START

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
July 3, 1990 Volume 1116 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1109 O.G. 3 on Dec. 5, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of March 1, 1990, and was announced in the *Official Gazette* at 1111 O.G. 24 on Feb. 20, 1990.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1242.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Apr. 30, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of May 31, 1990.

Chemical Discipline - August 1, 1989
Mechanical Discipline - November 7, 1988
Electrical Discipline - December 20, 1988

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of May 31, 1990.

Chemical - March 1, 1989
Electrical - June 15, 1989
Mechanical - September 1, 1989

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of May, 1990.

Affirmed....241
Affirmed-in-Part....59
Reversed....142
Total Decided....442

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on June 30, 1987, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,675,912 through 4,677,693
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on June 28, 1983 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,389,733 through 4,390,994
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant....$245.00"

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))....$245.00
By other than a small entity....$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))....$495.00
By other than a small entity....$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f))....$60.00
By other than a small entity....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED APRIL 22, 1990
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,325,226	06/235,404	4/20/82
4,325,327	06/237,183	4/20/82
4,325,360	06/249,788	4/20/82
4,325,408	06/228,683	4/20/82
4,325,504	06/216,797	4/20/82
4,325,536	06/271,511	4/20/82
4,325,554	06/238,580	4/20/82
4,325,612	06/260,582	4/20/82
4,325,718	06/260,126	4/20/82
4,325,722	06/223,525	4/20/82
4,325,788	06/221,373	4/20/82
4,325,791	06/222,865	4/20/82
4,325,793	06/266,865	4/20/82
4,325,796	06/229,957	4/20/82
4,325,805	06/217,889	4/20/82
4,325,831	06/243,083	4/20/82
4,325,872	06/218,465	4/20/82
4,325,874	06/267,152	4/20/82
4,325,919	06/225,910	4/20/82
4,325,929	06/217,237	4/20/82
4,325,930	06/221,448	4/20/82
4,325,932	06/219,166	4/20/82
4,325,936	06/233,888	4/20/82
4,325,968	06/222,572	4/20/82
4,325,972	06/278,934	4/20/82
4,326,016	06/221,390	4/20/82
4,326,068	06/216,035	4/20/82
4,326,137	06/228,035	4/20/82
4,326,151	06/216,908	4/20/82
4,583,247	06/493,667	4/22/86
4,583,258	06/629,583	4/22/86
4,583,260	06/733,540	4/22/86
4,583,263	06/656,960	4/22/86
4,583,264	06/566,786	4/22/86
4,583,269	06/643,623	4/22/86
4,583,272	06/377,704	4/22/86
4,583,279	06/609,656	4/22/86
4,583,280	06/452,660	4/22/86
4,583,286	06/479,491	4/22/86
4,583,287	06/754,530	4/22/86
4,583,290	06/677,266	4/22/86
4,583,292	06/640,043	4/22/86
4,583,300	06/570,933	4/22/86
4,583,302	06/667,904	4/22/86
4,583,303	06/622,477	4/22/86
4,583,312	06/515,377	4/22/86
4,583,315	06/538,960	4/22/86
4,583,328	06/386,673	4/22/86
4,583,329	06/699,199	4/22/86
4,583,332	06/758,084	4/22/86
4,583,334	06/591,935	4/22/86
4,583,343	06/532,402	4/22/86
4,583,352	06/514,148	4/22/86
4,583,365	06/558,503	4/22/86
4,583,371	06/713,096	4/22/86
4,583,374	06/544,381	4/22/86
4,583,381	06/568,723	4/22/86
4,583,383	06/695,199	4/22/86
4,583,391	06/652,801	4/22/86
4,583,392	06/606,242	4/22/86
4,583,405	06/616,656	4/22/86
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4,583,420	06/660,867	4/22/86
4,583,426	06/625,850	4/22/86
4,583,427	06/715,184	4/22/86
4,583,443	06/596,896	4/22/86
4,583,445	06/562,541	4/22/86
4,583,451	06/630,380	4/22/86
4,583,454	06/634,143	4/22/86
4,583,458	06/714,969	4/22/86
4,583,463	06/406,674	4/22/86
4,583,464	06/662,797	4/22/86
4,583,467	06/396,941	4/22/86
4,583,474	06/719,213	4/22/86
4,583,476	06/686,972	4/22/86
4,583,478	06/585,449	4/22/86
4,583,484	06/517,577	4/22/86
4,583,486	06/696,813	4/22/86
4,583,489	06/731,182	4/22/86
4,583,494	06/703,994	4/22/86
4,583,497	06/589,445	4/22/86
4,583,498	06/724,173	4/22/86
4,583,501	06/541,515	4/22/86
4,583,503	06/598,194	4/22/86
4,583,504	06/631,496	4/22/86
4,583,512	06/456,527	4/22/86
4,583,520	06/636,749	4/22/86
4,583,521	06/724,249	4/22/86
4,583,526	06/691,510	4/22/86
4,583,531	06/585,568	4/22/86
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4,583,563	06/522,786	4/22/86
4,583,569	06/752,605	4/22/86
4,583,579	06/632,666	4/22/86
4,583,599	06/653,594	4/22/86
4,583,601	06/501,735	4/22/86
4,583,604	06/663,301	4/22/86
4,583,617	06/675,243	4/22/86
4,583,618	06/671,593	4/22/86
4,583,621	06/590,749	4/22/86
4,583,624	06/679,723	4/22/86
4,583,627	06/544,066	4/22/86
4,583,629	06/582,827	4/22/86
4,583,632	06/589,960	4/22/86
4,583,633	06/631,937	4/22/86
4,583,635	06/647,197	4/22/86
4,583,637	06/698,732	4/22/86
4,583,639	06/708,490	4/22/86
4,583,646	06/630,690	4/22/86
4,853,652	06/656,781	4/22/86
4,583,655	06/719,905	4/22/86
4,583,658	06/544,921	4/22/86
4,583,667	06/566,054	4/22/86
4,583,677	06/655,038	4/22/86
4,583,680	06/665,191	4/22/86
4,583,691	06/590,798	4/22/86
4,583,694	06/618,465	4/22/86
4,583,705	06/664,259	4/22/86
4,583,715	06/671,420	4/22/86
4,583,724	06/748,674	4/22/86
4,583,727	06/619,928	4/22/86
4,583,730	06/705,979	4/22/86
4,583,735	06/706,938	4/22/86
4,583,741	06/671,620	4/22/86
4,583,742	06/624,356	4/22/86
4,583,743	06/735,097	4/22/86
4,583,744	06/594,021	4/22/86
4,583,745	06/723,134	4/22/86
4,583,747	06/678,417	4/22/86
4,583,758	06/707,081	4/22/86
4,583,765	06/542,759	4/22/86
4,583,766	06/608,144	4/22/86
4,583,777	06/578,512	4/22/86
4,583,778	06/698,188	4/22/86
4,583,779	06/601,691	4/22/86
4,583,780	06/646,797	4/22/86
4,583,795	06/567,775	4/22/86
4,583,798	06/735,532	4/22/86
4,583,801	06/548,738	4/22/86
4,583,802	06/578,852	4/22/86
4,583,806	06/690,566	4/22/86
4,583,814	06/630,785	4/22/86
4,583,819	06/405,109	4/22/86
4,583,823	06/618,137	4/22/86
4,583,829	06/593,549	4/22/86
4,583,853	06/585,588	4/22/86
4,583,864	06/732,747	4/22/86
4,583,869	06/374,649	4/22/86
4,583,878	06/737,670	4/22/86
4,583,880	06/763,064	4/22/86
4,583,882	06/575,893	4/22/86
4,583,883	06/610,826	4/22/86
4,583,890	06/581,263	4/22/86
4,583,891	06/680,583	4/22/86
4,583,892	06/463,793	4/22/86
4,583,903	06/567,898	4/22/86
4,583,904	06/615,540	4/22/86
4,583,905	06/616,710	4/22/86
4,583,911	06/544,822	4/22/86
4,583,916	06/713,216	4/22/86
4,583,918	06/700,961	4/22/86
4,583,928	06/617,157	4/22/86
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4,583,937	06/216,521	4/22/86
4,583,943	06/633,786	4/22/86
4,583,944	06/690,211	4/22/86
4,583,945	06/704,187	4/22/86
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4,583,956	06/667,748	4/22/86
4,583,965	06/692,857	4/22/86
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4,583,977	06/640,822	4/22/86
4,583,980	06/691,715	4/22/86
4,583,988	06/550,743	4/22/86
4,583,993	06/305,675	4/22/86
4,583,995	06/660,972	4/22/86
4,583,997	06/659,285	4/22/86
4,584,012	06/650,148	4/22/86
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4,584,052	06/401,885	4/22/86
4,584,054	06/630,503	4/22/86
4,584,059	06/753,341	4/22/86
4,584,061	06/688,317	4/22/86
4,584,064	06/578,952	4/22/86
4,584,069	06/704,461	4/22/86
4,584,074	06/696,859	4/22/86
4,584,094	06/617,984	4/22/86
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4,584,109	06/584,648	4/22/86
4,584,123	06/633,965	4/22/86
4,584,124	06/629,367	4/22/86
4,584,128	06/644,117	4/22/86
4,584,139	06/462,267	4/22/86
4,584,152	06/620,621	4/22/86
4,584,176	06/591,280	4/22/86
4,584,198	06/499,894	4/22/86
4,584,200	06/518,942	4/22/86
4,584,213	06/720,075	4/22/86
4,584,216	06/621,303	4/22/86
4,584,256	06/674,347	4/22/86
4,584,257	06/724,057	4/22/86
4,584,269	06/547,258	4/22/86
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4,584,298	06/660,135	4/22/86
4,584,301	06/734,432	4/22/86
4,584,308	06/554,749	4/22/86
4,584,310	06/588,024	4/22/86
4,584,312	06/740,123	4/22/86
4,584,315	06/561,013	4/22/86
4,584,318	06/505,606	4/22/86
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4,584,350	06/644,082	4/22/86
4,584,371	06/585,337	4/22/86
4,584,376	06/440,077	4/22/86
4,584,394	06/682,431	4/22/86
4,584,396	06/546,216	4/22/86
4,584,409	06/709,808	4/22/86
4,584,435	06/554,265	4/22/86
4,584,442	06/540,789	4/22/86
4,584,457	06/622,416	4/22/86
4,584,458	06/643,960	4/22/86
4,584,467	06/695,615	4/22/86
4,584,474	06/592,691	4/22/86
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4,584,502	06/753,349	4/22/86
4,584,512	06/558,836	4/22/86
4,584,517	06/620,240	4/22/86
4,584,521	06/514,813	4/22/86
4,584,525	06/485,789	4/22/86
4,584,527	06/479,065	4/22/86
4,584,541	06/687,546	4/22/86
4,584,550	06/480,755	4/22/86
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4,584,560	06/618,985	4/22/86
4,584,565	06/714,388	4/22/86
4,584,566	06/685,105	4/22/86
4,584,569	06/650,835	4/22/86
4,584,571	06/553,072	4/22/86
4,584,572	06/387,597	4/22/86
4,584,585	06/596,747	4/22/86
4,584,593	06/510,080	4/22/86
4,584,600	06/534,730	4/22/86
4,584,607	06/600,475	4/22/86
4,584,616	06/699,809	4/22/86
4,584,617	06/534,902	4/22/86
4,584,618	06/658,557	4/22/86
4,584,620	06/594,638	4/22/86
4,584,625	06/649,312	4/22/86
4,584,634	06/670,496	4/22/86
4,584,650	06/549,402	4/22/86
4,584,670	06/458,543	4/22/86
4,584,673	06/501,320	4/22/86
4,584,675	06/278,045	4/22/86
4,584,688	06/521,106	4/22/86
4,574,691	06/523,101	4/22/86
4,584,695	06/550,526	4/22/86
4,584,717	06/634,676	4/22/86

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,647,830, Re. S. N. 07/319,301, Filed Mar. 3, 1989, Cl. 320/001, SERIES INVENTOR CIRCUIT WITH TIMING RESPONSIVE TO REFLECTIVE CURRENT, George L. Bees, et al., Owner of Record: *Candela Corp., Natick, Mass.*, Attorney or Agent: James M. Smith, Ex. Gp.: 212

4,680,635, Re. S. N. 07/388,792, Filed July 12, 1989, Cl. 358/211, EMMISSION MICROSCOPE, Neeraj Khurana, Owner of Record: *KLA Instruments Corp., San Jose, Calif.*, Attorney or Agent: Claude A. S. Hamrick, Ex. Gp.: 262

4,719,204, Re. S. N. 07/466,081, Filed Jan. 11, 1990, Cl. 514/167, FOWL BONE MINERALIZATION WITH 28-NOR 1a-HYDROXYVITMAIN D2 ANALOGS, Hector F. DeLuca, Owner of Record: *Wisconsin Alumni Research Foundation, Madison, Wis.*, Attorney or Agent: Howard W. Bremer, Ex. Gp.: 125

4,732,188, Re. S. N. 07/420,008, Filed Oct. 10, 1989, Cl. 137/73, FUEL TANK CAP WITH PRESSURE/THERMAL RELIEF, Zdenek Gabrlik, et al., Owner of Record: *GT Development Corp., Tukwila, Wash.*, Attorney or Agent: Joan H. Pauly, Ex. Gp.: 347

4,744,594, Re. S. N. 07/514,076, Filed Apr. 25, 1990, Cl. 294/641, VACUUM HANDLING ESPECIALLY FOR THE USE IN HANDLING SILICON WAFERS, Bernard Poli, Owner of Record: *Recif, S.A., Saint-Etienne, France*, Attorney or Agent: Jonathan B. Penn, Ex. Gp.: 312

4,744,733, Re. S. N. 07/522,058, Filed May 10, 1990, Cl. 417/310, SCROLL TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM, Kiyoshi Terauchi, et al., Owner of Record: *Saden Corp., Isesaki-Shi, Japan*, Attorney or Agent: Scott F. Partridge, Ex. Gp.: 343

4,869,300, Re. S. N. 07/484,361, Filed Feb. 21, 1990, Cl. 141/59, MULTIFUNCTION FLUID CHARGING DEVICE, Ronald A. Gudenau, et al., Owner of Record: *Rabidfil, Inc., Rochester-Hills, Mich.*, Attorney or Agent: John R. Benefiel, Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

in the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,355,986, Reexam. No. 90/002,030, Requested May 21, 1990, Cl. 440/53, OUTBOARD MOTOR WITH ELEVATED HORIZONTAL PIVOT AXIS, Myron T. Stevens, Owner of Record: *Inventor, Kenosha, Wis.*, Attorney or Agent: R. E. Clemency, Ex. Gp.: 310, Requester: E. A. Beutler, Harness, Dickey & Pierce, Bloomfield Hills, Mich.

4,478,268, Reexam. No. 90/002,028, Requested May 17, 1990, Cl. 160/310, DOOR STRUCTURE, Glenn R. Palmer, Owner of Record: *M & I Door Systems, Barrie, Ontario, Canada*, Attorney or Agent: Wegner & Bretschneider, Ex. Gp.: 350, Requester: Owner

4,707,658, Reexam. No. 90/002,026, Requested May 14, 1990, Cl. 324/309, METHOD OF RAPID ACQUISITION OF SPIN RESONANCE DATA FOR A SPATIALLY RESOLVED INVESTIGATION OF AN OBJECT, Gens Frahm, et al., Owner of Record: *Max Planck Society for the Advancement of Science, Goettingen, Fed. Rep. of Germany*, Attorney or Agent: Frishauf, Holtz, Goodman, et al., Ex. Gp.: 260, Requester: Owner

4,769,963, Reexam. No. 90/002,027, Requested May 16, 1990, Cl. 52/309, BONDED PANAL INTERLOCK DEVICE, Steven C. Myerson, Owner of Record: *Republic Bank, Clearwater, Fla.*, Attorney or Agent: Herbert H. Larson, Ex. Gp.: 350, Requester: Peter Zadok, Pembroke Park, Fla.

4,851,226, Reexam. No. 90/002,029, Requested May 21, 1990, Cl. 424/441, CHEWABLE MEDICAMENT TABLET CONTAINING MEANS FOR TASTE MASKING, Thomas N. Julien, et al., Owner of Record: *McNeil Personal Products Co., Inc., Fort Washington, Pa.*, Attorney or Agent: R. L. Minier, Ex. Gp.: 150, Requester: Owner

4,877,077, Reexam. No. 90/002 031, Requested May 14, 1990, Cl. 160/236, VERTICAL COEXTRUDED PEARLESCENT LOUVER FOR VERTICAL BLINDS, George W. Ebert, Owner of Record: *Home Fashions, Inc., Santa Monica, Calif.*, Attorney or Agent: Welsh & Katz, Ex. Gp.: 350, Requester: Montage, Inc., Twinsburg, Ohio

Service by Publication

A Petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by

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certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

The Wine Exchange, Ltd., Philadelphia, Pa., Reg. Np. 1,390,213, for the mark "THE WINE EXCHANGE", Canc. No. 18,488.

Lambert M. Kowalewski and Alphonse P. Bambenek, dba Hot Fish Soup Enterprises and Hot Fish Shop, Winona, Mich., Reg. No. 935,784, for the mark "HOT FISH SHOP", Canc. No. 18,529.

Ivo Import and Export Co., Inc., Upper Marlboro, Md., Reg. No. 1,330,955, for the mark "RAGTOP USA" and design, Canc. No. 18,564.

JEAN BROWN
Administrator of the Trademark Trail and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

Errata

"All reference to Patent No. 4,919,307 to Frank K. Schneider, Jr., et al., of N. J. for `DUAL COMPONENT PNEUMATICALLY OPERATED CAULKING GUN' appearing in the Official Gazette of April 24, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,925,208 to Kazuaki Shitanoki, et al., of Japan for `AIR BAG DEVICE FOR PROTECTING A VEHICLE OCCUPANT' appearing in the Officaial Gazette of May 15, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,927,720 to Earl J. Chaney, Jr., et al., of Ohio for `ELECTROCHEMICAL CELL HAVING A SAFETY VENT CLOSURE' appearing in the Offical Gazette of May 22, 1990 should be deleted since no patent was granted."

REGISTRATION TO PRACTICE

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registraion is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following appplicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Disclipline on or before July 30, 1990.

Edlow, Martin H., 9368 Tucker Woods Ct., Burke, Va. 22015
George, Keith E., 6401 N. 25th St., Arlington, Va. 22207
Huleatt, Jayme A., 34th General Hospital, Box 111, APO, N.Y. 09178
McCall, James T., 4038 S. Four Mile Run Dr., Arlington, Va. 22204
Spiegel, Jack, 5103 Upshur St., Bladensburg, Md. 20710

CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Disclipline

REGISTRATION TO PRACTICE

The following list contains the names of persons that passed the registration examination that was held October 11, 1989. Final approval for registration is subject to establishing to the satifaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discpline on or before July 30, 1990.

Foodman, Marc D., 1144 Pine St., #103, San Francisco, Calif. 94109
Waggett, Gordon G., 228 W. Cowan, Houston, Tex.

CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Testing of Computer Readable Form Submissions for Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures

The Patent and Trademark Office (PTO) is interested in identifying participants for voluntary testing of computer readable form submissions in conjunction with the anticipated implementation of the final rules setting forth the requirements for patent applications containing nucleotide sequence and/or amino acid sequence disclosures. The final rules were published in the *Federal Register*, 55 FR 18230 (May 1, 1990), and in the *Official Gazette*, 1114 O.G. 29 (May 15, 1990). The testing of computer readable form submissions will encompass all of the computer readable forms permitted by § 1.824 of the final rules. It is expected that the submission testing will be conducted during the month of July 1990.

Participants in the testing will be able to submit information to the PTO which is related to an actual patent or patent application or which is entirely hypothetical. The confidentiality requirement imposed by 35 U.S.C. 122 will be respected if the submitted information relates to a pending application. A software program for IBM compatible PCs, called "Patentin", that has been developed to facilitate compliance with the final rules, will be available during the testing period. The "Patentin" program has been specifically designed to collect all of the information that is requested by the final rules, in the format required by those rules. The testing of the "Patentin" program will also involve a review of an instruction manual that will accompany the program.

Requests to participate in the testing of computer readable form submissions should be made in writing and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Lois E. Boland; Special Program Examiner, Office of the Assistant Commissioner for Patents - Crystal Park 2, Suite 919. Any questions about the submission testing should be directed to Lois E. Boland, by telephone, at (703) 557-8384.

June 7, 1990

HARRY F. MANBECK, JR.
Assistant Secretary and Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction For Week of July 3, 1990

PP. 6,581	4,808,359	4,841,649	4,855,335
PP. 6,586	4,809,448	4,842,956	4,855,361
PP. 6,887	4,811,837	4,843,026	4,855,372
PP. 6,991	4,813,280	4,843,243	4,855,491
Re. 32,992	4,813,761	4,843,347	4,855,545
Re. 33,005	4,814,111	4,843,451	4,856,355
4,563,743	4,815,945	4,843,475	4,856,368
4,572,795	4,815,986	4,843,832	4,856,519
4,660,680	4,816,658	4,843,845	4,857,033
4,661,139	4,817,376	4,844,071	4,857,053
4,668,272	4,819,215	4,844,734	4,857,099
4,669,647	4,819,805	4,844,827	4,857,297
4,685,639	4,820,106	4,845,081	4,857,379
4,686,074	4,820,800	4,845,101	4,857,627
4,693,986	4,820,825	4,845,398	4,857,753
4,700,940	4,820,869	4,845,418	4,858,362
4,707,710	4,822,282	4,845,429	4,858,636
4,721,916	4,823,461	4,845,619	4,858,848
4,736,377	4,824,011	4,847,133	4,858,936
4,746,007	4,824,512	4,847,527	4,859,452
4,756,256	4,824,668	4,848,457	4,859,591
4,760,987	4,826,358	4,848,835	4,859,954
4,762,813	4,826,587	4,850,007	4,860,004
4,767,734	4,828,374	4,850,346	4,861,916
4,773,872	4,828,620	4,850,636	4,862,002
4,776,658	4,830,650	4,850,709	4,862,309
4,777,362	4,831,083	4,851,075	4,862,467
4,779,468	4,832,204	4,851,138	4,864,121
4,782,297	4,832,428	4,851,458	4,864,631
4,782,325	4,832,657	4,852,248	4,865,754
4,796,091	4,834,390	4,852,261	4,866,195
4,797,868	4,834,678	4,853,011	4,868,306
4,798,395	4,835,032	4,853,409	4,884,309
4,799,633	4,835,306	4,853,454	4,897,442
4,800,378	4,836,669	4,853,798	4,903,201
4,800,761	4,839,991	4,853,920	4,905,793
4,804,610	4,840,126	4,854,064	4,906,090
4,806,338	4,840,854	4,854,120	4,912,874
4,808,090	4,841,418	4,854,445	4,915,260

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SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

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Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions to revive, petitions to accept late payment of fees, petitions to defer issue, and petitions to withdraw an application from issue.
Box FWC	Requests for File Wrapper Continuation Applications.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue.
Box ITU	All Intent to Use documents excluding the initial application and amendments to allege use.
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Box Non Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection.)
Box OED	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent application *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.
Box Assignments	All assignment documents except those filed in new patent applications.
Box SEQUENCE	All application papers, computer readable forms and fees related to applications containing nucleotide sequence and/or amino acid sequence disclosures in accordance with 37 CFR §§ 1.821 through 1.825.

Reference Collection of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to libary, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effctive access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 261-2916
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8874
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 275-2562
	Tampa: Tampa Campus Library, University of Central Florida	(813) 974-2726
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada-Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(201) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 473-4636
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 737-3280
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
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Oklahoma	Stillwater: Oklahoma State University Library	(405) 744-7086
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF May 19, 1990

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-7-87
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	10-18-88
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—BARRY S. RICHMAN, Director	5-12-88
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-5-88
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-28-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—ROBERT E. GARRETT, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	3-8-88
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-9-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	3-23-88
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 STEWART LEVY, Acting Director	3-31-88
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-24-89
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	6-23-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	10-25-88
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	5-5-89

Expiration of patents: The patents within the range of numbers indicated below expire during May 1990 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,729,744 to 3,736,594 inclusive
Plant Patents ..... 3,321 to 3,349 inclusive

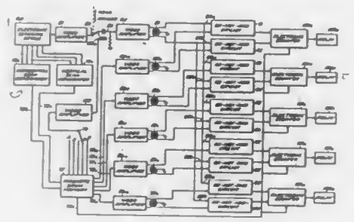
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REEXAMINATIONS

JULY 3, 1990

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,713,100 (1314th)
METHOD AND APPARATUS FOR IDENTIFYING LETTERS, CHARACTERS, SYMBOLS, AND THE LIKE
Harold S. Hemstreet, 33 Blueking Ridge Rd., Wilton, Conn. 06897
Reexamination Request No. 90/001,050, Jul. 2, 1986.
Reexamination Certificate for Patent No. 3,713,100, issued Jan. 23, 1973, Ser. No. 336,080, Feb. 10, 1953.
Filed Jul. 2, 1986, Ser. No. 336,080
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—34



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-21, 24-34, 36-44, 50-52, 54-57 and 59-65 is confirmed.

Claims 22, 23, 35, 45-49 and 58 are cancelled.

1. In a device of the character described, means for comparing two different electrical quantities each comprising a plurality of pulses in time sequence, said means comprising an electronic gate for each quantity, and a coincidence circuit, each of said electrical quantities being connected to a first input of its respective electronic gate, and each being connected to a respective input of the coincidence circuit, both of said gates being biased to pass pulses of at least one polarity from either input quantity, a counter energized by the output of said gates, the coincidence circuit being biased to produce an output when energized by simultaneous pulses of said polarity, the output of said coincidence circuit being connected to a second input of each of said gates so that an output from the coincidence circuit causes both of said gates to be blocked so that no pulses from either of said electrical quantities are sent to said counter.

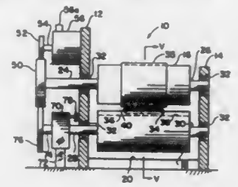
B1 3,899,945 (1315th)
METHOD AND APPARATUS FOR ACCURATE DIE-CUTTING
Clyde B. Garrett, Lanham, and William S. Thayer, Lutherville, both of Md., assignors to United Container Machinery Group, Inc., Glen Arm, Md.
Reexamination Request No. 90/001,667, Dec. 14, 1988.
Reexamination Certificate for Patent No. 3,899,945, issued Aug. 19, 1975, Ser. No. 411,941, Nov. 1, 1973.
Division of Ser. No. 319,163, Dec. 29, 1972. This application Dec. 14, 1988, Ser. No. 411,941
Int. Cl.[5] B23D *25/12*; B26D *1/56*
U.S. Cl. 83—38

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 through 15 is confirmed.

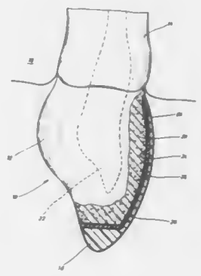
Claim 16 is cancelled.

1. A method of controlling the accuracy of cuts made in a paperboard blank passing between a pair of cooperating die and anvil cylinders comprising the steps of:



driving said die cylinder at a first angular velocity;
driving said anvil cylinder at a second angular velocity; and
selectively changing and maintaining said second angular velocity equal to, faster, or slower than said first angular velocity,
for controlling the velocity of said blank.

B1 3,986,261 (1316th)
METHOD AND APPARATUS FOR RESTORING BADLY DISCOLORED, FRACTURED OR CARIOUSLY INVOLVED TEETH
Frank R. Faunce, 1307 Wilcrest Dr., Apt. 237, Houston, Tex. 77025, assignor to Frank R. Faunce; Tae Deborah Harrell Z. Browning; James R. Harris; Scott T. Cook and Edward F. Barker
Reexamination Request No. 90/001,629, Oct. 31, 1988.
Reexamination Certificate for Patent No. 3,986,261, issued Oct. 19, 1976, Ser. No. 421,846, Dec. 5, 1973.
Filed Oct. 31, 1988, Ser. No. 421,846
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—217.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 8-16 is confirmed.

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Claims 1, 3, 5, 7, 17, 18, 22, 23 and 26 are determined to be patentable as amended.

Claims 2, 4, 6, 19–21, 24, 25 and 27, dependent on an amended claim, are determined to be patentable.

1. A laminar tooth facing *for a single tooth, said facing being* formed of restoration material and adapted to *intimately fit the enamel surface of a patient's tooth and to* be bonded to the enamel surface of a patient's natural tooth to provide a thin restorative covering for the labial proximal and incisal surfaces of the patient's tooth, said facing comprising:

a thin sheet-like body of preformed dental restoration material having a substantially uniform thickness, said body being preformed to define a concave lingual surface that *intimately* conforms [generally] to the configuration of [desirable] *the labial enamel surface* portions of the natural tooth to which it is to be bonded and to define at least one proximal surface *intimately* conforming to the configuration of the outer enamel surface of said tooth, said body being formed to define [knife edges] *a sharp marginal edge* that [engage] *engages and establishes a contiguous margin with* the enamel surface of said tooth, said body being of such color as to provide a completed tooth restoration of pleasing cosmetic appearance.

B1 3,994,711 (1317th)

GLASS TEMPERING SYSTEM INCLUDING OSCILLATING ROLLER FURNACE

Harold A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburgh, Ohio

Reexamination Request No. 90/001,288, Jul. 16, 1987.
Reexamination Certificate for Patent No. 3,994,711, issued Nov. 30, 1976, Ser. No. 613,714, Sep. 15, 1975.
Filed Jul. 16, 1987, Ser. No. 613,714
Int. Cl.[5] C03B *27/00*
U.S. Cl. 65—163

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–33 is confirmed.

New claims 34–40 are added and determined to be patentable.

1. A glass tempering system comprising:

a furnace including a housing defining a horizontally elongated heating chamber; a furnace conveyor including a plurality of elongated rollers spaced along the elongated length of the chamber extending transversely with respect thereto in a horizontal manner so as to support a sheet glass load within the chamber in a horizontal orientation; a furnace conveyor drive mechanism that alternately rotates the rollers in one direction and then in the other for the same extent of rotation so as to convey the sheet glass load between the opposite ends of the chamber in an end-for-end oscillating manner; heating means for heating the sheet glass load to a quench temperature during the oscillating movement thereof between the ends of the chamber; said oscillating movement being at a sufficient speed and engaging each portion of the glass load with a plurality of the rollers such that there is no sagging of heated glass between the rollers; and said drive mechanism having an index cycle that rotates all of the furnace rollers to convey a heated glass sheet glass load out of the furnace or to receive a sheet glass load to be heated;

a quench unit including a horizontal roller conveyor having an index cycle for receiving a heated sheet glass load from the furnace and including means for quenching the heated glass load to provide tempering thereof; and

control means for coupling the furnace conveyor drive mechanism during the index cycle thereof with the roller conveyor of the quench unit during the index cycle thereof to provide coordinated sheet glass load conveyance from the furnace to the quench unit; said control means uncoupling the furnace conveyor drive mechanism from the quench unit conveyor after the coordinated index cycles thereof such that the furnace conveyor drive mechanism can oscillate a sheet glass load to be heated within the furnace independently of a sheet glass load being quenched in the quench unit.

B3 4,083,229 (1318th)

METHOD AND APPARATUS FOR DETECTING AND LOCATING FLUID LEAKS

Allen R. Anway, Superior, Wis., assignor to Plaunt & Anderson Co., Duluth, Minn.

Reexamination Request No. 90/001,865, Oct. 13, 1989.
Reexamination Certificate for Patent No. 4,083,229, issued Apr. 11, 1978, Ser. No. 727,359, Sep. 28, 1976.
Reexamination Certificate B2 4,083,229, issued Sep. 11, 1984.
Reexamination Certificate B1 4,083,229, issued Feb. 1, 1983.
Continuation-in-part of Ser. No. 650,842, Jan. 20, 1976, abandoned. This application Oct. 13, 1989, Ser. No. 727,359
Int. Cl.[5] G01M *3/00*
U.S. Cl. 73—40.5 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentablity of claims 38, 68, 134 and 135 are confirmed.

Claims 1, 2, 4–10, 12–16, 19, 20, 23–28, 30–35, 42–44, 46–60, 65, 66, 69, 70 and 74–108 were previously cancelled.

Claims 3, 11, 17, 18, 21, 22, 29, 36, 37, 41, 45, 61–64, 67, 71–73, 109–117, 120–133, 138–140, 143–147, 150, 151, 152–156, 158–162 and 164–178 are cancelled.

Claims 39, 118, 136, 141, 148, 149, 152, 157 and 163 are determined to be patentable as amended.

Claims 40, 119, 137 and 142, dependent on an amended claim, are determined to be patentable.

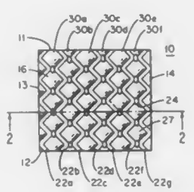
148. [The apparatus defined in claim 110 comprising] *In an apparatus for locating a leak of a liquid, such as water, from a buried pipe lying in contact with the material in which it is buried, first means for intercepting the noise vibration produced by the leak at two spaced apart points lying along said pipe on opposite sides of the suspected site of the leak and for converting the vibration intercepted at each of said points into an electrical signal to provide just two electrical signals that are miscorreloted in time to an extent determined by the location of the leak from said points, an electrical circuit electrically connected to said first means and including time delay means for variably time delaying at least samples of one of said signals relative to samples of the other of said signals to thereby vary the extent of time correlation between at least samples of said two signals to cause maximum time correlation therebetween, the extent of the variable time delay determining the point on said pipe being scanned for the site of the leak, means providing a display of the variation of the extent of time correlation between the samples, and means for indicating the location of the point being scanned on the pipe where said maximum time correlation occurs to enable the leak's location to be determined from the occurrence of the maximum time correlation and from the speed of sound in said liquid without requiring the leak-produced vibration to be intercepted at any points other than said two spaced apart vibration-interception points where the leak is in a pipe region lying between said two spaced apart vibration-interception points and extending at least part of the distance between said two spaced apart vibration-interception points, said first means comprising a pair of selectively positionable transducers located to contact different portions of a pipeline system containing said pipe to pick up the leak-produced noise vibration propagated through said liquid, and* means for time delaying one of said samples by a fixed pre-selected amount for enabling more than one-half the length of the pipe between said two spaced apart vibration-interception points to be scanned for the site of the leak by variably time delaying just one of said signals and without intercepting the leak-produced vibration at any points other than said two spaced apart vibration-interception points.

B1 4,228,225 (1319th)

BATTERY SEPARATOR

Dennis D. O'Rell, Boxboro, and Nan J. Lin, Burlington, both of Mass., assignors to W. R. Grace & Co-Conn, Cambridge, Mass.

Reexamination Request No. 90/001,736, Mar. 27, 1989.
Reexamination Certificate for Patent No. 4,228,225, issued Oct. 14, 1980, Ser. No. 51,175, Jun. 22, 1979.
Filed Mar. 27, 1989, Ser. No. 51,175
Int. Cl.[5] H01M *2/18*
U.S. Cl. 429—147



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–22 and 27–29 is confirmed.

Claim 23 is determined to be patentable as amended.

Claims 24–26, dependent on an amended claim, is determined to be patentable.

New claims 30–36 are added and determined to be patentable.

23. In a battery separator having a battery plate engaging face with a top and a bottom, the improvement comprising *the separator being thin, porous throughout and formed of a thermoplastic polymer, the separator having* a plurality of *porous, integral* raised spacing members that extend from said bottom to said top of said battery plate engaging face adjacent to one another, each of said spacing members having an outer extremity lying in a plane, being sinusoidal like in configuration in said plane, at least 75% continuous in said plane in extension from said bottom to said top of said battery separator face and isolated in said plane from adjacent raised spacing members.

B1 4,486,378 (1320th)

PLASTIC BOTTLES AND PROCESS FOR PREPARATION THEREOF

Sadao Hirata, Yokohama; Isao Tanikawa, Ayase, and Yoshitsugu Maruhashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Japan

Reexamination Request No. 90/000,838, Aug. 19, 1985.
Reexamination Certificate for Patent No. 4,486,378, issued Dec. 4, 1984, Ser. No. 598,543, Apr. 12, 1984.
Continuation of Ser. No. 386,039, Jun. 7, 1981, abandoned, which is a division of Ser. No. 258,772, Apr. 29, 1981, Pat. No. 4,370,368. This application Aug. 19, 1985, Ser. No. 598,543
Claims priority, application Japan, May 7, 1980, 55-59505; May 7, 1980, 55-59506
Int. Cl.[5] B29D *9/04*
U.S. Cl. 264—512

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–9 are cancelled.

[1. A process for the preparation of coated plastic bottles which excel in both oxygen-barrier property and water resistance, which comprises coating at least one surface of a plastic bottle-forming parison, preform or sheet formed of a thermoplastic resin by melt molding with an aqueous latex of a copolymer consisting essentially of 99 to 70% by weight of vinylidene chloride and 1 to 30% by weight of at least one acrylic or methacrylic monomer and further including up to 100 parts by weight of at least one member selected from other ethylenically unsaturated monomers per 100 parts by weight of the total amount of said two monomers, said copolymer having an oxygen permeability constant of less than 9×10^{-14} cc-cm/cm^2-sec-cmHg as measured at a temperature of 20° C. and a relative humidity of 100% and a water vapor permeability constant of less than 3×10^{13} g-cm/m^2-day as determined according to the method of JIS Z-0208, drying the coated parison, preform or sheet to form a coating layer, subjecting the so-formed coated structure to biaxially drawing blow molding or deep forming to introduce monoaxial or biaxial orientation in said plastic substrate, and then increasing the oxygen-barrier property and water resistance of the coated plastic bottle by subjecting the resultant bottle to aging at a temperature of 30° to 120° C. for 30 seconds to 7 days.]

B1 4,683,291 (1321st)

PLATELET BINDING INHIBITORS

Theodore S. Zimmerman; Zaverio M. Ruggeri, both of La Jolla, and Richard Houghten, Solhna Beach, all of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Reexamination Request Nos. 90/001,537, Jun. 20, 1988 and 90/001,564, Jul. 21, 1988.
Reexamination Certificate for Patent No. 4,683,291, issued Jul. 28, 1987, Ser. No. 791,872, Oct. 28, 1985.
Filed Jun. 20, 1988, Ser. No. 791,872
Int. Cl.[5] A61K *37/02*; C07C *215/06, 215/24*
U.S. Cl. 530—324

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–33 are cancelled.

New claims 34 ∫ 72 are added and determined to be patentable.

34. A peptide having one of the formulas

(Ib)

$$\{H_2N-(Ch)-NH\}_m-(CZ)-C(O)-Arg-Gly-Asp-(Cx)-H$$
$$[NH-(Cx)-Asp-Gly-Arg-NH_2]_n$$

-continued

$$[H_2N—(Ch)—NH]_m—(CZ)—[C(O)—Arg—Gly—Asp—(Cx)—H)]_n \quad (Ic)$$

$$[H_2N—(Ch)—NH]_m—(CZ)—[NH—(Cx)—Asp—Gly—Arg—NH_2]_n \quad (Id)$$

wherein:

(Ch) is a chain of 1 to 20 amino acid residues which contains at least 1 residue selected from the group consisting of Lys and Arg;

m and n are each 1–10, and (m+n) is 3–20;

(CZ) is a straight or branched alkyl group containing at least (m+n) carbon atoms and up to 20 carbon atoms;

(Cx) is a chain of 1 to 20 amino acid residues; and each amino acid residue is in the (L) or (D) configuration.

B1 4,699,447 (1322nd)

OPTICAL BEAM SCANNER WITH ROTATING MIRROR

P. Guy Howard, Junction City, Oreg., assignor to Spectra-Physics, Inc., San Jose, Calif.

Reexamination Request No. 90/001,819, Aug. 9, 1989.

Reexamination Certificate for Patent No. 4,699,447, issued Oct. 13, 1987, Ser. No. 834,284, Feb. 27, 1986.

Filed Aug. 9, 1989, Ser. No. 834,284

Int. Cl.[5] G02B *26/10*

U.S. Cl. 350—6.9

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 14, 16** and **18** are determined to be patentable as amended.

Claims **2–13, 15, 17, 19** and **20**, dependent on an amended claim, are determined to be patentable.

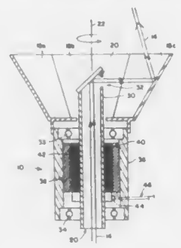
New claims **21–32** are added and determined to be patentable.

1. A laser bar code scanning device, comprising,

a housing for connection to a beam generator projecting a beam along a beam axis,

a first mirror mounted within the housing obliquely with respect to the beam on the beam axis, in position to intercept and fold the beam to direct [it] *the folded beam* generally radially outwardly from the beam axis,

a plurality of mirrors disposed radially outwardly with respect to the beam axis and spaced away from the beam axis, each oriented on a tilt angle with respect to the beam axis and successively positioned in a generally basket-shaped array *more than 180° around said beam axis*, each



mirror of the basket-shaped array being so oriented that when it receives the folded beam it redirects the beam generally in the direction of orientation of the beam axis,

rotational means operatively connected to the [obliquely angled] *oblique first* mirror and to the basket-shaped array of mirrors, for permitting relative rotation of the [mirror] array *of mirrors* and the oblique first mirror about the beam axis so that the folded beam sweeps across each mirror of the basket-shaped array of mirrors in succession to scan the beam to project generally a plurality of scan lines on a surface to be scanned, and

motor means for effecting said relative rotation.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED JULY 3, 1990

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H793

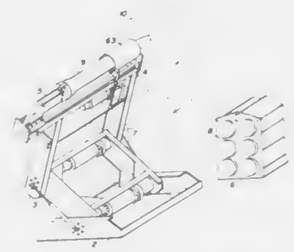
ROBOTIC AUTOLOADER

Roy A. Zangrando, Boonton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1989, Ser. No. 421,430

Int. Cl.[5] F41F *9/10*

U.S. Cl. 89—46 **9 Claims**



1. An autoloader for loading and unloading rounds between a magazine having a plurality of cavities, each for receiving one round and the breech of a gun, comprising:

a base adapted to be positioned near the magazine;

a load head for receiving and discharging a round;

link means connected between said base and said load head for moving said load head between a position adjacent any one of the cavities, and a position adjacent the breech;

a carriage assembly mounted for movement to said load head, in a direction for extracting and replacing loads to and from the cavity and to and from the breech;

round gripping means connected to said carriage assembly for gripping a rear end of a round; and

grip release means operatively connected to said round gripping means for selectively disconnecting a round from said round gripping means when the round is in the breech and in a cavity of the magazine.

H794

DISCARDING ROTATING BAND FOR PROJECTILE

Frisco T. Telmo, King George, and Raymond D. Cooper, Bowling Green, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1989, Ser. No. 405,826

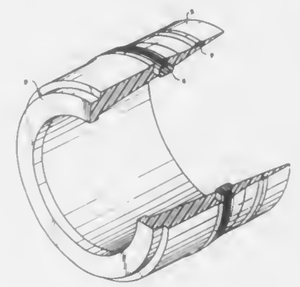
Int. Cl.[5] F42B *13/00*

U.S. Cl. 102—527 **12 Claims**

1. A rotating band for a projectile having a tapered art end comprising:

a plastic sleeve circumscribing the tapered aft end;

one or more thermoplastic rings embedded in said plastic sleeve;



one or more grooves formed on the exterior of at least one of said thermoplastic rings;

a retainer ring molded on the bottom of said plastic sleeve.

H795

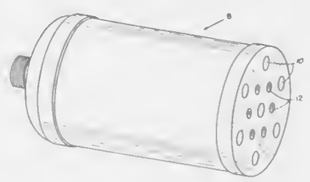
REDUCED TEMPERATURE SENSITIVITY LAUNCH MOTOR

Albert R. Maykut, and Jerrold H. Arszman, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1989, Ser. No. 469,852

Int. Cl.[5] F02K *1/06*

U.S. Cl. 239—265.15 **3 Claims**



1. A rocket motor having a main area nozzle means for exhausting gases from the rocket motor and a secondary nozzle area means that is closed by burst disc means that rupture upon predetermined temperature and pressure being reached inside said rocket motor to initially reduce the temperature and pressure of burning propellant within said rocket motor.

H796

OPEN LOOP SEEKER AIMING GUIDING SYSTEM

Walter E. Miller, Jr., and Richard W. Currie, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1989, Ser. No. 441,750

Int. Cl.[5] F41G *7/30*

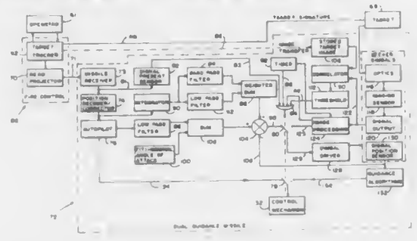
U.S. Cl. 244—3.17 **4 Claims**

1. An open loop seeker guiding system for directing a guided missile from launch to impact with a target, comprising:

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(a) line of sight means for acquiring an image of said target;
(b) control means disposed on said missile for controlling the flight of said missile to guide said missile along a flight path;
(c) means for tracking said target and for transmitting a signal to said control means corresponding to the disposition of the target;
(d) image storing means disposed on said missile for storing an image of said target;
(e) means for transmitting the target image acquired by said line of sight means to said image storing means;
(f) means disposed on said missile for detecting said target during flight and for forming an image thereof;



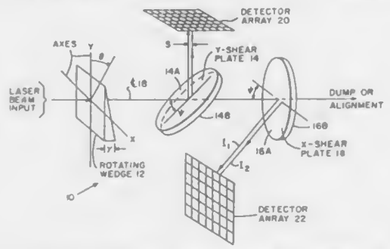
(g) means for comparing said detected image to said stored image; and
(h) means for disconnecting said control means from said signal transmitted by said target tracker when said signal is interrupted for a predetermined amount of time, when said missile has been in flight for a predetermined period of time, or when the said detected image matches said stored image to a predetermined degree, whichever occurs first, whereupon said means for detecting said target is connected to said control means for guiding said missile on a path to intersect and impact with said detected target.

H797

LONG ROD PENETRATOR WITH SEVERABLE GUIDE FINS

William P. Keown, deceased, late of West Milford, N.J.; by Evelyn Keown, executrix, 15 Hiawatha Pass, West Milford, N.J. 07480, and Walter J. Huckaby, P.O. Box 1057, Latrobe, Pa. 15650

Filed May 2, 1989, Ser. No. 355,621
Int. Cl.[5] F42B *10/06*
U.S. Cl. 244—3.25 10 Claims



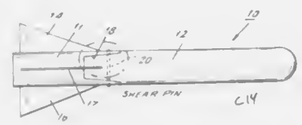
1. A long rod penetrator comprising an elongated rod having an armor piercing end and a rear end, guiding fin means including fins connected to a fin support positioned on said rear end of said rod and severable attachment means for attaching guiding fin means to said rod whereby said guiding fin means is fixedly secured to said rod during propulsion and travel of said rod toward a target, but is severed from said rod when said rod penetrates armor and said guiding fin means reaches said armor without requiring severance of said fins from said fin support.

H798

PHASE SHIFTING APPARATUS AND METHOD FOR SHEARING INFERFEROMETRY

Lawrence D. Brooks, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 18, 1989, Ser. No. 425,085
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 7 Claims



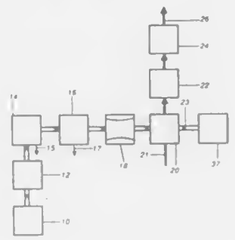
1. An optical sensor head for a shearing interferometer comprising: beam directing means and first and second shear plates disposed in alignment for coupling a laser beam therethrough, said beam directing means being disposed to receive a laser beam input and direct the beam toward said first shear plate, said first shear plate having first and second surfaces for reflecting first and second beam portions and coupling a third beam portion therethrough, said second shear plate having first and second surfaces for reflecting fourth and fifth beam portions and coupling a sixth portion therethrough.

H799

HIGH CONCENTRATION STANDARD AEROSOL GENERATOR

William E. Farthing, Birmingham, Ala.; Randal S. Martin, Pullman, Wash., and Kenneth M. Cushing, Birmingham, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 28, 1988, Ser. No. 186,265
Int. Cl.[5] B01D *45/12*
U.S. Cl. 55—392 4 Claims



1. An apparatus for producing an aerosol having a narrow size distribution, comprising:
supply means for providing a primary aerosol stream having a wide size distribution;
concentration means positioned to receive said stream, including means for reducing the volume flow rate of said stream without discarding a proportional fraction of the particles to produce a reduced flow rate stream;
venturi means for receiving said reduced flow rate stream, including means to monitor said stream and transfer said stream;

impactor means for receiving said stream and introducing a core of clean air into the center of said stream, including means for adjusting the relative velocities of said stream and said core to exclude particles having an inertia below a predetermined size;
outlet impactor means positioned to receive said stream and core, for removing particles larger than a predetermined size; and
exit means for exiting a primary aerosol stream.

H800

METHOD FOR GETTERING ORGANIC, INORGANIC AND ELEMENTAL IODINE IN AQUEOUS SOLUTIONS

Edward C. Beahm, and William E. Shockley, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 20, 1989, Ser. No. 341,005
Int. Cl.[5] G21F *9/08, 9/02, 9/04*
U.S. Cl. 252—631 1 Claim

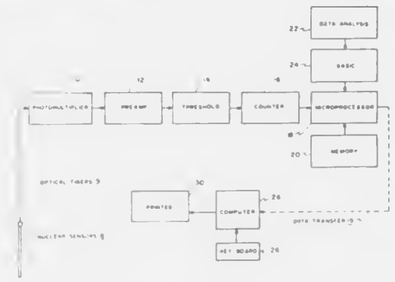
1. A process for removing iodine, from aqueous solution and from vapor contiguous thereto comprising exposing an iodine-containing solution to well dispersed silver carbonate which reacts with said iodine, thereby gettering said iodine from solutio and contiguous vapor.

H801

NUCLEAR FIBER SENSOR REMOTE DETECTION SYSTEM

Walter Koechner, Rte. 1, Box 83, Roundhill, Va. 22141; Deborah R. Van Wyck, 2743 Boomsbury Ct., Lake Ridge, Va. 22191; Gary P. Stevenson, 13339 Apgar Pl.; William Krug, 1014 Charles St., both of Herndon, Va. 22070; Tom McCollum, 46775 Melrose Ct., Apt. 303, Sterling, Va. 22170, and Garry B. Spector, 5800 Quantrell Ave., Apt. 421, Alexandria, Va. 22312

Filed Mar. 17, 1989, Ser. No. 336,456
Int. Cl.[5] G01T *1/20*
U.S. Cl. 250—368 8 Claims



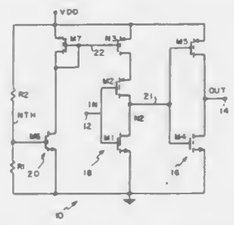
1. A fiber sensor nuclear line detector system for monitoring movement of nuclear material about a remote perimeter, said system comprising:
at least two nuclear fiber sensors portioned at two monitoring points a precise distance apart and individually located in close proximity to where a nuclear source will travel in an area to be monitored, each of said fiber sensors comprised of an organic scintillator inner core material embedded in a nuclear radiation transmitting polymer cladding outer material of a smaller index of refraction than said inner core material and which is fabricated into a nuclear radiation sensitive fiber sensor;
at least two ultraviolet transmitting optical fibers, each of said sensitive fiber sensors connected to one of said at least two ultraviolet transmitting optical fibers for transmission of optical signals generated in said fiber sensors by movement of a nuclear radiation source emitting radiation which impinges on said organic scintillator core material when in close proximity thereto;
a self contained sealed battery operated electronic system comprised of an optical detector and amplifier means for detecting said optical signals at the input thereto from said transmitting optical fibers and converting said optical signals into output electrical signal pulses according to the intensity and durations of said optical signals wherein said electrical signal pulses are passed through a preamplifier and signal thresholding device into a counter, said electronic system further comprised of microprocessor which serves as a data acquisition and verification device and which controls signal processing and data storage and has an event verification algorithm which discriminates between background noise and valid nuclear radiation events as indicated when the sum of the thresholded counts recorded by said counter exceeds a threshold signal in the microprocessor memory and a data key means for storing and retrieving event data along with exact time of said events; and an event read-out and data display system remote to said electronic system wherein said data key means is a data key insertable into said mircorprocessor for
recording event data thereon and is removable from said microprocessor and dumped into said event read-out and data display system at another location.

H802

BINARY VOLTAGE LEVEL CONVERTER

Shinichi Hisano, 150 Huntington ave., Apt. No. 8, Boston, Mass. 02115

Filed Apr. 7, 1989, Ser. No. 335,096
Int. Cl.[5] H03K *19/092*
U.S. Cl. 307—475 11 Claims



1. A circuit for converting binary information received at first logic high and logic low voltage levels from circuitry of a first logic family to second logic high and logic low voltage levels for use by circuitry of a second logic family comprising:
an output stage operative when in a first state for generating an output at said second logic high voltage level and operative when in a second state for generating an output at said second logic low voltage level;
an input stage for receiving inputs at said first logic levels and for generating a control voltage, said control voltage being applied to the output stage to control its state; and a reference stage including means for generating a reference potential substantially stable over an extended temperature range, the level of said reference potential being between said first logic high and logic low voltage levels, and means responsive to said reference potential for generating an output; said input stage including control means responsive to said reference stage output for changing said control voltage to change the state of said output stage when the received input passes through a voltage level which is substantially equal to said reference voltage.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

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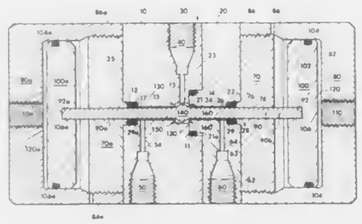
HIGH SPEED, HIGH TEMPERATURE THREE-WAY VALVE FOR SWITCHING HIGH PRESSURE FLUIDS UNDER LOW PRESSURE CONTROL

Robert D. Barree, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Original No. 4,726,398, dated Feb. 23, 1988, Ser. No. 942,566, Dec. 16, 1986. Application for reissue Sep. 6, 1989, Ser. No. 408,159

Int. Cl.[5] F16K *11/044*

U.S. Cl. 137—625.5 9 Claims



1. In combination with a fluid supply, first and second fluid receivers, a low pressure control system, and a high speed three-way valve for switching high temperature, high pressure fluids from said fluid supply under low pressure control by said control system to one of said two fluid receivers, said high temperature being as great as 250 degrees Fahrenheit and said high pressure being as great as 10,000 psig, said three-way valve comprising:

a valve body composed of material capable of withstanding said high temperature and said high pressure without deformation, said body having a formed input port connected to said fluid supply and first and second formed output ports, said first output port being connected to said first fluid receiver and said second output port being connected to said second fluid receiver,

a cavity formed in said valve body and in fluid communication with said formed input and said formed first and second output ports, said cavity being of elongated [symmetrical] shape having a formed central cylindrical region and first and second opposing elongated cylindrical regions, the radius of said central region being greater than the radius of said opposing first and second elongated cylindrical regions, said formed input port being in fluid communication [in the center of] *with* said formed central cylindrical region, said first output port being in fluid communication [near the end of] *with* said first elongated cylindrical region and said second output port being in fluid communication [near the end of] *with* said second elongated cylindrical region, the transitions between said central cylindrical region and said opposite elongated cylindrical regions forming first and second valve seats,

an elongated symmetrical spool disposed within said formed cavity in said valve body and comprised of material capable of withstanding said high temperature and said high pressure without deformation, said spool having a central raised portion and first and second opposing elongated cylindrical shafts, the radius of said central raised portion being slightly less than the radius of said central cylindrical region of said cavity, the radius of said first and second opposing elongated cylindrical shafts being slightly less than the radius of said first and second opposing elongated cylindrical regions, the transitions between said central raised portion of said spool and said first and second opposing shafts forming first and second conical shaped spool seats, said spool cooperating with said valve body to form a first fluid passageway between said formed input port and said first output port when said first spool seat seals against said first valve seat and to form a second fluid passageway between said formed input port and said second output port when said second spool seat seals against said second valve seat,

first and second opposing pistons connected to opposite ends of said valve body and to said control system, said first piston engaging to the end of said first elongated cylindrical shaft of said spool and said second piston engaging to the end of said second elongated cylindrical shaft of said spool, the diameter of said first and second opposing pistons being at least ten times greater than the sealing diameter of said central raised portion of said shaft,

means located in said valve body and around said first and second opposing elongated cylindrical shafts for sealing said high temperature, high pressure fluid in said first and second formed passageways,

said first piston being responsive to a low pressure signal from said control system for driving said spool towards said second valve seat so as to firmly engage said second spool seat against said second valve seat to seal said high pressure, high temperature fluid in said [first] *second* passageway for delivery to said second outlet port, and

said second piston being responsive to a low pressure signal from said control system for driving said spool towards said first valve seat so as to firmly engage said first spool seat against said first valve seat to seal said high pressure, high temperature fluid in said [second] *first* passageway for delivery to said [second] *first* outlet port, said time of travel of said spool between said first and said second valve seals occurring in less than fifteen milliseconds and said distance of travel of said spool being less than 0.03 inches with no volume change in the flow of said high temperature, high pressure fluid during said travel of said spool, said low pressure from said control system being at least two orders of magnitude less than said high pressure of said fluid.

Re. 33,247

DISPENSER FOR PASTE-LIKE PRODUCTS

Japp Bossina, Bussum, Netherlands, assignor to Gap Gesellschaft fur Auswertungen und Patente AG, Glarus, Netherlands

Original No. 4,511,068, dated Apr. 16, 1985, Ser. No. 456,449, Jan. 7, 1983. Continuation of Ser. No. 942,923, Dec. 17, 1986, abandoned, which is a continuation of Ser. No. 814,653, Dec. 30, 1985, abandoned. Application for reissue Mar. 10, 1988, Ser. No. 170,087

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—257 7 Claims

[6. A dispenser for paste-like products comprises a container for holding a supply of product to be dispensed, said container having a lower cylindrical wall portion that is closed by a closure piston which is slideable upwardly therein and is displaced upwardly by atmospheric pressure as product is dispensed from the container, and repetitively actuatable delivery means at an upper portion of the container whereby a limited amount of product can be dispensed at each actuation, said dispenser being characterized by:

A. said delivery means comprising

(1) a delivery piston

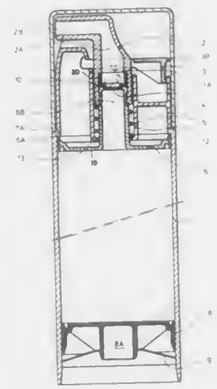
(a) which has a peripheral portion that axially slidably

and sealingly engages an upper cylindrical wall portion of the container all around the same and

(b) which substantially closes said upper wall portion of the container, opposes said closure piston and cooperates with it in defining the interior of the container so that downward movement of the delivery piston decreases the volume of said interior,

(2) an upwardly projecting dispensing portion on the delivery piston,

(a) the exterior of which comprises means whereby the delivery piston can be manually displaced downward and



(b) which has an outlet at its top that is communicable through its interior and through an aperture in the delivery piston with the interior of the container, and

(3) a non-return valve in said dispensing portion for controlling communication between the interior of the container and said outlet and whereby product displaced from the container by downward movement of the delivery piston is permitted to flow upward to said outlet but displaced product is prevented from flowing back into the container upon upward movement of the delivery piston; and

B. locking means on said closure piston cooperating with the container to prevent downward movement of the closure piston but permit upward movement thereof.]

Re. 33,248

CLAMP MECHANISM

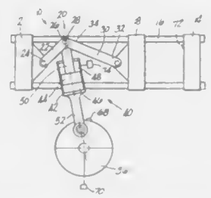
Robert D. Schad, 110 Bloor Street West, Suite 2104, Toronto, Ontario, Canada

Original No. 4,588,364, dated May 13, 1986, Ser. No. 718,803, Apr. 1, 1985. Application for reissue Nov. 14, 1988, Ser. No. 270,816

Int. Cl.[5] B30B *11/02;* **B29C** *45/67, 45/84*

U.S. Cl. 425—135 **12 Claims**

33. A reciprocating press comprising a support, a fixed platen and an abutment, said fixed platen and said abutment being connected on said support such that said fixed platen is spaced from said abutment, a movable platen mounted on said support between said fixed platen and said abutment, said movable platen being movable between a first position wherein said movable platen abuts said fixed platen and a second position wherein said movable platen and fixed platen are apart, a transmission assembly for moving said movable platen between said first position and said second position, said transmission assembly comprising a linkage system connecting said movable platen and said abutment, drive means for articulating said linkage system for moving said movable platen relative to said abutment and said fixed platen, connecting means for transferring motion from said drive means to said linkage system, said connecting means including locking means associated with said linkage system for locking said movable platen in place when said movable platen is in said first position, said locking means comprises a fluid link and first means associated with said drive means for sensing when said movable platen is proximate to said first position for controlling the flow of



fluid under pressure to said fluid link for locking said movable platen in said first position and second means associated with said fluid link for sensing an obstruction between said fixed platen and said movable platen for inactivating said locking means prior to said first sensing means sensing when said movable platen is proximate to said first position.

Re. 33,249

COUPLING DEVICE

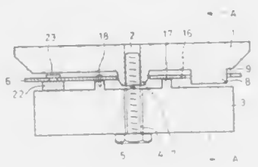
Rudolf Schneider, Büron, Switzerland, assignor to Erowa A.G., Reinach, Switzerland

Original No. 4,615,688, dated Oct. 7, 1986, Ser. No. 543,030, Oct. 18, 1983. Application for reissue Oct. 6, 1988, Ser. No. 254,395

Claims priority, application Switzerland, Oct. 18, 1982, 6055/82; Aug. 18, 1983, 4507/83

Int. Cl.[5] F16D *1/02*

U.S. Cl. 464—93 **33 Claims**



15. A coupling device for establishing and maintaining coupled parts in an accurate positional relationship comprising:

first and second separable coupling members,

said first coupling member comprising at least two pins protruding from an end face thereof,

said second member comprising a body and a first surface facing said first coupling member when said second coupling member is coupled thereto, said first surface comprising a plurality of openings corresponding in location to said pins,

each of said pins comprising a beveled surface on opposite sides,

each of said openings having at least one edge for engaging the beveled surfaces of at least two of said pins,

means for pressing said first and second members towards each other; and

means for maintaining a predetermined distance between said end faces of said first and second coupling members when they are pressed towards each other.

Re. 33,250

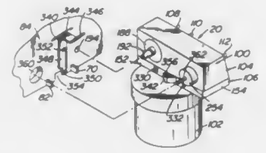
MICROSURGICAL SYSTEM CASSETTE ASSEMBLY

Kenneth P. Cook, Blue Bell, Pa., assignor to Site Microsurgical Systems, Inc., Horsham, Pa.

Original No. 4,627,833, dated Dec. 9, 1986, Ser. No. 616,633, Jun. 4, 1984. Continuation of Ser. No. 383,635, Jun. 1, 1982, Pat. No. 4,493,695. Application for reissue Dec. 2, 1988, Ser. No. 282,718

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—34 **18 Claims**



1. A cassette assembly adapted for releasable securement to a control console for use in ophthalmic surgery comprising:

a housing having at least one rigid surface and having an externally accessible suction port;

a first port internal to said housing in fluid communication with said suction port;

a second port internal to said housing and means through which fluid may flow to a source of vacuum in a control console;

a first occludable tubular conduit means disposed in said housing and coupled between said first and second ports and providing fluid communication therebetween;

at least a portion of said occludable tubular conduit means aligned with said housing rigid surface;

a collection vessel supported by said housing and having a first port for providing fluid communication between a source of vacuum and said collection vessel and having a second port in fluid communication with said first occludable tubular conduit means.

Re. 33,251

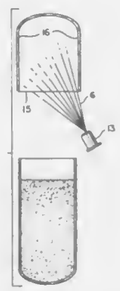
APPARATUS AND METHOD OF SEALING CAPSULES

Fritz Wittwer, Lupsingen, and Ivan Tomka, Lenzburg, both of Switzerland, assignors to Warner-Lambert Company, Morris Plains, N.J.

Original No. 4,539,060, dated Sep. 3, 1985, Ser. No. 468,022, Feb. 18, 1983. Application for reissue Mar. 2, 1987, Ser. No. 20,801

Int. Cl.[5] C09J *27/02*

U.S. Cl. 156—275.1 **14 Claims**



1. A method for sealing gelatin capsules having hard shell coaxial cap and body parts which overlap when telescopically joined, comprising the steps of:

A. [dipping] *contacting* the capsules [in] *with* a sealing fluid making contact by capillary action within the overlap of the cap and body parts;

B. removing the *surplus* sealing fluid from the surface of the capsules; and

C. applying [thermal energy] *convection heating* locally for about two seconds to the overlap so as to cause peptization or denaturation of the gelatin and sealing fluid within the overlap, thereby causing a sealing together of the cap and body parts.

Re. 33,252

HYBRIDOMA ANTIBODY WHICH INHIBITS INTERLEUKIN 2 ACTIVITY

Steven Gillis, Mercer Island, Wash., assignor to Immunex Corporation, Seattle, Wash.

Original No. 4,473,493, dated Sep. 25, 1984, Ser. No. 309,173, Oct. 7, 1981. Continuation-in-part of Ser. No. 258,601, Apr. 29, 1981, Pat. No. 4,411,993. Application for reissue Jul. 23, 1986, Ser. No. 889,102

Int. Cl.[5] C12P *21/00;* **C12N** *15/00, 5/00;* **A61K** *39/395;* **C07K** *15/00;* **G01N** *33/53*

U.S. Cl. 530—387 **6 Claims**

1. An anti-IL-2 antibody produced by:

immunizing murine B-lymphocyte cells with IL-2;

activating said immunized murine B-lymphocyte cells with a B-cell mitogen;

fusing said activated murine B-lymphocyte cells with murine myeloma cells;

[culturing] *cultivating* said hybridoma anti-IL-2 antibody producing cells under conditions suitable for antibody production; and

recovering the anti-IL-2 antibody produced by said anti-IL-2 antibody producing cells.

[3. The anti-IL-2 antibody of claim 1, wherein said hybridoma anti-IL-2 antibody producing cells include cells selected from the group consisting essentially of 4E12, 4E12B2 and 4E12B2D10 cells.]

Re. 33,253

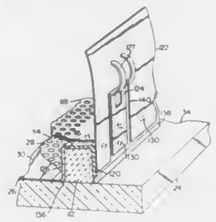
COMPONENT MOUNTING MEANS FOR A TENSION MASK COLOR CATHODE RAY TUBE

Paul Strauss, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Original No. 4,779,023, dated Oct. 18, 1988, Ser. No. 60,142, Jun. 6, 1987. Continuation-in-part of Ser. No. 866,030, May 21, 1986, Pat. No. 4,737,681. Application for reissue Apr. 21, 1989, Ser. No. 341,507

Int. Cl.[5] H01J *29/07, 29/02*

U.S. Cl. 313—402 **8 Claims**



1. A front assembly for a color cathode ray tube having improved means for mounting components for electrical interconnection and magnetic shielding, the assembly comprising:

a faceplate having on its inner surface a centrally disposed, electrically conductive phosphor screen;

a peripheral sealing area on said inner surface of said faceplate for receiving a funnel, said funnel having an internal

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electrically conductive funnel coating adapted to receive a high electrical potential;

a shadow mask support structure secured to said inner surface of said faceplate between said screen and said peripheral sealing area and enclosing said screen and in contact with said screen, said structure supporting in electrical union therewith a tensed foil shadow mask, said structure having an electrically conductive surface adjacent to said sealing area essentially perpendicular to said screen and having secured thereto by weldments an internal magnetic shield, said assembly including an electrical conductor secured to said electrically conductive surface of said shadow mask support structure and extending through an opening in said shield and in contact with said internal conductive coating of said funnel, whereby an electrical connection is formed between said funnel coating and said mask, through said electrical conductor and said electrically conductive surface of shadow mask support structure.

PLANT PATENTS

GRANTED JULY 3, 1990

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,258

KALANCHOE PLANT NAMED DESERT BLAZE

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 2, 1989, Ser. No. 318,055
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Desert Blaze, as illustrated and described.

7,259

BEGONIA PLANT NAMED FANTASIA

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jun. 2, 1989, Ser. No. 360,424
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Begonia plant named Fantasia, as described and illustrated.

7,260

BEGONIA PLANT NAMED DESIRé

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jun. 2, 1989, Ser. No. 360,426
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Begonia plant named Desiré, as illustrated and described.

7,261

AFRICAN VIOLET PLANT NAMED IMPROVED ELLEN

Reinbold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jun. 8, 1989, Ser. No. 362,961
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Improved Ellen, as described and illustrated, and particularly characterized by its single pink flowers with frilled edges, strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves, medium green, oval, serrated leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,262

AFRICAN VIOLET PLANT NAMED LITTLE TURQUOISE

Reinbold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jun. 8, 1989, Ser. No. 362,962
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Little Turquoise, as described and illustrated, and particularly characterized by its miniature growth habit; violet-blue, semi-double flowers; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse and continuous flowering; medium green, spear-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,263

CHRYSANTHEMUM NAMED C. P. HONEY GLOW

Jerry C. van Wingerden, Carpinteria, Calif., assignor to California Plant Company, Carpinteria, Calif.

Filed Jun. 5, 1989, Ser. No. 362,081
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—79 1 Claim

1. The new and distinct variety of *Chrysanthemum morifolium*, substantially as herein shown and described, particularly characterized by the spicy golden bronze coloration of its relatively small button-shaped blooms in which the florets at the more or less central portion of the flower are generally upright so as to display the bright yellow coloration of their underside thereby brightening the bronze coloration of the florets forming the major portion of the flower body.

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PATENTS

GRANTED JUL. 3, 1990

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For CLASS	See PATENT NO.
475-072	4,938,096
475-072	4,938,097
475-200	4,938,098
475-226	4,938,099
606-120	4,938,215
134-064	4,938,257
221-045	4,938,382
206-470	4,938,462
273-164	4,938,470
273-227	4,938,471
273-241	4,938,472
282-009	4,938,507
292-235	4,938,508
401-056	4,938,626
522-035	4,938,631
441-075	4,938,725
464-085	4,938,729
600-981	4,938,763
118-723	4,938,859
203-001	4,938,868
514-169	4,938,897
428-476	4,939,076
435-005	4,939,096
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505-001	4,939,308
455-613	4,939,482
375-017	4,939,555
371-037	4,939,741
455-033	4,939,746

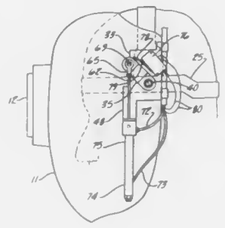
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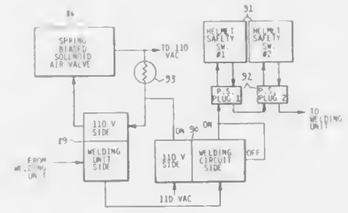
PATENTS

GRANTED JULY 3, 1990

GENERAL AND MECHANICAL

4,937,879
AUTOMATIC WELDING HELMET
David R. Hall, Box 4312, Enterprise, Fla. 32725, and Mark Steele, 1913 Sheeler Oaks Dr., Apopka, Fla. 32703
Filed Oct. 31, 1988, Ser. No. 265,255
Int. Cl.[5] A61F 9/06
U.S. Cl. 2—8 6 Claims





1. An arc welding helmet for use with an arc welding system, comprising:

a head band harness;

an arc welding helmet hood pivotally mounted to said head band harness;

an electrical activation switch; electrical circuit means interconnected with said electrical activation switch for connecting with the arc welding system;

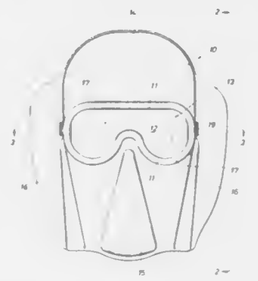
rotation means connected with said electrical activation switch, said arc welding helmet hood and said head band harness, for automatically rotating said arc welding helmet hood relative to said head band harness responsive to actuation of said electrical activation switch, said rotation means rotating said arc welding helmet hood relative to said head band harness selectively between an up position to a down position; and

safety means interconnected with said electrical circuit means and said arc welding helmet hood for permitting the arc welding system to provide an arc only when said arc welding helmet hood is located substantially at said down position.

4,937,880
FACE SHIELD
Jeffrey C. Beard, 24 Stoney Creek, Austin, Tex. 78734
Filed May 26, 1989, Ser. No. 357,357
Int. Cl.[5] A61F 9/00
U.S. Cl. 2—9 6 Claims

1. A shield for protecting a wearer's face from liquids, light solids, particles and objects in the air comprising:

a face mask for use with goggles that have eyepiece parts and means for attaching said goggles to said face mask and molded in the abstract shape of said wearer's face having: (a) curved portions covering said face's curved forehead and sides of the face and (b) openings in the eye areas adapted to accommodate the eyepiece parts of said goggles and (c) a portion covering said face's nose, mouth, and chin with a curved portion covering under-the-chin



and (d) lateral extensions protruding on each side of said face mask to protect said wearer's ears and neck portions and (e) seal means surrounding said openings in said eye areas and sealingly engageable with said eyepiece parts of said goggles and (f) openings for engaging said goggles' attachment means.

4,937,881
GARMENT DEVICE FOR HANDLING AND STORING NOXIUOS MATERIALS
Annemarie Heise, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 3, 1984, Ser. No. 567,833
Int. Cl.[5] A41D 19/00; A47L 25/00; B65D 33/16
U.S. Cl. 2—16 5 Claims

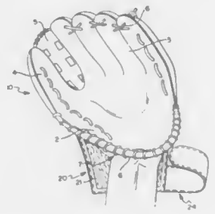


1. A method of disposal comprising placing onto an arm a container comprising a hand and arm conforming glove of flexible polymer sheet covering adapted to fit the hand and having an extended sleeve portion extending along the arm at least partially to the body and a fastening means integrally formed with said covering adapted to close the open end of said container when it is removed from the bodily extremity, performing a task in which the exterior of said covering becomes soiled, removing said container from the extremity while inverting said container so that the exterior of said container becomes the interior and closing the open end of the inverted device with said fastening means, wherein said fastening means provides an odorproof seal, said covering is about

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5.5 to about 7 inches across in the area of the four knuckles and about 5 to about 7 inches across the cuff portion when laid flat and wherein the ratio of knuckle width to cuff width is about 1 to 1.

4,937,882
BASEBALL GLOVES AND ATTACHMENTS THEREFOR
Rufus Hayes, 18640 Griggs, Detroit, Mich. 48221
Continuation-in-part of Ser. No. 158,647, Feb. 22, 1988. This application Nov. 25, 1988, Ser. No. 275,951
Int. Cl.[5] A63B *71/14*
U.S. Cl. 2—19 **17 Claims**



1. An apparatus for imparting hand, wrist and arm control to a baseball glove, comprising:
a substantially bendable support piece integrally attached to a back wall of said baseball glove so as to extend a distance above and below a lowermost free edge of a front wall of said baseball glove which is sufficient to cover and support at least back portions of a user's hand, wrist and forearm;
a securing strap member extending from a lower portion of said support piece and adapted to encircle a portion of the user's forearm substantially below the user's wrist so as to secure said support piece in position adjacent at least back portions of the user's hand, wrist and forearm;
said support piece and said securing strap member operatively cooperating with each other and with said baseball glove to permit flexing of a user's hand and wrist beneath said support piece while said support piece is disposed sufficiently close to the back of the user's hand, wrist and forearm to support same and impart controlling movements from the user's hand, wrist and forearm to said baseball glove; and
said support piece being attached to said back wall of said baseball glove by rawhide stitching.

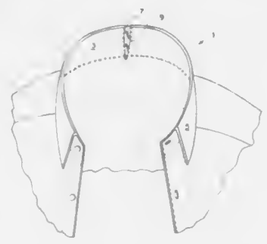
4,937,883
ATHLETIC SHIRT
Todd T. Shiral, 880 Leighton St., Honolulu, Hi. 96821
Filed Mar. 10, 1989, Ser. No. 321,871
Int. Cl.[5] A41B *1/00*; A41D *27/00, 31/00*
U.S. Cl. 2—115 **2 Claims**

1. A baseball shirt having a knitted body made of cotton or cotton-blend material and having sleeves made of four-way stretch SPANDEX-LYCRA type material, the sleeves being permanently joined to the body of the shirt, the body of the shirt comprising a relatively high bulk material with relatively large threads and no less than 12 stitches per inch, the body of the shirt being stretchable in one direction, and the sleeves of the shirt being constructed of relatively lightweight, low bulk material having relatively small stitches and being stretchable in all directions and being resilient and highly plastic for



quickly returning to shape, the body of the shirt being highly absorbable; the sleeves being quick-drying.

4,937,884
EXPANDABLE SHIRT COLLAR
Gary L. Sherman, 2401 Pine Lake Dr., West Columbia, S.C. 29169
Filed Sep. 29, 1989, Ser. No. 414,719
Int. Cl.[5] A41D *27/18*
U.S. Cl. 2—129 **4 Claims**

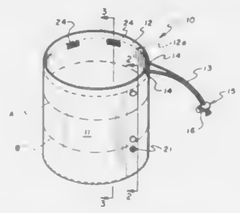


1. A shirt having an integral collar with an internal interfacing portion and an external turned-down portion, said internal interfacing portion and external turned-down portion being vertically split to form opposed end portions and define a longitudinal separation of uniform radial width over a given area, said longitudinal separation extending completely through said internal interfacing and external turned-down portions, said collar having a longitudinal elastic insert of uniform width over most of its area, said elastic insert being complemental with said longitudinal separation, said elastic insert having lateral portions joined with said opposed end portions of said longitudinal separation, said elastic insert allowing both said collar's internal interfacing and external turned-down portions to automatically, correspondingly and comfortably expand circumferentially around a wearer's neck to accommodate spatial necessity occasioned when the wearer's neck swells or the wearer moves his neck.

4,937,885
HEAD COVERING
Robert F. Gregg, 1161 White Ave., Grand Junction, Colo. 81501
Filed Dec. 27, 1988, Ser. No. 290,422
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—196 **5 Claims**

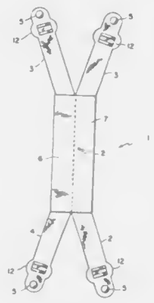
1. A head covering comprising, a right circular cylindrical body formed of a flexible heat retentive material that includes a sleeve formed around a top edge thereof and formed for folding upon itself in equal thirds; a drawstring for threading

through an opening in said sleeve, the drawstring ends to extend beyond said sleeve opening; means for maintaining the



drawstring in a taut state against said sleeve opening; and coupling means for maintaining said right circular cylindrical body folded upon itself in thirds.

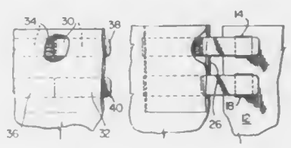
4,937,886
INFANT SHIRT HOLD-DOWN
Barbara S. Ellis, 8213 Aspen Way, Elkins Park, Pa. 19117
Filed Dec. 30, 1988, Ser. No. 292,362
Int. Cl.[5] A41F *17/00*
U.S. Cl. 2—323 **8 Claims**



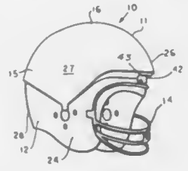
1. An upper garment hold-down device comprising:
an elastic central section and two pairs of elastic straps, each of said elastic straps having a free end and an end with a fastening means thereon,
each of said pair of straps affixed directly adjacent each other by sewing, at the free ends thereof, to a respective end of said central section with the straps of a respective pair diverging outwardly from each other and the central section as they extend toward the fastening means.

4,937,887
GARMENT WITH HOOK-AND-LOOP FASTENERS
David N. Schreiner, Montreal, Canada, assignor to Med-I-Pant Inc., Montreal, Canada
Filed Oct. 5, 1988, Ser. No. 253,617
Claims priority, application Canada, Jul. 29, 1988, 573463
Int. Cl.[5] A41B *9/00, 17/00*
U.S. Cl. 2—402 **10 Claims**

1. A diaper having a main portion for extending around the rear of the lower torso of a person, and having opposed side edges; a frontal flap for extending between the legs of the person and up between said opposed side edges, said flap having side edges for positioning adjacent the side edges of said main portion to form pairs of adjacent side edges; hook-and-loop fastening means on each of said pairs of adjacent side edges, said fastening means comprising a loop-type fastener pad on one side edge of each pair of adjacent side edges, a pocket on the other side edge of each pair, a hook-type fastener tab housed therein and extendable therefrom so as to overlie and engage said loop-type fastener pad on the adjacent side edge when said main portion and said frontal portion are juxtaposed, elastic means for maintaining said hook-type fastener tab into said pocket to prevent lint accumulation thereon during laundering and wherein said hook-type fastener tab is extendable from said pocket to engage said loop type fastener pad upon pulling said hook-type fastener tab from said pocket, said pocket having non-snaggable material on the interior surfaces opposed to said hook-type fastener tab to prevent catching of said hook-type fastener tab in said pocket.

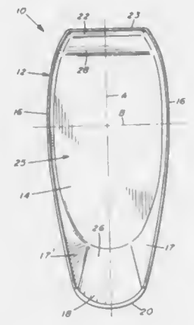


4,937,888
HELMET COVER
Albert E. Straus, 3740 Stirrup Dr., Erie, Pa. 16506
Filed May 31, 1988, Ser. No. 200,526
Int. Cl.[5] A42B *3/00*; A63B *71/10*
U.S. Cl. 2—411 **20 Claims**



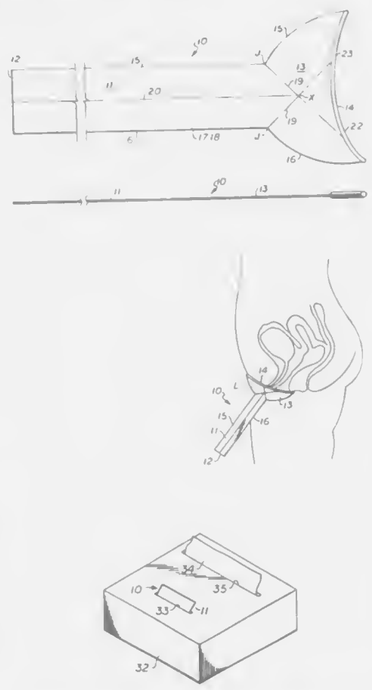
1. A cover for a helmet comprising an integral elastomeric cover made of a relatively soft resilient foam material encased in an integral outer skin and an integral inner skin,
said outer skin being a relatively tough, durable, high abrasion resistant, low friction material,
said cover being molded to fit over the top part of a helmet,
said helmet having said top, a front, a rear and sides,
said front, said rear and said sides of said helmet terminating in a first peripheral helmet edge,
said cover having a top, a front, a rear and sides,
said front, said rear and said sides of said cover terminating in a second peripheral edge spaced from said first peripheral edge,
said helmet cover having fastening means attached to it adjacent said second peripheral edge,
said fastening means being adapted to extend into ear ventilation openings and upwardly to said helmet cover and terminate adjacent said second peripheral edge and comprising integral extensions of said outer skin for attaching said cover to said helmet spaced from said first peripheral edge of said helmet whereby said cover can be readily removed from said helmet.

4,937,889
FEMALE URINAL
Maxine R. Strickland, 6606 Rowan, Houston, Tex. 77074
Continuation of Ser. No. 98,452, Sep. 18, 1987, abandoned. This application May 12, 1989, Ser. No. 353,229
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—144.3 9 Claims



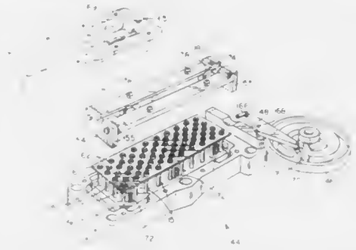
1. A urinal for use by a female when reclining in a prone position on a bed or other reclining surface, comprising
a generally rectangular-shaped container having an open top and a longitudinal length dimension at least twice the dimension of the transverse width of said container, said transverse width of said container having a relatively narrow dimension selected for comfortable longitudinal placement between the upper thighs of a user when in the reclining position, said open top container comprising,
a relatively flat bottom portion,
continuous longitudinal side and transverse end walls integrally attached to said bottom portion and projecting upwardly therefrom which terminate in an edge to define said open top, and
one of said transversely disposed end walls having at least a portion thereof slanting upwardly and outwardly from said bottom portion co-terminus with said side walls to form an inclined ramp portion communicating with the interior of said container, said side walls at said end wall curving toward the interior of said container to join the sides of said ramp, the outer margin of said inclined ramp portion terminating in a longitudinally projecting transverse rim section of said edge having a preselected transverse dimension narrower than the transverse width of said container and selected for comfortably engaging the soft tissue of the lower portion of the user's vaginal area for insuring sufficient transverse surface contact therewith for forming a seal therebetween, the height of said projecting transverse rim section above said bottom portion having a preselected dimension generally less than the transverse width of said container for engaging the user's vaginal area in a location posterior of the urethra when said container is placed between the user's upper thighs and resting on the reclining surface, wherein when said container projecting transverse rim section is firmly pressed into sealing contact with said vaginal area posterior of the urethra and retained in such position between the user's thighs, said container collects urine discharged initially in a stream from the urethra and urine that drains down unto said inclined ramp surface into the interior of said container.

4,937,890
FLAT FOLDED DISPOSABLE FEMALE URINARY AID
Jose J. Tafur, 2122 Haven House, Spring, Tex. 77386
Filed Oct. 5, 1989, Ser. No. 417,716
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—144.4 15 Claims



1. An elongate flat-folded expandable urinary aid for feminine use comprising;
an elongate flat-folded tubular portion terminating at an outlet end, and
a flat-folded funnel-shaped portion extending outwardly and rearwardly from the opposite end of said tubular portion terminating at an inlet end,
said flat-folded tubular portion and said funnel-shaped portion defined by a pair of opposed planar side walls hinged together from said inlet end to said outlet end along their top and bottom longitudinal edges,
each said planar side wall of said funnel-shaped portion being scored on its surface along a pair of lines converging angularly from the juncture of said funnel-shaped portion longitudinal edges with said tubular portion longitudinal edges to intersect at a point approximately one-half the length of said funnel-shaped portion, and
each said planar side wall of said tubular portion and said funnel-shaped portion being creased or scored on its surface intermediate its longitudinal edges along a line extending longitudinally from said outlet end and terminating at the intersection of said converging score lines, whereby
said opposed planar side walls expand laterally outward from a flat-folded configuration to define a central longitudinal opening in response to compression of the top and bottom longitudinal edges toward each other.

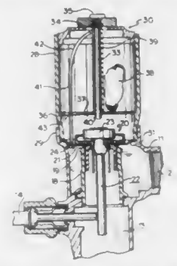
4,937,891
VALVE FOR WASTE COLLECTION AND STORAGE
Thornton, Jr. William E., Friendswood, and Henry B. Whitmore, San Antonio, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Division of Ser. No. 35,401, Apr. 7, 1989, Pat. No. 4,870,709.
This application Aug. 10, 1989, Ser. No. 392,228
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—209 R 2 Claims



1. A multiple-orifice valve for controlling airflow out of a waste collection system and removing any solid particles contained therein, comprising:
a plurality of valve stems each with a generally elongated and cylindrical body and a first and a second end thereon;
a valve stem guide plate with a plurality of stem orifices therethrough to slidably receive said stems therein;
a frame receiving said guide plate thereon and attachable to a body of said waste collection system;
valve stem retainer means with a plurality of holes therethrough free to move in response to urging by a reciprocator means wherein said first ends of said valve stems are attached to said valve stem retainer means through said holes therein;
a face plate with a plurality of plate orifices therethrough, said plate orifices sized to match said valve stems, said plate orifices for receiving said second ends of said valve stems therethrough; and
said reciprocator means for alternately moving said valve stems from a first position wherein said second ends of said valve stems protrude through and plug said plate orifices, thereby removing solid waste material therefrom and stopping air from moving therethrough, to a second position wherein said second ends of said valve stems are withdrawn from and unplug said plate orifices, allowing air from said body to pass therethrough.

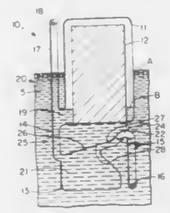
4,937,892
DISINFECTING UNIT FOR PRESSURE TYPE FLUSH VALVES AND URINALS
Marius H. Syrenne, 1604-9th Avenue N., Saskatoon, Saskatchewan, Canada S7K 3A1
Filed Apr. 12, 1989, Ser. No. 336,690
Int. Cl.[5] E03D *9/02*
U.S. Cl. 4—226 18 Claims

1. A disinfecting unit adapted to be connected to pressure type flush valves of toilets and urinals in which said flush valve includes a hollow body having an upper end, an inlet connectable to a source of water under pressure, an outlet connectable to the toilet or urinal and a valve assembly within said body for selectively connecting and disconnecting said inlet with said outlet, said valve assembly including a valve seat operatively associated therewith, a flexible diaphragm which spans said body between said inlet and outlet such that the water is released into said outlet when said assembly is lifted off said valve seat and a by-pass valve located in said diaphragm to fill a portion of said body located above the diaphragm with water from said inlet and a detachable cover assembly located on top of said valve body; said disinfectant unit comprising a disinfectant carrying container having a base and an upper and lower end and adapted to be detachably secured to the valve body above said diaphragm after the cover assembly is removed, a screen spanning said container adjacent said container base and



a relatively small bore tube adapted to be operatively extended from the by-pass valve in the diaphragm, through said screen to adjacent said container upper end, a cover for said container having an underside and side walls, and an adjusting screw adapted to screw-threadably engage said cover and extend through said container to adjacent said valve assembly for controlling the flushing action of said flush valve.

4,937,893
PASSIVE-DOSING DISPENSER EMPLOYING CAPTIVE INTERNALLY-GENERATED GAS BUBBLE TO PROVIDE PRODUCT ISOLATION
Stephen H. Iding, and Robert S. Dirksing, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 618,622, Jun. 8, 1984, abandoned. This application Oct. 11, 1989, Ser. No. 420,643
Int. Cl.[5] E03D *9/03*
U.S. Cl. 4—228 15 Claims



1. A passive dosing dispenser for a solution which is to be isolated from a body of liquid when said dispenser is at least partially immersed therein and which is adapted to have a dose of said solution issue from said dispenser in response to the level of said body of liquid being lowered from a first elevation to a second elevation and to have liquid taken into said dispenser as the level of said body of liquid rises from said second elevation to said first elevation, said dispenser comprising:
(a) an internal reservoir for containing a product which is soluble in said liquid to form said solution and which is adapted, in use, to contain a quantity of said solution;
(b) an inlet/discharge passageway which is use provides fluid communication between said reservoir and said body of liquid, said inlet/discharge passageway having an intermediate, inverted, generally u-shaped section the legs of which extend to elevations sufficiently below that of its

central portion to provide a syphon action during the terminal portion of issuing each said dose of said solution, said inlet/discharge passageway comprising means for providing, in use, immediately after cessation of the flow of liquid into the reservoir, a continuum of liquid/solution bridging the inverted, generally u-shaped section of said inlet/discharge passageway;

(c) gas generating means for providing gas bubbles in said dispenser during use; and

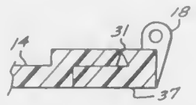
(d) passive means for directing at least a portion of said gas bubbles in said dispenser in use to said inverted, generally u-shaped section of said inlet/discharge passageway to establish a gas-lock thereacross.

4,937,894

DUAL FLUSH TOILET

Russell L. Hill, Jr., 16472 Grimand La., Huntington Beach, Calif. 92649, and Robert K. Hitchcock, 5504 Donner St., Buena Park, Calif. 90621

Filed Aug. 17, 1989, Ser. No. 395,023
Int. Cl.[5] E03D *1/35*
U.S. Cl. 4—324 **5 Claims**



1. A dual mode valve assembly for selectively allowing a first or a second quantity of water to drain from a flush tank, comprising:

a sealing member for selectively sealing off a discharge duct extending from below the flush tank by seating against a valve seat;

an air chamber, affixed to said sealing member extending below said seating member into said discharge duct, having an air vent therein and an opening located near a bottom portion;

a first means for pivoting said sealing member off said seat in a first direction relative to the air vent so as to allow any air trapped within said air chamber to escape through the air vent and water to enter said air chamber through said opening to thereby impart a negative buoyancy to the entire valve assembly allowing it to settle onto the valve seat to reseal the discharge duct while submerged;

a first actuation means for causing said sealing member to pivot off said seat in the first direction;

a second pivot means for pivoting said sealing member off said valve seat in a second direction relative to the air vent so as to prevent air trapped within the air chamber from escaping through said vent hole to thereby allow the entire valve assembly to maintain a positive buoyancy and prevent it from resealing the discharge duct while submerged; and,

a second actuation means for causing said sealing member to pivot off said seat in the second direction.

4,937,895

WATER CLOSET METERING DEVICE

Charles F. Stevens, 20192 Rockville Ct., Yorba Linda, Calif. 92686

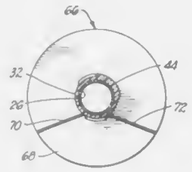
Continuation-in-part of Ser. No. 51,297, May 15, 1987, Pat. No. 4,748,699. This application May 2, 1988, Ser. No. 189,152
Int. Cl.[5] E03D *3/12*
U.S. Cl. 4—324 **2 Claims**

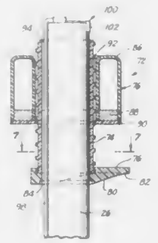
1. A water closet metering device comprising:

a vale actuator comprising an actuator flange having a downwardly directed face;

an upright actuator tube forming part of said valve actuator, said actuator tube being sized to slidably engage upon the overflow tube in a toilet tank, said actuator flange being secured to the lower end of said actuator tube, said actuator flange having a detachable section and said flange is round when said detachable section is in place and is non-round when said detachable section is removed;

a float adjustably mounted on said actuator tube, said float being movable into a selected position on said actuator tube at a spaced distance from said actuator flange, said actuator flange, said actuator tube and said float comprising said metering device, said metering device having a





net buoyancy in water so that at least part of said metering device is shown toilet tank water level when the level in the tank is high and said metering device having sufficient weight so that when water level decreases in the tank, said actuator flange moves the flapper valve at the bottom of the overflow tube towards the closed position to close the flapper valve before water level descends to the flapper valve to conserve flush water, said valve actuator being unrestrained in its movement up and down the overflow tube except for float buoyancy in the toilet tank water and contact of said actuator flange on the flapper valve.

4,937,896

FLOOR-LEVEL ADJUSTING DEVICE FOR A POOL

Masateru Niimura, No. 6-4-4, Ohmorinishi, Ohta-ku, Tokyo, Japan (143)

Division of Ser. No. 908,504, Sep. 17, 1986. This application Dec. 23, 1988, Ser. No. 289,178
Claims priority, application Japan, Sep. 27, 1985, 60-212690; Nov. 11, 1985, 60-250948; Aug. 26, 1986, 61-198236
Int. Cl.[5] E04H *3/18*
U.S. Cl. 4—495 **5 Claims**

1. A floor-level adjusting device for a pool having a bottom and side walls, said device comprising:

a movable floor disposed in the pool and vertically movable relative to the pool;

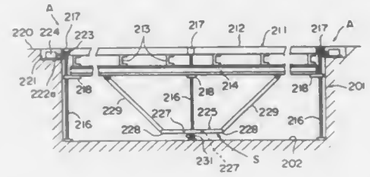
a plurality of lifting means disposed adjacent the side walls of the pool and operatively connected to said movable floor for moving said floor vertically relative to the pool,

each of said lifting means comprising a threaded shaft extending vertically along a said side wall of the pool, shaft support means rotatably supporting said threaded shaft,

and coupler means operatively connected between said threaded shaft and said movable floor for converting rotation of said threaded shaft into a force that moves said movable floor vertically relative to the pool; and

at least one support mechanism disposed on the bottom of the pool and connected to said movable floor for supporting a central portion of said movable floor while said movable floor is at various positions thereof relative to the pool,

said support mechanism comprising a support cam disposed at and supported on the bottom of the pool, a rotation shaft to which said support cam is mounted, and a pair of support arms extending between said support cam and the central portion of said movable floor,



said support cam including a pair of integral cam plates each of which has an arcuate outer edge, the arcuate edges of the cam plates extending from respective first locations defined on said support cam to respective second locations defined on said support cam, radii of said support cam extending from said support shaft to each of said first locations being smaller than radii of said support cam that extend from said support shaft to each of said second locations, respectively, and

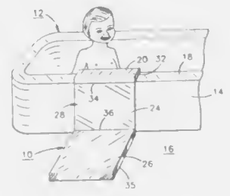
said support arms each having a first end pivotally connected to said movable floor and a second end in sliding engagement with the arcuate outer edge of a respective one of said cam plates.

4,937,897

KNEELING PAD FOR BATHTUBS

Albert Barnable, 47 S. Lakeview Dr., Gibbsboro, N.J. 08026

Filed Aug. 14, 1989, Ser. No. 393,253
Int. Cl.[5] A47K *3/02*
U.S. Cl. 4—580 **6 Claims**



1. A kneeling pad for a bathtub having a top side, an inside and an outside, said kneeling pad comprising:

water resistant flexible sheeting,

a plurality of cushions spacedly attached to said sheeting;

said sheeting being of length sufficient to have a first part extending over a portion of the top side of said bathtub, a second part extending down over a portion of the inside of said bathtub, a third part extending over a portion of the outside thereof, and a fourth part extending over a portion of the floor area adjacent to said bathtub,

one of said cushions being attached to said sheeting at said first part to provide an arm rest for a kneeling user,

another of said cushions being attached to said sheeting at said fourth part to provide a knee rest for the user,

said sheeting being foldable in said third part thereof, and

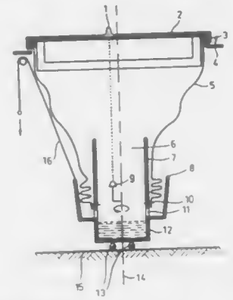
said sheeting including hinges along which said kneeling pad can be folded into a flattened condition.

4,937,898

HYDRAULIC MASSAGE METHOD

Theodor Mützell, 7 Senator Street, Hobart, Tasmania, Australia

Division of Ser. No. 556,708, filed as PCT AU82/00164 on Oct. 7, 1982, published as WO83/01896 on Jun. 9, 1983, now Pat No. 4,757,562
This application Jul. 14, 1988, Ser. No. 219,282
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147798
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—615 **1 Claim**



1. A hydraulic massage method which comprises the steps of:

(a) supporting the body of an individual above a water-collecting receptacle on a support structure having openings;

(b) interposing between said support structure and said body a sheet of support structure and forming a flexible surface above said support structure upon which the body of the individual can repose;

(c) training water upwardly toward said surface from a nozzle mounted in said receptable for directing a jet of water against said surface whereby said individual is massaged through said surface with said jet and water falling from said surface is collected in said receptacle; and

(d) displacing said nozzle in at least two directions of a coordinate system to sweep said jet against said surface, said nozzle being rotated about an axis and being displaced horizontally so that said jet describes at least one cycloidal pattern against the underside of said surface.

4,937,899

LAVATORY WITH IMPROVED OVERFLOW DUCT ASSEMBLY

Steven A. Morris, Knoxville, and Jerry L. Roberts, Sevierville, both of Tenn., assignors to JPI Plumbing Products, Inc., Ann Arbor, Mich.

Filed May 18, 1988, Ser. No. 195,710
Int. Cl.[5] E03C *1/24*
U.S. Cl. 4—651 **3 Claims**

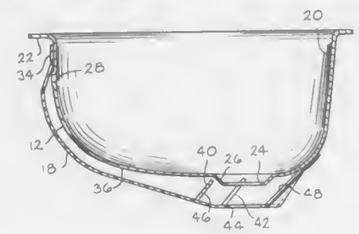
1. A lavatory sink assembly comprising:

a sheet metal sink bowl having an outside surface and a concave inside surface for receiving and retaining water, said bowl also having a lower drain aperture and an overflow aperture positioned along a side surface of said sink and spaced above said drain aperture, said sink bowl further having a surface coating applied to both said inside surface and said outside surface,

a substantially trough shape overflow duct for attachment to

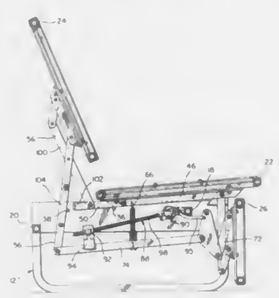
said outside surface at a position extending between said overflow aperture and said drain aperture, said duct having a peripheral flange conforming to said outside bowl surface,

hot-melt glue drops applied to said sink bowl outside coated surface for retraining said overflow duct in position on said sink bowl, and



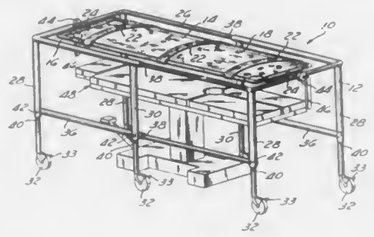
a bead of room temperature vulcanizing material applied between said duct peripheral flange and said bowl outside surface, whereby said hot-melt glue drops retain said duct in position while said room temperature vulcanizing material cures.

4,937,900
ELECTRIC SOFA BED
Bobby L. Bridges, Rt. 2, Box 3492, Nicholson, Ga. 30565
Filed Apr. 13, 1989, Ser. No. 337,747
Int. Cl.[5] A47C *17/04, 17/17*
U.S. Cl. 5—37 R 13 Claims



1. A convertable seat bed assembly including a base frame having front and rear sides, a forward seat support and a rear seat back support disposed rearward of said forward seat support, first linkage means connected between said base frame and said seat back support for guided movement of said seat back support between a raised seat back support defining position with said seat back support in a raised generally upright position extending upwardly from the rear side of said base frame and a lowered generally horizontal position projecting rearwardly of said base frame, second linkage means connected between said base frame and said forward seat support for guided movement of said forward seat support between a first generally horizontally position disposed closely forward of said rear seat back support when the latter is in the lowered position thereof and a second slightly rearwardly and downwardly inclined position with the rear extremity of said forward seat support lowered relative to the horizontal position of said forward seat support, force means operably connected between said base frame and said first linkage means for shifting said seat back support between the raised and lowered positions thereof, biasing means operatively connected between said base frame and said forward seat support yieldingly biasing said forward seat support toward said second position, and connecting means connected between said first and second linkage means and operatively associated with said base frame for shifting said forward seat support from said second position thereof to the first position thereof responsive to final movement of said seat back support from said raised position to said lowered position.

4,937,901
APPARATUS FOR TURNING A PATIENT FROM A SUPINE TO A PRONE POSITION AND VICE-VERSA
Louis G. Brennan, 7333 Parkwoods Dr., Stockton, Calif. 95207
Filed Nov. 4, 1988, Ser. No. 267,544
Int. Cl.[5] A61C *7/10*
U.S. Cl. 5—61 16 Claims



1. A turning apparatus for turning a patient from a supine to a prone position and vice versa with minimal effort exerted by the person performing the turning and minimal risk of injury to the patient, said apparatus employing the lift system of a standard operating room table or other patient supporting device having its own inherent lift system to raise and lower said apparatus prior to and after turning the patient, said apparatus comprising:

a rotatable stretcher for supporting the patient's body during a 180° rotation, said rotatable stretcher having spindles extending from opposite ends thereof;

a stretcher support for rotatably mounting said spindles, said support straddling said operating room table or other patient supporting device having its own inherent lift system, and being movable upwardly to an elevated position as said operating room table or other patient supporting device having its own inherent lift system is raised; and

means for turning said stretcher 180° while in said elevated position, so as to turn the patient from a supine to a prone position or vice versa.

4,937,902
CRIB STRUCTURE WITH SLIDABLE STEPS PROVIDING STORAGE COMPARTMENTS
Kathy Ceike Shapiro, 3600 Embassy Dr., West Palm Beach, Fla. 33401
Division of Ser. No. 207,299, Jun. 25, 1989, Pat. No. 4,882,799.
This application Nov. 16, 1989, Ser. No. 437,988
Int. Cl.[5] A47D *7/01*
U.S. Cl. 5—93 R 3 Claims

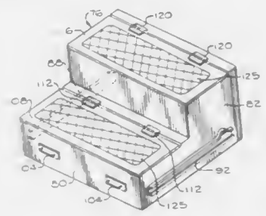
1. A crib comprising:

a support surface;

upstanding side walls substantially enclosing said support surface;

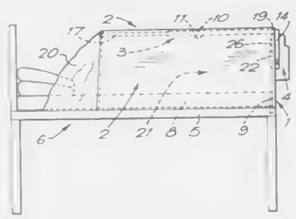
a base structure adapted to retain said support surface above a floor;

a movable step structure mounted beneath said support surface, said step structure comprising at least two steps having a retracted position substantially beneath the support surface, and an extended position laterally outward from and below the support surface; said steps being laterally and vertically offset from each other at least in the extended position;



at least one of said steps having at least one storage compartment and closure structure, for accessing the storage compartment, whereby a child can enter and leave the crib using said steps, and said steps can be used as a seat by a parent and as a storage compartment.

4,937,903
BED COVERING APPARATUS
Cyril B. Joly, Winchester, and David N. B. Joly, London, both of United Kingdom, assignors to Dormair Limited, England
PCT No. PCT/GB86/00804, § 371 Date Jul. 1, 1988, § 102(e) Date Jul. 1, 1988, PCT Pub. No. WO87/04066, PCT Pub. Date Jul. 16, 1987
PCT Filed Dec. 24, 1986, Ser. No. 216,637
Int. Cl.[5] A47C *21/04*
U.S. Cl. 5—414 18 Claims



1. Bed covering apparatus for covering a bed having a mattress defining a foot region normally occupied by an occupant's feet and a shoulder region normally occupied by an occupant's shoulders comprising:

a foot board adapted to be arranged in use across the bed at the foot region, the foot board defining an outside surface facing away from the mattress;

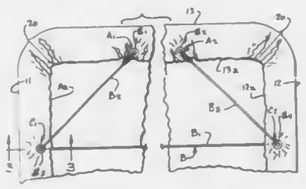
a cover support attached to the foot board to extend along the bed above the mattress, the cover support comprising a pair of L-shaped members, each L-shaped member being defined by a long arm and a short arm, the long arm of each L member extending over the mattress and the short arm of each L-shaped member extending down the outside surface of the foot board, the lower end of each short arm being captive to the foot board for support of each long arm;

engagement means for engaging the foot board to a frame of the bed in an upright position, whereby the foot board holds the cover support above the mattress;

a thermally insulating cover, the cover in use being connected to the foot board at the top and side edges thereof, supported on the cover support above the bed, and detachably arranged adjacent the mattress from the foot region to the shoulder region thereof; and

air recirculating means mounted on the foot board for recirculating air within the space between the mattress and the cover.

4,937,904
FITTED SHEET WITH SHEET RETAINER
Anthony J. Ross, 526-74th St., Anna Maria Island, Holmes Beach, Fla. 34217
Filed Dec. 4, 1989, Ser. No. 445,355
Int. Cl.[5] A47G *9/04*
U.S. Cl. 5—497 5 Claims



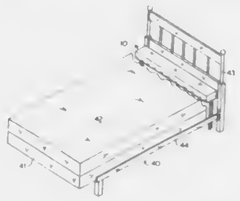
1. In a fitted sheet having a top panel, first and second side panels and first and second end panels for covering the top, sides and ends respectively of a mattress with adjacent ends of the sides and end panels connected together to form corners, the side and end panels each having lower edges extending lengthwise thereof and spaced from the top panel, the improvement comprising a one-piece elastic band of generally cylindrical cross-section and having first and second ends, a first band end anchor means for attaching the first end of the band to the first end panel adjacent the lower edge thereof at a location spaced a distance from the lower edge of the first side panel, a second band end anchor means for attaching the second end of the band to the first end panel adjacent the lower edge thereof and at a location spaced a distance from the lower edge of the second side panel, first intermediate band engaging means slidably engaging the elastic band intermediate its ends for connecting the elastic band to the first side panel adjacent the lower edge thereof and at a location spaced a distance from the lower edge of the first end panel, second intermediate band engaging means slidably engaging the elastic band intermediate the ends thereof for connecting the elastic band to the second side panel adjacent the lower edge thereof and at a location spaced a preselected distance from the lower edge of the first end panel, the first and second band anchor means and the first and second intermediate band engaging means being arranged on the sheet such that the elastic band has an intermediate band section extending between the first and second intermediate band engaging means and spaced from the lower edge of the first end panel and first and second band corner sections, the first band corner section extending from the first intermediate band engaging means to the first band end anchor means and diagonally between the lower edges of the first side panel and first end panel, and the second band corner section extending from the second intermediate band engaging means to the second band end anchor means and diagonally between the lower edges of the second side panel and the first end panel.

4,937,905
BED EXTENDER
John W. Thaxton, Jr., 1326 Terry Ave., South Boston, Va. 24592
Filed Dec. 11, 1989, Ser. No. 448,230
Int. Cl.[5] A47C *19/04*
U.S. Cl. 5—508 5 Claims

1. A bed extender device for providing additional length to a conventional bed of the type having box springs and a mattress supported by a pair of opposed right angle shaped bed rails, comprising:

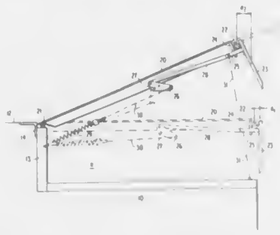
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(a) a pair of opposed vertical leg members;
(b) a horizontal extender board providing a flat support surface extending between said leg members and suited to serve as a head rest, said extender board being mounted on, supported by and secured to said leg members; and
(c) each of said leg members being formed with horizontal



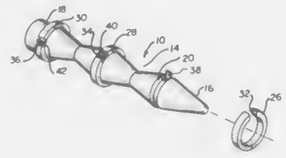
vertically spaced slots for receiving the horizontal portions of a pair of right angled bed rails enabling said leg members to engage and be supported by a pair of right angle shaped bed rails forming part of said type of conventional bed and said extender device to be vertically adjusted as an integral unit solely by selecting the slots in which the bed rails are positioned.

4,937,906
VARIABLE LIP THROW-OUT FOR DOCKBOARD
James C. Alexander, London, Canada, assignor to Serco Corporation, Ontario, Canada
Filed Jun. 1, 1989, Ser. No. 360,184
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—71.1 **9 Claims**



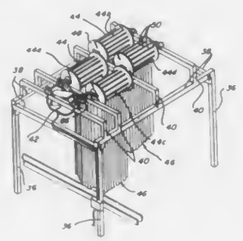
1. A dockleveler comprising:
A frame mounted on a fixed structure,
a deck hingedly connected at an inner end to said frame for movement between a generally horizontal position and a raised position,
a lip hingedly mounted to an outer end of said deck,
an assembly biased to raise said lip from a pendent position to an outwardly extended position, said assembly comprising a pair of link members coupled to each other, a first link member coupled to said lip, a lever coupled to a second link member, said lever mounted for rotation relative to said deck and spring means secured to said frame and coupling said lever, wherein upon upward movement of said deck, said spring means compresses to rotate said lever such that said link members extend as spring tension decreases to assist raising said lip.

4,937,907
CLEANING PLUG ASSEMBLY
Michael P. Antal, 2037 Washington Rd., Apollo, Pa. 15613
Filed Nov. 3, 1989, Ser. No. 431,228
Int. Cl.[5] B08B *9/04*
U.S. Cl. 15—104.061 **8 Claims**



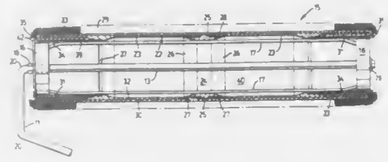
1. A cleaning plug assembly for condenser and heat exchanger tubes and the like, adapted to be propelled through a tube by fluid pressure injected into the tube, comprising:
an elongated body having front and rear end sections;
a plurality of spaced resilient annular rings removably and rotatably circumscribing said body at positions spaced inwardly from said front and rear end sections and extending radially outwardly from said body for contacting the inner surface of a tube;
each of said rings defining a radially extending cutout therethrough allowing the rings to contract or expand circumferentially when radially or circumferentially directed forces are applied to the ring;
stop means on said body of a size less than that of said cutouts of said rings for securing each of said rings against free rotation about said body and for allowing the rings to contract; and
said rings having outer diameters at least generally the same as the inner diameter of a tube to be cleaned whereby the rings will contract and expand within the tubes consistent with the inner dimensions the rings encounter.

4,937,908
RETRACTABLE VEHICLE WASH APPARATUS
Dennis R. McCadden, Arvada, Colo., assignor to Mark VII Equipment, Inc., Arvada, Colo.
Filed Feb. 21, 1989, Ser. No. 313,626
Int. Cl.[5] B60S *3/04*
U.S. Cl. 15—97 B **17 Claims**



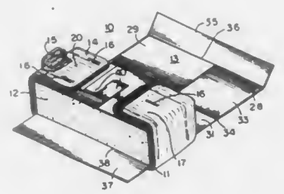
1. An apparatus for use in a wash system for cleaning a vehicle wherein one of said apparatus and vehicle is moveable along a linear path relative to the other of said apparatus and vehicle, said apparatus comprising in combination:
a frame elongated support means extending laterally of said linear path at an elevated position relative to said vehicle,
a support shaft on said frame rotatably supporting the support means,
flexible curtain means suspended from said support means in a position to be selectively engaged by a vehicle along said path,
drive means operatively associated with said support shaft for moving the support means in an orbital path, and
break means for selectively preventing the support means from rotating relative to the support shaft whereby the curtain means an be selectively wrapped around the support means as the support means is moved in an orbital path to elevate the curtain means above a vehicle disposed along said linear path.

4,937,909
ROLLER STRUCTURE FOR USE IN A PAINT ROLLER, AND PAINT ROLLER INCORPORATING THE SAME
Rogiros P. Georgiou, 200 Gateway Boulevard, Apt. 1014, Toronto, Ontario, Canada M3C 1B6
Filed Feb. 6, 1987, Ser. No. 11,908
Claims priority, application Greece, Feb. 10, 1986, 860383
Int. Cl.[5] B05C *1/08, 17/02*
U.S. Cl. 15—230.11 **17 Claims**



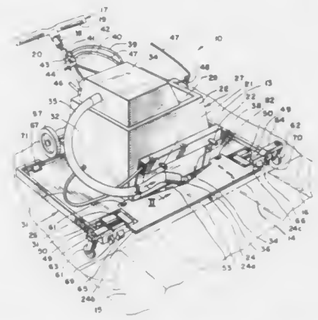
1. A roller structure for use in a paint roller, the roller structure comprising a tubular member having an inner surface and an outer surface and having two end portions, each presenting on the inner surface of the tubular member an inwardly projecting annular rib spaced from the respective end of the tubular member, and two open-bore tubular shell-like end collars each of which has an inner end portion and an outer end portion and is adapted to be disposed within a respective end portion of the tubular member with a predetermined narrow annular gap between the tubular end collar and the inner surface of the tubular member at the respective end portion thereof, but with the inner end portion of the end collar in substantially liquid-tight engagement with the respective annular rib.

4,937,910
WHITE BOARD ERASER
Thomas G. Frazier, c/o J. Penner Corp., Waterside Industrial Park, Box B113, R.D. #2, New Hope, Pa. 18938
Filed Nov. 30, 1988, Ser. No. 277,764
Int. Cl.[5] A47L *13/00*
U.S. Cl. 15—231 **18 Claims**



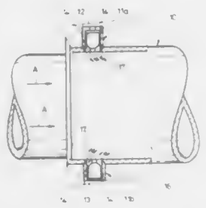
1. An eraser for white board surfaces which comprises
a stack of elongated fabric layers,
a jacket cover,
a rigid central core about which said stack and said cover are wrapped,
fastening means to detachably fasten said fabric layers at each end to said jacket cover such that said layers can be removed one at a time without disturbing the underlying layers, and
each of said fabric layers having an exposed dispensing pull tab at one end for removal of one layer at a time from said stack.

4,937,911
BOWLING ALLEY LANE CLEANING APPARATUS
Remo Picchietti, Sr., 1600 Audubon La., Bannockburn, Ill. 60015, and Thomas A. Westenberger, 4313 Lake St., Burlington, Wis. 53105
Filed Jun. 3, 1988, Ser. No. 202,104
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—320 **13 Claims**



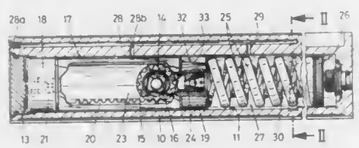
4. Apparatus for cleaning a bowling alley lane, wherein one end of a lane surface and a coplanar approach surface are contiguous along a foul line and wherein a pair of gutters extend along opposite sides of said lane surface from said approach surface to the opposite end of said lane surface, said apparatus comprising: a frame structure, roller means for supporting said frame structure for movement in a forward direction over said approach surface and along said lane surface to said opposite end thereof and then in a rearward direction back to said approach surface, fluid-applying means on said frame structure for applying a cleaning fluid onto said lane surface, and suction means supported from said frame structure and including pick-up head means extending across the full width of said lane surface to remove cleaning fluid applied by said fluid-applying means, said fluid-applying means and said suction means being constructed and arranged for preventing application of cleaning fluid to said approach surface behind said foul line while permitting application and removal of cleaning fluid to and from said lane surface ahead of said foul line, wherein said fluid-applying means includes fluid-intercepting wall means supported on said frame structure and having a forward edge extending transversely across said lane surface, said wall means being effective to intercept fluid and prevent fluid from reaching portions of said lane surface positioned behind said forward edge of said wall means, wherein said fluid-applying means includes nozzle means having a fluid distribution pattern which is such as to include a primary region extending across said lane and having a relatively high fluid density and a marginal region behind said primary region and having a density which gradually tapers off from that of said primary region, said forward edge of said wall means being so positioned relative to said primary and marginal regions as to insure that adequate fluid will reach portions of said lane surface which are positioned forwardly from said forward edge while preventing fluid from reaching portions of said lane surface which are positioned behind said forward edge and while also limiting the volume of fluid intercepted by said wall means.

4,937,912
MOUNTING DEVICE FOR SENSORS AND PICK-UPS
Gerhard Kurz, Stuttgart, Fed. Rep. of Germany, assignor to Interlava AG, Lugano, Switzerland
Filed Jan. 30, 1989, Ser. No. 302,950
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1988, 3803824
Int. Cl.[5] A47L 5/12
U.S. Cl. 15—339 4 Claims



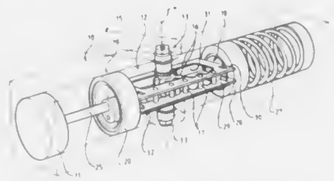
1. Mounting device for sensors and pick-ups of vacuum cleaners which are arranged, as dust-detecting means, adjacent a suction channel passed by the dust and dirt particles, and whose sensitive areas are exposed, at their point of installation, to contamination or to being covered up, in particular optical or electric dust-detecting means, characterized in that at least one channel (14) is arranged in the mounting area (11) of the sensor, directly adjacent the body of the sensor (12, 13) and its sensitive area, through which an air flow is guided due to the underpressures and overpressures produced by the vacuum blower itself, Whereby the sensitive area is continuously cleaned.

4,937,913
DOOR CLOSER
Dietrich Jentsch, Ennepetal, Fed. Rep. of Germany, assignor to DORMA GmbH & Co. KG., Ennepetal, Fed. Rep. of Germany
Filed Nov. 16, 1988, Ser. No. 272,122
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1987, 3742213
Int. Cl.[5] F16F 9/48
U.S. Cl. 16—58 12 Claims



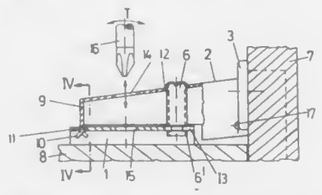
1. Apparatus for controlling movements of a door panel or a like component between open and closed positions, comprising a housing having a fluid-containing space; a piston having a peripheral surface and being installed in said housing for movement in a first direction during movement of said component from closed position and in a second direction during movement of the component toward closed position, said piston dividing said space into a chamber and a compartment and said piston being arranged to expel fluid from said chamber during movement in said first direction; channel means provided in said housing and defining a first path for the flow of fluid from said chamber into said compartment during a first stage of movement of the piston in said first direction; a check valve provided in said piston and arranged to provide a second path for the flow of fluid from said compartment into said chamber, said valve including a body having a peripheral surface; and a bypass including a groove provided in one of said peripheral surfaces and defining a third path for the flow of fluid from aid chamber into said compartment during a second stage of movement of said piston in said first direction, the cross-sectional area of aid third path increasing in a direction from said chamber toward said compartment.

4,937,914
DOOR CONTROL DEVICE
Stephen J. Harrison, and Peter E. Brown, both of Bridgnorth, United Kingdom, assignors to Jebron Limited, Wednesbury, United Kingdom
Filed Mar. 30, 1989, Ser. No. 330,709
Claims priority, application United Kingdom, Jul. 15, 1988, 8816862; Nov. 2, 1988, 8825642
Int. Cl.[5] E05F 3/14
U.S. Cl. 16—62 5 Claims



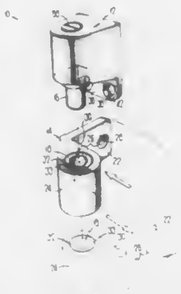
1. A door control device comprising a housing and a slide which is slidable along a path in the housing and a control member mounted for turning relative to the housing about an axis which is transverse to said path, wherein the slide has a row of drive elements which are spaced apart along said path, the control member has a number of drive elements arranged around said axis for co-operation with respective ones of the drive elements of the slide to transmit drive between the control member and the slide and wherein the slide includes a carrier for the drive elements of the slide, the device being characterised in that the drive element of the slide are individually mounted in the carrier.

4,937,915
HINGE
Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Australia
Filed Mar. 27, 1989, Ser. No. 329,381
Claims priority, application Australia, Apr. 15, 1988, 974/88
Int. Cl.[5] E05D 7/04
U.S. Cl. 16—238 3 Claims



1. In a hinge including a mounting plate having in a front end thereof an open-ended first slot, a deformable hinge arm having a U-shaped cross-sectional configuration including two lateral flanges and a center flange, a hinge casing connected by hinge links to said hinge arm, said hinge arm being mounted on said mounting plate and having a rear end pivotally connected thereto, said hinge arm having a front end having therein a female thread, and a joint adjustment screw threaded into said female thread and having a head slidably fitted within said first slot of said mounting plate, the improvement comprising:
said hinge arm and said mounting plate being provided with openings for the insertion therethrough of a tool;
said mounting plate having therein a second slot extending in the longitudinal direction of said mounting plate;
a pin projecting from one of said lateral flanges of said hinge arm and extending into said second slot of said mounting plate;
said hinge arm having at said rear end a covering flange connecting said lateral flanges and said center flange;
said mounting plate having therein a third slot; and
said covering flange having projecting from an edge thereof at least one flap extending through said third slot in said mounting plate.

4,937,916
OFFSET DOOR PIVOT
Ronald E. Redman, Tucker, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.
Filed Dec. 7, 1988, Ser. No. 281,102
Int. Cl.[5] E05D 5/00, 7/04
U.S. Cl. 16—243 12 Claims



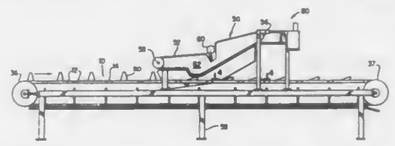
1. An apparatus for attaching a workpiece to a planar member having opposite first and second faces and walls defining a bore in said planar member transverse to said opposing first and second faces, said apparatus comprising:
a boss protruding from said workpiece;
means defining a hole through said workpiece in spaced-apart relation to and generally parallel to said boss, said hole being generally oblong in cross-section and having an elongate axis;
a lug projecting from said boss at a point thereon spaced apart from said workpiece by a distance approximately equal to the distance between said first and second faces of said planar member, said boss and said lug being dimensioned to be received through said bore in said planar member;
a fastener for inserting through said oblong hole in said workpiece and into said planar member, said fastener having a wedging surface formed thereon; and
a bearing surface on said workpiece aligned with said oblong hole such that when said fastener is inserted through said hole, said wedging surface on said fastener bears against said bearing surface on said workpiece to exert a force against said workpiece in a direction generally coincident with said elongate axis of said hole;
whereby when said boss is inserted through said first face of said planar member and into said bore in said planar member, and said fastener is inserted through said hole in said workpiece and into said first face of said planar member, said fastener draws said workpiece against said first face of said planar member, said wedging surface on said fastener impinging against said bearing surface on said workpiece to translate said workpiece in said direction generally coincident with said elongate axis of said hole, said boss thereby being urged laterally against said walls of said bore, and said lug thereby being imposed against said second face of said planar member to prevent said boss from being extracted from said bore, whereby said workpiece is anchored to said first face of said planar member.

4,937,917
HINGE
Erich Röck, Höchst; Helmut Rupprechter, and Klaus Brüstle, both of Lauterach, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Aug. 11, 1988, Ser. No. 231,213
Claims priority, application Austria, Aug. 18, 1987, A 2068/87
Int. Cl.[5] E05D 7/04, 7/12
U.S. Cl. 16—245 48 Claims



1. A hinge for enabling a furniture door to be releasably mounted to a furniture wall, said hinge comprising:
a hinge casing to be mounted on the furniture door, said hinge casing having extending thereacross a pin;
a hinge arm to be mounted on the furniture wall;
a coupling member pivotally connected to said hinge arm and selectively insertable into said hinge casing to a coupled position and removable therefrom, thereby coupling said hinge casing and the furniture door to the hinge arm and the furniture wall; and
locking means coupled to said coupling member by a clamping screw, for releasably locking said coupling member in said coupled position in said hinge casing, said locking means comprising a member having a U-shaped configuration including two lateral flanges between which is positioned said coupling member, and inner ends of said flanges having notches engaging said pin such that said hinge casing is pivotable about said pin relative to said locking means and said coupling member to said coupled position.

4,937,918
INLINE BREAST DEBONER
Eugene G. Martin, New Holland, Pa., assignor to Foodcraft Equipment Company, Lancaster, Pa.
Continuation-in-part of Ser. No. 200,165, May 31, 1988, abandoned. This application Jul. 27, 1988, Ser. No. 224,633
Int. Cl.[5] A22C 21/00
U.S. Cl. 17—11 18 Claims



1. A method of cutting a chicken wing from its breast comprising steps of
making an initial cut downward through the shoulder muscle of the bird and through the shoulder joint to sever the ligaments of thereof,
restraining the wing from translation, without preventing it from rotating, with respect to the breast,
pulling on the breast so as to create, between the wing and the breast, a tension insufficient to tear the wing from the breast, and then

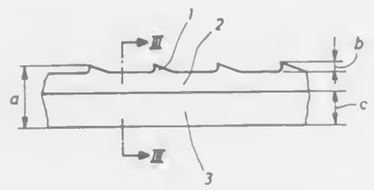
making a final cut through said tissues, to separate the wing from the breast, while permitting the wing to rotate freely with respect to the breast.

4,937,919

SAW TOOTH ALL-STEEL CARD CLOTHING

Ralph A. Graf, Freienbach, Switzerland, assignor to Graf & Cie. AG, Rapperswil, Switzerland

Filed Apr. 19, 1989, Ser. No. 340,220
Claims priority, application Switzerland, Aug. 24, 1988, 3140/88
Int. Cl.[5] D07G *15/84*
U.S. Cl. 19—114 6 Claims



1. A saw tooth all-steel card clothing for a carding engine, which card clothing includes a foot section followed by a web section including the teeth,

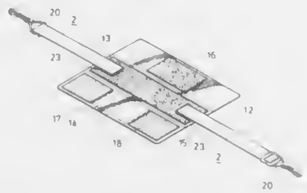
in which the total height of the foot and web section amounts to less than 2.0 millimeters and more than 0.5 millimeters, and in which the ratio of the total height to the height of the foot amounts to less than 1.8.

4,937,920

ATTACHMENT DEVICE

Allan Tsai, 2nd Fl., No. 1, Lane 222, Tun-Hua N. Rd., Taipei, Taiwan

Filed Jun. 20, 1989, Ser. No. 368,813
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—3 C 7 Claims



1. An attachment device comprising:

(a) a folding plate member having two parallely arranged folding lines therein which divide said folding plate member into three portions, said three portions lying over one another when said folding plate member is folded;

(b) a first fastener means provided on surfaces of said three portions that contact one another when said folding plate member is folded to adhering face-to-face said three portions to one another, said first fastener means comprising releasable hook-and-loop fastening members;

(c) two belt members each having a first end placed between said three portions and a second free end opposite to said first end, said first end having a hook-and-loop fastening member to engage with a hook-and-loop fastening member of said folding plate member; and

(d) a second fastener means connected to said second end of each of said two belt members,

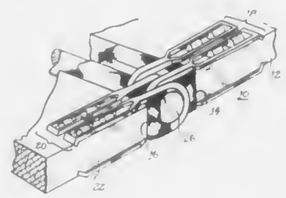
(e) wherein said first ends of said two belt members are attached to an intermediate one of said three portions.

4,937,921

ANTI-SIFTING BELT FASTENER ASSEMBLY

Edward C. Musil, Lyons, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed May 12, 1989, Ser. No. 351,171
Int. Cl.[5] F16G *3/02*
U.S. Cl. 24—33 C 2 Claims



1. A belt fastener assembly for fastening to a conveyor belt end and for reducing sifting of materials through the fastener assembly, said assembly comprising:

a plurality of belt fasteners having upper and lower arms disposed in an open position with the arms disposed angularly relative to one another to define a belt receiving gap therebetween,

connecting means joining adjacent belt fasteners together in aligned positions adjacent each other,

a hinge loop on each fastener joining the upper and lower arms and being aligned by the connecting means to define a hinge pin receiving trough,

an elongated body of soft, flexible, compressible resilient material spanning adjacent loops of the belt fasteners to reduce sifting of materials,

said arms having a plurality of belt stops, said belt stops being on an arm and projecting toward the other of said arms to limit the insertion of the belt end into the gap between the arms, and said belt stops retaining said resilient body in place to reduce sifting,

free ends on the belt stops spaced from the opposing other arms to define a slot,

an elongated body of soft, flexible, compressible foamed material spanning adjacent loops of the belt fasteners,

said body being confined between inner portions of the arms and the belt stops and the loops prior to clinching the belt fasteners to the belt end preparatory to connecting the two ends of the belt together,

said arms in the open position extending beyond a parallel relationship such that a subsequent bending of the arms into parallel relationship against opposite sides of the belt squeeze the resilient body about the inner sides of the upper and lower arms and projects the resilient body into the space between adjacent arms, an inner side of the resilient body extending into the loops sufficiently that it must be displace outwardly toward the belt stops before a hinge pin is inserted into the loops, said resilient body having an uncompressed height greater than the dimension of said slot, said resilient body being compressible to be pushed through the slot into the hinge loops with manual pressure,

each of said resilient bodies being compressed by the hinge loops of the other set of belt fasteners to change substantially the size and shape of the resilient bodies and to provide an opening for the hinge pin,

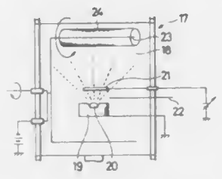
said bodies being expandable and compressible with the hinge loops as the loops define different sizes of opening for different sizes of hinge pins to reduce sifting with different sizes of hinge pins.

4,937,922

COUPLING ELEMENT FOR A SLIDE FASTENER

Fumio Okazaki, Tottori, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 6, 1988, Ser. No. 280,439
Claims priority, application Japan, Dec. 18, 1987, 62-320603
Int. Cl.[5] A44B *19/00*; B05D *3/06*
U.S. Cl. 24—403 3 Claims



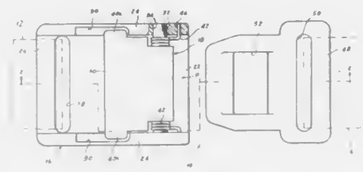
1. A coupling element for a slide fastener which is made of a metallic material, said element having an intermediate nickel plated layer on its surface and a protective film formed thereover by ionization plating, said protective film comprising at least one of titanium oxide and titanium nitride to enhance the appearance of the slide fastener by providing a multi hued rainbow effect.

4,937,923

POSITIVE-LOCK QUICK-RELEASE BUCKLE

B. Joseph McEntire, Warminster, Pa., assignor to Gentex Corporation, Carbondale, Pa.

Filed Aug. 11, 1988, Ser. No. 231,068
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—647 9 Claims



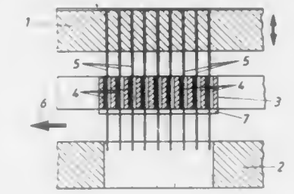
1. A buckle assembly including in combination a tongue having a recess, a base defining a passageway for receiving said tongue, and a latch supported by said base adjacent to said passageway for pivotal movement about and axis, said latch having a catch adapted to extend into said recess in a locking position of said latch to retain said tongue in said passageway and having a portion adapted to abut said tongue from a direction generally normal to the direction of said passageway in said locking position of said latch, said latch being movable beyond said locking position in the absence of said tongue in said passageway, said abutting portion being so located along said passageway relative to said axis that attempted withdrawal of said tongue from said passageway produces a movement about said axis to cause said abutting portion to clamp said tongue against said base, said base including a pair of sidewalls, one of which is formed with a recess therein, said latch having a portion extending into said recess to limit movement of said latch.

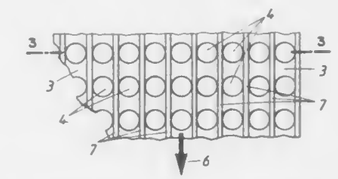
4,937,924

APPARATUS FOR NEEDLING A FELT FROM ONE SIDE

Rudolf Leuchtenmüller, Schwertberg, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed May 11, 1989, Ser. No. 350,563
Claims priority, application Austria, May 17, 1988, 1276/88
Int. Cl.[5] D04H *18/00*
U.S. Cl. 28—107 2 Claims





1. In an apparatus for needling a felt from one side, comprising

a support for supporting a felt for a movement in a predetermined direction of travel,

a needle board, which is arranged to be movable up and down over said support and carries a multiplicity of needles, which depend from said needle board toward said support and are arranged in a plurality of longitudinal rows extending in said direction of travel, and

a stripper plate, which is disposed between said support and said needle board and has an underside surface and is formed with a multiplicity of holes, which are arranged in a plurality of longitudinal rows extending in said direction of travel and permit said needles to pass through respective ones of said holes as said needle board is moved up and down,

the improvement residing in that

said stripper plate is provided with a plurality of guide ribs, which protrude from said underside surface and each of which extends in said direction of travel between adjacent ones of said longitudinal rows of holes and

said ribs have a height which is 0.2 to 2 times the diameter of said holes.

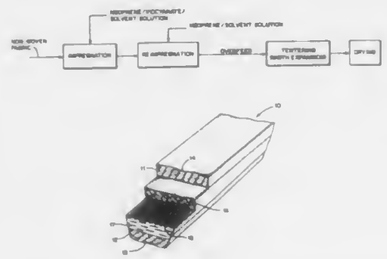
4,937,925

METHOD FOR PRODUCING REINFORCED V-BELT CONTAINING FIBER-LOADED NON-WOVEN FABRIC

James N. McGee, Jr., Pleasant Garden, N.C., assignor to Highland Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 80,602, Aug. 3, 1987, abandoned, which is a division of Ser. No. 859,435, May 5, 1986, Pat. No. 4,684,569, which is a division of Ser. No. 484,367, Apr. 12, 1983, Pat. No. 4,598,013. This application Feb. 28, 1989, Ser. No. 316,574
Int. Cl.[5] D06C *3/00*; B32B *25/02*
U.S. Cl. 28—112 16 Claims

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1. A method for producing a fiber-loaded non-woven fabric of the type used for reinforcing V-belt constructions comprising the steps of

(a) entangling chopped fibers in said non-woven fabric;

(b) impregnating said non-woven fabric with a first solvent solution;

(c) reimpregnating said non-woven fabric by applying a second solvent solution on both sides thereof;

(d) expanding the width of said non-woven fabric to reorient a plurality of said chopped fibers in a direction perpendicular to the longitudinal axis of said non-woven fabric; and

(e) drying said non-woven fabric, wherein steps (b) and (c) are carried out without expanding the width of said non-woven fabric and wherein steps (b) and (c) cause said chopped fibers to become solvated in said non-woven fabric prior to step (d).

4,937,926

METHOD FOR MANUFACTURING LOOM BEAMS FOR WOVEN FABRICS AND AN APPARATUS THEREFOR

Kwang H. Lee; Han S. Lee, both of Seoul; Du H. Lee, Woolsan, and Yong H. Kim, Daeku, all of Rep. of Korea, assignors to Tong Yang Polyester Co., Ltd., Seoul, Rep. of Korea

Filed May 8, 1989, Ser. No. 348,801

Claims priority, application Rep. of Korea, Jun. 16, 1988, 88-7235

Int. Cl.[5] D02H *9/02, 5/02*

U.S. Cl. 28—191 6 Claims



4. An apparatus for manufacturing loom beams for fabrics, comprising machines which carry out a series of processes which selectively combine a creeling of yarns, a sizing or non-sizing, a separating, a warping, and a beaming, said apparatus including a reed dividable into a plurality of blocks which can be interconnected and separated from one another to have a certain space between adjacent blocks, and said apparatus comprising at least one conventional single large warper beam and at least one selectively includable dividable warper beam, said dividable warper beam comprising means for dividing said single large warper beam into a plurality of warper beams each having uniform or non-uniform width.

4,937,927

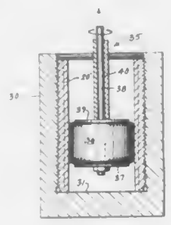
METHOD OF JOINING A SLEEVE INTO A CYLINDER OPENING OF A RECIPROCATING PISTON

Dale L. Taipale, Delafield, Wis., assignor to Slinger Manufacturing Company, Inc., Slinger, Wis.

Division of Ser. No. 924,965, Oct. 30, 1986, abandoned. This application Dec. 27, 1988, Ser. No. 290,214

Int. Cl.[5] B23P *15/10;* B23Q *3/14*

U.S. Cl. 29—888.061 3 Claims



1. A method of joining a sleeve into a cylinder opening of a reciprocating piston apparatus, comprising:

forming an internal screw in the cylinder opening along a major portion of the length of the opening;

forming a cylindrical sleeve having a relatively thick wall;

forming an external screw thread on the outer diameter of the sleeve along a major portion of its length, said external screw thread being complementary with the internal screw thread of the cylinder opening;

threading the sleeve into a fixture having a central opening with an internal screw thread the same as that of the cylinder opening;

machining a cylinder bore in the sleeve while it is held in the fixture to thereby form a thin wall sleeve;

removing the machined sleeve from the fixture; and

threading the machined sleeve into the cylinder opening.

4,937,928

METHOD OF MAKING A DENTAL CROWN FOR A DENTAL PREPARATION BY MEANS OF A CAD-CAM SYSTEM

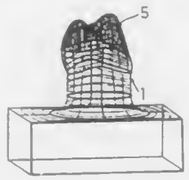
Joseph M. van der Zel, Kapberg, Netherlands, assignor to Elephant Edelmetaal B.V., Hoorn, Netherlands

Filed Oct. 5, 1988, Ser. No. 253,772

Claims priority, application Netherlands, Oct. 7, 1987, 8702391

Int. Cl.[5] B23P *13/00*

U.S. Cl. 29—160.6 11 Claims



1. A method of making a dental crown for a dental preparation by means of a CAD-CAM system wherein under the control of the CAD-CAM system a model of the dental preparation is made from a refractory material, to which model successively two or more layers of a material suitable for dental crowns are applied, each layer being sintered during or after its application and being ground after the sintering treatment and before the next layer is applied, which grinding treatments are effected under the control of said CAD-CAM system until a shape determined by said system is obtained, after which the refractory material is removed.

4,937,929

METHOD AND APPARATUS FOR TRANSPORTING VEHICLE BODIES, AND VEHICLE ASSEMBLING SYSTEM

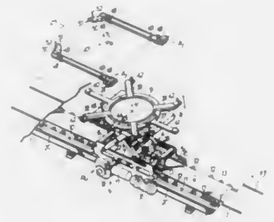
Kunio Nokajima; Mitsuki Hirasaka, both of Saitama; Yasuhiro Yamamoto, Tokyo; Yuji Ikeda, Saitama; Masayasu Arakawa, Saitama, and Yoshimasa Oota, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1987, Ser. No. 100,383

Claims priority, application Japan, Sep. 25, 1986, 61-224821; Apr. 1, 1987, 62-79891; Apr. 1, 1987, 62-79892

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—430 21 Claims



1. A method for transporting vehicle bodies by use of a plurality of transporting means in a vehicle assembling line, comprising the steps of:

placing a vehicle body onto a pallet in a relatively positioned manner; and

transporting said body sequentially on each of said plurality of transporting means in a manner positioned relative to each transporting means through interposition of the pallet, while transferring said body from one transporting means onto another transporting means together with said pallet.

4,937,930

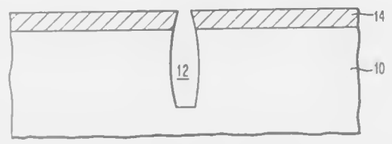
METHOD FOR FORMING A DEFECT-FREE SURFACE ON A POROUS CERAMIC SUBSTRATE

James N. Humenik, LaGrangeville; Ekkehard F. Miersch, Briarcliff Manor; Charles H. Perry, Poughkeepsie, and Janusz S. Wilczynski, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1989, Ser. No. 417,365

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—527.4 4 Claims



1. Aethod for hermetically sealing defects in a porous ceramic substrate comprising the steps of:

(step 1) evaporating or sputtering a metal layer onto the defective porous ceramic substrate surface,

(step 2) swaging or smearing the metal layer over the defects to cover any openings in said metal layer, and

(step 3) depositing a second metal film over the swaged first film to provide a smooth, defect free surface.

4,937,931

METHOD OF MANUFACTURING A SADDLE-SHAPED DEFLECTION COIL FOR A PICTURE DISPLAY TUBE

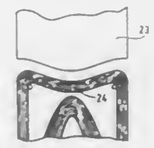
Franciscus C. A. J. Jacobs; Nicolaas G. Vink, and Franciscus M. P. P. Doomernik, all of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1990, Ser. No. 461,889

Claims priority, application Netherlands, Jan. 30, 1989, 8900213

Int. Cl.[5] H01F *41/06*

U.S. Cl. 29—605 3 Claims



1. A method of continuously winding in a winding space a saddle-shaped deflection coil flaring from a rear end towards a front end and having a connecting portion at its front end and a connection portion at its rear end between which longitudinal turn sections extend, characterized in that at least one connection portion is given a convex shape during winding and in that after winding the convex connection portion is given a concave shape by means of a die, whereafter the coil turns are united to a compact assembly by means of a heating step.

4,937,932

MEMBRANE PANEL SWITCH

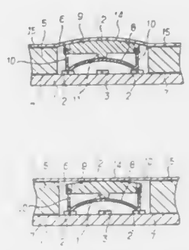
Toshihiro Ishii, Fuknyama, Japan, assignor to Ishii Hyoki Co., Ltd., Japan

Division of Ser. No. 153,675, Feb. 8, 1988, Pat. No. 4,892,988. This application Oct. 18, 1989, Ser. No. 423,329

Claims priority, application Japan, Apr. 10, 1987, 62-89311

Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 1 Claim



1. A method of making a membrane panel switch, comprising the steps of:

(a) providing a sheet of extruded foam-molded polypropylene having a thickness of greater than 2 mm;

(b) forming apertures for switches in said sheet by cutting said sheet with a blade;

(c) placing said sheet on a printed circuit board having a pair of contact elements disposed within said apertures;

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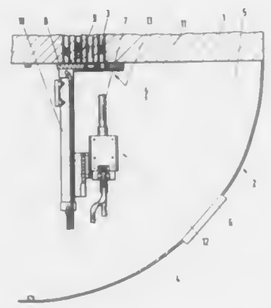
(d) placing a clicking plate in at least some of said apertures in contact with one of said contact elements and spaced from the other of said contact elements, said clicking plates each having at least projection with a free end;
(e) placing a press plate having a spherical upper surface, a lower surface and at least one hole in the lower surface in each said aperture containing a clicking plate, said lower surface contacting said clicking plate and at least one free end extending into at least one lower surface hole; and
(f) coupling an insulating layer to said sheet extending over said aperture and over said spherical upper surface.

4,937,933

APPARATUS FOR THE INTRODUCTION OF A SLEEVE INTO A TUBE OF A STEAM GENERATOR

Alban Dietrich, Hasloch, Fed. Rep. of Germany, assignor to ABB Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 337,562
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1988, 3812351
Int. Cl.[5] B21D *53/00*
U.S. Cl. 29—726 **11 Claims**



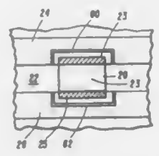
1. Apparatus for the introduction of a repair sleeve into a tube ending in a tube sheet of a steam generator, comprising a holding plate being fixed relative to the tube sheet and having an aperture formed therein coaxially with the tube, a stationary holding device associated with the tube sheet and integrated in said holding plate, a movable holding device being movable in axial direction of the steam generator for transferring the repair sleeve in partial strokes to said stationary holding device and for performing a return stroke, a connecting sleeve being resiliently supported in axial direction of said connecting sleeve in said aperture, said connecting sleeve having a given height, a given inside diameter, an end surface facing away from the tube sheet and an end surface facing toward and contacting the tube sheet, a holding grip including a first shoulder having a surface with a greatest diameter being smaller than said given inside diameter of said connecting sleeve and a second shoulder with a surface for contacting said end surface of said connecting sleeve facing away from the tube sheet, said first shoulder being spaced from the tube sheet by a first axial distance along the axis of said holding grip, said second shoulder being spaced from the tube sheet by a second axial distance along the axis of said holding grip being greater than said first axial distance by an amount substantially equal to said given height, and a centering piece with a variable outside diameter, the repair sleeve being clamped between said first shoulder and said centering piece during the return stroke of said holding device.

4,937,934

INSTALLATION OF SURFACE MOUNT COMPONENTS ON PRINTED WIRING BOARDS

Michael J. Devera, Cedar Rapids; Rick A. Williams, Iowa City, and Jerome P. Mulka, Marion, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 10, 1989, Ser. No. 309,457
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **7 Claims**



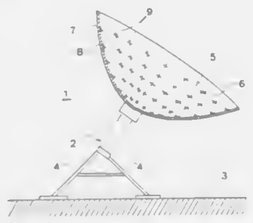
1. Method of soldering a surface mount component having at least one signal lead thereon to a copper-clad printed wiring board, comprising the steps of:
removing copper from the printed wiring board to form at least one copper solder pad in the area where placement of the surface mount component is desired;
forming a solder mask and adhering the solder mask material to the copper solder pad adjacent to at least a portion of the periphery of the desired placement area;
applying solder to said copper pad adjacent said solder mask;
applying solder paste to said solder pad in the desired component placement area;
positioning said component with a signal lead in registry with said component placement area of solder pad; and
heating said printed wiring board and component to melt the solder paste to electrically and mechanically bond the component signal lead to said solder pad.

4,937,935

PROCESS FOR MAKING AN ASSEMBLY OF ELECTRICALLY CONDUCTIVE PATTERNS ON AN INSULATING SURFACE OF COMPLEX FORM

Jean-Pierre Clariou, Maisons Laffitte, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

PCT No. PCT/FR88/00413, § 371 Date Mar. 16, 1989, § 102(e) Date Mar. 16, 1989, PCT Pub. No. WO89/02213, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 11, 1988, Ser. No. 350,740
Claims priority, application France, Aug. 24, 1987, 87 11851
Int. Cl.[5] H05K *3/02*
U.S. Cl. 29—846 **14 Claims**



1. Method for making an assembly of electrically conductive patterns on an electrically insulating non-developable surface, comprising the steps of:

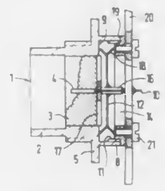
(a) forming said assembly of patterns on a face of a plastically deformable flat support;
(b) applying said flat support, while being deformed, against said non-developable surface; and
(c) connecting said deformed flat support to said non-developable surface.

4,937,936

METHOD FOR RETROFITTING A NOISE REDUCING FILTERS TO AN ELECTRICAL COUPLING CONNECTOR.

Rolf Schill, Mühlacker, and Stapelfeldt, Remchingen, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 13, 1989, Ser. No. 322,067
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808330
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—854 **4 Claims**



1. A method of retrofitting an electrical filter to a commercially available plug-in-electrical connector with at least one contact element held therein and fastened in a housing, the contact element including a connecting pin which freely projects at one end of said insulating body into an opening formed by one end of said housing, the method comprising the steps of:
(a) cutting a threaded into said one end of said housing;
(b) providing a filter element;
(c) providing a metal grounding sheet having a perforation corresponding to the outer diameter of said filter element;
(d) providing a threaded ring having a thread matching said thread of said one end of said housing;
(e) inserting said metal grounding sheet into said opening and into contact with said one end of said housing;
(f) painting said connecting pin with soldering paste;
(g) pushing said filter element onto said connecting pin up to said insulating body;
(h) screwing said threaded ring onto said one end of said housing to secure said metal grounding sheet in said housing;
(i) applying solder paste to said metal grounding sheet;
(j) producing a solder connection between said metal grounding sheet and a first part of said filter element; and
(k) producing a solder connection between a second part of said filter element and said connecting pin.

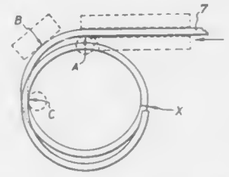
4,937,937

METHOD FOR THE MANUFACTURE OF PISTON RINGS

John R. Bruce, Tilton on the Hill, England, assignor to T&N Technology Limited, Rugvy, England

Filed Jun. 27, 1989, Ser. No. 371,792
Claims priority, application United Kingdom, Jun. 30, 1988, 8815604; Sep. 19, 1988, 8821996
Int. Cl.[5] B23B *5/26*
U.S. Cl. 29—888.073 **7 Claims**

1. A method for the manufacture of piston rings for use in internal combustion engines, from a metal strip, the method at least including providing rings having a predetermined non-circular profile, by feeding the metal strip into a guide means to align the strip and feed the strip into a first bending means, bending the strip in said first bending means into a regular curve of a predetermined radius, and feeding said curved strip into a second bending means operable to vary the radius of curvature of the strip fed thereto, the strip being bent by said first bending means to a uniform radius of at least 2 percent



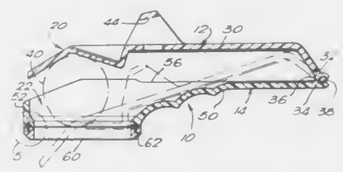
below the minimum radius of curvature in said predetermined ring profile, and then the strip being bent by said second bending means throughout the formation of each ring, to increase the radii of curvature of all the constituent portions of the strip forming the ring to the values required in said predetermined non-circular profile.

4,937,938

EGG SLICERS

Vincent H. Koo, Kowloon, Hong Kong, assignor to IBL Products Company Limited, Hong Kong, Hong Kong

Filed Sep. 28, 1989, Ser. No. 413,882
Claims priority, application United Kingdom, Nov. 11, 1988, 8826454
Int. Cl.[5] A21C *5/00*
U.S. Cl. 30—117 **3 Claims**



1. An egg slicer comprising upper and lower hinged arms, intermediate portions of said arms extending one over the other, and said arms having front ends and rear ends, these said intermediate portions being arranged to be grasped in one hand by a user, the hinge means for hinging said arms to one another at said rear ends, a number of spaced but parallel cutter means at said front end of said lower arm for slicing a boiled egg forced past them, an enlarged presser member at said front end of said upper arm for trapping an egg placed in said cutter means and forcing the egg past said cutter means as the two arms are squeezed together by the user squeezing the arms, thumb receiving means on said upper arm for engaging a user's thumb whilst grasping the arms of the slicer in one hand so that, by raising the user's thumb, the presser member can be raised to allow a fresh egg to be placed in the cutter means, thereby enabling the egg slicer to be operated with one hand.

4,937,939

REMOTEDLY OPERATED CHIMNEY CHISEL

Francis J. Fisher, 82 Brooks Cove Rd., Candler, N.C. 28715

Continuation of Ser. No. 157,581, Feb. 18, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,481
Int. Cl.[5] B27G *17/04*
U.S. Cl. 30—167 **1 Claim**

1. An apparatus operable from a remote position to exert a

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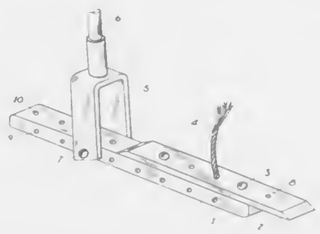
chiseling force against one wall inside a chimney by bracing against an opposite wall, the apparatus comprising:

a blade having two ends, both ends beveled to a sharp edge, and the blade having mounting holes for fasteners;

a support piece, having two ends, both ends being blunt, and the support piece having a plurality of adjustment holes for fastening the blade to the support piece;

fastening means for mounting the blade to the support piece, with one sharp end of the blade extending beyond one blunt end of the support piece, to comprise a chisel member sharp on one end and blunt on the other end;

in which the adjustment holes when chosen will adjust the overall length of the chisel member, from the tip of the sharp end to tip of the blunt end, to be longer than the inside width of the chimney;



a pushing handle having a top end held by an operator and a bottom end pivotably attached to the chisel member to apply a force to the chisel member;

a pulling handle having a top end held by an operator and a bottom end pivotably attached to the chisel member to apply a force to the chisel member;

the pulling handle being fastened to the chisel member near the sharp end and the pushing handle being fastened to the chisel member near the blunt end;

so that a further increase of force on one handle while maintaining a lesser force on the other handle causes a movement of the chisel member, the sharp end of the chisel member shaving deposits off the wall as the blunt end of the chisel member slides along the opposite wall, thereby cleaning the chimney.

4,937,940

RAZOR CLEANING IMPLEMENT

Robert J. Mason, 19 Wells Pl., Lynn, Mass. 01902

Filed Apr. 19, 1989, Ser. No. 340,311
Int. Cl.[5] B26B *19/48, 1/00, 9/02, 3/00*
U.S. Cl. 30—169 **1 Claim**



1. A razor cleaning implement for use in combination with a razor having a head and twin blades wherein the razor cleaning implement consists of:

a gripping unit comprising an enlarged gripping member that is dimensioned to be grasped by a users thumb and forefinger; wherein the gripping member is provided with a central recessed portion formed on the opposite sides of the gripping member wherein the central recessed portions are dimensioned to receive the users thumb and forefinger; wherein the central recessed portions are further provided with a plurality of raised ribs to assist the frictional grasp of the user relative to the gripping member; and, is further provided with an enlarged peripheral collar which at least partially surrounds the central recesses of the gripping member; and,

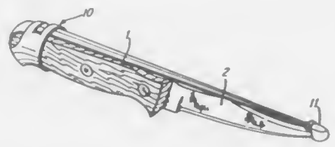
a cleaning blade unit comprising an elongated generally flat and relatively rigid cleaning blade member having an enlarged cleaning head element attached to a stem which is affixed to the enlarged gripping member, wherein the cleaning blade element is provided with an inwardly tapered point which projects outwardly from opposed flared shoulders; whereby the opposed flared shoulders are dimensioned to limit the penetration of the tapered point relative to the space between the twin blades of the razor in one orientation of the implement; and, wherein in another orientation of the implement the tapered point will have unobstructed access relative to the space between the twin blades of the razor.

4,937,941

ADAPTER TO CONVERT A KNIFE INTO A SKINNING TOOL

Gerald L. Crist, 632 S. 6th, Greybull, Wyo. 82426

Filed Sep. 29, 1989, Ser. No. 414,942
Int. Cl.[5] A22B *5/16;* **B26B** *29/00*
U.S. Cl. 30—294 **15 Claims**



1. An adapter for converting a knife, which has a blade with a tip, into a skinning tool, said adapter comprising:

a removable point protector that fits over said tip of said blade, with said point protector being provided with first securement means; and

a bootie to securely hold said point protector on said tip of said blade, with said bootie including means for fitting over an end of said knife remote from said blade tip thereof, and with said bootie including second securement means for connection to said first securement means of said point protector to snugly hold said point protector on said tip of said knife blade, with said second securement means being connected to said means of said bootie for fitting over said end of said knife.

4,937,942

KITCHEN TOOL

Robert Skerker, Buffalo, N.Y., and William Priadle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Springville, N.Y.

Filed Dec. 19, 1988, Ser. No. 286,325
Int. Cl.[5] A47J *43/28*
U.S. Cl. 30—345 **1 Claim**

1. A single piece kitchen tool comprising a handle, a work end, and a connection section connecting the handle and work end, wherein said connection section is comprised of two opposed edges, and a center section which forms a substantially U-shaped cross-section and wherein said handle, work



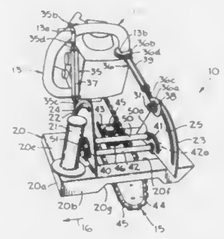
end and connection section are one continuous integral piece consisting of polyetherimide.

4,937,943

POWER CHAIN SAW UNIT FOR CUTTING NOTCHES IN A SERIES OF WOODEN ROOF RAFTERS

Drew Nieminen, 125 Franklin St., Santa Cruz, Calif. 95060

Filed Oct. 23, 1989, Ser. No. 425,011
Int. Cl.[5] B27B *17/00*
U.S. Cl. 30—376 **11 Claims**



1. A portable power chain saw unit comprising:

(a) a guide shoe adapted to engage the upper surface of a workpiece for movement therealong, said guide shoe being formed with an opening;

(b) a power chain saw having a chain saw blade assembly extending through said opening in said guide shoe and projecting beyond said guide shoe for cutting the workpiece;

(c) a plurality of spaced apart upstanding plates secured to said guide shoe, said upstanding plates being spaced apart in the direction of movement of said guide shoe; and

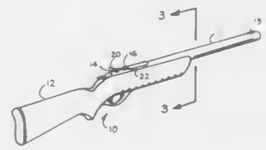
(d) a plurality of rigid rods interconnecting said power chain saw and said upstanding plates respectively, said rigid rods being releasably secured to said upstanding plates respectively for locking said power chain saw in various selected angular positions relative to said guide shoe for controlling the depth and the angle of the cut in said workpiece.

4,937,944

GUN SIGHT FOR SHOOTING MOVING TARGET

Fredrick N. Montalvo, Rt. #7, Box 7390, Nacogdoches, Tex. 75961

Filed Dec. 9, 1988, Ser. No. 283,150
Int. Cl.[5] F41G *1/00*
U.S. Cl. 33—261 **8 Claims**



1. A gun sight for assisting a shooter in hitting a moving target with a gun having a barrel connected to a stock comprising:

a sight ring assembly connected to the top of a gun barrel near the rear end of the gun barrel for alignment of the gun with a moving target, said sight ring assembly having

i. a base means, said base means having a top side and a bottom side, said bottom side being connected to the top of said gun barrel,

ii. a semi-circular sight ring connected to said top side of said base means, said sight ring being generally semi-circular in shape, said sight ring extending vertically upward from the top of said gun barrel, the plane in which said sight ring lies being perpendicular to the centerline of said gun barrel, and

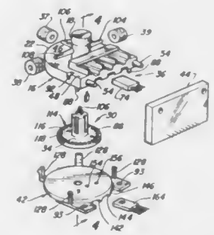
iii. two horizontal arm means connected to said base means adjacent to said sight ring, said arm means extending outwardly from said gun barrel generally perpendicular to the vertical axis of the stock attached to the gun barrel.

4,937,945

MAGNETIC COMPASS WITH OPTICAL ENCODER

Kenneth Schofield; Desmond J. O'Farrell, both of Holland, and Kenneth L. Schierbeek, Zeeland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 117,220, Nov. 4, 1987, Pat. No. 4,862,594. This application Nov. 7, 1988, Ser. No. 267,972
Int. Cl.[5] G01C *17/26*
U.S. Cl. 33—356 **10 Claims**



1. A vehicle compass with which heading is determined by measuring compass rotor displacement from a reference position to a position in alignment with the local magnetic field after the rotor is turned by a search coil to the reference position, said compass comprising:

a support body comprising a cylindrical cup and a support member defining a recess at the open end of said cup,

a compass rotor including a compass magnet, an encoder

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disk and pivot pins defining a rotation axis of said rotor, said rotor being disposed with the magnet in the cup and with the pivot pins supported by the bottom of the cup and the support member,

said support member comprising a base plate and an axially spaced cover plate with said encoder disk therebetween, said base plate defining a vehicle orientation axis,

said encoder disk having a reference aperture therein,

each of said plates having a first optical aperture therein at a first predetermined angular position relative to said orientation axis and at the same radial position as said reference aperture,

a transducer comprising a reference position sensor having a first optical transmitter and first optical receiver with an optical axis therebetween in alignment with the first optical apertures in said plates,

a first retaining means on one of said plates and a second retaining means on the other of said plates for holding said first transmitter and first receiver, respectively, in said alignment with the first optical apertures,

a support arm for a search coil on said cup opposite said magnet in a predetermined angular location relative to said orientation axis and a search coil on said support arm,

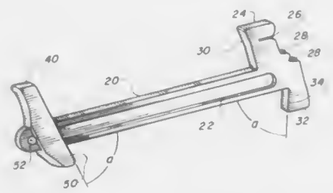
said base plate, cup and support arm being a unitary molded body of polymeric material whereby the optical axis of said sensor and the location of said search coil have predetermined and precisely reproducible angular locations relative to said orientation axis.

4,937,946

MASONRY LINE STRETCHER

Alvin C. Steinhoff, 23721 Singapore St., Mission Viejo, Calif. 92691

Filed Nov. 24, 1989, Ser. No. 440,812
Int. Cl.[5] G01C *15/10*
U.S. Cl. 33—410 **8 Claims**



1. Masonry line stretching apparatus for holding a guide line taut between building blocks comprising:

(a) a longitudinal body having a first and a second end essentially larger in width than depth;

(b) an upright finger integrally formed on an upper portion of the first end of said body having a slit therein for retaining and positioning a masonry line;

(c) a lower jaw integrally formed on a lower portion of the first end of said body, the jaw forming an acute angle relative to the body, for maintaining position on a building block;

(d) a slideable jaw having an aperture therein enclosingly passing along said body, further having a lower portion forming an acute angle relative to the body opposite said lower jaw such that a slideable face to face relationship is formed therebetween when straddling a building block, the angles of said jaws allowing a guide line to be precisely aligned on the face of a building block when said line stretching apparatus are used in pairs with the line retained at the apex of the angle and stretching tightly therebetween at right angles to each body with the line wrapped around the finger and upper portion of the slideable jaw anchoring within the slit of each finger; and,

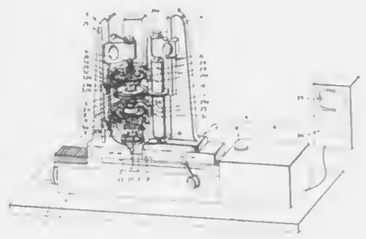
(e) a stop disposed at the second end and on an outside surface of said body such that the slideable jaw is retained when positioned onto the body.

4,937,947

APPARATUS FOR ADJUSTING SHAFT SUPPORTS TO A REFERENCE AXIS

Camille M. Catterlain, Franconville; Francis Girard, Viroflay, and Gaston H. Reide, La Garenne Colombes, all of France, assignors to Societe Anonyme Dite Hispano-Suiza, Saint-Cloud, France

Filed May 17, 1989, Ser. No. 352,988
Claims priority, application France, May 17, 1988, 88 06591
Int. Cl.[5] B43L *7/06*
U.S. Cl. 33—550 **6 Claims**



1. Apparatus for adjusting lateral positions of a plurality of rolling path elements each having a center and attached to a gear shaft such that the centers coincide with a reference axis comprising:

(a) means to support the gear shaft and rolling path elements;

(b) means to rotate the gear shaft about an axis;

(c) a plurality of arms on the support means, each having a pair of pressure shoes adapted to bear against a periphery of a rolling path element at circumferentially displaced points;

(d) pressure tips located on each arm and acting on a rolling path element to urge it into contact with the pressure shoes;

(e) control means operatively connected to the means to rotate the gear shaft comprising;

(i) a computer operatively connected to the means to rotate the gear shaft ; and,

(ii) display and input command means operatively connected to the computer to visually display on a touch sensitive screen a program sequence for the consecutive adjustment stages for adjusting the position of the rolling path element wherein the input command is achieved by touching the screen at the desired portion of the program sequence display; and,

(f) feeler means located on each arm so as to bear against the respective rolling path element and connected to the control means to provide input relating to the positions of the rolling path elements.

4,937,948

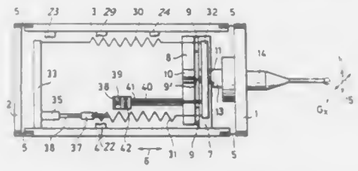
PROBE HEAD FOR A COORDINATE-MEASURING INSTRUMENT

Klaus Herzog, Oberkochen, and Franz Szenger, Konigsbronn, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Jul. 28, 1988, Ser. No. 225,178
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1987, 3725207
Int. Cl.[5] G01B *7/03*
U.S. Cl. 33—559 **13 Claims**

1. A probe head for coordinate-measuring instruments having a probe-suspension system which defines a three-dimensional coordinate system and is adapted to carry a probe (14)

which can be deflected in all three coordinate directions in space, characterized by the fact that, for each of the three coordinate directions (6, 15, 16), a separate taring device in-



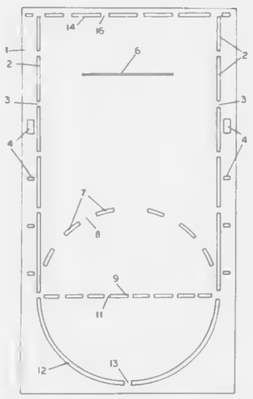
cluding an adjustable spring system is provided with means for automatically setting the zero position of the spring system, whereby the probe head is automatically adjusted for tare, whatever the spatial orientation of the probe head.

4,937,949

BASKETBALL COURT LAYOUT DEVICE

Jon J. Kiefer, 7010 Mountain Ct., Louisville, Ky. 40219

Filed Dec. 29, 1988, Ser. No. 290,511
Int. Cl.[5] B43L *13/20*
U.S. Cl. 33—563 **4 Claims**



1. Template for use in the laying out selected features of basketball court with relation to the location of the backboard including a fexible planar elongate sheet of material having a index to locate the backboard in relation to the template with slits provided within the template to outline features of a basketball court with relation to the index provided by the backboard and including the freethrow lane, freethrow circle freethrow line where coating means can be applied to the substract on which the template is located.

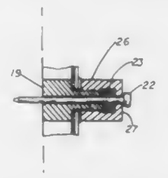
4,937,950

SPACING AND HOLDING DEVICE FOR HORIZONTAL SIDING

Wilfred Farnworth, P.O. Box 278, Clinton, Wash. 98236

Filed Jul. 17, 1989, Ser. No. 380,281
Int. Cl.[5] G01B *5/14*
U.S. Cl. 33—646 **2 Claims**

1. A tool for assisting in the installation of horizontal siding boards, comprising inner and outer upstanding slidable members held together by means of a nut-and-bolt type fastener, in which a bolt of said fastener is bored on its longitudinal axis to slidably accept a nail-like pin, the diameter of said pin being substantially the same as that of nails normally used in siding board installation, the length of said pin being greater than the overall length of said fastener, wherein the longitudinal axis of said bolt is coincident with a horizontal nailing line of a siding board being installed; a nut of said fastener having a closed end



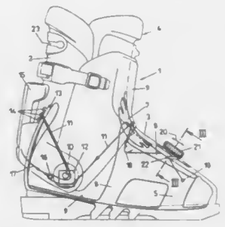
which is drilled to slidably accept said pin, said nut being sufficiently long to provide a space between said closed end and the end of the threaded portion of the bolt, when said nut is in a tightened condition on said bolt.

4,937,951

SYSTEM FOR SECURING A FOOT OR INNER SHOE IN A SKI BOOT OR CLIMBING BOOT

Josef Loecker, Voitsberg, Austria, assignor to Koflach Sport Ceselschaft m.b.H., Voecklebruck, Austria

PCT No. PCT/AT87/00018, § 371 Date Nov. 19, 1987, § 102(e) Date Nov. 19, 1987, PCT Pub. No. WO87/05473, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 20, 1987, Ser. No. 130,991
Claims priority, application Austria, Mar. 21, 1986, 763/86
Int. Cl.[5] A43B *5/04, 5/00, 23/28*
U.S. Cl. 36—119 **26 Claims**



1. A system for securely and comfortably holding a foot in a boot, particularly in the heel and instep regions, comprising:

a shell covering at least the instep region;

tiltable rear part means for closing the boot;

tension element means for applying securing force to both the heel and instep regions of the foot;

deflection point means for directing said tension element means in the ankle region of the boot;

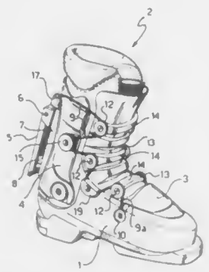
counterpressure means for counteracting in the heel region the securing force applied by said tension element means to the instep region, wherein said counterpressure means is covered by said tiltable rear part means when the boot is closed; and

clamping element means associated with said tension element means in the area of said deflection point means for distributing force to said tension element means.

4,937,952
FASTENING ARRANGEMENT FOR REAR ENTRY TYPE SKI BOOTS

Oliviero Olivieri, Montebelluna, Italy, assignor to Icaro Olivieri and C.S.p.A. Minuterie Metalliche, both of Treviso, Italy

Filed Jun. 9, 1989, Ser. No. 364,041
Claims priority, application Italy, Jun. 22, 1988, 21475/88[U]
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 3 Claims



1. A fastening arrangement for a ski boot having a front part and a rear part pivotally connected to a boot shell to jointly define a bootleg portion of the ski boot and to allow a foot to enter the ski boot, said fastening arrangement comprising a lever for tensioning a pull cable affixed rearwardly to the rear part of the bootleg, a plurality of lay pulleys arranged symmetrically at mutually corresponding locations on opposite sides of the front and rear parts of the bootleg, at least one pair of deflector members mounted on opposite sides of the boot shell at symmetrical locations thereof intermediate two lay pulleys on said front part, and a pull cable running over said lever, all said pulleys and said deflector members and having ends attached to said boot shell at symmetrical locations on opposite sides thereof.

4,937,953
SKI BOOT

Klaus Walkhoff, Kreuzlingen, Switzerland, assignor to Raichle Sportschuh AG, Kreuzlingen, Switzerland

Filed Nov. 16, 1988, Ser. No. 272,506
Claims priority, application Switzerland, Nov. 20, 1987, 04533/87
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 20 Claims



1. A sport shoe, particularly a ski boot, comprising:
(a) a sole;
(b) a shaft attached to said sole;
(c) a cushioning in said shaft;
(d) two support elements within the interior of said shaft positioned saddle-like with respect to said cushioning in the region of the instep, said support elements overlapping each other in a region extending approximately in the longitudinal direction of said sport shoe;
(e) a clamping arrangement for displacing the support elements transversely relative to the longitudinal direction of the sport shoe so that when said support elements are moved towards each other of tightening, the overlap of the support elements is increased; and
(f) connecting means for connecting front end regions of said support elements with said shaft so as to permit movement of said support elements in the longitudinal direction of the sport shoe and transversely thereto.

4,937,954
GOLF SHOES

Shawn Clement, Westmount, Canada, assignor to Incredibal Inc., Westmount, Canada

Filed Oct. 27, 1988, Ser. No. 263,015
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—127 10 Claims

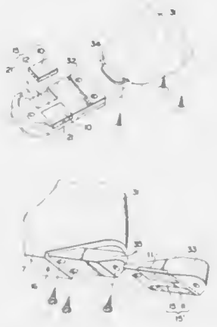


1. A pair of golf shoes comprising a first and a second shoe each having a sole, each sole comprising toe, heel and intermediate metatarsal portions and further comprising inner and outer edges; said first shoe being adapted for a first foot of a golfer that will assume a stance position closest to a target, said inner and outer edges of said sole of the first shoe each including at least a part which is defined substantially linearly in the plane of said sole of the first shoe, said part of said inner edge of said sole of the first shoe extending substantially from said toe portion to said metatarsal portion corresponding at least with a part of the ball of the first foot, said part of said outer edge of said sole of the first shoe extending substantially from said heel portion to said metatarsal portion; the linear parts of said edges of said sole of the first shoe being substantially parallel; said second shoe being adapted for a second foot of the golfer that will assume the stance position furthest from said target, said inner edge of said sole of the second shoe including at least metatarsal and heel parts which are defined substantially linearly in the plane of said sole of the second shoe; a longitudinal axis of the sole of the second shoe extending through the heel portion thereof corresponding to the heel of said second foot and through the metatarsal portion of the sole of the second shoe corresponding to one of the first and second metatarsal bones of the metatarsus of said second foot, said metatarsal and heel parts being substantially aligned and being substantially parallel to said longitudinal axis of said sole of the second shoe, said metatarsal part extending along at least a part of said metatarsal portion of the sole of the second shoe corresponding with the ball of the second foot, said heel part extending at least along a part of said heel portion of the sole of the second shoe; a front edge of said toe portion of said sole of the second shoe being substantially linearly defined in said plane of said sole of the second shoe and being substantially perpendicular to said longitudinal axis thereof.

4,937,955
ALPINE SKI BOOT WITH SHOCK ABSORBING SOLE

Laurent Bonavesture, Annecy, France, assignor to Salomon, S.A., Annecy, France

Filed Jan. 29, 1988, Ser. No. 150,202
Claims priority, application France, Feb. 12, 1987, 87 02175
Int. Cl.[5] A43C *13/08*; A43B *5/04*
U.S. Cl. 36—132 10 Claims

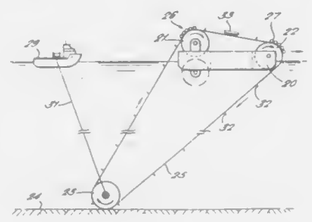


1. A removable end plate for a ski boot having a sole, said removable end plate comprising:
(a) at least one stiffener having a lower surface and a width less than the width of said sole;
(b) at least one elastically deformable element positioned adjacent said at least one stiffener wherein said end plate comprises a lower surface, whereby said lower surface of said at least one stiffener defines the lower surface of said removable end plate, and whereby said at least one elastically deformable element is adapted to absorb forces encountered during skiing.

4,937,956
OCEAN FLOOR DREDGING

Miloslav Malecha, Zoetmeer, Netherlands, assignor to Manaco International, Geneva, Switzerland

Filed Aug. 4, 1988, Ser. No. 228,276
Claims priority, application United Kingdom, Aug. 7, 1987, 8718769
Int. Cl.[5] E02F *3/08*
U.S. Cl. 37—69 11 Claims



1. A system of ocean floor dredging comprising a first vessel, two rollers rotatably mounted on the first vessel, at least one of which is drivable in rotation, the roller axes extending crosswise and the rollers being spaced from each other fore and aft of the vessel, a third roller lying on and directly supported by the ocean floor and an endless net having means for collecting material from the ocean floor, the net extending around the three rollers, the third roller being positioned to roll along the ocean floor as the net is passed around it.

4,937,957
TORSIONAL LIMITING DEVICE FOR A VEHICULAR DITCHING APPARATUS

Gerald E. Umberson, Midland, Tex., assignor to Capitol Trencher Corporation, San Dimas, Calif.

Filed Dec. 2, 1987, Ser. No. 127,447
Int. Cl.[5] E02F *3/24*
U.S. Cl. 37—97 4 Claims



1. In a vehicular ditching apparatus having a main frame, and an engine attached to the main frame, a transmission attached to the engine, a torsional limiting device attached to the transmission, and a rotatable cutting wheel attached to the main frame and connected to the torsional limiting device by shaft means, the improvement comprising said torsional limiting device comprising an oil cooled, adjustable mechanism having:
a. a housing which is attached to said transmission;
b. a first hub rotatably journalled in said housing and attached to an output shaft from said transmission;
c. a plurality of circular discs which are keyed to said first hub, such that they rotate and are movable coaxially with said first hub;
d. a second hub rotatably journalled in said housing, having a first end which extends exteriorly of said housing and is there connected to said shaft means and having a second end to which are keyed a plurality of plates such that they rotate and are movable coaxially with said second hub and said first hub, each said plate being sandwiched between two said discs; said second hub further having a piston chamber and a fluid driven piston housed therein which acts upon said discs and said plates to increase the friction therebetween;
e. means for introducing, and controlling fluid pressure, in said piston chamber;
f. means for circulating oil around said discs and said plates, said oil being used to cool said discs and said plates.

4,937,958
PICTURE FRAME

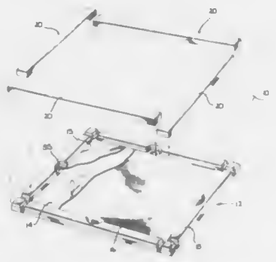
Berdie Stein, 61 Irving Pl. 3B, New York, N.Y. 10003; Thomas Dair, 438A Mountain View Ave., Valley Cottage, N.Y. 10989, and Stephen Allendorf, 35 Bedford St. ∩18, New York, N.Y. 10014

Filed Oct. 19, 1988, Ser. No. 259,796
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—156 9 Claims

1. A picture frame for use by children comprising:
a tray having a centrally disposed flat portion for receiving pictures and photographs and a raised portion disposed at an outer periphery of said tray, said tray serving as a rigid backing for said pictures, said flat portion and said raised portion being disposed on a front side of said tray;
a cover placed over said flat portion;
a plurality of holding members removably engaged with said raised portions wherein when said holding members are engaged with said raised portions, an inner edge of said holding member extends over said flat portion and said cover so as to retain said cover in said tray;
wherein said tray further comprises at least one recess in said

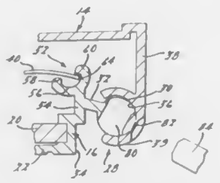
VOL 1116 ISS 1 JL 3 1990 UMI

raised portion corresponding to each of said holding members and wherein each of said holding members has an



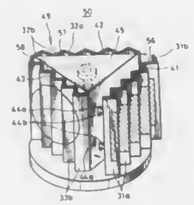
inwardly extending tab disposed on an inner surface of said holding member.

4,937,959
POSTER DISPLAY DEVICE WITH LONGITUDINAL RETENTION OF FRAME SECTIONS
Randall Palmer, Farmington Hills, and David U. Hillstrom, Novi, both of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.
Filed Mar. 13, 1987, Ser. No. 25,398
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—156 **37 Claims**



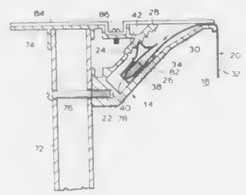
1. In a display holder having a plurality of elongated frame sections forming a frame structure for receiving and holding a display piece, each of said sections having a pair of elongated front and back members adapted to be assembled in an interconnected arrangement with one another, said front and back members being provided with coacting hinge formations integral therewith and in mating pivotal engagement with one another, the improvement wherein in said coacting hinge formations one of said elongated front and back members has a laterally recessed portion formed at a predetermined longitudinal position therein, the other of said elongated front and back members having a laterally-protruding discontinuity formed at a longitudinal position thereon corresponding to said predetermined longitudinal position of said laterally recessed portion when said front and back members are in said interconnected arrangement, said laterally-protruding discontinuity being longitudinally interlockingly received within said laterally recessed portion in order to provide a longitudinally interlocking interference and to substantially prevent longitudinal movement of said front and back members relative to one another when in said interconnected arrangement.

4,937,960
PICTURE DISPLAY AND APPARATUS FOR MAKING THE SAME
Katsumi Otake, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 8, 1987, Ser. No. 130,263
Claims priority, application Japan, Dec. 8, 1986, 61-188638[U]; May 22, 1987, 62-77051; May 27, 1987, 62-130853
Int. Cl.[5] G09F *19/14*
U.S. Cl. 40—453 **10 Claims**



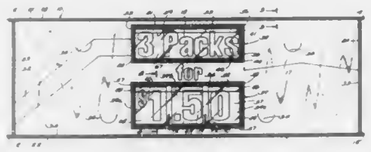
1. A picture display assembly for displaying two different pictures, said assembly comprising:
means for forming a wavelike picture display surface which has two interleaved series of display sections, each of said series being disposed in a different direction, wherein said wavelike picture display surface forming means comprises at least three concave display walls each having a set of said two interleaved series of display sections;
at least three transparent members covering a corresponding one of said three concave display walls while maintaining a small space therebetween;
two sheets containing said two different pictures, each of said sheets being divided into respective sets of picture segments which are attached to corresponding ones of one of said interleaved series of display sections; and
means for supporting said wavelike picture display surface forming means.

4,937,961
SIGN ASSEMBLY
James Gandy, and Bruce E. S. MacDonald, both of Mississauga, Canada, assignors to Signtech, Inc., Ontario, Canada
Filed Mar. 9, 1989, Ser. No. 321,044
Int. Cl.[5] G09F *17/00*
U.S. Cl. 40—603 **5 Claims**



1. A sign assembly comprising a frame surrounding an aperture, and a sheet of flexible sign material with a main portion stretched across the aperture and an end portion secured to the frame,
the frame having a lip member defining the aperture and having a free end over which the flexible sign sheet passes, the frame also having a U-shaped channel portion rearwardly of the lip member and receiving an end portion of the sign sheet,
a mounting bar extending longitudinally within the U-shaped channel and around which the sheet end portion is wrapped, and a series of spaced U-shaped resilient clips within which the mounting bar and wrapped around sheet end portion are received, said clips having means for retaining the mounting bar and wrapped around sheet end portion therein,
the U-shaped channel having at least one wall with a plurality of longitudinally-extending shoulders which face in a rearward direction from the lip member, and
each clip having engagement means snappingly engageable with successive shoulders in the channel to enable the flexible sign sheet to be tensioned by pushing the clips with the mounting bar and wrapped around sheet end portion retained therein rearwardly in the channel to cause the shoulder engaging means of the clip to snappingly engage successive shoulders until the sheet is suitably tensioned.

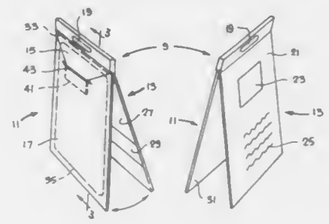
4,937,962
DISPLAY BANNER
Richard P. Hornblad, Shorewood, Wis., assignor to DCI Marketing, Milwaukee, Wis.
Continuation of Ser. No. 348,152, May 2, 1989, abandoned, which is a continuation of Ser. No. 64,330, Jun. 19, 1987, abandoned. This application Sep. 13, 1989, Ser. No. 406,195
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—617 **20 Claims**



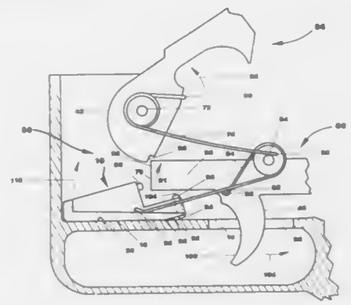
1. A banner comprising:
a print carrying medium in the form of a planar sheet;
a transparent panel mounted over said planar sheet so as to form a display pocket having one side formed by said planar sheet and another side formed by said transparent panel;
said transparent panel being attached to said planar sheet around the periphery of said transparent panel but with a part thereof being free from said planar sheet to provide an opening for access to said display pocket;
a second panel having a position at the part of said transparent panel which is free from said planar sheet, said second panel being fixed to said planar sheet and having a portion thereof extending over and movable relative to said part of said transparent panel so that said second panel overlaps said part of said transparent panel which is free from said planar sheet to shield the interior of said display pocket against the entry of debris while permitting access to the interior of the display pocket, and
a display card removably receivable in said display pocket through said opening and having a display surface visible through said transparent panel when said display card is in said display pocket.

4,937,963
PROTECTIVE ENCLOSURE FOR DATA CARDS
Robert B. Barnes, Los Gatos, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.
Filed Nov. 21, 1988, Ser. No. 275,150
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 **23 Claims**

1. A protective information bearing device for a data card comprising,
a data card holder including a generally rectangular pocket defined by a front layer and a base layer which further define an opening to the pocket of sufficient size to accommodate a wallet-size data card, the data card holder having an upper end and a lower end,
a laminar flap hingedly attached to the base layer near the upper end of the data card holder, said flap having an inside surface facing the pocket and having an outside surface facing in a direction opposite the inside surface, the outside surface bearing eye-visible information discernible from a distance, and
means separate from said flap for repeatedly sealing said opening to the pocket.



4,937,964
TWO-STAGE TRIGGERED ADAPTER
David L. Crandall, 10425 N. Dorian Ave., Idaho Falls, Id. 83401
Filed Nov. 7, 1989, Ser. No. 434,862
Int. Cl.[5] F41A *19/16*
U.S. Cl. 42—69.03 **10 Claims**

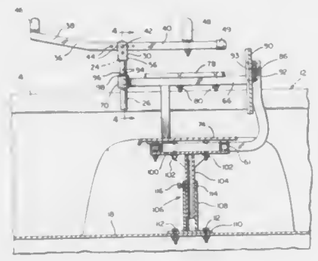


1. An adapter to convert a single-stage trigger to a two-stage trigger in a weapon, comprising:
a. a first base contact portion and a second base contact portion arranged at an inclusive obtuse angle to one another such that the bases intersect at a fulcrum; and
b. a bearing surface to contact a trigger arm such that engagement of the bearing surface and the trigger arm causes the adapter to pivot about the fulcrum from a first base contact position to a second base contact position.

4,937,965
ADJUSTABLE GUN REST
Salvador Narvaez, 301 W. Saunders, Laredo, Tex. 78040
Filed May 23, 1989, Ser. No. 355,496
Int. Cl.[5] F41A *27/00*
U.S. Cl. 42—94 **18 Claims**

1. A gun rest for a long gun, said gun rest including elongated upright standard means defining a longitudinal center axis and including upper and lower portions, said lower por-

tion including support structure for support of said standard means from a support therebelow and angular displacement of said standard means about said center axis relative to said support structure, the upper portion of said standard means including a pair of upwardly facing support members mounted therefrom and disposed on opposite sides of said center axis with said support members being horizontally aligned to support therefrom longitudinally spaced portions of a long gun, said support members being mounted from said upper portion for inverse elevational shifting relative to said standard means, whereby the muzzle end of a long gun supported from said



support members may be depressed and elevated, as desired, and also angularly displaced about said center axis, said lower portion of said standard means defining a cylindrical shank including vertically adjustable, downwardly facing stop surface means, a support, said support including a seat for supporting a seated person thereon, said seat including an elevated front-to-rear extending armrest on one side thereof, a forward portion of said armrest including upstanding support sleeve means mounted therefrom, said shank being rotatably received through said sleeve means with said stop surface means abutting said sleeve means from above.

4,937,966

FISH HOOK WITH BAIT RETAINER

John McKenzie, 1405 Cornets, Austin, Tex. 78721

Filed Dec. 1, 1989, Ser. No. 444,281

Int. Cl.[5] A01K *83/06*

U.S. Cl. 43—44.8 **7 Claims**



1. A bait-retaining fishhook comprising

a fishhook having an elongated, curved body portion with line retaining means at one end and a point at the other end; and

a bait retaining member comprising an elongated piece of flexible non-metallic material fixedly attached adjacent said point and divergingly following said curved body portion of said fishhook

whereby when bait is placed on said fishhook said bait retaining member is separated from said body portion and inhibits removal of the bait from said hook.

4,937,967

FISH CATCH STORE FOR BOATS

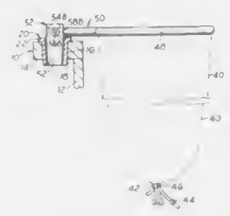
John Wilding, The Boat House, Halton-on-Lune, Lancaster, Great Britain

Filed May 19, 1989, Ser. No. 353,980

Claims priority, application United Kingdom, Aug. 12, 1988, 8819208; Mar. 9, 1989, 8905375

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—55 **4 Claims**



1. A catch storage apparatus for a seaworthy fishing boat, comprising in combination:

an open-topped enclosure permitting water entry through at least a surface thereof;

a frame supporting said enclosure at its open top so said enclosure is suspended therefrom, and said frame having ends extending in close, but spaced parallel relation;

a first mount having parallel spaced holes in one face thereof for receiving said ends of the frame and for removably securing same in said holes, and further having a spigot extending from another face in a direction parallel to the enclosure suspended from said frame;

a second mount attached to a gunwhale of said boat and having an extending formation in the form of a socket to receive said spigot of said first mount; and

said spigot and said socket having cooperating formations defining at least two alternative positions for engagement when mated together, such that in at least one position, said frame is outboard of said gunwhale with the enclosure depending therefrom into the water, and in another position, said frame is inboard of said gunwhale and the enclosure depending therefrom inside said boat.

4,937,968

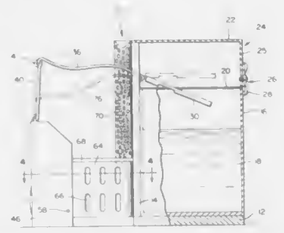
MOUSETRAP

Henry M. Thomas, 7701 Cantrell Rd., Little Rock, Ark. 72217

Filed Oct. 19, 1989, Ser. No. 424,189

Int. Cl.[5] A01M *23/08*

U.S. Cl. 43—69 **8 Claims**



1. A mousetrap comprising a base for engaging a supporting surface, an upright wall disposed generally centrally and transversely of the base to form a partition extending vertically upwardly from the base, a container for water positioned on the base in engagement with one surface of the wall, a pivotal

platform mounted on the wall vertically above the upper end of the container with the platform extending over the upper end of the container, said container including an open upper end to enable the platform to swing downwardly toward the open upper end of the container and discharge a mouse on the platform into water in the container, a downwardly opening platform housing mounted on the wall and enclosing the top and side surfaces of the platform and terminating adjacent the upper edge of the container to form a continuation thereof and preclude mice from exiting the platform and container, entrance means on the base extending from the wall in opposed relation to the container, said entrance means including an openable and closable door, bait means positioned inwardly of the door and a tube extending from the bait means to the platform by which a mouse entering the door into the bait means can only exit through the tube when the openable door is closed after entry of a mouse whereby a mouse will exit onto the upper surface of the platform and be dumped into the water as the platform swings downwardly by the weight of the mouse.

4,937,969

HYDROPONIC SYSTEM

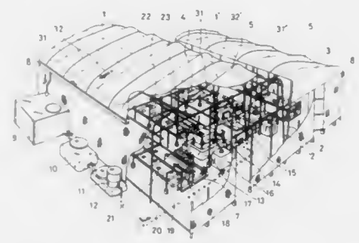
Hidehiko Kawabe, Yawata, and Toshikazu Tomioka, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 6, 1988, Ser. No. 280,468

Claims priority, application Japan, Dec. 7, 1987, 62-309025; Dec. 7, 1987, 62-309026; Dec. 7, 1987, 62-309027

Int. Cl.[5] A01G *13/04;* **A45F** *1/6*

U.S. Cl. 47—17 **11 Claims**



1. A hydroponic system comprising:

a pipe-assembly house construction defining an interior space comprising two shed-roofed structures including strut pipes and having ridge sides facing each other with a gap provided between the facing ridge sides and at least partially exposing the interior space, said two shed-roofed structures covered with ultraviolet shielding transparent sheets with the gap remaining uncovered, the two shed-roofed structures having a foundation and ridge-side pillars in common, said ridge-side pillars being fixed on said foundation and protruding from the foundation with the distance between adjacent ridge-side pillars expanding as the ridge-side pillars protrude away from the foundation, said two shed-roofed structures being coupled with girders to make an integrated construction thereby forming a triangular configuration between adjacent ridge-side pillar sides of said pipe-assembly house construction, the triangular configuration being covered with ventilative sheets,

a plurality of rows of cultivation beds fixed on the strut pipes of said pipe-assembly house construction,

nutrient solution channels connecting said cultivation beds, said cultivation beds arranged as a plurality of systems each having several rows of cultivation beds as a unit,

nutrient solution tanks coupled to respective systems containing nutrient solution to be provided to the cultivation beds through the channels, the nutrient solution characterized by a temperature and a concentration, and

nutrient solution controllers for controlling the concentration and the temperature of the said nutrient solution channels.

4,937,970

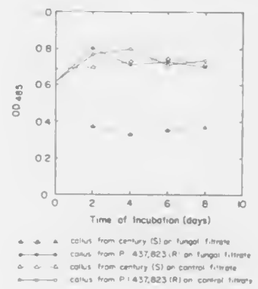
IN VITRO SCREENING FOR AND SELECTION OF GLYCINE MAX RESISTANT TO PHIALOPHORA GREGATA

Yong-Quan Guan, Urbana; Lynn E. Gray, Briarcliff, and Jack M. Widholm, Champaign, all of Ill., assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio and The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Sep. 20, 1985, Ser. No. 778,384

Int. Cl.[5] A01B *79/00;* **C12Q** *1/00*

U.S. Cl. 47—58 **19 Claims**



1. A method for identifying the presence of brown stem rot resistance in a Glycine plant comprising growing cells of said plant in in vitro cell culture in the presence of a *Phialophora gregata* Type I-produced, species-specific, genotype-specific toxin, observing the viability of said cells, and identifying the presence of brown stem rot resistance in plants whose cultures show viability in the presence of said toxin.

4,937,971

PROCESS OF GRAFTED CUTTINGS OF STOCK AND SCION FROM IN VITRO

Alain Collas, Verzenay; Olivier Brun, Tours Sur Marne; Claude Martin; Roland Vernoy, both of Saulon La Chapelle, and Georges Vesselle, Tours Sur Marne, all of France, assignors to Groupement Champenois d'Exploitation Viticole, Epernay, France and Institut National de la Recherche Agronomique, Paris, France

Continuation of Ser. No. 175,034, Mar. 29, 1988, abandoned. This application Sep. 29, 1989, Ser. No. 414,571

Claims priority, application France, Apr. 8, 1987, 87 04968

Int. Cl.[5] A01G *1/06*

U.S. Cl. 47—58 **21 Claims**

1. A process of concomitantly rooting and uniting without callosing grafted plants which are in an actively growing condition, which comprises:

A. selecting a rootstock line and In Vitro culturing such line to a state of being differentiated tender tissue in the form of shoots, said shoots being of a size wherein such shoots can be conveniently manipulated by hand and in an actively elongating growth stage;

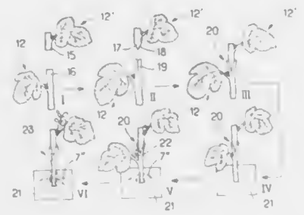
B. selecting a scion line and In Vitro culturing such line to a state of being differentiated tender tissue in the form of shoots, said shoots being of a size wherein such shoots can be conveniently manipulated by hand and being in an actively elongating growth stage;

C. dividing the stock shoots into at least one section,

wherein each section includes at least one node bearing at least one leaf;

D. dividing the scion shoots into at least one section, wherein each section includes at least one node bearing at least one leaf;

E. grafting said scion shoot section onto said stock section to form graft unions;



F. embedding at least the lower portion of the length of said stock section into a rooting medium;

G. maintaining the embedded graft unions in conditions of temperature, humidity and root growth conditions, which assure that the grafted sections will remain in an active stage of growth for a period of at least about 10 days; and

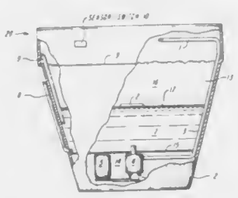
H. hardening said grafted plants for ultimate transplanting.

4,937,972

SELF-CONTAINED PLANT GROWTH SYSTEM

Joseph P. Freitus, Box 424, 36 Town Forest Rd., West Groton, Mass. 01472

Filed Mar. 16, 1989, Ser. No. 324,171
Int. Cl.[5] A01G *31/02*
U.S. Cl. 47—62 15 Claims



1. Self-contained hydroponic apparatus for automatically irrigating a plant supported in a supporting medium, said apparatus comprising

housing means, for defining first, second, and third compartments,

said first compartment defining a growth compartment for containing the plant and the supporting medium,

said second compartment defining a reservoir compartment for containing a selected liquid, and

said third compartment defining a power compartment,

said growth, reservoir and power compartments defining upper, intermediate, and lower compartments, respectively, said upper, intermediate, and lower compartments collectively defining a vertical array of compartments, said lower compartment being separated from said upper compartment by said intermediate compartment,

liquid sensing means, in communication with said growth compartment, for sensing a selected value of a parameter representative of quantity of liquid in said growth compartment, and for generating a liquid quantity signal representative of said quantity of liquid and

selective liquid transport means, responsive to a selected value of said liquid quantity signal, for selectively transporting said selected liquid from said reservoir compartment to said growth compartment, so that liquid transport is automatically initiated when said liquid quantity signal has said selected value, and is automatically terminated when said liquid quantity signal has another value, said selective liquid transport means including

electrically powered liquid pump means, disposed within said power compartment, responsive to said selected value of said liquid quantity signal, for initiating said liquid transport,

first conduit means, in liquid communication with said reservoir compartment and said pump means, for conducting said selected liquid from said reservoir compartment to said pump,

second conduit means, in liquid communication with said pump means and said growth compartment, for conducting said selected liquid from said pump to said growth compartment,

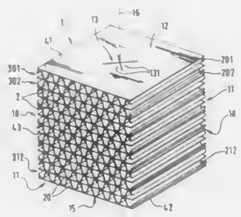
electrical power source means, disposed within said power compartment, for supplying electrical power to said pump means, said electrical power source means including storage battery means for storing and delivering electrical power.

4,937,973

INITIAL-PLANT-GROWTH BODY

Frank Schilling, Alveslohe, Fed. Rep. of Germany, assignor to Edm. Romberg & Sohn (GmbH & Co.) KG, Ellerau, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,353
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733805
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 32 Claims



1. An initial plant growth body for receiving a plant element, comprising a body of stacked corrugated layers, each of said corrugated layers having a plurality of ridges defining a wavy profile and adjacent ones of said corrugated layers being in contact with one another, a plurality of channels formed between adjacent ones of said ridges of said corrugated layers; and said corrugated layers being formed of a material readily penetrable by roots of a plant element.

4,937,974

SUPPORT ASSEMBLY FOR POSITIONING OF A PLANTING POT WITHIN AN OUTER LIQUID CONTAINING POT

Jose A. Costa, Jr., 22290 SW. 162nd Ave., Gould, Fla. 33170, and Julian Gutierrez, 6205 SW. 116th St., Miami, Fla. 33156

Continuation-in-part of Ser. No. 243,500, Sep. 12, 1988. This application Apr. 3, 1989, Ser. No. 332,512
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—81 11 Claims

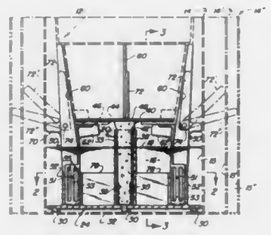
1. A support assembly designed to support a planting pot within an outer container in fluid communication with liquid contained within the outer container, said support assembly comprising:

a. a base disposed in supported engagement on an inner floor of an outer container in at least partially submerged relation to liquid therein,

b. support means for the support of the planting pot comprising a support platform adapted to supportingly engage an under portion of the planting pot and including a plurality of spaced apart stanchions extending upwardly from said base and adapted to supportingly engage the exterior surface portions of the planting pot,

c. said support platform defined by a plurality of spaced apart support members each secured to a different one of said stanchions at a common height above said base sufficient to maintain a planting pot above the level of liquid within an outer container, said support members extending radially inward therefrom and adapted to supportingly engage a planting pot,

d. positioning means mounted on said support means and



extending laterally outward therefrom for engaging the interior wall surface portions of the outer container for disposing the planting pot in a preferred location within the outer container,

e. said positioning means comprising a movable positioning member movably mounted on each of said stanchions and selectively disposable from an aligned, substantially parallel relation to said one stanchion outwardly in a substantially vertical plane at substantially varying distances from said one stanchion for engagement with an interior wall surface of the outer container, whereby the planting pot may be positioned within any one of a plurality of outer containers of varying, greater diameters than the planting pot, and

f. liquid delivery means mounted on said base in at least partially submerged position within the liquid and extending upwardly therefrom for delivering liquid to the interior of the planting pot.

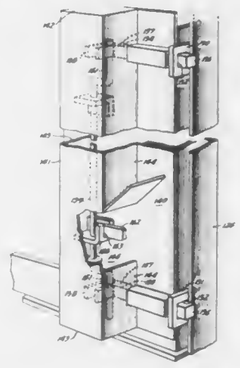
4,937,975

WINDOW GATE

Uri Zilkha, 330 Third Ave., New York, N.Y. 10010

Filed Jul. 3, 1989, Ser. No. 374,772
Int. Cl.[5] E06B *3/68*
U.S. Cl. 49—56 1 Claim

1. In a window gate having a relatively fixed frame element adapted to be installed in a window opening, and a pivotally mounted gate element supported within an opening in said frame element, the improvement comprising: manually operated locking means for securing said gate element in coplanar relation with said frame elements; said locking means including a hollow elongated channel-forming member on a vertical edge of said gate element, said channel-forming member having an opening therein for access to the interior thereof by a user, said opening being accessible from only one side of said frame element, and a plurality of openings medially disposed within said channel-forming member; an elongated bar slideably disposed within said channel-forming member for manual axial movement between first and second positions, means on said bar for manual engagement therewith for such movement, said bar having plural locking means positioned therealong selectively alignable each with one of said plural openings; corresponding plural locking means on said frame element positioned opposite said plural openings in said channel-forming member when said gate element is in coplanar relation with said frame element, movement of said bar to one of said first and second positions serving to engage said plural locking means on said bar with said corresponding locking means on said frame element; said locking means and said bar including a plurality of offset crank portions, said gate element mounting



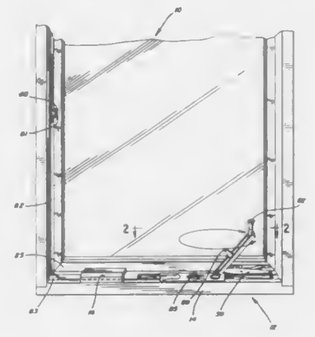
plural laterally movable bolt members, each having means on one end thereof engaging said crank portions, said frame element having plural openings therein selectively engaging free second ends of said bolt members; said bar being mounted for both axial and rotational movement, rotational movement serving to move said bolts between engaged and disengaged condition relative to said plural openings, and translational movements serving in one position thereof to fix the rotational position thereof.

4,937,976

WINDOW OPERATOR AND HINGE STRUCTURE

Daniel G. Tucker, Elysian, and Gregory J. Vetter, Owatonna, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Filed Sep. 22, 1989, Ser. No. 411,098
Int. Cl.[5] E05F *11/28*
U.S. Cl. 49—345 19 Claims



1. A window operator for a window having a window frame with a sill cover and a movable window sash comprising, linkage means connectable between the window frame and

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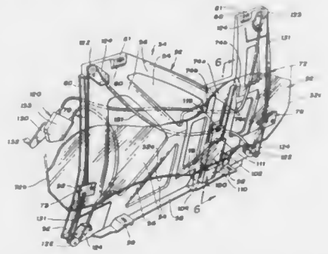
window sash and operable to cause movement of the window sash, rotatable handle means, motion-transmitting means between the handle means and the linkage means, said rotatable handle means comprising a handle having an inactive position flush with the sill cover and an active position inclined relative to the sill cover, and a hand knob pivotally mounted to the underside of the handle adjacent an end thereof for storage beneath the handle when the handle is in inactive position and movable to an operating position when the handle is in said active position.

4,937,977

STABLE WINDOW GUIDE AND LIFT MODULE FOR A FRAMELESS DOOR

Bela Gergoe, Birmingham, and Allan C. Acciacca, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1989, Ser. No. 348,829
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 **6 Claims**



1. A frameless door assembly for use with an automotive vehicle having body structure defining a door opening and a seal on the body structure surrounding said opening along its sides and top, said door assembly comprising spaced inner and outer door panels and fore and aft ends which define a compartment having a top opening, a window supported by the door assembly for movement through said top opening between an open position in which the window is disposed within said compartment and a closed position in which the window is disposed substantially above said top opening in the door assembly, said window being engageable with said seal on said body structure when the door assembly is moved to its closed position,

stationary guide means for guiding said window when it is moved between its open and closed position, said guide means including first and second spaced side guide channels located adjacent the fore and aft ends of said door assembly, respectively, and a third stationary guide channel located approximately midway between the first and second guide channels,

first and second pin guides secured to said window adjacent its bottom edge and slidably connected to said first and second stationary guide channels, respectively, for movement therealong,

a collapsible guide means carried by said window and slidably connected to said third guide channel for movement therealong,

said collapsible guide means being biased toward an extended position in which its sliding connection with said third stationary guide channel is located a given distance beneath the bottom edge of the window,

said collapsible guide means being in its extended position when said window is in its closed position whereby said window is supported at its opposite sides adjacent said top opening in said compartment of said door assembly and at a location generally midway and substantially below its bottom edge to provide a three point connection which forms an imaginary triangle whereby said window is highly stabilized when in its closed position,

said collapsible guide means being slidable along said third stationary guide as said window is being moved through a first portion of its movement to its open position until it bottoms against an abutment adjacent the lower end of said third stationary guide channel and then being collapsible as the window is further lowered through a second portion of its movement to its fully open position,

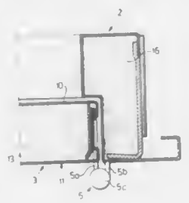
and a window regulator mechanism operatively connected with said window for moving said window between its open and closed positions.

4,937,978

JOINING OF SIDE-PLATES AT A METAL DOOR

Arne Johansson, and Inga-Lisa Johansson, both of Töreboda, Sweden, assignors to Daloc AB, Toreboda, Sweden

PCT No. PCT/SE87/00557, § 371 Date May 3, 1989, § 102(e) Date May 3, 1989, PCT Pub. No. WO88/03983, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 24, 1987, Ser. No. 353,655
Claims priority, application Sweden, Nov. 24, 1986, 8605025
Int. Cl.[5] E05D *7/00*
U.S. Cl. 49—399 **6 Claims**



1. A metal door construction which comprises two sheet-metal panels (**10**, **11**) which extend in mutually parallel, spaced relationship, preferably with an intermediate filling of insulating material (**13**), to form planar sides of a door leaf, and which present folded side-edge portions (**10***a*–**10***g*; **11***a*–**11***f*) which extend parallel to and in contact with each other within a joint region (**10***f*, **11***e*) in which the leaf panels are connected together; and in which a first one of the leaf panels (**10**) is provided on one side of the joint region (**10***f*; **11***e*) with a double fold (**10***c*, **10***e*) which forms a pocket for receiving a part of a second one of the leaf panels, wherein: (a) a straight end-edge portion (**11***f*) of the second leaf panel (**11**) is received in said pocket and extends therefrom along the joint region (**10***f*; **11***e*), (b) said second leaf panel is provided on another side of the joint region with a folded profile part in the form of a bead or like promontory (**11***b*), therewith to form a channel or recess in a side-edge surface of the door between the double fold and the bead, (c) the door is hung in a steel frame (**2**) by means of hinges (**5**) which comprise a blade part (**5***a*) and a frame part (**5***b*), and (d) the hinge blade part (**5***a*) is passed through the bead and into the joint region, extends adjacent to said second leaf panel, and is preferably secured to said second leaf panel with the aid of screws.

4,937,979

UPPER AND LOWER SLIDING MECHANISMS FOR SHOWCASES

Chih C. Liou, 2Fl., NO. 4, Lane 767, Ming Sheng E. Road, Taipei, Taiwan

Filed Oct. 16, 1989, Ser. No. 422,411
Int. Cl.[5] E05D *13/00*
U.S. Cl. 49—449 **1 Claim**

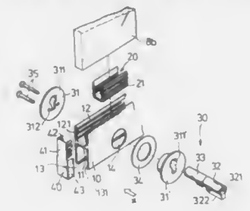
1. Upper and lower sliding mechanisms for showcases, in which a glass sheet is disposed between the upper and lower

sliding mechanisms, said upper and lower sliding mechanisms being received in an upper rail and a lower rail of the showcase respectively, wherein: said lower sliding mechanism comprises:

a horizontal middle portion to divide said lower sliding mechanism into an upper groove and a lower groove, said upper groove having a plurality of projections to form a plurality of recesses on inner wall surfaces, said lower groove having a pair of inwardly extending flanges formed at lower ends of side walls;

a plastic member having a plurality of projections formed on outer wall surfaces being inserted into said upper groove to receive said glass sheet, said projections of said plastic member engaging with said recesses of said upper groove;

a cover member engaging with said upper and lower groove, said cover member having a plurality of projections to engage with said recesses of said upper groove;



a plurality of wheels being rotatably engaged in said lower groove so that said lower sliding mechanism together with said glass sheet slide on said lower rail; and a lock disposed in said lower groove having a removable shaft which is composed of a rotary portion and a stop section, said shaft horizontally passing through said lower groove, when engaged, said stop section projecting out of said lower groove in order to prevent another glass sheet passing thereby; and

said upper sliding mechanism comprises:

a n-shaped channel having a n-shaped plastic member disposed therein to receive upper end of said glass sheet in said n-shaped plastic member; and a plurality of wheels being engaged on upper surface of said n-shaped channel; thereby, said upper rail has a M-shaped crossection to receive a pair of upper sliding mechanisms together with glass sheets and allow said upper sliding mechanisms to smoothly slide therein.

4,937,980

DOOR WEATHER STRIP FOR MOTOR VEHICLE

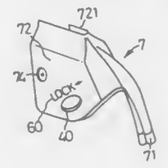
Keiji Akachi, Gifu; Harumi Kogiso, Inazawa; Kazuo Ogawa, Ota; Nobuyuki Okada, Ota, and Chieko Kawauchi, Ota, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai and Fuji Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Nov. 22, 1989, Ser. No. 440,378
Claims priority, application Japan, Dec. 13, 1988, 63-161636[U]; Dec. 13, 1988, 63-161637[U]
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—475 **5 Claims**

1. A door weather strip to be continuously attached along an outer periphery of a door panel of a rear door of a motor vehicle, a door inner panel of which is provided with a child lock lever hole in its rear upper end portion, a head portion of a lock lever projecting from the child lock lever hole, comprising:

a strip-shaped tubular main portion attached along the outer periphery of the door panel; and

a rear end portion connected to a rear end of said strip-shaped tubular main portion for covering a rear upper end portion of the door inner panel, said rear end portion having such sizes as to cover the child lock lever hole, and being provided with an opening from which the head



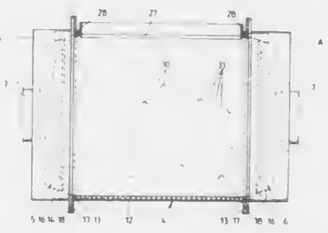
portion of the lock lever slidably projects, at a position corresponding to the child lock lever hole.

4,937,981

CENTRIFUGAL-FORCE VIBRATORY GRINDING MACHINE

Karl Temme, Wuppertal, Fed. Rep. of Germany, assignor to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Dec. 19, 1988, Ser. No. 287,770
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1987, 3743161
Int. Cl.[5] B24B *31/10*
U.S. Cl. 51—7 **11 Claims**



1. A centrifugal-force vibratory grinding machine comprising

a container held stationary during a grinding operation, the container having a circumferential wall about a central axis with a filling opening on the wall;

a rotary plate mounted rotatably to the container for revolving contents of the container during the grinding operation, the container central axis extending horizontally; and wherein

the container has two opposed ends which are closed by two closure walls, said rotary plate serving as one of said closure wall.

4,937,982

POSITIONING APPARATUS FOR TOOL SHARPENING

Raymond V. Schrock, 553 Woods Dr., San Marcos, Calif. 92069

Filed Oct. 31, 1988, Ser. No. 264,826
Int. Cl.[5] B24B *41/00*
U.S. Cl. 51—225 **14 Claims**

1. A positioning apparatus for positioning a tool having end cutting edges on an axial end face thereof in a tool holder prior to a grinding operation for sharpening the end cutting edges, the apparatus comprising:

a guide member;

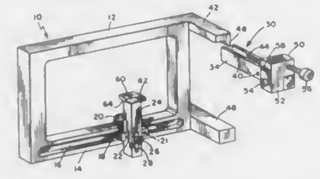
a mounting assembly for releasably mounting the guide member on an end face of a tool holder so that the guide member projects transversely away from the end face in a first direction;

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slide means slidably mounted in the guide member for movement towards and away from the tool holder in said first direction;

first locking means for locking said slide means in a selected position relative to said tool holder;

levelling means slidably mounted in said slide means for movement in a second direction perpendicular to said first



direction, said levelling means having a keying end portion for seating an end cutting edge of a tool mounted in said holder, said keying end portion including stop means for controlling the distance of said end cutting edge away from said holder end face; and

second locking means for locking said keying end portion in a selected position relative to said slider means

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4,937,983

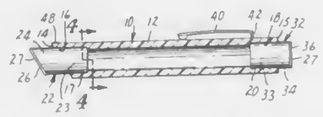
ABRASIVE DISC BACK UP ASSEMBLY

Frederick R. Luecke, White Bear Lake; Thomas L. Jones, Stillwater, and Conrad T. Freerks, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 118,296, Nov. 6, 1987, abandoned. This application May 9, 1989, Ser. No. 349,915

Int. Cl.[5] **B24D** *15/00*

U.S. Cl. 51—392 **8 Claims**



1. A manually manipulatable pencil like abrasive disc back up assembly for supporting coated abrasive discs while abrading away defects in an orange peal surface on paint, said assembly comprising:

an elongate rigid body member having an axis, first and second ends, and a first socket opening though said first end; and

a first support member of a firm flexible material having a durometer in the range of about 40 to 90, said first support member having an inner portion in said socket, an outer portion projecting at least about one sixteenth inch from said socket, a planar end surface on said outer portion adapted to support one of the coated abrasive discs, said planar end surface having a minimum transverse dimension of greater than about three eights inch and a maximum transverse dimension of less than about one inch.

4,937,984

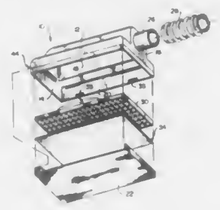
VACUUM SANDER

Thomas F. Taranto, 3396 Patchett Rd., Baldwinsville, N.Y. 13027

Filed Feb. 23, 1989, Ser. No. 314,033

Int. Cl.[5] **B24D** *15/00;* **B24B** *23/00, 55/10*

U.S. Cl. 51—392 **5 Claims**



1. A vacuum sander for attachment to partial vacuum producing means, said sander comprising:

(a) an air permeable abrasive sheet;

(b) a resilient, air permeable pad, one surface of which contacts and support said abrasive sheet;

(c) housing means, having a top wall with side walls extending therefrom to define an open bottom, forming a vacuum manifold;

(d) attachment means on an outer surface of at least one of said top and side walls communicating with said vacuum manifold on one end and with said partial vacuum producing means on the opposite end such that said vacuum manifold is maintained at a sub-atmospheric pressure;

(e) an open, grid-like support member of substantially the same lateral dimensions as, and positioned within said open bottom, said support member comprising peripheral walls opposing said housing side walls and defining the boundaries of a plurality of intersecting, spaced, wall members having bottom edge portions lying in a common plane substantially perpendicular to said support member peripheral walls and coplanar with the bottom edges of said support member peripheral walls and said housing side walls, said bottom edge portions providing a rigid support for said pad and said abrasive sheet; and

(f) means securing said abrasive sheet and said pad in covering relation to said rigid support with the surface of said pad opposite said one surface contacting said rigid support, whereby air and sanding residue are drawn into said vacuum manifold through said pad, said support member and said abrasive sheet.

4,937,985

ABRASIVE WATERJET RECEIVER

Arie Boers, Plymouth, and Mark R. Frich, Maplewood, both of Minn., assignors to Possis Corporation, Minneapolis, Minn.

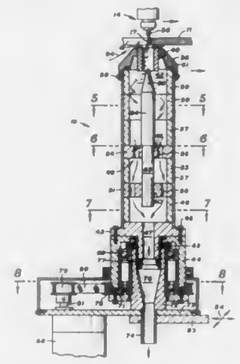
Filed Sep. 25, 1989, Ser. No. 412,116

Int. Cl.[5] **B24C** *9/00, 3/00*

U.S. Cl. 51—410 **42 Claims**

1. A receiver for collecting liquid and particulate materials emanating from a moving jet cutting head and a work piece of liquid jet cutting machine comprising: first means having a passage with a longitudinal axis, an open inlet end for receiving liquid and particulate materials from the cutting head and work piece, and an open outlet end remote from the inlet end for carrying liquid and particulate materials from the passage to a

desired location, and second means operatively connected to the first means for rotating the first means about the longitudi-



nal axis thereof as the liquid and particulate materials flow through said passage.

4,937,986

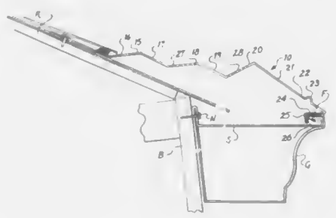
GUTTER PROTECTOR

Donald W. Way, Sr.; Royce L. Vail, both of Matthews, and John P. Kieronski, Charlotte, all of N.C., assignors to Ladon Enterprises, Matthews, N.C.

Filed Jul. 13, 1989, Ser. No. 379,095

Int. Cl.[5] **E04D** *13/00*

U.S. Cl. 52—12 **12 Claims**



1. A gutter protector adapted for mounting on a sloping roof of the type having shingles arranged in horizontally extending overlapping rows, comprising:

an inner edge portion that is positionable under a row of shingles that is upward of the lowermost row of shingles;

a draining surface portion extending from said inner edge portion at an inclination with respect to the slope of the roof for extension at a spacing above the last row of shingles and above the gutter, said draining surface portion having perforations for draining water therethrough into the gutter without passage of leaves and other large debris therethrough; and

an outer end portion extending from said draining surface portion for engagement with the outer edge of the gutter;

said draining surface portion comprises a plurality of longitudinally extending sections at least one of which is imperforate and at least another of which extends outwardly therefrom at an inclination with respect thereto and has perforations therein, the relative inclination causing the flow of water flowing from said one section over said another section to wash leaves and other debris outwardly off said another section and off said outer end portion away from the gutter.

4,937,987

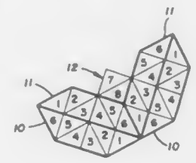
TEMPORARY BUILDING STRUCTURE

John F. Runyon, 91 Kent St., Apt. 4, St. Paul, Minn. 55102

Filed Mar. 10, 1989, Ser. No. 321,358

Int. Cl.[5] **E04B** *1/32*

U.S. Cl. 52—70 **15 Claims**



1. A temporary foldable building structure comprised of a plurality of twenty-six right isosceles triangular panel units of the same size flexibly assembly from:

(A) four trapezoidal modules of six aligned panel units each, two pairs of modules each being joined into double modules along their alonger bases and said double module pairs being joined at right angles along one of their non-parallel ends, and

(B) a peak square top member comprised of two right isosceles triangular panel units joined along their hypotenuses, said square joined along two adjacent short edges of one of said panel units to said double module pairs at their juncture.

4,937,988

PIGEON BARRIER

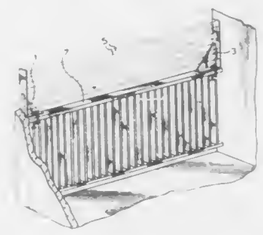
Edouard A. Gratton, Weston, Canada, assignor to William H. Young and Vaughn W. Boyt, both of Mactier, Canada

Filed Aug. 17, 1989, Ser. No. 394,812

Claims priority, application Canada, Mar. 8, 1989, 593,116

Int. Cl.[5] **A01K** *3/00*

U.S. Cl. 52—101 **27 Claims**



1. A barrier for preventing pigeons from landing on a balcony rail extending between a pair of vertical surface, comprising:

(a) a pair of support brackets adapted for flush mounting to opposite ends of said balcony rail and respective ones of said pair of vertical surfaces;

(b) a plurality of wires extending between said pair of support brackets;

(c) an intermediate support bracket adapted for flush mounting to a corner of said balcony rail, wherein said plurality of wires extend between a first one of said pair of support brackets and said intermediate support bracket and between said intermediate support bracket and the other one of said pair of support brackets, and

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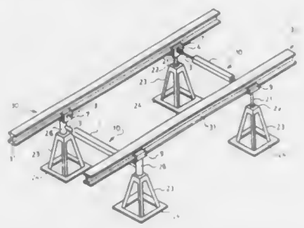
(d) wherein said intermediate support bracket further comprises a generally square horizontal member adapted for flush mounting to a top horizontal surface of said rail at said corner, and a pair of generally vertical orthogonally oriented planar members tapering to respective points at the topmost portions thereof and being connected to said generally square horizontal member.

4,937,989

LOCKING BRACE FOR UNITING MOBILE HOME SECTIONS THROUGH THEIR UNDERCARRIAGE I-BEAMS

Urban Miyares, 12875 Calle De Las Rosas, San Diego, Calif. 92129; Clayton M. Chong, 11338 Surco Dr., San Diego, Calif. 92126, and Arthur Angelo, 18331 Verano Pl., San Diego, Calif. 92128

Filed Apr. 10, 1989, Ser. No. 335,577
Int. Cl.[5] B66F 7/26
U.S. Cl. 52—126.7 **5 Claims**



1. A support unit for restraining the lateral movement of abutted mobile home sections and two undercarriage I-beams of a mobile home, wherein the support unit comprises a pair of vertically adjustable and identical piers, each said pier being adapted to seat beneath a single I-beam, wherein each of said piers has a square base, stanchions extending upwardly therefrom, a horizontal pad attached to the upper end of each of said stanchions, wherein said pad has a non-rotatable hex nut that supports a threaded rod, and a two part clamp disposed at the top of said rod to engage a bottom flange of the I-beam thereabove, said support unit being further defined by a tie-rod assembly having adjustably threaded rods disposed at opposite ends thereof, and said tie-rod assembly being transversely situated between adjacent I-beams while in alignment with said piers therebeneath, said tie-rod assembly being secured to each said two I-beams by engaging said two part clamp with each of the threaded rods of said tie-rod assembly.

4,937,990

VENTILATION SYSTEM FOR ROOFS

Jean-Paul Paquette, St-Hilaire, Canada, assignor to SIBO, Inc., Canada

Continuation of Ser. No. 96,697, Sep. 15, 1987, abandoned. This application Jul. 27, 1989, Ser. No. 385,971
Claims priority, application Canada, Mar. 6, 1987, 531417
Int. Cl.[5] E04B 7/00
U.S. Cl. 52—199 **29 Claims**

1. A ventilation system for facilitating the drying of roofs, comprising:

a basic structure;

an insulation layer disposed on said basic steructure;

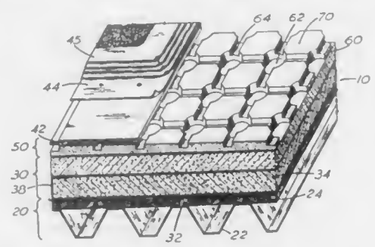
a sheet disposed on top of said insulation layer, said sheet having a plurality of openings therethrough distributed over its surface; and

a membrane disposed on said sheet;

wherein said plurality of openings passes from said membrane through said sheet to said insulation layer;

said system further comprising aeration outlet means connected to the openings in said sheet for facilitating the evacuation of water and moisture from the vicinity of said insulation layer;

wherein said aeration outlet means comprises a first plurality of grooves formed in said sheet and oriented in a first direction and a second plurality of grooves formed in said sheet and oriented in a second direction approximately perpendicular to said first direction, each of said first



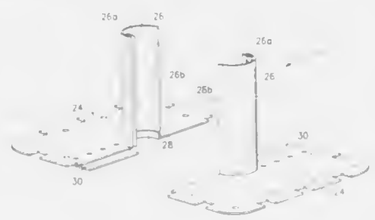
plurality of grooves intersecting a corresponding one of said second plurality of grooves at a respective one of said plurality of openings, thereby facilitating the drying of the roofs by providing a means for ventilation of said insulation layer by the removal of water and moisture from the insulation layer via said plurality of openings and said first and second pluralities of grooves.

4,937,991

FLASHING UNIT FOR SEALING ROOF PENETRATIONS

Michael J. Orth, 1375 NE. 134 St., N. Miami, Fla. 33161

Filed May 1, 1989, Ser. No. 345,700
Int. Cl.[5] E04B 7/00
U.S. Cl. 52—199 **7 Claims**



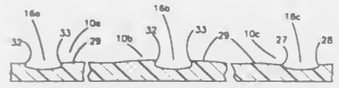
1. An improved prefabricated flashing unit for use in weatherproofing roof penetrations including a pair of complementary mating half portions of generally rigid, high-strength sheet material, each half portion comprising a base plate and generally semi-cylindrical stack portion attached to and extending upwardly from an edge portion of each base plate, each base plate having an upwardly directed generally semi-cylindrical flanged edge disposed within the lower end of each semi-cylindrical stack portion in engagement with the lower edge portion of the stack portion, means securing each stack portion to its base plate, one longitudinal edge portion of each stack portion forming an elongated continuous channel for receipt of the corresponding smooth longitudinal edge of the opposite stack portion to provide snap-fit frictional retention of the two stack portions when mated with the edge portions of the base plates in abutment, and means operatively attached to the abutting edges of the base plates to lap the same and facilitate seal and strength of the unit when in mating relation.

4,937,992

SCORED PANEL

John L. Dawson, Canton, and David L. Bridges, New Philadelphia, both of Ohio, assignors to Commercial and Architectural Products, Inc., Dover, Ohio

Filed Jun. 21, 1989, Ser. No. 369,639
Int. Cl.[5] B44F 7/00
U.S. Cl. 52—316 **10 Claims**



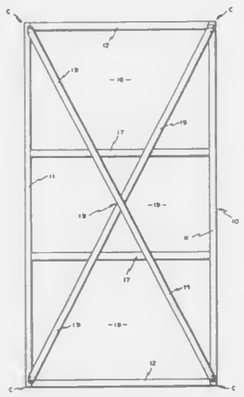
1. A panel comprising a substantially planar sheet of material having front and back faces and a nominal thickness which varies between a maximum thickness and a minimum thickness, an exposed groove in said front face having an inner extremity, said material of said panel having a substantially uniform thickness between said back face and said inner extremity of said groove sufficient to prevent fracture of said panels along said grooves during normal manufacture, storage, and shipment, said groove providing an inner wall surface and radiused corners tangentially intersecting said inner wall surface, said radiused corners each extending through an arc of substantially 90 degrees to edges remote from said inner wall surfaces, said edges of said radiused corners being spaced from said back face by a distance substantially equal to said minimum thickness, portions of said groove along portions of said sheet having a thickness greater than said minimum thickness providing an outer groove surface extending from said edges of said radiused corners to said front face substantially perpendicular to said faces, said grooves providing a substantially uniform width unaffected by variations in thickness of said sheet, said radiused corners facilitating removal of debris from said grooves.

4,937,993

COMPOSITE BUILDING PANEL

William G. Hitchins, "Fiddawn", New Cascade Road, Norfolk Island, United Kingdom 2899

Continuation of Ser. No. 756,655, Jul. 19, 1985, abandoned. This application Feb. 3, 1987, Ser. No. 11,411
Claims priority, application Australia, Jul. 19, 1984, PG6104
Int. Cl.[5] E06B 3/70; E04C 2/34, 2/38
U.S. Cl. 52—455 **4 Claims**



1. A composite, load-bearing building panel comprising a parallel and spaced-apart pair of substantially rigid end transverse members disposed between a pair of side members adjacent respective ends thereof and normal thereto; a plurality of substantially rigid additional transverse members extending between said side members and disposed normal thereto, said transverse members defining separate adjacent areas within said building panel; a block of foamed plastic material disposed within each of said areas, each end and additional transverse member being formed with a channel-shaped cross-section having opposed flange portions engaging said blocks of foamed plastic material; a cladding panel overlying each side of the composite building panel; and a pair of bracing members, of thin cross-section and high tensile strength, disposed between at least one of said cladding panels and said blocks of foamed plastic material, said bracing members extending between diagonally-opposed corners defined by said side and end transverse members:

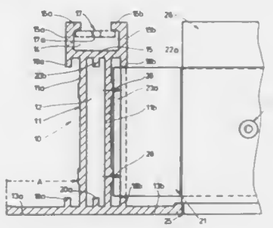
characterized in that each of said additional transverse members has opposed ends which only abut said side members and are free of any fastening means thereto; and in that said bracing members are pop-riveted to said side and end transverse members at the corners thereof, and to said additional transverse members, whereby the composite, load-bearing building panel is able to withstand wind loadings and to dissipate small loadings induced by seismic activity.

4,937,994

COUNTER CEILING COMPRISING A SUSPENDED SUPPORTING SKELETON

Albrecht Ritter, Scheibbserstrasse 119, D-7255 Rutesheim, Fed. Rep. of Germany

Filed Aug. 22, 1988, Ser. No. 234,557
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802309
Int. Cl.[5] E04B 5/55, 5/57
U.S. Cl. 52—488 **18 Claims**



1. A counter ceiling comprising a suspended ceiling supporting formed of a skeleton comprising longitudinal and transverse rails of substantially the same T-shaped cross section, and means for making flush joints between said longitudinal and transverse rails at their points of intersection, whereby each of said longitudinal and transverse rails includes a vertical main web, lower supporting webs projecting sidewise and an enclosed longitudinally extending passage within said main web, and having at least one open end, and connection elements each having a T-shape in cross section, each one of said connection elements having a central mounting web sized and positioned to be received within said passage through said open end in said main web, and laterally extending base webs connected to said central mounting web, said base web being adapted to abut against said vertical main web of a transversely extending rail and to be connected thereto to join together transversely and longitudinally extending rails, said connection element being further arranged such that a front surface of said transversely extending rails are in flush abutment with the outer lateral surfaces of said lower supporting webs.

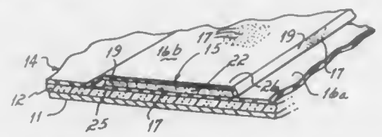
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4,937,995

NONINVASIVELY IDENTIFIABLE MEMBRANE ROOF SYSTEM

Robert J. Deffeyes, Cincinnati, Ohio, and William A. Manly, Arlington, Tex., assignors to Carlisle Corporation, Cincinnati, Ohio

Filed Jun. 16, 1988, Ser. No. 207,709
Int. Cl.[5] B27K *1/00*
U.S. Cl. 52—515 **17 Claims**



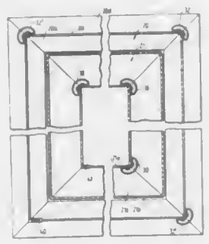
1. A noninvasively identifiable roof system comprising:
a plurality of water impermeable membrane sheets sealed at overlapping edges thereof by lap sealant and adhesive to form one continuous water impervious membrane;
magnetically permeable particles incorporated into at least one component part of said roof system selected from the group consisting of said adhesive, said lap sealant and said membrane sheets, said particles incorporated in sufficient quantity and distribution so as to be electromagnetically detectable.

4,937,996

METAL FRAME ARRANGEMENTS

Arne Karlsson, Lysekil, Sweden, assignor to A/S Spilka Ioco, Ltd., Alesund, Norway

Filed Aug. 17, 1988, Ser. No. 233,338
Claims priority, application Norway, Aug. 24, 1987, 873552
Int. Cl.[5] E04C *2/38*
U.S. Cl. 52—658 **17 Claims**



1. A metal frame comprising
a one-piece metal profile for bending into a rectangular frame, said profile having at least one discontinuous flange with pairs of opposed edges at three respective corners of said frame and a continuous web portion deformably bent into a kidney shape on itself at said respective corners of said frame to press said edges of said flange together in pressed relation.

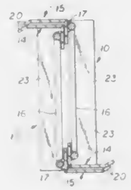
4,937,997

OPEN WEB Z-SHAPED STRUCTURAL METAL BEAM

William G. Thomas, Jr., 1718 Castlerock, Houston, Tex. 77090; John C. Gussett, 11807 Dover, Houston, Tex. 77031, and Clarke H. Stevenson, 1006 Lodge Hill, Houston, Tex. 77090

Continuation-in-part of Ser. No. 31,799, Mar. 30, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 327,700
Int. Cl.[5] E04C *3/02*
U.S. Cl. 52—693 **10 Claims**

1. An open web nestable metal structural beam for use in building construction having a generally Z-shaped transverse cross section which is capable of being nested and joined in lapped relation with like beam members to form a continuous beam comprising;
a top chord member defined by an elongate longitudinal angle member having an L-shaped transverse cross section,
a bottom chord member defined by an elongate longitudinal angle member having an L-shaped transverse cross section,
said top and bottom chords disposed in vertically opposed relation with the vertical leg portions of the L-shapes aligned vertically and the horizontal leg portions of the L-shapes in laterally opposed relation,
the laterally opposed longitudinal edges of the horizontal leg portions of the L-shapes bent angularly relative to the horizontal axis to form vertically opposed longitudinally extending stiffener lips on said chord members,
said chord members and said stiffener lips being configured to receive or be received on identical chord members in a vertically inverted nested relation,
one or more bar members secured at longitudinally spaced intervals to opposite sides of the opposed vertical leg portions of the L-shaped top and bottom chord members



in a longitudinally extending diagonal configuration forming an open web extending between said top and bottom chords,
one or more metal angle members welded vertically between the vertical legs of L-shaped chord members on the side opposite of said open web for increased rigidity of said structural beam in spanning horizontal distances, and
longitudinally spaced holes formed in the vertical leg portions of the L-shaped chords to receive fastener means for joining one said structural beam to another identical said structural beam,
said top and bottom chords, said open web, and said holes through said vertical leg portions being disposed relative to one another such that one said structural beam may be inverted and placed over an identical said structural beam to overlap a portion of their length in a nested 180° vertically inverted side-by-side lapped relation and secured by said fastener means received through said holes in said vertical leg portions to form a single continuous beam wherein said top chord of one beam is nested inside, or, on top of said bottom chord of the other beam and said web bar and vertical angle members are on laterally opposite sides of the assembly.

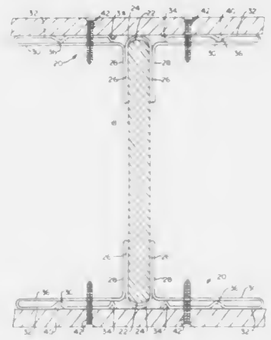
4,937,998

STRUCTURAL MEMBER

Howard Goldberg, 211 Chestnut Ridge Rd., Woodcliff Lake, N.J. 07675

Filed Jun. 17, 1988, Ser. No. 208,347
Int. Cl.[5] E04B *5/52*
U.S. Cl. 52—729 **6 Claims**

1. A structural member suitable for use as a joist comprising:
paired juxtaposed flanges and connecting web extending therebetween, each of said flanges formed from a continuous metal sheet longitudinally bent and folded upon itself and comprising:
(a) a socket for reception of said web, said socket located substantially at the center of said flange and having walls of double thickness; and
(b) paired wings extending from the center of said flange in the same plane and in opposite directions to each other to



define screw-fastening surfaces, each of said wings defined by a continuous length of said metal sheet that is retroverted and folded over itself and defining parallel, spaced-apart layers for the support and screw-fastening attachment of other structural surfaces thereto, wherein the layers of each of said wings are discontinuous from each other and connected only by said socket.

4,937,999

PLATE MADE OF INSULATING MATERIAL, IN PARTICULAR MINERAL FIBERS

Manfred Pankatz, Geldern, Fed. Rep. of Germany, assignor to Deutsche Rockwool Mineralwoll GmbH, Gladbeck, Fed. Rep. of Germany

Division of Ser. No. 052,756, Jul. 27, 1987, Pat. No. 4,879,157, which is a continuation of Ser. No. 811,301, Dec. 16, 1985, abandoned, which is a continuation of Ser. No. 481,447, Sep. 15, 1982, abandoned. This application Nov. 30, 1988, Ser. No. 279,444
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—745 **2 Claims**



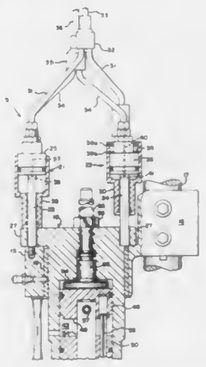
1. A method of manufacturing a plate of insulating material for heat and sound insulation of buildings and for mounting in a space between supports, comprising the steps of forming a body part composed of mineral fiber insulating material and having longitudinal sides arranged to face toward the supports; subdividing the body part by at least one continuous cut which is inclined relative to said longitudinal sides into a plurality of separate parts, inserting the thusly subdivided body part loosely in one row into the space between the supports; and thereafter displacing the parts of said body relative to one another in a direction along said longitudinal sides so as to tightly abut the parts against one another and against the supports and to therefore compensate for differences in a distance between the supports.

4,938,000

VARIABLE LOW-PRESSURE SEQUENTIAL-RETURN FORCE CAP LIFT

Rodney P. Smith, Moline, Ill., and Donald E. Cohrs, Davenport, Iowa, assignors to The Kartridg Pak Co., Davenport, Iowa

Continuation-in-part of Ser. No. 266,507, Nov. 3, 1988, Pat. No. 4,875,324. This application Oct. 19, 1989, Ser. No. 423,873
Int. Cl.[5] B65B *31/06, 31/02, 3/10*
U.S. Cl. 53—88 **13 Claims**



1. In a crimper head for use in introducing fluid under pressure into the mouth of an open container provided with an unsecured closure and thereafter crimping the closure to said mouth comprising, an upper cylinder closed at its upper and lower ends and having flange means which can rest on a support sleeve in which it is vertically reciprocal, a piston operable in said upper cylinder, a lower cylinder attached to said lower end of said upper cylinder and depending co-axially therefrom, a hollow collet co-axially mounted in said lower cylinder, plunger means attached at its upper end to said piston and extending downwardly through a bore in said lower end of said upper cylinder and into said collet for distending the bottom end of said collet, a container-engaging bell surrounding said lower cylinder and the lower end of said upper cylinder and reciprocal with respect to said lower cylinder and said lower end of said upper cylinder, said bell and said lower cylinder having cooperating transverse vacuum-transmitting passageways arranged to register only when said bell occupies a particular vertical position relative to said lower cylinder to thereby establish vacuum communication through said bell and said lower cylinder into an annular clearance region that encircles said collet internally of said lower cylinder and which region opens downwardly into the lower end of said bell for communication with said container, said bell having a second passageway for admitting fluid under pressure into the lower portion of said bell and into a said container engaged by said bell, said upper cylinder having a passageway communicating from its exterior into its interior at a location above said piston and a second passageway communicating from its exterior into its interior below said piston, and all the above mentioned elements of said head except said bell being collectively vertically reciprocal as a unit between raised and lower positions with respect to said bell when the latter stationarily engages a said container and being collectively lifted with respect to said container-engaging bell and said support sleeve when fluid under sufficient pressure is admitted into said bell through said second passageway, the improvement comprising: means for

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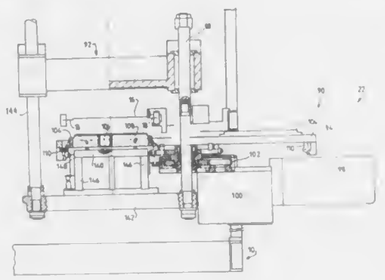
controlling the raising and effecting the lowering of said collectively lifted elements of said crimper head as a unit against the lifting force of fluid admitted under pressure into the lower portion of said bell, comprising fluid pressure exerting cylinder means operatively connected with said upper cylinder and having one operating mode in which said cylinder means controllably resists the raising of said collectively lifted means and a second operating mode in which said cylinder means effects the lowering of said collectively lifted means.

4,938,001

MACHINE FOR CONTINUOUSLY PACKING PRODUCTS IN PARTICULAR FOOD OR PHARMACEUTICAL PRODUCTS IN PLASTIC MATERIAL CONTAINERS

Jean-Marie Vico, Paris, France, assignor to A.R.C.I.L., Chatou, France

Filed Jul. 12, 1989, Ser. No. 378,866
Claims priority, application France, Jul. 13, 1988, 88 09533
Int. Cl.[5] B65B *47/02, 61/00;* **B31F** *5/00*
U.S. Cl. 53—128 **7 Claims**



1. A machine for continuously packing products, in particular, food or pharmaceutical products in plastic material containers, comprising a frame equipped with means for taking up and displacing a plastic material film from one end to the other of the machine and comprising a station for thermoforming the containers, a station for introducing predetermined amounts of products into the containers, a station for sealing the containers and a cutting station, the station for thermoforming the containers comprising a horizontal platen receiving two identical mold parts and means mounting said horizontal platen for rotation about a vertical axis such that each of the two mold parts is moved successively between a thermoforming position and a position for receiving elements for decorating the containers.

4,938,002

APPARATUS FOR ATTACHMENT OF A U-SHAPED METAL CLIP ABOUT THE TAIL END OF A PACKAGE MOVING ON A HORIZONTAL CONVEYOR

Alfred J. Evans, and John T. Stanley, both of Raleigh, N.C., assignors to Delaware Capital Formation, Inc., Apex, N.C.

Filed Nov. 14, 1988, Ser. No. 270,250
Int. Cl.[5] B65B *61/00;* **B23P** *23/04*
U.S. Cl. 53—138 A **2 Claims**

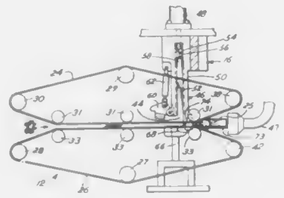
1. Apparatus for attachment of a U-shaped metal clip about the gathered open end of a package which is transported upon a horizontally moving, longitudinal conveyor belt with the gathered open end defining a tail extending vertically upward from the package on the belt, the apparatus being for attaching the clip in a manner which allows the conveyor to continuously transport the package in a forward direction and simultaneously attach a clip to the package, the apparatus comprising:

a clipper mechanism which gathers and affixes a clip about the gathered material of the package, said clipper mechanism including a punch and cooperative die:

generally horizontal, opposed endless belts, positioned in a horizontal plane vertically above the position of the clipper mechanism defining a longitudinal pathway for the tail which pathway is substantially parallel to the conveyor:

means for releasing the tail subsequent to the position at which the punch engages a clip against the die to form the clip about the tail end against the die:

said clipper mechanism mounted generally horizontally below the horizontal plane of the endless belts and including the punch positioned on one side of the pathway of the tail, the clipper mechanism defining a clip and punch channel mounted transverse to said feed direction and the punch slidably mounted for transverse sliding in the clip and punch channel and for driving the clip transversely in the clip and punch channel and the die positioned on the opposite side thereof so that a clip may fit over the tail:



an open throat in the clipper mechanism for receipt of the tail and positioned in the pathway to receive the tail:

a gate for defining at least a part of the clip and punch channel, said gate also for gathering the tail from behind the tail into a compact configuration in the open throat to receive a clip, said gate mounted on the clipper mechanism to swing into and out of the pathway of the tail from behind the tail:

a clip ejector plate positioned adjacent the die and moveable between a position to engage the tail subsequent to clipping and thereby drive and release a closed clip and tail from the die and thereby cause disengagement with the clipper mechanism; and

means for continuously operating the conveyor and the opposed belts at all times during the clipping operation while simultaneously operating the clipper mechanism intermittently in response to positioning of a tail in the open throat.

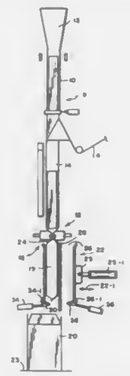
4,938,003

APPARATUS FOR FILLING TWO OR MORE BAGS WITH PRODUCT

John W. Seppala, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Continuation-in-part of Ser. No. 132,343, Dec. 14, 1987, abandoned, and a continuation-in-part of Ser. No. 269,568, Nov. 10, 1988. This application Nov. 23, 1988, Ser. No. 276,180
Int. Cl.[5] B65B *9/08*
U.S. Cl. 53—171 **3 Claims**

1. Apparatus for depositing two or more filled and sealed bags containing product into a single box, comprising means for supporting a box, first means above the support for forming the filling bags with product and sealing the same and means intermediate the support, and second means comprising a shuttle movable side by side or front to back with respect to said first means to successively receive filled and sealed bags and position same when filled with bags above the same box and then releasing the filled bags therefrom for deposit of the bags into the box, said shuttle embodies a plurality of chambers, each of a cross section to receive a bag and of length corresponding to substantially the length of the bag, said chambers being open at their upper and lower ends, said shuttle being movable relative to the bag forming apparatus and to the box to successively receive filled bags from the filling and sealing apparatus and to discharge all of the filled and sealed bags into the box and means for holding the bags and then



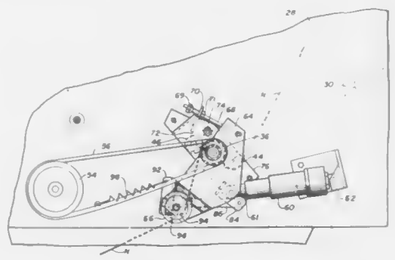
releasing a complement of filled and sealed bags into the box, and means for controlling said last mentioned means to release the bags into the box, wherein there is a divider between chambers extending downwardly to a level below the upper edge of the larger closure flaps and short of the shorter closure flaps.

4,938,004

NET WRAPPING METHOD

John H. Merritt, New Holland, and Robert A. Wagstaff, Lancaster, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 13, 1989, Ser. No. 322,260
Int. Cl.[5] B65B *13/04, 13/22*
U.S. Cl. 53—399 **2 Claims**



2. In a round baler for making cylindrical bales of crop material having apparatus for wrapping said bales with netting material, said apparatus including a knife and a feed roller which may be selectively driven to dispense netting material from a supply roll into said round baler, said apparatus having a home position wherein said feed roller is latched and said knife is retracted and a cutting position wherein said feed roller is latched and said knife is actuated, said apparatus also having a feeding position wherein said feed roller is driven, a method comprising the steps of:

latching said feed roller when said apparatus is in said home position;

unlatching said feed roller when said apparatus is moved from said home position to said feeding position;

relatching said feed roller when said apparatus is moved from said feeding position to said cutting position;

maintaining said feed roller latched as said apparatus is moved from said cutting position to said home position; and

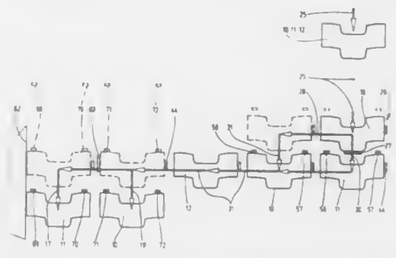
said latching and relatching steps including moving a latch arm toward said feed roller into engagement with said feed roller, and said unlatching step including moving said latch arm away from said feed roller out of engagement with said feed roller.

4,938,005

PROCESS AND APPARATUS FOR THE PRODUCTION OF HINGE-LID PACKS HAVING A COLLAR, ESPECIALLY FOR CIGARETTES

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Jan. 10, 1989, Ser. No. 295,324
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1988, 3800664
Int. Cl.[5] B65B *19/20*
U.S. Cl. 53—410 **14 Claims**



1. Process for the production of hinge-lid packs having a collar, especially for cigarettes, collar blanks being severed from a material web and being laid individually onto a cigarette block to be introduced into the hinge-lid pack, said process comprising simultaneously producing two hinge-lid packs at a time in two production tracks extending next to one another, simultaneously feeding two collar banks (**10, 11, 12**) to a cigarette block (**15, 16**) and severing them successively from a single common material web (**13**), moving the first of said two collar blanks (**10, 11**) as a result of a transverse shift into a position next to the other collar blank (**11**) to be processed simultaneously, and thereafter feeding the two collar blanks (**10, 11**) lying next to one another to associated cigarette blocks (**15, 16**) of the two production tracks (**17, 18**).

4,938,006

METHOD FOR BUILDING UP A GROUND STORE OF PRESSED VEGETABLE MATERIAL

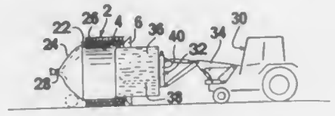
Ebbe Korsgaard, Agerövej 14, Karby, Denmark

Continuation of Ser. No. 638,967, Aug. 3, 1984, abandoned. This application May 5, 1986, Ser. No. 859,788
Claims priority, application Denmark, Dec. 3, 1982, 5366/82
Int. Cl.[5] B65B *9/10, 43/42, 55/00*
U.S. Cl. 53—431 **11 Claims**

1. A method of providing a protected store of pressed material on the ground, the method comprising the steps of successively filling the material into a long hose of a sheet material through a funnel member forming a storage of the sheet material of the hose and from which the sheet material of the hose is caused to be successively paid out by moving the funnel member along the ground in accordance with a build up of material pressed into the ground supported hose behind the

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funnel member, characterized in that the step of filling includes supplying the material to and through the funnel member as conventionally prepressed bail units, which are picked up from a field and brought to the funnel member by a vehicle equipped with a bail seizing and lifting element, and in that the step of



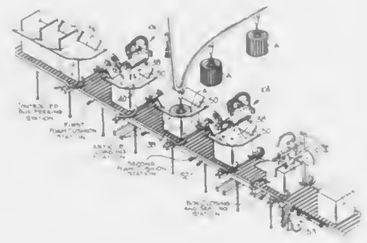
moving the funnel member includes moving said member after each through put of a bail unit in a stepwise forward direction for retraction or pay out of a length of sheet material of the hose sufficient for accommodating the next prepressed bail unit introduced through the funnel member.

4,938,007

APPARATUS AND METHOD FOR FORMING FOAM CUSHIONS FOR PACKAGING PURPOSES

Charles R. Sperry, Springfield, Vt., assignor to Sealed Air Corporation, Danbury, Conn.

Division of Ser. No. 121,223, Nov. 16, 1987, Pat. No. 4,800,708.
This application Dec. 30, 1988, Ser. No. 292,405
Int. Cl.[5] B65B *61/20*
U.S. Cl. 53—449 **3 Claims**



1. A method of protectively packaging one or more articles in a container utilizing a foam cushion as a protective medium for the article or articles within the container, said method comprising

providing a foam cushion forming station and successively forming cushions filled with foam thereat from plastic film material formed into bags, and moving said bags vertically downwardly with a predetermined amount of a foamable composition deposited in the bags for thereafter substantially filling the bag as the composition foams,

successively moving open-topped containers with one or more articles present therein in a predetermined path of travel to and beneath the foam cushion forming station,

dropping a successively formed cushion with foamable material therein from the foam cushion forming station into each container successively positioned therebeneath before the foamable composition in the cushion has completely formed, and with the leading lower end of each dropping cushion oriented to extend transversely of the path of travel of the container to facilitate laying the cushion over the article or articles present in the container, and

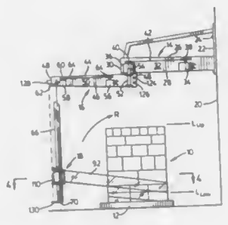
successively closing and sealing the containers before the foamable composition forming the cushion in each container has completely formed.

4,938,008

PALLET WRAPPING APPARATUS

Roy Salzsauler, P.O. Box 271, Georgetown, Ontario, Canada L7G 4Y5

Continuation of Ser. No. 072,146, Jul. 10, 1987, abandoned.
This application Dec. 30, 1988, Ser. No. 292,266
Int. Cl.[5] B65B *13/04*
U.S. Cl. 53—556 **12 Claims**



1. Pallet wrapping apparatus for wrapping pallet loads or the like with a membrane comprising:

(a) support means adapted to be solely supported at one end thereof for general horizontal securement to a vertical wall above said pallet load, said support means defining an enclosure for housing drive means interiorally of said support means;

(b) arm means one end of which is rotatably connected to another end of said support means in the region remote from such structure, said arm means defining an enclosure for housing second drive means interiorally of said arm means;

(c) hollow leg means depending from another end of said arm means for and solely supported by said arm means;

(d) endless chain link means disposed interiorally of said hollow leg means, said endless chain link means engageable with said second drive means;

(e) carriage means carried by said leg means, said carriage means connected to said endless chain link means;

(f) said first drive means adapted to rotate said arm means about said load and dispense said membrane from said carriage means so as to wrap said membrane about said pallet load;

(g) said second drive means adapted to displace said endless chain link means whereby said carriage means is displaced along said hollow leg means between an upper and lower limit during rotation of said arm means about said pallet load so as to wrap said membrane about said pallet load between said upper and lower limits.

4,938,009

AUTOMATIC PACKAGE STRAPPING MACHINE

Masaho Takami, 9-5, Kohrienyamanote-cho, Hirakata-shi, Osaka-fu, Japan

Filed Mar. 31, 1988, Ser. No. 176,172
Claims priority, application Japan, Apr. 25, 1987, 62-63062[U]; Sep. 4, 1987, 62-135919[U]
Int. Cl.[5] B65B *13/06, 13/18*
U.S. Cl. 53—589 **18 Claims**

1. A package strapping machine, comprising:

a machine frame;

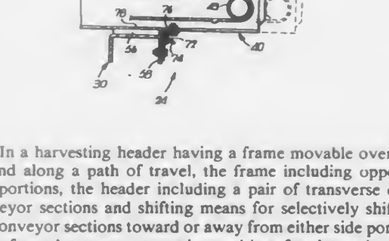
a reel for holding a length of strap disposed adjacent said machine frame;

support means on said machine frame for supporting a package to be strapped;

means for feeding said strap from said reel to a position around said package and for tightening said strap around said package;

means for holding a leading end of said strap when said means for feeding and tightening tightens said strap around said package;

means for storing an excess strap portion generated when said means for feeding and tightening tightens said strap around said package, said means for storing disposed between said means for feeding and tightening and said reel;



means for rewinding said excess strap portion onto said reel; and

resistor means disposed between said means for storing and said reel for providing a tension in a portion of said strap adjacent said reel when said strap is rewound by said means for rewinding;

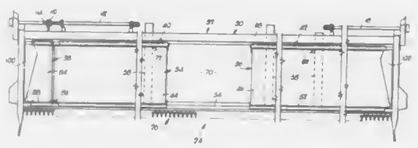
whereby said means for storing and said resistor means enable said strap to be smoothly rewound onto said reel.

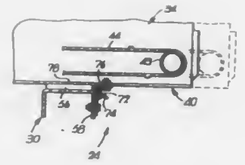
4,938,010

HARVESTING HEADER HAVING ADJUSTABLE WIDTH, DRAPER BELT DISCHARGE OPENING

Ronald K. Guinn, Valley Center; Ray Schmitt, Hesston, and James W. Schroeder, Newton, all of Kans., assignors to Hay & Forage Industries, Hesston, Kans.

Filed May 20, 1988, Ser. No. 196,293
Int. Cl.[5] A01D *34/12, 57/20*
U.S. Cl. 56—181 **5 Claims**





1. In a harvesting header having a frame movable over the ground along a path of travel, the frame including opposite side portions, the header including a pair of transverse crop conveyor sections and shifting means for selectively shifting the conveyor sections toward or away from either side portion of the frame between cooperating positions for alternative left, right or center delivery of severed crops through a discharge opening of a predetermined width in directions laterally of the path of travel, the improvement comprising:

limit means for limiting movement of each of the crop conveyor sections past a predetermined position when that section is shifted toward the closest side portion of the frame, the predetermined width of the discharge opening being defined by the position of the crop conveyor sections when at least one of the conveyor sections is located at the first predetermined position; and

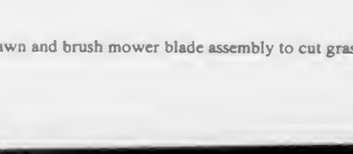
limit stop adjustment means for adjusting the predetermined position at which each of the crop conveyor sections is limited from further movement toward the closest side portion of the frame so that the predetermined width of the discharge opening is made variable.

4,938,011

LAWN MOWER ATTACHMENT FOR SHREDDING AND PULVERIZING

Nicholas L. Pernia, 3029 Wood Rd., Erie, Mich. 48133

Filed Feb. 13, 1989, Ser. No. 310,416
Int. Cl.[5] A01D *34/73, 67/00*
U.S. Cl. 56—255 **21 Claims**



1. For use with a lawn mower of the type including a housing, a cutting blade rotatable within the housing about a central axis for cutting the lawn and a discharge opening in the housing for allowing lawn material cut by the blade to be discharged from the housing, an attachment for shredding or pulverizing said lawn material, said attachment comprising:

a closure removably mountable on said housing over said discharge opening for closing said discharge opening, said closure including an arcuate wall extending along and generally facing a portion of the path of travel of said blade; and,

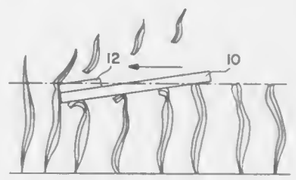
a plurality of cutting members on said closure wall and within said housing in closely spaced relationship to said cutting blade, each of said cutting members including at least a first plurality of cutting elements radially spaced respectively at successively greater distances from said central axis for shredding or pulverizing said lawn material.

4,938,012

CUTTING BLADE FOR CUTTING A PLURALITY OF FLEXIBLE MEMBERS

Walter F. Klima, 59 Chestnut Hill La. S., Williamsville, N.Y.

Continuation of Ser. No. 109,175, Oct. 16, 1987, abandoned.
This application Apr. 24, 1989, Ser. No. 342,590
Int. Cl.[5] A01D *34/63*
U.S. Cl. 56—295 **20 Claims**



1. A lawn and brush mower blade assembly to cut grass and

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brush extending from a substrate such as the ground, said blade comprising:

a support bar having an exposed side facing the substrate during operation of the blade assembly, and an unexposed side positioned opposite to said exposed side;

a cutting bar attachment secured on at least a portion of said unexposed side of said support bar, said cutting bar attachment having a substantially flat leading surface for cutting the grass and brush oriented substantially perpendicular to a path of movement of said support bar during operation of said blade assembly, said substantially flat leading edge being positioned substantially flush with a leading edge of said support bar; and

means for attaching said support bar to a drive for propelling the blade assembly against the grass and brush during a cutting operation.

4,938,013

SPLICING HEAD WITH VARIABLE COMPRESSED AIR ENTRANCE OPENINGS

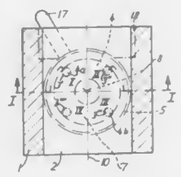
Heinz Zumfeld, Monchen-gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Dec. 19, 1988, Ser. No. 286,357

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1987, 3743516

Int. Cl.[5] D01H *15/00*

U.S. Cl. 57—22 **14 Claims**



1. In a yarn splicing device of the type adapted for splicing a pair of staple fiber yarn ends by compressed air, a stationarily disposed splicing head comprising means defining a splicing chamber for receiving the yarn ends, means defining a slot opening into said splicing chamber for insertion of the yarn ends thereinto, means for selectively defining a pair of compressed air entrance openings for delivering compressed splicing air into said splicing chamber at differing locations therein for selectively generating differing splicing air vortices within said splicing chamber in relation to characteristics of the yarn ends, said means for defining said compressed air entrance openings comprising means defining a plurality of said entrance openings and means movable between differing operative dispositions for selectively opening and closing said entrance openings in predetermined pairs, and means defining a common conduit from a common source of compressed air to each of said compressed air entrance openings for supplying compressed air to said entrance openings, said supplying means including a controllable valve in said common conduit, said movable means comprising a slide member disposed between said supplying means and said splicing chamber.

4,938,014

FUNNEL FOR A FUNNEL SPINNING APPARATUS ON A TEXTILE MACHINE

Horst Wolf, Albershausen, and Stefan Krawietz, Ebersbach-/Fils, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,912

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732967

Int. Cl.[5] D01H *7/26, 7/68*

U.S. Cl. 57—115 **10 Claims**



1. A yarn feedmg funnel for a textile spinning machine, comprising:

an upper shaft portion having an axial yarn passage extending vertically therethrough for passage of yarn therethrough; and

a body portion extending downwardly from said upper shaft portion and having an outlet passage extending from said upper shaft portion passage to an opening in said body portion and having an outer surface of substantially constant inclination with respect to the axis of the funnel, said outer surface beginning at said opening and

extending from said opening over an extent of the body portion sufficient to substantially prevent the yarn from moving radially outwardly away from said outer surface during its travel thereover.

4,938,015

REINFORCING STEEL CORDS

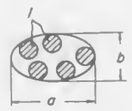
Mitsuru Kinoshita, Tochigi Pref., Japan, assignor to Bridgestone Bekaert Steel Cord Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1989, Ser. No. 376,453

Claims priority, application Japan, Nov. 11, 1988, 63-283975

Int. Cl.[5] D02G *3/48, 3/12, 3/22*

U.S. Cl. 57—200 **5 Claims**



1. A reinforcing steel cord having an open twisted structure obtained by twisting 3 to 6 steel filaments each having an ellipsoidally helical shape, said ellipsoid being represented by the following equation:

$$(x/a)^2+(y/b)^2=t,$$

where:

a is the major axis of the ellipse,

b is the minor axis of the ellipse,

x is the variable major axis of a helically formed filament.

y is the variable minor axis of a helically formed filament

provided b/a: 0.70–0.90, and said cord having a tensile elongation of 0.50–0.90% under a load of 5 kg/cord.

4,938,016

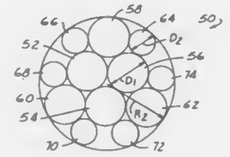
WIRE STRAND FOR ELASTOMER REINFORCEMENT

Glenn E. Braunstein, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1989, Ser. No. 325,982

Int. Cl.[5] B60C *9/00*; **D02G** *3/48*

U.S. Cl. 57—212 **12 Claims**



1. A wire strand for reinforcing elastomers and the like that comprises multiple individual filaments having identical lay direction and length, said filaments being disposed in a core and an outer layer around a common axis in a hexagonally close-packed longitudinally uniform cross sectional outline with each individual filament being tangential to all adjacent surrounding filaments; said core comprising a first number of filaments of a first diameter, and said outer layer comprising a second number of filaments of said first diameter respectively positioned between and adjacent to two filaments of said core, and a third number of filaments of a second diameter respectively positioned between and adjacent to one filament of said first diameter in said core and one filament of said first diameter in said outer layer; said outer layer filaments being so disposed with respect to each other and with respect to filaments of said core that outer edges of all filaments of said outer layer lie substantially on a common radius from said axis.

4,938,017

APPARATUS FOR AUTOMATIC DOFFING AND DONNING OF TUBES IN A TEXTILE SPINNING OR TWISTING MACHINE

Norbert Städele, Göppingen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

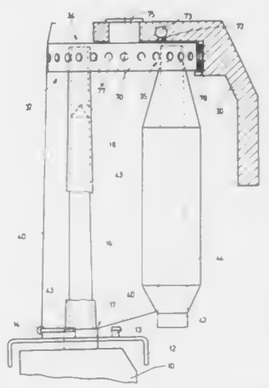
Filed Nov. 20, 1987, Ser. No. 123,171

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1986, 3640002

Int. Cl.[5] D01H *9/04*

U.S. Cl. 57—274 **16 Claims**

1. In a textile spinning or twisting machine or like apparatus of the type having a machine frame, a plurality of spinning stations each having a tube-supporting spindle longitudinally arranged along the frame, transport means extending longitudinally along the machine frame for delivering empty tubes for donning on the spindles and removing tubes fully wound with yarn doffed from the spindles, a gripper beam extending longitudinally along the machine frame with a plurality of gripper means respectively associated with the spinning stations for gripping engagement of fully wound tubes and empty tubes for doffing and donning thereof, each gripper means including a pair of gripper assemblies, the gripper beam being selectively positionable at the spindles and the transport means, and means for controlling the gripper beam and gripper means for successively removing empty tubes from the transport means, doffing fully wound tubes from the spindles, donning the empty tubes onto the spindles, and transferring the doffed tubes to the transport means, apparatus for automatically doffing fully wound tubes simultaneously from the spindles and subsequently donning empty tubes simultaneously onto the spindles, said apparatus comprising a common drive means for the plurality of gripper means for selectively positioning each pair of gripper assemblies relative to the gripping beam alternately in a first position for alignment with respectively associated



spindle for doffing and donning operation with respect thereto and a second position spaced from the first position away from the machine frame.

4,938,018

FRICTION SPINNING MACHINE

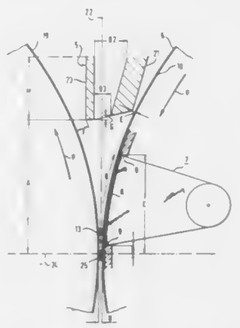
Herbert Stalder, Kollbrunn, and Josef Baumgartner, Sirnach, both of Switzerland, assignors to Rieter Machine Workds, Ltd., Winterthur, Switzerland

Filed Sep. 21, 1989, Ser. No. 410,649

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1988, 3832110

Int. Cl.[5] D01H *4/16, 4/18*

U.S. Cl. 57—401 **4 Claims**



1. A friction spinning machine comprising

(a) a perforated cylindrical roller rotatable in a first direction of rotation and having a suction nozzle therein with an outlet in the form of an elongate slot present between a first longitudinal edge of said suction nozzle and a second longitudinal edge thereof, said edges being disposed very near the inside of a perforated wall of said perforated cylindrical roller;

(b) a second and imperforate cylindrical roller rotatable in the same direction of rotation as said perforated roller, the rotational axis of said imperforate roller extending parallel to the rotational axis of said perforated roller, the two

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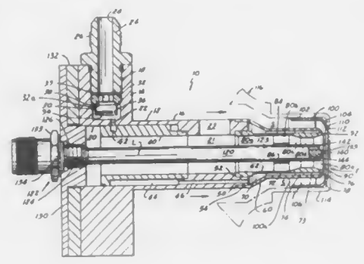
rollers co-operating to bound between them a nip in a plane containing said two rotational axes;
(c) a fiber feed duct which is disposed on that side of the nip where the surface of the perforated roller rotates into the nip and the surface of the imperforate roller rotates out of the nip, said duct having a first longitudinal side wall adjacent said perforated roller and a second longitudinal side wall adjacent said imperforate roller;
(d) the diameter of the two rollers is in the range of from 40 to 60 mm, the ratio of the diameter of the perforated roller to the diameter of the imperforate roller being in the region of from 0.5 to 2;
(e) the distance between the roller surfaces in said nip is between 0.10 and 0.35 mm;
(f) that longitudinal edge of the suction nozzle which is adjacent the nip has a distance from the plane interconnecting the two rotational axes which is in the range of from 2 mm on that side of the plane which is remote from the fiber feed duct to 2 mm on that side of the plane which is near the fiber feed duct;
(g) the second longitudinal edge of the suction nozzle is remote from the plane interconnecting the two rotational axes on that side of such plane which is near the fiber feed duct in a range of from 4 mm to 10 mm;
(h) said first longitudinal side wall of said fiber feed duct forms an angle of from 0° to 20° with a symmetry plane through the nip perpendicularly to said plane interconnecting the two rotational axes, such angle being measured at that end part of said second longitudinal edge which is near the nip;
(i) said second longitudinal side wall of said fiber feed duct forms with said plane of symmetry an angle of from −10° to +10° measured at that end part of said second longitudinal side wall which is near the nip, the fiber being guided on to the perforate roller as far as possible in a plane tangential thereto by selection of the last-mentioned two angles and of the various air flows;
(j) the height of the center-line of the outlet formed by the fiber feed duct longitudinal edges facing the nip is at least 7 mm;
(k) said second longitudinal side wall of said fiber feed duct extends at least as far as, but not much further, towards the plane interconnecting the two rotational axes than said first longitudinal side wall of said fiber feed duct;
(l) the width of the fiber feed duct outlet is in the range of from 0.75 to 2 mm;
(m) the speed of the air flow which guides the fibers in the fiber feed duct is in the region of from 50 to 100 m/sec at the duct outlet;
(n) the negative pressure in the fiber feed duct as measured at a place 10 mm above the outlet is in the region of from 110 mm to 300 mm water column;
(o) the radial distance between the surface of the perforated roller and said first longitudinal side wall of said fiber feed duct is in the range of from 0.1 and 0.5 mm;
(p) the radial distance between the imperforate roller and said second longitudinal side wall of said fiber feed duct is in the region of from 1.0 to 0.5 mm;
(q) the yarn-forming station is disposed between the fiber feed duct outlet and the nip;
(r) the angle α between the central longitudinal axis of the fiber feed duct and the yarn draw-off direction is an acute angle of from 15° to 40°;
(s) the yarn draw-off speed is in the region of from 150 to 300 m/min;
(t) the surface speed of the perforated roller is in the region of from 150 to 1200 m/min; and
(u) the surface speed of the imperforate roller is in the region of from 95 to 105% of the surface speed of the perforated roller.

4,938,019

FUEL NOZZLE AND IGNITER ASSEMBLY

Fenton L. Angell, Novi, and Theodore R. Koblish, Birmingham, both of Mich., assignors to Fuel Systems Textron Inc., Walled Lake, Mich.

Continuation of Ser. No. 109,580, Oct. 16, 1987, abandoned. This application Oct. 18, 1989, Ser. No. 423,653
Int. Cl.[5] F02C 7/266
U.S. Cl. 60—39.06 19 Claims



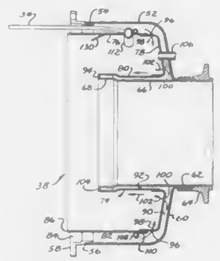
8. A method for starting combustion in the combustor of a gas turbine engine comprising the steps of:
(a) discharging a swirling inner air flow and swirling outer air flow from a nozzle face while discharging a fuel flow from the nozzle face between the inner air flow and the outer air flow to establish a flow field in the combustor of atomized fuel downstream of the nozzle face and downstream of an igniter tip so disposed adjacent the nozzle face that the swirling inner air flow swirls peripherally about the igniter tip, and
(b) establishing a spark discharge from the igniter tip generally longitudinally downstream of the igniter tip out of the path of the inner air flow as it swirls about the igniter tip and discharges from the nozzle face and in the path of the flow field of atomized fuel to ignite same.

4,938,020

LOW COST ANNULAR COMBUSTOR

Jack R. Shekleton; Douglas C. Johnson, and Melvin K. Lafferty, all of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 65,258, Jun. 22, 1987, Pat. No. 4,794,754. This application Dec. 19, 1988, Ser. No. 286,130
Int. Cl.[5] F02C 3/14
U.S. Cl. 60—39.36 12 Claims



1. An annular combustor for a gas turbine comprising:
an annular outer wall;
an annular inner wall within said outer wall and separated therefrom by an annular space;

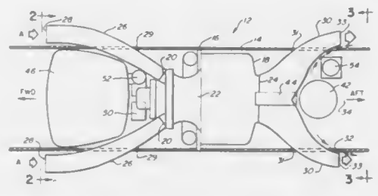
a generally radially extending wall interconnecting said inner and outer walls;
a housing about at least said outer and radial walls and spaced therefrom to define a compressed air annulus exterior of said outer and radially extending walls and adapted to be connected to a compressor for a turbine engine;
fuel injectors extending through the outer wall into the space between the inner and outer walls and oriented to inject fuel in a generally tangential direction within said space; and
means for directing a oxidant into said space in said generally tangential direction whereby fuel and air swirl within said space;
said outer wall being characterized by being imperforate in the section thereof that is in alignment with the path of fuel injection and further characterized by the absence of any means for flowing an air stream of air from said compressed air annulus over said section on the inner side of said outer wall.

4,938,021

SUSTAINER PROPULSION SYSTEM

Anthony C. Jones, and Henry A. Weber, both of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 27, 1988, Ser. No. 263,397
Int. Cl.[5] F02K 3/10
U.S. Cl. 60—263 27 Claims



1. A propulsion system for a missile comprising:
a gas turbine engine including a housing located within a circular casing of said missile, said engine including an air inlet to a compressor and an exhaust gas outlet from a turbine;
inlet means located forward of the engine for directing free stream air through the missile casing and into said compressor inlet;
outlet means aft of the engine for directing engine exhaust gas through the missile casing and into free stream air;
engine start means mounted aft of the engine outlet;
fuel storing means mounted forward of the engine within the inlet means;
fuel delivery means associated with said storing means for delivering fuel to the engine; and
means for controlling said engine.

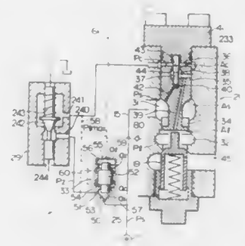
4,938,022

FLOW CONTROL SYSTEM FOR HYDRAULIC MOTORS

Tolchi Hirata, Ushiku, and Yusaku Nozawa, Ibaragi, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1988, Ser. No. 213,107
Claims priority, application Japan, Oct. 5, 1987, 62-249900
Int. Cl.[5] F16H 39/44
U.S. Cl. 60—426 22 Claims

14. A hydraulic excavator comprising: at least one hydraulic pump; a plurality of hydraulic actuators connected to said hydraulic pump through respective main circuits and driven by hydraulic fluid delivered from said hydraulic pump; a plurality of working members including a swing body, boom, arm and bucket, and driven by said plurality of hydraulic actuators, respectively; a plurality of flow control valve means connected to said respective main circuits between said hydraulic pump and said plurality of hydraulic actuators; pump control means for controlling a delivery pressure of said hydraulic pump; each of said plurality of flow control valve means comprising first valve means having an opening degree variable in response to the operated amount of operation means, and second valve means connected in series with said first valve means for controlling a differential pressure between the inlet pressure and the output pressure of said first valve means; and control means associated with each of said plurality of flow control valve means for controlling said second valve means based on the input pressure and the output pressure of said first valve means, the delivery pressure of said hydraulic pump, and the maximum load pressure among said plurality of hydraulic actuators, wherein:
each of said plurality of flow control valve means comprises: a main valve having a valve body for controlling communication between an inlet port and an outlet port both connected to said main circuit, a variable restrictor capable of changing an opening degree thereof in response to displacements of said valve body, and a back pressure chamber communicating with said outlet port through said variable restrictor and producing a control pressure to urge said valve body in the valve-opening direction; and a pilot circuit connected between the inlet port and said back pressure chamber of said main valve;
said first valve means is a pilot valve connected to said pilot circuit for controlling a pilot flow passing through said pilot circuit, and said second valve means is an auxiliary



valve connected to said pilot circuit for controlling a differential pressure between the inlet pressure and the outlet pressure of said pilot valve; and
said control means controls said auxiliary valve means for each of said plurality of flow control valve means associated with at least two working members among said swing body, boom, arm and bucket such that the differential pressure between the inlet pressure and the outlet pressure of said pilot valve has a relationship as expressed by the following equation with respect to a differential pressure between the delivery pressure of said hydraulic pump and the maximum load pressure among said plurality of hydraulic actuators, a differential pressure between said maximum load pressure and the self-load pressure of each of said hydraulic actuators, and the self-load pressure,

$$\Delta Pz = \alpha(Ps - Pl\ max) + \beta(Pl\ max - Pl) + \gamma Pl$$

where
ΔPz: differential pressure between the inlet pressure and the outlet pressure of the pilot valve
Ps: delivery pressure of the hydraulic pump
Pl max: maximum load pressure among the plurality of hydraulic actuators
Pl: self-load pressure of each of the plurality of hydraulic actuators
α, β, γ: first, second and third constants
said first, second and third constants α, β, γ being set to respective predetermined values.

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4,938,023

SWING-FRAME MOTOR FLOW AND SENSED LOAD PRESSURE CONTROL SYSTEM FOR HYDRAULIC EXCAVATOR

Kazunori Yoshino, Kobe, Japan, assignor to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 245,049
Claims priority, application Japan, Sep. 29, 1987, 62-242744
Int. Cl.[5] E02F 9/22
U.S. Cl. 60—427 **11 Claims**



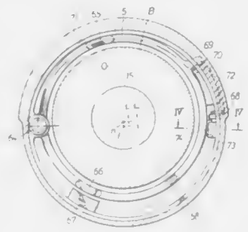
1. A fluid pressure control system comprising
a variable displacement pump of which amount of discharge is variable,
a first selector valve adapted to be selectively held at any one of a neutral position, a first operative position and a second operative position,
a second selector valve adapted to be selectively held at any one of a neutral position, a first operative position and a second operative position,
a first actuator of which action is to be controlled by the shifting operation of the first selector valve,
a second actuator of which action is to be controlled by the shifting operation of the second selector valve,
a first flow control valve for controlling a fluid to be supplied to the first actuator,
a second flow control valve for controlling a fluid to be supplied to the second actuator,
a feed flow passage connecting the variable displacement pump to the first and second selector valves,
a return flow passage connected to the first and second selector valves,
first and second flow passages connecting the first selector valve to the first actuator,
third and fourth flow passages connecting the second selector valve and the second actuator, and
a main load-detecting flow passage for controlling the amount of discharge of the variable displacement pump,
the first selector valve at the first operative position permitting communication of the feed passage with the first flow passage and also the return flow passage with the second flow passage,
the first selector valve at the second operative position permitting communication of the feed passage with the second flow passage and also the return flow passage with the first flow passage,
the first selector valve at the neutral position shutting off communication of the feed flow passage and the return flow passage with the first flow passage and the second flow passage,
the second selector valve at the first operative position permitting communication of the feed passage with the third flow passage and also the return flow passage with the fourth flow passage,
the second selector valve at the second operative position permitting communication of the feed passage with the fourth flow passage and also the return flow passage with the third flow passage,
the second selector valve at the neutral position shutting off communication of the feed flow passage and the return flow passage with the third flow passage and the fourth flow passage,
the first flow control valve being adapted to control a fluid to be supplied to the first or second flow passage from the feed flow passage when the first selector valve is at the first or second operative position, and
the second flow control valve being adapted to control a fluid to be supplied to the third or fourth flow passage from the feed flow passage when the second selector valve is at the first or second operative position;
wherein a pressure reducing valve and a relief valve are disposed in relation to the second flow control valve, the pressure reducing valve having a primary side and a secondary side wherein the pressure reducing valve reduces the pressure of the fluid supplied to the second actuator through the second selector valve, and the pressure on the secondary side of the pressure reducing valve is controlled by the action of the relief valve which is controlled by an external pilot pressure.

4,938,024

HYDROSTATIC CONTINUOUSLY VARIABLE TRANSMISSION

Takushi Matsuto, Saitama; Tsutomu Hayashi; Yoshihiro Nakajima, both of Tokyo; Kazuhiko Nakamura, Kanagawa, and Atsuo Hojo, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 312,952
Claims priority, application Japan, Feb. 18, 1988, 63-35487; Feb. 19, 1988, 63-36979
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—468 **1 Claim**



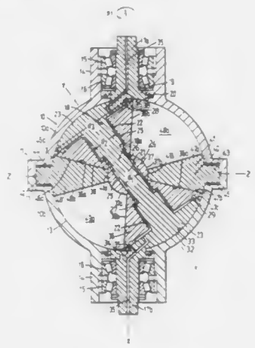
1. A hydrostatic continuously variable transmission comprising a swashplate type hydraulic pump having a pump cylinder which is integrally and coaxially coupled with a motor cylinder of a swashplate type hydraulic motor, an annular higher pressure oil passage communicating with motor ports located in an expansion stroke region of said hydraulic motor, an annular lower pressure oil passage communicating with motor ports located in a shrinkage stroke region of said hydraulic motor, said both oil passages being concentrically formed between the pump and motor cylinders, a large number of radially arranged distributor valves reciprocally movable between radially inner and outer positions to put a large number of pump ports in said hydraulic pump into alternate communication with said higher and lower pressure oil passages, and an eccentric ring circumscribed about the distributor valves and connected to an input member of said hydraulic pump for movement between a clutch OFF position and a clutch ON position, so that the distributor valves are con&rolled to put the pump ports located in a discharge stroke region of said hydraulic pump into communication with the higher pressure oil passage and the pump ports located in an intake stroke region into communication with the lower pressure oil passage in a first eccentric position of the eccentric ring and to bring said hydraulic pump into a short-circuited state in a second eccentric position of the eccentric ring, said eccentric ring including a clutch spring connected thereto for biasing the eccentric ring toward said clutch OFF position, and a weight added thereto and adapted to exhibit a centrifugal force for moving the eccentric ring toward said clutch ON position against a spring force of the clutch spring.

4,938,025

POWER CONVERSION MACHINE HAVING PISTONS WHICH ARE MOVED IN A TURNING MOVEMENT IN A SPHERICAL HOUSING

Thor Larsen, Fyllingsdalen, Norway, assignor to 3D International A/S, Oslo, Norway

PCT No. PCT/NO87/00074, § 371 Date Jul. 12, 1988, § 102(e) Date Jul. 12, 1988, PCT Pub. No. WO88/03986, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 16, 1987, Ser. No. 217,825
Claims priority, application Norway, Nov. 24, 1986, 864684
Int. Cl.[5] F02G 1/044, 1/05; F01C 3/06
U.S. Cl. 60—518 **9 Claims**



1. A power conversion machine comprising
a spherical housing;
a piston construction mounted in said housing for rotation about a first axis, said piston construction including a central hub portion with part-cylindrical surfaces and a pair of double acting pistons, each piston being connected on an opposite side of said hub on a second axis passing through said first axis at a common point in a center of said housing and being in the form of a spherical segment with oppositely directed piston surfaces; and
a partition plate pivotally mounted in and across said housing on a third axis intersecting said common point, said partition plate receiving said hub portion centrally thereof and having bearing surfaces bearing on said hub and part-cylindrical bearing surfaces for slidably receiving said pistons.

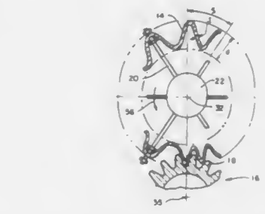
4,938,026

HEAT ENGINE BASED ON SHAPE MEMORY ALLOYS

David Goldstein, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1989, Ser. No. 444,350
Int. Cl.[5] F03G 7/06
U.S. Cl. 60—527 **16 Claims**

1. An engine for converting radiated heat energy into mechanical energy comprising a tube made of sheet material with shape memory properties having axially extending corrugations thereon, a toothed roller in meshing engagement with said corrugations within a cold thermal region, frame means for establishing a pair of fixedly spaced axes and means rotatively positioning the tube and the roller on said fixedly spaced axes restrictively exposing the corrugations to the radiated heat energy and producing a temperature differential with respect to the corrugations in said cold thermal region for inducing rotation of the tube and the roller about said fixedly spaced axes.

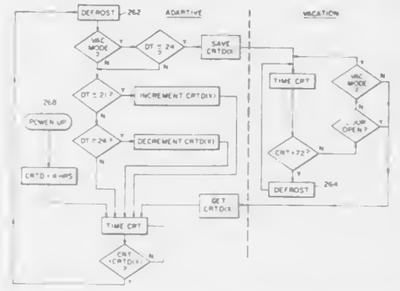


4,938,027

APPARATUS AND METHOD FOR DEFROSTING REFRIGERATOR IN VACATION MODE

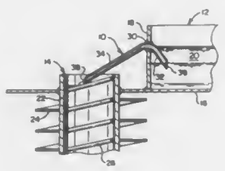
Brian M. Midlang, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Nov. 6, 1989, Ser. No. 432,250
Int. Cl.[5] F25D 21/06
U.S. Cl. 62—80 **12 Claims**



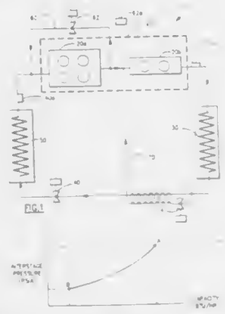
1. The method of controlling the interval between refrigerator defrost cycles in an operator actuated mode 3 wherein, in the normal mode of operation, the duration of a defrost cycle is measured and then the interval to the next defrost cycle is determined in accordance with an inverse relationship to the measured duration, comprising the steps of:
initiating the next defrost cycle according to the scheduled interval as determined in the normal mode of operation before the operator actuation of the operator actuated mode;
initiating defrost cycles in accordance with the normal mode of operation if the measured duration of the next defrost cycle is longer than a predetermined time period; and
initiating defrost cycles at a fixed interval greater than intervals in the normal mode if the next or a subsequent defrost cycle is shorter than a predetermined time period.

4,938,028
REFRIGERANT SOLUTION FLOW CONTROL
Joseph G. Murray, Worthington, Ohio, assignor to Gas Research Institute, Chicago, Ill.
Filed Mar. 30, 1989, Ser. No. 331,676
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—108 3 Claims



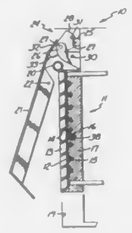
3. In an absorption refrigeration system operating method of initiating through a tube means a flow of refrigeration liquid from a header means liquid pool to heat transfer surface, the steps of:
(a.) flowing refrigeration liquid upwardly through a tube means inlet leg to a tube means bend;
(b.) flowing refrigeration liquid essentially horizontally through said tube means bend by liquid surface level and surface tension effect; and
(c.) flowing the fluid flow through said tube means bend downwardly through a tube means outlet leg to said heat transfer surface by gravitational force and surface tension effect.

4,938,029
UNLOADING SYSTEM FOR TWO-STAGE COMPRESSORS
David N. Shaw, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 3, 1989, Ser. No. 374,907
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—117 11 Claims



1. An unloading system for a refrigeration system comprising:
a first closed fluid loop serially including a first stage of a compressor means, a second stage of said compressor means, a condenser means, expansion means and evaporator means;
a second fluid loop defining bypass means and fluidly connected to said first loop between a first end located intermediate said first and second stages and a second end located intermediate said evaporator means and said first stage;
first valve means located in said second loop for unloading said first stage back to said second end of said second loop;
a third fluid loop defining an economizer means and fluidly connected to said first loop between a first end located intermediate said condenser means and said expansion means and a second end located intermediate said first and second stages;
second valve means in said third loop for providing an economizer flow;
whereby when said first valve means is fully open said second stage alone must handle refrigerant vapor generated by both said evaporator means and said economizer means thereby unloading said refrigeration system.

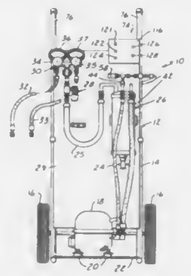
4,938,030
ICE CUBE MAKER WITH NEW FREEZE AND HARVEST CONTROL
Marvin H. Josten, Garner; Terry L. Merrill, Mason City; Kenneth W. Schneider, Mason City, and Robert Putter, Mason City, all of Iowa, assignors to Schneider Metal Manufacturing Co., Mason City, Iowa
Division of Ser. No. 937,931, Dec. 4, 1986, Pat. No. 4,733,539.
This application Mar. 28, 1988, Ser. No. 174,061
Int. Cl.[5] F25C *1/00*
U.S. Cl. 62—126 15 Claims



1. An ice cube maker, comprising
(a) an ice making refrigeration system having a compressor, condenser, evaporator plate, water reservoir, water pump for pumping water in the reservoir over the plate, hot gas defrost valve, and means for control of the defrost valve;
(b) an ice cube storage bin below the evaporator plate;
(c) a normally closed curtain covering the plate, said curtain being normally mounted with respect to the plate and being positively opened by ice cubes falling off the plate;
(d) means for shutting off refrigeration system in response to the curtain being open; and
(e) timer means operatively connected between the curtain and the shut-off means for delaying shut off of the refrigeration system for a predetermined period of time while the curtain is open for establishing with certainty that the bin is full before shut off.

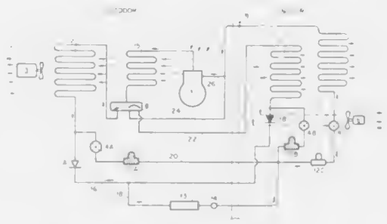
4,938,031
REFRIGERANT RECOVERY AND PURIFICATION SYSTEM
Kenneth W. Manz, Paulding, and Roger D. Shirley, West Unity, both of Ohio, assignors to Kent-Moore Corporation, Warren, Mich.
Division of Ser. No. 204,675, Jun. 9, 1988, Pat. No. 4,809,520, which is a division of Ser. No. 117,098, Nov. 4, 1987, Pat. No. 4,768,347. This application Mar. 3, 1989, Ser. No. 319,618
The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—145 16 Claims

1. A self-contained portable refrigerant recovery system comprising a support; a refrigerant compressor mounted on said support and having an inlet and an outlet; refrigerant evaporator means for adding heat to and evaporating refrigerant passing therethrough; refrigerant condenser means for extracting heat from and condensing refrigerant passing therethrough; means including a first pressure sensor for connecting said compressor inlet through said evaporator means to a refrigeration system from which refrigerant is to be recovered, said first pressure sensor providing an electrical signal as a function of pressure of refrigerant to said evaporator means; means including said condenser means for connecting said compressor outlet to a refrigerant storage container; means responsive to content of said container for sensing impending overfill of said container; and automatic refrigerant recovery control means mounted on said support and comprising a



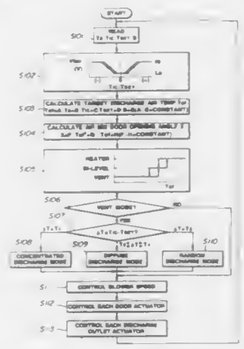
solenoid control means mounted on said support and comprising a solenoid valve for selectively admitting refrigerant to said evaporator means, means responsive to operator actuation for selectively applying electrical power to said solenoid valve and said compressor, means responsive to said first pressure sensor for removing power from said solenoid valve and said compressor, and means responsive to said content-responsive means for inhibiting application of electrical power to said solenoid valve and said compressor when said container is in an impending overfill condition.

4,938,032
AIR-CONDITIONING SYSTEM
Graeme C. Madford, 9 George St., Ferntree Gully, 3156, Victoria, Australia
PCT No. PCT/AU87/00216, § 371 Date May 16, 1988, § 102(e) Date May 16, 1988, PCT Pub. No. WO88/00676, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 14, 1987, Ser. No. 236,650
Claims priority, application Australia, Jul. 16, 1986, PH6961
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—160 4 Claims



1. An air-conditioning system including a compressor, an outdoor heat exchanger, a first indoor heat exchanger, a second indoor heat exchanger, a four-way valve having an inlet and three outlets, the inlet of which communicates with said compressor and the three outlets thereof communicating with one end of a respective one of said heat exchangers, each heat exchanger having a respective expansion valve and electromagnetic shut-off valve in line at the other end of the respective heat exchanger, a piping communicating each heat exchanger with the other, and a branch piping communicating said one end of said second indoor heat exchanger to the return of said compressor.

4,938,033
AUTOMATIC AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES
Yoshiyuki Ogihara; Junichiro Hara, and Hideo Takahashi, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Japan
Filed May 9, 1989, Ser. No. 349,437
Claims priority, application Japan, May 10, 1988, 63-113293
Int. Cl.[5] G05D *23/00*; F25B *29/00*
U.S. Cl. 62—186 10 Claims



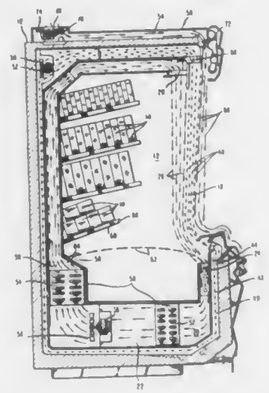
1. An automatic air conditioning system for automotive vehicles having at least one discharge outlet to discharge conditioned air therethrough comprising:
sensor means for monitoring the environmental condition of said vehicular cabin for producing a sensor signal indicative thereof;
variable means associated with said discharge outlet for varying the discharge mode of the conditioned air discharged therefrom, said variable means being operable in a first discharge mode wherein said conditioned air is concentratedly discharged to an occupant of said vehicular cabin, a second discharge mode wherein said conditioned air is discharged in a manner so as to be diffused to all regions within said vehicular cabin, and a third discharge mode wherein said conditioned air is oscillatingly discharged to said occupant; and
discharge control means deriving a control value indicative of a heat demand on the basis of said sensor signal and a target temperature in said vehicular cabin, said discharge control means operating said variable means at said first discharge mode when said control value is within the range of a first predetermined values satisfying a first environmental condition, at said second discharge mode when said control value is within the range of a second predetermined values satisfying a second environmental condition, and at said third discharge mode when said control value is within the range of a third predetermined values satisfying a third environmental condition.

4,938,034

OPENED FRONT REFRIGERATED DISPLAY CASE

Ronald R. Rossato, and George E. Wallace, both of Levittown, Pa., assignors to Hill Refrigeration Corporation, Trenton, N.J.

Filed May 3, 1989, Ser. No. 346,858
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—256 10 Claims



1. An opened front refrigerated display case having multiple front refrigeration control curtain means and supplemental bin cooler means comprising:

(a) a housing means comprising:

(1) a display compartment area adapted for receiving and retaining articles therein;

(2) a display bin area in the lowermost section of said display compartment means for receiving and retaining articles therein;

(3) an open front area to facilitate placement and removal of articles positioned within said display therebelow;

(b) a primary refrigeration means comprising:

(1) a primary refrigeration duct means extending through said housing means, said primary refrigeration duct means defining a primary inlet below said open front area and a primary outlet above said open front area, said primary refrigeration duct means being adapted to expel refrigerated air from said primary outlet to pass over said open front area and into said primary inlet to form a primary refrigeration curtain thereover;

(2) a primary refrigeration coil means positioned within said primary refrigeration duct means to receive air flowing therethrough for refrigeration thereof;

(3) a primary fan means positioned within said primary refrigeration duct means to facilitate air flow therethrough;

(c) a secondary cooling means comprising:

(1) a secondary duct means extending through said housing means, said secondary duct means defining a secondary inlet below said open front area adjacent said primary inlet, said secondary duct means further including a secondary outlet above said open front area adjacent said primary outlet, said secondary refrigeration duct means being adapted to expel air from said secondary outlet to pass over said open front area and into said secondary inlet to form a secondary refrigeration air curtain thereover;

(2) a secondary fan means positioned within said secondary duct means to facilitate air flow therethrough;

(d) an ambient air flow control means comprising:

(1) an ambient duct means extending through said housing means, said ambient duct means defining an ambient inlet in said housing and an ambient outlet within said housing above said open front area, said ambient outlet being adapted to expel air therefrom over said open front area to form an ambient air curtain extending thereover;

(2) an ambient fan means positioned within said ambient duct means to facilitate ambient air flow therethrough; and

(e) a bin area supplemental refrigeration means defining a display bin refrigeration outlet means positioned within said primary refrigeration duct means between said primary refrigeration coil and said primary outlet adjacent said display bin area to flow refrigerated air over said display bin area to facilitate refrigeration thereof, said display bin refrigeration outlet means adapted to expel refrigerated air therefrom across said display bin area into said primary inlet to form a bin refrigeration air curtain extending thereover; and

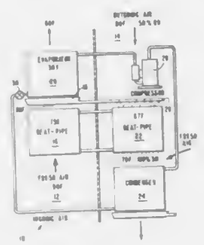
(f) a one-way check valve means extending over said display bin refrigeration outlet means to selectively facilitate air flow outwardly therethrough from said primary refrigeration duct means and to selectively prevent air flow inwardly therethrough into said primary refrigeration duct means.

4,938,035

REGENERATIVE FRESH-AIR AIR CONDITIONING SYSTEM AND METHOD

Khanh Dinh, 1618 SW.76 Ter., Gainesville, Fla. 32607

Continuation-in-part of Ser. No. 110,420, Oct. 20, 1987, Pat. No. 4,827,733. This application Dec. 22, 1988, Ser. No. 288,159
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—279 12 Claims



1. A system, comprising; an ingoing air path for receiving ambient ingoing air and channeling said ingoing air into a structure;

first means mounted in said ingoing air path for moving air through said ingoing air path to provide said ingoing air to said structure;

second means including a first heat exchange coil containing a heat exchange fluid for cooling the ingoing air to a temperature at which a condensate is formed;

an outgoing air path for channeling outgoing air from said structure to atmosphere;

third means mounted in said outgoing air path for moving air through said outgoing air path to exhaust said outgoing air from said structure;

fourth means including a second heat exchange coil containing a heat exchange fluid for transferring heat to said outgoing air wherein the fourth means is a heat pipe, one end of which is positioned in the ingoing air path and the other end of which is positioned in the outgoing air path; and

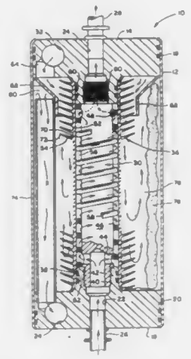
fifth means for channeling said condensate to said second coil to evaporatively cool said second coil.

4,938,036

COMBINATION AIR CONDITIONING ACCUMULATOR AND FUEL COOLER

David H. Hodgkins, Granby, and John J. Foley, Bozrah, both of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

Filed Mar. 6, 1989, Ser. No. 318,958
Int. Cl.[5] F02M *53/00*
U.S. Cl. 62—323.1 19 Claims



1. A combination air conditioning accumulator and fuel cooler unit comprising:

an enclosed housing having a fuel inlet and outlet, and a refrigerant inlet and outlet, said housing including a cylindrical casing and a plug member at each end of the casing, each plug member having a fuel flow bore coaxially aligned with the casing and a refrigerant flow bore at a location radially spaced from a respective fuel flow bore;

fuel flow means within the housing, for confining a flow of hot fuel from the fuel inlet to the fuel outlet;

heat exchanger means in intimate contact with the fuel flow means within the housing, for drawing heat away from the flowing fuel;

each said plug member including a neck portion projecting axially inwardly, each neck portion having a radially inner portion into which said fuel flow means is secured, and a radially outer portion onto which said heat exchanger means is secured;

means defining a refrigerant flow path from the refrigerant inlet to the refrigerant outlet, said refrigerant flow path passing along said heat exchange means so that the refrigerant absorbs the heat drawn from the flowing fuel,

whereby liquid refrigerant entering the unit is evaporated before leaving the unit.

4,938,037

UNIVERSAL ACCUMULATOR

Billy M. Carlisle, Jr., 6415 Jetty, San Antonio, Tex. 78239

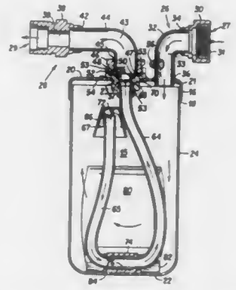
Continuation of Ser. No. 139,858, Dec. 30, 1987, Pat. No. 4,835,986. This application Jun. 2, 1989, Ser. No. 360,442
The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 7 Claims

5. An accumulator, comprising:

a housing having a top;

inlet fitting means connected to said top of said housing and in fluid communication with a cavity within said housing, said inlet fitting means having a service fitting connected thereto and said inlet fitting means having an inlet port;

outlet fitting means connected to said top of said housing in fluid communication with said cavity within said housing, said outlet fitting means having an outlet port; and



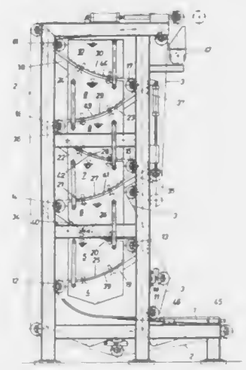
at least one said fitting means being rotatably connected to said housing top so as to permit variable positioning of said outlet port relative to said inlet port.

4,938,038

MATERIAL PROCESSING SYSTEM

Johann Sbaschnigg, and Franz Resch, both of Graz, Austria, assignors to Maschinenfabrik Andritz Actiengesellschaft, Graz, Austria

PCT No. PCT/AT87/00054, § 371 Date Jul. 13, 1988, § 102(e) Date Jul. 13, 1988, PCT Pub. No. WO88/02046, PCT Pub. Date Mar. 24, 1988
PCT Filed Sep. 16, 1987, Ser. No. 199,238
Claims priority, application Austria, Sep. 17, 1986, 2489/86
Int. Cl.[5] D06B *5/02*
U.S. Cl. 68—9 16 Claims



1. A device for the treatment of a material comprising:

a plurality of stationary containers for receipt of a treatment medium, said plurality of containers being superimposed and including a lowermost treatment container and an uppermost treatment container, said containers including means for introducing and discharging the treatment medium, the treatment medium being first fed to the uppermost treatment container;

at least two endless permeable belts for guiding the material therebetween, said belts having an undulating path including a plurality of loops extending about a portion of the underside of the containers;

means for transporting said belts with the material lodged therebetween ascendingly around the treatment contain-

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ers in the path of the belts, said means for transporting conveying the material with the belts first to the lowermost treatment containers;

a single container being disposed within each single loop of the belts; and

a guide for the belts and thus the material, said guide being formed by the underside of the containers, said guide facing an upper side of the belts, the undersides having an opening formed therein for feeding the treatment medium to the belts and to the further treatment containers positioned beneath the container, the walls of the further containers having upper borders, said guide being additionally formed by said upper borders.

4,938,039

ACTUATING MECHANISM FOR PADLOCK

Lo Tzung-I, P.O. Box 96-405, Taipei, Taiwan 10098

Filed May 9, 1989, Ser. No. 349,038
Int. Cl.[5] E05B *67/22*
U.S. Cl. 70—38 A 3 Claims



1. An improved actuating mechanism for a padlock comprising an actuating assembly mounted in said lock in front of a during member of a lock cylinder, and said actuating assembly including:

a cam member in cylindrical shape being mounted in front of a cylinder hole in said lock, and both sides of said cam member being furnished with two curved recesses for installing two steel balls respectively; and the center of said cam member having a hole for receiving a T-shaped bolt; and the front end of said cam member having two opposite lugs;

a front guide plate having two symmetrical indented edges, and having a hole in the center thereof, and said front guide plate being mounted against said two lugs of said cam member, and said two indented edges being mounted within and against said two lugs respectively;

a return spring being mounted on the outer side of said front guide, and the inner end of said return spring being pivotally connected with a T-shaped bolt, while the outer end of said return spring having a straight portion to be connected with a cylindrical block which is fitted in a block hole in the body portion of said padlock;

a rear guide plate having a hole in the center thereof, and being mounted on the outside of said two lugs;

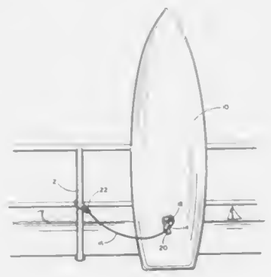
a T-shaped bolt, of which the bolt stem penetrates said rear guide plate, said return spring, said front guide plate and said cam member, and then being fixed in place with a pin; and said bolt stem having a square groove for fixedly mounting the inner end of said return spring, while the other end of said bolt stem having a rectangular plate to be engaged with a rectangular groove on said driving member.

4,938,040

SECURING DEVICE FOR SURFBOARDS

William J. Humphreys, Jr., 26981 Ayamonte, Mission Viejo, Calif. 92692

Filed Jan. 12, 1990, Ser. No. 464,007
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 2 Claims



1. A device for securing surfboards and other relate recreational implements to a fixed object comprising,

a mechanism capable of being locked with a typical mid-sized padlock to a metal pin contained within a leash plug contained with a surfboard, said mechanism having an opening capable of accepting a shackle of a padlock, said mechanism having attached at one end a length of cable, said cable having a fixed loop at end opposite said mechanism, said loop in said cable having an inner diameter large enough to allow the passage of said mechanism, as to allow the user to wrap said mechanism and said cable around a fixed object, then pass said mechanism through said loop prior to securing said mechanism to said leash plug and locking in place with said padlock,

a generally circularly symmetric, longitudinally elongated body,

said body having a generally cylindrical shaped center,

said body having a hole extending radially through said center,

said body having a taper at the rear end to a smaller diameter rear cylindrical section,

said body having a taper at the front end to a smaller diameter front cylindrical section,

said front section of said body having a semi-circular cross section notch extending transversely through said front section,

said body having a pin extending radially outward from said center section,

said body having a length of cable securely attached to said rear end,

a hollow cylindrical sleeve having an inner diameter slightly larger than the outer diameter of said center of said body adapting said sleeve to slide longitudinally downwards on said body,

said sleeve having a rear section tapering to a smaller diameter tubular front section

said front section of said sleeve having an inner diameter slightly larger than the outer diameter of said front section of said body,

said sleeve having a longitudinal groove complementarily shaped to said pin in said body to secure said sleeve against rotation relative to said body while said sleeve slides with respect to said body,

said front section of said sleeve having a transversely disposed cross section notch extending longitudinally,

said sleeve having two opposite holes extending radially through center of said sleeve,

said length of cable having a fixed loop at end opposite said body,

said fixed loop having an inner diameter larger than the outer diameter of said sleeve

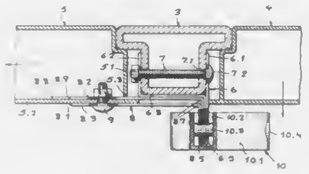
said body, said sleeve, and said cable to be joined in such a manner as to allow the user to put said cable around a fixed object and attach said body and said sleeve to the metal pin contained within the leash plug of a surfboard in such a manner that when said sleeve is slid forward on said body, said notch in said sleeve is radially aligned with said notch in said body causing said metal pin contained in said leash plug to be captivated, further when said sleeve and said body are aligned in such a manner as to contain said metal pin of said leash plug, said hole in said body and said holes in said sleeve are aligned in such a manner as to allow the shackle of a padlock to be passed through said hole in said body and said holes in said sleeve, thereby locking said device to said leash plug and hence securing said surfboard to said fixed object.

4,938,041

LOCKING ASSEMBLY FOR A DOOR STRUCTURE

James O'Gara, 444 W. 258th St., Riverdale, N.Y. 10471

Filed Jun. 20, 1989, Ser. No. 369,537
Int. Cl.[5] E05B *65/08*
U.S. Cl. 70—95 14 Claims



1. A locking assembly for a door structure having a stationary portion and a hinged portion swingable into an open position past an edge of said stationary position, said locking assembly comprising:

a strap mounted one of said portions and formed with a projection adjacent a separation between said portions and said edge, said projection extending substantially parallel to an opening swing of said hinged portion past said edge, said projection being formed with at least one aperture; and

a lock removably mounted on said projection and having a shaft traversing said aperture, said lock having a body which extends across the separation between the portions, directly abutting a surface of the other of said portions adjacent said edge and blocking both portions of said door structure and acting to prevent the opening swing of said hinged portion without being fixed to said other of said portions, said body of said lock being cylindrical and formed with an elongated groove across which said shaft can move transversely, said groove being adapted to receive said projection in a releasably lockable manner while presenting a closed outwardly facing surface.

4,938,042

SHIFT LEVER LOCKING APPARATUS

Tadao Muramatsu, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 21, 1988, Ser. No. 260,677
Claims priority, application Japan, Oct. 27, 1987, 62-164093[U]
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—245 9 Claims

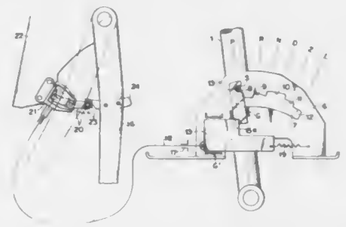
1. In combination with an automobile having a pivotally movable brake pedal and a shift lever adapted to be pivotally rotated and set at any desired one of positions corresponding to a plurality of driving states including a parking state,

an apparatus for locking the shift lever, comprising

a detent pin associated with the shift lever so as to by moved up and down by push-button manipulation,

a ratchet plate including at least an engagement portion for engaging the detent pin to prevent pivotal rotation of the shift lever when the shift lever is set at the parking state,

means for locking the detent pin, said locking means preventing the detent pin from disengaging from the engagement portion in a locking state, but allowing the detent pin



to disengage from the engagement portion in an unlocking state,

a cam attached to the brake pedal and

a lever having opposite ends and being pivoted at an intermediate portion thereof, said lever being pivotally moved when one end of the lever is urged in one direction by the cam in response to the stepping down of the brake pedal,

a cable connecting the other end of said lever to said lock means and

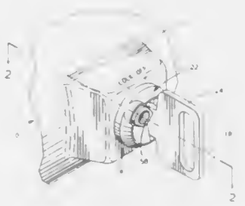
an elongated sheath having opposite ends secured to fixed portions for enclosing the cable.

4,938,043

INHIBITOR FOR COINCIDENTAL LOCK

Larry W. Burr, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1989, Ser. No. 351,107
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—252 5 Claims



1. In a steering column mounted coincidental lock including an armored sleeve rigidly supported on said steering column and defining an annular end wall and a key controlled barrel disposed in said sleeve for rotation relative thereto in an unlocking direction from a LOCK position to and through an OFF position and in a locking direction from beyond said OFF position to said LOCK position,

an inhibitor comprising:

means on said barrel defining an annular shoulder facing said annular end wall,

a blocking means on said armored sleeve extending from said annular end wall and movable from a first position slid-

ably engaging said annular shoulder to a second position substantially retracted within said annular sleeve,

first spring means biasing said blocking means to said first position,

means on said barrel defining a step in said annular shoulder having a flat side intercepted by said blocking means in said first position of said blocking means and in said OFF position of said barrel when said barrel is rotated in said locking direction from beyond said OFF position,

a release means on said barrel adjacent said flat side of said step in said annular shoulder and movable between a retracted position withdrawn into said barrel and an extended position coextensive with said flat side,

said release means in said OFF position of said barrel moving said blocking means from said first to said second position concurrently with movement of said release means from said retracted to said extended position and being intercepted by said blocking means before said OFF position of said barrel is attained when said barrel is rotated in said locking direction from beyond said OFF position and said release means is in said extended position,

second spring means biasing said release means to said retracted position, and

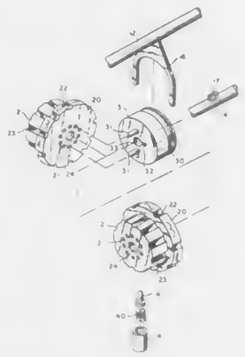
manual actuation means on said barrel connected to said release means for manually moving said release means from said retracted to said extended position.

4,938,044

COMBINATION LOCK WITH VARIABLE CODE

Chin-Chen Chang, No. 27, Lane 107, Mi Tou Road, Chiayi, Taiwan

Filed Oct. 2, 1989, Ser. No. 415,749
Int. Cl.[5] E05B *37/00*
U.S. Cl. 70—315 2 Claims



1. A combination lock with code thereof randomly set comprising:

an oblong casing;

an actuation rod disposed in said casing and supported in place by a wall mounting seat near the left end thereof and by a tubular protrusion having a bias spring located therein at the rightmost end thereof so to permit the actuation rod to resiliently retreated; adjacent to said rightmost end thereof there being disposed a recess at where a first releasing rod having a recess for the passage of said actuation rod is orthogonally engaged with said actuation rod; the leftmost end thereof being in selective contact with a cam contour of a first abutment rod; on the middle of said actuation rod being secured at least two C-shaped actuation claws each having two spaced legs extended downwardly;

a slide rod disposed in parallel with said actuation rod and supported in place at the right end thereof by a wall protruded tube extended from said casing and; in said tube being disposed a spring which is in abutment relation with an enlarged portion of said slide rod at the right end thereof so to keep said slide rod resiliently operated back and forth when actuated and released; a supporting seat being fixed on the wall of said casing for holding the left end of said slide rod in place; next to said slide enlarged portion of the slide rod being disposed a recess which is in selective engagement with a second releasing rod having a recess thereon orthogonally for the passage of said slide rod and being disposed with respect said slide rod; the leftmost end thereof being inselective contact engagement with the cam contour of a second abutment rod; on the slide rod there being disposed at least two square key means each of which is in alignment with a corresponding keyway disposed on a restraint wheel which is in engagement with one of said actuation claw respectively; the right end of said slide rod being retractably extended out of said casing, serving as a latch head;

at least a pair of dial wheels rotatably mounted on said slide rod with part thereof being exposed externally of said casing; on the periphery of each said dial wheel being provided with a plurality of spaced ditches for easy dialing operation thereof, which divided the periphery thereof into ten sections marked by numerals 0–9; and there being ten through holes defined in accordance with said ten sections on the wall of each said dial wheel;

at least two restraint wheels in correspondence to said dial wheels being slidably disposed on said slide rod with each thereof located next to each said dial wheel; the periphery of each restraint wheel being provided with a trough so that each said actuation claw can be engaged therewith; and on side thereof in contact with said dial wheel being provided with a pair of symmetric protrusion rods which are in selective registry with two of said through holes when the restraint wheel is moved by said actuation claw of said actuation rod; the center of each restraint wheel being provided with a central hole with a keyway in correspondence to one of said key on said slide rod, so that when the restraint wheels in engagement with said dial wheels are rotated to right positions with the keys and said keyways being in alignment with each other, and the second releasing rod pressed down at the same time so to make the recess of the second releasing rod come in alignment with slide rod which will be automatically push backward by spring force thereby the latch head is retreated into the casing, effecting the unlocking of the lock;

each said first and second releasing rods being exposed externally of said casing at one end and resiliently biased by a spring at the other end; said spring being located in a wall protruded tube;

a first and second abutment rods each having one end exposed externally of said casing and the other end thereof located in a wall protruded tube with a spring disposed therein to make the abutment rod resiliently operated; at the middle of thereof being provided with a cam contour which can be in urging abutment with the left end of said actuation rod and slide rod respective so to make the same move on the ends thereof being pressed down;

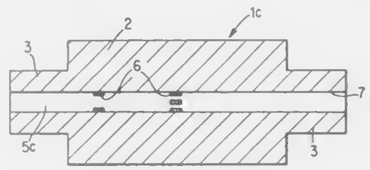
whereby the code can be varied, with said slide rod being in a unlocked position, the operator presses down the first abutment rod to make said actuation rod moving against the biasing spring, in the meanwhile, the first releasing rod is actuated to a position to prevent the actuation rod from resuming its original position; the moved actuation rod will make said restraint wheels disengage with said dial wheels by way of said actuation claws so that said dial wheels are able to be rotated randomly to new positions; afterward, said first releasing rod is pressed down so to let go of said actuation rod, causing the actuation claws to make said restraint wheels to come into engagement with said dial wheels again, then the dial wheels are randomly rotated to complete the setting of a new code.

4,938,045

METHOD OF ASCERTAINING THE MAGNITUDE OF FORCES ACTING UPON ROLLS IN ROLLING MILLS

Hans G. Rosenstock, Robert-Koch-Strasse 8, D-6625 Püttlingen, and Siegfried Wienecke, Kleyer Weg 91d, D-4600 Dortmund-Kley, both of Fed. Rep. of Germany

Filed Oct. 27, 1988, Ser. No. 263,424
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 3736999
Int. Cl.[5] B21B *13/00*
U.S. Cl. 72—19 3 Claims



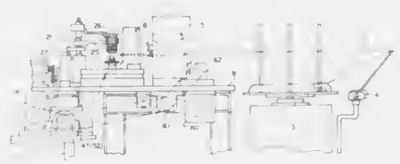
1. A method of ascertaining the magnitude of forces acting upon a roll in a rolling mill, the roll having a main portion and journals at each end of the main portion, comprising the steps of establishing a plurality of deformation monitoring stations; distributing said stations in at least one of two directions including axially and circumferentially of the roll between the two axial ends of the roll; and directly monitoring the extent of deformation of the roll as a result of the application of forces to the roll in the course of the rolling operation at each of said plurality of monitoring stations.

4,938,046

SPRING FORMING MACHINE WITH CONVEYING DEVICE

Ryozou Kodama, and Minoru Yoshida, both of Kyoto, Japan, assignors to Sanko Senzai Kogyo Kabushiki Kaisha, Kyoto, Japan

Filed May 18, 1989, Ser. No. 353,438
Int. Cl.[5] B21F *3/02*
U.S. Cl. 72—135 3 Claims



1. A spring forming machine with an integral conveying device comprising:

feed means for intermittenly severing a prescribed length of an elongate material and feeding it to a forming station having forming means including a plurality of dies for forming said elongate material into a desired shape,

a bench,

a swivel and elevating shaft supported on said bench for vertical movement and swivel movement,

a first arm fixed to an upper part of said swivel and elevating shaft,

a second arm mounted on the swivel and elevating shaft to swivel and elevate with said shaft and to move vertically independently of said shaft,

openable clamp members fitted to the end of said first arm and biased to a closed position,

a member for opening said clamp members fitted to the end of said second arm,

an elevating arm supported on said bench, said elevating arm being parallel to said swivel and elevating shaft and mounted for vertical movement to vertically move said second arm independently of said first arm,

swivel means for reciprocatably swiveling the swivel and elevating shaft,

elevating means for vertically moving the swivel and elevating shaft, and

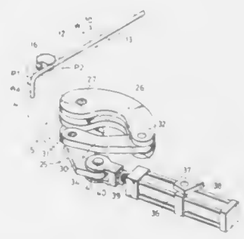
lifting means for elevating the elevating arm, wherein said swivel means is operative to swivel said swivel and elevating shaft to move said clamp members between a first position above said forming station and a next process position, said elevating means is operative to lower said clamp members at said first position to engage formed material and then raise said clamp members vertically at said first position and lower said clamp members at said next process position, and said lifting means is operative at said next process position to lower said elevating arm and said member for opening said clamp members toward said first arm to open said clamp members and release said formed material at said net process position, and said swivel means, elevating means and lifting means are operated in relation to said forming means to clamp each formed material as it is formed at said forming station and move it to said next process position.

4,938,047

BENDING MACHINE

Teruaki Yogo, Aichi, and Junsuke Inoue, Seto, both of Japan, assignors to Kabushikikaisha Chuodenkiseisakusbo, Aichi, Japan

Filed Nov. 8, 1989, Ser. No. 433,095
Claims priority, application Japan, Nov. 24, 1988, 63-296988
Int. Cl.[5] B21D *7/04*
U.S. Cl. 72—149 5 Claims



1. A bending machine comprising

(a) a base frame,

(b) a bend arm mounted on a forward end of said base frame for turning movement about a first pivot axis 01,

(c) a bend die in coaxial relationship with said first pivot axis,

(d) a clamp die mounted on said bend arm for movement toward and away from said bend die for to said bend die and

(e) a drive mechanism connected to said bend arm for turning said bend arm about said first pivot axis,

said drive mechanism including

a drive arm mounted on siad base frame for turning movement about a second pivot axis 02 positioned rearwardly relative to said first pivot axis,

an expanding and contracting drive means connected to said drive arm for turning said drive arm about said second pivot axis, and

a link with one end thereof pivotally connected to said bend

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arm at a pivot point A spaced from said first pivot axis and with another end thereof pivotally connected to said drive arm at a pivot point B spaced from said second pivot axis, wherein a relationship among distances 01-A, 02-B and 01-02 between said first pivot axis 01, said second pivot axis 02, said pivot point A of said link on said bend arm and said pivot point B of said link on said drive arm satisfies the inequalities

$01\text{-}A < 02\text{-}B$ and

$01\text{-}02 < 02\text{-}B$.

4,938,048

GUIDE STRIP CONTROL DEVICE OF PIPE BENDING MACHINE

Jean LaFrasse, Dardilly, and Jean-Paul Chastan, Ecully, both of France, assignors to Picot, S.A., Tassin La Demi Lune, France

Filed Dec. 2, 1988, Ser. No. 278,962
Claims priority, application France, Dec. 2, 1987, 87 17184
Int. Cl.[5] B21D *7/04, 9/05*
U.S. Cl. 72—154 5 Claims



1. A guide strip control device for controlling a one piece guide strip in a pipe bending machine, said guide strip being positioned laterally against a pipe in a location behind a portion of the pipe to be bent by a bending die, the pipe being held and moved along a longitudinal axis by a carriage comprising:

first means for controlling movement of the one piece guide strip transverse to the longitudinal axis of the pipe to be bent over a first relatively long distance sufficient to disengage the pipe entirely from a gripping position and to allow movement and positioning of the carriage; relatively close to the bend die without interference from said guide strip to permit further bending of the pipe adjacent to an end of said pipe gripped by said carriage while said guide strip is spaced laterally from said pipe by said long distance; and

second means for controlling movement of the one piece guide strip transverse to the longitudinal axis of the pipe to be bent over a second relatively short distance so that the pipe is freed laterally but remains supported by a portion of the guide strip, said second means being distinct from said first means.

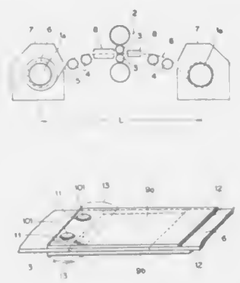
4,938,049

WARM ROLLING METHOD FOR HIGH SILICON STEEL STRIPS

Sadakazu Masuda; Fumio Fujita; Tadayoshi Murakami; Masahiko Yoshino; Ryuichi Yagi, and Masamoto Kamata, all of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00490, § 371 Date Dec. 20, 1988, § 102(e) Date Dec. 20, 1988, PCT Pub. No. WO89/11349, PCT Pub. Date Nov. 30, 1989
PCT Filed May 23, 1988, Ser. No. 295,040
Int. Cl.[5] B21B *1/22, 1/32, 3/00*
U.S. Cl. 72—202 19 Claims

1. A warm rolling method for a high Si steel strip having a first end and a second end, comprising connecting a first leader strip to said first end and a second leader strip to said second end, said leader strips having excellent cold workability and excellent warm workability, connecting the free end of said first leader strip to a first tension reel, connecting the free end of said second leader strip to a second tension reel, and warm rolling on the steel strip by means of reducing rolls, said warm



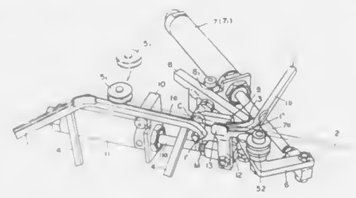
rolling method including the steps of rotating said tension reels to draw the strip through said reducing rolls to warm roll the strip.

4,938,050

SMALL-DIAMETER METALLIC CONDUIT BENDING MACHINE

Sadao Kimura, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Nagasawa, Japan

Filed Jun. 22, 1989, Ser. No. 369,850
Int. Cl.[5] B21D *7/024*
U.S. Cl. 72—306 15 Claims



1. A small-diameter metallic conduit bending machine for bending a metallic conduit into a finished curved shape, said machine comprising:

a frame having a shape subsantially conforming to the finished curved shape of the metallic conduit over the whole length,

a first bending station being provided on the frame and including a first guide surface having a curvature in its lengthwise direction and extending substantially orthogonal to a first bend plane in its widthwise direction,

a second bending station being provided on the frame and including a second guide surface extending substantially parallel to a second bend plane and a curved guide member which is secured to the frame substantially orthogonally to the second guide surface, and

a bending member which is selectively movable toward and away from the frame by an bending member actuator attached to the frame such that the metallic conduit is bent soo as to lie along at least one surface selected from the first guide surface in the first bending station and the second guide surface and the guide member in the second bending station,

said machine being further characterized in that for the purpose of preventing the metallic conduit from interfering with other parts of the machine, a floor or the like when the metallic conduit is bent by the bending member,

a portion of the frame is separated from the remainder of the frame including the first bending station,

the separated frame portion including the second bending station is pivotably connected to the remainder of the frame at a position in the vicinity of the first bending station,

the separated frame portion is selectively displacable by a frame actuator from a first alignment where start-of-bending positions of the first and second bending stations are angularly aligned to a second alignment where the start-of-bending positions of the first and seconnd bending stations lie substantially on a single straight line, whereby bending work can be performed initially in the second bending station by moving the bending member towards the frame with the start of bending positions being on the straight line, and

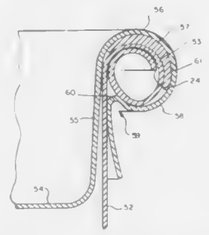
then, the bending work can be performed in the first bending station with the metallic conduit being held down in both bending stations and with the bending work being performed by pivoting both the separated frame portion on the side of the second bending station to its first alignment by means of the frame actuator and the bending member with the second bending station.

4,938,051

METHOD OF FORMING A DRUM OR PAIL CLOSURE

Douglas C. Duffy, West Ryde, and Richard D. Temby, Woodville West, both of Australia, assignors to Rheem Australia Limited, Sydney, Australia

Filed Aug. 6, 1986, Ser. No. 893,790
Claims priority, application Australia, Dec. 7, 1984, PG8469; Sep. 30, 1985, PH2676
Int. Cl.[5] B21D *22/00*
U.S. Cl. 72—356 11 Claims



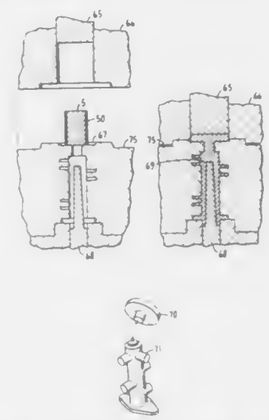
1. A method of forming an outwardly rolled curl as the top rim of a tubular open head sheet metal pail to adapt said pail to receive a lug cover lid, comprising the steps of forming a primary curl in the top peripheral edge of said rim, and then forming a secondary curl of larger cross-sectional dimensions as a continuation of said primary curl, said primary curl being contained within said secondary curl such that the peripheral edge of said primary curl is curled through at least 270° with respect to the cylindrical wall of said pail wherein said secondary curl is formed by further curling said peripheral edge of said primary curl through at least an additional 270° such that said secondary curl has a height to diameter ratio of about 1.25 to 1 prior to securing said lug cover lid thereto.

4,938,052

CAN CONTAINMENT APPARATUS

Kenneth P. Young, Chesterfield, and Alan A. Koch, Maryland Heights, both of Mo., assignors to Alumax, Inc., Norcross, Ga.

Filed Jul. 8, 1986, Ser. No. 883,324
Int. Cl.[5] B21D *37/16, 43/10*
U.S. Cl. 72—361 1 Claim



1. A method for continuously producing shaped metal parts comprising:

A. providing can-shaped containment means for containing metal preforms;

B. introducing metal preforms into the can-shaped containment means;

C. introducing the can-shaped containment means containing said metal preforms into one or more heating stations such that said preforms become partially liquid and partially solid;

D. transferring said can-shaped containment means containing said preforms from said heating stations to a shaping means while said preforms remain substantially in their partially liquid and partially solid states;

E. introducing both the can-shaped containment means and the preforms into the shaping means; and

F. shaping said preforms while in their partially liquid and partially solid state into shaped metal parts wherein the can-shaped containment means is deformed by said shaping means and is removed from the shaped metal part as an impurity.

4,938,053

FLUID METERING SYSTEM

Peter Jepson, Whitley Bay, and Graham M. Tofield, Wincham, both of England, assignors to Thorn EMI Flow Measurement Limited, Stretford, England

Filed Aug. 26, 1988, Ser. No. 236,879
Claims priority, application United Kingdom, Aug. 28, 1987, 8720357
Int. Cl.[5] G01F *1/28, 5/00, 25/00*
U.S. Cl. 73—3 5 Claims

1. A fluid metering system comprising:

an inlet for receiving fluid to be metered;

an outlet for said fluid;

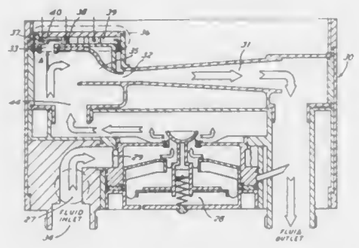
a main flow channel extending between the inlet and the outlet, said main flow channel including a venturi;

a bypass channel having an inlet connected to the main flow channel upstream of the venturi and an outlet communicating with said main flow channel within the venturi, whereby the pressure drop between the inlet and the

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outlet of the bypass channel is greater than the pressure drop between the inlet and the outlet of the main flow channel;

flow monitoring means disposed in the bypass channel for monitoring the flow of fluid therethrough; and



output means responsive to said flow monitoring means to produce an output representative of the total amount of said fluid flowing through the metering system;

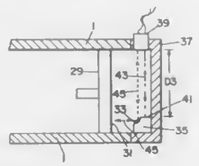
wherein said flow monitoring means comprises at least one microbeam sensor formed by micromachining in a semiconductor substrate wherein a beam is displaced by the fluid flow.

4,938,054

ULTRASONIC LINEAR METER SENSOR FOR POSITIVE DISPLACEMENT METER

G. Frank Dye, and John S. McSpadden, both of Greensboro, N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed May 3, 1989, Ser. No. 346,904
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 **21 Claims**



1. A system for real-time measurement of the volume of liquid passing through a metering pump prior to delivery to a nozzle, said metering pump including at least one piston that moves on a downstroke within a cylinder, when liquid is forced under external pressure into said cylinder, and delivers a measured amount of liquid to said nozzle on an upstroke of said piston, said system comprising:

first transducer means mounted upon an uppermost portion of a sidewall of said cylinder, for transmitting and receiving signals along a signal path transverse to the longitudinal axes of said piston and cylinder;

first signal reflecting means rigidly mounted within said cylinder opposite said transducer means and in alignment with the transverse signal path, for reflecting said signal from said transducer means downwardly along a path substantially parallel to the longitudinal axis of said piston;

second signal reflecting means located upon the face of said piston, for both receiving the signal from said first signal reflecting means and reflecting the signal back thereto, said first signal reflecting means thereafter serving to further reflect the signal returned from said piston back to said first transducer means; and

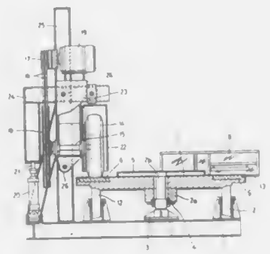
control means connected to said transducer means for periodically energizing said transducer means for transmitting a signal, said control means including receiving means for receiving return signals from said first and second reflecting means via said first transducer means, for both calculating and indicating the volume or amount of fluid being metered through said metering pump analogous to the volume displaced by said at least one piston during the times between periodic energization of said transducer means.

4,938,055

APPARATUS FOR TESTING ABRASION

Isami Tsuda, Kobe, Japan, assignor to Ozeki Chemical Industry Co., Ltd., Kobe, Japan

Filed Jan. 26, 1989, Ser. No. 301,943
Int. Cl.[5] G01N *19/00*
U.S. Cl. 73—8 **7 Claims**



1. An apparatus for testing the degree to which a test piece abrades, said apparatus comprising:

a turntable rotatably supported in the apparatus, said turntable having a test piece-inserting portion defined thereon for receiving a test piece;

a cooling or high-temperature chamber confronting said turntable and open to said turntable at a location past which said test piece-inserting portion is moved when said turntable is rotated in the apparatus, said cooling or high-temperature chamber including heating and cooling means selectively operable for allowing the interior of said chamber to be heated and cooled;

a rotatable grinding member for abrading a test piece received in said test piece-inserting portion; and

support means supporting said grinding member in the apparatus and for moving said grinding member between a first position at which the grinding member is disposed away from said turntable and a second position at which said grinding member is operative to rotate in contact with a test piece received in said test piece-inserting portion and rotate said turntable, said second position being defined in the apparatus at another location past which said test piece-inserting portion is moved when said turntable is rotated in the apparatus.

4,938,056

DETERMINING THE AIR PERMEABILITY OF A TIRE

James L. DeRudder, Mt. Vernon, Ind.; Kenneth M. Schur, Middleburg, Hts., and John P. Porter, Cuyahoga Falls, both of Ohio, assignors to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed May 30, 1989, Ser. No. 358,757
Int. Cl.[5] B60C *23/04*; G01M *17/02*
U.S. Cl. 73—49 **27 Claims**

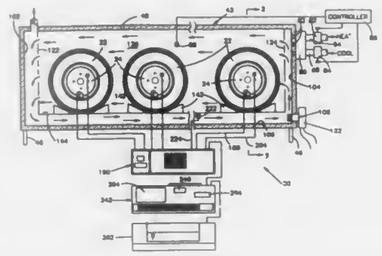
13. An apparatus for determining the air permeability of a tire, said apparatus comprising:

means for mounting the tire in an inflated condition;

tire pressure sensing means in fluid communication with the interior of the inflated tire for sensing the fluid pressure in the tire and for generating an electrical signal in proportion to the fluid pressure sensed in the tire;

temperature sensing means adapted for attachment to said mounting means for sensing the temperature adjacent the tire and for generating an electrical signal in proportion to the temperature sensed adjacent the tire;

data acquisition means in electrical communication with said tire pressure sensing means and said temperature sensing means for receiving the electrical signals generated by said respective sensing means at a substantially simultaneous time and for converting the electrical signals to digital information;



computer means in electrical communication with said data acquisition means for receiving the digital information and for calculating a value representative of a corrected pressure in the tire as a function of the digital information;

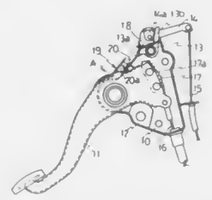
storage means for storing a plurality of values representative of corrected pressure in the tire; and first program means to linearize the plurality of values to provide another value representative of the rate of change of pressure in the tire.

4,938,057

PARKING BRAKE DEVICE

Takeo Yamazaki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 24, 1989, Ser. No. 314,967
Claims priority, application Japan, Feb. 26, 1988, 63-25806[U]
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **4 Claims**



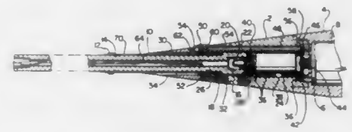
1. A manipulating device for a parking brake comprising a bracket secured to a vehicle body, a parking brake actuating means movably positioned on said bracket, leaf spring means having one end secured to one of said bracket and said parking brake actuating means and a switch mounted on one of said bracket and said parking brake actuating means, a switch actuating means brought into contact with the opposite end of said leaf spring means when said parking brake actuating means is in a first position, stopper means secured to said bracket and positioned to be contacted by said parking brake actuating means when said parking brake actuating means is rotated clockwise to a non-actuated state, said clockwise rotation initiating contact between said leaf spring and said switch actuating means so as to move the switch to an off condition, and a region of said opposite end of said leaf spring being elastically retained with a predetermined bent condition which is opposite to a direction of movement of said switch actuating means as determined by movement of said parking brake actuating means.

4,938,058

ELECTRICAL FLECHETTE SPIN RIG FOR WIND TUNNEL TESTING

Bertrand Girard, Sillery, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Sep. 28, 1989, Ser. No. 413,767
Claims priority, application Canada, Oct. 14, 1988, 580548
Int. Cl.[5] G01M *9/00*
U.S. Cl. 73—147 **5 Claims**



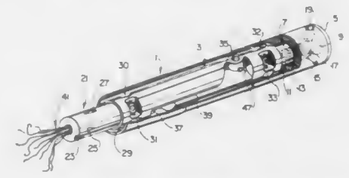
1. A sting for supporting and spinning small diameter models in a wind tunnel consisting of a rear section securable within a standard wind tunnel, a cone shaped region at the front end of the rear section and a small diameter, model supporting, front section upon which a balance and a model can be mounted; an electric motor within the rear section aligned along the sting axis; a drive gear mounted on the motor shaft; a driven shaft parallel to the motor shaft and extending from the motor to the cone shaped region, a driven pinion at the rear end of the driven shaft in meshing contact with the drive gear, a drive pinion at the front end of the drive shaft, a driving sleeve on the front section having a driving gear secured to its rear end and in engagement with the drive pinion, and a pair of spigots at the front end of the driving sleeve for contacting a model to be tested.

4,938,059

MONOPIECE STRAIN GAUGE STING MOUNTED WIND TUNNEL BALANCE

Gilles Faucher, Sillery; Marc-André Paradis, Ste-Foy, and Bertrand Girard, Sillery, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Oct. 3, 1989, Ser. No. 416,404
Claims priority, application Canada, Oct. 14, 1988, 580277
Int. Cl.[5] G01M *9/00*
U.S. Cl. 73—147 **8 Claims**



8. A strain gauge balance consisting of an outer longitudinal shell and an inner centre core; the outer shell being generally cylindrical with an open end and a closed end with a frusto conical bore extending towards the closed end, and the inner

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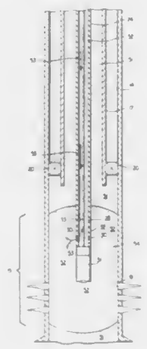
core having frusto conical shaped ends, one end being sized to fit within the frusto conical bore and the other end being sized to fit into a sting, the closed end of the outer shell having an aperture therethrough such that a bolt can pass through the aperture and be accommodated in a threaded bore within the adjacent end of the inner centre core; four radially extending, equally spaced, webs formed within the core and at each end of the core inboard of the frusto conical ends, each web being thicker at its radial edges and its axially oriented edges and tapering to its thinnest at its central radial region at a position approximately onethird along its length, the webs being oriented vertically and horizontally with the vertically oriented webs being thicker than the horizontally oriented webs, a central region of two longitudinal separated, semicircular cross section parts each being formed within the part, with tensioning rings, one disposed diagonally to the other, and a number of strain gauges secured to the webs and the rings to determine induced strain in 6 degrees of freedom, there being a strain gauge secured to each web and to each transverse position on each ring, and an aperture along the axis of the inner centre core so that electrical wires to and from the strain gauges ca be lead through the core and into the sting.

4,938,060

DOWNHOLE INSPECTION SYSTEM

Phillips S. Sizer; Henry P. Arendt, both of Dallas, and Charles C. Cobb, Lewisville, all of Tex., assignors to Otis Engineering Corp., Dallas, Tex.

Filed Dec. 30, 1988, Ser. No. 292,330
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—151 **41 Claims**



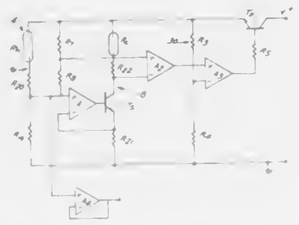
1. A system for inspecting conditions in and around a borehole, comprising:
a length of conduit extending from the surface through the borehole down into the zone where inspection is to occur;
a sensor mounted on the lower end of said conduit for inspecting conditions within the borehole; and
means for pumping from the surface down the conduit into an inspection region adjacent the sensor, a fluid which provides a medium conducive to accurate inspection of conditions within the borehole by the sensor.

4,938,061

CURRENT CONTROLLED ELECTRONIC CIRCUIT FOR A HOT WIRE AIR FLOW METER

Ralph W. Carp, Newport News, Va., assignor to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Filed Sep. 30, 1988, Ser. No. 252,947
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.19 **5 Claims**



1. A current controlled electronic circuit comprising:
power driver means, adapted to be connected to a voltage source for supplying current response to a control signal; and
means for maintaining a desired temperature offset between a first temperature variable resistor and a second temperature variable resistor comprising:
a current bridge adapted to be positioned in an air-flow having a sensing leg including said first temperature variable resistor and a first offset resistor connected in electrical series and a compensation leg including said second temperature variable resistor and a second offset resistor connected in electrical series;
current stabilizing means connected to said sensing leg and compensation leg for causing the current flows in such leg to be a specified ratio, including a first amplifier having its positive input connected to a first resistor which is connected in series with said sensing leg and a second resistor, the output of said first amplifier is connected to a first transistor which completes a series connection between said compensation leg and said second resistor, said first and second resistors are chosen to generate said specified ratio;
a first voltage divider connected across said sensing leg, said divider comprising third and fourth resistors having approximately the same ratio as said first and second resistors;
a second amplifier having a positive input connected to a junction between said third and fourth resistors and its negative input connected to sense the voltage across said compensation leg and an output of said second amplifier communicated to and used to regulate said power driver means.

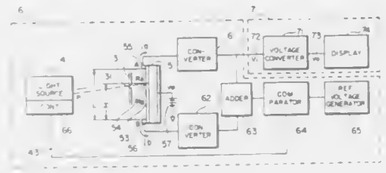
4,938,062

BAROMETRIC METER

Sbuhei Shimizu, Kokubunji; Shotaro Nakabayashi, Kukizaki, and Masahiko Ohgushi, Tokorozawa, all of Japan, assignors to Mimy Electronics Co., Ltd., Tokyo and Sanoh Instrument Co., Ltd., Tsukuba, both of, Japan

Filed Oct. 11, 1988, Ser. No. 255,949
Claims priority, application Japan, Oct. 12, 1987, 62-256508
Int. Cl.[5] G01L *7/06*
U.S. Cl. 73—386 **2 Claims**

1. A barometric meter comprising:
a vacuum chamber having a movable portion which displaces in proportion to atmospheric air pressure;
a light source which is relatively movable with respect to said movable portion of said vacuum chamber;
an aperture plate mounted to said movable portion of said vacuum chamber for movement therewith, said aperture plate having an aperture formed therein for allowing a beam of light emitted from said light source to pass therethrough;
a photo-electric position detector, disposed on the other side of said light source relative to said aperture plate and relatively movable with respect to said movable portion of said vacuum chamber, for receiving the light beam which passes through said aperture in said aperture plate to generate a photo-electric signal from a light-receiving region thereof at which said light beam impinges on said photo-electric position detector;
display means connected to said photo-electric position detector for displaying barometric pressure as a function of said photo-electric signal; said display means comprising a voltage converter connected to said photo-electric position detector for converting an input signal Vi supplied thereto from said photo-electric position detector into an output voltage Vo according to



$$Vo = K_1 \times Vi + K_2$$

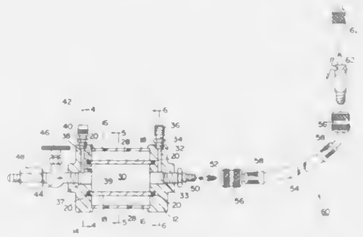
where, K_1 and K_2 are constants; said voltage converter comprising an amplifier connected to said photo-electric position detector for amplifying an output signal from said position detector by a factor of K_1, an adjustable voltage generator for generating a constant voltage K_2, and an adder connected at its inputs to said amplifier and said voltage generator for supplying an output voltage which is a sum of said output signal from said position detector multiplied by K_1 and said constant voltage K_2.

4,938,063

APPARATUS AND METHOD FOR INFUSING A MATERIAL INTO A CLOSED LOOP SYSTEM

Kenneth C. Leighley, Stony Brook, N.Y., assignor to Spectronics Corporation, Westbury, N.Y.

Filed Sep. 13, 1988, Ser. No. 243,758
Int. Cl.[5] G01M *3/22*
U.S. Cl. 73—40.7 **21 Claims**



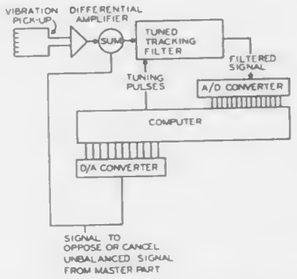
1. An apparatus for infusing a liquid material into an operating pressurized closed loop air conditioning or refrigeration system comprising:
(a) a sealed reservoir having inlet means and outlet means for holding a predetermined amount of liquid material;
(b) a sealable material fill means in communication with the interior of the sealed reservoir for admitting liquid material into the sealed reservoir while substantially maintaining the seal;
(c) means for selectively regulating the inflow of an externally available high pressure system carrier fluid into the reservoir through the inlet means for allowing system carrier fluid to contact the liquid material within the reservoir and form a high pressure system carrier fluid and liquid material mixture; and
(d) means for connecting the outlet means of the sealed reservoir to the closed loop system for allowing the selectively regulated flow of high pressure system carrier fluid and liquid material mixture from the interior of the sealed reservoir to the closed loop air conditioning or refrigeration system.

4,938,064

ELECTRONIC BOBWEIGHT ELIMINATOR

Ronald W. Anderson, Ann Arbor; Leonard J. Salembier, Saline, and Gordon E. Hines, Ann Arbor, all of Mich., assignors to Hines Industries, Inc., Ann Arbor, Mich.

Filed Apr. 17, 1989, Ser. No. 340,144
Int. Cl.[5] G01M *1/16*
U.S. Cl. 73—462 **5 Claims**



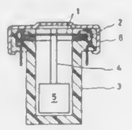
1. A method for rotationally balancing a workpiece, the end use of which is to carry attached bodies of a specified mass in a balanced rotational operation, comprising the steps of:
positioning such workpiece without such attached bodies for rotation;
rotating such workpiece to induce a rotational vibration of such workpiece;
monitoring said rotational vibration of such workpiece and generating an electronic signal representative of said vibration;
processing such electronic signal to determine the amount and location of such rotational unbalance;
generating a second electronic signal representative of any unbalance created by the removal of such attached bodies from such workpiece; and,
applying said second electronic signal to said first electronic signal to offset said first electronic signal by the amount of unbalance created by such removed bodies, whereby the amount of unbalance signal remaining is solely representative of the inherent rotational unbalance of the workpiece as if such workpiece were operating with such bodies attached, said second electronic signal being applied to said first electronic signal prior to said first electronic signal being processed to determine the amount and location of such rotational unbalance.

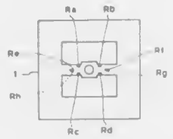
4,938,065

ACCELERATION DETECTING DEVICE

Toshihiro Kobayashi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Mar. 28, 1989, Ser. No. 329,630
Claims priority, application Japan, Mar. 28, 1988, 63-74157
Int. Cl.[5] G01P *15/12*
U.S. Cl. 73—517 R 1 Claim





1. An acceleration detecting device comprising:
an elastic flat plate;
a supporting member secured to opposite ends of said plate;
a weight fixed to a substantially central portion of said plate and extending downwardly from said plate in a vertical direction;
strain detecting means arranged on said plate in a horizontal plane adjacent said weight; and
stress indicating means for indicating an external force being applied to said weight from strains detected by said strain detecting means;
wherein said strain detecting means is comprised of a plurality of pairs of strain detectors disposed in corners of a rectangle symmetrically disposed relative to said central portion of said plate and on each diagonal line of two congruent rectangles on opposite sides of said central portion having side legs in parallel in a direction connecting said both ends of said plate with said stress indicating means indicating an external force applied to said weight in length and width directions from a difference between strains detected by said strain detectors arranged in pairs.

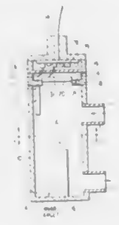
4,938,066

ULTRASONIC APPARATUS FOR MEASURING THE SPEED OF SOUND IN A GASEOUS MEDIUM

John A. Dorr, Crofton, Md., assignor to Xecutek Corporation, Annapolis, Md.

Filed Jan. 29, 1988, Ser. No. 149,816
Int. Cl.[5] G01H *5/00*
U.S. Cl. 73—597 11 Claims

1. Ultrasonic apparatus for measuring the speed of sound in a gaseous medium, comprising:
(1) a closed chamber having a first end and an opposing end,
(2) an ultrasonic transducer mounted at said first end of said closed chamber,
(3) a first ultrasonic reflecting surface mounted at said opposing end of said closed chamber,
(4) a second ultrasonic reflecting surface,
(5) a mounting member having a low coefficient of linear expansion for mounting said second ultrasonic reflecting surface at a predetermined distance spaced from said first ultrasonic reflecting surface and closer to said ultrasonic transducer, and
(6) circuit means connected to said transducer for converting ultrasonic energy reflections from said first and said second ultrasonic reflecting surfaces to a signal corresponding to the speed of ultrasonic energy in said gaseous medium between said ultrasonic reflecting surfaces.

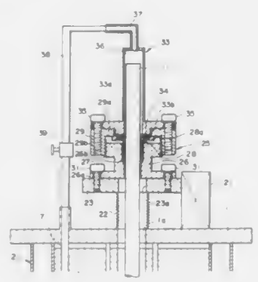


4,938,067

LOW TEMPERATURE ULTRASONIC MICROSCOPE

Koichi Karaki, Hino; Masahiro Aoki, Mizuho; Mitsugu Sakai, and Yasuo Sasaki, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1989, Ser. No. 336,477
Claims priority, application Japan, Apr. 14, 1988, 63-92201
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—606 9 Claims



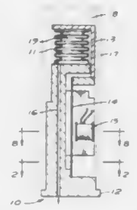
1. A low temperature ultrasonic microscope comprising:
an adibatic container having an opening in the upper part and containing a low temperature liquid which is an ultrasonic wave transmitting medium;
a sample supporting member supporting a sample to be observed, removably inserted into said adiabatic container through said opening and arranged at the upper end out of said adiabatic container;
an ultrasonic wave image observing means which has an acoustic lens arranged within said adiabatic container and projecting an ultrasonic wave beam toward said sample, said means detecting sound waves projected from said acoustic lens and disturbed by said sample and obtaining an ultrasonic wave image;
a housing part housing the upper end part of said sample supporting member; and
a connecting means capable of connecting through a path said housing part and adiabatic container with each other.

4,938,068

PRESSURE TRANSDUCER

David J. Clements, Bexhill, England, assignor to The Slope Indicator Co., Seattle, Wash.

Filed Sep. 28, 1988, Ser. No. 250,179
Int. Cl.[5] G01L *9/00*
U.S. Cl. 73—704 13 Claims



1. A pressure transducer comprising:
(a) a body;
(b) affixed to one end of said body a closed flexible chamber having an extensible end movable along a single axis of extension in a direction away from said body, the interior of said chamber communicating with an external pressure;
(c) a saddle connected to said extensible end, said saddle for interconnecting the extensible end of said chamber to one end of an elongated elastic member in such a way that the centerline of said elastic member lies along said single axis of extension of said flexible chamber, said elongated elastic member attached at one end to said saddle at a point lying along said single axis of extension of said chamber and at the other end to said body at a point lying along said single axis of extension of said chamber, whereby extension of said chamber increases stress within said elastic member;
(d) means positioned to both excite said elastic member into resonant vibration and to generate a frequency related output signal proportional to stress within said elastic member; and
(e) a housing to enclose said flexible chamber within a reference chamber formed thereby, said reference chamber having a reference pressure, whereby an external pressure applied to the interior of said flexible chamber causes said chamber to extend along its single axis against said reference pressure.

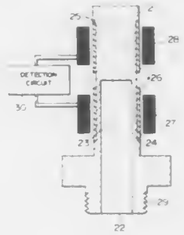
4,938,069

PRESSURE SENSOR

Rihito Shoji, Yawata; Hiroyuki Hase, Katano, and Masayuki Wakamiya, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1989, Ser. No. 421,154
Int. Cl.[5] G01L *9/10*
U.S. Cl. 73—728 7 Claims

7. A pressure sensor comprising
a columnar body with a radius r_o including a pressure introducing opening therein, a deforming part having therein a pressure chamber with a radius r_i which is distorted by a pressure applied through said pressure introducing opening, and a non-deforming part which is not distorted by the pressure;
at least one magnetostrictive amorphous magnetic alloy member secured to said deforming part and said non-deforming part;
coils each disposed respectively at said deforming part and said non-deforming part to form a magnetic circuit in combination with said amorphous magnetic alloy member,
wherein a magnitude of the applied pressure is measured from the difference between inductances of said two coils accompanied with the application of said pressure, and wherein following relationships are satisfied;



$$\epsilon_t > \epsilon_p \tag{1}$$

$$\epsilon_t = |\alpha_a - \alpha_t| \, |T_g - T_m| \tag{2}$$

$$\epsilon_p = \frac{(2 - \nu) r_i^2 P_i}{E(r_o^2 - r_i^2)} \tag{3}$$

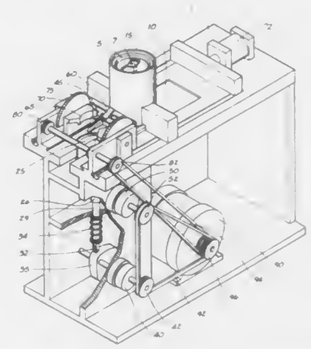
where
α_a: thermal expansion coefficient of the amorphous magnetic alloy,
α_t: thermal expansion coefficient of material of the columnar body,
T_g: adhering temperature of said amorphous magnetic alloy member to said columnar body,
T_m: operating temperature of said sensor,
ν: Poisson's ratio of the material of the columnar body,
E : Young's modulus of the material of the columnar body, and
P_i: maximum applied pressure.

4,938,070

CAN LID TESTER AND METHOD OF USE THEREOF

Robert J. Pessina, St. Louis, and Robert F. Lamping, St. Charles, both of Mo., assignors to J. P. Manufacturing Co., St. Louis, Mo.

Filed Mar. 31, 1989, Ser. No. 332,233
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—835 17 Claims



1. A device for testing a plurality of can lids equipped with a tab operated easy-open feature to determine the proper functioning of said easy-open feature comprising a magazine for holding the can lids which are to be tested; a mechanism which

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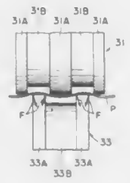
removes one can lid from the magazine and transports said lid to an orientation position; a mechanism which orients said selected can lid until said easy-open feature is in a preselected orientation with respect to a testing mechanism; a testing mechanism consisting of a clamping device which holds said selected lid firmly in position and an activating mechanism which engages said tab of said easy-open feature and rotates said tab through an arc with respect to the plane of said lid thereby activating said easy-open feature in the fashion in which a consumer would activate said feature; and a mechanism for ejecting the tested lid from the device.

4,938,071

DEVICE FOR DETECTING PROPERTIES OF SHEETS OF PAPER OF THE LIKE

Tetsuji Kobayashi; Makoto Akashi; Takahiro Yoshikawa, and Shigeru Kusaka, all of Himeji, Japan, assignors to Clory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Aug. 30, 1989, Ser. No. 401,136
Claims priority, application Japan, Aug. 31, 1988, 63-217298
Int. Cl.[5] G01N *3/20*
U.S. Cl. 73—849 **7 Claims**



1. A device for detecting properties of sheets of paper, comprising:

driving rotary means with a moving surface having alternately disposed raised and recessed portions in a direction transverse to the direction of movement of said moving surface;

means for conveying sheets of paper in contact with said moving surface;

detection rotary means disposed rotatably in opposed relationship with said driving rotary means and having a movable surface with alternately disposed raised and recessed portions which are in staggered, opposed relationship with the raised and recessed portions of the driving rotary means so as to form gaps between the raised portions of the driving rotary means and the raised portions of the detection rotary means, said gaps being arranged to allow the sheets fed by said means for conveying sheets to pass therethrough in a state deformed in a wave shape so that a rotary driving force is imparted from the driving rotary means to the detection rotary means through a sheet passing through said gaps;

resistance imparting means for imparting to said detection rotary means a predetermined rotational characteristic such that depending upon the stiffness of the sheet passing through said gaps in the wave shape, a variation occurs in the degree to which the rotation of the driving rotary means influences the rotational characteristic of the detection rotary means, thus resulting in a variation in the rotary movement of the detection rotary means; and

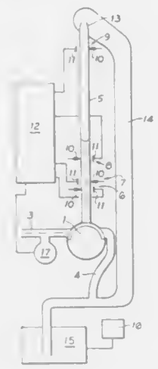
for detecting the variation in the rotary movement detection rotary means to determine the stiffness and hence the degree of deterioration of each sheet.

4,938,072

FLOW MEASUREMENT DEVICE

Malcolm C. Brown, and Paul E. Hammond, both of Merseyside, United Kingdom, assignors to Masar Limited, West Kirby, England

PCT No. PCT/GB88/00035, § 371 Date Jul. 13, 1989, § 102(e) Date Jul. 13, 1989, PCT Pub. No. WO88/05526, PCT Pub. Date Jul. 28, 1988
PCT Filed Jan. 20, 1988, Ser. No. 381,664
Int. Cl.[5] G01F *1/00*
U.S. Cl. 73—861 **10 Claims**



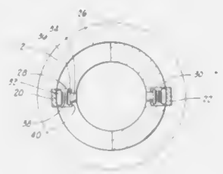
1. A flow measurement device having a tube or other container for receiving a flow of a liquid, a plurality of sensors associated with the container to sense when the liquid reaches a level in the container corresponding to each sensor, and a timing device deriving a time difference between sensing of two levels, characterised in that there are more than two sensors and in that logic means associated with the timing device checks whether the time difference exceeds a predetermined minimum and if so calculates the flow rate from that time difference but if not inhibits that calculation and arranges for a time difference derived from a subsequent senser to be used in calculating flow rate.

4,938,073

EXPANDED RANGE MAGNETIC FLOW METER

Stanley V. Stephenson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 13, 1988, Ser. No. 243,950
Int. Cl.[5] G01F *1/58*
U.S. Cl. 73—861.12 **19 Claims**



1. An expanded range magnetic flowmeter, comprising:

a flow tube of a substantially fixed inner diameter;

an electrically powered inductance proximate said flow tube;

means for measuring voltage generated by flow of a conductive fluid through said flow tube and through a magnetic field generated by said inductance;

insertion means for being interchangeably inserted into said flow tube to permit different said insertion means to be used with said flow tube, wherein a selected inserted insertion means provides means for maintaining a predetermined velocity of said conductive fluid through said flow tube; and

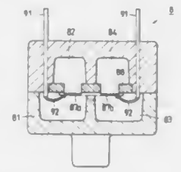
seal means, extending about and between an outer periphery of said insertion means and an inner periphery of said flow tube, for providing a sealing engagement between said flow tube and said insertion means such that said conductive fluid is prevented from entering therebetween.

4,938,074

VORTEX FLOW METER

Yasuo Tada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 323,589
Claims priority, application Japan, Mar. 17, 1988, 63-36851[U]
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.22 **3 Claims**



1. A vortex flow meter, comprising:

vortex generator means provided in a conduit through which a fluid to be measured flows for generating Kárman vortices;

first pressure chamber;

second pressure chamber;

third pressure chamber;

fourth pressure chamber;

first and second pressure takeout ports for taking out the pressure of said vortices;

a first pressure passage for transmitting the pressure change caused at said first pressure takeout port to said first and second pressure chambers;

a second pressure passage for transmitting the pressure change caused at said second pressure takeout port to said second and third pressure chambers;

a first diaphragm provided between said first and second pressure chamber for acting in response to the pressure difference between said first and second pressure chambers;

a second diaphragm provided between said third and fourth pressure chambers for acting in response to the pressure difference between said third and fourth pressure chambers, said second diaphragm being movable in a first direction coincident with that in which said first diaphragm is movable, said first direction is not coincident with a second direction of a maximum component of an external force which acts to said first and second diaphragms;

first and second bridge circuits provided on said first and second diaphragms, respectively, for generating a pair of outputs inverse to each other in polarity and equal to each other in absolute value in response to the action of said first and second diaphragms, respectively; and

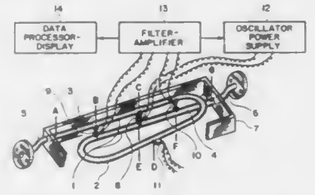
differential amplifying means for differentially amplifying the outputs from said first and second bridge circuits to generate an output indicative of the period of a pulsation.

4,938,075

CONVECTIVE INERTIA FORCE FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 14,278, Feb. 12, 1987, Pat. No. 4,776,220, and a continuation-in-part of Ser. No. 71,777, Jul. 10, 1987, Pat. No. 4,813,289, and a continuation-in-part of Ser. No. 78,206, Jul. 27, 1987, Pat. No. 4,829,832, and a continuation-in-part of Ser. No. 88,571, Aug. 24, 1987, Pat. No. 4,879,910. This application Mar. 7, 1988, Ser. No. 164,541
The portion of the term of this patent subsequent to May 16, 2009, has been disclaimed.
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **11 Claims**



1. An apparatus for measuring mass flow rate comprising in combination:

(a) at least one conduit with two extremities secured to a rigid support including a first generally straight section extending from one of the two extremities in an over-hanging arrangement and a second generally straight section extending from the other of the two extremities in an over hanging arrangement, said first and second generally straight sections connected to one another by a smoothly curved midsection of the conduit of a loop angle ranging from 360 degrees to 540 degrees, said conduit substantially free of restriction or constraints along the length between the two extremities restraining flexural vibrations of the conduit in directions generally perpendicular to a plane parallel to said curved midsection of the conduit; wherein at least a portion of first half of the conduit including said first generally straight section and one half of said curved midsection, and at least a portion of second half of the conduit including said second generally straight section and the other half of said curved midsection over-lap one another with a space therebetween;

(b) means for exerting vibratory force on the over-lapping portion of said first and second halves of the conduit, said vibratory force generating relative flexural vibration between said first and second halves of the conduit; and

(c) means for determining difference in the flexural vibration between said first and second halves of the conduit as a measure of mass flow rate of media moving through the conduit.

4,938,076

TARGET FLUID FLOW INDICATOR GAUGE

Steven O. Buchanan, Rolling Prairie, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Jul. 17, 1989, Ser. No. 380,450
Int. Cl.[5] G01F *1/24, 1/28*
U.S. Cl. 73—861.53 **18 Claims**

1. A target fluid flow indicator gauge comprising:

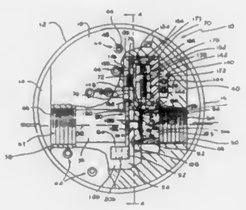
a housing formed from a non-magnetic material and defining an internal chamber having an orifice having a throat and fluid inflow and outflow ports disposed on opposite sides of said chamber and axially aligned to direct fluid flow into and out of said chamber and through said orifice throat in a predetermined fluid flow direction through said housing,

said throat being curvilinear about a central axis that is substantially coaxial with said ports, and defining an inlet and an outlet that are coaxial with said axis,

a leaf spring cantilever mounted in said housing adjacent one end of said leaf spring for disposing said leaf spring to extend substantially crosswise of said fluid flow direction,

said leaf spring being exposed to said chamber,

a target centered in said direction of fluid flow and disposed



in centered relation within said orifice throat and fixed to the other end of said leaf spring for limited movement thereof in said direction of fluid flow when fluid flow through the housing impinges against said target,

said target comprising a round disc member,

said orifice throat including means for effecting a linear deflection of said target in response to said fluid flow,

said throat means comprising said throat having a margining wall shaped according to the equation

$$R = \left(\frac{(Ro^2 - ro^2)}{\sqrt{Xo}} \sqrt{X} + ro^2 \right)^{\frac{1}{2}}.$$

wherein R_o is the radius of said throat at said throat outlet of same, r_o is the radius of said throat at said throat inlet and is the maximum radius of said disc member, X_o is the linear distance between said throat outlet and said throat inlet along said central axis, X is the selected distance measured from said throat inlet in the direction of said throat outlet along said central axis, and R is the radius of said throat for selected values of X, whereby said target has a deflection response that is linear relative to increasing fluid flow rates,

a driving magnet assembly movable with said target within said housing,

an indicator pointer disposed externally of said chamber and journaled to pivot about an axis extending crosswise of said fluid flow direction,

a scale located externally of said housing adjacent said pointer that is calibrated for linear readout, using said pointer, on deflection of said target by the fluid in said fluid flow direction,

and a follower magnet assembly disposed externally of said chamber and being magnetically coupled to said driving magnet assembly and being fixed with respect to said indicator pointer to pivot said pointer about said axis,

said housing including an imperforate wall structure of film thickness proportions separating said magnet assemblies, and the magnetic coupling of said magnet assemblies being through said wall structure.

4,938,077

DEVICE TO MEASURE A LARGE RANGE OF FLUID FLOW

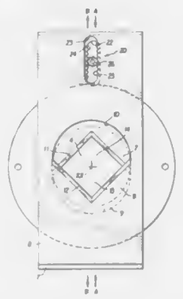
Alain Robinet, Toulouse, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jul. 8, 1988, Ser. No. 216,376

Claims priority, application France, Jul. 9, 1987, 87 09757

Int. Cl.[5] G01F *1/22, 1/42*

U.S. Cl. 73—861.62 **8 Claims**



1. In an apparatus for measuring the flow of fluid in a conduit and comprised of an orifice and means for measuring the pressure upstream and downstream of the orifice, the improvement comprising, a first flat plate in face to face relation to a second flat plate, said plates having overlapping adjacent edges defining an orifice in the shape of a regular polygon, said orifice having its center of area substantially at the axis of the conduit, said first and second plates each being movable in a straight line to vary the area of the orifice while conserving said regular polygon shape of the orifice.

4,938,078

METHOD AND APPARATUS FOR MEASURING FLOW RATE

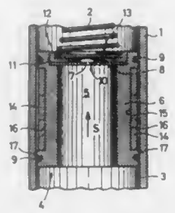
Klaus Kobold, Nordring 22-24, 6238 Hofheim/Ts, Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 222,826

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1987, 3724179

Int. Cl.[5] G01F *1/28*

U.S. Cl. 73—861.71 **23 Claims**



1. A process for measuring the flow rate of a fluid, comprising the steps of:

providing a housing for the fluid to flow through;

providing a cylinder within said housing for movement in a sealing manner, said cylinder having an inner axial flow channel;

providing an orifice plate having an orifice, said orifice having a predetermined diameter d and thickness t, said diameter d defining a cross-sectional area substantially smaller than that of said axial flow channel and said orifice

defining a ratio V—t/d, the value of said ratio V for said orifice plate being determined according to a function of the upper limit of the range of viscosity of the fluid, where said ratio V increased with an increase of the upper limit of the range of viscosity of the fluid, the value of said ratio V being approximately 0.5 when the fluid has a viscosity within the range of approximately 1 to 200 cSt., approximately 0.7 when the fluid has a viscosity within the range of approximately 1 to 1000 cSt. and approximately 1.0 when the fluid has a viscosity within the range of approximately 1 to 2500 cSt;

mounting said orifice plate on said cylinder to extend across said axial flow channel;

flowing the fluid through said housing and therefore through said axial flow channel and said orifice; and

indicating the position of said cylinder within said housing.

4,938,079

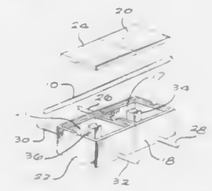
THERMAL TRANSIT TIME FLOW MEASUREMENT SYSTEM

Jack Goldberg, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Mar. 6, 1989, Ser. No. 319,353

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—861.95 **29 Claims**



1. Apparatus for measuring the rate of flow of a fluid through a conduit, comprising

(a) at least one heater means for generating radiative heat energy in a manner sufficient to produce a thermal marker in said fluid flow, said heater means not physically in contact with said fluid;

(b) at least one sensor means for detecting said thermal marker in said fluid, not physically in contact with said fluid, and adapted to generate an electrical signal responsive to the proximity of said thermal marker to said sensor means; and

(c) signal processing means operatively connected to said heater means and said sensor means for determining a parameter of fluid flow rate within the conduit based upon the magnitude of the signal from said sensor means as a function of time.

4,938,080

AUTOMATIC PIPETTING APPARATUS

Robert J. Sarrine, Beaumont, and Henry A. Garsee, Kountze, both of Tex., assignors to Helena Laboratories, Inc., Beaumont, Tex.

Continuation of Ser. No. 242,378, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 89,025, Aug. 24, 1987, Pat. No. 4,827,780, which is a continuation of Ser. No. 853,201, Apr. 17, 1986, abandoned. This application Jun. 1, 1989, Ser. No. 361,700

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] B01L *3/02*

U.S. Cl. 73—864.21 **2 Claims**

1. Apparatus adapted for use with automatic pipetting of liquid samples to be subjected to electrophoresis comprising a sample plate including a lateral row of individual liquid sample chambers and a lateral application space longitudinally separated from said liquid chamber row, said lateral application space having disposed thereon a removable microporous support medium adapted for electrophoretic analysis after a liquid sample has been deposited thereon, said sample plate including an upper portion and a lower portion, said row of individual liquid sample chambers being disposed on said raised portion, said lateral application space being disposed on said lower portion.

2. Automatic pipetting apparatus comprising

a base,

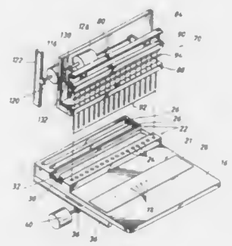
sample plate mean stationarily disposed on said base, said sample plate means having longitudinal and lateral dimensions, said plate means including a lateral row of liquid sample chambers and a lateral application space longitudinally separated from said liquid chamber row, said lateral application space adapted to receive a microporous support medium, said sample chambers adapted to receive liquid samples,

a pipette frame including vertical support means for supporting said frame from said base laterally above said sample plate means,

longitudinal translation means for effecting longitudinal movement of said pipette frame between said lateral row of said sample chambers and said lateral application space above said stationarily disposed sample plate means,

a mounting plate carried by said pipette frame,

vertical translation means for effecting relative vertical movement of said mounting plate and said sample plate means,



a plurality of microsyringe barrels having their heads secured in a row to said mounting plate, said barrels spaced corresponding to the spacing of said liquid chambers on said plate, said barrels being hollow with each having a lower tip,

a plurality of micro-plungers, each of said plungers disposed in one of said barrels,

plunger translation means for moving said plungers vertically within said barrels, signalling means

for generating longitudinal signals representative of the relative longitudinal orientation of said pipette frame with respect to said sample plate means,

for generating mounting plate signals representative of the vertical orientation of said mounting plate relative to said sample plate means and

for generating plunger signals representative of the orientation of said plungers relative to said barrels, and

programmed computer means responsive to said longitudinal signals, to said mounting plate signals and to said plunger signals for generating a sequence of control signals to said longitudinal translation means, to said vertical translation means and to said plunger translation means to aspirate a first predetermined amount of liquid from said sample chambers into said respective pipette barrels, and to apply,

a droplet of said liquid samples in each of said pipette barrels onto corresponding spaces of said microporous support medium when placed on said lateral application space of said sample plate by precisely positioning said lower tips

of said barrels at a small distance above said microporous support medium, said small distance being smaller than the diameter of a droplet of liquid sample which may be maintained on the end of said tips through surface tension forces of the barrel tips, whereby each droplet slightly touches said microporous support medium and is thereby relieved of its surface tension and is precisely transferred to said microporous support medium from each of said pipette barrels.

4,938,081

TRAVELING DEVICE MOVING ALONG ELONGATED MEMBER

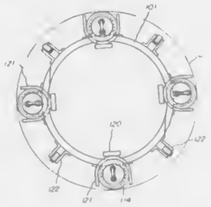
Koichi Negishi, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 133,464, Dec. 15, 1987, Pat. No. 4,848,168. This application Apr. 21, 1989, Ser. No. 341,181

Claims priority, application Japan, Apr. 13, 1987, 62-88896; Oct. 23, 1987, 62-266644

Int. Cl.[5] F16L *55/00*

U.S. Cl. 73—865.8 **6 Claims**



1. A traveling device traveling along an elongated tube comprising: a pair of frames having a shape and a size enclosed in said elongated tube, at least one elastic contractable body having both ends connected to said pair of frames, respectively, said body having a radial axis and an axial axis, said body expanding in radial directions to cause contractive force in axial directions when supplied with pressurized fluid into the body, an elastic member between said frame and deformable in response to contractive movement of the elastic contractable body, and anchoring means on said elastic contractable body and expandable at least outwardly of said frames to engage an inner surface of said elongated tube when supplied with pressurized fluid into the anchoring means, thereby causing the traveling device to travel in said elongated tube by supplying the pressurized fluid into and exhausting from the elastic contractable body in connection with alternate supplying the pressurized fluid into and exhausting from the anchoring means.

4,938,082

INSPECTION SYSTEM AND METHOD

B. Shawn Buckley, 7067 Via Blanca, San Jose, Calif. 95139; Keith J. DelleDonne, 17 Pleasant Ave., Apt. 4, Los Gatos, Calif. 95032, and Kendall A. King, 1929 The Alameda, San Jose, Calif. 95126

Filed Sep. 22, 1988, Ser. No. 248,434

Int. Cl.[5] G01B *21/00*

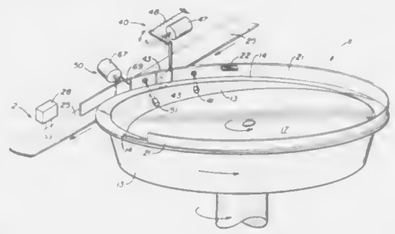
U.S. Cl. 73—865.8 **16 Claims**

1. An automated inspection system for identifying characteristics of parts, comprising:

a rotary feeder means including a bowl-shaped member having a generally horizontal rim and a disc-shaped floor which rotatably carries parts to the rim;

a stationary wall arranged so that parts can only travel in a single-file stream on the rim;

a first deflecting means for selectively diverting parts from the rim such that the single-file parts have a predetermined minimum spacing, the first deflecting means including a first detector for detecting parts that are travelling on the rim, a gate for deflecting parts from the rim into the bowl-shaped member, and first actuating means for moving the gate in response to signals from the detector; and



inspection means for identifying characteristics of parts conveyed on the rim.

4,938,083

EXCHANGEABLE ATTACHMENT OF A PROBE STYLUS TO A PROBE FOR A COORDINATE MEASURING INSTALLATION

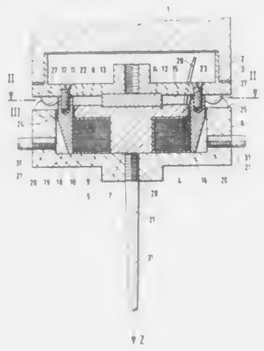
Werner Gurny, Wadgassen, and Kurt Linder, Karlsruhe, both of Fed. Rep. of Germany, assignors to Wegu-Messtechnik GmbH, Wadgassen, Fed. Rep. of Germany

Filed Apr. 7, 1989, Ser. No. 334,927

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1988, 3811851

Int. Cl.[5] B23Q *3/155*

U.S. Cl. 73—866.5 **11 Claims**



1. Mounting arrangement for the exchangeable attachment of probe stylus means on a probe head for a coordinate measuring arrangement, said arrangement comprising an electrically-operating clamping means having a permanent magnet and an electromagnet, said electromagnet generating a field which is superimposed on a field generated by the permanent magnet; a connecting member for the probe stylus means being drawn by said clamping means against a bearing on a mounting member on said probe head for determining the position of said connecting member, said connecting member being cup-shaped and arranged coaxially below the mounting member; a steel ring which is connected to the mounting member being received by said connecting member at a radial spacing relative to a cylindrical wall of said connecting member; said electromagnet including a coil member with a coil winding which is centrally arranged in said connecting member, said coil member having a unitarily attached upper shoulder supporting the

permanent magnet on an end surface and having a mantle surface arranged at a radial spacing relative to the steel ring in said connecting member.

4,938,084

STARTER FOR AN INTERNAL COMBUSTION ENGINE

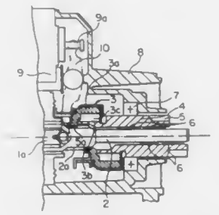
Akira Morishita, and Shuzoo Isozumi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 278,401, Dec. 1, 1988. This application Aug. 11, 1989, Ser. No. 392,317

Claims priority, application Japan, Dec. 26, 1987, 62-197808; Jan. 8, 1988, 63-1533; Feb. 26, 1988, 63-25276

Int. Cl.[5] F02N *11/00*

U.S. Cl. 74—6 **2 Claims**



1. A starter for an internal combustion engine comprising:

an electric motor including an armature amounted on an armature shaft and accommodated in a cylindrical yoke;

a front frame coupled to an output side of said cylindrical yoke and having a central aperture;

an output shaft operatively coupled on a front end of an armature shaft of said electric motor to be driven and rotated;

a hollow cylindrical member coaxially disposed around and axially slidably splined to a portion of said output shaft;

a hollow shaft coaxially and rotatably and axially slidably supported around a portion of said output shaft at a front side of said hollow cylindrical member splined to the output shaft;

a pinion gear formed at a front end of said hollow shaft and adapted to engage with a ring gear of the internal combustion engine;

a one-way clutch axially slidably disposed around said output shaft and coupling said hollow cylindrical member and said hollow shaft to transmit rotational motion in one rotational direction; and

an angular contact ball bearing mounted to said central aperture of said front frame and rotatably and axially slidably supporting said hollow shaft extending therethrough;

wherein a rear side surface of said angular contact bearing abuts against a front side surface of said one-way clutch to stop a forward sliding movement of said clutch and the hollow shaft at an extreme front position of the hollow shaft at which said pinion gear engages with said ring gear of the internal combustion engine.

4,938,085

POWER TRANSMISSION SYSTEM IN A TRACTOR

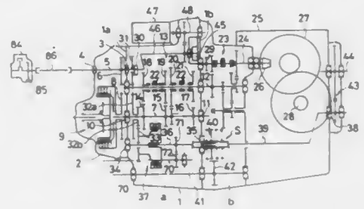
Takanori Suzuki; Kenji Nakamura, and Satoshi Matsuzawa, all of Saitama, Japan, assignors to Honda giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1988, Ser. No. 207,416

Claims priority, application Japan, Jan. 30, 1987, 62-160988; Jan. 30, 1987, 62-160992; Jan. 6, 1988, 63-324

Int. Cl.[5] B60K *17/00*

U.S. Cl. 74—15.2 **27 Claims**



1. A power transmission system in a tractor having an engine, a travelling drive system for driving wheels and a PTO drive system for driving working machines, comprising:

a transmission case longitudinally spaced from said engine,

a single input shaft provided in a transmission case and connected directly to said engine;

a travelling main shaft disposed within said transmission case and extending in the longitudinal direction;

a main clutch provided at the front end of said main shaft and operatively connected to said input shaft for connecting and disconnecting a power transmission route from said input shaft to said main shaft;

a travelling counter shaft disposed in parallel to said main shaft on either an upper side or a lower side of said main shaft;

a plurality of clutch speed-changers disposed on both said main shaft and said counter shaft to be operated selectively;

a PTO transmission shaft disposed in parallel to said main shaft on the opposite side of said counter shaft from said main shaft;

a PTO clutch provided on said PTO transmission shaft and operatively connected to said input shaft for connecting and disconnected a power transmission route from said input shaft to said PTO transmission shaft; and

a hydraulic pump provided in said transmission case in direct, cooperatively coupled relation to said input shaft.

4,938,086

WINDOW OPERATOR

Douglas A. Nolte, Owatonna, Minn.; Dennis J. Rooney, Sterling, Ill., and Christopher T. Sandberg, Owatonna, Minn., assignors to Trubt Incorporated, Owatonna, Minn.

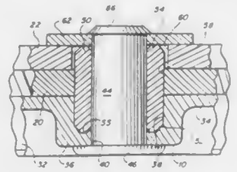
Division of Ser. No. 187,429, Apr. 28, 1988, Pat. No. 4,843,703, which is a continuation-in-part of Ser. No. 70,411, Jul. 7, 1987, Pat. No. 4,845,830. This application Jan. 26, 1989, Ser. No. 371,619

Int. Cl.[5] F16H *29/02*

U.S. Cl. 74—89.14 **3 Claims**

1. A window operator having controlled clearance between components, said components including a mounting base of deformable metal, a gear and a pull arm each having an opening and which are in stacked relation, a pin fixed to the mounting base, a hardened metal bushing on said pin and extended through said openings, and a washer fitted onto said pin and engaging said bushing, said hardened metal bushing having a

bevelled end pressed into and deforming the metal of said mounting base to have an exposed end of the hardened metal



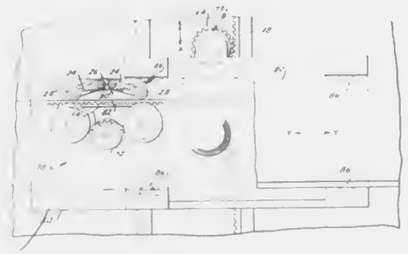
bushing a predetermined distance beyond the uppermost of said stacked gear and pull arm.

4,938,087

ZERO BACKLASH POSITIONING SYSTEM FOR A MOVABLE LINEAR AXIS

Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed May 31, 1989, Ser. No. 359,325
Int. Cl.[5] F16H *19/06, 55/28;* **B25J** *5/02*
U.S. Cl. 74—89.21 **6 Claims**



1. An apparatus for providing precision linear displacement of an axis relative to a support, and comprising in combination:
- a drive mechanism having a servomotor attached to and moveable with one of said axis and said support, and a rack attached to and moveable with the other of said axis and said support, said rack being attached hingedly so as to be pivotal about a pivot axis which is parallel longitudinally to said rack;
- a speed reducer operatively associated with said servomotor and providing direct drive to a timing belt;
- said timing belt intermeshing with said rack such that forward and reverse rotation of said motor provides to and fro relative linear motion, respectively, between said axis and said support so as to displace said axis linearly along a Y coordinate and longitudinally of said rack; and
- means for biasing said rack about said pivot axis toward said timing belt in order to maintain contact between teeth of said rack and said belt.

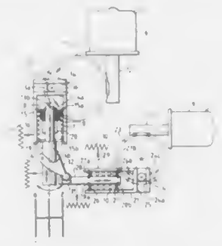
4,938,088

VEHICLE TRANSMISSIONS

Paul A. Langley, and Victor E. Strange, both of Sulihull, United Kingdom, assignors to Austin Rover Group Limited

Filed Jul. 18, 1988, Ser. No. 220,551
Claims priority, application United Kingdom, Jul. 28, 1987, 8717898
Int. Cl.[5] F16H *61/32, 61/34*
U.S. Cl. 74—335 **13 Claims**

1. A constant mesh gearbox of the kind having pairs of gears on parallel shafts in constant mesh with each other, comprising a selector rod which is moveable in an axial direction and in a rotational direction about its axis in order to select a gear ratio and actuating means for moving the selector rod in both directions of movement to a desired position via resilient means, the arrangement being such that when the actuating means is moved to a position corresponding to a desired position of the



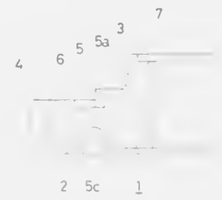
selector rod, but the selector rod is not free to move in that direction of movement, the resilient means is preloaded to store the energy corresponding to the desired selector rod movement until the selector rod is free to move whereupon the resilient means will unload to move the selector rod to the desired position.

4,938,089

FORGED GEAR FOR A TRANSMISSION

Noboru Oboka, Nagoya, Japan, assignor to Oboka Forge Co Ltd., Japan

Filed Jan. 25, 1989, Ser. No. 301,344
Claims priority, application Japan, Jan. 29, 1988, 63-20374
Int. Cl.[5] F16H *3/08;* **F16D** *23/06*
U.S. Cl. 74—339 **1 Claim**



1. A gear for a transmission used in a motorcar, an agricultural machine, a construction machine or other industrial machine, which comprises
- (i) a gear body (2) with (a) spiral teeth (4) at the circumferences thereof and (b) an inner recessed portion (6) located inwardly of said spiral teeth (4), and
- (ii) a dog member (3) located in said recessed portion (6)
- the dog member (3) having a plurality of circumferential dogs (5) which project radially outwardly from an annular portion of the dog member (3) and axially outwardly from said recessed portion of the gear body (2),
- each of said circumferential dogs (5) comprising (a) a major portion which gradually becomes wider axially and (b) a substantially triangular top portion which project axially from the widest portion of said major portion,
- opposed sides of said major portion of each dog (5) meeting two inclined sides of said triangular top portion of the dog (5) at slightly rounded corners,
- the two inclined sides of the triangular top portion of each dog also meeting each other at a slightly rounded top corner,

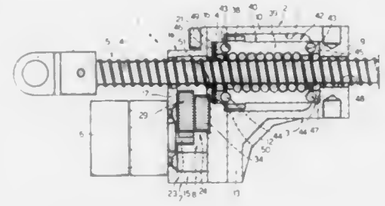
the gear body (2), the dog member (3) and the dogs (5) being integrally formed by forging a raw gear material and
the spiral teeth (4) being formed by a machining operation.

4,938,090

AXIAL ACTUATOR

Enzo Brusasco, Turin, Italy, assignor to R.G.B. S.p.A., Italy

Filed Jul. 22, 1988, Ser. No. 223,426
Claims priority, application Italy, Jul. 24, 1987, 53558/87[U]
Int. Cl.[5] F16H *25/22*
U.S. Cl. 74—424.8 R **5 Claims**



1. An axial actuator comprising:
- an axially-mobile output rod, and drive means for axially moving said rod, said drive means including a support fitted through with said rod, the rod being axially mobile relative to said support;
- a screw-nut screw coupling including a screw which is integral with said rod, and a nut screw which is supported in a rotary and axially-fixed manner on said support, said coupling being a recirculating-ball screw-nut screw coupling;
- a motor operable to turn said nut screw about its axis, said nut screw constituting an intermediate ring of a double thrust axial bearing mounted between two opposite faces on said support; and,
- flexible thrust means disposed between said double thrust axial bearing and a single one of said two opposite faces.

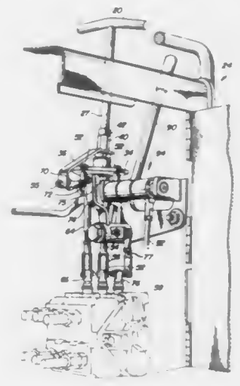
4,938,091

THREE FUNCTION CONTROL MECHANISM

Van E. Waggoner, and Michael E. Barr; Allan A. Loney, of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 263,588, Oct. 26, 1988, abandoned.
This application Dec. 8, 1989, Ser. No. 449,092
Int. Cl.[5] G05G *9/04*
U.S. Cl. 74—471 XY **10 Claims**

1. A three-function control mechanism comprising:
- a control lever;
- a main ball joint to which the control lever is operatively attached for manipulating the control lever through first and second control arcs and also for manipulating the control lever through a twisting motion;
- an operator plate having first and second mounting assemblies, the operator plate being operatively coupled to the control lever;
- a first auxiliary ball joint mounted to the operator plate by the first mounting assembly, the first auxiliary ball joint being provided with a first link operatively coupling the operator plate to a first hydraulic control valve through the first auxiliary ball joint for controlling a first function;
- a second auxiliary ball joint mounted to the operator plate by the second mounting assembly, the second auxiliary ball joint being provided with a second link operatively coupling the operator plate to a second hydraulic control valve through the second auxiliary ball joint for controlling a second function;
- a radially extending arm is operatively coupled to the control lever, the arm being provided with a third mounting assembly;
- a third auxiliary ball joint is mounted to the arm by the third mounting assembly, the third auxiliary ball joint being provided with a third link operatively coupling the arm to



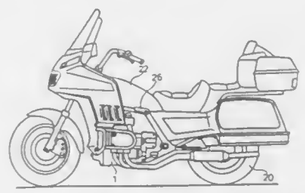
a third hydraulic control valve through the third auxiliary ball joint for controlling a third function, whereby manipulating the control lever in the first and second control arcs manipulates the operator plate and the first and second control links respectively, and twisting the control lever rotates the arm manipulating the third control link.

4,938,092

POWER TRANSMISSION CHANGE-OVER DEVICE FOR SMALL SIZED VEHICLES

Hideaki Nebu, Saitama; Haruyasu Fujita, Tokyo; Kouichi Uchibaba, Saitama; Kouji Terada, Saitama, and Takeaki Tada, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 135,229, Dec. 21, 1987, Pat. No. 4,905,536.
This application Aug. 15, 1989, Ser. No. 393,896
Int. Cl.[5] B60K *20/02*
U.S. Cl. 74—473 R **1 Claim**



1. In a motorcycle having a body covered by a body cover and mounting longitudinally spaced front and rear wheels, an engine disposed intermediate said front and rear wheels, a power transmission capable of operating in different operating conditions interconnecting said engine and said rear wheel, a clutch for alternately placing said power transmission in forward and reverse operating conditions, means for operating said clutch comprising:
- a recess in an accessible position on said body cover on a lateral side thereof;
- a rotatably mounted change-over lever positioned in said recess; and
- connecting means extending between said change-over lever and said clutch for operating said clutch to place said

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power transmission in said respective operating conditions, said connecting means including:

a pulley operably connected to said change-over lever for rotation therewith;

a pair of cables, each connected at one end to said clutch to impose movement therein in one of two alternate directions between said forward operating condition and said reverse operating condition; and

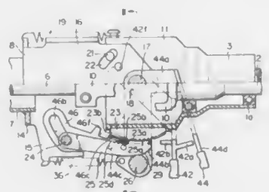
the other ends of said cables each connecting said pulley on opposite sides of the axis of rotation thereof, whereby one of said cables is in tension when said pulley is rotated in either a clockwise or a counterclockwise direction.

4,938,093

TILT STEERING COLUMN UNIT FOR VEHICLES WITH MEMORY MECHANISM

Sakae Matsumoto, Takasaki, and Takeshi Fujiwara, Maebashi, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1989, Ser. No. 321,373
Int. Cl.[5] B62D *1/18*
U.S. Cl. 74—493 10 Claims



1. A tilt steering column unit with memory mechanism for vehicles, comprising:

a supporting member (3) for rotatably supporting a steering shaft (2) on which a steering wheel (1) is fixedly mounted;

a fixed member (8) for tiltably supporting said supporting member for rocking movement around tilt pins (17, 18);

a first member (23) fixed to said supporting member and having a first gear portion (23*a*);

a second member (25) having one end pivotably connected to a pivot shaft (24) fixed to said fixed member and another end provided with a second gear portion (25*a*) engageable with said first gear portion;

said second member being rockable in one direction around said pivot shaft to release an engagement between said first and second gear portions when a tilt angle between said supporting member and said fixed member is to be altered, and being rockable in an opposite direction to reestablish the engagement between said first and second gear portions after said tilt angle is altered;

a third member (46) mounted on said fixed member for movement in a predetermined direction and having a third gear portion (46*a*) engageable with said first gear portion;

said third member being movable in said predetermined direction while maintaining a released condition between said first gear portion and said second gear portion, thereby altering an engagement position between said third gear portion and said first gear portion to change a memory position of said supporting member;

control means for preventing said second gear portion from engaging with said first gear portion when said supporting member is lifted upwardly, and for permitting the engagement between said first and second gear portions when said supporting member is pushed down, said control means comprising a first portion (46*c*) formed on said third member near said third gear portion, and a second portion (25*d*) formed on said first member near said first gear portion; and

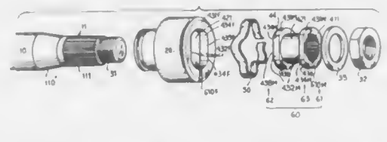
shift preventing means for preventing said third member from shifting beyond a certain limit relative to said second member even if said steering wheel is pushed down while said second gear portion is disengaged from said first gear portion an even if said third gear portion is disengaged from said first gear portion, said shaft preventing means comprising a projection (23*f*) formed on an end of said first gear portion, and an end surface (46*g*) of said third gear portion of said third member.

4,938,094

DEVICE FOR EFFECTING THE FINE ADJUSTMENT OF THE ANGULAR ORIENTATION OF A STEERING-WHEEL ON A MOTOR VEHICLE STEERING-WHEEL SHAFT

Jean-Pierre Cochard, Carrieres sur Seine, France, assignor to ECIA - Equipements et Composants pour l'Industrie Automobile, Audincourt, France

Filed Dec. 9, 1988, Ser. No. 282,188
Claims priority, application France, Dec. 9, 1987, 87 17156
Int. Cl.[5] B62D *1/04, 1/18*
U.S. Cl. 74—552 20 Claims



1. In a steering column for a motor vehicle and having a shaft and a steering wheel and having means for providing a progressive and continuous fine adjustment of a setting of a relative angular orientation of the shaft and the wheel the position of which is fixed by a screw and nut fastening means (30), the improvement comprising:

a shaft (10) having an end (11) provided with a male conical bearing surface (110) of a conical joint and with external rectilinear axial splines (111) of an interengaging connection system;

a steering wheel hub (20) provided with a female conical bearing surface (210) complementary to said male conical bearing surface (110) of the conical joint adapted to receive said male conical bearing surface (110);

a sleeve (40), interposed between said shaft end (11) and said hub (20), provided with internal rectilinear axial splines (411) complementary to said external rectilinear axial splines (111) and adapted to be interengaged with the latter and defining together with said hub (20) an annular changer (42), said hub (20) and sleeve (40) being movable in rotation relative to one another;

a friction member (50) located in said chamber (42) and adapted to develop a frictional torque between said hub (20) and sleeve (40) to oppose their spontaneous relative rotation; and

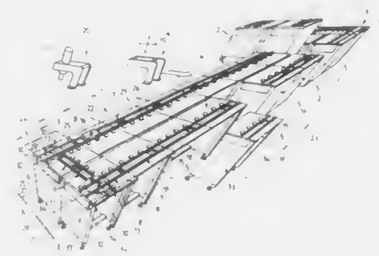
an arrangement means (60) carried by said hub (20) and sleeve (40) to rotate only along an angle said hub (20) and sleeve (40) against the frictional torque of said friction-member (50) and comprising: control mechanism means (61) to overcome said frictional torque to finely adjust the relative position of said hub (20) and sleeve (40); amplitude limiter means (62) for determining the value of a maximum angle (θ) of the relative rotation between said hub (20) and said sleeve (40); and safety limit stop means (63) to allow a positive driving connection between said hub (20) and sleeve (40) in case of failure of said fastening means (30).

4,938,095

SAFETY MODULE FOR MACHINE TABLE IN AN ASSEMBLY LINE

Walter Sticht, Karl-Heinrich-Waggerl-Strasse 8, A-4800 Attnang-Puchheim, Austria

Division of Ser. No. 119,244, Nov. 5, 1987, Pat. No. 4,762,218, which is a continuation of Ser. No. 912,170, Sep. 26, 1986, abandoned, which is a continuation of Ser. No. 695,840, Jan. 28, 1985, abandoned. This application May 4, 1988, Ser. No. 190,002
Claims priority, application Austria, Feb. 6, 1984, 365/84; India, Jan. 28, 1985, 54/85; Canada, Jan. 29, 1985, 473068; Fed. Rep. of Germany, Jan. 29, 1985, 8502222[U]; Jan. 29, 1985, 3502820; Australia, Jan. 30, 1985, 38233/85; Switzerland, Jan. 31, 1985, 442/85; Israel, Feb. 3, 1985, 74230; Czechoslovakia, Feb. 5, 1985, 786-85; France, Feb. 5, 1985, 85 01582; Hungary, Feb. 5, 1985, 434/85; Norway, Feb. 5, 1985, 850424; Spain, Feb. 5, 1985, 540134; U.S.S.R., Feb. 5, 1985, 3850150; Yugoslavia, Feb. 5, 1985, 167/85; Argentina, Feb. 6, 1985, 299446; Brazil, Feb. 6, 1985, 8500539; Rep. of Korea, Feb. 6, 1985, 750/1985; United Kingdom, Feb. 6, 1985, 8503049; Feb. 6, 1985, 2153767; Taiwan, May 12, 1986, 75204237
Int. Cl.[5] F16P *1/00*
U.S. Cl. 74—608 3 Claims



1. A [safety module for a] machine table having two vertically extending support elements and a table plate supported on, and connected to, the support elements, each support element having flanges defining bores, [the] in combination with a safety module comprising

(a) two hollow vertical columns having longitudinally extending guide tracks,

(b) safety plate means supported by the vertical columns for protecting the machine table and designed to aid in the prevention of accidents, the safety plate means comprising a transparent safety plate having a bottom edge and the guide tracks receiving the safety plate for displacement therealong,

(c) cantilevers connecting the columns to the flanges at a front of the machine table, [and]

(d) releasable coupling devices received in the bores for connecting the cantilevers thereto[.],

(e) two pulling cables having one end attached to the safety plate,

(f) counterweights attached to ends of the cables opposite to the one cable ends and pulleys between the cable ends over which the cables are trained, the counterweights being arranged inside the hollow columns, and

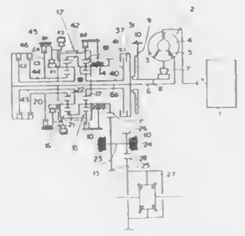
(g) limit switches arranged in the displacement path of the safety plate for engagement therewith when the safety plate is in its lowermost position.

4,938,096

AUTOMATIC TRANSMISSION FOR VEHICLE HAVING FORWARD CLUTCH AND COUNTER DRIVE GEAR POSITIONED BETWEEN TORQUE CONVERTER AND GEAR MECHANISM

Tokuyuki Takahashi, Aichi; Seitoku Kubo, Toyota; Masahumi Kinoshita, Toyota, and Hiroshi Itoh, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 14, 1989, Ser. No. 322,935
Claims priority, application Japan, Mar. 18, 1988, 63-65342
Int. Cl.[5] F16H *37/08, 57/10*
U.S. Cl. 475—72 5 Claims



1. An automatic transmission comprising: a torque converter; a speed change gear device including a planetary gear mechanism disposed coaxially with said torque converter, selective coupling means for changing over route of transmission of rotational power in said planetary gear mechanism so as selectively to provide a plurality of forward speed stages and a reverse stage, and a counter drive gear serving as a power output member thereof; a pump disposed coaxially between said torque converter and said speed change gear device and adapted to generate hydraulic pressure for operating said selective coupling means; and a counter shaft disposed in parallel with said speed change gear device and having a counter driven gear meshing with said counter drive gear; said selective coupling means including a first clutch adapted to be engaged to provide a lowest and a next to the lowest speed stage, said first clutch being coaxially disposed between said pump and said counter drive gear with the remainder of said selective coupling means and said planetary gear mechanism of said speed change gear device being disposed axially on a side of said counter drive gear opposite to a side thereof facing said first clutch.

4,938,097

FOUR SPEED TRANSAXLE FOR AUTOMOTIVE VEHICLES

Stanley L. Pierce, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 11, 1989, Ser. No. 336,145
Int. Cl.[5] F16H *37/08*
U.S. Cl. 475—72 8 Claims

1. In a planetary, multiple speed transaxle comprising a converter with an impeller and a turbine, a pair of simple planetary gear units and clutch and brake means for controlling torque transfer through the gear units;

a driving shaft arranged coaxially with respect to said converter and said gear units on one side of said converter;

a driven member disposed in spaced, parallel relationship with respect to said driving shaft;

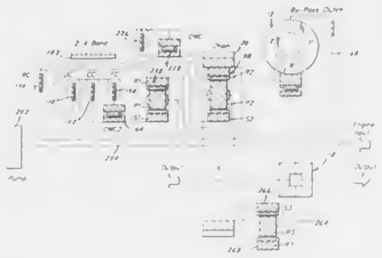
said clutch and brake means being located on the other side of said gear units;

a torque transfer drive means for transmitting torque from a torque output element of said gear units, said torque transfer means, including a driving elements and a driven element respectively mounted on the axis of said gear unit and the axis of said driven member, said driving element being located sustantially in the transverse geometric

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plane of the one of said gear units that is more proximate to said converter; and

torque transfer shafts disposed concentrically within said



gear units and said clutch and brake means for transferring torque between said clutch and brake means, and said turbine and between said clutch and brake means and torque input elements of said gear units.

4,938,098

POWER UNIT FOR MOTOR VEHICLE

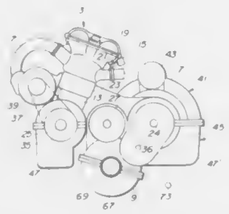
Kenichi Sasaki, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1988, Ser. No. 289,707

Claims priority, application Japan, Dec. 28, 1987, 62-201239[U]; Sep. 21, 1988, 63-122805[U]

Int. Cl.[5] F16H *37/08*

U.S. Cl. 475—200 **16 Claims**



1. A power unit suitable for use in a motor vehicle, comprising:

an in-line engine having a crankshaft;

a transmission having a gear-shaft, said transmission being arranged alongside said engine, with said crankshaft and said gear-shaft on parallel axes;

power transmitting means for transmitting power from said engine to said transmission, said power transmitting means including an intermediate shaft disposed intermediate said crankshaft and said gear-shaft and rotationally engaged for transmitting power from said crankshaft to said gear-shaft, said intermediate shaft having an axis which is parallel with the axis of said crankshaft and lies on an imaginary plane on which the respective axes of said crankshaft and said gear shaft lie; and

a differential gear operatively connected to said transmission,

wherein said engine is inclined toward said transmission with respect to said imaginary plane.

4,938,099

DIFFERENTIAL GEAR MECHANISM

David J. Knight, Sommerset, England, assignor to Knight Mechadyne Limited, Kirtlington Oxon, England

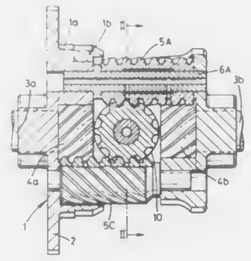
PCT No. PCT/GB87/00560, § 371 Date Apr. 11, 1988, § 102(e) Date Apr. 11, 1988, PCT Pub. No. WO88/01355, PCT Pub. Date Feb. 25, 1988

PCT Filed Aug. 7, 1987, Ser. No. 180,987

Claims priority, application United Kingdom, Aug. 11, 1986, 8619531; Nov. 21, 1986, 8627862

Int. Cl.[5] F16H *1/38*

U.S. Cl. 475—226 **3 Claims**



1. A differential gear mechanism comprising a gear carrier (1A, 1B) mounted for rotation about an output axis of the differential, a pair of spaced coaxial helical output gears (4A, 4B) mounted for rotation in the carrier about the axis thereof, and gear trains mounted in said gear carrier and interconnecting the two output gears, each gear train comprising two helically toothed members (5A–D) coupled by a worm wheel (7A, C; 7B, D), the teeth of said output gears being formed as a continuous helix and having a uniform involute profile in a radial direction, forming a helicoidal worm mesh with said worm wheel and a conventional helical pinion at an output gear mesh, the mechanism being characterized by the parameters in the following equations:

$$\frac{R_W + \cot\psi}{R_W + R_G} = \sin\alpha \quad (1)$$

$$\frac{b_{WH}}{b_{OG}} = \frac{k1\tan\psi}{\cos\psi} \quad (2)$$

where

R_W is the ratio of the number of teeth of each worm to the number of teeth of the worm wheel,

R_G is the ratio of the number of teeth of each output gear to the number of teeth of the worm wheel,

ψ is the helix angle of the worms and output gears,

b_{WH} and b_{OG} are respectively the lengths of the teeth of each worm wheel and each output gear measured axially of the worm wheel and output gear respectively,

K1 is the coefficient, selected from the range 0.5–0.8 for a differential mechanism having two gear trains and from the range 0.35–0.65 for a differential having three gear trains,

α is the angle formed by the axis of the worm wheels and a straight line going through the center of a worm and the center of symmetry of the mechanism (when viewed along the axis of the output gears), and selected for two gear trains (when K1 is 0.5–0.8) from a range of 56°–68°, and for three gear trains (when K1 is 0.35–0.65) from a range of 35°–41°.

4,938,100

CONTROL SYSTEMS FOR VEHICLE ENGINES COUPLED WITH AUTOMATIC TRANSMISSIONS

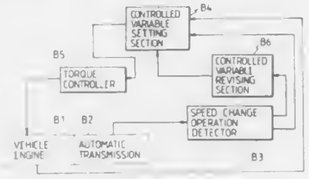
Hiroshi Yoshimura; Keiji Bota; Kazuo Takemoto, all of Hiroshima, and Fumiaki Baba, Higashihiroshima, all of Japan, assignors to Mazada Motor Corporation, Hiroshima, Japan

Filed May 4, 1989, Ser. No. 347,028

Claims priority, application Japan, May 18, 1988, 63-121199

Int. Cl.[5] B60K *41/18*

U.S. Cl. 74—860 **13 Claims**



1. A control system for a vehicle engine coupled with an automatic transmission, the control system comprising:

torque controlling means operative to vary torque produced by the vehicle engine, in accordance with a controlled variable determined for controlling the torque, so as to suppress torque shock resulting from a speed change operation carried out in the automatic transmission,

detecting means for detecting the speed change operation carried out to vary a gear ratio in a power transmitting gear arrangement provided in the automatic transmission,

controlled variable setting means for determining said controlled variable in accordance with an operating condition of the vehicle engine and the speed change operation detected by said detecting means, and

controlled variable revising means for varying said controlled variable so as to reduce variation in the torque brought about by said torque controlling means under a condition in which the speed change operation causing a change from one to another of speed ranges of relatively small gear ratios is detected by said detecting means, as compared with variation in the torque brought about by said torque controlling means under a condition in which the speed change operation causing a change from one to another of speed ranges of relatively large gear ratios is detected by said detecting means.

4,938,101

CONTINUOUSLY VARIABLE SPEED TRANSMISSION

Kazuya Maki, Aichi, and Yoshikazu Ishikawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1988, Ser. No. 251,548

Claims priority, application Japan, Oct. 12, 1987, 62-256716

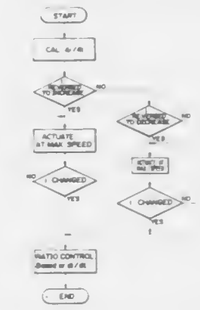
Int. Cl.[5] B60K *41/12*

U.S. Cl. 74—866 **11 Claims**

1. A speed change control apparatus in a continuously variable transmission, comprising,

means for changing a speed reduction ratio of said transmission, and

means for reversing a direction of change of said speed reduction ratio from a first direction of change to a second direction of change by operating said means for changing to vary said speed reduction ratio in said second direction at a maximum speed of speed reduction ratio change until



said direction of change of said speed reduction ratio has actually changed to said second direction.

4,938,102

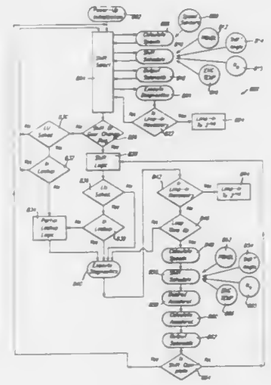
METHOD OF ADAPTIVELY SCHEDULING A SHIFT FOR AN ELECTRONIC AUTOMATIC TRANSMISSION SYSTEM

Maurice B. Leising, Clawson, and Howard L. Benford, Bloomfield Hills, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Continuation of Ser. No. 188,599, Apr. 23, 1988, abandoned. This application Mar. 17, 1989, Ser. No. 326,492

Int. Cl.[5] B60K *41/18*

U.S. Cl. 74—866 **4 Claims**



1. In a vehicle having an engine and a transmission system including an input member, an output member, a torque converter assembly for transmitting torque between the engine and the input member, a gear assembly for changing the ratio of torque between the input member and output member, a plurality of friction elements for shifting the gear assembly, input sensors providing input signals indicative of predetermined conditions, a controller having memory for processing and storing the input signals and predetermined values and providing output signals, a method of adaptively scheduling a shift of the gear assembly, said method comprising the steps of:

checking the speed of the engine;

determining whether engine speed (N_e) is less than a predetermined speed stored in memory;

if engine speed is not less than the predetermined speed, allowing the shift to occur; and

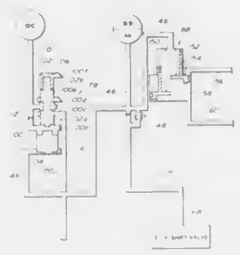
if engine speed is less than the predetermined speed, inhibiting the shift of the gear assembly for a time period until N_e is equal to the predetermined speed to prevent the speed of the turbine from increasing above the speed of the engine which results in backlash of the drivetrain.

4,938,103

FRICTION ELEMENT ENGAGEMENT PRESSURE AND TIMING CONTROL ARRANGEMENT FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 31, 1988, Ser. No. 264,720
Claims priority, application Japan, Oct. 30, 1987, 62-273217
Int. Cl.[5] B60K *41/10*
U.S. Cl. 74—867 **6 Claims**



1. In a transmission having a friction element and an overrunning clutch which produces engine braking when engaged;

an overrunning clutch control valve, and an accumulator which is pressurized when said friction element is engaged;

said overrunning control valve including a bore in which first and second spool valve elements are reciprocatively disposed, said second spool valve element having a diameter which is larger than that of the first spool valve element, said first and second spool valve elements being arranged so that when said transmission is conditioned to produce a predetermined speed said first spool valve element modifies a supply of hydraulic pressure under pressure in a manner which supplies a pressure having a predetermined level to said overrunning clutch; and

said first and second spool valve elements being arranged so that when said first spool valve element is engaged by said second spool valve element in a manner biased by the engagement, the supply of said predetermined pressure to said overrunning clutch is cutoff, said second spool valve element being exposed at one end to the pressure in said friction element in a manner biased toward said first spool valve element.

4,938,104

APPARATUS FOR FACILITATING THE MACHINING OF WORKPIECES

Benno Iseli, Schotz, Switzerland, assignor to Iseli & Co. AG, Schotz, Switzerland

Filed Jan. 24, 1989, Ser. No. 301,325
Claims priority, application Switzerland, Jan. 25, 1988, 00244/88
Int. Cl.[5] B23D *63/14*
U.S. Cl. 76—40 **13 Claims**

1. Apparatus for machining a workpiece with a plurality of tools, the workpiece comprising a saw-blade having teeth with flanks in a tip area of the teeth, the apparatus comprising a saw-blade guide extending in a feed direction parallel to a predetermined saw blade plane of the apparatus, two pivoted arms for carrying the tools of the apparatus, therebeing one such pivoted arm located on each side of the saw-blade plane, the arms being mounted for an angular adjustability with respect to said plane, support means located to one side of said plane for supporting both said pivoted arms with respect to the



remainder of the apparatus, and coupling means located remote from the region occupied by a blade on the apparatus for enabling synchronous pivotable movements of the two arms between a rest position and a working position about pivot axes extending transversely to the saw-blade plane and the arms.

4,938,105

METHOD OF MANUFACTURING A ONE-SIDED OR TWO-SIDED PUNCHING KNIFE FOR NON-METALLIC MATERIALS

Leopold Böswarth, Vienna, Austria, assignor to Martin Miller Aktiengesellschaft

Filed Dec. 15, 1988, Ser. No. 285,094
Claims priority, application Austria, Dec. 18, 1987, 3354/87
Int. Cl.[5] B23P *15/24*
U.S. Cl. 76—107.8 **15 Claims**



1. In a method of manufacturing a one-sided or two-sided punching knife for non-metal materials, such as leather, textiles, paper, the knife having an inner side, a groove having a width being defined in the inner side, a reinforcing plate of a non-metal material engaging in the groove, the reinforcing plate having a thickness which corresponds at least approximately to the width of the groove, the improvement comprising stamping the reinforcing plate from the non-metal material by means of the knife which the reinforcing plate is intended to reinforce.

4,938,106

HAND TOOL FOR INSTALLING AND EXTRACTING CIRCUIT BOARD TEST POINTS

Bruce Roberts, 1348 Homestead Way, Palm Harbor, Fla. 34683

Filed Jan. 4, 1989, Ser. No. 294,256
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—55 **9 Claims**

1. A hand-held tool having utility in connection with the installation and removal of test points, comprising:

a first socket means adapted to engage a test point outer part;

a second socket means adapted to engage a test point inner part;

a first handle member;

an elongate shank member disposed in interconnecting relation to said first handle member and said first socket means;

a second handle member;

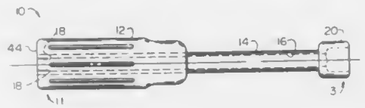
an elongate inner shaft member disposed in interconnecting relation to said second handle member and said second socket means;

said inner shaft member having a length greater than the combined length of said first handle member, shank member and first socket means;

an elongate bore means formed in said first handle member, shank member and first socket means;

said inner shaft member being slideably disposed in said bore means;

said second socket means having an outer diameter less than the inner diameter of said first socket means;



said inner shaft member being formed of two longitudinally spaced parts disposed in axial alignment with one another;

bias means for urging said second socket means distally of said first socket means;

said bias means maintaining said two parts in spaced relation to one another when the bias means is in a state of equilibrium;

said two parts of said inner shaft member being a proximal part and a distal part;

a cylindrical yoke member being fixedly secured to said proximal part, said yoke member slideably receiving a proximal end of said distal part to maintain the two parts in axial alignment with one another;

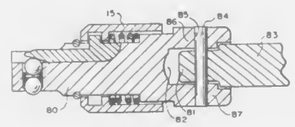
whereby a test point is removed by engaging its inner part with said second socket means, compressing said bias means until said second socket means retracts into said first socket means and rotating said first and second handle members relative to one another;

4,938,107

WEDGE LOCKING SOCKET DEVICE

Michael F. Nickipuck, Brookfield, Ill., assignor to 501 Qualicorp, Ltd, Westmont, Ill.

Continuation-in-part of Ser. No. 45,781, Nov. 6, 1984, Pat. No. 4,768,405, which is a continuation-in-part of Ser. No. 634,775, Jul. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 260,350, May 4, 1981, Pat. No. 4,480,511. This application Aug. 23, 1988, Ser. No. 235,287
Int. Cl.[5] B25B *23/16*
U.S. Cl. 81—177.85 **22 Claims**



1. In a tool for securement to socket members having variously spaced walls defining securement openings, a tool having a securement structure for entry and withdrawal with respect to said openings for connecting and disconnecting such socket members for rotation therewith comprising:

a first shank member adapted to be selectively entered within the securement opening;

a control bar member supported on the shank member for forward and retracting longitudinal movement with respect thereto to a locked position and a retracted release position and for generally radial movement on the shank member toward and away from an adjacent wall of a socket member for locking engagement therewith and release therefrom;

detent means supported on the shank member for movement transversely with respect thereto for selectively securing and releasing said shank member through said control bar member with respect to said socket member;

said control bar member having an outward surface facing generally away from the shank member and an acutely angled inward wedging surface facing the shank member;

said inward surface of the control bar member continuously wedgingly engaging the detent means when the control bar member is moved into the locked position to move and maintain said detent means against a first wall of the socket member for securing the socket member in engagement with the shank member;

the control bar member moving generally radially outwardly from the shank member and said outward surface of the control bar member contacting another of the wall portions of the socket member within the opening therein coincident with the inward wedging surface wedgingly moving the detent means to engage the first of the inner wall portions, whereby the socket member is generally centered on and secured to the securement structure;

said detent means being expandable radially between said first wall of the socket and said control bar and the wedging moving the control bar generally radially outwardly attendant to the socket member tending to move longitudinally in a disconnecting direction relative to the first shank,

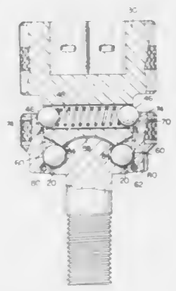
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4,938,108

THEFT-RESISTANT FASTENER SYSTEM

Dan Mekler, Jerusalem, Israel, assignor to Abraham Levy, Tel Aviv, Israel

Continuation of Ser. No. 918,605, Oct. 10, 1986, abandoned, which is a continuation of Ser. No. 568,502, Jan. 5, 1984, abandoned. This application Feb. 6, 1989, Ser. No. 307,314
Claims priority, application Israel, Jan. 23, 1983, 67733
Int. Cl.[5] B25B *13/50*
U.S. Cl. 81—176.15 **16 Claims**



10. A theft-resistant fastener system comprising in combination:

a fastener with a head portion having a sloped outer surface about a fastener axis;

a rotatable wrench adapted to engage a head portion of said fastener and to rotate said fastener and head portion about said fastener axis;

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said wrench and fastener jointly comprising at least three ball-and-socket joints distributed about said axis, each of said ball-and-socket joints having a non resiliently biased ball in said wrench and a socket in said sloped outer surface of said head portion of the fastener so as to prevent actuation of said fastener by a conventional wrench, each socket having a circular cross-section about a socket axis extending at an acute angle to said fastener axis;

said wrench including a releasable actuator means for pressing said balls into said sockets preparatory to and during rotation of said wrench about said fastener axis; and

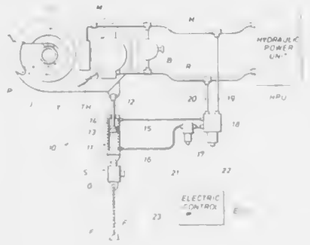
said fastener including means for preventing said head portion from clearing said balls, when said wrench presses said balls into said sockets, including in said head portion, at each socket, an overhang extending over part of the ball in that socket, each overhang having an outer limit closer to said fastener axis than a center of a corresponding one of the balls of said ball-and-socket joints.

4,938,109

TORQUE HOLD SYSTEM AND METHOD

Carlos A. Torres, 2131 Peach Ridge Rd., Brookshire, Tex. 77423; Wesley L. Leggett, and Jay K. Thomas, both of Houston, Tex., assignors to Carlos A. Torres, Brookshire, Tex.

Filed Apr. 10, 1989, Ser. No. 335,847
Int. Cl.[5] B25B *23/14*
U.S. Cl. 81—467 **17 Claims**



1. A powered mechanical wrench for rotating and applying torque forces to an object comprising:

(a) first powering means for rotating and exerting torque on said object;

(b) first control means for limiting the maximum torque exerted by said first powering means;

(c) second powering means including a power device separate from said first powering means for moving said wrench in a direction to increase the torque exerted on said object; and

(d) second control means for controlling said second powering means for increasing the torque on said object to a selected value above the maximum torque exerted by said first powering means.

4,938,110

CAM SHAFT TOOL

Daniel L. Ruby, Troy, Mich., assignor to Sandvik AB, Sandviken, Sweden

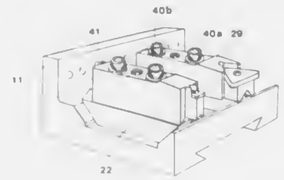
Filed Jun. 1, 1988, Ser. No. 200,919
Int. Cl.[5] B23B *29/00*
U.S. Cl. 82—138 **12 Claims**

1. A cam shaft tool for cutting a plurality of grooves in a rotating work piece which has a longitudinal axis extending in an axial direction, said axial direction being perpendicular to a radial direction, said tool comprising:

a first block having a plurality of second blocks mounted thereon, said first and second blocks having mating first abutment surfaces for guidance of said second block in said axial direction;

each said second block carrying a holder having a cutting insert at a radially forward end thereof, each said second block and said holder including mating second abutment surfaces for guidance of said holder in said radial direction;

a plurality of radial setting means for adjusting said holder relative to said second block in said radial direction;



a plurality of axial setting means for adjusting said second blocks relative to said first block in the axial direction without affecting the position of said second blocks in said radial direction, said axial setting means including rotatable adjusting pins that extend through holes in said second block and said holder and into a hole in said first block; and

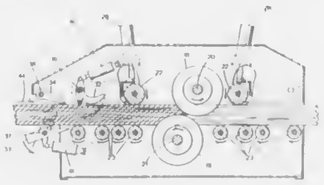
a plurality of fastening means for fixing the relative positions of said holders, said second blocks and said first block.

4,938,111

ANTI-KICKBACK DEVICE FOR A WOOD PROCESSING MACHINE

Serge Massé, Lachine, Canada, assignor to Institut de Recherche en Sante et en Securite du Travail du Quebec, West Montreal, Canada

Filed Dec. 30, 1988, Ser. No. 292,003
Claims priority, application Canada, Nov. 4, 1988, 582311
Int. Cl.[5] B26D *7/06, 7/22*
U.S. Cl. 83—425.3 **9 Claims**



9. For use in sawmill machines for ripsawing or square edging lumber, including at least a frame and means for feeding, frontwardly of said frame, lumber to a series of circular saws, an anti-kickback device for preventing said lumber from being thrown in a direction opposite to the feeding direction of the lumber in the machine, comprising: two or more shaft means mounted transversely of said frame upstream of said saws; a series of adjacently disposed fingers defining a protective curtain mounted on said shaft means; said fingers being pivotably mounted on said shaft and adapted to be moved as lumber is processed to said circular saws; each finger of a series mounted on one of said shaft means having a curved edge including a plurality of pointed lumber engaging elements peripherally spaced along said curved edge to engage lumber at various optimum angles depending on the thickness of lumber passing through the machine, the series of fingers on at least two of the shafts being located on opposite sides of the lumber and capable of engaging each other in the absence of said lumber.

4,938,112

APPARATUS AND METHOD FOR THE ACCELERATION OF PROJECTILES TO HYPERVELOCITIES

Abraham Hertzberg, Bellevue; Adam P. Bruckner, Seattle, and David W. Bogdanoff, Bellevue, all of Wash., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 623,829, Jun. 22, 1984, abandoned.
This application Dec. 23, 1986, Ser. No. 946,439
Int. Cl.[5] F41F *1/00*
U.S. Cl. 89—7 **14 Claims**



1. Apparatus for accelerating a projectile comprising:

a launch tube having an inlet end and a muzzle end;

a projectile disposed within said launch tube for acceleration from said inlet end to said muzzle end, said projectile and launch tube forming a ramjet;

a combustible gaseous mixture contained within said launch tube;

means for varying the density of said combustible gaseous mixture in a predetermined manner from the inlet end to the muzzle end of said launch tube to increase the speed of sound in a predetermined manner from the inlet end to the outlet end so that, as said projectile accelerates through said launch tube, the Mach number of said projectile is maintained within a predetermined range; and

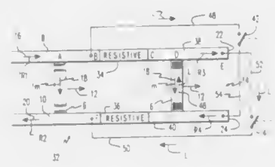
means for igniting said combustible gaseous mixture.

4,938,113

ELECTROMAGNETIC PROJECTILE LAUNCHER WITH REDUCED MUZZLE ARCING AND ASSOCIATED METHOD

George A. Kemeny, Wilkins Twp., Allegheny County, Pa., and William C. Coodit, Jr., Huletts Landing, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 29, 1988, Ser. No. 290,397
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 **1 Claim**



1. Apparatus for minimizing electrical arcing at the muzzle of an electromagnetic projectile launcher which includes a first section, a second section and a muzzle comprising:

current injecting means cooperating with the launcher for generating a generally unidirectional current in a first direction through the armature of the projectile when the projectile is in the first section and second section of the launcher; and

electrical circuit means cooperating with the launcher and said current injecting means for supplying a generally unidirectional current in a direction opposite said first direction through the armature of the projectile when the projectile is in the second section of the launcher;

said current injecting means being rail means, said rail means including a first rail with a first segment and a second segment and a second rail with a third segment and a fourth segment;

said first segment being electrically connected to said fourth segment;

said second segment being electrically connected to said third segment; and

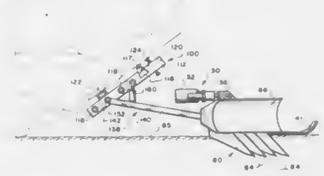
said rail means including first and second portions with said first portion being of a higher resistance than said second portion, whereby the net current flowing through the armature of the projectile is substantially reduced when the projectile exits the muzzle.

4,938,114

MINE CLEARING APPARATUS

John D. Matthews, Simi Valley, and Donald E. Williams, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1989, Ser. No. 415,760
Int. Cl.[5] F41H *11/12*
U.S. Cl. 89—1.13 **6 Claims**



1. Mine clearing apparatus, comprising:

a mount attached to the front of a pushing vehicle and adapted for the selectable receiving of said mine clearing apparatus;

means for positioning of said mine clearing apparatus above the ground while plowing and adapted to slide on top of virgin soil;

a crossbeam for receiving said positioning means;

first and second pushbars pivotally connecting said crossbeam to said mount;

first and second plowing apparatus angularly attached to the ends of said crossbar and including a plurality of vertically disposed, parallel tines for engaging and uplifting soil and mines and further including moldboards for sweeping aside said uplifted soil and mines;

sensing means, communicating with said mine clearing apparatus and said pushing vehicle, for continuously monitoring the relative position of said mine clearing apparatus and said pushing vehicle and producing control signals for maintaining said mine clearing apparatus of a constant depth of plow when said pushing vehicle moves up or down in response to reactive forces generated when said mine clearing apparatus encounters uneven or variable load terrain;

adjusting means on said crossbeam and communicating with said positioning means, said adjusting means being able to respond to control signals from said sensing means and thereby control said positioning means.

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4,938,115

ARRANGEMENT IN A FLYING WEAPONS CARRIER FOR COMBATING GROUND TARGETS

Ignaz von Maydell, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 116,022, Jan. 23, 1980, abandoned. This application May 24, 1989, Ser. No. 357,639

Int. Cl.[5] F41F *3/06*

U.S. Cl. 89—1.51 **10 Claims**



1. Arrangement for combatting ground targets by launching a projectile from a flying weapons carrier, comprising:

means for flying the weapons carrier in a first direction over the target,

a launching device on the weapons carrier and positioned to launch the projectile at a substantially constant ejection velocity downwardly and in a second rearwardly direction opposite to the first direction such that said ejected projectile has a horizontal velocity component in the second direction,

means for controlling the angle of inclination of the launching device relative to the target,

an aiming system having control units connected to the weapons carrier and to the angle-controlling means of the launching device,

said control units being operable to control the horizontal velocity of the weapons carrier in the first direction and the angle-controlling means of the launching device such that the projectile can be released in the nadir above the target and to increase the likelihood of the projectile striking the target.

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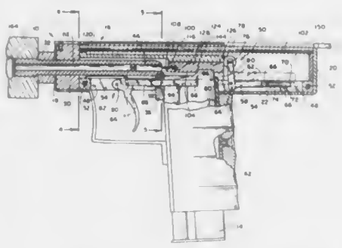
RECOIL SYSTEM FOR WEAPONS WITH A RECIPROCATING BREECH BLOCK

John L. Royster, 928 S. Yosemite, Denver, Colo. 80237

Continuation-in-part of Ser. No. 40,129, Apr. 20, 1987, abandoned. This application Feb. 26, 1988, Ser. No. 161,195

Int. Cl.[5] F41A *25/12*

U.S. Cl. 89—198 **26 Claims**



1. In a firearm of the type having a frame and a receiver, a barrel mounted on the fame and having a shell-receiving chamber with a breech that is located adjacent to a rear end of the barrel, the shell-receiving chamber including a mouth on a front end thereof into which a shell is inserted for firing with shell firing imparting recoil energy into the breech and producing an empty shell casing, means for extracting the empty shell casing from the breech and means for positioning a new shell for insertion into the breech, a block having sidewalls and a front end and a rear end housing within the receiver for reciprocating movement along a path between a closed position with said front end seated against the breech and a retracted position uncovering the breech, with the empty shell casing being extracted from the breech as said block moves from said closed position to said retracted position and the new shell being inserted into the breech as said block moves from said retracted position to said closed position, and a primary recoil absorption means including a spring normally biasing the block into said closed position operative during a retraction stroke thereof to absorb at least a portion of recoil energy associated with firing of said shell while the empty shell casing is being extracted and during a return stroke to force said block into contact against the new shell to pick up that new shell and force same into the shellreceiving chamber, the improvement in combination therewith comprising: secondary recoil adsorption measn which immediately after firing is in movement-controlling connection with said block during a time the empty shell is being extracted and cooperates with the primary recoil absorption means to slow down the retraction stroke of the block as it moves away from the breech and then after the empty shell has been extracted becomes essentially inactive with respect to controlling movement of said block and then prior to the new shell being contacted by the breech block for insertion into the breech reengages into movement-controlling contact with said block and once again cooperates with said primary recoil absorption means and speeds up the return stroke of said block to a speed which is faster than that speed attainable under an influence of the primary recoil absorption means alone to assist the primary recoil absorption means during the picking up of the new shell and forcing it into the breech, said secondary recoil absorption means including at least a first lever-actuating means mounted on the frame adjacent to the block for movement towards an extended position when moving in a direction which is identical to that in which said block moves during the return stroke thereof and towards a retracted position when moving in a direction which is identical to that in which said block moves during said retraction stroke, a first spring means connected to the first lever-actuating means normally biasing same into said extending position, means comprising a first lever arm having an antifriction means mounted thereon, said first lever arm being connected to said first lever-actuating means and to the frame for pivotal movement between a substantially upright operative position in engagement with the rear end of the block yieldably resisting movement of the latter into said retracted position and a reclining inoperative position alongside a sidewall of said block, said first spring means cooperating with the first lever-actuating means and the first lever arm when said first lever arm is in said upright operative position in engagement with the rear end of said block to assist the primary recoil absorbing means in slowing down movement of said block as it moves away from the breech, said first lever arm and said first lever-actuating means and any recoil energy left in said block next cooperating with one another when said block is partially retracted to overcome bias exerted by said first spring means and move said first lever arm with said antifriction means out of contact with the rear end of said block and to move said first lever arm into said reclining inoperative position alongside said sidewall of the block such that any recoil energy remaining in the block when the first lever actuating means moves into said reclining inoperative position is absorbed solely by the primary recoil absorption means, said primary recoil absorption means being solely operative thereafter to terminate the retraction stroke of said block and start said block on said return stroke, and said first spring means finally cooperating with the first lever-actuating means and the first lever arm after said block has progressed part way along its return stroke under bias imparted thereto by the primary spring recoil absorption means to reactivate said secondary recoil absorption means by returning said first lever arm into said upright operative position and said antifriction means in contact with the rear end of said block thereby assisting said primary recoil absorption means to push and speed the block into said closed position against the breech

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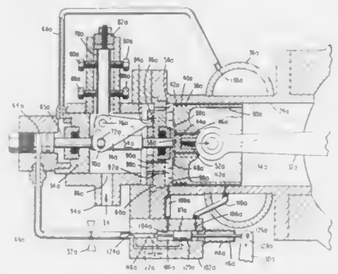
MULTICYLINDER SELF-STARTING UNIFLOW ENGINE

Barry W. Johnston, 2423 Pickwick Rd., Dickeyville, Baltimore, Md. 21207

Filed Mar. 31, 1988, Ser. No. 177,915

Int. Cl.[5] F01B *1/06;* **F01L** *25/02*

U.S. Cl. 91—286 **26 Claims**



1. A mechanism for ensuring self-starting of a multicylinder, single crankshaft, reciprocating piston engine with at least three cylinders evenly distributed around the common crankshaft, providing a rotational output solely upon provision thereto of a supply of an expandable working fluid at a predetermined initial condition, comprising:

speed-responsive first means that forcibly adjusts its position in correspondence with an output speed of the engine; and

second means for controlling the start and stop of an inflow of said expandable working fluid at said initial condition, into individual engine cylinders in a prescribed sequence, as a function of the position of each individual piston with respect to its top dead center (TDC) during a working stroke, in correspondence with said position of said first means, said inflow being controlled by said second means to extend for substantially the entire power stroke of each piston below a predetermined engine speed and for only a predetermined initial fraction of said power stroke at and above said predetermined engine speed.

4,938,118

CONTROL VALVE

Hans Wölfges, Lohr, and Wolfgang Volpert, Gemünden, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

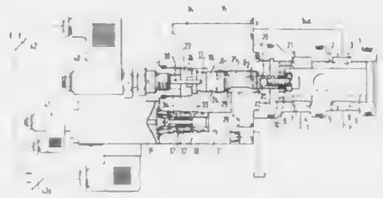
Filed Feb. 8, 1989, Ser. No. 307,832

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 3805288

Int. Cl.[5] F15B *13/16*

U.S. Cl. 91—361 **10 Claims**

1. Control valve comprising a regulating piston which by a control pressure is adjustable oppositely to a regulating pressure acting in a regulating pressure chamber on the regulating piston, control edges for selectively connecting the regulating pressure chamber to a fluid source or a tank, and a pilot valve driven by a signal depending on a desired value and a control position of the regulating piston, characterized in that the regulating piston is connected to an actuating piston having two portions of different cross-sectional area, the portion with a larger cross-sectional area subjected to the control pressure and the portion with a smaller cross-sectional area subjected in an opposite sense to the regulating pressure, and both of the



cross-sectional areas of the actuating piston being smaller than the cross-sectional area of the regulating piston.

4,938,119

VALVE MEANS

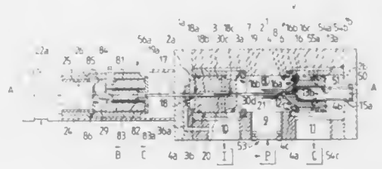
Pentti Rita, Poronkatu 4, SF-50190 Mikkeli, Finland

Filed Sep. 19, 1988, Ser. No. 246,346

Claims priority, application Finland, Sep. 22, 1987, 874147

Int. Cl.[5] F15B *13/043*

U.S. Cl. 91—461 **12 Claims**



1. A valve means comprising a valve body, a chamber space disposed within the valve body, two running spindles and seats disposed to cooperate and placed within said chamber space, each running spindle enabling an aperture defined in the respective seat to be controlled, and said valve means comprising an input duct, a return duct and a working duct, said ducts being connected to the chamber space, a pressurized fluid being supplied through said input duct in said chamber space and the fluid being conducted out of said chamber space through the controllable apertures by selectively positioning the running spindles to selectively direct fluid through the return duct or the working duct to at least one power cylinder, and the position of said running spindles and the size of said apertures being controlled with the aid of pilot valves, characterized in that through each running spindle has been provided a passage connecting a back chamber space behind the running spindle with the space in front of the running spindle, such as the chamber space and that in each passage have been disposed pilot valves by the aid of which the differential pressure across the running spindles is controlled and at the same time the position of the running spindles and the size of the apertures are controlled, as well as the fluid flow from the chamber space to the return duct and to the working duct.

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DEVICE FOR INFLUENCING THE RESET VALUE OF A VALVE

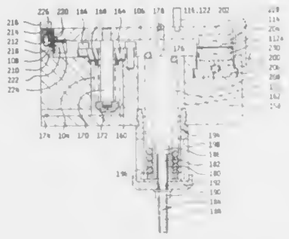
Carl H. Häfele, and Manfred Weyand, Korschenbroich, Fed. Rep. of Germany, assignors to Sempell Aktiengesellschaft, Fed. Rep. of Germany, a part interest

Continuation of Ser. No. 243,717, Sep. 13, 1988, abandoned. This application Jun. 15, 1989, Ser. No. 366,491

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1987, 3731661

Int. Cl.[5] F15B *15/26, 21/10;* **F16K** *31/08*

U.S. Cl. 92—16 **3 Claims**



1. A fluid operated drive assembly having snap characteristics for operating a closing control mechanism (126, 136, 118) comprising a fluid actuated motor (160 to 172) and biassing spring means (110) as well as magnet assembly (112, 114) including a stationary and a movable part made from magnetic material, driving members of said motor, said spring means and said magnet assembly acting on a lever (106) which in turn is connected to an output member (116) of the drive assembly, comprising abutment means (204) defining a minimum distance between the two parts of the magnet assembly, and comprising adjustment means (208) for varying the relative position between the two parts of the magnet assembly (112, 114) wherein the end faces of the two parts of the magnet assembly (112, 114) are adapted to be moved into a position of mutual surface contact thus forming said abutment means and wherein the adjustment means (208) act on one (112) of the parts of the magnet assembly (112, 114) for moving the latter in a direction that is perpendicular to the pivoting plane of the lever (106).

4,938,121

PISTON FOR INTERNAL COMBUSTION ENGINES AND LIKE MACHINES

Jean F. Melchior, 126 Bld Montparnasse, Paris 14ème, France

PCT No. PCT/FR88/00097, § 371 Date Aug. 29, 1988, § 102(e) Date Aug. 29, 1988, PCT Pub. No WO88/06250, PCT Pub. Date Aug. 25, 1988

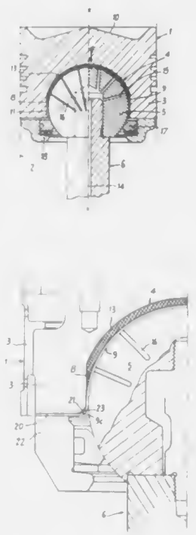
PCT Filed Feb. 22, 1988, Ser. No. 264,961

Claims priority, application France, Feb. 20, 1987, 87 02203

Int. Cl.[5] F01B *31/00*

U.S. Cl. 92—110 **25 Claims**

1. A piston for sliding in cylinders of reciprocating two-stroke or four-stroke internal or external combustion engines and compressors, i.e. machines in which the working gas contained in the or each cylinder (2) by a transverse surface (10) of the piston (1) is at both high pressure and high temperature, which piston (1) has, within an externally cylindrical skirt (3), a partly spherical bearing surface (4) for receiving in the manner of a ball joint a partly spherical head (5) of a connecting rod (6), characterized in that said piston comprises an inner cavity (7) open at an end opposed to said transverse surface (10) and laterally defined at least partly by a cylindrical bearing surface of revolution (8); in that a space (12) defined inside the cavity (7) by the partly spherical head (5) of the rod (6) is filled with a fluid (13) which is practically incompressible and which is viscous, pasty or plastically deformable at the high operating temperatures and pressures of the piston (1); and in that the diameter (D) of the cylindrical bearing surface (8) is very slightly larger than the diameter (d) of the partly spherical head of the rod (6) so that the operational clearance between



said cylindrical bearing surface (8) and said partly spherical head (5) is small enough to prevent any migration of said fluid (13) out of said space at the operating temperatures and pressures of the piston.

4,938,122

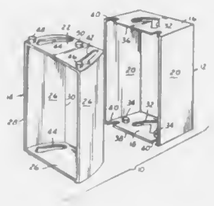
IMPROVED OUTLET ASSEMBLY

Vale M. Ziemba, Livonia, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 4, 1989, Ser. No. 445,527

Int. Cl.[5] B60H *1/34*

U.S. Cl. 98—2 **8 Claims**



1. An improved air directing outlet assembly for a vehicle air conditioner adapted to be located within an opening in a vehicle dashboard panel for selectively directing air flow straight out from the front of the outlet assembly or to either side, the improved assembly comprising: a generally rectangularly shaped frame member having side walls, opposite end walls and open front and rear faces so that air can flow into the rear face and discharge from the front face of the assembly; a barrel member with opposite end walls, opposite side walls and open front and rear faces so that air can pass through the assembly, the barrel member being configured and sized to fit within the walls of the frame, its opposite end walls extending in close overlying relation to the frame's end walls, the side walls of the barrel member being curved slightly inward toward one another from the front face to the rear face sufficiently to prevent interference as the barrel is rotated in the frame; a central pin and slot arrangement between the overlying end walls of the frame and the barrel, the slot having a substantially V-shaped configuration formed by intersecting apertures which diverging from their intersection in a direction toward the front face of the assembly, the pin positioned at the intersection of the V-shaped slot when the barrel is in a normal mid-position; a pivot pin and edge recess arrangement between each of the overlying end walls of the frame and barrel consisting of a pair of spaced pins extending outward from the end wall of the barrel and corresponding recesses formed in the forward edge of the frame's end wall so that when in the normal mid-position, the pair of pivot pins are received in the recesses whereby when the barrel member is pivoted either right or left, one of the pivot pins moves outward away from its corresponding recess while the barrel pivots about the other pivot pin in its corresponding recess while the central pin moves in the V-shaped slot away from the intersection of the apertures so that rotation of the barrel includes substantial but limited movement of one side edge outward from the instrument panel.

4,938,123

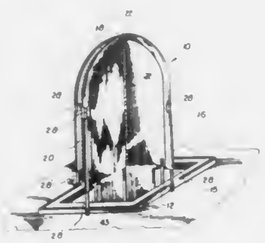
WIND DIRECTING ASSEMBLY FOR A BOAT HATCH OR LIKE STRUCTURE

Lin Hilton, 2816 NE. 25th Ct., Ft. Lauderdale, Fla. 33305

Filed Nov. 17, 1989, Ser. No. 439,252

Int. Cl.[5] B60H *1/26*

U.S. Cl. 98—37 **16 Claims**



1. A wind directing assembly for directing air to and thereby ventilating the interior of a structure through an opening such as a boat hatch, said assembly comprising:

(a) a support frame including a plurality of legs disposed in spaced relation to one another and including end portions mounted about the opening,

(b) a plurality of panels each interconnected along a substantially center seam line and extending radially outward therefrom, each of said panels comprising an upper portion and a lower portion,

(c) each of said panels being connected in supported attachment along an outer longitudinal edge to one of said plurality of legs of said support frame, said outer longitudinal edge extending about the periphery of said upper portion,

(d) said support frame and said upper portion of said plurality of panels extending outwardly from the opening in substantially overlying relation thereto and said plurality of panels disposed to direct air downwardly to said lower portion,

(e) said lower portion of said plurality of panels extending downward from said upper portion and passing through the opening, said lower portion disposed to direct airflow through said opening and into an interior space,

(f) said lower portion on said plurality of panels including a bottom transverse edge defined by a hollow sleeve extending therealong,

(g) at least two elongate mounting arms extending through said hollow sleeves, each individual one of said elongate mounting arms extending through said sleeves on an oppositely disposed pair of said panels and having opposite free ends protruding therefrom, and

(h) brace means attached to said plurality of panels and being adapted for connecting engagement with said elongate mounting arms so as to apply a downward force on said support frame and an upward force on said elongate mounting arms when said assembly is mounted about the opening.

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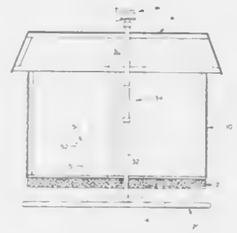
SUBSTRUCTURE RADON GAS EVACUATION SYSTEM

Roberto M. Garza, P.O. Box 7036, San Antonio, Tex. 78207

Filed Apr. 21, 1989, Ser. No. 341,416

Int. Cl.[5] F24F *11/00*

U.S. Cl. 98—42.04 **7 Claims**



1. A substructure gas ventilation system for a house or a similar habitable structure having substructure gas under the structure comprising:

a network of flow connected/perforated pipe under said structure;

a vertical pipe in flow connection with and rising from said network, said vertical pipe acting as a vent for said network;

first and second vacuum means for creating a negative air pressure in said vertical pipe, said negative air pressure being transmitted to said network to draw said substructure gas therethrough, said first vacuum means being a blower means in flow communication with said vertical pipe, and said second vacuum means being a Venturi structure exposed to wind, said Venturi structure being conductive of said wind therethrough, said Venturi structure further being in flow communication with said vertical pipe, said Venturi structure, when conductive of said wind, creating said negative air pressure in said vertical pipe; and

an air valve between said blower means and said Venturi structure, said air valve alternately connecting said vertical pipe to said blower means or to said Venturi structure, such that if said wind is not present through said Venturi structure to create said negative air pressure, said blower means will create said negative air pressure.

4,938,125

LIQUID DISPENSING APPARATUS

Don M. Wong, 2296 Bunker Hill Dr., San Mateo, Calif. 94402

Filed Oct. 28, 1982, Ser. No. 114,472

Int. Cl.[5] A47J *27/14, 27/66*

U.S. Cl. 99—326 **5 Claims**

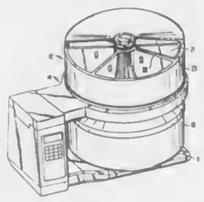
1. In a cooking apparatus for use in a domestic kitchen of the type including a cooking vessel and a dispensing structure defining a plurality of chambers for holding ingredients to be

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dispensed into the cooking vessel, the dispensing structure being mounted for rotation about a central axis of rotation so as to bring said chambers into position for dispensing their ingredients into said cooking vessel, apparatus for dispensing liquid ingredients or the like into said vessel comprising:

a liquid holding chamber disposed within said dispensing structure and movable therewith into dispensing position, said liquid holding chamber having a bottom wall formed with a dispensing orifice therein;

a liquid-dispensing actuator member pivotally mounted to the underside of said bottom wall to rotate about an actuator axis spaced from said orifice, said actuator member being formed with a first portion extending between said actuator axis and said orifice and a second portion extending away from and said first portion and toward the axis of rotation of said dispensing structure so as to form a lever arm for use in pivoting said actuator member about said actuator axis;



a closure member formed for sealing said orifice and disposed so as to be movable into and out of a sealing position at said orifice for respectively containing and releasing liquid ingredients within said liquid holding chamber; and

a camming member mounted proximate to said central axis of rotation in stationary relation with respect to said rotating dispensing structure and positioned to engage said lever arm as said dispensing structure rotates so as to urge said closure member out of said sealing position when said liquid holding chamber is in position for dispensing its liquid ingredients into said vessel.

4,938,126

TORTILLA PRESS APPARATUS

Manuel J. Rubio, 1621 Collings Ave. Apt. 1002, Miami Beach, Fla. 33139; Alberto de la Vega, Amazonas 101, PTE Garza Garcia, N.L., Mexico, and Eberhard M. Lobeck, 71 Aiken St., Norwalk, Conn. 06851

Filed May 9, 1988, Ser. No. 191,977

Int. Cl.[5] A47J *37/00*

U.S. Cl. 99—349 **10 Claims**

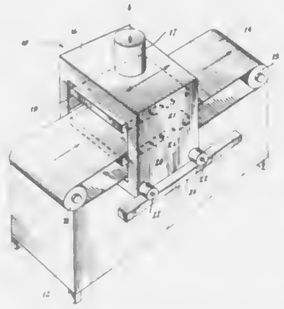
1. Press apparatus for pressing dough units into flat, pancake-like shapes, comprising,

a press having upper and lower platens between which is positioned a dough unit carrying conveyor belt traveling at a predetermined velocity, wherein

each of said platens has a substantially flat planar pressing surface and said surface of each is in substantially parallel, opposing, facing relationship to that of the other,

at least the upper of said platens is moveable vertically to position said surfaces of said platens in close, spaced-apart juxtaposition at a first predetermined distance from each other while said press moves in the same direction and at the same speed as said belt, and wherein, within a period of time that is sufficient for unpressed doughballs being transported by said belt to become positioned between said pressing surfaces of said platens,

the upper of said platens then moves upward until its said surface is spaced apart from said surface of said lower platen by a second predetermined distance while said press reduces its speed progressively from that of said belt until said press stops, and thereafter moves counter-directionally to said belt to a predetermined point, and then again moves in the same direction as said belt at an increasing speed until it has attained substantially the same speed as the belt when said upper platen moves downward until its said surface reaches said first predetermined distance from said surface of the lower platen.



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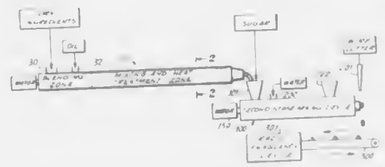
EXTRUDER AND CONTINUOUS MIXER ARRANGEMENT FOR PRODUCING AN AT LEAST PARTIALLY BAKED PRODUCT HAVING A COOKIE-LIKE CRUMB STRUCTURE INCLUDING A POST-EXTRUSION RADIO FREQUENCY DEVICE

Bernhard H. van Lengerich, Ringwood, N.J., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 362,490, Jun. 7, 1989, abandoned. This application Nov. 22, 1989, Ser. No. 441,240

Int. Cl.[5] A21C *3/04;* **A47J** *27/12;* **A23P** *1/00*

U.S. Cl. 99—353 **18 Claims**



1. An apparatus for producing a product having a cookie-like crumb structure, which comprises

an extruder including a housing having a screw channel formed along the longitudinal axis of the housing;

at least one screw-type element rotatably received within the screw channel to convey and mix ingredients;

a feed port means arranged in the housing adjacent the upstream end thereof to input ingredients into the screw channel for conveyance and mixing by the screw-type element;

means for inputting at least certain ingredients of a cookie-like dough formulation, including oil and flour, with less than a preselected total water content, by weight, of the ingredients;

the means for inputting being coupled to the feed port means;

a vigorous mixing zone formed by the screw channel and screw-type element downstream from the feed port means to vigorously mix and convey the ingredients input into the feed port means;

a temperature control means operating to elevate the temperature of the screw channel for heat treatment of the ingredients input into the feed port means in a heat treatment zone of the housing extending downstream from the feed port means;

a second stage mixing apparatus including an inlet port coupled to the downstream end of the extruder housing to receive, mix and convey the heat treated ingredients conveyed through the extruder;

an added water inlet port arranged in the second stage mixing apparatus;

a source of water coupled to the added water inlet port to add a preselected amount of water through the added water inlet port to increase the water content and modify the consistency of the heat treated ingredients from the extruder input into the inlet port of the second stage mixing apparatus;

a mixing zone formed by the second stage mixing apparatus and operating to mix the added water throughout the heat treated ingredients under pressure and temperature conditions to avoid substantial oil separation from the heat treated ingredients and added water; and

an output means at the downstream most end of the second stage mixing apparatus; and

a radio frequency device coupled to the output means of the continuous mixing apparatus to receive and further heat treat the ingredients output by the output means of the continuous mixing apparatus.

4,938,128

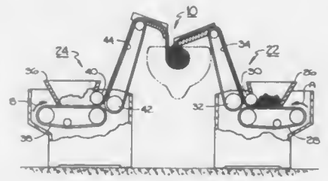
APPARATUS FOR FORMING A CONFECTIONARY ROPE HAVING A VISCOUS CENTER

Leslie F. Knebl, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 28, 1988, Ser. No. 265,370

Int. Cl.[5] A23P *1/00*

U.S. Cl. 99—450.6 **11 Claims**



1. An apparatus for forming a confectionary rope having a viscous candy center-fill and a semi-solid candy outer layer, comprising:

an inclined elongated cradle having an upper end and a lower end and having a plurality of rotatable frustoconical rollers arranged to extend substantially in the machine direction in side-by-side relationship with their respective narrow portions at the lower end of said cradle to provide continuous arcuate contact with a moldable mass passing through said cradle;

a first feed assembly for delivering said center-fill to said cradle near said upper end;

means for rotating said rollers to form said center-fill into a cylindrical shape and to rotate said center-fill in said cradle as said center-fill progresses down said inclined cradle; and

a second feed assembly positioned near said lower end for inserting a portion of said outer layer between said rollers and said cylindrically formed center-fill as said center-fill rotates in said cradle.

4,938,129

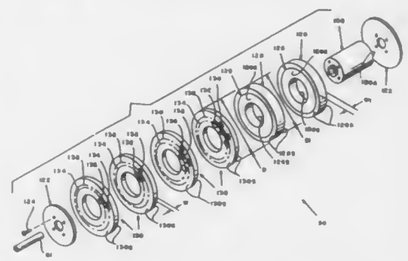
MAILING MACHINE INCLUDING IMPROVED IMPRESSION ROLLER

Joseph F. Miciukiewicz, Trumbull, Conn., and Alfred J. Santilli, Mamaroneck, N.Y., assignors to Pitney Bowes, Stamford, Conn.

Filed Sep. 28, 1989, Ser. No. 413,808

Int. Cl.[5] B41J *45/00*

U.S. Cl. 101—76 **25 Claims**



1. In a mailing machine including an impression roller, a postage indicia printing drum overhanging the impression roller, and means for rotating the impression roller and drum in timed relationship with one another for feeding a sheet beneath the drum and in printing engagement therewith, wherein the feeding means includes shaft means on which the impression roller is mounted for rotation therewith, an improved impression roller comprising:

a. two annularly-shaped inner members made of a soft resilient material, the inner members coaxially mounted side by side on the shaft means;

b. two annularly-shaped outer members made of a hard resilient material, the outer members coaxially mounted on the inner members; and

c. four annularly-shaped disc members made of a hard resilient material, the disc members coaxially mounted on the shaft means, each of said disc members dimensioned such that the width thereof is half the width of an outer member, and each of said disc members including a plurality of apertures formed therethrough at equidistantly spaced intervals along a circular line extending coaxially thereof.

4,938,130

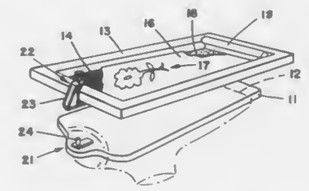
SCREEN PRINTING REGISTRATION DEVICE AND REGISTRATION METHOD

Robert C. Thorpe, 4439 Edwards La., Castro Valley, Calif. 94456

Filed Jun. 7, 1989, Ser. No. 362,618

Int. Cl.[5] B05C *17/08*

U.S. Cl. 101—126 **9 Claims**



7. In combination with a screen printing press of the form having at least one platen which has a platen surface for supporting material that is to be printed upon, said screen printing press further having at least one screen frame which has edge members framing a porous screen or the like, said screen print-

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ing press further having a screen frame clamping arm which can be pivoted about a pivot axis to travel said screen frame towards said platen from a location spaced apart therefrom and which includes means for enabling selectable movement of said screen frame relative to said clamping arm in a plane parallel to said platen followed by clamping of said frame to immobilize said frame relative to said clamping arm, screen registering apparatus comprising:

a register pin attached to an edge region of said platen surface that is remote from the pivot axis of said frame clamping arm and which extends outward from said platen surface towards one of said edge members of said screen frame,

a selectively movable clamp fitted on to said one of said edge members of said screen frame and having an inner arm which extends between said one edge member and said platen surface and a spaced apart parallel outer arm, said one edge member being received between said inner and outer arms, said clamp further having at least one register pin receiving passage in said inner arm thereof that is located to be entered by said register pin as said screen frame approaches said platen, said clamp having clamping means for selectively enabling movement of said frame relative to said clamp in each of two orthogonal directions while said clamp is engaged on said register pin followed by immobilization of said frame and clamp relative to each other.

4,938,131

CLAMP DEVICE FOR THE CYLINDER WIPER BLADE IN A ROTOGRAVURE PRINTING MACHINE

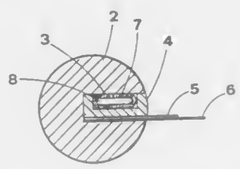
Luigi Maggi, Piacenza, Italy, assignor to Schiavi Cesare Costruzioni Meccaniche S.p.A., Milano, Italy

Filed Oct. 7, 1988, Ser. No. 254,960

Claims priority, application Italy, May 15, 1987, 40054 A/87

Int. Cl.[5] B41F *9/10*

U.S. Cl. 101—169 **7 Claims**



1. A device for clamping the cylinder wiper blade in rotogravure printing machines, comprising:

a bar having a longitudinal chase;

a back-up iron facing said wiper blade;

a pressure plate urging against said back-up iron facing said wiper blade;

a sheath reservoir formed by a flexible sheath lodged between said pressure plate and one wall of said longitudinal chase; and

means for selectively directing a pressurized fluid into said sheath reservoir so as to selectively expand said flexible sheath and cause said pressure plate to apply a constant clamping action against said back-up iron along the entire length of said wiper blade, and for selectively exhausting said pressurized fluid out from said sheath reservoir so as to release said wiper blade from said pressure plate and said back-up iron to permit wiper blade disassembly and/or replacement.

4,938,132

HAND OPERATED IMPRINTER APPARATUS

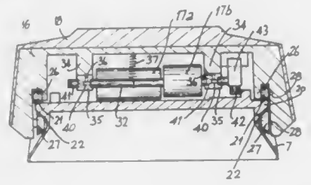
John P. Finn; Raymond Kenny, both of Blanchardstown; Cornelius B. Clarke, Raheny, and Patrick J. Lawlor, Dublin, all of Ireland, assignors to Security Imprinter Corporation, Walkersville, Md.

Continuation-in-part of Ser. No. 833,601, Feb. 27, 1986, abandoned. This application May 18, 1987, Ser. No. 51,572

Claims priority, application Ireland, Nov. 18, 1985, 2885/85

Int. Cl.[5] B41F *3/04*

U.S. Cl. 101—269 **8 Claims**



1. In a hand operated imprinter for imprinting characters from a card-like character source member such as a credit card or the like onto a sheet material document, comprising an elongated generally rectangular base member having a flat upwardly facing panel forming a document supporting surface, a reciprocative carrier member transversely spanning the base member supporting imprinter roller means and movable longitudinally over the document supporting panel from a start position adjacent one end of the panel to a reversing return position adjacent the other end of the panel, the carrier member having opposite side portions flanking opposite sides of the base member, said imprinting roller means comprising at least one imprint roller for engaging a document when positioned on said panel overlying said character source member during movement of said carrier member between said start and return positions, the base member and carrier member having coactive means for moving the imprint roller from a raised inactive position to an imprint position engaging the document to cause imprinting of characters on said source member onto the document during such last-mentioned movement of the carrier member; the improvement comprising said base member having track means at said opposite sides of the base member longitudinally spanning the length of the base member for movably supporting and guiding the carrier member during its movement, said track means at each of the opposite sides comprising an upwardly facing first track surface disposed in substantially a horizontal plane paralleling said panel and an inclined downwardly and outwardly facing second track surface formed by an upper side face of an outwardly opening track channel at each opposite side of the base member having outwardly diverging upper and lower side faces, the portion of said base member at each side thereof lying between said first and second track surfaces defining a truncated triangular rib formation, and said carrier member having a pair of pinched action bearing roller assemblies at the respective opposite side portions thereof each comprising an upper roller having a cylindrical periphery concentric with a horizontal axis of rotation thereof disposed in confronting downwardly bearing rolling relation to said upwardly facing first track surface adjacent thereto and a tapered inwardly convergent substantially conical companion lower roller spaced directly below the upper roller and bearing upwardly in confronting rolling relation against said upper side face of the adjacent track channel, said upper roller and companion lower roller at each side of the carrier member being spaced so as to exert a vertically directed converging pinch action on and embracing said truncated triangular rib formation at the adjacent side of the base member.

4,938,133

PRINTING MACHINE HAVING CHAMBERED DOCTOR BLADE UNIT INKER

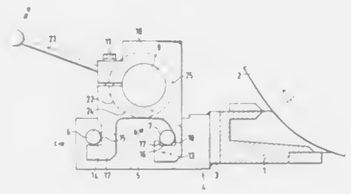
Georg Bock, Augsburg; Franz X. Gollinger, Hirschbach, and Thomas John, Augsburg, all of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Augsburg, Fed. Rep. of Germany

Filed Sep. 6, 1989, Ser. No. 403,760

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1988, 3832160

Int. Cl.[5] B41F *31/00, 9/16*

U.S. Cl. 101—349 **20 Claims**



1. A printing machine having a chambered doctor blade unit inker comprising

a cross member (9) extending axially parallel to an ink receiving roller (2),

at least one chambered doctor blade unit (1) adjacent said ink receiving roller (2);

at least one carrier element (4) secured to said at least one chambered doctor blade unit;

at least one holder element (10) secured to said cross member (9) for retaining said chambered doctor blade unit;

coupling means for releasably coupling said at least one holder element (10) and said at least one carrier element (4) including

an axially extending projecting means (6, 7) formed on one (4) of said elements and hook-like extending means (12, 13) formed on the other (10) of said elements to receive said projecting means (6, 7),

said axially extending projecting means (6, 7) and said hook-like extending means (12, 13) being located on at least one line extending substantially radially, with respect to said ink receiving roller,

wherein the hook-like extending means (12, 13) define a support surface (14, 16; 28) and

the hook-like extending means (12, 13), in a region closest to the ink receiving roller (2), is formed with two radially spaced positioning surfaces (17, 18; 28),

for receiving, supporting and positioning said axially extending projecting means (6, 7);

and a clamping means (22) actuatable in first and second directions located on the cross member (9) adjacent the holder element (10),

said axially extending projecting means (6, 7) and the hook-like extending means (12, 13), upon actuation of said clamping means in the first direction, engaging the axially extending projecting means (6, 7) against said support surfaces (14, 16; 28) when the chambered doctor blade unit (10) is in operative position upon actuation of said clamping means in the second direction, while release of said chambered doctor blade unit (1) from said operative position and pivoting of said unit to an inoperative position is permitted.

4,938,134

PRINTING PLATE CLAMPING ASSEMBLY

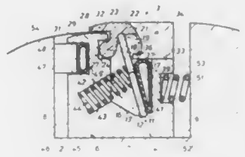
Willi R. L. Dörsam, Höchberg, and Karl-Heinz A. Schneider, Würzburg, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Sep. 13, 1988, Ser. No. 243,724

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731039

Int. Cl.[5] B41F *27/12*

U.S. Cl. 101—415.1 **5 Claims**



1. A flexible printing plate clamping assembly for securing a flexible printing plate on the periphery of a plate cylinder in a rotary printing machine, said flexible printing plate clamping assembly comprising:

a printing plate clamping housing positioned in an axially extending groove formed in the periphery of the plate cylinder;

a clamping bar pivotably carried in said printing plate clamping housing and having a printing plate clamping flap;

a plurality of elbow lever assemblies carried in said housing and pivotable between folded and straight positions to effect movement of said clamping bar between printing plate clamping and unclamping positions; and

spring means and opposing expandable means to pivot said elbow assemblies between said folded and straight positions.

4,938,135

PLATE CLAMPING ASSEMBLY

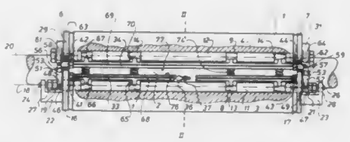
Erich G. Wieland, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Sep. 13, 1988, Ser. No. 243,844

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1987, 3731684

Int. Cl.[5] B41F *13/16, 27/12*

U.S. Cl. 101—415.1 **5 Claims**



1. A plate clamping assembly useable to clamp and to slidably and skewably position a printing plate on a plate cylinder of a rotary printing machine, said plate clamping assembly comprising:

first and second spaced clamping bars, each of said clamping bars being axially slidable and pivotable in a groove in the plate cylinder, each of said clamping bars being adapted to receive an end of the printing plate;

first and second rotatable adjusting shafts associated with said first and second clamping bars respectively and being

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positioned in said groove and each having a plurality of axially spaced truncated cones said truncated cones being positioned eccentrically with respect to axes of rotation of said adjusting shafts, one of said first and second rotatable adjusting shafts being axially slidable; and

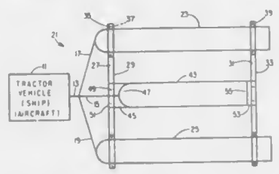
means for communicating said axial sliding movement of said one of said adjusting shafts to said first and second clamping bars.

4,938,136

RESONANT ACOUSTICMAGNETIC MINISWEEPER

Paul F. Gould, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1976, Ser. No. 651,489
Int. Cl.[5] F42B *22/00*
U.S. Cl. 102—406 **6 Claims**



1. A minesweeping system, comprising in combination:

means for generating and broadcasting a predetermined magnetic field throughout a given environmental medium;

means for generating and broadcasting acoustical energy of predetermined frequency throughout the aforesaid given environmental medium;

holding means connected to said predetermined magnetic field generating and broadcasting means and to the aforesaid acoustical energy generating and broadcasting means for the holding thereof in such predetermined spatial dispositions that the magnetic field and acoustical energy respectively broadcast thereby comingle throughout said given environmental medium during the broadcasts thereof;

said holding means comprising a first substantially rigid strap means connected to said predetermined magnetic field generating and broadcasting means adjacent the front end thereof and extending substantially normally from the longitudinal axis thereof, a second substantially rigid strap means connected to said predetermined magnetic field generating and broadcasting means adjacent the rear end thereof and extending substantially normally from the longitudinal axis thereof in substantially the same plane as the aforesaid first strap means, a first hinge means connected between said second substantially rigid strap means and the front end of the aforesaid acoustical energy generating and broadcasting means, and a second hinge means connected between said second substantially rigid strap means and the rear end of said acoustical energy generating and broadcasting means.

4,938,137

EXPLODING BRIDGEWIRE DRIVEN MULTIPLE FLYER DETONATOR

Roland H. Guay, 7764 Squirehill Ct., Cupertino, Calif. 95014

Filed Jun. 5, 1989, Ser. No. 362,629
Int. Cl.[5] F42B *3/12, 3/22*
U.S. Cl. 102—202.7 **18 Claims**

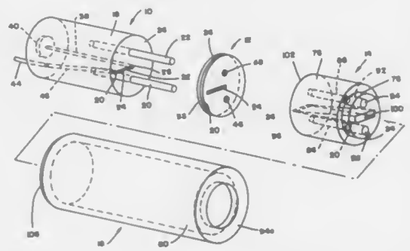
1. Apparatus for initiating an explosive comprising:

(a) a bridgewire;

(b) a header assembly means for supporting said bridgewire, said means for supporting said bridgewire having a first surface with a channel in which said bridgewire is disposed;

(c) electrically conductive means coupled to each of the respective ends of said bridgewire for applying an initiating electrical current across the channel confined bridgewire to explode said bridgewire, thereby producing channel confined explosive gases and particles;

(d) a multiple flyers bridge disc having a first layer of electrical insulator adjacent to said first header assembly, a second layer of metal cladding on said electrical insulator layer and having a bridge comprised of a plurality of flyers aligned with said bridgewire, said bridge being disposed over said bridgewire in a path of said explosive gases and particles, from said bridgewire when exploded, said explosive gases and particles ejecting said plurality of flyers from said multiple flyers bridge disc; and



(e) means for directing said ejected plurality of flyers away from said disc and said header assembly,

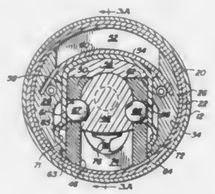
(f) means for directing said ejected flyers to impact an explosive which includes a barrel having a first surface disposed adjacent to said bridge disc having an internal longitudinal slot of gradually increasing cross-section and thereby said slot has a small end and a large end, said slot having the same cross-sectional dimensions as said bridge at the smaller end, said slot being disposed over and aligned with said bridge so that said plurality of flyers are directed toward an explosive which is disposed to have a face aligned with a second surface of said barrel, said slot providing a controlled run distance for said plurality of flyers toward said explosive.

4,938,138

SAFING AND ARMING MECHANISM WITH CREEP RIBBON ARMING DELAY

William O. Maruska, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 7, 1989, Ser. No. 389,921
Int. Cl.[5] F42C *15/04, 15/26, 15/34*
U.S. Cl. 102—235 **20 Claims**



1. A safing and arming mechanism (20) for a spin stabilized projectile (16) containing an explosive charge (24) and a fuzing system (18) including a detonator (38), said safing and arming mechanism (20) comprising:

(a) a safing and arming housing (26) mounted in the base of the projectile (16), said housing (26) having two faces including a first face (28) in communication with said explosive charge (24) and a second face (30) in communication with the fuzing system (36);

(b) a blow-through hole (32) formed through said safing and arming housing (26), said blow-through hole (32) communicating with the detonator (36);

(c) a barrier (48) mounted within said housing, said barrier (48) being movable from a first position, in which said barrier (48) blocks said blow-though hole (32), to a second position in which said barrier (48) does not block said blow-through hole (32);

(d) restraining means (67,68) for preventing movement of said barrier (48) from said first to said second position, said restraining means (67,68) being movable from a restraining position, in which said restraining means (67,68) lock said barrier (48) into said first position above said blow-through hole (32), to a releasing position in which said restraining means (67,68) allow said barrier (48) to move out of said second position away from said blow-through hole (32); and

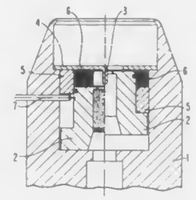
(e) mechanical delay means (54) for mechanically delaying release of said restraining means (67,68) until a predetermined time period has elasped, said mechanical delay means (54) comprising a creep element which, under typical firing conditions, is deformable from a first state, in which said creep element holds said restraining means (67,68) in said restraining position, to a second state, in which said creep element allows said restraining means (67,68) to move into said release position, wherein deformation of said creep element occurs at a rate determined by the creep characteristics of the material from which said element is formed.

4,938,139

AFTER-FIRING SAFETY DEVICE IN A PROJECTILE WITH PERCUSSION FUZE

Uwe Brede; Ernst Jensen, and Helmuth Werner, all of Furth, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 273,573, Nov. 21, 1988, abandoned. This application Jun. 6, 1989, Ser. No. 363,282
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1987, 3739368
Int. Cl.[5] F42C *15/04, 15/20*
U.S. Cl. 102—249 **8 Claims**



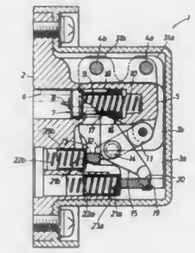
1. An after-firing safety device in a nonspinning projectile having a percussion fuze said device comprising a tension spiral spring set surrounded by a cage, said spring set occupying a space formed between a detonator and a primer needle to such an extent that contacting of the detonator by the primer needle is precluded, and the spiral spring set is afforded the possibility of relaxing only after firing of the projectile by displacement of the cage due to acceleration of the projectile, said space becoming available and thereby making movement of the detonator possible, said spiral spring set comprising several spiral springs wound up in series in respectively opposite directions and being inserted within the cage.

4,938,140

DECELERATION SENSOR

Yoshihiko Kinoshita; Kazuhiro Kishimoto, and Hiroshi Tabata, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,663
Claims priority, application Japan, Sep. 29, 1988, 63-245788; Oct. 19, 1988, 63-136505[U]
Int. Cl.[5] F42C *1/04;* B60R *21/08;* H01H *35/14*
U.S. Cl. 102—274 **8 Claims**



1. A deceleration sensor, comprising:

a sensor casing having a middle part defining a guide bore extending in a certain direction;

a pair of pendulums pivotally suspended from upper parts of said casing at their upper ends in individually pivotable manner;

a pair of biasing spring means for opposing movement of said pendulums against their inertia forces;

a firing pin slidably received in said guide bore;

drive spring means urging said firing pin toward fuse means which is intended to be activated by said deceleration sensor;

a swing arm which is pivotally attached to said sensor casing at its one end and engaged by one of said pendulums at its other end; and

a trigger arm which is pivotally attached to a middle part of said swing arm so as to be able to swing in a same plane as said swing arm, and is engaged by the other of said pendulums at its one end and engages said firing pin against the spring force of said drive spring means at its other end;

whereby said trigger arm keeps said firing pin at its non-active state against the spring force of said drive spring means when neither one of said pendulums is displaced by more than a certain threshold value and releases said firing pin into its active state under the spring force of said drive spring means when at least one of said pendulums is displaced by more than the threshold value.

4,938,141

SHOCK INITIATOR DEVICE FOR INITIATING A PERCUSSION PRIMER

W. Keith Gallant, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

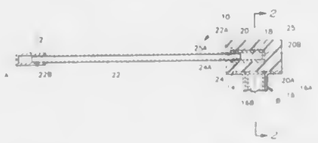
Filed Jun. 19, 1989, Ser. No. 368,477
Int. Cl.[5] F42B *19/08*
U.S. Cl. 102—275.4 **10 Claims**

1. A shock wave initiator device for initiating a percussion primer, said device comprising:

(a) a primary explosive of a type which upon ignition is capable of detonation and thereby producing a shock wave;

(b) a cup enclosing said primary explosive and having an opening only at one end;

(c) a body for engaging the primary, said body being a core of material having a central cavity with an opening only at one end, said cup and said primary explosive therein being contained in said cavity with said openings of said cup and cavity aligned in communication with one another and the exterior of said body, said body encompassing said cup and primary explosive and being capable of transmitting



said shock wave produced by said detonation to the primer; and

(d) an energy transfer link having an end extending from the exterior of said body through said aligned openings of said body cavity and said cup and into said cup into direct contact with said primary explosive therein for communicating a source of input energy to said primary explosive for igniting said primary explosive which then detonates.

4,938,142

DROPPABLE AMMUNITION

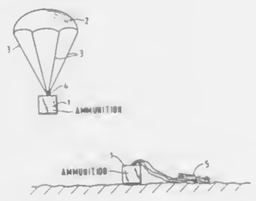
Peter Sundermeyer, Lauf, Fed. Rep. of Germany, assignor to DIEHL GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jun. 22, 1989, Ser. No. 370,197

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1988, 3824374

Int. Cl.[5] F42B *23/24*

U.S. Cl. 102—293 **4 Claims**



1. A droppable ammunition, in particular ammunition which is adapted to lie in-wait; comprising a parachute and means for the elimination of said parachute subsequent to landing of said ammunition on the ground; the parachute being equipped with fuse cords and with a fuze which ignites the fuse cords subsequent to said landing on the ground.

4,938,143

BOOSTER SHAPED FOR HIGH-EFFICIENCY DETONATING

Ronald D. Thomas, Woodland Hills, and Robert W. Levan, Orem, both of Utah, assignors to Trojan Corporation, Salt Lake City, Utah

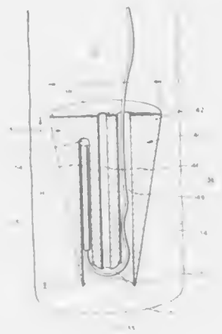
Continuation of Ser. No. 44,513, Apr. 29, 1987, abandoned. This application Feb. 3, 1989, Ser. No. 306,810

Int. Cl.[5] F42B *3/00*

U.S. Cl. 102—318 **27 Claims**

18. A booster for use with a means for detonating the booster to explode a column of explosives filling a longitudinal portion of a borehole, said booster comprising:

(a) a quantity of selectively detonatable high energy material formed into a body portion terminating at one end thereof in an interface surface for contacting and being directed toward the majority of the explosives in the column of explosives with said interface surface oriented normal to the longitudinal axis of the borehole and with the other end of said body portion being on the opposite side of said interface surface from the majority of the explosives in the borehole, the area of the cross-section of said booster and any plane parallel to said interface surface diminishing with the distance of said plane therefrom, and the volume of said booster being in the range of from about one-third to about two thirds of the volume of a reference booster



having an equal height, an identical interface surface, and sides normal thereto; and

(b) means for engaging the booster with said means for detonating the booster, such that said means for engaging orients the interface surface of the booster to be directed toward the majority of explosives in the column of explosives and said body portion to be on the side of said interface surface opposite the majority of the explosives in the column of explosives.

4,938,144

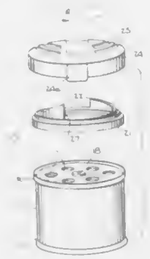
MOTION ACTIVATED THERMAL FOGGER

Scott W. Demarest, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 16, 1988, Ser. No. 155,949

Int. Cl.[5] A01M *13/00*

U.S. Cl. 102—334 **7 Claims**



1. A motion activated thermal fogger apparatus comprising:

a combustible material;

a base portion containing therein a compartment for containing said combustible material and having at least one opening in the upper surface thereof for allowing the escape of fumes emitted after the combustible material has been ignited;

a percussion ignitor for igniting the combustible material in response to forceable impact, said ignitor being mounted within said housing and disposed so as to communicate with the combustible material; and

detachably attached to said base portion, actuator means for actuating said ignitor such actuator means further comprising top housing having at least one opening therein for allowing the escape of fumes, a spring portion which has a spring, fixed at one end and having a contact portion thereupon and a loading portion, said loading portion having at least one camming ramp therein, said top housing being rotatable relative to said loading portion so that said spring is forced along and up said camming ramp by said rotation, loading said spring relative to the base portion, so that, when sufficient rotational force has been applied, said spring falls from the end of the camming ramp with sufficient impact to ignite said percussion ignitor within said base portion.

4,938,145

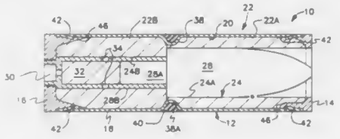
CASED TELESCOPED AMMUNITION HAVING FEATURES AUGMENTING CARTRIDGE CASE DIMENSIONAL RECOVERY BY CASE SKIN TUBE

Wilford E. Martwick, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 154,560, Feb. 10, 1988, abandoned. This application Nov. 24, 1989, Ser. No. 440,489

Int. Cl.[5] F42B *5/045*

U.S. Cl. 102—434 **13 Claims**



8. In a cased telescoped ammunition round, the combination comprising:

(a) an elongated propellant charge having an axial bore therethrough;

(b) an elongated tubular case composed of a skin tube having opposite ends terminating in edges and end caps on said opposite ends of the tube, said case defining a chamber that contains said propellant charge;

(c) tubular means disposed in said case extending at least partially through said axial bore of said propellant charge at an aft portion thereof and attached at least at its aft end to said aft end of said case;

(d) a projectile housed within a forward portion of said axial bore of said propellant charge;

(e) a primer positioned within an aft portion of said tubular means and being actuatable for igniting said propellant charge to cause firing of said projectile forwardly from said case; and

(f) attachment means for locking said end caps onto said opposite ends of said skin tube of said case, said attachment means including

(i) a plurality of inclined spring fingers formed from said skin tube adjacent each of said opposite ends thereof, said spring fingers at each skin tube end having inner free ends and being bent to project in an inclined fashion away from said skin tube and toward the opposite tube end, and

(ii) an annular recess defined in each of said end caps, said recess having an outboard shoulder and an inboard end spaced from said shoulder, said recess also slanting at a slight angle to said skin tube so as to complement the inclination of said spring fingers for seating one of said skin tube ends and said inclined spring fingers projecting therefrom in locking relation in said slanting recess with said edge of said one skin tube end abutting said outboard shoulder of said recess and said free ends of said inclined spring fingers on said one skin tube end abutting said inboard end of said recess.

4,938,146

GRENADE-TYPE PROJECTILE

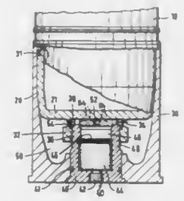
Michael Günther, Meerbusch, and Wolfgang Graupner, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 22, 1989, Ser. No. 410,521

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1988, 8812000[U]

Int. Cl.[5] F42B *5/067*

U.S. Cl. 102—439 **7 Claims**



1. Ammunition comprising

(a) a cartridge casing having a length, a frontal end portion and a rear base;

(b) a propellant unit disposed in the cartridge casing and having a generally cylindrical propellant housing having a length oriented codirectionally with the length of the cartridge casing, a rear terminal portion held in said rear base and a frontal terminal portion provided with an external thread; said housing having a diameter at least approximately corresponding to the length thereof; said housing accommodating a propellant;

(c) a projectile housing having a length, a thinwalled and generally bowl-shaped rear length portion, a fragmentation length portion situated in front of said rear length portion, and a rear base constituting a rear terminus of said rear length portion; said rear length portion of said projectile being received in said frontal end portion of said cartridge casing; said rear base of said projectile housing having an exterior face oriented towards the rear base of said cartridge casing;

(d) an explosive charge accommodated in said fragmentation length portion;

(e) a forwardly acting shaped charge liner bounding said explosive charge at a front end thereof;

(f) a fuze accommodated in said rear length portion;

(g) an annular sleeve affixed to said exterior face and being in alignment with said propellant housing; said annular sleeve having

(1) an internal thread being in a threaded engagement with the external thread of said propellant housing; and

(2) means defining weakened portions immediately adjacent said exterior face for causing a rupture of said annular sleeve at said weakened portions in response to a predetermined propelling force seeking to separate said projectile housing from said cartridge casing upon igniting said propellant.

4,938,147

HIGH IMPACT EXPANDABLE BULLET

Paul Czetto, Jr., 163 Cocoa Dr., Tavernier, Fla. 33070

Filed Jun. 7, 1989, Ser. No. 363,043

Int. Cl.[5] F42B *12/34*

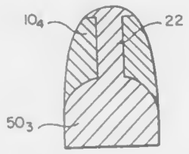
U.S. Cl. 102—507 **6 Claims**

1. An expandable bullet which includes a leading end and a

trailing end and which, when fired, expands upon impact, said bullet having a substantially smooth, continuous side wall and comprising:

a first, nose part of a soft metal comprising lead disposed at the leading end of the bullet and including a central opening therein; and

a second, separately formed, unitary, one piece rear part of a soft metal comprising lead, said rear part comprising a base portion which defines the trailing end of the bullet and an integral central column of a substantially smaller



diameter than said base portion extending outwardly from said base portion through the central opening of said nose part, the diameter of said base portion being substantially equal to the base diameter of the bullet, the distal end of said central column including laterally extending portions which overlie portions of said nose part defining the distal end of said central opening so as to assist in holding the two parts together, and said column being at least substantially equal in length to said base portion and being cylindrical in shape over substantially the entire length thereof apart from said laterally extending portions.

4,938,148

SEESAW SKI-TRACK

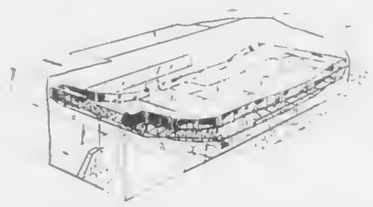
Ludovicus J. A. Driessen, Mosselerlaan 45, B-3600 Genk, Belgium

Filed Jan. 25, 1989, Ser. No. 301,108

Claims priority, application European Pat. Off., Jul. 25, 1988, 88.201601.7

Int. Cl.[5] **A63G** *31/08*

U.S. Cl. 104—58 **16 Claims**



1. A seesaw ski-track apparatus having a surface on which a skier can slide, said apparatus comprising:

a stationary central part which defines first and second pivot means at opposite first and second sides thereof,

a first wing assembly which defines opposite first and second ends and which is pivotally connected at said second end thereof to said first pivot means,

a second wing assembly which defines opposite first and second ends and which is pivotally connected at said second end thereof to said second pivot means, and

drive means for raising and lowering said first end of said first wing assembly relative to said central part and cause said first wing assembly to pivot upwardly and downwardly around said first pivot means.

4,938,149

RAIL TRANSPORT SWITCH ARRANGEMENT

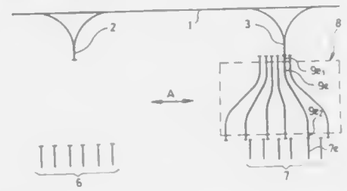
Karl Lötzer, Munich, Fed. Rep. of Germany, assignor to Velt Transpo GmbH, Landsberg, Fed. Rep. of Germany

Filed Oct. 4, 1988, Ser. No. 253,169

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1987, 3734506

Int. Cl.[5] **E01B** *7/00, 25/06*

U.S. Cl. 104—102 **14 Claims**



1. A switch arrangement for a rail transport system, comprising:

a plurality of first rail connections laterally spaced from one another a first predetermined distance;

a plurality of groups of second rail connections, each group of second rail connections being allocated to one of the plurality of first rail connections, each one of the plurality of groups extending laterally a second predetermined distance less than the first predetermined distance, each group having a predetermined number of second rail connections;

the plurality of first rail connections being spaced from and opposing the plurality of groups of second rail connections in a longitudinal direction to define opposite sides of a path;

a carriage movably mounted in the path between the defined opposite side;

a plurality of laterally spaced rail connecting elements fixedly mounted to the carriage, the number of rail connecting elements corresponding to the number of second rail connections in each group;

each of the rail connecting elements having a first free end extending in a direction toward one side of the path defined by the first rail connections and a second free end extending in a direction toward the opposite side of the path defined by the groups of second rail connections;

the second free end being offset from the first free end of each corresponding rail connecting element for aligning with a different second rail connection of a respective group at times when the first free end is aligned with the allocated one of said plurality of first rail connections; and

means for moving the carriage back and forth laterally in the defined path for aligning the second free ends of the connecting elements with corresponding ones of the plurality of second rail connections of each of the plurality of groups.

4,938,150

GUIDE AND SUPPORT TRACK SYSTEM

Rackowitsch Gustav, Dortmund; Grapetin Manfred, Herdecke, and Spöler Johannes-Gerhard, Borken, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 8, 1989, Ser. No. 308,144

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 3805617

Int. Cl.[5] **F01B** *25/06*

U.S. Cl. 104—130 **15 Claims**

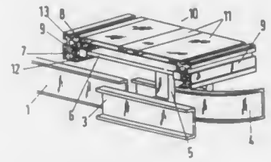
1. A guide and support track system comprising:

a stationary rail section;

a movable rail section;

a base plate (6) carrying said movable rail section and movable between a first position in which said movable rail section is aligned with said stationary rail section and a second position in which said movable rail section is displaced out of alignment with said stationary rail section;

a lateral profiled section (9) forming a stationary running rail



and a guide rail for guiding said base plate between said first and second positions; and

an intermediate profiled section (11), said lateral and intermediate profiled sections having mutually engageable protrusions (11*a*) and recesses (11*c*) for connecting said lateral and intermediate sections to form a stationary support plate (10).

4,938,151

TWIN AXLE RAIL BOGIE FOR CONVERTIBLE RAIL-HIGHWAY VEHICLES

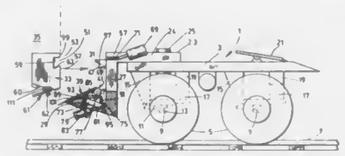
Jacques Viens, 1486 Bellemare, Roxton Pond, Quebec, Canada J0E 1Z0

Filed Apr. 4, 1989, Ser. No. 333,053

Claims priority, application Canada, Mar. 15, 1988, 561,449

Int. Cl.[5] **B61D** *17/00;* **B62D** *53/00*

U.S. Cl. 105—4.3 **17 Claims**



1. A rail bogie comprising:

a truck having a platform and railroad wheel means beneath said platform allowing said bogie truck to ride on railroad tracks;

a first fifth wheel mounted on said platform;

a draw-bar mounted at one end of said platform, said draw-bar including a vertical leg and a horizontal foot solid with said leg at the lower end thereof;

a connection block solid with said leg at the upper end thereof;

a lift plate beneath said block and a second fifth wheel mounted on said lift plate; and

means operatively connected to said lift plate and to said foot for moving said lift plate and said second fifth wheel thereon vertically and with respect to said connection block.

4,938,152

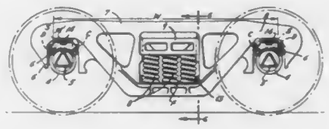
FLEXIBLE RAILWAY CAR TRUCK

Harold A. List, Bethlehem, Pa., assignor to Railway Engineering Associates, Inc., Bethlehem, Pa.

Continuation of Ser. No. 897,776, Aug. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 583,650, May 17, 1984, abandoned, which is a division of Ser. No. 348,922, Feb. 16, 1982, Pat. No. 4,483,253, which is a continuation-in-part of Ser. No. 948,878, Oct. 5, 1978, Pat. No. 4,455,946, which is a continuation-in-part of Ser. No. 608,596, Aug. 28, 1975, Pat. No. 4,131,069. This application Dec. 15, 1988, Ser. No. 285,285

Int. Cl.[5] **B61F** *3/00*

U.S. Cl. 105—208 **5 Claims**



1. A method for retrofitting a railroad vehicle truck with mechanism providing for wheelset steering, comprising the following steps:

a) selecting an existing truck having two load-carrying side frames each having means defining two spaced pairs of pedestal jaws each having a base between the jaws, the pedestal jaws of the two side frames being arranged in opposed pairs, transversely of the truck, two wheelsets each fixed on an axle extended transversely of the truck in a horizontal plane, outboard portions of each axle each having roller bearing means each including a bearing adapter, each bearing adapter of each axle being in load-receiving relation with the base of a corresponding one of said pairs of pedestal jaws, and a bolster extended transversely of the truck and having opposed end portions each supported by one of said frames through the agency of truck springs carried by that side frame, the bolster having a central vehicle load bearing region inboard of said frames and a pivot for mounting the truck on the vehicle with freedom for truck swiveling motion;

b) interconnecting the side frames of the selected truck by securing opposite end portions of a transverse interconnecting structure to the side frames at points spaced from each other fore-and-aft of the side frames to thereby restrain relative fore-and-aft motions of the side frames, the interconnecting structure being torsionally flexible to provide freedom for relative pitching motions of the side frames; and

c) introducing resilient shear means in load-transmitting position between the bearing adapters and the base of the pedestal jaws for at least one of the wheelsets in order to provide resilient restraint of relative axle steering motions.

4,938,153

PORTABLE ADJUSTABLE TABLE

Daniel T. Maes, 207 Francis St., Kaukauna, Wis. 54130

Filed Mar. 13, 1989, Ser. No. 322,614

Int. Cl.[5] **A47B** *3/00*

U.S. Cl. 108—128 **18 Claims**

1. A portable adjustable table assembly comprising:

a supporting base;

extensible leg means including a pair of parallel vertically disposed lower legs having lower ends attached to the lower legs for vertical axial movement with respect thereto;

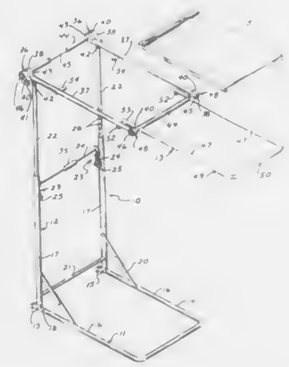
a pair of parallel support arms having first pivotal connecting means for providing a pivotal connection between one end of each of said support arms and one upper end of each of said upper legs to allow relative rotation between said support arms and said upper legs about a first horizon-

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tal axis parallel to the planes defined by each of said pairs of upper legs and support arms;

first stop means for limiting the relative rotation in one direction between said support arms and said upper legs, including a first stop position with said support arms extending over the supporting base;

a pair of parallel table arms having second pivotal connecting means for providing a second pivotal connection between one end of each of said table arms and one of the other ends of each of said support arms to allow relative rotation between said table arms and said support arms about a second axis parallel to said first axis;



second stop means for limiting the relative rotation in both directions between said table arms and said support arms, including an extended table arm position with said table arms extending away from the plane of said upper legs, and a retracted table arm position with said table arms extending toward the plane of said upper legs; and,

table top means attached to said table arms and disposed generally in a plane parallel to the plane defined by said table arms for presenting an upwardly facing table surface in said extended and retracted table arm positions.

4,938,154

SECURITY CLOSURE

Ronald W. Watt, 16 Randolph Rd., Glasgow G11 7LG, Scotland

PCT No. PCT/GB88/00575, § 371 Date May 17, 1989, § 102(e) Date May 17, 1989, PCT Pub. No. WO89/00637, PCT Pub. Date Jan. 26, 1989

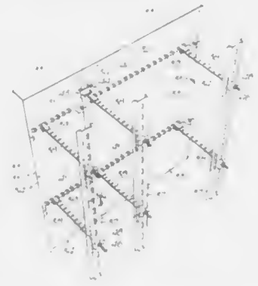
PCT Filed Jul. 18, 1988, Ser. No. 358,352

Claims priority, application United Kingdom, Jul. 17, 1987, 8716960; Nov. 28, 1987, 8727909; Nov. 28, 1987, 8727910; Jan. 29, 1988, 8802042

Int. Cl.[5] E05B *9/00*; E05C *21/02*

U.S. Cl. 109—49.5 **4 Claims**

1. A security closure comprising a rectangular continuous plate like panel having a front and a rear face and a periphery, a shallow, rearwardly extending peripheral sidewall extending around the full periphery of the panel and having an outer edge formed integrally with the panel and an inner edge, an inwardly turned rim formed at the inner edge of the peripheral wall, said rim forming, with said panel and said peripheral sidewall, a peripheral channel, peripherally spaced holding elements rigidly secured to said panel within said peripheral channel, elongate anchor means of a length not substantially less than the height or width of the panel, and at least two spaced apart flexible elongate connector means interconnecting the spaced holding elements and each of the anchor means, each flexible elongate connector means being adapted, at one end thereof, to be releasably engaged with said spaced holding elements and being so connectable with said anchor means as to clamp an opening surround in the inwardly turned rim and



said elongate anchor means, with said elongate anchor means then extending generally parallel to said panel.

4,938,155

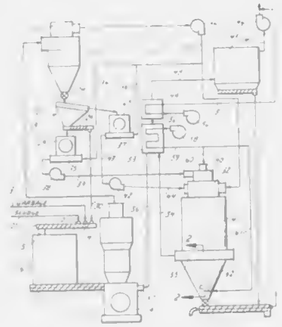
FLUIDIZED BED COMBUSTION APPARATUS FOR GENERATING ENVIRONMENTALLY-INNOCENT ASH

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed May 1, 1989, Ser. No. 345,189

Int. Cl.[5] F23G *5/02, 7/00*

U.S. Cl. 110—345 **2 Claims**



1. In a system for disposing by incineration of composite waste material containing sludge and garbage, the system comprising the steps of:

(a) processing the composite waste material in multiple steps of reduction which includes a first step wherein all of the composite waste material is processed and thereafter the composite waste material is separated into different classes of fuel material for individual reduction in second and third steps, to form the composite waste into a fuel suitable for incineration;

(b) carrying on incineration of the processed fuel to produce hot gases in the presence of preheated ambient air; and

(c) moving hot gases from the incineration of the processed fuel for drying and transporting the processed composite waste material in the first step and is withdrawn following the first step of reduction and is returned upon the completion of the second and third steps of reduction for transporting the different classes of reduced material into the incineration of the processed fuel, for introduction into the processing of the composite waste material for drying and transporting such processed composite waste material through the multiple steps of reduction, for heating ambient air supplied to the incineration of the processed fuel, and for heat exchange between ambient air and hot gases to drop the hot gas temperature prior to release to ambient atmosphere.

4,938,156

METHOD FOR VOLUME REDUCTION OF ION-EXCHANGE RESIN

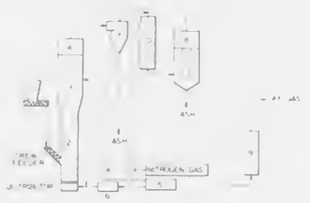
Taneaki Yahata, Oarai, Japan, assignor to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 6, 1989, Ser. No. 318,826

Claims priority, application Japan, Mar. 28, 1988, 63-71958

Int. Cl.[5] F23G *7/00*

U.S. Cl. 110—346 **8 Claims**



1. A process for combustion of ion-exchange resin which comprises introducing an ion-exchange resin and air into a fluidized bed reaction zone heated to initially combust said resin and thereafter contacting soot and other unburned materials from said fluidized bed reaction zone in a region above the fluidized bed reaction zone with a catalyst to effect further catalytic combustion.

4,938,157

COMPUTERIZED NUMERICAL CONTROL AUTOMATIC SEWING DEVICE

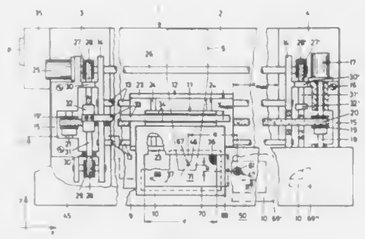
Hans Scholl, Oerlinghausen-Lipperreihe, Fed. Rep. of Germany, assignor to Kochs Adler Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 30, 1988, Ser. No. 292,526

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 8800328[U]

Int. Cl.[5] D05B *21/00, 65/06*

U.S. Cl. 112—121.12 **5 Claims**



1. A computerized numerical control automatic sewing device comprising a sewing head having a stitch forming place with a thread cut-off device and a workpiece holder for holding a workpiece to be sewn, the sewing head and the workpiece holder being movable relative to one another in two co-ordinate directions by means of two carriages displaceable perpendicularly to one another each along a sliding path to produce a seam within an operating range of the workpiece holder, a thread device is spaced a predetermined distance from the stitch forming place, said trimming device is stationary relative to the forming place and directly below the workpiece holder, and a maximum sliding path of the workpiece holder in each co-ordinate direction is in each case at equal to the dimensions of the operating range in the corresponding co-ordinate direction plus the distance of the trimming device from the stitch forming place in the corresponding co-ordinate direction.

4,938,158

LOWER THREAD SUPPLYING MECHANISM FOR A SEWING MACHINE

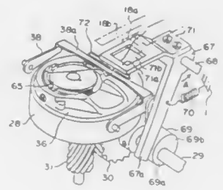
Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1989, Ser. No. 307,388

Claims priority, application Japan, Feb. 5, 1988, 63-13600[U]

Int. Cl.[5] D05B *57/00, 57/26*

U.S. Cl. 112—184 **8 Claims**



1. In a sewing machine having a vertically reciprocating needle carrying an upper thread, a needle plate secured to a sewing machine housing and provided with a needle penetrating hole, a loop-taker means arranged below the needle plate and operated in synchronism with reciprocation of the needle for interlocking a lower thread carried thereby with the upper thread, and a fabric feeding means for feeding a fabric placed on the needle plate in a predetermined direction on which a stitch composed of the interlocked upper and lower threads has been formed, a lower thread supplying mechanism comprising a lower thread drawing means for drawing a predetermined amount of the lower thread out of said loop-taker means, and a lower thread arresting means cooperating with said lower thread drawing means for preventing the lower thread from being pulled back from the stitch formed on the fabric while the lower thread is being drawn out of said loop-taker means by said lower thread drawing means.

4,938,159

THREAD DETECTING APPARATUS IN A SEWING MACHINE

Yoshio Shibata, Aichi, Japan, assignor to Kabushikikaisha Barudan, Aichi, Japan

Filed Mar. 9, 1989, Ser. No. 321,127

Claims priority, application Japan, Apr. 27, 1988, 63-105173

Int. Cl.[5] D05B *69/36*

U.S. Cl. 112—273 **4 Claims**

1. A thread detecting apparatus in a sewing machine for detecting the presence of a bobbin thread for sewing, said sewing machine including:

(1) a throat plate formed with a needle hole,

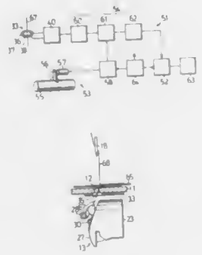
(2) a rotary hook assembly mounted under said throat plate; and,

(3) a needle mounted over said throat plate for vertical movement, comprising:

(a) a detecting electrode connected to said throat plate adjacent said needle hole adapted to generate an electric signal in accordance with the transverse spatial movement of a thread for sewing, passing through said needle

hole in a direction towards said electrode by detecting an electric charge on said thread;

(b) a timing signal generating means adapted to generate a timing signal synchronously with the vertical movement of said needle, and



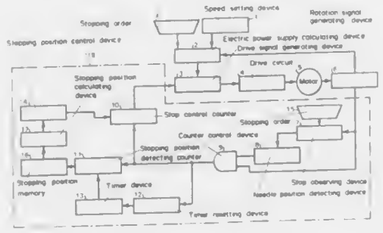
(c) a discriminating means adapted to receive the electric signal from said detecting electrode and the timing signal from said timing signal generating means and to provide a discrimination signal when said electric signal exceeds a reference value when said discriminating means receives said timing signal.

4,938,160

SEWING MACHINE MOTOR CONTROL DEVICE

Takashi Nakanura; Akira Orii, and Haruhiko Tanaka, all of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Oct. 13, 1988, Ser. No. 257,966
Claims priority, application Japan, Oct. 15, 1987, 62-258379
Int. Cl.[5] D05B *69/26*
U.S. Cl. 112—275 **2 Claims**



1. A stop control system for a sewing machine including a main shaft, a drive motor for rotating the main shaft, a drive motor feedback speed control drive, and drive signal generating means for controlling power to be supplied to the drive motor in accordance with difference between a set rotational speed of the drive motor and an actual speed of the drive motor, to effect operation of the drive motor at the set rotational speed, said stop control system comprising:

sensor means for sensing an actual rotational speed of the drive motor and for generating a pulse signal in response thereto;

means for generating a stopping signal for reducing the actual rotational speed of the drive motor to a stopping speed of the drive motor;

means for sensing a reduced rotational speed in response to the stopping signal and for generating a stopping speed signal;

rotational angle detecting means for detecting an angular position of the main shaft at which a needle of the sewing machine is to be stopped, in response to the stopping speed signal and for generating a main shaft angular position signal;

counter control means for generating, in response to the angular position signal, a plurality of pulse signals in synchronism with pulse signals generated by said sensor means until the pulse signals from said sensor means disappear;

stop control counter means for counting the pulse signals from said counter control means and for communicating a motor stopping signal to the drive signal generating means upon said plurality of pulse signals generated by said counter control means reaching a predetermined magnitude;

main shaft position detecting counter means operable in synchronism with said counter control means for counting the pulse signals from said counter control means; and

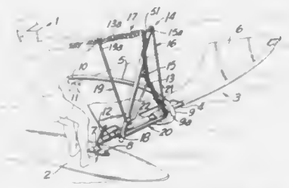
stop position control means for comparing a pulse count-up value of said main shaft position detecting counter means with a predetermined set count value stored in said stop position control means and corresponding to a predetermined angular stop position of the main shaft, for communicating a differential signal to said stop control counter means in response to the pulse count-up value deviating from the predetermined set count value for adjusting a count-up value of said stop control counter means.

4,938,161

HOIST APPARATUS FOR A SAILBOARD RIG

Richard Blackmer, 109 Oakwood Dr., Scotia, N.Y. 12302

Filed Nov. 25, 1988, Ser. No. 276,003
Int. Cl.[5] B63B *35/00*
U.S. Cl. 114—39.2 **12 Claims**



1. An improved hoisting apparatus for a sailboard rig of the type which is attachable to a sailboard with a universal connection, said rig comprising a mast, a boom having a boomhead, an uphaul, and a sail, said hoisting apparatus comprising:

a hoist pole having a top end and a bottom end,

attachment means adapted to connect said bottom end of said hoist pole to said rig to provide pivotable and rotational movement of the hoist pole with respect to the mast,

halyard means including first and second tension members extending from the top end of the hoist pole, said first tension member adapted for connection to said rig distal from the sailboard with respect to said attachment means to permit rotating and pivoting of the hoist pole on said attachment means away from the mast to a selected angle, said second tension member having a graspable end portion for exerting a force on the hoist pole to hoist said rig when the hoist pole is so pivoted,

a third tension member having one end adapted for connection to a point on said rig distal from the sailboard with respect to said attachment means and having the other end connected to said bottom end of said hoist pole, whereby said third tension member transfers the axial component of the force exerted by the bottom end of the hoist pole to said distal connection point on the rig, so that said attachment means only sustains the transverse component of force exerted by the bottom end of said hoist pole, and

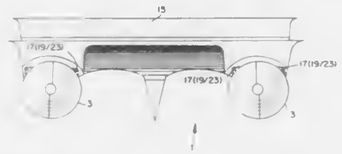
retracting means arranged to retract said hoisting apparatus to a stowage position when said graspable end portion is released.

4,938,162

INFLATABLE POWER CATAMARAN

Frederick V. Hanlon, 712 Chesapeake Ave., Annapolis, Md. 21403

Filed Sep. 30, 1988, Ser. No. 251,256
Int. Cl.[5] B63B *7/08*; B63C *9/04*
U.S. Cl. 114—61 **10 Claims**



1. A boat having a bow and a stern comprising:

(a) at least a pair of separate, individual, inflatable hull sections, said hull sections being J-shaped in profile,

(b) a substantially rigid wing deck forming a superstructure between and above said hull sections, and

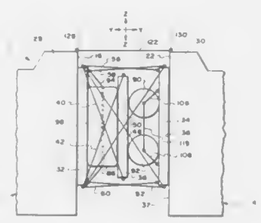
(c) means for attaching said deck to each of said hull sections at least essentially only above center lines extending horizontally through each of said hull sections, wherein essentially only said hull sections displace water.

4,938,163

BARGE CONNECTOR SYSTEM

Mark E. Capron, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1989, Ser. No. 459,180
Int. Cl.[5] B63B *21/04*
U.S. Cl. 114—251 **13 Claims**



1. A system for connecting a lead barge to a following barge comprising:

means for connecting the stern of said lead barge to the bow of said following barge;

first, second and third spaced rectangular shaped plates, the first plate of which has one surface thereof attached to the stern of said first barge and third plate of which has one surface thereof abutting the bow of said second barge;

first pneumatic fender means positioned between said first and second plates for allowing said second and third plates to move along a first axis which is approximately parallel to either surface of said first plate;

second pneumatic fender means positioned between said second and third plates for allowing movement of said third plate along a second axis which approximately parallel to either surface of said first plate and perpendicular to said first axis;

said first and second fender means being adapted to absorb a surging force exerted by said following barge upon said lead barge; and

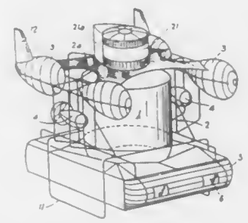
bracing means for resiliently connecting said second and third plates to said first plate.

4,938,164

SELF-PROPELLED MANNED SUBMERSIBLE VEHICLES FOR UNDER-SEA EXCURSIONS

Jean-Michel Onofri, 6, rue Berthelot, 13880 Velaux, France

Filed Nov. 28, 1988, Ser. No. 276,861
Claims priority, application France, Dec. 18, 1987, 87 17973
Int. Cl.[5] B63G *8/16, 8/24*
U.S. Cl. 114—312 **10 Claims**



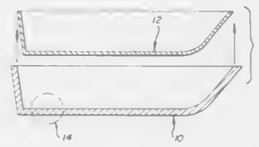
1. A self-propelled manned submersible vehicle of the type comprising a pressure-resistant capsule serving as a cabin, ballast tanks, releasable ballast, propulsion units having propellers driven by electric motors, and storage batteries, wherein said pressure-resistant capsule comprises a peripheral window constituted by a vertical cylindrical sleeve which is entirely transparent, said sleeve being of sufficient diameter to house a plurality of people sitting side-by-side, said sleeve extending upwardly from a hemispherical bottom and downwardly from a spherical cap which is extended by a cylindrical conning tower which is closed by a hatch.

4,938,165

MOUNTING OF TRANSDUCER IN A BOAT HULL

Phillip L. Williams, Chouteau; John V. Wallace, Skiatook, and Roy E. Stiner, Tulsa, all of Okla., assignors to Lowrance Electronics, Inc., Tulsa, Okla.

Filed Jun. 10, 1988, Ser. No. 205,213
Int. Cl.[5] G01C *21/00*
U.S. Cl. 114—343 **18 Claims**



1. A method for mounting a transducer in a beat hull where the transducer has a frusto-conical outer end portion which converges from a bottom toward a central shank and which bottom is designed to be flush mounted with a bottom surface of the boat hull, the method comprising:

positioning a plug at a predetermined location in a boat hull mold, the plug having a lower end in contact with the hull mold and a lower outer surface upwardly converging therefrom forming a frusto-conical surface substantially the same as the frusto-conical surface of the outer end portion of the transducer, said positioning step including the step of mounting the plug to the hull mold;

molding a boat hull in the hull mold and about the plug;

removing the molding boat hull from the mold, said removing step including the step of removing the plug from the boat hull as the boat hull is removed from the hull mold to

leave a frusto-conical cavity in the bottom surface of the boat hull; and

attaching the transducer to the portion of the boat hull which was molded about the plug.

4,938,166

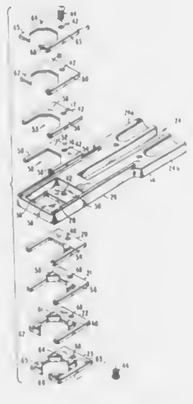
DEVICE FOR GROWING MULTI-LAYER CRYSTALS EMPLOYING SET OF MASKING ELEMENTS WITH DIFFERENT APERATURE CONFIGURATIONS

Robert L. Joyce, Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 846,411, Mar. 31, 1986, abandoned. This application Feb. 16, 1988, Ser. No. 156,252

Int. Cl.[5] B05C *13/00*

U.S. Cl. 118—500 **10 Claims**



1. A device used in growing multi-layered crystals on a substrate comprising:

a holder member adapted to be inserted into a liquid melt of the crystal material from which the multi-layered crystal material is grown, said holder member including an opening therein adapted to hold the substrate and expose opposing faces of the substrate to the liquid melt; and

a plurality of pairs of masking elements adapted to be successively detachably secured to said holder member such that one masking element of each pair is disposed adjacent to one face of said substrate and the other masking element of each pair is disposed adjacent to the opposite face of said substrate, each masking element defining an open section along a plane parallel to said opposing faces of said substrate, the open section of each masking element having a configuration in said plane which is the same as that of the open section of the other masking element of its pair but different from the configuration of the open section of the other pairs of said masking elements.

4,938,167

SELF-PROPELLED VEHICLE FOR USE IN PIPES

Koichi Mizuho, Tondabayashi, and Nobuaki Kaltatsu, Ikeda, both of Japan, assignors to Kubota Ltd., Osaka and Shin-Toyo Engineering Co., Ltd., Kobe, both of, Japan

Filed Jan. 25, 1989, Ser. No. 301,100

Claims priority, application Japan, Jan. 26, 1988, 63-15276

Int. Cl.[5] B05B *13/06*; **B05C** *7/08*

U.S. Cl. 118—713 **10 Claims**

1. A self-propelled vehicle for use in performing work in an interior of a pipe of a piping system, said self-propelled vehicle comprising:

a vehicle body;

at least three parallel link assemblies arranged at approximately equal angular spacings about a central axis of the vehicle body and each comprising first and second links having opposed base and free ends and being pivoted at the base ends to the vehicle body;

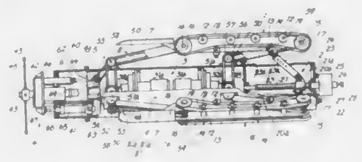
at least three traveling assemblies connected to the respective link assemblies at the free ends of the first and second links and movable along an inner surface of the pipe to be worked on;

a collapsing assembly, connected to the link assemblies, moving the traveling assemblies toward or away from the pipe inner surface wherein the collapsing assembly comprises,

a screw rod provided in the vehicle body rotatably and movable by a specified distance axially thereof, the screw rod having an extension rod implanted in a rear end thereof,

an internally threaded block screwed on the threaded portion of the screw rod,

support frames pivoted at base portions thereof to the block,



support bars, each slidably inserted in each support frame and fixedly positionable relative thereto, each support bar having an outer end pivoted approximately to a midportion of the second link of a respective one of the at least three parallel link assemblies,

an air cylinder having a portion secured to a rear portion of the vehicle body, and

a piston rod retractable into a body portion of the air cylinder and projectable therefrom into the vehicle body, a length of projection of each support bar from each support frame being adjustable stepwise, the extension rod on the screw rod extending through the piston rod of the air cylinder and projecting out from the piston rod;

a drive unit, disposed within the vehicle body, providing a drive force for driving the traveling assemblies;

at least three transmissions transmitting the drive force to the traveling assemblies; and

a rotary nozzle assembly, removably attached to a front portion of the vehicle body, causing a nozzle to apply a liquid to the pipe inner surface while rotating the nozzle.

4,938,168

HUMMINGBIRD FEEDER

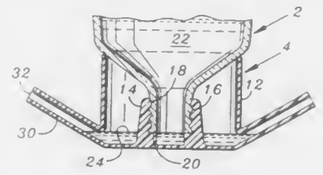
Dorothy H. Meldell, 5506 P Paseo del Lago, Laguna Hills, Calif. 92653

Filed Sep. 2, 1988, Ser. No. 239,644

Int. Cl.[5] A01K *39/00*

U.S. Cl. 119—77 **8 Claims**

1. In a hummingbird feeder including a receptacle for holding at a predetermined level a liquid solution dispensed from a container to be fed to hummingbirds, the receptacle including an outer wall, means with the receptacle and spaced from the outer wall for attaching the receptacle to the container to receive said liquid solution and to hold said solution within said receptacle at said predetermined level, and between said outer wall and said means for attaching at least one tubular at least one channel in communication with the interior of the receptacle, the channel terminating in an opening positioned above



and spaced at least ¾ of an inch from said predetermined level of the liquid solution, the channel being substantially straight.

4,938,169

GROOMING APPARATUS AND METHOD

Bruce B. Barmakian, 8560 Vineyard Ave., #510, Rancho Cucamonga, Calif. 91730

Filed Feb. 6, 1989, Ser. No. 306,060

Int. Cl.[5] A01K *13/00*

U.S. Cl. 119—83 **20 Claims**

1. An animal gate for providing ingress and egress across an access opening in a vertical barrier comprising:

(a) at least one planar covering panel disposed across the access opening so as to provide a closure of the access opening; the panel comprising at least three flexible triangular flaps, each flap having a first planar surface, a second planar surface, a base edge, an oppositely-disposed apex and two side edges; the flaps being disposed proximate to one another within the same plane with their apices convergent to about the center of the access opening; and

(b) a plurality of bristles attached normal to at least one planar surface of each flap; so that an animal can traverse the access opening by pushing aside the flaps, and so that, when an animal traverses the access opening, the bristles engage and comb the animal's fur.

4,938,170

THERMAL REACTOR

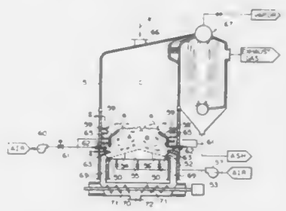
Takahiro Ohshita; Tsutomu Higo, both of Kanagawa; Shigeru Kosugi; Naoki Inumaru, both of Tokyo, and Hajime Kawaguchi, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 224,273, Jul. 26, 1988, Pat. No. 4,823,740, which is a continuation of Ser. No. 006,066, Jan. 21, 1987, abandoned. This application Jul. 17, 1987, Ser. No. 75,033

Claims priority, application Japan, Jan. 21, 1986, 61-8880; Mar. 12, 1986, 61-52559; Jul. 3, 1986, 61-155059; Aug. 13, 1986, 61-188589; Sep. 5, 1986, 61-207702; Sep. 12, 1986, 61-214028

Int. Cl.[5] B09B *3/00*

U.S. Cl. 122—4 D **26 Claims**



1. Thermal reactor comprising:

a fluidizing bed chamber surrounded by walls and containing a fluidizing medium;

a diffusor means, disposed at the bottom of the reactor and adapted to be coupled to a pressurized gas source, for discharging gas upwardly into said fluidizing medium;

two partition wall means, disposed in said fluidizing bed chamber and inclined adjacent to but spaced from said walls of said reactor, for forming two thermal energy recovery chamber means for recovering thermal energy, each of said two recovery chamber means including openings at both a top and a bottom end thereof communicating with said fluidizing bed chamber, said inclined partition wall means being arranged to generate a circulating zone of said fluidizing medium in said fluidizing bed chamber;

two auxiliary diffusor means for directing a pressurized gas into each respective one of said two recovery chamber means; and

a heat exchanger disposed in each of said two recovery chamber means.

4,938,171

TRANSPORT CONDUIT FOR HOT PARTICULATE MATERIAL

Detzel Roger A., Norton; Paul S. Knoebel, Clinton, and David J. Walker, Wadsworth, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 12, 1989, Ser. No. 449,022

Int. Cl.[5] F22B *1/00*

U.S. Cl. 122—4 D **12 Claims**

1. An apparatus for transporting hot particulate material in a circulating fluidized bed boiler via non-mechanical means comprising:

a. an insulated generally horizontal conduit extending to a furnace from said non-mechanical means;

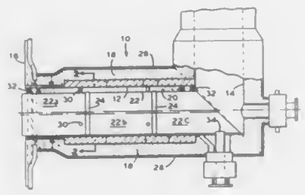
b. an insulated insert positioned within said horizontal conduit said insert being segmented;

c. a collar secured to an end region of one insert segment and extending beyond an end region of an adjacent insert segment, said collar being sized to closely fit around said adjacent segment while enabling said adjacent segment to freely move longitudinally with respect to said first insert segment;

d. hinge means for pivotally securing a portion of adjacent

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said insert segments together, said hinge means enabling said segments to pivot with respect to each other while remaining secured together; and,



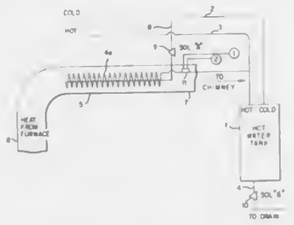
e. positioning means for accurately aligning and positioning said segments with respect to said horizontal conduit.

4,938,172

SUPPLEMENT SYSTEM FOR TRANSFERRING HEAT FROM A FURNACE EXHAUST STACK TO A HOT WATER TANK

Matthew Belovarac, 607 E. 31 St., Erie, Pa. 16504

Filed Jan. 19, 1989, Ser. No. 299,840
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—20 B **3 Claims**



1. A supplementary heating system for a hot water heater tank having a cold water line to the tank, a hot water line from the tank, and a drain line from the lower part of the tank, a heat exchanger adapted to be mounted in heat exchange relation to hot exhaust gases from a furnace exhaust stack, said heat exchanger having an inlet connected to said cold water line and an outlet connected to said hot water line, and means for draining water from said drain line to permit flow of heated water from said heat exchanger into said tank in response to the temperature of water in said heat exchanger.

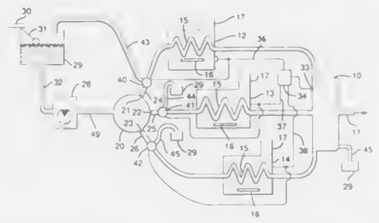
4,938,173

FLUID SYSTEM

Kenneth E. Hopkinson, South Yorkshire, United Kingdom, assignor to Cubit Limited, Birmingham, United Kingdom

PCT No. PCT/GB87/00870, § 371 Date Oct. 11, 1988, § 102(e) Date Oct. 11, 1988, PCT Pub. No. WO88/04390, PCT Pub. Date Jun. 16, 1988
PCT Filed Dec. 3, 1987, Ser. No. 235,894
Claims priority, application United Kingdom, Dec. 11, 1986, 8629644
Int. Cl.[5] F22B *27/00*
U.S. Cl. 122—40 **12 Claims**

1. A fluid system comprising a plurality of water using boilers, a single pump means, and a flow control device, the flow control device comprising a chamber, an inlet to the chamber, means connecting the inlet to the single pump means which supplies a head of water to the flow control device, and the flow control device further comprising a plurality of outlets, one for each of the water using boilers, a valve means associated with each outlet, means connecting each of the outlets to the respective valve means, each valve means being operable



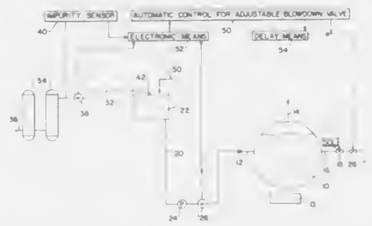
to direct water fed thereto from the associated outlet alternatively to one of the respective water using boilers and a relief means.

4,938,174

STEAM BOILER SYSTEM

Alan F. Bennett, Coventry, Great Britain, assignor to Spirax Sarco Limited, Cheltenham, England

PCT No. PCT/GB87/00832, § 371 Date May 25, 1989, § 102(e) Date May 25, 1989, PCT Pub. No. WO88/04008, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 23, 1987, Ser. No. 358,388
Claims priority, application United Kingdom, Nov. 25, 1986, 8628105; Mar. 4, 1987, 8705000
Int. Cl.[5] F22B *37/54*
U.S. Cl. 122—382 **9 Claims**



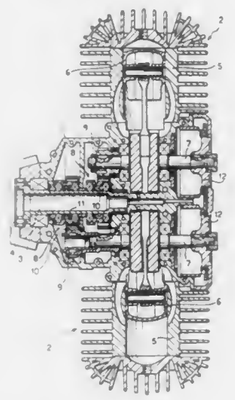
1. A steam boiler system which includes a steam boiler (10), a feed water inlet (12) to the boiler for boiler feed water supply, a steam outlet (14) from the boiler, a blowdown outlet (16) from the boiler, and valve means adjustable to provide a blowdown rate which is a porportion of the feed rate of the boiler feed water characterised by means comprising an impurity sensor (40) to determine the TDS of the boiler feed water upstream of the boiler feed water inlet, flow means (26) to determine the flow rate of the boiler feed water, and means automatically to control valve means (28) in the blowdown outlet in response to the determined TDS and flow rate to set the blowdown outlet to provide a blowdown rate which is a calculated proportion of the flow rate of the boiler feed water, said proportion being calculated to provide a blowdown rate which will maintain the boiler TDS below a specified maximum concentration.

4,938,175

ENGINE, PARTICULARLY FOR ULTRALIGHT AIRCRAFT

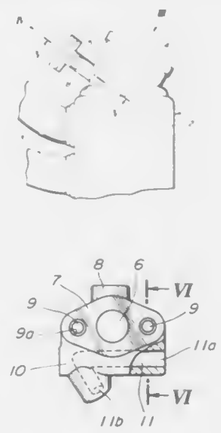
Luigi Matta, Arignano, Italy, assignor to Offmar S.n.c. di Matta Emiliano & Matta Luigi, Turin, Italy

Filed Nov. 14, 1988, Ser. No. 270,591
Claims priority, application Italy, Nov. 12, 1987, 67963 A/87
Int. Cl.[5] F02B *61/00*
U.S. Cl. 123—52 A **5 Claims**



1. An engine, particularly for ultralight aircraft, comprising an engine block (1) carrying at least one pair of autonomous drive units (2) with respective driving shafts (7) connected independently to a common output shaft (3) by means of respective one-way transmission units (8) arranged to automatically couple the output shaft (3) and the driving shafts (7) for rotation only when the respective drive units (2) are in the operating condition.

a cooling passage, defined within said mounting portion, through which coolant flows to cool said hole so as to



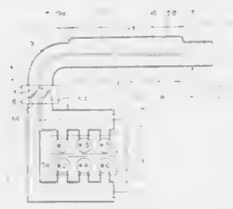
guard said hole against heat caused by exhaust gas recirculation.

4,938,177

INTAKE SYSTEM OF MULTICYLINDER INTERNAL COMBUSTION ENGINE

Masahi Hasegawa, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,528
Int. Cl.[5] F02M *35/00*
U.S. Cl. 123—52 MV **4 Claims**



1. An intake system of a multicylinder internal combustion engine with first and second rows of cylinders comprising; a throttle valve unit provided on a side of either cylinder row, and first and second intake air passages, controlled by said valve unit, of different length leading to the two rows of cylinders, said first passage for the first cylinder row having a first resonance portion, and said second passage for the second cylinder row having a second resonance portion nearly equal in length to said first resonance portion and a pressure wave inversion portion extending from said second resonance portion at least to the upstream-side end where said two passages separate from each other and having a cross-sectional area that allows inversion of intake pressure waves.

4,938,176

MOUNTING STRUCTURE OF EGR VALVE FOR INTERNAL COMBUSTION ENGINE

Sojiro Tanaka, and Yasuo Fukae, both of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Kanagawa, Japan

Filed Jul. 12, 1989, Ser. No. 378,662
Claims priority, application Japan, Jul. 12, 1988, 63-92220[U]
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MC **6 Claims**

1. A mounting structure for mounting an EGR valve on an intake manifold of an internal combustion engine comprising:

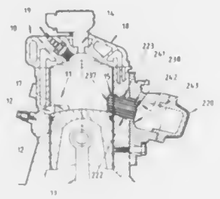
a mounting portion integrally formed on the intake manifold;

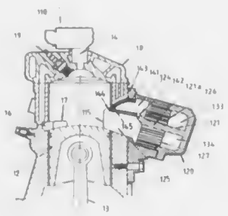
a hole formed in said mounting portion, into which a bolt is inserted to mount the EGR valve on said mounting portion; and

4,938,178
TWO STROKE CYCLE INTERNAL COMBUSTION ENGINES

Christopher K. Schlunke, Kingsley, Australia, and Mark Lear, Tauranga, New Zealand, assignors to Orbital Engine Company Proprietary Limited, Balcatta, Australia

PCT No. PCT/AU88/00415, § 371 Date Jun. 26, 1989, § 102(e) Date Jun. 26, 1989, PCT Pub. No. WO89/03929, PCT Pub. Date May 5, 1989
PCT Filed Oct. 26, 1988, Ser. No. 378,513
Claims priority, application Australia, Oct. 26, 1987, PI5102
Int. Cl.[5] F01N *3/28*
U.S. Cl. 123—65 PE **23 Claims**





1. A method of operating a two stroke cycle internal combustion engine wherein for each combustion chamber there is provided means to supply fuel to the combustion chamber, an exhaust port through which gases pass from the combustion chamber to an exhaust system, and at least one inlet port through which a fresh charge of air enters the combustion chamber, the inlet and exhaust ports being arranged so that the inlet port opens prior to the closing of the exhaust port, the method being characterised in that during an exhaust port open period of each combustion chamber a first portion of the gas exhausted from said combustion chamber during the exhaust port open period is directed into contact with a first catalyst means of a first catalytic character, and a subsequent second portion of the gas exhausted from said combustion chamber in the same exhaust port open period is directed into contact with a second catalyst means of a differing catalytic character to the first catalyst means.

4,938,179
VALVE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

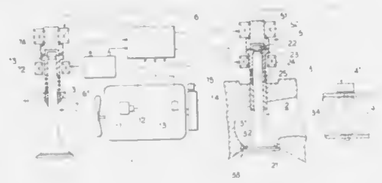
Filed Dec. 5, 1989, Ser. No. 446,101
Claims priority, application Japan, Dec. 28, 1988, 63-334963
Int. Cl.[5] F01L *9/04*; F01N *7/00*
U.S. Cl. 123—90.11 **7 Claims**

1. A valve control system for controlling intake and exhaust valves of each of the cylinders of an internal combustion engine which includes a crankshaft and an exhaust brake having an exhaust brake valve disposed in an exhaust pipe of the internal combustion engine, said valve control system comprising:

electromagnetic actuator means, associated with each of the intake and exhaust valves, for opening and closing the intake and exhaust valves;

a crankshaft angle sensor for detecting and outputting a signal indicative of an angular position of the crankshaft of the internal combustion engine;

timing calculating means for calculating the timing at which the intake and exhaust valves are to be opened and closed, based on the detected signal from said crankshaft angle sensor;



operation control means for applying drive signals to said electromagnetic actuator means based on the timing calculated by said timing calculating means;

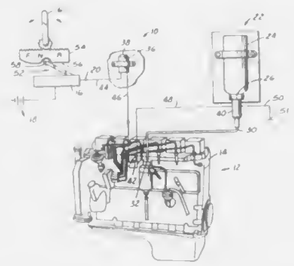
exhaust brake operation detecting means for detecting and outputting a signal indicative of operation of the exhaust brake; and

electric power control means responsive to the detected signal from said exhaust brake operation detecting means for controlling electric power to be supplied to said electromagnetic actuator means associated with said exhaust valve of the cylinder in an intake stroke, to increase a force to keep the exhaust valve closed while the exhaust brake is being applied.

4,938,180
COLD START SYSTEM

James A. King, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 20, 1989, Ser. No. 325,713
Int. Cl.[5] F02M *1/16*
U.S. Cl. 123—180 T **9 Claims**



1. A cold start system in combination with an internal combustion engine which is capable of heating up to a predetermined temperature and in which a manifold is connected to inlet ducts for cylinders of the engine, and a start switch means connected to a transmission means and having at least one start operating mode for permitting starting of the internal combustion engine, the cold start system comprising:

an auxiliary fuel reservoir having a reservoir outlet for feeding auxiliary fuel therethrough;

an auxiliary fuel selection means having at least one operating mode which is operative only when said start switch means is in said at least one start operating mode, said auxiliary fuel being releasable from said auxiliary fuel reservoir only when said auxiliary fuel selection means is in said operating mode;

an outlet valve connected to the reservoir outlet and closing said reservoir outlet, the outlet valve being openable to open said reservoir outlet responsively to said auxiliary fuel selection means being in said operating mode;

an auxiliary fuel inlet conduit having one end communicating with said reservoir outlet and having another end communicating with said manifold, said auxiliary fuel inlet conduit for conducting auxiliary fuel from said reservoir to said manifold;

a heat responsive, shut-off means for closing off communication between said auxiliary fuel reservoir outlet and said auxiliary fuel inlet conduit; and

preventive means for rendering said auxiliary fuel selection means inoperative when said transmission means is in a posture in which power may be transmitted from the engine,

whereby when the start switch means is operative and said transmission is in a posture in which power is not transmitted from the engine, said auxiliary fuel selection means may be operated to open said outlet valve at temperatures below said predetermined temperature.

4,938,181
VALVE FOR INTERNAL COMBUSTION ENGINES

Ernst Holmér, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Nov. 9, 1989, Ser. No. 433,837
Claims priority, application Sweden, Nov. 15, 1988, 8804120
Int. Cl.[5] F01L *3/00*
U.S. Cl. 123—188 AA **5 Claims**

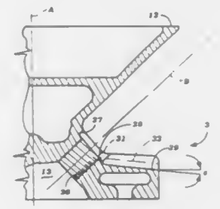


1. A valve intended for internal combustion engines and including a valve-head (2) having a circular surface (12) for sealing coaction with a valve seat (9), and further comprising a valve-stem (3) which is joined to the valve-head (2) and which is moveably journalled in a valve-guide (10), characterized in that the valve-head (2) has a relatively small wall-thickness in cross-section; and in that the valve-stem (3) is provided with a collar (16) which presents on the side thereof remote from the valve-head (2) an abutment surface (17) intended for abutment with a fixed abutment surface (10*a*).

4,938,182
ENGINE CYLINDER HEAD

Shigeki Shiozawa, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 22, 1988, Ser. No. 289,983
Claims priority, application Japan, Dec. 25, 1987, 62-327311
Int. Cl.[5] F02F *1/24*
U.S. Cl. 123—193 H **8 Claims**

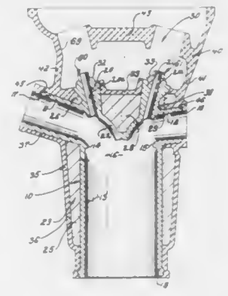


1. In an internal combustion engine comprising a body of said engine defining a spark plug recess opening surrounded by a recessed sealing area that is inclined to the vertical, the improvement comprising a drain passage extending downwardly from said sealing area to drain any accumulated fluid therefrom.

4,938,183
METHOD OF MAKING AND APPARATUS FOR MONOBLOCK ENGINE CONSTRUCTION

Nathaniel L. Field, Northville, and Michael A. Pulick, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 137,771, Dec. 24, 1987, Pat. No. 4,831,203. This application Jan. 13, 1989, Ser. No. 296,633
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—193 C **7 Claims**



1. An engine monoblock construction, comprising:

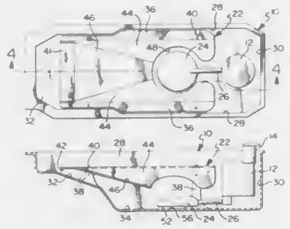
(a) a cast internal iron-based unitary construction having walls defining one or more chambers or passages for each of combustion, piston reciprocation, gaseous induction and gaseous exhaust; and

(b) a cast external aluminum-based metal construction having walls encasing said internal construction except for separations therebetween to define fluid cooling chambers about at least some portion of all of said internal construction, said external construction being fused to said internal construction at the extremities of the walls of said internal construction defining said gaseous induction and exhaust and the chamber of piston reciprocation, said fused ex-

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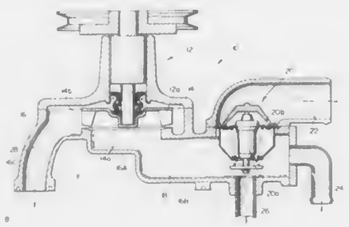
tremities being remote from the walls defining the combustion chamber.

4,938,184
ENGINE OIL RETURN SYSTEM
Harold M. Martin, Southfield, and Peter R. Crawford, Northville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 21, 1989, Ser. No. 410,436
Int. Cl.[5] F16N *31/00*
U.S. Cl. 123—195 C **3 Claims**



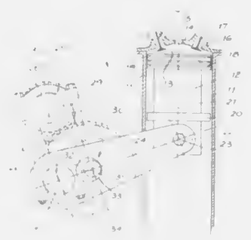
1. In an automotive vehicle having a transversely mounted internal combustion engine having an oil intake, means for enhancing the flow of oil to the intake comprising:
an oil pan having walls and a bottom,
an oil pump in the pan, the pump including an oil intake at the bottom of the pan and positioned for immersion in a pool of oil during lateral acceleration in either direction,
a baffle in the oil pan above the normal operating oil level, the baffle having three sides spaced from three of the pan walls and conforming to the shape of the pan walls, and further having an aperture above the oil intake and surfaces sloped inwardly and downwardly from the three sides to the aperture for expediting oil flow from the engine to the intake.

4,938,185
ENGINE COOLING ARRANGEMENT
Katsuji Doke, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 23, 1988, Ser. No. 275,190
Claims priority, application Japan, Nov. 26, 1987, 62-180184[U]
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C **8 Claims**



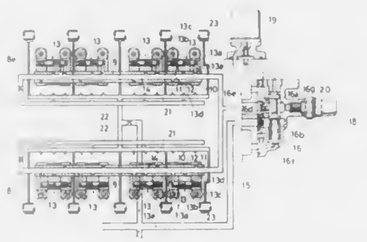
1. An engine cooling arrangement comprising:
a timing cover secured to a front face of a cylinder block of an internal combustion engine to cover a part of a valve operating mechanism;
a first section defining a chamber and formed integral with said timing cover;
a coolant pump at least partially disposed in said chamber;
a second section defining a coolant inlet passageway through which coolant flows to said coolant pump, said second section being formed integral with said timing cover, said second section being directly integral with said first section so that said coolant inlet passageway is directly connected to said chamber, said second section extending generally straight so that said coolant inlet passageway extends generally straight in a manner to enable said second section to be produced by die-casting;
a thermostat having a heat sensor section disposed in said coolant inlet passageway; and
a third section defining a coolant outlet passageway through which coolant flows from said coolant pump, said third section being formed integral with said timing cover, said third section being directly integral with said first section so that said coolant outlet passageway is directly connected to said chamber, said third section extending toward said cylinder block of said engine to define a space between said cylinder block and said engine cooling arrangement.

4,938,186
INTERNAL COMBUSTION ENGINE VARIABLE STROKE MECHANISM
Leonhard J. G. Pal, and Lyn L. Pal, both of 9 Jasmine Place, Umina, New South Wales 2257, Australia
Filed Mar. 1, 1989, Ser. No. 317,421
Claims priority, application Australia, Sep. 1, 1986, PH7767
Int. Cl.[5] F02B *75/32*
U.S. Cl. 123—197 R **5 Claims**



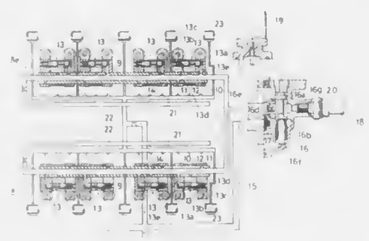
1. An internal combustion piston engine having an interacting piston and cylinder co-operating to provide a combustion chamber, a power transmission lever pivoted intermediate its ends and having one end pivotally attached to said piston so that linear reciprocation of said piston causes angular oscillation of said lever, a main shaft having an eccentric connection coupling the other end of said lever with said main shaft so that oscillation of said lever causes rotation of said main shaft, a pivot means supporting said lever, said pivot means including an eccentric portion mounted for rotation about a first axis, said eccentric portion pivotally supporting said lever so that said lever pivots about an eccentric axis eccentric with respect to said first axis, and drive means to cause rotation of said eccentric portion at half the angle of velocity of said main shaft so that every second stroke of said piston is a longer stroke.

4,938,187
FUEL CONTROL APPARATUS FOR ENGINE
Yasunari Seki, Utsunomiya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1989, Ser. No. 386,662
Claims priority, application Japan, Aug. 1, 1988, 63-192245
Int. Cl.[5] F02D *17/02*; F01L *1/34*
U.S. Cl. 123—333 **4 Claims**



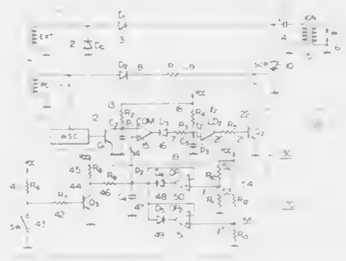
1. A fuel control apparatus for use in an engine having a valve-timing changing means capable of changing at least one of a valve opening-closing timing and a valve-lift amount for a valve on at least one of an intake side and an exhaust side, said fuel control apparatus for said engine comprising:
a judgement means for judging whether or not an operating state of said engine has entered a predetermined operation range determined by an engine load and a revolution speed of said engine;
a correction means for correcting a fuel supply to said engine when said operating state of said engine has entered said predetermined operation range; and
a means for changing said predetermined operation range in accordance with a change of at least one of said valve opening-closing timing and said valve-lift amount.

4,938,188
ENGINE CONTROL APPARATUS
Yasunari Seki, Utsunomiya, and Isao Yahata, Takanezawamachi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1989, Ser. No. 386,661
Claims priority, application Japan, Aug. 1, 1988, 63-192242
Int. Cl.[5] F02D *17/02*; F01L *1/34*
U.S. Cl. 123—333 **3 Claims**



1. An engine control apparatus comprising:
a valve-timing changing means for changing at least one of a valve opening-closing timing and a valve-lift amount for a valve on at least one of an intake side and an exhaust side;
a reduction means for reducing engine output when revolution speed of said engine has reached a predetermined upper-limit revolution speed during acceleration of the engine; and
a revolution speed change means for changing said predetermined upper-limit revolution speed in accordance with at least one of a changed valve opening-closing timing and valve-lift amount effected by said valve-timing changing means.

4,938,189
AUTOMATIC IGNITION CONTROL SYSTEM
Yoshio Morita, Saitama; Shigeaki Kuwabara, Higashikurume, and Hiroshi Watabe, Fuchu, all of Japan, assignors to Shindengen Electric Manufacturing Co., Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan
Filed Jul. 24, 1989, Ser. No. 384,144
Claims priority, application Japan, Jul. 29, 1988, 63-188099; Jul. 29, 1988, 63-188100
Int. Cl.[5] F02P *5/145*
U.S. Cl. 123—335 **8 Claims**



1. An engine ignition control system comprising an ignition circuit of capacitor charge-discharge type in which the ignition timing is determined by controlling the charge-discharge cycle of an ignition energy-securing capacitor by an engine speed detection circuit, said system further comprising:
an overspeed control circuit including first comparator means for comparing a detection output signal level from the engine speed detection circuit with a first reference voltage level corresponding to a set engine speed and producing a difference output therebetween, and second comparator means for comparing said difference output from the first comparator means with a second reference voltage level corresponding to the set engine speed, the ignition being stopped in accordance with the output of the second comparator means when the difference output from the first comparator means exceeds the second reference voltage level; and
a slowing down control circuit actuated by engine slowing down operation start means in such a manner that the first reference voltage level of the first comparator means of the overspeed control circuit is gradually increased thereby to reduce a set engine speed, thereby stopping the ignition in a condition substantially equivalent to the one in which the engine speed detection circuit detects an engine speed higher than the actual engine speed.

4,938,190
THROTTLE PLATE ACTUATOR
Ralph P. McCabe, Troy, Mich., assignor to Colt Industries Inc., New York, N.Y.
Filed May 5, 1989, Ser. No. 347,913
Int. Cl.[5] F02B *77/00*; F02D *9/08*
U.S. Cl. 123—399 **9 Claims**

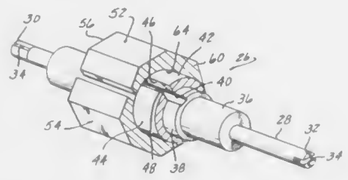
1. A throttle plate actuator for a carburetor or throttle body having a pivotal throttle plate biased by a return spring to a closed throttle position and pivotal against the bias of the

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return spring in response to accelerator pedal position, the throttle plate actuator comprising:

a rotatable shaft fixedly connected at one end to the throttle plate;

permanent magnet means, fixedly mounted on the rotatable shaft and having a predetermined direction of polarity; and



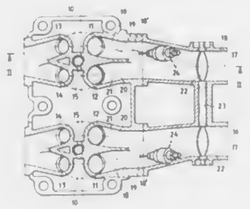
electromagnet means, disposed in spaced relation to the permanent magnet means and generating a magnetic field when energized having a polarity opposed to the direction of polarity of the permanent magnet means, for rotating the permanent magnet means and the rotatable shaft an angular amount proportional to the strength of the magnetic field generated thereby.

4,938,191

INDUCTION DEVICE FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Emilio Oldani, Cerro Maggiore; Riccardo Rosa, Milan, and Sergio Truzzi, Cisiano, all of Italy, assignors to Alfa Lancia Industriale S.p.A., Arese, Italy

Filed Dec. 12, 1988, Ser. No. 282,494
Claims priority, application Italy, Dec. 18, 1987, 23102A/87
Int. Cl.[5] F02B *15/00*
U.S. Cl. 123—432 **4 Claims**



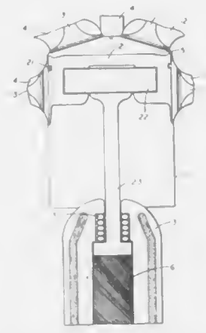
1. Induction device for a multi-cylinder internal combustion engine equipped with a plurality of induction valves, and at least one exhaust valve per each cylinder, in particular with two induction valves (**11, 12**) per cylinder, and equipped with driving means for said valves, wherein said induction device comprises individual induction manifolds (**16**), one induction manifold per each cylinder (**10**), and at least two induction ducts (**18, 20**) branching off from each individual manifold (**16**) and leading to the corresponding cylinder (**10**) through the above-said induction valves (**11, 12**), and wherein the two induction valves of each cylinder are driven with lift laws respectively optimized for the low-revolution-speed running conditions and the high-revolution-speed running conditions of the engine, characterized in that a respective choke valve (**22**) is installed inside each induction manifold (**16**) in a per se known way, and that at least one fuel injector (**24**) is installed inside each individual induction manifold (**16**), downstream the respective choke valve (**22**), in an off-centre position relatively to the longitudinal axis (**17**) of the same manifold (**16**), and shifted towards the side of the induction duct (**18**) equipped with the induction valve (**11**) having a lift law optimized for the low-revolution-speed operating conditions.

4,938,192

PISTON CYLINDER COMBINATION WITH ENGINE CYLINDER WALL HAVING VALVE PORTS AND COMBUSTION CHAMBER

Pavo Pusic, Molountska 6, and Bozo Memed, B. Mekisica 3, both of Dubrovnik, Yugoslavia 50000

Filed May 2, 1989, Ser. No. 346,075
Int. Cl.[5] F02B *15/00*
U.S. Cl. 123—432 **15 Claims**



1. A piston cylinder combination for use in a multicylinder internal combustion engine which includes a camshaft, the piston cylinder combination comprising:

a piston having a piston head with a predetermined diameter and cylindrical side wall with a predetermined length;

a cylinder bore comprising a cylindrical wall having first and second ends and a cylinder head at the first end of the cylindrical wall, a plurality of valve ports formed in the cylinder head and at least one valve port formed in the cylindrical wall;

a connecting rod having one end connected to the piston and another end coupled to the cam shaft, the connecting rod being arranged so that the end of the connecting rod which is connected to the piston alternatively guides and is guided by the piston without generating significant side thrust;

wherein the piston is slidably received within the cylinder bore for movement between a top dead center position wherein the piston head is proximate the cylinder head and a bottom dead center position wherein the piston head is proximate the second end of the cylindrical wall; and

wherein the valve port formed in the cylindrical wall is formed at a location proximate the cylinder head below the top dead center position of the piston head and above a midpoint position located midway between the top dead center position of the piston head and the bottom dead center position of the piston head.

4,938,193

FUEL INJECTION NOZZLE

Robert Raufeisen, Simsbury; David A. Chace, Canton Center, and Leon P. Janik, Suffield, all of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

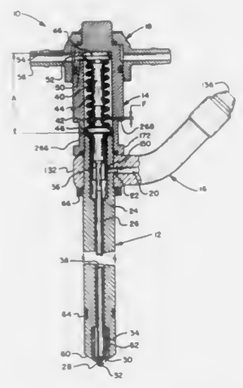
Continuation-in-part of Ser. No. 61,711, Jun. 15, 1987, Pat. No. 4,790,055. This application Sep. 9, 1988, Ser. No. 243,286
Int. Cl.[5] F02M *39/00*
U.S. Cl. 123—470 **18 Claims**

1. A fuel injection nozzle assembly for attachment to an engine cylinder head having a nozzle mounting socket in alignment with an engine cylinder, comprising:

a substantially cylindrical fuel injection nozzle member having a discharge end for insertion into the cylinder, a body portion for mounting in the socket and a cap end for projecting above the cylinder head;

a fuel inlet stud having a connector portion affixed to the exterior of the nozzle member and a tube portion rigidly extending radially from the connector portion;

resilient means carried by the nozzle member below said connector portion for providing a seal between the nozzle member and the socket;



a locating plate transversely engaging the nozzle member, said plate having means for cradling the radially extending portion of said tube portion of the inlet stud;

means cooperting with the cylinder head for maintaining the locating plate in a fixed axial relationship relative to the tube portion of the inlet stud; and

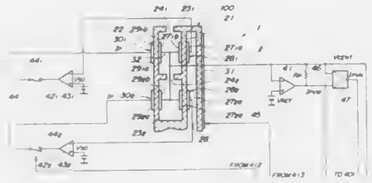
means cooperating with the cylinder head for urging the nozzle member axially downward, whereby the resilient means will be compressed between the nozzle member and the mounting socket.

4,938,194

METHOD OF DETERMINING DETERIORATION OF OXYGEN CONCENTRATION SENSOR

Akira Kato, and Toru Yano, both of Wako, Japan, assignors to Honda Giken Kogyo K. K., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 372,297
Claims priority, application Japan, Jun. 30, 1988, 63-162857
Int. Cl.[5] F02D *41/14, 41/22*
U.S. Cl. 123—479 **14 Claims**



1. A method of determining the deterioration of an oxygen concentration sensor for an internal combustion engine, said oxygen concentration sensor including:

at least one oxygen concentration sensor element, said oxygen concentration sensor element having an oxygen-pumping element and a cell element, said oxygen-pumping element and said cell element each being composed of a member of a solid electrolytic material having oxygen ion-conductivity, and a pair of electrodes having said member interposed therebetween, said oxygen-pumping element and said cell element defining a diffusion restriction region therebetween;

a current-detecting resistance serially connected to said oxygen-pumping element to form a series circuit therewith;

voltage-applying means for applying to said series circuit a voltage having a magnitude corresponding to a difference between a voltage produced between said electrodes of said cell element and a predetermined reference voltage; and

current-detecting means for detecting pumping current from a voltage developed across said current-detecting resistance;

the method comprising the steps of:

(1) changing said predetermined reference voltage from a first predetermined value to a second predetermined value;

(2) detecting a difference between a value of said pumping current detected when said predetermined reference voltage assumes said first predetermined value and a value of said pumping current detected when said predetermined reference voltage assumes said second predetermined value;

(3) comparing said difference detected in said step (2) with a predetermined reference value; and

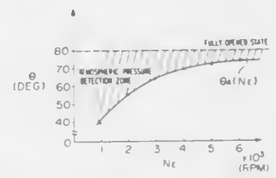
(4) determining that there is deterioration in said oxygen concentration sensor when said difference is equal to or greater than said predetermined reference value.

4,938,195

ATMOSPHERIC PRESSURE DETECTING DEVICE FOR ENGINE CONTROL

Masaaki Miyazaki; Shinji Kojima, and Hajime Kako, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1989, Ser. No. 346,677
Claims priority, application Japan, May 6, 1988, 63-111222
Int. Cl.[5] F02D *35/00*
U.S. Cl. 123—488 **8 Claims**



1. An atmospheric pressure detecting device for engine control which comprises:

a throttle valve sensor for detecting a degree of opening of a throttle valve for limiting a quantity of intake air to an engine,

a pressure sensor for detecting a pressure in an air intake manifold, as a value of the absolute pressure, contiguous to an intake air passage at the downstream side of said throttle valve,

an engine revolution speed detecting means for detecting a revolution speed of the engine,

a cranking detection means for detecting the actuation of a starter for driving the engine,

a pressure change detecting means for detecting that a change of pressure detected by said pressure sensor is less than a predetermined level in a predetermined period

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during a time from power supply to the detection of the actuation of the starter by said cranking detection means,

a timer means which receives a signal corresponding to a degree of opening of the throttle valve from said throttle sensor and a signal corresponding to the engine revolution speed from said engine revolution speed detecting means so as to detect that a time period in which said signal values continuously fall in an atmospheric pressure detection zone, which is determined by said degree of opening of the throttle valve and said engine revolution speed by which a pressure loss in said intake air passage is rendered to be a specified value or less, reaches a predetermined value, and

a processing unit which generates a signal of pressure of said pressure sensor as a detected atmospheric pressure value when the processing unit receives a detection signal from said pressure change detecting means, and generates a signal obtained by adding a set value to a signal of pressure from said pressure sensor as a detected atmospheric pressure value when the processing unit receives a detection signal from said timer means.

4,938,196

CONTROL DEVICE FOR HEATER FOR OXYGEN SENSOR OPERATIVE TO CORRECT TARGET RESISTANCE WITH REFERENCE TO STANDARD POWER SUPPLY THERETO

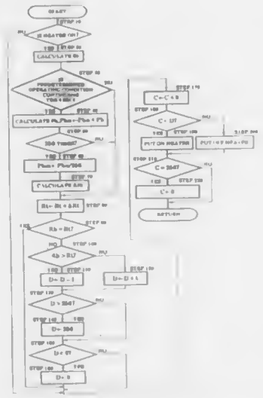
Kouichi Hoshi; Masaru Goudo; Mitsuhiro Suzuki; Ritsuo Masaki; Akira Hashizume, and Hidemi Ohnaka, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 27, 1989, Ser. No. 413,231

Claims priority, application Japan, Oct. 7, 1988, 63-132195[U]; Mar. 31, 1989, 1-39007[U]; Jul. 27, 1989, 1-88227[U]

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—489 **10 Claims**



1. A control device for controlling supply of electric power to a heater for an oxygen sensor for detecting oxygen in an exhaust system of an internal combustion engine for a vehicle, said control device comprising a means for detecting electric resistance of said heater and controlling said supply of electric power so as to maintain the detected electric resistance at a target value therefor, further comprising a means for detecting a predetermined operating condition of the engine, a means for detecting the amount of electric power supplied to said heater when the engine is operating at said predetermined operating condition, and a means for modifying said target value for the electric resistance of said heater so as to cancel difference between said detected value of said supply of electric power to said heater and a standard value therefor.

4,938,197

FUEL SUPPLY CONTROL SYSTEM FOR ENGINE

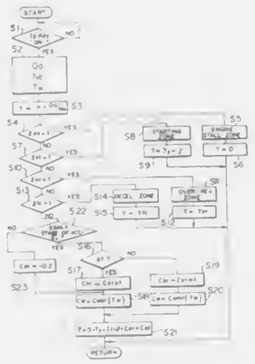
Yoshinobu Kido; Toshihiro Handa; Tetsushi Hosokai, and Naoya Takada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 5, 1988, Ser. No. 152,936

Claims priority, application Japan, Feb. 5, 1987, 62-25429

Int. Cl.[5] F02P *5/04;* **F02M** *7/00*

U.S. Cl. 123—492 **12 Claims**



1. A fuel supply control system for an engine associated with a transmission for transmitting the engine output power to driving wheels of a vehicle, comprising

a fuel supply means for supplying an amount of fuel according to engine operating condition,

a fuel increasing means which increases the amount of fuel to be supplied to the engine when the engine is in a particular operating condition of at least one of heavy load, acceleration, and cold state,

a transmission detecting means which detects whether the transmission associated with the engine is a manual transmission in which the engine output shaft and the transmission output shaft are mechanically connected or an automatic transmission in which the engine output shaft and the transmission output shaft are connected to permit slip therebetween, wherein said transmission detecting means sends a signal indicative of the transmission type and

a fuel increase control means which controls the fuel increasing means according to whether the engine is associated with a manual transmission or an automatic transmission by receiving the signal from said transmission detecting means, so that the amount by which the fuel to be supplied to the engine is increased when the engine is in the particular operating condition is smaller when said transmission detecting means indicates that the engine is associated with an automatic transmission than when the transmission detecting means indicates that the engine is associated with a manual transmission so that operating performance is enhanced while improving fuel costs.

4,938,198

INTERNAL COMBUSTION ENGINE

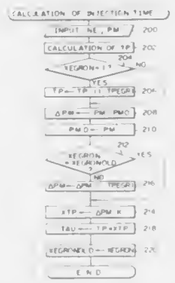
Michio Suzuki, Hekinan, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Aug. 25, 1989, Ser. No. 398,623

Claims priority, application Japan, Aug. 30, 1988, 63-215492

Int. Cl.[5] F02M *25/07*

U.S. Cl. 123—571 **17 Claims**



1. An internal combustion engine having an intake passage and an exhaust passage, comprising:

a throttle valve arranged in the intake passage;

a pressure detecting means for detecting a pressure in the intake passage downstream of said throttle valve;

a calculating means for calculating an amount of fuel to be injected on the basis of said pressure detected by said pressure detecting means;

a fuel injection means for injecting fuel into the intake passage on the basis of said amount of fuel;

a first correction means for calculating a transient correction value on the basis of a changing rate of said pressure detected by said pressure detecting means and for correcting said amount of fuel on the basis of said transient correction value;

an exhaust gas recirculation means for recirculating a part of the exhaust gas in the exhaust passage into the intake passage;

a determining means for determining whether or not the recirculation of the exhaust gas into the intake passage is started, or whether or not said recirculation is stopped; and

a second correction means for reducing an absolute value of said transient correction value in accordance with an amount of exhaust gas recirculated by said exhaust gas recirculation means when said determining means determines that said recirculation is started or stopped.

4,938,199

METHOD FOR CONTROLLING THE AIR-FUEL RATIO IN VEHICLE INTERNAL COMBUSTION ENGINES

Toshio Sato; Yoshiharu Abe; Yuji Fujiki, and Hiroshi Hasebe, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1988, Ser. No. 238,425

Claims priority, application Japan, Aug. 31, 1987, 62-217328; Aug. 31, 1987, 62-217329

Int. Cl.[5] F02M *23/08*

U.S. Cl. 123—585 **2 Claims**

1. In an air-fuel ratio control method for an on-vehicle internal combustion engine having an automatic transmission, a secondary intake air supplying passage communicating with an intake pipe downstream of a throttle valve in a carburetor of said internal combustion engine, and a flow regulating pipe provided in said secondary intake air supplying passage, the improvement comprising the steps of:

(a) detecting a low vehicle speed;

(b) detecting an in-gear condition of said automatic transmission;

(c) detecting a decelerating condition of said engine in accordance with a change of speed of engine operation parameters; and



(d) controlling an opening degree of said flow regulating valve in accordance with said change of speed upon detection of said decelerating condition when it is determined that said low vehicle speed is not detected and at the same time said in-gear condition is not detected.

4,938,200

IGNITION DEVICE

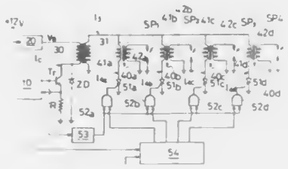
Shinichiro Iwasaki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Dec. 27, 1988, Ser. No. 290,062

Claims priority, application Japan, Dec. 26, 1987, 62-330667

Int. Cl.[5] F02P *3/04*

U.S. Cl. 123—620 **8 Claims**



1. An ignition device for an internal combustion engine comprising:

electromagnetic energy accumulating means;

energy supplying means for supplying electromagnetic energy to the electromagnetic energy accumulating means;

switching means responsive to rotation of the engine for controlling the supply of energy from the supplying means to the accumulating means;

transformer means having a primary winding connected to the accumulating means, and a secondary winding for including a flow of electromagnetic energy in the secondary winding in response to the flow of electromagnetic energy in the primary winding;

rectifier means for controlling the direction of flow of the electromagnetic energy in the primary winding; and

spark generating means connected to the secondary winding of the transformer means for generating an electric spark in response to the energy flowing in the secondary winding;

wherein the accumulating means includes an accumulation transformer having a coupled coil and means for electrically connecting the coupled coil with the primary winding,

said coupled coil and said primary winding each being connected to ground and said rectifier means including a rectifier connected in series between the primary winding and ground;

wherein the transformer means includes a plurality of transformers, the spark generating means includes a corresponding plurality of spark generators, and the rectifier means includes an individual rectifier comprised of a thyristor corresponding to each transformer; and

wherein said device also includes logic means connected to the switching means for controlling the operation of the individual thyristors in response to the rotation of the engine.

4,938,201

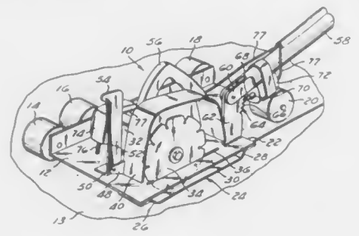
SAW FOR CUTTING UNCURED CONCRETE

Edward Chiuminatta, and Alan R. Chiuminatta, both of 6677 Columbus, Riverside, Calif. 92504

Division of Ser. No. 185,055, Apr. 22, 1988, which is a division of Ser. No. 843,799, Mar. 25, 1986, Pat. No. 4,769,201. This application Jul. 27, 1989, Ser. No. 386,814

Int. Cl.[5] B28D *1/04*

U.S. Cl. 125—13.01 36 Claims



1. An apparatus for cutting grooves in the exterior surface of concrete, comprising:

rotating cutting means urged against said exterior concrete surface for cutting a groove in said exterior surface, said cutting means having a cutting edge, two sides, and a trailing edge, said cutting edge rotating out of the exterior surface of the concrete;

a motor driving said cutting means;

propelling means for moving the apparatus across the exterior surface of the concrete;

support means in contact with the exterior surface of said concrete for supporting the surface of said concrete within 0.125 inches of said sides immediately adjacent the cutting edge of said cutting means as said cutting means cuts said groove, said support means inhibiting cracking, chipping and damaging of the said concrete finish adjacent said groove;

movement means for allowing movement of said cutting means away from the exterior surface of said concrete in response to contact between said cutting means and an obstacle in the concrete, said movement means allowing said cutting means to at least partially circumvent said obstruction;

resilient means by which said cutting means is resiliently urged against said exterior surface of said concrete and for predetermining the force with which the cutting means is urged against the exterior surface of the concrete; and

wheel means for moving said apparatus across the exterior surface of said concrete.

4,938,202

OUTDOOR COOKING UNIT WITH DISPOSABLE COMPONENT

Paul W. Hait, Los Gatos, Calif., assignor to Pyromid, Inc., Redmond, Oreg.

Filed Apr. 24, 1985, Ser. No. 726,835

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.[5] F24C *1/16*

U.S. Cl. 126—9 R 26 Claims



1. A cooking unit comprising:

(a) a first hollow open-ended member having a truncated pyramidal configuration and having a smaller open end, said first member comprising a plurality of first panels, each of said first panels having a trapezoidal configuration,

(b) a second hollow open-ended member having an inverted truncated pyramidal configuration and having a smaller open end, said second member comprising a plurality of second panels, each of said second panels having a trapezoidal configuration, said second member disposed above said first member and in axial alignment therewith, said smaller open end of said first member and said smaller open end of said second member being disposed in overlapping relation with the smaller end of said second member being nested within the smaller end of said first member;

(c) first hinge means hingedly connecting adjacent non-parallel edges of said first panels of said first member for folding and extending said first member;

(d) second hinge means hingedly connecting adjacent non-parallel edges of said second panels of said second member for folding and extending said second member;

(e) a cooking grill supported by said second member at the upper sections thereof;

(f) a fire grate supported by said second member below said cooking grill; and

(g) a removable, bendable, non-combustible liner freely disposed along the inner walls of said second panels, said liner having a hollow truncated pyramidal configuration with a bottom wall below said fire grate, said liner being initially in a flat folded state and subsequently unfolded to an extended state conforming to the shape of the inner walls of said second panels of said truncated, pyramidal second member for being freely disposed along the inner walls of said second panels of said second member.

4,938,203

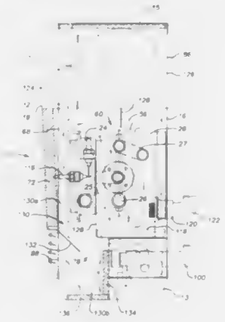
PULSE COMBUSTION APPARATUS

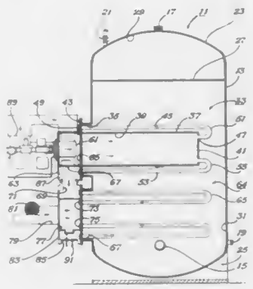
William H. Thrasher, North Royalton; Robert A. Borgeson, Cleveland Hts., both of Ohio; Lloyd R. Maschhoff, Belleville, Ill.; Charles M. Pavlik; Steven J. Tucky, both of Cleveland, Ohio, and Jeffrey L. West, Newport Beach, Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Mar. 8, 1989, Ser. No. 320,463

Int. Cl.[5] F24H *3/00*

U.S. Cl. 126—110 R 22 Claims





9. A pulse combustion space heater for heating air in a space to be temperature conditioned including a cabinet having exterior walls providing a cabinet volume for enclosing and supporting the heater, said cabinet exterior walls including air intake and discharge openings, interior housing means located within said cabinet volume including walls providing a heat transfer chamber having inlet and outlet openings respectively communicating with said cabinet intake and discharge openings for circulating air from the space through the heat transfer chamber, pulse combustion burner means including a plurality of burner elements operably connected in a fluid-tight manner for pulse combustion of a combustible gaseous mixture and discharge of combustion products to the atmosphere remote of said space, said burner elements having exterior heat transfer surfaces located within said heat transfer chamber for transfer of combustion heat to air contacting said heat transfer surfaces, and blower means for circulating air from said space through said heat transfer chamber for heating by contact with said exterior heat transfer surfaces of said burner elements and back into said space, said heater including a discharge silencer through which the air passes prior to flow through said discharge opening in said cabinet, said discharge silencer comprising a labyrinthine air flow passageway lined with sound attenuation material arranged to cause changes in the direction of air flow to trap and dissipate acoustical energy, said burner elements including a combustion chamber which cooperates with an adjacent wall of the interior cabinet to provide a multi-functional portion of said labyrinthine air flow passageway within said heat transfer chamber in which heat transfer and sound attenuation occur simultaneously to thereby enhance the compactness of the space heater.

4,938,204

WATER HEATER OR BOILER WITH IMPROVED THERMAL EFFICIENCY

Charles L. Adams, Euless, Tex., assignor to PVI Industries, Inc., Fort Worth, Tex.

Filed Aug. 18, 1989, Ser. No. 395,475

Int. Cl.[5] F24H *1/20*

U.S. Cl. 126—360 R 14 Claims

1. A water heater of the type having a closed tank normally containing water under pressure with a sidewall extending between the top and bottom of the closed tank and having a primary and secondary openings in the sidewall, the water heater comprising:

a submergible, pressurized combustion chamber with multiple external heating surfaces, said combustion chamber extending through the primary sidewall opening of the closed tank so that all of the heating surfaces are submerged in the water under pressure;

an air-fed, forced draft burner having a burner inlet and being mounted on the exterior of the closed tank and communicating with said combustion chamber for causing combustion to take place within said submergible, pressurized combustion chamber so that substantially all combustion takes place in the tank assembly to minimize heat loss;

a secondary heat exchanger having a plurality of heat exchange tubes, said secondary heat exchanger extending through the secondary sidewall opening of the closed tank so that said heat exchange tubes are submerged in the water under pressure;

passage means for conducting products of combustion generated by said air-fed, forced draft burner in said combustion chamber to said secondary heat exchanger; and

preheat means for preheating the air being supplied to the forced draft burner.

4,938,205

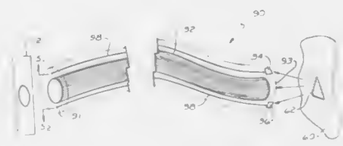
ENDOSCOPE WITH TRACED RASTER AND ELEMENTAL PHOTODETECTORS

Sol Nudelman, Avon, Conn., assignor to The University of Connecticut, Farmington, Conn.

Filed May 27, 1988, Ser. No. 199,997

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 10 Claims



1. An endoscope adapted for operation in association with an optical scanner which generates a beam of radiation tracing out a raster comprising:

probe means for forming an elongated flexible endoscopic tube having a proximal end and a distal end;

an optical channel enclosed in said probe means comprising a bundle of coherent optical fibers extending from a channel proximal end to a channel distal end;

at least one elemental photodetector mounted at the distal end of said probe means;

electrical wire means for providing electrical communica-

tion between said at least one photodetector and the proximal end of said probe means,

so that a raster from said scanner projected on said proximal end of said optical channel traverses said channel and is projected through said optical channel distal end for illumination of the surface of an object to be examined and reflected radiation from said surface is sensed by said at least one photodetector which generates a corresponding electrical signal for transmission through said electrical wire means.

4,938,206

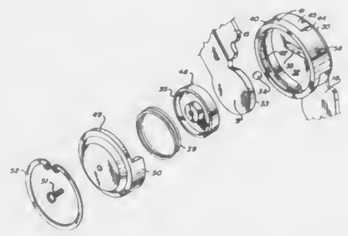
FLOATING PIVOT HINGE AND KNEE BRACE

David P. Harris; Michael E. Berkeley, both of Aspen, and William L. McCune, Denver, all of Colo., assignors to Design Medical, Inc., Aspen, Colo.

Continuation-in-part of Ser. No. 943,554, Dec. 18, 1986, abandoned. This application Jan. 29, 1987, Ser. No. 8,196

Int. Cl.[5] **A61F** *5/04*

U.S. Cl. 128—80 F **16 Claims**



1. A floating pivot axis hinge comprising, in combination, a pair of juxtaposed hinge plates adapted to pivot and slide with respect to each other, each said plate having a pivot face in opposition to a pivot face on the juxtaposed plate, a concave groove in each of said faces, said concave grooves being substantially of equal length, a single pivot bearing ball positioned between said opposed faces and retained in said concave grooves, and means resiliently biasing said hinge plates together against said pivot bearing ball when said ball is positioned in said opposed grooves between said opposing faces, said pivot bearing ball thereby providing a floating pivot axis for hinge rotation of said hinge plates relative to each other, said concave grooves allowing said hinge plates to slide relative to each other and simultaneously pivot relative to each other about said floating pivot axis defined by said ball.

4,938,207

KNEE BRACE HAVING PLURALITY OF FLUID FILLED CHAMBERS SURROUNDING KNEE

Alexander C. Vargo, 17617 Midway Rd., #209, Dallas, Tex. 75252, assignor to Alexander C. Vargo, Dallas, Tex.

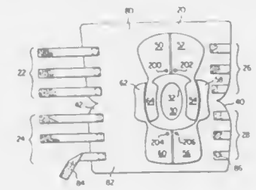
Filed Oct. 20, 1986, Ser. No. 920,411

Int. Cl.[5] **A61F** *5/00*

U.S. Cl. 128—80 C **8 Claims**

1. A knee brace comprising:

a flexible sheath member sized so as to extend about the human thigh and calf to embrace the knee area of the leg, having a cutout portion to receive and locate the knee cap, means to exert a hydrostatic pressure on said knee area when said knee is bent comprising first and second fluid filled chambers located so as to be proximate to the above said knee cap, each fluidly connected to a corresponding first and second side chamber, wherein said first side chamber is located on one side of the knee and said second side chamber is located on the opposite side of the knee; and a third and fourth fluid filled chamber located so as to be proximate to and below said knee cap, each fluidly connected to a corresponding third and fourth side chamber, wherein said third side chamber is located on one side of the knee and said fourth side chamber is located on the opposite side of the knee where the hydrostatic pressure in said first, second, third and fourth side chambers is increased by a corresponding increase in the hydrostatic pressure in the first, second, third and fourth fluid filled chambers occasioned upon the bending of the knee; said first, second, third and fourth chambers having no fluid interconnection with each other.



4,938,208

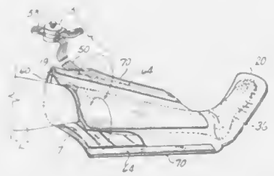
FULL LENGTH COMPRESSIBLE SLEEVE

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 16, 1989, Ser. No. 324,513

Int. Cl.[5] **A61F** *5/00*

U.S. Cl. 128—87 R **17 Claims**



1. A sleeve for applying compressive pressures against a patient's limb from a source of pressurized fluid, comprising:

a multi layered elongated sheath defining a plurality of generally limb encircling compressive chambers, said sheath having an open proximal end and a closed distal end, said sheath receiving a patients limb through its open proximal end;

said sheath having a front portion for juxtaposition with the front surface of a patient's limb, said sheath having a back portion for juxtaposition with the back surface of a patient's limb;

said front and back portions of said sheath having transversely extending side elements, said side elements having an outer gripping edge thereon, said front portion having a gripping means on an outer lateral central surface of the front portion;

said side elements being wrappable over and securable onto said front portion of said sheath to permit girthwise adjustability of said sleeve about a patient's limb.

4,938,209

MASK FOR A NEBULIZER

William J. Fry, 122 Ford Hill Rd., Seymour, Tenn. 37865

Filed Jan. 12, 1989, Ser. No. 296,011

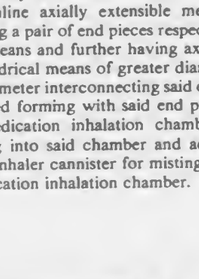
Int. Cl.[5] **A61M** *16/06, 15/00;* **A62B** *7/00*

U.S. Cl. 128—200.21 **7 Claims**

1. A face mask providing fluid communication between an outlet of an apparatus for nebulizing medication and said face mask, delivering mist or spray produced by said nebulizing apparatus to the nose and/or mouth of a patient wearing said face mask, and having means for maintaining said nebulizing apparatus in an upright position to avoid spillage, said face mask comprising:

a body defining a rearwardly opening cavity for receiving at least a portion of the face of a patient and also defining a forwardly disposed opening communicating with said cavity;

a delivery conduit for establishing fluid communication between said outlet of said nebulizing apparatus and said



forwardly disposed opening of said body, said conduit having first and second end portions and defining a passageway therethrough;

said means for maintaining said nebulizing apparatus in a vertical position comprising a ball and socket connecting means rotatably connecting said delivery conduit to said body, whereby said passageway is in fluid communication with said cavity of said body; and

attaching means for releasably attaching said nebulizing apparatus to said delivery conduit.

4,938,210

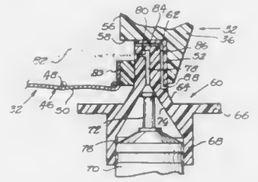
INHALATION CHAMBER IN VENTILATOR CIRCUIT

William R. Sheve, Plattsburgh, N.Y., assignor to Trudell Medical, London, Canada

Filed Apr. 25, 1989, Ser. No. 342,809

Int. Cl.[5] **A61M** *11/08, 16/08, 16/16*

U.S. Cl. 128—203.12 **15 Claims**



1. The combination comprising a ventilator breathing circuit including an inhalation conduit, including a pair of axially separable conduit means of substantially equal predetermined diameter normally in closed fluid communication with one another, an inline axially extensible medication inhalation chamber having a pair of end pieces respectively connected to said conduit means and further having axially extensible substantially cylindrical means of greater diameter than said predetermined diameter interconnecting said end pieces and when axially extended forming with said end pieces a substantially cylindrical medication inhalation chamber, and receptacle means opening into said chamber and adapted to receive a metered dose inhaler cannister for misting aerosol medication into said medication inhalation chamber.

4,938,211

BREATHING APPARATUS

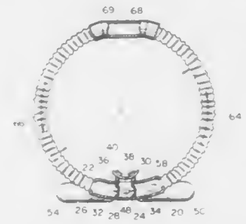
Masashi Takahashi; Yasuhiko Satomi; Tadayoshi Iwasaki; Tsuneo Suzuki; Yasunobu Shimada; Shozo Tanaka; Shinji Oshima; Shigeto Suzuki; Seiji Okino, and Masahiro Sakamoto, all of Tokyo, Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,476

Claims priority, application Japan, Oct. 14, 1987, 62-156989[U]; Jan. 20, 1988, 63-5543[U]; Feb. 10, 1988, 63-16918[U]; Mar. 10, 1988, 63-32043[U]; Jul. 18, 1988, 63-94800[U]; Jul. 18, 1988, 63-94801[U]; Jul. 20, 1988, 63-95884[U]

Int. Cl.[5] **B63C** *11/22, 11/24;* **A62B** *7/04, 9/04*

U.S. Cl. 128—204.26 **16 Claims**



1. A breathing apparatus enabling a person to function in irrespirable fluids, the breathing apparatus comprising:

a mouth piece adapted to be taken in the mouth of the person;

a vessel member connected to the mouth piece and having an internal influx chamber communicating with the mouth piece, the vessel member having intake and outgo ports communicating with the influx chamber;

communication means having opposite ends connected respectively to the intake and outgo ports of the vessel member in such a manner that the vessel member and the communication means form a loop in which a circular passage for a respirable gas is defined, the loop being adapted to be loosely worn around the person's body;

oxygen-supplying means for supplying the circular passage with the respirable gas;

intake and outgo check valves, disposed respectively at the intake and outgo ports of the vessel member, for limiting the flow of the respirable gas in the circular passage to a single direction so that, when the person exhales the respirable gas into the influx chamber through the mouth piece, the respirable gas is introduced into the communication means through the outgo port and, when the person inhales through mouth piece, the respirable gas in the communication means is recycled into the influx chamber through the intake port; and

an outlet port for discharging excess respirable gas out of the circular passage, the communication means comprising:

(a) first and second inflatable flexible tubes for receiving the respirable gas upon the person exhaling the respirable gas into the circular passage, and for releasing the respirable gas to the influx chamber upon the person inhaling through the mouth piece, the first and second flexible tubes being adapted to be worn respectively on the person'opposite shoulders, each of the first and second flexible tubes being of a cylindrical bellows-like construction and being longitudinally extensible and contractible to respectfully increase and decrease the internal volume thereof, each of the first and second flexible tubes having proximal and distal ends, the proximal ends of the first and second flexible tubes being communicatively connected respectively to the intake and outgo ports of the vessel member, the distal ends of the first and second flexible tubes being communicatively connected to each other, the

first and second flexible tubes longitudinally extending in response to the person exhaling to receive the respirable gas exhaled by the person, the flexible tubes longitudinally contracting in response to the person inhaling so as to decrease in internal volume as the respirable gas is withdrawn therefrom, whereby said flexible tubes define a reservoir for respirable gas which varies in volume in response to exhaling and inhaling by the person; and

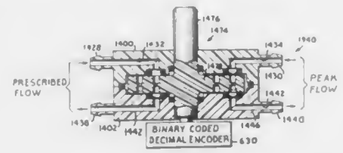
(b) carbon dioxide-removing means for removing carbon dioxide from the respirable gas passing through the communication means.

4,938,212

INSPIRATION OXYGEN SAVER

James A. Snook, Overland Park; Thomas W. Nelson, Lenexa; Marilyn S. Wyble, and Russell L. Trimble, both of Overland Park, all of Kans., assignors to Puritan-Bennett Corporation, Lenexa, Kans.

Filed Oct. 16, 1987, Ser. No. 108,947
Int. Cl.[5] A62B *9/02*
U.S. Cl. 128—205.24 **3 Claims**



1. A fluid flow restricting device, comprising:

a flow selector element presenting a pair of opposed faces and two sets of spaced apart orifices therethrough, the orifices of each set being of different effective dimensions respectively; and

a body disposed about said element and having a wall surface adjacent each of said element faces, said body having first and second separate fluid inlet passageways therethrough and passing through one of said body wall surfaces, said body also having corresponding first and second, separate, fluid outlet passageways therethrough and passing through the other of said body wall surfaces,

said first inlet passageway and said corresponding first outlet passageway, and said second inlet passageway and said corresponding second outlet passageway, being arranged for fluid flow communication therebetween,

the individual orifices of each set thereof being oriented in mated pairs for presenting a plurality of orifice pairs each including one orifice from each set thereof,

means mounting said element within said body for selective, sequential, noncontinuous relative shifting movement between the element and body, and for selective stopping of said shifting movement at individual relative operating positions between the element and body,

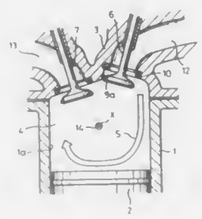
each of said orifice pairs being located and arranged for correlation with a respective one of said operating positions so that, for each of said operating positions, the orifice pair in correlation therewith establishes simultaneous fluid flow communication between said corresponding inlet and outlet passageways.

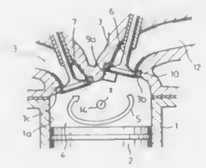
4,938,213

TWO-STROKE ENGINE

Toshio Tanahashi; Toshio Itoh; Masanobu Kanamaru, and Kazuhiro Itoh, all of Susono, Japan, assignors to Toyota Jidosha Dabushiki Kaisha, Aichi, Japan

Filed Apr. 20, 1989, Ser. No. 342,169
Claims priority, application Japan, Apr. 26, 1988, 63-101322
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—301 **16 Claims**





1. A two-stroke engine comprising:

a cylinder having an inner wall;

fresh air feeding means for feeding fresh air into said cylinder;

combustion gas discharging means for discharging combustion gas from said cylinder;

fresh air turning means for turning said fresh air around a central axis perpendicular to an axis of said cylinder; and

injection means for injecting fuel into said cylinder along said central axis.

4,938,214

HAND HELD SURGICAL TOOL

Paul B. Specht, Wilmette, and Harry P. Weiorib, Chicago, both of Ill., assignors to Micrins Surgical Instruments, Ltd., Chicago, Ill.

Continuation-in-part of Ser. No. 847,237, Apr. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 674,379, Sep. 10, 1984, abandoned, and a continuation-in-part of Ser. No. 839,643, Mar. 13, 1986, Pat. No. 4,793,349, which is a continuation-in-part of Ser. No. 648,583, Sep. 10, 1983, abandoned. This application Nov. 13, 1987, Ser. No. 188,439
Int. Cl.[5] A61B *17/06, 17/21*
U.S. Cl. 128—340 **20 Claims**

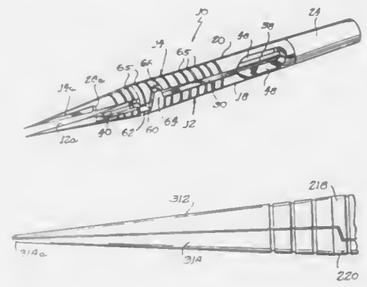
1. A hand-held microsurgical tool for use in microsurgery, said tool comprising:

an elongated body including a cylindrical section having a longitudinal axis about which the body may be rotated by a surgeon;

said cylindrical section comprised of first and second generally opposed, coextensive longitudinally extending portions joined at a closed end;

needle point ends on each of said first and second portions located opposite from the closed end and movable toward and away from each other between closed and open positions, respectively; and

alignment means for maintaining alignment of the needle point ends when in the open and closed positions and at all intermediate positions therebetween, said alignment means comprising an interior guide member having a surface in sliding engagement with at least one of said first and second portions, said guide member being located within the configuration of the cylindrical section so as not to interfere with the rotation of the cylindrical section of the tool.

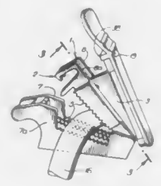


4,938,215

UMBILICAL CORD CLAMP AND CUTTERS

Norman M. Schulman, 8635 W. 3rd St. #665, Los Angeles, Calif. 90048, and Donald Raible, Irvine, Calif., assignors to Norman M. Schulman, Los Angeles, Calif.

Continuation-in-part of Ser. No. 858,397, May 1, 1986, Pat. No. 4,716,886. This application Dec. 11, 1987, Ser. No. 131,997
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.[5] A61B *17/08*
U.S. Cl. 606—120 **33 Claims**



1. A device for the clamping and severing of a tubular body, each severed end thereof being retained in a clamp, the device comprising:

a pair of clamps, each clamp comprising a pair of arms hingeably connected at one end and further having latching means for securing said pair of arms in a clamped position about said tubular body;

breakable connecting means for selectively connecting and maintaining said pair of clamps in a side-by-side abutting relation; and

a cutting blade connected between said clamps, for breaking said connecting means and severing said tubular body,

at least one arm of each of said clamps and said cutting blade being pivotably connected to common pivot means, said pivot means forming a disengageable connection among said clamps and said cutting blade,

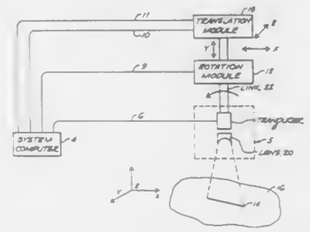
whereby clamping and cutting of said tubular body is done substantially in a single motion.

4,938,216

MECHANICALLY SCANNED LINE-FOCUS ULTRASOUND HYPERTHERMIA SYSTEM

Padmakar P. Lele, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 21, 1988, Ser. No. 209,519
Int. Cl.[5] A61N *5/00*
U.S. Cl. 128—399 **10 Claims**



1. An ultrasonic hyperthermia system for delivering hyperthermic therapy to a subject, the system comprising

a piezoelectric transducer element which can produce a beam of ultrasonic energy upon electrical activation, said piezoelectric transducer element having a selected length and a substantially constant thickness over said length;

a line-focus lens element coupled with the transducer element and adapted to be situated between the transducer element and the subject, for focusing a beam of ultrasonic energy produced by said transducer element upon electrical activation into a substantially linear focal region, said substantially linear focal region having a length substantially equal to the length of the transducer element;

electrical activation means for activating the transducer element, the electrical activation means including adjustment means for selectively varying the electrical excitation, and, as a result, the intensity of the ultrasonic energy beam, the adjustment means including means for selectively varying the intensity of the ultrasonic energy beam continuously across the substantially linear focal region; and

scanning means for scanning the line-focused beam across a target region of a subject during activation of the transducer element.

4,938,217

ELECTRONICALLY-CONTROLLED VARIABLE FOCUS ULTRASOUND HYPERTHERMIA SYSTEM

Padmakar P. Lele, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 21, 1988, Ser. No. 209,517
Int. Cl.[5] A61N *5/00*
U.S. Cl. 128—399 **8 Claims**

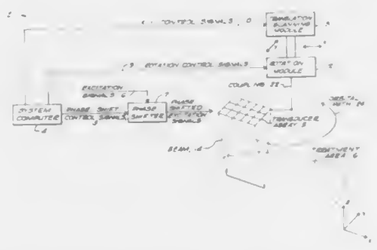
1. An ultrasonic hyperthermia system for delivering hyperthermia therapy to a subject, the system comprising:

ultrasonic transducer means, including a plurality of piezoelectric transducer elements, said transducer elements having a substantially constant thickness, said transducer elements being arranged in an array to provide multiple sources of ultrasonic energy, for generating a beam of ultrasonic energy characterized by an elongate, substantially linear focal region or selected length at a selected depth in the subject;

an electrical excitation means for exciting said transducer elements, said electrical excitation means including electronic control means for dynamically and electronically varying the length and depth of the substantially linear focal region, said electronic control means including a phase-shifting means for supplying the transducer elements with electrical excitations having adjustable phases

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for dynamically varying the length and depth of the substantially linear focal region to selectively focus the beam of ultrasonic energy from the transducer array into a target region of treatment area within the subject; and



scanning means for scanning the focused ultrasonic energy across said target region.

4,938,218

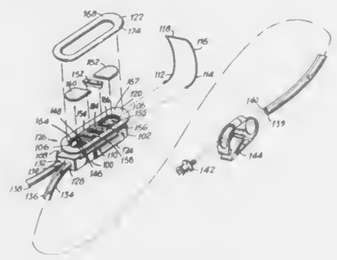
PERINATAL PULSE OXIMETRY SENSOR

David E. Goodman, San Francisco; Jessica A. Warring, Millbrae, and Paul D. Mannheimer, San Mateo, all of Calif., assignors to Nellcor Incorporated, Hayward, Calif.

Continuation-in-part of Ser. No. 217,080, Jul. 7, 1988, abandoned, and Ser. No. 206,918, Jun. 13, 1988, abandoned, which is a continuation of Ser. No. 105,509, Oct. 5, 1987, abandoned, which is a continuation of Ser. No. 941,540, Dec. 11, 1986, abandoned, which is a continuation of Ser. No. 789,580, Oct. 21, 1985, abandoned, which is a division of Ser. No. 644,051, Aug. 24, 1984, abandoned, said Ser. No. 217,080, is a continuation of Ser. No. 935,060, Nov. 21, 1986, abandoned, which is a continuation of Ser. No. 644,051, which is a continuation-in-part of Ser. No. 527,726, Aug. 30, 1983, abandoned. This application Oct. 28, 1988, Ser. No. 264,196

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **12 Claims**



1. A sensor for insertion into a uterus that is useful for measuring fetal blood flow characteristics, comprising:

a deformable outer body, having at least one cavity open to the exterior of the outer body;

a light source secured in the cavity;

a light detector secured in the cavity;

means for connecting the cavity to a vacuum source to create a partial vacuum in the cavity at a predetermined time; and

diffusion means associated with the cavity for diffusing air removed from within the cavity before the air enters the means connecting the cavity to the vacuum source.

4,938,219

ELECTROCARDIOGRAPHIC ELECTRODE

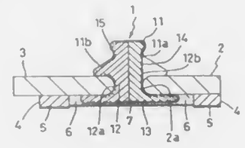
Hiroyoshi Ishii; Kenzo Suzuki; Misao Kaneko; Hiroshi Kawamoto, all of Saitama; Chuji Shimizu, Chiba, and Yasuaki Onodera, Saitama, all of Japan, assignors to Fukuda Denshi Co., Ltd. and Kabushiki Kaisha Riken, Tokyo, Japan

Continuation of Ser. No. 144,134, Jan. 15, 1988, abandoned. This application Oct. 17, 1989, Ser. No. 423,590

Claims priority, application Japan, Jan. 16, 1987, 62-004575; Jan. 16, 1987, 62-004577

Int. Cl.[5] A61B *5/0402*

U.S. Cl. 128—641 **2 Claims**



1. An electrocardiographic electrode comprising:

(a) a metal-powder coated synthetic resin electrode element comprising a head portion for attachment to an electrical lead, a bottom portion for contacting the skin of a living body, and a neck portion connecting said head portion with said bottom portion and forming an engagement section of said electrode element for engaging an expansible sheet-like member, said head portion having a downwardly and outwardly sloped substantially conoidal section, said conoidal section having at least one recessed portion which forms a continuous vertical surface with said neck portion;

(b) an expansible sheet-like member having upper and lower surfaces and a central opening engaging said neck portion of said electrode element, said bottom portion of said electrode element and said conoidal section being arranged to support said sheet-like element between them; and,

(c) an adhesive film secured to said lower surface of said expansible member for retaining said electrocardiographic electrode on the skin of a living body.

4,938,220

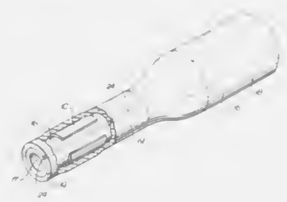
CATHETER WITH SPLIT TIP MARKER AND METHOD OF MANUFACTURE

Richard L. Mueller, Jr., Mountain View, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 891,790, Aug. 1, 1986, abandoned. This application Jan. 13, 1989, Ser. No. 298,865

Int. Cl.[5] A61M *25/10*

U.S. Cl. 128—658 **7 Claims**



1. A vascular catheter comprising:

(a) an elongated flexible outer tubular member having proximal and distal ends and an inflatable balloon near the distal end thereof defining an interior chamber therein;

(b) a vent passageway extending distally from the balloon interior providing fluid communication with the surrounding exterior environment; and

(c) a split, cylindrically shaped sleeve of radiopaque material disposed distally of the inflatable balloon having an arc length of less than 360° and a longitudinal gap between the confronting edges thereof with the vent passageway disposed within the gap.

4,938,221

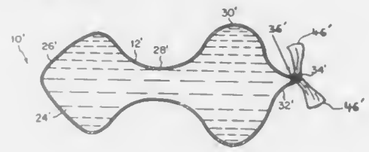
HEMORRHOID INFLAMMATION REDUCING DEVICE

Judith S. Tuffel, 97 Cedarhurst Ave., Cedarhurst, N.Y. 11516

Continuation-in-part of Ser. No. 179,878, Apr. 11, 1988, abandoned. This application Mar. 2, 1989, Ser. No. 317,917

Int. Cl.[5] A61F *7/12*

U.S. Cl. 128—401 **4 Claims**



1. A hemorrhoid inflammation reducing device, comprising:

(a) a hollow flexible housing shaped to be inserted into and removed from an anus of a rectum of a person having internal/external hemorrhoids, said housing including an enlarged head portion means to fit into the rectum, a reduced neck poriton means extending from said head portion means so that said neck portion means can bear against the internal/external hemorrhoids, and an oversized body portion means extending from said neck portion means so that said body portion means can stick out from the anus allowing the person to grip said body portion means for inseretion into and removal from the anus of the rectum;

(b) a coolant means disposed within said housing for shrinking said internal/external hemorrhoids; and

(c) means for sealing said coolant means within said housing after said coolant means is placed within said housing, said sealing means including a pair of handle-like extension means formed in distal end of said body portion means opposite said neck portion means of said housing and having an aperture therebetween so that said pair of handle-like extension means can be tied together sealing said coolant means in said housing without leaking, and said pair of said handle-like extension means being initially untied for allowing said coolant means to be initially filled through said aperture contained between said handle-like extension means when first using the device.

4,938,222

THERAPEUTIC BANDAGE

John D. Bier, Jr., 635 Pear Tree Cir., Columbia, Mo. 65203

Filed Mar. 20, 1989, Ser. No. 325,901

Int. Cl.[5] A61F *7/00*

U.S. Cl. 128—402 **1 Claim**

1. A therapeutic bandage for securement about an individual foot member, comprising,

an elongate flexible hollow body for encompassing an anatomical part of said individual including a non-hardening refrigerant contained therewithin,

and

said elongate body including a top edge surface and an opposed forward edge surface and further including a right side bounded by a continuous elongate right edge,

and

a left side bounded by a continuous elongate left edge,

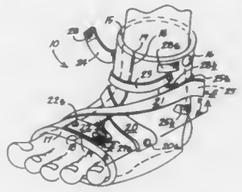
and

first strap means mounted on said right side selectively securable to a plurality of patch members secured to said left side, and second strap means mounted on said left side selectively securable to a plurality of patch members secured to said right side, and

wherein said first strap means is pivotally mounted to said right side and said second strap means is pivotally mounted to said left side, and

wherein said first strap means includes a first strap, a second strap, and a third strap, and wherein each of said first, second, and third straps are securable to said patch members and said patch members include a plurality of patches selectively associatable with one of each of said first, second, and third straps, and

wherein said second strap means includes a fourth strap and a fifth strap selectively securable to a plurality of respective fourth patches and fifth patches, and wherein a respective first, second, and third pivot member pivotally secures the respective first, second, and third straps of the right side, and a respective fourth and fifth pivot member secure the respective fourth and fifth straps to the left side, and



wherein said flexible hollow body comprises an "L" shaped body and is formed with a quarter spherical relief opening defining an exterior intersection of a lower horizontal leg and an upper vertical leg forming said "L" shaped body, and wherein the quarter spherical relief opening is spaced from the right edge and left edge to receive a heel portion of the foot member therethrough, and

wherein said first, second, and third straps are secured to the lower horizontal leg of the "L" shaped body, and wherein the fourth and fifth straps are secured to the upper vertical leg of the "L" shaped body, and

wherein said "L" shaped body further includes a threadedly removable fill plug formed within an upper portion of the upper vertical leg for selective filling of a refrigerant gel within the "L" shaped body.

4,938,223

TRANSCUTANEOUS NERVE BLOCK DEVICE

Thomas H. Charters, Beaverton, Oreg., and Fritz L. Jenkner, Vienna, Austria, assignors to T. H. Charters, Inc., Beaverton, Oreg.

Filed Mar. 28, 1988, Ser. No. 174,233

Int. Cl.[5] A61N *1/36*

U.S. Cl. 128—421 **19 Claims**

1. A nerve block device comprising:

means for producing a cyclic modulating signal of changing amplitude;

means for producing a carrier signal in a predetermined timed relation to the modulating signal, the carrier signal having a first frequency;

modulation means for producing a resultant signal;

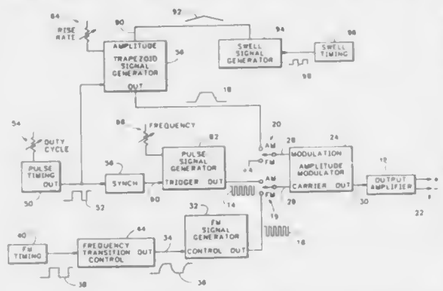
patient output electrodes;

output means for coupling said resultant signal to said patient electrodes;

means for producing a frequency modulated signal; and

switch means for selectively applying one of the carrier signal and the frequency modulated signal to said modulation means and for selectively applying one of the modulating signal and a constant signal to said modulation

means such that in a first state of said switch means the resultant signal corresponds in frequency to the carrier signal and in magnitude to the modulating signal amplitude while in a second state of said switch means the resultant signal corresponds in frequency to the frequency modulated signal and in amplitude to the constant signal.



4,938,224

PROCESS FOR DETECTING ACCIDENTAL CONTACT WITH BODY FLUIDS

Joseph A. Rysavy, 3511 S. 105th Ave., Omaha, Nebr. 68124

Filed Nov. 16, 1988, Ser. No. 271,922

Int. Cl.[5] A51B *5/00*

U.S. Cl. 128—633 **16 Claims**

1. A process for detecting accidental exposure of a protected skin surface to a body fluid, comprising,

protecting a skin surface by covering it with a substantially fluid impervious covering thereby providing a covered skin surface,

causing said covered skin surface to contact a body fluid,

providing a solution of a fluorescent fluid,

submerging said covered skin surface into said fluorescent fluid,

removing said covered skin surface from said fluorescent fluid,

removing said fluid impervious covering from said skin surface,

illuminating said skin surface with a light operative to cause said fluorescent fluid to be visually fluorescent, and,

visually detecting on said skin surface any fluorescent spots illuminated by said light.

4,938,225

ULTRASONIC ECHOGRAPH UTILIZING AT LEAST ONE PIEZOELECTRIC TRANSDUCER WITH AN ASSOCIATED RANDOM PHASE SCREEN, AND METHOD OF SCANNING AN OBJECT BY MEANS OF SUCH AN ECHOGRAPH

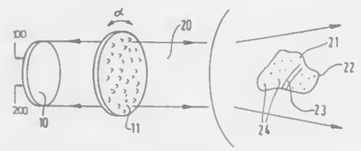
Mathias A. Fink, Strasbourg, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1988, Ser. No. 197,080

Claims priority, application France, Jun. 4, 1987, 8707795

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.01 **3 Claims**



1. An ultrasonic echograph comprising a first transducer for transmitting and/or receiving an ultrasonic beam, first random phase screen means, disposed in the ultrasonic beam and displaceable to a plurality of relative positions with respect to th transducer and the beam, for shifting the phase of said beam randomly in the range between at least 0 and π as a function of said relative positions, means for receiving echographic lines produced from reception of the beam at each of said plurality of positions and second phase screen means which are disposed in and are stationary with respect to the ultrasonic beam.

4,938,226

METHOD AND AN APPARATUS FOR MEASURING BLOOD PRESSURE

Per Danielsson, Hantverkaregatan 13, S-341 00 Ljungby; Nels Henningsen, Sånekullavägen 35, S-217 74 Malmö, and Hans Coger, Torsgatan 105, S-341 00 Ljungby, all of Sweden

PCT No. PCT/SE87/00311, § 371 Date Jan. 17, 1989, § 102(e) Date Jan. 17, 1989, PCT Pub. No. WO88/00448, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 1, 1987, Ser. No. 303,670

Claims priority, application Sweden, Jul. 15, 1986, 8603115

Int. Cl.[5] A61B *5/022*

U.S. Cl. 128—679 **7 Claims**



1. An apparatus for measuring blood pressure by means of a blood pressure cuff comprising two parallel, physically interconnected and pneumatically communicating cushions having an outer surface, which, at inflation, achieves a substantially continuously vaguely rounded shape, and an inner surface, for contact with an extremity, the blood pressure of which is to be monitored, having two separate areas of contact with said extremity.

4,938,227

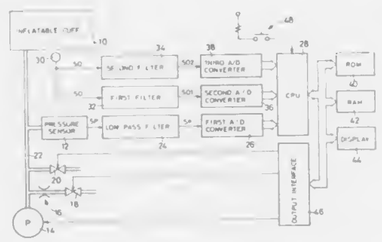
METHOD AND APPARATUS FOR MEASURING BLOOD PRESSURE

Minoru Niwa, Nagoya, and Hifumi Yokoe, Kosai, both of Japan, assignors to Colin Electronics Co., Ltd., Aichi, Japan

Filed Feb. 16, 1989, Ser. No. 310,893

Int. Cl.[5] A61B *5/0225*

U.S. Cl. 128—682 **18 Claims**



1. A method of measuring a blood pressure of a subject based on Korotkoff sounds which are produced synchronously with heartbeat of the subject by pressing a body portion of the subject, the method comprising the steps of:

detecting said Korotkoff sounds by a microphone, said microphone generating electric signals corresponding to the detected Korotkoff sounds in a whole frequency range thereof,

separating from at least one of said electric signals a signal component corresponding to a Korotkoff sound in a comparatively high frequency range out of said whole frequency range,

measuring, regarding said signal component, a time of occurrence of said Korotkoff sound in said comparatively high frequency range,

determining at least one time window regarding said electric signals, based on said time of occurrence measured regarding said signal component, said at least one time window consisting of a time interval smaller than a time period of occurrence of said Korotkoff sounds, and

collecting a Korotkoff sound occurring in the time interval of each of said at least one time window determined regarding said electric signals, the collected Korotkoff sound being utilized for determining the blood pressure of the subject.

4,938,228

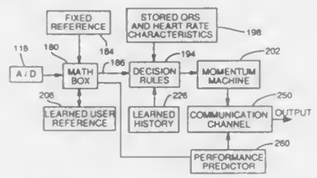
WRIST WORN HEART RATE MONITOR

William H. Righter, 540 SW 191st, Aloha, Oreg. 97006, and John J. Fallin, 7680 SW 182 Pl., Aloha, Oreg. 97007

Filed Feb. 15, 1989, Ser. No. 311,529

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—690 **28 Claims**



1. A heart rate monitor that determines a user's heart rate, comprising:

sensing means for sensing a biosignal and producing a sensed signal;

signal modifying means for modifying the sensed signal and producing a modified signal;

characteristic determining means for determining characteristics of a first portion of the modified signal;

matching means for matching a second portion of the modified signal with the characteristics and producing a matched signal therefrom;

matched signal modification means for receiving the matched signal and producing a modified matched signal therefrom; and

heart rate calculating means for receiving the modified matched signal and for calculating the user's heart rate from the modified matched signal.

4,938,229

METHOD AND APPARATUS FOR TRANSMITTING DATA DESCRIPTIVE OF ELECTROMAGNETIC WAVEFORM

Michael N. Bergelson, Riverdale, N.Y.; Victor Parsonnet, Millburn, N.J., and Tim Daily, Philadelphia, Pa., assignors to Paceart Inc., Wayne, N.J.

Filed Apr. 29, 1988, Ser. No. 187,945

Int. Cl.[5] A61B *5/0402*

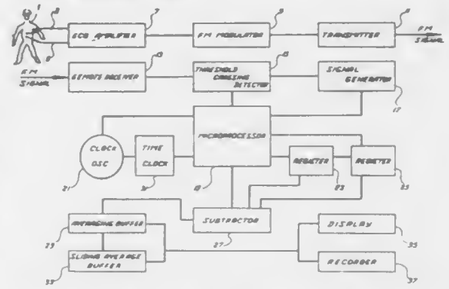
U.S. Cl. 128—696 **11 Claims**

1. An apparatus for deriving information from a remotely situated electromagnetic waveform having a characteristic with a time varying magnitude comprising:

fm modulator means for detecting the varying magnitude of said electromagnetic waveform and modulating the frequency of a constant amplitude continuous carrier signal in response thereto;

transmitter means operatively connected to said fm modulator means for transmitting the fm constant amplitude signal to a remote location;

detector means operatively connected to a receiver for detecting threshold crossings of the continuous fm constant amplitude signal;



subtractor means operatively connected to said detector means for comparing successive times of said threshold crossings and determining their differences; and

signal generator means operatively connected to said subtractor means for constructing a signal having a characteristic with a time varying magnitude corresponding to said characteristic with time varying magnitude of said remotely situated electromagnetic waveform.

4,938,230

DEVICE FOR SELECTIVELY PRODUCING INCREMENTAL JOINT MOVEMENT IN A PATIENT IN OPPOSITE DIRECTIONS

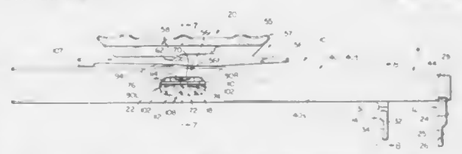
James E. Machek, Bradfordwoods, and Edward J. Rhinehart, Monroeville, both of Pa., assignors to Medrad, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 19,459, Feb. 26, 1987, Pat. No. 4,834,112. This application Mar. 31, 1989, Ser. No. 331,811

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.[5] A61B *5/10*

U.S. Cl. 128—777 **30 Claims**



1. A device for producing precise incremental joint movement in a patient, which comprises:

first and second spaced retractors for engaging respective body parts of the patient adjacent the joint;

support means having said first and second retractors mounted thereon for relative movement;

actuating means mounted on said support means for movement relative to said support means, said actuating means being movable to cause relative movement between said first and second retractors;

operating means movably mounted on said support means for selectively causing a precise preselected incremental movement of said actuating means in either of two opposite directions for a single stroke of said operating means, to cause relative movement between said first and second retractors in the selected direction into successive incremented positions relative to said support means and one another; and

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means on said support means for retaining said actuating means and said first and second retractors in their relative incremented positions.

4,938,231

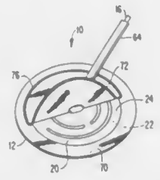
DEFIBRILLATOR ELECTRODE

Zoran Milijasevic, Elanora Heights; Loraine K. Holley, Rockdale, and Michael Skalsky, Waverley, all of Australia, assignors to Telectronics N.V., Netherlands

Continuation of Ser. No. 790,166, Oct. 22, 1985, abandoned. This application Nov. 21, 1988, Ser. No. 274,669

Int. Cl.[5] A61N *1/36*

U.S. Cl. 128—784 **33 Claims**



1. An apparatus for use as an electrode for implantation in a patient and affixation to tissue therein having a three dimensional, time-varying surface topography, the apparatus comprising:

a tissue-contacting member including a sheet of electrically conductive, flexible material having a generally unflexed planar shape, and a plurality of elongated slits arranged in a pattern in said sheet, said slits allowing the sheet to conform to the tissue and to any movement thereof, a part of at least one interior portion of said sheet defined by said pattern being flexibly movable in a direction perpendicular to the plane of said sheet past sheet portions separated from said movable portion by said pattern of slits for continuously conforming said tissue-contacting member to the tissue during any movement of the tissue.

4,938,232

COUPLING A MEMBRANE TO THE SKIN OF A HUMAN BEING

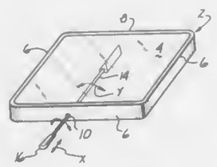
Othmar Wess, Munich; Reiner Groezinger, Alling; Kai Isdebski, Saulgau; Manfred Windsheimer, Germering, and Wolfgang Erhardt, Fuerstenfeldbruck, all of Fed. Rep. of Germany, assignors to Dornier Medizintechnik GmbH, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 942,259, Dec. 16, 1986, abandoned. This application Oct. 23, 1989, Ser. No. 426,494

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1985, 3544811

Int. Cl.[5] A61N *1/06*

U.S. Cl. 128—802 **5 Claims**



1. An apparatus for use in coupling medical equipment to the skin of a human being, comprising a membrane said membrane being adapted to be connected to said medical equipment, a gel layer being provided on the membrane and adapted for interpositioning between the skin of the human being and the membrane, a movably mounted wiping structure disposed on a side of the membrane facing away from the side that is adapted to face the skin, the wiping structure being connected to a laterally displaced actuator; by means of said wiping structure the membrane is locally and progressively forced against the gel layer and thereby being adapted for forcing the gel layer against the skin so that upon movement of the wiping structure, progressively any air bubbles in the gel layer are driven out of that layer and the layer is interposed bubblefree between the skin and the membrane.

4,938,233

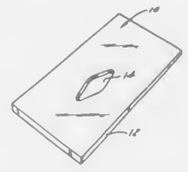
RADIATION SHIELD

William W. Orrison, Jr., Albuquerque, N. Mex., assignor to Techton, Inc., Albuquerque, N. Mex.

Filed Aug. 3, 1987, Ser. No. 80,958

Int. Cl.[5] A61B *6/10*

U.S. Cl. 128—849 **27 Claims**



21. A disposable radiological garment to be worn by or selectively draped about a patient, comprising a viscoelastic polymeric matrix charged with an attenuating inorganic filler, said garment having a durometer of less than 100 Shore "00".

4,938,234

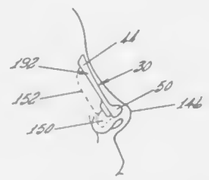
METHOD OF SURGICALLY IMPLANTING A CONTOUR NASAL IMPLANT

Robert J. Capriotti, 2800 Garth Rd., Baytown, Tex. 77521

Filed Jul. 15, 1988, Ser. No. 219,983

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—898 **16 Claims**



1. A method for surgically implanting a contour nasal implant into the nose of a patient wherein the nose has lateral lower cartilages, a nasal dorsum and a nasal tip wherein the nasal dorsum and nasal tip are to be elevated and augment the frontal and profile views of the patient's nose comprising the steps of

drawing, onto the nose of a patient into which a contour nasal implant is to be surgically implanted, connecting the highest points of the superior palpebral sulci such that the line crosses the nasal dorsum at a point representing the nasion and the highest point of implant insertion;

placing two pledgets in each nostril of the nose of said patient;

performing an open rhinoplasty incision into the skin located between the nostrils of the patient;

retracting superiorly the columella skin off of the lower lateral cartilages on each side of the nostril up to the highest point of the natural dome of the nose of the patient;

dissecting the skin off of the nasal dorsum of the nose to the line previously drawn across the nasal dorsum;

inserting a contour nasal implant having an elongated central member having a first end and a second end wherein the first end thereof has a dorsal section having a concave curvature on a selected side which is adapted to be positioned over the nasal dorsum in the nose of a patient into which the same is to be implanted and wherein the second end includes a predetermined shaped tip located on the same side of the elongated central member as the concave curvature of the dorsal section and further includes a keel having a selected width and length which is located under said predetermined shaped tip and wherein the keel has a length which is generally parallel to the elongated central member such that the first end thereof having the dorsal section is positioned between the nasal dorsum and the skin while the predetermined shaped tip is located on the lower lateral cartilages and the keel thereof extends downward between the lower lateral cartilages until the desired implantation position is obtained; and

suturing the rhinoplasty incision in the skin between the nostrils to implant the contour nasal implant within the nose of the patient to augment the frontal and profile views of the patient and to elevate the nasal tip of the nose of a patient.

4,938,235

SEPARATOR FOR SEPARATING TOBACCO PARTICLES FROM A TOBACCO/GAS MIXTURE

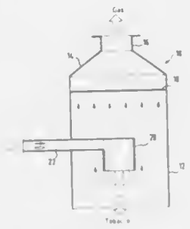
Werner Hirsch, Hamburg, and Arno Weiss, Norderstedt, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 29, 1988, Ser. No. 226,025

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1987, 3725148; European Pat. Off., Jun. 15, 1988, 88109550.9

Int. Cl.[5] A24B *3/00, 3/06*

U.S. Cl. 131—110 **18 Claims**



1. A separator for separating tobacco particles from a fluid tobacco and gas mixture comprising: a hood, a circular deflection space arranged in the hood, said circular deflection space being formed by an upwardly closed and downwardly open cylinder providing a downwardly directed outlet for said tobacco particles and said gas, an inlet for the fluid tobacco and gas mixture to be separated opening into the circular deflection space, a conduit for delivering said fluid tobacco and gas mixture through said inlet in a path with a radially outer portion of said fluid mixture tangentially contacting and following a curved interior surface of said cylinder, an outlet for the tobacco particles at the lower end of the hood and an outlet for withdrawing said gas above the deflection space, wherein the ratio of the area (A_2) of the deflection space to the area (A_1) of the inlet is between 5 and 30, and the ratio of the area (A_3) of the hood to the area (A_1) of the inlet is greater than 50.

4,938,236

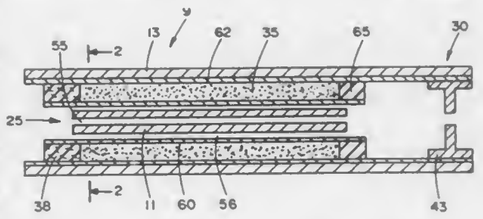
TOBACCO SMOKING ARTICLE

Chandra K. Banerjee, Pfafftown, and Henry T. Ridings, Lewisville, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 18, 1989, Ser. No. 408,814

Int. Cl.[5] A24D *1/00, 1/18*

U.S. Cl. 131—194 **47 Claims**



1. A cigarette which does not burn tobacco comprising:

(a) tobacco; and

(b) a non-combustion heat source for heating the tobacco, and including

(i) at least two metallic agents capable of interacting electrochemically with one another, and

(ii) a normally solid dispersing agent.

4,938,237

APPARATUS FOR TESTING CIGARETTES AND SEPARATING OUT DEFECTIVE CIGARETTES

Heinz Focke, and Josef Schulte, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Aug. 25, 1988, Ser. No. 236,489

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729213

Int. Cl.[5] A24C *5/31, 5/345;* **B07C** *5/34*

U.S. Cl. 131—282 **12 Claims**



Fig 2

1. Apparatus for testing cigarettes and separating out any defective cigarettes, with a test zone composed of vertical test shafts arranged next to one another, through which cigarettes are conveyed from the top downwards in vertical cigarette rows and in which the cigarettes are checked in a test plane by testing members, intact cigarettes being transferred downwards to a store, characterized in that, in each test shaft (22), a cigarette (11*b*) is clamped below the test plane (28) by clamp-

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ing members at least for the duration of the test; and that at least one clamping jaw, in the form of a clamping finger (33; 43, 44) extending in the longitudinal direction of the cigarette (11*b*) next to this, is arranged in each test shaft (22) so as to be transversely displaceable.

4,938,238

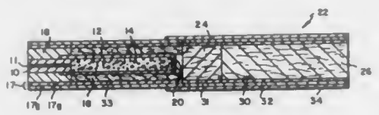
SMOKING ARTICLE WITH IMPROVED WRAPPER

Russell D. Barnes, Belews Creek, N.C.; Carmen P. Digrigoli, Canton, Ga.; Donald F. Durocher, Roswell, Ga., and Loyd G. Kasbo, Norcross, Ga., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 769,532, Aug. 26, 1985. This application Aug. 25, 1987, Ser. No. 89,187

Int. Cl.[5] **A24D** *1/02*

U.S. Cl. 131—365 **42 Claims**



1. An improved wrapper for a smoking article having a combustible fuel element encircled at least in part by an air permeable insulating layer and a physically separate aerosol generating means including an aerosol forming material, the wrapper encircling at least a portion of the insulating layer, and comprising a material which during burning of the fuel element provides a permeable coherent layer to assist in controlling the amount of peripheral air to the burning fuel element, wherein the wrapper reduces the peak puff aerosol delivery when measured as wet total particulate matter by at least about 20% when compared to a smoking article having the same structure but without the wrapper, when the smoking articles are smoked under conditions which consist of 50 ml puff volumes of 2 seconds duration, separated by 28 seconds of smolder, for at least six puffs.

4,938,239

MOBILE TRACK BED CLEANING MACHINE AND METHOD

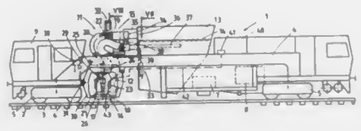
Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Mar. 15, 1989, Ser. No. 324,424

Claims priority, application European Pat. Off., Apr. 13, 1988, 88890092.5

Int. Cl.[5] **B08B** *5/04, 7/04;* **A47L** *5/14*

U.S. Cl. 134—21 **16 Claims**



15. A method of cleaning a bed containing a large amount of dirt with a mobile machine, the bed supporting a track consisting of two rails fastened to ties, and the machine comprising a machine frame, undercarriages supporting the machine frame on the track rails for mobility in an operating direction, a suction arrangement on the machine frame, the suction arrangement extending substantially over the entire width of the track and comprising a suction head means having an inlet port means, suction conduit means, a ventilator having a suction port connected to the suction head means by the suction conduit means for producing suction at the inlet port means and an exhaust port, and a receptacle incorporating a filter connected to the suction conduit means, and a compressed air generating arrangement associated with the suction arrangement, the compressed air generating arrangement comprising a compressed air discharging nozzle means arranged within the inlet port means of the suction head means, a compressed air conduit means, and a compressed air generator means constituted by the exhaust port of the ventilator, the exhaust port being connected to the nozzle means by the compressed air conduit means, the inlet port means completely surrounding the compressed air discharging nozzle means whereby the suction and compressed air generating arrangements form a substantially closed pressure-suction system, which track bed cleaning method comprises the steps of

(a) lowering the suction head means until there is only a small gap between the surface of the ties and the suction head means while the machine is continuously advanced in the operating direction in a first operating stage, the suction applied to the inlet port means and reinforced by the compressed air discharged from the nozzle means removing coarse superficial dirt from the track bed, and

(b) subsequently lowering the suction head until the rim defining the inlet port means is in engagement with the surface of the ties while the machine is intermittently advanced from crib to crib in the operating direction in a second operating stage and is retained stationary at each crib, the suction applied to the inlet port means and reinforced by the compressed air discharged from the nozzle means removing further dirt from the track bed at each crib.

4,938,240

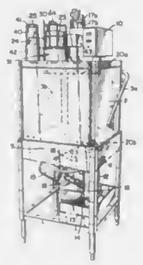
DISHWASHING APPARATUS INCLUDING A FLIP-TOP SOLID DETERGENT DISPENSER

Haresh C. Lakhan, Eagan; Lawrence W. Switala, Minneapolis, both of Minn., and Kim J. Ashton, Racine, Wis., assignors to Ecolab Inc., St. Paul, Minn.

Division of Ser. No. 290,885, Dec. 22, 1988, Pat. No. 4,836,229, which is a continuation of Ser. No. 44,434, Apr. 30, 1987, abandoned. This application Apr. 21, 1989, Ser. No. 341,927

Int. Cl.[5] **A47L** *15/44*

U.S. Cl. 134—93 **10 Claims**



1. A dispenser apparatus for use with a container having an indent comprising:

(a) a base, said base having an interior and a rim;

(b) a nozzle, said nozzle positioned within said interior of said base and flow of water through said nozzle is controlled by a valve;

(c) a cam, said cam extending out over the rim of said base, said cam operatively connected to a switch situated such that application of vertical pressure downwards onto said cam causes said cam to move, thereby activating said switch, said switch operatively connected to said valve allowing water to flow through said nozzle; and

(d) a container support, said container support attached by a hinge to said base, said hinge designed to allow said container support to move from a closed position in which said container support rests upon said base to an open position, said container support comprising in its closed position;

(i) a first circular member having a space, said space of a size and location as to enclose said cam when said container support is in a closed position without touching said cam;

(ii) a second circular member situated parallel and above said first circular member, said second circular member attached to said first circular member, said second circular member having a circumference larger than said first circular member;

(iii) a protection means, said projection means attached to said container support, said projection means extending within and above a circular area defined by said first circular member, said projection means adapted to be positioned in an indent of a container;

(iv) a vertically extending support member having a top portion and a bottom portion, said vertically extending support member extending perpendicular to said second circular member, said vertically extending support member attached at its bottom portion to said second circular member, said vertically extending support member positioned such that when said container support is in an open position, said vertically extending support member is attached to a portion of said second circular member which is closest to said base member;

(v) a container base support, said container base support situated parallel to and above said first circular member and said circular member, said container base support attached to the top portion of said vertically extending support member; and

(vi) a handle attached to said container base support.

3. The dispenser apparatus of claim 1, further comprising a dishwashing apparatus operatively connected to said dispenser apparatus, said dishwashing apparatus comprising:

(a) a first water access means having a valve and a vacuum breaker, said water access means leading into;

(b) a main container, said main container having a means to access said main container in order to insert and remove dishware, and a sump with a bottom, said sump situated in a bottom portion of said main container wherein water and debris can collect in said sump;

(c) a first nozzle positioned within said main container in a manner such that pressurized water directed through said first nozzle would serve to contact dishware contained in said main container;

(d) a self cleaning first filter wherein said self cleaning first filter comprises a perforated cylindrical filter encased in a cylindrical metal casing having an open top portion and an open bottom portion wherein said top portion of said self cleaning first filter is attached to said bottom portion of said sump in a manner which would allow the flow of water and debris from said sump into said first filter by gravity and would allow the flow of water across said perforated cylindrical filter when access from said bottom portion of said first filter is closed by means of a drain valve;

(e) a drain valve attached to the bottom portion of said self cleaning first filter wherein said drain valve when opened would allow the downward flow of water and debris out through the bottom portion of said self cleaning first filter in order to empty said dishwasher apparatus of all water and debris contained therein;

(f) a main pump connected to said self cleaning first filter by;

(g) a second water access means wherein water which has collected in said sump can be pumped by said main pump through said perforated cylindrical filter and through said second water access means;

(h) a third water access means leading from said main pump to said first nozzle and also to a second self cleaning filter, wherein said second self cleaning filter is designed such that water and debris can flow by gravity through said third water access means into said main container when said main pump is deactivated;

(i) a fourth water access means having a valve extending from said second self cleaning filter and leading to a second nozzle positioned in a solid additive container supported by said container support of said dispensing apparatus; said second nozzle positioned such that pressurized water directed through said second nozzle would spray against a solid additive contained in said solid additive container in order to form an additive solution; and

(j) a fifth water access means leading from said solid additive container into said main container in order to allow the flow of additive solution into said main container.

4,938,241

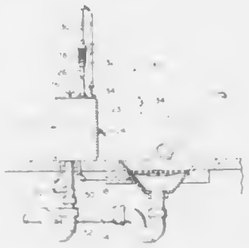
RV SANITARY DUMPING BAY AND POTABLE WATER SYSTEM

James M. Teel, 625 Blue Rise La., Wetumpka, Ala. 36092

Filed Jul. 21, 1988, Ser. No. 222,411

Int. Cl.[5] **B08B** *3/02*

U.S. Cl. 134—104.2 **4 Claims**

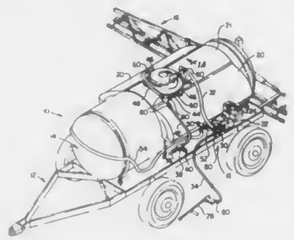


2. A recreational vehicle sanitary dumping bay and potable water supply assembly comprising an upwardly opening drain having an upwardly exposed surface, said drain being supported generally at ground level enabling a recreational vehicle to pull alongside thereof and discharge waste from its holding tank into the drain by gravity flow through a flexible hose, a potable water supply means extending to a position adjacent said drain, a pair of manually operated valves connected with said water supply means, a drain flushing pipe extending from one of said valves to the drain below the upwardly facing surface thereof for flushing the drain when said one valve is opened, a potable water delivery means connected to the other of said valves, said delivery means including a flexible outlet hose having a handheld nozzle on the outer end thereof to supply water to the recreational vehicle and discharge water onto the upwardly facing surface of the drain and surfaces adjacent thereto, said drain flushing pipe being communicated with the drain below the upwardly facing surface thereof, said drain including a drain line extending from the bottom portion of the upwardly facing surface thereof with the water discharged from the nozzle cleaning the upwardly facing surface with the flushing water discharged from the drain flushing pipe being independently controlled and the flushing water discharged from the nozzle being independently controlled by operating said valves, said delivery means including an upwardly extending standpipe connected to said other valve, said hose being connected to the upper end of the standpipe and having a length less than the distance between the upper end of the standpipe and the drain to prevent contact of the nozzle with the drain but enabling the nozzle to be manipulated to flush the upwardly facing surface of the drain and adjacent surface areas, said standpipe including a flexible, resilient intermediate section that enables the upper end of the standpipe to swing laterally upon exertion of tension force on

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the hose to facilitate manipulation of the nozzle when flushing the drain and when supplying water to the recreational vehicle, and a weatherproof housing rigidly supported adjacent the drain and enclosing said valves with the standpipe extending vertically from the upper end thereof, each of said valves including an actuator positioned externally of the housing to enable manipulation of the valves.

4,938,242
CHEMICAL APPLICATOR RINSING APPARATUS
John E. Redmond, 17 W. Peru, Princeton, Ill. 61356
Filed Aug. 15, 1989, Ser. No. 393,960
Int. Cl.[5] B08B *3/02, 9/08*
U.S. Cl. 134—169 R **15 Claims**



9. Spray rinsing apparatus adapted for connection with a mobile chemical spray apparatus including a vehicle, an elongated, enclosed chemical tank, and a chemical spray array, comprising in combination:

(a) at least one generally rectangular and flexible rinse water storage vessel made of a flexible, coated, watertight fabric and adapted to be supported in draped position across an upper side and along a vertical side of said chemical tank;

(b) first fluid passageway formed near the top of said flexible vessel;

(c) a second fluid passageway formed near the bottom of said vessel for releasing a liquid through an outlet conduit;

(d) a pump means mounted on said vehicle with a pump inlet connected to said outlet conduit and a pump outlet connected into the inlet of a high pressure switching valve means;

(e) spray head means mounted into the top of said reservoir tank for spray rinsing the interior of said reservoir tank;

(f) said spray head means being connected through a spray head conduit into a first outlet of said high pressure switching valve means; and

(g) a manually held and operated high pressure spray gun means having a manually variable spray pattern adjustment and connected through a spray gun conduit into a second outlet of said high pressure switching valve means.

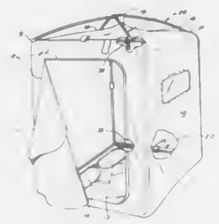
4,938,243
ICE FISHING SHELTER
Michael R. Foster, 1011 S. 10th St., LaCrosse, Wis. 54601
Filed Apr. 3, 1989, Ser. No. 332,155
Int. Cl.[5] E04H *15/00*
U.S. Cl. 135—105 **7 Claims**

1. A foldable shelter comprising, in combination;

a flexible skin having a parallelepiped configuration including top, bottom, ends and sides;

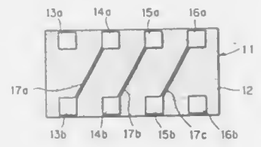
a U-shaped support frame for said skin comprised of vertical end frames and a horizontal bottom frame dimensioned to be and disposed within said skin coincident with said bottom and ends of said skin; and

a pair of elongated flexible resilient support members having a longitudinal dimension in excess of the diagonal dimensions of the top of said skin, said skin including means for receiving the ends of said support members and support means extending upwardly of the center of said top whereby said skin is maintained in said parallelepiped



configuration and suspended from the midsection of said support members.

4,938,244
TEMPERATURE DIFFERENCE DETECTING ELEMENT USING SEMICONDUCTIVE CERAMIC MATERIAL
Akira Kumada; Michihiro Murata, and Norimitsu Kitoh, all of Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Oct. 5, 1988, Ser. No. 253,719
Claims priority, application Japan, Oct. 5, 1987, 62-251345; Oct. 5, 1987, 62-251347; Oct. 5, 1987, 62-251348; Oct. 5, 1987, 62-251349
Int. Cl.[5] H01L *35/28*
U.S. Cl. 136—212 **16 Claims**



1. A temperature difference detecting element comprising:

a substrate having two opposite major surfaces, said substrate being an integral plate formed of semiconductive ceramic material and having first and second regions defined therein which are opposite to each other and extend along the longitudinal direction of said two major surfaces, said substrate being associated with a plurality of thermoelements arranged in the longitudinal direction of said major surfaces,

each said thermoelement comprising a respective portion of the semiconductive ceramic material in said substrate, and a pair of hot-side and cold-side electrodes provided on said semiconductive ceramic material with a prescribed spacing therebetween, forming a hot junction and a cold junction respectively,

a plurality of said hot-side electrodes and a plurality of said cold-side electrodes being provided independently of each other on said substrate,

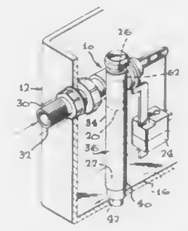
said plurality of hot-side electrodes being arranged on said first region of said substrate adjacent to each other,

said plurality of cold-side electrodes being arranged on said second region of said substrate adjacent to each other; and

conductive path means for electrically connecting a hot-side electrode of at least one of said plurality of thermoelements with the cold-side electrode of a thermoelement adjacent thereto, thereby to sequentially electrically connect said plurality of thermoelements in series with each other;

wherein said hot-side electrodes, said cold-side electrodes and said conductive path means are formed on at least one of said two major surfaces of said substrate.

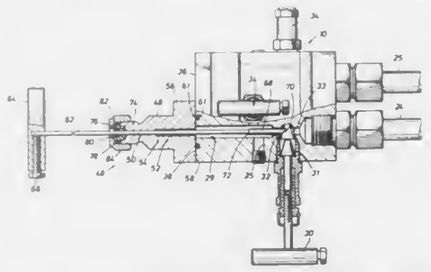
4,938,245
LOW NOISE TOILET TANK VALVE
Adolf Schoepe, and Oscar Dufau, both of Fullerton, Calif., assignors to Fluidmaster, Inc., Burton, Calif.
Filed Sep. 25, 1989, Ser. No. 411,909
Int. Cl.[5] F16K *47/02, 47/16, 31/24*
U.S. Cl. 137—2 **11 Claims**



11. A method for operating a water closet refill valve which includes a conduit that has an inlet and that carries water from the inlet past a valve device to the upper portion of an outlet tube to flow down along the outlet tube to near the bottom of the water closet and into the water closet, wherein the refill valve includes an anti-siphon air tube having a bottom lying within the outlet tube and a top open to the atmosphere, comprising:

flowing water applied at a pressure of at least about 20 psi into said inlet and through said conduit into said outlet tube and around the bottom of said air tube, and down through said outlet tube into said water closet, while preventing water from flowing from said conduit into said air tube without first flowing into said outlet tube, including restricting the downward flow of water along said outlet tube sufficiently that the water level in said outlet tube rises to at least the bottom of said air tube, whereby to avoid drawing in air to mix with the refill water during most of a refill cycle to minimize noise.

4,938,246
CLEANING TOOL FOR A VALVE MANIFOLD
Jeff A. Conley, 13111 Nantucket, Sugar Land, Tex. 77478, and Randall J. Miller, 2231 Greencove La., Sugar Land, Tex. 77479
Filed Nov. 6, 1989, Ser. No. 432,238
Int. Cl.[5] B08B *1/00, 9/04;* **F16K** *51/00*
U.S. Cl. 137—15 **5 Claims**



4. A method of cleaning the axial bore of a valve manifold which has a mounting flange thereon supporting an instrument, the valve manifold having an axial bore therein for cleaning by a cleaning tool and a manually actuated valve for blocking fluid flow to said instrument through said axial bore when in a closed position; said method comprising the following steps:

moving said manually actuated valve to closed position for blocking fluid flow to said instrument;

then removing said instrument from the mounting flange of said valve manifold;

next mounting the cleaning tool having a flange thereon onto the mounting flange of said valve manifold in sealing relation, the cleaning tool having a central bore therethrough in alignment with an axial bore through said valve manifold and including a manually reciprocable rod received within said central bore having a cleaning member of an enlarged diameter on its inner end for fitting within the axial bore of the tool;

moving said manually actuated valve to open position to permit fluid flow to said cleaning tool;

manually reciprocating the rod by manually gripping of a handle thereon for extending the cleaning member within said axial bore for cleaning thereof;

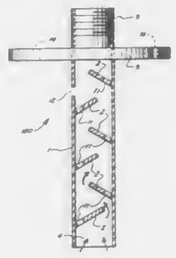
moving said manually actuated valve to closed position for blocking fluid flow to said axial bore adjacent said cleaning tool;

removing said cleaning tool from the mounting flange on said valve manifold;

then remounting said instrument onto the mounting flange of said valve manifold; and

moving said manually actuated valve to open position for providing fluid flow to said instrument from said axial bore of said valve manifold for returning said instrument to service.

4,938,247
HYDRAULIC HAMMER REDUCTION SYSTEM FOR RAILROAD TANK CARS
S. E. Yandle, II, 5883 Rhodes Ave., New Orleans, La. 70131
Continuation of Ser. No. 859,791, May 5, 1986, Pat. No. 4,480,192. This application Jun. 20, 1989, Ser. No. 368,648
The portion of the term of this patent subsequent to Jan. 20, 2006, has been disclaimed.
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **15 Claims**



13. A method of dissipating the hydraulic hammer action in a moving tank carrying a liquid load, such as for example a railroad car, having a rupture disk assembly, comprising the steps of:

(a) providing a relatively small mechanical energy dissipation device having a series of diverging, impact surfaces for dissipating hydraulic hammer action in the moving tank car; and

(b) attaching said mechanical device in line between the liquid in the tank and the rupture disk of the rupture disk assembly, causing the liquid to have to pass through said mechanical device before it can reach said rupture disk, with said device occupying less than and extending into less than about one percent (1%) of the interior volume of

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the tank, the kinetic energy of the moving liquid being dissipated as it passes through said device impacting against said diverging surfaces, dissipating the hydraulic hammer action.

4,938,248

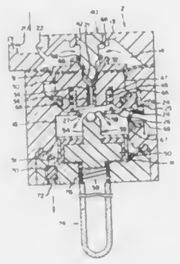
MOISTURE AND PRESSURE SENSITIVE FLUID CONTROL CIRCUIT

Christopher L. Browne, Philomath, Oreg., assignor to Irro-Controls Group, Corvallis, Oreg.

Continuation-in-part of Ser. No. 46,803, May 4, 1987, abandoned. This application May 3, 1988, Ser. No. 189,575

Int. Cl.[5] **A01G** *25/00*

U.S. Cl. 137—78.3 29 Claims



1. A moisture and pressure sensitive fluid flow control system comprising:

controller body means defining first, second and third chambers, a control valve port communicating with the first chamber, a controller outlet, and a controller outlet passageway connecting the outlet with the second chamber;

a first movable diaphragm assembly separating and defining a diaphragm passageway between the first and second chambers, the passageway having an end which opens into the second chamber, and the assembly being constructed to provide a valve seat at the end;

first diaphragm biasing means for urging the first movable diaphragm means toward the first chamber;

a second movable diaphragm assembly separating the second and third chambers and including a valve closing member; and

in communicating with the third chamber, fluid detection means adapted to apply a closing force so as to move the second movable diaphragm assembly such that the valve closing member seats in the valve seat when sufficient fluid is present in a region to be sensed for fluid;

the system being constructed such that, in the absence of sufficient fluid in the region to be sensed, fluid is allowed to flow from the control valve port to the controller outlet via the controller outlet passageway.

4,938,249

CHIP TOLERANT FLAPPER

Craig A. Nordeen, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 30, 1986, Ser. No. 925,051

Int. Cl.[5] **G05D** *16/00*

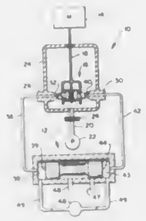
U.S. Cl. 137—82 4 Claims

1. Apparatus disposed between a first nozzle having a first orifice of a given cross-sectional area and a second nozzle having a second orifice of a given cross-sectional area to apportion a flow of pressurized fluid to each of said first and second orifices, said apparatus characterized by:

motor means for selectively moving toward either of said first or second nozzles;

a first plate mounted upon said motor means for movement therewith and having a first means mounted therein for varying the effective cross-sectional area of said first orifice, said first plate being moveable relative to and independently of said first means for allowing said first plate to continue to move toward said first orifice in an unimpeded manner if said first means engages an impediment while moving toward said first orifice; and

a second plate mounted upon said motor means for move-



ment therewith and having a second means mounted therein for varying the effective cross-sectional area of said second orifice, said second plate being moveable relative to and independently of said second means for allowing said second plate to continue to move toward said second orifice in a unimpeded manner if said second means engages an impediment while moving toward said second orifice.

4,938,250

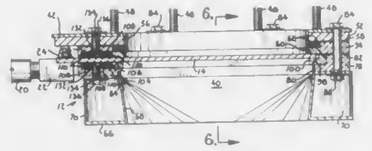
GATE VALVE WITH PARTICLE CLEARING ACTION

L. Neil Peterson, Salina, Kans., assignor to Salina Vortex Corp., Salina, Kans.

Filed Jun. 20, 1989, Ser. No. 369,006

Int. Cl.[5] **F16K** *3/02, 3/316;* **B08B** *9/02*

U.S. Cl. 137—244 21 Claims



1. A gate valve for controlling the flow of solid particulate material, said gate valve comprising:

a valve housing presenting a flow opening through which the material may pass;

a gate having opposing surfaces and opposite side edges, said gate being mounted to the housing for movement between an open position wherein said flow opening is open and a closed position wherein the gate closes said flow opening;

means for effecting movement of the gate between the open and closed positions;

a pair of guide bars mounted in said housing substantially the entire length of said housing for guiding said gate between the open and closed positions, each bar presenting a wall which bears against the corresponding side edge of the gate and a shoulder along which one of said gate surfaces rides between the open and closed positions;

pressure loaded sealing means in said housing sealing against the other of said gate surfaces around the flow opening; and

means acting along substantially the entire length of said guide bars for urging said guide bars toward the corresponding side edges of the gate to maintain said walls against the side edges such that any material on said shoulders is scraped along the shoulders by the gate during closing of the latter.

4,938,251

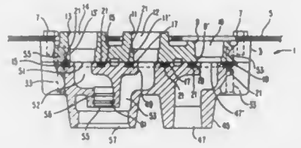
UNIVERSAL HOSE ADAPTER FOR GASOLINE PUMP

Roger W. Furrow, High Point, and Kenneth L. Pope, Walkertown, both of N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed Jul. 11, 1989, Ser. No. 378,416

Int. Cl.[5] **F16L** *39/00*

U.S. Cl. 137—269 20 Claims



1. A universal hose adapter facilitating retrofitting a gasoline dispenser for connection to any one of a plurality of different vapor recovery or non-vapor recovery hose configurations, comprising;

an upper member adapted for rigid mounting upon a piping housing of said gasoline dispenser, said upper member including upon its upper face a vapor return outlet port, a plurality of gasoline inlet ports for receiving different grades of gasoline, respectively, a first internal passageway from said vapor outlet port through said upper member for providing a vapor return inlet port upon a lower face of said member, and a plurality of second internal passageways from said gasoline inlet ports, respectively, through said upper member for providing a plurality of gasoline output ports for said different grades of gasoline, respectively; and

a plurality of lower members each being adapted for rigid mounting upon said upper member, with said lower face of said upper member proximate an upper face of a selected one of said lower members, said plurality of lower members each including first port means along an upper face for individual connection to a predetermined combination of selected ones of said vapor return inlet port and plurality of gasoline outlet ports of said upper member, second port means along a lower face for connection to a predetermined hose configuration unique to each one of said lower members, respectively, and internal passageway means for connecting said first port means to said second port means, respectively, thereby permitting selection of the appropriate one of said lower members for connection of a particular one of said plurality of hose configurations to said gasoline dispenser.

4,938,252

ELECTRICALLY ACTUATED VALVE, IN PARTICULAR THROTTLE VALVE

Martin Piechnick, Lohr/Main, Fed. Rep. of Germany, assignor to Mannesman Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed May 17, 1989, Ser. No. 353,009

Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817932; Mar. 23, 1989, 3909693

Int. Cl.[5] **G05D** *7/00*

U.S. Cl. 137—486 13 Claims

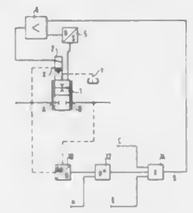
1. A circuit arrangement for controlling an electrically activated valve having a valve member regulating fluid flow between an inlet port and an outlet port, the circuit arrangement comprising:

a displacement transducer for measuring an actual position of the valve member;

a transmitter circuit for transmitting a position signal corresponding to the actual position of the valve member;

a pressure transducer for measuring a pressure difference between the inlet port and the outlet port and transmitting a pressure differential signal corresponding to the pressure difference;

an exponentiating circuit for exponentiating the pressure



differential signal with a freely selected exponent n resulting in an exponentiating circuit output signal;

a multiplying circuit for multiplying the exponentiating circuit output signal with a value of a desired position of the valve resulting in a multiplying circuit output signal;

a control circuit for combining the position signal and the multiplying circuit output signal resulting in a control signal; and

a position control means for repositioning the valve in response to the control signal.

4,938,253

PAINT DISCHARGE CONTROL DEVICE

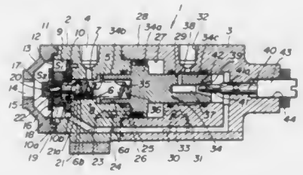
Tadashi Takeo, and Daizo Shiga, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1985, Ser. No. 756,058

Claims priority, application Japan, Jul. 17, 1984, 59-148198

Int. Cl.[5] **F16K** *31/12*

U.S. Cl. 137—508 6 Claims



1. A paint discharge control device comprising:

a housing having a paint supply port and a paint discharge port defined therein;

a paint passage through which said paint supply and discharge ports communicate with each other;

a diaphragm disposed in said paint passage and actuatable by air under pressure for controlling the rate of a paint flow through said paint passage;

a piston slidably disposed in said housing and having a hole defined therein as part of said paint passage;

a needle valve supported in said housing and having a portion disposed in said hole in said piston; and

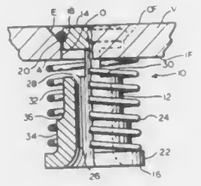
said paint passage including a paint discharge control passageway defined between said hole and said needle valve portion, whereby the cross-sectional area of said paint discharge control passageway can be varied in response to sliding movement of said piston in said housing.

4,938,254

OVER-PRESSURE RELIEF VALVE

David R. Gimby, Livonia, Mich., assignor to Borg-Warner Automotive Electronic & Mechanical Systems, Troy, Mich.

Filed Sep. 21, 1989, Ser. No. 410,568
Int. Cl.[5] F16K *17/08*
U.S. Cl. 137—541 17 Claims



1. A relief valve for installation in an opening of a vessel which is subject to an over-pressure condition, the vessel having an inside face and an outside face, said relief valve comprising:

a valve member having a closed first end and a second end, said first end being adapted to be positioned within the opening of the vessel;

means carrier by said valve member for forming a seal with the opening of the vessel;

resilient biasing means acting on said valve member for normally maintaining said means carried by said valve member in sealing engagement with the opening of the vessel, an over-pressure condition within the vessel overcoming the effect of said resilient biasing means to permit venting of the vessel;

wherein the opening in the vessel is larger than a portion of said valve member which is adjacent to said first end, the opening forming an annulus with said portion, the venting of the vessel occurring at least in part through the annulus; and

wherein said valve member further comprises an internal passage extending from said second end partly to said first end, and radially extending passage means within said valve member in communication with said internal passage, said radially extending passage means being adapted to be entirely within the vessel when said means carried by said valve member is in sealing engagement with the vessel, said radially extending passage means being adapted to extend at least partly beyond the outside face of the vessel during an over-pressure condition within the vessel to provide additional venting of the vessel through said internal passage and said radially extending passage means.

4,938,255

SEALER FOR VACUUM CONTAINERS

James A. Lanfri, Sunnyvale, and Valentin Balter, Cupertino, both of Calif., assignors to Huntington Mechanical Laboratories, Inc., Mountain View, Calif.

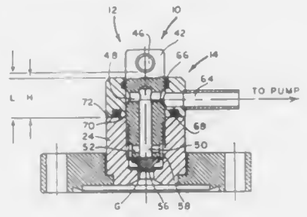
Filed Nov. 20, 1989, Ser. No. 438,259
Int. Cl.[5] F16K *31/50*
U.S. Cl. 137—565 18 Claims

1. A sealer for vacuum containers, comprising:

a valve unit which is removably attachable to a vacuum container to be evacuated, said valve unit having an inlet opening and an outlet opening; and

a removable connection element fitted onto said valve unit for sealingly connecting said outlet opening to a source of vacuum;

said valve unit having moveable means for closing said inlet opening while said vacuum container is connected to said source of vacuum through said removable connection element, said moveable means being arranged to maintain said inlet opening in said closed state after disconnection



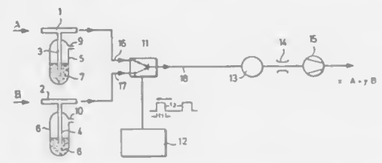
of said removable connection element from said valve unit.

4,938,256

APPARATUS FOR THE PRODUCTION OF PARTICULAR CONCENTRATIONS OF GASEOUS MATERIALS AS WELL AS FOR MIXING VARIOUS GASEOUS MATERIALS IN A SPECIFIED RATIO

Gerhard Wiegleb, Gelselbach, and Albert Randow, Bruchkobel, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

PCT No. PCT/DE88/00282, § 371 Date Feb. 7, 1989, § 102(e) Date Feb. 7, 1989, PCT Pub. No. WO88/08743, PCT Pub. Date Nov. 17, 1988
PCT Filed May 13, 1988, Ser. No. 303,764
Claims priority, application Fed. Rep. of Germany, May 15, 1987, 3716289
Int. Cl.[5] G05D *11/13*
U.S. Cl. 137—565 14 Claims



1. Apparatus for mixing a plurality of component gases in a specified ratio, comprising

a plurality of sources for the respective plurality of gases,

a multiway valve with "n" inlets and "m" outlets, where n and m are integers and n>m, said inlets being connected to respective sources,

means for operating said valve in order to supply component gases to at least one of said outlets in pulsed fashion,

a buffer vessel downstream of said at least one of said outlets, said vessel serving to mix said component gases in the specified ratio, and

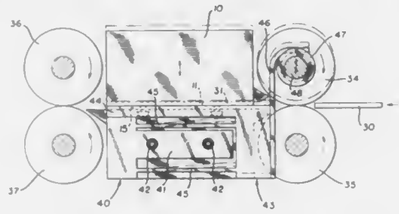
a gas pump downstream of said buffer vessel, said gas pump serving to pump the gases mixed in the specified ratio, said gas pump operating during pulsed supply of said component gases to said buffer vessel, whereby output fluctuations related to the types of component gases being supplied are eliminated and the output of the pump is continuous.

4,938,257

PRINTED CIRCUIT CLEANING APPARATUS

Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 21, 1986, Ser. No. 933,768
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—64 R 5 Claims



1. Apparatus for cleaning contaminants from upper and lower surfaces of planar printed circuit panels having length and width dimensions and differing thicknesses, said apparatus comprising:

conveyor means including a pair of horizontally supported driven input rolls and a pair of horizontally supported driven output rolls for conveying printed circuit panels along a horizontal path in their length direction, the nips of said input and output rolls being spaced from each other along said horizontal path a distance slightly less than the length of the shortest panel to be cleaned whereby the output rolls engage the leading edge of a panel just before its trailing edge is released by the input rolls,

a lower manifold disposed below said horizontal path between said input rolls and said output rolls, said lower manifold having a generally rectangular upper face having a length substantially equal to the spacing between said input and said output rolls and a width at least as wide as the widest panel to be cleaned,

an upper manifold having a rectangular lower face having substantially the same shape and size as the upper face of said lower manifold,

means mounting said upper manifold above said lower manifold to provide a narrow passage disposed along said horizontal path having an inlet closely adjacent the nip of said input rolls and an output disposed closely adjacent the nip of said output rolls, said manifold mounting means being responsive to separation of the input rolls by a printed circuit panel conveyed therebetween for adjusting the height of the passage defined by the confronting faces of the manifold regardless of the thickness of the panel being cleaned, the confronting faces of said manifolds being planar and uninterrupted except for a transverse slot formed in each in proximity to the inlet of said passage and communicating with the interior of its respective manifold, and

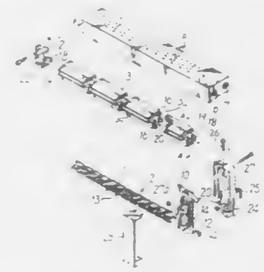
means for supplying cleaning liquid under pressure to the interiors of said upper and lower manifolds for discharge through said slots and producing a high velocity flow of liquid along substantially uniform flow paths defined by the surfaces of a panel conveyed through said passage and the confronting manifold faces, said means for supplying cleaning liquid including a container for receiving liquid discharged from the inlet and exit of said passage, a pump for recirculating the liquid, and means for heating the recirculated cleaning liquid, whereby printed circuit panels having a range of thicknesses conveyed through the passage are cleaned by high velocity liquid flowing along said flow paths.

4,938,258

POWER SUPPLY SYSTEM FOR SOLENOID VALVES

Hideharu Sato, Soka, Japan, assignor to SMC Corporation, Tokyo, Japan

Continuation of Ser. No. 187,466, Apr. 28, 1988, abandoned.
This application May 12, 1989, Ser. No. 353,168
Claims priority, application Japan, Apr. 30, 1987, 62-66133[U]
Int. Cl.[5] F16K *31/06*
U.S. Cl. 137—884 7 Claims



1. A power supply system having a plurality of solenoid valves for assembly on a manifold base having a flat lateral side, said power supply system comprising:

a plurality of brackets connected together to form a bracket assembly, each bracket of said plurality of brackets being of integral length as compared to a center-to-center distance between adjacent solenoid valves of said plurality of solenoid valves;

an end plate fastened to a first end of said manifold base on the flat lateral side of said manifold base, said bracket assembly being connected to said end plate;

a connector means fastened to a second end of said manifold base on the flat lateral side of said manifold base, said bracket assembly being connected to said connector means such that said bracket assembly is sandwiched between said end plate and said connector means;

a printed wiring board having a horizontal portion upon which a plurality of power supply terminals are mounted, said printed wiring board having a vertical fitting portion located at an end of said printed wiring board, said vertical fitting portion being connected to said connector means, said vertical fitting portion having a multipolar connector;

said horizontal portion of said wiring board being fitted into a longitudinal opening along the length of said bracket assembly; and

each bracket of said plurality of brackets, said end plate and said connector means are provided with mutually engaging catches and recesses.

4,938,259

FLUID FLOW CONTROLLER

William J. Schmidt, Xenia, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Jan. 18, 1989, Ser. No. 298,143
Int. Cl.[5] F16K *17/24*
U.S. Cl. 138—45 8 Claims

1. A flow control for regulating the flow of liquid in one direction between two aligned upstream and downstream passages, comprising:

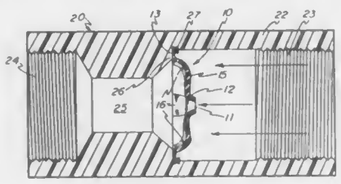
(a) an annular member of elastomeric material having predetermined upstream and downstream sides,

(b) said downstream side including a circumferential rim defining a plane extending substantially radially of said

member and surrounding an opening of relatively large flow area,

(c) said downstream side of said member including an apex having a flow passage extending axially therethrough which is of predetermined substantially smaller normal flow area than said opening surrounded by said rim,

(d) a bowl-shaped wall interconnecting said rim and said apex and having a convex upstream outer surface and a concave downstream inner surface cooperating to provide



said member with a bowl-shaped contour in radial section, and

(e) said wall being of substantially less thickness than the axial distance between said apex and said plane defined by said rim whereby fluid pressure applied against said upstream surface of said wall will result in deflection of said wall causing axial movement of said apex toward said plane and reduction of the flow area of said fluid flow passage through said apex.

4,938,260

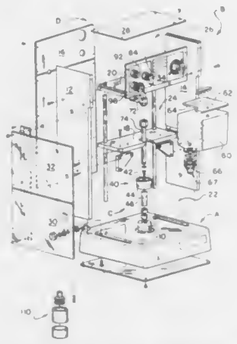
PNEUMATIC AERSOL CAN FILLING MACHINE

Donald J. Hirz, Willowick, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Aug. 19, 1988, Ser. No. 234,320

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—20 **10 Claims**



1. An apparatus for charging a pressurized aerosol can, the charging apparatus comprising:

a base;

an aerosol can support mounted adjacent the base for receiving a base of the aerosol can;

a liquid reservoir having an aerosol can engaging outlet for selective sealing engagement with the aerosol can;

a can support moving means for raising and lowering the aerosol can support between raised and lowered positions, said moving means including a pneumatic cylinder for selectively raising and lowering the can support whereby the supported can is raised smoothly into sealing engagement with the reservoir outlet, and a can support control means for selectively controlling the pneumatic cylinder to move the can support between positions and continuously biasing the can support toward the reservoir outlet in the raised position;

a cabinet connected with the base for supporting and enclosing the liquid reservoir such that the outlet sealingly engages the aerosol can in the raised position, said cabinet including a lower door providing access to the can support, an upper door providing access to the reservoir, and an interlock means connected with at least one of the doors for preventing the pumping of fluid when the door is open;

a pump means for selectively pumping liquid from the reservoir through the outlet into an aerosol can in the raised position;

a pressure limiting means for limiting a pressure with which the pneumatic cylinder urges the supported aerosol can into engagement with the outlet, whereby deformation of the can is prevented;

a pump control means for controlling the pump means to pump a selected amount of liquid into the aerosol can; and

sensing means for sensing movement of the can support, and operatively connected with the pump control means, to prevent the pumping of fluid upon movement of the can support out of position.

4,938,261

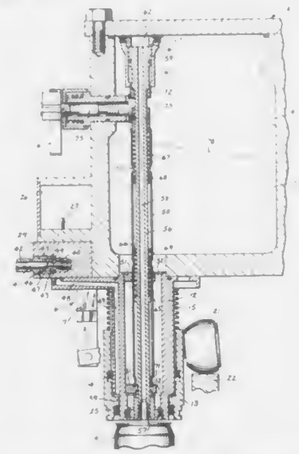
APPARATUS FOR FILLING CANS WITH A LIQUID

Ulrich H. Petri, Elm Grove, Wis.; Friedrich Rademacher, Kamen Südkamen, and Siegmar Sindermann, Kamen-Heeren, both of Fed. Rep. of Germany, assignors to H & K Inc., Waukesha, Wis.

Filed Aug. 8, 1988, Ser. No. 229,815

Int. Cl.[5] B67C *3/06, 3/12*

U.S. Cl. 141—39 **13 Claims**



1. An apparatus for filling an open top container with a liquid, comprising a supporting surface to support a container, annular sealing means to seal against the upper edge of the container, a reservoir to contain a liquid and having a headspace above the liquid, a tubular member extending downwardly from said reservoir and having a valve seat, first valve means mounted within the tubular member for longitudinal movement and disposed to engage said valve seat, a vent tube disposed within said tubular member and having a lower end communicating with said container and having an upper end selectively disposed in communication with said headspace, second valve means associated with the upper end of said vent tube and having an open position where the interior of said vent tube communicates with said headspace and having a closed position, means for introducing a pressurizing gas into the container, means responsive to pressurization of said container for moving said vent tube downwardly with respect to said tubular member to position the lower end of the vent tube in the container and to open said second valve means, and operating means for moving said fist valve means to the open position to admit liquid from said reservoir to said container, gas from said can being vented through said vent tube and open second valve means to the headspace of said reservoir.

4,938,262

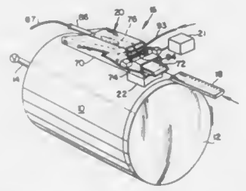
FLUID INJECTION SYSTEM

Harold R. Williams, Capistrano Beach, and Robert M. Spencer, San Juan Capistrano, both of Calif., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Division of Ser. No. 52,698, May 20, 1987. This application Apr. 11, 1988, Ser. No. 180,423

Int. Cl.[5] A61L *2/18*

U.S. Cl. 141—114 **6 Claims**



1. Apparatus for a fluid injection system comprising;

a chamber;

a valve connected to said chamber normally closed so that a vacuum may be maintained in said chamber;

a cassette having a plurality of compartments each adapted to receive a sealed container filled with fluid; and

a mechanism for forcing fluid out of at least one of said containers into said valve, and into said chamber, said valve being responsive to a vacuum in said chamber to be held closed and responsive to the pressure of said fluid to open temporarily and permit said fluid to be injected into said valve while maintaining said vacuum.

4,938,263

MACHINE FOR CUTTING LOGS TO FORM LOG JOINTS

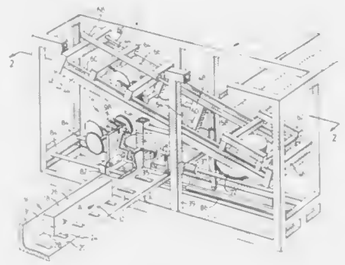
Ronald A. Wrightman, Bracebridge, Canada, assignor to True North Log Home Machinery Inc., Bracebridge, Canada

Filed Jul. 18, 1989, Ser. No. 381,327

Claims priority, application Canada, Aug. 17, 1988, 575032

Int. Cl.[5] B27C *9/00*

U.S. Cl. 144—3 A **10 Claims**



1. A machine for cutting logs to provide a predetermined log joint configuration at one end thereof comprising;

(a) means for supporting a log in a logging station with its longitudinal extent extending in a first direction and one end face thereof extending in a datum plane which extends normal to the first direction,

(b) first saw mounting means for mounting first saw means for movement through the cutting station along a first cutting path which extends transversely of said first direction,

(c) second saw mounting means for mounting second saw means for movement through the cutting station along a second path which converges with and intersects at first cutting path on one side of the cutting station,

(d) pivot means pivotally supporting said first mounting means for movement between first position in which it supports the first saw movement in said first path and a second position in which the first support means is remote from said second path to provide clearance for the movement of the second saw as it travels along said first path in use.

4,938,264

ROUTING CUTTER

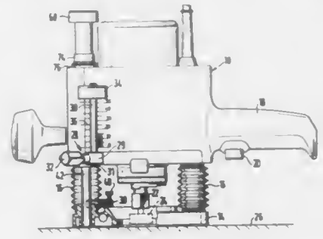
Ladislaus Ferenczffy, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 26, 1989, Ser. No. 371,421

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1988, 3824200

Int. Cl.[5] B27C *5/00*

U.S. Cl. 144—134 D **16 Claims**



1. A routing cutter, comprising drive means; and upper housing part arranged to receive said drive means and having a lower side; a cutting tool arranged at said lower side of said upper housing part; a base plate displaceable substantially vertically relative to said upper housing part, and fixable relative to the latter; means for guiding said base plate and including a column guide, said column guide including a sleeve which is arranged in said upper housing part and, is guided in said sleeve, and is fixable thereto; and means cooperating with said upper housing part for displacing said sleeve relative to said upper housing part in a displacement direction of said base plate.

4,938,265

METHOD OF MAKING A TRUCK FLOOR

Elton E. Mountz, Morgantown, Pa., assignor to Morgan Corporation, Morgantown, Pa.

Filed Nov. 10, 1987, Ser. No. 119,183

Int. Cl.[5] B27F *1/00*

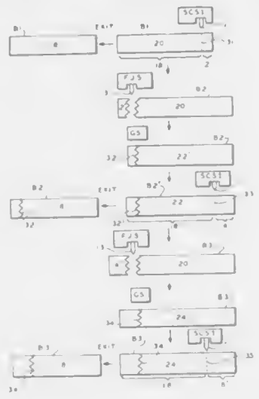
U.S. Cl. 144—347 **34 Claims**

1. In a method for producing truck floor boards having a desired standard length from truck floor boards having at least one initial standard length and remainder floor boards, the truck floor boards of desired standard length being suitable for installation in one or more trucks to form a substantial part of the flooring thereof, the improvement which comprises

(a) attaching to a remainder floor board, a floor board of initial standard length to produce a joined, composite

board having a length which is either equal to or greater than the desired length; and

(b) in the case where the joined board has a length greater than the desired length, cutting from the joined board one



of: as many boards of desired length as are available, or as many boards of desired length as are available and a new remainder board which is suitable for attachment, to a floor board.

4,938,266

METHOD OF PRODUCING STEEL HAVING A LOW YIELD RATIO

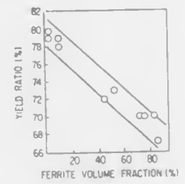
Yukio Tomita; Ryohta Yamaba, and Takeshi Tsuzuki, all of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 282,043

Claims priority, application Japan, Dec. 11, 1987, 62-312304; Dec. 11, 1987, 62-312305

Int. Cl.[5] C21D *8/00*

U.S. Cl. 148—12 F **6 Claims**



1. A method of producing steel having a low yield ratio comprising heating a low-carbon steel slab having a composition consisting essentially, by weight, of

Carbon: 0.30% or less

Silicon: 0.05 to 0.60%

Manganese: 0.5 to 2.5%

Aluminum: 0.01 to 0.10%

as the basic components, with the balance being iron and unavoidable impurities, to a temperature of 950° to 1250° C., hot rolling it, quenching it to a temperature not exceeding 250° C., reheating it to a temperature of $Ac_1+20°$ C. to $Ac_1+80°$ C., water-cooling it and then tempering it at a temperature range of 200° to 600° C., whereby the steel is given a two-phase mixed microstructure of ferrite and second-phase carbide.

4,938,267

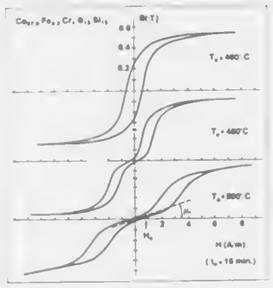
GLASSY METAL ALLOYS WITH PERMINVAR CHARACTERISTICS

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 817,193, Jan. 8, 1986, abandoned. This application Aug. 18, 1988, Ser. No. 233,979

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—304 **21 Claims**



1. A magnetic alloy that is at least 70% glassy, having the formula $Co_aFe_bNi_cM_dB_3Si_f$, where M is at least one member selected from the group consisting of Cr, Mo, Mn and Nb, "a"-"f" are in atom percent and the sum of "a"-"f" equals 100, "a" ranges from about 66 to about 71, "b" ranges from about 2.5 to about 4.5, "c" ranges from 0 to about 3, "d" ranges from 0 to about 2 except when M=Mn in which case "d" ranges from 0 to about 4, "3" ranges from about 6 to about 24 and "f" ranges from 0 to about 19, with the proviso that the sum of "a", "b" and "c" ranges from about 72 to about 76 and the sum of "e" and "f" ranges from about 25 to about 27, said alloy having a value of magnetostriction between -1×10^{-6} and $+1\times10^{-6}$, a saturation induction ranging from about 0.5 to about 1 Tesla, a Curie temperature ranging from about 200 to about 450° C. and a first crystallization temperature ranging from about 440 to about 570° C., said alloy having been heat-treated by heating the alloy to a temperature between about 50 to about 110° C. below the first crystallization temperature for a time of from about 15 to about 180 minutes, and then cooling the alloy at a rate slower than about—60° C./min. said alloy further having bulk properties comprising a relatively constant permeability at low magnetic excitation and a constricted hysteresis loop.

4,938,268

DEFECTIVE WEFT THREAD REMOVAL FOR AN AS-SPUN WEFT THREAD SUPPLY

Henry Shaw, Vleteren, Belgium, assignor to Picanol N.V., Ieper, Belgium

Filed May 13, 1988, Ser. No. 193,753

Claims priority, application Belgium, May 20, 1987, 8700567

Int. Cl.[5] D03D *47/30, 51/00*

U.S. Cl. 139—116.2 **20 Claims**



12. In a weaving machine having a weft supply mechanism including a yarn supply means adapted to use as-spun, non-cleaned weft thread and a pick insertion device, the improvement comprising:

a detector for detecting as-spun weft thread irregularities in the weft thread while the weft thread is extended between the yarn supply means and the pick insertion device and while a section of weft thread containing an irregularity is disposed between a portion of weft thread extending from the section to the yarn supply and another portion extending from the section to the pick insertion device;

means for severing the section of weft thread containing the irregularity from the weft thread portion extending from the yarn supply and from the portion of weft thread extending to the pick insertion device at least while said portion extending to the pick insertion device is maintained so extended in response to the detection of an irregularity; and

means for removal of the severed section from the portion of weft thread extending from the yarn supply and from the portion of the weft thread extending to the pick insertion device; and

means for joining the severed ends of the weft thread portions extending from the yarn supply and to the pick insertion device.

4,938,269

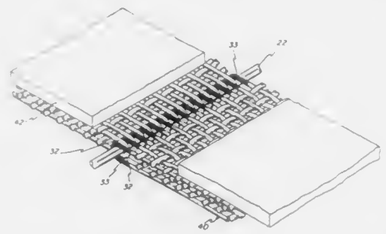
PAPERMAKER'S FELT SEAM WITH DIFFERENT LOOPS

Dimitri P. Nicholas, Savannah, Ga., and Pieter S. Diehl, Pleasant Hill, Ohio, assignors to The Orr Felt Company, Piqua, Ohio

Filed Feb. 1, 1989, Ser. No. 305,347

Int. Cl.[5] D03D *3/04, 15/00*

U.S. Cl. 139—383 AA **3 Claims**



1. In a papermaker's felt having opposed ends in which ends are connected by a pin seam, and in which said seam includes a series of interfitted transversely aligned pin-receiving loops, in which successive alternate said loops are associated with one or the other of said opposed ends, the improvement comprising:

all the said loops associated with one of said ends having a first color which is distinctively different in appearance from a second color of all the said loops associated with the other said end of said felt to facilitate the internesting of said loops for the threading of the connecting pin therethrough by forming the appearance of alternating first and second colors when the loops are properly aligned.

4,938,270

SPHERICAL CLOTH WEAVING MACHINE WITH SHUTTLE CHUCKS

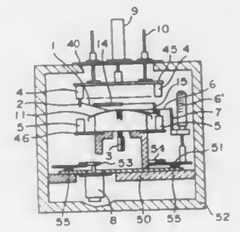
Kenji Fukuta, Ibaraki; Syozo Nakata, Amagasaki; Kunihiko Murayama, Amagasaki, and Hiroshi Hatta, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha & Agency of Industrial Science and Technology, Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,429

Claims priority, application Japan, Jun. 9, 1987, 62-143780

Int. Cl.[5] D03D *37/00*

U.S. Cl. 139—457 **3 Claims**



1. A spherical cloth weaving machine, wherein radially stretched warp yarns and circumferentially running weft yarn are woven into a predetermined configuration, said machine comprising in combination:

means for arranging warp yarns in a radially stretched state;

means for moving said warp yarns alternately by circumferentially spaced shuttle chucks which hold numbers of the warp yarns at a radially outer peripheral part of said warp yarns;

means for hooking the circumferentially running weft yarns and beating the same toward a center of said radially stretched warp yarns for compact weaving;

weft yarn rotating means for causing said weft yarn to pass through the warp yarns which have been moved by said warp yarn moving means; and

means for maintaining the woven cloth in a spherical shape, wherein said means for maintaining comprise a spherical jig disposed in the weaving region of the warp yarns and the weft yarn and supporting said warp yarns, wherein said warp yarns and said weft yarns are woven while in close contact with and along the surface of the spherical jig, and

wherein said means for arranging said warp yarns in a radially stretched state comprise a central hole in said jig and a weight to which radially inner ends of said warp yarns are attached, said warp yarns passing through said central hole at a position along their lengths between said weight and said shuttle chucks.

4,938,271

DOSING APPARATUS

Kevin R. Bunce, Baldock, and William Russell, Bury St. Edmunds, both of England, assignors to Elopak Systems AG, Glattbrugg, Switzerland

Filed Feb. 19, 1988, Ser. No. 158,249

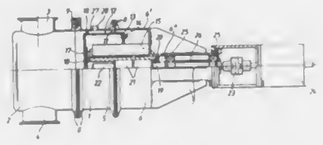
Claims priority, application United Kingdom, Feb. 20, 1987, 8703985

Int. Cl.[5] B65B *1/32, 3/28*

U.S. Cl. 141—1 **17 Claims**

1. An improved method of filling containers with a substance, comprising advancing containers one after another past a dosing station, operating oscillatorily a rotary stepping motor constituting a dosing drive, and converting the motion thereby produced into reciprocatory linear motion of a wall in a housing to obtain inflow of a dosage of said substance into and outflow of said dosage from said housing to supply discrete

dosages to said containers at said dosing device, and controlling according to a computer programme the speed of said



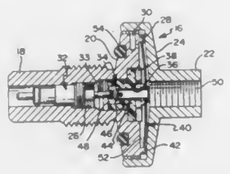
motor and thus the speed of said wall and thereby speed of flow of said dosage.

4,938,272

VALVE ACTUATOR FOR TIRE PRESSURE MANAGEMENT

William M. Sandy, Jr., Seven Hills, and Donald L. Williams, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1989, Ser. No. 301,765
Int. Cl.[5] B60C *23/00*; F16K *7/17*
U.S. Cl. 152—427 1 Claim



1. A valve actuator assembly for a vehicle tire pressure management system of the type that can provide a selected air pressure, said valve actuator assembly comprising,

a housing having an inlet adapted to receive said air pressure and an outlet adapted to open to at least one of said vehicle tires,

a pressure check valve located in said outlet so as to open and close said outlet,

a dimpling disk that moves quickly between a stable, convex free state and a non stable, concave stressed state when a sufficient command pressure is applied thereto and maintained, and which returns automatically and without assistance to the free state when said command pressure is removed, said disk being sealingly fixed within said housing between said inlet and check valve so as to create a signal chamber between the free state convex side of said disk and said inlet and to isolate the opposite side of said disk from said inlet,

a plunger assembly sealingly fixed within said housing between said check valve and said disk so as to create both a feed chamber between said check valve and plunger assembly and an expansion and contraction chamber between said plunger assembly and said disk opposite side that is isolated from said feed chamber, said plunger assembly also having a plunger with one end engageable with said disk and the other end engageable with said check valve so as to open and close said outlet as said disk moves between said free state and said stressed state, and

a conduit by-passing said expansion and contraction chamber and communicating between said signal and feed chambers,

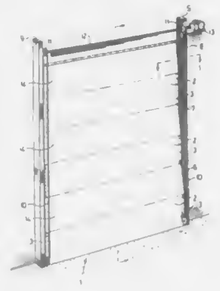
whereby, when said command pressure is supplied to said signal chamber, said disk will move from said free state to said stressed state quickly and substantially without restriction, by virtue of said isolated expansion and contraction chamber, thereby opening said check valve and allowing air pressure to flow freely between said signal and feed chambers, and when said command pressure is removed from said signal chamber, said disk will quickly self return to its free state, allowing said check valve to close.

4,938,273

VERTICALLY MOVABLE DOOR STRUCTURE

Voldemar Dubbelman, and Stefan Dubbelman, both of Björkliden 16, S-703 58 Örebro, Sweden

PCT No. PCT/SE87/00480, § 371 Date Apr. 7, 1989, § 102(e) Date Apr. 7, 1989, PCT Pub. No. WO88/03217, PCT Pub. Date May 5, 1988
PCT Filed Oct. 19, 1987, Ser. No. 346,981
Claims priority, application Sweden, Oct. 24, 1986, 8604558
Int. Cl.[5] E05D *15/00*
U.S. Cl. 160—201 10 Claims



1. A vertically foldable door structure to cover a door opening comprising;

side guide means (6–8) arranged on the vertical sides of the door opening;

a door leaf (1) being divided into a plurality of horizontal, foldable panels (2, 14), each panel having an upper and lower long edges and vertical end portions, at least said end portions of each alternate ones of said panels (21) being rigid; and at least the remaining of said panels (14) comprising a flexible material;

guide means (15, 20) attached to said rigid end portions and co-acting guidingly with said side guide means; and

wherein said side guide means comprises a plurality of pairs of side guides, each guide in said pair being correspondingly vertically oriented, and each pair of side guides being operative with respect to at least a corresponding one of said panels having a rigid end portion.

4,938,274

METHOD OF DETECTING DEGASSED STATE IN MOLD AND SYSTEM THEREFOR

Norihiro Iwamoto, and Hiroshi Iga, both of Zama, Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,071
Claims priority, application Japan, Dec. 10, 1987, 62-177256[U]; Aug. 31, 1988, 63-218053[U]
Int. Cl.[5] B22D *2/00*, *11/16*
U.S. Cl. 164—4.1 15 Claims

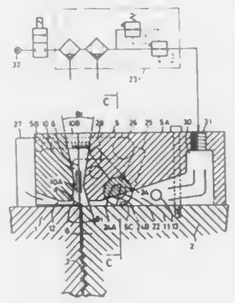
15. A system for detecting a degassed state in a mold, comprising:

a degassing vent and a gas release opening communicating therewith, both of which release the gas in the mold, when a molten material is injected into the mold to be molded into a predetermined form;

a diffuser section formed as an extension of said gas release opening on the exterior of the mold, serving as a path for a released gas stream;

at least one secondary flow path communicating with said diffuser section;

a wind velocity sensor provided in said secondary flow path adapted to sense a secondary flow in said secondary flow path when the gas is released from the mold; and



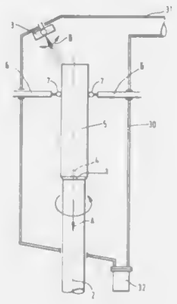
a shut-off means for shutting the atmospheric air off said wind velocity sensor, whereby the secondary flow is brought into contact with said wind velocity sensor while the mold is clamped.

4,938,275

PRODUCTION OF SPRAY DEPOSITS

Alan G. Leatham, Bishopston; Jefferey S. Coombs, Neath, both of Wales, and Paul B. Davis, Swansea, United Kingdom, assignors to Osprey Metals Limited, Wales

Continuation of Ser. No. 929,442, Nov. 12, 1986, abandoned. This application Mar. 1, 1989, Ser. No. 318,426
Claims priority, application United Kingdom, Nov. 12, 1985, 8527853; Nov. 12, 1985, 8527855
Int. Cl.[5] B22D *23/00*
U.S. Cl. 164—46 9 Claims



1. A process for forming an ingot having a length at least twice as great as a characteristic sectional dimension hereof, comprising the steps of:

spraying droplets of molten metal from spray means and in a first direction; positioning an element having a catching surface in the path of said sprayed droplets; rotating said catching surface about an axis angularly spaced from said first direction by between 90° and 180°, whereby said sprayed droplets are evenly applied to said catching surface to form a continuous agglomerate and, when said catching surface is covered by said agglomerate, said sprayed droplets are evenly applied to a catching surface of said agglomerate such that the agglomerate is self-supporting; continuously moving said agglomerate along said axis as said sprayed droplets are applied and at a rate such that said catching surface remains at a constant distance from said spray means, whereby a longitudinal ingot surface is formed by said continuous agglomerate, and determining the shape of the agglomerate without physical containment by the interrelationship between the movement of the catching surface and the movement of the spray.

5. Apparatus for forming an ingot having a length at least twice as great as a characteristic sectional dimension hereof, comprising:

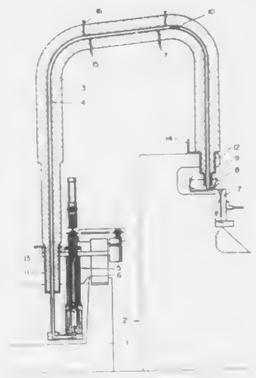
spray means for spraying droplets of molten metal in a first direction; an element having a catching surface for positioning in the path of said sprayed droplets; means for rotating said catching surface about an axis angularly spaced from said first direction by between 90° and 180°, whereby said sprayed droplets may be evenly applied to said catching surface to form a continuous agglomerate and, when said catching surface is covered by said agglomerate, said sprayed droplets may be evenly applied to a catching surface of said agglomerate such that the agglomerate is self-supporting; means for continuously moving said agglomerate along said axis as said sprayed droplets are applied and at a rate such that said catching surface remains at a constant distance from said spray means, whereby a longitudinal ingot surface is formed by said continuous agglomerate without physical containment by the interrelationship between the movement of the catching surface and the movement of the spray; and stabilizing means, remote from the catching surface, for stabilizing the agglomerate as it grows in size.

4,938,276

METHOD AND APPARATUS FOR SUPPLYING A LEAD ALLOY TO A CASTING MACHINE

Kenji Noguchi, and Shigeru Sato, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Japan

Continuation of Ser. No. 318,422, Feb. 28, 1989, abandoned, which is a continuation of Ser. No. 40,048, Apr. 17, 1987, abandoned. This application Jan. 25, 1990, Ser. No. 471,676
Claims priority, application Japan, Apr. 18, 1986, 90367
Int. Cl.[5] B22D *39/02*
U.S. Cl. 164—133 6 Claims



1. In a method of supplying a molten lead alloy from a melting furnace to a casting machine used for manufacturing grids for lead accumulators, the improvement which comprises supplying the molten lead alloy through a piston pump and a feed pipe, said piston pump being driven by a pneumatic cylinder to supply the molten alloy from the melting furnace to a swing bucket of the casting machine through the feed pipe, and said feed pipe provided between the melting furnace and the

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swing bucket which pours the supplied molten lead alloy into a mold and having both open ends, one of which being positioned at a level which is lower than the level of the molten metal in the melting furnace and the other being positioned at a level which is lower than the level of the molten lead alloy in the swing bucket, said feed pipe further having an intermediate portion location at a level which is higher than the higher of the two levels of the molten lead alloy located adjacent to the both open ends, respectively, of said feed pipe by a distance exceeding the height of a column of the molten lead alloy which atmospheric pressure can support, and said piston pump being provided with a valve which is closed by the back pressure of the molten lead alloy in the feed pipe and opened by the pressure of the molten lead alloy to be applied to the valve, whereby the molten lead alloy always fills the feed pipe and prevents any air from entering the feed pipe, the pump is operationally associated with the swing bucket and an adjust bolt, through which a piston rod connecting the pneumatic cylinder to a piston extends, is vertically moved so as to allow the piston to be no longer lowered when the lower end of a member to which the piston rod is connected abuts on the upper end of the adjust bolt, thereby adjusting the feeding amount of the molten lead alloy corresponding to one stroke of the piston.

4. An apparatus for supplying a molten lead alloy from a melting furnace to a casting machine, which comprises

a feed pipe extending from said melting furnace to a swing bucket for pouring the molten alloy into a mold;

a piston pump driven by a pneumatic cylinder for supplying the molten alloy from said melting furnace to said swing bucket of said casting machine through said feed pipe;

said feed pipe having opposite open ends, one of which is positioned at a level which is lower than a level of molten metal in the melting furnace and another is positioned at a level which is lower than the level of the molten alloy in the swing bucket, said feed pipe further having an intermediate portion located at a level which is higher than the higher of the two levels of the molten alloy located adjacent to the both open ends, respectively, of said feed pipe by a distance exceeding the height of a column of the molten alloy which atmospheric pressure can support said piston pump being provided with a valve which is closed by the back pressure of the molten lead alloy in the feed pipe and a piston which compresses the molten lead alloy against said valve to open it, said piston pump being operationally associated with the swinging motion of said swing bucket; and an adjust bolt, through which a piston rod connecting the pneumatic cylinder to a piston extends, is vertically moved so as to allow the piston to be no longer lowered when the lower end of a member to which the piston rod is connected abuts on the upper end of the adjust bolt, thereby adjusting the feeding amount of the molten lead alloy corresponding to one stroke of the piston.

4,938,277

CASTING MOLD WITH EXPANSION MEMBER FOR RADIATION PLATES

Clayton P. Korver, 700 Juneau S.E., Orange City, Iowa 51041

Filed Dec. 8, 1988, Ser. No. 281,350

Int. Cl.[5] B22D *15/00*

U.S. Cl. 164—137 **8 Claims**

4. An apparatus for producing a radiation shield plate having an aperture of predetermined dimensions represented by a pattern, the plate being formed from a low melting point material which expands during solidification, comprising:

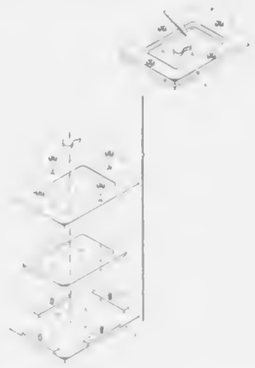
a base plate;

a resilient ring having a first side and an opening of predetermined dimensions capable of receiving the pattern therein;

means for confining the resilient ring;

means for forming a seal between the first side of the resilient ring and the base plate, the pattern being placed within the opening of the resilient ring and on the base plate, molten material poured into the opening about the pattern, the resilient ring deforming as the material hardens to form the shield plate,

a top plate, said forming means compressing the resilient ring between the top plate and base plate to form the seal; and



wherein the top plate has a lower surface, a continuous lip extending from the lower surface toward the resilient ring, the lip providing a uniform compression force to the resilient ring about the entire periphery of the opening to ensure a continuous seal between the resilient ring and the base plate.

4,938,278

SUBSTRATE FOR USE IN SPRAY-DEPOSITED STRIP

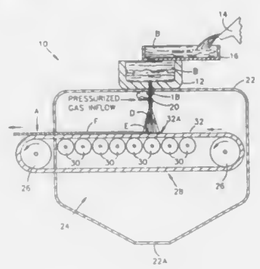
Asbok Sankaranarayanan, Bethany; Harvey P. Cheskis, North Haven, and W. Gary Watson, Cheshire, all of Conn., assignors to Olin Corporation

Filed Sep. 20, 1988, Ser. No. 246,844

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] B22D *23/00*

U.S. Cl. 164—429 **12 Claims**



1. In a molten metal gas-atomizing spray-depositing apparatus, the combination comprising:

(a) means employing a pressurized gas flow for atomizing a stream of molten metal into a spray pattern of metal particles and producing a flow of said particles in said pattern thereof along with said gas flow in a generally downward direction;

(b) a substrate having at least an upper surface layer of glass, thermally softenable over a predetermined temperature range, being disposed below said atomizing means for impingement thereon by said pressurized gas flow and for receiving thereon a deposit of said particles in the spray pattern to form a product;

(c) means for moving said substrate relatively to said atomizing means; and

(d) means for separating said deposit from said substrate located downstream of said atomizing means.

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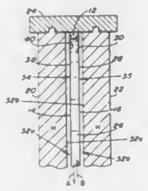
FLEXIBLE MEMBRANE HEAT SINK

Jay B. Betker, Fullerton, Calif., assignor to Hughes Aircraft Company, Calif.

Continuation of Ser. No. 152,683, Feb. 5, 1988, abandoned. This application Aug. 1, 1989, Ser. No. 359,068

Int. Cl.[5] H01L *23/473*

U.S. Cl. 165—46 **5 Claims**



1. A heat sink assembly comprising:

first and second heat producing assemblies, a support structure, said first and second heat-producing electronic assemblies being supported by said support structure to leave a space between said heat-producing electronic assemblies, said heat-producing electronic assemblies being demountably mounted with respect to said support structure, said heat sink assembly comprising:

a rigid metallic frame, said frame having ends and walls to define a reservoir space therein and having first and second planar faces;

first and second resilient metallic membranes being secured with their inner faces respectively against said first and second faces of said frame and sealed with respect thereto to enclose said reservoir space, said outer faces of said membranes being substantially planar when said reservoir is unpressurized, said assembly having a thickness between said first and second membrane outer faces less than the space between said spaced electronic assemblies so that said heat sink assembly can be placed between spaced electronic assemblies without contact thereon;

a coolant fluid inlet connection to said reservoir in said heat sink assembly to permit coolant to flow into said reservoir and a coolant outflow connection from said reservoir spaced from said inlet connection to permit coolant fluid outflow from said reservoir; and

control means for controlling coolant fluid flow and reservoir pressure to pressurize said reservoir to resiliently deflect said membranes into contact with the adjacent electronic assemblies and simultaneously cause coolant flow through said reservoir to extract heat therefrom so that said control means can be operated to depressurize said reservoir to permit resilient retraction of said membranes out of contact with the adjacent electronic assemblies to permit detachment of one of said electronic assemblies from said support structure and replacement thereof without removal of said heat sink assembly from its position adjacent the remaining electronic assembly.

4,938,280

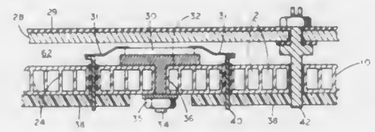
LIQUID-COOLED, FLAT PLATE HEAT EXCHANGER

William E. Clark, 401 Hyder St., N.E., Palm Bay, Fla. 32907

Filed Nov. 7, 1988, Ser. No. 268,068

Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—80.4 **11 Claims**



1. A one-piece, substantially flat and very thin metal heat exchanger core having two flat and parallel surfaces, each of said surfaces being suitable as a mounting surface for a number of heat producing electronic chips, said surfaces being closely spaced and separated by a single cavity for conveying a fluid coolant, said cavity containing a plurality of closely spaced, generally circular pins extending the full distance between said parallel surfaces, said pins being permanently and integrally formed as part of said parallel surfaces without creation of a seam, said pins being capable of having a hole installed through for their entire length, from one of said surfaces to the other, without breaching said fluid cavity and without creating a path for fluid to leak from said fluid cavity to the ambient, the majority of said pins being no more than 0.035 inches in diameter, said core having a total cross-sectional thickness of approximately 0.04 inches.

4,938,281

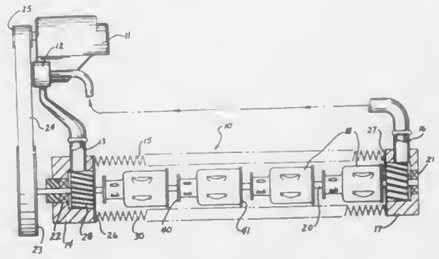
HEAT EXCHANGER WITH MECHANICAL TURBULATOR

Robert F. Dierbeck, 2707 Hall Rd., Hartford, Wis. 53027

Filed Nov. 17, 1989, Ser. No. 438,709

Int. Cl.[5] F28F *13/12*

U.S. Cl. 165—109.1 **12 Claims**



1. A heat exchanger for a fluid flow comprising:

a tubular conduit having a heat exchanging outer wall, an inlet end and an outlet end for the flow of a fluid therethrough;

a rotatable turbulator mounted for rotation within the tubular conduit on a driven shaft, said shaft extending through said conduit on an axis thereof;

said turbulator including an upstream end plate and a downstream end plate, each having an outer peripheral edge spaced from the outer wall of the conduit to define therebetween a path of restricted fluid flow;

said turbulator further including axially spaced groups of fluid intake blades and fluid discharge blades mounted between the upstream and downstream end plates and defining therewith a generally open interior;

said intake blades having outer edge portions positioned in the path of restricted fluid flow and oriented to sweep a

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part of the fluid flow radially into the open interior of the turbulator;

said discharge blades having outer edge portions oppositely oriented with respect to said intake blades and positioned with respect to the outer wall of said conduit to discharge fluid from said open interior radially outwardly toward said outer wall; and,

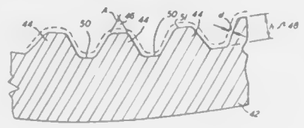
means for rotating said driven shaft and for causing the fluid to flow through said conduit.

4,938,282

HIGH PERFORMANCE HEAT TRANSFER TUBE FOR HEAT EXCHANGER

Steven R. Zohler, 4854 Carey Dr., Manlius, N.Y. 13104

Filed Sep. 15, 1988, Ser. No. 244,294
Int. Cl.[5] F28F *1/40*
U.S. Cl. 165—133 **11 Claims**



1. A heat transfer tube for transferring heat to and from a liquid outside the tube to condense or evaporate a refrigerant liquid inside the tube, the tube having an outside diameter and an inside diameter and which tube is enhanced with a plurality of interior ribs on an interior surface of the tube which is exposed to the refrigerant fluid, successive ones of said ribs having a floor therebetween defining a spacing therebetween, said refrigerant liquid forming a liquid film of a characteristic film thickness covering the interior surface of the tube; comprising the improvement wherein said ribs are disposed at a sufficiently small pitch on the order of 0.060 to 0.090 inches so that the height of said ribs is on the order of about 0.015 to 0.030 times the tube inside diameter and the floor spacing between successive said ribs is on the order of 0.015 to 0.030 times the inside diameter.

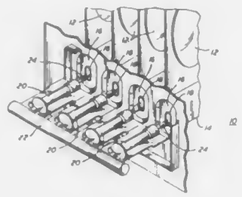
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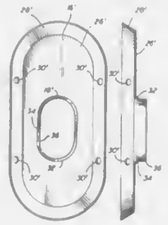
BELL ORIFICE PLATE FOR INSHOT COMBUSTION FURNACE

Richard J. Wood, North Syracuse; Robert H. Swieczkowski, Cazenovia, both of N.Y., and Ninev K. Zia, Clermont, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 19, 1989, Ser. No. 369,065
Int. Cl.[5] B22D *1/00*
U.S. Cl. 165—135 **8 Claims**

1. An inlet plate for a heat exchanger of a combustion furnace in which an inshot burner produces hot gaseous combustion which is injected through a rounded aperture in the inlet plate into a combustion zone in the heat exchanger in which the plate is mounted; wherein said inlet plate includes a collar surrounding said aperture at its periphery and extending into said combustion zone, the collar having a flared section joining to a main flat portion of the plate and leading to a substantially





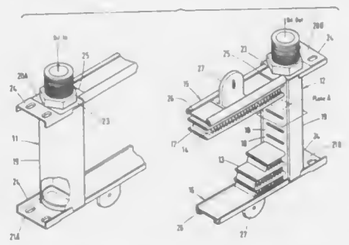
straight walled section that ends a predetermined distance into the combustion zone.

4,938,284

HEAT EXCHANGER

David R. Howells, Llanelli, Wales, assignor to Austin Rover Group Limited, United Kingdom

Filed Sep. 23, 1987, Ser. No. 100,270
Claims priority, application United Kingdom, Oct. 21, 1986, 8625142
Int. Cl.[5] F28F *9/26*
U.S. Cl. 165—149 **13 Claims**



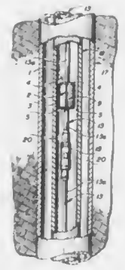
1. A heat exchanger of brazed aluminum construction comprising: a first tank; a second tank; a heat exchanger core interposed between said first and second tanks; a first casing member extending between said first and second tanks; a second casing member extending between said first and second tanks, the heat exchanger core including a number of fluid transfer conduits to provide a fluid transfer connection between said first and second tanks, each of said conduits being separated from adjacent conduits by an open structured heat transfer media, each of said tanks including a plate member defining a number of apertures, each aperture having one end of one of said fluid conduits secured therein, a side wall member connected to said plate member to define therewith a fluid manifold, at least one component from the group comprising said first casing member, said second casing member, and said side wall member extruded and formed with a pair of grooves, each groove having an open end and a closed end opposite said open end, and in which the distance between said open ends is different from the distance between said closed ends, and in which another component of the heat exchanger, other than said one component formed with said grooves, is formed with edges which lie within and are held by said grooves.

4,938,285

ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE SUCKER ROD GUIDE

Billy J. Edwards, 1917 Cambridge, Bossier City, La. 71112, and Jimmy A. Starks, 1105 James, Bossier City, La. 71111

Continuation-in-part of Ser. No. 211,567, Jun. 27, 1988, Pat. No. 4,858,688. This application May 30, 1989, Ser. No. 357,794
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—241 **5 Claims**



1. A sucker rod guide for mounting on a sucker rod comprising a generally cylindrically-shaped cylinder shape from polyethylene having an ultra high molecular weight in the range from about two million to about five million; a longitudinal bore provided in said cylinder, wherein said bore is smaller in diameter than the diameter of the sucker rod; a tapered slot extending through said cylinder in longitudinal relationship, said tapered slot communicating with said bore and further comprising a slot mouth having having a first spacing and a slot throat spaced from said slot mouth, said slot throat lying adjacent to said sucker rod bore and having a second spacing and wherein said second spacing is wider than said first spacing, for mounting said sucker rod guide on the sucker rod; a first taper terminating one end of said cylinder and a second taper terminating the opposite end of said cylinder; and a plurality of grooves provided in spaced circumferential relationship in said bore.

4,938,286

METHOD FOR FORMATION STIMULATION IN HORIZONTAL WELLBORES USING HYDRAULIC FRACTURING

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 14, 1989, Ser. No. 379,755
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—280 **11 Claims**

1. A method for stimulating a formation penetrated by a horizontal wellbore comprising:

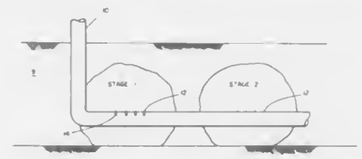
(a) perforating a horizontal wellbore along its top side at desired intervals so as to enable fluid communication with said formation;

(b) fracturing hydraulically said formation through perforations in said wellbore with a fracturing fluid containing a substantially lightweight proppant which has a density substantially equal to said fluid thereby creating a fracture within a first interval of the formation and maximizing multilayer proppant placement within said fracture;

(c) releasing hydraulic pressure on said formation thereby causing said fracture to be propped with said proppant;

(d) placing ball sealers in said fracturing fluid in an amount sufficient to close perforations in said wellbore adjacent said first interval;

(e) applying pressure in an amount sufficient to fracture said



formation in an area adjacent to said first interval which causes said ball sealers to seal off perforations in said first interval and direct fluid into a second perforated interval of said wellbore thereby fracturing the formation adjacent to said second interval; and

(f) releasing pressure applied to said fluid thereby maximizing multilayer proppant placement and causing the ball sealers to float upwardly with said fluid through said wellbore where they are recovered.

4,938,287

SAND CONSOLIDATION METHODS

Robert H. Friedman; Billy W. Surles, both of Houston, and Philip D. Fader, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 23, 1989, Ser. No. 425,137
Int. Cl.[5] E21B *33/138*
U.S. Cl. 166—288 **16 Claims**

1. A method for consolidating unconsolidated mineral particles including sand in a subterranean petroleum formation penetrated by a well in fluid communication with at least a portion of the formation, comprising:

(a) introducing an effective amount of a preflush into the formation sufficient to invade substantially all of the pore spaces of a portion of the formation to be consolidated, said preflush fluid comprising an ester which is a solvent for oil residue on the sand grains and removing at least a portion of water present in the pore spaces of the formation; thereafter

(b) introducing a sand consolidating fluid into substantially the same portion of the formation as the preflush fluid, said sand consolidating fluid containing a polymerizable compound, a diluent for the polymerizable compound and an acid catalyst capable of causing condensation polymerization of the compound at fluid injection temperatures; and

(c) allowing the injected fluid to remain in the formation for a period of time sufficient to accomplish at least partial polymerization of the monomer, forming a permeable consolidated mass around the wellbore.

4,938,288

NON-DAMAGING WORKOVER AND COMPLETION FLUID

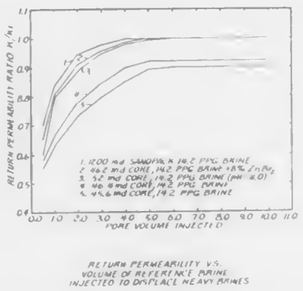
Kenneth L. Bridges, Breaux Bridge, La., assignor to OSCA, Inc., Lafayette, La.

Filed May 5, 1989, Ser. No. 348,042
Int. Cl.[5] E21B *43/00, 43/25, 43/27*
U.S. Cl. 166—305.1 **6 Claims**

1. A method of preventing potential subterranean formation damage caused by calcium based completion and well servicing brines comprising adding an acid buffer composition comprised of a weak acid and its conjugate mental salt to said

completion and well servicing brine to maintain the pH of said brine between approximately 3.5 and 5.5.

4. A method of preventing potential subterranean formation damage in oil and gas wells in which calcium based completion



RETURN PERMEABILITY VS. VOLUME OF REFERENCE BRINE INJECTED TO DISPLACE HEAVY BRINES

and well servicing brines are pumped into said wells, the improvement comprising maintaining the pH of said brine between 5.5 and 3.5 by adding an acid buffer composition comprised of a weak acid and its conjugate metal salt to said brine.

4,938,289

SURFACE WELLHEAD

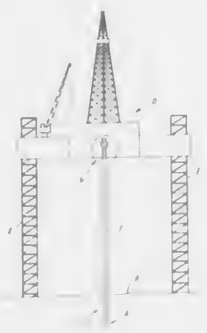
Bernard H. Van Bilderbeek, Aberdeen, Scotland, assignor to Plexus Ocean Systems Limited, Aberdeen, Scotland

Continuation-in-part of Ser. No. 65,299, Jun. 22, 1987, Pat. No. 4,794,988. This application Nov. 21, 1988, Ser. No. 274,192

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.[5] **E21B** *7/12*

U.S. Cl. 166—342 **23 Claims**



1. A method of installing tubular casing, the casing having a main axis and having a lower portion which has a locating member for engagement with a first fixture, and an upper portion which has an engagement member for engaging a support member on a second fixture in fixed spatial relationship to the first fixture, the engagement member and the support member being relatively movable in a direction axially of the casing, the method comprising setting the distance between the locating member and the engagement member greater than the distance between the first fixture and the support member, engaging the locating member with the first fixture, and bringing the engagement member and the support member into engagement thereby to lock the casing between the first fixture and the support member.

4,938,290

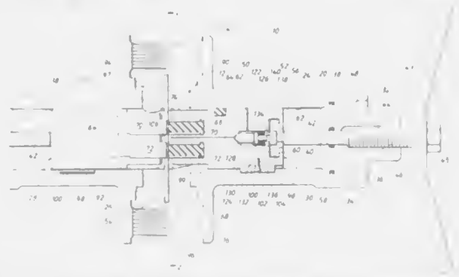
WIRELINE BLOWOUT PREVENTER HAVING MECHANICAL AND HYDRAULIC SEALING

Henry H. Leggett, Longview, Tex., and Lionel M. Gingras, Setia Mansion, Singapore, assignors to Eastern Oil Tools PTE LTD

Filed Jun. 19, 1989, Ser. No. 367,782

Int. Cl.[5] **E21B** *33/02*

U.S. Cl. 166—387 **18 Claims**



1. A single ram unidirectional wireline BOP system having mechanical and hydraulic sealing capability with respect to a wireline that is movable therethrough and which forms interstices between armor strands thereof, comprising:

(a) a BOP body having a vertical flow passage and forming a pair of opposed horizontal ram passages;

(b) a pair of rams being movably disposed within said ram passages, each of said rams forming a face surface and having an elastomeric outer seal establishing an outer peripheral seal between said rams and said BOP body and a pair of vertically spaced elastomeric inner sealing elements projecting beyond said face surface and adapted for sealing engagement with one another and with the wireline, said rams being movable to open positions wherein said inner sealing elements are positioned away from said wireline and closed positions where said face surfaces of said rams are disposed in spaced relation with one another and said inner sealing elements of said rams establish mechanical sealing engagement with said wireline, in said closed positions of said rams the space between said vertically spaced elastomeric inner sealing elements and the space between said face surfaces of said rams forming a grease sealant chamber through which said wireline extends;

(c) means imparting movement of said rams to said open and closed positions; and

(d) means for conducting injected grease sealant into said grease sealant chamber at sufficiently high pressure to establish hydraulic sealing with said wireline in said grease sealant chamber to prevent leakage of fluid pressure through said interstices of said wireline.

4,938,291

CUTTING TOOL FOR CUTTING WELL CASING

Gerald D. Lynde, and James M. Price, both c/o Tri-State Oil Tool Industries, Inc., P.O. Drawer 5757, Bossier City, La. 71111-5757

Division of Ser. No. 927,512, Nov. 6, 1986, Pat. No. 4,887,668, which is a continuation-in-part of Ser. No. 816,287, Jan. 6, 1986, Pat. No. 4,796,709. This application Nov. 17, 1988, Ser. No. 272,466

Int. Cl.[5] **E21B** *29/00*

U.S. Cl. 166—55.8 **8 Claims**

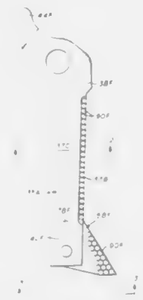
1. A cutting tool mounted for rotation within a well for cutting a casing therein during rotation and comprising:

a tubular cutter body having a longitudinally extending slot therein and adapted to be connected to a well string for being lowered within a well and being surrounded by casing to be cut;

an elongate cutter arm received within said slot having a leading side in the direction of rotation for forming a cutting surface and an outer side adjacent the inner periphery of the casing;

means on the cutter body mounting the upper end portion of said cutter arm in said slot for pivotal movement to permit the outward swinging movement of said cutting surface into cutting contact with the inner periphery of the adjacent casing to be cut;

means associated with said cutting tool and selectively actuated at a predetermined well depth to move the lower end of the arm outwardly for said cutting surface to engage the casing in a cutting operation;



a plurality of cutting elements positioned at the juncture of the leading side and outer side of said elongate cutter arm to define said cutting surface and extending in a row having a longitudinal axis generally parallel to the longitudinal axis of the elongate cutter arm, said cutting elements comprising a plurality of hard carbide inserts having parallel rear and front planar faces, said rear planar faces secured to the elongate arm with the outer planar leading faces of the inserts having a negative rake to present a sharp outer cutting edge to said casing; and

a separate cutting blade mounted on the lower end of said elongate arm and having a plurality of hard carbide cutting inserts thereon forming a cutting surface.

4,938,292

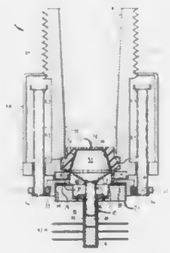
FLUSH MOUNTED FIRE SPRINKLER HEAD

Wilfred V. Johnson, Oxford, Mass., assignor to U.S. Fire Control Corporation, Rochdale, Mass.

Filed Feb. 28, 1989, Ser. No. 316,828

Int. Cl.[5] **A62C** *37/10*

U.S. Cl. 169—19 **20 Claims**



1. Fire sprinkler apparatus comprising:

a tubular body means defining an inlet adapted for connection to a supply of pressurized fire extinguishing fluid, an outlet adapted for placement in a fire protected zone, and a cylindrical inner wall extending between said inlet and said outlet and defining an annular recess;

a valve means comprising a piston means and a cup-shaped gasket retained by and mounted for movement within said body means from a closed position to an open position and providing in said closed position a fluid tight seal between said inlet and said outlet and allowing in said open position fluid flow therebetween; said cup-shaped gasket comprising a bottom portion for receiving a force for inducing said movement and produced by pressurized fluid at said inlet, an annular skirt portion having one end joined to said bottom portion and an opposite end retained by said piston means, and an annular lip portion extending outwardly from said skirt portion and received by said annular recess so as to form a fluid tight seal therewith;

locking means retained by said valve means and movable between an engaged position and a disengaged position, said locking means being shaped and arranged in said engaged position to exert on said cup-shaped gasket a locking force retaining said annular lip portion within said annular recess to thereby prevent relative movement therebetween, and shaped and arranged in said disengaged position to substantially eliminate said force between said annular lip portion and said annular recess and to allow relative movement therebetween; and

latching means automatically movable from a latched position to a released position in response to a predetermined condition, said latching means being shaped and arranged in said latched position to retain said locking means in said engaged position and shaped and arranged in said released position to permit movement of said locking means into said disengaged position.

4,938,293

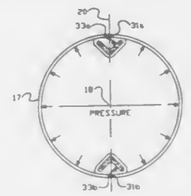
LINEAR FIRE EXTINGUISHER

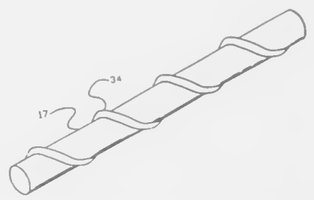
Donald E. Warren, Berkeley, and Maurice E. Tyler, Orinda, both of Calif., assignors to Systron Donner Corp., Concord, Calif.

Continuation-in-part of Ser. No. 43,928, Apr. 29, 1987, Pat. No. 4,854,389. This application Aug. 7, 1989, Ser. No. 392,218

Int. Cl.[5] **A62C** *35/08, 35/12*

U.S. Cl. 169—28 **4 Claims**





1. A linear fire extinguisher for aircraft and other similar applications where a linear uniform distribution of a fire extinguishing agent is necessary along a long linear distance comprising:

a closed, elongated high strength metal tubular container

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having an axis along which it is elongated and having its interior volume substantially totally filled with a fire extinguishant and pressurized, means for explosively cutting said container along a pair of substantially opposed lines extending the length of said container as measured along said axis, said opposition providing a net reaction force of substantially zero on said tube when cut, said cutting means including a pair of linear shaped explosive charges in substantial respective contact with said container along substantially all of said pair of lines to thereby provide a uniform radial distribution of extinguishant with a pair of fan-like spreadings along the length of said container within a time period of less than ten (10) milliseconds of explosively cutting said container.

4,938,294

TRIGGER ELEMENT FOR A SPRINKLER

Johann G. Mohler, Bahnhofstrasse 11, Pratteln, Switzerland CH-4133 , and Petr Bohac, Im Rüteli 21, Baden, Switzerland CH-5405

PCT No. PCT/CH88/00033, § 371 Date Oct. 13, 1988, § 102(e) Date Oct. 13, 1988, PCT Pub. No. WO88/06046, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 11, 1988, Ser. No. 275,173

Claims priority, application Switzerland, Feb. 13, 1987, 535/87

Int. Cl.[5] A62C *37/14, 37/32*

U.S. Cl. 169—38 **4 Claims**

1. A trigger element for a sprinkler, the sprinkler having a water outlet nozzle, the water outlet nozzle of the sprinkler being kept closed by the trigger element, wherein the trigger element consists essentially of a small glass barrel filled with an expanding liquid selected from the group consisting of toluene, a xylene, trichloroethylene, tetrachloroethylene and a mixture thereof.

4,938,295

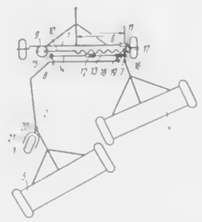
IMPLEMENT HITCH ASSEMBLY

Tiit R. Marrandi, derevnya Moka, Estonskaya SSR, Raplasky raion, and Juri R. Olt, sovkhoz-tekhnikum Kuremaa, Estonskaya SSR, Iygevasky raion, both of U.S.S.R.

Filed Dec. 22, 1988, Ser. No. 288,234

Int. Cl.[5] A01B *73/00*

U.S. Cl. 172—313 **7 Claims**



1. An implement hitch assembly comprising:

a transverse draw bar;

a mechanism for transferring an implement mounted on said draw bar from a transport position to a working position or from the working position to the transport position;

an arcuate beam mounted on said draw bar;

a support wheel with a suspension pivotably secured on said arcuate beam and having a vertical axis of rotation, said support wheel being lockable relative to said arcuate beam;

a shaft for locking said suspension pivotably secured on said arcuate beam;

a resilient element and a locking element mounted on said shaft;

lock means positioned on said suspension, said lock means including a cylindrical pivot having a swing limit for automatically locking said suspension against pivotal movement as said arcuate beam is positioned in its working position;

said shaft and said lock means being operatively interconnected.

4,938,296

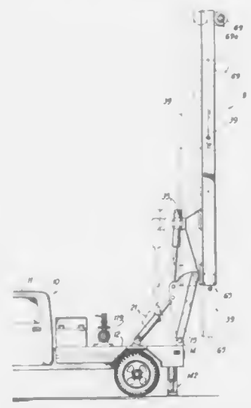
DRILL RIG ASSEMBLY

James W. Brazell, II, Atlanta, Ga., assignor to Pacer Works, Ltd., Atlanta, Ga.

Filed Oct. 12, 1988, Ser. No. 256,699

Int. Cl.[5] F21B *7/02*

U.S. Cl. 173—22 **18 Claims**



1. A drilling apparatus for driving a drill rod into a selected location, comprising:

(a) a mast frame;

(b) actuating means attached to said mast frame for moving said mast frame in a position adjacent to said selected location;

(c) rotary means contained within said mast frame for rotating said drill rod; and

(d) feed means positioned within said mast frame and concentrically aligned with said drill rod and being disposed above said drill rod when said mast frame is in a vertical position for pushing and pulling said drill rod toward and away from said selected location.

4,938,297

RAM BORING MACHINE

Paul Schmidt, Relherstr. 1, 5940 Lennestadt 1 (Saalhausen), Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 223,287

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724619; Oct. 16, 1987, 3735018

Int. Cl.[5] E21B *4/14, 7/08*

U.S. Cl. 175—19 **4 Claims**

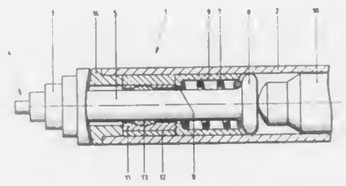
1. A pressure-medium driven ram boring machine for earth boring, comprising:

a machine housing;

an impact tip movable in a longitudinal advance direction and having a stem, the impact tip being adjustable radially relative to the advance direction from a normal centered position;

a striker piston arranged so as to be reciprocally movable in the housing and so as to act upon the impact tip;

at least one eccentric ring arranged in the housing so as to surround the stem with the housing and rotatably support the impact tip;



a spherical shell arranged in a matching recess in the at least one eccentric ring so as to be in area contact with a portion of an outer contour surface of the stem; and

members arranged so as to enclose the at least one eccentric ring on its end faces.

4,938,298

DIRECTIONAL WELL CONTROL

William A. Rehm, Houston, Tex., assignor to BecField Horizontal Drilling Services Company, Houston, Tex.

Filed Feb. 24, 1989, Ser. No. 315,882

Int. Cl.[5] E21B *7/06*

U.S. Cl. 175—61 **7 Claims**



1. A method of drilling a deviated well having a desired rate of turn, said deviated well to be drilled with a drilling assembly having a bend therein, comprising the steps of:

(a) collecting data indicative of interference, drilling assembly bend length, and turning rate from a plurality of drilled wells;

(b) providing a relation between said turning rate and a parameter related to the said interference divided by said drilling assembly bend length;

(c) inputting at least one set of data indicative of interference and drilling assembly bend length for said deviated well to be drilled;

(d) based on said relation, indicating a predicted value of turning radius for said well to be drilled;

(e) based on said predicted value of turning radius for said well to be drilled, selecting a drilling assembly which will provide substantially said desired rate of turn; and

(f) drilling said well to be drilled using said selected drilling assembly.

4,938,299

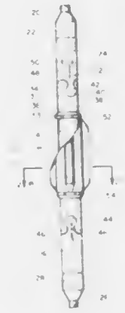
FLEXIBLE CENTRALIZER

Henk H. Jelsma, Spring, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Filed Jul. 27, 1989, Ser. No. 386,415

Int. Cl.[5] E21B *7/08, 17/10, 17/20*

U.S. Cl. 175—73 **16 Claims**



1. An improved centralizer for positioning downhole within a drill pipe string passing through an angle building portion of a wellbore, the drill pipe string having a drill bit at its lower end for drilling the wellbore in response to rotation of the drill string while passing pressurized fluid through the drill string to the drill bit, the improved centralizer comprising:

a tubular-shaped centralizer body having a centralizer body central axis, a uniform outer diameter portion, and an inner bore;

a centralizer sleeve carried on and rotatable about the centralizer body for engaging sidewalls of the borehole;

the centralizer body having a first plurality of upwardly projecting lobe-shaped connectors at its upper end each axially spaced closely adjacent an upper end of the centralizer sleeve, and having a second plurality of downwardly projecting lobe-shaped connectors at its lower end each axially spaced closely adjacent a lower end of the centralizer sleeve;

an upper sub having an upper sub inner bore, an upper sub central axis, and a third plurality of downwardly projecting lobe-shaped connectors at a lower end for cooperation with the first lobe-shaped connectors to permit angular deviation of the centralizer body central axis with respect to the upper sub central axis while transmitting torque along the drill string to the drill bit;

a lower sub having a lower sub inner bore, a lower sub central axis, and a fourth plurality of upwardly projecting lobe-shaped connectors at an upper end for cooperation with the second lobe-shaped connectors to permit angular deviation of the centralizer body central axis with respect to the lower sub central axis while transmitting torque along the drill string to the drill bit;

a fluid conduit positioned within and extending axially through the inner bore of the centralizer body for transmitting pressurized fluid between the upper sub and the lower sub, the fluid conduit having an upper end within the upper sub inner bore and a lower end within the lower sub inner bore;

an upper sealing member positioned within the upper sub inner bore for sealing between the upper sub and the upper end of the fluid conduit; and

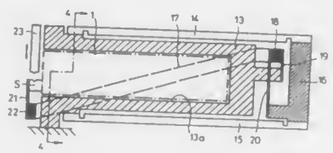
a lower sealing member positioned within the lower sub inner bore for sealing between the lower sub and the lower end of the fluid conduit.

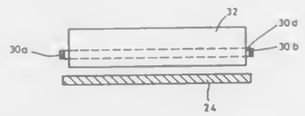
4,938,300

WEIGHING APPARATUS HAVING MULTI-RANGE MOTION TRANSMITTING LEVERS

Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 25, 1989, Ser. No. 426,167
Claims priority, application Switzerland, Nov. 15, 1988, 4238
Int. Cl.[5] G01G *23/14, 7/00, 21/08*
U.S. Cl. 177—164 11 Claims





1. Weighing apparatus of the electromechanical type comprising:

(a) first weighing means (1,32) including:

(1) a first frame (2);

(2) first load receiving means (5,33) connected with said frame by parallel guide means (3,4) for movement relative to said frame;

(3) load-responsive means (9) connected with said frame for determining the magnitude of the applied load; and

(4) first motion-transmission lever means (7) pivotally connected with said frame for transmitting to said load-responsive means movement of said load receiving means relative to said frame;

(b) second load receiving means (16,28) connected by parallel guide means (14,15; 26,27) for movement relative to a frame upon the application thereto of a load to be measured; and

(c) second motion-transmitting lever means (17,30) for transmitting movement of said second load receiving means to said first load receiving means.

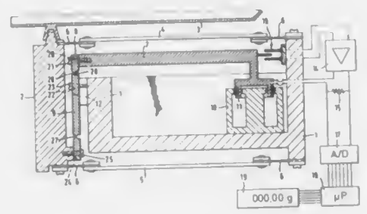
4,938,301

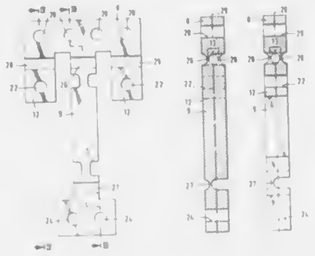
ELECTRONIC BALANCE WITH SCALE ON TOP

Eberhard Stadler; Matthias Eger, both of Göttingen; Gottfried Nolte, Bovenden, and Eberhard Lübke, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Göttingen, Fed. Rep. of Germany

Filed Nov. 8, 1989, Ser. No. 433,264
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1988, 3838906
Int. Cl.[5] G01G *7/00, 1/18*
U.S. Cl. 177—212 11 Claims

1. An electronic balance with a scale on top with two guide rods which connect a load receiver to a system carrier fixed to a housing as parallel guides, with at least one translation lever which is connected to the system carrier by means of two springs and with a coupling element which transfers the force corresponding to the mass of the weighed material from the load receiver to a shorter lever arm of the translation lever while a counteracting force attacks a longer lever arm of the translation lever, characterized in that the two springs and the coupling element are connected to each other by a common cross piece and consist of a single sheet of metal, the thickness of the sheet of metal is greater than the length of the shorter lever arm of the translation lever and the material thickness is reduced in such a manner both in the area of the two springs and in the area of the coupling element, the shorter lever arm





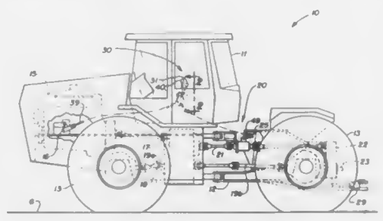
is formed by an offset of the thin area of the coupling element generated in the longitudinal direction of the lever in relation to the thin areas of the springs.

4,938,302

TRACTOR POWER-TAKEOFF ENGAGEMENT LIMIT

Allan N. Schott, Warren, and Mark B. Oleski, Winnipeg, both of Canada, assignors to Ford New Holand, Inc., New Holland, Pa.

Filed Oct. 5, 1989, Ser. No. 417,420
Int. Cl.[5] B60K *25/00*
U.S. Cl. 180—53.1 16 Claims



1. In a tractor having a frame supported by ground-engaging wheels mobilely supporting said frame over the ground; an engine supported by said frame to provide operative power for said tractor, said engine having a throttle operatively associated therewith to vary upon movement thereof the speed of operation of said engine; a power-takeoff means selectively operatively engageable with said engine for the selective provision of rotational power to an output shaft engaged with an implement connected to said tractor; and control means operatively connected to said throttle and to said power-takeoff means to permit the remote operative control thereof, an improved control means comprising:

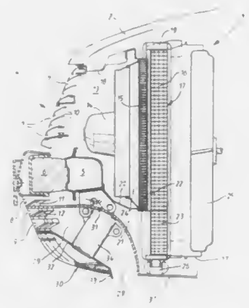
an interlock means operatively associated with said throttle and with said power-takeoff means to prevent an operative engagement of said power-takeoff means with said engine for the delivery of rotational power from said engine to said attached implement whenever said engine is operating at a speed of operation greater than a predetermined speed of operation.

4,938,303

COOLING AIR CIRCULATION SYSTEM IN THE FRONT END OF A MOTOR VEHICLE

Hans Schaal, Esslingen; Thomas Attinger, Stuttgart, and Wolfgang Kleineberg, Calw-Stammheim, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jul. 21, 1989, Ser. No. 383,211
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1988, 3825071
Int. Cl.[5] B60K *11/02*
U.S. Cl. 180—68.1 5 Claims



1. A cooling air circulation system at a front end of a motor vehicle having a water cooled internal combustion engine, a water cooler, and a supplemental cooler comprising:

an upper duct sealed at its sides and extending from upper inlet openings at a wall of the front end to an upper section of the water cooler;

a condenser of an air conditioning system positioned in front of the upper section of the water cooler and an electric fan positioned in front of the condensor arranged in the upper duct;

a fan cowl of the fan extending to the water cooler and tightly enclosing the fan and condenser;

a central duct sealed at its sides and extending from central inlet opening at the wall of the front end to a lower section of the water cooler, cooling air of the central duct flowing exclusively through the lower section of the water cooler;

and a lower duct sealed at its sides and extending from lower inlet opening to an outlet opening which lies in front of the water cooler at an underside of the front end, the supplemental cooler being arranged in the lower duct.

4,938,304

THROTTLE VALVE CONTROL APPARATUS FOR A VEHICLE

Hisaaki Yamaguchi; Itaru Okuno; Nagahisa Fujita, and Koji Hosoda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 13, 1988, Ser. No. 243,862
Claims priority, application Japan, Sep. 14, 1987, 62-230828
Int. Cl.[5] B60K *28/16, 31/00;* F02D *11/10*
U.S. Cl. 180—197 12 Claims

1. A throttle valve controlling apparatus for a vehicle comprising:

a motor, wherein operation of said motor is controlled in accordance with a running state of the vehicle;

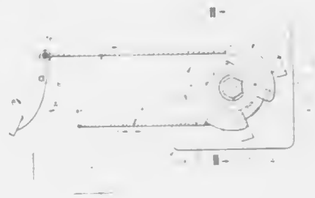
a mounting shaft rotatably driven by said motor at one end portion thereof;

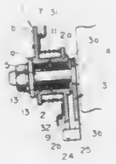
a first lever pivotably mounted to the mounting shaft at a first position and connected to an accelerator so as to pivot in a first direction in accordance with downward movement of the accelerator;

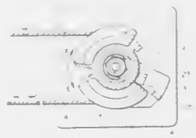
a second lever pivotably mounted to the mounting shaft at a second position, wherein said second position is between said first position and said one end portion of said mounting shaft, wherein said second lever is connected to the throttle valve so that the throttle valve is opened when the second lever is pivoted in said first direction;

urging means having a first urging force for urging the throttle valve in a direction of closing the throttle valve;

a third lever fixed to the mounting shaft at a third position, wherein said third position is between said second position and said one end portion of said mounting shaft;







a first stopper portion formed on the first lever;

a second stopper portion formed on the second lever, wherein said second stopper portion is adapted to abut the first stopper portion when the second lever is pivoted in said first direction; and

a coil spring having a second urging force which is greater than said first urging force, wherein said coil spring is fitted onto an outer periphery of the mounting shaft between said first position and said second position and is engaged at a first end portion with the first lever and at a second end portion with the second lever, and wherein said coil spring urges the second lever toward the first lever so as to abut the first stopper portion against the second stopper portion;

wherein the second lever is returned by the urging means in

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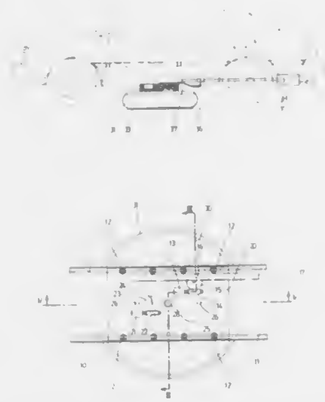
a direction opposite to said first direction upon a weaking of said second urging force caused by pivotal movement of the third lever, wherein said pivotal movement of said third lever is caused by the motor.

4,938,305

AUTOMATIC DIRECTION CHANGING APPARATUS FOR VEHICLE

Heung J. Park, 410-4, Beon 1-Dong, Dobong-Ku, Seoul, Rep. of Korea 132-061

Filed Nov. 23, 1988, Ser. No. 275,318
Claims priority, application Rep. of Korea, Nov. 24, 1987, 20343/1987
Int. Cl.[5] B66F *7/24*
U.S. Cl. 180—199 **5 Claims**



1. An automatic direction changing apparatus for a vehicle which comprises:

movement means which includes a cover plate (10) of rectangular shape mounted at a bottom portion of the vehicle, guide rails (11), (11) protruding at both sides of a bottom surface of said cover plate (10), a supporting plate (20) formed at a lower side of said cover plate (10), guide rollers (12), (12) fixed at an upper surface of the supporting plate (20), said guide rollers (12), (12) are meshed with said guide rails (11), (11), a first motor (13) fixed to the upper surface of said supporting plate (20) for producing forward and reverse revolution, a first worm gear (14) fixed to a rotary shaft of said first motor (13), a large and small gear (15), (16) meshed with said first worm gear (14) to reduce the speed of revolution of said motor (13), and a rack (17) which is fixed at a side of the bottom surface of said cover plate (10) and is meshed with said small gear (16);

turning means which includes a second motor (21) fixed at the upper surface of said supporting plate (20) for producing forward and reverse revolution, a second worm gear (22) fixed to a rotary shaft of said second motor (21), a large and small gear (23), (24) for speed reduction meshed with said second worm gear (22), a circular base plate (30), a circular internal tooth gear (25) fixed at a central portion of an upper surface of said circular base plate (30) and meshed with said small gear (24), a pair of supporting rollers (26), (26) fixed at a bottom surface of said supporting plate (20) to support the supporting plate (20), and a hollow shaft (28) fixed at a central portion of said supporting plate (20) and a lower end of said shaft being supported by a bearing (27) at the central portion of said circular base plate (30);

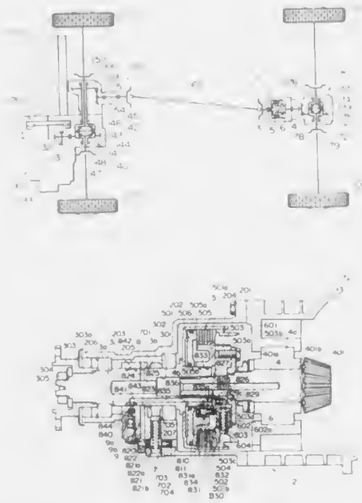
lift-up means for lifting up the vehicle which includes an air tube (31) fixed at a bottom surface of said circular base plate (30), a bottom plate (33) fixed at a bottom surface of said air tube (31) and connected to said circular base plate (30) with a pair of tensile springs (32), (32), a hose (34) fixed to said air tube (31) and passing through said hollow shaft (28), and a flexible hose (37) having a first end connected to said hose (34) with a ring coupling means (35) and a second end connected to an air supply source.

4,938,306

FOUR-WHEEL-DRIVE VEHICLE HAVING A TORQUE TRANSMISSION COUPLING FOR ALWAYS TRANSMITTING THE TORQUE

Masaharu Sumiyoshi, and Masaaki Noguchi, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Apr. 17, 1987, Ser. No. 39,389
Claims priority, application Japan, Apr. 21, 1986, 61-91467
Int. Cl.[5] B60K *17/34*; F16H *1/44, 57/04*
U.S. Cl. 180—233 **16 Claims**



1. A four-wheel-drive vehicle comprising:

(a) an engine having a crankshaft;

(b) a transmission which is driven corresponding to the speed of the output rotation of said engine;

(c) a first differential means which is driven by said transmission to drive one of a front wheel system and a rear wheel system:

(d) a second differential means which is drivingly connected to the other one of said front and rear wheel systems; and

(e) a torque transmission coupling which is provided between said first and second differential means and which includes:

(i) an input shaft which is driven by said transmission via said first differential means;

(ii) an output shaft which is drivingly connected to said second differential means;

(iii) an oil pump which is always driven by the relative rotation between said input shaft and said output shaft to generate oil pressure in response to the speed of said relative rotation due to oil pressure supplied to said oil pump corresponding to the revolution of said engine; and

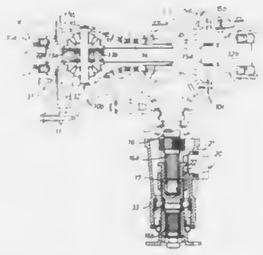
(iv) a friction clutch mechanism which engages said input shaft and said output shaft with each other by said oil pressure generated by said oil pump.

4,938,307

POWER TRANSFER DEVICE FOR FOUR-WHEEL DRIVE

Kan Sasaki, Nagoya; Keisuke Takimura, and Nobuaki Katayama, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 22, 1989, Ser. No. 327,104
Claims priority, application Japan, Mar. 23, 1988, 63-38195
Int. Cl.[5] B60K *23/08*
U.S. Cl. 180—247 **2 Claims**



1. A power transfer device for four-wheel drive in combination with a power transmission, comprising:

a differential arranged to split the driving torque from said power transmission into two torque delivery paths respectively for front-wheel drive and rear-wheel drive;

a first output shaft assembly in drive connection to said differential to transfer the split driving torque to front or rear-wheel drive axles;

a second output shaft assembly in drive connection to said differential to transfer the split driving torque to rear or front-wheel drive axles, one of said output shaft assemblies being composed of a pair of split shafts; and

a shift mechanism including a clutch sleeve slidably mounted on one of said split shafts for rotation therewith and shiftable between a first position where it is engaged with the other split shaft to select a four-wheel drive mode at the transfer device and a second position where it is disengaged from the other split shaft to select a two-wheel drive mode at the transfer device;

wherein said shift mechanism includes a manually operated plug member rotatably coupled within a corresponding bore in a peripheral wall of a housing of said transfer device, said plug member having an inner end portion integrally provided with an eccentric cam pin which is displaced in a predetermined distance from the rotation axis of said plug member and engaged with an annular groove formed on said clutch sleeve, said plug member being integrally formed with a flange portion to be fastened to said housing and having a columnar body and a hexagonal head which are integrally formed with said flange portion for rotation therewith, said columnar body having an inner end integrally formed with said eccentric cam pin and being rotatably coupled within the corresponding bore in the peripheral wall of said housing, and means for releasably fastening said plug member to said housing at a rotated position, said means for releasably fastening said plug member being in the form of a fastening bolt threaded into the peripheral wall of said housing through a hole in the flange portion of said plug member.

4,938,308

INERTIAL RUNNING ENERGY STORAGE DEVICE FOR VEHICLES

Masaru Takayama, No. 4-43, Kamishinozaki-cho, Edogawa-ku, Tokyo, Japan

Filed Sep. 8, 1988, Ser. No. 241,475
Claims priority, application Japan, Jul. 2, 1988, 63-165482
Int. Cl.[5] B60K *25/10*; B60S *9/10*
U.S. Cl. 180—165 **1 Claim**



1. An inertial running energy storage device for vehicles comprising:

chain means for interconnecting a wheel to an engine of a vehicle so that said wheel can be driven by said engine for rotation;

brake means for applying a brake to said wheel;

a first cylinder;

a first piston rod connected to the brake means and being slidably mounted in said first cylinder;

a compressor including a clutch portion,

means for interconnecting said first cylinder with said clutch portion so that upon application of the brake means and thereby simultaneous movement of said first piston rod within said first cylinder, said clutch portion is moved such that said chain means is engaged to thereby activate said compressor;

an air tank storing compressed air forced by said compressor into said air tank when said compressor is activated;

a conduit connected to said air tank and said compressor.

a stand pivotably connected to the vehicle for movement between a raised, running position and a lowered, parking position;

a second cylinder pivotably connected to a connection point on the body of said vehicle;

a second piston rod being pivotably connected to said stand and being slidably mounted in said second cylinder to pivot said stand between said raised position and said lowered position;

a directional control valve for supplying compressed air from said air tank to opposite ends of said second cylinder so that said second piston rod can be selectively moved into and out of said second cylinder to force the pivoting of said stand toward said raised position and said lowered position, respectively, and

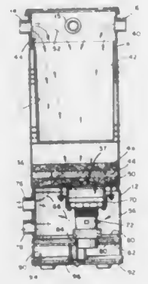
an actuating rod for controlling the release of compressed air to each end of said second cylinder.

a conduit connected to said air tank and said directional control valve.

two conduits interconnecting said directional control valve and said second cylinder to provide fluid communication therebetween and controlled movement of said second piston rod.

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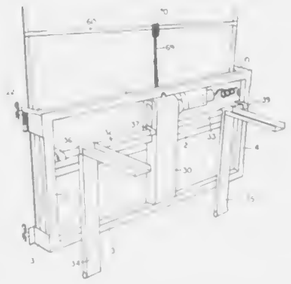
4,938,309
BUILT-IN VACUUM CLEANING SYSTEM WITH IMPROVED ACOUSTIC DAMPING DESIGN
Wayne Emdy, North Hollywood, Calif., assignor to M.D. Manufacturing, Inc., Bakersfield, Calif.
Filed Jun. 8, 1989, Ser. No. 363,090
Int. Cl.[5] A47L *9/00*; F01N *1/14, 1/24*
U.S. Cl. 181—231 **42 Claims**



1. An improved power unit for a vacuum cleaning system including a canister having a sidewall, a top and a bottom, an upper interior hollow compartment housing a removable dirt and dust collection receptacle and including a partition base which separates the upper and interior hollow compartment from a second interior compartment which houses at least one motor and armature interiorly extending therefrom, with the at least one motor emitting noise when the at least one motor is turned on, the improvement comprising:
a. a baffle within said canister positioned to define one end of said second interior compartment;
b. a first acoustic damping means supported on said baffle;
c. a second acoustic damping means supported on said bottom of said canister;
d. said sidewall, said baffle and said second acoustic camping means defining an acoustic damping chamber;
e. said baffle and said first acoustic damping means comprising at least one opening to permit a portion of the armature of said at least one motor to extend through the baffle and first acoustic damping means into said acoustic damping chamber;
f. exhaust means in said sidewall to permit hot air exhaust from said at least one motor to exit said second interior compartment; and
g. air intake means in said sidewall to permit cooling air to enter said acoustic damping chamber;
h. whereby said first acoustic damping means and said second acoustic damping means reduce the noise emitted from said at least one motor.

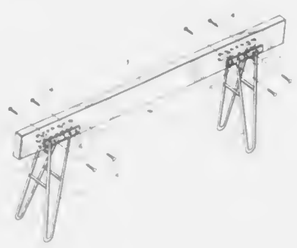
4,938,310
SCAFFOLD LIFT
William A. Larsen, R.R. 2, Box 31A, Dell Rapids, S. Dak. 57022
Filed Oct. 17, 1988, Ser. No. 258,901
Int. Cl.[5] E04G *1/20*
U.S. Cl. 182—129 **7 Claims**

1. A scaffold lift which will slidably attach to the frame of a scaffold having a frame made of pipes consisting of
a carriage frame having a top frame member, a bottom frame member, a right frame member, and a left frame member attached to each other so as to form a rectangle, and a middle frame member extending parallel to the top and bottom frame members and attached to the right and left frame members,
the carriage frame having a front, a back, a top, a length and a plane parallel to the rectangle of the carriage frame,
four guide members, one attached at each corner of the carriage frame, extending behind and perpendicular to the plane of the carriage frame,
a plurality of wheels on the guide members for engaging the scaffolding frame,



a chain, a chain support bracket which is attached to the top of the scaffold frame,
a chain drive connected to a motor attached to the carriage frame, the chain running through the chain drive,
a means of lifting a load attached to the carriage frame.

4,938,311
SAWHORSE
Linsey L. Combs, Rte. 4, Box 185, Holdenville, Okla. 74848
Filed Apr. 17, 1989, Ser. No. 341,423
Int. Cl.[5] B27B *21/00*; B25H *1/06*
U.S. Cl. 182—155 **10 Claims**

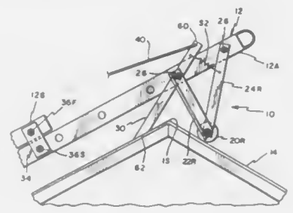


1. As a manufacture, a kit for use with a pre-dimensional piece of wood to form a load support system comprising a pair of identical support assemblies wherein each support assembly includes at least one wood support member, a pair of spaced apart side plates connected to a pair of interconnected legs formed from bent metal tubing, an inboard and outboard fastening means for securing said side plates to a piece of wood inserted therebetween, said piece of wood being dimensioned such that it rests on said wood support member and means for connecting said wood support member to said interconnected legs.

4,938,312
LADDER RIDGE HOOK AND STAND OFF
Thomas E. Trail, 803 4th St., Radford, Va. 24141
Filed Oct. 17, 1989, Ser. No. 422,609
Int. Cl.[5] E06C *7/06, 7/48*
U.S. Cl. 182—206 **20 Claims**

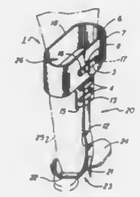
1. A ridge hook device for a ladder comprising:

two arms, each having an upper end with means for attachment to a ladder;
two wheels, each mounted to a lower end of a corresponding one of said two arms, said wheels and said arms secur-



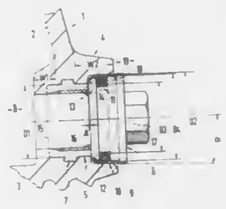
able in a position relative to a ladder to hook a ladder to a ridge of a roof; and
unhooking means extending from adjacent said arms to a location remote from said arms and operable to unhook a ladder from a location near the lower end of a ladder.

4,938,313
CUSHIONED WRAP-AROUND PAD FOR USE WITH A POLE OR TREE CLIMBER
James J. Rullo, Elmira, and Mark A. Colian, Binghamton, both of N.Y., assignors to Buckingham Manufacturing Company, Inc., Binghamton, N.Y.
Filed Dec. 7, 1988, Ser. No. 280,772
Int. Cl.[5] A63B *27/00*
U.S. Cl. 182—221 **23 Claims**



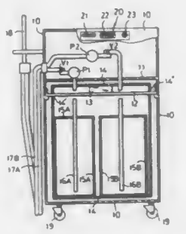
1. A wrap-around leg pad for attachment to an upper portion of a tree or pole climber which includes an elongated rigid member having a spur and a boot support on a lower end thereof, said wrap-around pad comprising an elongated, flexible, cushioned pad for complete encirclement of an upper tibia portion of a leg to provide complete wrap-around support and comfort thereto, said elongated flexible cushioned pad further comprising a vertical extension means for supporting said elongated rigid member, and integral securing means for adjustably securing said wrap-around pad upon itself, whereby any sized tibia can be accommodated by said wrap-around pad as it is wrapped about said leg.

4,938,314
PLASTIC OIL PAN
Klaus Sitzler, Stuttgart, Fed. Rep. of Germany, and Herbert Ampferer, Sachsenheim, Austria, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany
Filed Nov. 1, 1989, Ser. No. 429,993
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1988, 3838250
Int. Cl.[5] F16N *33/00*
U.S. Cl. 184—1.5 **9 Claims**



1. A plastic oil pan for internal-combustion engines having an oil drain plug which is screwed into a threaded insert, the threaded insert resting in a wall of the plastic oil pan, wherein the oil drain plug is braced by means of a projection with respect to the threaded insert and cooperates with at least one sealing means constructed as a radial seal within a circular-cylindrical recess formed between a thickening of the wall and a receiving section of the oil drain plug.

4,938,315
APPARATUS FOR EXCHANGING OIL FOR DEVICE HAVING OIL PAN FOR CIRCULATING OIL THEREBETWEEN
Yasuto Ohta; Masaru Kawabe; Fumitaka Uemura; Yoshiyuki Satoh, and Naohiko Suzuki, all of Tokyo, Japan, assignors to Tokyo Tatsuno Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1988, Ser. No. 288,885
Claims priority, application Japan, Apr. 14, 1988, 63-90259
Int. Cl.[5] F16N *33/00*
U.S. Cl. 184—1.5 **5 Claims**



1. Apparatus for exchanging oil comprising:
a pair of vessels one for waste oil to be taken and the other for fresh oil stored to supply;
a pair of solenoid valves and pumps for extracting waste oil and supplying fresh oil;
a pair of conduits respectively extending from said vessels through said concerned valve and pump, each other ends of which is connected to one and common nozzle;
means for determining the amount of waste and fresh oils;
a key board;
an indicator;
controlling means connected with the valves, pumps, indicator for actuating thereof and with the determining means

and key board to be actuated thereby and so programmed that the first solenoid valve and pump are actuated to extract waste oil in some amount to be taken into the first vessel through the single nozzle and the first conduit, then the second solenoid valve and pump are actuated to supply fresh oil in some amount from the second vessel through the second conduit and the single nozzle, and actuation thereof is paused for some time period, which is repeated a few or several times to be stopped when the total amount of the extracted and supplied oil which is determined by the determining means reaches at a preset amount, and a warning device connected with the controlling means so that, when an amount of the first extracted oil is insufficient in comparison with a predetermined value, the warning device is energized so that the nozzle can be rearranged in place.

4,938,316

LUBRICATING DEVICE

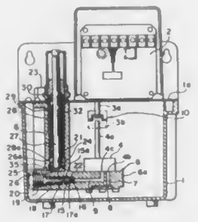
Minoru Ichikawa, Owariasahi; Kotaro Kashiyama, Inuyama, and Tomomitsu Furukawa, Nagoya, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Filed Jan. 11, 1989, Ser. No. 295,799

Claims priority, application Japan, Feb. 3, 1988, 63-23512

Int. Cl.[5] **F16N** *7/14, 7/36, 13/10*

U.S. Cl. 184—27.2 **6 Claims**



1. A lubricating device mounted on a tank cover fixed to a lubricating oil tank for intermittently supplying a lubricating fluid to a plurality of sliding portions to be lubricated in machining tools, industrial equipment and power machines comprising:

an electric motor energizingly connected to a rotating gear pump disposed near a bottom of said tank, a plunger pump fixed to the tank cover; and

an electronic control unit for controlling actuation and suspension of said gear pump;

wherein said plunger includes an oil flow passage 9, in communication with an outlet port of said gear pump, to cause oil under pressure to flow into a selector valve unit 17, connected to said flow passage, a piston unit 25, connected to said selector valve unit and an outlet port connected to said piston unit.

4,938,317

CHECK-OUT COUNTER WITH STOPPING ELEMENTS

Mitsunori Kohno; Yukuo Kurimoto; Takao Umebara, and Hiromasa Akita, all of Shizuoka, Japan, assignors to Tokyo Electric Company, Ltd., Tokyo, Japan

Filed Jul. 22, 1988, Ser. No. 223,029

Claims priority, application Japan, Jul. 28, 1987, 62-115181[U]; Sep. 22, 1987, 62-144897[U]

Int. Cl.[5] **A47F** *9/04*

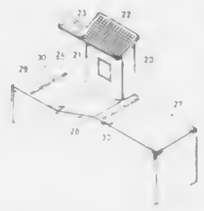
U.S. Cl. 186—61 **7 Claims**

1. A check-out counter table upon which a basket is placed, comprising:

a vertical type bar code reader having a reading window formed in a front wall thereof,

a stationary commodity receiving surface extending on opposite sides of said bar code reader, and

first stopper means mounted in a recessed portion of said commodity receiving surface for presenting a slipping



resistance surface which lies in substantially the same plane as said commodity receiving surface so as to provide slipping resistance with a bottom portion of said basket when passed over said surface of said stopper means and which is located forward of said bar code reader.

4,938,318

ADJUSTABLE SHOE MOUNTING STRUCTURE FOR BICYCLE BRAKE ASSEMBLY

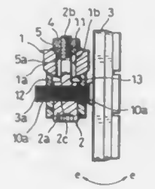
Yasunori Ishibashi, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Aug. 2, 1989, Ser. No. 388,007

Claims priority, application Japan, Aug. 9, 1988, 63-105772[U]

Int. Cl.[5] **B62L** *1/16*

U.S. Cl. 188—24.19 **11 Claims**



1. An adjustable shoe mounting structure for a bicycle brake assembly comprising:

a bolt reception bore penetrating through a shoe support portion of the brake assembly;

a support bolt loosely insertable into said reception bore, one end of said support bolt being threaded and projectable from one end of said reception bore, the other end of said support bolt being projectable from the other end of said reception bore and formed with a cross bore extending transversely of said support bolt;

a shoe mounting pin extending from a brake shoe for insertion into said cross bore of said support bolt;

a nut engageable with said threaded end of said support bolt for transversely pressing said shoe mounting pin against said cross bore of said support bolt upon tightening of said nut to fix said brake shoe relative to said shoe support portion; and

a pin retainer mounted to said other end of said support bolt and having at least one pin retaining hole in alignment with said cross bore for press-fitting to said shoe mounting pin to frictionally restrain said shoe mounting pin from moving relative to said cross bore.

4,938,319

LINEARLY ADJUSTABLE FORCE TRANSFER ELEMENT WITH STEPLESS INERTIA-SENSITIVE BLOCKING

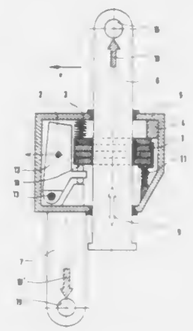
Hans-Hellmut Ernst, Bismarckallee 50, D-2070 Ahrensburg, Fed. Rep. of Germany

Filed Nov. 10, 1988, Ser. No. 269,330

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1987, 3738797

Int. Cl.[5] **G05G** *7/14;* **B60N** *1/00;* **B60R** *21/32*

U.S. Cl. 188—67 **13 Claims**



1. A linearly adjustable force transfer device having inertia-sensitive blocking means for intercepting heavy masses under deceleration forces, said device comprising:

first and second load carriers that are lineraly movable with respect to each other;

at least one tiltable plate joined to said first load carrier for tilting movement for bearing against a surface of said second load carrier;

a sensor mass mounted on said first load carrier for tilting said tiltable plate into frictional contact with said surface of said second load carrier upon application of a deceleration force on said force transfer device, thereby locking said load carriers together against linear movement with respect to each other; and

sensor spring means mounted on said first load carrier and adapted for resisting movement of said sensor mass.

4,938,320

APPARATUS AND METHOD OF UTILIZATION THEREOF OF A THERMAL COMPENSATING SELF-ADJUSTING VEHICLE WHEEL DRUM BRAKE

Robert W. Hyde, and Frank W. Brooks, Sr., both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 10, 1989, Ser. No. 295,273

Int. Cl.[5] **F16D** *65/56*

U.S. Cl. 188—79.52 **5 Claims**

1. A thermal compensating self-adjusting vehicle wheel drum brake with primary and secondary shoes, one of said shoes having an aperture with a pivoting surface, said brake in combination comprising:

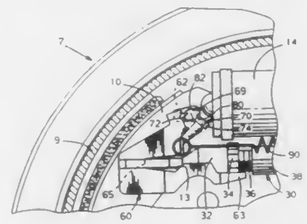
a wheel cylinder with pistons contacting said brake shoes, said wheel cylinder pistons actuating said brake by moving said shoes outward;

a plate means for mounting said wheel cylinder and said shoes to said vehicle;

an adjuster strut positioned between said shoes including a rotatable star wheel for extending said strut thereby adjustably extending the distance between said shoes;

a compliantly biased adjuster pawl for contacting said star wheel and for turning said adjuster star wheel with a portion inserted and mated within said shoe aperture for pivotal movement with respect to said shoe upon movement of said shoes in a predetermined direction; and

a thermal elongating stop means with a column portion for insertion within said shoe aperture angularly extendible at a predetermined temperature for contacting and wedging said adjuster pawl portion within said aperture for providing a column force transmittal effect and preventing the



pivotal motion of the same whereby said adjuster pawl can pivot to turn said star wheel when said brake shoes are moved in a given predetermined direction and said adjuster pawl is prevented from pivotal motion by said stop means when said shoes are moved in said predetermined direction when the temperature of said brake exceeds a predetermined temperature.

4,938,321

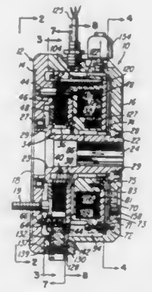
LIQUID COOLED BRAKE APPARATUS

Reginald D. Kelley, Simpsonville, S.C., and Jerry L. Yater, Fairfield, Ohio, assignors to Force Control Industries, Inc., Fairfield, Ohio

Filed Jul. 21, 1989, Ser. No. 382,917

Int. Cl.[5] **F16D** *55/38, 65/853*

U.S. Cl. 188—171 **30 Claims**



1. Apparatus for braking the rotation of a shaft, comprising a hub member having a center axis and means defining a liquid coolant inlet passage, means for connecting said hub member to the shaft for rotation therewith, at least one annular brake disc mounted on said hub member for rotation therewith, means connecting said inlet passage to the inner portion of said brake disc, a housing surrounding said hub member and including an annular base section coupled to a closure section for enclosing, a liquid coolant, at least one non-rotatable annular brake plate disposed adjacent said brake disc and connected to said housing, said coolant flowing outwardly through said inlet passage within said hub member and between said brake disc and plate in response to rotation of said hub member and said brake disc, means defining a recirculating passage within said housing for recirculating said coolant from said brake plate and

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disc into said inlet passage of said hub member, a non-rotatable annular thrust member and a non-rotatable annular pressure member supported by said housing with said brake plate and disc disposed therebetween, an annular non-rotatable electrical coil and an annular armature member disposed within said housing, an annular coil body secured within said housing and supporting said coil, means for moving said thrust member between a brake release position and a brake engaged position clamping said brake disc and plate together in response to energizing said coil and axial movement of said armature member, means defining a coolant surge passage connecting said recirculating passage to said inlet passage, and means for displacing oil within said surge passage inwardly into said inlet passage in response to movement of said armature member for producing a surge of coolant between said brake plate and disc when said thrust member moves towards said brake engaged position.

4,938,322

MULTI-DISC DAMPER USING VISCOUS FLUID

Seiji Sugasawara; Ken Tsuneki; Kazuyoshi Ohshima; Youjirou Nakayama; Tatsuya Hayakawa, and Seiichiroh Tamura, all of Tokyo, Japan, assignors to Sugatsune Industrial Co., Ltd., Tokyo, Japan

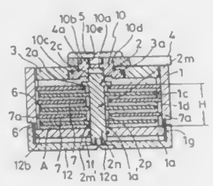
PCT No. PCT/JP88/00550, § 371 Date Feb. 10, 1989, § 102(e) Date Feb. 10, 1989, PCT Pub. No. WO88/09884, PCT Pub. Date Dec. 15, 1988

PCT Filed Jun. 8, 1988, Ser. No. 310,721

Claims priority, application Japan, Jun. 10, 1987, 62-144881; Jun. 10, 1987, 62-144882; Jun. 22, 1987, 62-154794; Jul. 1, 1987, 62-164665; Jul. 1, 1987, 62-164666; Jul. 8, 1987, 62-170713

Int. Cl.[5] F16D *57/02*

U.S. Cl. 188—290 3 Claims



1. A multi-disc damper using viscous fluid comprising within a casing a number of movable discs provided on a rotary shaft capable of being rotated by external force so as to be rotated with the shaft; a number of fixed discs not interlocked with the rotary shaft for being free of rotary movement and arranged in an alternating arrangement with the movable discs; a viscous fluid material filling the space between the movable and the fixed discs; wherein said fixed discs are not rotatable around the rotary shaft due to engagement with the casing but are axially deflectable and the movable discs are also axially deflectable; and means, provided on said rotary shaft, for adjusting the overall drag of the damper; said adjusting means successively engaging, and thereby rotating, said movable discs so that the overall drag of the damper varies according to the number of movable discs engaged.

4,938,323

HYDRODYNAMIC BRAKE

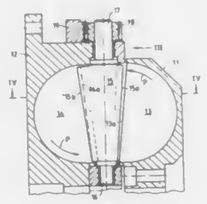
Heinz Höller; Klaus Nolz, and Georg Wahl, all of Crailsheim, Fed. Rep. of Germany, assignors to Voith Turbo GmbH & Co. AG, Fed. Rep. of Germany

Filed Apr. 3, 1989, Ser. No. 332,787

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1989, 3811246

Int. Cl.[5] F16D *57/02*

U.S. Cl. 188—296 17 Claims



1. A hydrodynamic brake comprising:

a rotor blade wheel and a stator blade wheel defining a common longitudinal axis and together forming a toroidal work chamber, said blade wheels providing a braking action due to a flow of braking fluid within said work chamber;

each said blade wheel having a series of substantially flat blades in said work chamber, each said blade being mounted radially and stationary with respect to its corresponding blade wheel and said blades being angled with respect to said longitudinal axis; and

control means for controlling the flow of braking fluid between said blade wheels within said work chamber and thereby controlling the braking action of the brake.

4,938,324

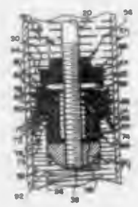
AUTOMATIC DERAILLEUR SHIFTER

Laroy J. Van Dyke, Audubon, Pa., assignor to Bike-O-Matic, Inc., Audubon, Pa.

Filed Dec. 5, 1988, Ser. No. 279,860

Int. Cl.[5] F16F *9/34;* F16H *9/00*

U.S. Cl. 188—317 8 Claims



1. Automatic derailleur shifter for use with a bicycle of the type having a frame, gears, or chain rotatable about the gears, or derailleur to shift the chain from gear to gear, a shifter having a fixed arm connected to the frame and a movable arm povitable about the fixed arm and being connected to the derailleur through a flexible cable, the improvement comprising a hydraulic cylinder, containing hydraulic fluid therewithin the hydraulic cylinder being connected intermediate the fixed arm and the movable arm, the hydraulic cylinder comprising a hollow, cylindrical body having an interior periphery;

a piston rod reciprocal within the body, the piston rod terminating in a piston receiving end,

a dual element piston secured to the piston rod and being adapted for movement within the hollow interior of the cylindrical body between a first, downward position and a second, upward position,

the piston comprising a fixed piston element and a movable piston element,

the fixed piston element being secured to the piston rod in spaced relationship from the piston rod end, the fixed piston element having an outer diameter that is less than the inner diameter of the cylindrical body, the outer diameter of the fixed piston element and the inner diameter of the cylindrical body defining a first hydraulic fluid passage therebetween to permit substantially unrestricted hydraulic fluid flow therethrough,

the fixed piston element comprising a downwardly extending, bottom, peripheral flange, the flange contacting the movable piston element when the piston is moved to the said first, downward position, the flange not contacting the movable piston element when the piston is moved to the said second, upward position,

the movable piston element being provided with a central bore of diameter larger than the diameter of the piston rod, the central bore receiving a portion of the piston rod therethrough, the central bore defining a second substantially unrestricted, hydraulic fluid passage,

the bottom peripheral flange, the fixed piston element and the movable piston element defining a fourth hydraulic fluid channel therebetween when the piston is moved to the said first, downward position; and restrictive channel means provided in the fixed piston element to form a third, restricted hydraulic fluid channel through the fixed piston element,

the restrictive channel means being in fluid communication with the first hydraulic fluid passage and the fourth hydraulic fluid passage when the piston is moved to the first, downward position and being in fluid communication only with the first hydraulic fluid passage when the piston is moved to the, second, upward position.

4,938,325

VIBRATION DAMPING APPARATUS FOR PULSE MOTOR

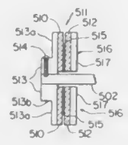
Hiroshi Nakagawa, Mie, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 880, Jan. 6, 1987, abandoned. This application Sep. 20, 1988, Ser. No. 247,067

Claims priority, application Japan, Jan. 9, 1986, 61-002833; Mar. 14, 1986, 61-037306

Int. Cl.[5] H02K *7/02*

U.S. Cl. 188—378 8 Claims



1. A vibration damping apparatus for a pulse motor having a movable member, comprising:

a back plate secured to said movable member of said pulse motor for serving as a base part of said apparatus;

a first permanent magnet mounted on a flat plate portion of said back plate for transmitting movement of the motor to later stages of said vibration damping apparatus; and

an inertia member disposed in opposed relation to said first permanent magnet and movable relative to said first permanent magnet in a plane parallel to said flat plate portion and having a second permanent magnet thereon magnetically couplable with said first permanent magnet, said inertia member having a natural frequency substantially equal to the natural frequency of said pulse motor without said inertia member, whereby when said back plate is being moved, said inertia member will tend to lag behind said back plate, and upon cessation of movement of said back plate, said inertia member will be moved to bring the poles of said second magnet into alignment with the opposite poles of said first magnet.

4,938,326

CARRYING CASE HAVING A LID WITH A COMPARTMENT MOUNTED ON THE SURFACE OF THE LID

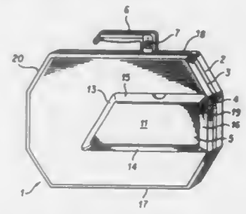
Michael Pfeiffer, Ismaning b.Munich, Fed. Rep. of Germany, assignor to MP Lizenzen- und Reisegepaeck Vertriebs GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 20, 1989, Ser. No. 325,640

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1988, 8804178[U]

Int. Cl.[5] A45C *3/02, 5/04, 15/00, 13/28*

U.S. Cl. 190—109 2 Claims



1. A carrying case comprising an octagonal shaped body fitted with an octagonal shaped lid, a trapezoidal shaped compartment located on an octagonal shaped surface of the octagonal shaped lid, the compartment being fitted with a trapezoidal shaped lid, the entire perimeter of the trapezoidal shaped lid being defined by four slanting surfaces each which forms an obtuse angle with the octagonal shaped surface of the octagonal shaped lid, each of the slanting surfaces having an outer edge parallel to an edge of the octagonal shaped surface of the lid, the body including a wall perpendicular to said octagonal shaped surface and on which is mounted a carrying handle for the carrying case, the carrying handle being substantially L-shaped and having a shorter leg oriented perpendicular to and fixed to said wall and a longer leg spaced from and oriented parallel to said wall and having its major dimensions in a plane parallel to the plane of said octagonal shaped surface, and a lock for said case mounted in said shorter leg.

4,938,327

MOTOR-POWERED DRIVE DEVICE

Tsutomu Tominaga, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1989, Ser. No. 363,004

Claims priority, application Japan, Jun. 8, 1988, 63-141000; Jun. 8, 1988, 63-141001; Jun. 13, 1988, 63-145168; Jul. 8, 1988, 63-171511

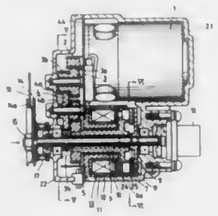
Int. Cl.[5] B60K *31/02;* F16D *27/112*

U.S. Cl. 192—0.02 R 7 Claims

1. A motor-powered drive device comprising: an electric motor; a plurality of stepped gears; an output gear, whereby drive power of said motor is transmitted through said stepped gears to said output gear, said stepped gears and said output gear constituting a reduction gear mechanism; a tubular clutch rotor having said output gear fixedly mounted on one axial

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end, and an opposite end provided with a magnetic attracting plane; an output shaft rotatably supporting said clutch rotor; a movable clutch plate supported by return springs on a flange mounted on said output shaft, said clutch plate being in facing relation to said magnetic attracting plane of said clutch rotor; a clutch coil for magnetically coupling said magnetic attracting plane of said clutch rotor to said movable clutch plate



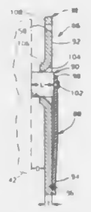
when electric current flows therethrough, said magnetic attracting plane of clutch rotor and, said movable clutch plate constituting an electromagnetic clutch portion; a rotary lever means for winding-up a load driving wire, said rotary lever means being fixed to one end of said output shaft; and a base plate means for partitioning said reduction gear mechanism and said electromagnetic clutch portion.

4,938,328

FLOATING WIPER FOR A PUMP PLATE OF A VISCOUS FLUID CLUTCH

Lawrence C. Kennedy, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1989, Ser. No. 404,538
Int. Cl.[5] F16D *35/02*
U.S. Cl. 192—58 B **3 Claims**



1. A wiper assembly mounted on a pump plate of a viscous fluid fan clutch, wherein the pump plate separates a pumping chamber and a reservoir and is laterally spaced from a driven clutch plate, the wiper assembly comprising:

(a) a wiper, formed from a low friction material, having a length greater than the sum of the distance between the pump plate and the clutch plate and the thickness of the pump plate;

(b) an opening in the pump plate complementary to the periphery of the wiper; and

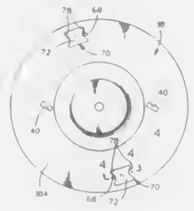
(c) spring means, secured at a first end to the pump plate and connected at a second end to the wiper, for urging the wiper through the opening into full-time contact with the clutch plate.

4,938,329

SNAP-IN-PLACE WIPER FOR A VISCOUS FLUID CLUTCH

Lawrence C. Kennedy, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1989, Ser. No. 383,474
Int. Cl.[5] F16D *35/02*
U.S. Cl. 192—58 B **4 Claims**



1. A pump plate assembly for separating a receiving chamber and a reservoir of a viscous fluid clutch, wherein the receiving chamber receives fluid from a shear zone in the clutch, the pump plate assembly comprising:

(a) a plate member having a front surface in communication with the reservoir and a rear surface in communication with the receiving chamber;

(b) means provided in the plate member for permitting the passage of a fluid from the receiving chamber to the reservoir including of least a pair of diametrically opposed orifices;

(c) an aperture provided in said plate member adjacent each orifice; and

(d) a wiper removably mounted on said plate member adjacent each orifice, wherein each wiper includes:

(i) a planar surface in engagement with the plate member rear surface, and

(ii) a stem projecting from the planar surface through a respective one of said apertures and terminating in a resiliently compressible bulb engaging the plate member front surface.

4. A pump plate assembly for separating a receiving chamber and a reservoir of a viscous fluid clutch, wherein the receiving chamber receives fluid from a shear zone in the clutch, the pump plate assembly comprising:

(a) a plate member having a front surface in communication with the reservoir and a rear surface in communication with the receiving chamber;

(b) means provided in the plate member for permitting the passage of fluid from the receiving chamber to the reservoir including at least a pair of diametrically opposed cross-shaped orifices, wherein each orifice includes a longitudinal channel and an intersecting cross channel; and

(c) a wiper removably mounted to the plate member at each orifice, each wiper including

(i) a planar surface in engagement with the plate member rear surface, and

(ii) a stem projecting from the planar surface through a respective one of said longitudinal channels and terminating in a cross bar complementary to the cross channel, said cross bar engaging said plate member front surface;

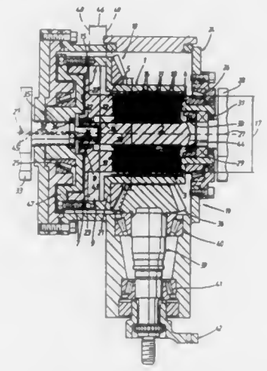
whereby a portion of the longitudinal channel remains uncovered after each wiper is slid to its selected location in the longitudinal channel.

4,938,330

FLUID-FRICTION CLUTCH WITH A COMPENSATING CHAMBER FOR VISCOUS FLUID

Henning Wallentowitz, Buch am Erlbach; Karl-Heinz Büchle, Sachsenheim, and Bernd Hirschmiller, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed May 19, 1989, Ser. No. 354,213
Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817082
Int. Cl.[5] F16D *35/00*
U.S. Cl. 192—58 C **10 Claims**



1. Fluid-friction clutch having an annular, rotatable clutch housing enclosing a rotatable central shaft comprising:

a clutch chamber enclosed concentrically between the annular clutch housing and the central shaft, the clutch chamber being closed on all sides for receiving a viscous fluid;

a disc stack, having discs adjacent a thrust ring and an axially displaceable adjusting piston, each arranged in the clutch chamber; and

a compensation chamber in constant communication with the clutch chamber and located between the disc stack and the adjusting piston for receiving the viscous fluid of the clutch chamber, the adjusting piston being movable within the compensation chamber between first and second lifting stroke positions to vary a volume of the compensation chamber and the volume of the compensation chamber being coordinated with a total volume of a plurality of shear gaps formed between adjacent discs of the stack so that when the adjusting piston is moved to one of the first and second lifting stroke positions, viscous fluid drains from between the plurality of shear gaps into the compensation chamber and a viscous coupling of the discs is prevented, a clutch torque of the clutch becoming zero.

4,938,331

FLUID COUPLING FOR ENGINE COOLING SYSTEM

Atsushi Ohmi, Anjo, and Makoto Nakagawa, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 25, 1989, Ser. No. 412,132
Claims priority, application Japan, Sep. 27, 1988, 63-241546
Int. Cl.[5] F16D *35/00*; F01P *7/02*
U.S. Cl. 192—58 B **6 Claims**

3. A fluid coupling for an engine cooling system, comprising:

a driving member;

a driven member having an engine cooling element and enclosing a sealed working chamber, wherein said driving member comprises a rotor fitted in said working chamber and having input means drivable by an engine to be cooled;

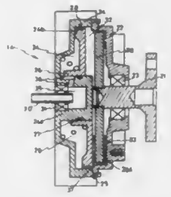
rotational torque coupling means between said driving member and said driven member, wherein said torque coupling means comprise a viscous fluid in said working chamber and engaging said rotor, whereby viscous shear in said viscous liquid transfers torque between said rotor and said driven member;

an engine coolant liquid temperature sensor; and

means for controlling said torque coupling means as a function of a sensed engine coolant liquid temperature,

whereby said engine cooling element is driven as a function of the engine coolant liquid temperature,

wherein said driven member comprises a casing rotatably supported by said driving member and a cover sealingly



mounted to said casing, and wherein said means for controlling said torque coupling means comprise a plate sealingly held in said driven member and rotating therewith, said plate cooperating with said driven member to define said working chamber, said plate being movable toward and away from said rotor, whereby a volume of said working chamber varies so as to vary both an area of contact of said viscous liquid on said rotor and the torque transferred from said rotor to said driven member,

wherein said means for controlling said torque coupling means comprise spring means in said cover and biasing said plate for movement and means for applying to a pressure chamber at a side of said plate opposite said working chamber, as a function of a temperature sensed by said temperature sensor, a gas pressure opposing a force of said spring means.

4,938,332

HYDRAULICALLY ACTUATED CLUTCH RELEASE MECHANISM

Joan J. Thomas, Pontiac; Phillip D. Yee, Troy; Daniel F. Kilawi, Rochester Hills, and Bryce W. Babcock, Saline, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Aug. 30, 1988, Ser. No. 238,650
Int. Cl.[5] F16D *25/062*
U.S. Cl. 192—85 CA **33 Claims**

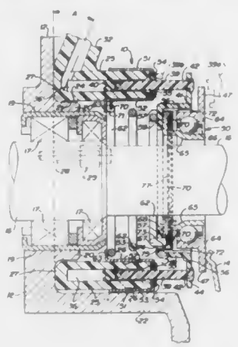
1. A hydraulically actuated clutch release mechanism comprising an annular housing adapted to be situated concentrically about a transmission input shaft and having an annular piston-reception groove extending axially from one end face of said annular housing, a tubular piston extending into said groove for axial movement in response to hydraulic pressure forces generated within the groove, an annular carrier, means for attaching said annular carrier to an exposed end of said tubular piston and generally concentric therewith, said carrier extending inwardly from the piston to define an annular seat surface located radially inward of the annular housing, and an annular anti-friction bearing adapted to be situated concentrically about said transmission input shaft, said bearing having an inner and outer race, and one such race being supported on said seat surface for conjoint axial movement of said bearing with said carrier and piston,

said annular seat surface being located in a radial plane

located between two imaginary radial planes defined by opposite axial end portion of the annular piston,

said carrier comprising a first radial wall attached to the piston, a second radial wall located radially inward of the annular housing, and an annular axial wall interconnecting the two radial walls,

said anti-friction bearing being located radially within said annular axial wall of said carrier and being located axially substantially between said first and second radial walls of said carrier whereby both said carrier and said anti-friction bearing are substantially radially nested within said



annular housing when said piston is in a fully retracted position relative to said housing,

said annular housing comprising a rigid plastic material,

a steel band encircling an outer annular surface of the annular housing to resist outward radial deformation of the housing wall due to said hydraulic pressure forces,

a second steel band in close adjacency to an inner annular surface of the housing to resist inward radial deformation of the annular housing, and

each said steel band extending axially from said one end face of the housing to a point along the length of the housing.

4,938,333

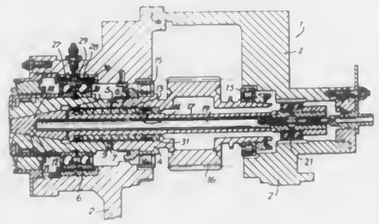
COIL SPRING FOR A SPRING CLUTCH ASSEMBLY

Jules G. Kish, West Haven, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1988, Ser. No. 288,306

Int. Cl.[5] F16D *13/08*

U.S. Cl. 192—415 **30 Claims**



1. A coil spring for a spring clutch assembly having teaser coils at each end, separated by central coils, the teaser coils having a larger outside diameter than the central coils, the coil spring further comprising:

transition coils disposed between the central coils and the teaser coils, the transition coils forming a gradual ramp in outside diameter therebetween, spread over from 2-6 coils.

4,938,334

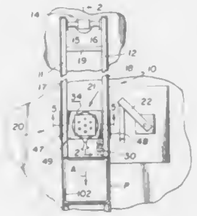
WORKPIECE TRANSPORT SYSTEM

Terrance E. McGinn, Sellersville, Pa., assignor to PS Group, Inc., Telford, Pa.

Filed Jun. 15, 1988, Ser. No. 206,818

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—346.1 **16 Claims**



1. In a workpiece transport system for transporting a workpiece carrier to an away from a work station,

a workpiece carrier,

means for conveying said workpiece carrier along a path to and away from the work station,

means for lifting and rotating said workpiece carrier at said work station to provide access to nay predetermined side of a workpiece support on said workpiece carrier from a common point at said work station,

said means for lifting and rotating said workpiece including a support member constructed and arranged to engage said workpiece carrier from the underside thereof,

direct drive lift means for moving said support member vertically with a high degree of accuracy between a rest position and a raised position along a vertical axis, said lift means including a first actuating means having a vertically movable actuating member and means connecting said actuating member directly to said support member, and

direct drive rotation means for rotating said support member with a high degree of accuracy about said vertical axis from a start position in a direct path of travel to a precise predetermined stop position located at any of a plurality of angular positions throughout 360° of rotation from said start position, said rotation means including a second actuating means having a rotatable actuating member and means engaging said rotatable actuating member directly to said support member.

4,938,335

METHOD AND DEVICES FOR CONTROLLING THE UNLOADING OF THE ITEMS IN AN AUTOMATIC SORTING PLANT

Francesco Canzianl, Via Contardo Ferrini 21, San Macario (Varese), Italy

Filed Sep. 6, 1988, Ser. No. 240,916

Claims priority, application Italy, May 23, 1988, 2069 A/88

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

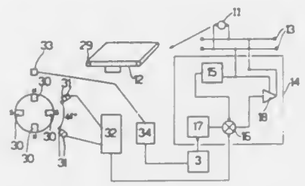
Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—365 **8 Claims**

1. A method for controlling the unloading operation in a sorting plant having a plurality of units that run in a feed direction along a fixed path, each unit having a moving belt for receiving items having different masses and motor means connected to the belt for moving the belt, each belt moving orthogonally to the feed direction in order to carry out the unloading operation of an item at an unloading station along the fixed path, the method comprising:

measuring the actual velocity of the belt near the unloading station using an electric transducer operatively connected to the belt;

using a signal generator to generate a selected desired velocity;



comparing the measured velocity to the selected desired velocity for the belt to produce a difference signal which is a function of the mass of the item on the belt the signal generator being connected to the electric transducer for producing the difference signal; and

controlling power being supplied to the motor means for moving the belt as a function of the difference signal.

4,938,336

SELECTIVE EJECTION CONVEYOR

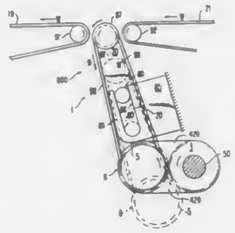
Agostino Aquino, Paterson, and Nicholas Polifroni, Cliffside Park, both of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 772,398, Sep. 4, 1985, Pat. No. 4,809,842. This application Oct. 12, 1988, Ser. No. 256,868

The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—369 **31 Claims**



1. A diverting device for selectively diverting articles from a conveyor belt path to a second location, the diverting device including at least one diverting conveyor operatively connected to a drive shaft and movable from a first conveying position to a second conveying position to divert said articles, said diverting conveyor comprising;

(a) a support member movable with respect to the drive shaft and having a drive roller operatively connected to the drive shaft and at least one idle roller rotatably mounted to the support member, wherein said support member is movable whereby said drive roller is movable in an arc coaxially with the drive shaft;

(b) drive means to operatively connect the drive shaft to the drive roller;

(c) a diverting conveyor belt operatively disposed on the drive roller and idle roller to define a diverting conveyor surface wherein the drive roller and idle roller are spaced from the drive shaft whereby the conveyor belt can be removed from the drive and idle rollers without disassembly of the diverting device;

(d) actuator means to selectively move the support member in relation to the drive shaft from the first conveying position to the second conveying position.

4,938,337

REMOVING A CAN FROM A ROTATING TURRET

Frederick W. Jowitt; Robert H. Harrison; Keith West, and Kevin J. Pope, all of Oxfordshire, United Kingdom, assignors to Metal Box Public Limited Company, United Kingdom

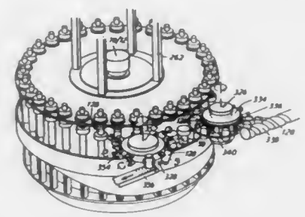
PCT No. PCT/GB87/00454, § 371 Date May 6, 1988, § 102(e) Date May 6, 1988, PCT Pub. No. WO88/00255, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 26, 1987, Ser. No. 193,455

Claims priority, application United Kingdom, Jul. 7, 1986, 8616514

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—377 **14 Claims**



1. Transfer apparatus for removing a container, or other article, from a rotating turret, which apparatus comprises:

(a) a transfer wheel mounted for rotation adjacent the turret on a stationary support;

(b) a driving shaft rotatably carried in said support and drivingly connected to said transfer wheel;

(c) a plurality of container holding means mounted at circumferentially spaced positions around said transfer wheel, each said container holding means comprising

(i) a radial shaft rotatably mounted in said transfer wheel for rotation about its longitudinal axis and incorporating a gear pinion;

(ii) a jaw assembly carried at the outer end of said radial shaft and comprising opposed jaw members mounted on said radial shaft for relative movement between gripping and relaxed positions thereby to grip and release a said container, and jaw actuating means extending eo-axially through said radial shaft and carrying a first spring biased cam follower, for effecting said relative movement of said jaw members;

(iii) a gear rack slidably mounted in said transfer wheel for movement normal to said radial shaft and carrying a second spring biased cam follower, said gear rack engaging said gear pinion for effecting rotation of said radial shaft;

(d) a first cam mounted to said stationary support and engaging said first cam follower, said first cam being shaped to effect operation of said jaw members in a predetermined manner during rotation of said transfer wheel relative to said stationary support; and

(e) a second cam mounted to said stationary support and engaging said second cam follower, said second cam being shaped to effect rotation of said radial shaft through 180°, thereby to rotate said jaw members from a container pick-up condition to a container release condition and back again during rotation of said transfer wheel relative to said stationary support;

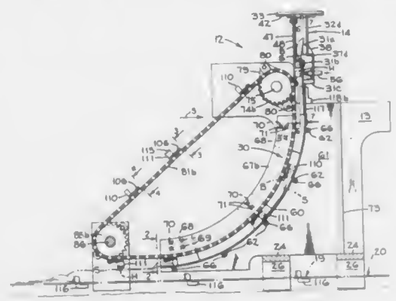
wherein:

said transfer wheel comprises a hollow drum member compris-

VOL 1116 ISS 1 JL 3 1990 UMI

ing spaced upper and lower transverse walls and a peripheral side wall connecting them;
said radial shafts are rotatably carried in said side wall with said gear pinions disposed within said drum member;
said gear racks are disposed within said drum member, and are slidably carried in said upper and lower transverse walls;
said gear racks penetrate said upper transverse wall;
a fluid-tight protective cover is provided on said upper transverse wall to prevent ingress within said drum member of fluid from outside, and
said driving shaft extends upwardly through said lower and upper transverse walls and is drivingly connected to said upper transvrse wall.

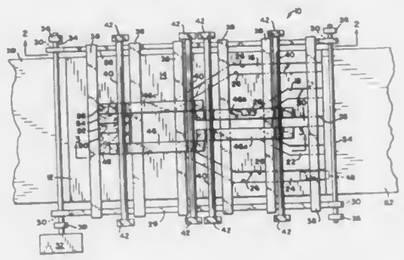
4,938,338
PLASTIC CUTLERY FEEDER
Donald C. Crawford, and Kenneth H. LaCount, both of Green Bay, Wis., assignors to FMC Corporaton, Chicago, Ill.
Filed Nov. 9, 1988, Ser. No. 269,081
Int. Cl.[5] B65G *47/244*
U.S. Cl. 198—408 **15 Claims**



1. A cutlery feeder for receiving a backlog of unpackaged cutlery items from a source of supply and for delivering individual items to a flighted conveyor of an automatic wrapping machine, said feeder comprising:
a chute for guiding said items in a proper orientation to a flighted conveyor of a wrapping machine;
guide means for receiving a backlog of cutlery items and for guiding said items along a path toward a position adjacent to said chute;
gripping means cooperating with said chute for grasping a handle of an individual cutlery item disposed in position adjacent said chute; and
a movable chain assembly aligned with said chute and carrying said gripping means for pulling said grasped item into said chute and thereafter for moving said individual items through said chute and delivering said individual items in timed relationship to said flighted conveyor of said wrapping machine.

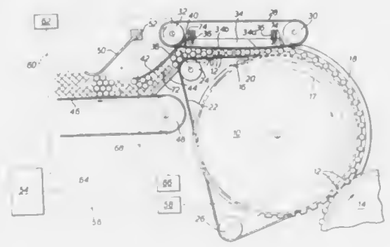
4,938,339
MEANS FOR LATERALLY SPACING PRODUCTS
Dan T. Benson, Joplin, Mo., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Dec. 9, 1988, Ser. No. 281,767
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—458 **10 Claims**

1. Apparatus for laterally spacing juxtaposed, elongate products, comprising:
a platform;
said platform having a given planar surface, and a plurality of trackways having divergent portions; wherein
said trackways are recessed into said surface;
means for moving said juxtaposed, elongate products, in a given axial direction, along said surface toward said trackways; and
means supported above, and in proximity to, said surface, for urging said products, during movement thereof along said



surface into said recessed trackways for lateral spacing thereof in response to movement of said products through said divergent portions, said means for urging being supported by said means for moving said products.

4,938,340
CONVEYING ROD-LIKE ARTICLES
John K. Horsley, and John E. Nixon, both of Bucks, England, assignors to Molins PLC, London, England
Filed Aug. 15, 1984, Ser. No. 640,883
Claims priority, applicatioo United Kingdom, Aug. 10, 1984, 8420347
Int. Cl.[5] B65G *47/31*
U.S. Cl. 198—462 **23 Claims**



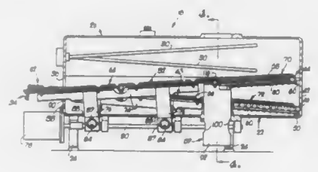
1. Apparatus for conveying rod-like articles in a direction transverse to their lengths, comprising first conveyor means for conveying a first stream of articles, second conveyor means arranged downstream of the first conveyor means for receiving articles from the first stream and for conveying them in a second stream, further conveyor means for engaging rod-like articles at a position downstream of at least part of said first conveyor means and upstream of at least part of said second conveyor means, means for driving said first conveyor means such that articles are conveyed by said first conveyor means at a first speed, means for driving said second conveyor means such that articles are conveyed by said second conveyor means at a second speed which is lower than said first speed, and means for driving said further conveyor means such that articles are conveyed by said further conveyor means at a speed which is higher than said first speed.

4,938,341
APPARATUS FOR ALTERING THE DISTANCES BETWEEN ARTICLES MOVED ONE BEHIND THE OTHER
Hans U. Bogatzki, Zurich, Switzerland, assignor to Elpatronic AG, Zug, Switzerland
Filed Jan. 5, 1989, Ser. No. 293,641
Claims priority, application Switzerland, Feb. 2, 1988, 00351/88
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—474.1 **10 Claims**



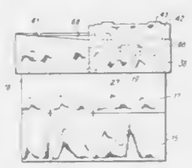
1. An apparatus for altering the distances between articles moved one behind the other, particularly containers, comprising:
a hub which can be driven in rotation about an axis of rotation to move the articles along a path of movement from an entry point to a discharge point,
a plurality of spokes which project away from the hub at specific angular spacings,
entrainment means which are disposed one on each spoke, the two entrainment means on two adjacent spokes being adapted to contact one article at a leading point and a trailing point respectively throughout the movement of the article, and
a guide for altering the radial distance of the entrainment means from the hub during its rotation.

4,938,342
CONTINUOUS CONVEYING MECHANISM
Marshall Long, 11147 Old Harbour Rd., North Palm Beach, Fla. 33408
Continuation-in-part of Ser. No. 82,835, Aug. 6, 1987, Pat. No. 4,796,745, which is a division of Ser. No. 802,705, Nov. 29, 1985, Pat. No. 4,686,894. This application Nov. 3, 1988, Ser. No. 266,671
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—774.3 **6 Claims**



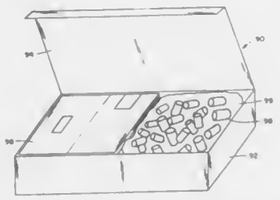
1. Conveying apparatus for moving articles along a substantially straight path of travel as well as along a curved path of travel, said structure comprising:
a first assembly having a series of elongated, laterally spaced apart elements and a series of curved, laterally spaced apart elements
disposed in generally end-to-end relationship to said elongated elements of said first assembly;
a second assembly having a series of elongated, laterally spaced apart elements and a series of curved, laterally spaced apart elements disposed substantially in end-to-end relationship to said elongated elements of said second assembly,
at least one of said assemblies having mechanism for cyclically and successively raising its series of elongated elements, advancing the same along a substantially straight path, lowering the same and retracting the same along a substantially straight path,
said at least one of the assemblies having mechanism for cyclically and successively raising its series of curved elements advancing the same along an arcuate path, lowering the same and retracting the same along an arcuate path, the elongated elements and the curved elements of said one of said assemblies interleaving with the elongated elements and the curved elements respectively of the other of said assemblies during each cycle of movement of the moving elements,
the elements of said one assembly rising above the elements of the other assembly during each cycle to raise and advance the articles sequentially along both a straight path as well as along an arcuate path said elongated elements of said one assembly being oriented for depositing said articles on said curved elements of the other assembly.

4,938,343
PREASSEMBLED DISPLAY STAND AND CONTAINER ASSEMBLY
William T. Willis, 3638 Wentworth La., Lilburn, Ga. 30247
Continuation-in-part of Ser. No. 72,627, Jul. 13, 1987, Pat. No. 4,813,536. This application Jun. 27, 1988, Ser. No. 212,278
The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—44 R **4 Claims**



1. A shipping container and display stand assembly comprising a rectangular box container including front, back and side panels and a bottom panel formed of interleaved flaps, each of said flaps being hingedly attached to a respective one of said front, back and side panels, a display stand including substantially rectangular front and back walls laterally movably connected relative to each other by opposed side walls, said front and back walls respectively being connected at corresponding ends to opposed ones of said interleaved flaps, said container and display stand assembly being foldable from a substantially flat folded configuration in which the container and display stand lie substantially flat for stacking with like containers and display stands for storage and shipment, to a container formed configuration in which the container is box-shaped for receiving goods of a producer of goods, to a display stand formed configuration in which the display stand supports the container in its box shape above a floor or other support surface.

4,938,344
COLLAPSIBLE DISPLAY APPARATUS
Patricia M. McHale, Kernersville, and Jeffrey T. Weber, Winston-Salem, both of N.C., assignors to Nabisco Brands, Inc., East Hanover, N.J.
Filed Oct. 14, 1988, Ser. No. 257,601
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—45.25 5 Claims



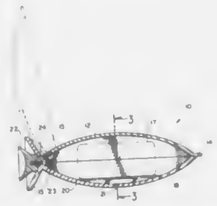
1. A kit comprising a box containing a predetermined number of collapsible display devices and a predetermined number of candy packages, said predetermined number of candy packages being substantially equal to the number of display devices, said display devices being joined together along separation lines within said box to form sheets of display devices, said display devices having a two-layer construction where a front layer and a back layer are constructed from a single sheet of fibrous material folded along a first fold line to form said two layers, said front layer having a window area cut out from said fibrous material shaped to support a candy package fit into said window, said back layer having a series of fold lines parallel to said first fold line and to each other, wherein said back layer is secured to said front layer at least one point and being movable relative to said front layer to move said back layer from a collapsed position to an assembled position when said back layer is folded along said series of fold lines to form a support element having wall members as defined by said series of fold lines, such that said support element allows said device to stand freely.

4,938,345
DISPENSING AND DRAINING DEVICE
Darlene W. Bolton, 1250 Sabla Palm Dr., Boca Raton, Fla. 33432
Filed Jan. 14, 1985, Ser. No. 691,220
Int. Cl.[5] B65D *81/18*
U.S. Cl. 206—77.1 5 Claims



1. A combination device including magazine means for holding a plurality of cleaning articles and a drainage device vertically disposed and spaced apart from said magazine and functionally connected therewith, said magazine including a receptacle with a bottom opening for manually removing at least one cleaning article, and an elongated front opening for selectively removing any one of a diversity of cleaning articles stored therein without removing the remaining cleaning articles that are not needed at that particular time.

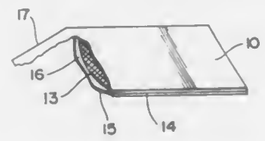
4,938,346
WALL MOUNTED SOAP DISH
Virgilio M. Urbano, 15 15th St., #17, Hermosa Beach, Calif. 90254
Filed Sep. 18, 1989, Ser. No. 408,201
Int. Cl.[5] A47K *5/08*
U.S. Cl. 206—77.1 1 Claim



1. In a soap dish for protecting a soap bar from direct impingement of shower or bathing spray comprising the combination of:
a soap dish having a bottom with upwardly projecting elongated and parallel ridges;
a soap bar supported on said ridges;
drainage holes provided in said dish between adjacent ones of said ridges;
mounting means carried on said dish for attachment to a vertical wall which includes an elongated stiffening and rigid member along the rear of said dish;
suction cup means supported in load-bearing relationship on said member having a flexible cup outwardly protruding from said member;
a cover movably carried on said dish selectively shielding contents of said dish from environmental spray or the like;
said dish bottom is concave and said cover is convex in transverse cross-section, said cover having an inner surface in spaced-apart relationship with respect to said soap bar so as to avoid pressure of said soap bar;
an elongated lip carried on said cover protruding beyond the edge of said dish;
hinge means pivotally connecting said cover to said dish for selective exposure of the interior of said dish; and
said rigid member further having a V-shaped defined cavity substantially enclosing said suction cup mean presenting an exterior angled surface protecting said suection means from direct inpingement of shower spray.

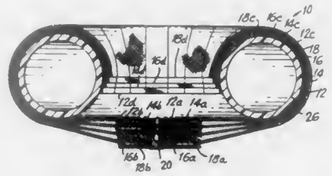
4,938,347
DISPOSABLE SINGLE DIGIT NAIL POLISH REMOVER POUCH
Cynthia A. Tillman, Alexandria, Va., assignor to PKP, Inc., Alexandria, Va.
Filed Dec. 23, 1988, Ser. No. 289,000
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—209 18 Claims

1. A combined fluid storage and application device, comprising:
(a) two superposed sheets of fluid impervious material positioned in a generally flat, parallel overlying relation to each other;
(b) seal means for sealing said sheets to each other;
(c) a fluid-retaining cavity having substantially flat parallel opposed wall surfaces formed by said sheets, a permanent seal line defining the periphery of said fluid retaining cavity;
(d) a fluid-retaining dauber disposed in said cavity and coupled to only one of said wall surfaces; and



(e) a fluid comprising a nail polish solvent contained within said dauber.

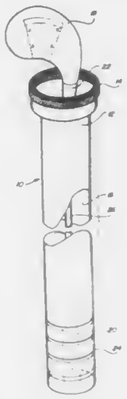
4,938,348
COMPACT BOW PACKAGE AND METHOD
Peter S. C. Scheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed Nov. 3, 1989, Ser. No. 431,434
Int. Cl.[5] A41H *43/00*; D04D *7/06*
U.S. Cl. 206—303 7 Claims



1. An arrangement for compactly packaging bows, comprising:
a plurality of decorative, annular bows arranged in a nested stack, each bow having a central region and a plurality of elongated curled bow ribbons extending generally outwardly from the central region in a plurality of different directions and terminating in free curled ribbon ends, said central regions of the bows overlying one another, said free curled ribbon ends of each bow at least partially enveloping the free curled ribbon ends of adjacent nested bows, said free curled ribbon ends of each bow together bounding an opening overlying the central region, each bow being removable from the stack.

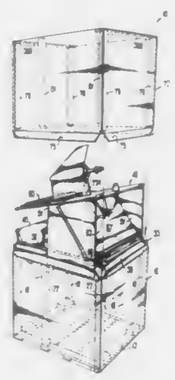
4,938,349
PROTECTIVE TUBE FOR A GOLF CLUB SHAFT
Paul H. Burns, 831 Livernois, Ferndale, Mich. 48220
Filed May 22, 1989, Ser. No. 355,751
Int. Cl.[5] A63B *55/00, 55/04, 55/06*
U.S. Cl. 206—315.6 25 Claims

1. A golf club shaft protector for protecting the shaft of a golf club, said protector comprising:
a tube portion having an upper end and a lower end and an inner wall and an outer wall; and
a collar positioned at said upper end of said tube;



said collar having an inner wall;
at least said inner wall of said collar being substantially covered by a resiliently soft material.

4,938,350
SHIPPING CONTAINER FOR AN OUTBOARD MOTOR
John M. Grigsby, Marietta, Ga., assignor to North American Container Corporation, Mableton, Ga.
Continuation-in-part of Ser. No. 126,659, Dec. 1, 1987, Pat. No. 4,792,041. This application Jul. 18, 1988, Ser. No. 220,802
Int. Cl.[5] B65D *85/68*
U.S. Cl. 206—319 25 Claims

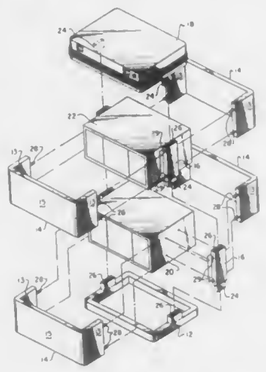


1. A container for supporting an outboard motor, comprising:
a bottom box to enclose the powerhead end of the motor;
a motor mount frame, comprising:
a pair of side rails;
a crossbar on which the motor mounts, the crossbar connected normal to the side rails;
means for maintaining the side rails in parallel relation; and

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at least one resilient bushing disposed between the connections of the crossbar and each side rail;
means for resisting rotational movement by the motor with respect to the motor mount frame;
a top box to enclose the gear case end of the motor; and
means for connecting the top box of the bottom box.

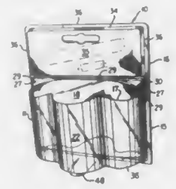
4,938,351
MODULAR ELECTRICAL COMPONENT PACKAGING SYSTEM
William D. Lewis, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 20, 1989, Ser. No. 368,832
Int. Cl.[5] B65D *7/00*
U.S. Cl. 206—328 **12 Claims**



1. A modular packaging system for electrical components comprising:
at least one generally rectangular card cage having two pairs of opposed vertical side panels for receiving and retaining electrical components therein.
two substantially identical channel members each disposed vertically and generally centrally located on one of a first pair of opposed vertical side panels;
two substantially identical exterior panel members, each having a first planar surface for overlying an entire one of a second pair of opposed vertical side panels and having a pair of planar side surfaces integral with and generally perpendicular to said first planar surface each overlying at least a portion of one of said first pair of opposed vertical side panels; and
means for coupling each of said two substantially identical exterior panel members to both of said two substantially identical channel members.

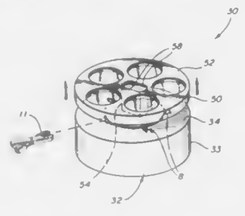
4,938,352
BATTERY DISPLAY PACKAGE
Victor A. Calcerano, Carmel, N.Y., and David F. O'Brien, North Woodstock, Conn., assignors to Duracell Inc., Bethel, Conn.
Division of Ser. No. 324,286, Mar. 16, 1989, Pat. No. 4,896,770.
This application Dec. 7, 1989, Ser. No. 433,629
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—333 **13 Claims**

1. A package for the sale and display of four cylindrical articles, said package comprising a housing for said articles formed by front and rear blisters, said housing being shaped to hold the articles therein with the articles standing upright in the housing, and wherein two articles are arranged, one behind the other, centered between the sides of the package, with the front of the rearward article substantially touching the back of the forward article; and the other two articles being located on opposite sides of the touching articles, with each of the said other two articles touching both of the centrally located articles; whereby the articles form a diamond-shaped arrangement



having a front-to-rear dimension which is smaller than the side-to-side dimension.

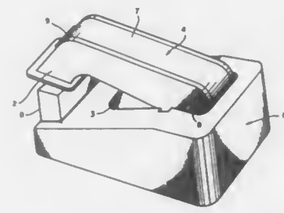
4,938,353
CONTAINER AND DISPENSER FOR ANEURYSM CLIPS
Richard L. Bell, Marshfield, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Oct. 27, 1989, Ser. No. 428,255
Int. Cl.[5] B65D *83/00, 85/00*
U.S. Cl. 206—339 **15 Claims**



1. A container and dispenser for a plurality of aneurysm clips comprising:
a base for retaining a number of clips;
clip retaining means on said base for holding said clips;
platform means on said base aligned with said clip retaining means for separating at least a portion of each of said clips from said base to facilitate grasping said clip with an instrument;
a magnifier housing;
at least one lens in said magnifier housing in position to allow a user to visualize said platform means through said lens;
cooperative means on said base and said magnifier housing for operatively connecting said base and said magnifier housing together to permit said magnifier housing to be moved between a first position and a second position separated from said platform means by the focal distance of said lens to bring the clips into focus for the user to facilitate the removal of clips from the dispenser.

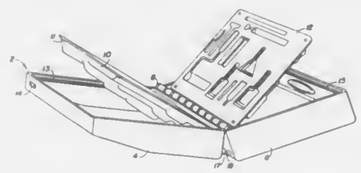
4,938,354
DEVICE FOR HOLDING A MEDICAL SYRINGE
Manuel F. Hernandez, 3515 Kemp, El Paso, Tex. 79904
Filed Sep. 8, 1989, Ser. No. 404,556
Int. Cl.[5] A61M *5/325;* **B65D** *83/00*
U.S. Cl. 206—365 **2 Claims**

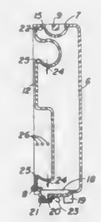
1. A device for holding a medical syringe which comprises: a base adapted to receive and hold a syringe needle holder means comprising a hollow, enclosed receptacle, which is disposed in an inclined position relative to said base with its lower end resting therein; an elongated hollow tube being disposed within said receptacle with an illuminated annular elastic collar means at one end proximate the upper end of said inclined receptacle for engaging the cover surrounding a medical syringe needle when said needle and cover are inserted into



said elongated tube and for retaining said cover when the syringe needle is withdrawn therefrom.

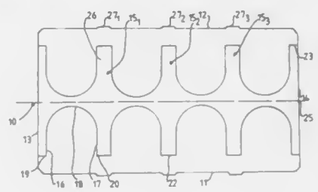
4,938,355
CARRYING CASE FOR WET AND DRY PAINTING TOOLS
Joseph Rocco, 469 Zadig St., Oceanside, N.Y. 11572
Filed Dec. 20, 1989, Ser. No. 453,675
Int. Cl.[5] B65D *85/28*
U.S. Cl. 206—372 **20 Claims**

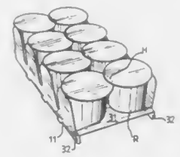




1. A carrying case for painting tools comprising:
a first case portion defining an interior space;
a second case portion defining an interior space;
a dry tool tray operatively connected to the first case portion for closing the interior space thereof, the dry tool tray having a plurality of dry tool sites distributed thereon each for receiving at least one separate dry tool for use during a dry operation of a painting job;
a wet tool tray operatively connected to the second case portion for closing the interior space thereof, the wet tool tray having a plurality of wet tool recesses therein, each recess for receiving at least one wet tool for use during a wet operation of a painting job;
connecting means operatively connected between the first and second case portions for connecting the case portions to each other in a closed position with the dry tool tray facing the wet tool tray, and for allowing movement of the first and second case portions into an opened position with the dry and wet tool trays facing in the same direction for free access to tools in the dry tool sites and tools in the wet tool recesses;
each wet tool recess including recess drainage means for draining an interior of each recess into the interior space of the second case portion; and
case drainage means connected to the second case portion for draining liquid from the interior space of the second case portion.

4,938,356
PACKAGING DEVICE OF THE TRAY TYPE FOR A PLURALITY OF ARTICLES, MORE PARTICULARLY FOR POTS CONTAINING FRESH MILK PRODUCTS SUCH AS YOGHURTS OR SIMILAR
Daniel Gallegue, Les Clayes-Sous-Bois, and Eric Thiry, Paris, both of France, assignors to Compagnie Gervais Danone, Levallois-Perret, France
Filed Oct. 31, 1988, Ser. No. 264,594
Claims priority, application France, Oct. 29, 1987, 87 14984; Jul. 6, 1988, 88 09146
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—429 **4 Claims**

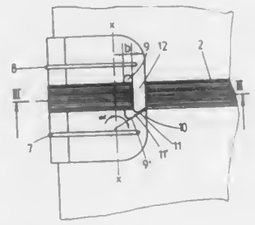




1. A packaging device for displaying and carrying individual containers having a given height and an external projection at one end, said packaging device comprising
at least one cardboard, plastic or similar material blank, having a substantially rectangular shape with parallel longitudinal edges and parallel transversal edges and orifices adapted to lodge said containers;
two grooved folding lines on said blank parallel to said longitudinal edges;
two short parallel flaps of said blank between said folding lines and said longitudinal edges;
tongues in number as the number of orifices formed by cut-outs of said orifices and a surface of said blank between said grooved folding lines and said orifices;
said blank foldable along said grooved lines that each said flap and said tongue lies in a plane substantially perpendicular to said surface of said blank;
walls with each of said walls formed by one of said flaps and said tongues starting from the same said folding line having a total height substantially equal to a height of said containers;
each of the external projections of the containers partly resting on only one of said flaps.

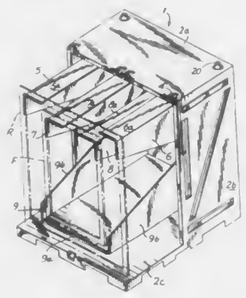
VOL 1116 ISS 1 JL 3 1990 UMI

4,938,357
CORNER-ANGLE EDGE PROTECTOR
Wolfgang Schmidt, Schwelm, Fed. Rep. of Germany, assignor to Sander GmbH & Co., Wuppertal, Fed. Rep. of Germany
Filed Aug. 23, 1989, Ser. No. 397,694
Int. Cl.[5] B65D *6/36, 63/00*
U.S. Cl. 206—453 7 Claims



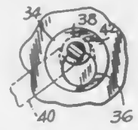
1. A corner-angle protector for strapped packages, and bundles, the protector comprising
an arm to be positioned against the package or bundle, there being a strapping-band passage opening and a slot in an end of said arm, said passage opening being open via said slot towards an adjacent edge of the corner-angle edge protector; and
wherein at least a region adjacent said slot to said edge is developed as an elastically outwardly bendable tab which protrudes freely from and is spaced apart from a resting plane of the corner protector and the slot; and
said slot extends at an oblique angle to the lengthwise direction of the passage opening, the lengthwise direction being parallel to an edge of the package or bundle supporting the protector.

4,938,358
STORAGE CONTAINER
Hans A. Johansen, North Vernon, Ind., assignor to Pantasote, Inc., Greenwich, Conn.
Filed Aug. 18, 1989, Ser. No. 395,884
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—499 25 Claims



1. A container for storing frame-like objects during shipment, which comprises:
(a) a box comprising a normally vertical wall portion and a normally horizontal base together defining an inner space, said box having an opening into said inner space,
(b) upper and lower pairs of elongated brackets projecting from said vertical wall portion into said inner space for supporting a plurality of frame-like objects suspended therefrom, said pairs of brackets each having proximal ends at said vertical wall portion and distal free ends,
(c) said pair of lower brackets being lower with respect to said base than and spaced inwardly of said pair of upper brackets, said upper and lower pairs of brackets being accessible through said opening, whereby said frame-like objects can be loaded onto and unloaded from said upper and lower brackets via said opening, and
(d) a movable cover for closing said opening.

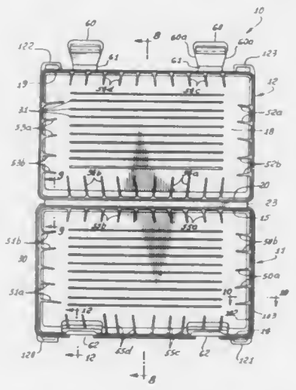
4,938,359
RECEPTACLE FOR RETURNABLE BEVERAGE CONTAINERS
Howard Bernstein, 145 Nassau La., Island Park, N.Y. 11558
Continuation of Ser. No. 209,077, Jun. 17, 1988, abandoned. This application Aug. 29, 1989, Ser. No. 401,498
Int. Cl.[5] B65D *21/00, 85/62*
U.S. Cl. 206—509 12 Claims



1. A receptacle for returnable beverage containers having a generally open top, comprising:
a rigid bottom portion;
means associated with said bottom portion to releasably secure at least bases of each of said beverage containers whereby said beverage containers are retained in a vertical position;
generally vertical side wall means extending from said rigid bottom portion to define said generally open top of said receptacle; and
mechanical interlock means associated with said bottom portion and said side walls means for releasably locking said receptacle to the top or bottom of an adjacent, identical receptacle.

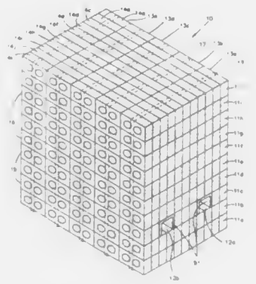
4,938,360
SEALED CUSHIONING PACKAGE
Robert S. Wallace, 823 South Longwood Ave., Los Angeles, Calif. 90005, assignor to Robert S. Wallace, Los Angeles, and Jack Bauman, Pacific Palisades, both of Calif., part interest to each
Filed Feb. 9, 1989, Ser. No. 308,314
Int. Cl.[5] B65D *81/06, 81/10*
U.S. Cl. 206—586 27 Claims

1. A container, comprising
(a) a receptacle and a cover therefore, the receptacle having a bottom wall and the cover having a top wall,
(b) fin means integral with at least one of said walls and projecting toward the other of said walls to engage an article placed within the container and between said walls when the cover is closed onto the receptacle,
(c) said fin means being yieldably deflectable in response to squeezing of the article between said walls,
(d) and fastener means associated with the receptacle and cover to hold the cover closed on the receptacle with said article squeezed and thereby positioned with said fin means in deflected state,
(e) the receptacle and cover having interfitting peripheral edge structures that provide a fluid seal when the fastener means holds the cover closed on the receptacle and the article is squeezed by the fin means in deflected state,
(f) the peripheral edge structure of one of the cover and receptacle typically forming a peripheral groove, and the peripheral edge structure of the other of the cover and receptacle forming a peripheral tongue that fits into said peripheral groove when the cover is closed on the receptacle,
(g) the peripheral groove having inner and outer walls, and including a yieldably compressible seal received in the groove between said walls to be compressively engaged by the tongue when the cover is closed on the receptacle,
(h) the cover and receptacle having interconnections at longitudinally spaced sides thereof, one interconnection comprising a molded hinge, and the other interconnection



comprising interfitting locking tab and recess elements, one on the cover and the other on the receptacle, the groove being intercepted by one of the tab and recess elements, the tab and recess elements comprising a fastener means,
(i) the outer wall interrupted by said recess element, the outer wall having a gap therein where it is interrupted by the recess element, and the tab element closing said gap when the tab is received in the recess,
(j) the tab compressing the seal at the location of the gap.

4,938,361
BLENDED CUBE OF BRICK
Joseph H. Patrick, Jr., Greenwood, S.C., assignor to Pearne and Lacy Machine Company, Inc., Siler City, N.C.
Filed Mar. 14, 1988, Ser. No. 167,873
Int. Cl.[5] B65D *71/00, 79/00*
U.S. Cl. 206—595 11 Claims



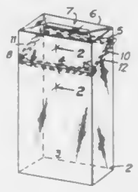
1. A cube of brick for storage and shipment, including a plurality of horizontally extending columns of aligned abutting brick, said columns being arranged in panels of vertically aligned columns resting one on another to provide a plurality of layers, at least one of said layers including a pair of spaced voids permitting said cube to be supported and moved with a fork lift apparatus, and separator members extending along the upper side of each void to support brick in layers above said voids, said separator member also extending along at least one side of said voids to support brick above said voids when said cube is resting on its side, said separator member providing two planar portions intersecting at substantially a right angle, one of the planar portions extending along said upper side of an associated void and other of said planar portions extending along said at least one side of said associated void, each planar portion extending beyond said intersection in both directions to provide an X-shaped structure.

4,938,362
OPENER FOR PACKAGES
Barbara J. Johnson, Brookfield, Conn., assignor to Nestec S.A., Vevey, Switzerland
Continuation-in-part of Ser. No. 162,428, Mar. 1, 1988. This application Jul. 15, 1988, Ser. No. 219,603
Int. Cl.[5] B65D *17/30*
U.S. Cl. 206—603 17 Claims



1. A package comprising at least one flexible surface and a tab integral with the package as a flange having at least one score line defining a cutter having a cutting edge, the at least one score line enabling, by finger pressure, making the cutter effective for piercing the flexible surface by enabling breaking the cutter from the remainder of the flange at the score line.

4,938,363
CONTAINER WRAPPER WITH INTEGRAL TEAR TAPE, AND METHODS AND APPARATUS FOR MAKING SAME
Angel Amendola, Millersville, Md., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Apr. 24, 1989, Ser. No. 342,240
Int. Cl.[5] B65D *77/04, 65/34*
U.S. Cl. 206—606 14 Claims



1. A wrapper for enveloping a container comprising:
a sheet of material having a thickness and a longitudinal axis; and
a first set and a second set of substantially parallel score lines in the surface of and extending partially through the thickness of said sheet, said first set of score lines forming an integral tear tape in said wrapper and said second set of score lines being disposed outwardly of said first set of score lines thereby forming a track for minimizing tearing

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of said wrapper outside of said track when said tear tape is removed.

4,938,364

PRESENTATION DISPLAY STORAGE SYSTEM

Hildegarde A. Stadelman, and Fred E. Stadelman, both of Park La., North White Plains, N.Y. 10604

Filed May 23, 1988, Ser. No. 197,282
Int. Cl.[5] A47F 7/16
U.S. Cl. 211—47 2 Claims



1. A presentation display having a supported round spindle (2) of uniform outer diameter, a base support (10) for establishing a base position on said spindle (2), and a set of presentation platforms (i.e., 8) having a presentation platform shelf (i.e., 13) for mounting cantilever to said spindle (2) and a subset of spacers, at least one spacer for each presentation platform is attached to said presentation platform and adapted to surround said spindle (2) and provide minimum spacing along said spindle for the related presentation platform characterized in that

each presentation platform shelf is of relatively rigid material and has an aperture sufficiently larger than said spindle (2) to provide relief so as to avoid contact between shelf and spindle; and

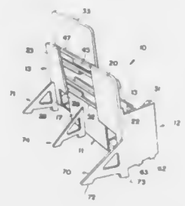
each presentation platform spacer is a slide-and-spin-resistant slider of relatively tough material with aperture dimensioned for tight fit on said spindle (2) and compressional contact with each related presentation platform, whereby each in the set of presentation platforms gains distributed support along said spindle from said subset of spacers at a fixed axial position while allowing significantly damped rotational motion, the shelf being supported by its related spacers in compression, rather than by said spindle (2).

4,938,365

LITERATURE DISPLAY BOX

Gerald A. Conway, Cleveland, Ohio, and Kin G. Cheng, Hong Kong, Hong Kong, assignors to Gerald Conway & Company, Cleveland, Ohio

Filed Jan. 11, 1988, Ser. No. 142,231
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—50 20 Claims



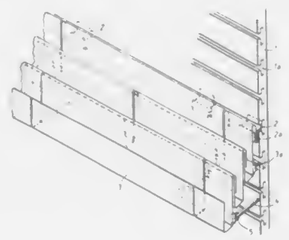
1. A three part literature display box for displaying literature on a counter, shelf or the like comprising a center part having a front wall, a bottom wall and a back wall, a rear portion of said bottom wall meeting with a lower portion of said back wall, said front wall being upstanding from said bottom wall, said center part being open at each end, and two end parts each having an end wall, a front, and back wall, and means mounting said end parts on said center part for telescoping movement toward and away from each other to expand and contract the lateral width of the box, with the front walls of said end parts telescoping adjacent and rearwardly of the upstanding front wall of said center part.

4,938,366

DISPLAY UNIT

Francis A. Carroll, Dublin, Ireland, assignor to Eolas, Dublin, Ireland

Filed Jun. 15, 1988, Ser. No. 206,838
Claims priority, application Ireland, Jun. 15, 1987, 1574/87; May 9, 1988, 1388/88
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—55 21 Claims



1. A display unit for articles comprising

a plurality of elongate channels suspended one from the other, each of the channels being of generally J-shaped cross-section defining a high rear wall, a low front wall, and a bottom wall to form a trough for supporting the articles;

first support means for supporting the high rear wall of the uppermost J-shaped channel on a mounting surface; and

second support means for supporting the high rear wall of each lower J-shaped channel on the low front wall of a higher J-shaped channel so as to provide a suspended tiered display.

4,938,367

WELDMENT-FREE DOCUMENT HOLDER

Wallace A. Krapf, Macedon; Robert J. Blood, Holcomb, and Daniel W. Rossborough, Conesus, all of N.Y., assignors to Krapf Business Systems, Inc., Macedon, N.Y.

Filed May 12, 1989, Ser. No. 350,759
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—55 12 Claims

1. A document holder, comprising

a housing having a plane back wall, and spaced, parallel side walls projecting substantially equi-distantly forwardly from said back wall and defining therebetween a large opening in the front of the housing,

a horizontal bottom plate removably secured adjacent its marginal edges to the lower edges of said back wall and side walls, and operatively closing the lower end of said housing,

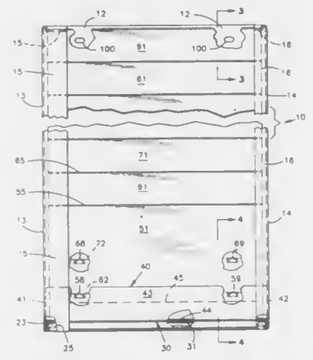
a plurality of spaced, parallel, planar partitions having upper and lower edges, respectively,

means supporting said partitions slidably and removably one above the other in said housing to extend between said upper and lower edges thereof in parallel planes disposed

substantially at right angles to said side walls and diagonally of said back wall,

said partitions defining therebetween in said housing a plurality of document holding spaces inclined to the vertical, and opening at their upper ends on said large opening in the front of said housing, and

means for closing the lower end of each of said document holding spaces,



said closing means defining at the bottom of each of said document holding spaces a plane surface extending transversely between the two partitions defining such space, and

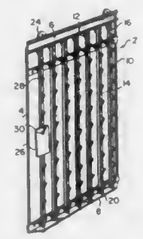
said parition supporting means including means releasably securing only the uppermost of said partitions to said housing, whereby upon release and removal of said uppermost partition from said housing, the remaining partitions are free to be withdrawn slidably from said housing.

4,938,368

MERCHANDISE DISPLAY AND DISPENSER RACK

Brent O. Sharman, Penticton, Canada, assignor to Victor Ventures Ltd., Penticton, Canada

Filed Jun. 2, 1989, Ser. No. 360,533
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—57.1 7 Claims



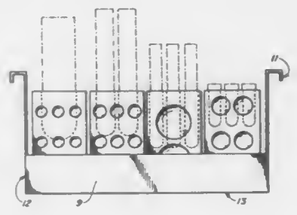
1. A merchandise display and dispenser rack comprising a planar frame, which incorporates a pair of spaced, transverse upper and lower members to be horizontally oriented when the rack is in position, a plurality of suspension means spaced along the upper of the transverse members, a plurality of corresponding apertures spaced along the lower of the transverse members and a plurality of linear, merchandise-supporting members, each of which is provided, at one end, with means to releasably receive the suspension means and be supported thereon in vertical fashion when the rack is in position, the other end to extend into the corresponding aperture of the lower transverse member when that merchandise-supporting member is supported on the suspension means, a plurality of upwardly extending, outwardly protruding merchandise-receiving ears spaced along the length of each merchandise-supporting member to releasably receive merchandise in display and dispensing position.

4,938,369

MULTIPLE-OPTION TEST TUBE SUPPORT SYSTEM

Brian D. Carilli, 2150 Columbia, Palo Alto, Calif. 94306

Filed Jun. 22, 1989, Ser. No. 370,643
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—74 3 Claims



1. A test tube support system, comprising:

a plurality of rectangular box-shaped units each having six faces, a multiplicity of said faces in each said unit having a plurality of holes of various diameters, each said hole having sufficient depth to prevent tipping of test-tubes stored vertically therein; and

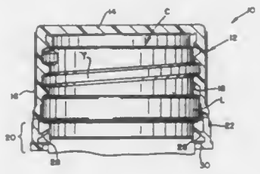
support means for holding said plurality of units, wherein each of said units may be differently oriented so that test tubes of various sizes may be stored in said test tube support system.

4,938,370

TAMPER-INDICATING PLASTIC CLOSURE

Stephen W. McBride, Brownsburg, Ind., assignor to H-C Industries, Inc., Crawfordsville, Ind.

Filed Apr. 26, 1989, Ser. No. 343,995
Int. Cl.[5] B65D 41/34
U.S. Cl. 215—252 17 Claims



1. A tamper-indicating plastic closure for a container having an annular locking ring, said closure comprising:

a plastic cap including a top wall portion, and an annular, depending cylindrical skirt portion, and

an annular pilfer band at least partially detachably connected to and depending from said skirt portion,

said pilfer band including inwardly extending flexible tab means comprising a plurality of circumferentially spaced, flexible tabs extending inwardly of said pilfer band and each having a free end portion, and inwardly extending interference bead means positioned beneath said tab means, said free end portions of said flexible tabs of said tab means being engageable with said container locking ring when said flexible tabs extend upwardly and inwardly during removal of said closure from said container for

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providing a first means for at least partially detaching said pilfer band from said skirt portion,

said tab means being further engageable with said locking ring during removal of said closure from said container by disposition of said tab means between said locking ring and said interference bead means for providing a second means for at least partially detaching said pilfer band from said skirt portion.

4,938,371

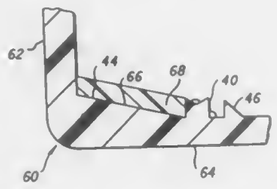
CLOSURE HAVING IMPROVED SEALANT CHANNEL FOR RECEIVING SEALANT BY SPIN LINING

Peter A. Vercillo, Hinsdale, Ill., assignor to Continental White Cap, Inc., Norwalk, Conn.

Filed May 19, 1989, Ser. No. 354,294

Int. Cl.[5] B65D *53/06*

U.S. Cl. 215—352 **19 Claims**



1. A closure for containers, said closure comprising a skirt open at one end for receiving a container and having an end panel at an opposite end of said skirt, said end panel carrying a dam spaced from said skirt and projecting from said end panel into an interior of said closure, said skirt, said dam and a portion of said end panel between said skirt and said dam defining a channel for a sealant, and said end panel portion having a surface opening into said closure with said end panel portion surface sloping from said skirt toward said dam with said channel being of greatest depth adjacent said dam.

4,938,372

STORAGE CONTAINER FOR STORING POWDERED OR GRANULAR MATERIALS

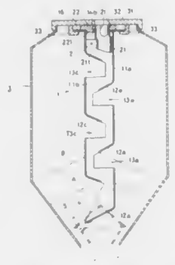
Kiyoshi Morimoto, Mishima; Akikazu Iwamoto, Shizuoka, and Masuo Moriyama, Numazu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo and Kabushiki Kaisha Matsui Seisakusho, Osaka, both of, Japan

Filed Apr. 14, 1989, Ser. No. 339,175

Claims priority, application Japan, Apr. 15, 1988, 63-051101[U]

Int. Cl.[5] B65D *83/00*

U.S. Cl. 220—20.5 **5 Claims**



1. A storage container for storing powdered or granular materials comprising, in combination:

a zigzagged shoot provided at its upper end with an inlet for inducing powdered or granular materials as well as at its lower end with an outlet for discharging said materials and having a zigzagged passage formed therebetween for guiding the dropping of the materials,

a storage container body for storing said powdered or granular materials and accommodating said zigzagged shoot therewithin,

a plurality of slant plates extended inwardly downwardly slantly inside said passage alternately from opposed side wall portions of said shoot,

a plurality of outlets for discharging said materials formed respectively in said opposed side wall portions below said respective slant plates except the lowermost one, and

a window of discharging said materials formed in the upper portion of said shoot.

4,938,373

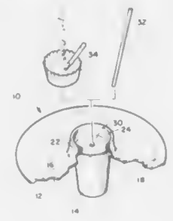
SERVING DEVICE

Dennis McKee, 1833 Oriole St., San Diego, Calif. 92114

Filed Apr. 25, 1985, Ser. No. 727,129

Int. Cl.[5] A47G *19/22*

U.S. Cl. 220—23.86 **6 Claims**



1. A serving device comprising:

a liquid container formed of resilient material having a top and bottom;

a plate member formed of resilient material, said plate member comprises an upper substantially planar food placement surface and a substantially planar bottom surface and a central area substantially smaller than said food placement surface configured to removably secure thereto the bottom of said container to said central area on its upper food placement surface and the top of said container on its bottom surface by a press fit gripping relationship while containing food on said upper food placement surface;

said central area is elevated from the upper surface of said plate member and comprises a first wall means formed as a continuation of said plate and a second wall means formed as a continuation of said first wall means and angularly spaced therefrom and a support surface formed as a continuation of said second wall means and is substantially parallel to the upper and lower surface of said plate, said second wall means and support surface configured to receive the bottom of said container in said press fit gripping relationship and the space between said first and second wall means configured to receive and secure thereto the top of said container in said press fit relationship.

4,938,374

BEVERAGE CONTAINERS AND METHOD OF MAKING SAME

Joseph E. Wuchterl, 637 Pickwick Ct., Mt. Prospect, Ill. 60056

Filed Oct. 12, 1988, Ser. No. 256,726

Int. Cl.[5] B65D *1/24*

U.S. Cl. 220—83 **9 Claims**

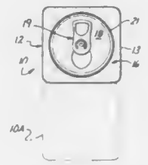
1. A carbonated beverage container comprising:

a hollow side and bottom elongated wall body being rectangular in cross section throughout its axial length and having a centrally disposed axis;

a smoothly tapered hollow neck portion being generally circular and symmetrical in cross section throughout its axial length, said hollow neck portion having a generally circular top end portion and a large rectangular bottom end portion being connected integrally to the top end portion of said body;

said top end portion being smoothly rounded and contoured for facilitating the filling of the container therethrough during an initial container filling operation;

said neck portion having a centrally disposed axis aligned with the body central axis, said neck portion being symmetrical in configuration relative to the central axis;



a generally circular and substantially flat top wall sealed to said tapered neck portion at its generally ciruclar top end portion;

pour opening pull tab device disposed closely to the neck top end for serving as a smoothly contoured drinking surface to facilitate the pouring of the container contents therefrom; and

annular chine means for sealing together the entire edge of said generally circular top wall and the neck top end portion in a continuous, uninterrupted, leak tight manner to maintain the contents of the container under high pressure.

4,938,375

DRINKING RECEPTACLE AND ICE TRAP

Ralph A. Fantacone, 104 Swan Pkwy. E., Royal Palm Beach, Fla. 33411

Filed Jan. 30, 1989, Ser. No. 303,271

Int. Cl.[5] B65D *23/00*

U.S. Cl. 220—90.4 **2 Claims**



1. In combination, a drinking receptacle and an ice trap comprising:

(a) a beverage cup having a rim defining a circular top opening, a substantially conical side wall sloping downwardly and inwardly toward a bottom well and an internal annular lip in the sloping side wall with said lip having an annular, horizontal bottom surface and,

(b) a flexible ice trap, said ice trap being formed of resilient material, said ice trap comprising a circular rim defining a top opening close in diameter to the inside diameter of the cup side wall just below the bottom surface of said lip, said trap having a conical side section conforming to the angle of said cup wall and a bottom section sloping downwardly and inwardly from the bottom of said side section,

(c) said trap rim and side section comprising flexible means for contracting when pressed downwardly against said lip upon insertion into said cup and for springing back toward a relaxed position beneath said lip bottom surface to lock said trap in said cup,

(d) said trap having a plurality of openings concentrically arranged in said side and bottom sections, said openings extending from said trap rim to the center of said bottom section,

(e) whereby when locked into position beneath said lip bottom surface said trap allows beverage to flow smoothly through said openings while retaining pieces of ice in said cup.

4,938,376

VALVE FOR SAFEGUARDING THE OUTER CONTAINER OF DOUBLE WALL VACUUM-INSULATED STORAGE CONTAINERS FOR LOW BOILING LIQUIFIED GASES

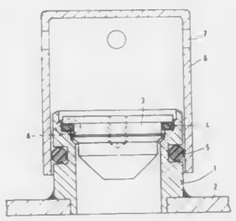
Heinrich Fieseler, Dormagen; Roland Heaneborn, and Gunter Holstein, both of Cologne, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Aug. 4, 1988, Ser. No. 228,054

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1987, 3727891

Int. Cl.[5] B65D *51/16*

U.S. Cl. 220—203 **6 Claims**



1. A method of safeguarding the outer container of double wall vacuum-insulated storage containers for low boiling liquified gases against a pressure increase in the insulation space after a loss of vacuum by means of a valve comprising a valve housing fastened in the outer container and a valve plug and an O-ring which as a result of deformation act as a sealing element between the valve housing and the valve plug, the improvement being in deforming the O-ring in its radial direction as a result of the dimensions of the valve housing and the seal plug and simultaneously deforming the O-ring in its axial direction as a result of the influence of the outside air pressure on the valve plug.

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4,938,377

DEVICE FOR PRESERVING AROMA AND FLAVOR OF POTABLE LIQUID INCLUDING A BUOYANT LID

Robert B. Jarvis, 1801 N. 29th St., Boise, Id. 83703

Filed Nov. 2, 1989, Ser. No. 430,255
Int. Cl.[5] B65D *25/10*
U.S. Cl. 220—216 2 Claims



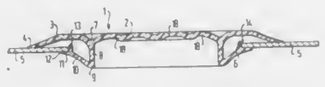
1. A device for preserving aroma and flavor of potable liquids including:
a vessel;
a buoyant lid receivable within said vessel; and
a lid retainer, separable from said vessel and defining at least one pour aperture, and said lid retainer including a plurality of flexible members operable to snap on to said vessel for holding said retainer in place.

4,938,378

CLOSURE COVER

Willibald Kraus, Grünstadt, Fed. Rep. of Germany, assignor to TRW United-Carr GmbH & Co., Enkenbach-Alsenborn, Fed. Rep. of Germany

Filed May 17, 1989, Ser. No. 353,011
Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817896
Int. Cl.[5] B65D *39/00*
U.S. Cl. 220—307 1 Claim



1. A plastic closure cover especially suited for closing an opening which extends between first and second opposed exterior faces of a support member comprising: a plastic body having a transverse bottom wall with a circumferentially extending first sealing lip joined thereto and adapted to lie against the first face of the support member and about the opening, a circumferentially continuous catch ring joined to the bottom wall and lying opposite the first sealing lip and terminating in a flexible and tapered free end which extends diagonally toward the first sealing lip and is adapted to engage about the opening against the second face opposite the first face, and a circumferentially continuous ring form second sealing lip carried by said catch ring at a location radially inward of said free end and extending axially toward said first sealing lip, said second lip having a radially facing sealing surface sized to tightly and sealingly engage about the inner peripheral surface of the opening in the support member.

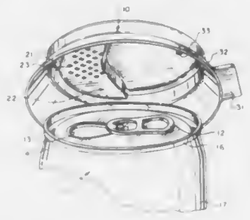
4,938,379

COVER FOR A BEVERAGE CAN

Louis W. Kellner, 901 Hiawatha Dr., Elgin, Ill. 60120

Filed Dec. 23, 1988, Ser. No. 288,958
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—370 20 Claims

1. A protective one piece circular dish shaped synthetic plastic beverage can top cover for attachment only with closed top alumirum cans having an upstanding intergral loop-shaped radially outer rim for nested engagement with a raised circular can edge of a beverage can, the loop-shaped outer cover rim defining an axially inwardly opening annular groove for receiving a raised circular edge of the beverage can, when the cover is mounted upon an upper open end of a beverage can, the cover having a depressed area that has a meshed area positioned alignable with a can opening in an open upper end of a beverage can to allow beverage fluids to flow from a



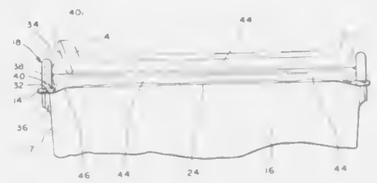
beverage can through the meshed area of the cover, the depth of said depressed area from said outer rim approximates the depth of a can cover from its raised circular edge in a manner to provide a fluid flow control fit between said depressed area and a can cover, the cover and the meshed area being cooperable with a loop-shaped outer cover rim when mounted upon a beverage can to prevent bees and the like from entering a can opening in top of a beverage can.

4,938,380

TRASH/GARBAGE CONTAINER WITH EXTERNAL LINER RETAINERS

Michael T. Donahoe, 960 Chanel Ct., Concord, Calif. 94518

Filed Nov. 8, 1985, Ser. No. 796,613
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—404 11 Claims



1. In a trash/garbage container of the leak-proof, molded type having two end walls with a juncture at each lateral end thereof to a respective one of two side walls and defining a substantially rectangular opening at a top edge of the walls, together with a closure-forming bottom piece attached to a lower edge of each wall to form a cavity; the improvement comprising:
(a) a pair of spaced projecting members on said end walls, one member of said pair adjacent each said juncture; each said projecting member being oriented essentially at right angles to a respective one of said side walls and having a tip terminating outboard of said respective one side wall,
(b) a bag liner insertable in said cavity, said liner being made of flexible, extensible material and having an upper end with handle loops thereon for carrying said liner and for engagement with said projecting members, the spacing of said projecting members being sufficiently large relative to said handle loops as to maintain said loops in a stretched state when engaged therewith, and
(c) means on said projecting members holding at least a portion of said loops externally of said cavity and below said top edge of the walls, whereby said projecting members are located externally of said cavity and support said liner in substantially wall-hugging and unobstructedly removable relation to said walls when engaged with said handle loops.

4,938,381

METHOD AND APPARATUS FOR DISPENSING A FOAM PRODUCT

David C. Mandeville, Canton, and David W. Lazar, Garden City, both of Mich., assignors to Kent-Moore Corporation, Warren, Mich.

Filed Sep. 1, 1988, Ser. No. 239,515
Int. Cl.[5] B29B *13/02*
U.S. Cl. 222—1 60 Claims



1. A method for dispensing a foam product wherein an elastomeric base material, which is solid at ambient temperatures, and a liquid material containing a heat actuated foaming agent are combined to form the foam product, comprising
heating the base material to melt the material,
metering simultaneously portions of the base material and liquid material,
mixing the portions,
thereafter conditioning the mixture at a temperature above the melting temperature of the base material,
subsequently conditioning the mixture to a lower temperature before dispensing; and
dispensing the mixture,
heating the liquid material to maintain the liquid at an elevated temperature above ambient,
reheating the mixture to substantially the melting temperature of the base material just prior to the dispensing.

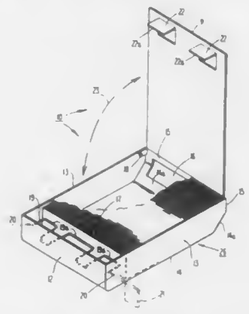
31. An apparatus for dispensing a foam product wherein an elastomeric base material, which is solid at ambient temperature, and a liquid material containing a heat actuated foaming agent are combined to form the foam product, which comprises:
means for providing a heated base material,
means for providing a liquid material,
means for mixing said heated material and said liquid material in predetermined metered portions,
means for thereafter conditioning the mixture at a temperature above the melting point of said composition and means for subsequently conditioning said mixture to a temperature below the melting point of said composition, and
a dispensing means, and
means for delivering said conditioned mixture to said dispensing means.

4,938,382

DISPENSING CABINET FOR PAPER SHEETS

Alan D. Frazier, West Chester; Richard P. Lewis, Oaks, both of Pa., and Richard O. Norman, San Antonio, Tex., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 79,842, Jul. 30, 1987, abandoned. This application May 22, 1989, Ser. No. 339,913
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—45 11 Claims



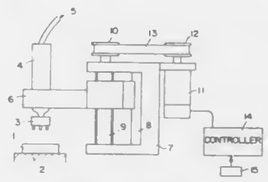
1. An improved cabinet for dispensing a sheet of paper from a stack of paper sheets in the cabinet, the cabinet having a dispensing opening, a refillable container section, and a cover section wherein the improvement comprises:
(a) first means, pivotally mounted in the cabinet, having a surface that pivots into contact with the stack thereby restricting the stack length when the container section is separated from the cover section, the first means being pivotable to a pressure relieving position when the container section is joined with the cover section; and (b) second means for pivoting the first means from the stack length restricting position to the pressure relieving position when the contained section is joined with the cover section, thereby reducing the pressure on the sheet adjacent the dispensing opening caused by a compression force applied to the stack by the pivoted surface.

4,938,383

DISPENSER APPARATUS

Nobuto Yamazaki, Tachikawa; Shigeru Fuke, Higashikurume, and Akihiro Hirayanagi, Tachikawa, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

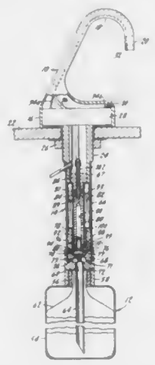
Filed Jan. 31, 1989, Ser. No. 304,803
Claims priority, application Japan, Apr. 13, 1988, 63-89115
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—41 3 Claims



1. A dispenser apparatus comprising:
a syringe equipped with a nozzle;
a rotational driving means which drives said syringe upward and downward;
a controller which controls the rotational stopping positions and rotational speed of said driving means; and

digital switches for inputting programs into said controller, said program setting the rotational stopping positions and rotational speed of said driving means, and the position to which said nozzle is lowered and the speed at which said nozzle is raised being controlled by said setting program.

4,938,384
LIQUID DISPENSER
Joseph J. Pilolla, Elmhurst; John R. Wilson, Naperville; Edward M. Jones, Hoffman Estates, and Richard A. Kamysz, Roselle, all of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed Jan. 17, 1989, Ser. No. 297,594
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—52 **34 Claims**



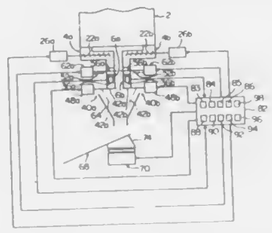
26. A liquid dispenser for automatically dispensing a measured quantity of liquid to a user, comprising a proximity detection means for sensing the presence of a user in a detection zone at the liquid dispenser, control means responsive to the detection means when a user is detected, said control means including a means for activating a pump for dispensing the measured quantity of liquid and electrical inhibiting means for effectively locking out the operation of the liquid dispenser for a predetermined minimum interval immediately following the dispensing of liquid to the user, said pump including a solenoid and a plunger.

4,938,385
POWDER FEEDING APPARATUS
Tsunemi Hayashi, Shizuoka, Japan, assignor to Akatake Engineering Co. and Shin-etsu Chemical Co., Ltd., both of Tokyo, Japan
Filed Apr. 12, 1989, Ser. No. 337,059
Claims priority, application Japan, Sep. 5, 1988, 63-220325
Int. Cl.[5] B67D *5/08*; G01G *13/00*
U.S. Cl. 222—55 **5 Claims**

1. A powder feeding apparatus comprising a holding hopper for holding a powdery material, a metering hopper for metering the powdery material supplied from the holding hopper, a weight measuring means for measuring the weight of the powdery material in the metering hopper, an opening and closing means adapted to be selectively held at an opening position at which it opens a discharge opening in the metering hopper and a closing position at which it closes the discharge opening and a control means for controlling the actuation of the opening and closing means, the control means having a timer means for timing a discharge interval and a discharge interval setting means for setting the discharge interval of the powdery material; wherein

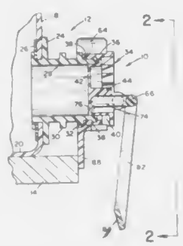
the control means further includes a discharge interval correcting means for correcting a standard discharge interval set by the discharge interval setting means,

said discharge interval correcting means comparing a standard discharge weight of the powdery material supplied every time the opening and closing means opens the discharge opening of the metering hopper with the weight of the powdery material actually discharged from the metering hopper; and, when the weight of the powdery material



actually discharged from the metering hopper is larger than the standard discharge weight, said correcting means corrects the discharge interval so that it becomes longer than the standard discharge interval; and, when the weight of the powdery material actually discharged from the metering hopper is smaller than the standard discharge weight, said correcting means corrects the discharge interval so that it becomes shorter than the standard discharge interval.

4,938,386
CUP TRIP ASSEMBLY
Henry G. Roethel, and James P. Leigh, both of Ravenna, Ohio, assignors to The Meyer Company, Cleveland, Ohio
Filed Jan. 18, 1989, Ser. No. 298,021
Int. Cl.[5] B65D *47/08*
U.S. Cl. 222—92 **14 Claims**



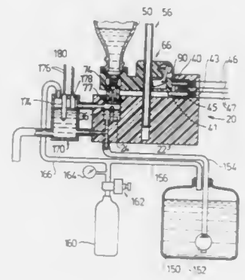
1. A cup trip assembly for sue on bag-in-the-box and membrane type beverage containers having an outlet nozzle with a manually operable dispensing valve carried at the end thereof; said cup trip assembly comprising:

a mounting collar including engaging positions adapted to encircle and releasably lock to said nozzle for support therefrom at a location adjacent said dispensing valve;

an operating member carried by said mounting collar at a location axially outwardly of said nozzle in general alignment with said nozzle, said operating member mounted for rotation about an axis transverse to said mounting collar and having an operating means extending rearwardly therefrom for engagement with said dispensing valve for moving said valve to an open position when said operating member is rotated in a first direction and permitting said valve to move to a closed position when said operating member is rotated in a second direction; and

a cup trip lever joined to and depending from said operating member to a position subjacent said dispensing valve where movement of a cup to a receiving position beneath said dispensing valve causes movement of said cup trip lever to rotate said operating member in said first direction.

4,938,387
DEVICE FOR SELECTIVELY DISPENSING AND MIXING A PLURALITY OF BEVERAGES
Stig Kervefors, Ekerö ; Gösta Söderström, Johannesbov, and Hans Krook, Sollentuna, all of Sweden, assignors to Drinx Production AB, Taby, Sweden
Filed Dec. 19, 1988, Ser. No. 286,253
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.4 **27 Claims**



1. A device for selectively dispensing and mixing a plurality of beverages, having separately for each beverage a storage unit, a pump unit and a dispensing unit, said units for each beverage being connected in series by pipe conduits, each storage unit comprising an intermediate storage unit provided between a storage container and a respective pump unit and arranged to receive a volume of beverage larger than the volume dispensable on each operation by the pump unit via said dispensing unit, and said dispensing units being combined so as to provide a bundle to dispense and mix the beverages in selected quantities and combinations into a receptacle, wherein each intermediate storage unit comprises at least one inlet housing for communication with a respective storage container, and a storage vessel for communication with said inlet housing and with the respective pump unit and means for venting said inlet housing and said storage vessel to ambient gas, and wherein each dispensing unit comprises a dispensing nozzle of resilient material and actuable by the pressure from said pump unit only.

4,938,388
GLUE TRANSPORT MECHANISM FOR A MOLTEN GLUE DISCHARGING DEVICE
Chao Bin Yeh, Taipei, Taiwan, assignor to Future Co., Ltd., Taipei, Taiwan
Filed May 5, 1989, Ser. No. 347,870
Int. Cl.[5] B67D *5/62*; B05G *5/04*
U.S. Cl. 222—146.5 **6 Claims**

I. An electric glue gun, including:

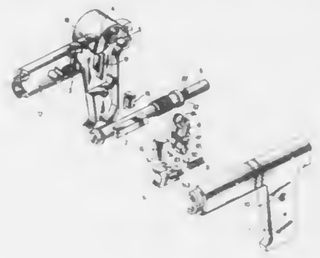
a housing;

a glue stick guide tube having front and rear ends disposed in said housing for receiving a glue stick therein, said glue stick guide tube incorporating an upper notch and a lower notch opening thereinto;

an electric heating element externally mounted on said glue stick guide tube adjacent the front end thereof;

a servo-motor mounted in said housing and including a rotary driven gear, said gear projecting through said upper notch of said glue stick guide tube to drive a glue stick disposed therein and to move said glue stick forward in said guide tube for melting by said electric heating element;

a pressure wheel set mounted for up and down shifting within said housing and including an upper end from which a pressure wheel is journalled projecting into said lower notch and a lower end, a trigger shiftably mounted from said housing for movement between on and off



positions, said trigger and said lower end including coacting means for upwardly displacing said pressure wheel set relative to said housing responsive to movement of said trigger toward said on position;

a motor controlling switch mounted in said housing for controlling operation of said servo-motor; and

an operator shiftably supported from said housing and operatively associated with said trigger and motor controlling switch for closing the latter responsive to shifting of said trigger to said on position.

4,938,389
FILTER BOTTLE
Scott R. Rossi, Haverhill, and Jeffrey P. Gilbard, Boston, both of Mass., assignors to Eye Research Institute of Retina Foundation, Boston, Mass.
Filed Nov. 3, 1988, Ser. No. 266,701
Int. Cl.[5] B65D *5/58*; B01D *35/00*
U.S. Cl. 222—189 **9 Claims**



1. A liquid dispenser for dispensing sterile liquids comprising:

a reservoir compartment adapted for storing sterile liquids;

a tip adapted to dispense said sterile liquids;

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a flow passage providing fluid communication between said tip and said reservoir; and

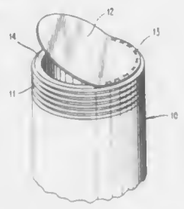
a filter assembly, said filter assembly being sealed in said fluid passage so that it extends across the entire expanse of said flow passage to prevent fluid and air flow except through said filter assembly, said filter assembly comprising a hydrophilic filter and a hydrophobic filter arranged in fluid communication serially along said flow passage so that said hydrophilic filter is nearer to said reservoir than said hydrophobic filter, said hydrophobic filter and said hydrophilic filter each having pores sufficiently small to act as microbial filters.

4,938,390

LIQUID STORAGE CONTAINER WITH DISPENSING CLOSURE

Neil F. Markva, 5901 Sherborn La., Springfield, Va. 22152

Filed Jul. 24, 1987, Ser. No. 77,696
Int. Cl.[5] B65D *81/24*
U.S. Cl. 222—206 **13 Claims**



1. The combination comprising:

(a) container means including a body portion and a neck portion;

(b) an amount of liquid material disposed within the container means for storage thereof;

(c) the neck portion extends from the body portion at one end thereof to a discharge opening defined by a peripheral wall edge at the other end thereof, said wall edge end having a uniform width around the entire discharge opening;

(d) sealing means effective to contain the liquid when the container means is inverted to otherwise cause the liquid therein to pour out of the discharge opening;

(e) said sealing means includes membrane means and adhesive means for securing the membrane means to said uniform width wall edge around the discharge opening;

(f) said securing adhesive means includes a fixed adhesive section a delimited distance along said wall edge end and a tacked adhesive section along said wall edge end to keep the membrane means fixed thereto when the membrane means parts along the tacked adhesive section;

(g) said tacked adhesive section having an adhering strength less than the adhering strength of said fixed adhesive section;

(h) said fixed adhesive section remaining fixed to said uniform width wall edge end and said tacked adhesive section becoming unsecured therefrom;

(i) the membrane means includes two membrane members composed of a thin film material with one membrane member being overlapped onto the other membrane member; and

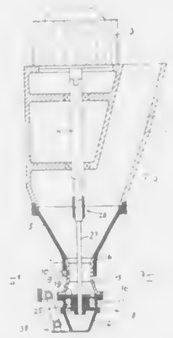
(j) the tacked adhesive section includes a defined area between overlapped portions of the two membrane members.

4,938,391

CONVERTIBLE METERING APPARATUS FOR DIFFERENT FLOWABLE GOODS OF UNLIKE CONSISTENCY

Bruno Gründler, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 9, 1988, Ser. No. 282,031
Claims priority, application Switzerland, Dec. 11, 1987, 4852/87
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—278 **9 Claims**



1. A metering apparatus kit for providing a convertible metering apparatus to dispense metered quantities of different flowable goods of unlike physical properties, comprising

(a) a housing defining a material storage chamber therein;

(b) a motor;

(c) a drive shaft having an axis and being rotatably connected to said motor and extending into said housing;

(d) a first metering member adapted to handle a flowable material of a first physical property;

(e) a second metering member adapted to handle a flowable material of a second physical property;

(f) a first discharge unit configured to receive said first metering member therein;

(g) second discharge unit configured to receive said second metering member therein;

(h) a first releasable connecting means for readily connecting a selected one of said first and second metering members to and readily disconnecting it from said drive shaft; and

(i) a second releasable connecting means for readily connecting a selected one of said first and second discharge units to and readily disconnecting it from said housing.

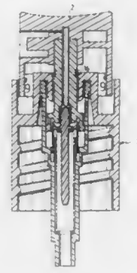
4,938,392

ANTI-LEAKAGE STRUCTURE FOR A LIQUID ATOMIZER

Cheng-Yuan Su, No. 124, Sec. 4, Tung-Ta Road, Hsin-Chu, Taiwan

Filed Nov. 29, 1988, Ser. No. 277,270
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—321 **4 Claims**

1. A liquid atomizer of the type including a piston having both an axis and a cylindrical periphery, said piston movable along said axis within a ring body and defining an annular air gap therebetween, the piston having an annular shoulder engageable by a lower edge of the ring body for forming a first seal of the air gap, the improvement comprising the ring body being provided with a second seal means including an inwardly directed annular flange disposed in sealing and sliding engagement around the periphery of the piston and spaced from the first seal to prevent liquid from entering the air gap and leaking out of the atomiser due to breaking of the first seal caused by inadvertent separation of the lower edge of the ring body from the annular shoulder, and air passage means formed on the periphery of the piston, whereby when the flange encounters



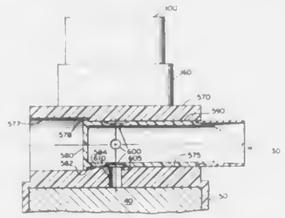
the air passage means upon axial movement of the piston relative to the ring body over a predetermined operating distance, air is permitted to flow through the air passage means and into the air gap during operation of the atomizer.

4,938,393

BIMODAL STORAGE AND DISPENSING PACKAGE FOR FLUENT MATERIAL

Kenneth R. Ericson; Paul K. Platt; Robert H. Van Coney, and Elmer K. Linman, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 209,126, Jun. 2, 1988, abandoned, which is a continuation of Ser. No. 803,269, Nov. 27, 1985, abandoned. This application Nov. 6, 1989, Ser. No. 432,658
Int. Cl.[5] B67D *5/40*
U.S. Cl. 222—380 **2 Claims**



1. A storage and dispensing package for fluent material, said package having a first mode of operation capable of storing said fluent material without leakage when said package is subjected to unintentional external forces and a second mode of operation capable of dispensing said fluent material when said package is subjected to external forces intentionally applied by the user, said second mode of operation also being capable of automatically isolating substantially all of the fluent material remaining in said package from the surrounding atmosphere as soon as said intentionally applied external forces are removed, said package comprising:

(a) a container for housing said fluent material;

(b) means for applying pressure to said fluent material in said container by applying external forces to said package;

(c) a conduit for transportation said fluent material from the interior of said container to the exterior of said container, said fluid conduit having an inlet end for receiving said fluent material from said container and a discharge end remote from said inlet end, said fluid conduit comprising a hollow tubular member having a closed end wall at its inlet end and a continuous side wall, said tubular member being slidable withing a complementary shaped sheath portion of said container;

(d) a first valve which does not open in response to pressure of the fluent material in said container, said first valve being located at said inlet end of said fluid conduit, said first valve having a closed position which correspond to said first mode of operation and which prevents fluid communication between said fluent material in said container and the inlet end of siad fluid conduit regardless of the pressure applied to said fluent material, said first valve also having and open position which corresponds to said second mode of operation and which permits fluid communication between the fluent material in said container and the inlet end of said fluid conduit, said first valve comprising a first orifice in said continuous side wall of said fluid conduit which is placed in fluid communications with a second orifice in said sheath portion of said container only when said first valve is in said open position, said first valve further including means for manually switching said valve between said closed position and said open position, said means for manually switching said first valve comprising said fluid conduit; and

(e) a second valve located at the discharge end of said fluid conduit, said second valve being normally closed to prevent fluid communication between fluent material contained in said fluid conduit and the surrounding atmosphere, said second valve being openable only in response to pressure applied by said fluent material in said fluid conduit, said second valve being automatically closable whenever the pressure of said fluent material in said fluid conduit is relieved;

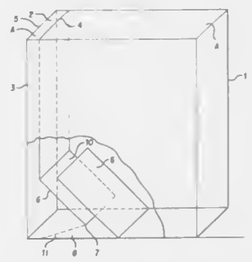
whereby leak resistant handling, shipping and storage of said fluent material contained in said package can be carried out while said first valve is in said closed position and dispensing of said fluent material from said package can be carried out while said first valve is in said open position by applying external forces to said container to pressurize said fluent material in said container and said fluid conduit.

4,938,394

CONTAINER FOR DISPENSING MEASURED QUANTITIES OF FREE FLOWING POWDERED MATERIAL

Joseph A. Biacchi, 102 Prospect St., Jamestown, N.Y. 14701

Continuation of Ser. No. 291,285, Dec. 28, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 418,957
Int. Cl.[5] G01F *11/26*
U.S. Cl. 222—456 **6 Claims**



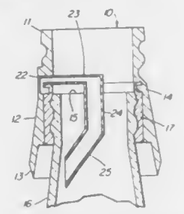
1. A box for holding and dispensing soap and other flowable material having a discharge opening at the top of the box, a discharge chute leading from the bottom to the top of the box, and the box defining a material chamber;

a first baffle extending at an acute angle from the chute toward the bottom of the box and defining an opening to

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the chute and a measuring chamber between the lower end of the first baffle and the bottom of the box;
and a second baffle spaced from and generally parallel to and overlapping the first baffle, extending at an acute angle from the bottom of the box toward the chute and defining with said first baffle a passage from said material chamber to said measuring chamber when the box is upright and for returning excess material to said material chamber when the box is inverted to discharge material from said measuring chamber through said discharge opening.

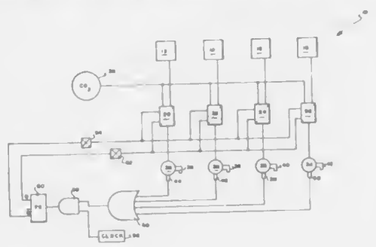
4,938,395
MOUTHPIECE FOR BOTTLES AND THE LIKE
James M. Jamieson, Box 2336, New Liskeard, Ontario, Canada P0J 1P0
Filed Jan. 10, 1989, Ser. No. 295,400
Claims priority, application Canada, May 20, 1988, 564559
Int. Cl.[5] B65D *23/06*
U.S. Cl. 222—478 **7 Claims**



1. A mouthpiece to facilitate direct human consumption of liquid from a narrow-necked container, such as a bottle having a mouth defined by a peripheral rim that in use is enclosed by the lips of the consumer, said mouthpiece comprising:
a tubular body having a mounting section adapted to engage the peripheral rim of the bottle mouth and form an annular seal therewith;
an adjoining extension that defines an annular wall projecting axially away from said mounting section to surround the container adjacent its mouth, the annular wall encompassing the same diameter as the mouth of the container to allow for unrestricted liquid flow, and terminating in a smooth annular free end;
and vent passage means formed in said mouthpiece communicating between an interior outlet receiving a tube for opening to the interior of the container, and an exterior inlet located on the surface of the mouthpiece at a position spaced from said free end by a distance sufficient to ensure that in use said inlet will not be blocked by the lips of the consumer and air can pass therethrough to the interior of the container to replace the liquid being consumed.

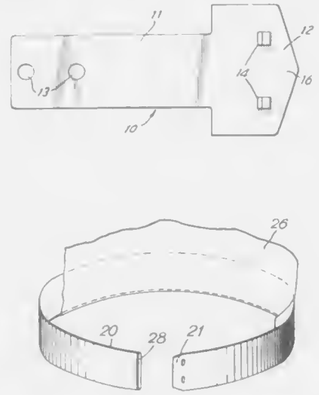
4,938,396
SYRUP DISPENSING SYSTEM
Joseph W. Shannon, Kent, Ohio, assignor to ABC/Sebrn Tech. Corp., Akron, Ohio
Filed May 18, 1988, Ser. No. 195,276
Int. Cl.[5] B67D *5/30*
U.S. Cl. 222—641 **9 Claims**

1. A syrup dispensing system for a soft drink dispenser, comprising:
at least one bulk supply of syrup;
at least one dual cavity dual piston positive displacement pump connected to and receiving syrup from said bulk supply;
at least one dispensing head in syrup-receiving communication with said pump; and
means connected to said pump for assuring a fixed rate of flow of syrup to said dispensing head independent of the temperature or viscosity of the syrup, said means comprising a clock operatively connected to said pump for enabling and disabling said pump at a set clock rate; and



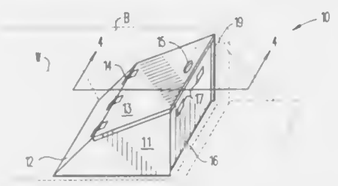
switching means interconnected between said clock and said pump for mutually exclusively enabling said dual pistons of said pump.

4,938,397
HAT ADJUSTING TECHNIQUE
Vasant J. Shend'ge, 115 Erskine Hill, London NW11 6HU, England
Continuation-in-part of Ser. No. 940,034, Dec. 10, 1986, abandoned. This application Jul. 1, 1988, Ser. No. 214,690
Claims priority, application United Kingdom, Dec. 10, 1985, 8530371
Int. Cl.[5] A42C *1/00, 3/00;* A42B *1/22*
U.S. Cl. 223—7 **3 Claims**



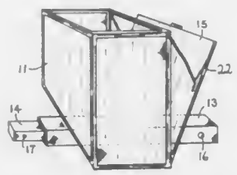
1. A method of inserting a first member into an open end of a substantially flattened tubular member, the method comprising providing said first member as a flap on the other end of the substantially flattened tubular member, providing the flap with first engagement means, introducing a substantially planar tool comprising a head portion having a width less than or equal to the width of said tubular member, said head portion having second engagement means, inter-engaging the first and second engagement means to form a one-way drive connection, inserting said head portion into said open end and moving it along in said one way within said tubular member entraining said first member therewith, and withdrawing said tool and disengaging said first and second engagement means, leaving said first member inserted in said open end.

4,938,398
TRUCK STORAGE BOX
James E. G. Hallsen, 3902 Tammy Ct., New Albany, Ind. 47150
Filed Sep. 11, 1989, Ser. No. 405,227
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.42 **10 Claims**



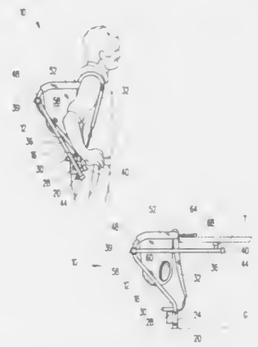
1. A truck storage box for mounting in a pick-up truck bed having a pair of spaced parallel vertical side walls connected by a horizontal floor, a tail gate pivotally mounted on a rear end portion of the truck be for movement between open and closed positions, and a pair of wheel wells extending upwardly through the floor at a predetermined distance forwardly of the tailgate, said storage box comprising:
a pair of generally vertical side walls;
a planar generally horizontal base connecting said generally vertical side walls;
an aerodynamically configured front wall connecting said base and said vertical side walls;
an aerodynamically configured cover mounted for movement between open and closed position; and
a rear panel removably mounted in a rear opening formed between said generally vertical side walls.

4,938,399
ARTICLE CARRIER
Harold L. Hull, 401 Canyon Way, Sp. 43, Sparks, Nebr. 89431, and Albert B. Currey, Rte. 1, Box 185, Eucha, Okla. 74342
Filed Jul. 25, 1988, Ser. No. 223,903
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.43 **3 Claims**



1. An article carrier adapted to be detachably connected to an existing square tubular receiver mounted to a frame of a towing vehicle, for connecting and transferring the weight of a towed vehicle, while providing an additional container means intermediate the towed and towing vehicle, the article carrier comprising:
a connection member adapted to be slidably fastened within said square tubular receiver;
a carrier member connected at its proximate end to said connection member, said carrier member consisting of a single elongate beam having an upper flat surface and being capable of supporting and transferring the weight of a towed vehicle to said connection member, the connection member then transferring the weight to a towing vehicle, said carrier member also having a container means mounted on top thereof for providing storage space;
said container means mounted to the carrier member comprising an enclosed rigid box having a bottom wall, front wall, back wall, side walls and a door, said bottom wall directly secured to said upper flat surface of said carrier member;
and a receptacle member removably attached to the distal end of said carrier member, said receptacle member having a ball hitch adapted to receive a conventional trailer hitch from a towed vehicle.

4,938,400
COMBINATION PACK AND SEAT
Ted B. Springston, 79 Prairie Ridge Rd., Highlands Ranch, Colo. 80126
Filed Aug. 21, 1989, Ser. No. 396,134
Int. Cl.[5] A45F *4/02*
U.S. Cl. 224—155 **16 Claims**

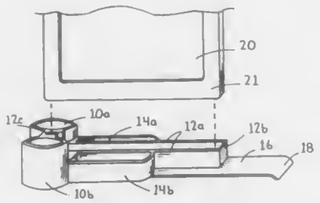


1. A combination pack and seat, comprising:
a pair of spaced side frame members extending in parallel relation;
each of said side frame members connected by a radiused bend portion with an obliquely extending ground support foot;
a non-slip tip formed from a resilient material on each of said ground support feet;
an offset support brace extending between said ground support feet, opposite ends of said support brace secured adjacent said radiused bend portions;
a back support strap extending between said ground support feet, opposite ends of said ground support straps secured to said feet between said support brace in said non-slip tip;
an upper end of each of said side frame members connected by an arcuate curved portion with a top frame member, said top frame members extending in spaced parallel relation;
a transverse end bar connecting free end portions of said top frame members;
a resilient padding material covering said top frame members and said top end bars;
a child carrying pouch formed from a flexible material suspended from said top frame members and said top end bar, said pouch having an open upper end disposed in a rectangular channel formed by said top frame members and said top end bars;
a pair of feet receiving apertures in said pouch;
an extension member telescopically received in a free end of each of said top frame members, said extension members mounted for selective linear extension and retraction and extending in parallel relation;
a non-slip tip formed from a resilient material on a free end of each of said extension members;

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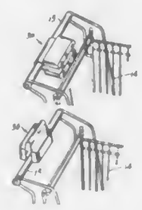
a pair of padded adjustable shoulder straps extending between said top end bar and said support brace;
a pair of pivotal struts, each having an upper end mounted by a pivot mechanism adjacent said arcuate curved portion of one of said frame members;
each of said pivotal struts terminating at a lower end in a non-slip tip formed from a resilient material;
a transversely extending abutment member adjacent said lower end on each of said pivotal struts, each of said abutment members terminating in a non-slip tip formed from a resilient material; and
each of said pivot mechanisms including a circular array of cooperating detents for locking said pivotal struts in a selected position, whereby said pivotal struts may be pivoted to a first position to carry a child in said pouch in a back pack fashion, and to a second position to form a free standing child seat, and to third position to engage a table top between said pivotal struts and said extension members to form a table engaging child seat.

4,938,401
AUTOMOBILE PASSENGER SEAT DIVIDER
Diane B. Weisbrodt, and Richard G. Weisbrodt, both of Raleigh, N.C., assignors to R&D Ventures, Inc., Raleigh, N.C.
Filed Jul. 14, 1989, Ser. No. 379,598
Int. Cl.[5] B60R *7/04*
U.S. Cl. 224—275 7 Claims



1. An automobile seat divider unit comprising a divider base unit and an insert unit:
said divider base unit having;
a base plate having first and second end portions and opposite side portions extending between said first and second end portions,
an elongated insert sleeve disposed on said base plate having first and second end walls and two side walls connecting said first and second end walls and defining means to securely support said insert unit wherein said first end wall is located adjacent said first end portion of said base plate, said second end wall is located intermediate said first and second end portions of said base plate and said two side walls are centrally located between said opposite side portions of said base plate, and
a plurality of storage cylinders providing means to securely support a standard sized drinking cup and a plurality of storage bins providing means to retain items, whereby at least one of said storage cylinders and at least one of said storage bins are disposed adjacent each side of said two side walls of said insert sleeve and on said base plate,
wherein the second end portion of said base plate extending past the second end wall of said insert sleeve has means to hold said divider base unit onto an automobile seat cushion;
said insert unit having;
means for insertion into said insert sleeve and means for placing articles thereon to be carried.

4,938,402
COUPON HOLDER
Heather E. Anatra, and Victor Anatra, both of Guilford, Conn., assignors to Anatra Enterprises, Inc., Guilford, Conn.
Filed Apr. 10, 1989, Ser. No. 335,817
Int. Cl.[5] B62B *5/00*
U.S. Cl. 224—277 12 Claims



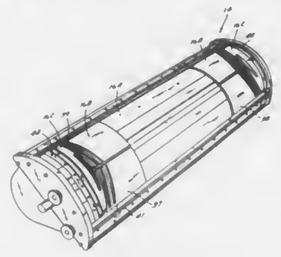
1. For use with a shopping cart having a horizontal pushing handle extending rearwardly therefrom, a coupon holder molded in one piece of rigid plastic material and having two spaced apart open top coupon receptacles joined by an upper arcuate portion adapted to be received on said handle whereby said receptacles depend on either side of said handle, each of said receptacles being defined by end walls and a bottom wall, and further including at least one strap member attached to said receptacles, said strap member flexing said arcuate portion to cause it to engage said handle and secure said holder to said handle.

4,938,403
FREIGHT STACKING SUPPORT
David P. Cortelli, 1036 E. Street North, Suffield, Cona. 06078
Filed Feb. 1, 1989, Ser. No. 304,579
Int. Cl.[5] B60R *11/00*
U.S. Cl. 224—310 11 Claims



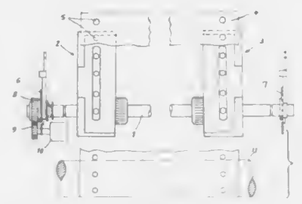
1. A freight stacking support apparatus for enhancing the durability and freight handling capacity of the freight carrying beds of pickup trucks wherein the beds are of the type having two parallel, opposing side walls that extend from a passenger compartment of the truck to a pivotable tailgate between ends of the side walls, said freight stacking support comprising:
a. a pair of opposing brackets adapted to be mounted on the side walls adjacent the tailgate such that said brackets have upper portions that extend above the side walls, said upper portion of each bracket include an arcuate channel, wherein said channels are in open-facing relationship to each other when mounted on said truck; and
b. a support beam adapted in size and shape to span the width of the bed and to removably fit within the arcuate channels of the opposed brackets, wherein the support beam has at least one beam securing slot adjacent each of its ends and each of said brackets have pin means adapted to be received in said slots for securing the beam within the channels and thereby, positioned above the bed.

4,938,404
APPARATUS AND METHOD FOR ULTRASONIC CONTROL OF WEB
Randall D. Helms, and Robert A. Daane, both of Green Bay, Wis., assignors to Advance Systems, Inc., Greey Bay, Wis.
Filed Jul. 14, 1989, Ser. No. 380,125
Int. Cl.[5] B65H *23/00*
U.S. Cl. 226—10 6 Claims



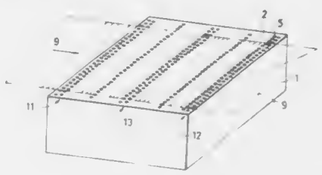
1. Web processing apparatus comprising:
a contactless web guide;
first means operable to support a web in spaced apart relationship from said contactless web guide;
and control means operable to transmit, reflect off of said web, and receive an ultrasonic signal which travels through air to ascertain the actual position of said web relative to a predetermined position with respect to said web guide by measuring the distance traversed by said ultrasonic signal between transmission and reception thereof by measuring the time interval between transmission and reception of said ultrasonic signal and by effecting temperature compensation of said time interval in accordance with the ambient temperature of the air through which said ultrasonic signal travels; and to effect operation of said first means to move said web from said actual position to said predetermined position.

4,938,405
TRACTOR DRIVE FOR AN OFFICE MACHINE
Detlef Kunst, Horsten, Fed. Rep. of Germany, assignor to AEG Olympia Office GmbH, Wilhelmshaven, Fed. Rep. of Germany
Filed Oct. 11, 1989, Ser. No. 419,668
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1988, 3834563
Int. Cl.[5] B65H *20/22*
U.S. Cl. 226—74 14 Claims



1. A tractor drive for feeding continuous paper in an office machine, comprising
(a) a drive shaft supported for rotation about a longitudinal drive shaft axis; said drive shaft having an axially extending groove defined by side walls and a bottom formed in the drive shaft;
(b) a tractor housing;
(c) a drive wheel rotatably supported in the tractor housing;
(d) a transport member connected to said drive wheel to be driven by said drive wheel; said transport member having means for projecting into marginal perforations of the paper for transmitting a feeding force thereto;
(e) a bearing sleeve affixed to said drive wheel and coaxially mounted on said drive shaft;
(f) a feather key carried by said bearing sleeve and being in alignment with said groove; and
(g) an actuating member operatively connected to said feather key and having a clamping position and a releasing position; in said clamping position said actuating member presses said feather key into a clamping contact with said bottom, whereby said tractor housing, said drive wheel, said transport member and said bearing sleeve are axially immobilized as a unit relative to said drive shaft; in said releasing position said actuating member allows said feather key to be released from said bottom, whereby said tractor housing, said drive wheel, said transport member and said bearing sleeve are, as a unit, axially shiftable on and relative to said drive shaft.

4,938,406
AIR JETTING BOX
Hiroshi Nakashima; Masayuki Kawarada; Kiyoshi Okutsu, and Sanshiro Fukuhara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 5,986, Jan. 21, 1987. This application Aug. 16, 1988, Ser. No. 232,528
Claims priority, application Japan, Jan. 21, 1986, 61-008893
Int. Cl.[5] B65H *20/14*
U.S. Cl. 226—97 3 Claims



1. An air jetting box for floating a moving web, comprising:
upstanding wall means, and
a flat plate having an air jetting surface on top of said upstanding wall means, in which a plurality of lines of air jetting holes are formed in such a manner that said lines are extended in the widthwise direction of said web and the sum of the areas of said air jetting holes is from 1% to 3% of the total area of said air jetting surface,
wherein said lines of air jetting holes are formed in both of two opposite edge regions and a middle region therebetween, and
wherein there are two of said lines of said air jetting holes in each of said edge regions and said middle region, the distance between two lines in any one region being less than the distance between a line in one of said regions and an adjacent line in an adjacent region.

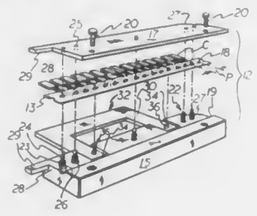
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4,938,407

INACTIVE FEEDER FOR RADIAL COMPONENT INSERTION MACHINE

Vance F. St. Hilaire, Beverly, Mass., assignor to Emhart Industries, Inc., Hartford, Conn.

Filed Oct. 12, 1989, Ser. No. 420,418
Int. Cl.[5] B65H *5/00, 23/28*
U.S. Cl. 226—196 **3 Claims**



1. An inactive feeder for a radial component insertion machine comprising

elongated body means including a downwardly extending channel for receiving a lead tape having evenly spaced sprocket holes and components, the depth of said channel being selected so that the components carried by said received lead tape will be located above said body means,

a first pair of ball detents at the forward end of said channel for forcefully entering adjacent sprocket holes of the received lead tape, and

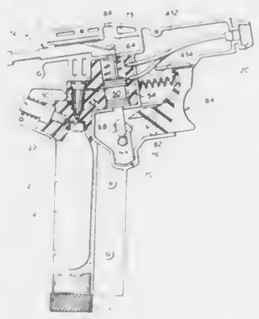
a second pair of ball detents at the rear end of said channel for forcefully entering adjacent sprocket holes of the received lead tape whereby the lead tape can be advanced by an increment equal to the distance between adjacent sprocket holes and said first and second pairs of ball detents will precisely locate the lead tape.

4,938,408

SURGICAL STAPLER SAFETY AND SEQUENCING MECHANISMS

James Bedi, Cincinnati, Ohio; Bela Vincze; Jess Deniega, both of Flemington, N.J.; Dale Schulze, Lebanon; William Fox, New Richmond, both of Ohio, and Jack Pedlick, Butler, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 9, 1989, Ser. No. 294,535
Claims priority, application United Kingdom, Jan. 15, 1988, 8800909
Int. Cl.[5] A61B *17/072*
U.S. Cl. 227—8 **20 Claims**



1. A surgical stapling instrument including a stapler head having a clamping mechanism and a stapling mechanism, a handle including means for actuating said stapling mechanism at a predetermined stapling gas pressure, and means interconnecting said handle and said stapler head comprising:

a source of pressurized gas located in said handle;

coupled to said gas source, first means for developing pressure regulated from said pressurized gas source;

coupled to said first means and to said clamping mechanism, second means for variably controlling the pressure of gas supplied to said clamping mechanism, said second means including a manual control;

coupled to said actuating means, third means for preventing actuation of said stapling mechanism prior to the development of said predetermined stapling gas pressure within said actuating means, said third means comprising a first lock which prevents said actuating means from actuating said stapling mechanism prior to the development of said predetermined stapling gas pressure and the manual disengagement of said first lock; and

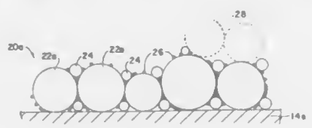
fourth means for inhibiting successive operation of said actuating means prior to manually resetting said fourth means.

4,938,409

BRAZED POROUS COATING AND IMPROVED METHOD OF JOINING METAL WITH SILVER MATERIAL

Peter R. Roberts, Groton, Mass., assignor to Nuclear Metals, Inc., Concord, Mass.

Division of Ser. No. 162,072, Feb. 29, 1988, Pat. No. 4,813,965. This application Jan. 17, 1989, Ser. No. 297,118
Int. Cl.[5] A61F *1/24*
U.S. Cl. 228—178 **25 Claims**



1. A method of forming a brazed porous coating of metal particles on a metal substrate of a device, comprising:

interposing a silver material between the substrate and the particles, and placing the particles onto the substrate;

heating the device to a first temperature slightly below the melting point of the silver material;

briefly heating the device to a second temperature above 1100° C. to rapidly melt the silver material to wet the particles and substrate and to generate alloying among the silver material, the particles, and the substrate; and

allowing the device to cool to solidify the alloy and unite the particles and substrate to form a porous coating on the device.

4,938,410

SOLDERING APPARATUS OF A REFLOW TYPE

Kenshi Kondo, Tokyo, Japan, assignor to Nihon Den-Netsu Keiki Co., Ltd., Tokyo, Japan

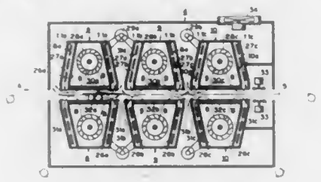
Filed Jan. 18, 1989, Ser. No. 298,164
Claims priority, application Japan, Jan. 19, 1988, 63-7432; Apr. 30, 1988, 63-105478; Jun. 3, 1988, 63-135566
Int. Cl.[5] B23K *1/012*
U.S. Cl. 228—180.1 **6 Claims**

1. In a solder apparatus of the reflow type having a conveyor means for conveying a printed circuit board on which a chip is temporarily mounted with a solder paste, a preheating chamber for preheating the printed circuit board, a reflow chamber for effecting soldering of the chip on the printed circuit board by fusion of the solder paste, and a fan for circulating air in each of the chambers, the improvement comprising, for each of the preheating chamber and the reflow chamber:

a heater mounted on a sidewall of the chamber

a screening member mounted adjacent to said heater to prevent direct radiation of heat into the chamber, and to form with said sidewall a heating sub-chamber;

an air inlet for directing air into said sub-chamber to be heated by said heater, and an air outlet for directing heated air to the circulating fan;



an air discharge disposed adjacent to said conveyor means for discharging heated air from said chamber onto said conveyor means and printed circuit board; and

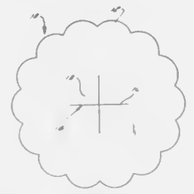
as air flow transforming member disposed in said air discharge for transforming turbulent air flow to laminar air flow to provide a uniform flow of heated air from said discharge.

4,938,411

SKIRT FOR ICE CREAM CONES

Peppino Rizzuto, Stevens Point, Wis., assignor to Apix International, Division of Worzalla Publishing Co., Stevens Point, Wis.

Filed Mar. 31, 1989, Ser. No. 331,142
Int. Cl.[5] B65D *75/00, 81/34*
U.S. Cl. 229—1.5 H **5 Claims**



1. An ice cream cone, comprising:

an edible ice cream holder having a circular cross section;

a drip catching device disposed about said ice cream holder;

said drip catching device comprising a substantially sinusoidal portion caused by said ice cream holder and extending laterally from said ice cream holder, a plurality of flap sections contiguous with said ice cream holder, such that said drip catching device continuously contacts said edible ice cream holder along a circumferential portion thereof.

4,938,412

MANUFACTURE OF COLORED EGG PACKAGES

Vaga Genter, 35, Hoejrups Alle, Hellerup, Denmark DK-2900

PCT No. PCT/DK88/00090, § 371 Date Feb. 21, 1989, § 102(e) Date Feb. 21, 1989, PCT Pub. No. WO88/10337, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 10, 1988, Ser. No. 314,534
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720265
Int. Cl.[5] B65D *85/32*
U.S. Cl. 229—2.5 EC **30 Claims**



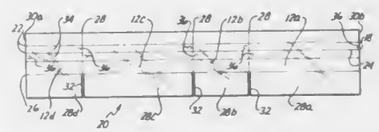
1. Method for manufacturing coloured egg packages from a pulp, charcterized in that the egg package receives a final outside colour after the package is molded by spraying a dye onto the package.

4,938,413

COLLAPSIBLE BOXES

Steve Wolfe, 2024 Argyle, Apt. E, Los Angeles, Calif. 90068

Filed Feb. 27, 1989, Ser. No. 316,427
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—101 **6 Claims**



1. For making a collapsible container, a sheet of corrugated cardboard cut and scored transversely to a longitudinal dimension to define a plurality of wall panels and a plurality of flaps foldable for making a rectangular box with a bottom,

one or more accordion folds extending longitudinally on said sheet, each said fold including parallel crease lines on a common side of said sheet and an intermediate crease line on an opposite side of said sheet and diagonally opposed areas of crushed corrugation in said cardboard adjacent to each intersection of said intermediate crease with said transverse creases.

4,938,414

POSTCARD TYPE MAILING PIECE WITH REMOVABLE MESSAGE LABELS

Ludwig Lippert, 8422 Blakiston La., Alexandria, Va. 22308

Filed May 3, 1989, Ser. No. 346,732
Int. Cl.[5] B65D *27/00*
U.S. Cl. 229—92.8 **4 Claims**

1. A postcard-type, mailing piece with removable message labels comprising:

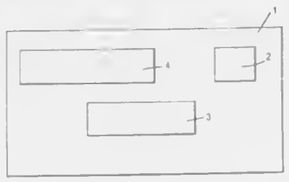
a paper sheet of desired, predetermined dimensions having first and second opposing surfaces, said paper sheet being glossy paper stock of approximately 60 lb. weight;

at least one removable message label adhesively bonded to one surface of said paper sheet, said message label being paper stock of approximately 100 lb. weight;

a releasable, pressure sensitive, permanent high bond strength adhesive coating applied to one side of said mes-

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sage label for adhesively bonding said label to said paper sheet on one surface thereof;
said paper sheet paper stock being capable of accepting and retaining marking by inks and multi-color printing, without smudging or bleeding on the opposite surface to which said message label is adhesively bonded;



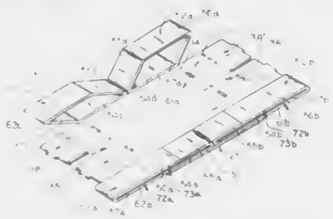
said adhesive which bonds said message label to said paper sheet being capable of readhering following removal from said paper sheet;
said message label paper stock being capable of receiving multi-color printing without smudging or bleeding.

4,938,415

CONTAINER APPARATUS FOR FRIABLE OR GRANULAR MATERIAL

Glen Walker, Picayune, La., and Ben L. Broyles, Beaumont, Tex., assignors to Stone Container Corporation, Chicago, Ill.

Filed Oct. 19, 1989, Ser. No. 424,114
Int. Cl.[5] B65P *5/48*
U.S. Cl. 229—120.29 **15 Claims**



1. A container apparatus for friable or granular material, which facilitates the unfilled shipment, articulation and filling of the container apparatus towards the secure containment of the friable or granular material therewithin, said container apparatus comprising:
one or more containment cell means,
each of said one or more containment cell means having two generally parallel opposed cell side walls and two generally parallel opposed cell end walls, said cell side walls and said cell end walls forming a cell member having a bottom region and an open top region;
tray means for fixedly and restrainably receiving said one or more containment cell means,
said tray means having a generally planar bottom panel described by two substantially parallel opposed side edges and two substantially parallel opposed end edges with said side edges being substantially perpendicular to said end edges, said generally planar bottom panel having an upper surface upon which the bottom region of said one or more containment cell means are seated with the cell side walls and the cell end walls disposed generally perpendicular to said bottom panel upper surface,
said tray means further including a pair of opposed side flaps, each extending upwardly from one of said respective side edges of said bottom panel as well as a pair of opposed end flaps, each extending upwardly from one of said respective end edges of said bottom panel,
each of said side flaps being positioned substantially opposite and parallel to one another and each of said end flaps being positioned substantially opposite and parallel to one another with said side flaps being positioned substantially perpendicular to said end flaps,
at least one of said cell end walls of said one or more containment cell means positioned along a respective one of said bottom panel end edges and juxtaposed to a respective one of said tray end flaps,
at least one of said cell side walls of said one or more cell containment means positioned along a respective one of said bottom panel side edges and juxtaposed to a respective one of said tray side flaps,
each of said tray side flaps restrainably securing said at least one juxtaposed cell side wall through side wall attachment means, and
each of said tray end flaps restrainably securing said at least one juxtaposed cell end wall through end wall attachment means.

4,938,416

METHOD OF DELIVERING A WATER-BASED ROOM AIR FRESHENER

Jerome C. Bertrand, Woodside, Calif., and Robert Pirolo, Tacoma, Wash., assignors to Consoldiated Ceramic Products, Inc., Blanchester, Ohio

Filed May 16, 1989, Ser. No. 352,563
Int. Cl.[5] B05B *9/043*
U.S. Cl. 239—1 **14 Claims**

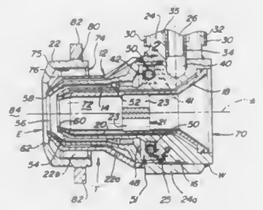
1. A method of delivering a water-based room air freshener comprising
providing a pump sprayer having a liquid container adapted to deliver a minute amount of atomized particles of said liquid into the room atmosphere upon manually activating the pump,
providing in said sprayer container a liquid comprising a water-based dispersion of a fragrance oil and surfactant, said dispersion preserved against microbial attack and free from volatile propellant, and
manually activating said pump to deliver a minute amount of atomized particles of said liquid into the room air, said fragrance oil being released upon said atomization for immediate detection by the olfactory senses.

4,938,417

AIRBLAST FUEL INJECTOR WITH TUBULAR METERING VALVE

Robert M. Halvorsen, Birmingham, Mich., assignor to Fuel Systems Textron Inc., Walled Lake, Mich.

Filed Apr. 12, 1989, Ser. No. 336,773
Int. Cl.[5] B05B *7/10, 7/06*
U.S. Cl. 239—5 **19 Claims**



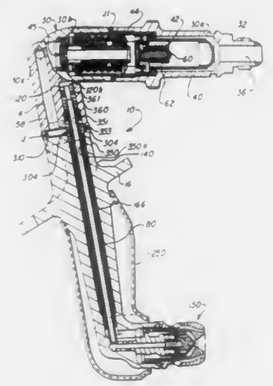
1. A fuel injector tip having a fuel receiving chamber and a fuel discharge orifice downstream of said chamber, a valve seat disposed in the fuel receiving chamber and an arcuate, distensible, tubular valve member for receiving pressurized fuel therein from a source, said tubular valve member having a stationary inlet end in fuel flow communication with the source of fuel and a discharge end disposed in the fuel receiving chamber and cooperatively movable relative to said valve seat in dependence on the pressure of the fuel in said tubular valve member in such a manner as to control discharge of fuel from said tubular valve member to the fuel receiving chamber.

4,938,418

MODULAR FUEL NOZZLE ASSEMBLY FOR GAS TURBINE ENGINES

Robert M. Halvorsen, Birmingham, Mich., assignor to Fuel Systems Textron Inc., Walled Lake, Mich.

Filed Dec. 1, 1988, Ser. No. 278,953
Int. Cl.[5] F02C *7/22*
U.S. Cl. 239—5 **23 Claims**



1. A fuel nozzle assembly having prescribed fuel flow versus fuel pressure characteristics, comprising:
(a) a valve module having a first support housing with a fuel inlet, a fuel metering valve mounted interiorly of the first housing for providing a valved fuel flow and a first fuel passage in the first housing for receiving the valved fuel flow,
(b) a nozzle module having a second support housing, a second fuel passage in the second housing for receiving the valved fuel flow from the first fuel passage, and a fuel injection nozzle on the second housing for discharging the valved fuel flow into a combustion chamber,
(c) means for joining said first housing and said second housing at a joint in such a manner as to permit separation of the valve module and the nozzle module from one another, and
(d) said valve module and nozzle module being separately precalibrated to provide, when joined, said prescribed fuel flow rate versus fuel pressure characteristics without the need for adjustment thereof after joining.

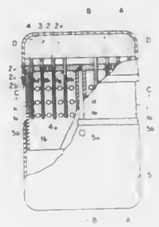
4,938,419

DEVICE FOR ATOMIZING OF ACTIVE SUBSTANCES

Heinz H. Weick, 94, Rue de la Servette, CH-1202 Geneve, Switzerland

Filed Oct. 12, 1988, Ser. No. 256,499
Claims priority, application Switzerland, Mar. 31, 1988, 1216/88; World Int. Prop. O., Aug. 9, 1988, 8800134
Int. Cl.[5] A61L *9/12*
U.S. Cl. 239—55 **7 Claims**

1. A device for the atomizing of active substances, said device comprising:
a plate-form flat hollow body including two wide-side walls of which at least one wide-side wall has a porous zone;
a slide-type cover element slidably movable on the hollow body, the cover element being adjustable from a closed position which covers the porous zone of the hollow body to at least one atomizing position which at least partially frees the porous zone;
the hollow body (1, 2) defining a circumferentially push-in sealing groove (2*b*) which is open toward the cover element (5) and which widens toward the outside, the cover element including a tapered rim portion (5*b*) located on the outside of the cover element for engaging with the



hollow body in the push-in sealing groove when the cover element is in the closed position; and
at least the outer surface of the hollow body at the push-in sealing groove and at least the inner surface of the cover element at the tapered rim portion being smooth sealing surfaces and lying tightly against each other when the cover element is in the closed position, the hollow body at the push-in sealing groove and its sealing surface being slightly reinforced circumferentially so that the outer surface of the hollow body at the push-in sealing groove is at least raised relative to the porous zone of the hollow body.

4,938,420

DEVICE FOR IRRIGATING PLANTS

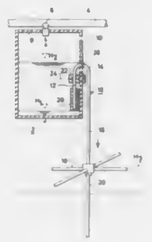
Gideon Ruttenberg, 101-B Stern Street, Kiron, Israel

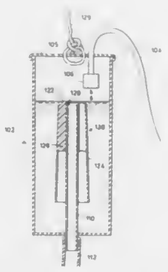
Filed Nov. 12, 1981, Ser. No. 320,695
Claims priority, application Israel, Nov. 19, 1980, 61522; Sep. 11, 1981, 63792
Int. Cl.[5] A01G *27/00*
U.S. Cl. 239—68 **1 Claim**

1. A device for irrigating plants, comprising: a container adapted to be mounted adjacent to a plant to be irrigated, the upper end of the container being vented to the atmosphere; water inlet means connectable to a water supply pipe for inletting water into the container at a low rate over a long period of time; and a water discharge conduit carried by said container, said conduit including an open-ended tube; and a cap having a top wall overlying but vertically spaced from the upper end of the tube, and a side wall enclosing, but spaced laterally from and depending below the upper end of the tube; said cap being mounted on the upper end of said tube so as to be supported thereby, and including axially-extending, circumferentially-spaced, ribs on the inner face of its top wall engageable with the upper end of the tube for axially spacing the cap top wall vertically above the upper end of the tube; said cap further including radially extending circumferentially spaced ribs formed on the inner face of its side wall for frictionally gripping the outer face of the upper end of the tube; said tube, with the cap mounted thereon, being press-fitted within an opening in the bottom wall of the container so as to extend vertically to a pre-fixed height within the container to pre-fix

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the quantity of water accumulating therein effective to produce automatically, and without the movement of any parts, a





siphonic-flow-discharge of water from the container at a high rate and over a short period of time.

4,938,421

CLEANING LIQUID MIXER FOR A WATER LINE, PARTICULARLY FOR A SURFACE CLEANER

Robert C. Berfield, Jersey Shore, and Ronald F. Meland, Muncy, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Continuation-in-part of Ser. No. 289,906, Dec. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 283,378, Dec. 12, 1988, abandoned. This application May 26, 1989, Ser. No. 358,248

Int. Cl.[5] B05B *7/32, 9/04*

U.S. Cl. 239—309 **25 Claims**

1. Apparatus for mixing water and an additional cleaning liquid and for delivering the mixed liquid to a dispenser thereof, comprising:

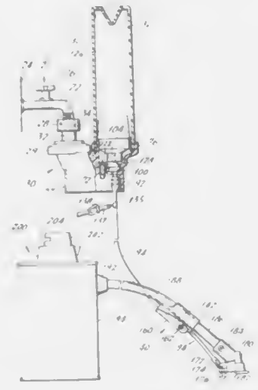
a water supply conduit;

a pressure application capsule, the capsule having an inlet and the water supply conduit communicating with the capsule inlet for delivering water into the capsule; a flexible container containing an additional liquid to be mixed with the water, the container having flexible walls, the container being disposed in the capsule, the capsule and container being so shaped as to provide a plenum in the capsule around the flexible container:

metering means communicating with the capsule comprising

a metering valve body having a first water flow metering passage therethrough for communicating from the inside of the capsule to a first outlet outside of the capsule; the body having a second metering passage for the additional liquid; the second metering passage communicating from inside the container to a second outlet outside of the capsule; the cross-sections of the first and the second metering passages are selected that the same pressure applied to the container of additional liquid and to the water in the capsule, the water will flow through the first metering passage at a flow rate in a predetermined ratio to the flow rate of the additional liquid through the second metering passage;

a mixing chamber into which the first and the second metering passage outlets communicate for enabling the mixing of the additional liquid and water in the chamber, and a third outlet from the chamber;



a dispensing nozzle for dispensing mixed liquid to a surface to be cleaned and a conduit joining the third outlet from the chamber to the dispensing nozzle for delivering liquid thereto.

4,938,422

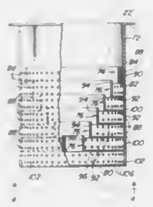
INLET DISTRIBUTOR FOR DOWNFLOW REACTOR

William J. Koves, Hoffman Estates, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 23, 1987, Ser. No. 138,224

Int. Cl.[5] B05B *1/14*

U.S. Cl. 239—553.5 **14 Claims**



1. A fluid distributor comprising:

(a) a conduit having an inlet for receiving a fluid stream;

(b) a plurality of partitions subdividing at least half of the cross-sectional area of said conduit into at least two annular collection zones said partitions having an inner ring that extends longitudinally toward said inlet to a level at least equal to about the most downstream level of the preceding collection zone;

(c) a series of outlet bands spaced along and centered about the longitudinal axis of said conduit, with each outlet band located along the outer boundary of a collection zone, said outlet bands having an arrangement wherein the outlet band located nearest said inlet borders the outmost collection zone and succeeding outlet bands having an increased axial spacing from said inlet border collection zones have progressively increasing inward locations;

4,938,423

PAPER PULP BEATER

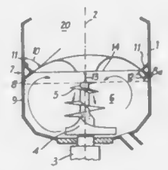
Jean P. Lamort, Vitry, France, assignor to E & M Lamort, Vitry le Francois, France

Filed Apr. 18, 1989, Ser. No. 339,734

Claims priority, application France, Apr. 18, 1988, 88 05103

Int. Cl.[5] B02C *17/16*

U.S. Cl. 241—46.17 **19 Claims**



1. A paper pulp beater comprising:

a vat having a side wall and a bottom;

a rotor at the bottom;

a vertical rotor shaft rising from said bottom inside the vat and extending along a central axis of the vat,

said side wall of the vat having means for forced recirculation of pulp in said vat, the recirculation means including at least one surface element extending substantially around the wall of the vat, said surface element having a face of constant width and running at an inclined angle from the wall toward the interior of the vat and toward the top of said vat, said face of the surface element being oriented toward the bottom of the vat, said surface element forming a band of constant width, pulp encountering said face being diverted into the interior of the vat.

4,938,424

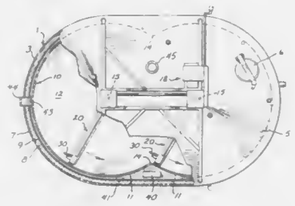
FOOD PROCESSING VAT

Allen J. Pittelko, Oakfield, Wis., assignor to Damrow Company, Inc., Fond du Lac, Wis.

Filed Aug. 8, 1989, Ser. No. 391,131

Int. Cl.[5] B01F *7/32*

U.S. Cl. 241—98 **22 Claims**



1. A food processing vat, comprising an outer shell having a generally oval side wall and a bottom wall, a vessel spaced within the shell and composed of a pair of interconnected generally cylindrical members, the cylindrical members intersecting along a pair of vertically extending apices, (each apex being generally rounded and having a radius in the range of 1:6 to 1:12 with respect to the radius of a cylindrical member), and agitation means disposed within each cylindrical member for agitating the product therein.

4,938,425

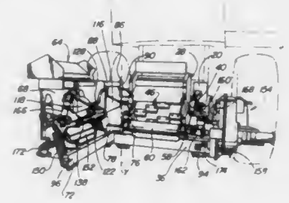
HINGED FEED ROLL HOUSING

Terry A. Williams, Batavia, and Raymond S. Wilkes, Ottumwa, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 20, 1987, Ser. No. 75,458

Int. Cl.[5] B02C *18/22*

U.S. Cl. 241—101.7 **11 Claims**



1. In a combined feed roll and cutterhead assembly for a forage harvester having a support frame including first and second transversely spaced sidewalls rotatably supporting a cutterhead, adjustably supporting a shear bar in fixed relationship to the cutterhead and supporting at least one set of upper and lower feed rolls ahead of the cutterhead for feeding a crop mat across the shear bar for being cut into lengths by the cutterhead, the improvement comprising: said support frame including a fixed section containing the cutterhead and a selectively movable section containing said at least one set of upper and lower feed rolls; hinge means coupled between the fixed and movable sections of the frame and establishing a vertical pivot axis transversely outwardly of the first sidewall about which the movable section may pivot from a working position, wherein the feed rolls extend parallel to and are disposed ahead of the shear bar and cutterhead, to a service position permitting access to the shear bar, and fastener means releasably securing the movable frame section to the fixed frame section for retaining the movable frame section in its working position.

4,938,426

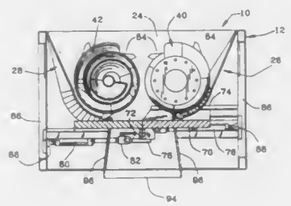
DUAL AUGER SHREDDER

Larry E. Koenig, c/o Komar Industries Inc. 4425 Marketing Pl., Groveport, Ohio 43125

Continuation-in-part of Ser. No. 187,229, Apr. 28, 1988. This application Apr. 19, 1989, Ser. No. 340,963

Int. Cl.[5] B02C *18/22, 4/30*

U.S. Cl. 241—222 **6 Claims**



1. A shredder for grinding large objects to form material of a smaller, predetermined size, comprising:

first and second taper flight screw augers positioned such that said flights taper oppositely relative to each other;

a housing defining a grinding chamber having side walls shaped to conform to said tapered flights of said augers;

means for rotating said screw augers;

said grinding chamber including first and second closure

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doors positioned below said augers and skewed relative to each other to conform to said tapered flights, said closure doors being positionable between a closed position, wherein said doors are in abutting relation to each other and form a seal sufficient to prevent comminuted material in said grinding chamber from flowing between said doors, and an open position, wherein said doors are spaced apart to form an opening therebetween, such that material in said grinding chamber reduced by said augers falls through said opening between said doors; and

hopper means positioned above said grinding chamber for directing material downwardly into said grinding chamber to be shredded by said augers.

4,938,427

APPARATUS FOR FRICTIONAL SURFACE DRIVING OF A CROSS-WOUND BOBBIN

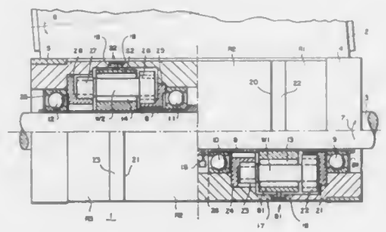
Horst Wionsek, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Jun. 29, 1989, Ser. No. 374,158

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1988, 3823403

Int. Cl.[5] **B65H** *54/46*

U.S. Cl. 242—18 DD **22 Claims**



1. Apparatus for frictional surface driving of a bobbin for cross-winding of yarn thereof, comprising a central drive shaft, at least three drive bodies rotatably supported axially adjacent one another on said drive shaft, at least two of said drive bodies being arranged for peripheral drive engagement with the bobbins, and transmission means coupling said drive bodies in driven relation to said drive shaft and in speed-change relation to one another at predetermined speed-change ratios established as a function of the frictional driving relationship between said at least two drive bodies and the bobbin, as a function of the axial rotational speed of said drive shaft, and as a function of any difference in peripheral dimension between respective ends of the bobbin, said transmission means comprising a respective transmission drive train intermediate each adjacent pair of drive bodies, each drive train including a pair of annular drive surfaces each of which is fixed with respect to a respective one of the associated pair of drive bodies, a bearing fixedly mounted with respect to said drive shaft intermediate the associated pair of drive bodies, said bearing rotatably supporting a connecting shaft having a drive member at each opposite end in drive engagement with a respective one of said pair of annular drive surfaces of the associated pair of drive bodies.

4,938,428

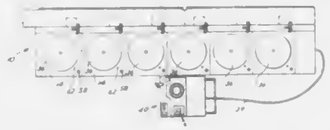
WIRE WINDING SYSTEM WITH MOBILE TRANSFER CART

Mohammad F. Zaman; David J. Lothamer, and James Gerencser, all of Ft. Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 28, 1989, Ser. No. 373,042

Int. Cl.[5] **B65H** *67/04*

U.S. Cl. 242—25 R **16 Claims**



1. In a system of winding wire on a spool means comprising a plurality of stations each having:

means for pulling the wire from a process toward the spool means;

adjustable means, operatively positioned between the pulling means and the spool means, for maintaining a relatively constant predetermined tension on the wire being wound;

variable speed turntable means, operatively connected to the spool means, for rotating the spool means; and

traverse mechanism means, operatively positioned between the adjustable means and the variable speed turntable means, for adjusting reversal points of the wire as the wire is wound on the spool to form a constant pitch winding in successive opposed layers;

selection means operatively connected to the traverse mechanism means, and the variable speed turntable means, for selecting a specific spool means geometry associated with a specific spool means from a plurality of possible spool means geometry;

the improvement comprising mobile transfer cart means, selectively operatively connected to a station, for effecting transfer of the winding of the wire from the variable speed turntable means at the selected station to the mobile cart transfer means while spool means are being exchanged on said variable speed turntable means and for effecting transfer of the winding of the wire back to a different empty spool means operatively mounted on the variable speed turntable means.

8. A mobile transfer cart for selectively winding wire thereon while spools are being exchanged on a spool turntable means, said cart comprising:

a frame;

jaw means, operatively positioned on the frame, for accumulating wire during the exchange of spools on the spool turntable means:

traverse assembly means operatively positioned on the transfer cart means for vertically adjusting the wire on the spool means prior to the exchange of spool means on the turntable means;

wire guide means operatively positioned on the transfer cart means for accurately guiding the wire during the exchange of spool means on the turntable means;

wire transfer control means for effecting transfer of the wire from the wire winding turntable means to the transfer cart means; and

spindle release means operatively positioned on the cart and operatively connected to the jaw means for permitting removal of accumulated wire wound on the jaw means after the exchange of spool means on the turntable means has been effected and the winding of the wire has been transferred from the transfer cart means back to the spool means on the turntable means.

4,938,429

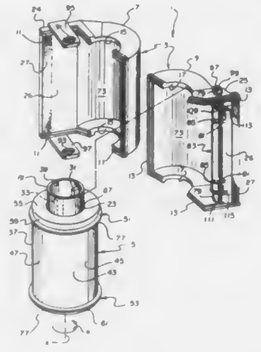
FILM CASSETTE

Jeffrey C. Robertson, Rochester, and Mark D. Fraser, Brockport, both of N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.

Filed Jan. 12, 1989, Ser. No. 296,541

Int. Cl.[5] **G03B** *17/26*

U.S. Cl. 242—71.1 **11 Claims**



1. An improved film cassette wherein (a) a cassette shell has a pair of throat portions defining a film passage slit to the outside of said cassette shell, (b) a leading end section of the outermost convolution of a film roll wound on a film spool is advanced to the outside of said cassette shell via said film passage slit in response to rotation of said film spool in an unwinding direction, and (c) a pair of annular constraining flanges coaxially spaced on said film spool radially confine said outermost convolution to prevent said film roll from radially expanding against said cassette shell and are rotatable with the film spool in the unwinding direction to ensure the advancement of said leading end section to the outside of the cassette shell, and wherein the improvement comprises:

said constraining flanges adapted to be flexed apart along successive sections an axial distance sufficient to radially free corresponding sections of said outermost convolution, to permit each freed section of the outermost convolution to be advanced to the outside of said cassette shell via said film passage slit, when the constraining flanges are rotated with said film spool in the unwinding direction;

a pair of flange camming members mounted for movement between a camming position for flexing respective sections of said constraining flanges apart said axial distance and a non-camming position for allowing the flexed sections to return to an original state; and

control means accessible at the outside of said cassette shell for moving said flange camming members between their camming and non-camming positions.

4,938,430

TAPE MEASURE LOCK

David S. Chapin, Raleigh, N.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 24, 1988, Ser. No. 236,005

Int. Cl.[5] **B65H** *75/48*

U.S. Cl. 242—107.2 **11 Claims**

1. A lock for locking a tape extended from its housing within a case, comprising:

a toggle pivotably mounted on the upper portion of the case;

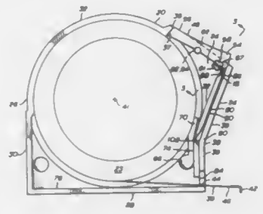
a member affixed to the toggle and extending into the case to a position adjacent the tape;

the case including a lower wall portion extending substantially normal to the base of the case and a medial flat portion disposed between said lower wall portion and said toggle;

said medial flat portion and said lower wall portion intersecting at an obtuse angle such that said medial flat portion extends outward from the case;

said member having an articulation joint such that the portion of said member between said toggle and said joint actuates obtuse to said lower wall portion and the remaining portion below said joint actuates parallel to said lower wall when said toggle is depressed;

said member further having compression means for compressing the length of said member upon pivoting the toggle to move said member against the tape.



4,938,431

VEHICLE SEAT BELT RETRACTOR

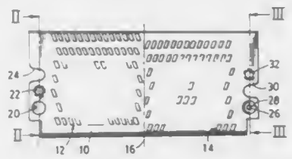
Alan G. Smithson, Cumbria, England, assignor to BSRD Limited, Cumbria, England

Filed Apr. 29, 1988, Ser. No. 188,364

Claims priority, application United Kingdom, May 1, 1987, 8710465

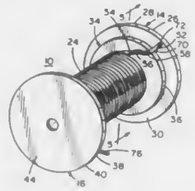
Int. Cl.[5] **B60R** *22/40*

U.S. Cl. 242—107.2 **17 Claims**



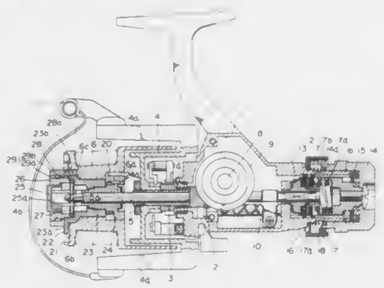
1. A vehicle seat belt system having clamping means for the belt thereof, the clamping means comprising first and second belt-engagement members which are movable towards each other and into engagement with the belt so that the belt is clamped between respective surfaces of the members and protraction of the belt is prevented, the system including operating means for the clamping means, the operating means being responsive to a pre-determined condition to cause operation of the clamping means, wherein each belt-engagement surface has an array of teeth thereon, the vertex of the teeth having means for penetration into the material of the belt in order to engage therewith and each array comprising a plurality of parallel rows of teeth, the rows being spaced apart to define a plurality of inter-row spaces, the rows of teeth of each array being aligned across the belt with the inter-row spaces of the other array so that, upon clamping, the rows of teeth of each array are received in the inter-row spaces of the other array.

4,938,432
CABLE SPOOL WITH INTEGRAL END STORAGE FLANGE
Jeffrey P. Kurt, Batavia, Ill., and James D. Holder, Tompkinsville, Ky., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 12, 1989, Ser. No. 336,859
Int. Cl.[5] B65H *75/18, 75/28*
U.S. Cl. 242—117 5 Claims



1. A cable spool comprising:
a cylindrical drum with a first end and a second end having a longitudinal axis and drum surface around which a length of cable may be wound for storage;
a first end flange and a second end flange mounted on said drum at each of said first and second drum ends, respectively, at least one of said first and second end flanges having an outer flange with an outer flange periphery for preventing the length of cable from escaping the cylindrical drum and,
an inner flange between the one of said first and second drum end and the outer flange,
said inner flange approximately perpendicular to said longitudinal axis and having a reduced radial extension with respect to the outer flange;
the inner flange defining an S-shaped serpentine cable channel generally extending radially outward from said drum surface, said channel operable to receive and frictionally engage an end of the length of cable to hold the cable within the periphery of the outer flange.

4,938,433
SPINNING REEL
Junichi Toda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed May 19, 1988, Ser. No. 195,909
Claims priority, application Japan, May 23, 1987, 62-77882[U]; Sep. 9, 1987, 62-138499[U]; Sep. 11, 1987, 62-139885[U]; Dec. 24, 1987, 62-197032[U]
Int. Cl.[5] A01K *89/027, 89/01*
U.S. Cl. 242—245 6 Claims

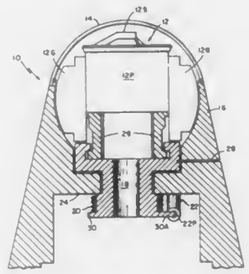


1. A spinning reel including:
a reel body;
a spool rotatably supported to said reel body;
a spool shaft carrying said spool;
a rotary frame rotatably supported to said reel body and for winding a fishing line onto said spool;
a drag mechanism for applying a braking force against rotation of said spool, said drag mechanism comprising an adjuster for adjusting said braking force;
a support member on which said adjuster is supported such that said adjuster can be adjusted in position relative to said support member, said support member including a portion which extends away from one side of said adjuster;
a braking force measuring mechanism for measuring said braking force applied by said drag mechanism, said measuring mechanism comprising (a) an elastic member interposed between (i) a braking force acting member subjected to said braking force applied by said drag mechanism and (ii) a rotary member rotatable with respect to said braking force acting member, (b) a pointer provided at one of said braking force acting member and said rotary member, and (c) a display portion provided at the other of said braking force acting member and said rotary member, said display portion for displaying an indication of said braking force applied by said drag mechanism represented by a position of said pointer; and
a reference position setting mechanism for setting a user-selectable reference position indicating an optimum braking force applied by said drag mechanism as adjusted by said adjuster, said reference position setting mechanism comprising a reference portion for setting said reference position and a position specifying member, said reference portion being non-rotatable with respect to said support member for said adjuster, said position specifying member being located at said one side of said adjuster and including a position specifying portion for specifying a position of said adjuster corresponding to said reference portion, said position specifying member being supported such that in a first mode it is operable to move together with said adjuster when said adjuster is moved to adjust said braking force and in a second mode it is movable relative to said adjuster to alter its position with respect to said adjuster, whereby said adjuster is able to be accurately positioned at a position to achieve said optimum braking force, said reference portion and said position specifying member in said first mode being movable past one another when said adjuster is moved to adjust said braking force such that in said first mode said adjuster can adjust said braking force both up and down relative to said optimum braking force.

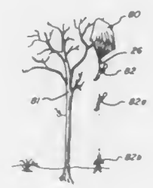
4,938,434
RESTRAINING MECHANISM
Samuel Menasha, Westford, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jul. 31, 1989, Ser. No. 387,564
Int. Cl.[5] F41G *7/26*
U.S. Cl. 244—3.16 4 Claims

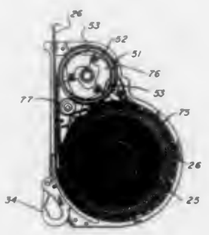
1. In a gyroscopically stabilized seeker for installation on gimbals in a cannon-launched projectile, a restraining mechanism to prevent relative motion of such seeker longitudinally of the body of such projectile during the firing phase of such projectile, such restraining mechanism comprising:
(a) latching means, initially interconnecting a gimbal for the gyroscopically stabilized seeker and the body of the cannon-launched projectile, to maintain, before and during the launching phase, the position of the gimbal for such seeker longitudinally of such body;

(b) means, actuated at the end of the launching phase, to unlatch the latching means thereby to allow relative motion between the gyroscopically stabilized seeker and the body of the cannon-launched projectile.



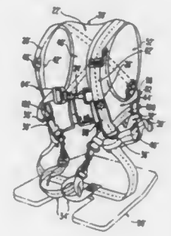
4,938,435
PERSONNEL LOWERING DEVICE
Horace M. Varner, and Ernest L. Stech, both of Littleton, Colo., assignors to Frost Engineering Development Corporation, Englewood, Colo.
Filed Dec. 30, 1988, Ser. No. 292,483
Int. Cl.[5] B64D *17/78*
U.S. Cl. 244—142 11 Claims





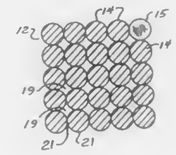
1. A personnel descent control device comprising, in combination, a housing adapted to be secured to a person intending to descend from a higher to a lower elevation, a line adapted to be secured at one end to a fixed point at said higher elevation, means on said line for securing said line to said point, a reel rotatably mounted in said housing and containing a supply of said line, said reel being adapted to rotate as said line is extended and the person descends from the higher elevation to the lower elevation, a brake assembly mounted in said housing and including a centrifugal brake, means operatively coupling said reel to said centrifugal brake for controlling the rate of rotation of said reel, a mechanical brake on said housing for manually controlling the rate of rotation of said line supply reel, and means defining a plurality of capstans mounted within said housing about which said line is trained for absorbing energy and providing a capstan ratio effective to reduce applied line tension thereby slowing the descent of a person supported by said descent device.

4,938,436
SAFETY HARNESS AND BELT ASSEMBLIES FOR AIRCRAFT CREWMEMBERS
Gary F. Bradley, Hendersonville; Walter R. Peck, Asheville; James W. Duncan, and Thomas M. Britton, both of Asheville, all of N.C., assignors to Survival Engineering Corporation, Asheville, N.C.
Filed Aug. 31, 1988, Ser. No. 238,598
Int. Cl.[5] B64D *17/30*
U.S. Cl. 244—151 R 20 Claims



1. A harness and belt assembly for a crewmember of an aircraft comprising:
a left sling which is designed to extend from the left side of the chest of a crewmember, over the left shoulder of the crewmember to the crewmember's back;
a right sling which is designed to extend from the right side of the chest of a crewmember, over the right shoulder of the crewmember to the crewmember's back;
a first belt assembly having first and second ends;
said first end of said first belt assembly being attached to one of said left and right slings at the portion of said slings designed to be adjacent the chest of said crewmember, said belt assembly being designed to extend around the back of the crewmember, said second end of said belt assembly being attached to the other of said slings;
a survival kit attachment fitting which slidably engages said first belt assembly between said first and second ends; and
means for releasably attaching said fitting to a seat in an aircraft.

4,938,437
RUBBERLESS TIRE BEAD ASSEMBLIES AND METHODS OF MAKING SAME
Doyle W. Rausch, Niles, Mich., assignor to National Standard Company, Niles, Mich.
Filed Dec. 8, 1987, Ser. No. 130,320
Int. Cl.[5] B60C *15/05*
U.S. Cl. 245—1.5 158 Claims



1. A tire bead assembly comprising:
a predetermined length of a single wire having two ends

thereon substantially free of an envelope of rubber-type materials extending along its length and wound about an axis to provide a plurality of convolutions of said single wire to provide a bead hoop, with each convolution of said single wire in substantially wire-to wire contact with at least one adjacent convolution of said single wire and positioned substantially in a plane parallel to the other convolutions of said single wire to provide a tire bead assembly having an inside diameter surface, an outside peripheral surface and sidewall surfaces, with at least one end of said predetermined length of single wire located on one of said surfaces of said tire bead assembly, and

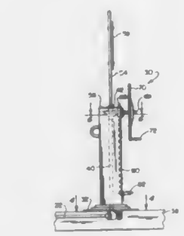
shape-retaining means engageable with at least a portion of said plurality of convolutions of said single wire of said tire bead assembly, said shape-retaining means engaging a substantial portion of the perimeter of said bead hoop cross-section and engaging at least a portion of the circumference of said bead hoop of said bead assembly to retain the bead assembly in planar configuration perpendicular to the axis of revolution of said bead hoop and to retain each convolution of said single wire in substantially wire-to-wire contact with at least one adjacent convolution of said single wire to provide for void volumes within said bead assembly to permit entrapped air to be dissipated and minimized during a tire building operation.

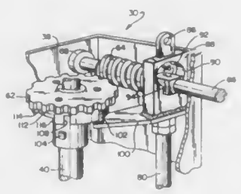
4,938,438

RAILROAD SWITCH STAND

Arthur W. Farrell, Naperville; James A. Remington, Richton Park; Albert V. Fiorenzo, South Chicago Heights, all of Ill., and Ray Hoyer, St. John, Ind., assignors to ABC Rail Corporation, Chicago, Ill.

Filed Jan. 9, 1989, Ser. No. 294,423
Int. Cl.[5] B61L *5/02*
U.S. Cl. 246—406 **9 Claims**





1. A switch stand assembly for moving a connecting rod attached to a switch rod mounted between a pair of switch points located between a pair of stock rails to divert rolling stock from one track to another comprising:

a vertically extending body tube;

a spindle rotatably mounted within said body tube and pivotable between a first position in which said connecting rod is extended in one direction to move said switch points such that one point rests against one stock rail and a second position in which said connecting rod is extended in a second direction to move said switch points such that the other point rests against the second stock rail;

a crank connected to the foot end of said spindle and to the connecting rod;

a worm gear connected to the head end of said spindle;

a horizontally extending input shaft mounted in said body tube;

a worm wheel mounted on said input shaft and in engagement with said worm gear such that rotary motion of said input shaft causes corresponding rotary motion of said worm gear, said spindle and said crank to thereby impart substantially linear movement to said connecting rod for movement of said switch points;

an index hub affixed to said spindle having a stop slot defining a first stop surface and a second stop surface;

a spindle stop mounted on said body tube;

wherein said spindle stop engages said first stop surface when said spindle is at said first position and engages said second stop surface when said spindle is at said second position;

a stop block mounted on said input shaft and rotatable therewith;

a lock rod mounted for vertical movement between a locked position and an unlocked position within said body tube;

a lock block affixed to said lock rod;

a keyhole formed in said lock block having a first portion for non-rotatably receiving said stop block to prevent rotation thereof and a second portion for rotatably receiving said stop block to permit rotation thereof;

wherein said stop block is captured within said first portion of said keyhole when said lock rod is in said locked position and said stop block is within said second portion to enable said input shaft to rotate when said lock rod is in said unlocked position; and

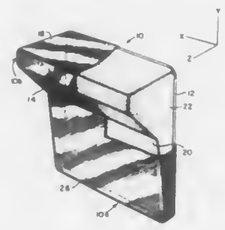
moving means for moving said lock rod between said locked and said unlocked positions.

4,938,439

AUTOMOBILE ARMREST/TRAY ACCESSORY

Hollis Fried, 21 Intervale Ave., Peabody, Mass. 01960, and Sandra Torrisi, 16 Lilha La., Reading, Mass. 01867

Filed Jul. 21, 1988, Ser. No. 222,157
Int. Cl.[5] B43L *15/00*
U.S. Cl. 248—118.5 **5 Claims**



1. A portable accessory for use in automobiles, comprising:

a body member defined by at least two rectangular, planar surfaces and at least one non-planar surface, said planar surfaces positioned substantially perpendicular to one another so as to have a coincident edge therebetween, said non-planar surface extending between the edge of each planar surface which is opposed to said coincident edge, a first of said planar surfaces having greater area than a second of said planar surfaces; and

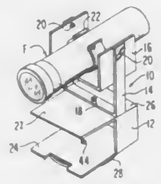
a rectangular, planar support member lying in a plane parallel with and secured adjacent to said first planar surface.

4,938,440

ROTATABLE FLASHLIGHT HOLDER

Todd A. Weinfield, 1406 Burlingame Ave., Ste. 92, Burlingame, Calif. 94010

Filed Dec. 20, 1988, Ser. No. 286,810
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—183 **11 Claims**



1. A rotatable flashlight holder adapted for dual rotational movement comprising, in combination:

a base structure which comprises a bottom plate member (and), an inverted U-shaped upper member having a horizontally extending top wall spaced apart from said bottom plate member in a parallel relation thereto and an upright U-shaped spring bracket secured to said bottom plate member inside said base structure;

a U-shaped bracket extending upwardly from said base structure and rotatably secured thereto:

first means for securing said U-shaped bracket to said base structure and adapted for rotatable movement of said U-shaped bracket in horizontal plane;

a receptacle affixed to upper portion of said U-shaped bracket;

second means for connecting said receptacle with said U-shaped bracket for rotatable polar movement of said receptacle in vertical plane; and

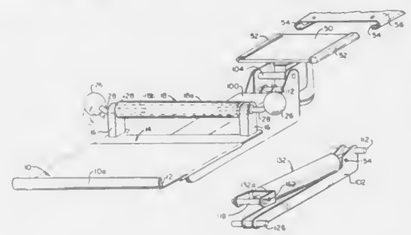
clamp means fastened in said receptacle for receiving and removably retaining a flashlight therein.

4,938,441

SLIDE PLATE ADJUSTMENT MECHANISM

Bruce R. Hannah, Cold Spring, N.Y.; James B. Eldon, Barto, Pa.; Eric J. Armstrong, Pennsburg, Pa.; Harold A. Smith, Emmaus, Pa., and Philip J. Campbell, Bethlehem, Pa., assignors to Knoll International, Inc., New York, N.Y.

Division of Ser. No. 44,756, May 1, 1987, Pat. No. 4,826,123, which is a continuation of Ser. No. 494,810, May 16, 1983, abandoned. This application Mar. 29, 1989, Ser. No. 330,297
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—248 **6 Claims**



1. A slide plate adjustment mechanism comprising a slide track plate having a pair of slide tracks along the sides thereof, a slide plate having bearing blocks along the sides thereof that ride in said tracks and which are spring-biased against said tracks, said bearing blocks extending substantially along the entire length of the side of said slide plate and serving as (1) sole bearing surfaces between said slide plate and slide track plate so that said slide plate may be moved relative to said slide track plate, and (2) friction members which provide a drag dependent upon the bearing characteristics of the material of said bearing blocks and the spring biasing force to permit semi-permanent positioning of said slide plate relative to said slide track plate.

4,938,442

BRACKET AND SHELF ASSEMBLY

Arthur R. Mastrodicasa, 36 Donnelly Dr., Dover, Mass. 02030

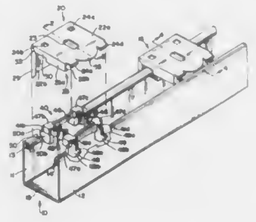
Filed Jun. 21, 1988, Ser. No. 209,312
Int. Cl.[5] A47B *47/00*
U.S. Cl. 248—250 **9 Claims**



1. A bracket and shelf assembly comprising first and second bracket members, and a shelf member, each of said bracket members being adapted for attachment to a vertical member and to extend transversely of said vertical member, said first and second bracket members or said shelf member comprising a first component provided with button means extending therefrom, the other component of said first and second bracket members or said shelf member being provided with opening means therein, said opening means being adapted to receive said button means to join said bracket means to said shelf member, said opening means being elongated to permit relative sliding movement between said shelf member and said bracket members, said button means comprising a button having a frusto-conically shaped portion extending from a cylindrically shaped shoulder portion, a smaller diameter portion of said frusto-conically shaped portion being joined to said shoulder portion, the extent of said shoulder portion beyond said first component being substantially less than the thickness of a planar portion of said other component having said opening means therein, said opening means comprising an elongated slot having a first portion of a substantially circular configuration and a diameter exceeding a larger diameter of said button member and a second portion having two straight parallel elongated edges and having a width constant along the length of said two edges and less than the diameter of said larger diameter of said button and greater than the diameter of said shoulder portion of said button, such that said edges of said opening second portion impinge upon said walls of said frusto-conical portion of said button and are wedged between said first component and the walls of said frusto-conical portion of said button as said other component is slid along said button means, said wedging action being operative to lock said first and second components together without additional locking means.

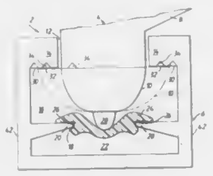
VOL 1116 ISS 1 JL 3 1990 UMI

4,938,443
VENETIAN BLIND INSTALLATION BRACKET
Norman D. Rowe, South Renovo, Pa., assignor to Carey-McFall Corporation, Montgomery, Pa.
Filed Dec. 2, 1988, Ser. No. 279,358
Int. Cl.[5] A47H *1/14*
U.S. Cl. 248—251 20 Claims



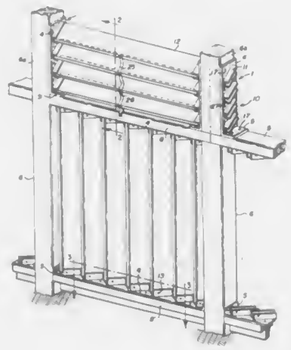
1. A bracket assembly for attaching a window treatment headrail to a support surface comprising,
a. an inner support including at least two spaced connecting members, and at least two spaced hook members, said at least two spaced hook members being displaceable in opposite directions and disposed for engagement in assembled position to hold said window treatment headrail,
b. an outer support having means to attach said outer support to the support surface, and
c. said outer support including means operatively disposed to releasably engage said at least two spaced connecting members in assembled position to hold the window treatment headrail in operative association with the support surface, and spaced retaining means for mating engagement with said at least two spaced connecting members in assembled position for enabling the displacement of said at least two spaced hook members relative to said window treatment headrail.

4,938,444
SUPPORT STRUCTURE
Anthony C. Worrallo, 77 Beaconsfield Road, Blackheath, London. SE3 7LG, United Kingdom
Filed Feb. 28, 1989, Ser. No. 316,947
Claims priority, application United Kingdom, Mar. 4, 1988, 8805254
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—297.2 10 Claims



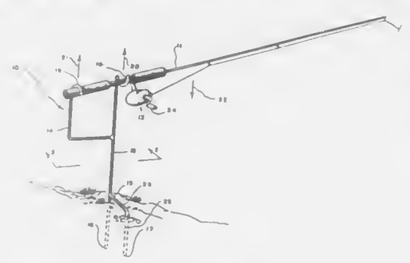
1. A support structure comprising: a bracket and an elongate mounting element on which the bracket is mountable, the bracket having a main portion and a neck portion extending from the main portion, and the mounting element having a front wall, a rear wall, a pair of side walls, a first opening which is in the front wall and which leads to a first channel, a first pair of lips which form the front wall and which define the first opening, a second opening which is inside the mounting element and which leads to a second channel, a second pair of lips which define the second channel, and a flexible member which is mounted on the second pair of lips such that it bridges the second opening and is for being deformed by a first part of the neck portion of the bracket, the first opening and the first channel being for receiving the neck portion of the bracket with the first pair of lips defining abutment surfaces for being engaged by second parts of the neck portion of the bracket, and the second pair of lips being spaced apart from the rear wall such that the flexible member is mounted solely on the second pair of lips and does not engage the rear wall whereby the second channel is of such a size that it is able to receive electrical wires and heads of fixing means without these electrical wires and heads of fixing means interfering with the deformation of the flexible member by the first part of the neck portion of the bracket during locking of the bracket in a desired position along the mounting element.

4,938,445
LOUVER BRACKET ASSEMBLIES
Travis D. Medley, 1551 Brenner Way, San Jose, Calif. 95118
Filed Sep. 27, 1988, Ser. No. 249,698
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—300 17 Claims



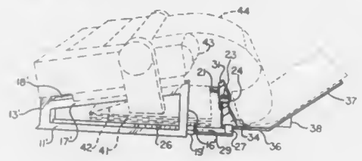
1. A louver bracket assembly for retaining louver boards in a spaced array used to extend the height or length of privacy and sun screening units, comprising in operative combination:
(a) a generally rectangular planar plate defined into:
(i) a first, side plate member having a longitudinal axis and marginal edges;
(ii) a second, base plate member having marginal edges disposed at one end of said side plate member; and
(iii) said base member plate is disposed substantially normal to said side plate member in a normal use position;
(b) a plurality of flange brackets for retainingly engaging louver boards comprising pairs of flanges disposed substantially normal to said side plate and in association therewith at a pre-selected angle θ of from about 15° to about 90° to said longitudinal axis of said side plate;
(c) said flange pairs of each of said flange brackets being spaced apart by a preselected amount to receive louver boards therebetween;
(d) said flange bracket flange pairs being spaced from each other along said longitudinal axis by at least one preselected amount to provide preselected spacing of louver boards retained thereby; and
(e) said side plate member and said base plate member includes a plurality of holes disposed to permit securing at least one of said plate members to a structural member by fastening means received therethrough.

4,938,446
FISHING ROD SUPPORT
James L. Williams, 270 West Autin, Garland, Utah 84312
Filed Feb. 27, 1989, Ser. No. 316,147
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—530 4 Claims



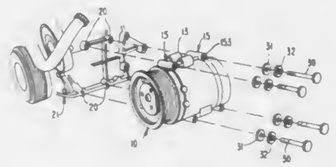
1. A fishing rod support comprising:
a pair of parallel, vertical tines;
a horizontal member joining the pair of tines in spaced apart relationship;
a pair of parallel, spaced apart, rod accepting cradles joined to the paired tines, one of said cradles opening upwardly and the other downwardly; said pair of cradles being mounted substantially above the horizontal member, one thereof upon an upward extension substantially colinear with one of the paired tines and the other cradle is carried upon a member rigidly secured to the tine member extension; wherein
said horizontal member is adapted to provide purchase of the foot to set the tines into the soil.

4,938,447
STAND FOR A PAPER-DISCHARGING DEVICE
Michael J. Schriner, 19 Brandon Pl., Rocky River, Ohio 44116
Filed Feb. 9, 1989, Ser. No. 308,721
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—670 9 Claims



1. A demountable, interconnected stand assembly for a paper-discharging burden in the nature of a printer, plotter or other graphic output device, the stand comprising:
a pair of load-bearing platforms, each with a base, one platform for each side of a paper supply access route to the burden for supporting the burden;
a paper-cradling support means disposed as a catcher for the paper output from the burden;
adjustable spreader means for stabilizing the space between the platforms at a magnitude effective for maintaining the burden steady and the input of paper to the burden unobstructed by a platform;
adjustable projecting means for stabilizing the distance between the paper-cradling support means and the rear of the platforms at a magnitude effective for maintaining an orderly paper flow,
the paper-cradling support means being situated to the rear of the platforms, reaching substantially as deeply as the bases of the platforms, being adjustable sideways, and being joined to the spreader means,
said platforms, paper cradling support means, spreader means, and projecting means being interconnected to constitute a unitary structure upon assembly.

4,938,448
MOUNTING MECHANISM FOR AN AUTOMOTIVE AIR CONDITIONING COMPRESSOR
Seiji Shimazaki, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan
Filed Sep. 14, 1988, Ser. No. 244,109
Claims priority, application Japan, Sep. 14, 1987, 62-140165[U]; Sep. 14, 1987, 62-140166[U]
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—635 10 Claims



1. In a mounting mechanism for directly mounting an automotive air conditioning compressor on an automobile engine including a flange portion projecting from an outer peripheral surface of the compressor and bolt-nut mechanisms connecting the flange portion of the compressor to the automobile engine, the improvement comprising:
said flange portion including a first hole having vibration absorbing coupling means fixedly disposed therein for coupling the flange portion to the bolt-nut mechanisms and absorbing compressor vibration;
said coupling means including a cylindrical bushing fixedly disposed in said first hole and attaching members for attaching said bushing to the bolt-nut mechanisms;
said cylindrical bushing comprising an outer cylinder, an inner cylinder and a vibroisolating rubber member fixedly disposed between said outer and inner cylinders and bonded thereto; and
each attaching member including a bar inserted into said inner cylinder and a cylindrical portion connected to said bar wherein said cylindrical portion includes a second hole for receiving the bolt-nut mechanisms.

4,938,449
TIE FOR CONCRETE FORMS
Patrick E. Boeshart, Rte. 1, Box 134, Sioux City, Iowa 51108
Filed Feb. 13, 1989, Ser. No. 309,111
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.[5] E04G *17/06*
U.S. Cl. 249—216 2 Claims

1. A tie for interlocking a pair of spaced-apart form panels, comprising:
a generally flat, elongated strap having first and second opposite end portions, upper and lower edges, opposite sides and an intermediate portion between said ends;
said strap means including means for retaining the panels in spaced-apart relation on opposite ends of said intermediate portion, comprising:

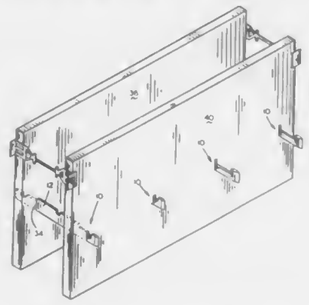
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stop means located at each end of said intermediate portion for preventing movement of the panels inwardly on said tie towards the intermediate portion; and

waler receiving means on each end of said tie, spaced outwardly from said stop means, for receiving a waler to prevent outward movement of the panel;

said stop means comprising said intermediate portion being formed with a height greater than the height of said end portions, to create a step at each end of said intermediate portion such that a panel will abut the step and be prevented from moving inwardly on the tie;



said waler receiving means comprising each said end portion being formed with a notch extending downwardly from the upper edge thereof, each notch having an inner edge, outer edge, and bottom edge, the width of each notch between the inner and outer edges being adapted to receive the width of a predetermined waler therein, whereby a waler inserted in a said notch will prevent outward movement of a panel;

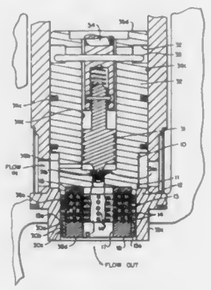
said inner edge of said notches being spaced a distance from said stop means equal to the thickness of the panels, such that insertion of a waler in said notches will retain a panel between said waler and said stop means.

4,938,450

PROGRAMMABLE PRESSURE REDUCING APPARATUS FOR THROTTLING FLUIDS UNDER HIGH PRESSURE

Dale S. Tripp, Coram, and Ronald Beauman, Hicksville, both of N.Y., assignors to Target Rock Corporation, East Farmingdale, N.Y.

Filed May 31, 1989, Ser. No. 359,114
Int. Cl.[5] F16K *47/04*
U.S. Cl. 251—30.03 **15 Claims**



1. A multi-stage programmable pressure reducing assembly for high energy fluids comprising

a cylindrical support sleeve having plurality of axially space apart tiers of circumferentially spaced apart radial passages for fluid flow,

a plurality of pressure dropping, staging rings adapted to be carried concentrically by the sleeve stacked in tiers of nested, staging rings of progressively differing diameters to establish a plurality of pressure dropping stages, each ring having annular walls extending radially and axially to define at least a portion of an annular fluid flow channel,

the axially extending wall of the ring having a plurality of circumferentially spaced apart radial fluid passages communicating with its annular fluid flow channel,

said staging rings proximate to the sleeve being axially movable to bring their respective annular fluid flow channels into variably adjustable register with one corresponding array of circumferentially spaced apart radial passages in the sleeve,

the nested rings being relatively axially movable to bring their respective annular channels into variably adjustable register to establish pressure dropping stages of selectable size, and

programming spacer means to establish the degree of axial registration of the respective annular flow paths of the rings with the proximate radial fluid flowpassages, and

means to secure the staging rings in fixed operating relationship,

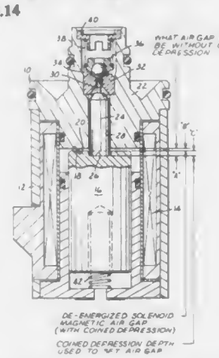
whereby the fluid flow from the high pressure side to the low pressure side will cause the flow to split and contract at the radial passages, to recombine in the annular flow paths with associated impingement and frictional losses and to change directions both circumferentially and axially, and whereby the pressure profiles at all stages of pressure reduction can be programmed by said spacer means.

4,938,451

METHOD FOR CONTROLLING SOLENOID DE-ENERGIZED AIR GAP

Richard D. Weaver, Williamsburg; Sims B. Demere, Newport News, and Thomas Hensley, Barhamsville, all of Va., assignors to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Filed Aug. 21, 1989, Ser. No. 396,591
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.14 **4 Claims**



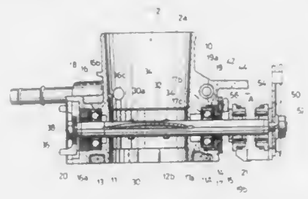
1. In a solenoid-actuated valve wherein a valving element is actuated by an armature acting through a push pin when the valve solenoid is energized, said valve having a magnetic circuit which, when the solenoid is de-energized, includes an air gap between an axial end face of the armature and a confronting stationary part of the valve, said push pin having one end that is disposed against said axial end face of the armature and another end that is disposed against said valving element, the method of calibrating the valve to yield a desired dimension of said air gap for a given dimension of said push pin, said method comprising measuring the amount of protrusion of said one end of said push pin from said stationary part of the valve, subtracting from this measurement the desired dimension of the air gap, and then imparting to said axial end face of said armature a depression that is equal to the difference between said measurement and the desired dimension of the air gap, and then assembling said armature to the valve such that said one end of said push pin seats in said depression.

4,938,452

AIR CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Kaneo Imamura, and Kazuaki Koyanagi, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Nov. 7, 1989, Ser. No. 432,913
Claims priority, application Japan, Dec. 10, 1988, 63-160487[U]; Aug. 22, 1989, 1-97580[U]
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—305 **4 Claims**



1. In an air control device including a body, an air passage formed in said body, a throttle valve disposed in said air passage for controlling an air quantity flowing in said air passage, a throttle shaft for mounting said throttle valve and extending across said air passage, and a pair of first and second ball bearings mounted in said body for rotatably supporting said throttle shaft; a supporting structure of said throttle valve comprising:

a first shoulder formed in said body;

a first stopper fixed to said body;

an inner ring of said first ball bearing engaged by interference fit with said throttle shaft;

an outer ring of said first ball bearing engaged by clearance fit with said body, said outer ring being fixedly sandwiched between said first shoulder and said first stopper under the condition where a thrust is applied to said outer ring in an axial direction of said throttle shaft;

a second shoulder formed in said body;

a second stopper engaged by interference fit with said body;

an inner ring of said second ball bearing engaged by clearance fit with said throttle shaft; and

an outer ring of said second ball bearing engaged by clearance fit with said body, said outer ring being fixedly sandwiched between said second shoulder and said second stopper.

4,938,453

SPRING-LOADED BALL VALVE FOR CONTROLLING THE FLOW OF FLUID THERETHROUGH

Joseph N. G. Blanchard, General Delivery, Rollyview, Alberta, Canada POC 2KO

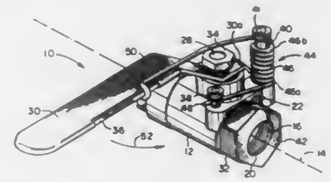
Filed Nov. 6, 1989, Ser. No. 432,097
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—313 **7 Claims**

1. A spring-loaded ball valve for controlling the flow of fluid therethrough, said ball valve comprising:

a housing having a longitudinal axis, said housing having a longitudinal conduit extending completely therethrough along said longitudinal axis for allowing fluid to flow therethrough, said housing further having a housing aperture extending through at least a portion of said housing perpendicular to and intersecting said longitudinal conduit;

a ball headed member positioned within said longitudinal conduit and including an aperture extending completely through the ball headed member for controlling said flow of fluid through said longitudinal conduit, said ball headed member having a stem portion integral therewith and extending through said housing aperture beyond said housing;

an elongated handle member coupled to said stem portion for moving said ball headed member between an open position wherein said ball headed aperture is generally aligned with said longitudinal conduit for allowing fluid to flow therethrough and a closed position wherein said ball headed aperture is not aligned with said longitudinal conduit for preventing fluid from flowing therethrough, said



elongated handle member extending outwardly from said stem portion toward a first lateral side of said longitudinal axis;

a stop member positioned on said first lateral side of said housing;

an elongated mounting member positioned on said housing on a second lateral side of said longitudinal axis; and

a biasing member having a body portion, a first terminal end extending from one end of said body portion and a second terminal end extending from another end of said body portion, said mounting member securing the biasing member to the housing with said first terminal end in engagement with said stop member and said second terminal end in sliding engagement with said handle member whereby said biasing member biases said handle member toward said closed position and as said handle member moves toward said open position said second terminal end of said biasing member slides therealong.

4,938,454

CHAIN HOIST WITH AUTOMATIC BRAKE AND DOUBLE CHAIN HOOKS

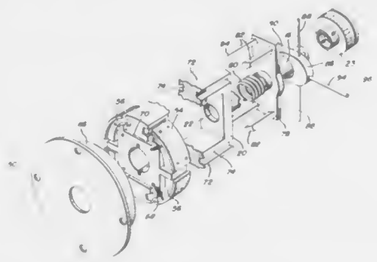
Lewis M. Jones, Greenwood, Miss., assignor to Maurice Jones, Brandon, Mich., a part interest

Filed Apr. 26, 1985, Ser. No. 727,797
Int. Cl.[5] B66D *3/16, 5/08*; F16D *63/00*
U.S. Cl. 254—356 **8 Claims**

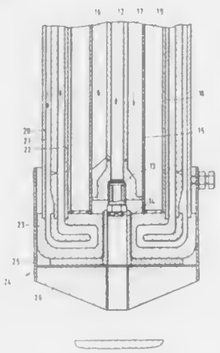
1. A chain hoist including a support frame, rotatable input and output shafts journalled from said frame, stationary drum means mounted from said frame, first and second self-energizing wedge-type brake shoe means shiftably mounted from said output shaft for movement between applied and release positions and including first and second spring means, respectively, yieldingly biasing said first and second brake shoe means to the applied positions thereof for friction braking of said output shaft relative to said drum to prevent rotation of said output shaft relative to said drum in first and second opposite directions, respectively, a torque input member mounted on said input shaft for rotation therewith, connecting means drivingly coupling said input and output shafts for rotation of each by the other in opposite directions of rotation thereof, said connecting means including means establishing a limited loss mo-

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tion connection between said shafts and control means operative to release said first and second brake shoe means responsive to torque input from said input shaft through said connecting means and to said output shaft above a predetermined minimum in said second and first directions of rotation, respectively, said control means also including abutment means engageable with said second and first brake shoe means for shifting said second and first brake shoe means to the release positions thereof against the biasing action of said second and first spring means responsive to said torque input to said connecting means from said input shaft in said second and first directions, respectively, during the take up of the lost motion in said connection as a result of rotation of said input shaft in said second and first directions, respectively, relative to said output shaft.

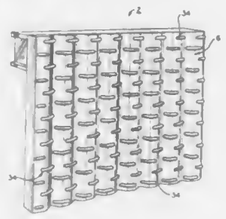


4,938,455
LIQUID-JET CUTTING TORCH
Paul Grohmann, Maria-Enzersdorf, Fed. Rep. of Germany, assignor to Messer. Griesheim GmbH, Fed. Rep. of Germany
Filed Mar. 13, 1989, Ser. No. 321,918
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1988, 3809292
Int. Cl.[5] B23K *7/10*
U.S. Cl. 266—48 **5 Claims**



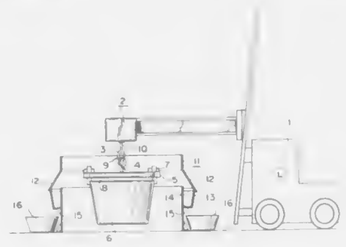
1. In a liquid-jet cutting torch, the improvement being in that a centrally positioned liquid-jet line having a mouthpiece, a cutting nozzle attached to said mouthpiece, an inner pipe concentrically surrounding said line to comprise means to admit and remove a liquefied cooling medium with a low-boiling point, an intermediate pipe concentrically around said inner pipe, said intermediate pipe comprising a vacuum insulation concentrically surrounding said inner pipe, and an outer cooling-water casing surrounding said pipe.

4,938,456
METALLURGICAL PANEL STRUCTURE
Raymond E. Richards, 36227 Ridge Rd., Willoughby, Ohio 44094
Filed Dec. 12, 1988, Ser. No. 282,608
Int. Cl.[5] F27D *9/00*
U.S. Cl. 266—194 **11 Claims**



1. In a metallurgical cooling panel, the improvement comprising an outer plate member providing a pair of generally flat cold face surface portions of tangential construction for plug welding attachment to the peaks of a corrugated inner plate member, an inner plate member providing a hot face surface, said inner plate member being formed to provide a series of laterally spaced corrugations defining peaks and grooves, said peaks and grooves defining elongated cooling fluid channels for transmitting a cooling medium therethrough, and said peaks being in contact with the confronting cold face surface portions of said inner plate member, a plurality of retention elements secured to the exposed surface of each of the corrugations to build up refractory material on the hot face of the panel, said retention elements extending beyond the exterior apices of the inner plate corrugations, and plug welds securing said contacting surfaces together to provide a finished metallurgical cooling panel.

4,938,457
APPARATUS FOR TREATING ALUMINOUS METAL SKIM MATERIAL
Ogle R. Singleton, Jr., 14 Lexington Rd., Richmond, Va. 23226-1626
Filed Jun. 28, 1989, Ser. No. 373,257
Int. Cl.[5] C22B *21/00, 9/02*
U.S. Cl. 266—204 **16 Claims**



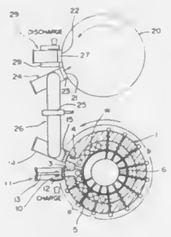
1. An apparatus for the separation of an enriched liquid phase from a mixture of liquid and solid phases containing at least 20% liquid comprising:

a container of generally circular cross-section to hold the aforesaid mixture and retain a solid-enriched residue said container being closeable and with the provision for at least one peripheral opening of controlled size;

a non-rotatable support from which to provide both a means of transmitting rotational force and of providing mechanical support;

a connecting and supporting means between the aforesaid means of both transmitting rotational force and of providing mechanical support and the aforesaid container comprising at least two, interconnecting, supporting, links which fit together loosely, and at least one component of which has a compound arcuate mating surface such that the region of contact between said links during rotation of said container is as close as practically possible to points or lines of contact, thus permitting said container to rotate smoothly in a controlled manner, in an earth-strength gravitational force field, during the change of mass as enriched liquid phase is expelled from said container and as the enriched-in-solids-mass remaining in said container may change position.

4,938,458
CONTINUOUS ION-CARBURIZING AND QUENCHING SYSTEM
Yujiro Nakajima, Osaka, Japan, assignor to Chugai Ro Co., Ltd., Osaka, Japan
Filed Dec. 19, 1989, Ser. No. 452,383
Claims priority, application Japan, Dec. 22, 1988, 63-165983[U]
Int. Cl.[5] C21D *1/74*
U.S. Cl. 266—250 **2 Claims**



1. A continuous ion-carburizing and quenching system comprising:

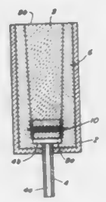
a rotary hearth type continuous ion-carburizing furnace provided with a charge vestibule and a discharge vestibule disposed adjacent to each other;

a continuous diffusion furnace disposed adjacent to said ion-carburizing furnace and provided with a charge vestibule and a quenching chamber;

a transfer vestibule for connecting said discharge vestibule of said ion-carburizing furnace with said charge vestibule of said diffusion furnace so that a material to be treated is transferred from said ion-carburizing furnace towards said diffusion furnace through said transfer vestibule; and

an airtight door disposed midway of said transfer vestibule for partitioning said discharge vestibule of said ion-carburizing furnace and said charge vestibule of said diffusion furnace from each other.

4,938,459
MECHANICALLY SEALED TUYERE BLOCK
George Cingle, III, Gibsonia, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.
Filed Jun. 8, 1989, Ser. No. 363,644
Int. Cl.[5] C21B *7/072*
U.S. Cl. 266—224 **16 Claims**



1. Tuyere block assembly for a metallurgical vessel, said assembly comprising:

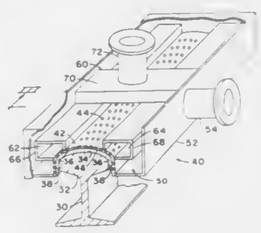
means for supplying gas to the molten metal contents of said vessel;

block means having passage means therein for communicating with said gas supply means and with an interior volume of said vessel;

movable plug means received in said passage means for opening and closing said passage means; and

pin means passing through said plug means and anchored in said block means for retaining said plug means in said block means.

4,938,460
APPARATUS FOR AIR QUENCHING RAILWAY HEADS
Emmerich E. Wechselberger, Glen Ellyn, and Ralph S. Frost, Olympic Fields, both of Ill., assignors to Chemetron-Railway Products, Inc., Wheeling, Ill.
Filed Mar. 19, 1987, Ser. No. 27,766
Int. Cl.[5] C21D *9/04*
U.S. Cl. 266—258 **13 Claims**



1. Apparatus for fluid quenching the head of an axially moving railway rail from austenizing temperatures to develop a pearlite microstructure in the head, said rail head defining a top running surface, laterally opposite side surfaces, and a shoulder surface between each side surface and said top running surface, said apparatus comprising a plurality of substantially longitudinally aligned and spaced apart quench units, each quench unit including:

a perforated plate having a concave surface for confronting the top, shoulder and side surfaces of the rail head when passed through the quench unit;

first housing means cooperative with said plate to define a primary fluid chamber in fluid-flow communication with perforations in said plate confronting only the top running surface and side surfaces of the rail head;

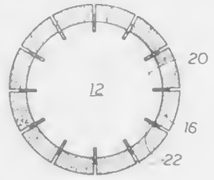
first fluid supply means for supplying cooling fluid to said primary fluid chamber at a first predetermined pressure;
second housing means defining a pair of secondary fluid chambers discrete from said primary fluid chamber and in fluid-flow communication with perforations in the plate confronting only the shoulder surfaces of the rail head; and
second fluid supply means for supplying fluid to said secondary fluid chambers at a second pressure less than the first pressure;
and pressure control means operatively associated with each of said first and second fluid supply means and operative to introduce fluid pressure into the primary fluid chambers of successive quench units in a manner to effect a progressively more rapid cooling rate in each successive primary fluid chamber, said pressure control means being further operative to introduce fluid pressure into the secondary fluid chambers of each successive quench unit to effect a lower rate of cooling of the shoulder surfaces than the top and side surfaces within the corresponding quench unit.

4,938,461

DEVICE FOR DISTRIBUTING GAS INTO MOLTEN METAL

Daniele Bertollo, Milan, Italy, assignor to Zedmark Refractories Corp., Slippery Rock, Pa.

Filed Jun. 2, 1989, Ser. No. 360,604
Int. Cl.[5] C21C *5/48*
U.S. Cl. 266—266 **19 Claims**



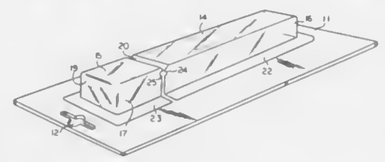
1. A device for supplying gas through the wall of a metallurgical container, comprising:
a plug of impervious refractory material closely fitted within, and extending substantially the full length of, a sleeve;
the sleeve having an open outlet end and an opposite substantially closed end;
the plug having a face end adjacent the sleeve's outlet end and a base end adjacent the sleeve's closed end;
conduit means, for conducting a gas flow from the sleeve's closed end and out through the outlet end, including a plurality of spaced-apart passages extending from inwardly adjacent the closed end to the outlet end, each of the passages being a slot in the plug and being partially defined along its full length by the inside surface of the sleeve; and
the passages containing metallic elongated strip having a first end terminating at a point closely adjacent the outlet end of the sleeve, the strip having a flat strap-like configuration with opposite planar surfaces and narrow longitudinal edges, and one of the edges oriented directly toward the sleeve's inside surface.

4,938,462

RESEALABLE PACKAGE

Charles E. Gould, 928 Central Dewey La., Nampa, Id. 83687

Filed Feb. 12, 1990, Ser. No. 478,439
Int. Cl.[5] B65D *75/58*
U.S. Cl. 206—470 **9 Claims**



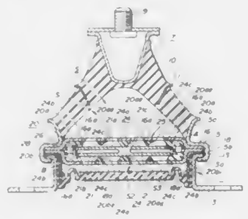
1. A resealable package comprising:
a planar base surface;
a top planar surface having opposing sides and opposing ends, said top planar surface further having a concave indentation formed therein and extending transversely across said top planar surface from side to side so as to form a first portion of said top planar surface on one side of the concave indentation and a second portion of said top planar surface on the other side;
a pair of first portion opposing side walls and an interconnecting end wall, for holding the top planar surface in spaced relationship to the planar base surface, extending out from the sides and end of the first portion of the top planar surface;
means for permanently attaching said first portion side walls and end wall to the planar base surface;
a pair of second portion opposing side walls and an interconnecting end wall, for attachment to the planar base surface, extending out from the sides and end of the second portion of said top planar surface; and
means for removably attaching said second portion opposing side walls and end wall to the planar base surface.

4,938,463

FLUID-FILLED VIBRATION DAMPER

Yasuo Miyamoto, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1989, Ser. No. 361,207
Claims priority, application Japan, Jun. 6, 1988, 63-74856[U]
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—140.1 **10 Claims**



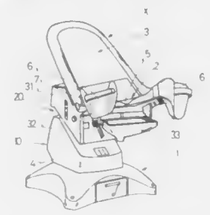
1. A fluid-filled vibration damper comprising;
an attachment for attachment to a vibration source;
a base for attachment to a structural member;
an elastomeric member interconnecting said attachment and said base;
a diaphragm disposed on one of said attachment and said base;
said elastomeric member and said diaphragm defining therebetween a fluid chamber filled with a fluid;
a partition disposed in said fluid chamber and dividing the fluid chamber into first and second fluid chambers;
a passage providing fluid communication between said first and second fluid chambers;
a stop assembly disposed between said partition and said first fluid chamber and between said partition and said second fluid chamber and spaced from said partition with a clearance therebetween, said stop assembly limiting vibration of said partition while allowing the partition to move transversely within a predetermined range; and
said partition having therein an auxiliary fluid chamber having a variable volume and communicating with at least one of said first and second fluid chambers, said auxiliary fluid chamber being expandable to reduce said clearance between said partition and said stop assembly when the fluid flows from said at least one fluid chamber into said auxiliary fluid chamber.

4,938,464

OBSTETRIC EXAMINING TABLE APPARATUS

Tabuchi Akiko, Okayama, Japan, assignor to Kazuhisa Tabuchi, Okayama, Japan

Continuation-in-part of Ser. No. 129,845, Dec. 8, 1987, abandoned. This application Aug. 29, 1989, Ser. No. 401,524
Int. Cl.[5] A61G *15/00*
U.S. Cl. 269—323 **4 Claims**



1. An obstetric examining table apparatus of the type including an examining table having an open space at the center thereof and thigh crutches on right and left sides provided on a base so that said examining table can be reclined, said apparatus further comprising a means provided in said base for raising and lowering said examining table, a means provided in said base for rotating said examining table and an electric control device for controlling both said raising and lowering means and said rotating means to raise or lower said examining table and at the same time rotate said examining table through a predetermined angle to move said examining table up and down through a spiral locus.

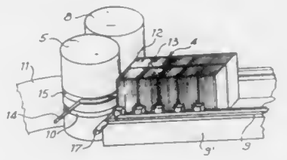
4,938,465

METHOD AND DEVICE FOR SEPARATING A PREDETERMINED NUMBER OF FLAT OBJECTS, SUCH AS SHEETS OF PAPER

Gianni Marsiletti, Oggiono, Italy, assignor to OMET S.r.L., Italy

Filed Jun. 8, 1988, Ser. No. 204,071
Claims priority, application Italy, Jun. 10, 1987, 20861 A/87
Int. Cl.[5] B65H *41/00*
U.S. Cl. 270—52.5 **21 Claims**

1. A method for separating a predetermined number of flat objects, in particular loops or leaves of paper being fed from a folder machine of the type comprising rollers which fold a ribbon of paper or similar material forming loops which are afterwards cut to form individual folded leaves, the method being characterized in that it comprises the following steps: blocking by a stop, in a determined position outside the space taken up by the ribbon in the folding phase, at least one support bearing at least one loop or leaf separating finger; retaining said support and related finger by said stop for the time as necessary to build up a predetermined number of loops, starting from an initial loop; disengaging the stop on command and freeing the finger which engages the last loop formed, becoming inserted between this loop and the following one, wherein said stop keeps the support in such as position that the related finger is near a folder roller, and when the support is freed by the stop, it is forced along the path first portion to engage the last loop formed; advancing the support and related finger along a path active portion parallel to that of the loops and leaves obtained



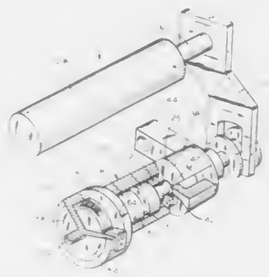
from the same loops, substantially at the same speed as said leaves; removing a pack formed by said predetermined number of leaves and defined by the leaves included between said finger and the preceding one sending the support back to its starting position along a path return portion; said phases being carried out simultaneously and successively by a plurality of supports, each having one or a group of separating fingers, the supports being separated one from the other by said predetermined number of leaves or loops along said path active portion.

4,938,466

CLUTCH ASSEMBLY FOR A VACUUM SIGNATURE FEEDING DEVICE IN A PACKER BOX

Salvador Correa, Middletown, Conn., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Jun. 5, 1989, Ser. No. 361,237
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—107 **32 Claims**



1. A clutch assembly for a vacuum signature feeding device in a packer box, comprising:
a pair of disks disposed within a housing for selective driving engagement therebetween;
means for engaging and disengaging said disks only in a single preselected angular orientation therebetween;
means for imparting oscillatory motion to one of said disks when said disks are engaged; and
means for transmitting oscillatory motion from the other of said disks when said disks are engaged;
said oscillatory motion transmitting means being operatively associated with said vacuum signature feeding device.

VOL 1116 ISS 1 JL 3 1990 UMI

4,938,467

APPARATUS FOR POST-PROCESSING OF SHEETS

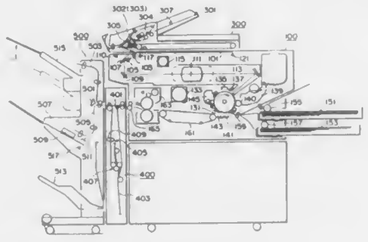
Takeshi Honjo, Kawasaki, and Koichi Murakami, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1988, Ser. No. 175,347

Claims priority, application Japan, Mar. 31, 1987, 62-078017; Mar. 31, 1987, 62-078018; Mar. 31, 1987, 62-078023; Apr. 1, 1987, 62-080486

Int. Cl.[5] B65H *45/04, 43/04*

U.S. Cl. 271—202 **14 Claims**



1. A sheet post-processing apparatus comprising:

discharge means for discharging sheets;

stacking means for stacking the sheets discharged by said discharge means;

input means for inputting information indicative of the presence or absence of fold in the sheets; and

control means for controlling said discharge means so as to vary the sheet discharge speed in accordance with the information indicative of the presence or absence of fold in the sheets, which information is entered through said input means,

wherein said control means controls said discharge means in such a manner that in case of the absence of fold in the sheet, the sheet is discharged at a first discharge speed, and in case of the presence of fold in the sheet, the sheet is discharged at a second discharge speed faster than the first discharge speed.

4,938,468

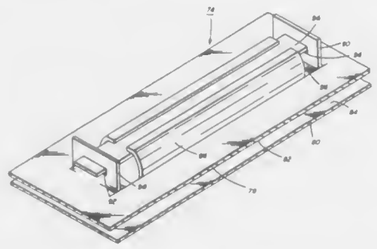
NON-ROTATING PAPER PATH IDLER

Walter F. Wafler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1985, Ser. No. 790,928

Int. Cl.[5] B65H *5/02*

U.S. Cl. 271—272 **12 Claims**



1. An apparatus for guiding and advancing a sheet, including:

a drive roller,

a non-rotating, arcuate member arranged to be positioned closely adjacent to said drive roller to define a nip with said arcuate member being made from a material having a low coefficient of sliding friction;

means for resiliently urging said arcuate member into engagement with the sheet to press the sheet against the drive roller to advance the sheet through the nip; and

means for guiding the sheet into and out of the nip, said guiding means includes at least a first member having a generally planar surface with a slot therein, said arcuate member being arranged to have at least a portion thereof extending through the slot to define the nip.

4,938,469

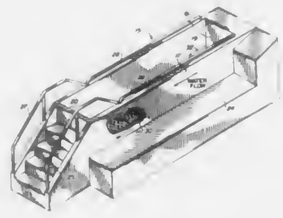
AQUATIC EXERCISE APPARATUS

Raymond H. Crandell, Phoenix, Ariz., assignor to Conray Company, Phoenix, Ariz.

Filed Feb. 21, 1989, Ser. No. 312,207

Int. Cl.[5] A63B *22/02*

U.S. Cl. 272—69 **26 Claims**



1. An aquatic exercising and therapeutic apparatus including in combination:

a container for retaining liquid to a predetermined depth, said container having a bottom, first and second opposite sides, and first and second opposite end walls;

treadmill means located in the bottom of said container and extending substantially between said first and second end walls for movement from one of said first and second end walls to the other of said first and second end walls; and

means for producing a continuous flow of liquid independently of movement of said treadmill means substantially from one of said first and second end walls to the other of said first and second end walls.

4,938,470

PERIMETER WEIGHTED IRON TYPE GOLF CLUB HEAD WITH UPPER ALIGNMENT AND SIGHTING AREA AND COMPLEMENTARY WEIGHTING SYSTEM

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Dec. 23, 1988, Ser. No. 289,259

The portion of the term of this patent subsequent to May 2, 2006, has been disclaimed.

Int. Cl.[5] A63B *53/04*

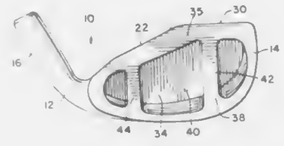
U.S. Cl. 273—164 **9 Claims**

1. An iron type golf club head having an improved weight distribution and sighting and alignment means comprising:

a main body including a heel, hosel proximate said heel, a toe, a bottom surface including a sole, a ball striking face to hit a ball along an intended line of flight, a center of percussion on said ball striking face, a rear surface, a complementary rear face and a top ridge extending from the hosel to the toe;

sighting and alignment means formed on a portion of said top ridge of said golf club head, said sighting and alignment means including a straight section on said top ridge extending in a direction perpendicular to the intended line of flight from a first point adjacent said toe to a second point located between said toe and said heel, and spaced substantially from said hosel;

a peripheral mass formed on at least the heel, toe and lower surface portions of the outer periphery of the rear surface of the club head, said peripheral mass defining a cavity at the rear surface of the club head and providing a perimeter weighting for the club head; and



at least two opposing weight members formed on the rear surface of the club head and extending outwardly from said rear surface to at least the rearmost outer surface of said peripheral mass, the respective opposing weight members being located on opposite sides of and spaced from the center of percussion, one weight member being positioned between and spaced from the center of percussion and the toe portion of said peripheral mass, the second opposing weight member being positioned between and spaced from the center of percussion and the heel portion of said peripheral mass, said first and second weight members providing a mass for improved club head stabilization and energy transfer to a golf ball struck off the center of percussion.

4,938,471

THREAD WOUND GOLF BALL

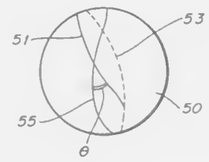
Jun Nomura, Yokohama, and Masaaki Kaida, Higashiyamato, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 5, 1989, Ser. No. 376,315

Claims priority, application Japan, Jul. 5, 1988, 63-167119

Int. Cl.[5] A63B *37/06*

U.S. Cl. 273—227 **4 Claims**



1. In a golf ball comprising a core ball having a core and a thread rubber continuously wound thereon and a cover enclosing the core ball, the improvement wherein for every ten turns of thread rubber around the core, at least 8 turns have a crossing angle in the range of 12° to 45°, the crossing angle being defined between the orbit of one full turn of thread rubber wound around the core and the orbit of a subsequent full turn of thread rubber wound around the core.

4,938,472

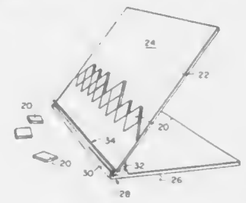
GAME WITH STACKING PIECES ON INCLINED SURFACES

Murray J. Gould, 11712 Silent Valley La., Gaithersburg, Md. 20878, and James R. Longacre, 3621 Littledale Rd., Kensington, Md. 20895

Filed Jan. 23, 1989, Ser. No. 299,432

Int. Cl.[5] A63F *7/38*

U.S. Cl. 273—241 **15 Claims**



1. A game comprising:

means for defining a planar extending surface having a lower edge and a plurality of triangular shaped raised portions extending in a saw-tooth pattern along said lower edge, said portions forming a sequence of triangular notches each being a right triangle with a base parallel to said lower edge, and sides extending from either side of said base, the intersection between said sides forming a right angle opposite said base;

means adapted for resting on another surface for mounting said surface defining means so that said extending surface is inclined away from said another surface to form an obtuse angle with respect to said another surface; and

a plurality of pieces having a square shape with four edges each substantially equal to the length of a side of said triangular notch, each piece having a surface conforming to the inclined extending surface, each of said pieces being adapted to be placed on said inclined surface with two adjacent edges thereof contacting and being supported by the sides of said raised triangular shaped portions or by the edges of other pieces, said plurality of pieces being divided into visually differentiable first and second sets so that two or more players can place said pieces in patterns on said inclined surface to play a game.

4,938,473

TREADMILL WITH TRAMPOLINE-LIKE SURFACE

R. Clayton Lee, 10369 Briar Forest, Houston, Tex. 77042, and Jeffrey O. Meredith, 10818 Sagetrail Dr., Houston, Tex. 77089

Filed Mar. 24, 1988, Ser. No. 172,412

Int. Cl.[5] A63B *23/06*

U.S. Cl. 272—69 **2 Claims**

1. A treadmill with a moving trampoline-like belt surface having a longitudinal axis defined by the direction of movement of the belt during use, comprising:

(a) a frame;

(b) an endless belt having generally parallel lateral edges and mounted for travel on the frame, the uppermost of which is adapted to form a flat exercising surface;

(c) the frame providing a lateral edge support rail spaced from and extending substantially along each lateral side of the endless belt;

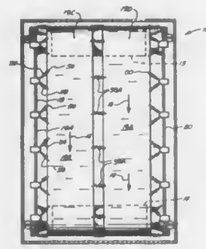
(d) connecting means for connecting the lateral edges of the endless belt to the lateral edge support rails to support the lateral edges along the exercising surface as the endless belt moves relative to the frame;

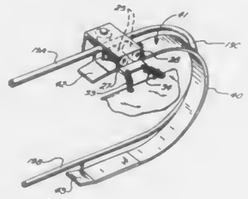
(e) the connecting means including a plurality of brackets mounted for movement along the lateral edge support rails and tensile means for applying tension between the

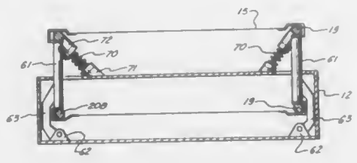
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brackets and the lateral edges of the belt at multiple positions along the belt and at acute angles with respect to the lateral edges so that the tensile means tension the belt at its lateral edge portions with both longitudinal and lateral load components;

wherein each bracket includes a plurality of rollers including at least one roller adapted to engage the outer surface of the rail on the side opposite the belt, and further comprising at least one second roller carried by the bracket and positioned generally between the rail and the mat for maintaining a generally semicircular curvature of the belt at the end portions of the belt, and further comprising a curved rail section having a surface which defines at least the curvature at the end of the belt and which is adapted to receive the second roller carried by the brackets, so that







the second roller engages the curved rail section at the end portions of the belt.

2. A treadmill with a moving tramp line-like belt surface having a longitudinal defined by the direction of movement of the belt during use, comprising:

(a) a frame;

(b) an endless belt having generally parallel lateral edges and mounted for travel on the frame, the uppermost surface of which is adapted to form a flat exercising surface;

(c) the frame providing lateral edge support means spaced from and extending substantially along both lateral sides of the endless belt;

(d) connecting means for connecting the lateral edges of the endless belt to the lateral edge support means to support the lateral edges along the exercising surface as the endless belt moves relative to the frame;

(e) the connecting means including spring means for applying tension to the lateral edges of the belt;

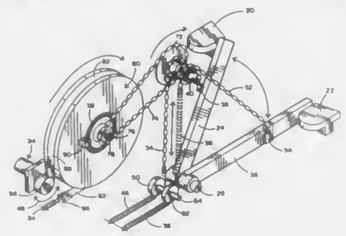
said spring means comprising shock absorber means defining a shock absorbing connection between the frame and the lateral edge support means for allowing the deflection of each upper edge portion of the belt inwardly during use.

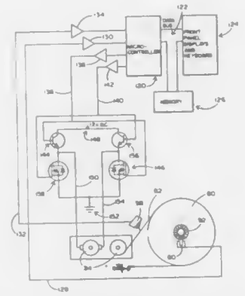
4,938,474

EXERCISE APPARATUS AND METHOD WHICH SIMULATE STAIR CLIMBING

Michael T. Sweeney; Duane P. Stark, and James S. Sweeney, Jr., all of Laguna Beach, Calif., assignors to Laguna Tectrix, Inc., Irvine, Calif.

Filed Dec. 23, 1988, Ser. No. 289,563
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 **35 Claims**





1. An exercise apparatus which simulates stair climbing by allowing user effort to lift the user's weight at a desired speed of climbing, comprising;

two user-operated pedals which are separately movable back and forth between upper and lower positions;

each pedal being individually moved downwardly by user climbing effort as the user's weight is lifted into the pedal in its upper position;

means for returning each pedal into its upper position after the user's weight has been removed from its;

a rotating member whose speed of motion is proportional to the speed of climbing by the user;

a friction brake cooperating with the rotating member to maintain the speed of the rotating member at a value representing a preselected climbing rate;

an actuator which exerts force to cause motion in one direction to increase the friction of the brake, and motion in another direction to decrease the friction of the brake;

speed sensing means for providing a value indicating the actual speed of motion attained by the rotating member;

means for providing command speed of motion of the rotating member, representing the user's desired climbing speed;

means for determining whether the actual speed or the command speed is greater than the other; and

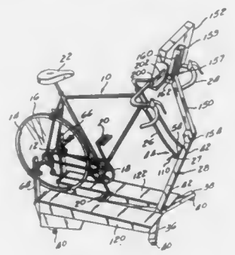
means for controlling the direction of motion caused by the actuator in response to the speed determining means.

4,938,475

BICYCLE RACING TRAINING APPARATUS

Bruce A. Sargeant, 137 N. Cobblestone, Orange, Calif. 92669; Mark J. Hoffenberg, 24306 Bellerive Clr., Laguna Niguel, Calif. 92677; Rob Reasons, 25108 Marguerite, #B19, Mission Viejo, Calif. 92692, and Robert A. Walpert, 1421 Rolling Hill Dr., Montery Park, Calif. 91754

Continuation-in-part of Ser. No. 54,749, May 26, 1987. This application Aug. 25, 1987, Ser. No. 89,329
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—73 **11 Claims**



1. A method of calibrating the loads on an exercise device containing a rotating wheel which is rotated by a person exercising with said exercise device and a loading device for applying loads to that wheel, comprising the steps of:

rotating a wheel in an exercising device until the wheel attains at least a first predetermined rotational velocity;

allowing the wheel to coast down to a second predetermined rotational velocity during which coasting period the loading device is not exerting loads on the wheel other than inherent frictional loads;

sensing and recording the time and rotational velocity at periodic intervals as the wheel coasts down from the first velocity to the second velocity;

determining the rotational mass moment of inertia of any components of the exercise device that rotate because the wheel rotates;

performing a linear regression analysis on the recorded velocities and times to determine the deceleration of the wheel and rotating components as a function of velocity; and

deriving the frictional load from rotation of the wheel and the rotating components of the exercise device from the formula Frictional torque equals the Mass Inertia times the Angular deceleration.

4,938,476

BODY POSITION ATTITUDE INDICATOR DEVICE

Timothy R. Brunelle, 2221 Marcia Ct., and Shawn Gallagher, 375 Glendening Rd., both of Orange Park, Fla. 32073

Continuation of Ser. No. 202,947, Jun. 6, 1988, abandoned. This application Sep. 12, 1989, Ser. No. 406,872
Int. Cl.[5] A63B *23/02*
U.S. Cl. 272—93 **4 Claims**

1. A device worn on a human torso for indicating torso bending at the waist by producing an audible signal, said device comprising in combination:

(A) body attachment means comprising a band to encircle and maintain a cylindrical housing on the side of a human torso, such that the central axis of the cylindrical housing is perpendicular to the vertical axis of the torso;

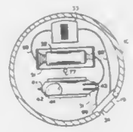
(B) a plate permanently fastened to said band to receive the cylindrical housing; and

(C) the cylindrical housing rotatably attached to said plate by a centrally positioned rivet allowing rotation of said housing about the central axis of said housing relative to said plate, said housing containing an electrical circuit housing,

power means comprising a battery to supply electrical current to an alert means,

alert means to produce an audible signal,





an activation switch to turn the device off and on, and

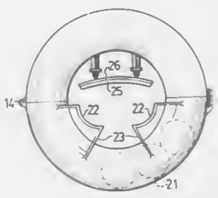
an attitude responsive switch to open and close said electrical circuit, directly affixed to said housing, where said attitude responsive switch is positioned in the electrical circuit between said power means and said alert means, said attitude responsive switch allowing said current to reach said alert means to produce said signal only when torso bending at the waist occurs to alter the attitude of said housing, and where said attitude responsive switch is adjustable relative to said torso only by rotating said housing relative to said plate.

4,938,477

WRIST ENGAGING EXERCISE DEVICE

Douglas T. Kuervers, 5204A Bowness Road, N.W., Calgary, Alberta, Canada T3B 0C3

Filed Apr. 12, 1989, Ser. No. 336,767
Int. Cl.[5] A63B *21/065*
U.S. Cl. 272—119 **20 Claims**



1. A wrist engaging exercising device comprising in combination an annular hollow member, means for detachably engaging said hollow member around the wrist of the user having

wrist engaging means projecting centrally from the annular hollow member and including adjustment means for adjusting the wrist engaging means to fit, within limits, wrists of various thicknesses, and at least one weight confined within said hollow member but freely movable therearound.

4,938,478
BALL HITTING PRACTICE DEVICE
William C. Lay, 931 Creek Hill Land, Midvale, Utah 84047
Continuation-in-part of Ser. No. 162,213, Feb. 29, 1988. This application Nov. 13, 1989, Ser. No. 435,059
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 R 7 Claims



1. A baseball or softball practice hitting device comprising in combination a planar base adapted to resting on a solid surface, a vertical pedistal having its lower end attached to said base said pedistal comprising a first elongated flexible member and a second elongated rigid tubular member; said first member having a specially prepared molded polyurethane baseball or softball fixedly attached at one end thereof said molded polyurethane extending down along the sides of the first member and its other end being telescopically inserted into the top of said second elongated rigid tubular member, a washer means between the first and second members at the upper end of said second member, a safety lock means at said other end of the first member to prevent it from being removed from the top of the second member, adjustable locking means on the first and second members for securing said first member at a desired hitting height, and a coil spring having one of its end fixedly attached to the bottom of the second member and its other end being fixedly attached by bolt mean to the planar base.

4,938,479
TENNIS BALL RETURN APPARATUS
Craig D. Jenkins, 8789 W. Cornell Ave. Unit 10-6, Lakewood, Colo. 80227; Scott E. Jenkins, 658 S. Reed Ct., Apt. NH12, Lakewood, Colo. 80226, and Jerold D. Jenkins, 850 Vindicator Dr., Suite 212, El Paso, Colo. 80918
Filed Jul. 11, 1988, Ser. No. 217,691
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—29 A 15 Claims

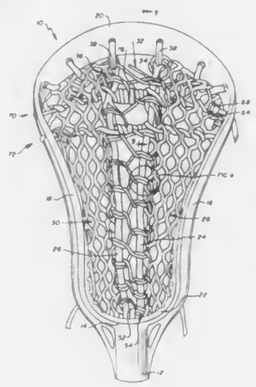
1. A tennis ball return apparatus comprising a pair of ball guide arrangements adapted to be oriented along opposite sides of a bottom portion of a tennis net and spaced apart to define a ball receiving recess therebetween, a tray in the bottom of the recess for receiving and guiding balls to a location for return to the base line of a tennis court, each of said guide arrangements including a frame and inclined net having an upwardly facing





surface of substantial lateral extend with the inclined net being inclined downwardly toward the recess.

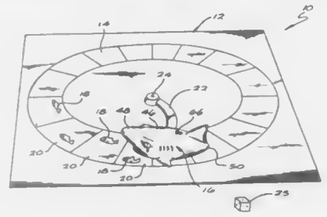
4,938,480
COACH'S RP SPECIAL LACROSSE STICK STRING CONFIGURATION
Randy P. Loda, Sandy Spring, Md., assignor to Coach's, Olney, Md.
Filed Nov. 20, 1989, Ser. No. 438,247
Int. Cl.[5] A63B *59/02*
U.S. Cl. 273—326 20 Claims



1. A head for a lacrosse stick comprising:
a frame member having first and second side walls, each of said side walls having a proximal end and a distal end, an end wall extending between said distal ends of said side walls, and a transverse stop element extending between said side walls adjacent said proximal ends thereof; and
a web of string-like material coupled to said frame, said web including:
first, and second longitudinal thong elements and a mesh portion, said mesh portion being coupled to each of said longitudinal thong elements and extending at least between each said thong element and a respective side wall

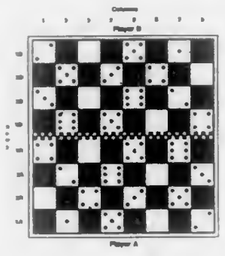
of said frame, means for coupling said mesh portion to each said side wall, means for coupling one longitudinal end portion of said mesh portion to said end wall of said frame, and means for coupling the other longitudinal end portion of said mesh portion to said frame adjacent said proximal ends of said side walls.

4,938,481
INCREMENTALLY ADVANCING TOY APPARATUS
Adolph E. Goldfarb, 1432 S. Eastwind Cir., Westlake Village, Calif. 91361, and Martin I. Goldfarb, Los Angeles, Calif., assignors to Adolph E. Goldfarb, Westlake, Calif.
Filed Feb. 10, 1989, Ser. No. 310,041
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 27 Claims



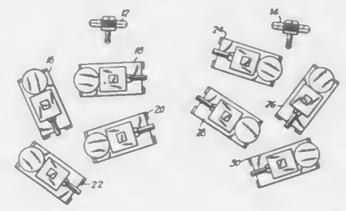
1. An action toy apparatus comprising:
(a) means defining a pathway with a series of areas therealong;
(b) a frame;
(c) catching means operatively connected to the frame for movement therewith and representing at least a portion of an animated character;
(d) moving means operatively associated with the catching means and the frame for causing the catching means to repeatedly move through a cycle, each cycle including the catching means both:
(i) advancing along the pathway from area to area, while
(ii) alternately rising to an elevated position and then falling to a lowered position relative to the pathway, the catching means advancing to each successive area in its elevated position and then falling to its lowered position at that area before again advancing to the next area.

4,938,482
BOARD GAME
John H. Ludwick, Bellevue, and Donald P. Jarvis, Seattle, both of Wash., assignors to Jarwick Enterprises Ltd., Seattle, Wash.
Filed Dec. 16, 1988, Ser. No. 285,082
Int. Cl.[5] H63F *3/02*
U.S. Cl. 273—260 10 Claims



1. A game board comprising a grid having eight rows and eight columns defining 64 squares, the squares alternating in color to identify a field of play containing 32 spaces, one space within each row of the grid being assigned the value of w, wherein w is a negative integer, and the remaining three spaces within each row being assigned a value of x, y and z, respectively, wherein x, y and z are positive integers, the sum of w, x, y, and z of the middle four rows of the grid being greater than the sum of w, x, y, and z of the first two and the last two rows of the grid, to promote aggressive movement towards the center of the board and the first four rows of the grid being a reverse mirror image of the last four rows of the grid.

4,938,483
MULTI-VEHICLE INTERACTIVE TOY SYSTEM
Ido Yavetz, Providence, R.I., assignor to M. H. Segan & Company, Inc., New York, N.Y.
Filed Nov. 4, 1987, Ser. No. 117,191
Int. Cl.[5] A63H *30/04*
U.S. Cl. 273—311 44 Claims



1. An interactive multi-vehicle combat game comprising:
first and second controllers, each including means operable by a player for selectively generating a control signal including at least a fire command signal and a movement command signal;
means for transmitting said control signal;
first and second vehicles controlled by said first and second controllers, respectively, each vehicle including:
detecting means for receiving said control signal,
firing means responsive to said fire command signal for transmitting an electromagnetic signal in a substantially straight line path when the fire command signal is in said control signal received by said detecting means,
motive means for moving said vehicle when said movement command signal is in said control signal received by said detector means,
sensor means for detecting impingement of an electromagnetic signal fired by another vehicle and for generating a damage signal in response thereto, and
indicator means responsive to said damage signal for providing an indication that said sensor means has detected an electromagnetic signal fired by said other vehicle.

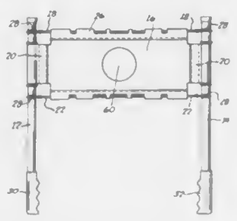
4,938,484
GAME DEVICE AND SYSTEM
Charles S. Davis, Jr., 134 Lakeshore Dr., No. 516ON, North Palm Beach, Fla. 33408
Filed Nov. 14, 1988, Ser. No. 271,493
Int. Cl.[5] A63B *65/12*
U.S. Cl. 273—324 9 Claims

1. A sling device comprising:
two long bars, each of said bars having a first end portion and a second end portion;
a sling having a body with four sides, said sling positioned

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between and rotatably connected to each said first end portion;

a handle connected to each said second end portion; and



said sling including elastic means connected thereto and rotatably connected to each said first end portion.

4,938,485

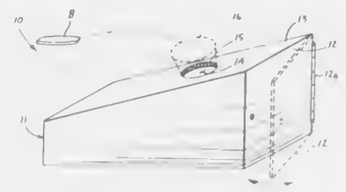
BEAN BAG TOSS GAME

Mark R. Hockridge, and Gary D. Buck, both of Box 86, Enfield, Me. 04433

Filed Feb. 13, 1989, Ser. No. 309,485

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—401 **5 Claims**



1. A bean bag toss game apparatus comprising,

at least one container defining an interior compartment,

and

a target opening comprising a through-extending aperture extending through a top surface of said container,

and

at least one bean bag means for use as a projectile to enter said interior compartment through said target opening,

and

insert means selectively positionable in said target opening to provide a varying target opening area and configuration,

and

wherein said insert defines an outwardly tapering configuration including an integrally formed base,

and

wherein said base is of a downwardly tapering truncated conical configuration,

and

wherein said base further includes an outer peripheral surface including hook and loop fasteners integrally formed thereon cooperative with further hook and loop fasteners formed on a peripheral surface of said target opening wherein said base may be positioned at varying angles relative to said target opening.

4,938,486

WATER DISCUS

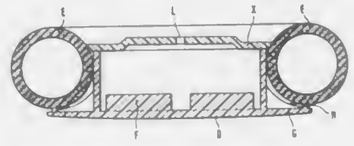
Josef Graf, 8201 Frasdorf, Segberg 1, Fed. Rep. of Germany

Filed May 17, 1989, Ser. No. 353,292

Claims priority, application Fed. Rep. of Germany, May 20, 1988, 8806676[U]

Int. Cl.[5] A63B *65/10*

U.S. Cl. 273—424 **4 Claims**



1. A water discus comprising a round, outwardly bulging plastic body having a hollow interior and a smooth water gliding exterior surface, and mounted on the periphery of the body an impact protection element having an exterior surface in the form of a toroid generated by a circle, the hollow body being comprised of a bottom section and a cover having a closable aperture, the cover being in clamping engagement with the bottom section, the bottom section having an annular wall laterally enclosing the hollow interior of the body, the height of the wall being less than the diameter of the circle, and the bottom section also having a floor, the floor supporting the wall and having an outwardly bulging obverse surface, the floor having a portion extending laterally beyond the wall thereby to support the impact protection element, the minimum distance between a point on the exterior surface of the protection element and the obverse surface of the floor being no greater than 3 mm.

4,938,487

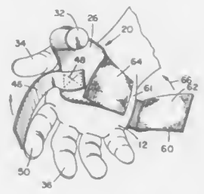
BOWLING AID

Eugene E. Ponsart, 705 Sandia Dr., Port St. Lucie, Fla. 34983

Filed Mar. 21, 1989, Ser. No. 326,613

Int. Cl.[5] A63B *71/14, 69/00*

U.S. Cl. 273—54 B **13 Claims**



1. An aid for a bowler, that is, a person engaged in the sport of bowling, said aid comprising:

a substantially rigid support member including an upper plate element and an integral lower plate element adapted to be removably received on the hand of the bowler and, when so received, extending continuously from the upper surface of the hand to the palm of the hand and contoured to snugly conform thereto, said upper plate element contiguously overlying the upper surface of the hand, said lower plate element contiguously underlying the palm of the hand; and

an artificial thumb member rigidly mounted on said lower plate element proximate to the general location of a natural thumb when said support member is so received on the hand of the bowler to thereby prevent relative movement between said artificial thumb member and said lower plate element, said artificial thumb projecting away from said lower plate element and away from the palm of the bowler's hand and so sized and positioned as to be receivable in the thumb hole of a bowling ball when fingers of the bowler are received in the finger holes of the bowling ball; thereby enabling the bowler to fully manipulate the ball without using a natural thumb.

4,938,488

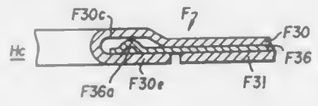
STEEL LAMINATE GASKET WITH WIDE SEALING AREA

Tsunekazu Udagawa, Ichikawa, and Susumu Inamura, Tokyo, both of Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1988, Ser. No. 243,528

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—235 B **14 Claims**



1. A steel laminate gasket for an internal combustion engine having at least one hole therein, comprising,

a first plate having at least one first hole therein corresponding to the hole of the engine, said first plate including a base portion, at least one curved portion integrally formed with the base portion to extend transversely with respect to the base portion to surround and define the first hole, at least one flange integrally formed with the curved portion and being located at a side of the base portion to extend substantially parallel to the base portion and surrounding the first hole, at least one side wall formed on one of the base portion and the flange spaced from the curved portion to surround the first hole so that the distance between the flange and a portion of said base portion laterally inside the side wall is greater than the distance between the flange and base portion laterally outside the side wall, and an area around the first hole surrounded by the side wall and the curved portion for forming an embossed portion, said embossed portion having a lateral width shorter than the lateral width of the flange and an outer surface which is substantially flat and parallel to an outer surface of one of the base portion and flange facing against the embossed portion so that when the gasket is tightened, the embossed portion deforms to strongly seal around the first hole, and

a second plate situated at a flange side of the first plate, said second plate having at least one second hole therein, the size of the second hole being larger than the size of the flange so that when the first and second plates are assembled, the flange is located inside the second hole.

4,938,489

SELF-CENTERING HOLDER FOR OPTICAL DEVICES AND THE LIKE

Robert Nemirovsky, 1117 Hyman Ave., Bayshore, N.Y. 11706, assignor to Robert Nemirovsky, Bay Shore and Joseph Deutsch, Commack, both of, N.Y.

Filed Dec. 20, 1988, Ser. No. 286,733

Int. Cl.[5] B23B *31/12*

U.S. Cl. 279—1 L **2 Claims**

1. An optical holder comprising:

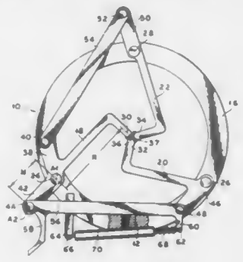
a frame;

a first, a second and a third arm, each of said arms being pivotally mounted on said frame and including an arm end;

a first linking bar pivotally attached to said first and second arms;

a second linking bar pivotally attached to said first and third arms;

said arms and said pivot attachments being arranged to pivot said arms by an angular movement of either of said linking bars, said arms being pivoted between a first open position in which said arm ends are spaced apart and a second closed position in which said arm ends come together adjacent to a common point;



spring means arranged between one of said linking bars and said frame to urge said arm ends toward said second closed position; and

actuating means coupled to one of said first and said second linking bars for achieving angular movement of said one linking said bar to pivot said arms.

4,938,490

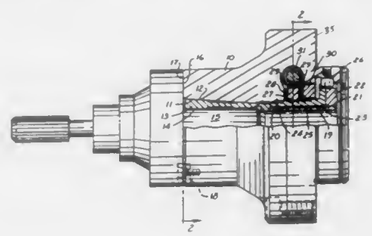
DRAWBACK COLLET

Ronald P. Bosek, Davisburg, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Continuation of Ser. No. 90,179, Aug. 27, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 331,088

Int. Cl.[5] B23B *31/10*

U.S. Cl. 279—42 **2 Claims**



1. Drawback collet chuck comprising an annular body, a rigid annular tapered collet chamber within said body, a collet having flexible segments each with matching tapered peripheral chamber engaging surfaces and cylindrical interior clamping surfaces, said collet having a coaxial extension integral thereto, extending through said body for added stability, said collet having a shoulder means on said extension for transmitting axial displacement thereto, sleeve means engaging said shoulder means with radial clearance relative to said extension, a threaded perimeter on said sleeve engaged by a worm gear, an actuating worm mounted tangentially to said worm gear to effect axial displacement of said collet extension within said chamber and corresponding radial clamping displacement wherein said actuating worm is tangentially mounted for worm gear driving engagement with axial thrust bearing means in

said body, and thrust bearing means for axially retaining said worm gear during rotation on said sleeve.

4,938,491

FOUR-JAW SELF-CENTERING CHUCK

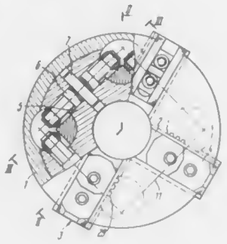
Vladimir I. Sumenko, 2 Gvazaursky prokhod, 1, kv. 8, Tbilisi; Nikolai A. Kiknadze, ulitsa Bostan-Kalaki, 5v, kv. 2, Rustavi, and Teimuraz S. Taniashvili, Gidansky massiv, 1 mikroraion, korpus 14, kv. 30, Tbilisi, all of U.S.S.R.

PCT No. PCT/SU87/00050, § 371 Date Nov. 17, 1988, § 102(e) Date Nov. 17, 1988, PCT Pub. No. WO88/08348, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 28, 1987, Ser. No. 283,277

Int. Cl.[5] B23B *31/16*

U.S. Cl. 279—119 **3 Claims**



1. A four-jaw self-centering chuck comprising a housing (1,12) having mounted therein radially movable clamping jaws (3,14) cooperating with a self-centering mechanism operatively connected with a drive comprising a plurality of drive members for actuating the clamping jaws for radial motion, characterized in that the self-centering mechanism includes four levers (6,25) having arms with opposite ends, and pivot axles, their respective pivot axles (7,24) carried by a said drive member, the clamping jaws (3,14) including means for receiving therein both ends of the arms of the adjacent levers (6,25), forming a closed force circuit (11,28).

4,938,492

SHOPPING TROLLEY OF THE NESTABLE TYPE COMPRISING A RACK WHICH IS CAPABLE OF WITHDRAWAL BENEATH ITS CARRIER BASKET

Alain Le Marchand, Reichstett, and Daniel Bailly, Bischheim, both of France, assignors to Ateliers Reunis Caddie, Schiltigheim, France

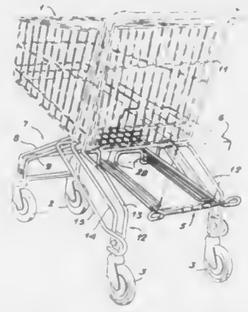
Filed Aug. 7, 1989, Ser. No. 389,972

Claims priority, application European Pat. Off., Jun. 16, 1989, 89401700

Int. Cl.[5] B62B *11/00*

U.S. Cl. 280—33.992 **5 Claims**

1. A trolley and especially a shopping trolley comprising a bottom frame including a front portion and a rear portion, wheels attached to lower ends of said front and rear frame portions, a carrier basket fixed on the bottom frame of said trolley and placed at a predetermined height above the level of the wheels, and a rack which is intended to serve as a support for a box or other bulky object, said rack being mounted so as to be capable of moving between an inclined position of withdrawal beneath the basket and a horizontal extended position of use behind said basket, said front frame portion including two lateral guides which are downwardly inclined in the forward direction for supporting said rack in the withdrawal position, and a supporting member located behind the upper ends of the lateral guides for supporting said rack in the extended position, said lateral guides of the movable rack being constituted by two sloping members which form at the same time the front bearing struts of the bottom frame, said members extending rearwardly to the rear portion of the bottom wall of the carrier basket, each of said two members consisting of two parallel wires which are superimposed in the same vertical plane, the lateral spacing between the forward ends of said two members being less than the lateral spacing between the rearward ends of said two members, said movable rack having a flat U-shaped structure with forwardly extending, laterally spaced legs forming an opening along the front portion of the



rack, said rack being formed of resilient wires so as to permit elastic deformation of said lateral legs upon inward displacement of said lateral legs in a transverse direction when said rack is moved to its position of withdrawal, the forward end of each lateral leg of said rack being adapted to carry a projecting hook member which is slidably engaged between the parallel wires of a corresponding lateral guide and the lateral legs of said rack being slidably mounted on said supporting member.

4,938,493

TRUCK WITH A HAND-OPERTABLE BED

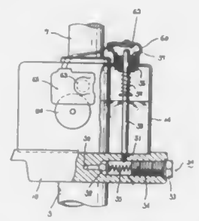
Genzaburo Okuda, Minami Kawachi, Japan, assignor to Kabushiki Kaisha Okudaya Giken, Osaka, Japan

Filed Aug. 2, 1988, Ser. No. 227,664

Claims priority, application Japan, Mar. 29, 1988, 63-77624

Int. Cl.[5] B62D *21/14*

U.S. Cl. 280—43.12 **15 Claims**



1. A truck with a hand-operatable bed of which the front side under surface is provided with a pair of front wheels, the rear side under surface is supported by a hydraulic cylinder for lifting or lowering said bed, mounted on a pair of rear wheels by means of bearings, a hydraulic fluid reservoir, an overload-sensing device and an alarm-raising device, comprising:

a chamber;

a pressure relief valve for venting hydraulic fluid from said hydraulic cylinder into said chamber;

an adjustable bias setting spring for controlling the differential pressure point between said hydraulic cylinder and said chamber at which said pressure relief valve opens;

a bore connecting said chamber to said hydraulic fluid reservoir;

a rod including a first end which is positioned in said bore;

said rod first end including a segment dimensioned to fill said bore and prevent fluid flow from said chamber into said hydraulic reservoir;

a rod bias spring for holding said rod first end segment in said bore;

rod support means for supporting said rod so that a second end of said rod is exposed to ambient pressure and said rod can slide relative to said rod support means;

said rod bias spring having a biasing capacity relative to said adjustable bias setting spring for permitting the pressure increase in said chamber relative to ambient pressure created by said pressure relief valve opening to unseat said rod to permit hydraulic fluid to pass from said chamber into said reservoir; and

electrical switch means positioned in alignment with said second end of said rod and positioned therefrom by a distance which is traversed by said rod when unseated for changing the state of said electrical switch for activating said alarm-raising device.

4,938,494

MOUNTING STRUCTURE OF A REAR-WHEEL STEERING SYSTEM FOR MOTOR VEHICLES

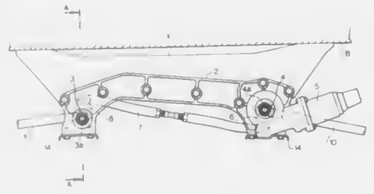
Akira Takahashi, and Yuji Soejima, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1988, Ser. No. 287,472

Claims priority, application Japan, Dec. 26, 1987, 62-197699[U]

Int. Cl.[5] B62D *5/00*

U.S. Cl. 280—91 **3 Claims**



3. A mounting structure of a rear-wheel steering system for a motor vehicle having a crossmember forming a U-shaped cross section with a front plate and a rear plate extending laterally under said motor vehicle, comprising:

a case secured on a rear side of said rear plate pivotally housing shafts of said rear-wheel steering system;

an underguard connected between lower ends of said front and rear plates;

the rear-wheel steering system comprising a pair of front and rear lateral links connected to rear wheels, respectively, right and left levers connected to said shafts respectively and covered by said underguard thereunder, and a connecting rod connected between said right and left levers;

each said shaft has an eccentric shaft portion integrally protruding from said shaft into said crossmember;

an inner end of each of said rear lateral links being pivotably mounted on a respective said eccentric shaft portion;

respective ends of said right and left levers are connected with said shafts, respectively, so as to move said rear wheels in a same direction simultaneously via said connecting rod and said rear lateral links; and

said underguard being secured at least one of below and adjacent said front and rear plates so as to form a bottom portion for said U-shaped cross section crossmember.

4,938,495

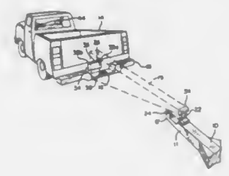
TRAILER HITCH POSITIONING APPARATUS

Donald R. Beasley, 2140 S. Pacific Hwy., Kelso, Wash. 98626, and Paul J. Hanson, 2914 Westside Hwy., Castle Rock, Wash. 98611

Continuation of Ser. No. 17,262, Feb. 20, 1987, Pat. No. 4,852,901. This application Jan. 5, 1989, Ser. No. 293,610

Int. Cl.[5] B60Q *9/00*; G08B *21/00*

U.S. Cl. 280—477 **11 Claims**



1. An apparatus for directing a towing vehicle having a towing coupling element toward a towed vehicle having a towed coupling element for hitching the coupling elements of said vehicles together, comprising:

emitting means mounted on the towed vehicle for transmitting a first focused optical beam toward the towing vehicle, the first beam being a collimated beam of a predetermined width;

first receiver means mounted on the towing vehicle and comprising a plurality of optical sensors in predetermined relation to the towing coupling element for discretely detecting the presence of the first beam relative to the towing coupling element wherein at least two of said optical sensors are spaced apart a distance greater than the predetermined width of the collimated beam; and

indicator means coupled to the first receiver means for indicating the alignment of the towing coupling elements with the towed coupling element as the towing vehicle is moved toward the towed vehicle, the indicator means being operable at locations out of the line of sight of and spaced apart from the first receiver means.

4,938,496

BALL HITCH APPARATUS

Charles B. Thomas, 29323 S. Gibraltar, Gibraltar, Mich. 48173; Arnol Staggs and Margarita C. Flores, both of 1155 Lincoln, Wyandotte, Mich. 48192

Filed Jan. 17, 1989, Ser. No. 297,174

Int. Cl.[5] B60D *1/06*

U.S. Cl. 280—511 **10 Claims**

1. A ball hitch apparatus for use with a conventional ball hitch socket, comprising:

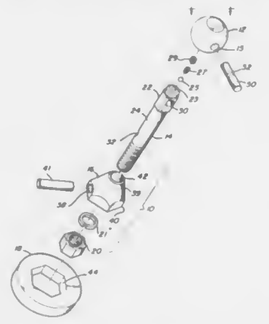
(a) a spherical body having at least one polygonally shaped bore, and a throughbore which communicates with the polygonal bore;

(b) a stud separable from the spherical body, comprising an upper, a middle, and a lower section, the upper section being polygonal in shape, and insertable into the polygonal bore of the spherical body, the upper section having a first transverse bore registrable with the throughbore of the spherical body, the middle section having a second transverse bore and the lower section being adapted to receive a fastening means;

(c) a collar separable from the stud, mountable onto the stud about the middle section thereof, the collar comprising an

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upper section and an outer lower base section having a polygonal configuration and a transverse bore therein which registers with the second bore of the stud to receive a latch pin to secure the collar to the stud;



(d) a base plate, attachable to a trailer hitch, having an inner cavity corresponding to the polygonal shape of the collar, which seats the collar and retains the latch pin within the collar; and

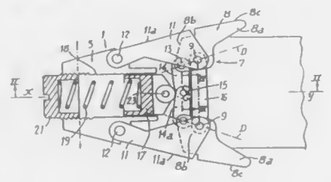
(e) the fastening means cooperating with the stud to retain the collar in relationship to the base plate.

4,938,497

SAFETY BINDING FOR A SKI

Gilles R. Goud, Annecy, France, assignor to Salomon S.A., Annecy Cedex, France

Filed Jan. 17, 1989, Ser. No. 297,314
Claims priority, application France, Jan. 15, 1988, 88 00432
Int. Cl.[5] A63C *9/085*
U.S. Cl. 280—625 30 Claims



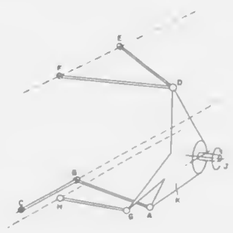
1. A safety binding for a ski adapted to maintain, in a releasable manner, the front of a boot mounted on the ski, comprising a body mounted on a base affixed to the ski, said body carrying, in a rear portion, a retention jaw for the boot which comprises two opposed lateral retention wings connected by a transverse member, said two wings being respectively journalled at two substantially vertical movable axes, on rear portions of substantially longitudinal arms, said arms being journalled, at front ends thereof, around two substantially vertical axes, so that said two front journal axes of said two arms on said base of said binding and said two rear movable axes connecting said jaw to said two arms constitute the four apices of a deformable, substantially isosceles trapezoid of which one base is defined by said two front fixed axes and the other base by said two movable rear axes, and an energization mechanism positioned within said body to elastically return said jaw to an engagement position from a release position, said energization mechanism comprising an energy spring supported, at one end, on a support surface linked to said body and, at its other end, on a force transmission element which is longitudinally movable in said body and coupled to said jaw in a manner so as to elastically bias said jaw against the front of the boot, to ensure the retention thereof on the skit, a first linkage half-lever and a second linkage half-lever, wherein each said lateral retention wing comprises a front arm which is journalled, around a substantially vertical axis, on one end of a respective linkage half-lever extending transversely, said first and second linkage half-levers being journalled on one another, at their internal end portions which are positioned substantially in the longitudinal plane of symmetry of said binding, around a substantially vertical common axis, said two substantially vertical journal axes of said linkage half-levers on said front arms of said wings defining, respectively, the two apices of the minor base of a second deformable isosceles trapezoid whose major base is defined by the two journal axes of said wings on said arms, each said first and second linkage half-levers including energization ramps along respective front edges thereof, wherein said energization mechanism comprises a pressure element exerting a force towards the rear in the longitudinal plane of symmetry of said binding, said force being applied substantially axially on said common journal axis of said internal end portions of said first and second linkage half-levers, and wherein said pressure element moves along and exerts a force against said energization ramps when said jaw moves towards the release position.

4,938,498

VEHICLE SUSPENSION

Kenneth J. Sears, Attleborough, England, assignor to Group Lotus plc, Norfolk, England

Filed Sep. 19, 1988, Ser. No. 246,231
Claims priority, application United Kingdom, Sep. 21, 1987, 8722199; Nov. 2, 1987, 8725607
Int. Cl.[5] B60G *7/02*
U.S. Cl. 280—675 9 Claims



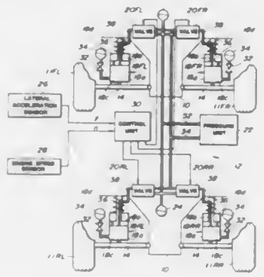
1. A vehicle suspension comprising a member on which a road wheel of the vehicle can be rotatably mounted and spaced upper and lower pivotal links extending from the wheel-mounting member to the structure of the vehicle, the lower link being L-shaped and having a first limb extending outwardly from the vehicle structure to the wheel-mounting member and a second limb which extends generally-longitudinally of the vehicle and is attached to the structure at first and second locations along its length, the suspension including a control link extending between the vehicle structure and the wheel-mounting member to control the steer alignment of the wheel-mounting member.

4,938,499

ACTIVELY CONTROLLED AUTOMOTIVE SUSPENSION SYSTEM WITH ENGINE DRIVING CONDITION DEPENDENT VEHICULAR ATTITUDE CONTROL

Kazunobu Kawabata, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 14, 1988, Ser. No. 244,008
Claims priority, application Japan, Sep. 17, 1987, 62-232890
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 14 Claims



1. A control system for an automotive suspension system for controlling vehicular attitude comprising:

a suspension system disposed between a vehicle body and a suspension member which rotatably supports a vehicular wheel, said suspension system having a variable pressure chamber filled with a working fluid of controlled pressure;

a pressure adjusting means, associated with said variable pressure chamber, for adjusting the pressure of said working fluid in said pressure chamber;

a first sensor means monitoring acceleration in vehicular attitude change to produce a sensor means signal indicative of said attitude change acceleration;

a second sensor means for monitoring engine driving condition to detect unstable condition of the engine, said second sensor means comprising an engine speed sensor monitoring engine revolution speed for producing engine speed data;

means for comparing said engine speed data with a predetermined threshold for discriminating between a stable engine driving condition and an unstable engine driving condition; and

a control unit receiving said sensor signal, deriving a suspension control signal value on the basis of said sensor signal for controlling operation of said pressure adjusting means in order to adjust suspension characteristics to suppress vehicular attitude change, said control unit being responsive to said comparing means detecting an unstable engine condition to fix said suspension control signal value to a preset value.

4,938,500

AIR BAG MOUNTING SYSTEM FOR MOTOR VEHICLES

Wataru Nakazato, and Takashi Outsu, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

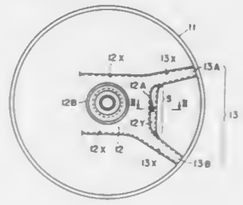
Filed Mar. 10, 1989, Ser. No. 321,800
Claims priority, application Japan, Mar. 25, 1988, 63-39522[U]
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—731 11 Claims

1. A steering wheel for a vehicle adapted to mount an air bag unit comprising:

an outer wheel member;

a boss plate having a substantially rectangular outer configuration and providing upper and lower flanges along the upper and lower edges thereof and a pair of side flanges along the lateral side edges thereof;

said side flanges being angularly rearwardly bent behind the major plane of said boss plate;



a plurality of spoke members connecting said boss plate and said outer wheel member and having flange portions along the length thereof; and

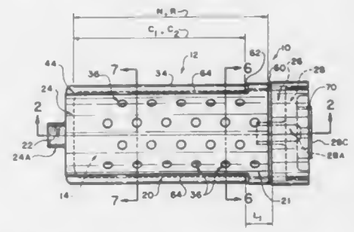
means for mounting said air bag unit on said side flanges of said boss plate.

4,938,501

INFLATOR HOUSING STRUCTURE

Pongdet P. Wipasuramonton, Rochester, Mich., assignor to TRW Vehicle Safety Systems Inc., Washington, Mich.

Filed Mar. 10, 1989, Ser. No. 322,079
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—743 25 Claims



1. An air bag inflator structure, comprising

a container having a longitudinal axis and a wall that circumscribes said longitudinal axis, said wall at least partially defining a cavity for receiving a gas generating means and having gas dispensing nozzles extending through said wall;

said wall including (a) a nozzle area extending along a selected longitudinal portion of said wall and partially circumscribing said longitudinal axis, (b) a reaction area partially circumscribing said longitudinal axis and disposed diametrically opposite said nozzle area and (c) connecting areas partially circumscribing said longitudinal axis so as to extend between said nozzle area and said reaction area,

the thickness of said wall in said nozzle area being greater than the thickness of said wall in said connecting areas, and said gas dispensing nozzles being disposed in said nozzle area.

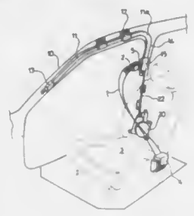
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4,938,502

AUTOMATIC LOCKING AND RELEASING ARRANGEMENT FOR VEHICULAR SEAT BELT

Kazuo Yamamoto, Sagamihara; Katsuyasu Ono, Yokohama, and Shinichi Yamamuro, Toyoake, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha and Chuo Hatsujo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 201,436, Jun. 2, 1988, Pat. No. 4,840,402. This application Jun. 16, 1989, Ser. No. 367,166
Claims priority, application Japan, Jan. 29, 1988, 63-17337
Int. Cl.[5] B60R *22/06*
U.S. Cl. 280—804 **13 Claims**



1. An automatic locking and releasing arrangement for a vehicular seat belt including:
- a guide rail supported along an opening portion of a vehicular door pivotably disposed within said opening portion;
- a cable adapted to slide through a first guide passage formed in the guide rail;
- a drive means for driving the cable;
- a connector and a cam both supported on the cable at a spacing from each other;
- a slider fitted slidably in a second guide passage formed in the guide rail in communication with the first guide passage, and adapted to engage the connector and the cam and slide through the second guide passage of the guide rail;
- a seat belt attached to the slider;
- an anchor means for retaining the slider in a locking position of the seat belt; and
- a ring-like slide member provided on a core of the cable portion positioned at least between said connector and said cam having at least a slide portion on its peripheral surface, the section of said slide portion in a plane perpendicular to the core of the cable having a smaller diameter than the section of said first guide passage, and the cable being slid through the first guide passage of the guide rail by said slide portion of said ring-like slide member.

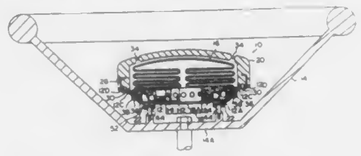
4,938,503

A1R BAG

Tsutomu Muraoka, and Hiroaki Shinto, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Feb. 15, 1989, Ser. No. 310,653
Claims priority, application Japan, Feb. 18, 1988, 63-20402[U]
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—731 **20 Claims**

1. An improved inflatable air bag assembly of the type having:
- a base plate;
- an air bag mounted onto said plate;
- a cover mounted on said base plate for defining a space between said base plate and said cover that accommodates said air bag, and
- mounting means with which said base plate is mounted on a vehicle, part of said mounting means protruding into said bag accommodating space, wherein the improvement comprises
- a cap for covering said portion of said mounting means that protrudes into said bag accommodating space and for protecting said air bag from the localized forces that said



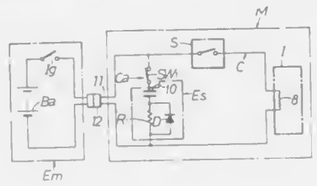
protruding part of said mounting means would otherwise apply to said bag when said bag is inflated.

4,938,504

MALFUNCTION PREVENTING DEVICE FOR AIR BAG MODULE IN AUTOMOBILES

Junichi Fukuda; Hisakazu Okuhara; Koichi Kamiji, and Naoki Okuyama, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1988, Ser. No. 165,336
Claims priority, application Japan, Mar. 9, 1987, 62-53507; Mar. 13, 1987, 62-58338; Mar. 13, 1987, 62-58339; Apr. 1, 1987, 62-79893
Int. Cl.[5] B60R *21/08, 21/22*
U.S. Cl. 280—731 **18 Claims**



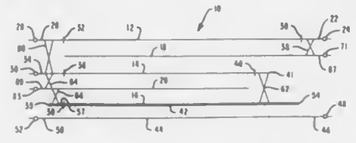
1. A malfunction preventing air bag module in a motor vehicle said motor vehicle having a primary power supply means carried on a body of said motor vehicle for supplying power, wherein said air bag module is detachably mounted in the motor vehicle, said malfunction preventing air bag module comprising:
- an air bag;
- an inflator means for supplying a bag-inflating high pressure gas into said air bag;
- an actuating circuit means for actuating said inflator means;
- said primary power supply means supplying power to said inflator means;
- an auxiliary power supply means connected in parallel to said primary power supply means for supplying auxiliary power to said inflator means;
- a deceleration sensing circuit means for opening said actuating circuit means and for closing said actuating circuit means when a deceleration of said body of said vehicle exceeds a predetermined value; and
- an operating-function neutralizing means, operatively connected to said auxiliary power supply means, for neutralizing operation of said inflator means, said neutralizing means comprising a discharge means for causing said auxiliary power supply means to discharge current when the air bag module is separated from its mounting position in the vehicle.

4,938,505

BUSINESS FORM FOR USE IN SHIPPING PARCELS

Frederick E. Gruttemeyer, West Carrollton; James B..Coffey, Dayton, both of Ohio, and Peter G. Fransee, Viroqua, Wis., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 11, 1989, Ser. No. 392,760
Int. Cl.[5] B41L *1/20*
U.S. Cl. 282—12 R **16 Claims**



1. A business form for use in shipping parcels comprising a first ply having printed indicia thereon and including spaces for entering information concerning the names and addresses of the parties involved in a parcel shipping transaction, said first ply including a first line of weakening spaced from one edge of the first ply and a second line of weakening spaced from the opposite edge of the first ply enabling removal of the first ply from the business form, a second ply having printed indicia and spaces thereon substantially the same as on said first ply, said second ply having a first line of weakening spaced from one edge of the second ply and a second line of weakening spaced from the opposite edge of the second ply enabling removal of the second ply from the business form, said second ply being secured to said first ply adjacent said second lines of weakening spaced from said opposite edges of said first and said second plies, a
first carbon sheet between said first and said second plies, a third ply having printed indicia and spaces thereon substantially the same as on said first and said second plies, said second ply being secured to said third ply by first continuous means positioned adjacent the first line of weakening spaced from said one edge of said second ply and adjacent one edge of said third ply, said second ply being secured to said third ply by second continuous means positioned adjacent said second line of weakening of said second ply, and said second ply being secured to said third ply by spaced continuous means across said second ply normal to said first and said second continuous means, said third ply having a coating of adhesive on one surface thereof, a
second carbon sheet between said second and said third plies, said third ply being secured to said second carbon sheet adjacent the opposite edge of said third ply, and a
release ply covering the adhesive coating on said one surface and removable therefrom to enable applying of the third ply on a parcel being shipped, said third ply having a removable strip portion adjacent said opposite edge thereof, said removable strip portion remaining with said second carbon sheet after removal of said release ply from said third ply.

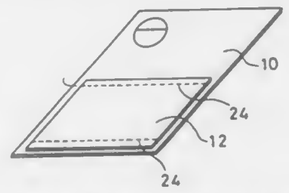
4,938,506

POSTCARD WITH REVEALABLE INDICIA AND MANUFACTURING METHOD THEREOF

Noboru Matsuguchi, and Tadashi Matsuguchi, both of Suita, Japan, assignors to Dainatsu Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 25, 1988, Ser. No. 223,573
Claims priority, application Japan, Jul. 31, 1987, 62-193571; Jul. 31, 1987, 62-193572; May 23, 1988, 63-125584; May 23, 1988, 63-125585
Int. Cl.[5] B42D *15/00, 15/02;* **B65D** *27/00;* **G09F** *3/00*
U.S. Cl. 283—105 **23 Claims**

1. A mail item comprising a mailable material and a sticking means adhered to said mailable material, said sticking means comprising a base means, a heat adherent resin layer on said base means adheringly attaching said base means to said mailable material, an adhesion retarding layer on a portion of said heat adherent resin layer disposed between said heat adherent resin layer and said mailable material such that said portion of said heat adherent resin layer is weakly adhered to said mailable material compared to the adherence where there is no adhesion retarding layer, and perforation means in said sticking



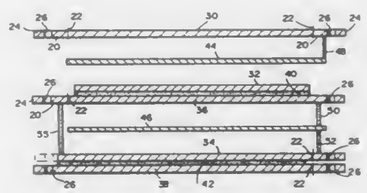
material extending through said base material means and said heat adherent resin layer at a location such that a portion of said sticking means juxtaposed to said perforation means and overlying said adhesion retarding layer is removeable from said mailable material while the remainder of said sticking material means remains adheringly attached to said mailable material by said heat adherent resin layer.

4,938,507

BUSINESS FORM WITH REPOSITIONABLE LABELS

Robert E. Ashby, Quakertown, Pa., and Walter G. Greig, Lewiston, N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

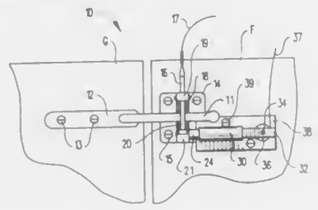
Filed Aug. 9, 1988, Ser. No. 230,033
Int. Cl.[5] B41L *1/26*
U.S. Cl. 282—9 R **7 Claims**



1. A continuous business form assembly comprising a plurality of form sets formed within a continuous, longitudinally extending web, each set separated from adjacent sets by longitudinally spaced, transversely extending lines of perforations, said assembly further comprising marginal feed strips extending longitudinally along either side of said web, and wherein each of said form sets comprises:
- upper, intermediate and lower form parts in superimposed relationship, wherein said upper form part comprises a non-adhesive paper ply and at least said intermediate and lower parts comprise self-stick labels temporarily adhered to associated lower and intermediate carrier plies, respectively and wherein at least said upper form part and said lower and intermediate carrier plies extend into said marginal feed strip; and transfer means disposed between said upper and said intermediate form parts, and between said intermediate and said lower form parts for transferring information applied to said upper part, to said intermediate and lower form parts.

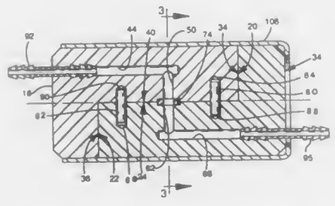
VOL 1116 ISS 1 JL 3 1990 UMI

4,938,508
GATE LATCH
Peter C. Thomas, 6750 Riverside Blvd., Sacramento, Calif. 95831
Filed Feb. 10, 1989, Ser. No. 308,672
Int. Cl.[5] E05C *3/06*
U.S. Cl. 292—235 **5 Claims**



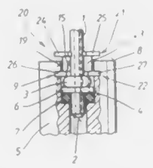
1. In a gate latch, for use with a gate mounted for pivotal movement relative to a stationary fence, said gate latch having a latch bar adapted for securement on one of said gate or said fence, a pivotal latch member for selective engagement with said latch bar adapted for securement on the other of said gate or said fence, the improvement comprising:
a latch frame;
means mounting said latch member on said frame for pivotal movement between latched and unlatched positions about an axis parallel to said latch bar;
an aperture extending through said latch frame;
a plunger mounted adjacent said latch frame in alignment with said aperture;
a spring biasing said plunger into said aperture for securing said latch member in said closed position;
an adapter plate having a notch formed in a bottom surface thereof for engagement with said latch frame;
a hollow cylinder secured on an upper surface of said adapter plate;
said plunger and said spring received in said cylinder;
a pulley rotatably mounted on said adapter plate adjacent an end of said cylinder; and
a cable guided by said pulley and having an end connected to said plunger, whereby said plunger may be moved out of said aperture by tensioning said cable.

4,938,509
MULTIPLE PORT FLUID COUPLER
Pierre LaPlante, 621 N. Morton, Newberg, Oreg. 97132
Filed Jun. 6, 1989, Ser. No. 362,228
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—26 **7 Claims**



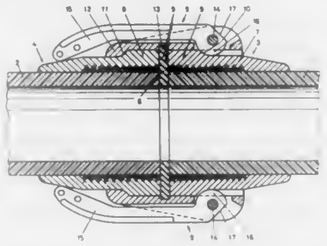
1. An in-line quick connect multiple port fluid coupler comprising:
a pair of substantially identical co-operating coupler units;
each coupler unit having a plurality of passages formed therethrough and disposed in communication with the passages of the other said coupler unit;
each passage of each coupler unit having a first end and a second end;
each said first end of each said passage disposed at a ninety degree angle to each said second end of said passage within each coupler unit;
a means to seal the passage of one coupler unit to the corresponding passage of the other coupler unit;
a guide pin projecting from one of said coupler units parallel to the second end of each of said passages cooperating with a recess in the other coupler unit to align one coupler unit for mating with said other coupler unit; and
a sleeve circumscribing the mated coupler units to retain one coupler unit against the other coupler unit.

4,938,510
LOCKING DEVICE FOR A FLUID PLUG-IN CONNECTION BETWEEN A FLUID PIPE AND A CONNECTING PART
Gunter Gmeiner Rudolf Andres, both of Sindelfingen; Hermann Möller, Gärtringen, and Kurt Schaible, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany
Filed May 22, 1989, Ser. No. 354,831
Claims priority, application Fed. Rep. of Germany, May 21, 1988, 3817472
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 **16 Claims**



1. Locking device for a fluid plug-in connection between one end of a fluid pipe provided with a radially protruding abutment axially adjacent the one end and a connecting part for receiving the one end of the fluid pipe and the abutment in a connecting hole opening up towards an end face of the connecting part at a plug-in side of the connecting part to form a seal comprising:
U-shaped clamping means for securing the plug-in connection against axial separation, the U-shaped clamping means overlapping the abutment in an installed position so as to maintain the abutment in the connecting hole;
guide slot means in the connecting part spaced from the plug-in end face of the connecting part for receiving the U-shaped clamping means, the guide slot means having an elongated opening at the plug-in end face of the connecting part, the elongated opening having a minimum clearance less than a width of the guide slot means; and
guard means for preventing insertion of the U-shaped clamping means when the abutment is improperly positioned in the guide slot with respect to the U-shaped clamping means, the guard means projecting from the U-shaped clamping means between the guide slot means and the plug-in end face of the connecting part.

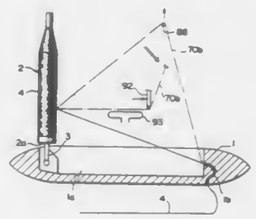
4,938,511
TUBE COUPLING
Wolfgang Kersting, Neudeln, Liechtenstein, assignor to Ecout Corporation Limited, Switzerland
Filed Jun. 17, 1988, Ser. No. 208,078
Int. Cl.[5] F16L *37/08*
U.S. Cl. 285—312 **9 Claims**



1. A hose coupling comprising:
a first flexible hose having a first end;
a second flexible hose having a second end; and sealing means between said ends;
a first external thread bonded onto the external surface of said first hose adjacent its first end;
a second external thread bonded onto the external surface of said second hose adjacent its second end;
a first tubular internally threaded coupling piece threaded onto and adhesively bonded to said first external thread, said first coupling piece having a first shoulder facing away from said first end;
a second tubular internally threaded coupling piece threaded onto and adhesively bonded to said second external thread, said second coupling piece having a second shoulder facing away from said second end; and
a coupling lock having an abutting means abutting, in the coupled state of the hose coupling, against said first shoulder, and a pivotable cam on a lever abutting, in the coupled state of the hose coupling, against said second shoulder and urging said first and second coupling pieces axially toward each other and said hose end against said sealing means, the lever being pivotable into a position in which said second hose with said second coupling piece is axially removable from said coupling lock.

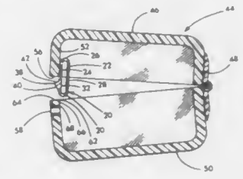
4,938,512
THREAD TYING APPARATUS FOR A SHUTTLE LOOM
Takao Yarita, Chiba; Hideo Komori, Ibaraki; Koji Ogasawara, and Hiroaki Takami, both of Kanagawa, all of Japan, assignors to Le[h]ikawa Woolen Textile Co., Ltd., Tokyo, Japan
Division of Ser. No. 207,484, Jun. 16, 1988, Pat. No. 4,877,061. This application Jun. 16, 1989, Ser. No. 366,958
Claims priority, application Japan, Jun. 16, 1987, 62-148063; Jun. 26, 1987, 62-157834; Jun. 30, 1987, 62-161024; Jun. 30, 1987, 62-161025
Int. Cl.[5] B65H *69/04; D03D 45/00, 45/50*
U.S. Cl. 289—2 **4 Claims**

1. A thread tying apparatus, comprising:
gripper claw means for gripping old and new threads disposed parallel to and adjacent one another at two locations; means for rotating and retracting said gripper claw means to form a loop in said adjacent threads having a point at which said threads cross;
pressing lever means for positioning said crossing point to a position offset from said gripping means; and
gripping claw means for gripping a part of the threads located in said offset position, pulling said part of the threads



through said loop and tensioning said threads to tie a single bundle knot with said old and new threads.

4,938,513
FLEXIBLE LATCH
Jeffrey E. Gunderson, Cottage Grove, Wis., assignor to Acry Fab, Inc., Madison, Wis.
Filed Oct. 25, 1989, Ser. No. 427,047
Int. Cl.[5] E05C *19/06*
U.S. Cl. 292—80 **5 Claims**



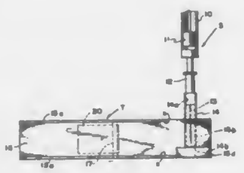
1. A reclosable display box comprising:
(a) a base having a rim and portions defining a nub hole;
(b) a lid hingedly attached to the base and having an inside front surface;
(c) a latch having a flexible plastic band with a planar attachment segment attached to the inside front surface of the lid, an upper arcuate segment extending upwardly from the attachment segment, a planar flex segment depending from the first arcuate segment and substantially parallel to the attachment segment, a lower arcuate segment depending from the flex segment, and an engagement segment extending upwardly from the lower arcuate segment parallel to the flex segment and in substantial alignment with the attachment segment; and
(d) a projecting nub on the engagement segment adapted to engage in the hole in the base when the lid is closed on the base, the flex segment and the engaging segment being adapted to deflect when the lid is closed on the base to enable the nub to engage in the hole.

4,938,514
PORTABLE HAND TOOL FOR HOLDING A NEEDLE CAP WHILE INSERTING A SYRINGE NEEDLE INTO THE CAP
Sandra A. D'Addezio, 6082 University Ave., Saginaw, Mich. 48604
Filed Dec. 6, 1988, Ser. No. 280,342
Int. Cl.[5] A61M *5/32; B25B 9/00*
U.S. Cl. 294—16 **1 Claim**

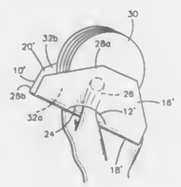
1. A portable hand tool for use in holding an elongate needle receiving tubular cap, having a closed base end held by the tool and an exposed open end, so that a syringe needle can be safely inserted into the cap comprising:

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a. a pair of interfitting, elongate, longitudinally extending co-extensive levers having remote front and rear ends, one of the levers having side wall portions receiving the other lever, the said other lever having side wall portions which are lapped by the side wall portions of said one lever;
b. the levers being configured to have confronting jaw portions at their front ends with abutting planar, longitudinal surfaces having mating, semi-cylindrical openings therein forming a socket with an axis for receiving said cap axially between said jaws, and rear ends which are spaced apart when the said jaw surfaces are in abutting relation; and
c. laterally extending pivot structure connecting the lapped side wall portions of the levers interjacent said front and rear ends;
d. spring means cooperable with said pivot structure to normally bias said jaw portions to a pivoted position in which the said jaw surfaces abut and a needle cap may be clamped in said socket;
e. one of said jaw portions being cut away laterally perpendicularly to the axis of said socket to define a notch and the other jaw portion having a laterally extending protruding ledge extending into said notch perpendicularly to said socket to fully underlie said socket and prevent a needle from axially passing through the cap and tool and injuring someone.



4,938,515
GRIPPER NAPKIN
Sebastian C. Fazio, 3596 Warren Rd., Cleveland, Ohio 44111
Filed Apr. 5, 1988, Ser. No. 177,615
Int. Cl.[5] B65D *65/30*
U.S. Cl. 294—25 15 Claims



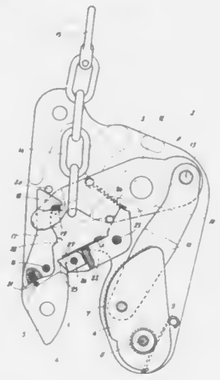
1. A napkin for use by a person, comprising a multi-layered sheet having opposed first and second layers of absorbent material for use in a generally flat configuration as a napkin to provide a substantially continuous protective cover, said napkin also having two spaced cuts through said first layer, said cuts being disposed adjacent the center of the sheet and opening into an intermediate pocket means between the layers, said cuts being sufficiently spaced from each other to enable the napkin user to fold the napkin along a bisecting line with the cuts on opposite outer sides of the fold to cause said second layer to form a mitten-bight sized to grip a food product upon insertion of opposed digits of his hand through the cuts and into the intermediate pocket means to form a mitten-like napkin, each of said spaced cuts having an arcuate configuration and being located a distance from the fold line equal to from about ¼ to ½ the distance from the fold line to a peripheral edge of the napkin adjacent to the cut.

4,938,516
RETRIEVING TOOL
Orza B. Temple, R.F.D. #1, Box 122, North Springfield, Vt. 05150
Filed Oct. 14, 1988, Ser. No. 257,697
Int. Cl.[5] A01B *1/16*; B25J *1/04*
U.S. Cl. 294—50.9 1 Claim



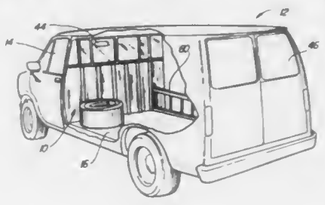
1. A retrieval tool for remote grasping of debris comprising,
an elongate body terminating at an upper end with a handle formed at an acute angle relative to said body, and
an actuation handle spaced below and pivotally mounted to said handle, and
a housing integrally secured and aligned with said handle formed with a cavity therein, and
a lower fixed receiving jaw projecting orthogonally and outwardly of said housing and cavity underlying a pivoted receiving jaw overlying said cavity, and
said pivoted jaw pivotally mounted to said housing, and
a jaw set including a lower grasping jaw and an upper grasping jaw receivable within said cavity wherein said lower grasping jaw is receivable within said lower fixed receiving jaw and said upper grasping jaw is receivable within said upper pivotal jaw, and
wherein said lower grasping jaw includes a rearwardly directed extension formed with a slot therein directed through an opening rearwardly of said cavity and outwardly of said housing, and
wherein a securement plate mounted within a bracket rearwardly of said housing is selectively positionable within said slot formed within said extension directed outwardly of said housing, and
wherein said upper grasping jaw and said lower grasping jaw are pivotally mounted and secured together by an elongate "C" spring wherein said "C" spring is receivable within arcuate recesses formed in said upper and lower grasping jaws, and
wherein a flexible cable is secured to said actuation handle at one end and to said upepr pivotal receiving jaw at its other end for pivotment of said receiving jaws and said jaw set upon manipulation of said actuation handle, and
wherein said jaw set comprises an upper grasping jaw formed with a serrated arcuate recess cooperating with a further serrated arcuate recess formed in said lower grasping jaw, and
wherein said upper grasping jaw includes a downwardly projecting plate cooperating with an enlarged projection orthogonally formed to a forward terminal end of said lower grasping jaw wherein said plate is mounted for overlapping cooperation with said projection for retrieval of flexible debris therebetween, and
wherein said jaw set includes an upper grasping jaw including a magnet cooperating with a lower grasping jaw including a further magnet for retrieval of metallic debris within said jaw set, and
wherein said jaw set includes an upper grasping jaw including a cavity cooperating with a lower grasping jaw wherein said lower grasping jaw includes a plurality of forwardly directed tines for securement of garden weeds and the like therebetween.

4,938,517
CLAMP FOR HANDLING AND LIFTING SHEET-METAL, PLATES OR THE LIKE
Charles Langloy, 24, rue Claude Farrere, Lyon 3 eme, Rhone, France
Filed Nov. 8, 1988, Ser. No. 268,814
Int. Cl.[5] B66C *1/48*
U.S. Cl. 294—101 5 Claims



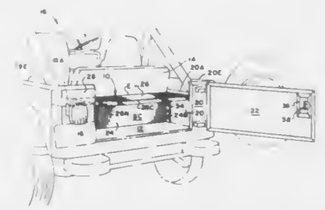
1. A clamp for handling a flat object, comprising:
a clevis-shaped body having two arms and an opening between said arms adapted to receive said object, one of said arms forming a fixed jaw on said body engageable with said object;
a mobile jaw carried by another of said arms and having a cam shape enabling said jaw to engage said object and be selftightening thereagainst;
means for pivotally connecting said mobile jaw to said other arm for swinging movement of said mobile jaw toward and away from said fixed jaw;
a spring on said other arm acting upon said mobile jaw for biasing said mobile jaw against said object;
a trigger pivotally mounted on said body and positioned to project into said opening for deflection by said object into a release position upon passage of said object into said opening;
means on said body for retaining said mobile jaw in an open position and operable by said trigger upon displacement of said trigger into said release position to release said mobile jaw to engage said object upon insertion of said object in said opening; and
means for displacing said mobile jaw into said open position and thereafter retaining said mobile jaw in aid open position while said trigger is engaged by said object and held in said release position, thereby permitting withdrawal of said object from said opening.

4,938,518
VEHICLE PARTITION ASSEMBLY
James A. Willemsen, 11670 Virgil, Redford, Mich. 48239
Filed Oct. 19, 1988, Ser. No. 259,711
Int. Cl.[5] B60R *1/00*
U.S. Cl. 296—24.1 18 Claims



1. An assembly for mounting in a vehicle, the vehicle being capable of storing and transporting elongated objects extending longitudinally within the vehicle, the inside of the vehicle having a width and a length, the assembly being mountable across the width of the vehicle thereby dividing the vehicle into a front compartment and a rear compartment, the vehicle having a rear view mirror disposed in the front compartment and a rear window disposed in the rear compartment, the assembly comprising:
(a) means for suspending the assembly from the vehicle, the suspending means cooperating with the ceiling of the vehicle to secure the assembly thereto;
(b) a thermal barrier disposed across the width of the vehicle, the thermal barrier enabling the front compartment to be maintained at a first temperature and the rear compartment to be maintained at a second temperature;
(c) a transparent panel disposed between the rear view mirror and the rear window of the vehicle, the transparent panel being rigid; and
(d) means which enable the elongated objects to be stored throughout the entire length of the vehicle, across and through the thermal barrier, the elongated objects extending from the front compartment and into the rear compartment of the vehicle.

4,938,519
SECURITY ENCLOSURE FOR OPEN DECK VEHICLE
Bradley S. Schlachter, P.O. Box 12168, Dallas, Tex. 75225
Filed Jan. 8, 1990, Ser. No. 461,978
Int. Cl.[5] B60R *5/04*
U.S. Cl. 296—37.6 2 Claims



1. A security enclosure for mounting onto the load bed of an open deck vehicle of the type having a load deck, deck sidewalls and a tailgate, with the deck sidewalls and the tailgate providing four sides of a security compartment, comprising, in combination:
top and forward side panels joined together along a common edge in an L-shaped configuration, said top and forward

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side panels each having side flanges extending transversely with respect to said forward and top panels for flush engagement against the deck sidewalls, said top panel having a notch opening for receiving the latch housing of the tailgate when the tailgate is in the closed position; and,

fastener apparatus for securing the side flanges to said deck sidewalls.

4,938,520

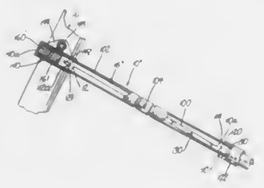
HOLD OPEN DEVICE FOR COMPARTMENT LID

Alan J. Shelton, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 213,795, Jun. 27, 1988. This application Dec. 5, 1989, Ser. No. 446,365

Int. Cl.[5] B62D *25/10*; E05C *11/44*

U.S. Cl. 296—76 **4 Claims**



1. In a vehicle body having a closure swingably mounted thereon for movement between open and closed positions and a support strut means for holding said closure in its open position, said support strut means comprising a pair of telescoping members, one of which has one end pivotally connected to said closure and the other of which has one end pivotally connected to said vehicle body, said telescoping members having their adjacently located end portions slidably connected together so that the strut means can be collapsed when the closure is moved toward its closed position and can be extended when the closure is moved toward its open position, and a releasable latch means carried by one of said telescoping members and cooperably engageable with the other of said telescoping members to hold the closure in its open position when moved thereto,

the improvement being that said releasable latch means comprises

a latch member pivotally supported by one of said telescoping members for movement between a latched position in which a first pawl thereof extends through an opening in said one member and engages a catch surface on the other of said members to hold said closure in its open position and an unlatched position in which the first pawl is out of engagement with said catch surface to allow said strut means to be collapsed and said closure to be moved to its closed position,

first spring biasing means for biasing said latch member toward its latched position,

a release member cooperably engageable with a second pawl of said latch member and slidably supported on said one telescoping member for limited movement relative thereto, second spring biasing means operatively connected with said one telescoping member and said release member for biasing said release member toward a first position in which it does not interfere with movement of said latch member between its latched and unlatched positions,

said release member being movable relative to said one telescoping member in opposition to the biasing force of said second biasing means from its first position toward a second position and engaging a cam surface on said second pawl to effect movement of said latch member from its latched to its unlatched position to allow said strut means to collapse when solely a downward force in excess of a given magnitude is exerted on the closure when the latter is initially being moved from its open position toward its closed position.

4,938,521

SPACER FOR VEHICLE WINDSHIELD

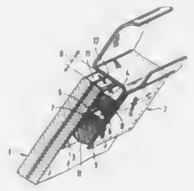
Heinz Kunert, Cologne, Fed. Rep. of Germany, assignor to Saint Gobain Vitrage, Courbevoie, France

Filed Sep. 9, 1988, Ser. No. 242,387

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1987, 3730345

Int. Cl.[5] B60R *13/06*

U.S. Cl. 296—96.21 **20 Claims**



1. A vehicle window comprising a glazing; a peripheral sheet metal bracket attached to a vehicle and oriented parallel to the edges of the glazing, said bracket including a support element attached thereto; and a spacer attached to the periphery of the glazing on at least one edge adjacent the bracket for supporting the weight of the glazing and for maintaining the bracket at a predetermined uniform distance away from said glazing, said spacer being provided with a lower peripheral portion having a recess with a cross sectional configuration forming a support surface for contacting said support element on said bracket, said support element being positioned within said recess at an inclined angle so that, as the glazing is positioned on the bracket, the support surface of the spacer contacts the support element and the weight of the glazing exerts a force which directs the glazing toward the bracket.

4,938,522

PROTECTIVE VEHICLE COVER

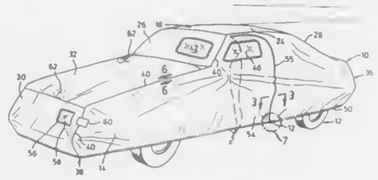
Robert A. Herron, and Brian J. Chapman, both of Mississauga, Ontario, Canada, assignors to Automotive Protective Jackets, Inc., Mississauga, Ontario, Canada

Filed Jul. 19, 1988, Ser. No. 221,129

Claims priority, application Canada, Jul. 20, 1987, 542552

Int. Cl.[5] B60J *11/00*

U.S. Cl. 296—136 **9 Claims**



2. A convex cover for snugly fitting over an automobile, comprising:

an upper panel member being shaped to cover snugly the front, top and rear portions of the automobile,

first and second side panel members being shaped to cover snugly, respectively, the left and right side portions of the automobile, said side members being connected securely by said upper member to form a smooth, convex contour,

each of said side members having a bottom edge, and said upper member having a front bottom edge and a rear bottom edge, and said sides being aligned to define an open end,

elastic means along said edges biased to close said open end, and

a sleeve at said open end, wherein said elastic means includes an elastic cord contained within said sleeve and interengageable fastening members at opposed free ends of said cord, and

wherein each of said members have a waterproof outer layer and an air-permeable, polishing inner layer in opposed facing relationship, portions of said inner and outer layers being laminated together.

4,938,523

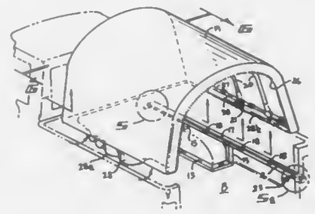
CONTRACTABLE TENT SHELL TRUCK COVER

Michael B. Camp, 424 Jane St., Bakersfield, Calif. 93306

Filed May 2, 1989, Ser. No. 346,591

Int. Cl.[5] B60P *3/34*

U.S. Cl. 296—159 **9 Claims**



1. A contractible tent shell truck cover apparatus in combination with an elongate truck bed comprising,

a truck bed framework mounted within said truck bed;

said framework including spaced parallel rails each including an upwardly directed slotted track receiving said cover member wherein said cover member includes a series of spaced and inverted "U" shaped rails including downwardly directed legs, each of said legs including a terminal end receivable within one of said rails, and each terminal end of each of said legs defined by a predetermined cross-sectional configuration, and

plural link means pivotally mounted to and between spaced "U" shaped rails for enabling the cover member to contracted from a first extended position coextensive with said truck bed to a second retracted and collapsed position,

and

a flexible canopy overlying each of said "U" shaped rails and formed with a forward end,

and

a rearward end formed as an inwardly directed arcuate flange about a rearwardmost "U" shaped rail,

and

wherein each "U" shaped rail includes an annular groove formed adjacent each terminal end wherein said annular groove is slidably received within said track,

and

wherein each track of each rail includes a series of spaced circular openings of a configuration complementary to the predetermined cross-sectional configuration of each terminal end to receive a respective terminal end therethrough.

4,938,524

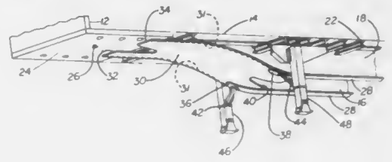
SEMI-TRUCK TRAILER GOOSENECK AND CURTAIN SIDE IMPROVEMENTS

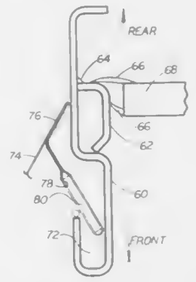
Gerald J. Straub, 13133 Island Lake Rd.; Martin L. Straub, 13131 Island Lake Rd., both of Chelsea, Mich. 48118; David A. Logan, 403 Tatum, and James D. Davis, Rte. 2, Box 535, both of Minden, La. 71055

Filed Jun. 27, 1988, Ser. No. 212,260

Int. Cl.[5] B62D *21/02, 21/10, 33/00*

U.S. Cl. 296—181 **17 Claims**





1. In an automotive truck trailer, a gooseneck assembly comprising two parallel spaced apart longitudinal main frame members generally spaced toward each side of the trailer, each of said frame members having a vertical web and an upper flange, said vertical web smoothly decreasing in vertical height back to front along at least a substantial portion of the gooseneck assembly, and a single curving lower flange extending between and joining together the two vertical webs of the two main frame members beneath the smoothly decreasing vertical web portions of the gooseneck assembly, the upper surface of said single curving lower flange abutting the two vertical webs.

10. A free standing truck trailer rear corner post comprising a substantially S-shaped cross-section forming a pair of cavities and a substantially L-shaped cross-section joined to the S-shaped section substantially within at least a portion of one of the pair of cavities of the S-shape, the other cavity of the S-shape opening to the outside of the trailer and being formed to provide a pocket for a member receivable therein, said pocket configured to trap said member therein upon horizontal tensioning of a side curtain attached to said member.

4,938,525

AUTOMOBILE ROOF RAIL STRUCTURE

Makoto Yamauchi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 26, 1988, Ser. No. 262,874

Claims priority, application Japan, Oct. 29, 1987, 62-274168

Int. Cl.[5] B62D *25/02*

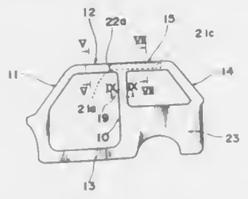
U.S. Cl. 296—185 **5 Claims**

1. A side panel of an automobile that includes automobile roof rail structure, said side panel comprising:

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an inner panel including a front inner panel having a front roof rail, and a rear inner panel having a rear roof rail and integral with said front inner panel, each of said roof rails having respective upper and lower flanges, and the roof rail of said front inner panel having an extended member integral therewith and extending rearwardly therefrom in the side panel, said extended member having upper and lower flanges; and

an outer panel joined to said inner panel, said outer panel including a front outer panel and a rear outer panel integral therewith, said integral front and rear outer panels defining a roof rail having upper and lower flanges,



said extended member interposed between and reinforcing the roof rail of said rear inner panel and the roof rail of said outer panel, the upper flange of said extended member sandwiched between and fixedly secured to the upper flange of the roof rail of said rear inner panel and the upper flange of the roof rail of said outer panel, the lower flange of said extended member sandwiched between and fixedly secured to the lower flange of the roof rail of said rear inner panel and the lower flange of the roof rail of said outer panel,

two sections having closed cross-sectional shapes being defined by the roof rail of said rear inner panel, the roof rail of said outer panel and said extended member interposed therebetween.

4,938,526

WIPER MOUNTING STRUCTURE

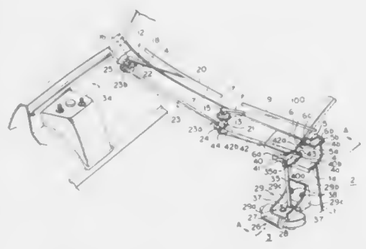
Masayoshi Sannomiya, Hiroshima; Reiji Kikuchi, Higashihiroshima, and Junji Kubogami, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 3, 1987, Ser. No. 128,650

Claims priority, application Japan, Dec. 4, 1986, 61-289528; Jan. 20, 1987, 62-11084

Int. Cl.[5] B62D *25/08, 25/14;* B60S *1/18*

U.S. Cl. 296—192 **10 Claims**



1. A wiper mounting structure for a vehicle having a cabin, an engine compartment, dash lower panel means separating the cabin from the engine compartment, dash upper panel means above the dash lower panel means, a connection between said dash upper panel means and an upper portion of said dash lower panel means, a bonnet means, cowl panel means and a further connection between said cowl panel means and said dash upper panel means, the cowl panel means having one end supporting a lower end of a front window glass, the cowl panel means having an opposite end disposed adjacent a rear end of the bonnet means, said wiper mounting structure comprising wiper means, first securing means securing said wiper means to said cowl panel means, wiper driving means and second securing means securing said wiper driving means to said dash lower panel means, said wiper driving means comprising a wiper motor having a wiper motor output shaft and gear means having a gear means output shaft, means connecting the gear means with said wiper output shaft, link means connecting said wiper means and said gear means output shaft, and the gear means output shaft extending upwardly in a substantially vertical direction, wherein the motor output shaft is disposed in a direction substantially parallel to said dash lower panel means and laterally with respect to the vehicle body, wherein said gear means and said link means are disposed substantially horizontally and the structure includes operation lever means connecting the gear means and the link means, one end of said operation lever means being fixed to said output shaft of the gear means, the other end of said operation lever means being engaged with the end of said link means, and which structure further includes a rotatable member rotatably supported by the vehicle body about a vertical axis at the side of the engine compartment and a pair of levers fixed to said rotatable member so as to be offset with respect to the vertical direction and extending substantially horizontally in opposite directions to each other, one of said levers being engaged through a link member with said operation lever means and the other of said levers being engaged with the end of said link means.

4,938,527

PLASTIC BODY FOR VEHICLE SEATS

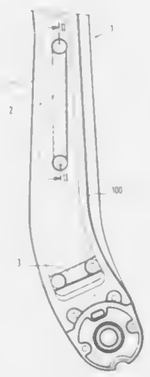
Gerhard Schmale, Huckeswagen, and Siegfried Peters, Remscheid, both of Fed. Rep. of Germany, assignors to Kelper Recaro GmbH & Co., Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 319,690

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808316

Int. Cl.[5] A47C *7/02*

U.S. Cl. 297—216 **36 Claims**



1. A plastic body for use in vehicle seats, having at least one element joined therewith to form a single structural unit, which element is made from a material having different physical characteristics than those of the plastic, characterized in that the element is made from a plastically deformable metal securely connected with the plastic body as an insert in the plastic body, wherein between said plastic body an intermediate layer is provided, said intermediate layer being made from a material that permits relative movements between the plastic body and the insert.

4,938,528

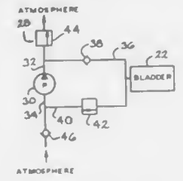
SEAT ASSEMBLY WITH INFLATABLE BLADDER HAVING A SINGLE NON-REVERSIBLE PUMP FOR INFLATING AND DEFLATING THE BLADDER

Glenn Scott, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Apr. 27, 1989, Ser. No. 343,731

Int. Cl.[5] A47C *7/46*

U.S. Cl. 297—284 **10 Claims**



1. A vehicle seat assembly having a lower seat cushion and a seat back extending upwardly from said seat cushion, comprising:

at least one inflatable bladder disposed within said seat assembly, said bladder being selectively inflatable and deflatable as desired by a seat occupant; and

air delivery means operatively associated with said bladder and selectively operable to inflate and deflate said bladder, said air delivery means including a single one-directional air pump having an inlet and an outlet, said pump outlet being selectively connectable to said bladder for inflating said bladder and said pump inlet being selectively connectable to said bladder for deflating said bladder.

4,938,529

DEVICE FOR TURNING OUT A LATERAL WING OF A SEAT AND BUCKET SEAT FOR AN AUTOMOBILE VEHICLE OR THE LIKE INCLUDING SAID DEVICES

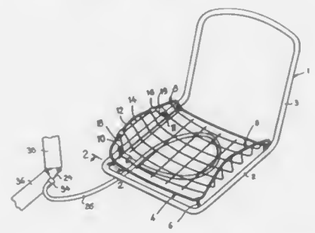
Francois Fourrey, Montbeliard, France, assignor to ECIA - Equipements Et Composants Pour L'Industrie Automobile, Audincourt, France

Filed Nov. 23, 1988, Ser. No. 275,484

Claims priority, application France, Nov. 26, 1987, 87 16419

Int. Cl.[5] A47C *3/00*

U.S. Cl. 297—284 **12 Claims**



1. A device for turning out a wing of a bucket seat for an automobile vehicle or the like, said seat comprising a frame and an elastic layer provided with two lateral projecting wings carried by the frame; said device comprising a driving rod which is bent into the shape of an inverted U having a base, connected to an upper part of the wing to be turned out, and two branches having ends pivotally mounted on the frame, and which is extended by a connecting lever, control means connected to the connecting lever and controlling the movement of the wing between a normal projecting position of use of the seat and a laterally turned out position of the wing, and a control cable connected to the connecting lever and to a post of a door of the vehicle.

4,938,530

WIRE FRAME CHAIR

Carlon D. Snyder, Alto, and Robert M. Scheper, Grand Rapids, both of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 150,100, Jan. 27, 1988. This application Aug. 22, 1988, Ser. No. 234,614

Int. Cl.[5] A47C *3/00*

U.S. Cl. 297—287 **30 Claims**



1. A chair comprising:

a shell shaped to support a seated user thereon, including a back and a seat interconnected for generally contemporaneous movement;

a base adapted to support said shell on a surface, and including forward and rearward portions;

a first support having a lower portion thereof connected with the rearward portion of said base, and an upper portion thereof connected with a medial portion of said seat to support the same in a cantilevered fashion on said base; said first support having at least a portion thereof resiliently flexible to permit said shell to rock with respect to said base in response to fore-to-aft movement of a seated user;

a second support having a lower portion thereof connected with the forward portion of said base, and an upper portion thereof connected with said back; said second support having at least a portion thereof resiliently flexible to permit and control the rocking motion of said shell in a manner that provides improved comfort.

4,938,531

ADJUSTMENT MECHANISM FOR CHAIRS

Steven Fogarassy, Yeronga, Australia, assignor to Email Limited, New South Wales, Australia

Filed Dec. 8, 1988, Ser. No. 281,469

Claims priority, application Australia, Mar. 23, 1988, P17389

Int. Cl.[5] A47C *1/032*

U.S. Cl. 297—300 **6 Claims**

1. Adjustable seat and back support apparatus for a chair comprising

(a) an elongate longitudinally extending base member adapted for attachment to the upper end of a vertical support member for a chair;

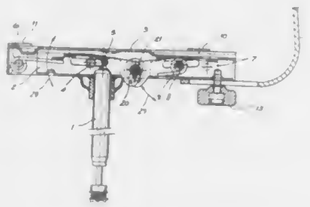
(b) an elongate longitudinally extending seat support member pivotally connected to said base member intermediate its ends for pivotal movement about a first transverse axis and extending from one end thereof;

(c) a further elongate, longitudinally extending support member adapted to support a back support for a chair said further support member being pivotally connected to said

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seat support member for pivotal movement about a second transverse axis; said adjustable seat and back support apparatus further including locking means for locking said seat support member and said further support member into selected angular positions of said seat support member and said further support member relative to said base member resulting from pivotal movement of said seat support member and said further support member about said first and second transverse axes respectively said locking means comprising

(d) a first plurality of flat longitudinally extending transversely spaced plate members projecting from said one end of said base member and rigidly connected thereto;



(e) a second plurality of flat, longitudinally extending transversely spaced plate members projecting from an adjacent end of said further support member and rigidly connected thereto and interleaved with said first plurality of plate members; and

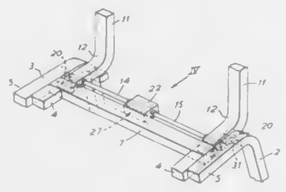
(f) transverse shaft means slidably mounted on said seat support member for movement along the longitudinal axis of said shaft means and extending through aligned apertures in said first and second plurality of plate members for urging said first and second plurality of plate members into fixed relation with said shaft means on movement of said shaft means along its longitudinal axis in one direction whereby said seat support member and said further support member are releasably locked into a fixed angular relation with said base member.

4,938,532

SEATING APPARATUS

Gerald N. Burgess, Anningsley Park, Ottershaw, Surrey, England

Filed Jan. 11, 1989, Ser. No. 296,117
Claims priority, application United Kingdom, Jan. 12, 1988, 8800571
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—301 6 Claims



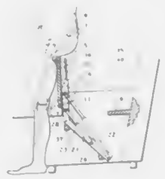
1. Seating apparatus comprising a seat support, back element pivotally connected to said seat support for pivoting movement between spaced apart forward and rearward positions, stop means mounted to and interacting between said seat support and said back element for limiting said pivoting at said forward and rearward positions, torsion bar means having axially spaced apart ends, said seat support being rigidly connected to said torsion bar means between said ends, said back element being rigidly connected to said torsion bar means at points spaced away from and on each side or said rigid connection to said seat support, said spaced apart and, of said torsion bar means pivotally connected to said seat support for effecting said pivoting movement between said back element and said support, and said torsion bar means being constructed and arranged for effecting resilient pivoting of said back element towards the rearward position when loaded and returning said back element to the forward position when unloaded.

4,938,533

UPRIGHT AND SEATING POSITIONING DEVICE WITH PARTICULAR APPLICATION TO ARMCHAIRS, CHAIRS OR FIXED OR MOBILE SEATS

Alain Thielois, Lyons, France, assignor to Leveur S.A.R.L., France

Continuation of Ser. No. 125,992, Nov. 27, 1987, abandoned.
This application Apr. 11, 1989, Ser. No. 336,511
Claims priority, application France, Dec. 1, 1986, 86 16955
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—337 1 Claim



1. A chair having movable means for bringing a sitting individual into a standing position comprising a seat, said seat having a first portion and a second portion therebehind in the same horizontal plane, said first portion of said seat having an outwardly and upwardly extending cross bar, said first portion of said seat being mounted on an arcuately movable frame, said arcuately movable frame being operatively connected to drivable linkage means mounted on said chair whereby said seat is arcuately movable about a horizontal axis disposed forwardly of said first portion of said seat, said cross bar being parallel to said horizontal axis and disposed rearwardly of said first portion of said seat, said cross bar being dimensioned and adapted and constructed to be positioned in lifting association of the sub femoral or ischial-femoral area of an occupier of said seat by pressing against the ischial projections of the occupier's pelvis to thereby provide resistance to sliding forward on the part of the occupier during lifting when support of the buttock and lumbar region of the occupier extends rearwardly of the seat beyond the said cross bar.

4,938,534

CHAIR WITH INDEPENDENTLY COLLAPSIBLE ARMREST AND METHOD OF OPERATION

Marta Tornero, 6117 Ballinger Rd., Greensboro, N.C. 27410

Filed Jun. 21, 1989, Ser. No. 369,341
Int. Cl.[5] A47C *7/59*
U.S. Cl. 297—417 7 Claims

1. In a chair comprising

a seat;

a back positioned at the rear of said seat;

an independent armrest at each side of the seat having a rear end movably connected to and supported by said back; and

an arm support strut having an upper end movably connected to the forward end of said armrest and having a lower end movably connected to said seat, the improvement comprising:

a track provided on each side of the seat for movable engagement of the lower end of each arm support strut, each of said armrests being independently movable from the other while the back and seat remain fixed and having a generally horizontal support position above the seat wherein the strut supports the forward end of the armrest



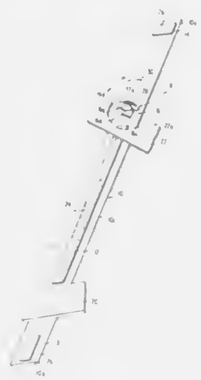
and the back supports the rear end of the armrest, and each of said armrests having a collapsed position wherein the armrest is in a generally vertical position aligned with the edge of the back and said strut is in a generally horizontal position adjacent the edge of said seat.

4,938,535

ADJUSTABLE SHOULDER/LAP SEAT BELT ADAPTER

Dolores Condon; Theresa A. Foster, and John C. Foster, all of P.O. Box 50577, Reno, Nev. 89513

Filed Jun. 14, 1989, Ser. No. 366,074
Int. Cl.[5] B60R *22/00*
U.S. Cl. 297—483 2 Claims



1. An adjustable shoulder/lap seat belt adapter for a shoulder/seat belt assembly having a lap strap extending across the lap of an occupant of an automotive motor vehicle seat and connecting to a shoulder strap extending downwardly and across the torso of the occupant from the same side of the seat and latching to the vehicle seat, to the opposite side of the occupant, via releasable coupling of said adapter, comprising:

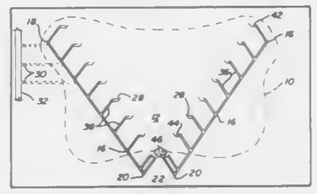
an elongated strap and disconnectable, loop-forming means for releasably enveloping said shoulder strap at the front of the occupant of the seat, and for releasably enveloping said lap strap, thereby forming a strap connection between the shoulder strap and the lap strap to prevent ride up of the shoulder strap on the torso of the seat occupant, misuse of the shoulder strap while eliminating the need for constant, repetitive readjusting of the shoulder strap position, without materially altering the restraint of the vehicle occupant by the seat belt assembly and wherein said loop-forming means comprises an elongated strip of one type hook-and-loop fastener tape fixedly mounted on one face of the elongated strap over a longitudinally central portion of said strap, and short length strips of the other of said hook-and-loop type fastener tape affixed to opposite ends of said elongated strap on said one face thereof whereby said loops are formed by face-to-face engagement between said short length strips of said other hook-and-loop type fastener tape and respective ends of said elongated strip of said one hook-and-loop type fastener tape, and said adapter further comprising a snap clamp mounted on said one face of said elongated strap at an intermediate position between one of said short length strips of the other of said hook-and-loop type fastening tape and the end of said elongated strip of one type hook-and-loop type fastener tape, and said clamp having spring loaded, openable and closable jaws for releasably gripping an edge of the shoulder strap passing through a loop thereof thereby maintaining a desired releasable coupling therebetween at the cross over of said shoulder strap and said elongated strap of said adjustable shoulder/lap seat belt adapter such that a loop of said seat belt adapter envelops said clamp and said gripped edge of said shoulder strap to prevent inadvertent opening of said clamp.

4,938,536

CONIC MASS CAVING STRUCTURE AND METHOD

Raymond C. Lee, 1014 Venhorst Rd., Colorado Springs, Colo. 80920

Filed Nov. 22, 1989, Ser. No. 440,886
Int. Cl.[5] E21C *41/00*
U.S. Cl. 299—19 12 Claims



1. A structure for mining rock waste or ore from an ore body located below the surface of the ground, comprising:

(a) a plurality of hyperbolic drifts, including an uppermost hyperbolic drift and a lowermost hyperbolic drift, each hyperbolic drift surrounding an area of the rock waste or ore to be mined, formed so that the hyperbolic drifts are parallel to each other, and formed so that each hyperbolic drift surrounds an area larger than the area surrounded by each lower hyperbolic drift,

(b) a plurality of ore passes, each ore pass extending from an upper position connected to the uppermost hyperbolic drift to a lower position connected to the lowermost hyperbolic drift, such that each ore pass intersects each hyperbolic drift, and each ore pass extends downward at an angle so that the lower position of each ore pass is located in an apex beneath the rock waste or ore to be mined,

(c) caving means for causing the rock waste or ore to cave downward, so that the rock waste or ore is loosened from the ore body, and

(d) hauling means for hauling rock waste or ore to the surface of the ground.

9. A method for mining rock waste or ore from an ore body located below the surface of the ground, comprising the steps of:

(a) constructing a plurality of hyperbolic drifts, including an uppermost hyperbolic drift and a lowermost hyperbolic drift, each hyperbolic drift surrounding an area of the

rock waste or ore to be mined, formed so that the hyperbolic drifts are parallel to each other, and formed so that the area surrounded by each hyperbolic drift is smaller than the area surrounded by the hyperbolic drifts above said hyperbolic drift,

(b) constructing a plurality of ore passes, each ore pass extending from an upper position connected to the uppermost hyperbolic drift to a lower position connected to the lowermost hyperbolic drift, such that each ore pass intersects each hyperbolic drift, and each ore pass extends downward at an angle so that the lower position of each ore pass is located in a apex beneath the rock waste or ore to be mined,

(c) causing the rock waste or ore to cave downward, so that the rock waste or ore is loosened from the ore body, and

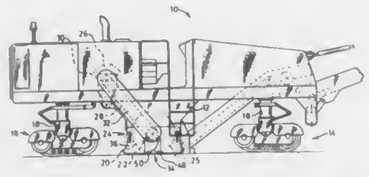
(d) hauling rock waste or ore to the surface.

4,938,537

END CLOSURE FOR A ROTARY CUTTER HOUSING

Cowell K. Rife, Jr., Champlin, and William A. Schmieg, Nevis, both of Minn., assignors to Caterpillar Paving Products Inc., Minneapolis, Minn.

Filed Oct. 23, 1989, Ser. No. 425,524
Int. Cl.[5] E01C *23/09*
U.S. Cl. 299—39 **2 Claims**



1. An end closure for a housing on a road planer enclosing a rotary cutter having a centrally disposed rotatable shaft assembly mounted on a frame, comprising:

a vertically movable end plate slidably mounted on said frame transversely with respect to said rotatable shaft assembly and forming an end of said housing and having an opening extending in a substantially vertical direction;

a pair of cover plates pivotally mounted on an external surface of said end plate; and,

means for moving said cover plates between a closed position at which the cover plates cooperatively overlay said opening in said end plate and an open position at which the cover plates are spaced from said opening in said end plate in response to moving said end plate vertically with respect to said frame.

4,938,538

EXCAVATING TOOL CUTTING INSERT

Kenneth L. Larsson, and Bert G. Levefelt, both of Sandviken, Sweden, assignors to Santrade Limited, Luzern, Switzerland

Filed Mar. 6, 1984, Ser. No. 586,818
Claims priority, application Sweden, Mar. 23, 1983, 8301584
Int. Cl.[5] E21C *35/18*
U.S. Cl. 299—86 **10 Claims**

1. A rotatable excavating tool for breaking hard material, comprising:

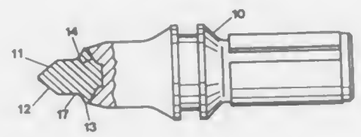
an elongated tool body having an end with a diameter and a supporting surface; and

a cutting insert of hard metal having

a generally conical tip portion,

an elongated intermediate portion integral with and extending from the generally conical tip portion, defining an abrupt transition from the generally conical tip portion, and having a maximum diameter which is substantially less than the diameter of the tool body end,

a concave surface portion axially spaced from the generally conical tip portion, joining the elongated intermediate portion, extending radially outwardly therefrom, and being integral with the elongated intermediate portion,



a shoulder with a diameter substantially larger than the maximum diameter of the elongated intermediate portion, and integrally joining the concave surface portion, and

a rearwardly facing contact surface attached to the supporting surface of the tool body.

4,938,539

PROCESS FOR PRODUCING A TOOTHBRUSH AND TOOTHBRUSHES PRODUCED BY THE PROCESS

Rolf Barman, Olav Kyrresgt. 45, N-5000 Bergen, Norway

Division of Ser. No. 153,821, Jan. 25, 1988, Pat. No. 4,876,157.
This application Jul. 24, 1989, Ser. No. 384,289
Claims priority, application World Int. Prop. O., May 30, 1986, PCT/NO86/00037
Int. Cl.[5] A46D *3/00*
U.S. Cl. 300—21 **4 Claims**



1. A process of producing a toothbrush comprising the steps of

providing a toothbrush blank having a pair of parallel head portions, a common handle and groups of bristles in upstanding relation in each head portion;

bending the head portions about a central axis of the handle to position the head portions at a first angle greater than 180° relative to each other;

cutting the upstanding bristles simultaneously in a common plane; and

thereafter bending the head portions toward each other to define a second angle therebetween less than said first angle with the bristles of the head portion angularly inclined toward each other.

4,938,540

RESIN-AUGMENTATION OF PIN-ASSEMBLY FOR EXTRUDED, ANODIZED WHEEL RIMS

Martin B. Sacks, Claypool, Ind., assignor to Sun Metal Products, Inc., Warsaw, Ind.

Continuation of Ser. No. 735,594, May 20, 1985, Pat. No. 4,702,528. This application Aug. 27, 1987, Ser. No. 90,121
Int. Cl.[5] B60B *21/00*
U.S. Cl. 301—99 **12 Claims**

1. A wheel rim formed with a pin type connecting joint comprising:

a first and second end face of said rim having substantially abutting surfaces;

said first and second end faces each having tubulations extending away from the end faces;

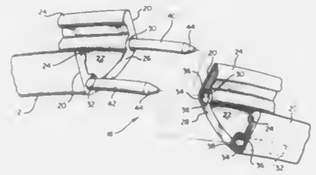
pin means connecting the first and second end faces;

said pin means consisting of at least one pin member insertable within said tubulations;

said tubulations having a larger total cross sectional area than said pin so as to form channels along a portion of tubulation;

sealing means surrounding a portion of said pin means to prevent migration of fluids into said tubulation;

said sealing means forming a hermetic seal at the connecting joint formed between the first and second end faces restricting the migration of fluids into said joint.

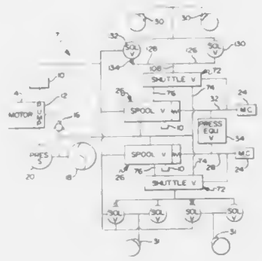


4,938,541

REMOTE POWER ASSIST HYDRAULIC ANTILOCK BRAKING SYSTEM

Schuyler S. Shaw, Dayton, and Donald E. Schenk, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 17, 1989, Ser. No. 352,873
Int. Cl.[5] B60T *8/32, 8/48, 13/16*
U.S. Cl. 303—10 **9 Claims**



1. A vehicle hydraulic braking system for applying the wheel brakes of an automotive vehicle comprising:

a reservoir means for holding a hydraulic brake fluid;

pump means fluidly connected with said reservoir for pressurizing said fluid;

at least one first valve means fluidly connected with said pressurized fluid from said pump means and said first valve means being connected with a modulation sump, said first valve means delivering a modulated brake pressure to at least one said wheel brake at a ratio of said master cylinder pressure to said wheel pressure so long as the fluid pressure from said pump is above a predetermined value; and

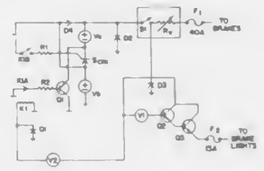
a second valve means fluidly connected with said wheel brake, said master cylinder, said modulated brake pressure, and with said pump and, whereby said second valve means isolates said master cylinder from said wheel brake when said pump pressure is above a predetermined value delivering modulated pressure to said wheel brake and when said pump pressure is below a predetermined value said second valve mean connects said master cylinder with said wheel brake.

4,938,542

BRAKING SYSTEM AND BREAK-AWAY BRAKING SYSTEM

Wayne K. Kline, R.D. 1, Box 340, Turbotville, Pa. 17772, and Jan J. Homan, R.D. 2, Box 138, Watsontown, Pa. 17777

Filed Feb. 6, 1989, Ser. No. 306,989
Int. Cl.[5] B60T *13/66*
U.S. Cl. 303—20 **15 Claims**



1. In an electric braking system for a vehicle comprising a plurality of electric brakes and a plurality of brake cables connected thereto, the improvement comprising a first voltage source which supplies electrical power to other systems in the vehicle at a fixed voltage, and an electric circuit connected thereto such that when the electric brakes are to be activated, the electric circuit connects a second voltage source in series with the first voltage source and connects both the first and the second voltage sources to each brake cable in a series configuration to provide a sufficient current at a sufficient voltage to operate the electric brakes.

4,938,543

ANTI-LOCK BRAKING/TRACTION CONTROL BRAKING SYSTEM

Donald L. Parker, Middletown, Ohio; Donald E. Schenk, Vandalia, Ohio; David F. Reuter, Beavercreek, Ohio; George N. Villec, Ann Arbor, Mich.; Alexander Kade, Grosse Pointe Woods, Mich.; Robert J. Hammersmith, Rochester Hills, Mich., and James F. Quinn, Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 17, 1989, Ser. No. 353,895
Int. Cl.[5] B60T *8/58*
U.S. Cl. 303—100 **15 Claims**

1. An integrated anti-lock braking system (ABS)/traction control (TC) braking system for a vehicle having a fluid activated brake for a wheel comprising:

a system controller cognizant of the condition of said wheel for signaling said system to an ABS or TC mode;

master cylinder means for delivering pressurized fluid to said wheel brake;

an actuator frame with a longitudinal bore, said bore having a first stop, and said bore being fluidly connected with said master cylinder means and said wheel brake;

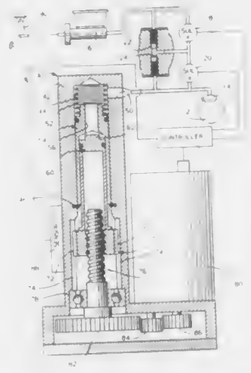
a first normally open solenoid valve means for isolating said master cylinder means from said wheel brake when said controller places said system in an ABS or TC mode;

a hollow primary piston slidably scalably mounted within said longitudinal bore biased towards said first stop, the interior of said primary piston being fluidly connected with the exterior of said primary piston;

a secondary piston slidably scalably mounted within said primary piston movable toward said bore fluid connection to pressurize said wheel brake and movable in an opposite

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direction to relieve said wheel brake, said secondary piston having an extreme position with respect to said primary piston wherein said pistons move in unison; and



reversible means to move said secondary piston in response to said controller.

4,938,544

METHOD OF CONTROLLING THE BRAKE PRESSURE IN AN ANTI-LOCK VEHICLE BRAKE SYSTEM

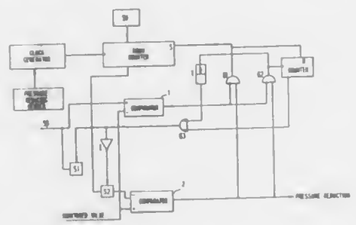
Volker Braschel, Nenwied, and Josef Pickenhahn, Plaidt, both of Fed. Rep. of Germany, assignors to Lucas Industries, Birmingham, England

Filed Feb. 21, 1989, Ser. No. 313,207

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 3805270

Int. Cl.[5] B60T *8/32, 8/66*

U.S. Cl. 303—103 **11 Claims**



1. A method of controlling brake pressure in an anti-lock vehicle brake system comprising the steps of:

(a) applying brake pressure,

(b) measuring the rotational speed of a braked wheel,

(c) deriving from the measured rotational speed a rotational deceleration of the braked wheel,

(d) comparing the rotational deceleration with a threshold value,

(e) lowering the brake pressure acting in the brake of said braked wheel when the rotational deceleration exceeds the threshold value, and

(f) applying brake pressure again at a time (t_2) later than a time (t_1) at which said lowering of brake pressure was performed, characterized by

(g) increasing the threshold value from a given base value (S_G) by a given constant amount ($S_H - S_G$) and at a time which is a function of the time (t_2) when the brake pressure is applied again.

4,938,545

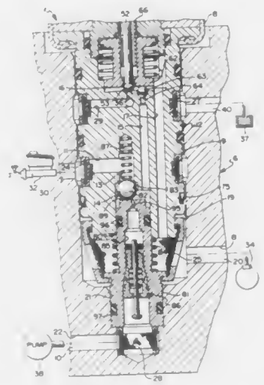
ABS SOLENOID/ISOLATION VALVE INTEGRATION INTO SINGLE-ENDED SOLENOID BODY, USING PUMP PRESSURE ACTUATION

Lyle W. Shuey, Pendleton, Ind.; Edward J. DeHoff, Huber Heights, Ohio, and Donald E. Schenk, Vandalia, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1989, Ser. No. 322,139

Int. Cl.[5] F16B *13/44;* **B60T** *8/36*

U.S. Cl. 303—119 **8 Claims**



1. A solenoid/isolation valve integration into a single ended body using pump pressure actuation for use in an anti-lock braking system including a master cylinder, wheel cylinder, reservoir, and a pressurized fluid source, said valve integration in combination comprising:

a housing for mounting said solenoid valve and said isolation valve, said housing including fluid connections for said master cylinder, wheel cylinder, reservoir, and pressurized fluid source, said housing also having a first fluid path connecting said master cylinder to said wheel cylinder, a second fluid path intersecting said first fluid path and connecting with said pressurized fluid source, and a third fluid path intersecting with said first fluid path and connecting with said reservoir;

a first solenoid having a first solenoid actuated valve member for controlling fluid communication in said first fluid path between the said intersection of said first and second fluid paths and said wheel cylinder connection, said first solenoid having a normally open position;

a second solenoid having a second solenoid actuated valve member positionally located on the same side of said first solenoid as said first solenoid valve member and said second solenoid valve member controlling fluid communication in said third fluid path and said second solenoid having a normally closed position; and

an isolation valve mounted within said intersection between said first and second fluid paths whereby said isolation valve during normal brake operation allows fluid flow between said master cylinder and said wheel cylinder and when said pressurized fluid source is activated in an anti-lock braking system mode, said pressurized fluid source causes said isolation valve to cut off flow from said master cylinder and to allow flow from said pressurized fluid source to said wheel cylinder.

4,938,546

FLEXIBLE SNOWMOBILE CLEAT

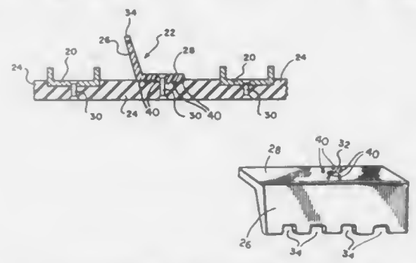
Verlin M. Simmons, 495 S. Main St., Providence, Utah 84332

Continuation-in-part of Ser. No. 31,696, Mar. 27, 1987, Pat. No. 4,795,221. This application Dec. 28, 1988, Ser. No. 291,945

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.[5] B62D *55/205*

U.S. Cl. 305—35 EB **17 Claims**



1. A cleat for mounting on the outer surface of an endless belt used as a track for a snowmobile, said cleat comprising

a relatively narrow, elongate, essentially planar fin whose elongate length is no greater than about ten centimeters and whose width is no greater than about 4 centimeters;

a relatively narrow, elongate, essentially planar flange extending along an elongate side edge of said fin, wherein said flange has an elongate length which is substantially the same as the length of said fin, and said flange has a width which is no greater than about 4 centimeters;

an opening through said flange for use in attaching said flange to the outer surface of an endless belt used as a track for a snowmobile, said opening extending between a first broad side of said flange which faces said fin and a second broad side of said flange which faces away from said fin; and

a plurality of sharp projections extending from the second broad side of said flange which faces away from said planar fin such that the projections engage the outer surface of the endless belt when the cleat is attached to the endless belt.

4,938,547

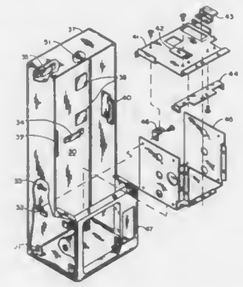
SIMPLIFIED METAL HOUSING FOR TELEPHONE PAYSTATION

Gerald B. McGough, Huntsville, Ala., assignor to Palco Telecom, Inc., Nashville, Tenn.

Filed Feb. 10, 1989, Ser. No. 308,645

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—100 **10 Claims**



1. A housing for a telephone paystation comprising:

an upper housing assembly including a shell of metallic construction;

first and second locking rods each mounted to an opposite vertical side wall of said upper housing assembly by first and second locking rod plates, respectively;

first and second push bars each including a first end connected to a first end of said first and second locking rods, respectively;

a rocker bar pivotally mounted to said upper housing shell, including a first end of said rocker bar connected to a second end of said first push bar and a second end of said rocker bar connected to a second end of said second push bar;

at least one of said push bars further including a cam receiving slot;

a key operable cylinder lock mounted in one of said vertical side walls of said upper housing assembly shell;

said lock further including a cam located internally of said upper housing shell and adapted to engage said slot in said one of said push bars;

a lower housing assembly including a lower shell;

and a rear shell;

first and second strike plates each mounted to an opposite vertical side wall of said rear shell and each engageable by a second end of a different one of said locking rods;

whereby in response to operation of said lock by a key, said cam engages said push bar slot moving a first one of said first push bars in a first direction, and in response to said first push bar movement, said rocker bar moving a second one of said push bars in a second direction, the movement of said push bars in said first and second directions, respectively, causing said second ends of said connected locking bars to engage or in the alternative to disengage said strike plates in said rear shell to secure or in the alternative to provide access to an internal portion of said housing assembly.

4,938,548

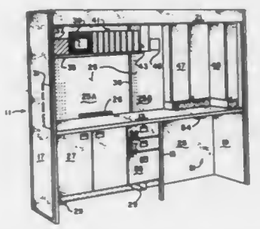
MODULAR MECHANIC'S WORKSTATION

Daniel E. Richardson, St. Louis, Mo., assignor to Shure Manufacturing Corporation, St. Louis, Mo.

Filed Apr. 30, 1986, Ser. No. 857,714

Int. Cl.[5] A47B *41/06*

U.S. Cl. 312—233 **4 Claims**



1. A modular workstation for a mechanic or the like comprising:

a work surface disposed at a height comfortable for a standing user such as a mechanic or other technician;

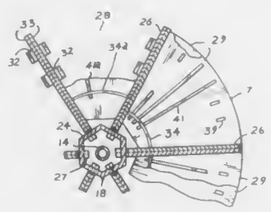
a back panel and first and second end panels operatively affixed to the work surface and generally perpendicular thereto, said panels extending upwardly above the work surface;

a locker suitable for clothes securely disposable at a plurality of locations on the work surface; and

a tool cabinet fixedly disposable at a plurality of locations on the work surface.

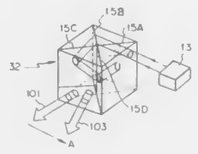
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4,938,549
ROTARY FILE UNIT AND CABINET
Frank Potter, Syosset, N.Y., assignor to Datum Filing Systems, Inc., Farmingdale, N.Y.
Filed Nov. 3, 1989, Ser. No. 431,396
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—305 3 Claims



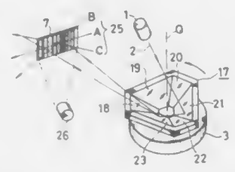
1. A rotary file unit comprising a floor base, a stationary vertical post having a releasable mounting with the base, a hexagonal-faced vertical column disposed coaxially about the post and having a bearing mounting to the post enabling rotation of the column about the post, an upright panel extending radially from each face of the column, the panels being in equal angular spaced relation to one another, each panel having a slidably releasable hooked engagement with complementary slots in the column, a plurality of horizintally disposed shelves of pie-form spaced one above the other between each angularly opposed pair of panels, each shelf being provided with side tabs slidably engaged in complementary pockets formed in the opposed pair of panels, a separate backwall disposed rearwardly of each shelf and having a slidably releasable mounting between the opposed pair of panels, and vertically disposed thin walled divider means engaged by a releasable tab and slot connection with a backwall and further engaged by a releasable tab and slot connection with the related shelf, the divider means serving to divided the space above a shelf into radially extending compartments for reception therein of file papers.

4,938,550
HOLOGRAPHIC DEFLECTION DEVICE
Takefumi Inagaki, Kawasaki; Fumio Yamagishi, Ebina; Hiroyuki Ikeda, Yokohama, and Shin-ya Hasegawa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Feb. 2, 1988, Ser. No. 151,616
Claims priority, application Japan, Feb. 3, 1987, 62-021892; Nov. 16, 1987, 62-287561
Int. Cl.[5] G03H *1/26;* G02B *5/32*
U.S. Cl. 350—3.71 37 Claims



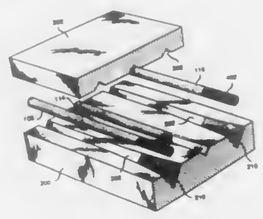
1. A holographic deflection device comprising at least one tunable laser, and at least one diffraction hologram for deflecting light incident thereupon from the tunable laser, so that the deflection of the light can be controlled by a change of the wavelength of the light by the tunable laser, said at least one diffraction hologram being arranged so that the variation of angle of deflection by the at least one diffraction hologram due to the change in wavelength are integrated by a plurality of successive diffractions.

4,938,551
LIGHT-SCANNING READER
Yasuo Matsumoto, Shizuoka, Japan, assignor to Tokyo Electric Company, Ltd., Tokyo, Japan
Filed Nov. 29, 1988, Ser. No. 277,312
Claims priority, application Japan, Dec. 1, 1987, 62-303621
Int. Cl.[5] G02B *26/10*
U.S. Cl. 350—6.7 8 Claims



1. A light-scanning reader wherein a polyhedral reflector comprises at least two reflecting surfaces, any two of said at least two reflecting surfaces defining an angular range of 180° or less to each other, said polyhedral reflector generating a plurality of mutually non-parallel scanning loci and being disposed so as to rotatable or oscillatable on its axis.

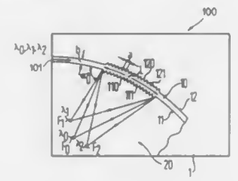
4,938,552
ELECTROSTATIC OPTICAL FIBER SWITCH
Robert W. Jebens, Skillman; William S. N. Trimmer, Belle Mead, and James A. Walker, Howell, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 15, 1989, Ser. No. 311,566
Int. Cl.[5] G02B *6/36*
U.S. Cl. 350—96.2 11 Claims



1. An optical fiber switch comprising a switch housing having an internal first channel extending from an outside surface of the housing for fixedly receiving a first switchable fiber, the first channel extending into an aperture of the housing of dimensions sufficent for allowing switching movement of the end of the first fiber, a conductive coating near the switching end portion of the first fiber in the aperture, and means for creating an electrostatic field in the aperture, the switch being characterized in that

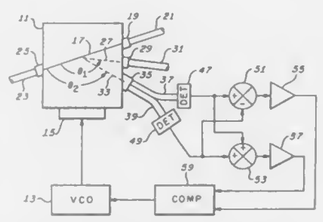
the aperture is formed in part by a flared portion of the first channel for supporting the switching end portion of the first fiber along an arc of the flare in a switched state when the electrostatic field is applied.

4,938,553
ARRANGEMENT FOR AN INTEGRATED OPTICAL SPECTROMETER AND THE METHOD FOR MANUFACTURING THE SPECTROMETER
Reinhard Maerz, and Cornelius Cremer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 15, 1988, Ser. No. 168,384
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1987, 3708526
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.11 9 Claims



1. In an arrangement for an integrated optical spectrometer, said arrangement comprising an optical film waveguide extending in a plane and a focusing, optical grating having grating lines extending essentially vertical to the plane of the film waveguide, the improvements comprising the focusing optical grating being fashioned in a longitudinal limiting surface of a ribbed waveguide that defines a step, the film waveguide being adjacent to the ribbed waveguide at least along one side of the ribbed waveguide.

4,938,554
TEMPERATURE COMPENSATED FIBER OPTIC BYPASS SWITCH
Mark L. Wilson, Vadnais Heights, and Stanley J. Lins, Bloomington, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Apr. 3, 1989, Ser. No. 331,763
Int. Cl.[5] G02B *6/26;* H01J *5/16;* G02F *1/11*
U.S. Cl. 350—96.15 4 Claims



1. An apparatus for correcting deviations from a normal ray path in a variable index of refraction device having a refractive index that varies as a function of an applied signal and environmental condition comprising:

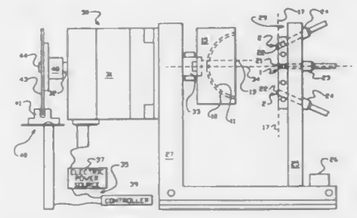
means coupled to said device and responsive to correction signals coupled thereto for providing said applied signals;

first and second optical fibers coupled to said device for receiving light energy that varies as a function of said refractive index, said optical fibers positioned relative to a predetermined diffracted ray in a manner to receive optical energy from said predetermined diffracted ray that is equal in each of said first and second optical fibers,

means coupled to said first and second optical fibers for providing signals representative of light energy in said first and second optical fibers; and

means coupled to said representative signals means and said applied signals means for providing said correction signals in response to said representative signals.

4,938,555
OPTICAL SWITCH
Richard N. Savage, Livermore, Calif., assignor to SC Technology, Int., Livermore, Calif.
Filed Aug. 16, 1988, Ser. No. 233,117
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.15 15 Claims



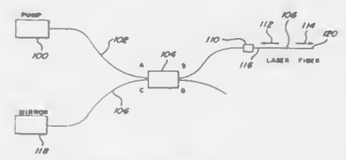
1. An optical switch for transmitting light between a first location and a selected one of a plurality of second locations comprising:

a mirror having a concave, reflective surface, a focal plane, and an axis;

light transmission means facing said mirror and having a light transmission face at said first location and each of said second locations, said light transmission faces of said second locations being positioned at an angle greater than zero degrees with said focal plane; and

means connected to said mirror for eccentric rotation thereof relative to said axis to direct said light between said first location and individual ones of said second locations depending upon the rotational position of said mirror about said axis.

4,938,556
SUPERFLUORESCENT BROADBAND FIBER LASER SOURCE
Michel J. F. Digonnet, Palo Alto, Calif.; Karen Liu, Lawrenceville, N.J.; Byoung Y. Kim, Menlo Park, Calif.; Herbert J. Shaw, Stanford, Calif., and John J. Fling, Gaviota, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Continuation-in-part of Ser. No. 137,870, Dec. 22, 1987, Pat. No. 4,859,016, which is a division of Ser. No. 6/930,136, Nov. 12, 1986, Pat. No. 4,723,824, which is a division of Ser. No. 6/544,888, Nov. 25, 1983, Pat. No. 4,674,830. This application Dec. 7, 1988, Ser. No. 281,088
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.15 52 Claims



1. A fiber optic system, comprising:

a source for emitting pumping light at a first spectrum of wavelengths;

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an optical fiber doped with a laser material, the intensity of said pumping light at said first spectrum of wavelengths being sufficient to induce superfluorescent emission of laser light in said laser material at a second spectrum of wavelengths, said laser light comprising first and second components, said first and second components being substantially contradirectional at locations where said laser light is emitted;

an optical coupler having at least a first port and a second port, said first port coupled to said pump source to receive said pumping light from said pump source, said second port coupled to a first end of said doped optical fiber so that said pumping light coupled by said coupler from said first port into said second port is launched into said doped optical fiber, said coupler selectively coupling one of said first and second spectrum of wavelengths and inhibiting coupling of the other of said first and second spectrum of wavelengths; and

a reflector for reflecting at least one of said first and second light components.

4,938,557

OPTICAL DEVICE

Keith J. Blow, Woodbridge, England, assignor to British Telecommunication public limited company, London, England

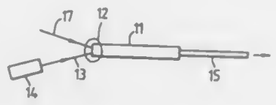
PCT No. PCT/GB87/00639, § 371 Date May 11, 1988, § 102(e) Date May 11, 1988, PCT Pub. No. WO88/02132, PCT Pub. Date Mar. 24, 1988

PCT Filed Sep. 14, 1987, Ser. No. 193,285

Claims priority, application United Kingdom, Sep. 16, 1986, 8622314

Int. Cl.[5] G02B *6/26, 6/42*

U.S. Cl. 350—96.15 **19 Claims**



1. An optical device compr.

an optical waveguide responsive to the intensity of light incident thereon to guide or not guide an optical signal from an input end to an output end of said waveguide, said waveguide having a core region, an outer cladding region and at least one further region disposed therebetween which has a lower refractive index than said outer cladding region, at least one of said regions having a refractive index which varies with respect to the intensity of said incident light;

coupling means including first and second input means for coupling at least two optical signals into said input end of said waveguide; and

separation means for separating portions of optical signals leaving said core region at said output end of said waveguide from other portions of the signals travelling in said outer cladding region and said at least one further region.

4,938,558

FUSED CONNECTOR FOR OPTICAL FIBER

Nancy L. Miller, Harrisburg, and Larry R. Stauffer, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 3, 1989, Ser. No. 332,818

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.20 **7 Claims**

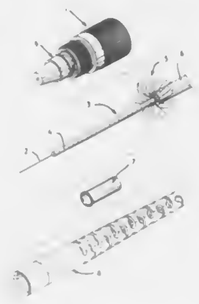
1. A method for assembling an optical connector for an optical fiber comprising the steps of:

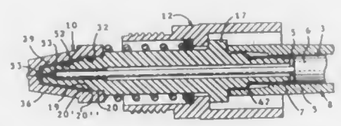
fabricating a front end portion of an alignment ferrule with a precision alignment surface and a coupling portion,

fabricating separately from the front end portion a remainder portion of said alignment ferrule with a thermoplastic portion for joining to said coupling portion,

applying energy to soften and melt said thermoplastic portion,

engaging said thermoplastic portion in a melted condition against said coupling portion in the absence of an optical fiber assembled along said front end portion, and





solidifying said thermoplastic portion while engaged with said coupling portion to join with said coupling portion in the absence of an optical fiber assembled along said front end portion and without distorting said precision alignment surface, whereby the front end portion and the remainder portion of said alignment ferrule are joined together before assembly of an optical fiber therewith.

4,938,559

SWITCH FOR FIBER-OPTICAL WAVEGUIDES

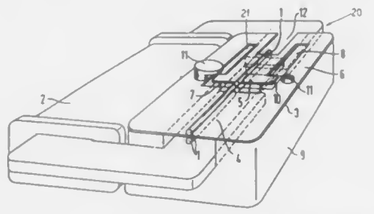
Helmut Bruch, and Bertold Malorny, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, both of, Fed. Rep. of Germany

Continuation of Ser. No. 416,331, Sep. 9, 1982, abandoned. This application Feb. 27, 1985, Ser. No. 706,233

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138686

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.20 **15 Claims**



1. A switch for opening and closing an optical connection between a pair of fiber-optical waveguides with one of the waveguides being held on a stationary carrier part and the other waveguide being transversely movable from a position optically connected to the one waveguide to a position disconnected therefrom, said switch comprising a base body having a planar seating surface forming a stop surface, a one-piece sheet of spring material being mounted on the base body with one surface of the sheet resting on the planar seating surface of the base body, said one-piece sheet having at least one slot to form a carrier part, a switch tongue and at least one stay extending between a base of the tongue and the carrier part, at least one waveguide secured on a surface of the carrier part, a second waveguide secured to a surface of the switch tongue in axial alignment with the first waveguide with the end faces of the two waveguides being spaced apart when the tongue is in a first position pressed against the seating surface to close the optical connection, said tongue being movable to a second position with the second waveguide out of the optical connection with the first waveguide and means for moving the tongue to one of said first and second positions including an electromagnet mounted on the base body.

4,938,560

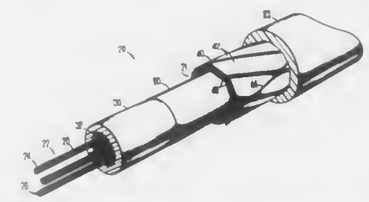
ANIMAL-RESISTANT CABLE

Candido J. Arroyo, Lithonia; Paul F. Gagen, Duluth, and Parbhubhai D. Patel, Dunwoody, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 194,760, May 17, 1988, Pat. No. 4,874,219. This application Aug. 11, 1989, Ser. No. 392,330

Int. Cl.[5] G02B *6/44*

U.S. Cl. 350—96.23 **18 Claims**



1. An animal-resistant cable, which comprises:

a core which comprises at least one transmission media; and

a sheath system which encloses said core, said sheath system comprising:

a plurality of longitudinally extending segments each of which has a cross section transverse to a longitudinal axis of the cable that encloses less than one-half the periphery of said core, and each of which is made of a dielectric material, said segments cooperating to provide a shell enclosing said core with at least portions of facing longitudinal edge surfaces of adjacent segments being substantially contiguous, and said segments being stranded helically about said core and being sufficient in number to allow said cable to be routed in a path having a predetermined radius without damaging said cable; and

at least one outer element being disposed about said segments and being effective to hold said segments in the configuration of said shell.

4,938,561

OPTICAL SIGNAL AMPLIFICATION WITH COUPLED FIBERS AND OPTICAL PUMPING ENERGY

Giorgio Grasso, Monza, Italy; Eleanor J. Tarbox, and Paul L. Scrivener, both of Southampton, England, assignors to Pirelli General plc, London, United Kingdom

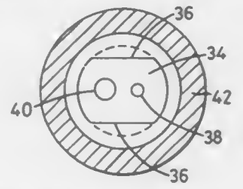
Filed Dec. 29, 1988, Ser. No. 291,636

Claims priority, application Italy, Jan. 12, 1988, 19037 A/88

Int. Cl.[5] G02B *6/22*

U.S. Cl. 350—96.33 **18 Claims**

1. An optical fibre structure usable in amplifying optical signals, comprising a length of optical fibre (1) which includes two uniformally spaced monomode optical cores (2,4) located within a common cladding (6) so as to provide two optical guidance paths, the optical characteristics of at least the cores being different and providing the two guidance paths with different propagation constants, the values of such propagation



constants being the same for a predetermined coupling wavelength, characterised in that one of the cores (4) includes a fluorescent material capable of producing stimulated emission at a wavelength substantially the same as said predetermined coupling wavelength.

4,938,562

OXIDE COATINGS FOR FLUORIDE GLASS

Lubos J. B. Vacha, Southbridge, Mass.; Cornelius T. Moynihan, Watervliet, N.Y., and Peter C. Schultz, Sturbridge, Mass., assignors to SpecTran Corporation, Sturbridge, Mass.

Filed Jul. 14, 1989, Ser. No. 379,847

Int. Cl.[5] G02B *6/00*

U.S. Cl. 350—96.34 **15 Claims**

1. A coated optical fiber comprising a core of a non-oxide glass and a coating of an oxide glass having a glass transition temperature below 400° C. and a thermal expansion coefficient of less than about 19×10^{-6}°C.$^{-1}$.

4,938,563

HIGH EFFICIENCY CUBE CORNER RETROFLECTIVE MATERIAL

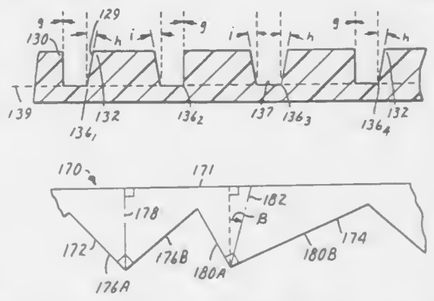
John C. Nelson; Mark E. Gardiner, both of Santa Rosa, Calif.; Roger H. Appeldorn, White Bear Lake, Minn., and Timothy L. Hoopman, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 933,470, Nov. 21, 1986, Pat. No. 4,775,219. This application May 20, 1988, Ser. No. 197,107

Claims priority, application Canada, Oct. 21, 1987, 549817

Int. Cl.[5] G02B *5/124, 5/136*

U.S. Cl. 350—103 **23 Claims**



1. A retroreflective material comprising a transparent surface layer having a front side and a back side and an array of cube corner reflective elements, each of said reflecting elements including:

(a) a rectangular base on the back side of the surface layer,

(b) two rectangular faces approximately perpendicular to

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each other, each one being joined to an edge of the rectangular base to form a reflecting element having a triangular cross section; and

(c) two triangular faces that are approximately parallel to each other and approximately perpendicular to said rectangular faces, and

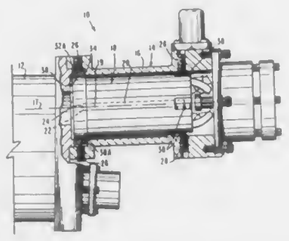
forming the ends of the reflecting elements; said triangular and said rectangular faces defining a pair of cube corners therebetween; said reflecting elements being formed by two approximately perpendicular sets of parallel grooves, a first set of V-shaped grooves, and a second-set of grooves having a pair of faces nearly perpendicular to said rectangular base, at least one of the sets of grooves including more than one groove having a groove side angle that differs from another groove side angle of the same set by a small amount less than 3°, whereby the array of cube corner retroreflective elements is characterized by small variations in at least one of the dihedral angles between the faces from one reflecting element to another, said variations existing in at least some but not necessarily all of the reflecting elements.

4,938,564

GIMBAL ASSEMBLY

Charles Romero, Downey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 10, 1987, Ser. No. 36,728
Int. Cl.[5] G02B 7/02
U.S. Cl. 350—252 **8 Claims**



7. A method for precise positioning of a device having an axis comprising the steps of:

supporting the device on its axis;

supporting the device in a housing having an axis; and

positioning the device axis in coincidence with the housing axis to angularly and linearly move the device and its axis with respect to the housing and its axis to bring the respective axes thereof into the coincidence, by

securing the device to a spherically contoured periphery,

mating an internal spherical surface of the housing with the spherically contoured periphery, and

angularly adjusting the device axis with respect to the housing axis by means axially spaced from said spherically contoured surfaces.

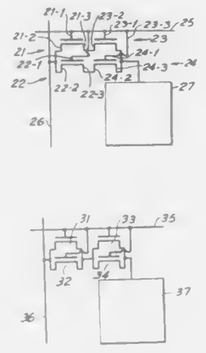
4,938,565

THIN-FILM TRANSISTOR ARRAY USED FOR LIQUID-CRYSTAL DISPLAY DEVICE

Shouji Ichikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,357
Claims priority, application Japan, Aug. 21, 1987, 62-208718
Int. Cl.[5] G02F 1/13
U.S. Cl. 350—332 **7 Claims**

1. A thin-film transistor array formed on an insulating board having a plurality of electrical signal applying first lines and a plurality of electrical signal applying second lines orthogonally crossing said first lines, the array comprising a plurality of transistor structures each formed in a region of said insulating board corresponding to each one crossing point of said first lines and said second lines; and a plurality of electrical elements connected in the array so as to use an electrical signal applied from one of said first and second lines through one of said transistor structures, each of said transistor structures including a plurality of thin-film transistors each having source, drain and gate electrodes, said thin-film transistors in each one of said transistor structures being respectively connected so that at least one parallel connection and at least one series connection of electrical paths between the source and the drain electrodes of said transistors are formed.

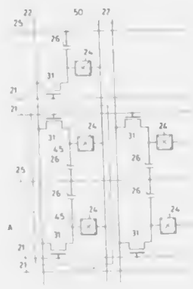


4,938,566

DISPLAY APPARATUS

Etsuya Takeda, Suita; Yutaka Nanno, Neyagawa; Takao Kawaguchi, Hirakata, and Seiichi Nagata, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 13, 1988, Ser. No. 243,860
Claims priority, application Japan, Sep. 14, 1987, 62-230103
Int. Cl.[5] G02F 1/13
U.S. Cl. 350—332 **12 Claims**



1. Display apparatus comprising:

a plurality of scanning bus-lines disposed horizontally on a substrate with a predetermined interval,

a plurality of signal bus-lines disposed vertically on said substrate, electrically insulated from said scanning bus-lines at respective crossing, with another predetermined interval,

first electrode bus-lines respectively disposed between adjacent scanning bus-lines,

second electrode bus-lines respectively disposed in parallel with and adjacent to said signal bus-line and being electrically insulated form said scanning bus-lines at respective crossings,

non-linear devices, having non-linear voltage-current characteristics, disposed substantially adjacent to respective areas surrounded by respective signal bus-lines, respective scanning bus-lines, respective first electrode bus-lines and respective second electrode bus-lines, whereby adjacent pairs of areas share a common first electrode bus-line, said devices being controlled by said respective signal bus-lines and said respective scanning bus-lines.

electro-optical elements disposed in said respective areas and connected between respective non-linear devices and respective second electrode bus-lines to be controlled by said respective non-linear devices, and

storage capacitors disposed adjacent to said respective areas and connected between said common first electrode bus-lines and the connection between said respective non-linear devices and electro-optical elements.

2. A display apparatus comprising:

a plurality of pairs of scanning bus-lines which are close together disposed horizontally with a predetermined interval on a substrate,

a plurality of signal bus-lines disposed vertically with another predetermined interval on said substrate, electrically insulated from said scanning bus-lines at the crossings,

first electrode bus-lines respectively disposed between one pair of scanning bus-lines and another pair of scanning bus lines neighboring to the one pair of scanning bus lines and electrically insulated from said signal bus-lines at the respective crossings,

second electrode bus-lines disposed adjacent to said signal bus-lines and electrically insulated from said scanning bus-lines and said first electrode bus-lines at the respective crossings,

non-linear devices, having non-linear voltage-current characteristics, respective devices disposed substantially adjacent to respective areas surrounded by respective signal bus-lines, respective scanning bus-lines, respective first electrode bus-lines and respective second electrode bus-lines, whereby adjacent pairs of areas share a common first electrode bus-line, said devices being controlled by said respective signal bus-lines and said respective scanning bus-lines,

electro-optical elements disposed in said respective areas and connected between respective non-linear devices and respective second electrode bus-lines to be controlled by said respective non-linear devices, and

storage capacitors disposed adjacent to said respective areas and connected between said common first electrode bus-lines and the connection between said respective non-linear devices and electro-optical elements.

4,938,567

ELECTRO-OPTICAL DISPLAY PANEL WITH CONTROL TRANSISTORS AND METHOD FOR MAKING IT

Eric Chartier, Chatenay Malabry, France, assignor to Thomson Grand Public, Paris, France

PCT No. PCT/FR87/00403, § 371 Date Jul. 20, 1988, § 102(e) Date Jul. 20, 1988, PCT Pub. No. WO88/02872, PCT Pub. Date Apr. 21, 1988
PCT Filed Oct. 16, 1987, Ser. No. 218,126
Claims priority, application France, Oct. 17, 1986, 86 14410
Int. Cl.[5] G02F 1/01, 1/133
U.S. Cl. 350—333 **24 Claims**

1. An electro-optical display panel with control transistors comprising:

a first strip and a second strip (1, 1') which are parallel and which enclose an electro-optical material (CX);

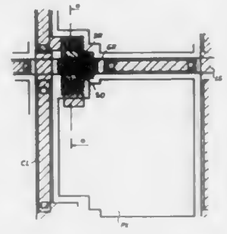
the first strip (1) being provided on its surface (10), in contact with the electro-optical material (CX), with a matrix of pixels (PX11 to PX22) arranged in lines and columns, line control electrodes (LG1, LG2) at a rate of one electrode associated with each line of pixels of said matrix and placed parallel to each line pixels, and control transistors (T11 to T22) at a rate of one transistor per pixel (PX11 to PX22) coupling the pixel to said line control electrodes;

the second strip (1') being provided, on its surface (10') in contact with the electro-optical material (CX), with at least one electrode (F); characterized in that each transistor comprised:

a gate (GR) placed on the surface (10) and associated with a line control electrode (LG);

a first layer (2) of insulating material covering the entire surface (10) with the line control electrodes (LG) and the gates (GR);

an element (3) made of amorphous semi-conductive material overlapping the gate (GR);



a source (SO) placed on this element (3) made of amorphous semi-conductive material and extending from one edge of the gate towards a pixel;

a drain (DR) placed on said element (3) made of amorphous semi-conductor material and extending from another edge of the gate towards a column electrode;

a second layer of insulant material (6) covering the entire panel on which the following elements are placed:

at least one pixel (PX);

a first connection element (CSP) crossing the second insulant layer (6) and connecting the source (SO) to the pixel (PX);

at least one column control electrode (CL);

a second connecting element (CDC) crossing the second insulant layer (6) and connecting the drain (DR) to said column control electrode;

a light barrier (EC) placed above the gate.

4,938,568

POLYMER DISPERSED LIQUID CRYSTAL FILM DEVICES, AND METHOD OF FORMING THE SAME

John D. Margerum, Woodland Hills; Anna M. Lackner, Los Angeles; Elena Ramos, Santa Monica, all of Calif.; George W. Smith, Birmingham; Nuno A. Vaz, West Bloomfield, both of Mich.; James L. Kohler, Kokomo, Ind., and Charles R. Allison, Flint, Mich., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 5, 1988, Ser. No. 141,033
Int. Cl.[5] G02F 1/13; B01J 13/02
U.S. Cl. 350—334 **9 Claims**

1. A method of controlling the electro-optical properties of a polymer dispersed liquid crystal (LC) film, comprising:

forming a solution of a LC dissolved in a polymerizable monomer system,

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photopolymerizing said solution to form a polymerized film having a dispersion of LC bubbles therein, and

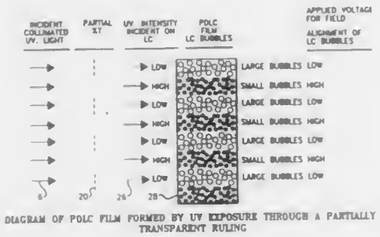


DIAGRAM OF PDLC FILM FORMED BY UV EXPOSURE THROUGH A PARTIALLY TRANSPARENT RULING

spatially varying the conditions of polymerization over said film to spatially vary the sizes of said LC bubbles therein.

4,938,569

ELECTRODE SUBSTRATE FOR ELECTRO-OPTICAL DEVICE

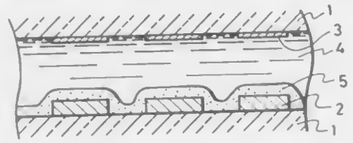
Yukiyoshi Tsunoda, and Tohru Sakai, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 16, 1987, Ser. No. 109,624

Claims priority, application Japan, Oct. 22, 1986, 61-251075

Int. Cl.[5] G02F *1/133*

U.S. Cl. 350—336 21 Claims



1. An electro-optical device comprising: a pair of spaced-apart substrates sandwiching therebetween an electro-optical material; a conductive layer having a predetermined pattern disposed on the inner surface of one of the substrates; a plurality of color filters disposed on the inner surface of the other of the substrates; and a coated conductive layer of organic material coated on the plurality of color filters.

4,938,570

METHOD AND SYSTEM FOR DATA DISPLAY AND INPUT VIA DISPLAY SCREEN

Osamu Majima, Tokyo; Kazuo Kobayashi, Kanagawa; Ikuo Misao, Kanagawa, and Hideshi Tamaru, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1986, Ser. No. 848,458

Claims priority, application Japan, Apr. 18, 1985, 60-83232; Apr. 30, 1985, 60-92802

Int. Cl.[5] G02F *1/13; G09F 9/00*

U.S. Cl. 350—351 23 Claims

17. An image handling apparatus comprising:

a laser bean generating means for generating a laser beam;

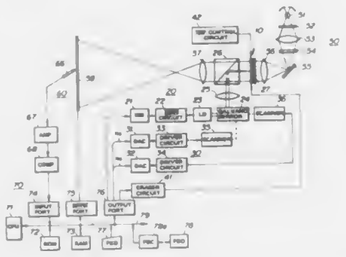
a thermally writable liquid crystal plate for forming an image in response to irradiation by said laser beam;

a laser beam scanning means for scanning the laser beam across a desired point on said liquid crystal;

a projection screen for receiving a projected image of said liquid crystal plate;

a light source for generating a light beam to be irradiated onto said liquid crystal plate for projecting an image of said liquid crystal plate onto said projection screen;

a transparent electronic coordinate indicating signal generating means overlying said projection screen for producing an electronic coordinate indicating signal at a coordinate of said screen which coordinate corresponds to a coordinate of said liquid crystal plate; and



a pen with a tip for sensing said electronic coordinate indicating signal when said pen tip is placed in contact with said transparent electronic coordinate indicating signal generating means.

4,938,571

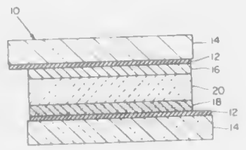
SOLID STATE ELECTROCHROMIC LIGHT MODULATOR

Stuart F. Cogan, and R. David Rauh, both of 111 Downey St., Norwood, Mass. 02062

Continuation-in-part of Ser. No. 64,069, Jun. 18, 1987. This application Jun. 16, 1988, Ser. No. 207,496

Int. Cl.[5] G02F *1/17*

U.S. Cl. 350—357 13 Claims



1. A solid-state variable transmission electrochromic device comprising,

a source of charge compensating ions,

an inorganic oxide electrochromic counter electrode film composed of a mixture of at least two oxides with a first of said oxides an oxide of a metal from the group consisting of vanadium and chromium and a second of said oxides an oxide of a different metal from the group consisting of V, Cr, Nb, Ta and Ti which on reduction with the accompanying insertion of said charge compensating ions increases its transmission of light of predetermined wavelength,

a primary electrochromic film which on reduction with the accompanying insertion of said charge compensating ions decreases its transmission of light of said predetermined wavelength,

an insulating electrolyte film contiguous with and separating said inorganic oxide counter electrode film and said primary electrochromic film for the transport of said charge compensating ions therebetween,

first and second electrodes contiguous with said inorganic oxide counter electrode film and said primary electrochromic film respectively and separated by said inorganic oxide counter electrode film, said insulating electrolyte film and said primary electrochromic film,

said first and second electrodes being for receiving an electric potential therebetween for producing a current flow

such that electrons flow into one of said electrodes and out of the other and said charge compensating ions flow through said insulating electrolyte film from that one of said inorganic oxide counter electrode and said primary electrochromic film being oxidized to that one thereof being reduced for modulating said device between states of minimum and maximum transmission at said predetermined wavelength with the direction of transmission change being determined by the direction of current flow.

4,938,572

ZOOM LENS SYSTEM FOR USE IN MICROFILM PROJECTION APPARATUS

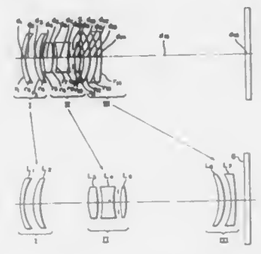
Satoshi Iwasaki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1988, Ser. No. 284,316

Claims priority, application Japan, Dec. 19, 1987, 62-321790

Int. Cl.[5] G02B *15/00*

U.S. Cl. 350—423 12 Claims



1. A zoom lens system for use in a microfilm projection apparatus,

the zoom lens system consisting of, from an enlargement side, a first lens unit of a negative refractive power, a second lens unit of a positive refractive power and a third lens unit of a negative refractive power and including an aperture stop positioned within said second lens unit or in the vicinity thereof,

said first lens unit consisting of one or more meniscus lens elements each having a concave surface faced to a reduction side and said third lens unit consisting of one or more meniscus lens elements each having a concave surface faced to the enlargement side,

wherein said second and third lens units are moved to the reduction side along the optical axis while said first lens unit is fixed in an operation of zooming from the longest focal length side to the shortest focal length side.

4,938,573

OBJECTIVE LENS SYSTEM

Yoshiharu Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 374,952

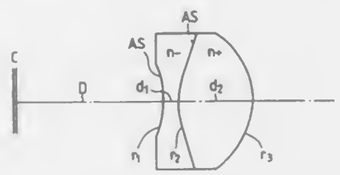
Claims priority, application Japan, Jul. 5, 1988, 63-167162

Int. Cl.[5] G02B *13/18*

U.S. Cl. 350—432 6 Claims

1. An objective lens system consisting of a single lens component of a cemented doublet, comprising a first surface concave on the object side, a second surface convex on the object side and a third surface convex on the image side arranged in the order from the object side, said first surface and said second surface being designed as aspherical surfaces, and so designed as to satisfy the following condition (1):

$$-0.2 > r_3/f > -0.8 \quad (1)$$



wherein the reference symbol r_3 represents radius of curvature on the third surface and the reference symbol f designates focal length of the objective lens system as a whole.

4,938,574

METHOD AND APPARATUS FOR DRIVING FERROELECTRIC LIQUID CRYSTAL OPTICAL MODULATION DEVICE FOR PROVIDING A GRADIATIONAL DISPLAY

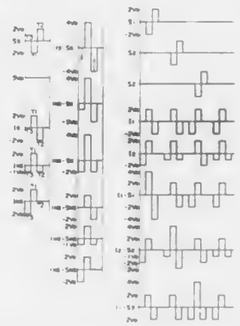
Shuzo Kaneko, Suginami; Tsutomu Toyono, Yokohama; Tadashi Yamamoto, Kawasaki; Masahiko Enari, Yokohama, and Mitsutoshi Kuno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1987, Ser. No. 85,866

Claims priority, application Japan, Aug. 18, 1986, 61-192571; Aug. 18, 1986, 61-192588; Aug. 29, 1986, 61-204932; Sep. 1, 1986, 61-206567

Int. Cl.[5] G02F *1/13; G09G 3/00*

U.S. Cl. 350—350 S 8 Claims



1. A driving method for an optical modulation device comprising a group of scanning electrodes, a group of signal electrodes disposed to intersect with the group of scanning electrodes, and a ferroelectric liquid crystal, having first and second threshold voltages, disposed between the group of scanning electrodes and the group of signal electrodes so as to form a pixel at each intersection, the driving method comprising the steps of:

applying a selection signal to a selected scanning electrode of the group of scanning electrodes and a non-selection signal to at least one non-selected scanning electrode of the group of scanning electrodes, wherein the non-selection signal comprises a non-scanning voltage signal applied at a predetermined level, and wherein the selection scanning signal comprises a first scanning voltage signal applied at one polarity with respect to the non-scanning voltage signal, a second scanning voltage signal applied at a polarity opposite to the one polarity and a third scanning voltage signal applied at the predetermined level, and

applying an information signal to a signal electrode of the group of signal electrodes,

wherein the information signal comprises first, second and third information voltage signals, wherein the first information voltage signal is applied in synchronism with the first scanning voltage signal and, in combination therewith, provides a voltage sufficient to erase a corresponding one of the pixels on the selected scanning electrode, wherein the second information voltage signal is selectively applied at a first selected level of either zero or a polarity opposite to that of the second scanning voltage signal in correspondence to a predetermined gradation in synchronism with the second scanning voltage signal, and wherein the third information voltage signal is applied,

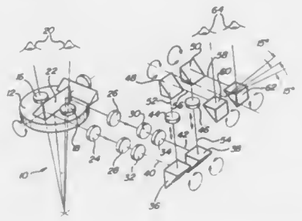
at a second selected level in synchronism with the third scanning voltage signal such that an average of the levels of the first, second and third information voltage signals is substantially equal to the predetermined level of the non-scanning voltage signal.

4,938,575

MICROSCOPE SYSTEM AND ATTACHMENT

Larry K. Kleinberg, Toluca Lake, and Douglas R. Mongeon, Orange, both of Calif., assignors to Storz Instrument Company, St. Louis, Mo.

Filed Sep. 30, 1988, Ser. No. 251,571
Int. Cl.[5] G02B *21/20*
U.S. Cl. 350—516 **20 Claims**



1. A microscope system for viewing an image from at least two viewing stations, one of the viewing stations being orthogonal to the other viewing station, said system comprising:

an objective lens common to at least two paths of light rays from the image to be viewed;

first prism means for re-directing at least one of the light rays from the objective lens in a direction orthogonal to the other of the light rays which travels to a first viewing station;

second prism means being rotatable about its optical axis for redirecting the orthogonal light ray to a second viewing station such that the second viewing station is maintained parallel to the image; and

means for compressing or stretching the path of said orthogonal light ray as said second prism means is rotated.

4,938,576

DEVICE FOR GENERATING AN OPTICAL COLLIMATING BEAM

Hans Stana, Oberkochen, and Werner Renner, Heidenheim, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Aug. 25, 1989, Ser. No. 398,646
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 3829707
Int. Cl.[5] G02B *17/00, 17/08, 27/00*
U.S. Cl. 350—574 **9 Claims**

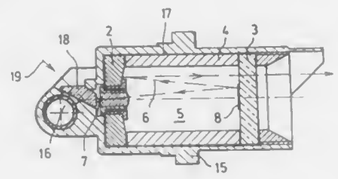
1. A device for generating an optical collimating beam having a defined angle with respect to a base when mounted thereon even in the presence of extreme mechanical and thermal loads, the device comprising:

a housing connected to the base in a form-tight manner;

collimating mark means arranged in said housing;

a mirror system including a plurality of optical components arranged in said housing to conjointly define a collimator defining an imaging beam path along which said collimator images said collimating mark means out to infinity;

at least one of said optical components being a concave mirror;



said concave mirror and the remaining ones of said optical components conjointly defining a space through which said imaging beam path extends;

a gaseous medium filling said space;

means for joining said components to form a compact unit; and,

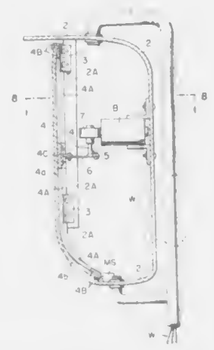
elastic means having permanent elasticity and being disposed between said optical components and said housing for holding said components in said housing.

4,938,577

REAR-VIEW MIRROR PIVOTING APPARATUS FOR USE IN A VEHICLE

Masahiko Sugita, 8-24, Atago 3-chome, Niiza-shi, Saitama Prefecture, Japan 352

Filed Oct. 30, 1989, Ser. No. 428,910
Claims priority, application Japan, Mar. 8, 1989, 1-26328[U]
Int. Cl.[5] G02B *5/08*
U.S. Cl. 350—605 **1 Claim**



1. A rear-view mirror pivoting apparatus which reflects a dead angle portion generated in the direction in which a vehicle makes a turn, comprising:

a mounting arm mounted on a car body;

a mirror box supported on said arm;

a mirror pivotally supported by hinges on an open side of said mirror box;

a crank arm whose one end is supported on said mirror, the other end thereof being pivotally supported by a crank piece;

an electric motor with a reduction gear to rotate said crank piece;

insulated capsulated wires through which current is supplied from a power source to said motor by way of a winker switch provided on said car body; and

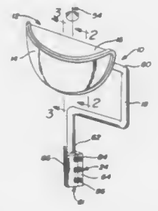
a mirror returning switch to short-circuit said winker switch only when said mirror is pivoted.

4,938,578

TRUNCATED MIRROR SURFACE

William P. Schmidt, Rockwood, and Frank D. Hutchinson, New Boston, both of Mich., assignors to Mirror Lite Company, Rockwood, Mich.

Filed Oct. 6, 1988, Ser. No. 254,027
Int. Cl.[5] G02B *5/10*
U.S. Cl. 350—629 **19 Claims**



15. A mirror mounting assembly for mounting a mirror assembly to a vehicle, the mirror mounting assembly having a center of gravity, the vehicle having a front, two sides, and a steering wheel, the mirror assembly enabling the driver to have a complete field of view about the front and two sides of the vehicle, the assembly comprising:

(a) a rigid, tubular member having two ends, the tubular member having a plurality of radical bends therein, the tubular member damping vibration of the mirror assembly during movement of the vehicle, the tubular member extending above the fender in such a manner that the reflective surface is visible to the driver when the driver is seated in a position behind the steering wheel;

(b) a mirror having a reflective surface with a generally convex shape throughout, the reflective surface being essentially in the shape of one-fourth of an ellipsoid, the top portion of the ellipsoid being truncated;

(c) means for attaching the first end of the tubular member to the mirror assembly, the attaching means including a first base mounting member being affixed to the mirror assembly, and a cover member being secured to the base member, there being a first longitudinal bore between the first cover member and the first base member which accepts and secures the rigid tubular member therebetween, the first cover member being adjustable relative to the first base member to enable a repositioning of the tubular member therebetween; and

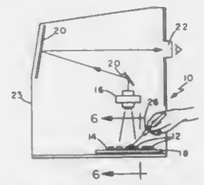
(d) means for mounting the second end of the tubular member to the vehicle, the mounting means including a second base mounting member being affixed to the vehicle, and a second cover member being secured to the second base member, there being a second longitudinal bore between the second cover member and the second base member which accepts and secures the rigid tubular member therebetween, the second cover member being adjustable relative to the second base member to enable a repositioning of the tubular member therebetween.

4,938,579

SIDE-VIEWING MIRROR DEVICE

Paul S. Kempf, P.O. Box 690, Solana Beach, Calif. 92075, assignor to Paul S. Kempf and Pilar Moreno Kempf Family Trust

Continuation-in-part of Ser. No. 53,813, May 26, 1987, Pat. No. 4,795,237. This application Aug. 8, 1988, Ser. No. 235,492
Int. Cl.[5] G02B *5/08*
U.S. Cl. 350—640 **24 Claims**



1. A mirror device for use with a magnifying optical instrument to provide a side view of an object to be examined, the device comprising:

a front surface mirror having a reflective front surface and a non-reflective rear surface, the mirror having a lower straight edge for placing against a flat surface and the reflective front surface extending up to the straight edge;

an edge portion of the rear surface of the mirror adjacent the straight edge being beveled to maintain the straight edge in contact with an object plane when the plane of the mirror is inclined at an angle to the vertical; and

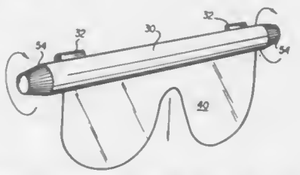
a handle member having an elongate handle portion for gripping by a user at one end, and a shaft rigidly secured to the handle portion at one end and to the mirror at the opposite end with the axis of the handle portion being at an angle less than 90 degrees to the lower straight edge of the mirror, so that when the mirror is placed with its lower straight edge against a surface the handle portion projects upwardly at an angle to that surface.

4,938,580

FLEXIBLE OPTICAL FILTER STORAGE SYSTEM

Michael A. Stang, 26 Stockmill Rd., Apt. F, Pikesville, Md. 21208

Filed May 5, 1989, Ser. No. 347,724
Int. Cl.[5] G02C *9/00*
U.S. Cl. 351—47 **19 Claims**



1. A flexible optical filter storage system adapted to be releasably coupled to an upper section of an eyeglass frame having a pair of lenses, comprising:

(a) a unitary housing extending substantially along a longitudinal axis;

(b) a flexible filter member reversibly extendable from within said housing, said filter member forming a one-piece singular member being displaceable over and retractable from both of said eyeglass lenses concurrently;

(c) coupling means for releasably coupling said housing to said upper portion of said eyeglass frame; and,

(d) means for extension and retraction of said flexible filter member from within said housing including:

(1) a longitudinally extended roller member rotatably mounted within said housing and extending coaxial said

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longitudinal axis for storage of said flexible filter member thereon, and;

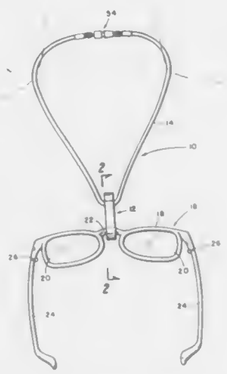
(2) rotative displacement means coupled to said roller member for extension of said flexible filter member responsive to said rotative displacement in a first direction and for retraction of said flexible filter member responsive to said rotative displacement in a second direction, said rotative displacement means including drive means disposed within said housing for rotating said roller member responsive to a linear displacement of a knob member coupled thereto.

4,938,581

HOLDER FOR USE WITH EYEWEAR

John Trickel, Tulsa, Okla., assignor to Allen D. West, Tulsa, Okla.

Filed Aug. 7, 1989, Ser. No. 390,405
Int. Cl.[5] G02C *3/00*
U.S. Cl. 351—156 **6 Claims**



1. A holder for use with eyewear of the type worn on the face of the user having spaced apart lens portions connected by a nose portion, in which the eyewear when not in use is conveniently suspended from the users neck, comprising:

a member of flexible material having opposed generally paralleled sides, a top and an external peripheral surface, and having a cutout therein providing communication with the member external peripheral surface and having an unlocked mode providing an opening adjacent the top to receive the nose portion of eyewear therein whereby the nose portion is loosely received in said cutout, and providing a locked mode wherein an eyewear nose portion is surrounded by the member;

a cord of length to loop around the neck of the user; and

means of attaching said cord to said member.

4,938,582

CHROMO THERAPY DEVICE

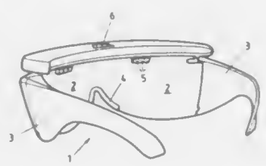
Michael J. Leslie, 99 Mary Street, Cygnet, Tasmania, Australia

Filed Dec. 22, 1988, Ser. No. 288,982
Claims priority, application Australia, Dec. 24, 1987, PI6092
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—158 **16 Claims**

1. A chromo therapy device ot stimulate the retina of the eye with certain light frequencies, said device comprising

a plurality of light emitting diodes each emitting a different light frequency to project their light onto a screen in front of the eyes, and

means to select the light frequency depending on the therapy required, said screen being worn by the user and positioned immediately in front of the eyes to exclude ambient light thereform.

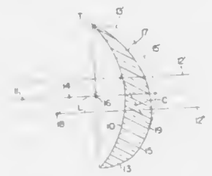


4,938,583

CONTACT LENS AND METHOD OF MAKING SAME

Gregory N. Miller, 11 Bernard Ave., Toronto, Ontario, Canada M5R-1R3

Continuation of Ser. No. 296,339, Jan. 9, 1989, abandoned, which is a continuation of Ser. No. 869,728, Jun. 2, 1986, abandoned. This application Sep. 5, 1989, Ser. No. 403,167
Int. Cl.[5] G02C *7/04, 7/06;* B24B *1/00*
U.S. Cl. 351—161 **6 Claims**



1. The method of making a bifocal contact lens usable by presbyopic patients which comprises the steps of:

a. providing a lens blank having a concave posterior surface shaped in conformity with a patient's cornea to define an optical axis;

b. rotating the lens blank about an axis of rotation substantially conicidental with the optical axis as defined by the posterior surface;

c. cutting a convex first corrective surface on the anterior surface of the lens blank while the lens blank is being rotated about the axis of rotation and until the first corrective surface forms substantially the entirety of the anterior surface, the first corrective surface providing a power for the lens conforming with the nearest distance correction of the patient's prescription and being centered on the axis of rotation;

d. shifting the lens blank perpendicularly to the axis of rotation to offset the lens blank parallel to the axis of rotation and to define a second axis of rotation; and

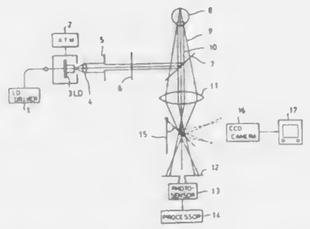
e. rotating the offset lens blank about said second axis of rotation and cutting a convex second corrective surface on the anterior surface of the offset lens blank to thin the lens eccentrically by removing some of the first corrective surface while leaving a first corrective surface which is of crescent shape, the second corrective surface being of greater radius than the first corrective surface to form therewith substantially the entirety of the anterior surface of the lens, the lens being devoid of ballasting other than that provided by the eccentric thinning of the lens.

4,938,584

OPHTHALMIC DIAGNOSTIC METHOD AND APPARATUS

Masakazu Suematsu, Hino; Yoshihisa Aizu, Machida, and Akihiro Fujita, Hino, all of Japan, assignors to Kowa Company Ltd., Japan

Filed Jun. 9, 1989, Ser. No. 364,257
Claims priority, application Japan, Jun. 16, 1988, 63-146779
Int. Cl.[5] A61B *2/10*
U.S. Cl. 351—211 **13 Claims**



1. An ophthalmic diagnostic method for measuring a distance between the corneal surface and the eye fundus of an eye undergoing ophthalmic examination, comprising the steps of:

projecting a beam of monochromatic coherent light at the eye;

measuring a phase difference between two light waves reflected by the corneal surface and the eye fundus which is produced depending upon the distance therebetween along which the two light waves travel;

varying the wavelength of the coherent light within a predetermined range; and

measuring an amount of change in phase difference caused by the variation in wavelength to determine the distance between the corneal surface and the eye fundus.

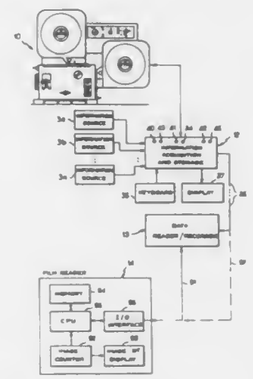
4,938,585

METHOD AND APPARATUS FOR HIGH SPEED RECORDING OF IMAGES AND OF INFORMATION ASSOCIATED WITH THE IMAGES

Bernard Weiffenbach, and Bernard Gizard, both of Paris, France, assignors to Societe Francaise d'Appareillage de Telecommandes, Paris, France

Continuation of Ser. No. 149,366, Jan. 28, 1988, abandoned. This application Apr. 10, 1989, Ser. No. 334,772
Claims priority, application France, Feb. 6, 1987, 87 01451
Int. Cl.[5] G03B *21/50*
U.S. Cl. 352—92 **8 Claims**

1. A method of high speed recording of images and of information associated with the images by means of a motion picture camera for high speed shooting, the camera being equipped with an image pulse generator, and the method comprising the following steps during shooting: acquiring and storing the information associated with the images in a large capacity fast access memory at the image rate under the control of the image pulses generated by said camera image pulse generator; and electro-optically writing at least one reference signal on the motion picture film beside the image corresponding to the first stored information, whereby each piece of information recorded in said memory may be subsequently read and precisely associated with a respective image or picture frame of said film to which it is related.

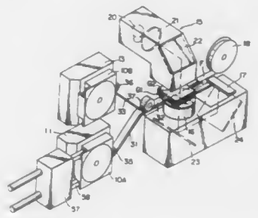


4,938,586

INFORMATION PROJECTING APPARATUS

Yoshiko Hirose, Yokohama; Noboru Koumura, Narashino; Tadashi Sato, Kokubunji; Shigeru Sugita, Sayama, and Yasutoshi Sugita, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 799,095, Nov. 18, 1985, abandoned. This application Mar. 4, 1988, Ser. No. 168,602
Claims priority, application Japan, Dec. 7, 1984, 59-258564; Dec. 13, 1984, 59-189444[U]; Dec. 13, 1984, 59-275548
Int. Cl.[5] G03B *23/08*
U.S. Cl. 353—26 A **25 Claims**



1. An information handling apparatus for use with a plurality of cartridges each containing an information recording medium, said apparatus comprising:

information processing means for processing information on information recording media contained in the cartridges;

first and second cartridge holding means for holding individual cartridges;

first and second information transfer means for transferring the recording media between cartridges held by said first and second holding means, respectively, and said information processing means;

means for alternatively operating said first and second transfer means;

cartridge storing means for storing a plurality of the cartridges;

cartridge transporting means for selectively transporting individual cartridges from said cartridge storing means to

said first cartridge holding means or said second cartridge holding means;

detecting means for detecting whether each of said first and second cartridge holding means holds a cartridge; and

control means for controlling said cartridge transporting means on the basis of an output of said detecting means, said control means inhibiting said cartridge transporting means from operating when said detecting means detects a cartridge in each of said first and second cartridge holding means, and releasing the inhibition of operation to transport the cartridge to said cartridge holding means when said detecting means detects the absence of a cartridge in at least one of said first and second cartridge holding means.

4,938,587

FOLDABLE OPTICAL APPARATUS

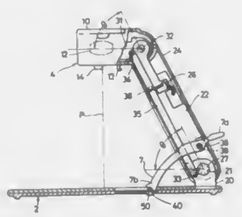
Kenta Namioka; Tokuji Sato; Minoru Shiiba, all of Tokyo; Fumio Kikutzugi, and Hirofumi Kino, both of Osaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Matzushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed May 16, 1989, Ser. No. 352,542

Claims priority, application Japan, May 16, 1988, 63-64223[U]; May 16, 1988, 63-64224[U]; May 16, 1988, 63-64225[U]

Int. Cl.[5] **G03B** *21/00*

U.S. Cl. 353—66 **11 Claims**



1. A foldable optical apparatus comprising:

a base table having, a stage to bear thereon an original;

support means comprising at least a power supply unit and mounted on said base table for vertical swinging movement between a lowered position covering said stage and a raised position;

an image forming unit including at least an image forming optical system, and pivotally mounted on said support means for forming an image in a predetermined plane of an original disposed on said stage; and

linkage means interconnecting said image forming unit and said support means for causing a pivotal movement of said image forming unit relative to said support unit upon movement of said support means between said raised and lowered positions, thereby positioning said image forming unit above said stage when said support means is in said raised position and flush with said supporting means and covering a portion of said stage when said support means is in said lowered position.

4,938,588

DISTANCE DETECTING APPARATUS

Toshihiko Taniguchi, Ikoma, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed Sep. 23, 1988, Ser. No. 248,368

Claims priority, application Japan, Sep. 24, 1987, 62-239336

Int. Cl.[5] **G01C** *3/00, 5/00;* **G03B** *3/00*

U.S. Cl. 356;1 **20 Claims**

1. A distance detecting apparatus comprising:

a light receiving sensor for outputting a first photo-current and a second photo-current corresponding to an incident position of light reflected from an object onto the light receiving sensor;

photo-current conversion means including an integrating capacitor, for converting said first and second photo-currents into a time-based signal by charging or discharging said integrating capacitor utilizing a first control-current and a second control-current corresponding to a level of said first and second photo-currents, respectively;



current control means connected in parallel with the integrating capacitor for controlling charging or discharging of said integrating capacitor without changing a ratio of the amplitude of the first control-current over the amplitude of the second control-current; and

coomparison means for comparing said time-based signal to a reference voltage and outputting comparison data indicative of said comparison.

4,938,589

SENSOR WITH INTEGRATED SIGNAL PROCESSING FOR ONE- TO THREE-DIMENSIONAL POSITIONING

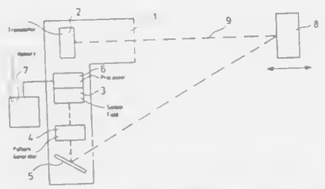
Hans-Hellmut Breithaupt, Kassel, Fed. Rep. of Germany, assignor to F. W. Breithaupt & Sohn GmbH & Co. KG., Kassel, Fed. Rep. of Germany

Filed Jan. 20, 1988, Ser. No. 145,864

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1987, 3703904

Int. Cl.[5] **G01C** *1/00, 1/10;* **G01D** *5/36*

U.S. Cl. 356—1 **15 Claims**



15. A sensor with integrated signal processing, comprising housing means, a radiation source arranged inside said housing means, said radiation source directing a beam to an object at which said beam is reflected; optical elements located at a determined distance from said radiation source; a pattern generator, said reflected beam being directed to said pattern generator by said optical elements; a sensor field, said beam being passed on from said pattern generator to said sensor field; and evaluation means, said sensor field including an array of distinguishable, measurable points, said evaluation means being connected to the sensor field and determining a desired measurement variable in response to an electrical state of the measurable points, wherein said pattern generator is constructed such that a light spot imaged by said optical elements is transformed into at least one fine line which is imaged obliquely on said sensor field to thereby enhance the capability of resolution by a factor depending on a number of rows in said array.

4,938,590

LIQUID LEVEL INDICATOR USING LASER BEAM

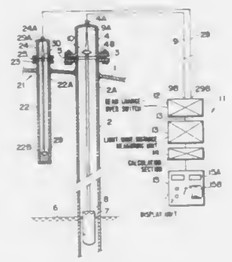
Sadao Ishida, Urawa, Japan, assignor to Nitto Machinery Co., Ltd., Tokyo and Tadahiko Kuno, Kanagawa, both of, Japan

Filed Aug. 10, 1988, Ser. No. 230,552

Claims priority, application Japan, Aug. 13, 1987, 62-202173

Int. Cl.[5] **G01C** *3/08;* **G01F** *23/00, 23/30*

U.S. Cl. 356—5 **7 Claims**



1. An optical liquid level indicator, comprising:

(a) a laser generator for generating a laser beam pulse;

(b) a first optical guide means for guiding the laser beam pulse;

(c) a second optical guide means for guiding the laser beam pulse;

(d) light beam change-over switch means, connected between said laser generator and said first and second optical guide means, for selectively guiding the laser beam pulse generated by said laser generator through one of said first and second optical guide means;

(e) a float provided with a reflecting means for reflecting incident laser beams in a direction parallel to the incident beams, said reflecting means floating on a liquid level within a pressure vessel;

(f) a first lens system associated with said first optical guide means, for guiding the laser beam pulse to and from said float reflecting means;

(g) a reference scale provided with reference reflecting means disposed in an upper space above the liquid level within said vessel;

(h) a second lens system associated with said second optical guide means, for guiding the laser beam pulse to and from said reference reflecting means;

(i) a liquid level indicating section, coupled to said laser generator: (1) for calculating a liquid level on the basis of travel time of the laser beam pulse emitted from said laser generator and reflected from said float reflecting means through said first optical guide means and said first lens system; (2) for calculating a reference distance on the basis of travel time of the laser beam pulse emitted from said laser generator and reflected from said reference scale reflecting means through said second optical guide means and said second lens system; and (3) for correcting an error, due to pressure, of the calculated liquid level on the basis of the calculated reference distance.

4,938,591

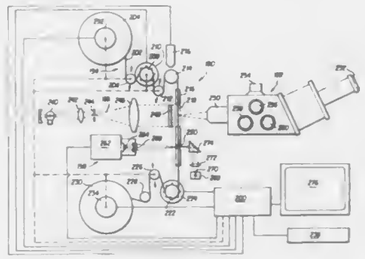
METHOD AND APPARATUS FOR ELECTRONIC AND VISUAL IMAGE COMPARING

Norman G. Anderson, Rockville, Md., and Norman L. Anderson, Washington, D.C., assignors to Large Scale Biology Corporation, Rockville, Md.

Division of Ser. No. 49,982, May 15, 1987. This application Nov. 8, 1988, Ser. No. 273,702

Int. Cl.[5] **G01B** *11/00*

U.S. Cl. 356—73 **9 Claims**



1. An apparatus for electronically and optically comparing images on film, comprising:

film transport means for moving images on at least two strips of film into an optical viewing position and an electronic scanning position;

means for illuminating and projecting the images on each film at the viewing position and the electronic scanning position; and

means for viewing the images at the viewing position in side-by-side and superimposed configuration;

electronic scanning means for capturing the images at the scanning position; and

means for storing the electronically captured images for image analysis and storage.

4,938,592

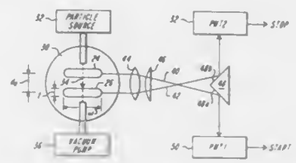
BEAM FORMING AND SENSING APPARATUS FOR AERODYNAMIC PARTICLE SIZING SYSTEM

Trent A. Poole, and Norman C. Ford, both of Amherst, Mass., assignors to Amherst Process Instruments, Inc., Amherst, Mass.

Filed Jul. 28, 1987, Ser. No. 78,857

Int. Cl.[5] **G01N** *15/14, 21/85*

U.S. Cl. 356—335 **22 Claims**



1. Apparatus for generating closely-spaced, substantially parallel first and second light beams in an image plane, each light beam having a relatively thin, elongated cross-sectional shape, comprising:

source means for generating an incident light beam;

means defining an aperture slit for establishing the shape of the first and second light beams;

a cylindrical lens for focusing the incident light beam on said slit defining means;

a diffraction grating positioned to convert the portion of the incident light beam passing through said aperture slit into diffracted beams in the zero order lobe and at least one first order lobe; and

a transfer lens spaced from said diffraction grating for forming said first and second light beams from said diffracted beams, said transfer lens being spaced from said aperture slit and said image plane so that in each of said first and second light beams said slit is imaged in said image plane.

4,938,593

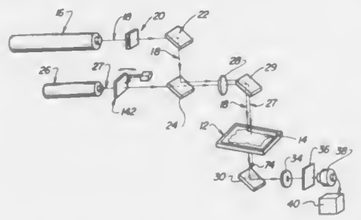
PHOTOTHERMAL DENSITOMETER FOR READING ELECTROPHORESIS GELS

Michael D. Morris, and Konan Peck, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 8,739, Jan. 30, 1987, abandoned. This application Aug. 10, 1988, Ser. No. 226,627

Int. Cl.[5] **G01J** *3/42*; **G01N** *21/41*

U.S. Cl. 356—344 **20 Claims**



1. A desitometer apparatus for evaluating electrophoresis gel samples for characterizing a presence of a dye within said sample comprising:

means for emitting a heating beam for passing into said sample such that said dye absorbs energy from said heating beam, thereby locally heating said sample and generating a local index of refraction variation within said sample,

means for emitting a probe beam for passing through said sample,

translation means for causing said beams to sweep relative to said sample,

beam aiming means for offsetting said probe beam with respect to said heating beam along the direction of translation of said beams with respect to said sample so that said probe beam passes through an area of said sample a predetermined period of time after said area is subjected to said heating beam, and

detector means for evaluating the modification of said probe beam as said probe beam passes through said area, whereby said modification caused by said local index of refraction variations is related to the concentration of said dye within said sample.

4,938,594

ASYMMETRIC

George A. Pavlath, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 14, 1988, Ser. No. 257,749

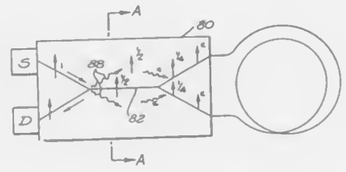
Int. Cl.[5] **G01B** *9/02*

U.S. Cl. 356—350 **32 Claims**

1. A device for guiding waves of electromagnetic energy which comprises

a substrate medium with one surface configured to hold and guide the electromagnetic waves;

at least one means for combining more than one guided electromagnetic wave into any reduced number of the guided electromagnetic waves on said configured surface; and



a means placed in the substrate medium for absorbing that energy radiated from the combined electromagnetic waves into the surrounding substrate medium.

4,938,595

DIFFRACTION PHOTOELECTRIC DISPLACEMENT MEASURING DEVICE

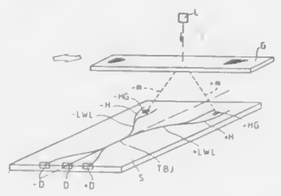
Olivier Parriaux, Lausanne, Switzerland, and Francois Cochet, Neuchatel, France, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 24, 1987, Ser. No. 77,190

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1986, 3625327

Int. Cl.[5] **G01B** *9/02*

U.S. Cl. 356—356 **9 Claims**



1. In a photoelectric displacement measuring device for measuring the relative positions of two objects, said device comprising a light emitting source and at least one movable diffraction grid which is perpendicular to the direction of emission of said light emission source, said grid creating at least two diffracted partial beam bundles which are brought into interference by means of optical elements, and the interfering partial beam bundles are converted into electric signals out-of-phase with each other, the improvement in which said device comprises at least two beam waveguides (+LWL, −LWL), means for coupling said (+LWL, −LWL), and a coupler (TBJ) for receiving said beam bundles transmitted by said beam waveguides (+LWL, −LWL), said coupler (TBJ) comprising an input area, an area for allowing said beam bundles to interfere, and an output area where signals produced which are out-of-phase with each other may be detected.

4,938,596

PHASE CONJUGATE, COMMON PATH INTERFEROMETER

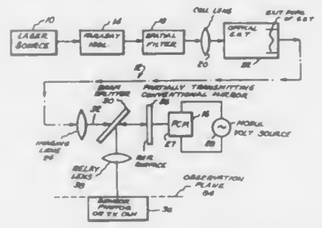
Daniel J. Gauthier; Robert W. Boyd; Robert Jungquist, all of Rochester, and Laurie L. Voci, Farmington, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Jan. 5, 1989, Ser. No. 293,900

Int. Cl.[5] **G01B** *9/02*

U.S. Cl. 356—360 **20 Claims**

1. An interferometer for characterizing a wavefront which comprises a partially reflective mirror (PRM) defined by a partially reflective surface on which said wavefront is incident and through which said waveform is transmitted without deflection from a path along which said wavefront propagates, a phase conjugate mirror (PCM) along said path on which said



waveform which is transmitted through said PRM is incident and from which the phase conjugate of said wavefront is reflected to form an interference pattern at said surface with the wavefront reflected by said PRM, and means for forming an image of said pattern.

4,938,597

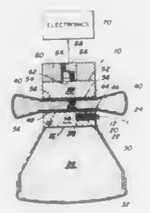
LIGHT RESPONSIVE MOTION SENSING DEVICE

John S. Gergely, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 21, 1988, Ser. No. 184,455

Int. Cl.[5] **G01P** *13/00, 15/00*

U.S. Cl. 356—373 **25 Claims**



1. A motion sensing device, comprising:

fluid means providing movement sympathetic to a moving force;

a light source secured for movement with said fluid means and directing a light output;

a pliable enclosure containing a dye solution juxtaposed to said light source whereby the dye solution is illuminated by said light output; and

photo-responsive detector means positioned adjacent said pliable enclosure and movable relative to said light source, said detector means providing an electrical output indicative of the illuminated dye solution and proportional to said movement.

4,938,598

METHOD AND APPARATUS FOR POSITION DETECTION ON REDUCTION-PROJECTION SYSTEM

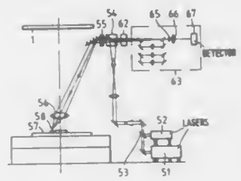
Nobuyuki Akiyama, and Yoshihiko Yamaoshi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1988, Ser. No. 200,911

Claims priority, application Japan, Jun. 5, 1987, 62-139740; Feb. 10, 1988, 63-27501

Int. Cl.[5] **G01B** *11/00*

U.S. Cl. 356—375 **12 Claims**



1. An apparatus, in a reduction-projection exposure apparatus, for reduction-projection position detection comprising:

illumination means for illuminating a registration mark on a specimen with at least three wavelengths of laser beams oscillated in an Ar laser and at least one wavelength which is different from said at least three wavelengths, of at least one laser beam oscillated in a He-Ne laser passed through a reduction-projection lens;

an image forming optical system condensing, through the reduction-projection lens, reflected beams from the registration mark on the specimen illustrated by said illumination means and separating the beam into beams of at least four wavelengths, at least, out of said wavelengths, for forming images of the separated beams; and

image pick-up means for picking up the images, formed by said image forming optical system, thereby to detect the position of the registration mark.

4,938,599

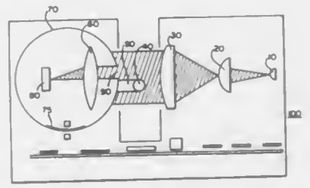
NON-CONTACT OPTICAL GAUGE

Kurt A. Goszyk, Washington Crossing, Pa., assignor to Contrologic, Inc., Norristown, Pa.

Filed Jun. 7, 1988, Ser. No. 203,433

Int. Cl.[5] **G01B** *11/08*

U.S. Cl. 356—387 **44 Claims**



1. A non-contact, device for measuring a dimension of an object comprising:

(a) storage means for memorizing a signature indicative of an error associated with measuring a known dimension;

(b) radiation source means for directing radiation upon said object;

(c) scanning means for receiving an image of said object produced by said radiation and for producing a signal responsive to said image, said scanning means comprising rotating drum means having an aperture therein disposed to pass nonlinearly through said image; and

(d) processing means for receiving said signal from said scanning means and for producing at least an output

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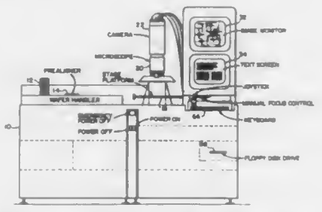
which is indicative of the dimension of said object, said processing means determining said output in relation to said signature.

4,938,600

METHOD AND APPARATUS FOR MEASURING REGISTRATION BETWEEN LAYERS OF A SEMICONDUCTOR WAFER

Stephen W. Into, Billerica, Mass., assignor to Interactive Video Systems, Inc., Concord, Mass.

Filed Feb. 9, 1989, Ser. No. 308,253
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 **14 Claims**



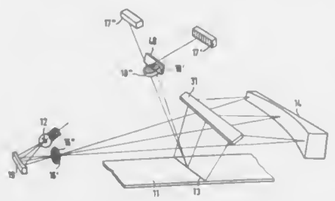
1. A method for measuring displacement between a first pattern and a second pattern on a workpiece, comprising the steps of:
positioning the workpiece relative to a measurement apparatus for measurement of said displacement alonq a prescribed measurement direction;
making a first measurement of displacement between the first pattern and the second pattern;
causing rotation of the workpiece and the measurement apparatus relative to each other by substantially 180° about an axis that is substantially parallel to the measurement direction;
making a second measurement of displacement between the first pattern and the second pattern; and
determining an actual displacement between the first pattern and the second pattern from said first measurement and said second measurement.

4,938,601

OPTICAL WEB MONITORING DEVICE WITH ROW CAMERAS WITH DIRECTED ILLUMINATION

Klaus Weber, Königsbronn, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Mar. 18, 1988, Ser. No. 169,704
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1987, 3709500
The portion of the term of this patent subsequent to Oct. 4, 2005, has been disclaimed.
Int. Cl.[5] G01N *21/86, 21/89*
U.S. Cl. 356—429 **13 Claims**



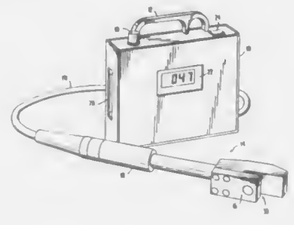
1. Optical web monitoring device with a diode row camera, characterised in that the imaged material strip is illuminated by means of two strip-like optical image forming elements (14', 15) via deflecting mirrors (32, 33) in such a way that the illuminating pupil (16) is imaged into the pupil of the observing objective (18) and this illuminating beam path is telecentric at the location of the illuminated material strip, with the second strip-like optical image forming element (15) being arranged at the distance of its focal length from the pupil of the observing objective (18), so that the observing beam path is also telecentric.

4,938,602

AUTOMATED PROCESS MONITORING

Joe T. May, and Edward A. Cassacia, both of Leesburg, Va., assignors to Electronic Instrumentation and Technology, Inc., Sterling, Va.

Continuation-in-part of Ser. No. 108,693, Oct. 15, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 329,293
Int. Cl.[5] G01N *21/85*
U.S. Cl. 356—435 **20 Claims**



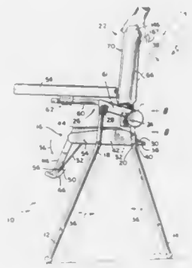
1. Instrumentation for measuring solution loading; comprising:
a probe with a light source and first and second photodetectors positioned in a measurement head section of said probe, said probe being of ruggedized construction for resisting the effects of caustic solutions and mechanical shock, said light source and said first photodetector being positioned on opposite sides of a channel in said measurement head with said first photodetector receiving transmitted light transmitted through a solution positioned in said channel, said second photodetector receiving incident light direct from said light source; and
a hand held housing connected to said probe by a flexible cable, said hand held housing including
(i) a computation means, said computation means connected to receive first and second signals indicative of said transmitted light and said incident light, respectively, from said first and second photodetectors for computing a negative logarithm of the radio of said first and second signals, said computation means outputting a third signal indicative of said negative logarithm;
(ii) a display mans, said display means connected to said computation means and responsive to said third signal for displaying a value proportional to said output signal, said value being presented in appropriate units chosen by an operator;
(iii) first and second operational amplifiers respectively connected between said first and second photodetectors and said computation means for amplifying said first and second signals generated by said first and second photodetectors;
(iv) first and second resistive feedback means respectively connected across said first and second operational amplifier for providing a zero adjustment calibration for said instrumentation;
(v) a third operational amplifier connected between said computation means and said display means for amplifying said third signal output from said computation means;
(vi) a third resistive feedback means connected across said third operational amplifier for providing a span adjustment calibration for said instrumentation; and
(vii) a battery and control means responsive to a switch for supplying battery power to said light source and said first and second photodetectors, said computation means, and said display means for a first predetermined period of time, said control means terminating the supply of battery power to said light source and said first and second photodetectors after a second predetermined period of time and freezing a display on said display means, said second predetermined period of time being of shorter duration than said first predetermined period of time, said computation means terminating battery power to said computation means and said display means at the expiration of said first predetermined period of time.

4,938,603

FOLDABLE HIGH CHAIR

Dennis M. Turner, North Columbus; Robert A. Schwartzkopf, and Donald L. Gerken, both of Columbus, all of Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Feb. 10, 1989, Ser. No. 310,069
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—16 **35 Claims**



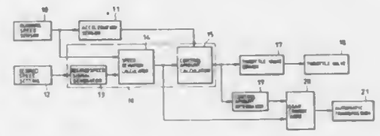
1. A foldable juvenile chair comprising
a seat,
a back,
a collapsible frame assembly movable between an unfolded use position and a folded storage position,
means for attaching each of the seat and back to the collapsible frame assembly for movement relative to the collapsible frame assembly during movement of said assembly between its use and storage positions so that the seat and back are aligned relative to one another in a chair-forming position to support an occupant seated therebetween in response to movement of the collapsible frame assembly to its unfolded use position,
means for locking the back and collapsible frame assembly together to block movement of the collapsible frame assembly from its unfolded use position toward its folded storage position so that the seat and back are fixed relative to one another in the chair-forming position, and
means for releasing the locking means to permit movement of the collapsible frame assembly from its unfolded use position to its folded storage position, the releasing means being connected to the locking means and the back and supported for movement relative to the back, the releasing means including means for automatically establishing a partly folded safety stop position of the collapsible frame assembly intermediate the unfolded use position and the folded storage position during movement of the collapsible frame assembly from its unfolded use position toward its folded storage position to aid in preventing inadvertent movement of the collapsible frame assembly to its folded storage position.

4,938,604

VEHICLE SPEED CONTROL DEVICE

Yasuo Naito, and Akihiko Mori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1988, Ser. No. 212,371
Claims priority, application Japan, Jun. 26, 1987, 62-160334
Int. Cl.[5] B60K *41/18*; G05D *13/62*
U.S. Cl. 364—426.04 **2 Claims**



1. A running speed control device for holding a running speed of a vehicle at a constant level, said device comprising:
a running speed detector for providing a running speed signal corresponding to said running speed;
an acceleration detector for receiving said running speed signal at a predetermined time interval to provide an acceleration signal;
means for setting a desired speed signal which corresponds to said desired constant speed level;
means for providing a speed deviation signal representing a speed deviation between said running speed and said constant speed level in response to said running speed signal and said desired speed signal;
means for providing a control signal based on said acceleration signal and said speed deviation signal;
driving force means responsive to said control signal to change a driving power of the vehicle such that the running speed becomes equal to the desired constant speed level;
means for integrating said control signal on a time basis to simulate a variation of said driving power; and
automatic transmission means for changing a gear ratio in response to said integrating means and said speed deviation signal.

4,938,605

APPARATUS AND METHOD FOR MIXING AND CONTINUOUS EXTRUSION OF A PLASTIC MASS

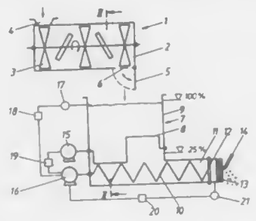
Reinhard Friedrich, Aidlingen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 31, 1988, Ser. No. 200,592
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720325
Int. Cl.[5] B28C *7/04, 7/14*
U.S. Cl. 366—76 **16 Claims**

1. An apparatus for the mixing and continuous extrusion of a plastic mass comprising a first stage including an intermittently operating mixer to which starting materials are fed batchwise and a second stage including extruder means supplied at intervals by the intermittent mixer and comprising a mixing and kneading device including mixing and kneading blades continuously rotating in a trough, an extrusion screw extending in said trough beneath said blades and an extrusion cylinder projecting from said trough and into which said extrusion screw extends, drive means for continuous drive of the

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extrusion screw and control means connected to said drive means for operating the same to maintain an amount of material in said trough representing at least 25% of the volume of the trough.



4,938,606

METHOD OF AND AN APPARATUS FOR PRODUCING A WATER-IN-OIL EMULSION

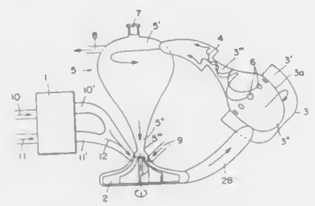
Gerold Kunz, Zürich, Switzerland, assignor to Zagol AG, Switzerland

Filed Oct. 5, 1987, Ser. No. 104,372

Claims priority, application Switzerland, Oct. 8, 1986, 4013/86; Jul. 13, 1987, 2664/87

Int. Cl.[5] B01F *15/02, 3/08*

U.S. Cl. 366—134 **9 Claims**



1. An apparatus for producing a water-oil emulsion for use in an emulsion-consuming device, said apparatus comprising:

a dosing means for providing separate dosed quantities of water and oil in predetermined quantity ratios,

a mixing chamber for forming the water-oil emulsion having a tangential inlet and an axial, funnel-like narrowing outlet,

a first connecting line extending between said dosing means and the tangential inlet of said mixing chamber and in which the separate dosed quantities of water and oil are united,

a conveying means located in said connecting line,

a storage container which includes a first outlet connected to said first connecting line on a suction side of said conveying means and a second outlet for supplying the water-oil emulsion to an emulsion-consuming device, and

a second connecting line connecting the outlet of said mixing chamber with said storage container, said second connecting line including an expansion chamber to which the outlet of said mixing chamber is connected.

4,938,607

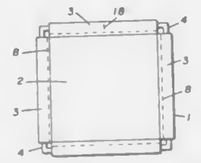
SACK-FORMING SHEET

Patrick W. Kelley, 311 Cook St., Hackettstown, N.J. 07840

Filed Aug. 17, 1987, Ser. No. 86,404

Int. Cl.[5] B65D *30/00*

U.S. Cl. 383—4 **9 Claims**



1. A flat-lying, flexible rectangular thermoplastic sheet having on each of its four sides a hem of a length less than the length of said side, wherein each of said hems has a continuous tape segment extending therein, wherein opposing segments are parallel and adjacent segments are perpendicular to each other, wherein each of said segments intersects adjacent segments and is fused to adjacent segments at the intersection thereof to form a continuous draw tape adapted to forming said sheet into a sack wherein the length of said draw tape is less than the peripheral length of said sheet.

4,938,608

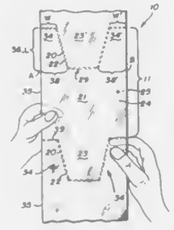
DOUBLE-SECTION PLASTIC PRODUCE BAG

Daniel Espinosa, 4425 Lonardo Ave., San Jose, Calif. 95118

Continuation-in-part of Ser. No. 185,978, Apr. 25, 1988. This application Dec. 18, 1989, Ser. No. 452,215

Int. Cl.[5] B65D *30/22, 33/06*

U.S. Cl. 383—7 **4 Claims**



1. A dual-section produce and bulk foods bag of ultrathin plastic formed as a tube flattened to form a dual-layered sheet having parallel side margins without side pleats, comprising in operative combination:

(a) individual dual-section bags defined in a sequential series in said tube by adjacent parallel scoring and heat sealing lines;

(b) each of said bags having a lower bag section with a closed bottom end and opposed closed sides formed by a continuous heat seal;

(c) said lower section closed sides being spaced inwardly from said parallel tube side margins and oriented at an angle thereto to define a pair of opposed, spaced trapezoidal side strap members between said lower section sides and said tube parallel side margins;

(d) an upper bag section having a bottom end, opposed closed sides coordinate with said tube parallel side margins, and an open upper end;

(e) said upper bag section bottom having a pair of opposed closed segments, and an opening transverse to said bag sides in communication with and coextensive with said upper open end of said lower bag section;

(f) said transverse opening of said upper bag section bottom comprising 50-60% of the width of said tube;

(g) said upper bag section upper end terminating on opposed sides thereof in said trapezoidal side strap members;

(h) said trapezoidal side strap members together having a base width comprising from 50–60% of the width of said tube at said transverse upper bag section bottom opening, and said trapezoidal members together having a top width comprising 40-50% of the width of said tube;

(i) said trapezoidal side members and said transverse upper bag section top opening being formed by scores spaced from said continuous heat seal line that forms a lower bag section of a next adjacent bag;

(j) said trapezoidal strap side members being of sufficient length to form opposed spaced tieable straps for closing and carrying said bag when filled with produce; and

(k) said lower bag section being smaller than said upper bag section, said lower bag section being from about 10 to about 40% of the volume of the upper bag section to permit retention of a plurality of small articles or a few larger articles without damage from being loose in an oversize bag, and said upper bag section permitting retaining additional ones of said larger articles in addition to, or separate from, said smaller articles.

4,938,609

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS

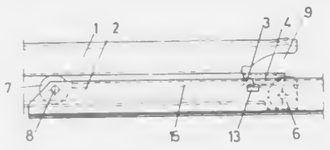
Klaus Brüstle, Lauterach, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jul. 19, 1989, Ser. No. 383,157

Claims priority, application Austria, Jul. 29, 1988, 1927/88

Int. Cl.[5] F16C *29/10;* **A47B** *88/00*

U.S. Cl. 384—21 **10 Claims**



1. A pull-out guide assembly for use on each of opposite sides of a drawer for guiding the movement of the drawer into and out of the body of an article of furniture, said assembly comprising:

a supporting rail to be mounted on a respective side of the body of the article of furniture;

a pull-out rail to be mounted on a respective side of the drawer, said pull-out rail including a horizontal running flange and a rear end;

a center rail having a forward end, a central horizontal flange and a lower vertical flange extending downwardly from said central horizontal flange, said center rail being mounted between said supporting and pull-out rails with said central horizontal flange above said running flange with a gap therebetween;

supporting rollers mounted on said rails for enabling relative longitudinal movement therebetween and including a first roller mounted on said lower vertical flange of said center rail adjacent said front end thereof for rolling contact with the lower surface of said horizontal running flange of said pull-out rail;

a recess formed in said front end of said center rail including said central horizontal flange thereof at a position above said first roller;

a stop member operable between said pull-out rail and said center rail for limiting the extent of longitudinal movement of said pull-out rail relative to said center rail in a direction of extraction of said pull-out rail from said center rail; and

a latch member mounted on said pull-out rail for reducing the vertical dimension of said gap and to enable, when said pull-out rail is moved to a maximum extraction position relative to said center rail as limited by said stop member, said pull-out rail to be retained on or removed from said center rail, said latch member comprising a slide member mounted on said pull-out rail at a position to be adjacent said first roller and below said recess when said pull-out rail is in said maximum extraction position, said slide member being movable longitudinally relative to said pull-out rail between a removal position, whereat said pull-out rail may be lifted and withdrawn over said first roller from said center rail through said recess, and a retaining position, whereat said slide member blocks or restricts said recess to prevent lifting and withdrawal of said pull-out rail over said first roller from said center rail through said recess.

4,938,610

ROLLING CONTACT DEVICE

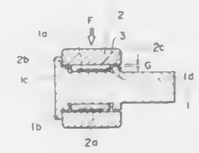
Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 331,129

Claims priority, application Japan, Mar. 31, 1988, 63-43328[U]

Int. Cl.[5] F16C *21/00, 19/52*

U.S. Cl. 384—126 **3 Claims**



1. A rolling contact device comprising:

a shaft having an outer track surface;

an outer ring surrounding said shaft and having an inner track surface;

rolling elements disposed between said shaft and said outer ring in a relationship spaced apart from each other circumferentially of said shaft, the outer peripheral surface of said outer ring being adapted to be in rolling contact with a track surface of an element of an apparatus;

an at least one abutting portion provided on each of said shaft and said outer ring;

the abutting portions on said shaft and said outer ring being radially opposed to each other with a small gap defined therebetween, and being arranged such that, when a radial load greater than a predetermined value acts on said outer ring, the abutting portions may abut against each other, thereby reducing radial load acting on contact portions among said track surface of said outer ring, said rolling elements and said track surface of said shaft;

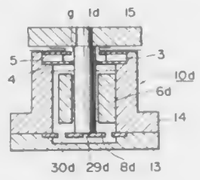
wherein said gap is greater than the sum of a radial elastic deformation of said outer ring caused by a maximum radial load applied to the outer ring during an usual operation of the device and an allowable minimum thickness of a lubricant oil film existing between the abutting portion of said shaft and the abutting portion of said outer ring, and wherein said gap is smaller than an amount of radial elastic deformation of said outer ring, the amount of the latter radial elastic deformation corresponding to that attainable under the assumption that said abutting portions are not provided and a basic static nominal load is applied to said outer ring.

4,938,611

BEARING APPARATUS

Katsutoshi Nii, Hitachi; Kazuhiko Kawaike, Katsuta; Hiroo Hiroyama, and Satoshi Uno, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1989, Ser. No. 368,836
Claims priority, application Japan, Jun. 22, 1988, 63-152333
Int. Cl.[5] F16C *33/82, 32/06*
U.S. Cl. 384—133 20 Claims



1. A bearing apparatus comprising a housing formed of a non-magnetizable material and having a bottom portion;

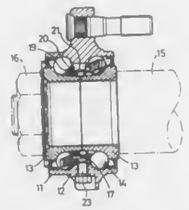
a fluid lubricating type radial bearing means coaxially disposed with respect to said housing and having a magnetic fluid sealing section and a radial bearing section; a thrust bearing means provided at the bottom portion of said housing; and a rotating shaft of a permeable material rotatably supported by said radial bearing means and said thrust bearing means so as to extend through said radial bearing means; said magnetic fluid sealing section being disposed on and open side of said housing with a predetermined spacing away from said radial bearing section whereby a space is provided between said magnetic fluid sealing section and a liquid surface of fluid lubricant filled in said radial bearing section.

4,938,612

BEARING ASSEMBLY WITH WHEEL REVOLUTION DETECTOR

Tsuneo Yamada, Kuwana, Japan, assignor to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Filed May 16, 1989, Ser. No. 352,593
Int. Cl.[5] F16C *19/52*
U.S. Cl. 384—446 2 Claims



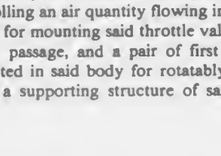
1. A bearing assembly with a wheel revolution detector, said bearing assembly comprising an outer ring, a pair of inner rings mounted in said outer ring, and a plurality of rolling elements interposed between said outer ring and said inner ring; said revolution detector comprising a multipolar magnetic pulse ring of ferromagnetic material fixedly mounted on the outer periphery of one of said inner rings and a sensor mounted on said outer ring at a position opposite to said pulse ring, said pulse ring comprising a mounting portion for fixedly mounting to the outer periphery of said one of said inner rings, an uprising portion extending radially and outwardly from one end of said mounting portion, and a flange portion extending from the outer end of said uprising portion in parallel with and in the opposite direction to said mounting portion, said flange portion having its outer surface magnetized into a multipolar magnet.

4,938,613

MOLDABLE PLASTIC BEARING BALL RETAINER

Patrick M. Griffin, Pontiac, Mich., and Frederick E. Lederman, Sandusky, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1989, Ser. No. 383,682
Int. Cl.[5] F16C *33/38*
U.S. Cl. 384—526 2 Claims



1. A moldable plastic bearing ball retainer, comprising,

a plurality of generally C shaped ball retention pockets, each of said pockets having a base with a predetermined radial thickness and a pair of flexible ball retention arms extending axially up from said base with a predetermined axial height,

a plurality of connector bars joining said pocket bases together in a circumferentially spaced array about an axis, each connector bar being sufficiently stiff to prevent said pocket bases from moving circumferentially relative to one another as a ball is forced between said retention arms, but having an axial height sufficiently less than said retention arms so as to leave a sufficient circumferential gap between adjacent retention arms of adjacent pockets so as to allow said adjacent retention arms to flex freely relative to one another as a complement of balls is forced into said retention pockets, each said connector bars further having a radial thickness less than said pocket base thickness, and,

a generally V shaped bridge member spanning each circumferential gap between said adjacent retention arms, each bridge member sloping down to said adjacent retention arms from an apex hinge point located axially above a respective connector bar, thereby guiding said bearing balls to said pockets while allowing said retention arms to flex freely, each bridge member further occupying only radial space unoccupied by said respective connector bar, whereby said retainer may be integrally molded by a single pair of mold halves that part along said axis.

4,938,614

AIR CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Kaneo Imamura, and Kazuaki Koyanagi, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Division of Ser. No. 432,913, Nov. 7, 1989. This applicatioo Feb. 15, 1990, Ser. No. 480,550
Claims priority, applicatioo Japan, Dec. 10, 1988, 1-160487[U]; Aug. 22, 1989, 64-97580[U]
Int. Cl.[5] F16K *1/22*
U.S. Cl. 384—537 1 Claim

1. In an air control device including a body, an air passage formed in said body, a throttle valve disposed in said air passage for controlling an air quantity flowing in said air passage, a throttle shaft for mounting said throttle valve and extending across said air passage, and a pair of first and second ball bearings mounted in said body for rotatably supporting said throttle shaft; a supporting structure of said throttle valve comprising:

an inner ring of said first ball bearing engaged by interference fit with said throttle shaft;

an outer ring of said first ball bearing engaged by clearance fit with said body;

an annular groove formed on an outer circumference of said outer ring of said first ball bearing;

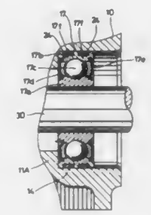
a ring member fitted in said annular groove of said outer ring and engaged by interference fit with said body, said ring member being formed of a material having a thermal expansion rate equal to or near that of said body;

a shoulder formed in said body;

a stopper engaged by interference fit with said body;

an inner ring of said second ball bearing engaged by clearance fit with said throttle, shaft; and

an outer ring of said second ball bearing engaged by clearance fit with said body, said outer ring being fixedly sandwiched between said shoulder and said stopper.

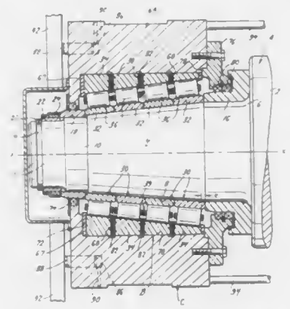


4,938,615

ROLL NECK BEARING

Mark E. Baker, Stark County, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Oct. 26, 1989, Ser. No. 427,176
Int. Cl.[5] F16C *33/36, 43/04*
U.S. Cl. 384—571 20 Claims



1. A bearing assembly for supporting a shaft having a neck and a body, said bearing assembly comprising: a cone, formed as a single element or multiple elements, fitted over the neck and having outwardly presented tapered raceways, all of which taper downwardly away from the body of the shaft, the cone raceways being progressively greater in size so that each raceway beyond the smallest is at its small end at least as large as the large end of that raceway which precedes it; a plurality of cups encircling the cone and having tapered raceways presented inwardly toward, but spaced outwardly from, the raceways of the cone and being inclined in the same direction as the raceways of the cone, there being a separate cup raceway for each cone raceway; tapered rollers arranged in circumferential rows between the raceways of the cups and cone, such that the rollers along their sides contact the raceways of the cone and cups, there being a separate row of tapered rollers within each cup; a major rib located in a fixed position at the end of each cup and projecting inwardly past the large diameter end of the raceway for the cup to provide a surface against which the large diameter ends of the rollers bear; a housing surrounding and containing the cups; clamp means on the housing for clamping the cups securely together so that they cannot shift relative to each other in the axial direction; and means for exerting an axially directed force on the housing, with the force being directed generally toward the body of the shaft so as to maintain the rollers seated against the raceways of the cone and cups.

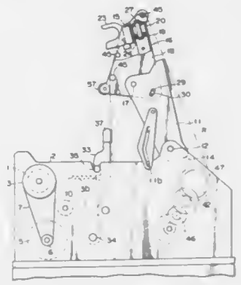
14. A process for supporting a mill roll having a roll body and roll necks at the end of the roll body, said process comprising: installing a cone of one or multiple elements over each roll neck, with the cone having outwardly presented raceways which taper downwardly away from the roll body; grinding the cone along its raceways while it is on the roll neck so that the raceways have a common center which is coincident with the axial center of the roll neck on which the cone is mounted; installing cups, rollers, and rib rings in housings, with the rollers being arranged in rows within the cups and the rib rings being at the large ends of the rows of rollers, all with the cups and rib rings clamped snugly together; installing the housings, with their cups, rollers, and rib rings, over the roll necks so that the rollers seat against the cone raceways; whereby the cones, rollers, cups, and rib rings about each roll neck form a bearing for the roll neck; supporting the roll on its bearings; and while the roll is supported on its bearings, grinding the roll body so that it has its center along the axis of the bearing.

4,938,616

THERMAL PRINTER

Tsugio Shiozaki, Susono; Osamu Koizumi, Shizuoka, and Ikuzo Sugiura, Sagamihara, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1988, Ser. No. 256,766
Claims priority, application Japan, Oct. 14, 1987, 62-258684
Int. Cl.[5] B41J *3/02*
U.S. Cl. 400—120 35 Claims



1. A thermal printer comprising:

a platen (1);

platen supporting means (2) for supporting the platen;

a thermal head (15) having an intermediate portion;

thermal head supporting means (11, 16, 27) movable relative to the platen supporting means for swingably supporting the thermal head for swinging movement around its intermediate portion, said thermal head supporting means being movable so as to press the thermal head against the platen; and

resilient urging means (28, 31) for resiliently urging the thermal head supporting means toward the platen supporting means for resiliently pressing the thermal head against the platen.

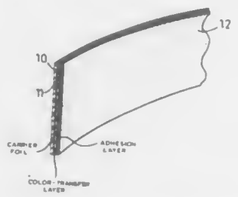
VOL 1116 ISS 1 JL 3 1990 UMI

4,938,617

THERMAL TRANSFER RIBBON WITH ADHESION LAYER

Norbert Mecke, Hanover, and Heinrich Krauter, Neustadt, both of Fed. Rep. of Germany, assignors to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 30, 1989, Ser. No. 375,404
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3822163
Int. Cl.[5] B41J *3/20, 31/06;* B41M *5/00*
U.S. Cl. 400—241.4 9 Claims



1. A method of making a thermal-transfer ribbon, comprising the steps of:

(a) applying to one side of a support strip a meltable color-transfer layer adapted to be transferred to a substrate upon heating to imprint a symbol on said substrate; and

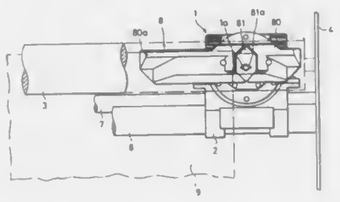
(b) applying on said color-transfer layer an adhesion layer promoting adhesion of said color-transfer layer to said substrate, said adhesion layer being formed by dispersing a sticky hydrocarbon resin in finely divided form in a paraffin.

4,938,618

METHOD AND APPARATUS FOR SETTING PAPER ON A PRINTER

Haruo Inoue; Yoshiaki Miyauchi, and Hidetoshi Kodama, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 267,609
Claims priority, application Japan, Nov. 6, 1987, 62-280613
Int. Cl.[5] B41J *13/10*
U.S. Cl. 400—642 1 Claim



1. A method for setting paper on a printer having a cylindrical platen rotatable to feed paper, a printing head disposed opposite said platen and reciprocated along said platen in a direction transverse to a paper feeding direction, a paper guide carried on a front portion of said printing head so as to oppose said platen, said printing head having a nose portion, said paper guide having an opening positioned opposite said nose portion, an ink ribbon exposed in said opening, said paper guide having guide portions extending laterally from both sides of said opening, comprising the steps of:

moving said printing head to a first position adjacent to an end of said platen;

feeding said paper substantially tangentially of said platen while said printing head remains in said first position, said paper having a lateral edge engaged by one of said guide portions of said guide while said lateral edge is spaced laterally away from said opening and between said opening and the other end of said platen to thereby prevent contact of said paper with said opening;

continuing the last said feeding step with said printing head remaining in said first position until an uppermost edge of said paper has been fed to and past the level of said opening;

shifting said printing head to a second position located at a central portion of said platen so that the entire paper guide engages said paper; and

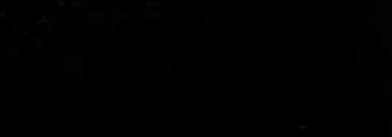
feeding said paper substantially tangentially of said platen between said paper guide and platen to a printing start position to form a desired top margin on said paper while maintaining said printing head in said second position.

4,938,619

ARRANGEMENT FOR POSITION INDICATION OF AN EDGE OF SHEET-SHAPED DATA CARRIER

Helmut Eicher, Wenden, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1989, Ser. No. 349,728
Claims priority, application Fed. Rep. of Germany, May 13, 1988, 3816365
Int. Cl.[5] B41J *29/42*
U.S. Cl. 400—708 5 Claims



1. An arrangement for position indication of an edge of a sheet-shaped data carrier which is transported between a lower and an upper guide plate of a printing apparatus; said guide plates defining a tape transport space therebetween, said arrangement comprising in combination with said apparatus:

an elastic tape extending in the transport direction, said tape having first and second opposing ends, said tape having a flexible bulge portion between said ends extending across said space;

means for fixedly securing one of said ends relative to said guide plates, the other end being free to slidably displace upon deflection of said bulge portion in response to engagement of the bulge portion by said carrier in said space; and

sensor means positioned adjacent to said other end for sensing the displacement of said other end upon said deflection.

4,938,620

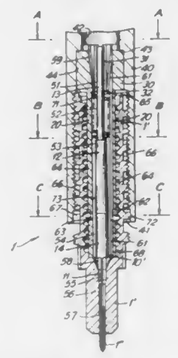
WRITING POINT OR TRACING ELEMENT

Peter Weiss, Fürth, and Karl Kaiser, Wendelstein, both of Fed. Rep. of Germany, assignors to J. S. Staedtler GmbH & Co.

PCT No. PCT/DE87/00484, § 371 Date Jul. 26, 1988, § 102(e) Date Jul. 26, 1988, PCT Pub. No. WO88/03875, PCT Pub. Date Jun. 2, 1988
PCT Filed Oct. 26, 1987, Ser. No. 237,734
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1986, 3640320
Int. Cl.[5] B43K *8/00, 5/10*
U.S. Cl. 401—260 22 Claims

1. A writing or tracing element for manual ink writing or drawing instruments or for plotters or other automatic or mechanical tracing machines, the element comprising an essentially tubular housing, the housing adapted to be connected to a shaft which serves as a holder and defines a storage space for

ink, the housing including a compensation system and defining a central bore, a core insert being inserted in the bore of the housing, a writing body being attached to an end of the housing, a supply system for the ink comprising a plurality of annular spaces being defined between the core insert and the hous-



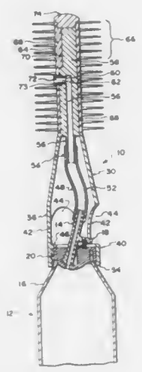
ing, the annular spaces having different widths in axial direction, such that different capillary forces act on the ink in the annular spaces, at least one of the annular spaces being a conical space, wherein the width of the at least one conical space decreases toward the writing body such that the capillary forces acting on the ink increase toward the writing body.

4,938,621

HAIR BRUSH AND MOUSSE DISPENSING DEVICE

Ronald R. Pyrozyk, Naramata, Canada, assignor to Okanagan House Inc., Penticton, Canada

Filed May 3, 1988, Ser. No. 189,647
Int. Cl.[5] A46B *11/06;* A47L *13/22*
U.S. Cl. 401—289 16 Claims



1. A hair brush/mousse dispensing device for use with a pressurised mouse dispensing cylinder having a generally axially aligned dispensing tip and a trigger mechanism adjacent a dispensing end of the cylinder, actuation of the trigger mechanism swinging the dispensing tip to an inclined position to open a valve controlling flow from the cylinder, the device comprising:

(a) a body portion having a first portion and a second portion, the first portion having a generally cylindrical side wall with an open end remote from the second portion and connecting means for releasably connecting the open end of the device to the dispensing end of the pressurized mousse dispensing cylinder, the second portion having a dispensing aperture and a passageway communicating therewith, the passageway being disposed generally axially of the device;

(b) a styling brush including a plurality of spaced apart bristles, the styling brush being axially moveable relative to, and detachably mounted on, the second portion of the body portion and communicating with the dispensing aperture;

(c) conduit means for receiving the mousse, the conduit means having an elongated flexible conduit having an first end portion with a diameter which is releasably connectable to the dispensing tip of the pressurized mousse dispensing cylinder, the conduit having an second end portion connected to the passageway for communication with the dispensing aperture in the body portion, the flexible conduit being preformed to extend at an angle to the longitudinal axis of the body portion when disconnected from the dispensing tip, and being sufficiently flexible to permit lateral movement thereof relative to the second portion to engage the tip so that when engaged on the tip, the conduit applies a force to the dispensing tip tending to close the valve; and

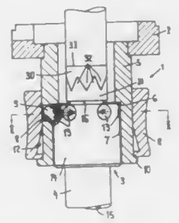
(d) the first portion having at least two openings generally transversely disposed relative to the first end portion of the conduit means for providing access to opposite sides of the flexible conduit to facilitate connecting together the flexible conduit and dispensing tip of the pressurized mousse dispensing cylinder, and to provide access to the trigger mechanism of the cylinder to dispense mousse therefrom.

4,938,622

COUPLING DEVICE

Wolfram Stoerzbach, Lucerne, Switzerland, assignor to Kinematica AG, Littau, Switzerland

Filed Jul. 21, 1989, Ser. No. 383,052
Claims priority, application European Pat. Off., Jan. 25, 1989, 89810064
Int. Cl.[5] F16B *1/00*
U.S. Cl. 403—2 9 Claims



1. A coupling device for coupling a shaft to an apparatus having a flange, comprising

a first coupling part having

a generally tubular connecting piece surrounding the shaft and having an inner wall, a top end, a bottom end adapted to support another member and at least two lateral bores having a width and a length, said connecting piece being connected to the flange at its top end,

at least two balls having a diameter and being positioned in the bores, the width of the bores being slightly larger than the diameter of said balls and the length of the bores being slightly smaller than the diameter of said balls so that the balls, when in the bores, protrude from the bores into the interior of said connecting piece, and

a generally cylindrical ring surrounding said connecting

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piece which rests on the bottom end of said connecting piece and extends above the bores, said ring being movable along said connecting piece and having a recessed lower inner portion adapted to partly receive said balls when said ring is raised off of the bottom end of said connecting piece, and

a second coupling part surrounding said shaft having

a generally tubular head lying along the inner wall of said connecting piece and having recesses adapted to receive said balls, and

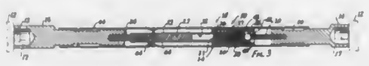
a generally tubular shaft positioned within and connected to said tubular head, said tubular shaft being journalled to said shaft.

4,938,623

LOCKING DEVICE

Larry G. Alexander, Indianapolis, Ind., assignor to Leads Metal Products, Inc., Indianapolis, Ind.

Filed Jun. 26, 1989, Ser. No. 371,621
Int. Cl.[5] F16B 7/06; F16G 11/12
U.S. Cl. 403—45 12 Claims



1. A locking bar device, comprising:

a first end body and a second end body, each having an outer end and an inner end;

connector means connecting the first end body and the second end body in a co-axial relationship, although movably related, as herein specified;

the connector means comprising a screw threaded rod means carried by the first end body, and non-rotatable with respect thereto, and extending toward the second end body;

the connector means also comprising a socket carrier rod means abuttingly associated with the second end body such that movement of the second end body relatively axially toward the first end body would produce a movement of the socket carrier rod means relatively axially toward the first end body;

the socket carrier rod means having two ends, a first one of which is the one which is most adjacent the first end body, and having a non-circular outer surface, and is provided, axially inwardly of the said first end, with an axial hole which freely receives the screw threaded rod means;

a nut means threaded onto the screw threaded rod means, and having a non-circular periphery;

a hollow socket member slidably disposed around the socket carrier rod means and having a first end, directed toward the second end body, including a non-circular bore such as to permit relative sliding but inhibit relative rotation with the socket carrier rod means;

the socket member having a second end directed toward the first end body including a non-circular bore such as to co-operate with the nut means periphery to make the socket member and the nut means non-rotatable with respect to one another;

the slidability of the socket member with respect to the socket carrier rod means being such that they are relatively movable into and between a first condition in which the second end of the socket member is not operatively engaging the nut means to make them relatively non-rotatable, and a second condition in which the second end of the socket member is operatively engaging the nut means to make them relatively non-rotatable with respect to one another, the second condition being that in which the socket member is positioned such that the second end of the socket member is sufficiently close to the first end body that the socket member is in torque transmittable registry with said nut means;

and a sleeve disposed around the first end body, the second end body, and the connector means;

a transverse connection means interconnecting the sleeve and the socket carrier rod means;

the length of the locking bar device being dependent upon where the nut means is located along the screw threaded rod means, the engagement of the nut means and said first end of the socket carrier rod means limiting the amount of closeness of the first end body and second end body;

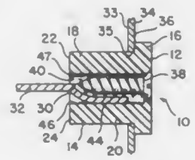
all the above thereby providing that torque effort applied to either the second end body or the sleeve is not operative to relatively rotate the nut means for changing its axial position on the screw threaded rod means unless the socket member is in its position of the said second condition, in which case torque imparted to the sleeve will do so, by transmission of torque through the transverse connection means, the socket carrier rod means, and the socket member.

4,938,624

BLIND EDGEWISE CONNECTOR

Roger N. Johnson, Mercer Island, and Douglas L. Johnson, Seattle, both of Wash., assignors to Radiant Optics Inc., Bellevue, Wash.

Continuation of Ser. No. 6,949, Jan. 27, 1987, Pat. No. 4,780,019. This application Aug. 5, 1988, Ser. No. 228,994
The portion of the term of this patent subsequent to Oct. 5, 2005, has been disclaimed.
Int. Cl.[5] F16B 9/00
U.S. Cl. 403—195 23 Claims



1. A connector for edgewise fastening without pre-alteration a first sheet of material having opposite first and second sides to a first side of a second sheet of material through a hole formed in the second sheet extending from the first side through to an opposite second side, the hole having an interior hole surface wall, and the first sheet having an elongated edge to be connected in position adjacent to the first side of the second sheet with the edge having a length larger than the width of the hole in the direction the edge extends, comprising:

first and second substantially inflexible arms fixedly positioned relative to each other and sized to be insertable through the hole in the second sheet, the arms each having an insertion arm portion positionable within the hole and sized to span at least from the first side to the second side of the second sheet and an attachment arm portion attached to the insertion arm portion and sized to project outwardly from the insertion arm portion beyond the first side of the second sheet, the projecting attachment arm portions each terminating in a free end distal from the insertion arm portion, each of the projecting attachment arm portions having an interior surface opposed to and spaced apart from the interior surface of the other projecting attachment arm portion to define an interior space therebetween located to the first side of the second sheet and away from the hole in the second sheet when the first and second arms have their insertion arm portions positioned in the hole, the space having a length extending in the direction of the projecting arm portions sufficient to receive the first sheet therein in edgewise position relative to the second sheet without the first sheet extending into the hole and having a distance between the opposed interior surfaces sufficient to receive the first sheet therewithin with the first side thereof in engagement with the interior surface of the projecting attachment arm portion of the first arm, the space having at least one lateral opening between the projecting attachment arm portions of the first and second arms extending substantially coextensive with the projecting attachment arm portions and an end opening between the projecting attachment arm portions of the first and second arms extending at least partly along the free distal end of the projecting attachment arm portions and communicating with the lateral opening to form a substantially unobstructed continuous opening sized for the first sheet to project through when positioned in the space, whereby the first sheet can be positioned within the space without prealteration and without extending into the hole in the second sheet so as to be in position fully to the first side of the second sheet with the edge of the first sheet edgewise adjacent to the first side of the second sheet in preparation for fastening by the connector to the second sheet, the space further including a passageway accessible from the second side of the second sheet and communicating with at least a portion of the space between the arms wherein the first sheet is positioned;

retaining means formed prior to insertion of the arms into the hole for retaining the arms from pulling through the hole toward the first side of the second sheet without requiring deformation of the retaining means while in the hole to expand the retaining means to engage the interior hole surface wall and without requiring the second sheet to have strength to supply a force counter to the expansion force of the retaining means in the hole, whereby the retaining means is operative even with a very thin second sheet not having the strength to allow use of an expansion member in the hole;

holding means for holding the projecting attachment arm portions in substantially fixed relation to each other; and

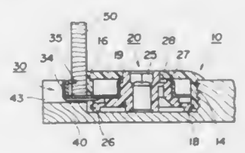
fastener means insertable in the space between the projecting attachment arm portions and selectively removable therefrom, without significant deformation of the fastener means, for engaging a portion of the second side of the first sheet and the interior surface of the projecting attachment arm portion of the second arm at a location exterior of the hole and without causing significant movement of the arms relative to each other to force a portion of the first side of the first sheet immediately opposed to the engaged portion of the second side thereof into firm engagement with the interior surface of the projecting attachment arm portion of the first arm while the fastener means remains inserted in the space without deformation of either the first arm, the second arm, the retaining means or the holding means, the space being constructed to permit the first sheet to be freely removable from the space upon removal of the fastener means from the space without first requiring alteration of the first sheet, the passageway having a size sufficient to receive the fastener means therein from the second side of the second sheet for operatively positioning the fastener means between the first sheet and the second arm, whereby the user needs access from only the second side of the second sheet, the passageway being a generally lengthwise bore formed partly in the first arm and forming a concavity in the interior surface of the first arm extending fully to the free distal end of the projecting attachment arm portion of the first arm substantially without any obstructions which would inhibit removal of the first sheet from the space when the fastener means is removed from the space, the fastener means bearing on the first sheet at the concavity to deform a portion of the first sheet into the concavity, the deformed portion being freely movable along the concavity for unrestricted removal of the first sheet from the space when the fastener means is removed from the space.

4,938,625

ASSEMBLING DEVICE

Kazuhiro Matsui, Aichi, Japan, assignor to Kabushiki Kaisha Kojima Shohten, Tokyo, Japan, a part interest

Filed Aug. 11, 1989, Ser. No. 393,403
Claims priority, application Japan, Aug. 30, 1988, 63-215491
Int. Cl.[5] B25G 3/00
U.S. Cl. 403—231 6 Claims



1. A furniture assembling device, comprising:

a main case adapted for mounting on a first furniture panel;

a retaining member supported in said main case for reciprocal movement, said retaining member including an engaging portion disposed within said main case and an arm portion projecting from said engaging portion and being extendable away from and retractable toward said main case;

rotary means rotatably supported in said main case and cooperable with said engaging portion for reciprocating said arm portion between extended and retracted positions; and

means provided on said arm portion for direct abutment against a second furniture panel, said direct abutment means including said arm portion having a serrated edge formed at a free end thereof and adapted for penetrating engagement with said second panel, said serrated edge facing away from said engaging portion.

4,938,626

LEAD-REPLACEABLE WRITING IMPLEMENT WITH MULTIPLE LEAD CHANNELS

Chun-Liang Kuo, 1st Fl., Alley 23, Lane 2, Sec. 6, Chungshan N. Rd., Taipei, Taiwan

Filed Jul. 5, 1989, Ser. No. 375,742
Int. Cl.[5] B43K 21/14, 21/20
U.S. Cl. 401—56 8 Claims



1. A lead-replaceable writing implement with multiple lead channels, comprising:

an outer tube having a lower portion and an upper portion and an upper portion formed with a slide slot;

an inner rod received in said outer tube, having plural axial lead channels capable of receiving various leads of different hardnesses separately, said inner rod further having a locating boss being slidably received in said slide slot said inner rod having a lower portion formed with an annular groove, a push rod being mounted on the bottom end of

said inner rod, each lead channel being provided with a axially extending slide opening portion, a protuberance being formed on the bottom inner surface of each said lead channel;

a rotary tube having a tapered lower portion and an upper portion inserted into said lower portion of said outer tube, said rotary tube being formed with a V-shaped slit defining a resilient stop means having a lead stop, said lead stop being rotarily located within said inner rod to stop and drop a lead contained therein when said inner rod is pushed upward; and

a lead holder having a narrowed lower portion and a top flange, said lead holder being received in said rotary tube with said top flange abutting against the inner surface of said tapered lower portion, said lower end of said lead holder being partially protruded beyond said lower portion of said rotary tube whereby the dropped lead is retained, said narrowed lower portion being formed with two slits to make said narrowed lower portion resilient;

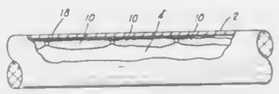
said boss reaching the bottom of said slide slot to make said push rod inserted into said lead holder, while reaching the top, said push rod retreated from said lead holder.

4,938,627

METHOD OF SLIPLINER GROUTING

Lindsey D. Lee, Houston, Tex., assignor to Halliburton Company, Ducan, Okla.

Continuation-in-part of Ser. No. 247,150, Sep. 21, 1988, Pat. No. 4,889,449. This application Mar. 7, 1989, Ser. No. 320,687
Int. Cl.[5] E02D *29/10*; E21F *15/00*
U.S. Cl. 405—154 **7 Claims**



1. A method of grouting a slipliner in a sewer, said slipliner forming an annular space between said slipliner and said sewer, said sewer having water therein thereby causing water to be present in said annular space prior to the grouting of said slipliner in said sewer, the method comprising the steps of:

sealing said annular space formed between said slipliner and sewer at a location;

inserting a grout injection pipe into said annular space formed between said slipliner and sewer to inject grout into said annular space;

mixing a grout having a density less than 1.0 specific gravity;

pumping the grout through the grout injection pipe into said annular space formed between said slipliner and sewer;

floating at least a portion of the grout on said water in said annular space between said slipliner and sewer thereby filling at least a portion of said annular space with grout; and

ceasing the pumping of the grout into said annular space formed between said slipliner and sewer prior to the grout forming sufficient hydrostatic fluid pressure in said annular space between said slipliner and sewer to cause said slipliner to collapse.

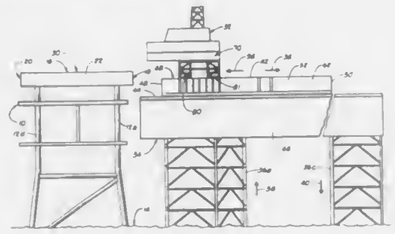
4,938,628

SYSTEM FOR MOVING DRILLING MODULE TO FIXED PLATFORM

James E. Ingle, Edmond, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Filed Oct. 31, 1989, Ser. No. 429,728
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—201 **31 Claims**

12. An apparatus for transferring a drilling module having a lower substructure support surface from a jack-up rig to a fixed platform wherein the fixed platform comprises legs secured to an ocean floor and wherein the jack-up rig comprises telescoping legs movable in upwardly and downwardly directions and wherein a portion of the jack-up rig is moveable in generally upwardly and downwardly directions and a cantilever beam assembly having a rearward end and a beam support surface and means for moving the cantilever beam assembly from a storage position wherein the cantilever beam assembly is supported generally on the jack-up rig to extended positions wherein the rearward end portion of the cantilever beam assembly is extended distances generally from the jack-up rig, the apparatus comprising:



a fixed platform support structure connected to the fixed platform having a drilling module support surface, a front end, a rear end, a first side and a second side; and

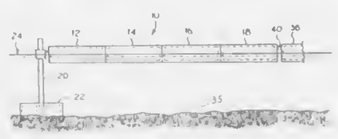
means for supporting the drilling module on the beam support surface of the cantilever beam assembly, said means being extendable by the cantilever beam assembly to an extended position for disposing the drilling module from the cantilever beam assembly on to the drilling module support surface of the fixed platform support structure, said means also supporting the drilling module on the drilling module support surface of the fixed platform support structure when the drilling module is transferred to the drilling module support surface.

4,938,629

FLOATABLE AND SINKABLE WHARF STRUCTURE

Philippe C. Boudrias, 268, Amédée-Meunier, Repentigny, Quebec, Canada J6A 1H9

Filed Mar. 30, 1989, Ser. No. 330,684
Int. Cl.[5] E02B *3/20*
U.S. Cl. 405—205 **9 Claims**



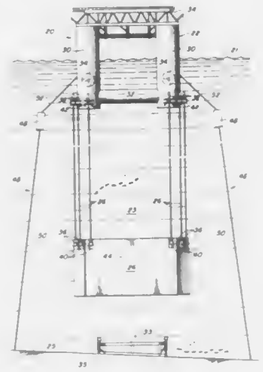
1. A floatable and sinkable concrete modular structure for making a wharf comprising a hollow parallelepipedic shell having an inner chamber, said shell being made of a rigid layer of reinforced concrete lined with an inner layer of an air impermeable material forming the surrounding walls of said chamber having opposite end walls, the size of said chamber being sufficiently large to allow the buoyancy of the shell in water when the chamber is filled with air, at least one pair of apertures through said one shell located at the upper part of said shell, said first and second apertures being located on opposite end walls, a duct located inside said shell extending between said first aperture located and the lower part of said chamber, whereby an inflow of water in said chamber through said first apertures allows the concrete modular structure to sink when floating in water and to refloat when air pressure is projected inside said chamber through said second apertures for ejecting the water located inside the chamber through said duct and through said first apertures.

4,938,630

METHOD AND APPARATUS TO STABILIZE AN OFFSHORE PLATFORM

Demir I. Karsan, and Zeki Demirbilek, both of Houston, Tex., assignors to Conoco Inc., Posca City, Okla.

Filed Aug. 22, 1988, Ser. No. 235,136
Int. Cl.[5] B63B *35/44*
U.S. Cl. 405—224 **12 Claims**



1. A column-stabilized floating platform for utilization in deep water, offshore hydrocarbon exploration and production, above a selected portion of a seafloor, said platform comprising:

a floating platform having at least one column which is at least partially hollow to provide positive buoyancy, said column supporting at least one above-surface deck;

a stabilizer connected to and suspended a substantial distance beneath said floating platform by a plurality of suspension tendons, said stabilizer having (a) sufficient submerged weight to maintain said suspension tendons in tension and (b) a sufficient added mass, produced by said submerged weight plus resistance to motion of a portion of the water surrounding said stabilizer, to satisfactorily control first order wave-induced heave, pitch, roll, surge and sway motions of said floating platform without the need for anchoring said platform to said seafloor.

4,938,631

FACADE ANCHOR

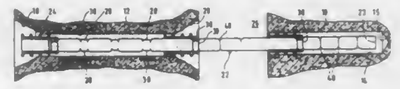
Daniel Maechtle, Korntal, and Joachim Mayer, Stuttgart, both of Fed. Rep. of Germany, assignors to Maechtle GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1989, Ser. No. 379,430
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1988, 3824001; Nov. 28, 1988, 3840055
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—235 **7 Claims**

1. A facade anchor for anchoring a facade to a main wall, the facade being arranged at a distance in front of the main wall and the facade and main wall having aligned bores; the facade anchor comprising:

an elongate connecting element in the form of a thin-walled and corrosion-resistant metallic anchoring tube for insertion into aligned bores of the main wall and the facade,

the tube forming a mortar injection pipe, the front end of which is open to act as an outlet opening, said tube having a number of diametrically disposed outlet openings along its rear portion and leading into the facade bore through which mortar may be discharged to form transverse webs extending from the wall of the facade bore through said diametral openings, the anchoring tube being reinforced at several places along its length by diametrically arranged pairs of transverse identations which run parallel to the



circumference to improve the tensile and flexural strength so that the anchoring tube has a limited resiliency allowing relative movements of the facade with respect to the main wall; and

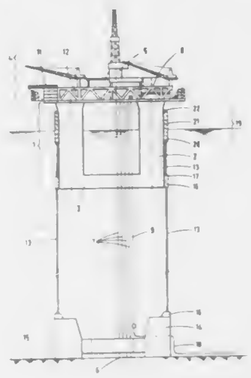
plastic material bushings for centrally positioning the anchoring tube within said bores, each of the bushings having radially outwardly extending resilient annular lamellae for sealing the tube within the bores.

4,938,632

TENSION LEG PLATFORM AND METHOD FOR INSTALLATION OF THE SAME

Rolf Eie, Osterås, Norway, assignor to Norwegian Contractors A/S, Stabekk, Norway

Filed Feb. 22, 1989, Ser. No. 314,411
Claims priority, application Norway, Feb. 24, 1988, 88.0806
Int. Cl.[5] B63B *35/44*
U.S. Cl. 405—224 **11 Claims**



1. A tension leg platform for sub sea operations comprising:

(a) a working platform positioned above sea level,

(b) a buoyant body which is connected to the underside of the working platform and which extends below the sea surface,

(c) a number of substantially rigid tension legs connecting the buoyant body under tension to the sea bottom,

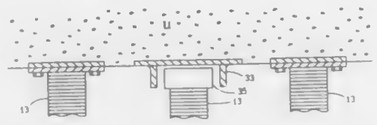
(d) means for attaching each of said tension legs to the buoyant body above the water line,

(e) a plurality of guide means disposed vertically along said buoyant body at a submerged portion thereof, each said guide means defining a vertically extending, walled space for receipt of a portion of one of the tension legs and serving to pilot the tension leg into proper position against said buoyant body during the attaching of the leg to the body,

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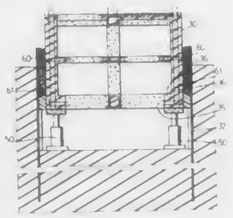
(f) said leg portion including a section of enlarged cross-sectional area,
(g) said guide means including an enlarged space complementary to said enlarged section for receipt thereof for restricting horizontal movement of the tension leg relative to said body.

4,938,633
SEISMIC ISOLATION SYSTEMS WITH DISTINCT MULTIPLE FREQUENCIES
Ting-shu Wu, Downers Grove, and Ralph W. Seidensticker, Wheaton, both of Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.
Filed Apr. 14, 1989, Ser. No. 339,457
Int. Cl.[5] E04H 9/02
U.S. Cl. 405—229 6 Claims



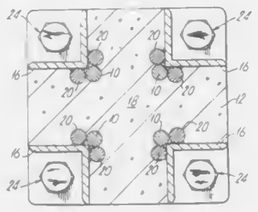
1. A method for supporting a structure such that it is isolated from seismic vibratory ground motion comprising:
supporting the structure by a horizontal upper mat;
providing a lower mat vertically adjacent to the upper mat of the structure that can support the structure;
creating a structure and support system that has a characteristic frequency that is outside the range of expected frequencies of seismic vibratory motion by coupling the upper and lower mats rigidly with primary isolator bearings, and
altering the characteristic frequency of the structure and support system by coupling secondary isolator bearings rigidly to one of said upper or lower mats and movably to the other of said upper or lower mats to engage and disengage the secondary isolator bearing and the other mat in response to seismic vibratory motion.

4,938,634
PROCESS FOR LOWERING BASEMENT
Yuan-Ho Lee, No. 851, Chung-San Rd., Nan-Pao Tsun, Kuei-Jen Hsian, Tainan Hsieng, Taiwan
Filed Jun. 26, 1989, Ser. No. 371,339
Int. Cl.[5] E02D 27/00
U.S. Cl. 405—229 6 Claims



1. In the construction of a building in which a basement is prefabricated on the ground and then lowered into the ground by excavating soil below the basement, a process for lowering the basement comprising:
driving corrugated steel plates into the ground around a region in which the basement is to be installed;
applying an adhesive on a surface of the basement adjacent to said steel plates;
applying a lubricant on a surface of said steel plates adjacent to said surface of said basement;
forming in-situ a flexible and resilient material in a space between said surfaces of the basement and the steel plates, said material serving as a guide member which is bonded securely to the basement;
excavating soil below the basement; and
causing the basement to descend into the ground.

4,938,635
CONCRETE BEAMS AND CONNECTING MEANS THEREFOR
James B. Russell, 157 Shore Road, Magheramorne, Larne, County Antrim BT40 3HY, United Kingdom
PCT No. PCT/GB86/00769, § 371 Date Oct. 25, 1988, § 102(e) Date Oct. 25, 1988, PCT Pub. No. WO88/04711, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 17, 1986, Ser. No. 265,850
Int. Cl.[5] E02D 5/14
U.S. Cl. 405—252 5 Claims

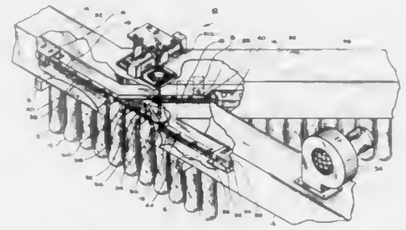


1. A beam of concrete having similar end pieces at each opposite end and an internal reinforcing elongate cage with longitudinals, each end piece comprising:
a rectangular plate with four apertures defined therein, said plate located transverse of the beam's longitudinal axis;
four wall surrounds of angular shape upstanding from an inner face of said plate each wall surround having an apex, one of each said wall surrounds located around each aperture to partition off a respective aperture from a cruciform void defined between said wall surrounds and said plate, the cage and end pieces being of weldable material; and
at least one starter reinforcing bar being secured to each said wall surround adjacent to an apex thereof on a side remote from each said respective aperture to extend parallel with the beam's longitudinal axis, said starter bars overlapping with the longitudinals of said cage with concrete being cast around said cage and over the outer ends of said wall surrounds and into the void, defined by said plate and said wall surrounds.

4,938,636
METHOD AND APPARATUS FOR FEEDING CONTAINER BODIES
Samuel S. Aidlin; Stephen H. Aidlin, and Larry Kincaid, all of Sarasota, Fla., assignors to Aidlin Automation Corp., Bradenton, Fla.
Filed Nov. 14, 1988, Ser. No. 270,797
Int. Cl.[5] B65G 51/02
U.S. Cl. 406—31 7 Claims

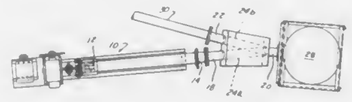
1. A system for directing a flow of container bodies to a plurality of base cupping machines from a plurality of blow molding machines comprising:
a plurality of primary conveyors, each primary conveyor adapted to feed container bodies from a blow molding machine toward a base cupping machine;

a plurality of cross-over conveyors for feeding container bodies from one of the primary conveyors to another of the primary conveyor;
diverter and converger blades positioned at the junction of primary and cross-over conveyors to direct container bodies between various primary conveyors;



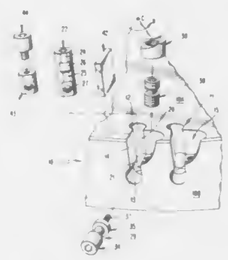
a sensor upstream and two sensors downstream of each diverter blade and a sensor downstream and two sensors upstream of each converger blade to detect the flow of container bodies therepast; and
programmable control means responsive to the sensors to switch the blades as required for proper feeding of container bodies.

4,938,637
METHOD AND APPARATUS FOR BOTTOM LOADING A PNEUMATIC TRANSPORT PRESSURE VESSEL
G. Wayne Lybecker, 123 Clair Hill Dr., Rochester, Mich. 48063, and Timothy P. Sherrow, 6 Willow Way, Pontiac, Mich. 48054
Filed Jun. 9, 1989, Ser. No. 364,782
Int. Cl.[5] B65G 53/08, 53/12, 53/56, 53/66
U.S. Cl. 406—56 6 Claims



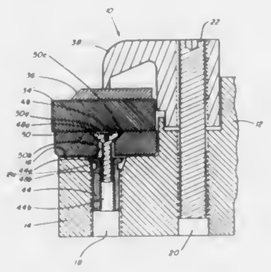
4. A pneumatic conveying system comprising:
a pneumatic transport pressure vessel having a funnel-shaped sidewall and a closed dome top, the pressure vessel further having a single material inlet/outlet at the bottom of the funnel-shaped sidewall;
a switch valve connected to the single material inlet/outlet of the pneumatic transport pressure vessel for connecting the pressure vessel selectively with an inlet pipe connection and an outlet pipe connection, the switch valve including an enclosure having a pressure vessel pipe connection at one end, wherein said pressure vessel pipe connection is connected to said material inlet/outlet, and the inlet pipe connection and the outlet pipe connection at another end, a bias cut pipe section disposed within the enclosure movable between a first position wherein the inlet pipe connection is connected to the pressure vessel pipe connection and a second position wherein the outlet pipe connection is connected to the pressure vessel pipe connection, a first seal ring housing connected to the section at one end adjacent the pressure vessel pipe connection through the enclosure, the first seal ring housing having an annular groove facing the enclosure, a first plastic seal ring reciprocally disposed within the annular groove and sealed with respect to the first seal ring housing with an inner diameter O-ring seal and an outer diameter O-ring seal forming an expansible fluid chamber between the seal ring and the first seal ring housing, a second seal ring housing connected to the pipe section adjacent the inlet pipe connection and the outlet pipe connection through the enclosure, the second seal ring housing having an annular groove formed facing the enclosure, a second plastic seal ring reciprocally disposed within the annular groove and sealed with respect to the second seal ring housing with an inner diameter O-ring seal and an outer diameter O-ring seal forming an expansible fluid chamber between the second seal ring and the second seal ring housing, fluid pressure actuated means for moving the pipe section between the first position and the second position, and control valve means in fluid communication with the fluid pressure chambers within the first and second seal ring housings for sealing and unsealing the first and second seal rings with respect to the enclosure when in the first and second positions;
outlet piping means connected to the discharge pipe connection of the switch valve for pneumatically conveying the material to a desired discharged location; and
a horizontally disposed positive displacement screw conveyor means connected to the inlet pipe connection of the switch valve for bottom loading the pneumatic transport pressure vessel.

4,938,638
MILLING CUTTER
Anders B. I. Hessman, Sandviken, and Leif R. Nyström, Järbo, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Feb. 23, 1989, Ser. No. 313,992
Claims priority, application Sweden, Mar. 11, 1988, 8800873-5
Int. Cl.[5] B23C 5/24, 5/06
U.S. Cl. 407—39 9 Claims



1. Milling cutter comprising a cutter body having multiple peripheral recesses, each said recess being adapted to receive an adjustment element and an indexible cutting insert in abutment with each other, said adjustment element having a central axis around which said adjustment element is rotatable to provide displacement of said insert, and a clamping device received in said recess and arranged for fixedly locating the insert in its adjusted position, said milling cutter having a rotation center and a direction of rotation, a separate second element received in said recess and arranged to abut against the insert, said adjustment element being threadably connected to said second element for rotation relative thereto, both said second element and said adjustment element being cylindrically shaped with substantially equal radii, each said recess comprising two bores oriented essentially perpendicular to each other for the receipt of said adjustment element and said second element, respectively.

4,938,639
COMBINATION TOOL HOLDER
Thomas A. Lockard, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.
Filed May 12, 1989, Ser. No. 351,692
Int. Cl.[5] B23B *27/16, 27/02*
U.S. Cl. 407—103 **6 Claims**



1. In a combination tool holder having the capability of accommodating different types and sizes of cutting inserts, shims, and shim securing devices, and having a seating area, a threaded bore formed in the seating area, the seating area receiving a respective shim, the shim an upper bearing surface having an upper opening and a throughbore extending downwardly from the upper opening through the shim, a cutting insert overlying the respective shim secured within the seating area, and a top clamping device for securing the tool insert over the shim, the improvement comprising an adapter shim securing assembly for extending through the throughbore formed within the shim and securing the shim about the seating area, the adapter shim securing assembly when secured within the tool holder including:

(a) a bushing threaded in the threaded bore formed below the seating area and having a top portion that lies at or below the seating area;

(b) a second threaded bore formed in the bushing;

(c) the threaded bushing having a diameter greater than the diameter of the throughbore extending through the shim while the diameter of the threaded bore formed within the seating area is greater than the diameter of the throughbore extending through the shim;

(d) a threaded shim screw extending through the throughbore in the shim and secured within the second threaded bore within the bushing so as to engage and secure the shim to the tool holder, and wherein the threaded shim screw is counter-sunken relative to the top of the shim; and

(e) wherein by providing the diameter of the threaded bushing larger than the diameter of the shim's throughbore enables the size of the upper opening in the shim to be minimized thereby enabling the area of the upper bearing surface of the shim to be maximized.

4,938,640
METAL CUTTING TOOL
Joseph Pano, Shave Zion, Israel, and Hans Braun, Hagen, Fed. Rep. of Germany, assignors to Iscar, Ltd., Migdal Tefen, Israel
Continuation-in-part of Ser. No. 94,692, Sep. 9, 1987. This application Apr. 11, 1989, Ser. No. 336,216
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1986, 3630845; Oct. 15, 1986, 3635052
Int. Cl.[5] B23B *27/06, 27/08, 29/06, 29/08*
U.S. Cl. 407—110 **8 Claims**

1. A metal cutting tool comprising:

an elongated cutting insert;

a leading end of said insert;

a pair of longitudinally directed clamping surfaces of said insert having respectively formed therein a pair of elongated keying grooves;

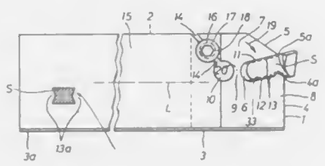
an insert holder;

a pair of clamping jaws of said holder;

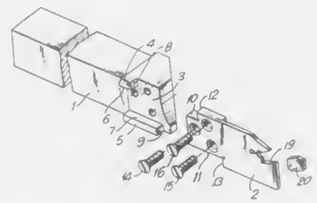
a pair of oppositely facing clamping surfaces of said jaws having respectively formed therein a pair of elongated keying ribs and defining between them an insert seat within which said insert is to be located with the keying ribs respectively located within the keying grooves;

an arched projection extending out of and across a second one of said jaws adjacent a free end thereof and a correspondingly arched recess formed in and extending across a base surface of said insert adjacent the leading end thereof, into which recess said projection is adapted to fit, said keying ribs extending into an outer surface of said projection and said keying groove extending into the surface of said recess; and

jaw displacing means for displacing a first of said jaws from a first position, wherein the spacing between said jaws allows for the ready insertion of the insert into said insert seat without relative displacement of said jaws, to a second position, wherein said insert is firmly clamped between said jaws with said keying ribs located in said keying grooves and with said arched projection located in said arched recess.

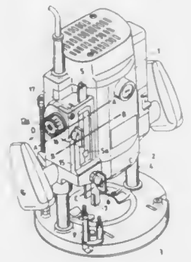


4,938,641
PARTING TOOL
Johann Maier, Pfiach, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.
Filed Jul. 18, 1988, Ser. No. 220,603
Claims priority, application Austria, Jul. 22, 1987, A 1854/87
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—110 **5 Claims**



1. A parting tool comprising a tool shank and blade support or attachment, said tool shank comprising a sidewall with a plurality of opendings and offset first and second laterally flanged surfaces having flat contact surfaces and flat guide surfaces which extend perpendicularly from said sidewall and perpendicularly to each other, said blade support or attachment comprising a front and back broad side and top and bottom narrow sides having countersurfaces and guide segments and a plurality of mating openings; the guide segment of said top narrow side of said blade support or attachment contacting the flat guide surface of said first flanged surface of said tool shank, the guide segment of said bottom narrow side of said blade support or attachment contacting said flat guide surface of said second flanged surface of said tool shank, and clamping means cooperating with said plurality of openings for joining said tool shank and said blade support or attachment in a prestressed relationship wherein the countersurface of said top narrow side is pressed against said flat contact surface of said first flanged surface, the countersurface of said bottom narrow side is pressed against said flat contact surface of said second flanged surface and the back broad side of said blade support being supported by said tool shank in contact with the sidewall thereof.

4,938,642
PORTABLE ELECTRIC ROUTER
Toshiaki Imahashi, Hitachi; Kihachiro Matsumoto; Katsuhiko Muto, both of Katsuta, and Yasunori Ogawa, Mito, all of Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan
Filed Aug. 31, 1989, Ser. No. 401,303
Claims priority, application Japan, Sep. 2, 1988, 63-220743; Sep. 2, 1988, 63-220744
Int. Cl.[5] B23C *1/20;* **B27C** *5/10*
U.S. Cl. 409—182 **5 Claims**



1. A portable electric router including an electric motor with a drive shaft for driving a cutter to cut an object to be machined, said router comprising:

a bracket for supporting said electric motor;

a base connected to said bracket and arranged to be brought into sliding contact with said object to be machined;

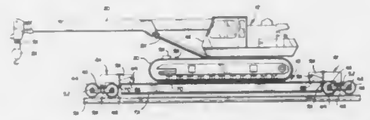
a cutter connected to one end portion of a drive shaft of said electric motor;

handles pivotally attached to handle-mounting sections of said bracket and in substantially the same plane for holding said router in cutting operation; and

a coupling mechanism for mechanically coupling each of said handles to each of said handle-mounting sections of said bracket, said coupling mechanism including first and second annular members which are respectively attached to said handle-mounting section thereof and said handle so as to be coaxially arranged in confronting relationship to each other, each of said first and second annular members having elongated recess portions and elongated projection portions which are alternately and successively arranged at a predetermined angular interval with respect to its own center, said elongated recess corporations and projection portions of said first annular member being arranged to be engaged with said elongated projection portions and recess portions of said second annular member so as to provide a desirable mounting angle of said handle with respect to said bracket.

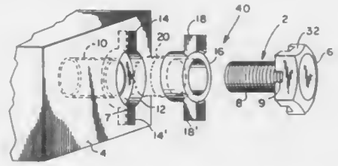
5. A portable electric router including an electric motor for driving a cutter to cut an object to be machined, said router comprising; a cutting-depth adjustable mechanism which is provided in a space formed by a housing for encasing said electric motor and a bracket for supporting said electric motor, a base connected to said bracket and arranged to be brought into sliding contact with said object to be machined; said cutting-depth adjustable mechanism including a stopper pole extending along the longitudinal axis of said router and having a first rack, a scale plate extending along the longitudinal axis thereof and having a second rack, and a knob-pinion assembly comprising a knob section and a pinion section and being arranged to be movable in directions of its own axis, said pinion section of said knob-pinion assembly having first and second toothed wheels, either of which are respectively arranged so as to be engageable with either of said first or second racks of said stopper pole and said scale plate in accordance with the movement of said knob-pinion assembly, whereby said stopper pole and said scale plate are respectively movable along the longitudinal axis of said router in accordance with rotations of said first and second toothed wheels caused by rotation of said knob section of said knob-pinion assembly.

4,938,643
RAIL MOUNTED CRANE CARRIER
James H. Lamb, Franklin, and Cliff Caneer, Jr., Cornersville, both of Tenn., assignors to Span-Deck, Inc., Franklin, Tenn.
Filed Jul. 27, 1988, Ser. No. 224,792
Int. Cl.[5] B61D *15/00*
U.S. Cl. 410—1 **13 Claims**



1. A rail mounted vehicle carrier comprising a frame assembly having a platform adapted to receive a vehicle to be carried on the carrier, a wheel assembly supported at each end of the carrier, a latch assembly disposed on said frame assembly and adapted to receive a retractable pin mounted on the underside of the vehicle, means on said vehicle for operatively positioning said pin between a first position engaging said latch assembly and a second position disengaging said latch assembly whereby when said pin is positioned in said first position said vehicle is fixed with respect to the axis of the pin and forward or backward movement of said vehicle on the platform is prevented while counter-rotation of the vehicle on the platform about the pin axis is permitted.

4,938,644
BOLT AND NUT LOCK ASSEMBLY
Thomas L. Runels, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 22, 1989, Ser. No. 355,257
Int. Cl.[5] F16B *39/24, 39/282*
U.S. Cl. 411—132 **8 Claims**



1. A bolt lock assembly for releasably locking a bolt to an object, said bolt having an enlarged head having an at least

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partially externally threaded shank extending therefrom, said object having a bore therein and a counterbore having a larger diameter substantially axially aligned therewith defining a shoulder at the intersection therebetween facing away from the bore theretowards, said object characterized by having at least one slot extending radially outwardly from the periphery of the counterbore for a distance sufficient to insure that a predetermined portion of thereof remains exposed when the bolt head is in substantial axial alignment with the counterbore and brought into close proximity thereto, and said assembly comprising;

a collar member adapted to be received into the counterbore separately from the bolt and operable to move in opposite axial directions relative thereto, said collar member having an opening adaPted to receive the bolt shank therethrough,

at least one locking member extending outwardly from the collar member and adapted to be received into the slot when in registration therewith and the collar member is received into the counterbore with a portion thereof radially exposed when the bolt head is in axial alignment with the collar member and brought into close proximity thereto,

resilient biasing means disposed in the counterbore between the shoulder and the collar member and having an aperture adapted to receive the bolt shank therethrough,

said biasing means operative to urge a predetermined portion of the locking member outwardly from the slot, and

means associated with the bolt head for releasably locking the bolt to the object when the locking member comes into engagement therewith,

said assembly operable such that, when the bolt shank is inserted through the collar member opening and the resilient biasing means aperture and into the bore, pressing the exposed portion of locking member axially inwardly against the resilient biasing means enables the bolt head to be brought into predetermined proximity to the object and release of the locking member when the bolt head locking means is in substantial registration therewith enables the resilient biasing means to urge a portion of the locking member axially outwardly into the bolt head locking means whilst a portion thereof remains in the slot to provide the locked engagement between the bolt and the object.

4,938,645

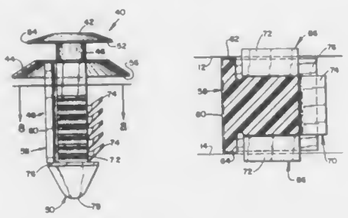
TEE TREE FASTENER

Burnell J. Wollar, Barrington, Ill., assignor to Phillips Plastics Corporation, Prescott, Wis.

Filed May 30, 1989, Ser. No. 358,898

Int. Cl.[5] F16B *13/02*

U.S. Cl. 411—508 **10 Claims**



1. A fastener of the type which is adapted for joining at least two members together, comprising:

shank means adapted for axial insertion into an orifice in a first member and into a slot in a second member;

head means which is integral with said shank means and is adapted for engaging an upper surface of the first member;

means integral with said shank means which is adapted for abutting the walls of the slot, said abutting means having at least two flat surfaces adapted for continuously contacting a slot wall, said surfaces being oriented substantially perpendicular to each other thereby preventing rotation of said fastener relative to said slot once it has been inserted into the slot regardless of the initial orientation of said fastener relative to said slot; and

means integral with said shank means which is adapted for resiliently engaging a lower surface of the second member, whereby the two members may be securely fastened, and wherein no possibility exists of said fastener rotating with respect to the slot.

4,938,646

ROUND BALE LOADER AND CARRIER

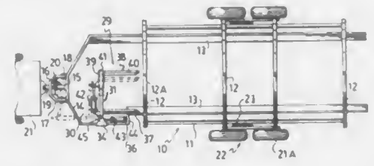
John Elias, Box 355, and Donald Cruikshank, Box 87, both of Miami, Manitoba, Canada R0G 1H0

Filed Oct. 19, 1988, Ser. No. 260,002

Claims priority, application Canada, Oct. 22, 1987, 549941

Int. Cl.[5] A01D *90/02*

U.S. Cl. 414—24.5 **10 Claims**



1. In a bale carrier which includes a longitudinally extending open chassis, ground engaging wheels supporting said chassis intermediate the ends thereof, means to raise and lower said chassis relative to the wheels from a bale pickup and discharge position to a transport position and vice versa, a pair of bale receiving glide rails mounted in said chassis in spaced and parallel longitudinally extending relationship and hitch means on the front of said chassis for attachment behind a conventional round baler assembly; the improvement which comprises a bale receiving cradle assembly mounted at the front of said chassis for directly receiving bales over the front of said chassis from the associated baler, whereby the longitudinal axis of the directly deposited bale is in a transverse position relative to said chassis, said cradle assembly being moveable from a transverse bale receiving position at the front of said chassis and within the confines thereof to a longitudinal bale transfer position within the confines thereof and vice versa, means associated with said cradle assembly to substantially horizontally swing said bale through substantially 90° whereby the longitudinal axis of said bale is substantially parallel to said glide rails after said swinging, and means to engage said bale with the ground within the confines of the chassis, after said swinging, by moving said chassis to the bale pickup position whereby when said chassis is moved forwardly and moved to the transport position, the ground-engaged bale is moved rearwardly an incremental amount relative to said chassis, and picked up by said glide rails.

4,938,647

TRUCK ACTUATED VEHICLE RESTRAINT HAVING A PIVOTABLE SLIDE

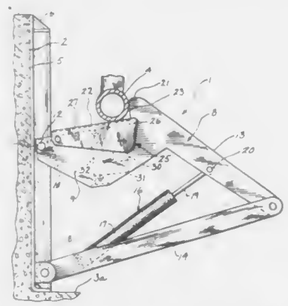
Kjell I. Erlandsson, Milwaukee, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.

Filed Sep. 21, 1989, Ser. No. 410,584

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—401 **14 Claims**

1. A vehicle restraint, comprising a frame mounted on a supporting structure, a slide having an inner end and having an upper surface, guide means for mounting the said inner end of said slide for vertical movement on said frame, said guide means comprising a single pair of guide members mounted co-axially on said slide about a horizontal axis, recess means disposed in said upper surface of said slide, said slide having a downwardly and outwardly facing inclined surface with said inclined surface having an upper end and having a lower end disposed at a level substantially beneath the level of said axis, biasing means for urging the slide to an upper storage position, an abutment on a vehicle backing toward said supporting



structure disposed to engage said inclined surface to wedge said slide downwardly against the force of said biasing means and effect engagement of said abutment with said recess means to thereby prevent said vehicle from pulling away from said supporting structure, said slide being constructed and arranged to pivot upwardly about said axis as said slide is wedged downwardly, and release means for releasing said abutment means from said recess means to enable said vehicle to pull away from the supporting structure.

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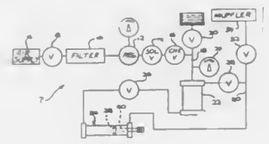
SHIPPING DOCK HOOK

Mike T. Horan, Toronto, and Donald R. Lidster, Oshawa, both of Canada, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1988, Ser. No. 238,947

Int. Cl.[5] B65G *69/00*; F15B *13/02*

U.S. Cl. 414—401 **9 Claims**



1. A truck shipping dock hook system for locking a truck trailer by an ICC bar of said truck trailer to a dock, said system in combination comprising:

a hook pivotally mounted with respect to the dock for locking said ICC bar to said dock;

a pressurized air source;

a normally closed two position first solenoid valve fluidly connected with said air source;

a tank containing a fluid which remains a liquid at relatively low temperatures, said tank being fluidly connected with said first solenoid valve;

a second two position solenoid valve normally closed fluidly connected with said tank;

a vent fluidly connected with said second solenoid valve; and

a hydraulic cylinder divided by a piston with a connected rod, said rod being pivotally connected to said hook, said cylinder powering said hook and said cylinder having one side of said piston being fluidly exposed with said fluid of said tank, and the opposite side of said piston being continually exposed with said vent and said second solenoid valve whereby said hook is actuated upon the opening of said first solenoid valve and said hook can return to a retracted position upon the opening of said second solenoid valve and the closing of said first solenoid valve.

4,938,649

METHOD AND DEVICE FOR HANDLING ENDS FOR TINS

Gerrit H. ter Horst, Schalkhaar; Hendrik C. Vrind, and Johannes C. Kempers, both of Deventer, all of Netherlands, assignors to Thomassen & Drijver-Verblifa N.V., Netherlands

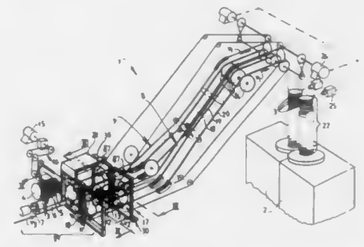
PCT No. PCT/NL85/00006, § 371 Date Sep. 26, 1985, § 102(e) Date Sep. 26, 1985, PCT Pub. No. WO85/03497, PCT Pub. Date Aug. 15, 1985

PCT Filed Jan. 31, 1985, Ser. No. 783,936

Claims priority, application Netherlands, Jan. 31, 1984, 8400294

Int. Cl.[5] B65G *59/00*

U.S. Cl. 414—412 **33 Claims**



1. The method of handling round flat substantially identical ends for tins comprising providing a plurality of elongated stacks of ends of at least a predetermined length, each stack comprising a plurality of separate ends in abutting relationship, supplying said stacks at intervals of time to a first conveying means where the ends are resiliently gripped to hold the ends of each stack in abutting relationship with one another and spaced from the preceding stack supplied to the first conveying means, moving each stack of ends linearly by the first conveying means in the direction of elongation of the stack at a first speed to a second conveying means where each stack of ends is further resiliently gripped to hold the ends of each stack in abtting relationship with one another, moving each stack of ends linearly by the second conveying means in the direction of elongation of the stacks at a second speed which is less than the first speed, the stacks of ends being supplied to the first conveying means in intervals short enough to ensure that the foremost end of each subsequent stack of ends is brought into abutting contact with the rearmost end of the preceding stack while the preceding stack is at least partially gripped by the first conveying means to ensure that a continuous stack of ends is provided downstream of the first conveying means.

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SPREADING APPARATUS FOR ATTACHMENT TO TRACTORS

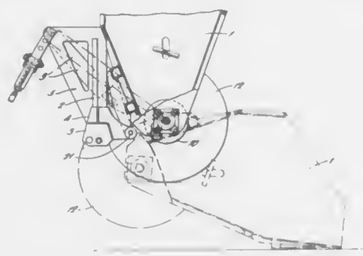
David W. Jenkins, Godalming, and Philip Threadgold, bookham, both of United Kingdom, assignors to Charterhouse Turf Machinery Limited, Guildford, England

Filed Jan. 19, 1989, Ser. No. 302,601

Claims priority, application United Kingdom, Apr. 8, 1988, 8808234

Int. Cl.[5] **B60P** *1/46*

U.S. Cl. 414—469 **10 Claims**



1. Spreading apparatus for use with a tractor having a hydraulic power source and a three-point-linkage, the spreading apparatus comprising: a rigid frame having attachment means for mounting said frame on the three-point-linkage of a tractor; a hopper movably mounted on said frame; spreading means contained in said hopper for spreading a substance contained in said hopper on the ground; a hydraulic ram connected to said frame and to said hopper and extending between said frame and hopper; and hydraulic connection means for connecting said hydraulic ram of said spreading apparatus operatively with the hydraulic power source of the tractor, said hydraulic ram moving said hopper relative to said frame so as to move said hopper relative to said frame from a spreading position, in which said hopper is in a substantially upright position, to a loading position, in which said hopper is in a substantially horizontal position, whereby said hopper may be used as a shovel to allow said substance to be spread to be loaded into said hopper.

4,938,651

GEAR LOCK QUICK DISCONNECT MECHANISM FOR ARTICULATED MACHINE

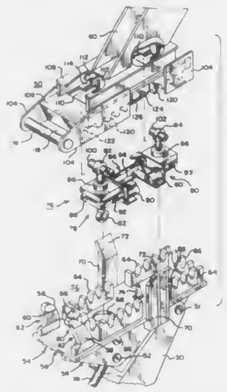
Jr. Gilmor, Ash Flat, Ak., and James J. Maynard, Marcellus, N.Y., assignors to Gilmore Transportation Service, Inc., Sioux City, Iowa

Filed Apr. 4, 1988, Ser. No. 177,360

Int. Cl.[5] **B66C** *23/56*

U.S. Cl. 414—694 **25 Claims**

1. In an articulated crane-type machine comprising a base, an overcarriage swingably mounted on said base and including means for swinging said overcarriage in a generally horizontal plane, a boom having a proximal end and a distal end, the proximal end being pivotally mounted on said overcarriage for motion in a generally vertical arc, means for raising and lowering said boom in said arc, a stick member at the distal end of said boom including quick-disconnect means for removably mounting the proximal end of said stick member onto said boom and permitting rocking movement of said stick member relative to said boom, a tool mounted at a distal end of said stick member, and means for rocking the stick member relative to said boom; the improvement wherein said quick-disconnect means comprises a shoe articulated on the distal end of said boom and a mating member affixed on the proximal end of said stick member removably coupling to said shoe, said shoe and mating member each comprising respective mating gear rack members which mesh together when said shoe and mating member are coupled together and prevent lateral play between



the stick member and the boom, wherein said rack members include at least one gear tooth rack extending horizontally on each of said shoe and said mating member.

4,938,652

LOAD HANDLING VEHICLES

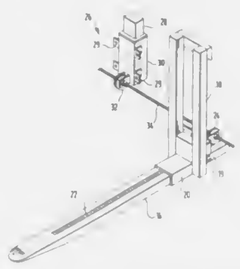
Roy Sanderson, Skegness, England, assignor to Sanderson (Forklifts) Limited, England

Filed Jul. 8, 1988, Ser. No. 217,013

Claims priority, application United Kingdom, Jul. 10, 1987, 8716356

Int. Cl.[5] **B66C** *1/22*

U.S. Cl. 414—718 **3 Claims**



1. A load handling vehicle comprising a self-propelled steerable chassis and a fork assembly comprising: a carriage; at least two parallel spaced-apart fork blades mounted on said carriage by means permitting rectilinear sliding of said fork blades in a longitudinal direction through said carriage from a load supporting extended position to a retracted position in which said blades will be disengaged from the load; and a driving mechanism for moving said fork blades between said extended and retracted positions, being adapted to provide driving motion for said fork blades, but at the same time to permit lateral adjustment of said fork blades relatively to said carriage, wherein said driving mechanism for moving said fork blades comprises a power driven shaft extending transversely of said carriage and at least two drive wheels one for each of said fork blades, each of said drive wheels engaging with its respective fork blade to provide the rectilinear sliding motion of said fork

blade, and each of said drive wheels being mounted on said power driven shaft in a manner permitting relative axial motion but preventing relative rotary motion between each said drive wheel and said power driven shaft.

4,938,653

TRANSMISSION ARRANGEMENT, IN PARTICULAR A MALTESE TRANSMISSION ARRANGEMENT

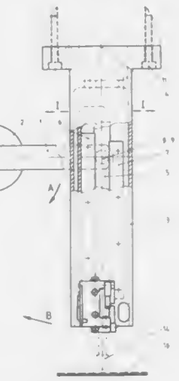
Gustav Wirz, Berg, Switzerland, assignor to Alphasem AG, Berg, Switzerland

Filed Oct. 27, 1988, Ser. No. 263,200

Claims priority, application Switzerland, Nov. 9, 1987, 4367/87

Int. Cl.[5] **B66C** *23/00*

U.S. Cl. 414—744.2 **9 Claims**



1. A transmission mechanism comprising at least one drive arm rotatably mounted to turn about a first axis, at least one driven arm rotatably mounted to turn about a second axis parallel to said first axis, a first guide member mounted on said driven arm and located to define a first guide edge of a guide slot on said driven arm, a second guide member parallel to said first guide member defining a second guide edge of said guide slot, said second guide member being formed and mounted on said driven arm for said second guide edge to yield resiliently under pressure in a direction away from said first guide member, said first guide member being relatively nonyielding and nonresilient under pressure, said first and second edges being arranged in displaced relationship with each other in a direction perpendicular to the planes of rotation of said arms, and two rolling members each rotatably mounted on said drive arm and located thereon and shaped for one of said rolling members to travel along said first edge of said guide slot and for the other of said rolling members to travel along said second edge of said guide slot under resilient pressure exerted by said second guide edge when said drive arm is rotated about said first axis.

4,938,654

AUTOMATED WAFER INSPECTION SYSTEM

Richard R. Schram, 11435 Tampa Ave., #94, Northridge, Calif. 91326

Division of Ser. No. 735,822, May 17, 1985, Pat. No. 4,818,169. This application Jan. 28, 1988, Ser. No. 149,391

Int. Cl.[5] **B65G** *47/24*

U.S. Cl. 414—757 **3 Claims**

1. An XY axis positioning system for semiconductor wafers or like elements, comprising:

(a) a microscope mounted in a midregion of a support above an inspection area;

(b) an XY stage, further comprising:

(i) a reference surface;

(ii) a Y-axis bed mounted on the reference surface;

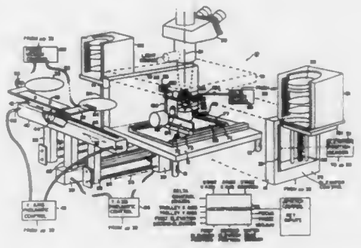
(iii) at least one Y-axis side rail mounted on the Y-axis bed;

(iv) a Y-axis carriage, the Y-axis carriage being slidably attached to the Y-axis side rail, thereby permitting the Y-axis carriage to be translated in a direction parallel to the Y-axis;

(v) a Y-axis motor, the y-axis motor being mounted fixedly with respect to the reference surface, the Y-axis motor serving to drive the Y-axis carriage;

(vi) at least one X-axis side rail, the X-axis side rail being mounted on the Y-axis carriage;

(vii) an X-axis carriage, the X-axis carriage being slidably attached to the X-axis side rail, thereby permitting the



X-axis carriage to be translated in a direction parallel to the X-axis, the X-axis carriage being orthogonally movable because of the underlying Y-axis carriage on which the X-axis carriage resides;

(viii) an x-axis motor, the X-axis motor being mounted fixedly with respect to the Y-axis carriage, the X-axis motor serving to drive the X-axis carriage;

(c) an uppermost vacuum chuck, the XY stage including means for rotating and moving the chuck along a vertical Z-Axis and being mounted on the inspection area;

(d) an edge sensor mounted to span the plane of a wafer on the chuck for sensing the edge position of the wafer; and

(e) microprocessor means coupled to control the XY position of the XY stage and responsive to signals from the edge sensor for storing a number of edge position coordinates, and for computing major and minor flats of the wafer therefrom, and location of a center region of the wafer relative to a predetermined axis.

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WAFER TRANSFER METHOD

Takanobu Asano, Yokohama, Japan, assignor to Tel Sagami Limited, Kanagawa, Japan

Filed Feb. 23, 1989, Ser. No. 313,902

Claims priority, application Japan, Feb. 25, 1988, 63-40590

Int. Cl.[5] **B65B** *69/00*

U.S. Cl. 414—786 **7 Claims**

1. A wafer transfer method comprising:

a first step of taking out a plurality of wafers from a cassette while holding the wafers by means of holding means;

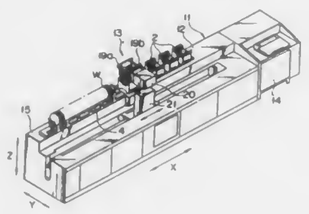
a second step of transporting the held wafers to a region over a boat;

a third step of transferring all the wafers from the holding means to the boat so that the wafers are arranged in a predetermined position on the boat;

a fourth step of moving the holding means relative to the boat by a distance equal to an integral multiple of a spacing between two adjacent wafers, and holding a required number of wafers, out of the plurality of wafers on the

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boat, by means of the holding means to remove the required number of wafers on the boat; and



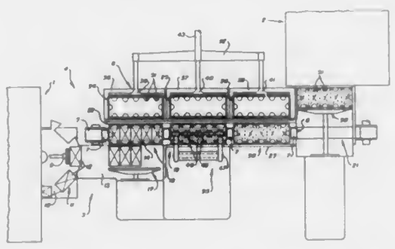
a fifth step of transferring a plurality of wafers from another cassette to the boat after the fourth step.

4,938,656

FEED EQUIPMENT FOR SUPPLYING A MACHINE UNIT WITH COMMODITIES ARRANGED IN SUBSTANTIALLY PARALLELEPIPED GROUPS

Antonio Gamberini, Bologna, and Marco Brizzi, Zola Predosa, both of Italy, assignors to G.D. Societa per Azioni, Bologna, Italy

Filed Sep. 30, 1988, Ser. No. 251,397
Claims priority, application Italy, Oct. 2, 1987, 3626 A/87
Int. Cl.[5] B65G *60/00*
U.S. Cl. 414—789.5 **6 Claims**



1. Feed equipment for supplying a machine unit with commodities arranged in substantially parallelepiped groups, comprising:

an intermittently driven conveyor by which groups, each having at least one layer formed from the commodities, are carried toward the machine unit; and

a device by which flat distance pieces, each having a given thickness, are dispensed and associated with the groups, positioned parallel with the formed layer, as they proceed on the conveyor toward the machine unit, said device comprising at least two push rods that are rigidly interconnected and installed at dissimilar heights in relation to said conveyor.

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SHINGLE STACKING MACHINE

Bruce V. Benson, Roselle, and Ashraf A. Siddigi, Bensenville, both of Ill., assignors to Reichel & Drews, Inc., Itasca, Ill.

Filed May 9, 1989, Ser. No. 349,512
Int. Cl.[5] B65H *31/30*
U.S. Cl. 414—790.4 **8 Claims**

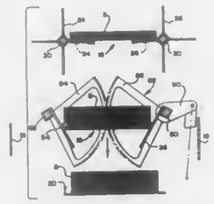
1. A shingle stacking machine for receiving shingles rapidly delivered thereto from a conveyor in successive order, said machine comprising:

a frame;

shingle supporting means for receiving shingles from said conveyor and supporting said shingles in a superposed relationship, said supporting means including a pair of generally parallel and elongated horizontal wheel assemblies, each wheel assembly being rotatably mounted on said frame about a fixed axis and includes a plurality of planar support members radially extending from said axis, with one support member on one wheel assembly normally extending inward toward a support member on the other wheel assembly at substantially the same level in substantially the same horizontal plane;

a pair of shelf-like supports pivotally carried on said frame for receiving, holding, and transferring a stack of shingles dropped from said shingle supporting means;

means for intermittently indexing said shingle supporting means, said indexing means including a continuously driven vacuum operated clutch assembly for intermittently driving said wheel assemblies, said clutch assembly including electromagnetic valve means for controlling operation of a drive shaft which rotatably drives said wheel assemblies, via drive means operatively connecting



said drive shaft with said wheel assemblies, in timed relation with the advancing shingles and after a predetermined number of shingles have been stacked on said shingle supporting means; and

means for cupping said shingles as they are received on said shingle supporting means from said conveyor, said cupping means comprising inclined guide plate means operatively positioned between said conveyor and said shingle supporting means and defining a generally upwardly concave guide surface for imparting a generally upward concave, transversely cupped configuration to said shingles as they are received on said wheel assemblies of said shingle supporting means to thereby enhance the rigidity of each shingle along the longitudinal axis thereof,

wherein said electromagnetic valve means are operable to position said elongated wheel assemblies so that a support member on one of said wheel assemblies and a like support member on the other of said wheel assemblies are inclined slightly downwardly toward each other upon receiving said shingles to cooperate with said cupping means to transversely cup said shingles.

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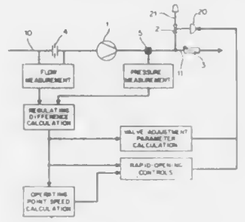
METHOD OF RELIABLY OPERATING TURBOCOMPRESSORS

Wilfried Blotenberg, Dinslaken, Fed. Rep. of Germany, assignor to MAN Gutehoffnungshütte AG, Oberhausen, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,509
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809070
Int. Cl.[5] F04D *27/02*
U.S. Cl. 415—27 **9 Claims**

1. A method for reliably operating turbocompressors comprising the steps: measuring continuously flow and forwarding pressure defining the operating point of a compressor; opening at least one blow-off valve or blow-around valve by a blow-off regulating system to prevent surging once said operating point of the compressor has attained a blow-off curve that parallels

a surge limit but before the operating point can attain the surge limit so that the flow will attain a minimum level depending on the forwarding pressure; determining continuously the speed at which said operating point moves relative to said blow-off curve or surge limit to obtain opening of said valve ahead of time; opening said blow-off valve or blow-around valve at maximum speed by a procedure superseding a normal blow-off



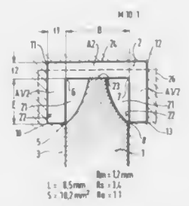
regulation system when said operating point has arrived at or beyond a rapid valve-opening curve representing a speed-dependent minimum distance of said operating point from said blow-off curve; discontinuing motion in said valve opening and resuming regulation of the valve beginning with its latest state by said normal blow-off regulation system when said operating point has traveled back beyond said rapid valve-opening curve.

4,938,659

FUEL PUMP

Helmut Bassler, Waiblingen, and Ulrich Kemmner, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,486
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3327922
Int. Cl.[5] F04D *5/00*
U.S. Cl. 415—55.1 **2 Claims**



1. In a fuel-pumping aggregate of the type having a housing accommodating drive means and pump means driven by said drive means and operated according to the peripheral principle, said pump means including a rotatable impeller having a central axis and an outer peripheral portion having a periphery, said outer peripheral portion being provided with a plurality of vanes uniformly spaced from each other, said housing having an inner wall, said outer peripheral portion extending towards said inner wall and being spaced therefrom so that a fuel-feeding passage is defined therebetween, said outer portion being immersed into said fuel feeding passage a distance corresponding to the height of each vane so that said inner housing portion in the region of said passage has an axial wall portion extended in the axial direction of the impeller and two lateral wall portions extended in the radial direction of the impeller, and wherein hydraulic characteristics of said pump means are defined by a first pump geometric characteristic $R_m = S/L$ lying within the range of approximately from 0.4 to 2 mm, wherein S is a cross-sectional area of a space enclosed between the inner wall of the housing and the periphery of said outer portion and L is the length of the periphery of said outer portion, the improvement comprising that hydraulic characteristics of said pump means are further defined by a second pump geometric characteristic $R_s = B/E$ and a third pump geometric characteristic $R_q = A_2/A_1$ which lie within the range of approximately 0.5 to 1.5, wherein

B is the width of the impeller in the axial direction thereof,

E is the height of each vane,

A_1 is the sum of the cross-sectional areas of two lateral portions of said space, extended laterally of said outer portion of the impeller; and

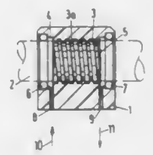
A_2 is the cross-sectional area of a remaining portion of said space, the cross-sectional area of each of said two lateral portions being defined by the product of the height of the vane and a distance t_1, defined in said axial direction between the impeller and one of said lateral wall portions, and the cross-sectional area A_2 being defined by the product of a distance t_2 defined in said radial direction between an end radial face of the impeller and said axial wall portion, and the sum of the width of the impeller and two distances t_1.

4,938,660

PUMP FOR VISCOUS FLUIDS

Karsten Schöne, Korb; Hans Nickel, Cottenweiler; Werner Geyer, Waiblingen, and Roland Schierling, Affalterbach, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jun. 8, 1989, Ser. No. 373,636
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1988, 3820483
Int. Cl.[5] F04D *3/02*
U.S. Cl. 415—90 **22 Claims**



1. A pump for pumping viscous fluids, the pump comprising:

a first body defining a stator having a longitudinal stator axis;

a second body defining a rotor having a longitudinal rotor axis, said rotor being rotatably mounted in said stator so as to be coaxial therewith;

said stator having a smooth inner wall surface facing said rotor and said rotor having a smooth outer wall surface in seal-tight contact engagement with said smooth inner wall surface, said wall surfaces conjointly forming a surface interface;

one of said bodies having a wall structure made of an elastomer at said surface interface;

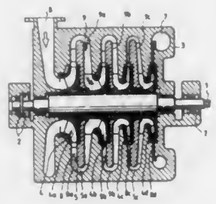
said wall structure made of elastomer having a screw-shaped spiral slot with a plurality of turns and respective ends formed therein so as to leave a spiral elastomer wall section having a top surface in seal-tight contact engagement with the smooth wall surface of the other one of said bodies to define said interface and to prevent a hydraulic short circuit between each two mutually adjacent ones of said turns notwithstanding wear between said stator and said rotor;

suction connection means formed at one of said ends for conducting the viscous fluid to be pumped into said slot; and,

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pressure connection means formed at the other one of said ends for conducting the viscous fluid out of said slot.

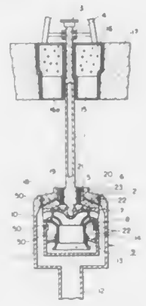
4,938,661
MULTISTAGE CENTRIFUGAL COMPRESSOR
Hiromi Kobayashi; Hideo Nishida, and Haruo Miura, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 8, 1989, Ser. No. 404,597
Claims priority, application Japan, Sep. 14, 1988, 63-228745
Int. Cl.[5] F01D *07/00*; F03D *03/06*
U.S. Cl. 415—199.1 **18 Claims**



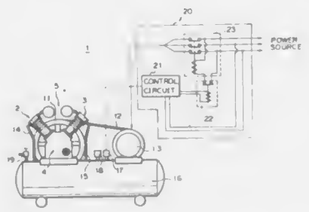
1. A multistage centrifugal compressor comprising a shaft rotatably on an axis, a plurality of centrifugal impeller means fixed on said shaft each having an outlet at a periphery thereof, conduit means for connecting said impeller means to form a fluid compression path for fluid undergoing multi-stage compression by said impeller means from a suction side to a delivery side of the compressor, said conduit means including a plurality of diffuser means arranged radially outwardly from impeller means, each impeller means and associated diffuser means constituting a stage of the centrifugal compressor, said diffuser means including at least two vaned diffusers provided with vanes having leading edges at inlet ends thereof a first one of said at least two vaned diffusers has a ratio of diffuser vane leading edge radius to impeller outlet radius larger than a ratio of diffuser vane leading radius to impeller outlet radius ratio of a second of said at least two vaned diffusers, and wherein the second of said at least two vaned diffusers is closer along said fluid compression path to the delivery side of the compressor than said first one of said at least two vaned diffusers.

4,938,662
MECHANICAL PUMP EQUIPMENT
Shigehiro Shimoyashiki, Hitachi; Kotaro Inoue, Tohkai; Yojiro Hayashi, Tsuchiura; Yasuo Tachi, Tokyo; Ryuhei Kawabe, Hitachi, and Yoshihiko Sato, Tohkai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 137,259, Dec. 23, 1987, abandoned.
This application Oct. 3, 1989, Ser. No. 415,486
Claims priority, application Japan, Jan. 21, 1987, 62-9852; Mar. 6, 1987, 62-50062
Int. Cl.[5] F04D *29/60*
U.S. Cl. 415—214.1 **10 Claims**

1. A pump system comprising: an upper structure removable with respect to a vessel; a rotary shaft of the pump passing through the upper structure and freely extending down into the liquid contained in the vessel; an impeller mounted to the rotary shaft; a bearing for supporting the rotary shaft at a point above the impeller in at least the radial direction; a bearing block to which the bearing is mounted; a diffuser mounted to the bearing block and disposed opposite to the fluid delivery port of the impeller; and a delivery pipe for leading the fluid coming out of the diffuser toward the outside of the pump whereby; the delivery pipe is supported in the vessel independently of the other components of the pump, the diffuser and delivery pipe are supported at a position lower than the rotary shaft and the bearing block is removably installed in the delivery pipe such that lateral vibration of the bearing is supported by the diffuser and delivery pipe.

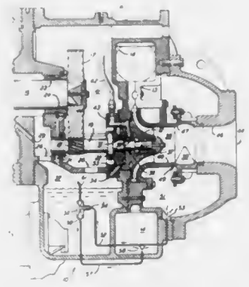


4,938,663
AIR COMPRESSOR MALFUNCTION DETECTOR
Hiroshi Mitsuhashi; Harutsugu Ushiota; Akiharu Odagiri; Gen Kanoh, and Susumu Sakamoto, all of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan
Filed Feb. 17, 1989, Ser. No. 312,055
Claims priority, application Japan, Feb. 19, 1988, 63-21088[U]
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—44 **7 Claims**



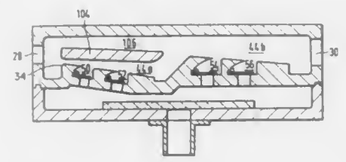
1. A compressor comprising:
a pressure sensor installed at a predetermined position in said compressor to detect the level of pressure at said position;
memory means for storing the behavior of the continuous change of the pressure level at said predetermined position that is obtained when said compressor is running in a normal state;
means for judging the behavior of the continuous change of the pressure level actually taking place at said predetermined position on the basis of an output from said pressure sensor and making a comparison between said actual pressure change behavior and said pressure change behavior in the normal state that is stored in said memory means; and
means for suspending said compressor when said actual pressure change behavior is different from said pressure change behavior in the normal state.

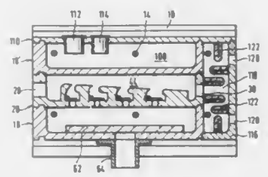
4,938,664
OIL RECLAIM SYSTEM
Thomas M. Zinsmeyer, Pennellville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 13, 1989, Ser. No. 435,129
Int. Cl.[5] F04B *23/08*
U.S. Cl. 417—83 **3 Claims**



1. An improved oil ejector system of the type operable to scavenge oil from a lower portion of a centrifugal compressor inlet housing and deliver it to an oil sump comprising:
an ejector pump having a low pressure line fluidly connected to the inlet housing lower portion and a discharge nozzle fluidly connected to the oil sump, said ejector pump having a high pressure inlet which is supplied with a high pressure flow of fluid from a bottom portion of a collector containing high pressure refrigerant as well as an accumulation of lubricating oil therein.

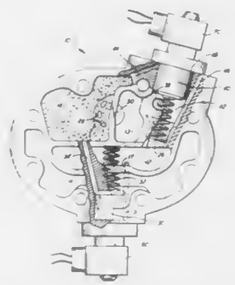
4,938,665
JET PUMP
Jurgen Volkmann, Zum Vulting 10, 4777 Schwefe-Welver, Fed. Rep. of Germany
Filed Jun. 29, 1988, Ser. No. 213,018
Claims priority, applicatioo Fed. Rep. of Germany, Jun. 29, 1987, 3721435
Int. Cl.[5] F04F *3/00*; B65G *53/24*
U.S. Cl. 417—174 **23 Claims**





1. A jet pump for the suction and/or conveyance of flowable materials or mixtures of materials with the aid of a liquid or gaseous propellant medium, comprising a housing provided with inlets for the propellant medium and a flowable material and a common outlet, wherein a flow passage is arranged between the inlet for the propellant medium and the outlet, and within the flow passage is formed at least one propellant nozzle, at least one diffuser, and at least one suction chamber connected with the inlet for the flowable material and attached downstream from said at least one propellant nozzle; said flow passage having a rectangular cross section limited on two sides by symmetrical wall surfaces with longitudinal sections between said wall surfaces parallel to a plane of symmetry and having identical sectional contours through an inside of the housing, wherein the wall surfaces are formed of separate housing walls, between which the sectional contours and dimensions are determined by profile members and wherein at least one flow defining element, as compared with one or more other flow defining element can be adjusted for modification of a shape and/or sectional extension of the flow passage in a direction of the plane of symmetry.

4,938,666
STAGED UNLOADING OF CYLINDER BANK
John J. DeSantis, Dewitt; Bruce A. Fraser, Manlius, and Peter F. Kaido, West Leyden, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 29, 1988, Ser. No. 237,356
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—295 **10 Claims**



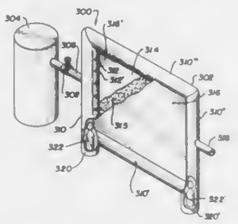
1. A method for unloading one bank of cylinders in a compressor having a plurality of banks of cylinders to achieve smaller steps of unloading including the steps of:
unloading a first cylinder in the one bank to achieve a first step of unloading;
with only a second cylinder still remaining loaded in the one bank, then unloading the one bank.

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METHOD FOR THE MANUFACTURE OF A VACUUM INSULATING STRUCTURE AND AN INSULATING STRUCTURE SO PRODUCED
Paolo della Porta, Milan, Italy, assignor to SAES Getters Spa, Milan, Italy
Filed Jun. 28, 1989, Ser. No. 372,323
Claims priority, application Italy, Sep. 30, 1988, 2155 A/88
Int. Cl.[5] F04B *37/02*
U.S. Cl. 417—48 **9 Claims**

1. A method for the manufacture of a vacuum insulating structure comprising the steps of;
I. flowing a getterable purge gas from a purge gas source, in fluid contact with said vacuum insulating structure, via a purge gas inlet attached to the vacuum insulating structure thereby expelling atmospheric air through a purge gas outlet attached to the vacuum insulating structure to produce a purged vacuum insulating structure, and;
II. closing said purge gas outlet, and;

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III. removing said getterable purge gas remaining in the purged vacuum insulating structure by means of a purge gas removal means in fluid contact with the vacuum insulating structure via a purge gas sorption conduit to pro-



duce a residual gas pressure of less than about 1 mbar within the vacuum insulating structure, and;

IV. closing said purge gas sorption conduit, and;

V. contacting the residual gas with a residual gas getter material situated within the vacuum insulating structure.

4,938,668

ROTATING PISTON MACHINE

Jürgen Schukey, Schnackenburgallee 173b, Hamburg 54, Fed. Rep. of Germany

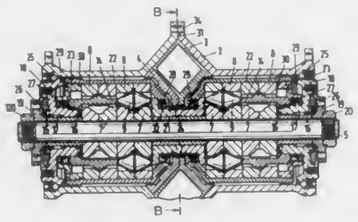
PCT No. PCT/EP87/00401, § 371 Date Jan. 10, 1989, § 102(e) Date Jan. 10, 1989, PCT Pub. No. WO88/00641, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 22, 1987, Ser. No. 299,808

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624842

Int. Cl.[5] **F04C** *5/00, 2/324*

U.S. Cl. 418—38 **20 Claims**



1. A rotating piston machine for use with a working medium comprising:

a casing (2) having wall structure in which a plurality of spaced apart intake and discharge openings (*6a*, *6b*) are provided for the working medium;

a shaft (5) supported within the casing and defining an annular space (1) between the shaft and the casing:

first and second rotating elements (3, 4) in driving relationship with the shaft and bearing sealingly against the casing wall for rotation therein, each rotating element having four sector-shaped vanes extending radially relative to the shaft and the two rotating elements being arranged coaxially with each vane of one rotating element located between two vanes of the other rotating element;

first and second cam track control means (7, 8, 9) operatively connected between the shaft and one of the rotating elements, for cyclically imparting variations in the relative speed of rotation of the rotating elements and in the distances between adjacent vanes of the rotating elements upon rotation relative to the shaft, each cam track control means including,

an inner cam ring (7) which is connected for corotation with the shaft,

an outer cam ring (8) which is connected for corotation with said one of the rotating elements,

four rolling elements (9) situated between the inner cam ring and the outer cam ring, each rolling element interacting with the cam rings so as to be movable radially relative to the shaft; and

cage means (14) connected to the casing, for holding the rolling elements of the first and second cam track control means against displacement in the circumferential direction relative to the shaft.

4,938,669

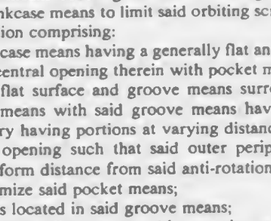
SCROLL COMPRESSOR WITH AXIAL COMPLIANCY

Howard H. Fraser, Jr., Lafayette; William R. Lane, Dewitt, both of N.Y., and Shahrokh Etemad, Stratford, Conn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 23, 1989, Ser. No. 299,574

Int. Cl.[5] **F04C** *18/04, 27/00*

U.S. Cl. 418—55 **9 Claims**



1. Axial compliance means for a scroll compressor having a fixed scroll means, an orbiting scroll means in operative engagement with said fixed scroll means, crankcase means and anti-rotation means coacting with said orbiting scroll means and said crankcase means to limit said orbiting scroll means to orbiting motion comprising:

said crankcase means having a generally flat annular surface with a central opening therein with pocket means formed in said flat surface and groove means surrounding said pocket means with said groove means having an outer periphery having portions at varying distances from said central opening such that said outer periphery is at a non-uniform distance from said anti-rotation means so as to maximize said pocket means;

said means located in said groove means;

said orbiting scroll means movably engaging said seal means and coacting therewith to isolate said pocket means;

means for supplying pressurized fluid to said pocket means for providing an axial force to said orbiting scroll means.

4,938,670

ROTARY FLUID MACHINE

Tocew Lee, P.O. Box 10160, Taipei, Taiwan

Filed Oct. 2, 1989, Ser. No. 416,033

Int. Cl.[5] **F04C** *18/18*

U.S. Cl. 418—150 **5 Claims**

1. A rotary fluid machine comprising:

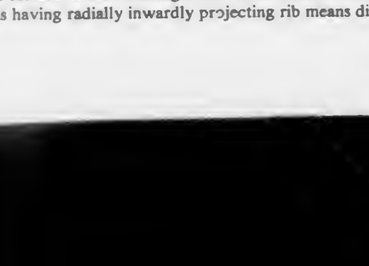
a casing having a double-cylinder bore portion formed in said casing, a fluid inlet formed in one side of said casing communicated with said bore portion, and a fluid outlet formed in the other side of said casing opposite to said fluid inlet fluidically communicated with said bore portion through a check valve formed between said outlet and said bore portion; and

a pair of intermeshing Roots type rotors respectively mounted on a pair of shafts rotatably mounted in said double-cylinder bore portion of said casing and respectively driven by a pair of gears,

each said rotor having a pair of lobe portions respectively disposed on two opposite ends of a long coordinate axis of a profile of said rotor, and a waist portion formed on a central portion of said rotor having a pair of shallow recess portions formed on two opposite sides of a short coordinate axis perpendicular to said long coordinate axis of said profile of said rotor, both said axes intersected at an origin of a center of said rotor,

the improvement which comprises:

each said lobe portion of said rotor having a curvature radius r of one half of a radius R of said rotor rotatably defined in each cylinder of said double-cylinder bore portion of said casing, said cylinder of said double-cylinder bore portion having the same radius R of said rotor, each said shallow recess portion of said waist portion having a



curvature radius R as same as the radius R of said rotor, of which each said recess portion is obtained by plotting an arc with the radius R around a curvature center on a line extrapolated from said short coordinate axis of said rotor, and said curvature center for plotting said recess portion having a distance of $\sqrt{2}$ R separated from center of said rotor and also said center of said cylinder of said double-cylinder bore portion, said waist portion having a transverse thickness of 2R ($\sqrt{2}-1$), a distance between two said centers of two said cylinders or between two centers of two said rotors intermeshed and rotatably mounted in said double-cylinder bore portion being $\sqrt{2}$ R,

whereby upon a tangential intersecting between each said shallow recess portion and each said lobe portion, a smooth rotor profile will be formed for ensuring a single-point contact between the two intermeshing rotors for a smooth running of said rotors.

4,938,671

ROTARY ROLLER PUMP WITH COMPLEMENTARY RIBS AND GROOVES BETWEEN HOUSING, ROTOR AND ROLLERS

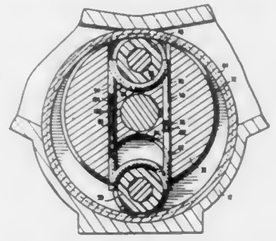
George A. Thompson, 114 Demotte Ave., Daytona Beach, Fla. 32019

Filed Jan. 26, 1989, Ser. No. 301,566

Int. Cl.[5] **F04C** *2/344*

U.S. Cl. 418—178 **4 Claims**

1. A rotary pump comprising housing means having a cylindrical internal surface, a rotor rotatably mounted in said housing and having a longitudinal axis disposed eccentrically relative to the cylindrical inner surface of said housing means, a pair of diametrically opposed longitudinal recesses formed in an outer surface of said rotor, a pair of cylindrical rollers disposed in said recesses, bearing support means extending through said rotor in engagement with said rollers for positively maintaining said rollers in engagement with said cylindrical surface of said housing means at all times, bearing ring means having radially inwardly projecting rib means disposed in said housing and extending about the cylindrical inner surface of said housing and complimentary annular grooves



formed in said outer surface of said rotor and outer surfaces of said rollers for engagement with said rib means.

4,938,672

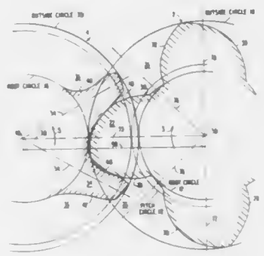
SCREW ROTOR LOBE PROFILE FOR SIMPLIFIED SCREW ROTOR MACHINE CAPACITY CONTROL

Robert A. Ingalls, Springfield, Vt., assignor to Excet Corporation, Springfield, Vt.

Filed May 19, 1989, Ser. No. 354,526

Int. Cl.[5] **F04C** *2/16*

U.S. Cl. 418—201 **4 Claims**



1. A male rotor for a screw rotor machine comprising:

an elongated formed male rotor rotatable about a central longitudinal axis and having a pitch circle centered on said axis;

a plurality of elongated helical lobes extending longitudinally of said male rotor, and circumferentially spaced about said pitch circle so as to provide intervening grooves therebetween forming addendums outside said pitch circle and dedendums inside said pitch circle;

a major portion of each of said lobes extending generally radially outwardly from said pitch circle;

the profile of each of said lobes in a plane perpendicular to said axis, having a tip portion, a root portion, and respective, generally convex lobe, leading and trailing flank portions extending intermediate said tip portion and said root portion of a respective adjacent groove:

the improvement wherein said male rotor lobe tip portion and root portions are involute curves for generating mating involute groove root and tip portions of a female rotor for said screw rotor machine when the rotors are in mesh, resulting in male and female rotor mating surfaces having low leakage paths between high and low pressure volumes with the rotors in mesh, and said lobe tips of said male rotor each including a ramp having a high point acting as a sealing strip between male and female rotor lobe tips and

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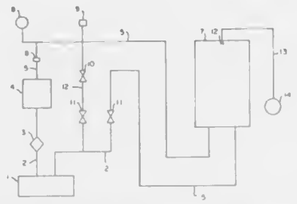
a screw rotor machine casing, thereby simplifying rotor geometry.

4,938,673

ISOSTATIC PRESSING WITH MICROWAVE HEATING AND METHOD FOR SAME

Donald J. Adrian, 7456 N. 53rd St., Milwaukee, Wis. 53223

Filed Jan. 17, 1989, Ser. No. 308,901
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—23 **14 Claims**



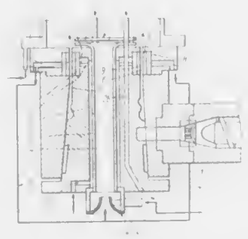
1. A method for isostatically pressing comprising:
preparing a workpiece, said workpiece being a composition comprising a powdered coupler and a first powdered insulator;
immersing said workpiece in a second powdered insulator, said second powdered insulator being in a compressible container;
placing said contained, immersed workpiece into a pressure vessel;
transmitting microwave energy into said pressure vessel at a sufficient frequency for a sufficient time to elevate said workpiece to a desired temperature; and
densifying said workpiece with a fluid medium supplied into said pressure vessel under pressure.

4,938,674

EXTRUDER HEAD FOR MAKING ANTICORROSIVE TUBULAR POLYMERIC FILM

Semen Y. Liberman, ulitsa B.Khmelnitskogo, 1O8, kv.27., and Igor M. Vertyachikh, ulitsa P.Brovki, 25, kv.84., both of USSR, Gomel, U.S.S.R.

Filed Mar. 24, 1989, Ser. No. 328,170
Int. Cl.[5] B29D *23/22*
U.S. Cl. 425—72.1 **3 Claims**



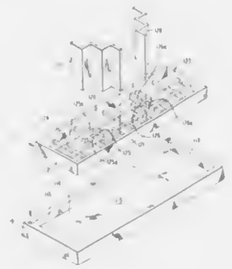
1. An extruder head for making an anticorrosive tubular polymeric film, comprising:
a hollow body;
an extrusion die mounted on said body;
a core mounted in said body and extending through said die;
a molding passage defined by the inner surface of said body and outer surface of said core;
an annular molding opening defined by the inner surface of said die and outer surface of said core;
annular grooves in the body of said core and die having their open sides facing towards each other, said grooves being located in the zone of said annular molding opening;
a liner of a material permeable for a corrosive inhibitor or its solution in a plasticizer mounted in said grooves;
a chamber of said core defined by walls of said groove of the core and the inner wall of said liner mounted in said groove;
a chamber of said extrusion die defined by walls of said groove in said die and the inner wall of said liner mounted in said groove;
a cylindrical pipe for supplying compressed air for blowing polymer melt into a tube, said pipe being mounted in said interior space of said core, one end of the pipe being in the form of a diverging tube and being provided with a blind wall extending perpendicularly with respect to the pipe axis to define an opening with the wall of the diverging tube;
a scroll having at least one tangential nozzle for supplying compressed air, the scroll having one end face thereof secured to an end of said pipe which is remote from said diverging tube, communicating with the pipe and extending coaxially therewith, a diaphragm in the form of a converging tube coaxial with the scroll communicating with said chamber of the die being provided at the other end of the scroll remote from said pipe;
at least one passage for supplying a corrosion inhibitor or its solution in a plasticizer communicating with said chamber of the core.

4,938,675

APPARATUS FOR MAKING MULTI-SECTIONED AND MULTI-COLORED SOLID PRODUCTS HAVING A DESIRED GEOMETRIC OR OTHER SHAPE

Joseph A. Contreras, 41-303 Mount Kemble Ave., Morristown, N.J. 07960, and Gregory P. Contreras, 106 Hauge St., Jersey City, N.J. 07307

Filed Dec. 12, 1988, Ser. No. 282,513
Int. Cl.[5] B28D *7/06;* B29C *39/12*
U.S. Cl. 425—121 **13 Claims**



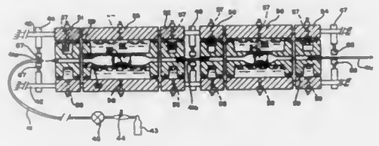
1. Apparatus for making a multi-sectioned multi-colored solid product of predetermined size and shape from different slurry mixtures comprising,
a. support and mold means having a cavity to define generally the size and shape of the product, said cavity having a bottom surface;
b. latticed grid means spaced from said bottom surface in said cavity,
said latticed grid means having at least one slot to define slurry receiving segments in said cavity,
c. dividing means removably positionable in said at least one slot so that each said slurry receiving segments can be alternatively and selectively filled with one of the different slurry mixtures whereby
said latticed grid means is so constructed and arranged with respect to said support and mold means that it becomes generally integral with the slurry mixtures after they solidify in the formation of the solid product of desired size and shape.

4,938,676

APPARATUS FOR MANUFACTURING BALLOONS FOR MEDICAL DEVICES

Stefan Jackowski, Hollywood, and Leonard Pinchuk, Miami, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 253,070, Oct. 4, 1988, abandoned. This application Jul. 24, 1989, Ser. No. 384,418
Int. Cl.[5] B29C *49/08, 49/18*
U.S. Cl. 425—140 **12 Claims**



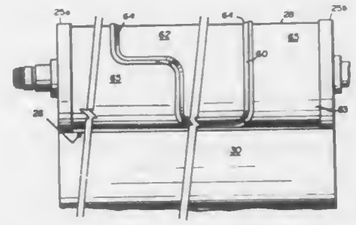
1. A molding apparatus for fabricating medical device balloons, comprising:
a free-blow biaxial orientation molding chamber having an infeed opening and an outfeed opening;
a blow molding chamber downstream of said free-blow biaxial orientation molding chamber, said downstream blow molding chamber having an infeed opening and an outfeed opening;
means for thermally isolating said free-blow biaxial orientation molding chamber from other components of the apparatus including said downstream blow molding chamber;
means for feeding a parison through the infeed opening and outfeed opening of the free-blow biaxial orientation molding chamber and through said infeed opening and outfeed opening of the downstream blow molding chamber;
means for supplying pressurized fluid into said parison at a location upstream of said infeed opening of the free-blow biaxial orientation molding chamber;
means for axially elongating said parison while a portion of the parison is within said free-blow biaxial orientation molding chamber and while another portion of the parison is within said downstream blow molding chamber;
said free-blow biaxial orientation molding chamber having means for permitting biaxial orientation and radial enlargement of the portion of the parison therewithin upon passage thereinto of pressurized fluid from said supplying means; and
said downstream blow molding chamber having means for permitting radial enlargement of the another portion of the parison therewithin upon passage thereinto of pressurized fluid from said supplying means.

4,938,677

PATTERN ROLLS USEFUL FOR THE IN-LINE CONTOURED EDGE MOLDING OF EXTRUDED PLASTIC PRODUCTS

Edward S. Robbins, III, 459 N. Court St., Florence, Ala. 35630

Continuation-in-part of Ser. No. 17,603, Feb. 24, 1987, abandoned, and a continuation-in-part of Ser. No. 158,622, Feb. 22, 1988, abandoned. This application Sep. 29, 1988, Ser. No. 250,684
Claims priority, application Canada, Feb. 24, 1988, 559756; European Pat. Off., Feb. 24, 1988, 88301577-8
Int. Cl.[5] B29C *43/46;* B30B *11/18*
U.S. Cl. 425—328 **7 Claims**



1. A pattern roll for forming at least first and second beveled peripheral edge portions of substantially constant geometry on a shaped article comprising:
a base roll defining an exterior cylindrical surface about its longitudinal axis; said base roll defining at least first and second groove sections recessed into said base roll relative to said cylindrical surface thereof, said first groove section extending about a portion of said base roll circumferentially relative to said base roll axis, and said second groove section extending along another portion of said base roll longitudinally parallel to said base roll axis;
first and second rib segments received within said first and second groove sections, respectively, each said first and second rib segments extending radially above said exterior cylindrical surface of said base roll by a predetermined dimension;
said first rib segment conforming to the generatrices of a right cylinder whose geometric center coincides with said roll axis, and wherein said first rib segment includes a first beveled surface derined along its cylindrical extent which, in cross-sectional profile, is planar and intersects said cylindrical exterior surface of said base roll along a first line within a reference plane tangent to said exterior roll surface so as to establish an angle A_1 between said first beveled surface and said reference plane;
said second rib segment including a second beveled surface along its longitudinal extent and intersecting said cylindrical exterior surface of said base roll along a second line within another reference plane tangent to said exterior roll surface so as to establish an angle A_2 greater than angle A_1, whereby said first and second beveled peripheral edge portions or substantially constant geometry may be formed by means of said roll.

4,938,678

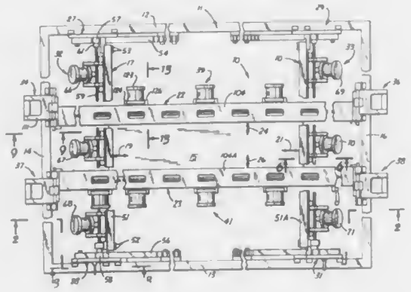
ADJUSTABLE CLAMP FRAMES FOR THERMO FORM MACHINE

James N. Oulman, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa

Filed Oct. 6, 1988, Ser. No. 254,179
Int. Cl.[5] B29C *51/26*
U.S. Cl. 425—397 **41 Claims**

1. A frame assembly for holding a plastic sheet in a thermo form machine comprising: a frame having longitudinal side rails and transverse end rails normally disposed relative to the

side rails, said side rails extended generally parallel to each other and having first and second opposite ends, said end rails being secured to the first and second ends of the side rails providing said frame with a rectangular shape, said side rails and end rails each have flat horizontal parallel top and bottom surfaces and an upright flat inside surface extended between said top and bottom surfaces, first and second longitudinal beams extended between said end rails generally parallel to said side rails, first roller means mounting the first and second beams on the end rails for movement along said end rails, a first adjusting mechanism connected to the first beam operable to selectively move the first beam along the end rails and hold the first beam in a selected position, a second adjusting mechanism connected to the second beam operable to selectively move the second beam along the end rails and hold the second beam in a selected position relative to the first beam whereby the distance between the first and second beams can be adjusted, first clamp means mounted on the first beam operable to hold one side edge of the plastic sheet on the first beam, second clamp means mounted on the second beam operable to hold the other side edge of the plastic sheet on the second beam, third and fourth transverse beams extended between said side rails across



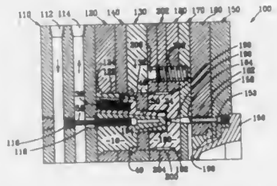
said first and second beams, second roller means mounting the third and fourth beams on the side rails for movement along said side rails, each roller means has a plurality of first rollers that ride on the top surface, at least one second roller that rides on the bottom surface, and a plurality of third rollers that roll on the inside surface whereby each roller means is free to roll along the rail supporting the roller means, a third adjusting mechanism connected to the third beam operable to selectively move the third beam along said side rails and hold the third beam in a selected position, a fourth adjusting mechanism connected to the fourth beam operable to selectively move the fourth beam along said side rails and hold the fourth beam in a selected position, whereby the distance between the third and fourth beams can be adjusted, third clamp means mounted on the third beam operable to hold one end edge of the plastic sheet on the third beam, fourth clamp means mounted on the fourth beam operable to hold the other end edge of the plastic sheet on the fourth beam, said movements of the first, second, third, and fourth beams allowing different sizes of plastic sheets to be held by the frame assembly, and each of said clamp means being releasable whereby the plastic sheet can be placed on the beams and removed therefrom.

4,938,679

COLLAPSIBLE CORE FOR MOLDING CLOSURES HAVING INTERRUPTED INTERIOR THREADS AND THE LIKE

Joseph A. Pietrorazio, Middlebury, Conn., assignor to Cores Unlimited, a partnership, Woodbury, Conn.

Filed May 18, 1989, Ser. No. 354,124
Int. Cl.[5] B28B *7/10, 7/30*
U.S. Cl. 425—437 **9 Claims**



1. A mold construction for molding closures having interrupted interior threads, the construction including:

(a) a collapsible male mold member comprising a base and an integral upstanding cylindrical core having an axis, the base extending outward from the axis to a peripheral sidewall, an annular tapered seat coaxial with the core and intermediate the base and core, the base, the seat and the core being formed with a plurality of cylindrical bores spaced inward from the peripheral sidewall and uniformly disposed about the axis and angling from the base forward toward the axis as the core is approached, a plurality of blades each having an outer end and an inner end and each having a cylindrical body, each blade being reciprocably disposed in one of the bores, each of said blades having an inward and an outward position with respect to the core, the outer ends of the blades being reduced in thickness to present sections shaped so that when the blades are in the inward position, the sections which lie adjacent the seat and the core constitute sections of the seat and core respectively and continue the peripheral surface shape of the seat and the core respectively, the sections of the blades which continue the shape of the core having thread segment matrices on their outer surfaces,

(b) a female mold cavity receiving the core and

(c) a stripper bushing having a tapered inner surface which fits forceably against the seat including the sections of seat on the blades when the mold is closed and serves to insure the proper rotational orientation of the blades.

4,938,680

REVERSE LIP BLOW MOLDING APPARATUS

Henry J. Guarriello; Joseph A. Guarriello, and Theodore J. Guarriello, all of 9 Woodland Rd., Newtown, Pa. 18940

Division of Ser. No. 265,163, Oct. 31, 1988. This application Oct. 20, 1989, Ser. No. 415,551
Int. Cl.[5] B29C *49/30*
U.S. Cl. 425—522 **7 Claims**

1. Apparatus for blow molding a deep recessed lip onto a molded part comprising:

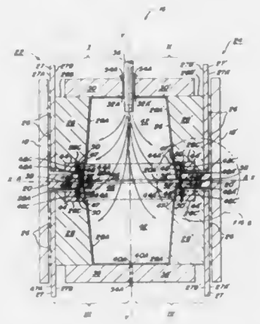
two plates reciprocally movable toward and away from one another;

a center member fixedly and perpendicularly mounted on each said plate;

a mold half mounted on each said plate, said mold half being divided into two sections, one said section being located on each side of said center member, each said section reciprocally movable toward and away from said center member;

a first member connected with each said section in proximity to said center member and having a wall and a channel;

a second member reciprocally movable in said channel and slidably engaging said center member;



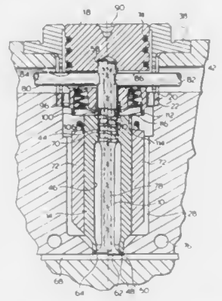
wherein the deep recessed lip being molded between said center member, said first member and said second member is symmetric to the transverse axis of said molded part.

4,938,681

INJECTION MOLDING SYSTEM HAVING OFFSET VALVE PIN BIASING MECHANISM

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Continuation-in-part of Ser. No. 297,495, Jan. 17, 1989, abandoned. This application Jun. 6, 1989, Ser. No. 362,233
Claims priority, application Canada, Jan. 3, 1989, 587417; Jun. 2, 1989, 601625
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—549 **8 Claims**



1. In a valve gated center entry hot runner injection molding apparatus having a heated nozzle which is secured to a heated manifold, the heated nozzle being received in a cavity plate, said nozzle having a central bore and a forward nose portion which extends through an opening in the cavity plate to a cavity, the central bore of the nozzle having a rear portion and a forward portion which extends through the nose portion of the nozzle to form a gate forming a forward mouth, an elongated valve member which extends through the central bore in the nozzle and reciprocates longitudinally between a retracted closed position and a forward open position, the valve member having a forward portion, a central portion, and a rear portion, the central portion of the valve member extending through the rear portion of the central bore, the rear portion of the valve member extending into a central opening the manifold, and a melt passage to convey pressurized melt from a central inlet in the manifold to the gate, the melt passage extending through the manifold and nozzle around the rear portion of the valve member to join a space which leaks to the gate, the space extending around the forward portion of the valve member in the forward portion of the central bore, the central portion of the valve member fitting in the rear portion of the central bore to prevent substantial leakage of the pressurized melt around the reciprocating valve member, the improvement wherein:

the valve member has an enlarged forward end which seats in the mouth of the gate in the retracted closed position, and

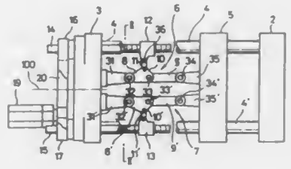
(a) at least one biasing mechanism is mounted in the manifold, the at least one biasing mechanism including a compression spring mounted in the manifold and lever means extending to receive a force from the compression spring and apply a force to the valve member in a rearward direction.

4,938,682

TOGGLE TYPE MOLD CLAMPING APPARATUS IN AN INJECTION MOLDING MACHINE

Shinji Kadoriku, Sakai, and Kikuo Watanabe, Oshino, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP88/01154, § 371 Date Mar. 30, 1989, § 102(e) Date Mar. 30, 1989, PCT Pub. No. WO89/04753, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 15, 1988, Ser. No. 337,527
Claims priority, application Japan, Nov. 20, 1987, 62-293569
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—593 **8 Claims**



1. A mold clamping apparatus for use in an injection molding machine, said mold clamping apparatus having a movable platen disposed for reciprocal motion between a front platen and a rear platen, said mold clamping apparatus comprising:

a first ball screw disposed in a first peripheral edge portion of said rear platen and extending in parallel with a longitudinal axis of said mold clamping apparatus;

a second ball screw disposed in a second peripheral edge portion of said rear platen and at a side opposite said first ball screw with respect to said longitudinal axis of said mold clamping apparatus and extending in parallel with said longitudinal axis;

a first toggle section disposed inwardly of said first ball screw, said first toggle section having a first head which is threadedly engaged with said first ball screw, said first toggle section further having a first set of links, said first set of links being connected to said rear platen, said first head and said movable platen;

a second toggle section disposed inwardly of said second ball screw, said second toggle section having a second head which is threadedly engaged with said second ball screw, said second toggle section further having a second set of links, said second set of links being connected to said rear platen, said second head and said movable platen;

a first driving pulley for driving said first ball screw;

a second driving pulley for driving said second ball screw;

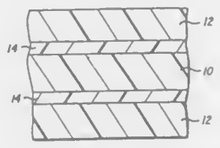
a first connection means capable of selectively assuming a first state for causing said first ball screw to be rotated in unison with said first driving pulley and a second state for causing the first ball screw to be rotatable relative to said first driving pulley; and

a second connection means capable of selectively assuming a

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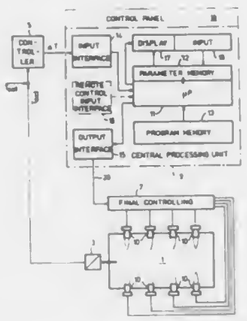
third state for causing the second ball screw to be rotated in unison with said second driving pulley and a fourth state for causing said second ball screw to be rotatable relative to said second driving pulley.

4,938,683
MONOAXIALLY ORIENTED SHRINK FILM
Peter R. Boice, Taylors, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Division of Ser. No. 120,273, Nov. 13, 1987, Pat. No. 4,879,177. This application Jul. 7, 1989, Ser. No. 384,617
Int. Cl.[5] B52B *27/08*
U.S. Cl. 428—517 **5 Claims**



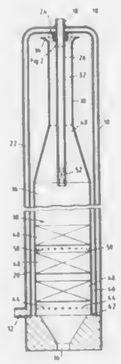
1. A multilayer film, oriented in primarily one direction, comprising:
(a) a core layer comprising a butadiene styrene copolymer;
(b) two outer layers each comprising ethylene propylene copolymer, polypropylene, or blends thereof; and
(c) two intermediate layers each bonding the core layer to a respective outer layer, and comprising an ethylene copolymer.

4,938,684
ON-OFF BURNER CONTROL BY CYCLE TIME VARIATION
Nolte Karl, Essen; Detlef Maiwald, Moers, both of Fed. Rep. of Germany; Michael Bock, Pittsburgh, Pa., and Thomas Spahr, Hungen-Nonnenrohr, Fed. Rep. of Germany, assignors to LVE Verfahrenselektronik GmbH, Essen, Fed. Rep. of Germany
Filed Aug. 30, 1989, Ser. No. 400,575
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 3829677
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 **19 Claims**



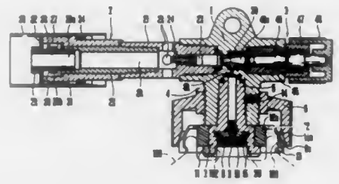
1. In a fuel-fired system, including at least one burner controllable by an ON-OFF control system and operated at a variable pulse spacing comprising two portions which consist of a pulse duration and a pulse separation, a method of controlling said at least one burner, said method comprising the steps of:
presetting a minimum pulse spacing, said minimum pulse spacing consisting of a predetermined pulse duration (tON) and a minimum pulse separation;
allocating an input rate reference value to said minimum pulse spacing;
substantially keeping constant one of the two pulse spacing portions consisting of said pulse duration and said pulse separation; and
varying said pulse spacing through varying the other one of said two pulse spacing portions to control the burner input rate, said controlled input rate being correlated with said input rate reference value.

4,938,685
CATALYTIC COMBUSTION
Kim P. A. Noakes, Norton, and Peter J. Davidson, Darlington, both of England, assignors to Imperial Chemical Industries PLC, London, England
Continuation of Ser. No. 52,004, May 20, 1987, Pat. No. 4,788,004. This application Apr. 13, 1988, Ser. No. 181,031
Claims priority, application United Kingdom, Apr. 13, 1987, 8708776
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—4 **3 Claims**



1. A process for the production of a hot pressurized gas stream by catalytic partial combustion comprising:
(a) passing a first gas stream, containing at least one hydrocarbon gas, at superatmospheric pressure through a constriction whereby a lower pressure region is created;
(b) feeding the gas stream from the lower pressure region to the inlet of a combustion zone containing a combustion catalyst that also has steam reforming activity;
(c) separately feeding to the inlet of the combustion zone a second gas stream, said second gas stream containing free oxygen and at least one of said first and second streams containing steam;
(d) effecting partial combustion and steam reforming of said hydrocarbon gas in the combustion zone to produce a hot product gas stream containing hydrogen; and
(e) recycling part of the hot product gas stream to said lower pressure region and therein mixing that recycled hot product gas stream with the first gas stream, the passage of the first gas stream through the constriction providing a pressure in said lower pressure region sufficiently below the pressure of said hot product gas stream to cause said recycle;
whereby the gas stream fed from said lower pressure region to the inlet of said combustion zone is a mixture of the recycled hot product stream and the first gas stream and thus contains hydrogen.

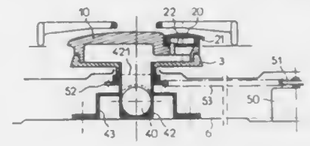
4,938,686
BURNER DEVICE
Sadao Yoshinaga, Ichikawa, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan
Division of Ser. No. 894,797, Aug. 8, 1986, Pat. No. 4,804,324. This application Nov. 16, 1988, Ser. No. 272,102
Claims priority, application Japan, Aug. 12, 1985, 60-123630
Int. Cl.[5] F23Q *2/16*
U.S. Cl. 431—264 **3 Claims**



1. A burner device comprising:
a burner body having a cylindrical connecting portion at a lower side thereof, a nozzle device threaded into a front portion of said burner body, a rear portion of said burner body having a valve device therein, and a piezoelectric ignition device provided at a side of said burner body;
said nozzle device including a nozzle tube having a flow passage formed therethrough and having a burner at an exit end of said nozzle tube;
said burner including:
a pipe-shaped nozzle head which forms separately a main passage interior to a sub-passage from said flow passage of said nozzle tube, each providing a flow of a fuel-air mixture therethrough;
an insulating cylinder mounted on said nozzle tube and serving as an electrode stand which surrounds said sub-passage; and
a discharge electrode at a side of said insulating cylinder, said discharge electrode communicating with the sub-passage fuel-air mixture and being connected with a lead wire of said piezoelectric ignition device; and wherein;
said valve device includes:
a cylindrical opening in a rear portion of said burner body;
a valve needle inserted into said cylindrical opening;
a valve seat disposed within said burner body, wherein;
an end of said valve needle mates with said valve seat when inserted into said burner body, and;
a valve operating device connected to said valve needle.

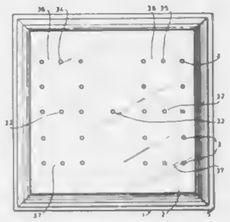
4,938,687
GAS COOKING APPARATUS WITH ROTARY BURNER AND ELECTRICAL IGNITION
Jean-Francois Monteil, Isles sur Suippes, France, assignor to Soremam S.N.C., Senlis Cedex, France
Filed Sep. 27, 1989, Ser. No. 413,221
Claims priority, application France, Sep. 28, 1988, 88 12780
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 431—264 **9 Claims**

1. A gas cooking apparatus, with rotary burner and electical ignition, of which the rotary burner is made of a circular, rotary burner carrier (10) supporting an off-center burner (20) and an igniter, the burner carrier (10) nests into the upper part of a rotary support (3) which fits onto a feed pipe (40) in relation to which it rotates by means of a chain drive (5) and of a geared motor (6), in that the off-center burner (20) has gas nozzles only over a sector of 280° distributed in a symmetrical manner in relation to a plane in which is the axis of rotation of the burner carrier (10) directed towards the outside of the burner in that the gas nozzles (21) of the burner (20) make an



angle alpha from 10° to 20°, upwards, in relation to the horizontal plane, in that the base of the off-center burner (20) includes radial ribs (22) distributed symmetrically over a sector identical to that of the nozzles (21).

4,938,688
CAKE COVER AND CANDLE HOLDER
Ethel Wexler, 23108 L'Ermitage Cir., Boca Raton, Fla. 33433
Continuation-in-part of Ser. No. 233,537, Aug. 10, 1988, Pat. No. 4,884,966. This application Jun. 6, 1989, Ser. No. 362,090
Int. Cl.[5] F23D *3/16*
U.S. Cl. 431—295 **16 Claims**



1. A combined candle bolder and cake cover for holding candles and protecting rectangular cakes, comprising:
(a) a substantially rectangular horizontal top portion having four edges;
(b) a plurality of indentation means in said top extending downwardly below said top, each said indentation means having an opening at its upper end for receiving a candle and a lower portion below said top for supporting the lower end of said candle in a substantially vertical position, said indentation means arranged in a pair of side-by-side configurations each of which indicates any digit from zero to nine by selective filling of said indentation means with said candles; and
(c) four sloped sides, one edges extending downwardly from each of said four sides of said top portion, said sides terminating at lower margins.

4,938,689
FURNACE FOR FIRING WIRE-LIKE PRODUCTS
Dino Macocco, Venaria Reale; Michele Ricco', Collegno, both of Italy; Hans J. Reiser, and Heinrich Wenker, both of Sulingen, Fed. Rep. of Germany, assignors to Societa' Industriale Costruzioni Microelettriche S.I.C.M.E. S.p.A., Turin, Italy
Filed Jan. 29, 1988, Ser. No. 149,860
Claims priority, application Italy, Jan. 30, 1987, 52926/87[U]
Int. Cl.[5] F27B *9/28*
U.S. Cl. 432—59 **14 Claims**

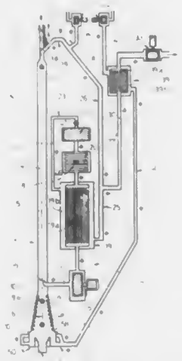
1. A furnace for firing wire-like products, in particular copper wires clad with plastics resin, of the type comprising:

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a principal chamber of elongate form within which the said products translate axially in a longitudinal direction between an inlet opening and an oulet opening, the said principal chamber defining a first portion in which evaporation of solvents from the said plastics resin takes place and a second portion in which polymerisation and cross linking of the plastics resin take place:

an auxiliary unit comprising an induction opening communicating with the said prinicipal chamber, means for drawing a first stream of air and solvent vapours from the said principal chamber and means for heating the said first stream to cause combustion of the said vapours;

first aspiration means for drawing a first volume of air from an external environment;



means for introudcing into the said principal chamber a mixture of the said first volume of air and at least a first portion of a second stream leaving the said auxiliary unit; and

means for delivering a second portion of the said second stream to a chimney;

second aspiration means (44) for drawing a second volume of air (43) from the external environment;

heat exchange means (39) for exchanging heat between at least a second portion (30) of the said second stream (24) and the said second volume of air (43); and

means (40, 45) for introducing the said second volume (43) of air to the said principal chamber (2).

4,938,690

INGOT PUSHER FURNACE WITH RAIL DRAWBRIDGES

Gordon Thomlinson, and Barry Dudek, both of Meadville, Pa., assignors to Seco/Warwick Corporation, Meadville, Pa.

Filed Jun. 12, 1989, Ser. No. 364,835

Int. Cl.[5] F27D *3/00, 1/12*

U.S. Cl. 432—239 **14 Claims**

1. An ingot pusher furnace comprising:

an insulated furnace enclosure including a bottom wall, a front wall, a rear wall and a top wall, said enclosure receiving a plurality of ingots to be heated;

means for heating said enclosure by heating a gaseous medium therein:

means for moving said gaseous medium within said enclosure;

support rails being disposed in association with said bottom wall for facilitating support and movement of the ingots within said enclosure;

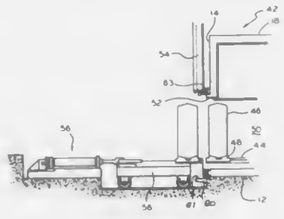
a charging door located adjacent said front wall and being adapted to close a first opening formed in said front wall;

a discharging door located adjacent said rear wall and being adapted to close a second opening formed in said rear wall;

said support rails extending between said first opening in said front wall and said second opening in said rear wall and terminating inside of said charging and discharging doors;

said charging and discharging doors extending below said support rails in their closed position so as to provide a positive seal;

first rail bridge means cooperating with said support rails terminating inside of said charging door for facilitating movement of the ingots into said enclosure;



said first rail bridge means including at least one rail member which is movable between a raised vertical position so that the charging door can be moved to the closed position and a lowered horizontal position to permit loading of the ingots into said enclosure;

second rail bridge means cooperating with said support rails terminating inside of said discharging door for facilitating movement of the ingots out of said enclosure; and

said second rail bridge means including at least one rail member which is movable between a raised vertical position so that said discharging door can be moved to the closed position and a lowered horizontal position to permit unloading of the ingots out of said enclosure.

4,938,691

HEAT-TREATING APPARATUS

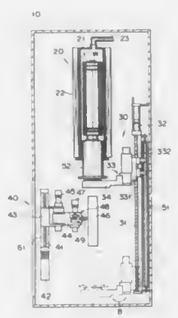
Wataru Ohkase; Ken Nakao, both of Sagamihara, and Seishiro Sato, Machida, all of Japan, assignors to Tel Sagami Limited, Kanagawa, Japan

Filed Nov. 17, 1988, Ser. No. 272,415

Claims priority, application Japan, Nov. 17, 1987, 62-290164; Nov. 17, 1987, 62-290165

Int. Cl.[5] F27D *3/00, 3/12, 5/00;* **B65G** *69/00*

U.S. Cl. 432—239 **17 Claims**



1. A heat-treating apparatus comprising:

a furnace, installed so as to set a longitudinal direction thereof vertically and having an opening which is formed in a lower end thereof to allow a boat mounting objects to be heat-treated at predetermined intervals to be loaded therein, for heat-treating said objects;

heat-insulating member to support said boat thereon, for keeping said objects hot when said boat is loaded in said furnace and said objects are heat-treated;

lifting/lowering means for lifting said heatinsulating member, with the boat supported thereon, to load said boat and said heat-insulating member into said furnace, and for lowering said heat-insulating member to unload said boat and said insulating member from said furnace;

moving means for moving said heat-insulating member from below said boat; and

handling means for supporting and vertically moving said boat.

4,938,692

INSTRUMENT HANDGRIP WITH A BUILT-IN LIGHT

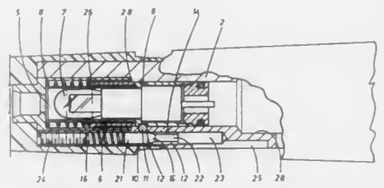
Franco Castellini, Bologna, Italy, assignor to Castellini S.p.A., Bologna, Italy

Filed Feb. 18, 1988, Ser. No. 161,447

Claims priority, application Italy, Feb. 27, 1987, 4779/87[U]

Int. Cl.[5] A61C *1/00, 3/00*

U.S. Cl. 433—29 **4 Claims**



1. An instrument handgrip with a built-in light, comprising:

a fixed section, embodied with a projecting axial end provided with a pair of centrally located coaxial electrical contacts;

a removable section, rotatable and coaxially connected by way of quick-release means to said projecting end of the fixed section, said removable section being provided with an axial backopen chamber open at one end to receive said fixed section and having at its other end a light guiding means;

a lampholder having a circumferentially groove and housed into said axial chamber, said lampholder having a lamp and poles able to contact directly or indirectly said coaxial electrical contacts;

a tubular element ensheathing a portion of the removable section incorporating the axial chamber, said tubular element being removable joined to a part of the removable section;

spring means, positioned between the lampholder and the axial chamber to eject the lampholder from the chamber; and a movable retention means for engaging said circumferential groove of the lampholder and serving to offset the action of the spring means.

4,938,693

DENTAL IMPLANTATE

Georgi K. Bulakiev, Sofia, Bulgaria, assignor to Centar Po Subna Implantologia I Protesirane "Avangard", Sofia, Bulgaria

Filed Nov. 16, 1988, Ser. No. 272,559

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—169 **1 Claim**

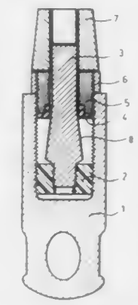
1. A dental implantate comprising:

a dental insert whose inner walls define a blank hole with an open and a closed end;

an adjuster bolt fastened within said hole, a section of said bolt being conical in shape;

an elastic bushing fastened to the closed end of the blank hole of the dental insert and surrounding a portion of said adjuster bolt;

a sealing ring surrounds a portion of said conical section;



an adjusting bushing fixed to said sealing ring, fitted into said blank hole, and protruding outside said hole;

a superstructure fixed to said adjuster bolt; and

a remote disk encompassing said adjusting bushing, resting against the open end of the dental insert and contacting said superstructure.

4,938,694

SCREW IMPLANT

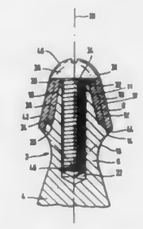
Philippe Ledermann, Herzogenbuchsee, Switzerland, assignor to Friedrichsfeld GmbH, Keramik-und Kunststoffwerke, Mannheim, Fed. Rep. of Germany

Filed Aug. 11, 1988, Ser. No. 230,828

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1987, 3726616

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **14 Claims**



1. A screw implant for securing a dental prosthesis, comprising a threaded part which can be screwed into a jaw, and an occlusal structural support which has a head with a top, a conical outer face, a cervical end edge and an inside thread; a single open-topped annular truncated casing having an annular occlusal end face and a cervical end face; an occlusal screw having a screw head with a bearing surface for securing the casing to the conical outer face of the head, said screw head having a diameter which is grater than the diameter of the top of said support head, wherein the screw is inserted in the thread of said head and the screw head bears via said bearing surface against the annular occlusal end face of the casing; the outer diameter of the screw head adjacent the bearing surface is substantially the same size as the outer diameter of the occlusal end face of the casing; the top of the head of the structural support is spaced a distance from the bearing surface of the

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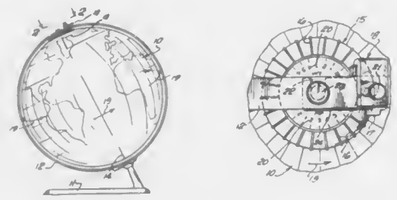
screw, and the cervical end face of the casing is designed as a continuous extension of a neck face of the structural support.

4,938,695

WORLD GLOBE ROTATION CONTROL DEVICE

Janet L. Kinner, 7772 Elden Ave., Whittier, Calif. 90602

Filed Oct. 6, 1988, Ser. No. 254,221
Int. Cl.[5] G09B *27/08*
U.S. Cl. 434—131 **13 Claims**



1. A device for controlling the direction of rotation of a world globe which is supported by a support frame, said device comprising:

a ratchet comprising a ring with a plurality of indicator means arranged radially from the center thereof, said ratchet being affixed to a rotatable world globe about one of its centers of rotation thereof; and

a deflectable pawl member held by the support frame of the world globe, said pawl member having a pawl finger abutting said indicator means of the ratchet at an angle to the upper surface of the ratchet, the angle of the pawl finger positioned so that the finger is pointing in an eastwardly direction so that the world globe may rotate so that its surface moves freely counter-clockwise as viewed from the North Pole but is restrained from rotating in a clockwise direction as viewed from the North Pole.

4,938,696

MODEL DEMONSTRATING HUMAN ORGAN SYSTEMS

Betty J. Foster, Crystal, and Barbara L. Pickard, Maple Grove, both of Minn., assignors to Foster-Pickard International, Inc., Maple Grove, Minn.

Filed Jul. 25, 1989, Ser. No. 394,411
Int. Cl.[5] G09B *23/30*
U.S. Cl. 434—267 **12 Claims**

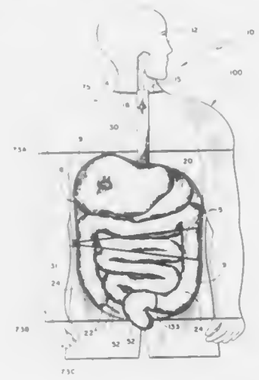
1. A model for the demonstration of human organ systems, including organs of the digestive system, comprising:

(a) a sectioned, rigid backboard having a plurality of sections including a mid-section wherein the backboard is foldable at the sections and wherein the backboard has the shape of a human silhouette;

(b) an abdominal tray including a back surface attached to the mid-section;

(c) a first group of elements housed within the abdominal tray and attached to the back surface wherein the first group comprises three dimensional actual shape simulated organs and includes elements representing a liver, a pancreas, a gall bladder and a plurality of ducts, and wherein the liver, pancreas and gall bladder are made substantially of flexible filled material; and

(d) a second group of elements at least partially housed within the abdominal tray and detachably mounted to the support surface wherein the second group comprises three dimensional actual shape simulated organs and includes elements representing an esophagus, a stomach, a greater omentum, a small intestine, a mesentery, an appendix, a large intestine and a rectum, and wherein the second



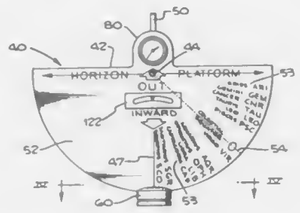
group of elements is made substantially of flexible filled material.

4,938,697

MULTI-DIMENSIONAL ASTRAL POSITION FINDING DEVICE

Ben Mayer, 1292 Stradella Rd., West Los Angeles, Calif. 90077

Filed Nov. 21, 1988, Ser. No. 273,889
Int. Cl.[5] G09B *27/04*
U.S. Cl. 434—289 **22 Claims**



10. In combination:

a sky viewing means delineating an actual area of the sky to be viewed;

and means responsive to gravitational forces carried by said sky viewing means to orient the sky viewing means and the eye of an observer with respect to a latitude position, the north and south axis of the earth, and the horizon.

21. A position finding means for viewing a selected area of the sky at a selected time and having a sky viewing means defining a selected angle of view and aspect ratio of the sky area to be viewed, comprising:

a first information bearing means having indicia arranged thereon relating to the sky area to be viewed;

a second weight means responsive to gravitational forces; and

means for pivotally mounting on the sky viewing means said first information bearing means for movement relative to said sky viewing means for determining the angle of inclination of the sky viewing means to position the sky viewing means for viewing a selected sky area indicated on the first information bearing means, and said second weight means being pivotally carried by said sky viewing means.

22. A position finding means for viewing a selected area of the sky at a selected time and having a sky viewing means defining a selected angle of view and aspect ratio of the sky to be viewed, comprising:

a first information bearing means having indicia arranged thereon relating to the sky area to be viewed;

a second weight means responsive to gravitational forces; and

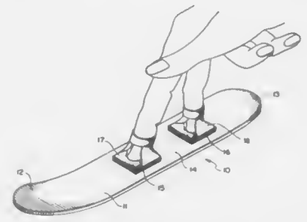
means for pivotally mounting on the sky viewing means said first information bearing means for movement relative to said sky viewing means for determining the angle of inclination of the sky viewing means to position the sky viewing means of viewing a selected sky area indicated on said first information bearing means and said second weight means being connected with said first information bearing means for movement therewith.

4,938,698

TRAINING AID FOR SNOWBOARD MANEUVERING

Michael Chantry, P.O. Box 1302, Tahoe City, Calif. 95730

Filed Apr. 17, 1989, Ser. No. 338,618
Int. Cl.[5] A63B *69/18*
U.S. Cl. 434—253 **1 Claim**



1. In a training aid and demonstrating device for use with the fingers of the user in the training of a variety of simulated body maneuvering in a selected sport, the combination comprising:

an elongated platform of no more than five inches in length and having a flat central midsection integrally joining upwardly curved forward and tail portions simulating a snowboard or ski;

coupling means releasably joining said platform midsection with the fingers of the user for manually deploying said elongated platform through the variety of simulated body maneuvers;

said elongated platform is composed of non-load bearing, lightweight material and is a reduced scale replica of said snowboard or ski;

said coupling means includes attachment means carried on said elongated platform midsection;

at least one coupler having a socket for insertably receiving a finer of the user and adapted to releasably engage with said attachment means;

said attachment means includes a pair of attachment pads arranged in fixed spaced-apart relationship;

said coupler means includes a pair of separate and independent couplers carried on the fingertips of two fingers of the user adapted to be manually registered in alignment with said pair of attachment pads preparatory to engagement;

said pair of couplers and said attachment pads include a hook and pile closure;

each of said couplers includes a securement means engageable with said attachment pads respectively and said securement means being downwardly depending from a sidewall defining an open socket for receiving the fingertips of the user; and

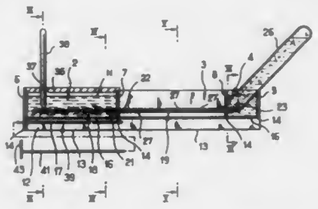
a closure band integral with said sidewall for encircling each of said coupler sidewalls and user fingers for securement onto the fingertips of the user.

4,938,699

APPARATUS FOR DETECTING EXCHANGES THROUGH THE CUT END OF A PLANT BRANCH

Serge Cassagne, 14 Rue Vergniaud, 75013 Paris, France

PCT No. PCT/FR88/00284, § 371 Date Jan. 26, 1989, § 102(e) Date Jan. 26, 1989, PCT Pub. No. WO88/09611, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 3, 1988, Ser. No. 320,097
Claims priority, application France, Jun. 3, 1987, 87 07735
Int. Cl.[5] C12M *1/36*
U.S. Cl. 434—276 **14 Claims**



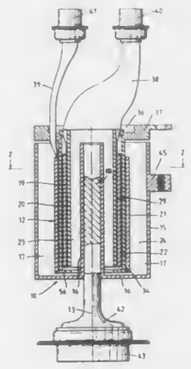
1. Apparatus to detect exchanges through the cut end of a plant branch, comprising a tank (2), a transit tube (19) connected by a first end with said tank (2) and one of whose ends at least is intended to receive the cut end of a plant branch, characterized in that a second end (23) of said transit tube (19) is associated with means (4, 80) able to contain a liquid, the transit tube establishing, at least in the absence of the branch, a vessel link connecting said tank (2) and said liquid containing means (4, 80).

4,938,700

ASSEMBLY INCLUDING TWO MEMBERS CAPABLE OF RELATIVE ROTATION AND WITH ELECTRICAL INTERCONNECTIONS THEREBETWEEN

Donald A. Campbell, Glasgow; Alexander G. Gillies, Edinburgh, and John D. Davidson, Lothian, all of Scotland, assignors to Ferranti International PLC, United Kingdom

Filed Jun. 6, 1989, Ser. No. 362,247
Claims priority, application United Kingdom, Jun. 8, 1988, 8813481
Int. Cl.[5] H01R *35/04*
U.S. Cl. 439—13 **4 Claims**



1. An assembly comprising an annulus-defining member having an outer, hollow, cylindrically-shaped section, and secured to one end of the outer section, an inner, cylindrically-shaped section having a longitudinal axis coaxial with the

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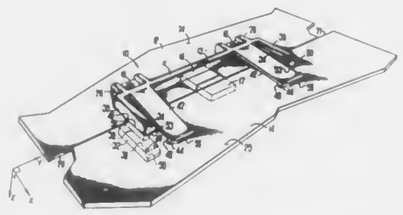
longitudinal axis of the outer section and being at least substantially coextensive with the outer section along the common longitudinal axis, an annulus being defined between the inner and outer sections, a hollow, intermediate, cylindrically-shaped member having a longitudinal axis coaxial with the longitudinal axis of the inner and outer sections, the two members being mounted for relative rotation about the common longitudinal axis, the intermediate member dividing the annulus into radially inner and outer constituent annular shaped sections, a first tape cable secured at one end of the inner section of the annulus-defining member, and secured at the other end to the intermediate member, the first tape cable being coiled loosely in the inner constituent annular section, a second tape cable secured at one end to the outer section of the annulus-defining member, and secured at the other end to the intermediate member, the second tape cable being coiled loosely in the outer constituent annular section in the same direction as the first tape cable is coiled in the inner constituent annular section, the assembly being so constructed and arranged that the two tape cables are screened electrically from each other by the intermediate member.

4,938,701

CONNECTING BRACKET FOR MODULAR CIRCUIT BOARDS

James R. Heberling, Lawrenceville, Ga., assignor to Hayes Microcomputer Products, Inc., Norcross, Ga.

Filed Sep. 23, 1988, Ser. No. 248,823
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—65 **3 Claims**



1. A connecting bracket for connecting a first circuit board having an upper and a lower primary surface and an end, to a second circuit board having an upper and a lower primary surface and an end, said second circuit board defining at least one hole extending through its thickness and defining at least one open-ended slot extending through its thickness and positioned along its end, comprising:

means for attaching said bracket to said first circuit board such that said end of said circuit board is substantially unobstructed;

finger means extending from said bracket and including a barb for engaging said hole of said second circuit board;

foot means extending from said bracket, said foot including a nodule extending upwardly therefrom, said foot and nodule defining an upper supporting surface for engaging said lower primary planar surface of said second circuit board; and

positioning flange means extending from said bracket for engaging said open-ended slot of said second circuit board.

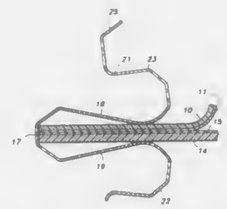
such that said finger means, foot means, and positioning flange means engage said second circuit board and said first and second circuit board are connected by said bracket in an end-abutting relationship.

4,938,702

CONNECTOR CLAMP FOR ATTACHING FLAT ELECTRICAL CONDUCTOR LEADS TO PRINTED WIRING BOARDS

George P. English, Hayden Lake, Id., assignor to Key Tronic Corporation, Spokane, Wash.

Filed Sep. 22, 1989, Ser. No. 410,911
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—67 **3 Claims**



I. A connector clamp for securing a flexible sheet with traces leading to conductive surface pads across one of its edges to a printed wiring board having traces leading to complementary conductive surface pads across one of its edges, comprising:

an elongated member made of spring material and having a continuous U-shaped cross-section along its length which includes a central base joined integrally with first and second opposed legs, the legs being yieldably urged toward one another along a line spaced from the base for exerting clamping force across opposite outer surfaces of a printed wiring board and flexible sheet having aligned rows of conductive surface pads in contact with one another;

the central base of the U-shaped cross-section having an interior separation greater than the combined thicknesses of the sheet and board to be secured by it; and

one leg of the U-shaped cross-section in the elongated member being adapted to overlie the sheet and including a row of identical transverse fingers spaced apart from one another, the fingers each including a free end adapted to be aligned with the positions of corresponding conductive pads along a sheet and board;

the cross section of the spring clamp further including extensions of both legs directed back toward its base at opposite sides of the U-shaped cross-section and spaced outward from the respective legs to form elongated openings along the spring clamp for reception of tool elements designed to spread the legs of the spring clamp apart from one another.

4,938,703

CONDUCTIVE BOARD SPACER

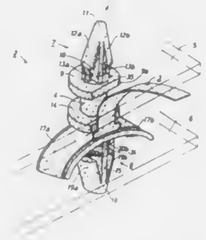
Yoshihito Nakano, Kasugai, Japan, assignor to Kitagawa Kogyo Kabushiki Kaisha, Japan

Filed Aug. 14, 1989, Ser. No. 393,635
Claims priority, application Japan, Sep. 9, 1988, 63-119215
Int. Cl.[5] H01R 9/09; H05K 7/12; F16B 5/06
U.S. Cl. 439—74 **21 Claims**

1. A conductive board spacer for insertion between first and second boards comprising a body having a spacing member for maintaining a fixed distance between the first and second boards and fixing members provided on ends of the spacing member for engaging the conductive spacer with the boards;

the fixing members comprising first and second supporting members for pressing against and supporting inner surfaces of the first and second boards, and locking means extending from the first and second supporting members for securely locking the first and second boards onto the first and second supporting members, respectively;

the conductive spacer further including a conductive member in which a first end of the conductive member contacts the first supporting member and the inner surface of the first board when attached to the first board such that the first end of the conductive member is securely



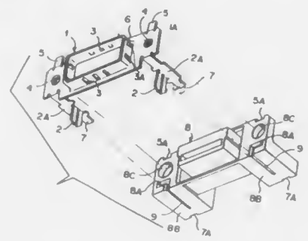
held between the first supporting member and the inner surface of the first board, and a second end of the conductive member extends towards and contacts the second board when the conductive board spacer is inserted between the first and second boards.

4,938,704

ELECTRICAL CONNECTOR SHIELDED MEMBER HAVING MOUNTING MEANS

Yoshitsugu Fujiura, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

PCT No. PCT/US88/00940, § 371 Date Nov. 8, 1988, § 102(e) Date Nov. 8, 1988, PCT Pub. No. WO88/08627, PCT Pub. Date Nov. 3, 1988
PCT Filed Mar. 25, 1988, Ser. No. 354,189
Claims priority, application Japan, Apr. 30, 1987, 62-066243
Int. Cl.[5] H01R 13/639
U.S. Cl. 439—95 **5 Claims**



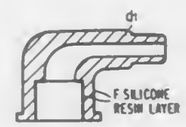
1. A shielded electrical connector for mounting onto a circuit board comprising a dielectric housing having electrical contacts secured therein for electrical connection to conductive areas on the circuit board and a shield member secured onto the housing, wherein said shield member includes a shield section extending along said housing and having integral leg sections extending along said housing, said leg sections including integral mounting sections extending outwardly from a bottom surface of said housing for engagement with holes in the circuit board to maintain the shielded connector on the circuit board, said housing having first slots along which said leg sections extend and further slots in communication with said first slots through which said mounting members extend.

4,938,705

CONNECTION STRUCTURE OF HIGH-VOLTAGE WIRING FOR AUTOMOBILE ENGINE

Toshiaki Kanno, and Seiichi Wakabayashi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,700
Claims priority, application Japan, May 18, 1987, 62-72884[U]
Int. Cl.[5] H01R 13/52, 13/53
U.S. Cl. 439—125 **6 Claims**



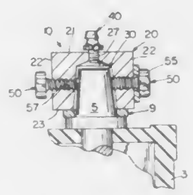
1. In a vehicle ignition high-voltage wiring connection structure of the type having first and second insulating members fitted with one another and protecting an electrical connection portion disposed within at least one of said first and second insulating members, the improvement comprising a layer of a soft elastic silicone resin provided on a surface of at least said first insulating member in contact with a mating surface of said second insulating member.

4,938,706

ANTI-CORROSIVE BATTERY TERMINAL

Charles A. Sykes, 1928 Big Bend Rd., Adrian, Oreg. 97901

Filed Apr. 14, 1988, Ser. No. 181,342
Int. Cl.[5] H01R 4/60, 4/46
U.S. Cl. 439—202 **25 Claims**



1. A battery terminal for mounting on a battery post, said terminal comprising:

a terminal block constructed of a plastic electrically conducting polymer and having an undersurface and an outer surface, the undersurface provided with a socket for reception of a battery post, and said block defining a conduit between said socket and the outer surface of said block;

a grease fitting located within said conduit for insertion of grease into said socket; and

clamp means for attaching said terminal block to the battery post.

4,938,707

MULTIMATE COAXIAL ADAPTER

Ronald Guimond, Amesbury, and Anthony Martiniello, Wilmington, both of Mass., assignors to Adams-Russell Electronic Company, Inc., Amesbury, Mass.

Filed Mar. 16, 1989, Ser. No. 324,183
Int. Cl.[5] H01R 17/18
U.S. Cl. 439—218 **8 Claims**

1. A multimate adapter comprising:

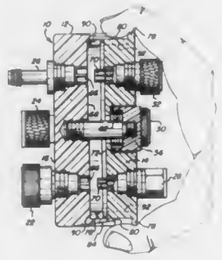
a first plate having on an outer side a plurality of various first

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coaxial connectors radially spaced from an axis of rotation;

a second plate having on an outer side a plurality of various second coaxial connectors that are radially spaced from an axis of rotation;

coaxial conduits on inner sides of the first and second plates and distributed about the axes of rotation at the same distance therefrom, said conduits being coupled to respective coaxial connectors and terminating on the outer sides of the first and second plates, the conduits on the first plate operatively interfitting with the conduits on the second plate so as to enable the transfer of microwave energy from any one of the plurality of first coaxial connectors to



any one of the plurality of second coaxial connectors when respective ones of the coaxial conduits are placed to operatively interfit with each other; and

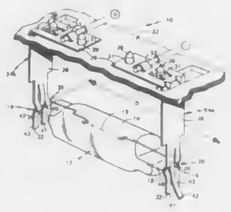
means for axially and rotationally moveably mounting said plates with respect to each other and with their inner sides facing and being spring biased towards each other and with their respective axes of rotation in alignment so as to enable operative axial engagement of aligned coaxial conduits while enabling axial separation against the spring bias of the first and second plates to rotate a coaxial conduit that is coupled to a first coaxial connector into alignment with a coaxial conduit that is coupled to a second coaxial connector.

4,938,708

MOUNTING ARRANGEMENT FOR CARTRIDGE BULB AND IMPROVED TERMINAL THEREFOR

Lawrence L. Vigneau, Allen Park, and Leonard E. Moriconi, Southfield, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jun. 23, 1989, Ser. No. 370,534
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—239 **8 Claims**



1. A mounting arrangement for a baseless cartridge bulb, the cartridge bulb having a body and two contact pins at respectively opposite ends of the body, each of said contact pins being sealed in said body and having a first portion extending outwardly therefrom and a second portion extending transversely of said first portion, said first portions of said two contact pins extending in respectively opposite directions from each other, said second portions of the two said contact pins being spaced from one another a predetermined distance D, the mounting arrangement comprising:

support means;

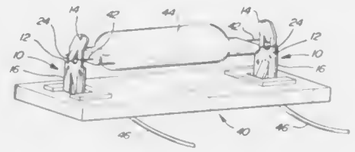
two terminals, each of said terminals including a mounting portion and a contact arm portion, each said contact arm portion including snap detent means for releasably engaging said second portion of a respective said contact pin of said cartridge bulb in electrically conducting relation therewith when said bulb is in an operating position, said terminals being fixedly mounted at their respective said mounting portions to said support means and being configured and positioned relative to each other such that the snap detent means of said contact arm portions are spaced from one another by substantially exactly said predetermined distance D between said second portions of said contact pins, thereby to minimize loading said contact pins relative to their respective seals with said body when the cartridge bulb is in an operating position with both of said contact pins in said releasable engagement with said snap detent means of said two terminals.

4,938,709

CONNECTION TERMINALS FOR RIGID-WIRE LOOP CARTRIDGE LIGHT BULBS

Robert J. Smith, Farmington Hills, and David J. Gardner, Fraser, both of Mich., assignors to Judco Manufacturing Corporation, Harbor City, Calif.

Filed Jun. 19, 1989, Ser. No. 367,893
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—239 **8 Claims**



1. An assembly of a pair of resilient terminals for supporting and providing electrical contacts for a cylindrically shaped cartridge bulb of the type having rigid-wire loops disposed on each bulb end to form external filament connections, each of said terminals comprising:

an elongated member of sheet metal having a relatively side lower base portion and a narrower upper contact portion, said contact portion and said base portion being joined to form a shoulder and each terminating in a free end;

said contact portion having a downwardly depending, elongated tab, the tab being separated by a cut from said contact portion and joined thereto at one end, said tab projecting out of the plane of the contact portion, said contact portion being folded across its width between its free end and said shoulder such that the free end projects out of the plane of the contact portion in a direction opposite the elongated tab;

electrical connection forming means at the free end of said base portion; and

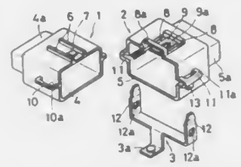
means for supporting said base portion in a housing assembly, whereby the pair of terminals are disposed with the free ends of their respective contact portions pointing inwardly toward one another so that the rigid-wire loop ends of a cartridge bulb can easily slip over the free ends of said contact portions without bending the contact portions and further movement of the bulb away from the free ends of said contact portions flexes the terminals toward one another until said loops slip over each contact tab, locking the cartridge bulb into position.

4,938,710

CONNECTOR APPARATUS

Yasuyuki Aihara; Hideki Kano; Yoshikazu Tsuchiya, and Noboru Miyazaki, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1988, Ser. No. 284,986
Claims priority, application Japan, Dec. 15, 1987, 62-189392[U]
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—345 **8 Claims**



1. A connector apparatus comprising male and female connector members each having a housing, a stay for mounting the connector members in place, a male projection provided on an outer side surface of the housing of the male connector member, a female projection into which said male projection can be inserted in the direction in which both the male and the female connector members are assembled to each other provided on an outer side surface of the housing of the female connector member, and at least one of the male and the female projections has an engagement opening formed to open in a direction perpendicular to said assembly direction of the male and the female connector members so that an opening of said engagement opening becomes narrower depending on the progress in assembling the male and the female connector members and becomes wide-open to receive a locking pawl formed on the stay when both the male and the female connector members are completely assembled to each other, said locking pawl having a wedge-shaped end so that it can be inserted into the engagement opening by forcible insertion even when both the male and the female connector members are still in a partially assembled condition, thereby forcibly brining the connector members into the completely assembled condition; wherein a said male projection is provided on each of two opposite outer side surfaces of the male connector member housing, wherein a said female projection is provided on each of two opposite outer side surfaces of the female connector member housing, and the stay comprises two locking pawls for inserting into two engagement openings formed on said projections.

4,938,711

STRAIN RELIEF FOR RIBBON CABLE CONNECTORS

Wayne S. Davis, Harrisburg, and Robert N. Whiteman, Jr., Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

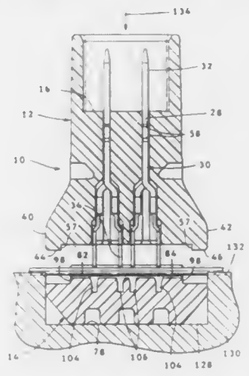
Continuation of Ser. No. 304,046, Jan. 30, 1989, abandoned. This application Nov. 1, 1989, Ser. No. 431,726
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—405 **10 Claims**

1. An electrical connector for terminating multiconductor cable, comprising:

a housing having a cable terminating face, an opposed mating face and opposed end walls having latch means thereon, said cable terminating face having major edges and minor edges, said minor edges contiguous with said end walls, said major edges extending beyond the profile of said mating face, said mating face having a rib extending along each of said major edges, said ribs upstanding from said cable terminating face;

a plurality of contacts in said housing, said contacts having respective conductor receiving portions extending from said cable terminating face;

a terminating cover defining an inner surface, major side edges and having latch arms at opposite ends thereof



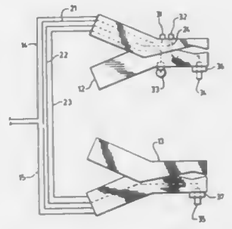
extending to respective distal ends, said latch arms adapted to engage said latch means to retain said cover on said housing, said terminating cover having an off-set recessed from said inner surface along the major side edges thereof cooperable with the rib to provide a space therebetween for passage of a cable terminated on said connector and to engage said cable to provide strain relief thereto.

4,938,712

JUMPER CABLES

Andrew B. Black, 210 Birkdale Road, Scarborough, Ontario, Canada M1P 3S2

Filed Aug. 3, 1989, Ser. No. 388,845
Int. Cl.[5] H01R *11/00*
U.S. Cl. 439—490 **9 Claims**



1. A battery jumper cable for polarized connection of a source battery to a destination battery, comprising:

(a) two insulated cables each having first and second ends,

(b) battery attachment means at each end of said cables,

(c) a first polarity indicating means at the second ends of one of the cables for indicating the polarity of the source battery when the first ends of said cables are arbitrarily connected thereto,

(d) a first and second probe at the second ends of said cables and electrically insulated therefrom, and

(e) a second polarity indicating means at the second end of

one of said cables for indicating the polarity of said destination battery when said first and second probes are arbitrarily connected thereto prior to polarized connection of the second ends of the cables to the destination battery.

4,938,713

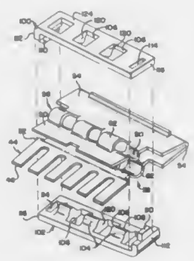
ELECTRICAL TERMINAL FOR WAVE CRIMP TERMINATION OF FLAT POWER CABLE

John K. Daly, Scottsdale, Ariz.; William B. Fritz, Hummelstown, Pa., and Earl R. Kreinberg, Phoenix, Ariz., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 193,852, May 13, 1988, Pat. No. 4,859,204, and a continuation of Ser. No. 194,063, May 13, 1988, Pat. No. 4,859,205, and a continuation of Ser. No. 298,259, Jan. 13, 1989, Pat. No. 4,867,700, which is a continuation of Ser. No. 193,458, May 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 50,793, May 14, 1987, abandoned, and a continuation of Ser. No. 236,313, Aug. 23, 1988, Pat. No. 4,834,673. This application Apr. 14, 1989, Ser. No. 338,242

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—492 5 Claims



1. A transition adapter for flat power cable of the type having a flat conductor with a thin insulative covering thereover, for terminating to the conductor and electrically interconnecting the conductor to another electrical article having contact means matable with contact means of the adapter for the transmission of power, comprising:

at least a body member formed from metal having spring characteristics and suitable for transmitting power, said body member including contact means at a mating end thereof and opposed first and second plate sections integrally joined at a cable-receiving end by a pair of bight straps spaced laterally apart defining a transverse cable-receiving slot therebetween, said first and second plate sections coextending forwardly from said pair of bight straps and slightly diverging to receive a portion of the cable therebetween; and

each of said first and second plate sections include at least one first and second terminating region respectively, said first and second terminating regions being opposed from each other prior to termination to said cable, said first and second terminating regions including opposing arrays of wave shapes such that when said first and second plate sections are pressed relatively together against a portion of the cable extending through said cable-receiving slot and disposed between said first and second plate sections, said wave shapes at least deflecting sheared conductor strips of said cable adjacent to respective ones thereof and associated therewith into opposing respective relief recesses defined by arcuate shapes associated with said wave shapes and thereby exposing sheared conductor edges for electrical connection therewith, forming a plurality of wave joints.

4,938,714

ELECTRICAL CONNECTOR

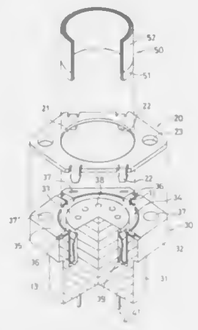
Mitsuru Kawai; Masaru Yoshida, and Yoshihiro Sasaki, all of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,629

Claims priority, application Japan, Oct. 4, 1988, 63-249148

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 6 Claims



1. An electrical connector comprising:

an insulating housing having an annular recess extending rearward from a front end thereof for receiving a portion of a mating connector;

a cylindrical shield member fitted in said annular recess, said shield member including:

first shield contact means for contact with a conductive shield of said mating connector;

second shield contact means for contact with an electrical circuit; and

third shield contact means extending in radial directions from a front edge of said shield member;

a detachable end face protection member attached to said front end of said insulating housing for protection thereof, said detachable end face protection member including:

engaging means for latching said detachable end face protection member to said front end, whereby said third shield contact means comes into contact with a backside of said end face protection member.

4,938,715

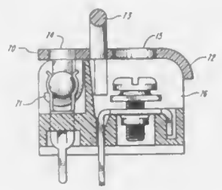
SHOCK SAFE FUSE HOLDER AND PULLER COVER

William H. Jones, Villa Park, and William R. Bailey, Glen Ellyn, both of Ill., assignors to Reed Devices, Inc., Carol Stream, Ill.

Filed May 5, 1989, Ser. No. 347,997

Int. Cl.[5] H01R *9/24*

U.S. Cl. 439—621 17 Claims



1. An electrical terminal block assembly comprising:

a body of electrically insulative material having a first cavity and a second cavity;

means for mounting an electrical terminal in the first cavity;

means for retaining a fuse in the second cavity; and

a cover configured to cover the first and second cavities, the cover including means for inserting a fuse into and extracting the fuse from the fuse retaining means.

4,938,716

DEVICE FOR SETTING UP ELECTRICAL CONTACT AMONG CONDUCTORS DISTRIBUTED BETWEEN TWO ELEMENTS, NOTABLY CONTACTS BETWEEN THE ELEMENTS OF A MEMORY CARD AND THOSE OF ITS READER

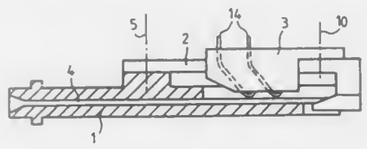
Jacques Chabrolle, and Jean-Claude Guyon, both of Beaune, France, assignors to Electroniques LCC-CICE, Courbevoie, France

Filed Apr. 17, 1989, Ser. No. 339,304

Claims priority, application France, Apr. 19, 1988, 88 05140

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—635 7 Claims



1. A device for setting up electrical contact among conductors (14) distributed between a first element (20) and a second element (3), the setting up of the contact between the conductors having to be made when the first element (20) is in a pre-determined position with respect to the second element (14-3), the device being solidly joined to the second element, said device including:

means for guiding (1) the first element toward said determined position;

a stop (8) designed to stop the first element (20) when it has reached said determined position, said stop comprising means (9) enabling said conductors to be gradually put into contact,

said device further including a flexible strip (2) formed by an arm(7), fixed by one of its ends (5,6) to said guiding means (1), the other end of which is extended by a part (8) forming said stop.

4,938,717

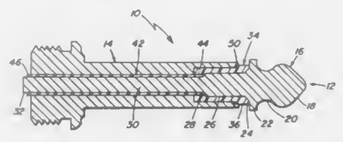
REINFORCED JACK PLUG

Frederick L. Lau, Skokie, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed Oct. 2, 1989, Ser. No. 415,804

Int. Cl.[5] H01R *17/18*

U.S. Cl. 439—669 2 Claims



1. An electrical jack plug comprising:

elongated cylindrical body means having a leading end and an opposing trailing end, said body means comprising a tip contact member made of electrically conductive material and extended axially of said body means, said tip contact member being provided with a tip component having a distal portion disposed adjacent said leading end of said body means and having a first maximum transverse dimension;

said body means further comprising a reinforced length component connected in axial alignment with said tip component and having a second maximum transverse dimension smaller than said first maximum transverse dimension;

said body means further comprising a rod component connected in axial alignment with said reinforced length component and having a third maximum transverse dimension smaller than said second maximum transverse dimension;

said reinforced length component having a length dimension greater than said second maximum transverse dimension and having a cross sectional size means for uniformly distributing impact stresses applied to said tip component and transmitted to said reinforced length component;

said tip component having a symmetrical outer surface tapering convergently toward said leading end of said body, said first maximum transverse dimension comprising the transverse dimension of a proximal portion of said tip component adjacent said reinforced length component;

said reinforced length component comprising a cylindrical structure having one end portion integrally attached through a first joint to said proximal portion of said tip component and having a substantially uniform diameter smaller than said transverse dimension of said proximal portion, said cylindrical structure having an opposing end portion integrally attached through a second joint to said rod component;

said body means including a cup-shaped bushing made of dielectric material and having an axially extending wall slidably encircling said reinforced length component, said cup-shaped bushing having an open end disposed adjacent said proximal portion of said tip component and having an opposing closed end provided with a central aperture through which extends said rod component; and

said body means including a tubular sheath made of dielectric material and slidably encircling said rod component, said tubular sheath having an end portion protruding into said closed end of said bushing.

4,938,718

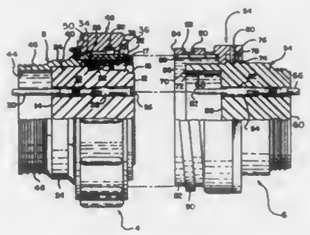
CYLINDRICAL CONNECTOR KEYING MEANS

Herbert W. Guendel, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 235,455, Feb. 18, 1981, abandoned. This application Jun. 7, 1985, Ser. No. 742,171

Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—680 4 Claims



1. An electrical connector assembly, comprising:

plug means including first shell means having first insert means disposed therein, said first insert means having first passageway means extending therethrough, first electrical terminal means secured in said first passageway means, first means on said first shell means and said first insert means securing said first insert means at a selected angular

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position relative to said first shell means and securing said first shell means and said first insert means together;

receptacle means including second shell means having second insert means disposed therein, said second insert means having second passageway means extending therethrough, second electrical terminal means secured in said second passageway means, second means on said second shell means and said second insert means securing said second insert means in said second shell means at a selected angular position relative to said second shell means;

coupling means on said first and second shell means coupling said first and second shell means, said first and second insert means, and said first and second electrical terminal means together, after angularly aligned mating thereof;

said first and second insert means having mating surfaces for engagement with each other when electrical contact sections of said electrical terminal means are electrically connected together, said second insert means having a continuous hood means surrounding the electrical contact sections of said second electrical terminal means extending outwardly from said mating surface of said second insert means and encompassing a forward section of said first insert means when said mating surfaces are engaged and said electrical contacts sections are electrically connected;

said first shell means having a circumferentially continuous forward portion having an internal surface radially spaced from said forward section of said first insert means such that said plug means is capable of encompassing a forward section of said hood means of said second insert means when said mating surfaces are engaged and said electrical contact sections are electrically connected;

said second shell means having a continuous hood means radially spaced from an external surface of said continuous hood means of said second insert means such that said receptacle means is capable of encompassing a forward section of said first shell means between said shell hood means and said insert hood means when said mating surfaces are engaged and said electrical contact sections are electrically connected, and said second shell hood means having a leading edge extending farther forward than the leading edge of said second insert hood means;

a first unique keying system of said connector assembly defined by key means and corresponding keyway means provided on said first and second shell means disposed at selected locations asymmetrically around and extending axially rearwardly from leading edges of said first and second shell means, said shell keyway means to receive said shell key means during mating of matchingly keyed ones of said plug means and said receptacle means;

a second unique keying system of said connector assembly defined by key means and corresponding keyway means provided on said first and second insert means disposed at selected locations asymmetrically around and extending axially rearwardly from leading edges of said first and second insert means, said insert keyway means to receive said insert key means during mating of matchingly keyed ones of said plug means and said receptacle means, whereby said shell key means and keyway means defining said first keying system must cooperatingly engage before said insert key means and keyway means defining said second keying system cooperatingly engage during mating of said plug means and said receptacle means; and

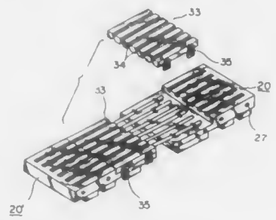
said selected angular position of said second insert means in said second shell means is selected relative to said selected angular position of said first insert means secured in said first shell means, such that said insert key and keyway means are capable of cooperatingly engaging during mating after said shell key and keyway means have cooperatingly engaged, in a unique keying arrangement for said plug means and said receptacle means to prevent mismating of one thereof with another means similar to the other thereof.

4,938,719

JUNCTION BLOCK

Mamoru Sawai, and Keiichi Ozaki, both of Kosai, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 22, 1988, Ser. No. 288,067
Claims priority, application Japan, Dec. 28, 1987, 62-329843
Int. Cl.[5] H01R *9/22*
U.S. Cl. 439—714 **3 Claims**



1. A junction block comprising:

a pair of first and second cover cases each having an inner surface and an outer surface, said inner surfaces having grooves therein;

a plurality of electrical conductors each having a first portion, a second portion, and a middle portion therebetween, said first portion of each of said conductors being received in one of said grooves of said first cover case and said second portion of each of said conductors being received in one of said grooves of said second cover case;

contact-terminals inserted through said grooves of said first and second cover cases to protrude through said outer surfaces of said first and second cover cases for electrical connection between said first or second portions of said conductors and external circuits; and

insulating partitioning means, said first cover case being piled on said insulating partitioning means with said grooved inner surface of said first cover case facing a surface of said insulating partitioning means; and said second cover case being piled on said insulating partitioning means with said grooved inner surface of said second cover case facing an opposed surface of said insulating partitioning means, whereby said first and second portions of said electrical conductors are retained in said inner surface grooves of said first and second cover cases and insulated against electrical contact by said insulating partitioning means sandwiched between said first and second cover cases.

4,938,720

ELECTRICAL CONNECTOR

Paul E. Romak, Langen, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

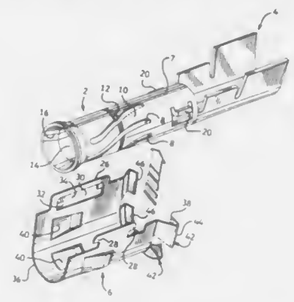
Filed Jun. 6, 1989, Ser. No. 362,728
Claims priority, application United Kingdom, Jul. 21, 1988, 8817403
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—839 **9 Claims**

1. An electrical terminal comprising:

an elongate, tubular socket having a pin receiving passage and a helper spring sleeve surrounding the socket, the pin receiving passage extending from a mating end of the socket toward an overinsertion end of socket, the socket being formed with slots providing a plurality of contact springs, each contact spring projecting into the passage, the helper spring sleeve having a first end which is proximate the mating end of the socket and a second end which is proximate the overinsertion end of the socket;

the socket having projections provided proximate the overinsertion end, the projections extend in a direction which is essentially perpendicular to the longitudinal axis of the socket;

the helper spring sleeve having spring arms which are provided about the circumference of the helper spring sleeve proximate the second end thereof, the spring arms are separated from each other by slots which are provided in the helper spring sleeve, each of the spring arms are



formed such that a midportion of each spring arm extends outward from the helper spring sleeve, away from the socket;

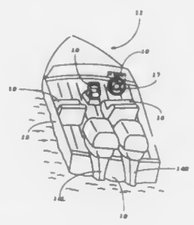
whereby the projections of the socket cooperate with the slots provided between the spring arms of the helper spring sleeve to insure that the helper spring sleeve does not rotate about the socket.

4,938,721

ALARM DEVICE FOR MARINE PROPULSION UNIT

Takashi Koike, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 178,979, Mar. 21, 1988, abandoned.
This application Sep. 26, 1989, Ser. No. 412,613
Claims priority, application Japan, Mar. 20, 1987, 62-66237
Int. Cl.[5] B63H *21/21*
U.S. Cl. 440—2 **8 Claims**



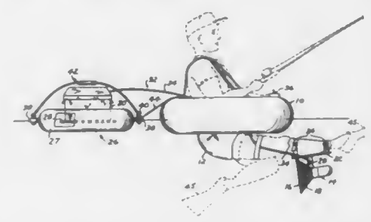
1. A control system for a marine propulsion comprising a first engine, first propulsion means driven by said first engine, a second engine, second propulsion means driven by said second engine, first sensing means for sensing an abnormal running condition of said first engine, first alarm operating means, second sensing means for sensing an abnormal running condition of said second engine, second alarm operating means, first control means operated by said first sensing means for providing a control for said first alarm operating means to give and alarm and a control for said first engine in response to the sensing of an abnormal running condition of said first engine, second control means operated by said second sensing means for providing a control for said second engine in response to the sensing of an abnormal running condition of said second engine, the improvement comprising means for operating the control means of the normally running engine in response to the operation of the alarm operating means of the abnormally running engine.

4,938,722

FISHERMAN'S FLOAT PROPELLING SYSTEM

Harold K. Rizley, P.O. Box 720, Sayre, Okla. 73662

Filed Jun. 29, 1989, Ser. No. 372,791
Int. Cl.[5] B63H *7/08, 21/17*
U.S. Cl. 440—6 **4 Claims**



1. In a toric fishing float dimensioned to loosely surround the torso and buoyantly support a fisherman in a sitting position, the improvement comprising: propulsion means including a trolling motor having a propeller

for moving the float and fisherman across a body of water;

flexible mounting means for operatively attaching said motor to

the fisherman;

said mounting means including a panel having a length less than the distance between a fisherman's knee and ankle and having a width less than its length;

motor mount means securing said motor to said panel intermediate its ends with the panel and motor axes disposed in longitudinal parallel relation;

flexible means attaching respective end portions of said panel to a fisherman's leg between his knee and ankle, whereby said motor moves the float and fisherman across a body of water when the motor is energized and the fisherman positions his motor attached leg forwardly in a substantially horizontal direction; and,

a source of electrical energy including an electric circuit for energizing said motor.

4,938,723

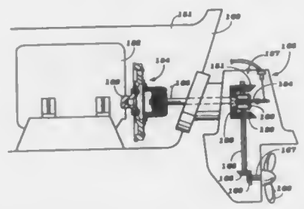
FABRICATED ELASTIC COUPLING FOR USE IN INBOARD/OUTBOARD ENGINE

Tsuyoshi Yoshimura, and Shiegeki Shiozawa, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 29, 1988, Ser. No. 277,145
Claims priority, application Japan, Nov. 30, 1987, 62-299851
Int. Cl.[5] B63H *23/00*; F16D *3/78, 3/76*
U.S. Cl. 440—52 **8 Claims**

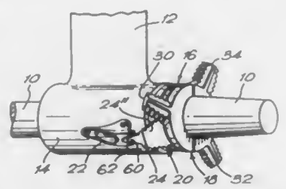
5. A marine outboard drive adapted to be affixed to the rear of a transom of a watercraft hull, an engine output shaft driven by an internal combustion engine mounted within the hull, said outboard drive having an input shaft extending through the transom of the watercraft and into the hull, and a coupling for connecting said engine output shaft to said outboard drive input shaft and for permitting misalignment between said shafts comprising a relatively thick molded hub member with a recess formed at one end thereof, said recess being curved in cross sections taken through the axis of rotation therein, a separate attachment member formed from a thin walled sheet material and having greater flexibility than said hub member, and adapted to be connected to one of said shafts, fastening means rigidly affixing said attachment member to said hub

member, an internally splined member adapted to have a splined connection to the other of said shafts, and an elastic



member received within said hub member recess and resiliently connecting said internally splined member to said hub member.

4,938,724
LINE CUTTING DEVICE
Robin D. Shaw, 252 Hursley, Winchester, Hampshire SO21 2JJ, England
PCT No. PCT/GB86/00778, § 371 Date Jun. 23, 1988, § 102(e) Date Jun. 23, 1988, PCT Pub. No. WO87/03856, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 18, 1986, Ser. No. 216,633
Claims priority, application United Kingdom, Dec. 24, 1985, 8531791
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—73 **15 Claims**



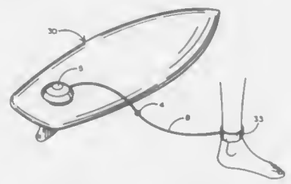
1. A line cutting device for mounting around a propeller shaft between a shaft bearing and a propeller comprising:

A. a rotatable cutting blade assembly mountable for rotation with the propeller shaft and including at least one rotatable cutting blade extending generally radially of the propeller shaft, each said rotatable cutting blade having an axially directed flat face and a circumferentially directed face, said faces of each cutting blade defining a cutting edge therebetween; and

B. a stationary cutting blade assembly adapted to be restrained against rotation by co-operation with the shaft bearing and including a stationary cutting blade extending generally radially of the propeller shaft, said stationary cutting blade having an axially directed flat face and a circumferentially directed face, said faces defining a cutting edge therebetween, said stationary cutting blade assembly being arranged for cutting action of its cutting edge in conjunction with the cutting edge of each rotatable cutting blade on rotation of the propeller shaft with the axially directed faces passing opposite each other during such rotation, said circumferentially directed face of each rotatable cutting blade and said circumferentially directed face of said stationary cutting blade extend away from each other from their radially inner ends to the outer ends when in relative cutting position to each other; and

C. serrations included on each cutting edge of each rotatable cutting blade and the cutting edge of the stationary cutting blade, each respective circumferentially directed face is provided with at least one tooth formation thereon, each tooth formation has a saw-tooth shape and each circumferentially directed face has its tooth formation raked back from its cutting edge, whereby each cutting edge is provided with points, the saw-tooth formations on each face being provided at equivalent radial spacing, whereby the points on the stationary cutting blade act at the same radius as the equivalent points on the rotatable cutting blade, the cutting edges being shaped for cutting action of radially inner ones of the serrations prior to such action of radially outer ones of said serrations on continued rotation of the propeller shaft.

4,938,725
RETRACTABLE SURFBOARD LEASH
Steven Beck, #5 Copley St., Laguna Niguel, Calif. 92680
Filed Jul. 13, 1989, Ser. No. 379,335
Int. Cl.[5] A63C *15/06*
U.S. Cl. 441—75 **7 Claims**



1. A leash assembly for attaching a surfboard to a surfer, the surfboard including a crossbar embedded therein, at least some of the crossbar being accessible through a cavity formed in the surfboard, said leash assembly comprising:

a cord;

a housing into which at least some of said cord is to be retracted;

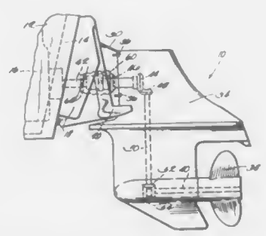
means to attach one end of said cord to the surfer;

means to connect the opposite end of said cord at the interior of said housing;

means to retract said cord into said housing; and

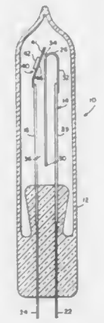
means by which to detachably connect said housing to the crossbar of the surfboard via the cavity.

4,938,726
MARINE PROPULSION DEVICE BELLOWS ASSEMBLY
Gerald F. Bland, Glenview, and Donald K. Sullivan, Arlington Heights, both of Ill., assignors to Outboard Marine Corporation, Waukega, Ill.
Filed Apr. 11, 1985, Ser. No. 722,004
Int. Cl.[5] B63H *23/36*
U.S. Cl. 440—112 **31 Claims**



1. A marine propulsion device comprising a flexible bellows having a rearward end, a pivot housing including an opening complementary with and communicating with said rearward end of said bellows, a propulsion unit removably connected to said pivot housing, and interengaging means on said end of said bellows and on said propulsion unit for releasably securing said end of said bellows in communication with said opening, said interengaging means including, on said end of said bellows, a rearwardly facing groove, and, in said propulsion unit, a portion having a forward edge receivable in said groove.

4,938,727
METHOD OF MANUFACTURING A GLOW DISCHARGE STARTER
Nikolaos Barakitis, Salem, and Gregory Zaslavsky, Brookline, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.
Division of Ser. No. 151,034, Feb. 1, 1988, Pat. No. 4,845,406.
This application Jun. 19, 1989, Ser. No. 367,921
Int. Cl.[5] H01J *9/38*
U.S. Cl. 445—40 **6 Claims**



1. The method of making a glow discharge starter comprising the steps of providing an envelope, forming a bimetallic electrode with an envelope, forming a bimetallic electrode with a bimetallic element, providing a counter electrode, securing a getter holder containing a predetermined amount of getter material to one of said electrodes, sealing said bimetallic electrode and said counter electrode within said envelope, exhausting said envelope, filling said envelope with a gas at a predetermined pressure greater than a predetermined final pressure before flashing a portion of said getter material, adjusting the pressure within said envelope to said final pressure, and hermetically sealing said envelope.

4,938,728
MAGNET ACTUATED FLOATING RUNG NOVELTY LADDER
Daniel T. Callari, 252 Wabash Ave., Kenmore, N.Y. 14217
Filed Oct. 11, 1989, Ser. No. 419,943
Int. Cl.[5] A63H *33/26*
U.S. Cl. 446—133 **11 Claims**

1. An improved novelty device resembling a ladder comprising:

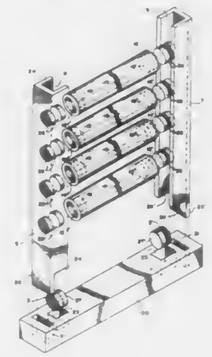
(a) a base;

(b) a pair of rung guides supported by said base, each one of said rung guides having a channel therein;

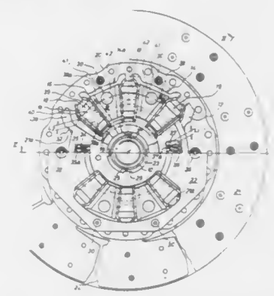
(c) a plurality of rungs, each end of each respective one of said rungs having an opening therein, each respective one of said rungs being arranged between said pair of rung guides such that each end of each one of said rungs fits into a respective said channel of each respective rung guide;

(d) a plurality of magnets, each magnet being mounted in a said opening;

(e) wherein vertically adjacent magnets are arranged with similar magnetic poles adjacent each other such that adjacent rungs are separated by magnetic repulsive forces, thereby creating spaces between said rungs.



4,938,729
DAMPER DISK OF A RUBBER-SERIES TYPE
Tooru Hamada, Takatsuki; Yoshio Nishimura, Neyagawa, and Syogo Ohga, Osaka, all of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
PCT No. PCT/JP87/00587, § 371 Date Apr. 8, 1988, § 102(e) Date Apr. 8, 1988, PCT Pub. No. WO88/01354, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 5, 1987, Ser. No. 184,638
Claims priority, application Japan, Aug. 12, 1986, 61-188944; Aug. 12, 1986, 61-123616
Int. Cl.[5] F16D *13/64*
U.S. Cl. 464—85 **4 Claims**



1. A damper disc of a rubber-series type including a spline hub continuously provided with a radial hub flange in which at least two first arms are formed, two side plates disposed at opposite sides of the hub flange, retainer plates disposed between the hub flange and the side plates and including second arms faced to said first arms, and elastic members made from rubber and disposed between said both arms and in openings formed in said side plates; characterized in that the second arms of the retainer plates are provided with support members fixed to each respective second arm by one rivet and made from elastic resin material for increasing pushing force transmitting area from the second arms to the elastic members, and end surfaces of the support members facing to the elastic members and projected by predetermined distances in the direction

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of the rubber members beyond the end surfaces of the second arms facing to the elastic members, said end surfaces of said second arms, in the circumferential direction of said damper disk when said elastic members are not compressed, being spaced from said facing elastic member.

4,938,730

TOY HOUSE WITH MAGNETICALLY ACTUATED LIGHT

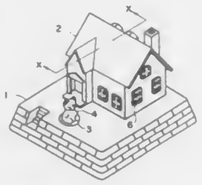
Yuji Yamane; Hideya Nishikawa, and Tetsuya Joja, all of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Katsushika, Japan

Filed Jan. 9, 1988, Ser. No. 204,505

Claims priority, application Japan, Oct. 28, 1987, 62-164856[U]

Int. Cl.[5] **A63H** *33/26*

U.S. Cl. 446—130 **8 Claims**



1. A toy house comprising:

an electrical circuit including a light and a battery power source;

first and second electrical contacts coupled to the electrical circuit and being normally spaced apart to provide an open circuit;

a house member having windows and an interior, wherein the light is mounted in the house member which is illuminated by the light when the electrical circuit is closed;

magnetic actuator means for opening and closing the electrical circuit; and

a base member having top, bottom, and side walls defining an interior chamber, the house member being supported on the top wall of the base member;

wherein the magnetic actuator means comprises a play piece having a magnet disposed therein, a lever pivotally supported inside the base member and having a distal end for carrying magnetic material and an opposite, proximal end for moving the first and second electrical contacts together, the magnetic material being attractable to the magnet in the play piece when the play piece is placed on the top wall to the base member, thereby causing the first and second electrical contacts to move into contact.

4,938,731

ROTATABLE, SELF-ALIGNING LOBE COUPLING

Phuson Nguyen, North Hollywood, and Robert E. Matijick, Alhambra, both of Calif., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Feb. 7, 1989, Ser. No. 307,734

Int. Cl.[5] **F16D** *3/18*

U.S. Cl. 464—158 **13 Claims**

1. A rotatable coupling comprising:

a male member including a first hub rotatable about a central axis;

a bit having a continuous wall projecting from the hub and defining a plurality of first lobes equidistantly spaced around the axis;

each lobe having a curvilinear portion adjacent the hub and a symmetrical wedge-shaped portion projecting from the curvilinear portion and terminating in a straight leading edge;

the leading edge of each wedge-shaped portion extending radially inwardly and intersecting at the central axis and lying in a common plane normal to the axis;

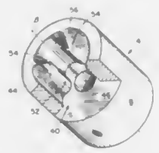
the sides of each wedge-shaped portion converging toward the leading edge and the common plane and away from the first hub so that only the leading edge portions and their intersection lie in the common plane;

a female member including a second hub rotatable about a second central axis;

a receiving cavity in the second hub having a second continuous wall formed from one face of the second hub and terminating in an interior flat bottom surface;

the second wall defining a plurality of second lobes equidistantly spaced around the second axis and extending radi-





ally toward the axis, the second lobes defining receiving chambers between them;

the bit of the male end being engageable within the cavity;

each second lobe having a curvilinear portion adjacent the bottom surface and a symmetrical, convex, wedge-shaped portion projecting from the curvilinear portion and terminating in a curvilinear leading edge radiating inwardly from the wall toward the central axis and centrally located relative to the lobe from which it projects;

each second lobe edge being inclined from the face of the hub toward the flat bottom surface;

such that the male member is engageable in the female cavity regardless of the rotational orientation of the first and second lobes prior to engagement.

4,938,732

CONTINUOUSLY VARIABLE TRANSMISSION SYSTEM HAVING VARIABLE DIAMETER PULLEY ASSEMBLIES RESPONSIVE TO AXIALLY DIRECTED FORCES

Werner Krude, Oxford, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 13, 1989, Ser. No. 365,609

Int. Cl.[5] **F16H** *11/02*

U.S. Cl. 474—53 **64 Claims**

1. A continuously variable transmission system having at least one variable diameter pulley assembly coupled to at least a second pulley by a belt, said at least one variable diameter pulley assembly comprising:

a plurality of belt engaging members arranged in a circle having an axis of rotation, said circle defining an effective diameter for said at least one variable diameter pulley assembly, each of said belt engaging members having a central shank and a pair of bearing sections longitudinally extending from the opposite ends of said central shank, said central shank being adapted to engage said belt;

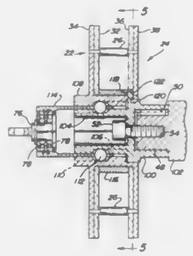
a pair of spatially separated inner disk members disposed concentric with said axis of rotation, one of said inner disk members being positioned adjacent to one end of said central shank and the other of said inner disk members being positioned adjacent to the other end of said central shank, each of said pair of inner disk members having a

first plurality of guideways extending in a first direction, each guideway of said first plurality of guideways receiving therethrough a respective one of said pair of bearing sections of said belt engaging members;

a pair of outer disk members disposed concentric with said axis of rotation, each of said outer disk members being in juxtaposition with a respective one of said inner disk members on the side opposite said belt engaging members, each of said outer disk members having a second plurality of guideways extending in a direction opposite said first direction, each guideway of said second plurality of guideways intersecting a respective one of said first plurality of guideways and receiving therein a portion of said bearing section which extends through said respective one of said first plurality of guideways at said intersection;

a hub connectable to a shaft, said hub having a first guide rotating in a first direction about said hub concentric with said axis of rotation;

a disk drive member, circumscribing said hub, said disk drive member having a second guide facing said first guide, said second guide disposed at an angle to said first direction, said first and said second guides crossing each other;



means for connecting one pair of disk members selected from the group consisting of said pair of inner disk members and said pair of outer disk members to said hub and for connecting the other pair of disk members of said group to said disk drive member;

actuator means simultaneously engaging said first and said second guides at the location where they cross each other for locking said disk drive member to said hub for rotation therewith; and

means for axially displacing said actuator means relative to said hub to displace the axial location where said first and said second guides cross each other to rotate said disk drive member relative to said hub, the rotation of said disk drive member relative to said hub rotating said pair of inner disk members relative to said pair of outer disk members, said rotation of said pair of inner disk members relative to said pair of outer disk members radially displacing said plurality of belt engaging members to change said effective diameter of said at least one variable diameter pulley assembly.

4,938,733

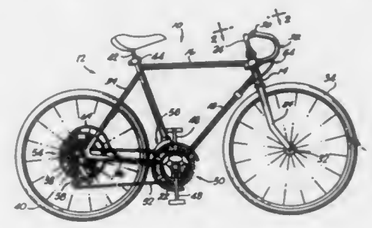
BICYCLE GEAR SHIFTING METHOD AND APPARATUS

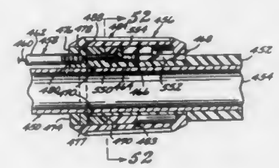
Sam H. Patterson, Chicago, Ill., assignor to Sram Corporation, Chicago, Ill.

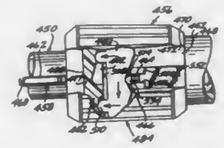
Continuation-in-part of Ser. No. 293,521, Jan. 5, 1989, Pat. No. 4,900,291, which is a continuation-in-part of Ser. No. 291,359, Dec. 29, 1988, abandoned, which is a continuation of Ser. No. 141,625, Jan. 6, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 456,155

Int. Cl.[5] **F16H** *9/24*

U.S. Cl. 474—80 **41 Claims**







1. A bicycle derailleur gear shifting system, which comprises:

derailleur shifting means having return spring means operatively associated with the rear wheel of the bicycle;

primary shift actuator cam means rotatably mounted on the bicycle handlebar generally coaxially of the handlebar;

control cable means having one end operatively associated with said primary cam means and the other end operatively connected to said derailleur shifting means, said cable means being biased toward said derailleur shifting means by said return spring means;

said primary cam means being configured so that rotational movement thereof in one direction will cause said cam means to pull said cable means against the biasing force of said spring means so as to cause down-shifting of said shifting means, and rotation thereof in the opposite direction will release said cable means in the direction of the biasing force of said spring means so as to cause up-shifting of said shifting means; and

secondary handgrip slip cam means rotatably mounted on the bicycle handlebar coaxially in tandem with said primary cam means for actuating said primary cam means, said slip cam means being axially located so that said

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primary cam means is biased against said secondary slip cam means by the force of said spring means;

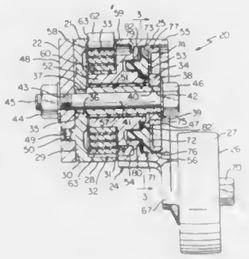
said slip cam means having a cam face engaged against said primary cam means whereby preliminary rotational movement of said slip cam means in the down-shift direction moves said primary cam means against the biasing force of said spring means to apply an overshift increment of cable pull against the biasing force of said spring means, further down-shifting movement of said slip cam means causing said down-shifting; and preliminary rotational movement of said slip cam means in the up-shift direction releases said primary cam means in the direction of said biasing force so as to release at least a portion of said overshift increment of cable pull, further up-shifting movement of said slip cam means causing said up-shifting.

4,938,734

BELT TENSIONER AND METHOD OF MAKING THE SAME

Nancy M. Green, and Mark P. Foley, both of Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Sep. 6, 1989, Ser. No. 403,537
Int. Cl.[5] F16H 7/12
U.S. Cl. 474—135 **20 Claims**



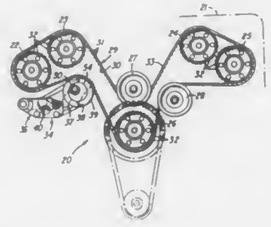
1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, first spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and frictional dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said dampening means having a longitudinal axis, said support means comprising a shaft means having a longitudinal axis and being fixed from movement relative to said belt engaging means, said belt engaging means having a portion thereof being rotatably carried by said shaft means so as to rotate relative to said shaft means, said dampening means comprising a pair of frictionally engaging first and second parts with said first part comprising an annular pad of friction material that is coaxially disposed and axially movable on said shaft means relative to said second part, and second spring means urging said first part against said second part with a certain spring force, said first part of said dampening means having guide means thereon, one of said support means and said belt engaging means having opening means therein that receive said guide means therein to guide axial movement of said first part, the improvement wherein said annular pad and said guide means of said first part of said dampening means comprise a one-piece homogeneous member.

4,938,735

BELT TENSIONING SYSTEM, TENSIONER AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

James L. Mitchell, Springfield, Mo., and Daniel P. Bexten, Columbus, Miss., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 323,539, Mar. 14, 1989, Pat. No. 4,883,446.
This application Sep. 15, 1989, Ser. No. 407,610
Int. Cl.[5] F16H 7/12
U.S. Cl. 474—133 **15 Claims**



1. In a belt tensioning system comprising a support means, an endless transmission belt construction carried by said support means and arranged to move in a certain path, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm and being in engagement with said belt construction, and an actuator carried by said support means and having opposed ends, said actuator having a movable piston projecting out of one of said opposed ends thereof and being in engagement with said arm to pivot said arm in a direction to urge said pulley into said belt construction as said piston is extended outwardly from said one of said opposed ends of said actuator, the improvement wherein the other of said opposed ends of said actuator is pivotally mounted to said support means whereby said actuator pivots relative to said support means as said piston thereof extends and retracts at said one end thereof, said actuator having spring means therein that is operatively associated with said piston for urging said piston outwardly when said spring means is unlocked from a locked condition thereof, said actuator having a removable locking pin that is adapted to lock said spring means in said locked condition thereof when said locking pin is carried by said actuator in a certain manner, said locking pin unlocking said spring means from said locked condition thereof when said locking pin is removed from said actuator.

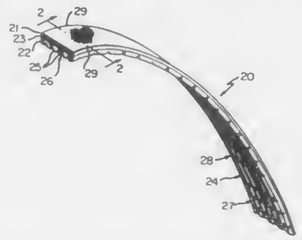
4,938,736

ENDLESS POWER TRANSMISSION BELT CONSTRUCTION AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Nixa, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 324,852, Mar. 17, 1989, Pat. No. 4,884,998, which is a division of Ser. No. 152,693, Feb. 5, 1988, Pat. No. 4,832,670. This application Sep. 20, 1989, Ser. No. 410,165
Int. Cl.[5] F16G 1/28
U.S. Cl. 474—205 **9 Claims**

1. In an endless power transmission belt construction having opposed side edge means and having an inner surface means for engaging a surface means of a rotatable pulley means or the like and defining a plurality of transversely disposed and alternately spaced apart projections and grooves that respectively extend between and to said opposed side edge means, the improvement wherein the depths of said transverse grooves are staggered so as to tend to reduce noise during normal operation of said belt construction with said pulley means or the like, said depths being staggered in a sequence calculated from a general formula utilizing a certain generating number with that sequence then being repeated throughout the length of said belt construction in the longitudinal direction thereof, said depths of said transverse grooves in each sequence thereof being staggered on the basis of a guadratic residue sequence based on said certain generating number where the depth for



each transverse groove in each sequence thereof is determined by multiplying m (where m is the maximum desired depth divided by the generating number minus one) times the integer remainder after taking the quotient of the square of the sequence number divided by the generating number.

4,938,737

TRANSMISSION BELT

Sigeaki Yamamuro, Zushi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1988, Ser. No. 289,721
Claims priority, application Japan, Dec. 25, 1987, 62-326825
Int. Cl.[5] F16G 1/24
U.S. Cl. 474—242 **7 Claims**



1. A transmission belt for use in a power transmission between two pulleys, each having pulley groove defining walls, comprising:

a plurality of chains, each including a plurality of link plates and a plurality of joint pins, each joining the adjacent two link plates of said plurality of link plates to permit articulation, said plurality of chains consisting of a first group and a second group;

a plurality of load blocks, each having taper surfaces adapted to contact with the pulley groove defining walls, each of said plurality of load blocks including a first chain receiving portion opening laterally to allow lateral insertion of said first group of said plurality of chains and a second chain receiving portion opening latereally to allow lateral insertion of said second group of said plurality of chains, each of said plurality of load blocks including first edge means defining said first chain receiving portion and second edge means defining said second chain receiving portion, respectively;

said plurality of link plates of each of said plurality of chains including concaves;

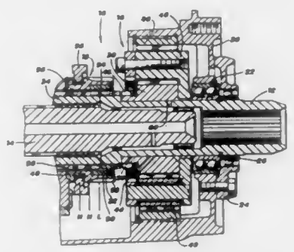
said first group of said plurality of chains being inserted into said first chain receiving portions of said plurality of blocks with said concaves of said link plates thereof receiving said first edge means defining said second chain receiving portions.

4,938,738

TWO-SPEED DRIVE ARRANGEMENT

Walter K. Fuelberth, Mesa, Ariz.; Andrew Fedor, Jr., Livonia, Mich., and Richard J. Murphy, Elma, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 22, 1989, Ser. No. 354,959
Int. Cl.[5] F16H 3/44
U.S. Cl. 475—317 **3 Claims**



1. A two-speed drive arrangement comprising:

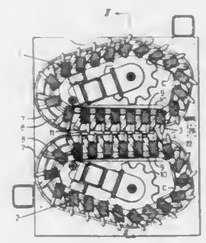
a stationary housing; an input member rotatably supported in said stationary housing; an output member; a planetary gear arrangement having a first member rotatably supported on said input member, a second member secured to said stationary housing and a third member; and clutch means having a first position for simultaneously connecting said first member for conjoint rotation with said input member and for connecting said third member for conjoint rotation with said output member and a second position for directly connecting said input member to said output member, said clutch means including a first sleeve member longitudinally slidably disposed on and continuously rotatable with said output member and engageable with said third member when said clutch means is in said first position and a second sleeve rotatably supported by and movable with said first sleeve member and also being continuously rotatable with said input member and engageable with said first member when said clutch means is in said first position.

4,938,739

EQUIPMENT FOR FOLDING PAPER WEBS AND THE LIKE

Mats G. Nilsson, Knivsta, Sweden, assignor to Sundström Safety AB, Lindingö , Sweden

Filed Jul. 27, 1987, Ser. No. 77,902
Int. Cl.[5] B65H 45/04, 45/10
U.S. Cl. 493—422 **12 Claims**



1. Apparatus for forming substantially parallel arcuate folds in a flat sheet of material, such as paper, moving along a sheet-feed plane, said apparatus comprising:

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two series of folding elements, each folding element having arcuate sheet-engagement means for forming a fold along an arc extending transversely to the direction of movement of the sheet between opposite edges of the sheet by engagement with a surface of the sheet along said arc,

means supporting the folding elements for translational movement through a sheet folding zone along opposite sides of the sheet-feed plane with the folding elements of one series facing those of the other series across the sheet-feed plane in the folding zone such that their respective sheet-engagement means are substantially parallel to one another, and with the folding elements of one series alternating with the folding elements of the other series in the direction of movement through the folding zone, and

means for causing the sheet-engagement means of the folding elements of one series to move relatively toward the folding elements of the other series in a direction substantially perpendicular to the sheet-feed plane so as to increasingly overlap the sheet-engagement means of the folding elements of the other series in such direction as the folding elements translate through the folding zone, such that the sheet-engagement means of the two series of folding elements engage opposite surfaces of the sheet, respectively, and progressively form substantially parallel arcuate folds in the sheet as said overlap increases as the folding elements translate through the folding zone.

4,938,740

REDUCING STRESS AT VASCULAR GRAFT ANASTOMOSES

Julius Melbin, Wallingford, Pa., assignor to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed May 25, 1988, Ser. No. 198,787
Int. Cl.[5] A61F *2/06, 2/04*
U.S. Cl. 600—36 **2 Claims**



1. A method for grafting a prosthetic vessel to a natural vessel, comprising the steps of:

(a) providing a prosthetic vessel, having at least one end, said end substantially elliptical in cross-section at an anastomotic plane, said anastomotic plane substantially perpendicular to the axis of said end of said prosthetic vessel;

(b) cutting a natural vessel along a first bias, such that an exposed end of the vessel along the plane of the bias cut possesses substantially the same cross-sectional geometry as said prosthetic vessel;

(c) cutting the same or a different natural vessel along a second bias, at an angle, such that a second elliptical cross-section possessing substantially the same cross-sectional geometry as said prosthetic vessel is formed; and

(d) forming an anastomosis at the interface of each of said first and second bias cuts and said prosthesis.

4,938,741

MEDICAL VENTILATING AND ASPIRATING APPARATUS AND METHODS

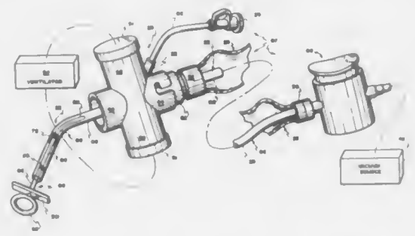
Richard C. Lambert, Lehi, Utah, assignor to Ballard Medical Products, Midvale, Utah

Continuation of Ser. No. 265,637, Nov. 1, 1988. This application Oct. 31, 1989, Ser. No. 429,738
The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.
Int. Cl.[5] A61M *1/30*
U.S. Cl. 604—19 **4 Claims**

1. An indwelling apparatus by which a medical patient is subject to involuntary respiratory therapy and by which secretions in the trachea and/or bronchi are evacuated, the apparatus comprising:

an elongated aspirating catheter tube having a hollow interior axial passageway and comprising relatively small inside and outside diameters, and essentially free distal end portion for manual insertion into the lungs of a patient and and axially disposed suction port means disposed at the distal tip of the catheter tube and in fluid communication with the axial passageway;

the free distal end portion of the catheter tube immediately proximal of the suction port means being shaped so that it bears a sharp angular relationship to the remainder of the



catheter tube whereby facile accurate entry into the left lung of the patient is predictably accommodated;

annular retainer means contiguously engaging and holding the distal end portion of the catheter tube in said sharp angular configuration during storage;

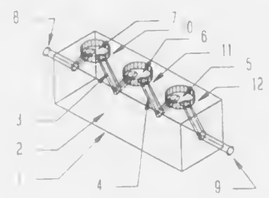
the catheter tube further comprising rotational indicia visually disposed at the proximal end thereof whereby the exact rotational disposition of the distal end portion in the respiratory system and entry of the angular distal end portion of the catheter tube into a lung of the patient can be accurately and predictably controlled by manual manipulation and visual reliance on rotational indicia at the proximal end.

4,938,742

PIEZOELECTRIC MICROPUMP WITH MICROVALVES

Johannes G. Smits, 22 Farrell St., Quincy, Mass. 02169

Filed Feb. 4, 1988, Ser. No. 152,379
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—67 **10 Claims**



1. A pump for the displacement of a liquid, comprising:

a body of a silicon wafer, said wafer having a front side and a back side, said front side having an original front surface plane and said back side having an original back surface plane, while in said front side are shaped by a first means for removing from said front side a multiplicity of surface depressions in each of which at lest one rim of substantially circular shape extends from the bottom of said surface depression to said original front surface plane,

and in which are shaped by a second means for removing from said backside:

a multiplicity of troughs,

and in which are shaped by a third means for removing from said backside:

a pair of passage holes which extend from two of said troughs to said original front surface plane,

a multiplicity of passage holes which extend from said troughs to said surface depressions;

a front side glass plate with an upper and a lower surface in which a first hole for the admission of said liquid into the pump and a second hole for the removal of said liquid are made, said front side glass plate being hermetically connected with said lower surface by a joining means to said original front surface of said silicon wafer over the entire area of said original front surface, using an exclusion means to exclude said rim from being joined to said lower surface;

a backside plate which is hermetically connected to said original backside of said silicon wafer by said joining means, with the exclusion of said troughs and said passage holes;

a multiplicity of piezoelectric disks having a free surface and a joined surface, said joined surface being joined to said upper side of said front side glass plate, substantially such that said piezoelectric disks oppose said surface depressions;

a multiplicity of electrodes consisting of a first set located on said free surface of said piezoelectric disks, and a second set located on said joined surface;

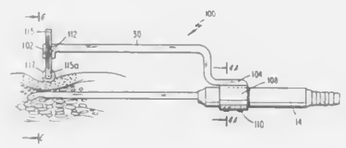
a multiplicity of electric conductor connections to said sets of electrodes.

4,938,743

SURGICAL APPARATUS FOR PERFORMING SUCTION LIPECTOMY

Hans Lee, Suite 200, 415 Morris St., Charleston, W. Va. 25301

Continuation of Ser. No. 14,839, Feb. 13, 1987, abandoned, which is a continuation of Ser. No. 831,799, Feb. 21, 1986, Pat. No. 4,676,780, which is a continuation-in-part of Ser. No. 814, May 6, 1985, Pat. No. 4,676,780. This application Jun. 29, 1989, Ser. No. 373,705
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—117 **9 Claims**



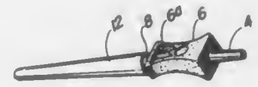
1. A device for use with a cannula having a handle and a tip, for positioning the tip of the cannula at a constant depth within subcutaneous fatty tissue to surgically aspirate the tissue upon application of suction supplied thereto through the tip, comprising a guide element formed with attachment means at a rear end of the guide element for attachment of the guide element to said handle of the cannula to secure said handle to the attachment means, said guide element including a guide surface spaced in relation to said tip when the cannula handle is secured to the guide element to thereby contact a portion of the skin covering the fatty tissue and maintain the cannula tip at said constant depth during reciprocating movement of the cannula and guide element with the guide surface moving on and in contact with the skin.

4,938,744

NEEDLE ASSEMBLY

Prentice C. Wharff, Walnut Creek, and Renato R. Salumbides, San Dimas, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 8, 1985, Ser. No. 699,714
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—263 **4 Claims**



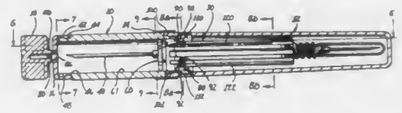
1. A double-protected needle assembly comprising a needle having a sharpened bevel-tip, the needle attached to a needle handle and completely enclosed by a rigid, relatively hard, outer needle protector attached to the needle handle by a resilient, tear-seal portion adapted to break when a twisting force is applied to the outer protector or needle handle, the outer protector including a resilient member for removing liquid from the outer surface of the needle when the outer protector is withdrawn from the needle, the resilient member comprising a portion of the tear seal portion and located within the outer needle protector, the outer protector also fully enclosing an unattached, relatively soft inner tubular enclosure completely enclosing the bevel tip of the needle and adapted to prevent contact of the bevel tip with any portion of the outer protector.

4,938,745

NEEDLE GUARD WITH VISUAL CONFIRMATION OF LOCK

William E. Sagstetter, 2696 S. Colorado Blvd., Ste. 585, Denver, Colo. 80222

Continuation-in-part of Ser. No. 160,150, Feb. 25, 1988, Pat. No. 4,878,902. This application Aug. 19, 1988, Ser. No. 234,336
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—263 **46 Claims**



1. A guard having a visually confirmable locked position for enclosing a needle extending from a hub to prevent uncovering of the needle and inadvertent needle stick after use to the needle, said guard comprising in combination:

(a) means for locating said guard in a first position relative to the hub to maintain enclosed the needle within said guard prior to use of the needle;

(b) means for posteriorly relocating said guard in a second position relative to the hub to exteriorize the needle;

(c) means for locking said guard in a third position upon anteriorly repositioning said guard relative to the hub to reenclose the needle within said guard after use of the needle; and

(d) means for providing a light transmissive passageway visually perceivable and unambiguously indicative of said guard being in the third position.

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4,938,746

NOVEL NASOGASTRIC DEVICE

Robert W. Etheredge, III, Natick, and John C. Charkoudian, Newton, both of Mass., assignors to The Kendall Company, Boston, Mass.

Filed Mar. 25, 1988, Ser. No. 173,340
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—265 **10 Claims**

1. A flexible stylet adapted for being removably inserted within a nasogastric tube in order to assist in intubation, said stylet having a surface coating of a substantially homogeneous non-aqueous mixture consisting essentially of an alkaline earth metal salt of an unsaturated higher fatty acid having at least sixteen carbon atoms; and up to equal parts by weight of an



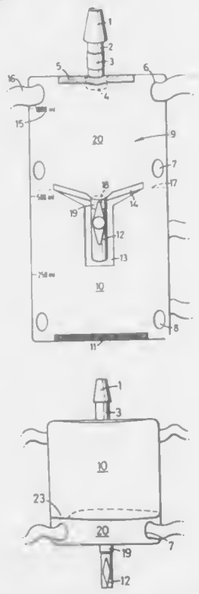
alkaline earth metal salt of a saturated fatty acid having at least sixteen carbon atoms.

4,938,747

BODY LIQUID DRAINAGE DEVICE

Stephen J. Wallace, Colchester, United Kingdom, assignor to Medical Assist Limited, United Kingdom

Filed Dec. 8, 1988, Ser. No. 281,209
Claims priority, application United Kingdom, Dec. 9, 1987, 8728773
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—317 **10 Claims**



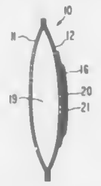
1. A body liquid drainage device comprising a first liquid storage chamber formed of a flexible plastic material and provided with an upper inlet for body liquids and a lower valved outlet for body liquids, a second flexible liquid storage chamber means movably connected to the first liquid storage chamber, said second chamber means being configured and movable for selective operation so as to be filled with the body liquid only when desired and to be emptied via said lower valved outlet for body liquids, such that when said second chamber means is folded over in overlying abutment with said first chamber, said valved outlet is disposed below said first chamber and said second chamber means.

4,938,748

URINARY DRAINAGE CONTAINER COMPRISING EXTERNAL SOURCE OF BIOCIDE

Su I. Yum, 1021 Runnymead Ct., Los Altos, Calif. 94021, and Felix Theeuwes, 1634 Fallen Leaf La., Los Altos, Calif. 94022

Filed Sep. 1, 1988, Ser. No. 239,563
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—323 **1 Claim**



1. A patient-care apparatus, comprising in combination:
(a) a container for receiving urine, the container comprising:
(i) a wall comprising a composition permeable to the passage of a biocide, which wall surrounds;
(ii) a lumen;
(iii) an inlet port in the wall for letting urine into the container;
(iv) an outlet port in the wall for letting urine leave the container:
(b) a delivery device in communication with the outside of the wall of the container, the device comprising:
(v) a reservoir comprising a polymeric composition comprising a surface in contact with the composition of the wall of the container permeable to a biocide;
(vi) about 0.1% to 80% by weight of a biocide in the reservoir, which biocide is delivered at a rate of 10 ng to 750 mg per hour through the wall into the container for substantially preventing and eliminating the presence of pathogens inside the container for a prolonged period of time up to 30 days; and,
(vii) a backing member in contact with the other surface of the reservoir, the backing member comprising a composition substantially impermeable to the passage of a biocide.

4,938,749

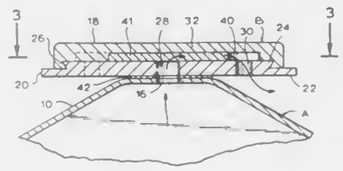
OSTOMY POUCH FILTER HOUSING

Ole R. Jensen, River Vale, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 9, 1988, Ser. No. 242,343
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—333 **16 Claims**

1. A filter housing for mounting on an ostomy pouch having a wall with an opening comprising a base having a surface with an entrance passageway, said base surface facing and being sealed to the external surface of the pouch wall surrounding the opening with said entrance passageway aligned with the opening, said base surface having a portion which extends substantially laterally in the plane of said base outwardly beyond the seal, an exit passageway through said laterally outwardly extending portion of said base surface portion such that the gasses being filtered will exit in a direction substantially toward the pouch wall and a cover having a filter receiving

recess adapted to align with said entrance passageway and a connecting channel extending from said recess, said cover being mounted on said base for relative movement between a



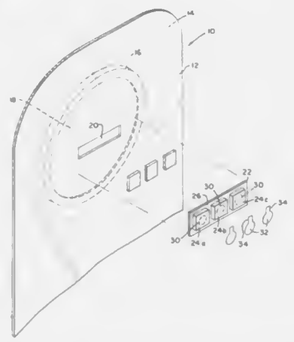
first position in which said connecting channel aligns with said exit passageway and a second position at which said connecting channel is remote from said exit passageway.

4,938,750

POUCH WITH SELECTIVE MULTIPLE DEODORIZING FILTERS

Walter F. Leise, Jr., Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 16, 1989, Ser. No. 367,364
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—333 **12 Claims**



1. A medical device comprising a collection receptacle in the form of a thin walled pouch, a member affixed to the pouch wall comprising a plurality of isolated gas passages, each constituting a vent, separate deodorizing filter means in each one of said passages and means for obstructing the flow through all but a selected one of said passages.

4,938,751

ELASTOMERIC BLADDERS FOR MEDICAL INFUSERS

Harold M. Leeper, Mountain View, and George V. Guittard, Cupertino, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 50,130, May 14, 1987, abandoned, which is a continuation of Ser. No. 237,325, Feb. 23, 1981, abandoned. This application Jul. 21, 1988, Ser. No. 222,448
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—132 **47 Claims**

1. An elastomeric bladder that is for use in a medical infuser and has improved resistance to rupture when inflated, the bladder being a tubular body:
(a) made from a vulcanized homogeneous mixture of synthetic polyisoprene having about 90% to about 98% cis-1,4 linkages and a material selected from the group consisting of particulate silicon dioxide and particulate carbon black having a nominal average diameter in the range of about 1×10^{-5} to about 5×10^{-3} mm;
(b) into which a nontoxic, substantially nonleachable antioxidant has been diffused after vulcanization; and
(c) the amounts of silicon dioxide, carbon black and antioxidant being sufficient to make the inflated half-life of a population of the bladders at 40° C. at least about ten times longer than the half-life of a comparable population of bladders made from said vulcanized synthetic polyisoprene but without the silicon dioxide, carbon black and the antioxidant.

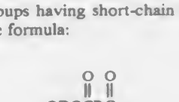
4,938,752

ABSORBENT SANITARY PRODUCTS

Cornelius M. F. Vrouenraets, Dieren, and Hans R. Herberts, Drempt, both of Netherlands, assignors to Akzo N. V., Arnhem, Netherlands

Filed Oct. 12, 1988, Ser. No. 256,920
Claims priority, application Netherlands, Oct. 12, 1987, 8702422
Int. Cl.[5] A61F *13/18*
U.S. Cl. 604—370 **8 Claims**

1. An absorbent sanitary product, comprising:
a film having a water vapor permeability of at least 500 g/m^2/day at 23°C., 100–50% relative humidity and wind velocity 0.3 m/s, a liquid-permeable layer, and a liquid-absorbing bibulous layer;
said film comprising a copolyether ester which consists of a plurality of recurrent intralinear ester groups having long-chain ester units and ester groups having short-chain ester units, which are randomly joined head-to-tail through ester bonds;
said ester groups having long-chain ester units corresponding to the formula:



and said ester groups having short-chain ester units corresponding to the formula:



wherein:
G is a bivalent radical remaining after removal of terminal hydroxyl groups from at least one long-chain glycol having a molecular weight greater than 800 and an average atomic ratio of carbon to oxygen of 2.0,
R is a bivalent radical remaining after removal of carboxyl groups from at least one dicarboxylic acid having a molecular weight less than 300, and
D is a bivalent radical remaining after removal of hydroxyl groups from at least one low-molecular-weight diol having a molecular weight less than 250;
at least 75 mole % of said dicarboxylic acid consisting of terephthalic acid or ester-forming equivalents thereof and at least 75 mole % of said low-molecular-weight diol consisting of 1,4-butanediol or ester-forming equivalents thereof, and a sum of the mole percentages of the dicarboxylic acid which is not terephthalic acid or an ester-forming equivalent thereof, and of the low-molecular-weight diol which is not 1,4-butanediol or an ester-forming equivalent thereof is at most 25;
45 to 95 weight % of the copolyether ester being made up of short-chain ester units;
the liquid permeability of said film being a maximum of 0.02 $g/cm^2/h$ at 23°C. and 0.07 bar;
the percentage by weight of the long-chain ester units in the copolyether ester being 5–55%, and the average carbon to

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oxygen ratio of the long-chain glycols being 2.0 to 3.7 and the molecular weight thereof being 800–6000 with the proviso that if the average atomic ratio of carbon to oxygen of the long-chain glycols is 2.0 to 2.4, the percentage by weight of the long-chain ester units is 5–35;

the copolyether ester film being manufactured by at least one process selected from the group consisting of flat-sheet extrusion from polymer chips and extrusion blow molding from polymer chips, said polymer chips exhibiting a water absorption in 23°C. water of at most 15 weight %, referred to the dry weight of the chips.

4,938,753

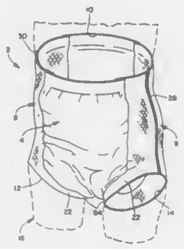
SEAM CONSTRUCTION IN A DISPOSABLE TRAINING PANT, INCONTINENCE GARMENT, OR DIAPER

Paul T. Van Gompel, Hortonville; Jody D. Suprise, Neenah, and Robert J. Schleinz, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 133,759, Dec. 16, 1987, abandoned. This application Jun. 27, 1989, Ser. No. 372,496

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.2 **37 Claims**



1. A seam construction in a disposable absorbent article, comprising:

a layered composite portion comprising a liquid pervious top layer, an absorbent middle layer, and a liquid impervious bottom layer, and

stretchable members being joined to said layered composite portion between respective opposite longitudinal side portions of said liquid pervious top layer and said liquid impervious bottom layer,

said stretchable members also extending outwardly beyond said opposite longitudinal side portions of said top and said bottom layers, whereby said layered composite portion and said stretchable members form a seam construction that is resistant to liquid leakage and that provides a gentle transition between said layered composite portion and said stretchable members.

4,938,754

DISPOSABLE DIAPER WITH IMPROVED BODY COMFORMITY AND LIQUID RETENTION

Virginia R. Mesek, Oak Forest, Ill., assignor to McNeil-PPC, Inc., Milltown, N.J.

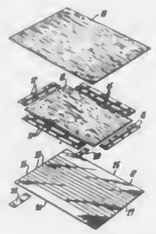
Continuation of Ser. No. 196,898, May 18, 1989, which is a continuation of Ser. No. 942,964, Dec. 16, 1986, which is a continuation of Ser. No. 798,035, Nov. 14, 1985, which is a continuation of Ser. No. 565,448, Dec. 27, 1983, which is a continuation-in-part of Ser. No. 1,615, Jan. 8, 1974. This application May 10, 1989, Ser. No. 351,266

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.2 **34 Claims**

1. A disposable diaper comprising:

a moisture-permeable facing layer; an absorbent panel at one side of said facing layer, said absorbent panel being smaller than said facing layer so that side marginal portions of the facing layer extend outwardly beyond the side edges of said absorbent panel; a backing layer at the side of said absorbent panel opposite said facing layer, said backing layer being larger than said absorbent panel so that side marginal portions of the backing layer extend outwardly beyond the side edges of said absorbent panel and into juxtaposed relationship with respect to the side marginal portions of said facing layer; means bonding said facing and backing layers to one another; and gathering means disposed between the juxtaposed side marginal portions of said backing and facing layers at each side edge of said absorbent panel, each of said gathering means including at least two spaced separate and distinct longitudinally extending, effectively elastic elements secured in between said juxtaposed side marginal portions by means securing said separate elastic elements in spaced relation to each other to at least one of said facing layer and said



backing layer to thereby define a region of said one layer between adjacent ones of said elastic elements which said region is unsecured to any of said elastic elements, whereby said gathering means provide improved conformity about the legs of the wearer without undue application of pressure upon the skin of the wearer and each of said elastic elements applies a gathering forces to a zone of at least one of said juxtaposed side marginal portions thereby defining a plurality of gasketing lines at the leg of the wearer for improved liquid containment, said plurality of gasketing lines corresponding in number and spacing to said elastic elements, said region of said one layer being disposed between adjacent ones of said gasketing lines, each elastic element having a recovery of at least 90 percent when elongated at least 10 percent of its yield point and measured in accordance with:

$$\text{Recovery (percent retraction)} = \frac{(Le - Li) \times 100}{Le - Lo}$$

wherein L_o equals the original length of the sample, L_e equals the fully extended length, and L_i equals the length of the sample measured three seconds after released from extended length.

4,938,755

ABSORBENT ARTICLE HAVING A CONTAINMENT POCKET

John H. Foreman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 114,929, Oct. 30, 1987, Pat. No. 4,816,025, which is a continuation of Ser. No. 917,452, Oct. 10, 1986, Pat. No. 4,738,677. This application Nov. 15, 1988, Ser. No. 271,796

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.2 **16 Claims**

1. A unitary disposable absorbent article comprising:

an absorbent core having a garment surface, a body surface, side edges, and waist edges;

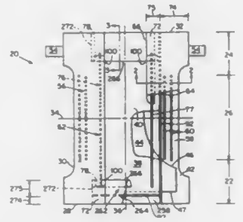
a liquid impervious backsheet positioned adjacent said garment surface of said absorbent core;

a liquid pervious topsheet positioned adjacent said body surface of said absorbent core;

a side flap extending outwardly from and along each side edge of said absorbent core;

an integral, liquid impermeable, first barrier cuff disposed adjacent each of said side flaps, each of said first barrier cuffs comprising a separate member joined to the absorbent article and having a first proximal edge and a first distal edge;

first spacing means operatively associated with each of said first barrier cuffs for spacing said first distal edges upwardly away from said topsheet of the absorbent article;



an integral second barrier cuff disposed along each end edge of the absorbent article, each of said second barrier cuffs comprising a separate member joined to the absorbent article and having a second proximal edge and a second distal edge;

second spacing means operatively associated with each of said second barrier cuffs for spacing said second distal edges upwardly away from said topsheet of the absorbent article; and

closing means for securing at least a portion of said first distal edges to said second distal edges.

4,938,756

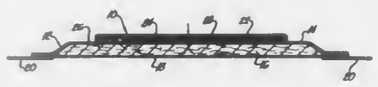
AUXILIARY ABSORBENT ARTICLE

Joann E. Salek, Somerville, N.J., assignor to Chicopee, New Brunswick, N.J.

Continuation of Ser. No. 521,818, Aug. 10, 1983, abandoned. This application Dec. 3, 1985, Ser. No. 805,243

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—368 **6 Claims**



1. An auxiliary absorbent article for use atom a primary absorbent article having absorbent capacity and wicking ability, said auxiliary absorbent article enhancing the absorptive capacity of the primary absorbent article, said auxiliary absorbent article comprising a superabsorbent layer, an upper facing layer, and an undersurface, said superabsorbent layer comprising a superabsorbent material dispersed in a matrix such that fluid passes through said auxiliary absorbent article and may be absorbed by the primary absorbent article, wicked along the undersuface of the auxiliary absorbent article, and absorbed through the undersurface of the super-absorbent layer in remote regions from the initial wetting of the auxiliary absorbent article whereby the full absorbent capacity of the primary absorbent article may be utilized.

4,938,757

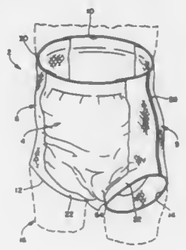
DISPOSABLE TRAINING PANT OR INCONTINENCE GARMENT

Paul T. Van Gompel, Hortonville; Jody D. Suprise; Leona G. Boland, both of Neenah, and Georgia L. Zehner, Larsen, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 133,758, Dec. 16, 1987, abandoned. This application Jun. 27, 1989, Ser. No. 372,414

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—396 **58 Claims**



1. A disposable pant-like garment for absorbing human discharge, comprising:

an absorbent assembly comprising a liquid impervious outer cover, a liquid pervious liner, and an absorbent medium therebetween, said absorbent assembly further comprising generally opposite side edges and generally opposite end edges,

stretchable side panels and said absorbent assembly being joined to form a waist opening and a pair of leg openings, said absorbent assembly end edges being generally adjacent said waist opening, and

a narrow intermediate portion of each said stretchable side panel being arranged generally adjacent a portion of a respective one of said leg openings, whereby said stretchable side panels provide generally inwardly directed force vectors against a wearer to maintain said garment snugly against the wearer's body and said absorbent assembly snugly in place against the crotch area both before and after a discharge, and said stretchable side panels provide elasticity about said leg openings to prevent leakage thereat.

4,938,758

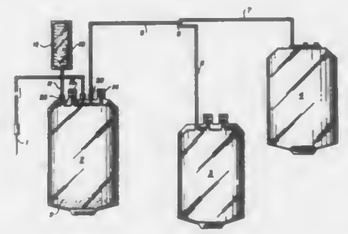
ANTI-PATHOGENIC BLOOD COLLECTION SYSTEM AND METHOD

Habib Al-Sioufi, P.O. Box 654, Brookline, Mass. 02146

Continuation of Ser. No. 848,923, Apr. 7, 1986, abandoned. This application Nov. 16, 1987, Ser. No. 121,338

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—410 **13 Claims**



1. A blood collection system for preventing the transmission

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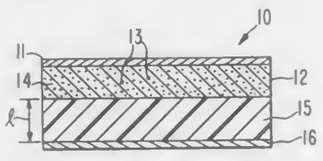
of viral pathogens in the blood which comprises: a closed blood collection container having a separate means for introducing and removing blood and a container means connected to said blood collection container for controllably introducing an effective amount of an agent for neutralizing said pathogens in the blood from said second container into the blood collection container; said neutralizing agent being selected from the group consisting of Suramin, Ribavirin, Phenothiazines, Chlorpromazine, Promazine, Butaperazine, Methophenazine, Fluphenzine Hydrochloride, Fluphenazine Decanoate, Triflupromazine, Triluoperazine, Reserpine, Haloperidol, Trifluperidol, Dibenzodiazepines, Chlorphenethazine, Promethazine, Beta-adregenic blockers, Trisodium Phosponoformate, Ansamycin, Antimonitungstate, 3'-Azido-3'-Deoxythymidine, Ethylenediaminetetraacetate (EDTA) and Ethylene Glycol Bis (2-Aminoethyl Ether)-N,N,N',N',-Tetraacetic Acid (EGTA) buffered to the ph of collected blood ranging from 6.5 to 7.4.

4,938,759

TRANSDERMAL DELIVERY DEVICE HAVING A RATE CONTROLLING ADHESIVE

David J. Enscore, Sunnyvale; Eun S. Lee, Redwood City, and Su I. Yum, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Sep. 2, 1986, Ser. No. 903,002
Int. Cl.[5] A61K *9/00*
U.S. Cl. 604—896.1 **34 Claims**



1. A medical device for the transdermal administration of a drug said device conforming to the Rate Controlling Adhesive Relationship and comprising:
(a) a drug reservoir comprising a drug dispersed with an ethylene/vinyl acetate copolymer having a vinyl acetate content in the range of about 15–60% by weight; and
(b) a PIB/MO adhesive for maintaining said reservoir in drug transferring relationship to the skin, said adhesive being bonded to said drug reservoir and being disposed in the path of diffusional flow of drug from said reservoir to the skin such that substantially all drug must pass through the adhesive by diffusion from the reservoir to the skin.

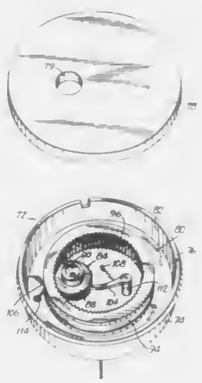
4,938,760

FEMALE SUSPENSION PROCEDURE

John H. Burton, Minnetonka, Minn.; Reginald C. Bruskewitz, Madison, Wis.; Michael A. Mikulich, Shakopee, and William D. Saville, Monticello, both of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Filed Mar. 29, 1989, Ser. No. 330,390
Int. Cl.[5] A61B *17/00*
U.S. Cl. 600—29 **5 Claims**

1. A method for suspending the urethrovesical junction with sutures which comprises
inserting said sutures through an incision in the suprapubic abdominal area or through an incision in the vaginal wall,
suspending said urethrovesical junction with said sutures, and
anchoring said sutures with at least one anchoring means at an anchoring site, wherein said anchoring means is selected from the group consisting of:
a relatively rigid helix having an attaching means to attach said suture, or
a pad adapted to be delivered within a delivery means to said anchoring site, or
a flip anchor in substantial axial alignment with a placement means and adapted to be flipped from said axial alignment



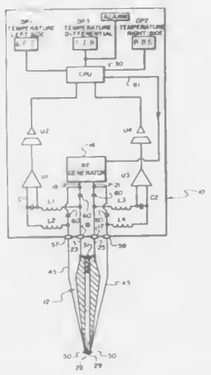
to an angled position with respect to said placement means, or
an adjustable tissue anchor having a means for adjustably attaching said sutures.

4,938,761

BIPOLAR ELECTROSURGICAL FORCEPS

Frieder H. Ensslin, Rochester, N.Y., assignor to MDT Corporation, Torrance, Calif.

Filed Mar. 6, 1990, Ser. No. 319,050
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—51 **4 Claims**



1. An electrosurgical apparatus comprising:
an rf generator with first and second output terminals;
a hand-held forceps formed of first and second prongs, respectively, said prongs being electrically coupled to respective said terminals;
each of said prongs having a proximal end and a distal end formed of a first metal, said prongs being positioned in approximately parallel spaced alignment with their proximal ends held in fixed non-conductive relationship and their distal ends spaced from each other in opposed working relationship;

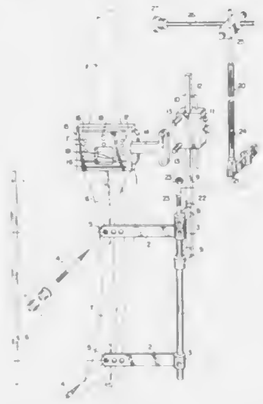
the distal ends of said prongs respectively comprising surgical contact surfaces electrically connected to said generator, and carrying a thermocouple junction between said first metal and a second metal in a groove separated from said contact surfaces;
conductors extending from respective said thermocouple junctions in mechanical association with but in non-conductive relationship with respective said prongs; and
measurement circuit means electronically associated with said conductors to detect signals from respective said junctions and to convert said signals into respective temperature measurements, said measurement circuit means being electronically isolated from said rf generator.

4,938,762

REFERENCE SYSTEM FOR IMPLANTATION OF CONDYLAR TOTAL KNEE PROSTHESES

Ulrich Wehrli, Wabern, Switzerland, assignor to Protek AG, Bern, Switzerland

Filed Dec. 8, 1988, Ser. No. 281,676
Claims priority, application Switzerland, Dec. 16, 1987, 4904/87
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—88 **20 Claims**



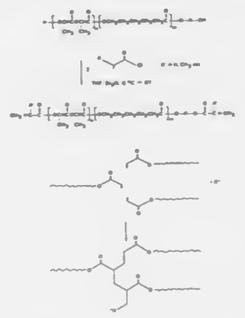
1. A reference system for the implantation of condylar total knee prostheses, comprising:
a measuring rod;
at least two attachment arms for attaching said measuring rod laterally to the tibia so that said measuring rod extends parallel to the longitudinal axis of the tibia;
a guide rail on said measuring rod;
an adjustable measuring carriage on said guide rail for displacement longitudinally thereon;
longitudinal scale means for determining the longitudinal position of said measuring carriage relative to said guide rail;
guide rods extending from said measuring carriage;
cutting block means removably mounted on said guide rods for movement in a direction substantially perpendicular to the frontal plane of the knee for positioning said cutting block means in a predetermined fixed position in front of the knee so that said cutting block means functions as a gauge for osteotomies;
an alignment bar mounted on said measuring rod as a continuation of said measuring rod substantially in the direction of the pelvis and having a length sufficient to extend at least to a position adjacent the pelvis; and
an alignment element adjustably mounted on said alignment bar for adjustment in a direction substantially perpendicular to the sagittal plane and relative to a predetermined reference point on the pelvic bone for determining the correct position of the lower leg during the operation.

4,938,763

BIODEGRADABLE IN-SITU FORMING IMPLANTS AND METHODS OF PRODUCING THE SAME

Richard L. Dunn, 451 Boardwalk Dr. RLD, Apt. 501, Fort Collins, Colo. 80526; James P. English, 2500 Melinda Cir., Birmingham, Ala. 35214; Donald R. Cowsar, 4657 Round Forest Dr., Birmingham, Ala. 35213, and David P. Vanderbilt, 1049-D Beacon Parkway East, Birmingham, Ala. 35204

Filed Oct. 3, 1988, Ser. No. 252,645
Int. Cl.[5] A61K *9/22*
U.S. Cl. 604—891.1 **19 Claims**



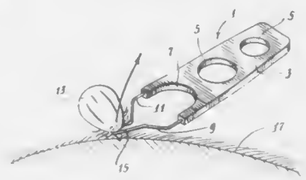
1. A method of forming an implant in-situ, in a living body, comprising the steps of:
(a) dissolving a non-reactive, water-insoluble polymer in a biocompatible, water-soluble solvent to form a liquid;
(b) placing said liquid within said body; and
(c) allowing said solvent to dissipate to produce a solid implant.

4,938,764

TICK REMOVER

John Glaberson, 99 Alberts Hill Rd., Newtown, Conn. 06470

Filed Jun. 2, 1989, Ser. No. 360,778
Int. Cl.[5] A61B *17/00*; A01M *3/00*
U.S. Cl. 606—131 **7 Claims**

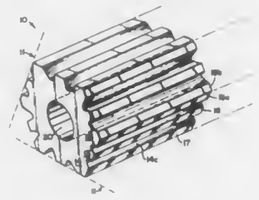


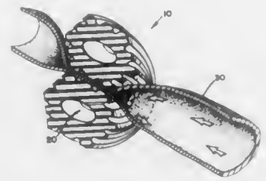
1. A tick remover for removing ticks from the skin, said tick remover including
a molded plastic handle and a fixed loop integral with said handle,
said loop together with the end of said handle forming an inner loop portion and an outer U-shaped portion removed from said handle, said inner loop portion being large enough to permit the passage of the body of an engorged said tick, and said outer U-shaped portion being wide enough to permit the passage of the neck of said tick,

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but not so wide as to permit the passage of the body of said tick,
whereby said U-shaped portion may be fitted about the neck of said tick and said tick pulled from said skin.

4,938,765
SURGICAL SILICON LOOPS
Larry A. Rasmusson, Coon Rapids, Minn., assignor to Life Centers, Inc., Bloomington, Minn.
Filed Jun. 22, 1989, Ser. No. 370,349
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—158 7 Claims

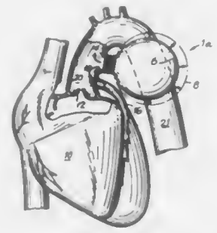




1. A vessel occluding loop for occluding the flow of blood in a vessel, the loop having an elongate body having a bore formed through the length of the elongate body and having an outer surface, the outer surface having at least six engaging surface around the loops periphery, each engaging surface comprising a plurality of members, the members each having a top and the tops forming the engaging surface, each of the engaging surfaces have first, second and third members, the members each having a planar top, and a depressed zone formed between the members, wherein the blood vessel may be compressed to enter the depressed zone when the loop is wrapped around the blood vessel, thereby increasing traction.

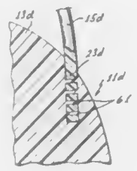
4,938,766
PROSTHETIC COMPLIANCE DEVICES
Robert K. Jarvik, 124 W. 60th St., New York, N.Y. 10023
Filed Aug. 28, 1987, Ser. No. 90,995
Int. Cl.[5] A61F *2/22*
U.S. Cl. 623—3 21 Claims

1. A method for using an arterial compliance assist device having a deformable reservoir for storing blood and absorbing energy during systole and releasing all or a portion of said blood and energy during diastole without utilizing any external energy supply, comprising the steps of:
surgically implanting the arterial compliance assist device in a patient's arterial system;
expanding the arterial compliance assist device during systole to store a quantity of blood pumped by the heart and absorb at least a portion of the energy transferred to the arterial system by the systolic pressure of the heart;



relaxing the arterial compliance assist device during the diastole to release said absorbed energy to assist the flow of blood through the arterial system; and
repeating the expanding and relaxing steps.

4,938,767
HAPTIC TO OPTIC ATTACHMENT FOR A SOFT IOL
Albert C. Ting, Laguna Niguel; Timothy R. Willis, El Toro; F. Richard Christ, Orange; Steven R. Bacich, Irvine; Dean K. Pettit, Irvine; Stanley L. Van Gent, Irvine, and Jeffrey C. Day, Mission Viejo, all of Calif., assignors to Allergan, Inc., Irvine, Calif.
Division of Ser. No. 228,955, Aug. 4, 1988, which is a division of Ser. No. 96,745, Sep. 15, 1987, Pat. No. 4,790,846, which is a continuation of Ser. No. 806,376, Dec. 9, 1985, abandoned. This application Apr. 25, 1989, Ser. No. 343,045
The portion of the term of this patent subsequent to Dec. 13, 2005, has been disclaimed.
Int. Cl.[5] A61F *2/16*; B29D *11/00*
U.S. Cl. 623—6 12 Claims



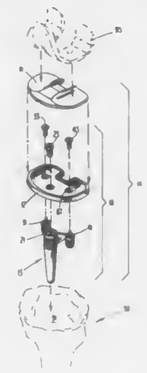
1. An intraocular lens comprising:
at least one fixation member having a proximal end portion, said proximal end portion including a filament with a region of the filament having at least one opening therein; and
an optic, said proximal end portion being within said optic and attached to the optic, a portion of said optic being in said opening to form a mechanical interlock between said filament and the optic, said opening being at a peripheral region of the optic and begin substantially smaller than said optic.

4,938,768
BONE GAP BRIDGING AND FUSING DEVICE
Kent K. Wu, Royal Oak, Mich., assignor to Henry Ford Hospital, Detroit, Mich.
Continuation of Ser. No. 22,564, Mar. 9, 1987, abandoned, which is a continuation of Ser. No. 764,020, Aug. 9, 1985, abandoned. This application Oct. 5, 1988, Ser. No. 253,939
Int. Cl.[5] A61F *2/28, 5/04*
U.S. Cl. 623—16 8 Claims



1. A bone gap bridging and fusing device for use where large portions of the bone are removed in limbs comprising
first and second pin members adapted to be placed in axial opening formed in the opposed remaining bone portions,
each pin member including an enlarged head on one end of the pin member having an outer surface adjacent the pin for engaging the end of the bone having an axial opening therein and an inner planar contacting surface,
the inner planar contacting surfaces on the inner ends of said first and second pin members facing one another and being adapted to abut one another,
each head having threads on the periphery of said head and extending in the same direction,
said inner planar contacting surfaces of said first and second pin members having at least two axially extending projections on said inner surface of said first member and at least two complementary recesses on the said inner surfaces of said pin member, said projections and recesses being axially engageable by axial movement only and being fully engaged when the inner contacting surfaces of said heads are in abutting relation and being constructed and arranged to prevent relative rotation between said pin members,
the lengths of said projections and recesses being such that they can be axially engaged when the pin members are placed in axial openings in opposed remaining bone portions,
the remaining portions of said inner contacting surfaces of said first and second pin members being in abutment when said projections and recesses are in engagement,
said threads on each said head extending to the inner contacting surface thereof and said projections and said recesses being constructed and arranged to orient said heads circumferentially to when said projections and recesses are engaged such that said threads are aligned to form a continuous thread,
a collar having internal threads threaded onto the threads of said heads thereby fixing said first and second pin members against axial movement.

4,938,769
MODULAR TIBIAL PROSTHESIS
James A. Shaw, 1424 Woodhaven Dr., Hummelstown, Pa. 17036
Filed May 31, 1989, Ser. No. 359,389
Int. Cl.[5] A61F *2/38*
U.S. Cl. 62[2]—20 22 Claims



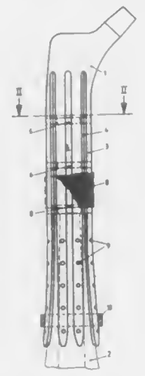
1. An in-bone anchorage assembly for a tibial prosthesis which comprises
an axially elongated central stem;
a plurality of elongated fixation pegs spaced from said stem, said stem and said pegs having proximal and distal termini, wherein the proximal termini of said stem and said pegs define an attachment table;
a plurality of structural links interconnecting said pegs to said stem; together with
means for removably attaching a tibial tray to said assembly, wherein each of said pegs is connected to said stem by the structural link.

4,938,770
STEM FOR A FEMORAL HEAD PROSTHESIS
Otto Frey, Winterthur, and Rudolf Koch, Berlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Oct. 3, 1989, Ser. No. 416,515
Claims priority, application Switzerland, Oct. 27, 1988, 4001/88
Int. Cl.[5] A61F *2/36*
U.S. Cl. 623—23 12 Claims

1. A stem for a femoral head prosthesis comprising
a hollow region defining an internal cavity;
a plurality of narrow webs in said hollow region disposed in circumferentially spaced relation to define slots, therebetween; and

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a plurality of discoid support elements disposed in longitudinally spaced relation within said internal cavity and in



engagement with said webs, each said support element having an aperture therein.

4,938,771

FEMORAL PORTION OF A HIP JOINT PROSTHESIS

Vilmos Vecsei, and Karl Obersteiner, both of 235 E. 42nd St., New York, N.Y. 10017

Filed Sep. 15, 1988, Ser. No. 244,448

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1987, 8712578[U]

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—23 **8 Claims**



1. A femoral component of a hip joint prosthesis comprising a shank, having a distal portion and a proximal portion which merges into a neck angulated with respect to the distal shank portion, the neck being adapted for connection a joint ball, and the proximal portion of the shank being defined by a structural framework, the contour of said framework being defined by four longitudinal bars spaced from each other and extending in substantially the longitudinal direction of the shank and arranged such that they define a proximal shank portion outer contour that is generally quadrilateral in transverse cross section with rounded edges, the longitudinal bars being supported relative to one another by a plurality of trusses extending between and through the hollow space between the longitudinal bars, the framework being configured such that the distribution of the tensile and compressive forces approximates the force distribution in the proximal portion of the natural femur.

4,938,772

FEMORAL PROSTHESIS

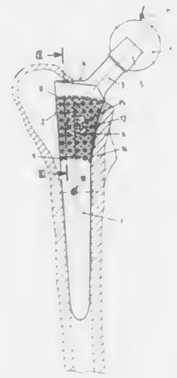
Otto Frey, Winterthur, and Rudolf Kock, Berlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 3, 1989, Ser. No. 416,513

Claims priority, application Switzerland, Oct. 26, 1988, 3985/88

Int. Cl.[5] A61F *2/36, 2/30*

U.S. Cl. 623—23 **12 Claims**



9. A femoral prosthesis comprising

a metal stem having a recess in a proximal zone on at least one side thereof, said recess having a proximal boundary wall and a distal boundary wall, said walls being disposed an concentric ars having a common center of curvature distal of said walls;

at least one plastic molding inserted in said recess, each molding having curved surfaces slidably engaging said walls of a respective recess; and

a surface structure on each molding for an ingrowth of tissue.

4,938,773

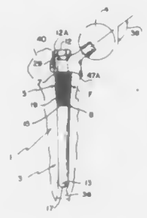
HIP JOINT PROSTHESIS

John A. Strand, 34 Strathallan Park, Rochester, N.Y. 14607

Filed Jan. 18, 1989, Ser. No. 298,166

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—23 **4 Claims**



1. A hip joint prosthesis comprising:

an elongated distal pin of circular cross section having a tapered shank including an upper threaded portion and a lower portion, said threaded portion extending along said shank from a proximal threaded end distally to a distal threaded end adjacent said lower unthreaded portion, said threaded portion including threads of substantially trapezoidal cross-section varying uniformly in pitch from the proximal threaded end to the distal threaded end.

a mounting post projecting upwardly from said proximal threaded portion, said mounting post having secondary threading.

a proximal body having a base and a neck member, said neck member forming an angle with said shank and extending medially from said base in imitation of the physiological femur,

said base having a vertical through bore formed therein adapted to surround said mounting post, said vertical through bore includes a lower bore adjacent an upper tapered bore,

said proximal body having a wing laterally projecting from said base diametrically opposed relative to said neck member and contacting the greater trochanter of the femur, said wing has a plurality of apertures disposed therethrough for wiring said wing to said femur.

said proximal body having a lower surface adapted to seat on a resected surface of the femur, said lower surface having a curved V-shaped protrusion extending medially and downwardly below said neck member to cover the lesser trochanter and is adapted to provide an interlock against angular displacement of the body when embedded within the femur,

fastening means engaging said mounting post and adapted to securely affix and proximal body to the femur, said fastening means comprising a threaded nut having a bottom tapered portion providing for centering of said bore in relation to said mounting post,

said proximal body having a joint head affixed to said neck portion for engagement with the acetabulum.

4,938,774

DYNAMIC SELF-LOCKING STEM FOR HIP PROSTHESIS

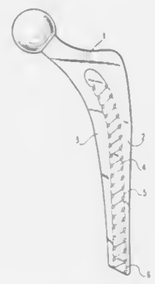
Slobodan Tepic, Davos, Switzerland, assignor to Laboratorium für experimentelle Chirurgie, Davos, Switzerland

PCT No. PCT/EP87/00451, § 371 Date Mar. 22, 1989, § 102(e) Date Mar. 22, 1989, PCT Pub. No. WO89/01321, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 15, 1987, Ser. No. 355,782

Int. Cl.[5] A61F *2/36, 2/30, 2/28*

U.S. Cl. 623—23 **9 Claims**



1. A stem for joint prosthesis, in particular for hip prosthesis, of the type having a proximal neck region (1), a lateral tension region (2), a medial compression region (3), and a central region (4) lying between said lateral and media regions (2, 3), characterized in that said central region (4) includes means defining a regular pattern of sinuous anteroposterior cuts (5), each said cut having two distinct ends, said pattern of cuts extending from said proximal region (1) to the distal end (6) of the stem, rendering the stem stiffness adaptable to the stiffness of the receiving bone cavity, said cuts being arranged in such a way that a series of flexible hinges (7) is formed along boundaries (8, 9) of said lateral and medial regions (2, 3) with said central portion (4) of the stem allowing movement of mediolateral segments (10) formed by said cuts (5).

4,938,775

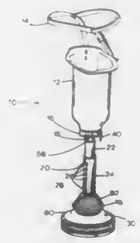
ARTIFICIAL LEG WITH BEARINGS FOR ROTATIONAL MOTION

Robert D. Morgan, 5711 West Ave. M, #33, Quartz Hill, Calif. 93536

Filed Apr. 3, 1989, Ser. No. 331,957

Int. Cl.[5] A61F *2/60, 2/62/2/66*

U.S. Cl. 623—27 **18 Claims**



1. An artificial leg comprising:

a socket formed to receive the stump of an amputee's leg and having means for securing said socket to said amputee,

a first member fixedly secured to said socket including a vise-like attaching member mounted on the lower end of said socket for releasably retaining a support prosthesis, and

a second member mounted on said support prosthesis and being fixedly retainable by said attaching member to releasably clamp said support prosthesis to said socket and containing bearing means for permitting free rotation of said support prosthesis through 360° with respect to said first member.

4,938,776

INTEGRATED ANKLE AND FOOT PROSTHETIC SYSTEM

Robert A. Masinter, 408 Laurel Ave., Menlo Park, Calif. 94025

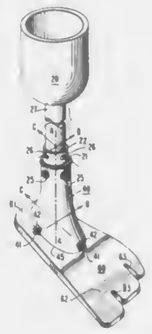
Filed May 12, 1989, Ser. No. 350,788

Int. Cl.[5] A61F *2/66*

U.S. Cl. 623—49 **10 Claims**

1. Integrated ankle and foot structure wherein the ankle portion is generally in the form of a modified frustrum of a cone with a generally elliptical base and a top of geometrical outline having a horizontal sectional area less then that of the elliptical base, wherein this ankle portion cone has a larger longitudinal dimension at its horizontal base than its lateral dimension, wherein this ankle cone is both flexible and resilient and capable of both compression and expansion at the forward, rearward, and lateral sides of the ankle and combinations thereof, wherein this flexible yet resilient ankle cone is affixed toward the rear of an elongate basal plate constructed from

flexible and resilient material as aforesaid and generally in the shape of a flattened human foot, wherein a junction member



extends from the top of the ankle cone and is adapted to be affixed to a conventional pylon.

4,938,777

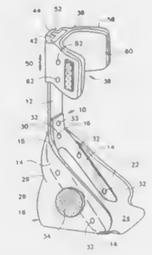
ANKLE ORTHOSIS

Jeffrey T. Mason, Escondido; Patrick W. Cawley, San Diego, and Bradley R. Mason, Carlsbad, all of Calif., assignors to Donjoy Corporation, Carlsbad, Calif.

Filed Jun. 11, 1987, Ser. No. 60,608

Int. Cl.[5] A61F *2/66*

U.S. Cl. 623—50 24 Claims



23. An ankle orthosis for substantially preventing eversion and inversion of the ankle while permitting substantially free plantar flexion of the ankle in a sagittal plane, the orthosis comprising:

a calcaneus-embracing element having two sections, one section being disposed on a lateral side and another section being disposed on a medial side of a user's calcaneus, the two sections joining at one point, the point being located substantially posterior to and above the calcaneus, and the two sections transmitting at least the forces directed toward the calcaneus and resulting in eversion and inversion of the user's ankle away from the calcaneus to the point posterior of the calcaneus where the two rigid members join;

a leg-embracing element, adapted to be attached about the user's leg and to extend to a distal position therefrom, for substantially coupling forces experienced at the distal position into the user's leg; and

a vertical riser element, connecting to the calcaneus-embracing element at the point posterior to and above the calcaneus where the two sections join and to the leg-embracing element at its portion extending distally to the user's leg, for substantially coupling the forces resulting in both eversion and inversion of the user's ankle from the calcaneus-embracing element to the leg-embracing element, whereby eversion and inversion of the user's ankle are substantially prevented while plantar flexion of the user's ankle is permitted to transpire substantially freely.

4,938,778

COMPOSITE HOLLOW FIBER TYPE SEPARATION MEMBRANES PROCESSES FOR THE PREPARATION THEREOF AND THEIR USE

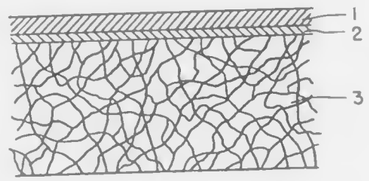
Shuzo Ohyabu; Syuji Kawai; Takehiko Okamoto, all of Kurashiki, and Takao Migaki, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Japan

Division of Ser. No. 584,321, Fe[illegible] 28, 1984, Pat. No. 4,664,669. This application Sep. 10, 1986, Ser. No. 906,604

Claims priority, application Japan, Feb. 28, 1983, 58-33304

Int. Cl.[5] A61F *2/00, 2/04*

U.S. Cl. 623—66 4 Claims



1. A process for producing a composite hollow fiber type separation membrane, comprising the steps of:

(A) extruding through an annular orifice a spinning solution of

(1) a matrix polymer, for forming an ultra-microporous layer and a porous layer of the hollow fiber separation membrane and

(2) a pore-making polymer capable of being extracted after formation of the hollow fiber,

said matrix polymer and said pore-making polymer dissolved in a common solvent, wherein the ratio of matrix polymer to pore-making polymer (by weight) is from about 100:25 to 100:200;

(B) rapidly coagulating the inner surface of said hollow fiber, thereby forming an inner surface which is non-porous and flat; then

(C) applying a solution of a polymer for forming a selective separation layer dissolved in a solvent to the core portion of said hollow fiber, thereby bringing said solution into contact with said non-porous inner surface of the hollow fiber;

(D) after removing the excess liquid passing a gas over the thus prepared inner surface of the hollow fiber to form on the non-porous, inner surface a non-porous, dense, selective separation layer having an average thickness of 0.01–2 μ and a coefficient of variation in thickness of less than or equal to 25%;

(E) contacting the outer surface of the hollow fiber with a solvent which is a non-solvent for said matrix polymer, but an effective solvent for said pore-making polymer and extracting and removing said pore making polymer, thereby forming a hollow fiber having said selective separation layer as the innermost layer of the hollow fiber, and having an ultra-microporous layer having a surface comprising pores which are not observable, even with scanning electron microscopy of 24,000 X magnification, and having a fluid permeability of at least 10 times that of said selective separation layer and a thickness of less than or equal to 0.08 μ and a porous layer comprising pores of 0.1–1μ in pore diameter except for macrovoids and having a porosity of at least 50% and a thickness of 10–500μ.

4,938,779

CHROME TANNING OF LEATHER WITH REDUCED WASTE OF CHROMIUM

Hans-Herbert Friese, Monheim; Emil Ruscheinsky, Leverkusen, and Rudolf Zauns, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 6, 1989, Ser. No. 376,262

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1988, 3822823

Int. Cl.[5] C14C *3/06*

U.S. Cl. 8—94.27 19 Claims

1. A process for converting animal hides into leather, comprising the steps of:

(A) pickling the hides in an aqueous solution of sulfuric acid, formic acid, or a mixture of sulfuric and formic acids;

(B) contacting the pickled hides with an aqueous tanning liquor having a pH value lower than about 3.5 and containing in solution an amount of chromium (III) salts equal to about 0.5 to about 12% by weight of the weight of the hides for a sufficient time to effect tanning;

(C) partially neutralizing at least the part of the tanning liquor utilized in step (B) that remains absorbed by the hides after step (B) with a first neutralizing agent selected from the group consisting of magnesium oxide, dolomite, an alkali metal carbonate, an alkali metal bicarbonate an alkaline earth metal carbonate or a mixture of any of these in the presence of at least one material selected from the group of aldehydo acids and keto acids, to produce a pH value for the partially neutralized tanning liquor within the range of about 3.6 to 4.3; and

(D) further neutralizing at least that part of the partially neutralized tanning liquor that remains absorbed by the hides after step (C) by adding thereto a second neutralizing agent, selected from the group of alkali aluminum silicates, in sufficient amount to produce a pH value for the tanning liquor within the range from about 4.2 to about 5.5.

4,938,780

PASTE TYPE CADMIUM ANODE AND METHOD FOR MAKING SAME

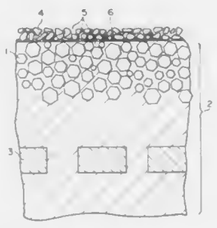
Hideo Kaiya; Katumi Yamashita, both of Fujisawa, and Masako Kusaka, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 15, 1989, Ser. No. 407,750

Claims priority, application Japan, Sep. 27, 1988, 63-241317

Int. Cl.[5] H01M *4/26*

U.S. Cl. 29—623.5 15 Claims



1. A method for making a paste type cadmium anode which comprises coating a core material with an active material mainly composed of cadmium compounds, then impregnating or coating this active material coated core material with an organic compound, and then forming a porous metallic nickel layer on the surface of this organic compound-applied electrode plate by electrolytic plating.

4,938,781

METHOD OF ORIENTING ELECTRODE TIPS

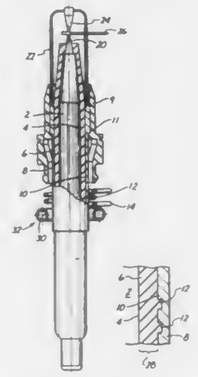
Klaus Pimiskern, Daisendorf, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 25, 1988, Ser. No. 186,108

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1987, 3713884

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—825 3 Claims



1. A method of particularly orienting electrode tips in relation to each other, to establish a definite locus for the generation of shock waves on electric discharge between the electrode tips, the tips being on tip elements, one element extending from an inner conductor, the other tip element being mounted on a cage that is mounted on an outer conductor, arranged around the inner conductor comprising the steps of:

providing one of the conductors with at least one annular groove;

providing an insulating sleeve as spacer between the inner and the outer conductors;

providing a gauge between the tips of the elements; and

heating the sleeve for causing sleeve material to flow into the groove, so that upon subsequent cooling, the inner and outer conductors are axially positioned as determined by the gauge as the solidified material in the groove retains the conductor in the axial position.

4,938,782

METHOD OF REFINING COAL BY SHORT RESIDENCE TIME HYDRODISPROPORTIONATION TO FORM A NOVEL COAL DERIVED FUEL SYSTEM

Lee G. Meyer, Englewood, Colo.; Bruce C. Sudduth, Laramie, Wyo., and Gerald F. Cavaliere, Englewood, Colo., assignors to Carbon Fuels Corporation, Englewood, Colo.

Continuation-in-part of Ser. No. 84,270, Aug. 11, 1987, Pat. No. 4,787,915, which is a continuation-in-part of Ser. No. 59,288, Jun. 8, 1987, Pat. No. 4,832,831, which is a continuation-in-part of Ser. No. 59,289, Jun. 8, 1987, Pat. No. 4,842,615, which is a continuation-in-part of Ser. No. 658,880, Oct. 9, 1984, Pat. No. 4,685,936, which is a continuation-in-part of Ser. No. 658,878, Oct. 9, 1984, Pat. No. 4,671,800, which is a continuation-in-part of Ser. No. 24,382, Mar. 24, 1981, abandoned. This application Nov. 29, 1988, Ser. No. 277,603

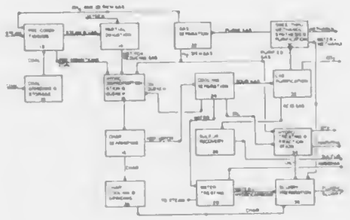
Int. Cl.[5] C10L *1/32;* C10G *1/00*

U.S. Cl. 44—51 20 Claims

1. An improved method for refining a volatile containing carbonaceous material comprising the steps of:

(a) heating a particulate volatile containing carbonaceous material at a heat rate sufficient to maximize decomposi-

tion and minimize formation of char and condensation products to a volatilization temperature effective to produce a substantially decomposed volatilization product; and



(b) contacting said substantially decomposed volatilization product with a hydrogen donor-rich gaseous atmosphere at a hydrogenation temperature effective to minimize formation of condensation products and reduce thermal cracking for a hydrogenation residence time effective to produce a hydrogenated volatilization product.

4,938,783

PROCESS FOR THE PURIFICATION OF CRUDE GASES WITH SIMULTANEOUS PRODUCTION OF SYNTHESIS GAS AND FUEL GAS

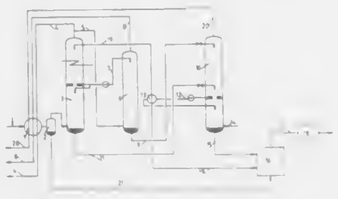
Gerhard Ranke, Poecking, and Horst Weiss, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed May 13, 1988, Ser. No. 193,607

Claims priority, application Fed. Rep. of Germany, May 14, 1987, 3716199

Int. Cl.[5] C10K *1/14*

U.S. Cl. 48—197 R **20 Claims**



1. A process for the purification of a crude gas produced from gasification of carbonaceous feedstock and simultaneous production of (a) synthesis gas, (b) CO_2-enriched fuel gas, and (c) a fluid rich in H_2S and COS comprising: subjecting said crude gas to a conversion step; cooling the converted crude gas; removing H_2S and COS in a lower section of a scrubbing column by scrubbing the converted crude gas with a scrubbing medium previously loaded with CO_2 and removing CO_2 in an upper section of said scrubbing column; discharging purified synthesis gas from said scrubbing column; branching-off a portion of said purified synthesis gas; utilizing said portion of synthesis gas, in a stripping column under pressure, to strip CO_2 from scrubbing medium discharged from said upper section, said scrubbing medium being loaded essentially with CO_2; removing a CO_2-enriched fuel gas from said stripping column; removing a partially stripped scrubbing medium loaded essentially with CO_2 from said stripping column; and employing said partially stripped scrubbing medium in an H_2S enrichment column to concentrate sulfur compounds in a stream of said scrubbing medium.

4,938,784

FOAMED ABRASIVE ELEMENT AND METHOD OF PRODUCING THE SAME

Shinji Murakami, Kyoto; Hikaru Horiuchi, Nara; Jiro Miyagawa, and Yoriyasu Furukawa, both of Hyogo, all of Japan, assignors to Toa Seito Kogyo Kabushiki Kaisha, Japan

Filed Oct. 11, 1988, Ser. No. 255,543

Claims priority, application Japan, Jun. 26, 1986, 61-150171

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—293 **5 Claims**

1. A foamed abrasive element comprising a bond of a cross-linked and hardened unsaturated polyester resin modified with a thermosetting resin selected from the group consisting of polyurethane resin, resol-type phenol resin and mixtures thereof and abrasive grains dispersed in the bond and having a porosity of 10 to 80% and a compressive modulus of 10^2 to 10^5 kg/cm^2.

4,938,785

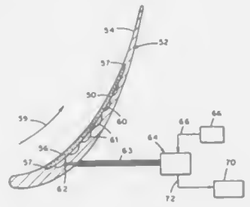
GAS-LIQUID SEPARATION

Robert E. MacPherson, Jr., Oak Ridge; Arthur P. Fraas, Knoxville, and Doan L. Phung, Oak Ridge, all of Tenn., assignors to PAI Corporation, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 223,281, Jul. 22, 1988, abandoned. This application Jul. 10, 1989, Ser. No. 377,627

Int. Cl.[5] B01D *45/08*

U.S. Cl. 55—1 **10 Claims**



1. The method of separating fluid droplets carried in a gas flowing at subsonic velocities which comprises;

directing the gas at a subsonic velocity at or below about Mach 0.7 through a conduit having internally facing, spaced apart curved walls defining successive bends for causing the gas to flow along successive arcuate flow paths with the radius of curvature of a first bend extending in one direction from said first bend and the radius of curvature of a next, subsequent bend lying generally in the plane containing the radius of curvature of said first bend but generally extending from said next, subsequent bend in a direction that is opposite that of the radius of curvature extending from said first bend to thereby cause generally oppositely directed successive changes in direction of the gas with a minimum pressure loss and for encouraging transverse movement of the droplets relative to the local gas flow direction and toward and into contact with said walls of said conduit;

removing liquid droplets contacting the walls of the conduit through the pores of a porous medium covering at least a portion of the walls, the pores communicating between the interior of the conduit and a liquid accumulation space located outside the conduit;

controlling the rate of movement of liquid through the pores of the porous medium to minimize accumulation of liquid on the surface thereof which faces the interior of the conduit and to maintain liquid menisci within the pores of the porous medium to avoid the passage of gas therethrough, whereby conditions giving rise to turbulent flow and shock waves are avoided to minimize pressure losses associated with traversal of the gas through the conduit for achieving separation of the liquid droplets carried therein.

4,938,786

FILTER FOR REMOVING SMOKE AND TONER DUST IN ELECTROPHOTOGRAPHIC/ELECTROSTATIC RECORDING APPARATUS

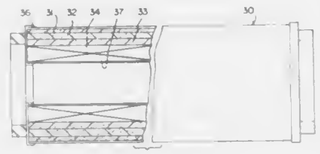
Yoshihiro Tonomoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 3, 1987, Ser. No. 128,054

Claims priority, application Japan, Dec. 16, 1986, 61-297492

Int. Cl.[5] B03C *3/00*

U.S. Cl. 55—103 **11 Claims**



1. An air filter for removing smoke and toner dust particles from air, the toner dust particles being both large and fine, having a predetermined average toner particle size of about 10 microns, and having a positive polarity, said air filter having an air inlet side and an air outlet side and comprising;

(a) a first filter unit disposed at the air inlet side of said air filter; and

(b) at least a second filter unit disposed between said first filter unit and said air outlet side,

wherein said first filter unit includes —negatively electrostatically charged fibrous material for attracting the positively charged toner particles, said charged fibrous material being made of a fibrous dielectric material and a solution coating of vinylidene fluoride and methyl ethyl ketone coated onto said fibrous dielectric material, and a first predetermined porosity greater than about 10 microns—for removing a substantial part of the large toner dust particles from the air and for allowing the fine toner dust particles and smoke to pass therethrough; and

wherein said second filter unit includes fibrous material without an electrostatic charge, said uncharged fibrous material having a second predetermined porosity less than about 10 microns for removing the fine toner dust particles and smoke.

4,938,787

FILTER DEVICE AND FILTER APPARATUS COMPRISING SUCH FILTER DEVICES

Ewald-Wilhelm Simmerlein-Erlbacher, Langer Berg 2, D-8570 Pegnitz, Fed. Rep. of Germany

PCT No. PCT/DE87/00489, § 371 Date Apr. 24, 1989, § 102(e) Date Apr. 24, 1989, PCT Pub. No. WO88/03049, PCT Pub. Date May 5, 1988

PCT Filed Oct. 29, 1987, Ser. No. 353,649

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3617428; Apr. 3, 1987, 3711294

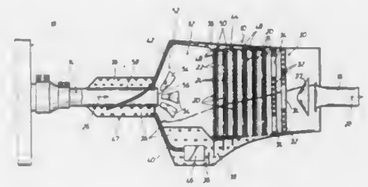
Int. Cl.[5] B01D *47/12*

U.S. Cl. 55—233 **16 Claims**

1. A filter apparatus for filtering dust or foreign particles from a gas, comprising:

a housing having an inlet opening and an outlet opening; and

a plurality of filter devices contained in said housing, said filter devices disposed between said inlet opening and said outlet opening and transversely with respect to the direction of flow of the gas to be filtered, and each of said filter devices disposed in succession and at a spacing from each other, each of said filter devices comprising a substrate upon which is deposited a filter liquid which wets said



substrate, each of said substrates including a plurality of holes, wherein the holes of the substrates of adjacent filter devices are displaced relative to each other.

4,938,788

METHOD OF PRODUCING UNIFORM SILICA GLASS BLOCK

Hideaki Segawa, Yokohama; Koji Tsukuma, Atsugi; Shinichi Kondo, Yokohama, and Keishi Honta, Zama, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Dec. 28, 1988, Ser. No. 291,258

Claims priority, application Japan, Dec. 28, 1987, 62-332939; Dec. 28, 1987, 62-332940; Mar. 2, 1988, 63-47576; Mar. 2, 1988, 63-47577; Jun. 15, 1988, 63-145791; Jul. 5, 1988, 63-167042; Jul. 6, 1988, 63-167935; Jul. 11, 1988, 63-172196; Dec. 23, 1988, 63-325605

Int. Cl.[5] C03B *23/20*

U.S. Cl. 65—18.1 **18 Claims**

1. A method of producing a uniform silica glass block comprising, calcining silica powder or its green body in an atmosphere of a fluorine gas, a chlorine gas or their compound gas, then in an oxygen gas atmosphere and then in a helium gas atmosphere each at a temperature of 800° C. or more for 10 minutes or more, and then subjecting the calcined product to a high-temperature, high-pressure treatment to provide a uniform, anhydrous silica glass block having an OH group concentration of 1 ppm or less.

4,938,789

RAW MATERIAL SUPPLYING DEVICE AND PROCESS

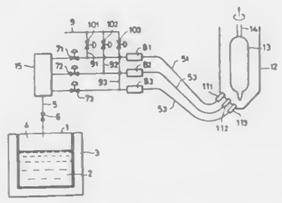
Ichiro Tsuchiya; Hiroshi Yokota; Toshio Danzuka, and Hideki Minami, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 854,638, Apr. 22, 1986, abandoned. This application Jun. 7, 1988, Ser. No. 205,030

Claims priority, application Japan, May 1, 1985, 60-92272

Int. Cl.[5] C03B *37/00*

U.S. Cl. 65—144 **4 Claims**



1. In the raw material supplying system for manufacturing optical fiber preforms under atmospheric pressure or higher

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pressure than atmospheric pressure comprising (A) at least one reaction vessel with at least one multi-layer burner mounted on said at least one reaction vessel, each of said burner layers including a separate raw material gas feed port, (B) a gas tight raw material tank for receiving a high-boiling raw material to be gasified by heating, (C) heating means for heating the raw material in the tank to form said raw material gas therefrom and (D) piping means connected to said tank and said gas feed ports to convey said raw material gas to said gas feed ports, the improvement comprising said piping means comprising a plurality of pipes for conveying a plurality of streams of said gas in parallel to each other to the ports of said reaction vessel, each of said pipes including a valve and a mass flow controller, said mass flow controller being positioned between said value and said reaction vessel, with each pipe of said plurality of pipes being connected to a different one of said ports, and pressure absorbing means being positioned between said tank and said mass flow controllers, respectively, wherein an abrupt change of mass flow rate in any one of said plurality of pipes does not affect the mass flow rates in the remaining pipes of said plurality of pipes.

4,938,790

HERBICIDAL 12-SUBSTITUTED 12H-DIBENZO(D,G)(1,3)DIOXOCIN-6-CARBOXYLIC ACIDS

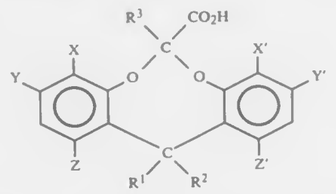
Michael G. Smith, Walnut Creek; James M. Renga; Brian K. Riley, both of Santa Rosa; Patricia G. Ray, Walnut Creek, and Charles Marlowe, San Francisco, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 15, 1989, Ser. No. 366,382

Int. Cl.[5] A01N *43/24*

U.S. Cl. 71—88 **38 Claims**

1. A dibenzo[d,g][1,3]dioxocin-6-carboxylic acid compound of the formula



wherein

R^1 and R^2 together represent the fragment $—CH_2CH_2—$;

R^3 represents H or CH_3; and

X, X', Y, Y', Z, and Z' each, independently represent H, F, Cl, Br, I, CN, NO_2, CO_2H, NH_2, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, C_1–C_4 alkylthio, phenylthio, C_1–C_4 mono- or dialkylamino, (C_1–C_3 alkyl)-carbonyl, phenylcarbonyl C_1–C_4 alkoxycarbonyl, or C_1–C_4 mono- or dialkylaminocarbonyl, wherein each alkyl, alkoxy, and alkylthio group is optionally substituted with one or more compatible groups selected from C_1–C_4 alkoxy, C_1–C_4 alkylthio, F, Cl, Br, CN, and phenyl and wherein each phenyl group is optionally substituted with up to 3 groups selected from F, Cl, Br, CN, CF_3, C_1–C_4 alkyl, and C_1–C_4 alkoxy;

and the agriculturally acceptable salt, esters and amides thereof.

4,938,791

FUNGICIDAL AND PLANT GROWTH-REGULATING HYDROXYETHYL-AZOLYL DERIVATIVES

Klaus Stroech, Solingen; Klaus Böckmann, Wuppertal; Stefan Dutzmann, Duesseldorf; Wilhelm Brandes, Leichlingen; Klaus Lürssen, Bergisch-Gladbach, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

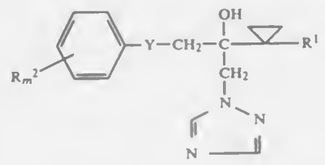
Filed Jun. 24, 1988, Ser. No. 211,799

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 3721696; Apr. 20, 1988, 3813129

Int. Cl.[5] A01N *43/653*; C07D *249/08*

U.S. Cl. 71—92 **9 Claims**

1. A hydroxyethyl-triazolyl derivative or addition product thereof with an acid or metal salt, of the formula



in which

R^1 represents fluorine, chlorine, phenyl which is optionally mono- or disubstituted by chlorine, or the grouping —O——R^3, wherein

R^3 is phenyl which is optionally mono- or disubstituted by chlorine,

R^2 represents fluorine, chlorine, methyl, trifluoromethyl, trifluoromethoxy, trifluromethylthio, methoximinomethyl or phenyl,

m represent the numbers 1 or 2, and

Y represents oxygen or SO_2.

4,938,792

AZOLE DERIVATIVES AND AGRICULTURAL AND HORTICULTURAL CHEMICAL COMPOSITION CONTAINING THE SAME

Satoru Kumazawa; Susumu Shimizu; Hiroyuki Enari; Atsushi Ito, all of Iwaki; Susumu Ikeda, Naka; Nobuo Sato, Iwaki, and Toshihide Saishoji, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1987, Ser. No. 115,084

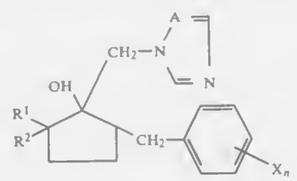
Claims priority, application Japan, Nov. 10, 1986, 61-265559; Jun. 30, 1987, 62-161126; Oct. 27, 1987, 62-271277

Int. Cl.[5] C07D *249/08*; A01N *43/653*

U.S. Cl. 71—92 **6 Claims**

1. An azole compound represented by the formula (I):

(I)



wherein R^1 and R^2 respectively represent a C_1–C_5 alkyl group or a hydrogen atom, X represents a halogen atom, a C_1–C_5 alkyl group or a phenyl group; n represents an integer from 0 to 2 and A represents a nitrogen atom, provided that R^1 is not a hydrogen atom when R^2 is a hydrogen atom.

4,938,793

COMPOUNDS AND COMPOSITIONS

Keith G. Watson, Box Hill North, and Graeme J. Farquharson, Reservoir both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

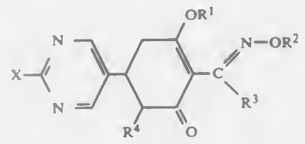
Continuation of Ser. No. 525,483, Aug. 22, 1983, abandoned. This application Jun. 20, 1988, Ser. No. 210,174

Claims priority, application Australia, Sep. 2, 1982, PF5700

Int. Cl.[5] C07D *239/38*; A01N *43/54*

U.S. Cl. 71—92 **8 Claims**

1. A compound of formula IIIa



IIIa

wherein:

X is selected from the group consisting of C_1 to C_6 alkyl, and C_1 to C_5 alkylthio;

R^1 is selected from the group consisting of: hydrogen, C_2 to C_6 alkanoyl and the alkali metals;

R^2 is selected from the group consisting of: C_1 to C_3 alkyl, allyl and haloallyl;

R^3 is selected from C_1 to C_3 alkyl; and

R^4 is hydrogen.

4. A compound of the formula wherein:

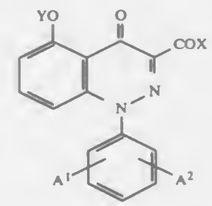
X is selected from C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl and C_1 to C_4 alkylsulfonyl;

R^1 is selected from hydrogen and the alkali metal cations;

R^2 is selected from C_1 to C_3 alkyl, allyl and haloallyl;

R^3 is selected from C_1 to C_3 alkyl;

R^4 is hydrogen.



(I)

in which X is —OH, —O$^-$M$^+$, or —OR^1 or



wherein M$^+$ is an alkali metal cation, an alkaline earth metal cation or



in which R^4, R^5 and R^6 are the same or different and each is hydrogen, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_3–C_8 cycloalkyl, benzyl or phenyl; R^1 is C_1–C_9 alkyl, C_3–C_6 alkenyl, C_3–C_4 alkynyl, C_1–C_3 alkoxy-(C_1–C_4) alkyl, C_3–C_8 cycloalkyl, benzyl or phenyl; and R^2 and R^3 are the same or different and each is hydrogen, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_3–C_8 cycloalkyl, benzyl in which at most two hydrogen at the α-position thereof may be substituted by methyl, C_2–C_3 hydroxyalkyl or phenyl in which at most three hydrogen thereof may be substituted by the same or different C_1–C_2 alkyl or halogen;

Y is C_1–C_4 fluoroalkyl, C_1–C_4 chloroalkyl, C_1–C_4 bromoalkyl, C_1–C_4 fluoro-bromoalkyl or C_1–C_4 fluoro-chloroalkyl; A^1 and A^2 are the same or different and each is hydrogen, fluorine, chlorine, bromine, trifluoromethyl, C_1–C_2 alkylthio or OCF_3, $OCHF_2$, OCF_2Br or OCF_2CHCl_2.

4,938,794

CINNOLINE DERIVATIVE, PROCESS FOR PREPARING THE SAME AND HERBICIDAL COMPOSITION CONTAINING THE SAME

Masato Mizutani, Toyonaka; Masao Shiroshita, Osaka; Masaharu Sakaki, Toyonaka; Nobuaki Mito, Takarazuka, and Hiroki Okuda, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 9, 1988, Ser. No. 281,726

Claims priority, application Japan, Dec. 17, 1987, 62-320276

Int. Cl.[5] C07D *237/28*; A01N *43/58*

U.S. Cl. 71—92 **8 Claims**

1. A cinnoline derivative having the formula (I):

4,938,795

TETRAHYDROPHTHALIMIDE COMPOUNDS, AND THEIR PRODUCTION AND USE

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Toyonaka; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, Toyonaka, and Katsuzo Kamoshita, Toyono, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 473,755, Mar. 9, 1983, Pat. No. 4,670,046, which is a continuation-in-part of Ser. No. 445,726, Nov. 30, 1982, abandoned. This application Dec. 17, 1986, Ser. No. 942,703

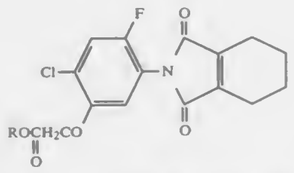
Claims priority, application Japan, Dec. 25, 1981, 56-212396; Jan. 29, 1982, 57-13845; Feb. 5, 1982, 57-17858; Mar. 23, 1982, 57-46940; May 6, 1982, 57-76306

The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.

Int. Cl.[5] A01N *43/38*; C07D *209/48*

U.S. Cl. 71—96 **12 Claims**

1. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of a compound of the formula:



wherein R is methyl or n-pentyl and an inert carrier.

4,938,796

HERBICIDAL COMPOSITIONS OF ACYLATED 1,3-DICARBONYL HERBICIDES AND ANTIDOTES THEREFOR

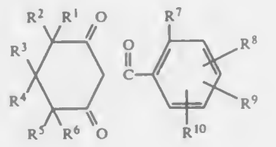
Lawrence L. Buren, Cupertino; Joanna K. Hsu, Sunnyvale; Michael P. Ensminger, San Jose; Charles J. Duerksen, Visalia; Nicholas N. Poletika, Visalia, and Benjamin P. Rodriquez, Visalia, all of Calif., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 70,015, Jul. 6, 1987, abandoned. This application Jun. 22, 1988, Ser. No. 208,269

Int. Cl.[5] A01N *35/06, 41/10, 41/12*

U.S. Cl. 71—98 **21 Claims**

1. A herbicide composition wherein said herbicidally active ingredient is a compound of the formula



in which

R^1, R^2, R^3, R^4, R^5 and R^6 are independently hydrogen, halogen or C_1–C_4 alkyl

or in which R^1 and R^2, or R^3 and R^4, taken together are C_2–C_5 alkylene;

R_7 is halogen; C_1–C_4 alkyl; or nitro;

R^8, R^9, and R^{10} independently are hydrogen or substituants including halogen; C_1–C_4 alkyl; C_1–C_4 alkoxy; trifluoromethoxy; C_1–C_4 haloalkyl

$R_bS(O)_n$ in which n is 0, 1 or 2; and R_b is C_1–C_4 alkyl, C_1–C_4 haloalkyl, phenyl or benzyl;

and as an antidote compound therefor, a nonphytotoxic antidotally effective amount of a compound selected from amides of haloalkanoic acids; and 1,8 naphthalic anhydride, wherein said compound is antidotally active with said herbicide and wherein the weight ratio of herbicide to antidote is from about 0.0:1 to about 30:1.

4,938,797

PROCESS FOR THE PREPARATION OF MICROCAPSULES

Hans W. Hässlin, Grenzach-Wyhlen, Fed. Rep. of Germany, and Michael J. Hopkinson, Pleasant Garden, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 73,324, Jul. 13, 1987, abandoned, which is a continuation of Ser. No. 776,080, Sep. 13, 1985, abandoned. This application Jun. 7, 1988, Ser. No. 203,791

Int. Cl.[5] A01N *37/18;* **A61K** *31/675*

U.S. Cl. 71—118 **21 Claims**

1. In a process for the preparation of an aqueous suspension of microcapsules having a capsule wall of polyurea and encapsulating a water-immiscible pesticide, by dispersing a solution of a polyisocyanate in the sparingly water-soluble pesticide in water and subsequently reacting the dispersion with a polyamine, the improvement which comprises effecting the dispersion of the solution of the polyisocyanate in the sparingly water soluble pesticide in water and the subsequent reaction of the dispersion with the polyamine in the presence of an effective viscosity-reducing amount of (a) an anionic dispersant selected from the group consisting of a salt of polystyrenesulfonic acid, a salt of polyvinylsulfonic acid, a salt of a condensate of naphthalenesulfonic acid and formaldehyde, a salt of a condensate of naphthalenesulfonic acid with phenolsulfonic acid and formaldehyde, and a salt of ligninsulfonic acid, and (b) at least one nonionic protective colloid or nonionic surfactant or both.

4,938,798

SPUTTERING TARGET AND PROCESS FOR PREPARING THE SAME

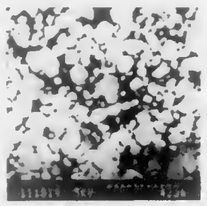
Yoshitaka Chiba, Gyoda; Noriyoshi Hirao; Toru Sugihara, both of Kumagaya, and Kenji Hasegawa, Saitama, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 7, 1988, Ser. No. 165,038

Claims priority, application Japan, Mar. 9, 1987, 62-53292

Int. Cl.[5] C22C *29/00*

U.S. Cl. 75—230 **5 Claims**



MAGNIFICATION X600

1. A high melting point metal silicide-based sputtering target for use as an electrode material or a wiring material in semiconductor devices, which comprises a fine textured non-stoichiometric material whose stoichiometric composition grains of MSi_2, where M represents a high melting point metal, have a maximum grain size of 20 μm, whose free silicon grains have a maximum grain size of 50 μm, whose oxygen content is not more than 200 ppm, and which has a density with respect to the theoretical density of 99% or more.

4,938,799

HEAVY TUNGSTEN-NICKEL-IRON ALLOYS WITH VERY HIGH MECHANICAL CHARACTERISTICS AND PROCESS FOR THE PRODUCTION OF SAID ALLOYS

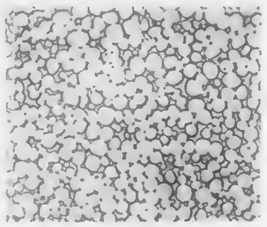
Guy Nicolas, Bonneville, France, assignor to Cime Bocuze, Courbevoie, France

Filed Oct. 5, 1988, Ser. No. 253,506

Claims priority, application France, Oct. 23, 1987, 87 15315

Int. Cl.[5] C32C *28/00*

U.S. Cl. 75—248 **3 Claims**



1. Heavy alloy with very high mechanical characteristics and a specific gravity between 15.6 and 18, comprising:

80 to 99% by weight of tungsten in the form of nodules constituting an α-phase in the shape of butterfly wings with dislocation cells of dimensions between 0.1 and 1 μm, and

nickel and iron in an Ni/Fe ratio greater than or equal to 2 constituting a bonding γ-phase, with a mean free path of less than 15 μm,

said alloy having an ultimate tensile strength higher than 1500 MPa, and a polygonised α-phase.

4,938,800

ALCOHOL PRINTING SOLUTION WITH REDUCED FUME EMISSION

Richard Allen, 103 Turnwood La., Winston-Salem, N.C. 27104

Filed Mar. 18, 1988, Ser. No. 170,267

Int. Cl.[5] C09K *3/18*

U.S. Cl. 106—2 **5 Claims**

1. A fountain solution consisting essentially of isopropyl alcohol, another alcohol, water and ethylene diamine in an amount of less than 1% by weight, the amount of said ethylene diamine being effective to reduce the fume emission and increase the viscosity of the fountain solution.

4,938,801

PRINTING INKS

Yoshioki Yoshioka; Kiyoe Hoshino, and Shigeru Nakamura, all of Ibaraki, Japan, assignors to Taniguchi Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 175,411

Claims priority, application Japan, Mar. 31, 1987, 62-76250

Int. Cl.[5] C09D *11/06*

U.S. Cl. 106—27 **2 Claims**

1. A printing ink for offset printing comprising an oxidation polymerization resin, a coloring agent, and an ink solvent, at least a part of said oxidation polymerization resin being an amine-denatured resin which sets to a gel in a non-polar ink solvent, and at least a part of said ink solvent being a non-volatile polar solvent.

2. A printing ink for offset printing comprising an oxidation polymerization resin, a coloring agent, and an ink solvent, at least a part of said oxidation polymerization resin being an alcohol-denatured resin which sets to a gel in a non-polar ink solvent, and at least a part of said ink solvent being a non-volatile polar solvent.

4,938,802

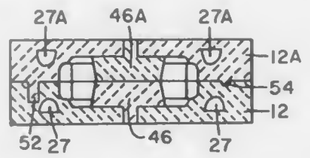
REUSABLE CERAMIC MOLD

Dale A. Noll, Corning; John J. Scholl, Elmira, and Stephen G. Skellett, II, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jan. 19, 1989, Ser. No. 300,289

Int. Cl.[5] B22C *1/00*

U.S. Cl. 106—38.9 **10 Claims**



9. A mold for making a metal casting, the mold having a plurality of mating sections, each mold section having a cavity-forming surface, the cavity-forming surface defining a mold cavity, a sprue hole communicating between the mold cavity and the outside of the mold, at least one mold section having a projection extending from a portion of its cavity-forming surface and towards the mold cavity, said projection having a draft angle of at least 6 degrees as measured between said portion of the cavity-forming surface and the adjoining surface of said projection, said projection being formed of a crystalline ceramic composition having a coefficient of thermal expansion (0°–1000° C.) of about $0–15\times10^{-7}$/°C., excellent dimensional stability at temperatures up to about 900° C. and consisting essentially of crystals substantially all finer then 10 microns in diameter dispersed in a glassy matrix, said crystals comprising at least 90% by weight of the projection and consisting essentially of beta-spodumene solid solution and mullite, and the composition being formed through crystallization in situ from a glass frit consisting essentially, by weight on the oxide basis, of about 3.5–7.5% LiO_2O, 15–30% Al_2O_3, and 65–80% SiO_2, the mole ratio Al_2O_3: Li_2O, being between about 1.0–1.5 and the sum of Li_2O, Al_2O_3 and SiO_2 constituting at least 98% by weight of the total crystalline ceramic composition, whereby, upon solidifying and shrinking, the metal casting will move relative to and along the projection and away from the cavity-forming surface of the mold section which carries said projection to thereby facilitate separation of the casting from the mold section.

4,938,803

VINYL GRAFTED LIGNITE FLUID LOSS ADDITIVES

David A. Huddleston, and Charles D. Williamson, both of Sugar Land, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 5, 1989, Ser. No. 375,548

Int. Cl.[5] C04B *24/34;* **C08K** *51/00;* **C09K** *7/02*

U.S. Cl. 106—719 **22 Claims**

1. A vinyl grafted lignite fluid loss additive comprising a lignite grafted with:

at least one vinyl monomer selected from the group consisting of dimethylaminopropyl methacrylamide, methacrylamido propyltrimethyl ammonium chloride, N-vinylformamide, N-vinylacetamide, diallyl dimethyl ammonium chloride, and diallylamine; and

at least one co-monomerer selected from the group consisting of: 2-acrylamido-2-methylpropanesulfonic acid, dimethylacrylamide, acrylamide, vinyl pyrrolidone, vinylacetate, acrylonitrile, dimethylaminoethyl methacrylate, styrenesulfonate, vinylsulfonate, dimethylaminoethyl methacrylate methyl chloride quaternary, acrylic acid and its salts; whereby said vinyl monomer imparts an amine or quaternary nitrogen functionality to the co-graft, such that the co-graft is relatively stable to hydrolysis.

4,938,804

METHOD FOR THE CRYSTALLIZATION OF FRUCTOSE

Heikki Heikkila, Espoo, Finland, and Vesa Kurula, Thomson, Ill., assignors to Suomen Sokeri Oy, Helsinki, Finland

Filed May 27, 1988, Ser. No. 199,487

Claims priority, application Finland, Jun. 3, 1987, 872487

Int. Cl.[5] C13F *1/02, 1/04*

U.S. Cl. 127—60 **12 Claims**

1. A crystallized fructose recovery process which comprises the steps of:

concentrating fructose syrup to a dry solids content of at least about 90% by weight;

adding ethanol to the concentrated syrup to form a solution of fructose in an ethanol-water mixture having an ethanol-water weight ratio sufficient to from an ethanol-water azeotrope;

supersaturating the resulting solution by azeotropic evaporation to a degree of supersaturation with respect to fructose at crystallization temperature of at least about 1.02;

combining the supersaturated solution with anhydrous fructose seed crystals to provide a mother liquor with fructose seed crystals dispersed therein;

subjecting the mother liquor to a reduced pressure while at a substantially constant temperature in the range of about 50° C. to about 75° C. and removing a minimum-boiling homogeneous ethanol-water azeotrope therefrom in an amount sufficient to crystallize fructose dissolved in the mother liquor; and

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recovering the crystallized fructose from the mother liquor.

4,938,805

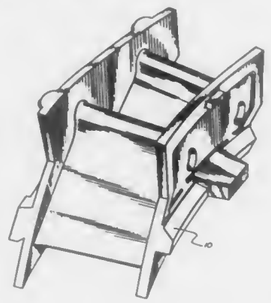
NOVEL COBALT-BASE SUPERALLOY AND CAST AND WELDED INDUSTRIAL GAS TURBINE COMPONENTS THEREOF AND METHOD

John S. Haydon, Mayfield; Adrian M. Beltran, and John H. Wood, both of Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 678,118, Dec. 9, 1984, abandoned. This application Jul. 14, 1986, Ser. No. 885,070

Int. Cl.[5] C22F *1/10*

U.S. Cl. 148—3 8 Claims



1. The method of producing a cobalt-base superalloy body having an unique combination of superior stress rupture strength and weldability properties and consequent special utility in application to industrial gas turbine hot gas path components which comprises the steps of casting in desired size and shape a superalloy consisting essentially of, by

0.3 to 0.6 percent carbon
27 to 35 percent chromium
9 to 16 percent nickel
6 to 9 percent tungsten
0.45 to 2.0 percent tantalum
up to 0.5 percent titanium
up to 3.0 percent hafnium
up to 0.7 percent zirconium
up to 1.0 percent manganese
up to 1.0 percent silicon
up to 0.05 percent boron
up to 2.0 percent iron
balance cobalt, the carbon, tantalum, hafnium, titanium and zirconium being so selected as to satisfy the following equation:

$$\frac{\text{Atomic Percent (Ta + HF + Ti + Zr + Cb)}}{\text{Atomic Percent C}} = 0.4 \text{ to } 0.8$$

and

$$\frac{\text{Atomic Percent Ta}}{\text{Atomic Percent C}} = >0.1$$

subjecting the resulting cast body containing M23C6 eutectic phase to elevated temperature and thereby solutioning substantially all M23C6 eutectic phase, thereafter cooling the said body and thereby precipitating substantially all the M23C6 carbide phase in the form of fine particulate distributed substantially uniformly throughout the body microstructure.

4,938,806

METHOD FOR PRODUCING AN ELECTRO-MAGNETIC STEEL SHEET

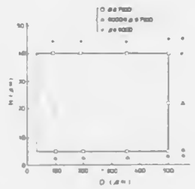
Atsuhito Honda, Chiba; Michiro Komatsubara, Kurashiki, and Ko Matsumura, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jun. 17, 1988, Ser. No. 208,034

Claims priority, application Japan, Jun. 23, 1987, 62-154289; Jun. 23, 1987, 62-154290

Int. Cl.[5] B21B *1/22;* B21H *8/02*

U.S. Cl. 148—111 4 Claims



3. A method for producing a semi-processed electromagnetic steel sheet excellent in an ti-sticking properties and in magnetic properties along the rolling direction by series of process steps comprising cold rolling, annealing and skin pass rolling, in this order, a hot-rolling, steel sheet containing not more than 0.02 wt. % of C, 0.1 to 1.0 wt. % of Si, 0.5 to 1.5 wt. % of Mn, 0.1 to 0.6 wt. % of Al and 0.02 to 0.10 wt. % of P, and a balance of iron and inevitable impurities, wherein the skin pass rolling step is carried out with a roll in which a number of substantially non-overlapping craters each having a diameter of an equivalent circle of 30 to 500 microns, are present on the roll surface, and in which a level difference between the most protuberant and most recessed portions of each of said craters is in the range from 5 to 40 microns, with the number of the craters per square centimeter being in the range from 1 to 400.

4,938,807

PROCESS FOR PRODUCTION OF GRAIN ORIENTED ELECTRICAL STEEL SHEET HAVING HIGH FLUX DENSITY

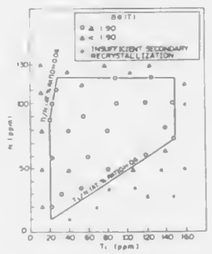
Nobuyuki Takahashi; Yozo Suga, and Katsuro Kuroki, all of Kyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,637

Claims priority, application Japan, Feb. 3, 1988, 63-21864

Int. Cl.[5] H01F *1/047*

U.S. Cl. 148—111 6 Claims



1. A process for the preparation of a grain oriented silicon steel sheet having a high flux density, which comprises heating

a slab at a slab heating temperature of lower than 1200? C., said slab comprising 1.5 to 4.8% by weight of Si, 0.012 to 0.050% by weight of Al, 0.0010 to 0.0120% by weight of N, 0.002 to 0.0150% by weight of Ti, up ro 0.45% by weight of Mn and up to 0.012% by weight of at lest one member selected from S and Se, which satisfies the requirement of 0.06 to 0.6 of Ti/N (at % ratio) and Mn/(S+Se)≧4.0 (weight ratio), with the balance comprising Fe and unavoidable impurities, not-rolling the slab, performing cold rolling once or at least twice to obtain a final thickness, performing decarburization annealing in a wet hydrogen or wet hydrogen/nitrogen mixed atmosphere, coating an annealing separator on the st ®el sheet surface, performing finish annealing for secondary recrystallization and purification of the steel sheet, and performing a nitriding treatment of the steel sheet during the period of from the point of termination of final cold rolling to the point of initiation of secondary recrystallization at the finish annealing step.

4,938,808

MARTENSITIC STAINLESS STEEL SHEET HAVING IMPROVED OXIDATION RESISTANCE, WORKABILITY, AND CORROSION RESISTANCE

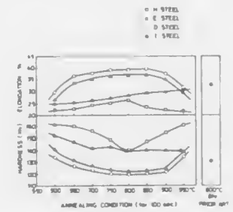
Kazuya Miura, and Keiichi Yoshioka, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP86/00108, § 371 Date Jun. 12, 1987, § 102(e) Date Jun. 12, 1987

PCT Filed Mar. 4, 1986, Ser. No. 69,447

Int. Cl.[5] C22C *38/18, 38/06*

U.S. Cl. 148—325 2 Claims



1. A stainless steel of martensitic grain structure having improved oxidation resistance, workability, and corrosion resistance consisting essentially of (in % by weight) 0.40% or less of C, 1.0% or less of Si, 1.0% or less of Mn, 0.6% or less of Ni, 10 to less than 14% of Cr, 0.05–0.20% of Al, and 0.025–0.060% of N, balance essentially iron.

4,938,809

SUPERPLASTIC FORMING CONSOLIDATED RAPIDLY SOLIDIFIED, MAGNESTUM BASE METAL ALLOY POWDER

Santosh K. Das, Randolph; Chin-Fong Chang, Morris Plains, and Derek Raybould, Denville, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed May 23, 1988, Ser. No. 197,796

Int. Cl.[5] C22C *23/02*

U.S. Cl. 148—406 4 Claims

1. A superplastic forming produced from a consolidated metal article, said article having been made by compacting a rapidly solidified magnesium based alloy powder consisting of the formula $Mg_{bal}Al_aZn_bX_c$, wherein X is at least one element selected from the group consisting of manganese, cerium, neodymium, praseodymium, and Yttrium, "a" ranges from about 0 to 15 atom percent, "b" ranges from about 0 to 5 atom percent, "c" ranges from about 0.2 to 3 atom percent, the balance being magnesium and incidental impurities, with the proviso that the sum of aluminum and zinc present ranges from about 2 to 15 atom percent, said alloy having a microstructure comprised of a substantially uniform cellular network solid solution phase of a size ranging from 0.2–1.0 micron together with precipitates of magnesium and aluminum containing inter-



metallic phases of a size less than 0.1 micron, and said forming having been produced at a forming rate ranging from 0.00021 m/sec to 0.00001 m/sec.

4,938,810

HEAT-RESISTANT, WEAR-RESISTANT, AND HIGH-STRENGTH ALUMINUM ALLOY POWDER AND BODY SHAPED THEREFROM

Fumio Kiyota; Tatsuo Fujita, both of Kashiwazaki; Tadao Hirano, and Shin'ichi Horie, both of Chichibu, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Kabushiki Kaisha Riken, both of Tokyo, Japan

Continuation of Ser. No. 168,795, Mar. 15, 1988, abandoned, which is a continuation of Ser. No. 867,883, May 16, 1986, abandoned, which is a continuation of Ser. No. 512,046, Jul. 8, 1983, abandoned. This application Oct. 18, 1988, Ser. No. 259,402

Claims priority, application Japan, Jul. 12, 1982, 57-119901; Jul. 12, 1982, 57-119902; Jul. 12, 1982, 57-167577; Jul. 12, 1982, 57-157578

Int. Cl.[5] C22C *21/00*

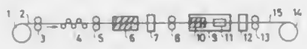
U.S. Cl. 148—437 30 Claims



1. A heat-resistant, wear resistant, and high-strength aluminum alloy powder which is formed by pulverizing and solidifying a melt, and which consists essentially of from 15.0% by weight to 25% by weight silicon, from 5.9% by weight to 15.0% by weight iron, and at least one of from 0.5% by weight to 5.0% by weight of copper and from 0.2% by weight to 3.0% by weight of magnesium, and comprising silicon crystals and intermetallic compounds of iron, wherein the silicon crystals in said aluminum alloy powder are 15 μm or less in size and said intermetallic compounds are finely dividable acicular crystals that are 20 μm or less in size, in a plastic deforming process of said powder.

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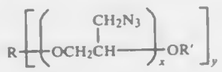
4,938,811
STEEL WIRE FOR A SPRING AND METHOD FOR THE PRODUCTION THEREOF
Teruyuki Murai; Hideo Ogita; Seizo Takamuku, and Norihisa Matsushima, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 220,360, Jul. 15, 1988, abandoned, which is a continuation of Ser. No. 705,166, Feb. 25, 1985, abandoned. This application Oct. 19, 1988, Ser. No. 262,115
Int. Cl.[5] C21D *9/02*
U.S. Cl. 148—12 B **15 Claims**



1. A coil spring having reduced residual shear strain and increased sag resistance, produced by a process in which the improvement comprises: straining a steel wire along a lengthwise direction of said wire to improve sag resistance of said coil spring, said strain being applied by imposing a tensile strain to said steel wire without permanently changing the shape thereof, said tensile strain being imposed following quenching and tempering, and said wire having a content of carbon of 0.5 to 0.7 wt %, so as to reduce the residual shear strain of said wire by at least 20% as compared with residual shear strain of a wire produced by quenching and tempering only, and forming said coil spring from said wire.

4,938,812
GLYCIDYL AZIDE POLYMER ESTERS
Joseph E. Flanagan, Woodland Hills, and Edgar R. Wilson, Simi Valley, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 12, 1989, Ser. No. 364,753
Int. Cl.[5] C06B *45/10*; C07C *117/00*
U.S. Cl. 149—19.1 **2 Claims**

1. A propellant consisting essentially of a binder, oxidizer, and fuel and an energetic plasticizer having the following general formula:



wherein x is an inleger from 2 to about 10, y is an integer from 1 to about 4, R is the residue of a mono-hydric alcohol, diol, triol or polyol and R′ is the acyl residue of an organic carboxylic acid.

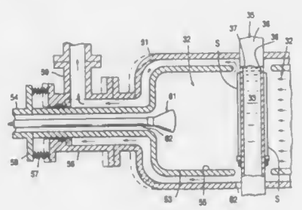
4,938,813
SOLID ROCKET FUELS
Siegfried Eisele, Karlsruhe; Klaus Menke, Bruchsal, and Hiltmar Schubert, Walzbachtal, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany
Filed Oct. 23, 1989, Ser. No. 424,909
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835854
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.2 **23 Claims**

1. Solid rocket fuels comprising high-energy nitramine compounds in an amount of 50–90% by weight, a high-energy, azide group-containing binder system of polymers and plasticizers in an amount of 8–50% by weight and heavy metal catalysts in the form of lead, tin or copper compounds in an amount of 0.5–10% by weight.

4,938,814
HIGH-PERFORMANCE PROPELLANT COMBINATIONS FOR A ROCKET ENGINE
Schöyer H. F. R., Zoetermeer; P. A. O. G. Korting, Uwiatsheul, and J. M. Mul, Delft, all of Netherlands, assignors to European Space Agency, Paris, France
Filed Jul. 7, 1989, Ser. No. 376,844
Claims priority, application Netherlands, Jul. 8, 1988, 8801739
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.9 **2 Claims**

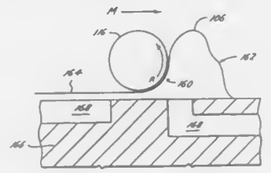
1. A hybrid propellant combination for a rocket engine, comprising a combination of polyglycidyl azide (GAP) ($[C_3H_5N_3O]n$), poly-3,3-bis(azidomethyl)oxetane (BAMO) ($[C_4H_6N_6O]n$) or hydroxyterminated polybutadiene (HTPB) with hydrazinium nitroformate ($N_2H_5C(NO_2)_3$) as a solid oxidizer and pentaborane (B_5H_9) or diborane (B_2H_6) as a fuel.

4,938,815
SEMICONDUCTOR SUBSTRATE HEATER AND REACTOR PROCESS AND APPARATUS
Michael M. McNeilly, Palo Alto, Calif., assignor to Advantage Production Technology, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 919,313, Oct. 15, 1986, Pat. No. 4,778,559. This application Oct. 14, 1988, Ser. No. 257,854
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.[5] C30B *23/02, 25/10*
U.S. Cl. 156—612 **15 Claims**



1. A reaction apparatus for conducting treatment of thin film materials onto semiconductor substrates, said apparatus comprising:
a reaction chamber;
a substrate supporting and heating assembly in said chamber comprising:
a heating container composed of thermally conductive material and having a flat wall for heating of semiconductor substrates,
support means for supporting the back side of at least one semiconductor substrate against the external surface of said wall at a substrate heating location,
heat transfer means comprising a low melting point, high boiling point metal contained within said container at least to the level of the top of said substrate heating location and in contact with said wall,
heating means for heating said heat transfer means;
means for directing auxiliary heat to the front side of said semiconductor substrate and
transport means for transporting reactant materials into and out of said chamber whereby heat is transferred from said means for directing heat to the front side of said substrate and from said heating means through said metal to said container wall to heat said external surface of said container wall to a substantially uniform temperature across said substrate heating location for uniformly heating the back side of said substrate during reaction with reactant materials.

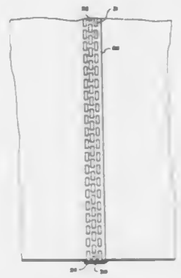
4,938,816
SELECTIVE LASER SINTERING WITH ASSISTED POWDER HANDLING
Joseph J. Beaman, and Carl R. Deckard, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.
Continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Sep. 5, 1989, Ser. No. 402,693
Int. Cl.[5] B27N *3/00*; B32B *31/00*; B23K *9/00*; B29C *67/00*
U.S. Cl. 156—62.2 **30 Claims**



17. A method of producing a part comprising the steps of:
depositing a first portion of powder onto a target surface;
scanning the aim of a directed energy beam over the target surface;
sintering a first layer of the first powder portion corresponding to a first cross-sectional region of the part by operating the beam when the aim of the beam is within boundaries defined by said first cross-sectional region;
depositing a second portion of powder onto the first sintered layer;
scanning the aim of a directed energy beam over the first sintered layer;
sintering a second layer of the second powder portion corresponding to a second cross-sectional region of the part by operating the beam when the aim of the beam is within boundaries defined by said second cross-sectional region, the first and second layers being joined during the sintering of said second layer;
depositing successive portions of powder in high bulk density onto the previous sintered layers and sintering a layer of each successive portion to produce a part comprising a plurality of sintered layers; and
attaining high bulk density in each said portion of powder in said target area.

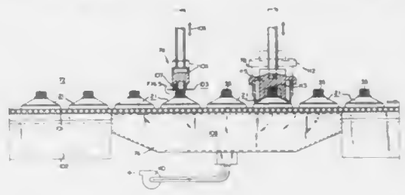
4,938,817
METHOD OF FORMING BONDED SEAMS OF SPUNBONDED POLYOLEFIN FABRIC AND CLEANROOM GARMENTS INCLUDING SUCH SEAMS
John D. Langley, Guntersville, Ala., assignor to Kappler Safety Group, Guntersvile, Ala.
Filed Dec. 30, 1988, Ser. No. 292,504
Int. Cl.[5] B29C *65/08*; B32B *31/20*
U.S. Cl. 156—73.1 **3 Claims**

1. The method of forming a seam joining together a pair of edge regions of a nonwoven, spunbonded polyolefin fabric having a linen side and a rib side which comprises:
placing said edge regions in stacked relation with linen sides of said fabric edge regions in contact with one another along a strip defining a seam line;
applying heat and pressure to the stacked fabric along said strip, the heat being applied continuously and the pressure being applied at spaced-apart intervals, whereby said edge regions are weakly bonded to one another along said strip;
folding said strip flat against an adjacent surface of a said edge region; and
applying heat and pressure to the folded strip and the area of said edge region against which the strip is folded from the linen side of the edge region against which the strip is folded and over and along the length of said strip, the heat being applied continuously and the pressure at spaced-apart intervals, whereby a strongly bonded seam between



both layers of the folded strip and the edge region against which the strip is folded is produced.

4,938,818
METHOD OF FORMING A SEAL
Henry S. Dzedzej, Media; Richard F. DeRosa, Newtown Square, and Carl B. Schartner, Wallingford, all of Pa., assignors to Teledyne Industries, Inc., Chester, Pa.
Filed Dec. 29, 1988, Ser. No. 290,475
Int. Cl.[5] B32B *31/20, 51/28*
U.S. Cl. 156—69 **2 Claims**



1. In a method of making a collapsible tube having a separately made rigid plastic head portion with a dispensing orifice therein, and separately made tube body of a laminate of plastic and metal foil, wherein the heat and tube body are welded together with radio frequency waves,
the improvement comprising
the method of forming a seal of a laminate of plastic and metal across the dispensing orifice of the tube, comprising
(1) applying the seal to the dispensing orifice of the head before the head is welded to the tube body by
(a) moving a file of heads past a first station;
(b) stopping each head intermittently at the first station;
(c) continuously applying a vacuum to the head and dispensing orifice from below the head at the first station;
(d) passing a web of laminate over the head adjacent the dispensing orifice at the first station;
(e) cutting a seal from the web of laminate adjacent the dispensing orifice;
(f) keeping the seal of laminate positioned on the head over the dispensing orifice by means of the vacuum;
(g) applying a hot press to the seal to fuse the seal to the head; and
(h) terminating the vacuum below the head to the dispensing orifice, and
(2) inserting a heat sink adjacent the seal during the welding by radio frequency waves of the head to the tube body,

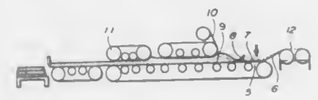
whereby any buildup of heat in the laminate seal is dissipated away from the seal to prevent damage to the seal.

4,938,819

METHOD OF MAKING A COMPOSITE PANEL OF A FOAM MATERIAL

Seiji Ishii; Hiroya Fukuda, and Takashi Ohashi, all of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jan. 7, 1988, Ser. No. 211,719
Claims priority, application Japan, Jan. 8, 1987, 62-141557; Apr. 19, 1988, 63-94680; May 7, 1988, 63-109913
Int. Cl.[5] B29C *67/20*; B32B *5/18, 5/20*
U.S. Cl. 156—78 **15 Claims**



5. A method of making a composite panel of a foam material comprising:

reacting an isocyanate component with a polyol component and foaming with a foaming agent to form a self-supporting, intermediate foam material, said isocyanate component present in an excess of a stoichiometric quantity needed to react with said polyol component;

contacting said self-supporting, intermediate foam material with water;

impregnating a non-woven sheet with an isocyanate component;

applying said impregnated nonwoven sheet onto said self-supporting; intermediate foam material;

contacting said impregnated nonwoven sheet/self-supporting, intermediate foam material with water; and

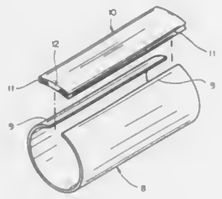
heating and laminating said impregnated nonwoven sheet/-self-supporting, intermediate foam material to form a composite panel, wherein said water reacts with remaining unreacted isocyanate component in said self-supporting, intermediate foam material and said water also reacts with said isocyanate component in said impregnated nonwoven sheet.

4,938,820

JOINING OF SHEETS

Corey J. McMills, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 61,354, Jun. 11, 1987, abandoned. This application Aug. 15, 1989, Ser. No. 394,288
Int. Cl.[5] B29C *53/36, 65/34*
U.S. Cl. 156—83 **11 Claims**



1. A method of forming a tubular structure, which method comprises

(a) providing a wrap-around sleeve having a first longitudinal edge portion and a second longitudinal edge portion, said second edge portion being substantially free of protrusions, said edge portions being capable of being brought substantially together such that the sleeve has a tubular configuration;

(b) positioning said first and second edge portions adjacent to an electrically heatable longitudinal sealing strip which

(1) comprises a sintered conductive polymer and

(2) comprises edge recesses into which are inserted said first and second edge portions; and

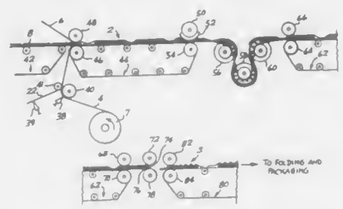
(c) electrically powering the strip to form a bond between the strip and at least the second edge portion.

4,938,821

METHOD AND APPARATUS FOR MANUFACTURE OF A DIAPER WITH ELASTIC MARGINS

J. Donald Soderlund, Bellevue; Richard H. Young, Puyallup, and E. Peter Lancaster, Gig Harbor, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 850,183, Apr. 10, 1986. This application Aug. 24, 1987, Ser. No. 89,197
Int. Cl.[5] B32B *31/08, 31/18*
U.S. Cl. 156—85 **16 Claims**



1. A method of making a disposable diaper of the type having a moisture permeable skin contacting cover sheet, a moisture impermeable backing sheet, and a moisture absorbing filler pad disposed therebetween which comprises:

uniting the individual diaper components to form a continuous end-to-end or side-by-side assembly of diaper units;

providing areas of heat shrinkable elastomeric material at least along one longitudinal edge of the diaper assembly, said elastomeric material being of the type that is heat unstable and relatively inelastic in its unshrunk form and stable and relatively elastic in its heat shrunk form;

maintaining sufficient longitudinal tension on the diaper unit assembly to prevent wrinkling thereof;

heating the longitudinal edges of each diaper unit in the assembly in the areas of the heat shrinkable elastomeric material to a temperature sufficient to enable shrinkage of said elastomeric material;

immediately thereafter relaxing the longitudinal edge tension of the heated diaper units while maintaining said tension in the central portion of the diaper units for a time sufficient to permit the heated elastomeric material to shrink and cool to a temperature where said elastomeric material is stable, thereby creating marginal elasticized zones on said diapers.

6. The method of claim 1 in which the diaper units in the assembly are in an end-to-end relationship so that the longitudinal edges of the diaper units correspond to the leg encircling portions and the area adjacent adjoining diaper units forms waist encircling portions of the diapers.

7. The method of claim 6 in which said waist encircling areas of the diapers are essentially devoid of filler pad and which further includes providing areas of heat shrinkable elastomeric material in at least one of said waist encircling areas of each diaper unit, heating said heat shrinkable material in the waist areas following shrinkage of the elastomeric material in the longitudinal edge zones, and relaxing any transverse tension

present to permit the heated elastomeric material to shrink and cool to a temperature where said elastomeric material is stable thereby creating elasticized waist areas in the diapers.

4,938,822

METHOD FOR MAKING ASSEMBLY OF PACING LEAD ELECTRODE TO COILED CONDUCTOR

C. A. Peers-Trevarton, 739 NW. 83 Dr., Coral Springs, Fla. 33065

Filed Oct. 17, 1983, Ser. No. 542,743
Int. Cl.[5] B32B *01/00*
U.S. Cl. 156—144 **2 Claims**



1. A method of manufacturing a pacing lead electrode assembly that includes a coiled conductor within a sleeve electrode having a generally cylindrical inside surface, comprising:

selecting an electrically conductive metal sleeve electrode having an electrically conductive generally cylindrical inside surface of a predetermined circumference;

oversizing an electrically conductive coiled conductor in its generally radial cross-section so as to provide a coil-shaped conductor member having a generally helically shaped uninsulated electrically conductive outer surface that is radially oversized with respect to the electrically conductive inside surface circumference of the sleeve electrode to the extent that the helically shaped outer surface has a average circumference that is greater than the circumference of the generally cylindrical inside surface of the sleeve electrode when the coil-shaped conductor is in a radially untensioned preassembly condition;

applying adhesive to a free end of the oversized coil-shaped conductor member;

generally coaxially aligning the free end of the oversized coil-shaped conductor member with a free end of the sleeve electrode;

radially rotating the oversized coil-shaped conductor member or the sleeve electrode with respect to each other generally along their coaxis;

engaging the oversized coil-shaped conductor free end and the sleeve electrode free end during said radial rotation step to thereby flow said adhesive to intersticies between said generally helicallv shaped outer surface and to thereby radially decrease the oversized circumference of the free end of the coil-shaped conductor member to the extent that the free end of the coil-shaped conductor member rotates into the free end of the sleeve electrode and is radially tensioned thereby;

continuing said radial rotation step while permitting longitudinal movement of the coil-shaped conductor member with respect to the sleeve electrode generally along their coaxis, whereby the coil-shaped conductor member moves longitudinally into the sleeve electrode to form an electrode assembly having a plurality of windings of the coiled conductor radially tensioned and springingly urged against and engaged with the electrically conductive generally cylindrical inside surface of the sleeve electrode to enhance electrical contact between the electrically conductive outer surface of the coiled conductor and the electrically generally cylindrical inside surface of the sleeve electrode; and

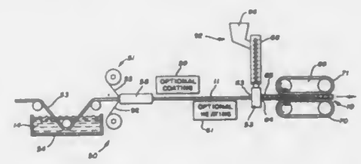
setting the adhesive in the intersticies to form an adhesive thread onto said inside surface of the sleeve electrode.

4,938,823

PULTRUSION/EXTRUSION METHOD

David T. Balazek, Stow; Thomas J. Griffiths, Ravenna, and David E. Pearson, Hudson, all of Ohio, assignors to The Pultrusions Corporation, Aurora, Ohio

Filed Oct. 7, 1988, Ser. No. 255,752
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—166 **9 Claims**



1. A method for the manufacture of fiber reinforced plastic articles comprising the steps of:

pultruding a first profile through a die, said first profile comprising a plurality of longitudinal strands of a fiber reinforcing material and a thermosetting resin impregnating said reinforcing material;

curing said thermosetting resin; and

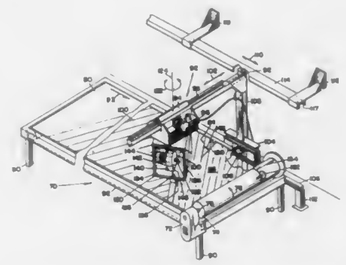
applying a thermoplastic resin to said cured first profile in a separate die and forming a second profile bonded integrally to said first profile.

4,938,824

METHOD FOR MAKING A COMPOSITE COMPONENT USING A TRANSVERSE TAPE

Dean C. Youngkeit, Willard, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Jan. 23, 1987, Ser. No. 6,411
Int. Cl.[5] B29C *53/62, 53/74*
U.S. Cl. 156—173 **7 Claims**



1. A method for making a composite component comprises the steps of:

a. applying at least one fiber strand impregnated with a matrix material onto a generally cylindrical mandrel at a predetermined angle relative to a line parallel to the rotational axis of the mandrel to form at least one layer of two crossing windings of unwoven, unknitted, and unstitched matrix impregnated fiber strand portions wherein the fiber strand portions are held together by the tack of the matrix material and wherein the fiber strand portions in each winding are parallel to each other wherein the step of applying at least one fiber strand comprises rotating the generally cylindrical mandrel while holding the generally cylindrical mandrel in a stationary position between its ends, forming the layer of fiber strand portions on a conveyor belt, and moving the conveyor belt to convey the

layer of fiber strand portions to the generally cylindrical mandrel and rolling the layer of fiber strand portions on the generally cylindrical mandrel as it is formed on the conveyor belt afterwhich the transverse tape is cut from the layer of fiber strand portions while it is on the generally cylindrical mandrel;

b. cutting from the layer while it is on the mandrel a transverse tape comprising a strip of unwoven, unknitted, and unstitched fiber strand portions which are held together by the tack of the matrix material whereby the fiber strand portions are not held together by weaving, knitting, or stitching, the transverse tape having at least two plies and a pair of parallel edges wherein fiber strand portions in each ply extend parallel to each other between the edges and are oriented at an angle, relative to a line passing through the edges and perpendicular to the edges, which is substantially equal to said predetermined angle;

c. winding the transverse tape onto a component mandrel;

d. compacting and curing the wound matrix impregnated transverse tape; and

e. removing the mandrel.

4,938,825

PROCESS FOR MANUFACTURING LAMINATED BATH TUB OR SHOWER TRAY

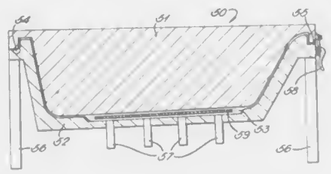
Keith M. Macdonald, Solihull, England, assignor to Armitage Shanks Limited, Stratfordshire, England

Continuation of Ser. No. 150,452, Jan. 29, 1988, abandoned, which is a continuation of Ser. No. 829,545, Feb. 12, 1986, abandoned, which is a continuation of Ser. No. 663,888, Oct. 23, 1984, abandoned. This application Jul. 12, 1989, Ser. No. 378,478

Claims priority, application United Kingdom, Oct. 28, 1983, 8328898

Int. Cl.[5] B29C *45/14*

U.S. Cl. 156—245 **13 Claims**



1. A process for the manufacture of a laminated bath-tub or shower-tray, wherein a reinforcing layer of polyurethane is applied to a surface of an acrylic shell, which process essentially consists of the steps of producing a preformed shell of an acrylic material; inserting the said preformed shell into a matching, closable mould, which mould provides a space for a layer of reinforcing material; forming by a reaction injection moulding step a reinforcing layer of rigid polyurethane that adheres directly to the shell which step comprises injecting into the said mould space a mixture comprising a polyol material and an isocyanate material that react therein; and demoulding the resultant laminated article.

4,938,826

METHOD OF ONE OR TWO-SIDE COATING OF THIN PLATES

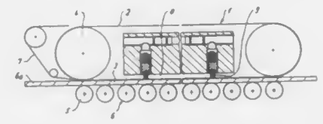
Udo Hanitzsch, Bielefeld, Fed. Rep. of Germany, assignor to Firma Theodor Hymmen, Bielefeld, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 207,372

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1987, 3722835

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—269 **16 Claims**



1. A method of at least one-sided laminating of thin plates with a coating material in a continuous operation, comprising the steps of supplying a coating material into a pressing gap; supplying a plurality of thin plates into the pressing gap; applying a pressure in the pressing gap to the thin plates and the laminating material so as to laminate the former with the latter, said supplying a plurality of thin plates including connecting neighboring ones of the thin plates with one another at their end sides facing toward one another with alignment of the upper and lower limiting surfaces so as to form a plate strand prior to the supplying thin plates into the pressing gap and laminating them with the laminating material and thereafter supplying the plate strand thusly formed from the connected thin plates into the pressing gap for the laminating of the latter; and separating the plate strand into individual plates by dividing the plate strand in all connecting regions of the latter.

4,938,827

PREPARATION OF A SILICONE RUBBER-POLYESTER COMPOSITE PRODUCTS

Jerry G. Leach, Hudson, N.H.; Edward C. Parnagian, Burlington, and Gary A. Seavey, Boxford, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 10, 1987, Ser. No. 119,017

Int. Cl.[5] B29C *65/14*

U.S. Cl. 156—272.6 **14 Claims**

1. A process for bonding a silicone rubber to a chemically resistant polyester film in order to reduce or eliminate the susceptibility of the resulting bond to chemical challenge in the user environment, which comprises:

exposing the polyester film to gas plasma treatment;

exposing the gas plasma treated polyester film to a siloxane coupling agent solution;

rinsing the plasma-treated polyester film to remove all but a thin layer of the coupling agent;

drying the polyester film coated with the coupling agent to remove all volatile materials;

mixing an RTV silicone resin with a suitable catalyst therefor;

applying of the RTV silicone resin-catalyst mixture to the dried and coupling agent-coated polyester film;

curing the resultant film; and

immersing the cured film in water to develop the cohesive bond between the polyester film and the RTV silicone rubber.

4,938,828

HIGH BARRIER LOW PROFILE FORMING WEB

Walter B. Mueller, Inman, and Henry G. Schirmer, Spartanburg, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 842,530, Mar. 21, 1986. This application Oct. 12, 1989, Ser. No. 420,428

Int. Cl.[5] B32B *1/02, 31/12, 31/30*

U.S. Cl. 156—244.17 **5 Claims**

1. A method for providing a thermoformable composite film with reduced line draw comprising:

(a) extruding a first polymeric film;

(b) orienting the first film to substantially the same extent in both the longitudinal and transverse directions;

(c) extruding a second polymeric film comprising an oxygen barrier layer sufficient to protect packaged food products; and

(d) bonding the second film to the first film over most of a major surface after effecting biaxial orientation of said first film.

4,938,829

PROCESS OF MAKING A DIAPHRAGM OF VITREOUS HARD CARBONACEOUS MATERIAL FOR AN ACOUSTIC DEVICE

Hideo Odajima, Fujioka, Japan, assignor to Mitsubishi Pencil Co., Ltd., Higashiohi, Japan

Continuation of Ser. No. 239,265, Sep. 1, 1988, abandoned. This application Aug. 3, 1989, Ser. No. 388,753

Int. Cl.[5] B29C *65/54;* C01B *31/02*

U.S. Cl. 156—245 **5 Claims**

1. A process for producing a diaphragm for an acoustic device, the diaphragm being formed of vitreous hard carbonaceous material, comprising the steps of:

preliminarily molding, in film or sheet shapes, vitreous hard carbon thermosetting resin which, upon calcining, exhibits high hardness and gas impermeability,

molding a diaphragm in a desired diaphragm shape and a voice coil bobbin in a desired voice coil bobbin shape from said preliminary moldings, calcining the diaphragm molding and the voice coil bobbin molding, and

forming an integral structure of the diaphragm and the voice coil bobbin by calcining in an inert gas atmosphere a composite material comprising the diaphragm molding and the voice coil bobbin molding with an organic liquid composition positioned therebetween, the organic liquid composition exhibiting high carbon residual yield.

4,938,830

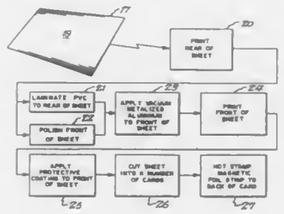
PLASTIC CARD AND METHOD OF FABRICATION THEREOF

Nick E. Cannistra, Addison, Ill., assignor to Perfect Plastic Printing Corp., St. Charles, Ill.

Filed Mar. 7, 1988, Ser. No. 164,919

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—270 **15 Claims**



1. A method of fabricating a plastic card comprising the steps of providing a sheet of plastic having a front surface and a rear surface, applying printing to said rear surface of said sheet of plastic, laminating a sheet of clear plastic to said rear surface of said sheet of plastic, polishing said front surface of said sheet of plastic, laminating a metal layer to said front surface of said sheet of plastic to provide a shiny front surface to said sheet of plastic, printing the shiny surface of said metal layer, and applying a protective coating in liquid form to said surface of said metal layer, said protective coating comprising a mixture of aminocoumarin dye and liquid polyvinyl chloride.

4,938,831

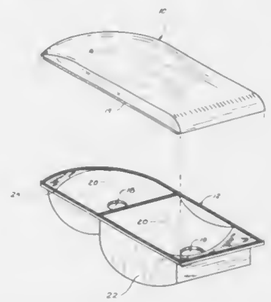
BONDING METHOD FOR PREPARING AUTOMOTIVE HEADLAMP ASSEMBLIES

Robert E. Wolf, Jr., Framingham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 25, 1988, Ser. No. 147,832

Int. Cl.[5] B32B *31/12, 31/28;* C08F *299/04, 299/06*

U.S. Cl. 156—275.3 **12 Claims**



1. A method for binding a polyarylate substrate to another polyarylate substrate or to a polycarbonate substrate comprising the steps of:

(a) applying to the surface of at least one of said substrates to be bonded a layer of a visible light curable adhesive composition consisting essentially of:

(1) at least one acrylic monomer or polyfunctional polyester acrylate oligomer;

(2) N-vinyl pyrrolidone;

(3) at least one low molecular weight aliphatic urethane acrylate polymer; and

(4) a photoinitiator system activatable by visible light;

(b) bringing said substrates to be bonded together into superposition whereby opposed surfaces of said applied layer of composition physically contact said respective substrates to be bonded; and

(c) subjecting said applied layer of composition to visible light while maintaining said respective substrates in contact with said composition, whereby to cure said composition and to bond said substrates together.

4,938,832

CARDABLE HYDROPHOBIC POLYPROPYLENE FIBER, MATERIAL AND METHOD FOR PREPARATION THEREOF

A. Chandler Schmalz, Conyers, Ga., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 30, 1989, Ser. No. 358,985

Int. Cl.[5] B05D *3/02*

U.S. Cl. 156—308.8 **19 Claims**

1. A method for preparing essentially hydrophobic polyolefin-containing spun fiber or filament for cutting and carding steps in the production of hydrophobic nonwoven material, comprising

A. initially treating corresponding continuous spun fiber or

filament with an effective amount of a first modifier composition comprising

(a) about 70%–100% by weight of modifier composition of at least one neutralized phosphoric acid ester represented by the formula

$$(Alk\text{-}O)_n\text{—}\overset{\overset{O}{\|}}{P}\text{—}O\text{—}R_m \quad (1)$$

wherein

alk is individually defined as a lower alkyl group,

R is defined as an amino group or an alkali metal,

n and m are individually defined as positive numbers of not less than about 1, the sum of which is about 3; and

(b) up to about 30% by weight of modifier composition of at least one polysiloxane represented by the formula

$$X\text{—}(Si\text{—}O)_o\text{—}Y \quad (2)$$
$$\quad\quad\quad

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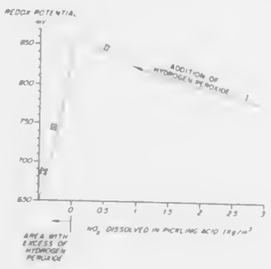
ble so that said outer crucible is moved down after drawing-up said single crystal has been completed, said lower stopper preventing said bent portions of said jigs from coming down so that said inner crucible is hung up out of said molten raw material and said sealing agent, or said molten raw material.

4,938,838

METHOD OF REDUCING THE EMISSION OF NO_x GAS FROM A LIQUID CONTAINING NITRIC ACID

Ivan Dalin, Surte, and Pia Andreasson, Lilla Edet, both of Sweden, assignors to Eka Nobel AB, Surte, Sweden

Filed Sep. 10, 1987, Ser. No. 94,808
Int. Cl.[5] C23F *1/00, 3/06*
U.S. Cl. 156—627 **8 Claims**



1. A method of reducing the emission of NO_x gas in a liquid containing nitric acid, characterized by measuring the redox potential in the liquid and adjusting the amount of hydrogen peroxide in relation to the redox potential, wherein the amount of hydrogen peroxide is adjusted so that the redox potential is at about its maximum value, wherein the redox potential is measured in the liquid, and hydrogen peroxide is automatically supplied to the liquid;

wherein the liquid, prior to the addition of hydrogen peroxide, contains sufficient nitric acid to result in the emission of NO_x gas, and wherein the addition of hydrogen peroxide reduces the emission of said NO_x gas; and

wherein the liquid is used as a pickling bath for stainless steel or a liquid bath for surface treatment of copper or brass.

4,938,839

METHOD OF REMOVING PHOTORESIST ON A SEMICONDUCTOR WAFER

Shuzo Fujimura, Tokyo; Yasunari Motoki, Kawasaki, and Yoshikazu Kato, Mizusawa, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

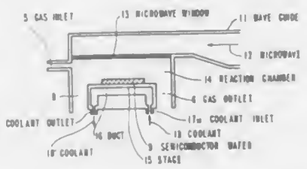
Continuation of Ser. No. 14,694, Feb. 13, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 257,165
Claims priority, application Japan, Feb. 14, 1986, 61-030327
Int. Cl.[5] H01L *21/24, 21/308*
U.S. Cl. 156—628 **7 Claims**

1. A method of ashing a photoresist coated on a semiconductor wafer, comprising the steps of:

patterning a photoresist on a semiconductor wafer;

ion-implanting a dopant into the semiconductor wafer through openings of the resist, said ion-implanting step affecting a surface of the photoresist by forming carbonates thereon;

cooling the semiconductor wafer after the ion-implanting step by making use of cooling means; and



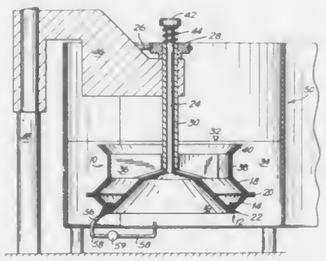
ashing the photoresist by making use of a plasma of a reaction gas during said cooling step.

4,938,840

UNIFORM TREATMENT OF LARGE QUANTITIES OF SMALL PARTS

Friedrich Schächter, Draschestrasse 31, Vienna, Austria A-1232

Filed Apr. 19, 1989, Ser. No. 340,881
Int. Cl.[5] B44C *1/22;* C23F *1/00;* B05D *3/12;* B08B *7/00*
U.S. Cl. 156—639 **33 Claims**



1. A method for the uniform treatment of the surfaces of a plurality of individual parts when such parts constitute a randomly oriented aggregate, which method comprises:

introducing a plurality of parts into a vessel to form such aggregate;

introducing a treatment medium into said vessel; and

repeatedly separating and dispersing said parts from said aggregate and then returning the parts back into said aggregate during controlled cycles;

wherein all surfaces of said parts to be treated are exposed to and contacted by said treatment medium and, while said parts are separated and dispersed from said aggregate, the treatment medium is forced into, around, through and out from said parts so that after a number of cycles, all surfaces of said parts are uniformly treated by said treatment medium.

4,938,841

TWO-LEVEL LITHOGRAPHIC MASK FOR PRODUCING TAPERED DEPTH

Arie Shahar, Aberdeen, and Walter J. Tomlinson, III, Holmdel, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

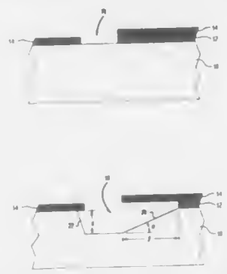
Filed Oct. 31, 1989, Ser. No. 429,560
Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—661.1 **15 Claims**

1. A method of forming a sloping surface, comprising the steps of

depositing on a principle surface of a substrate material a first layer of a first material of a first composition;

depositing on an outer surface of said first layer a second layer of a second material of a second composition;

patterning said second layer so as to expose a portion of said first layer; and



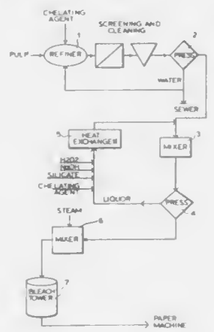
applying an etching medium to said principle surface deposited with said first layer and with said patterned second layer for etching said substrate material and said first layer, said etching medium having a first etching rate for said substrate material and a second etching rate for said first material greater than said first etching rate, said etching medium etching said second material, if at all, at an etching rate less than said first etching rate.

4,938,842

HIGH CONSISTENY PEROXIDE BLEACHING

Philip Whiting, Milton; Adele M. Rhodes, Oakville; Arnold E. Willoughby, Mississauga; Martin G. Fairbank, Milton; Hollis D. MacEwen, Mississauga, and Fraser McLellan, Campbellville, all of Canada, assignors to Abitibi-Price Inc., Toronto, Canada

Continuation of Ser. No. 87,488, Aug. 20, 1987, abandoned. This application Feb. 23, 1989, Ser. No. 392,626
Claims priority, application United Kingdom, Aug. 20, 1986, 8620222
Int. Cl.[5] D21B *1/16;* D21D *1/20*
U.S. Cl. 162—78 **11 Claims**



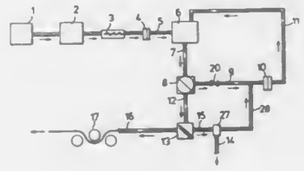
1. A single stage bleaching process for bleaching wood pulp which comprises, in combination, the steps of adding to the wood pulp a bleach liquor having an effective amount of hydrogen or sodium peroxide bleaching agent and 0.5 to 65% sodium hydroxide, 0 to 5% sodium silicate, 0 to 1% magnesium sulphate, and a chelating agent in an amount sufficient to sequester heavy metal ions, to produce a pulp consistency of 1 to 16% at a temperature in the range of the bleach liquor freezing point to 25° C., uniformly mixing the bleach liquor with the wood pulp, passing said wood pulp and bleach liquor directly to a thickening stage and thickening the wood pulp and bleach liquor to a consistency in the range of 20 to 70%, and bleaching the thickened wood pulp.

4,938,843

METHOD FOR PRODUCING IMPROVED HIGH-YIELD PULPS

Jonas A. I. Lindhal, Domsjo, Sweden, assignor to Mo och Domsjo Aktiebolag, Oraskoldsvik, Sweden

Filed Feb. 20, 1985, Ser. No. 703,240
Claims priority, application Sweden, Feb. 22, 1984, 8400969
Int. Cl.[5] D21D *5/02*
U.S. Cl. 162—55 **8 Claims**



1. A process for preparing improved high-yield cellulose pulps of the chemimechanical or chemithermomechanical type, consisting essentially of screening defibrated cellulose pulp in a first screening stage while controlling at least one of the area of the openings and the flows from the first screening stage so as to separate out as rejects not passing through the screen a long fiber fraction and as accepts passing through the screen a fine fiber fraction; separating out at least 30% by weight of the fiber content of the defibrated pulp as a long-fiber fraction comprising from 85 to 100% long fibers which are retained on a Bauer McNett screen having 59 openings per centimeter (150 mesh); and also separating out a further portion of the fiber content as a first fine-fiber fraction comprising at least 30% fibers which in accordance with Bauer-McNett pass through a wire having 59 openings per centimeter (150 mesh); screening the first fine-fiber fraction in a second screening stage and separating out a second long-fiber fraction comprising from 85 to 100% long fibers which are retained on a Bauer-McNett screen having 59 openings per centimeter (150 mesh) and a second fine-fiber fraction comprising at least 30% fibers which in accordance with Bauer McNett pass through a wire having 59 openings per centimeter (150 mesh); combining first and the second long-fiber fractions to form an improved long-fiber fraction; dewatering and recovering the long-fiber fraction; dewatering the second fine-fiber fraction and recovering the second fine-fiber fraction.

4,938,844

PROCESS FOR PRODUCING FIBER AGGREGATE

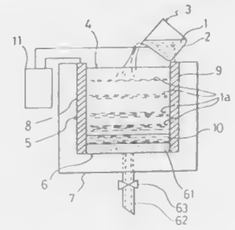
Tomohito Ito, Ohbu; Hidetoshi Hirai, Ichinomiya; Renichi Isomura, Kariya; Fukuo Gomi, Nagoya, and Senichi Masuda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Senichi Masuda, both of Kariya, Japan

Filed Apr. 1, 1988, Ser. No. 177,467
Claims priority, application Japan, Apr. 4, 1987, 62-83567
Int. Cl.[5] D21H *5/00*
U.S. Cl. 162—102 **5 Claims**

1. A process for producing fiber aggregate which comprises:

an orientation step of placing a liquid mixture consisting essentially of a dielectric fluid comprising a low molecular weight, low viscosity, organic solvent having an electric resistivity of not less than $10^{11}\Omega$cm., a surface active agent,

and fibers in the form of short fiber, whisker, or a mixture thereof dispersed therein between a pair of electrodes across which an AC voltage is applied, wherein individual fibers in said liquid mixture are electrostatically oriented, with one end pointing to one of said electrodes and the other end pointing to the other said electrode; and



an aggregating step of aggregating the electrostatically oriented fibers by filtering said liquid mixture while maintaining the direction of orientation of the fibers wherein fiber aggregate in which said fibers are substantially one-dimensionally oriented is produced, and

wherein said dielectric fluid is selected from the group consisting of carbon tetrachloride, fluorine- and chlorine-substituted hydrocarbons, n-hexane and cyclohexane.

4,938,845

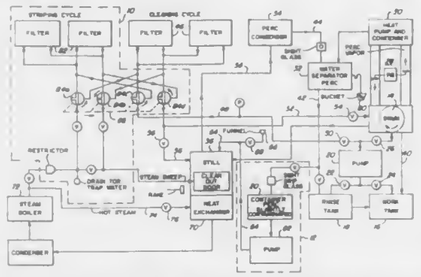
DRY CLEANING EQUIPMENT UTILIZING PERC RECOVERY PROCESS FOR STRIPPING FILTER

Tilo Kohler, West Babylon, N.Y., assignor to Richard L. Miller, Dix Hills, N.Y.

Division of Ser. No. 857, Jan. 6, 1987, Pat. No. 4,780,218, and Ser. No. 260,114, Oct. 20, 1988, Pat. No. 4,874,472. This application Oct. 24, 1989, Ser. No. 426,016

Int. Cl.[5] B01B *1/08*

U.S. Cl. 202—169 **2 Claims**



1. In a dry cleaning apparatus using perchlorethylene as a cleaning solvent, said apparatus including a drum for tumbling the fabric to be cleaned together with said solvent, a still for receiving contaminated solvent after use in said drum, a source of steam, means for feeding said steam into said still for sweeping the still and dissolving the contaminates from said solvent, a condenser for receiving said mixture of solvent and steam an condensing said mixture, a water separator receiving the condensed mixture from said condenser and removing condensed water from said mixture leaving solvent from which contaminants have been removed, and a storage tank for holding said condensed solvent with a conduit passing the decontaminated solvent from said water separator to said storage tank so that the solvent in the storage tank can be used again in the drum, a steam boiler and utilizing filter cartridges wherein the improvement comprises: means for enabling continuous distillation while simulataneously enabling regeneration of spent ones of said filter cartridges including;

a. means for diverting steam from said boiler first through said filter cartridges after they are spent so as to strip and filter cartridge of any perchlorethylene;

b. means for directing the steam mixed with perchlorethylene from said filter cartridges to the sweep input of said still; and

c. means for discarding excessive water from said water separator.

4,938,846

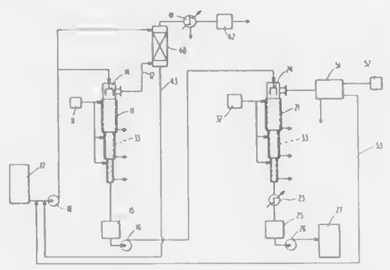
PREPARATION OF ANHYDROUS ALKANESULFONIC ACID

Perry D. Comstock, Wyandotte, and Karen M. Keys, Southfield, both of Mich., assignors to ATOCHEM, North America, Inc., Philadelphia, Pa.

Filed Dec. 8, 1986, Ser. No. 939,200

Int. Cl.[5] B01D *1/00, 3/00*

U.S. Cl. 203—15 **15 Claims**



1. A process for the removal of water from a mixture of lower alkanesulfonic acid and water which comprises the steps of (a) passing said mixture into a first vertical evaporator column and causing it to run down the internal surface of said column in the form of a liquid film, (b) operating said column at subatmospheric pressure and elevated temperature whereby some of the water from said mixture is vaporized as said mixture runs down said surface, (c) removing a substance comprising water vapor at the top and removing lower alkanesulfonic acid of reduced water content at the bottom of said column, (d) passing the alkanesulfonic acid-water mixture from the bottom of said first column into a second vertical evaporator column and causing it to run down the internal surface of said second column in the form of a liquid film, and (e) repeating the manipulations of steps (b) and (c) in said second column whereby the lower alkanesulfonic acid removed at the bottom of said second column has a water content of less than 2 percent by weight.

4,938,847

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES, INVOLVING THE DETECTION OF WATER

John M. Andrews, Jr., Watchung; Nadia Lifshitz, Bridgewater, and Gerald Smolinsky, Madison, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 18, 1989, Ser. No. 395,929

Int. Cl.[5] G01N *27/00*

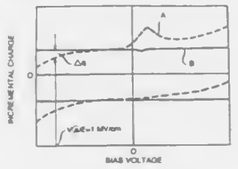
U.S. Cl. 204—153.22 **18 Claims**

1. A method of semiconductor device fabrication including the step of detecting water in a dielectric layer which is a part of the body of such device,

characterized in that the water-detecting step comprises the steps of:

heating the body to an elevated temperature;

applying across the dielectric layer a voltage sufficient, during at least a portion of such application, to create in



the dielectric layer an electric field intense enough to decompose water, whereby protons are generated; and detecting the protons.

4,938,848

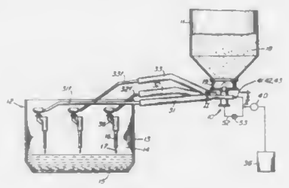
METHOD AND APPARATUS FOR CONVEYING SPLIT STREAMS OF ALUMINA POWDER TO AN ELECTROLYSIS CELL

Dennis R. Raines; John D. Latvaitis, and Boris M. Triko, all of Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 13, 1989, Ser. No. 309,199

Int. Cl.[5] C25C *3/06, 3/14;* B65G *53/40, 53/14*

U.S. Cl. 204—67 **20 Claims**



11. Apparatus for conveying alumina powder portions to an aluminum electrolysis cell comprising:

(a) a powder container having an interior portion containing alumina powder,

(b) a powder splitter having a chamber, said powder splitter being spaced downwardly of said powder container,

(c) a conduit extending between said powder container and said powder splitter, said conduit having an open proximal portion extending upwardly into the interior portion of said powder container,

(d) a valve cover overlying said proximal portion of the conduit and spaced therefrom,

(e) a plurality of hollow ducts for conveying alumina powder away from said chamber, each said ducts having an entrance communicating with said chamber and an exit in an aluminum electrolysis cell, and

(f) a gas source including a plurality of gas nozzles within said ducts and directed outwardly of said chamber, each said gas nozzles having an outlet orifice spaced outwardly of a duct entrance, said gas nozzles propelling gas jets into said ducts, and thereby conveying powder portions through said ducts and into said cell.

4,938,849

ELECTROCHEMICAL PROCESS FOR PRODUCING SATURATED OR UNSATURATED FLUOROCARBONS

Gwilym R. Davies, Via Warrington, and Guy Q. Maling, Malpas, both of England, assignors to Imperial Chemical Industries Plc, London, United Kingdom

Continuation of Ser. No. 201,862, Jun. 1, 1988, abandoned. This application Nov. 9, 1989, Ser. No. 434,640

Claims priority, application United Kingdom, Jun. 3, 1987, 8712989

Int. Cl.[5] C25B *3/00*

U.S. Cl. 204—73 R **23 Claims**

1. A process for the production of a saturated or unsaturated fluorocarbon by direct electrolytic reduction of a saturated fluorocarbon containing at least one atom selected from chlorine and bromine, in which the reduction is effected in an electrolytic cell equipped with a cathode having low overpotential for the production of hydrogen and in which the reduction is effected at said cathode.

4,938,850

METHOD FOR PLATING ON TITANIUM

Bill F. Rothschild, Anaheim, and Sue Troup, Calabasas, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 26, 1988, Ser. No. 248,885

Int. Cl.[5] C25D *5/34;* C23C *28/00*

U.S. Cl. 204—29 **6 Claims**

1. A process for plating electroless nickel onto a titanium piece, consisting of the steps of:

cleaning the piece of titanium;

contacting the piece of titanium to a concentrated hydrochloric acid solution;

activating the piece of titanium in a solution of nitric acid and hydrofluoric acid;

immersing, without the application of any voltage or current, the piece of titanium in a treatment solution prepared by the process of

preparing a mixture of acetic acid and hydrofluoric acid,

placing an inert cathode and a titanium anode into the mixture, and

dissolving titanium into the mixture;

coating the piece of titanium with a nickel strike layer;

electrolessly plating the piece of titanium with a nickel layer; and

heat treating the piece of plated titanium.

4,938,851

METHOD FOR PREPARING AN ELECTRODE AND USE THEREOF IN ELECTROCHEMICAL PROCESSES

Antonio Nidola, Milan, Italy, assignor to De Nora Permelec S.p.A., Italy

Continuation of Ser. No. 905,914, Sep. 29, 1986, Pat. No. 4,724,052. This application Feb. 5, 1988, Ser. No. 153,283

Claims priority, application Italy, Dec. 14, 1984, 24067 A/84; Oct. 10, 1985, 22529 A/85

The portion of the term of this patent subsequent to Feb. 9, 2005, has been disclaimed.

Int. Cl.[5] C25D *3/50;* C25B *1/20, 1/26, 11/08*

U.S. Cl. 204—44.6 **16 Claims**

1. A method for electrolyzing an alkali metal chloride solution which comprises providing an electrolytic cell comprising an anode and a cathode separated by an ion exchange membrane that is substantially impermeable to electrolyte flow, wherein said cathode comprises (a) an electroconductive support, and (b) an electrocatalytic coating of a metal or metal alloy containing metals of the platinum group as a homogeneous phase and being prepared by depositing said electrocatalytic coating by galvanic deposition onto said electroconductive support from a galvanic plating bath containing soluble salts of metal of the platinum group dissolved therein and small amounts effective to inhibit the poisoning of said cathode by

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metal impurities present in the catholyte of at least one additional compound of elements selected from the group of the periodic table of IIB, IIIA, IVA, and VA; and wherein the catholyte is an alkali metal hydroxide solution contaminated by metal impurities; and passing an electrical current from the anode to the cathode.

4,938,852

RECOVERY OF EUROPIUM (II) VALUES BY ELECTROLYSIS

Jean-Yves Dumousseau, Paris; Alain Rollat, La Rochelle, and Jean-Louis Sabot, Maisons Laffitte, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 18, 1988, Ser. No. 220,263
Claims priority, application France, Jul. 17, 1987, 87 10110
Int. Cl.[5] C25B *1/10*
U.S. Cl. 204—86 **33 Claims**

1. A process for the electrolytic reduction and recovery of europium (II) values, which comprises electrolytically reducing an aqueous solution of europium (III) values circulating in a cathode compartment of an electrolytic cell, said electrolytic cell also comprising an anode compartment separated from said cathode compartment by a cationic exchange membrane, recovering a solution of said europium (II) values from said cathode compartment, and separating europium (II) from other elements contained in the solution of said europium (II).

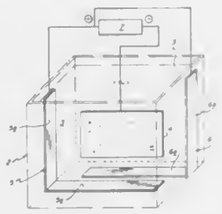
20. A process for the electrolytic reduction and recovery of europium (II) values, which comprises electrolytically reducing an aqueous solution of europium (III) values circulating in a cathode compartment of an electrolytic cell, said electrolytic cell also comprising an anode compartment separated from said cathode compartment by a cationic exchange membrane, and recovering a solution of said europium (II) values from said cathode compartment, and separating europium (II) from other elements by a liquid/liquid extracting process in which the europium (II) solution is put into contact with an organic solution of at least one acid ester of phosphoric and phosphonic acid extractants, whereby europium (II) values are obtained in a first aqueous phase and other elements remain in a first organic phase.

4,938,853

ELECTROLYTIC METHOD FOR THE DISSOLUTION OF COPPER PARTICLES FORMED DURING ELECTROLESS COPPER DEPOSITION

Richard C. Retallick, Stamford, and Peter E. Kukanskis, Woodbury, both of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed May 10, 1989, Ser. No. 350,148
Int. Cl.[5] C25B *1/00*; C23C *18/54, 18/38*
U.S. Cl. 204—86 **17 Claims**



1. In a process for electrolessly depositing a coating comprised of copper metal onto the activated surfaces of a substrate, wherein said substrate is immersed in an electroless copper depositing bath in a plating vessel having a bottom surface and side surfaces, under conditions effective to autocatalytically deposit a coating comprised of copper metal onto said activated surfaces of said substrate, and during which process metal particles comprised of copper, not adherent to said activated surfaces of said substrate, form in said electroless copper depositing bath, the improvement wherein said metal particles in said electroless copper depositing bath are oxidized and redissolved therein, said improvement comprising arranging said electroless copper depositing bath, containing said metal particles, in a treatment vessel having a bottom surface and side surfaces; arranging in said treatment vessel containing said electroless copper depositing bath a cathode element and an anode element, said anode element comprising a generally planar anode surface essentially parallel and proximate to said bottom surface of said treatment vessel; and briefly applying an electrical current between said anode and cathode elements for a time and at conditions sufficient to oxidize said metal particles so as to enable them to redissolve in said electroless copper depositing bath as bath-soluble compounds.

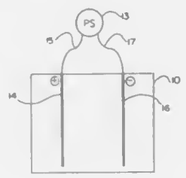
17. In a process for electrolessly depositing a coating comprised of copper onto suitably activated surfaces of a substrate material by immersion of said substrate in an electroless copper depositing bath, maintained in a plating vessel having side surfaces and a bottom surface, said electroless copper depositing bath being comprised of an aqueous solution of a soluble source of copper ions, a soluble source of hypophosphite, a complexing agent, and a soluble source of non-copper ions selected from the group consisting of cobalt ions, nickel ions and mixtures thereof, and wherein autocatalytic deposition of electroless copper from said electroless copper depositing bath onto said activated surfaces of said substrate is initiated by brief application of an electric current of negative potential to said substrate to render it cathodic while immersed in said electroless copper depositing bath, using an anode also immersed in said electroless copper depositing bath for completion of the electrical circuit, the improvement comprising utilizing as said anode an anode element comprising a generally planar anode surface substantially parallel and proximate to said plating vessel bottom surface so as to effect oxidation and redissolution in said electroless copper depositing bath of non-adherent metal particles comprised of copper which are formed in said electroless copper depositing bath during said electroless copper depositing process.

4,938,854

METHOD FOR PURIFYING QUATERNARY AMMONIUM HYDROXIDES

Hossein Sharifian, and Alan R. Tanner, both of Austin, Tex., assignors to Southwestern Analytical Chemicals, Inc., Austin, Tex.

Filed Nov. 28, 1988, Ser. No. 276,615
Int. Cl.[5] C25F *1/00*
U.S. Cl. 204—130 **36 Claims**



1. A process for the electrolysis of a solution of quaternary ammonium hydroxide containing latent halide to reduce the latent halide content therein which comprises the steps of

(A) providing an undivided electrolytic cell comprising an anode and a cathode, wherein the cathode comprises zinc, cadmium, tin, lead, copper or titanium or alloys thereof, mercury or mercury amalgam.

(B) charging a solution containing at least one quaternary ammonium hydroxide which contains latent halide into said electrolytic cell,

(C) passing a current through the electrolytic cell to lower the latent halide content in the solution, and

(D) recovering the quaternary ammonium hydroxide solution from the electrolytic cell.

4,938,855

PHOTOPROMOTED CATALYTIC METHOD FOR MAKING AMMONIA FROM MOLECULAR NITROGEN USING MOLECULAR HYDROGEN AS A REDUCING AGENT

Norman N. Lichtin, Newton Center, and Junchang Dong, Brookline, both of Mass., assignors to Boston University, Boston, Mass.

Filed Feb. 27, 1989, Ser. No. 315,965
Int. Cl.[5] B01J *19/08*
U.S. Cl. 204—157.46 **3 Claims**

1. A photopromoted method for making ammonia by the reduction of nitrogen, said method comprising the steps of:

combining at least one solid metal oxide catalyst with molecular nitrogen and molecular hydrogen as the reducing agent to form a reaction mixture at about one atmosphere of pressure; and

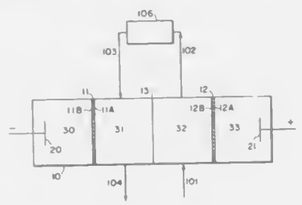
adding photoenergy to said reaction mixture.

4,938,856

PROCESS FOR MILD HEAT TREATMENT OF A FLOWABLE FLUID

Stratos E. Hatzidimitriu, San Jose, Calif., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 1, 1989, Ser. No. 317,510
Int. Cl.[5] A23L *2/22*; C25B *3/00*
U.S. Cl. 204—182.3 **5 Claims**



I. Process for inactivating microbial cells and enzymes in a flowable fluid comprising the steps of:

a. Introducing a flowable fluid into a first, more electropositive, intermediate compartment of an electrolytic cell wherein the pH of the flowable fluid is reduced,

b. Withdrawing flowable fluid from the first intermediate cell and maintaining said flowable fluid at a sufficient temperature for a sufficient time to inactivate at least part of the microbial cells and enzymes,

c. Introducing flowable fluid from step (b) into a second, more electronegative, intermediate compartment of the electrolytic cell wherein the pH of the flowable fluid is increased, said electrolytic cell comprising an anode in an anode compartment, a cathode in a cathode compartment and at least one pair of intermediate compartments, the first intermediate compartment of a pair being defined by a first bipolar membrane proximal to the anode, said bipolar membrane having an anion permeable surface and a cation permeable surface, and a cation selective membrane distal to the anode, and the second intermediate compartment of said pair being defined by the cation selective membrane and a second bipolar membrane proximal to the cathode, the membranes being aligned such that the anion permeable surface of each bipolar membrane is proximal to the anode, and

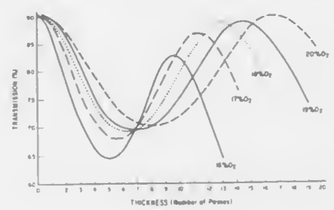
d. Inducing a direct current to flow through the cell by applying a voltage between the anode and the cathode, said voltage being sufficient to urge cations through the cation selective membrane and to incorporate hydrogen ions into the flowable fluid on the more electronegative side of the bipolar electrode, and to incorporate hydroxyl ions into the flowable fluid on the more electropositive side of the bipolar membrane without transporting ions into or out of the flowable fluid.

4,938,857

METHOD FOR MAKING COLORED METAL ALLOY/OXYNITRIDE COATINGS

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 31,315, Mar. 26, 1987. This application Nov. 27, 1989, Ser. No. 441,744
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.27 **10 Claims**



1. A method for making a colored architectural product comprising the steps of:

a. sputtering titanium in an atmosphere comprising oxygen and nitrogen to deposit a titanium oxynitride film on a surface of a substrate; and

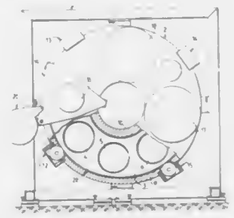
b. sputtering a metal in an inert atmosphere to deposit a first metallic film on a surface of said substrate.

4,938,858

CATHODE SPUTTERING SYSTEM

Jaroslav Zejda, Rodenbach, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 31, 1989, Ser. No. 386,975
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912297
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.25 **20 Claims**

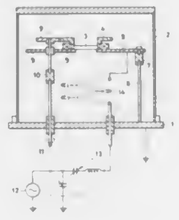


1. A cathode sputtering system for coating substrates, comprising:

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an annularly shaped process chamber oriented about a horizontal axis, said chamber having a plurality of vertical walls;
an annularly shaped substrate carrier accommodated within the process chamber and oriented about the horizontal axis;
at least one cathode station mounted on a vertical wall of the chamber; and
at least one substrate loading and unloading station mounted on a vertical wall of the chamber.

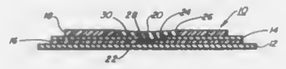
4,938,859
ION BOMBARDMENT DEVICE WITH HIGH FREQUENCY
Yoshio Ide, Mishima; Masahiro Mori; Ryo Yoshida, both of Gotenba; Masaaki Miyake, Oi; Tsukasa Sawaki, Gotenba, and Kazuo Hara, Kawasaki, all of Japan, assignors to Vacuum Optics Corporation of Japan, Tokyo, Japan
Filed Jul. 30, 1985, Ser. No. 760,430
Claims priority, application Japan, Jul. 31, 1984, 59-159371; Apr. 10, 1985, 60-74306
Int. Cl.[5] C23C *14/00*
U.S. Cl. 118—723 **4 Claims**



1. An ion bombardment device comprising:
a vacuum vessel;
a gaseous ion source medium introduced into said vessel;
a rotatable electrode within said vacuum vessel for supporting a substrate;
a single electrical potential source connected to said vessel consisting of means for ionizing said gaseous ion source medium, including means for supplying high frequency power to an auxiliary electrode in said vessel;
mechanical contact means within said vessel connected to said high frequency power supplying means through said auxiliary electrode for connecting high frequency power to said rotatable electrode, said mechanical contact means being subject to variations in contact resistance upon rotation of said rotatable electrode; and
means for stabilizing a high frequency discharge created by said high frequency power within said vessel against disruption due to said variations in contact resistance comprising said auxiliary electrode being a coil-like electrode connected within said vessel between said high frequency supplying means and said mechanical contact.

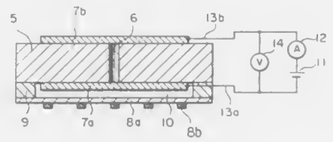
4,938,860
ELECTRODE FOR ELECTROCHEMICAL SENSORS
Frank W. Wogoman, South Bend, Ind., assignor to Miles Inc., Elkhart, Ind.
Filed Jun. 28, 1985, Ser. No. 749,817
Int. Cl.[5] G01N *27/30*
U.S. Cl. 204—403 **9 Claims**

1. A laminated electrode, consisting essentially of:
a cathode consisting of an electrically conductive film having a molecular layer of metal deposited thereon;
a layer of dielectric material laminated to said cathode; and
an anode consisting of an electrically conductive film having a molecular layer of metal deposited thereon, said anode being laminated to said dielectric material;
wherein an interactive area consisting of aligned apertures is



present in said dielectric material, in said anode or in said cathode and wherein said interactive area contains a glucose permeable, silicone water-based elastomer bonded to said aligned apertures.

4,938,861
LIMITING CURRENT-TYPE OXYGEN SENSOR
Hideyuki Kurosawa; Kazuhiro Takahashi; Tetsuo Uchiyama, and Yukio Nakanouchi, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan
Filed Aug. 1, 1989, Ser. No. 388,605
Int. Cl.[5] G01N *27/41*
U.S. Cl. 204—425 **4 Claims**



1. A limiting current-type oxygen sensor comprising
(a) an oxygen ion-permeable substrate made of a zirconia solid electrolyte having a gas diffusion pore extending between first and second surfaces of said substrate for rate determination by oxygen diffusion through said pore;
(b) a first porous electrode formed on said first surface of said substrate in an area including an opening of said gas diffusion pore;
(c) a second porous electrode formed on said second surface of said substrate such that it is opposite to said first porous electrode via said substrate;
(d) a sealing member fixed to said second surface of said substrate for sealing said second porous electrode such that an internal chamber is defined on said second porous electrode;
(e) a limiting current-detecting means connected between said first and second porous electrodes; and
(f) a heating means mounted to said sealing member.

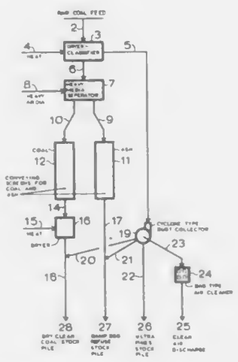
4,938,862
PROCESS FOR THE THERMAL CRACKING OF RESIDUAL HYDROCARBON OILS
Diederik Visser; Mathijs M. G. Senden, both of Amsterdam, Netherlands, and Jean J. H. E. Dell Amico, Grand Couronne, France, assignors to Shell Oil Company, Houston, Tex.
Filed Feb. 10, 1989, Ser. No. 309,757
Claims priority, application United Kingdom, Feb. 11, 1988, 8803156
Int. Cl.[5] C10G *37/00*
U.S. Cl. 208—67 **8 Claims**

1. A process for the thermal cracking of residual hydrocarbon oils which process comprises the following steps:
(1) feeding the residual hydrocarbon oil and a synthesis gas to a thermal cracking zone, the synthesis gas having a sufficiently high temperature to maintain the temperature in the thermal cracking zone by means of direct heat exchange at a value in the range of from 420° C. to 645° C. and maintaining said residual hydrocarbon oil in said thermal cracking zone for an average residence time of 10 seconds to 10 minutes to obtain cracked products,
(2) separating said cracked products from step 1 into (a) a gaseous fraction containing synthesis gas, (b) at least one hydrocarbon distillate fraction, and (c) asphaltene-containing cracked residue;
(3) separating in a separation zone said cracked residue from step 2 into at least one heavy hydrocarbon oil having lower asphaltene content than said cracked residue and at least one heavy hydrocarbon oil having higher asphaltene content than said cracked residue;
(4) gasifying at least one said heavy hydrocarbon oil having higher asphaltene content than said cracked residue from step 3 in the presence of oxygen and steam with production of synthesis gas; and
(5) recycling at least part of the synthesis gas from step 4 as feed to step 1.

4,938,863
METALS TOLERANT CATALYTIC CRACKING CATALYST, METHOD OF MANUFACTURE AND USE THEREOF
Thomas F. Degnan, Yardley, Pa., and Billy K. Huh, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 10, 1988, Ser. No. 206,242
Int. Cl.[5] C10G *11/05*
U.S. Cl. 208—120 **10 Claims**

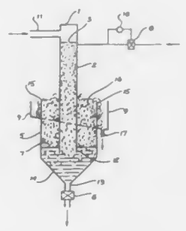
1. A catalytic cracking process for the cracking of a heavy, vanadium containing oil to lighter more valuable products over a circulating inventory of cracking catalyst having cracking activity and affinity for vanadium characterized by use of a circulating inventory of catalyst comprising zeolite cracking catalyst coated with a coating consisting essentially of silica or in a binder consisting essential of silica and separate getter additive with reduced cracking activity as compared to the cracking catalyst, and having a greater affinity for vanadium than the cracking catalyst.

4,938,864
METHOD FOR PROCESSING FINE COAL
Clarence L. Frazier, and Richard T. Burks, III, both of Lexington, Ky., assignors to Mare Creek Industries, Inc., Lexington, Ky.
Filed Aug. 23, 1988, Ser. No. 235,158
Int. Cl.[5] B03B *7/00*
U.S. Cl. 209—2 **6 Claims**



1. A method for processing a raw coal feed consisting of various sizes of particulate coal and ash ranging in sizes of from 0 to about ¾ inches, comprising:
drying the raw coal feed by heating means and concurrently classifying said raw coal feed into a first size class of ultra-fine particulate matter substantially 28 mesh and smaller and a second size class of fine particulate matter substantially 28 mesh and larger by air classifying means;
separating said dried and classified raw coal feed into said first size of particulate matter and collecting ultra-fine particles of coal and ash of 28 mesh size and smaller contained therein and said second size class of fine particulate matter retaining fine particles of coal and ash of 28 mesh and larger;
contacting said second size class of particulate matter with a fluid media in a flotation separator, wherein said fluid media has a specific gravity which allows coal contained therein to float and the ash and other components of the particulate matter are allowed to sink;
recovering said coal and ash as separate slurries;
draining excess fluid media from said separate slurries of coal and ash by means of conveyor screens and collecting said ash as refuse;
drying said coal by heating means; and
collecting a dry, clean product of coal fines greater than 28 mesh suitable for combustion.

4,938,865
COLUMN FLOTATION METHOD AND APPARATUS
Graeme J. Jameson, New Lambton, Australia, assignor to University of Newcastle Research Assoc., Ltd., Australia
Filed Sep. 25, 1987, Ser. No. 100,956
Claims priority, application Australia, Sep. 25, 1986, PH08216
Int. Cl.[5] B03D *1/14, 1/24*
U.S. Cl. 209—168 **3 Claims**



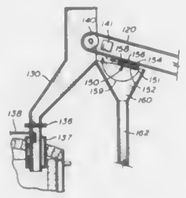
1. Apparatus for separating particulate materials from slurries or suspensions in a liquid, said apparatus comprising a first vertically extending column having a lower end, a second vertically extending column and the lower end of the first column being located within and communicating with the second vertically extending column; means for supplying air into the upper part of the first column; liquid outlet means in the upper part of the first column for being supplied with the liquid under pressure so that the liquid issues from the liquid outlet means for entraining air from the air supply means and for forming a downwardly moving foam bed in the first column; an overflow weir in the upper part of the second column located above the lower end of the first column, and a liquid drain means in the lower part of the second column for removing liquid separating out from the foam bed; the air supply means comprising an air flow control valve means for regulating the air supplied to the first column; and controller means controlling the air flow control valve means, the controller means being actuated by an air pressure sensor means arranged for sensing the air pressure adjacent the liquid outlet means.

4,938,866

CONVEYOR RESIDUE REMOVAL APPARATUS

Vincent C. Ward, 5228 Memorial Dr., Houston, Tex. 77007

Division of Ser. No. 120,656, Nov. 16, 1987, Pat. No. 4,870,655.
This application Sep. 13, 1989, Ser. No. 406,697
Int. Cl.[5] B03C *1/00*
U.S. Cl. 209—223.1 **4 Claims**



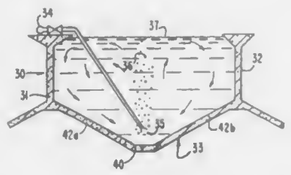
1. A conveyor for metallics and non-metallics which comprises:
a magnet at one end of a conveyor belt having a pulley wheel, said metals adhering to said conveyor belt; and
a beater bar for releasing said metals from the underside of said conveyor belt after passing over the pulley wheel which comprises:
a shaft located under said conveyor belt and adjacent the outer limit of the magnetic field of said magnet, and
an iron bar having parallel sides and a closed slot between said parallel sides,
said shaft extending through said slot.

4,938,867

CONFIGURATION OF AERATION CHAMBER FOR AN ACTIVATED-SLUDGE SEWAGE TREATMENT SYSTEM

Sam Long, 3046 N. 40th St., Kansas City, Kans. 66104

Filed Sep. 2, 1988, Ser. No. 239,943
Int. Cl.[5] B01D *35/00*
U.S. Cl. 210—220 **5 Claims**



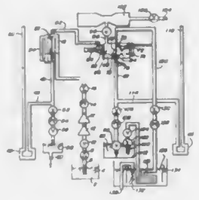
1. An activated-sludge sewage treatment plant comprising:
an elongated, hydraulic plug-flow aeration chamber employing spiral roll aeration and provided with a floor and a pair of opposed walls extending upwardly from said floor at opposed longitudinal edges thereof,
said floor having a sloped portion and an elongated bottom collection zone;
inlet means for introducing sewage influent into said aeration chamber for flow therethrough longitudinally thereof,
aeration means for inducing spiral roll aeration by which air is introduced into said aeration chamber, including a series of diffuser means longitudinally spaced along said elongated chamber and located adjacent and above said collection zone of said floor for treating said sewage influent with aeration and mixing sufficient to provide an effluent having a biological oxygen demand lower than that of said sewage influent.
said sloped portion of the floor extending transversely upwardly at an angle to the horizontal of approximately 15 to 50 degrees to prevent the deposit of sludge from the sewage flowing through said chamber, and
outlet means for discharging said effluent from said aeration chamber.

4,938,868

METHOD OF DISTILLING UNDER PARTIAL VACUUM

Thomas R. Nelson, 6889 Stratford Rd., Woodbury, Minn. 55125

Filed May 2, 1988, Ser. No. 189,376
Int. Cl.[5] B01D *3/10*; C02F *1/04*
U.S. Cl. 203—1 **30 Claims**



1. A method of distilling liquid under partial vacuum conditions to form treated liquid and a residual concentrate of the liquid comprising:
(a) introducing relatively warm untreated liquid into a boiler chamber having a base portion, said introduction of said untreated liquid being into the base portion of said boiler chamber, and simultaneously withdrawing residual concentrate of said untreated liquid from the base portion of said boiler chamber,
(b) maintaining a partial vacuum above the untreated liquid in said boiler chamber for boiling of said untreated liquid and causing upward movement of a mixture of vapor and mist from said untreated liquid,
(c) drawing said mixture of vapor and mist in an upwardly and spirally converging path through a mist collector having a vertically-oriented spiralled wall to remove mist from said vapor by deposit of said mist on said spiralled wall, and
(d) condensing said vapor into treated liquid in a condenser chamber having a base while maintaining said condenser chamber at a greater partial vacuum than said boiler chamber and maintaining a shallow pool of treated liquid at the base thereof.

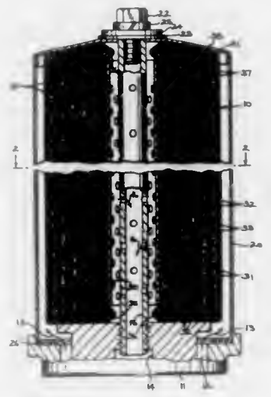
4,938,869

SPIRAL WOUND FILTER ELEMENT

Richard E. Bayerlein; Douglas G. Bayerlein, both of Elm Grove, Wis., and William G. Nostrand, Merced, Calif., assignors to Bay-San Co., Inc., Milwaukee, Wis.

Continuation of Ser. No. 262,113, Oct. 19, 1988, abandoned, which is a continuation of Ser. No. 4,657, Nov. 20, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 377,776
Int. Cl.[5] B01D *27/06*
U.S. Cl. 210—437 **15 Claims**

1. A fluid filter element, comprising:
a hollow perforate cylindrical supporting core;
a relative fine filtering media of substantially cross section spirally wound about the supporting core with adjacent layer spaced from each other and with the relatively fine filtering media exiting at the core, the fine filtering media accommodating fluid flow for filtering in both a radial and circumferential direction through the cross section and with free access through the cross-section to the core;
a relatively coarser filtering material of substantial cross section disposed in the space between the layers of the fine filtering media and with the relatively coarser filtering material exiting at the core, the coarser filtering material accommodating fluid flow for filtering in both a radial and



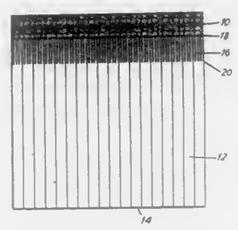
circumferential direction through the cross section and with free access through the cross-section to the core; and means closing the longitudinal ends of the coarser filtering material.

4,938,870

COMPOSITE MEMBRANE

Ernest P. Butler, Banbury; Rowena R. Landham, Solihull, and Michael P. Thomas, Banbury, all of England, assignors to Alcan International Limited, Montreal, Canada

Filed Apr. 16, 1987, Ser. No. 39,619
Claims priority, application United Kingdom, Apr. 16, 1986, 8609248; Feb. 24, 1987, 8704252
Int. Cl.[5] B01D *71/04*
U.S. Cl. 210—490 **7 Claims**



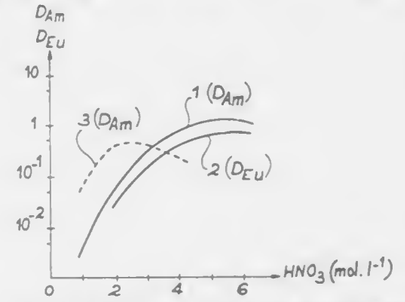
7. A filter comprising a composite sheet comprising a porous tape-cast inorganic membrane and a microporous inorganic film overlying a surface of the membrane, wherein the microporous inorganic film is of substantially uniform pore size and substantially free of cracks and pinholes.

4,938,871

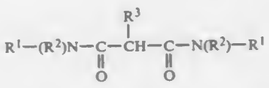
METHOD FOR THE RECOVERY OF ACTINIDES AND/OR LANTHANIDES USING NOVEL EXTRACTION AGENTS, AND NOVEL PROPANE DIAMIDES, AND THE PREPARATION THEREOF

Claude Musikas, Bures; Pierre Hoel, Palaiseau; Gérard Thiollet, Cerny, and Louisette Lafosse, Vert le Petit, all of France, assignors to Commissariat a l'Energie Atomique and Institut National de Recherche Chimique Appliquee, both of Paris, France

Division of Ser. No. 888,583, Jul. 21, 1986, Pat. No. 4,770,807.
This application Jun. 8, 1988, Ser. No. 203,901
Claims priority, application France, Jul. 31, 1985, 85 11707; Jul. 31, 1985, 85 11706
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 **14 Claims**



2. A process for the recovery of actinides and/or lanthanides present in the trivalent state in an acid aqueous solution comprising the steps of contacting said aqueous solution with an organic phase to extract actinides and/or lanthanides contained in the aqueous solution, said organic phase including at least one extracting agent comprising a diamide of formula:



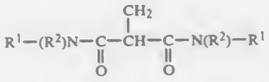
in which R^1 and R^2, which can be the same or different, represent a straight or branched alkyl radical with 1 to 15 carbon atoms or a radical of formula:

$$-(CH_2)_n-Z-(CH_2)_m-O-R^4$$

in which R^4 is an alkyl radical with 1 to 6 carbon atoms, n is equal to 0 or is an integer ranging between 1 and 6, Z is a single bond or an oxygen atom and m is an integer ranging from 1 to 6, provided that Z is a single bond when n is equal to 0 and R^3 represents a hydrogen atom, an alkyl radical with 1 to 15 carbon atoms, a radical of formula:

$$-(CH_2)_n-Z-(CH_2)_m-O-R^4$$

in which n, m, Z and R^4 have the meanings given hereinbefore, or a radical of formula:



in which R^1 and R^2 have the meanings given hereinbefore, provided that R^3 does not represent a hydrogen atom when R^1 and R^2 both represent an alkyl radical, and separating the organic phase to recover actinides and/or lanthanides therein.

4,938,872

TREATMENT FOR REVERSE OSMOSIS MEMBRANES

John W. Strantz, Jr., and Warren J. Brehm, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 7, 1989, Ser. No. 362,701
Int. Cl.[5] B01D *13/00*
U.S. Cl. 210—639 17 Claims

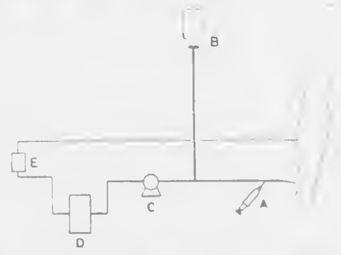
I. A process for increasing the salt passage of a polyamide reverse osmosis membrane comprising contacting said membrane with a dilute aqueous solution of alkali metal permanganate for a sufficient time to open the membrane to the desired salt passage, flushing said membrane with water to remove permanganate, contacting said membrane with a dilute aqueous solution of alkali metal bisulfite, or dilute aqueous solution of hydrogen peroxide to stabilize said membrane and flushing said membrane with water.

4,938,873

METHOD FOR PREVENTING BLOOD COAGULI FROM BEING FORMED IN THE EXTRA-BODY CIRCUIT OF DIALYSIS APPARATUS AND COMPOSITION USEFUL THEREFOR

Renato Rossi, Casnate-con-Bernate, Italy, assignor to Crinos Industria Farmacobiologica Spa, Villa Guardia Como, Italy

Filed Oct. 24, 1988, Ser. No. 261,539
Claims priority, application Italy, Oct. 23, 1987, 22399 A/87
Int. Cl.[5] B01D *61/24*
U.S. Cl. 210—646 8 Claims



1. A method for preventing the formation of blood coaguli in an extracorporeal hemodialysis apparatus, said apparatus comprising a first means for transporting blood from a patient to a dialyzer, a hemodialysis membrane for dialyzing the blood transported thereto, and a second means for returning the dialyzed blood to the patient, which comprises introducing defibrotide into the blood in said first means upstream of the dialyzer in an amount effective to prevent the formation of blood coaguli in said apparatus.

4,938,874

TANNIN/LIGNIN REMOVAL SYSTEM

Peter E. Auchincloss, Timonium, Md., assignor to Hydrosource, Inc., Timonium, Md.

Continuation-in-part of Ser. No. 144,675, Jan. 13, 1988, Pat. No. 4,795,563, which is a continuation of Ser. No. 21,347, Mar. 3, 1987, abandoned. This application Dec. 30, 1988, Ser. No. 292,396
The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.
Int. Cl.[5] C02F *1/28*
U.S. Cl. 210—662 9 Claims

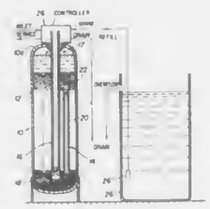
1. A method for removing tannin and lignin from a household well water stream, comprising the steps of:

(a) providing a generally cylindrical, vertical mineral tank assembly, said assembly comprising a tank, containing a quantity of a tannin/lignin-adsorbing resin, a dip tube in said tank having an inlet opening at its upper end and a first water distributor at its lower end, a backflush tube in said tank having an inlet opening at a lower end and a second water distributor at an upper end, said second water distributor being disposed beneath the upper level of said quantity of said tannin/lignin-adsorbing resin in said tank, and means for causing water to flow between the lower end of said dip tube and said backflush tube;

(b) providing control means for defining a first water flow path and a backwash water flow path;

said first water flow path extending from an inlet source of water to be treated, through at least one opening in the upper portion of said tank outside said dip tube, downwardly through said tannin/lignin-adsorbing resin, into said first water distributor, up said dip tube, and out through a service outlet; and

said backflush water flow path extending downwardly through said dip tube, and simultaneously out through said first water distributor and up through said resin and upwardly through said backflush tube and out through



said second water distributor, and out through said at least one opening in the upper portion of said tank outside said dip tube;

(c) passing a tannin/lignin-containing water stream through said first water flow path; and

(d) monitoring the flow of said tannin/lignin-containing water stream through said mineral tank;

(e) operating said control means to cause said water stream to pass through said backflush water flow path when said monitoring indicates that the capacity of said resin to adsorb tannin and lignin is substantially exhausted;

(f) constraining flow of said water stream down said dip tube to pass through an orifice of smaller diameter than the inner diameter of said dip tube;

(g) injecting a portion of said water stream flowing through said orifice into said lower end of said backflush tube; and

(h) dispersing a remaining portion of said water stream throughout said resin.

4,938,875

METHOD AND APPARATUS FOR MAGNETICALLY TREATING A LIQUID

Philippe Niessen, Paseo Garbi 129-131D, E - 08860 Castelldefels, Spain

PCT No. PCT/BE87/00020, § 371 Date Sep. 26, 1988, § 102(e) Date Sep. 26, 1988, PCT Pub. No. WO88/05763, PCT Pub. Date Aug. 11, 1988
PCT Filed Dec. 21, 1987, Ser. No. 269,662
Claims priority, application Belgium, Jan. 28, 1987, 08700056
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—695 6 Claims

1. A method of treating a liquid, comprising the steps of:

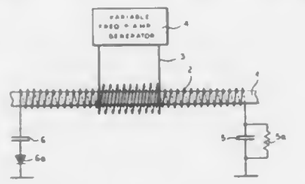
enclosing a space receiving a liquid to be treated with at least one wall;

providing on said wall a secondary coil at least partly surrounding said space;

connecting said secondary coil in an oscillating circuit having an adjustable resonance frequency and a polarizable resonant signal;

juxtaposing said secondary coil with a primary coil insulated from and inductively coupled with said secondary coil; and

connecting said primary coil across an electronic generator



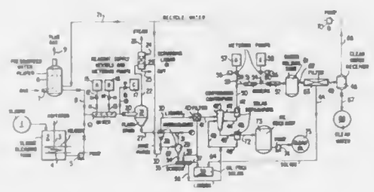
supplying electrical pulses of selected shape, frequency and amplitude to said primary coil and forming a primary circuit with said primary coil, whereby said pulses induce electrical signals in said secondary coil.

4,938,876

METHOD FOR SEPARATING OIL AND WATER EMULSIONS

Ernest O. Ohsol, 711 Hyannis Port North, Crosby, Tex. 77532

Filed Mar. 2, 1989, Ser. No. 318,176
Int. Cl.[5] B01D *17/04*
U.S. Cl. 210—708 41 Claims



1. A method for continuously separating oil, water and solids from stable mixtures thereof comprising the steps of:

heating under an absolute pressure of at least about 1.5 atm a mixture comprising liquids and solids to a temperature of at least about 115° C., said liquids comprising oil and water;

cooling said heated mixture to below about 100° C. by flashing said heated mixture into a lower pressure;

separating the solids from the liquids in said mixture; and

separating the water from the oil.

4,938,877

UNIQUE AND EFFECTIVE SEPARATION TECHNIQUE FOR OIL CONTAMINATED SLUDGE

Jan Bock, Bridgewater; Max L. Robbins, South Orange, and Gerard P. Canevari, Cranford, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 13, 1989, Ser. No. 309,632
Int. Cl.[5] B01D *17/00*
U.S. Cl. 210—723 20 Claims

1. A method for separating water and oil from a sludge which contains water, solids and more than 2% weight oil which comprises the steps of:

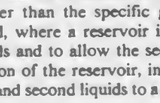
(a) contacting the sludge with an effective amount of one or more hydrophilic surfactants in combination having the properties of providing, at 1.5 wt % concentration in equal volumes of decane and 3 wt % aqueous NaCl, a lower phase microemulsion such that the volume ratio of oil to surfactant in the microemulsion phase is at least 0.5 wherein said one or more surfactants is selected from the group consisting of an alkali metal, ammonium, alkyl ammonium, alkanol ammonium or ethoxylated alkyl or alkanol ammonium salt of an alkyl or alkylaryl sulfonic acid of the generic formula:

$$R—SO_3H$$

wherein R is alkyl or alkyl benzene group containing about 8 to about 30 carbon atoms in the alkyl chain and the benzene ring may be additionally substituted with one or two alkyl groups containing 1-3 carbon atoms each; and an ethoxylated surfactant of the generic formula:

$$R_1X(CH_2CH_2O)_nY$$

wherein R_1 is an alkyl or mono- or di-alkyl aryl group containing about 8 to about 30 carbon atoms, X is —O—, —S—,



or $—SO_2NH—$; Y is —H, $—SO_3—M^+$ or $—(PO_3H)—M^+$ wherein M^+ is an inorganic or ammonium cation including alkyl substituted ammonium cations; R_2 is an alkyl group containing about 1 to about 20 carbon atoms or a polyethoxy ether group containing from about 1 to about 30 (CH_2CH_2O) groups; R_3 is H or an alkyl group containing about 1 to about 3 carbon atoms; R_4 is a polyhydroxyl group derived from glycerol, glycols, sorbitol, or various sugars; and n is an integer from about 1 to about 30; and

(b) mixing at least one said surfactant and said sludge with sufficient agitation to obtain a uniform mixture; and

(c) allowing said mixture to stand under gravitational settling or centrifugation to obtain the formation of three layers; and

(d) decanting separately the upper oil layer and the middle water layers from the bottom solid layer; and

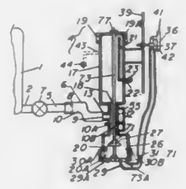
(e) further treating the water layer with heat and/or salt (NaCl) to separate the solubilized oil from the water.

4,938,878

IMMISCIBLE SEPARATING DEVICE

Wendell Hall, Jeffersonville, Ind., assignor to Halltech Inc., Jeffersonville, Id.

Filed Feb. 16, 1988, Ser. No. 156,331
Int. Cl.[5] C02F *1/40*
U.S. Cl. 210—744 6 Claims



5. A method of separating immiscible first and second liquids, said first immiscible liquid having a specific gravity greater than the specific gravity of said second immiscible liquid, where a reservoir is provided to hold the immiscible liquids and to allow the second liquid to settle to the bottom portion of the reservoir, including supplying a portion of the first and second liquids to a separatory device by a first conduit

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having a first conduit inlet of first diameter connected to said bottom portion of said reservoir and a first conduit outlet of second diameter greater than said first diameter, where a segment of said conduit between said first conduit inlet and said first conduit outlet has a downward offset; said separatory device having a midsection of selected diameter, and an inlet connected to said first conduit outlet and first and second midsection outlets where a first receiver having a diameter greater than said midsection is disposed above the midsection in communicative relation with the first midsection outlet and a second receiver is disposed beneath the midsection and in communicative relation with the second midsection outlet, where the second receiver has a diameter greater than the diameter than the midsection, and outlet means adjacent the bottom of the second receiver communicating with flexible outlet conduit means and vertically adjustable sight gage means having a gage outlet exposed to the atmosphere and a liquid outlet adjacent to said gage outlet exposed to the atmosphere; filling the second reservoir with said second immiscible fluid to a level within the midsection, adjusting the sight gage to a height above the level of the second liquid in the second receiver, admitting the first and second liquids from the reservoir to the midsection and the first receiver, adjusting the height of the sight gage to a level where said second immiscible liquid flows from the sight gage, and allowing said second immiscible liquid to flow from the sight gage as additional first and second immiscible liquids are received in said midsection.

4,938,879

STEARATE-BASED DRYER-ADDED FABRIC SOFTENER SHEET

George W. Kellett, Cranford, N.J., assignor to Creative Products Resource Associates, Ltd., Clifton, N.J.

Filed Apr. 4, 1989, Ser. No. 331,870
Int. Cl.[5] B05D *3/12*; D06M *13/02, 13/17, 13/48*
U.S. Cl. 252—8.75 **22 Claims**

1. A fabric softener comprising a gelled sheet comprising water, a water-miscible organic solvent, and an effective gel-forming amount of an alkali metal stearate, having uniformly distributed therein an effective amount of a quaternary amine fabric softening agent.

4,938,880

PROCESS FOR PREPARING STABLE OLEAGINOUS COMPOSITIONS

Malcolm Waddoups, and Barry J. Howlett, both of Westfield, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 26, 1987, Ser. No. 54,288
Int. Cl.[5] C10M *105/22, 105/56*
U.S. Cl. 252—32.7 E **67 Claims**

1. A process for producing dispersant-detergent compositions of improved haze-resistance, said compositions being useful as additives for oleaginous compositions which comprises:

(a) contacting a mixture comprising lubricating oil, ashless dispersant and metal detergent at a temperature of at least about 100° C. for a time of from about 1 to 10 hours to form a heat-treated mixture;

(b) cooling said heat-treated mixture to a temperature of not greater than about 85° C. to form a cooled heat-treated mixture;

(c) admixing said cooled heat-treated mixture with at least one member selected from the group consisting of copper antioxidant additives and zinc dialkyl dithiophosphate anti-wear additives to form an additive package of improved haze-resistance properties; said ashless dispersant comprising the oil soluble reaction product of a reaction mixture comprising:

(a) a hydrocarbyl substituted C_4 to C_{10} monounsaturated dicarboxylic acid producing material formed by reacting olefin polymer of C_2 to C_{10} monoolefin having a number average molecular weight ($\overline{M}_n$) of from about 1,500 to 3,000 and a C_4 to C_{10} monounsaturated acid material, said acid producing material having an average of at least about 0.8 dicarboxylic acid producing moieties per molecule of said olefin polymer present in the reaction mixture used to form said acid producing material; and

(b) a nucleophilic reactant selected from the group consisting of amine, alcohol, amino alcohol and mixtures thereof.

4,938,881

LUBRICATING OIL COMPOSITIONS AND CONCENTRATES

David E. Ripple, and William B. Chamberlin, III, both of Kirtland, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 1, 1988, Ser. No. 226,802
Int. Cl.[5] C10M *141/10*
U.S. Cl. 252—32.7 E **46 Claims**

1. A lubricating oil composition for internal combustion engines which comprises:

(A) a major amount of oil of lubricating viscosity, and minor amounts of

(B) at least one carboxylic derivative composition produced by reacting

(B-1) at least one substituted succinic acylating agent with

(B-2) from one equivalent up to two moles, per equivalent of acylating agent, of at least one amine compound characterized by the presence within its structure of at least one HN< group wherein said substituted succinic acylating agents consist of substituent groups and succinic groups wherein the substituent groups are derived from polyalkene, said polyalkene being characterized by an $\overline{M}n$ value of about 1300 to about 5000 and an $\overline{M}w/\overline{M}n$ value of about 1.5 to about 4.5, said acylating agents being characterized by the presence within their structure of an average of at least 1.3 succinic groups for each equivalent weight of substituent groups,

(C) at least one basic alkali metal salt of a sulfonic or carboxylic acid, and

(D) at least one metal salt of a dihydrocarbyl dithiophosphoric acid wherein

(D-1) the dithiophosphoric acid is prepared by reacting phosphorus pentasulfide with an alcohol mixture comprising at least 10 mole percent of isopropyl alcohol, secondary butyl alcohol, or a mixture of isopropyl and secondary butyl alcohols, and at least one primary aliphatic alcohol containing from about 3 to about 13 carbon atoms, and

(D-2) the metal is a Group II metal, aluminum, tin, iron, cobalt, lead, molybdenum, manganese, nickel or copper.

4,938,882

BORATED AND NON-BORATED OVERBASED CARBOXYLATES AS CORROSION INHIBITORS

Craig D. Tipton, Perry, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 179,087, Apr. 8, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 408,432
Int. Cl.[5] C10M *159/20*
U.S. Cl. 252—38 **18 Claims**

1. A gear oil formulation, comprising:

a major amount of a base oil having a viscosity at 40° C. of 40 cSt or more;

an overbased carboxylate; and

a sulfurized olefin.

4,938,883

OVERBASED ALKALINE EARTH ALKENYL SUCCINATES AS A SILVER-MILD SOURCE OF ALKALINITY FOR HEAVY DUTY DIESEL ENGINES

Francis J. Slama, Montgomery, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 26, 1988, Ser. No. 237,151
Int. Cl.[5] C10M *105/22*
U.S. Cl. 252—39 **11 Claims**

1. A method for providing silver-mild lubrication in a diesel engine containing silver parts which method comprises the step of lubricating internal portions of said engine with a lubricating composition which (a) has a total base number of at least about 5; and (b) comprises an overbased alkaline earth long chain alkenyl succinate in an amount in the range of about 0.5 to about 20% by weight of the lubricating composition.

7. A method for providing silver-mild lubrication in a heavy duty diesel engine containing silver parts which comprises lubricating internal portions of said engine with a lubricating oil composition which (a) has a total base number of at least 5; and (b) comprises an overbased alkaline earth long chain alkenyl succinate in an amount in the range of about 0.5 to about 20 percent by weight of the lubricating oil composition, said oil composition being formulated without silver lubricity agents.

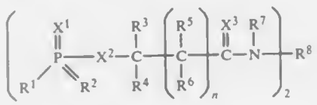
4,938,884

COUPLED PHOSPHORUS-CONTAINING AMIDES

Paul Adams, Willoughby, and Carmen V. Luciani, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 730,877, May 3, 1985, abandoned. This application Jan. 23, 1989, Ser. No. 300,713
The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.
Int. Cl.[5] C10M *133/16, 137/14*
U.S. Cl. 252—46.7 **20 Claims**

1. A lubricating composition comprising: a lubricating oil and an effective amount of a load carrying agent which is a coupled amide compound having the formula



wherein X^1, X^2 and X^3, independently, is O or S;
wherein R^1 and R^2, independently, is a hydrocarbyl, a hydrocarbyl-based oxy wherein the hydrocarbyl portion is an alkyl having from 6 to 12 carbon atoms, or a hydrocarbyl-based thio, having from 1 to about 34 carbon atoms;
wherein R^3, R^4, R^5 and R^6, independently, is hydrogen, or an alkyl having from 1 to about 22 carbon atoms, a cycloalkyl having from about 4 to about 22 carbon atoms, or an aromatic, an alkyl-substituted aromatic or an aromatic substituted alkyl having from 6 to about 34 carbon atoms;
wherein n is 0 or 1;
wherein R^7 is hydrogen or an alkyl having from 1 to 22 carbon atoms; and
wherein R^8 is an alkylene having from 1 to 12 carbon atoms, phenylene, or an alkyl-substituted phenylene having from 7 to 12 carbon atoms.

4,938,885

ANTIOXIDANT DISPERSANT POLYMER DENDRIMER

Cyril A. Migdal, Croton-on-Hudson, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 28, 1989, Ser. No. 413,669
Int. Cl.[5] C10M *133/44*
U.S. Cl. 252—51.5 A **12 Claims**

1. A lubricating composition comprising a major portion of a lubricating oil and a minor, effective dispersant, amount of a reaction product by a process comprising the following steps which can be repeated any desired number of times, said process comprising:

(a) reacting an amine or polyamine with an alkyl acrylate in the presence of an alkyl alcohol to produce a first generation polyamine ester dendrimer;

(b) reacting said first generation polyamine ester dendrimer with an amine or a polyamine to produce a first generation polyamidoamine dendrimer;

(c) reacting said first generation polyamidoamine dendrimer with an alkyl acrylate to produce a 12-branch second generation polyamidoamine ester dendrimer;

(d) reacting said 12-branch second generation polyamidoamine ester dendrimer with an amine or polyamine to produce a 12-branch second generation polyamidoamine dendrimer; and

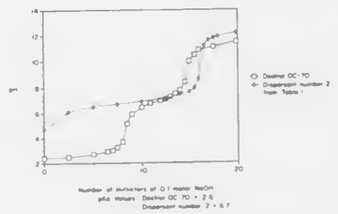
(e) reacting said 12-branch second generation polyamidoamine dendrimer with a polyisobutenyl succinimide acid anhydride to produce the product lubricant, a 12-polyisobutenyl succinicimide-12-polyamidoamine dendrimer polymer.

4,938,886

SUPERPARAMAGNETIC LIQUIDS AND METHODS OF MAKING SUPERPARAMAGNETIC LIQUIDS

Göran R. Lindsten, Mölndal, Sweden, and John E. Wyman, Westford, Mass., assignors to SKF Nova AB, Gothenburg, Sweden

Filed Sep. 21, 1988, Ser. No. 247,481
Claims priority, application Sweden, Feb. 8, 1988, 8800394-2
Int. Cl.[5] H01F *1/28*
U.S. Cl. 252—62.51 **28 Claims**



1. A superparamagnetic liquid comprising:

I. magnetic particles in stable colloidal suspension;

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II. a dispersing agent of the formula A-X-B anchored to said magnetic particles wherein A is derived from a non-ionic surface active agent precursor having a terminal OH group, said precursor selected from the group consisting of ethoxylated or propoxylated alcohols, ethoxylated alkyl phenols, ethoxylated fatty acids, ethoxylated amides, ethoxylated amines and ethylene oxide/propylene oxide block polymers wherein the structure of A in said A-X-B dispersant is the same as said precursor except that H of the terminal OH portion of said precursor is not present and said X group is linked to the oxygen of the terminal OH portion of said precursor, B is an organic carboxylic acid group which anchors said dispersing agent to said magnetic particles, and X is a connecting group linking A to B wherein X comprises at least one carbon atom;

III. a carrier liquid which is a thermodynamically good solvent for A but which does not form a stable superparamagnetic liquid with magnetic particles coated only with oleic acid.

4,938,887

LIQUID REFRIGERANT COMPOSITIONS

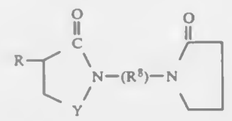
Arturs Grava, Mayfield Hts., and Scott T. Jolley, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Nov. 10, 1988, Ser. No. 269,894
Int. Cl.[5] C09K *5/00*; C10M *105/68, 133/16*
U.S. Cl. 252—68 **8 Claims**

1. A liquid composition comprising

(A) a major amount of a fluorine containing hydrocarbon containing one or two carbon atoms, and

(B) a minor amount of a soluble organic lubricant free of acetylenic and aromatic unsaturation and comprising a cyclic compound characterized by the following structure



wherein R is H or a hydrocarbyl group containing from 1 to about 20 carbon atoms, Y is C═O or CH_2 and R^8 is an alkylene group containing from 1 to about 10 carbon atoms.

4,938,888

DETERGENT SHEET WITH ALKYL POLYGLYCOSIDE COMPOSITION

Jesse J. Kiefer, Valley Cottage; Michael P. Aronson, West Nyack; William M. Karpusiewicz, Floral Park, and Karl F. Moschner, Troy, all of N.Y., assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 5, 1989, Ser. No. 293,725
Int. Cl.[5] C11D *17/06*
U.S. Cl. 252—91 **14 Claims**

1. A cleaning article comprising:

(i) A flexible substrate, said substrate being a single sheet and the only sheet of said cleaning article; and

(ii) a detergent composition impregnated into said substrate, said composition comprising:

(a) one or more surfactants which include an alkyl polyglycoside of the formula:

RO (R'O)y(Z)x

wherein R is a monovalent organic radical containing from about 6 to about 30 carbon atoms; R' is a divalent hydrocarbon radical containing from 2 to about 4 carbon atoms; y is a number having an average value of from 0 to about 12: Z represents a moiety derived from a reducing saccharide containing 5 or 6 to about 10:

(b) a detergency builder, and wherein the weight ratio of the total amount of surfactant to that of total amount of builder is at least 1:1, said article having flexibility and when handled does not have a wet, greasy or tacky feel.

4,938,889

STORABLE BLEACH MIXTURE HAVING IMPROVED DISSOLVING POWER

Heinz-Manfred Wilsberg, Cologne; Rolf Puchta, Haan, and Jochen Jacobs, Wuppertal, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 121,260, Nov. 16, 1987, abandoned. This application Mar. 15, 1989, Ser. No. 323,180
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1986, 3639115
Int. Cl.[5] C11D *7/54, 7/18, 7/32*
U.S. Cl. 252—102 **16 Claims**

1. A storable, powder-form bleach mixture having improved dissolving power, consisting of an intimate mixture of:

(a) from about 5 to about 35% by weight of sodium perborate monohydrate;

(b) from about 5 to about 30% by weight of tetraacetyl ethylene-diamine;

(c) from about 90 to about 50% by weight of at least one of the following water-soluble compounds;

(i) urea,

(ii) a mixture of urea and a phosphate-free salt which does not contain or release water of crystallization or melt in the temperature range from about 1° C. to about 45° C.,

(iii) a mixture of said compounds in (i) and (ii) with anhydrous sodium sulfate up to a ratio by weight of more than 3:2, respectively, and

(d) from 0 to about 15% by weight of a detergent constituent consisting of a synthetic surfactant or sequestering agent; with the proviso that the average particle size of constituents (a) to (c) is from about 0.1 to about 0.6 mm, and the proportion of particles larger than about 1.6 mm in size is less than about 1% by weight, based on the weight of said mixture.

4,938,890

METHOD OF MAKING $YTaO_4$:NB PHOSPHOR WITH IMPROVED BRIGHTNESS USING LITHIUM CHLORIDE-LITHIUM SULFATE EUTECTIC FLUX

Vaddi B. Reddy, Sayre, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 20, 1990, Ser. No. 481,550
Int. Cl.[5] C09K *11/78*
U.S. Cl. 252—301.4 R **5 Claims**

1. A method of making niobium-activated yttrium tantalate x-ray phosphor, comprising the steps of:

forming a uniform mixture consisting essentially of stoichiometric amounts of yttrium oxide, tantalum oxide, and niobium oxide;

blending said mixture with a flux consisting essentially of a lithium chloride-lithium sulfate eutectic mixture wherein the mole ratio of lithium chloride to lithium sulfate is 0.465:0.535;

firing said mixture at a temperature of about 1200°–1300° C. for about 10 to 14 hours to form said phosphor;

washing said phosphor in deionized water to remove said flux; and

filtering, drying and classifying said phosphor, said phosphor exhibiting a higher brightness than the phosphor prepared as above but where either lithium chloride or lithium sulfate is used as the flux instead of said eutectic mixture.

4,938,891

AQUEOUS FLUIDS

Alain L. P. Lenack, Boussecours, and Fernand J. Kech, Mont-Saint-Aignan, both of France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 89,870, Aug. 27, 1987, abandoned. This application Jul. 12, 1989, Ser. No. 378,881
Claims priority, application United Kingdom, Sep. 1, 1986, 86-21093
Int. Cl.[5] C10M *173/02*
U.S. Cl. 252—49.3 **5 Claims**

1. An oil-free additive concentrate adapted for use as metal working lubricants and coolants and hydraulic transmission fluids for incorporation into oil-free aqueous fluids consisting essentially of a mixture of alkanolamine and at least one water soluble carboxylic acid selected from the group amine being present in a stoichiometric excess relative to the carboxylic acid.

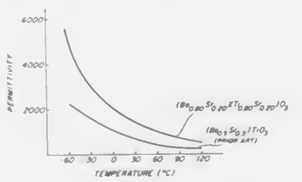
3. An oil-free aqueous fluid adapted for use as metal working lubricants and coolants and hydraulic transmission fluids consisting essentially of at least 90 wt. % water and a mixture of alkanolamine and at least one water soluble carboxylic acid selected from the group consisting of citric acid and tartaric acid, the alkanolamine being present in a stoichiometric excess relative to the carboxylic acid.

4,938,892

SENSOR ELEMENT FOR DETECTING TEMPERATURE AND MOISTURE

Tatsuo Toyoda, Nagoya, and Nobuyasu Kimura, Haguri, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 27, 1988, Ser. No. 212,180
Claims priority, application Japan, Jun. 27, 1987, 62-160606
Int. Cl.[5] H01B *1/06*
U.S. Cl. 252—520 **6 Claims**



1. A sensor element for detecting temperature and moisture comprising:

$(Ba_{1-k}Sr_k)(Ti_{1-(l+m)}Sn_lZr_m)O_3$

wherein $0<k\leqq 1$, $0\leqq l\leqq 1$, $0\leqq m\leqq 1$, and

wherein $l+m\neq 0$.

4,938,893

DETERSIVE SYSTEMS AND LOW FOAMING AQUEOUS SURFACTANT SOLUTIONS CONTAINING A MONO (C_{1-4} ALKYL)-DI(C_{6-20} ALKYL)-AMINE OXIDE COMPOUND

James L. Copeland, Burnsville, and Daniel J. Donovan, St. Paul, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Division of Ser. No. 250,975, Sep. 23, 1988, which is a continuation of Ser. No. 931,398, Nov. 14, 1986, abandoned. This application Aug. 28, 1989, Ser. No. 399,305
Int. Cl.[5] C11D *1/75, 3/33, 3/06*
U.S. Cl. 252—527 **6 Claims**

1. A laundary detersive system comprising:

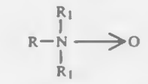
(a) about 10 to 50 wt-% of a hardness sequestering agent;

(b) about 10 to 50 wt-% of an inorganic salt diluent;

(c) about 0.5 to 30 wt-% of a source of alkalinity;

(d) about 5 to 30 wt-% of an anionic surfactant; and

(e) about 0.1 to 20 wt-% of a surfactant of the formula:



wherein R is a C_{1-4} aliphatic group and each R_1 is independently a linear or branched aliphatic C_{6-20} hydrocarbon group.

4,938,894

TETRAHALOPHTHALATE ESTERS AS FLAME RETARDANTS FOR ABS (ACRYLONITRILE-BUTADIENE STYRENE TERPOLYMER) RESINS

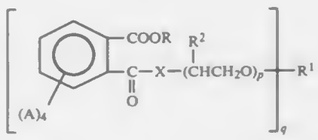
Joseph M. Bobea, King of Prussia, and Ronald F. Lovenguth, Doylestown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 30, 1987, Ser. No. 115,688
Int. Cl.[5] C09K *21/00*; C08K *5/20, 5/09, 5/12*
U.S. Cl. 252—609 **16 Claims**

1. A flame retardant composition comprising

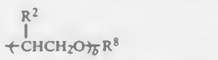
(i) an ABS terpolymer resin; and

(ii) a flame retarding effective amount of a flame retardant processing aid of the formula:



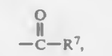
wherein:

(a) R is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 9 carbons, hydroxyalkyl of 2 to 20 carbons, polyhydroxyalkyl of 3 to 10 carbons; and

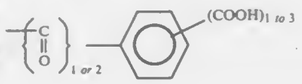


where R^8 is an alkyl or substituted alkyl of 1 to 18 carbons, and b is 1 to 50;

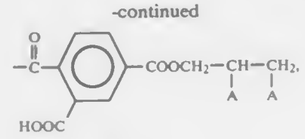
(b) R^1 is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 9 carbons, alkenyl or substituted alkenyl of 2 to 22 carbons,

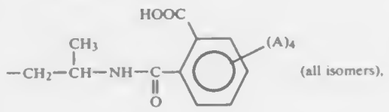


where R^7 is an alkyl of 1 to 18 carbons; a polyhydroxyalkyl of 3 to 12 carbons;

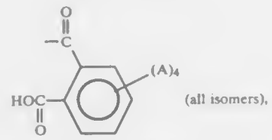


-continued





(all isomers),



(all isomers),



(c) R^2 is independently selected from the class consisting of H and CH_3;
(d) R^3, R^4, R^5, and R^6 are independently selected from the class consisting of H and an alkyl of 1 to 18 carbons;
(e) p is an integer of 0 to 50;
(f) q is an integer of 1 to 6;
(g) X is selected from O or NH; and
(h) A is selected from Cl or Br.

4,938,895

PROCESS FOR REMOVING RADIOACTIVE RUTHENIUM FROM AQUEOUS SOLUTION

Kenji Motojima, 2368-2, Senba-cho, Mito-shi, Ibaraki, Japan

Continuation-in-part of Ser. No. 106,355, Oct. 9, 1987, abandoned. This application Feb. 22, 1989, Ser. No. 313,468
Claims priority, application Japan, Oct. 9, 1986, 61-239199
Int. Cl.[5] G21C *19/42*; G21F *9/08, 9/00*; C02F *1/42*
U.S. Cl. 252—627 **16 Claims**

1. A process for removing radioactive ruthenium from an aqueous solution, comprising oxidizing ruthenium in said aqueous solution to ruthenium tetroxide, extracting the resulting ruthenium tetroxide with a halogen-free aliphatic or alicyclic hydrocarbon solvent, allowing the ruthenium tetroxide to be reduced in the solvent, and separating the precipitated solid ruthenium dioxide.

4,938,896

HIGH PERFORMANCE NONLINEAR OPTICAL MEDIA

Eui W. Choe, Randolph; Alan Buckley, Berkeley Heights; Dagobert E. Stuetz, Watchung, all of N.J., and Anthony F. Garito, Radnor, Pa., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 89,512, Aug. 26, 1987, abandoned, and a continuation-in-part of Ser. No. 855,346, Apr. 24, 1986, abandoned, which is a division of Ser. No. 748,617, Jun. 25, 1985, Pat. No. 4,707,303. This application Mar. 20, 1989, Ser. No. 325,440
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[5] F21V *9/04, 9/06*
U.S. Cl. 252—587 **3 Claims**

1. A nonlinear optical organic medium exhibiting a $\chi^{(2)}$ susceptibility of at least about 1×10^{-7} esu, an absence of interfering fluorescence in the wavelength range between about 0.3–3 μm, an optical loss less than about 1.0 decibel per centimeter, a response time less than about 10^{-13} second, phase matching of fundamental and second harmonic frequencies, and a dielectric constant less than about 5; and wherein the medium comprises a noncentrosymmetric configuration of aligned molecules having a diphenoquinodimethane or naphthoquinodimethane conjugated structure.

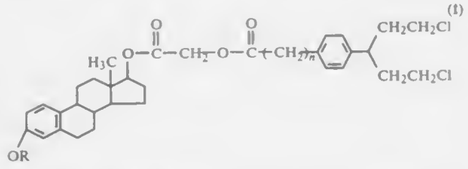
4,938,897

CHLORAMBUCIL DERIVATIVES AND CELL-DISCRIMINATING AGENT CONTAINING THE SAME

Kiro Asano; Humio Tamura, both of Inashiki; Tsuyoshi Saito, Toride; Hisayuki Wada, Matsudo, and Yoichi Suzuki, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1986, Ser. No. 873,812
Claims priority, application Japan, Jun. 21, 1985, 60-135791
Int. Cl.[5] C07J *1/00*; A61K *31/56*
U.S. Cl. 514—169 **6 Claims**

1. A substance represented by the formula (I):



(I)

wherein n is an integer of 0, 1, 2, or 3 and R represents a dimethylaminonaphthalenesulfonyl group.

4,938,898

ALPHA CHLORINATION PROCESS EMPLOYING ANTIOXIDANTS

James E. Thompson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1984, Ser. No. 625,922
Int. Cl.[5] C11C *3/00*
U.S. Cl. 260—408 **13 Claims**

1. A process for preparing an alpha-chloro acyl chloride comprising contacting an acyl chloride of an acid selected from the group consisting of octanoic acid, nonanoic acid, decanoic acid, dodecanoic acid, tetradecanoic acid, hexadecanoic acid and octadecanoic acid, with a chlorine source at a temperature of about 75° C. to about 125° C. in the presence of

(i) an effective amount of auxiliary acidic agent and
(ii) an effective amount of a food-grade antioxidant.

4,938,899

GAS DIFFUSION SYSTEM

Leo J. Oros, and Leo E. Oros, both of 2924 Brakley Dr., Unit B-4, Baton Rouge, La. 70816

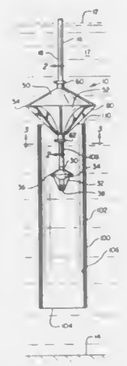
Filed Sep. 30, 1988, Ser. No. 251,536
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—123 **20 Claims**

1. A gas diffusion system for use in connection with a liquid-filled tank having a liquid top surface and a tank bottom surface, comprising:

a gas conduit extending downwardly into the liquid, said gas conduit having interior and exterior surfaces and having upper means for coupling said interior surface of said gas conduit to a source of gas supply, said gas conduit terminating at a lower means for coupling being located below the liquid top surface;

a lower gas diffuser gas-tightly coupled to said lower means for coupling, said lower gas diffuser having gas outlets in communication with the interior of said gas conduit for releasing gas into the liquid, and said lower gas diffuser further having a lower gas distribution surface terminating at a lower shear edge for directionally distributing gas from said gas outlets to said shear edge; and

an upper gas diffuser fixed with respect to said exterior surface of said conduit at a predetermined distance above



said lower gas diffuser, said upper gas diffuser having an upper gas distribution surface terminating at an upper shear edge and being vertically spaced apart from said lower gas distribution surface.

4,938,900

METHOD FOR THE PREPARATION OF MICROCAPSULES

Masafumi Moriwaki, Uenohara; Kei Etoh, Tokyo, and Hiroyuki Sekihara, Hino, all of Japan, assignors to Toppan Moore Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 174,039
Int. Cl.[5] B01J *13/02*
U.S. Cl. 264—4.1 **7 Claims**

1. A method for the preparation of microcapsules which comprises the successive steps of:

(a) partially hydrolyzing a copolymer of styrene and maleic anhydride in an alkaline aqueous medium in a degree of hydrolysis of 10 to 80% by moles to give an aqueous solution of a partial hydrolysis product of the copolymer;

(b) dispersing a core material of the microcapsules into the aqueous solution of the partial hydrolysis product of the copolymer to form an aqueous emulsion;

(c) adding a methylolated melamine or a methylolated urea to the aqueous emulsion; and

(d) heating the aqueous emulsion in an acidic condition to effect the reaction between the partial hydrolysis product of the copolymer and the methylolated melamine or the methylolated urea forming a film of the reaction product on the particles of the core material dispersed in the aqueous emulsion.

4,938,901

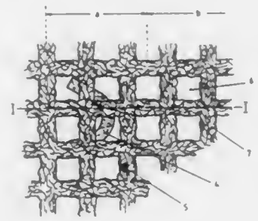
PROCESS OF MAKING A SURGICAL SPONGE CONTAINING AN X-RAY CONTRAST AGENT

Dieter Groitzsch, Hirschberg; Bernhard Klein, Birkenau-Löhrbach, and Gerhard Schaut, Hemsbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Division of Ser. No. 101,972, Sep. 28, 1987, abandoned. This application Sep. 2, 1988, Ser. No. 240,254
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641151
Int. Cl.[5] B29C *35/08, 47/06*; B32B *23/02, 23/04*
U.S. Cl. 264—22 **11 Claims**

1. A process of making a surgical sponge of fibrous nonwoven fabric containing cellulose fibers and a nonthermoplastic matrix material, said matrix material containing a material which is impervious to X-rays, comprising the steps of:

extruding onto a surface of a moving nonwoven fabric containing a majority of cellulosic fibers a prepolymer of a nonthermoplastic matrix material containing at least 40% by weight of a material which is impervious to X-rays, said prepolymer having chemically reactive groups and



said prepolymer furthermore being free of plasticizing agents;

polymerizing said prepolymer into a soft, elastic and flexible matrix material so as to embed said cellulosic fibers in said matrix material; and

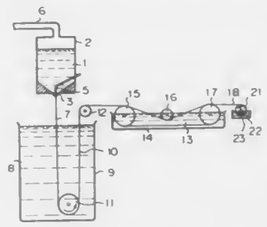
consolidating said polymer-containing fibrous nonwoven fabric.

4,938,902

PROCESS FOR PRODUCING AROMATIC IMIDE POLYMER HOLLOW FILAMENTS

Asumaru Nakamura; Yoshihiro Kusuki, and Takashi Harada, all of Ichihara, Japan, assignors to Director General of Agency of Industrial Science & Technology, Tokyo, Japan

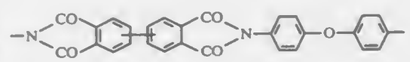
Continuation of Ser. No. 745,144, Jun. 14, 1985, abandoned. This application Feb. 3, 1988, Ser. No. 153,495
Claims priority, application Japan, Jun. 20, 1984, 59-125340
Int. Cl.[5] D01F *6/74*
U.S. Cl. 264—28 **10 Claims**



1. A process for producing an aromatic imide polymer hollow filament having excellent heat resistance, chemical resistance, mechanical strength, and which exhibits a gas selective permeability ratio of hydrogen gas permeating rate to carbon monoxide gas permeating rate of at least about 40, and hydrogen gas permeating rate of at least about 3×10^{-5} $cm^3/cm^2.sec.cmHg$, said process comprising the steps of:

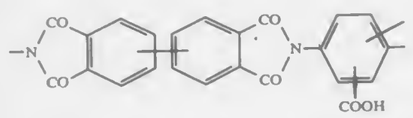
(1) dissolving an aromatic imide copolymer comprising:

(A) 20 to 80 molar % of recurring units of the Formula (I):



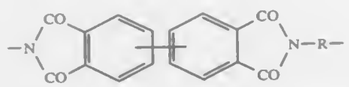
(I)

(B) 10 35 molar % of recurring units of the Formula (II):



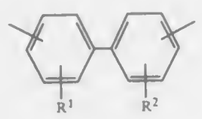
(II)

(C) 5 to 55 molar % of recurring units of the Formula (III):



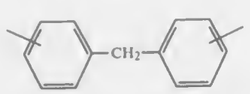
(III)

wherein R represents a divalent radical selected from those of the Formulae (IV) and V):



(IV)

and



(V)

R^1 and R^2, respectively, represent, independently from each other, a member selected from the group consisting of a hydrogen atom, alkoxyl radicals having 1 to 3 carbon atoms and alkyl radicals having 1 to 3 carbon atoms, in a solvent consisting essentially of at least one phenolic compound to provide a stable spinning dope solution and wherein the aromatic imide copolymer in the dope solution is in a concentration of from 10% to 20% by weight;

(2) extruding the dope solution while said solution is at a temperature of from 0° to 150° C., and wherein the dope solution has a rotation viscosity of at least 500 centipoises at a temperature of 20° C. to 120° C., through a spinneret having at least one hollow filament spinning orifice, to provide at least one hollow filamentary stream of the dope solution; and

(3) introducing the dope solution hollow filamentary stream into a coagulating bath wherein said coagulating bath has a temperature of −10° C. to 60° C., and wherein said coagulating bath is comprised of at least one polar solvent which is compatible with the phenolic compound, but substantially not capable of dissolving the aromatic imide copolymer, to solidify the hollow filamentary stream into a hollow filament.

4,938,903

HIGHLY INTENSIVE COOLING PROCESS AND APPARATUS FOR THE PRODUCTION OF BIAXIALLY ORIENTED FILMS OF HIGH- AND MEDIUM-MOLECULAR-WEIGHT THERMOPLASTICS

Gerard Schaeffer, and Georg Trunk, both of Worms, Fed. Rep. of Germany, assignors to Paul Kiefel GmbH, Worms, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 254,871

Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815415

Int. Cl.[5] B29C *47/90*

U.S. Cl. 264—565 **22 Claims**



1. A highly intensive cooling process for the production of biaxially oriented films from high- and medium-molecular-weight thermoplastics using a blown-film line, including a long neck with a first end and a second, downstream end, a die at the first end of the long neck, an expansion zone at the second end of the long neck where a tube neck is formed into a bubble, and a sizing cage for guiding and controlling the diameter of the bubble to form a tubular film, comprising the steps of:

extruding plastic material through the die to form the tube neck;

externally cooling the tube neck immediately after emergence of the tube neck from the die;

internally contacting the tube neck, immediately before the expansion zone, by using a drag mandrel positioned at the second end of the long neck, to stabilize and guide the tube neck;

continuously internally cooling the bubble in the expansion zone immediately after the drag mandrel by introducing cool air immediately after the tube neck contacts the drag mandrel; and

continuously removing the cool air that has been heated by the thermoplastic.

7. An apparatus for highly intensive cooling of biaxially oriented films from high- and medium-molecular weight thermoplastics using a long neck on a blown film line, said long neck including a first end and a second downstream end, an expansion zone at the second end of the long neck where a tube neck is formed into a bubble, and a sizing cage for guiding and controlling the diameter of the bubble to form a tubular film, comprising:

a plastics extruder;

a die at the first end of the long neck for forming the tube neck from the extruded plastic;

means, positioned adjacent the die, for externally cooling the tube neck;

means, positioned at the second end of the long neck, immediately before the expansion zone, for internally contacting the tube neck, and stabilizing and guiding the tube neck;

means for continuously internally cooling the bubble in the expansion zone immediately after the contact means as the bubble is forming, said means introducing cool air immediately after the contact; and

means for continuously removing the cool air that has been heated by the thermoplastic.

4,938,904

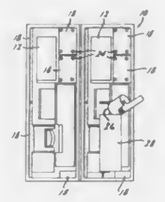
METHOD OF PRODUCING FASCIA PARTS

Nelson E. Williams, Jr., Hamilton, Ill., and Forrest F. Baum, Keokuk, assignors to Sheller-Globe Corporation, Toledo, Ohio

Division of Ser. No. 106,181, Oct. 8, 1987, Pat. No. 4,822,438. This application Jan. 13, 1989, Ser. No. 297,675

Int. Cl.[5] B28B *1/02, 1/08;* B29C *33/40*

U.S. Cl. 264—71 **3 Claims**



1. A method for making a plastic fascia part whereby the final part requires substantially no trimming of extraneous material comprising the steps of:

(a) providing a mold having critical molding surfaces for defining the shape of the final product desired, upon which critical surfaces coating of a plastic material occurs for forming the plastic fascia part and non-critical surfaces wherein it is undesirable for plastic coating to occur;

(b) shielding the non-critical surfaces of the mold used in a rotational casting process with a heat insulating material by:

(i) applying a layer of heat resistant bonding material to the non-critical surfaces;

(ii) cutting a plurality of sections from a heat insulating material which correspond to the non-critical surfaces of the mold and fitting and securing the plurality of cut sections to the non-critical surfaces of the mold having the layer of heat resistant bonding material thereon; and

(iii) allowing the heat resistant bonding material to cure;

(c) releasing a plastic powdered material into the mold;

(d) heating the mold to a temperature for melting the plastic powdered material;

(e) rotationally agitating the mold for distributing the plastic powdered material onto the critical molding surfaces, whereby the plastic powdered material is melted and distributed onto the critical surfaces of the mold while being prevented from covering the non-critical surfaces of the mold by the heat insulating material secured to the non-critical surfaces of the mold which provides heat insulation for preventing melting of the plastic powdered material on the heat insulated non-critical surfaces thereby forming the plastic fascia part requiring substantially no trimming of extraneous material.

4,938,905

METHOD OF CONTROLLING THE ORIENTATION OF SHORT FIBERS IN A SHORT FIBER-REINFORCED ARTICLE

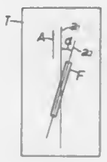
Akimasa Daimaru, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1989, Ser. No. 298,658

Claims priority, application Japan, Jan. 18, 1988, 63-8177

Int. Cl.[5] B29C *55/02*

U.S. Cl. 264—108 **6 Claims**



1. A method for controlling orientation of short fibers in a short fiber shaped body of composite materials including short fibers in a mixture with a solvent, comprising the step of subjecting the short fiber shaped body to a drawing treatment to control and set an average angle of orientation of the short fibers with respect to a drawing direction at a desired value by varying a draw ratio.

4,938,906

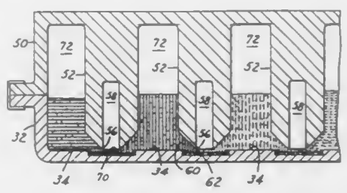
PROCESS FOR MOLDING MULTI-COLORED PLASTIC SHELLS

Alfred F. Brault, S. Berwick, Me., assignor to Davidson Textron Inc., Dover, N.H.

Division of Ser. No. 267,356, Nov. 4, 1988, Pat. No. 4,894,004. This application Nov. 22, 1989, Ser. No. 440,319

Int. Cl.[5] B28B *7/14;* B29C *39/12, 41/18*

U.S. Cl. 264—163 **4 Claims**



1. A vinyl shell molding process for producing an integral shell of different colored sections, comprising the steps of:

(a) providing a heated mold having a casting surface comprising alternate raised tear surfaces and recesses formed therein, each recess having spaced wall portions and a bottom formed therebetween;

(b) providing a powder box containing a thermoplastic powder;

(c) connecting open ends of the heated mold and powder box together to form an assembly and then rotating the assembly from a mold-up position to a mold-inverted position to allow the thermoplastic powder to fall onto and cover the raised tear surfaces and the recesses of the casting surface, such that the thermoplastic powder covering the casting surface of the heated mold is melted and fused to form a shell of thermoplastic material against both the tear surfaces and the recesses of the casting surface;

(d) rotating the assembly into the mold-up position and removing the mold from the powder box;

(e) removing strips of the thermoplastic material of the shell from the tear surfaces of the mold, thereby leaving shell

segments of the thermoplastic material in the recesses of the mold;

(f) providing a second powder box having spaced dams formed therein for alignment with the recesses of the casting surface, each dam having a predetermined length which provides a predetermined clearance gap between each dam and a corresponding recess in the casting surface when the spaced dams are aligned with the recesses, the spaced dams having compartments therebetween in which different colored thermoplastic powders are carried by the second powder box;

(g) connecting the second powder box to the heated mold to form an assembly so that the spaced dams are aligned with the recesses for forming the predetermined clearance gaps between each of the dams and the recesses, and rotating the assembly from the mold-up to the mold-inverted position to allow the different colored thermoplastic powders to fall onto the tear surfaces of the heated mold and to flow together into the recesses of the heated mold by flowing through the clearance gaps between the dams and the corresponding recesses;

(h) fusing the different colored thermoplastic powders together and to the shell segments in the recesses of the heated mold to form the integral shell of different colored sections; and

(i) rotating the assembly into the mold-up position, removing the second powder box from the heated mold, and removing the integral shell of different colored sections from the mold after cooling of the integral shell.

4,938,907

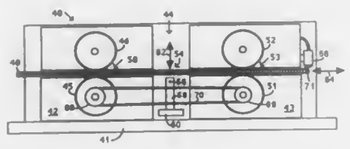
BRAIDED SLEEVE CUTTER AND METHOD

David L. Vowles, and Jeanene K. Matkin, both of Phoenix, Ariz., assignors to Motorola Inc., Schaumberg, Ill.

Filed Jun. 27, 1989, Ser. No. 372,392

Int. Cl.[5] B26D *7/10*

U.S. Cl. 264—159 **7 Claims**



1. A method for simultaneously cutting and fusing woven plastic sleeving, comprising:

providing the sleeving in a flattened form;

clamping a section of the sleeving between two spaced apart clamp means placed one on either side of an intended cut location, wherein a predetermined length of sleeving extends beyond the cut location;

uniformly axially tensioning a portion of the sleeving between the two clamp means at the cut location; and

cutting off the predetermined length of sleeving by passing a heated wire having a predetermined temperature and predetermined length greater than the width of the flattened sleeving through the axially tensioned portion of the flattened sleeving at a predetermined rate at the cut location, advancing the sleeving by a distance greater than the predetermined length, and then partially retracting the sleeving so that another predetermined length of sleeving extends beyond the cut location, and then repeating the stretching and cutting off steps.

4,938,908

FLEXIBLE TUBE OF THERMOPLASTIC RESIN HAVING POOR MELT FLOWABILITY AND PRODUCTION METHOD AND APPARATUS THEREOF

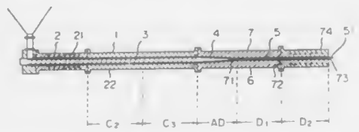
Takeshi Shiraki, Kuga, and Yoshiro Yoshimura, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 31,205, Mar. 30, 1987, which is a continuation of Ser. No. 736,028, , abandoned. This application Jan. 13, 1989, Ser. No. 297,015

Claims priority, application Japan, May 22, 1984, 59-101712

Int. Cl.[5] B29C *47/24*

U.S. Cl. 264—209.2 **3 Claims**



1. A method for producing a tube from a thermoplastic resin having poor melt flowability comprising the steps of:

melting the thermoplastic resin having poor melt flowability in a screw extruder, and;

melt extruding the molten thermoplastic resin from a tube die having an L/D of 30–70 provided at a mandrel rotatable with the rotation of the screw.

4,938,909

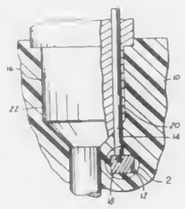
FLASH-FREE MOLDING OF I.C. ENGINE PASSAGES

Paul D. Daly, Troy, Mich., assignor to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Filed Feb. 15, 1989, Ser. No. 310,973

Int. Cl.[5] B29C *33/76*

U.S. Cl. 264—219 **15 Claims**



1. The method of making a molded plastic fuel rail for an internal combustion engine, said fuel rail having an injector socket for receiving a fuel injector that is used to inject fuel into the engine, a main fuel passage through which a fuel passes through the rail, and an auxiliary fuel passage through which said fuel passes from the main fuel passage to a fuel injector when an injector is disposed in the injector socket, said main fuel passage and said auxiliary fuel passage being transversely intersecting, said method serving to avoid the formation of flash at the intersection of said passages and comprising:

providing a mold having a cavity shaped to mold the fuel rail;

providing a first core pin for disposition in said cavity and around which one of said fuel passages will be molded, including providing in said first core pin a recess which contains a first screw thread whose axis is transverse to the length of said first core pin;

providing a second core pin for disposition in said cavity and around which the other of said fuel passages will be molded, including providing at one end of said second core pin a projection containing a second screw thread, said projection and said second screw thread being complementary to said recess and said first screw thread;

disposing said first core pin and said second core pin in positions within said cavity for the molding of a fuel rail, including the step of rotating the second core pin about the axis of said second screw thread so as to tightly thread the two screw threads together and forcefully abut said second core pin with a side wall of said first core pin to create between them a seal which closes off said projection, said recess and said screw threads but leaves exposed within said cavity those portions of said two core pins that are immediately contiguous said seal exterior of the closed-off projection, recess and screw threads;

introducing plastic into said cavity to mold said fuel rail, said one fuel passage being formed about said first core pin including the portion thereof immediately contiguous said seal and said other fuel passage being formed about said second core pin including the portion thereof immediately contiguous said seal, said seal preventing the plastic from reaching said projection, said recess and said screw threads so that the formation of flash is thus avoided;

after said fuel rail has been molded, rotating said second core pin to unthread the two screw threads and thereby destroy said seal;

and after the screw threads have been unthreaded, withdrawing the core pins from the respective passages.

4,938,910

MANDREL FOR PRODUCTION OF RUBBER HOSE

Shunji Abe, and Hiromi Shigemoto, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 629,558, Jul. 10, 1984, abandoned. This application May 16, 1988, Ser. No. 195,358

Claims priority, application Japan, Jul. 11, 1983, 58-124657

Int. Cl.[5] C08L *23/20*; B29C *41/08, 41/12, 71/02*

U.S. Cl. 264—236 **7 Claims**

1. A method of producing a rubber hose comprising the steps of:

(a) applying unvulcanized rubber on a mandrel said mandrel formed from a composition comprising:

(i) at least one ethylene-alpha-olefin random oligomer-like copolymer having an ethylene content of 40 to 95 mole % and a degree of crystallinity, based on X-ray determination, of 0 to 20%, wherein the number-average molecular weight of the random oligomer-like copolymer is within the range of from 300 to 5,000, and

(ii) 4-methyl-1-pentene polymer, wherein the weight ratio of the component (i) to the component (ii) is from 2:98 to 70:30;

(b) coating said unvulcanized rubber on said mandrel with a cover material;

(c) rolling up said mandrel together with said unvulcanized rubber and the cover material to obtain an unvulcanized rubber assemble;

(d) vulcanizing the unvulcanized rubber assemble by heating in a vulcanization apparatus;

(e) removing the cover material from the resultant vulcanized product; and

(f) pulling out the mandrel from the resultant vulcanized rubber hose product.

4,938,911

PROCESS FOR PREPARING POLYOLEFIN GEL ARTICLES AS WELL AS FOR PREPARING HEREFROM ARTICLES HAVING A HIGH TENSILE STRENGTH AND MODULUS

Cornelis W. M. Bastiaansen, Geleen; Henricus E. H. Meijer, Born, and Pieter J. Lemstra, Brunssum, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 173,022, Mar. 23, 1988, abandoned, which is a continuation of Ser. No. 13,181, Feb. 9, 1987, abandoned, which is a continuation of Ser. No. 830,936, Feb. 19, 1986, abandoned. This application Nov. 9, 1988, Ser. No. 268,919

Claims priority, application Netherlands, Feb. 20, 1985, 8500477

Int. Cl.[5] B29B *15/00*; D01F *6/04*

U.S. Cl. 264—56 **11 Claims**

1. A process for preparing highly stretchable gel articles comprising:

contacting an initial shaped article, comprising a polyolefin having a weight-average molecular weight of at least 4×10^5, with a swelling agent,

at a temperature above the dissolving temperature of the polyolefin and below the temperature at which the polyolefin or the swelling agent decompose and for a length of time (t), expressed in minutes, wherein t is between about $0.1D^2$ and about $100D^2$, where D represents the thickness or diameter of the article in millimeters, to produce a swollen article containing about 60% to about 99% by weight swelling agent;

and thereafter cooling said swollen article to a temperature below the gelling temperature of the polyolefin to produce the gel article.

4,938,912

METHOD FOR MAKING PERFORATED COMPONENTS

Helmut Pelzer, Neue Strasse 5, D-5804 Herdecke-Ende, Fed. Rep. of Germany

Filed Dec. 8, 1988, Ser. No. 282,400

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1987, 3741499

Int. Cl.[5] B29C *65/10*

U.S. Cl. 264—504 **2 Claims**

1. Method for perforating a deep drawn component made of a three layer configuration which includes a synthetic foil, a textile layer having and carrying said foil on one side, and a foam backing on another, opposite side of the textile layer, comprising the steps of:

applying towards the foil locally and in discrete spots hot pressurized air so that locally and in said spots the foil melts forming perforations in the foil and ducts form in the textile and into the adjoining foam; and

bonding foil material under formation of these perforations to the textile material underneath by melted foil material and as blown by the hot air into the textile material, around and adjacent each such perforation.

VOL 1116 ISS 1 JL 3 1990 UMI

4,938,913

SOLID PHASE DEFORMATION PROCESS

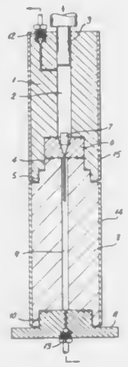
Ian M. Ward, Bramhope; Brain Parsons, Kent, both of England, and Ja'Faar B. Sahari, Selangor, Malaysia, assignors to National Research Development Corporation, United Kingdom

Continuation of Ser. No. 144,580, Dec. 30, 1987, abandoned, which is a continuation of Ser. No. 723,553, Apr. 15, 1985, abandoned. This application Dec. 16, 1988, Ser. No. 289,393

Claims priority, application United Kingdom, Apr. 13, 1984, 8409656

Int. Cl.[5] B29C *67/24*

U.S. Cl. 264—570 16 Claims



1. A solid phase deformation process comprising passage of an orientable, thermoplastic polymer through a die having both an entry side and an exit side, causing said polymer to deform in said solid phase through said die; and collecting said deformed polymer from said exit side of said die, wherein said thermoplastic polymer is linear polyethylene having a minimum molecular weight of 100,000 and prior to its passage through the die has a melting point (DSC) greater than 140° C. and a density greater than 0.98 g cm^{-3} and is in an extended chain crystalline morphology.

4,938,914

RETENTION DEVICE FOR A SAFETY BELT BAND OF MANUALLY ADJUSTABLE POSITION

Gerard Escaravage, Valentigney; Michel Henriot, Hericourt, and Antoine Negri, Herimoncourt, all of France, assignors to ECIA - Equipements Et Composants Pour L'Industrie Automobile, Audincourt, France

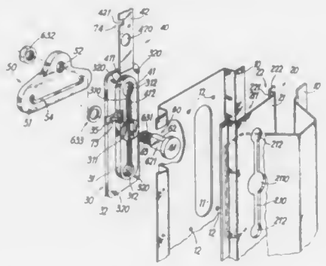
Filed Oct. 7, 1988, Ser. No. 254,642

Claims priority, application France, Oct. 7, 1987, 87 13866; Feb. 10, 1988, 88 01599

Int. Cl.[5] B60R *22/20*

U.S. Cl. 280—808 17 Claims

1. Retention device for a safety-belt band of manually adjustable position and intended to be fastened to a structure (10) and, comprising, among other things, a U-shaped body (20) with a base (21) pierced with a slot (210) and mounts (22) for anchoring to the structure (10) and of a band support (50) associated with the body (20) and movable relative to the body, in which the base (21) and the anchoring mounts (22) of the body are arranged so as to form a recess (211) opposite the slot (210), and the slot (210) is equipped, at least at opposite ends thereof, with partially circular cutouts (212), the diameter of which is greater than the width of the slot (210), and in which the band support (50) pierced with an orifice (52) and the body (20) are associated by means of a journal (60), which consists of a butt (61) having at least one dimension larger than that of the cutouts, of a shank (62) and of an endpiece (63) carrying retaining means (631, 632), the device being characterized in that the cross-section of the shank has, over its entire length, a non-circular contour inscribable in the cutouts, with two orthogonal transverse axes, one, a major axis, being exactly equal to the diameter of the cutout and the other, a minor axis, being exactly equal to the width of the slot (210), the shank normally being oriented so that its major axis is not parallel to the slot (210), in that the retaining means carried by the endpiece (63) comprises a gripping member, and in that this journal (60) is engaged within said slot (210) to be movable in translation and in rotation and is arranged in such a way that



the butt (61) is seated in line with the recess (211), and the shank (62) passes through the body (20) and the band support (50) which is engaged there by means of its orifice (52) and is factened there by the retaining means, so that, when the journal (60) engaged in one of said cutouts (212) is deliberately made to rotate by means of the gripping member, the major transverse axis is made parallel to the slot (210) so that the journal (60) can be shifted therein together with the band support (50).

4,938,915

METHOD OF RECORDING AT LEAST TERNARY DATA ON OPTOMAGNETIC RECORDING MEDIUM HAVING A PLURALITY OF MAGNETIC LAYERS

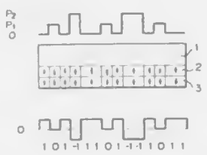
Ichiro Saito, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 29,888, Mar. 25, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 328,705

Claims priority, application Japan, Mar. 27, 1986, 61-67240; Mar. 28, 1986, 61-68795

Int. Cl.[5] G11B *11/12, 13/04*

U.S. Cl. 369—13 5 Claims



1. A method of recording at least ternary data on an optomagnetic recording medium comprising at least a first magnetic layer, and a second magnetic layer having a Curie temperature higher than that of the first magnetic layer and capable of being magnetization inverted independently of the first magnetic layer, said method comprising the steps of:

aligning directions of magnetization of the first and second magnetic layers of the medium in a predetermined direction; and

radiating the medium with a single light beam whose power is adjusted in accordance with the data so as to obtain energy of a first level, a second level higher than the first level, and a third level lower than the first and second levels, while applying a bias magnetic field in a direction opposite to the predetermined direction, wherein only the direction of the first magnetic layer of the medium is inverted when the power of the light beam is in the first level, the directions of the first and second magnetic layers are inverted when the power of the light beam is in the second level, and the directions of the first and second magnetic layers are not inverted when the power of the light beam is in the third level.

4,938,916

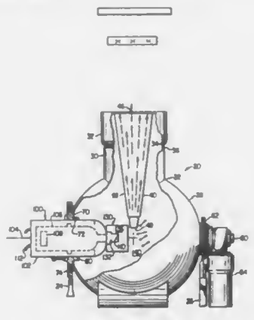
FLUX ENHANCEMENT FOR NEUTRON RADIOGRAPHY INSPECTION DEVICE

William E. Dance, Dallas, Tex., assignor to LTV Aerospace and Defense Co., Dallas, Tex.

Continuation-in-part of Ser. No. 449,391, Dec. 13, 1982, abandoned. This application Mar. 7, 1986, Ser. No. 837,548

Int. Cl.[5] G21K *5/00*

U.S. Cl. 376—110 11 Claims



1. In an apparatus for producing thermal neutron radiographs having a high energy neutron generator comprising an ion accelerator and a target located downstream of the accelerator, the generator having an aperture through which ions are directed against said target for emitting fast neutrons from said target, a collimator for collecting thermal neutrons and a moderator medium disposed between the inlet end of the collimator and the target for thermalizing high energy neutrons produced at the target, the improvement comprising:

a neutron flux booster having an inlet, said inlet having a size greater than the generator aperture and being positioned adjacent to the generator aperture to thereby surround the generator aperture, said booster further including a cavity formed therein for receiving the target, said cavity having an opening spaced apart from said booster inlet and being aligned with said booster inlet and further being aligned with said generator aperture, the target being positioned within said cavity and spaced apart from said cavity opening, said cavity having a depth substantially greater than the thickness of the target such that the booster completely encircles the target except for the cavity opening facing the generator, said booster comprising material having a high neutron cross section such that neutrons produced at said target will undergo collisions with said material to release additional high energy neutrons from said material, said booster disposed between said target and said moderator medium.

9. A method for increasing the neutron flux produced by a neutron generator of the type comprising an ion accelerator and a target located downstream of the accelerator and having an aperture through which ions are directed against said target for emitting fast neutrons from said target, comprising the step of:

enclosing said target in a neutron flux booster material having an inlet, said inlet having a size greater than the generator aperture and being positioned adjacent to the generator aperture to thereby surround the generator aperture, said booster further including a cavity formed therein for receiving the target, said cavity having an opening spaced apart from said booster inlet and being aligned with said booster inlet and further being aligned with said generator aperture, the target being positioned within said cavity and spaced apart from said cavity opening, said cavity having a depth substantially greater than the thickness of the target such that the booster completely encases the target except for the cavity opening facing the generator;

discharging ions from the neutron generator to the target through the inlet in the neutron flux booster thereby discharging a stream of fast neutrons produced at said target; and

receiving high energy neutrons from the target into the neutron flux booster material to undergo collisions with said material to release additional high energy neutrons in said material.

4,938,917

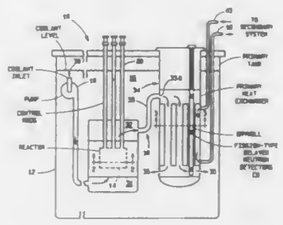
NUCLEAR REACTOR WITH INTERNAL THIMBLE-TYPE DELAYED NEUTRON DETECTION SYSTEM

Kenny C. Gross, Lemont; John Poloncsik, Downers Grove, and John D. B. Lambert, Wheaton, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 17, 1988, Ser. No. 272,583

Int. Cl.[5] G21C *17/06*

U.S. Cl. 376—253 12 Claims



1. A liquid-metal cooled nuclear reactor including a housing having a core containing nuclear material, a shell and tube heat exchanger positioned within said housing, said shell and tube heat exchanger having the tubes thereof arranged in parallel, a primary coolant within said shell and tube heat exchanger, means for detecting positioned within a tube in said shell and tube heat exchanger for generating a signal in response to a reaction detected by said means for detecting, said means for detecting including a plurality of signal detectors D-1, D-2, and D-3 selectively spaced from one another along said coolant flow within said shell and tube heat exchanger so that the total time lapsed after the occurrence of said reaction and a delayed-neutron is detected is:

$$\text{TOTAL} = T_h + T_t + T_d$$

Where:

T_h = isotopic holdup time for the delayed-neutron traveling from the reaction spot to the coolant

T_t = transit time for the delayed-neutron traveling from the coolant to the heat exchanger inlet

T_d = constant transit time for said delayed-neutrons to reach each of said delayed-neutron detectors D-1, D-2, and D-3, which is dependent upon the position of said delayed-neutron detector; and

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a mechanism remotely connected to said signal detectors to record said reaction detected thereby.

4,938,918

ELEMENT IMMERSED IN COOLANT OF NUCLEAR REACTOR

Albert Weiss, Whitehall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 163,140, Feb. 24, 1988, abandoned, which is a continuation of Ser. No. 802,563, Nov. 27, 1985, abandoned, which is a division of Ser. No. 570,487, Jan. 13, 1984, Pat No. 4,608,109. This application Sep. 11, 1989, Ser. No. 405,597

Int. Cl.[5] G21C *21/00*

U.S. Cl. 376—260 7 Claims



1. The method of processing a coolant-displacement rod of a nuclear reactor, preparatory to the installation of said rod in said nuclear reactor, to preclude the formation undesirably of an unsupported permanent axial gap in the cladding of said rod over the anticipated time of use of the rod in said nuclear reactor by reason of neutron bombardment of the rod, which gap would be collapsible under the force exerted by the coolant of said nuclear reactor, said rod including a stack of zirconium-oxide pellets in cladding of an alloy of zirconium, the inner surface of said cladding prior to said processing being spaced from the outer surfaces of said pellets; the said method including: mounting said rod in a container and evacuating said container from atmospheric pressure to a pressure such that said rod is in an attenuated atmosphere containing residual oxygen not combined chemically with any other chemical element, thereafter conducting electrical current only through said cladding to heat said cladding to a temperature at which the yield strength of said cladding is substantially reduced and, while said rod is maintained at said temperature adding a gas to apply pressure uniformly to said cladding of a magnitude sufficient at said temperature to collapse said cladding uniformly on the outer surface of said pellets of said stack while said rod maintains its radial symmetry, the outer surface of the cladding being oxidized at said temperature by said residual oxygen, the said processing, precluding the formation, by exposure to neutron flux, over the period of time over which said rod will later be in use in a reactor, of an unsupported axial gap in said cladding which would collapse under the pressure and at the temperature, of the coolant of said nuclear reactor.

4,938,919

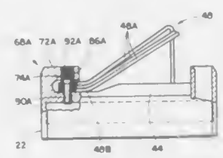
HOLD-DOWN SPRING CLAMPS ON FUEL ASSEMBLY TOP NOZZLE

John A. Rylatt, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 6, 1989, Ser. No. 319,590

Int. Cl.[5] G21C *3/30*

U.S. Cl. 376—446 6 Claims



5. In a fuel assembly having a top nozzle and a hold-down device including a plurality of spring assemblies mounted on said top nozzle and having base ends with holes therethrough alignable with holes in said top nozzle, a pair of improved spring clamp assemblies on said top nozzle for retaining said spring assemblies thereon, each of said improved clamp assemblies comprising:

(a) a clamp block formed integrally with a top portion of said top nozzle at each of a pair of diagonal corners thereof;

(b) said clamp block having a pair of interconnected clamp slots formed therein for insertion of a pair of said spring assemblies of said base ends thereof and a pair of internally threaded bores formed therein which are disposed above and intersects with respective ones of said clamp slots and are aligned with respective ones of said holes in said top nozzle being disposed below said respective ones of said clamp slots;

(c) each clamp slot being formed in said clamp block with interconnected openings at front and outer sides thereof, said front and outer side openings permitting sideways insertion of one of said spring assemblies at said base end thereof to position said one spring assembly for attachment to said top nozzle; and

(d) a pair of fasteners each for installing and fastening through one of said bores defined in said clamp block in alignment with one of said clamp slots, through said hole in one of said spring assemblies at said base end thereof when inserted in said one clamp slot, and into one of said holes in said top nozzle;

(e) said each fastener having an end being in said one hole in said top nozzle and an externally threaded head spaced from said end and being threadable within said one internally threaded bore of said clamp block for fastening and clamping said one spring assembly at said base end thereof between said clamp block and said top nozzle.

4,938,920

NUCLEAR REACTOR FUEL ASSEMBLY

Friedrich Garzarolli, Hoechstadt-Aisch; Erhard Ortlieb, Kalchreuth; Eckard Steinberg, Erlangen, and Hans Weidinger, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

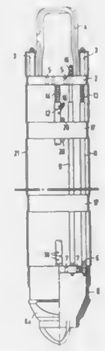
Filed Jul. 8, 1988, Ser. No. 216,829

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805124

Int. Cl.[5] B21C *3/06*

U.S. Cl. 376—457 19 Claims

1. Nuclear reactor fuel assembly, comprising a fuel rod containing nuclear fuel in a cladding tube formed of an iron-containing zirconium alloy, and a fuel assembly skeleton to which said fuel rod is attached having a structural part formed of said iron-containing zirconium alloy, said iron-containing zirconium alloy having an oxygen content of from 0.1 to 0.16% by weight and containing alloy components of from 0 to 0.8% by weight of tin, at least two metals from the group consisting of iron, chromium and vanadium having from 0.2 to 0.8% by



weight of iron, 0 to 0.4% by weight of chromium and 0 to 0.3% by weight of vanadium, and a total percent by weight of iron, chromium and vanadium of from 0.25 to 1% by weight.

4,938,921

METHOD OF MANUFACTURING A ZIRCONIUM-BASED ALLOY TUBE FOR A NUCLEAR FUEL ELEMENT SHEATH AND TUBE THEREOF

Jean-Paul Mardon, Caluire; Jacques Decours, Arpajon; Michel Weisz, Gometz le Chatel; Jacques Pelchat, Antony, and Jean Le Pape, Saint Brevin, all of France, assignors to Framatome and S.N.C. Uranium Pechiney et Framatome, both of Courbevoie, France

Filed Jun. 23, 1988, Ser. No. 210,444

Claims priority, application France, Jun. 23, 1987, 87 08814

Int. Cl.[5] G21C *3/06*

U.S. Cl. 376—457 12 Claims

1. Method of manufacturing a zirconium-base alloy tube for a nuclear fuel element sheath, comprising, after a plurality of successive sequences each including cold rolling and annealing, a final β-phase heat treatment consisting of heating said tube to a temperature between 950° C. and 1250° C., maintaining said tube at said temperature for a time duration sufficient for obtaining a homogeneous β-phase structure within and throughout the whole thickness of the tube and cooling the tube at a rate in the range between 100° C./s and 150° C./s for retaining said β-phase throughout the whole thickness of said tube, and omitting any subsequent finishing operation of a nature which would cause reversal toward the α-phase.

4,938,922

GOLD-NICKEL-TITANIUM BRAZING ALLOY

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 23, 1989, Ser. No. 370,490

Int. Cl.[5] C22C *5/02*

U.S. Cl. 420—508 10 Claims

1. A brazing alloy for brazing ceramics having the following composition, in weight percent: 91 to 99% gold; 0.5 to 7% nickel; 0.10 to 2% titanium.

4,938,923

GOLD WIRE FOR THE BONDING OF A SEMICONDUCTOR DEVICE

Takeshi Kujiraoka; Koichiro Makoyama; Hiromi Yamamoto, and Kenichi Kurihara, all of c/o Tanaka Denshi Kogyo Kabushiki Kaisha, 6-6, Nihonbashi Kayaba-cho, 2-chome, Chuoh-ku, Tokyo, Japan

Filed Oct. 31, 1989, Ser. No. 429,485

Claims priority, application Japan, Apr. 28, 1989, 1-109447; Apr. 28, 1989, 1-109448; Apr. 28, 1989, 1-109449; Apr. 28, 1989, 1-109450

Int. Cl.[5] C22C *5/02*

U.S. Cl. 420—509 6 Claims

2. A gold wire used for the bonding of a semiconductor device, comprising 1 to 20 wt ppm of Ca, 1 to 10 wt ppm of Mg, 1 to 90 wt ppm of one or more of rare earth elements and the balance of Au at high purity.

4,938,924

COPPER DOPING OF EUTECTIC SOLDER

Thomas Ozaki, Dekalb, Ill., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Feb. 16, 1990, Ser. No. 481,095

Int. Cl.[5] C22C *13/00*; B23K *35/34*

U.S. Cl. 420—558 1 Claim

1. A eutectic solder including in combination 62 parts of tin, 36 parts of lead, and 2 parts of silver, for use in the soldering of low temperature thick film cermet copper conductors as utilized on printed wiring cards, the improvement comprising:

adding to the eutectic solder combination, copper in the range of 0.2 to 0.3 percent by weight.

4,938,925

METHOD OF INHIBITING CORROSION USING N-S CONTAINING COMPOUNDS

Philip R. Petersen, Houston; Larry G. Coker, La Porte, and Daniel S. Sullivan, III, Houston, all of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed May 9, 1988, Ser. No. 191,929

Int. Cl.[5] E21B *41/02*; C23F *11/10*

U.S. Cl. 422—12 14 Claims

1. A method of treating well fluid stream containing a corrosive compound to reduce corrosion of metal equipment contacted by the stream which comprises introducing in the stream from 1 to 1000 ppm based on the combined weight of the stream and the corrosive compound of a corrosion inhibitor consisting essentially of the reaction product of

(a) from 0.5 to 3.0 moles of a carbonyl compound selected from the group consisting of aldehydes and ketones;

(b) from 0.5 to 3.0 moles of an alkyl amine; and

(c) from 0.5 to 3.0 moles of an ammonium thiocyanate, said reaction product being formed in an aromatic solvent.

4,938,926

TEST DEVICE FOR CHLORINE MEASUREMENT AND METHOD OF MAKING AND USING SAME

Andre Reiss, 147-47 Village Rd., Jamaica, N.Y. 11435

Filed Jan. 23, 1989, Ser. No. 300,297

Int. Cl.[5] G01N *21/00, 21/75, 33/00*

U.S. Cl. 422—58 7 Claims

1. A stable iodometric indicating composition in a device comprising a starch-iodide reagent incorporated within a hydrocarbon fluid, such composition comprising, by weight:

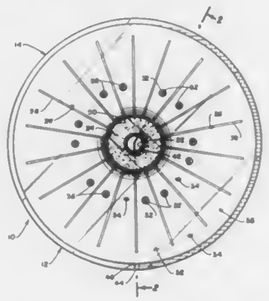
1–4 parts hydrocarbon fluid;

6–9 parts aqueous starch-iodide reagent;

such indicating composition enclosed within a valved test device, and such test device controllably discharging propelled indicating composition into contact with sample matter, thereby identifiably coloring said matter in proportion to chlorine content.

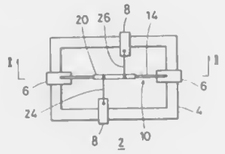
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4,938,927
ROTARY FLUID MANIPULATOR
Arden A. Kelton, Westminster; Michael L. Bell, Corona, and Roy A. Chung, Fountain Valley, all of Calif., assignors to Environmental Diagnostics, Inc., Burlington, N.C.
Continuation of Ser. No. 338,123, Jan. 8, 1982, abandoned. This application May 22, 1989, Ser. No. 356,581
Int. Cl.[5] G01N *35/00, 33/558;* C12N *11/12*
U.S. Cl. 422—64 13 Claims



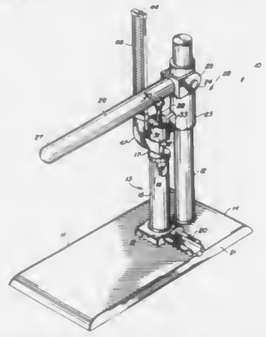
1. In a diagnostic device for fluid specimens, the combination of; a housing, a bibulous porous body in said housing incorporating irregular interstices which impart wicking characteristics to said body, at least one aperture in the interior of said housing for applying fluids to said body, a plurality of fluid passage sections defined in said body by occluding means which prevent fluid flow beyond the edges of said passage sections defined by said occluding means; and absorbent means removed from said at least one aperture at an end of said fluid passage sections and in contact therewith for common collection of excess fluids from said fluid passage sections.

4,938,928
GAS SENSOR
Hiroshi Koda; Muneharu Shimabukuro, and Kiyonori Ono, all of Osaka, Japan, assignors to Figaro Engineering Inc., Osaka, Japan
Continuation of Ser. No. 111,251, Oct. 22, 1987, abandoned. This application Jan. 30, 1989, Ser. No. 303,067
Claims priority, application Japan, Oct. 28, 1986, 61-256082; Jan. 27, 1987, 62-16844
Int. Cl.[5] G01N *27/00*
U.S. Cl. 422—98 6 Claims



1. A gas sensor consisting essentially of:
at least three planar metal outer electrodes;
a wire metal heat generating member connected to and supported by two of the three planar metal outer electrodes;
a heat resistant insulating coating formed on the wire metal heat generating member;
a gas-sensitive layer formed on the heat resistant insulating coating, electrical characteristics of the gas-sensitive layer changing with changes in an environmental gas to be sensed; and
at least one detecting electrode formed at a position selected from the group consisting essentially of the heat resistant insulating coating and the gas-sensitive layer, and said at least one detecting electrode connected to the gas-sensitive layer and directly connected to the remaining planar metal outer electrode.

4,938,929
STOPPER PENETRATION AND PIPETTE SYSTEM
Charles H. Bost, 1520 Eckert Dr., Winter Haven, Fla. 33880
Filed Jul. 21, 1988, Ser. No. 222,028
Int. Cl.[5] B01L *11/00;* B67D *5/00;* G01N *1/00*
U.S. Cl. 422—100 13 Claims

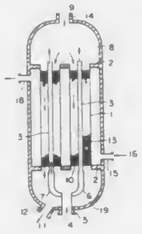


1. A stopper penetration and pipette system comprising:
a base;
a vial holding means attached to said base for holding a vial to said base;
means for driving a sleeve into a stopper held in a vial positioned in said vial holding means to thereby form an opening through said stopper of a predetermined size;
magazine means for holding a plurality of sleeves and feeding one sleeve at a time to said means for driving a sleeve into a stopper held in a vial; and
a pipette shaped to fit through said sleeve in said stopper; whereby material can be added to and removed from said vial without removing said stopper.

4,938,930
REACTION VESSEL
Toshikazu Shinkawa; Daisaku Shozen; Kazuto Kobayashi; Hiroshi Makihara, all of Hiroshima; Kensuke Niwa, Tokyo; Kazuhiro Morita, Tokyo; Masaaki Kuwa, Niigata, and Murayama Katsutoshi, Niigata, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Mitsubishi Gas Chemical Company, Inc., both of Tokyo, Japan
PCT No. PCT/JP85/00227, § 371 Date Dec. 12, 1985, § 102(e) Date Dec. 12, 1985, PCT Pub. No. WO85/04820, PCT Pub. Date Nov. 7, 1985
Continuation of Ser. No. 819,507, Dec. 12, 1985, abandoned. This PCT application Apr. 23, 1985, Ser. No. 96,810
Claims priority, application Japan, Apr. 23, 1984, 59-80053
Int. Cl.[5] B01J *8/06*
U.S. Cl. 422—197 3 Claims

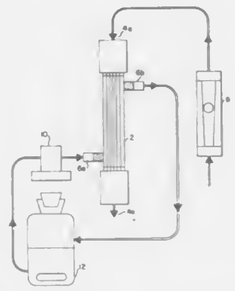
1. A reactor comprising a reaction vessel, an inlet formed at one end of said reaction vessel for supplying unreacted feed gas, an inlet formed at the other end of said reaction vessel for supplying cold unreacted gas of a temperature lower than that of said first unreacted feed gas, a mixing chamber provided in upper part of said reaction vessel and communicating with said inlet for cold unreacted gas, a circular catalyst layer provided in middle of said reaction vessel, a gathering chamber provided in lower part of said reaction vessel, and a central pipe piercing and extending through said circular catalyst layer, the upper

end of said central pipe being opened in said mixing chamber, the lower end thereof being connected to said inlet for unreacted feed gas and a coolant inlet and outlet being formed in said reaction vessel for supplying a coolant to the external



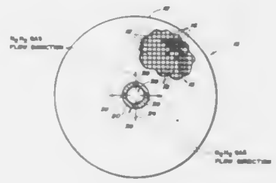
circumference of said circular catalyst layer, and an outlet for reacted gas being formed in said gathering chamber wherein a dispersing plate is disposed between said cold unreacted feed gas introducing section and said circular catalyst layers.

4,938,931
MICROPOROUS MEMBRANE TRICKLE BED REACTOR
Edward L. Cussler, Edina, Minn., assignor to Hoechst Celanese Corporation, Somerville, N.J.
Filed May 26, 1987, Ser. No. 54,351
Int. Cl.[5] B01J *8/08, 10/00*
U.S. Cl. 422—211 9 Claims



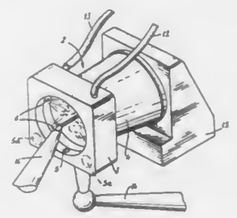
1. A catalytic reaction process comprising the steps of:
(a) confining a reactant fluid containing a reactant species, in a reactant fluid zone;
(b) confining a catalysis fluid, which is relatively immiscible in the reactant fluid, and a catalyst in a catalysis fluid zone;
(c) establishing a boundary layer between said reactant and catalysis fluids by separating the fluids using a hollow fiber microporous membrane; and
(d) forming a reaction product by allowing the reactant species to diffuse through the pores of the hollow fiber microporous membrane to the catalyst across said boundary layer, wherein
said step of separating the reactant and catalysis fluids includes the steps of:
(i) providing a hollow fiber microporous membrane which is compatible with and spontaneously wettable by that one of said reactant and catalysis fluids in which said reactant species is more soluble, and
(ii) minimizing resistance to diffusion of said reactant species through the pores of the hollow fiber microporous membrane to the catalyst by allowing said one fluid to spontaneously wet said membrane so that said one of said reactant and catalysis fluids fills the pores of said hollow fiber microporous membrane.

4,938,932
MONOLITHIC HIGH ACTIVITY CATALYST BED FOR A CATALYTIC GAS GENERATOR
William K. Burke, Bellevue, Wash., assignor to Olin Corporation, Stamford, Conn.
Filed May 31, 1988, Ser. No. 200,805
Int. Cl.[5] B01J *8/02*
U.S. Cl. 422—218 17 Claims



1. A catalyst bed for use in a catalytic gas generator, said catalyst bed comprising:
(a) a plurality of catalytically-active screens being composed of wires arranged in a grid-like fashion, said wires trapping and supporting a plurality of particles of catalyst material therebetween; and
(b) means for mounting said screens in closely spaced side-by-side stack-like relation, said mounting means being adapted for routing an axial inflow of a liquid from an external source to a center of said screens where the liquid is catalytically decomposed into a gas which exits from about a periphery of said stack of screens.

4,938,933
MEDICAL AND SURGICAL INSTRUMENT CLEANING AND DISINFECTING DEVICE
Jean J. M. V. A. Perrot, 304, rue Garibaldi, Lyon 7eme, Rhône, France
Filed Apr. 6, 1988, Ser. No. 178,339
Claims priority, application France, Apr. 13, 1987, 87 05564
Int. Cl.[5] B8B *5/02;* A61L *2/00*
U.S. Cl. 422—292 12 Claims



1. A device for cleaning and disinfecting medical and surgical instruments with a neublized disinfection fluid, comprising in combination:
a horizontally disposed tubular body having a first open end and a second end connected to a liquid collection tank;
said tubular body having a condensation means for promotion of condensation of nebulized disinfection fluid;
a suction means connected to said device for drawing air and

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nebulized disinfection fluid through said condensation means such that condensation of the fluid occurs;
detecting means for detecting the presence of an instrument inside said tubular body, said detecting means located near the open end of said tubular body;
diffusion means for pressurized diffusion of nebulized disinfection fluid, responsive to detection by said detecting means; and
wherein said tubular body comprises an inside wall inclined downward from the open end to the second end connected to the tank.

4,938,934

RECOVERY OF CESIUM CHLORIDE FROM POLLUCITE ORE

G. Chithambarathanu Pillai, and Kenneth S. Pisarcyzk, both of Peru, Ill., assignors to Carus Corporation, Peru, Ill.

Filed May 16, 1989, Ser. No. 352,267
Int. Cl.[5] B01D *9/02*; C01D *3/08*
U.S. Cl. 423—197 **11 Claims**

1. A process for recovering purified cesium chloride from a cesium aluminum silicate ore in which the ore is digested with aqueous hydrochloric acid and the silica solids removed to obtain an aqueous acidic digest solution of metal chlorides consisting principally of cesium chloride together with other metal chlorides, wherein the improvement comprises:
(a) evaporating the water from said digest solution to obtain a solid phase mixture of metal chlorides, including cesium chloride and hydrated aluminum chloride;
(b) heating said solid phase mixture at a temperature effective for converting the hydrated aluminum chloride to aluminum oxide without decomposing the cesium chloride;
(c) extracting the resulting solids with water to obtain an aqueous extract of cesium chloride; and
(d) separating the residual solids containing the aluminum oxide to produce a purified extract of cesium chloride.

4,938,935

ALTERATION OF THE CHARACTER OF HYDROGEN FLUORIDE DROPLETS RENDERING THEM MORE SUSCEPTIBLE TO A WATER DRENCH

Costandi A. Audeh, Princeton, and Saverio G. Greco, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 8, 1988, Ser. No. 229,669
Int. Cl.[5] C01B *7/19*
U.S. Cl. 423—240 **14 Claims**

1. A method for rendering a liquid hydrofluoric acid composition more susceptible, upon vaporization, to a water drench, which comprises adding a proton acceptor which is capable of multiple protonation to said hydrofluoric acid composition, which thus changes the character of hydrofluoric acid droplets present in said vaporous state and renders the hydrofluoric acid droplets more susceptible to a water drench.

4,938,936

HYDROGEN FLUORIDE VAPOR CONTAINMENT AND NEUTRALIZATION

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 1, 1988, Ser. No. 239,256
Int. Cl.[5] B08B *3/08*
U.S. Cl. 423—240 **10 Claims**

1. A method for the containment and neutralization of a vaporous cloud containing hydrofluoric acid which comprises; drenching said vaporous cloud with a drench composition comprising:
(a) water, and
(b) an alkali agent, wherein said alkali agent is selected from the group consisting of $NaHCO_3$, Na_2CO_3, K_2CO_3, $KHCO_3$, and naturally occurring mineral $Na_2CO_3/NaHCO_3$, and mixtures thereof, in amounts of between about 0.1 to 10 parts, per 100 parts of water.

4,938,937

CRYSTALLINE ALUMINOPHOSPHATE COMPOSITION

David A. Lesch, Ossining; Naomi Woodard, Peekskill, and Robert L. Patton, Katonah, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Jun. 4, 1987, Ser. No. 58,258
Int. Cl.[5] C01B *25/36*
U.S. Cl. 423—306 **19 Claims**

1. Microporous crystalline aluminophosphates having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is

$$Al_2O_3 : 1.0 \pm 0.2\ P_2O_5$$

and having a characteristic X-ray powder diffraction pattern which contains at least the d-spacings set forth in Table I

TABLE I

2θ	d, (Å)	Relative Intensity
9.6–9.8	9.24–9.06	VS
13.0–13.1	6.83–6.74	VW–W
14.1–14.2	6.28–6.22	VW–W
16.0–16.2	5.55–5.47	VW–M
17.9–18.3	4.94–4.84	VW–W
20.8–21.0	4.34–4.23	M
25.1–25.6	3.54–3.48	VW–W
30.8–31.0	2.903–2.887	W–M

where the notations VS, M, W and VW represent Very Strong, Medium, Weak, and Very Weak, respectively.

4,938,938

PROCESS FOR THE PREPARATION OF A HYDROXYL APATITE MATERIAL

Rolf Ewers, Graf-Spee-Strasse 46, D-2300 Kiel 1; Christian Kasperk, Bremen; Bruno Simons, Kiel, all of Fed. Rep. of Germany, and Bremen, assignors to Rolf Ewers, Kiel, Fed. Rep. of Germany

PCT No. PCT/EP88/00247, § 371 Date Nov. 22, 1988, § 102(e) Date Nov. 22, 1988, PCT Pub. No. WO88/07498, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 24, 1988, Ser. No. 278,924
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709897
Int. Cl.[5] C01B *25/32*
U.S. Cl. 423—308 **12 Claims**

1. A process for the preparation of a carbonaceous hydroxyl apatite material by means of hydrothermal conversion, comprising the following steps:
(a) cleaning a hard tissue from organic substances,
(b) converting the tissue with an aqueous concentrated solution of $(NH_4)_2HPO_4$ solution at a temperature up to 250° C.,
(c) executing the conversion in an autoclave under saturation steam pressure, and
(d) during conversion compensating for the content of Mg^{2+}-ions by addition of F of ions.

4,938,939

PREPARATION OF SMALL-PORED CRYSTALLINE TITANIUM MOLECULAR SIEVE ZEOLITES

Steven M. Kuznicki, Easton, Pa., assignor to Engelhard Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 94,233, Sep. 8, 1987, abandoned. This application Dec. 11, 1989, Ser. No. 449,032
Int. Cl.[5] C01B *33/20*
U.S. Cl. 423—326 **9 Claims**

1. A process for the preparation of a crystalline titaniumsilicate molecular sieve zeolite having a pore size of approximately 3–5 Anstrom units which comprises heating a reaction mixture containing a titanium source, a source of silica, a source of alkalinity, water and, optionally, an alkali metal fluoride having a composition in terms of mole ratios falling within the following ranges:

SiO_2/Ti: 1–10
H_2O/SiO_2: 2–100
M_n/SiO_2: 0.1–10

wherein M indicates the cations of valence n derived from the source of alkalinity and potassium fluoride to a temperature of from about 100° C. to 300° C. for a period of time ranging from about 8 hours to 40 days while controlling the pH within the range of 10.45–11.0±0.1, said crystalline titaniumsilicate having a composition in terms of mole ratios of oxides as follows:

$$1.0 \pm 0.25\ M_{2/n}O : TiO_2 : y\ SiO_2 : z\ H_2O$$

wherein M is at least one cation having a valence of n, y is from 1.0 to 100, and z is from 0 to 100 and characterized by an X-ray powder diffraction pattern having the lines and relative intensities set forth in Table I below:

TABLE I

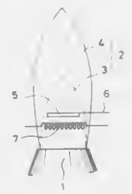
	d-SPACING (ANGS.)	I/I_o
	11.65 ± 0.25	S-VS
	6.95 ± 0.25	S-VS
	5.28 ± .15	M-S
	4.45 ± .15	W-M
	2.98 ± .05	VS
Where,		
	VS = 50–100	
	S = 30–70	
	M = 15–50	
	W = 5–30	

4,938,940

VAPOR-PHASE METHOD FOR SYNTHESIS OF DIAMOND

Yoichi Hirose, 358-225, Showa-machi, Komejima, Kitakatsushika-gun, Saitama-ken, and Kunio Komaki, Kanagawa, both of Japan, assignors to Yoichi Hirose, Saitama and Showa Denko K.K., Tokyo, both of, Japan

Filed Jan. 12, 1989, Ser. No. 296,140
Claims priority, application Japan, Jan. 14, 1988, 63-4780; Mar. 28, 1988, 63-71758
Int. Cl.[5] C30B *29/04*
U.S. Cl. 423—446 **8 Claims**



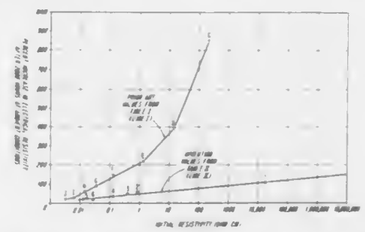
1. A vapor-phase method for the synthesis of diamond, comprising the steps of burning a raw material compound in the presence of oxygen for deposition of diamond thereby forming a combustion flame containing at least an incomplete combustion region; disposing a substrate for deposition of diamond in said combustion flame, and maintaining said substrate at a temperature for deposition of diamond, thereby inducing deposition of diamond on said substrate.

4,938,941

PARTIALLY CARBONIZED POLYMERIC FIBROUS MATERIAL HAVING AN ELECTRICAL RESISTIVITY OF ENHANCED STABILITY

Jozef G. Veaner, Matthews, and Yoon S. Ko, Charlotte, both of N.C., assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 786,863, Oct. 11, 1985, Pat. No. 4,816,242. This application Mar. 23, 1989, Ser. No. 327,533
Int. Cl.[5] D01F *9/12*
U.S. Cl. 423—447.2 **10 Claims**



1. A partially carbonized polymeric fibrous material having an electrical resistivity of enhanced stability when exposed to ambient conditions formed by the thermal processing of an acrylic fibrous material selected from the group consisting of an acrylonitrile homopolymer and an acrylonitrile copolymer containing at least 85 mole percent of recurring acrylonitrile units and up to 15 mole percent of one or more monovinyl units and possessing the following combination of characteristics:
(a) a denier per filament of approximately 0.2 to 2.0,
(b) a carbon content of approximately 63 to 85 percent by weight,
(c) a bound oxygen content of approximately 2.3 to 14 percent by weight,
(d) a nitrogen content of approximately 10 to 22 percent by weight,
(e) a hydrogen content of less than 3 percent by weight,
(f) a tensile strength of at least approximately 50,000 psi,
(g) a tensile modulus of approximately 2,500,000 to 25,000,000 psi,
(h) a surface which is substantially free of pitting when examined with a scanning electron microscope at a magnification of 6000X, and
(i) an electrical resistivity in the direction of its length within the range of approximately 0.01 to 10,000,000 ohm-cm, with said carbon, bound oxygen, nitrogen and hydrogen contents being based upon the sum of the weights of carbon, bound oxygen, nitrogen and hydrogen present therein and wherein said electrical resistivity of enhanced stability is evidenced by an increase in the initial resistivity following 2880 hours at ambient conditions to no more than a value which approximates a point on Line II of the drawing corresponding to the initial resistivity.

4,938,942

CARBON GRAPHITE COMPONENT FOR AN ELECTROCHEMICAL CELL AND METHOD FOR MAKING THE COMPONENT

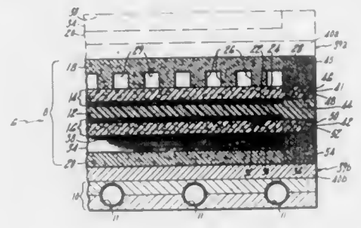
Michael E. Gorman, Suffield; Richard D. Breault, Coventry; John Donahue, Suffield, and Sudhangshu Bose, Manchester, all of Conn., assignors to International Fuel Cells, South Windsor, Conn.

Filed Jul. 17, 1985, Ser. No. 755,876
Int. Cl.[5] C01B *31/64*
U.S. Cl. 423—448 **28 Claims**

1. A method for making a carbon-graphite component suited for use in an electrochemical cell, comprising:
forming a precursor sheet structure comprising an inorganic

compound containing boron and oxygen, a carbonizable, thermosetting resin and fibers selected from the group consisting of cellulose fibers, carbonized cellulose fibers and mixtures thereof;

heating the sheet structure in a non-oxidizing atmosphere to a first temperature range which carbonizes cellulose fibers



and the thermosetting resin wherein the carbonized resin bonds the carbonized cellulose fibers together;

heating the sheet structure in a non-oxidizing atmosphere to a second, higher temperature range to increase the degree of graphitization of the carbonized cellulose fibers and resin.

4,938,943

PROCESS FOR PRODUCTION OF CHLORINE DIOXIDE

Maria Norell, Linjevägen, Sweden, assignor to Eka Nobel AB, Surte, Sweden

Continuation of Ser. No. 7/268,466, Nov. 8, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 418,977

Claims priority, application Sweden, Jun. 17, 1988, 8802273

Int. Cl.[5] C01B *11/02, 17/74*

U.S. Cl. 423—478 **7 Claims**

1. A process for production of chlorine dioxide, comprising the steps of:

(a) reacting in a reaction vessel an alkali metal chlorate, sulfuric acid and a reducing agent in proportions to generate chlorine dioxide in a reaction medium maintained at a temperature of from about 50° C. to about 100° C., having an acidity resulting in the formation of an alkali metal sulfate which consists of an alkali metal sesquisulfate and subjected to a subatmospheric pressure sufficient to effect evaporation of water;

(b) withdrawing chlorine dioxide and water vapor from an evaporation region in the reaction vessel;

(c) precipitating alkali metal sesquisulfate in a crystallization region of the reaction vessel; and

(d) heating the precipitated alkali metal sesquisulfate to a temperature sufficient to form gaseous sulfur trioxide and a neutral alkali metal sulfate.

4,938,944

METHOD OF AND REACTOR FOR PRODUCING CHLORINE DIOXIDE

Rainer Dworak, Wiesbaden; Peter Kohl, Neuberg; Karl Lohrberg, Heusenstamm, and Reinhard Müller, Grossostheim, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 2, 1989, Ser. No. 361,036

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1988, 3819763

Int. Cl.[5] C01B *11/02*

U.S. Cl. 423—478 **4 Claims**

1. A method of producing chlorine dioxide which comprises the steps of:

(a) reacting an alkali chlorate with an acid in a plurality of superposed reactor levels in an upright reactor while introducing alkali chlorate and acid at an upper level, permitting gaseous chlorine dioxide to bubble through liquid reaction phases at said levels and to be withdrawn from said upper level, and causing said liquid reaction phases to pass downwardly from said upper level to successively lower levels;

(b) feeding a solution from which chlorate and acid have been depleted from a lowermost reactor level to a reboiling chamber in said reactor below said lowermost reactor level;

(c) indirectly heating said solution in said reboiling chamber at a temperature of substantially 100° to 110° C;

(d) conducting depleted solution from said reboiling chamber to a pressure chamber maintained at a pressure of at least 1.2 bar;

(e) indirectly heating said depleted solution in said pressure chamber at said pressure at a temperature of substantially 110° to 150° C. to reboil said depleted solution in said pressure chamber and form vapors therein; and

(f) indirectly heating the depleted solution in said reboiling chamber or the liquid reaction phase in at least on of said levels by heat exchange with said vapors.

4,938,945

HIGH PURITY ANHYDROUS FEF_3 AND PROCESS FOR ITS MANUFACTURE

Tariq Mahmood; Charles B. Lindahl, both of Tulsa, and Ronald E. Davis, Sapulpa, all of Okla., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 18, 1988, Ser. No. 259,071

Int. Cl.[5] C01G *49/10*

U.S. Cl. 423—489 **16 Claims**

I. A process for the manufacture of 99.0% or greater purity anhydrous ferric fluoride according to the endothermic reaction

$$FeCl_3 + 3HF \rightarrow FeF_3 + 3\,HCl\uparrow$$

comprising:

(I) Charging anhydrous $FeCl_3$ to a reaction vessel; then

(II) Introducing liquid anhydrous HF to said vessel, in a stoichiometric amount or greater, at an addition rate effective to maintain the temperature of a resulting reaction mass at about −25° C. or higher;

(III) Permitting the resulting reaction to continue to completion;

(IV) Removing HCl by-product and any excess HF during the reaction; and

(V) Removing any HF or H_2O contained in the reaction product; said reaction being conducted in the substantial absence of O_2, H_2O, or other reactive agent.

4,938,946

LUNAR HYDROGEN RECOVERY PROCESS

Michael A. Gibson, and Christian W. Knudsen, both of Houston, Tex., assignors to Carbotek, Inc., Houston, Tex.

Filed Apr. 13, 1988, Ser. No. 181,318

Int. Cl.[5] C01B *3/02*

U.S. Cl. 423—648.1 **24 Claims**

1. A lunar hydrogen recovery process comprising

mining a particulate lunar feed material comprising mature particulate regolith,

separating a feed from said particulate material comprising particles in the size range of less than about 200 microns,

providing a fluidized bed reactor with upper and lower, vertically-spaced perforate supports for upper and lower fluidized beds, the upper fluidized bed comprising a preheat bed and the lower fluidized bed comprising a desorption bed, and a downcomer pipe for circulating fluidized particles between said upper and lower beds,

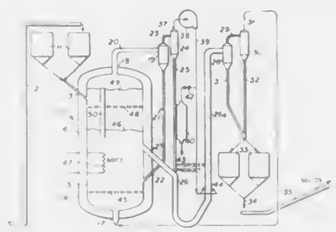
passing said particulate feed into the upper, preheat bed of said fluidized bed reactor,

passing said particulate feed from said upper preheat bed through said downcomer pipe into said desorption bed,

fluidizing said particulate feed in said desorption bed with a hydrogen gas stream at a temperature of about 600° C., to evolve adsorbed hydrogen from said regolith particles leaving a residue of hydrogen-free particles,

fluidizing said particulate feed in said preheat bed with hydrogen gas flowing from said desorption bed,

recovering an effluent gas stream comprising said hydrogen



gas stream plus desorbed hydrogen from said mature regolith particles,

continuously removing said hydrogen-free residue particles from said fluidized bed reactor for further use or processing,

separating net produced hydrogen from said recovered gas stream, and

recycling the remaining hydrogen to said desorption bed.

4,938,947

AEROSOL COMPOSITION FOR IN VIVO IMAGING

Yves-Claude Nicolau, La Chapelle; Alain Le Pape, Langeais, and Rita Barot-Ciorbaru, Fontenay-Aux-Roses, all of France, assignors to Centre National De La Recherche Scientifique (CNRS), France

Continuation of Ser. No. 794,500, Nov. 1, 1985, abandoned. This application Jan. 4, 1988, Ser. No. 142,242

Int. Cl.[5] A61K *49/02, 49/00*

U.S. Cl. 424—1.1 **8 Claims**

1. Aerosol composition for in vivo imaging or ex vivo diagnosis of tumors, which composition contains one or more soluble fragments of bacterial cell peptidoglycan of Nocardia derivatives (NSPD) which are labelled with a radioactive, paramagnetic or fluorescent element and encapsulated in liposomes and a substrate which can be used for administration by aerosol.

4,938,948

METHOD FOR IMAGING BREAST TUMORS USING LABELED MONOCLONAL ANTI-HUMAN BREAST CANCER ANTIBODIES

David B. Ring, Redwood City, Calif., and Arthur E. Frankel, Durham, N.C., assignors to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 785,076, Oct. 7, 1985, abandoned. This application Oct. 11, 1985, Ser. No. 786,948

Int. Cl.[5] A61K *49/02, 49/00*

U.S. Cl. 424—9 **9 Claims**

1. A method for imaging breast tumors, comprising the steps of:

(a) producing an immunoimaging composition comprising covalently binding an imaging moiety to a murine monoclonal antibody suitable for imaging breast tumors, said murine monoclonal antibodies having the properites of not binding to blood cells or human mammary tumor virus, a breast tumor binding range of at least 0.25, or has a breast cancer cell line range of greater than or equal to 0.25, a selectivity equal to or less than 0.09, a G or M isotype, and are selected from the group consisting of 2G3, 9C6, 32A1, 35E10, 87H7, 106A10, 120H7, 140A7, 260F9, 203E2, 219F3, 452E12, 454A12, 650E2, 697B3, 759E3, and 788G6;

(b) administering said imaging composition to a patient; and

(c) detecting a signal produced by said imaging moiety.

4,938,949

TREATMENT OF DAMAGED BONE MARROW AND DOSAGE UNITS THEREFOR

Richard F. Borch, Pittsford, and Therese K. Schmalbach, Rochester, both of N.Y., assignors to University of New York, Rochester, N.Y.

Filed Sep. 12, 1988, Ser. No. 243,405

Int. Cl.[5] A61K *47/00*

U.S. Cl. 424—10 **2 Claims**

1. A process for the treatment of myelosuppression resulting from a toxic side effect of a cytotoxic streptomyces-produced antibiotic derivative administered to a human, said process comprising administering about 0.01–10 mg/kg of body weight of said human, of a compound of the formula:

$$R^1R^2NC(=S)S^-M^+$$

wherein M^+ is a pharmaceutically acceptable cation, and R^1 and R^2 are the same or different and represent C_1-C_6 lower aliphatic or hydroxy-substituted lower aliphatic groups.

4,938,950

COSMETIC COMPOSITION BASED UPON CHITOSAN AND AMPHOLYTIC COPOLYMERIZATES, AS WELL AS NEW CHITOSAN/POLYAMPHOLYTE SALTS

Guenther Lang, Reinheim, and Harald Wendel, Ober-Ramstadt, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

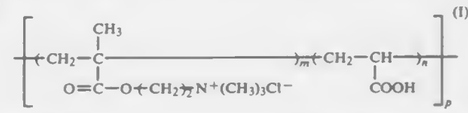
Filed Dec. 22, 1987, Ser. No. 136,857

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644097

Int. Cl.[5] A61K *7/06, 7/09;* C08B *37/08*

U.S. Cl. 424—47 **10 Claims**

1. Aqueous or aqueous-alcoholic cosmetic composition for treatment of hair or skin, comprising 0.05 to 10% by weight of chitosan, and 0.05 to 20% by weight of an ampholytic copolymerizate for formula (I)



(I)

wherein m=0.5 to 0.9, n=0.1 to 0.5, m+n=1 and p being such that the ampholytic copolymerizate has a molecular weight of from 1,000 to 3,000,000.

4,938,951

POTENTIATION OF TOPICAL COMPOSITIONS WHEREIN A UNIFORM MICRODISPERSION OF ACTIVE AGENT IS FORMED

Pak S. Leung, Highland Mills, N.Y., and Errol D. Goddard, Haworth, N.J., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.

Continuation of Ser. No. 511,911, Jul. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 221,504, Dec. 30, 1980, abandoned. This application Dec. 9, 1985, Ser. No. 806,963

Int. Cl.[5] A61K *7/42, 31/74*

U.S. Cl. 424—59 **36 Claims**

1. A liquid, topical composition consisting essentially of an evaporative solvent and a film-forming polymer which is a

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cellulose, polyvinyl alcohol, polyvinyl pyrrolidone, polyether, polyester, water-soluble polyacrylamide or water-insoluble polyamide, which polymer is in solution with said solvent, said polymer in admixture with a topically effective amount of topically active agent in solution with said solvent, which is a crystalline material providing a uniform microdispersion characterized by the virtual absence of a melting point of said agent as measured by differential scanning calorimetry, wherein the weight ratio of polymer to agent is from about 1:1 to about 20:1 and is sufficient to provide for potentiation of an applied amount of said agent present as a substantially uniform microdispersion formed during the evaporation of said evaporative solvent to provide a dried film containing said polymer, characterized by a reduction in the agglomeration of said agent upon evaporation of the evaporative solvent and providing increased topical activity as compared to an equal amount of said agent applied when said film-forming polymer is absent.

4,938,952

POLYMER SUPPORTED COSMETIC PRODUCTS AND METHODS

Melvin E. Kamen, Highlands; Philip Bernstein, Glen Ridge, and Amit R. Shah, Iselin, all of N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Oct. 14, 1988, Ser. No. 258,219
Int. Cl.[5] A61K *7/021, 7/027, 7/032*
U.S. Cl. 424—63 **22 Claims**

1. A cosmetic product comprising a matrix of a fibrillated polymer supporting at least one cosmetic pigment.

4,938,953

SELF-PRESERVING CONDITIONING SHAMPOO FORMULATION

Lorraine E. Pena, Kalamazoo, and Jenny L. Peters, Mattawan, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 9, 1988, Ser. No. 230,176
Int. Cl.[5] A61K *7/075*
U.S. Cl. 424—70 **8 Claims**

1. A conditioning shampoo formulation consisting essentially of

(a) a fatty alcohol sulfate and/or fatty alcohol-ether sulfate in an amount of at least 10% w/w;

(b) cocamidopropyl betaine; and

(c) cocamide diethanolamine;

wherein the total amount of said (a), (b) and (c) is at least 20% (w/w) and wherein said formulation is free of additional preservatives.

4,938,954

HAIRWAX

Paul Gross, Darmstadt, and Ernst Flemming, Heusenstamm, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP88/00483, § 371 Date Mar. 24, 1989, § 102(e) Date Mar. 24, 1989, PCT Pub. No. WO89/00845, PCT Pub. Date Feb. 9, 1989
PCT Filed May 30, 1988, Ser. No. 346,026
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1987, 3725080
Int. Cl.[5] A61K *7/11, 7/13*
U.S. Cl. 424—71 **17 Claims**

1. Hairwax, comprising a combination of

(a) 10 to 41 percent by weight polyethylene glycol with a molecular weight of 3000 to 5000,

(b) 8 to 25 percent by weight hydrogenated castor oil which is ethoxylated with 40 to 60 moles ethylene oxide,

(c) 36 to 51 percent by weight glycerol and/or ethyl hexanediol and/or polyethylene glycol with a molecular weight of 100 to 300 and

(d) 0 to 15 percent by weight water.

4,938,955

ANTIBIOTIC RESIN COMPOSITION

Reiji Niira, deceased, late of Kokubunji (by Yuriko Niira, Kiyotaka Niira, Hideaki Niira, heirs); Tatuo Yamamoto, Inazawa; Masashi Uchida, and Yoshihiro Fukuoka, both of Nagoya, all of Japan, assignors to Shingawa Fuel Co., Ltd and Shinanen New Ceramic Corporation, both of, Japan

Filed Apr. 18, 1988, Ser. No. 183,000
Claims priority, application Japan, Apr. 22, 1987, 62-99219
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/74;* **A01N** *59/16, 59/20, 59/00*
U.S. Cl. 424—79 **12 Claims**

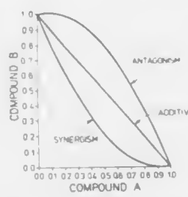
1. An antibiotic resin composition, comprising at least one antibiotic zeolite the ion-exchangeable ions of which are partially or completely replaced with ammonium ions and antibiotic metal ions comprising silver ions at least one discoloration inhibitor selected from the group consisting of benzotriazole compounds, oxalic acid anilide compounds, salicylic acid compounds, cyanoacrylate compounds, benzophenone compounds, hindered amine compounds, hindered phenol compounds, phosphorus compounds, sulfur compounds and hydrazine compounds and at least one resin, wherein the amount of said ammonium ions is from 0.5 to 15 wt % and the amount of said silver ions is from 0.1 to 15 wt %, based on the weight of said zeolite weighed after drying at 110° C., and the amount of said discoloration inhibitor is from 0.001 to 1.0%, based on the weight of said resin.

4,938,956

SYNERGISTIC IMMUNOSTIMULATING COMPOSITION AND METHOD

David K. Howard, Arlington Heights; Ellen R. Clough, Elmhurst; Anthony F. Abruzzini, Palatine, all of Ill., and Paula Myers-Keith, Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Northbrook, Ill.

Filed Apr. 1, 1987, Ser. No. 32,614
Int. Cl.[5] A61K *37/02, 39/00*
U.S. Cl. 424—85.2 **25 Claims**



1. A method for synergistically stimulating an animal's immune system to increase resistance to infection and disease and decrease the recovery time from injury or other trauma, which comprises:

administering in conjunction to said animal an immune stimulating amount of FK-565 and IL-2.

4,938,957

DEODORANT COMPOSITION AND USE THEREOF

Takashi Iwahashi, Sagamihara, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,244
Int. Cl.[5] A61F *2/60*
U.S. Cl. 424—76.21 **6 Claims**

1. A deodorant composition which comprises as an active ingredient for deodorization a reaction product obtained by reacting either polyethyleneimine or ethylene-imine-alkylene oxide copolymer having a molecular weight in the range of from 100 to 5000 with monochloroacetic acid in a weight ratio of 1:03 to 1.0.

4,938,958

ANTIBIOTIC ZEOLITE

Reiji Niira, deceased, late of Kokubunki (by Yuriko Niira, legal representative, Yuriko Niira, Kiyotaka Niira, Hideaki Niira, legal heirs); Tatuo Yamamoto, Inazawa, and Masashi Uchida, Nagoya, all of Japan, assignors to Shinagawa Fuel Co., Ltd. and Shinanen New Ceramic Corporation, both of, Japan

Filed Dec. 2, 1987, Ser. No. 127,645
Claims priority, application Japan, Dec. 5, 1986, 61-290144
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/74;* **A01N** *59/16, 59/20, 59/00*
U.S. Cl. 424—79 **7 Claims**

1. An antibiotic resin composition, which comprises a resin and from 0.05 to 80 wt % of an antibiotic zeolite in which all or a part of ion-exchangable ions in said zeolite are replaced with antibiotic metal ions comprising silver ions and with ammonium ions, the amount of silver ions ranging from 0.1 to 15 wt % and the amount of ammonium ions ranging from 0.5 to 15 wt %.

4,938,959

INSOLUBLE MEDICAMENT FOR A LOCAL ADMINISTRATION IN A HUMAN OR ANIMAL EAR

Henri A. Martin; Maurice Carraz; René Mallein, all of Lyon, and Georges S. Grimberg, 123 rue de l'Université , Paris, all of France, assignors to Georges Serge Grimberg, Paris, France

Continuation-in-part of Ser. No. 797,684, Nov. 13, 1985, abandoned. This application Aug. 30, 1988, Ser. No. 239,340
Claims priority, application France, Nov. 14, 1984, 84 17397
Int. Cl.[5] A61K *35/00*
U.S. Cl. 424—114 **6 Claims**

1. A method of treating an ear canal comprising applying to said ear canal a composition comprising an otically active therapeutic agent, soluble in physiological solution, in an amount therapeutically effective to treat said ear canal, mixed with an amount of nystatin, effective to dilute said otically active therapeutic agent to a non-toxic but therapeutically effective concentration, said active therapeutic agent being absorbable by said diluent.

4,938,960

AGENTS FOR THE TREATMENT AND PROTECTION OF THE SKIN

Rosbdy Ismail, Siebengebirgs-Apotheke, Siebengebirgsallee 2, 5000 Köln 41, Fed. Rep. of Germany

Continuation of Ser. No. 900,727, Aug. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 706,723, Feb. 28, 1985, abandoned. This application Jun. 21, 1988, Ser. No. 211,125
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 3408258; Mar. 23, 1984, 3410641; Jun. 1, 1984, 3420459; Jul. 25, 1984, 3427374; Sep. 25, 1984, 3435098; Nov. 15, 1984, 3441711; Feb. 12, 1985, 3504695
Int. Cl.[5] A61K *35/78, 31/355*
U.S. Cl. 424—195.1 **49 Claims**

1. A pharmaceutical composition effective for treatment of skin conditions of allergy, tetter, inflammation, itch, wrinkles and damage from wounds, and for protection of skin from ultraviolet light, comprising at least 200 mg vitamin E per dosage unit and at least one component selected from the group consisting of a blood circulation-promoting agent and a vasodilator, said composition being admixed with a suitable pharmaceutical vehicle.

4,938,961

ORGAN PRESERVATION SOLUTION CONTAINING POKYETHYLENE GYCOL AND METHOD OF PERFORMING CARDIOPLEGIA

Geoffrey Collins, 14 Leeward Rd., Belvedere, Calif. 94920, and Winston Wicomb, 38 Yolo St., Corte Madera, Calif. 94925

Filed Apr. 28, 1989, Ser. No. 345,121
Int. Cl.[5] A61H *31/08, 33/42, 31/765, 37/02*
U.S. Cl. 424—606 **16 Claims**

8. An organ preservative comprising, in aqueous solution, from about 4% to about 10% by weight of polyethylene glycol having an average mlecular weight in the range of about 15,000 daltons to about 20,000 daltons, the solution containing the following ingredients in approximately the amounts listed or their equivalents:

(a) NaOH, 30–40 mM,

(b) Lactobionic acid, 100 mM,

(c) KH_2PO_4, 25 mM,

(d) KOH, 100 mM,

(e) Raffinose, 30 mM,

(f) Glutathione, 3 mM.

4,938,962

HETEROGENEOUS TOPICAL COMPOSITIONS HAVING A BASE OF MICROGRANULES OF CAFFEINE AND/OR ITS DERIVATIVES, WHICH CAN BE USED AS SLENDERIZER AND/OR IN THE TREATMENT OF CELLULITIS, AS WELL AS THEIR PREPARATION

Marie-Thérese Treboac; Henri Cousse, both of Castres, and Gilbert Mouzin, Toulouse, all of France, assignors to Pierre Fabre Cosmetique, Paris, France

Filed Dec. 7, 1988, Ser. No. 281,082
Claims priority, application France, Dec. 7, 1987, 87 16969
Int. Cl.[5] A61K *47/00*
U.S. Cl. 424—439 **18 Claims**

1. Heterogeneous topical composition which can be used as slenderizer or in the treatment of cellulitis, characterized in that it comprises, as active principle, a caffeine metal carboxylate selected from zinc, magnesium, aluminum, and calcium caffeine carboxylates, said active principle being present in the form of microgranules or microparticles, having a diameter of about 0.2 to 2 millimeters, which microgranules or microparticles are present in an amount between about 0.5 and 20 percent by weight of the total composition and which are heterogeneously-distributed and suspended in a gel comprising water and a nontoxic alcohol in which they are insoluble.

4,938,963

METHOD AND COMPOSITION FOR TREATING XEROSTOMIA

Francis W. Parnell, Ross, Calif., assignor to Parnell Pharmaceuticals, Inc., San Rafael, Calif.

Filed Nov. 22, 1988, Ser. No. 275,124
Int. Cl.[5] A61K *9/20, 35/78, 9/68*
U.S. Cl. 424—440 **19 Claims**

1. A method for treating xerostomia, comprising orally administering, to an affected individual, an amount of an eriodictyon fluid composition effective to alleviate the symptoms of dry mouth, the eriodictyon fluid composition comprising eriodictyon fluid extract and sweetener.

4,938,964

EXTERNAL DERMATOLOGICAL COMPOSITION

Yasuyuki Sakai, Tokyo; Toyoaki Ishikura; Kazuo Kanbayashi, both of Yokohama; Tadashi Kato, and Koichi Abe, both of Tatsuno, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,356
Claims priority, application Japan, Dec. 9, 1987, 62-312675
Int. Cl.[5] A01R *9/70*
U.S. Cl. 424—443 **9 Claims**

1. An external dermatological composition comprising a

drug supply layer carried on a support and containing 5% to 35% by weight of ketoprofen in an acrylic or methacrylic copolymer, said copolymer comprising (i) 0.5% to 11.0% by weight of an α,β-unsaturated carboxylic acid or its anhydride, (ii) 0.1% to 28.0% by weight of a vinyl monomer, (iii) 1.0% to 5.5% by weight of a hydroxy C_2–C_4 alkyl ester of acrylic or methacrylic acid, and (iv) a balance of a C_4–C_{18} alkyl ester of acrylic or methacrylic acid, and having a glass transition point of −15° C. to −70° C.

4,938,965

OCULAR DELIVERY OF PROPHYLACTIC AGENTS

Pang N. Shek, Willowdale, and Raymond F. Barber, Toronto, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jul. 22, 1987, Ser. No. 76,449
Int. Cl.[5] A61K *9/127, 37/20*
U.S. Cl. 424—450 **14 Claims**

1. A method for the ocular delivery of a prophylactic agent, which comprises applying to the eye a liposome containing the prophylactic agent, wherein the liposome composition comprises phospholipid and cholesterol in a molar ratio of phospholipid to cholesterol of 8:2 to 1:1 with the prophylactic agent entrapped therein.

4,938,966

CONTROLLED RELEASE FLECAINIDE ACETATE FORMULATION

David Porter, and Andrew M. Twitchell, both of Loughborough, United Kingdom, assignors to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 30, 1988, Ser. No. 277,899
Int. Cl.[5] A61K *9/62*
U.S. Cl. 424—456 **10 Claims**

1. A flecainide acetate controlled release pharmaceutical formulation comprising a film-coated bead which comprises a bead which is coated with a film-coat, wherein said bead comprises:

(a) flecainide acetate present in an amount of about 20 to 80 percent by weight based on the total weight of said bead; and

(b) microcrystalline cellulose present in an amount of about 80 to 20 percent by weight based on the total weight of said bead;

wherein said film-coat comprises:

(a) a methacrylic acid/methyl methacrylate copolymer present in an amount of about 40 to 70 percent by weight based on the total weight of said film-coat;

(b) a plasticizer present in an amount of about 5 to 20 percent by weight based on the total weight of said film-coat; and

(c) a lubricant present in an amount of about 20 to 50 percent based on the weight of said film-coat; and

wherein said film-coat is present in an amount of about 5 to 20 percent by weight based on the total weight of said film-coated bead.

4,938,967

PHARMACEUTICAL FORMULATIONS

John M. Newton, and Jane E. Devereux, both of London, England, assignors to London School of Pharmacy Innovations Ltd., United Kingdom

Filed Sep. 17, 1987, Ser. No. 97,943
Claims priority, application United Kingdom, Sep. 18, 1986, 8622482; Apr. 3, 1987, 8708011
Int. Cl.[5] A61K *9/54*
U.S. Cl. 424—458 **21 Claims**

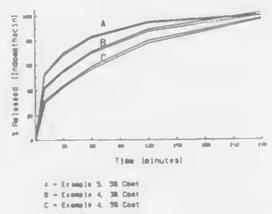
1. An oral, solid, pharmaceutical dosage form that is a capsule or disintegratable tablet and that has a minimum dimension of at least 2 mm and that is suitable for oral administration to humans and that comprises a plurality of controlled release units each comprising a pharmaceutically active ingredient and a pharmaceutically acceptable carrier that includes gastric controlled release binder that will permit controlled release of the active ingredient from the controlled release unit while in the stomach, and in which each said controlled release unit has a density of at least 2.5 g/ml.

4,938,968

CONTROLLED RELEASE INDOMETHACIN

Atul M. Mehta, Ramsey, N.J., assignor to Norjec Development Associates, Inc., Ramsey, N.Y.

Filed Jul. 26, 1988, Ser. No. 224,460
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—495 **6 Claims**



A = Example 5, 5% Coat
B = Example 4, 3% Coat
C = Example 4, 5% Coat

1. A method of producing controlled release formulation of indomethacin comprising:

(a) coating a non-pareil pellet with a first solution comprising indomethacin and a binding agent such that the final weight of said pellet and coating will be comprised of about 5% to about 30% indomethacin and about 2% to about 10% binding agent;

(b) coating said pellet from (a) with a second solution comprising a mixture of ethyl cellulose and hydroxypropyl cellulose in a weight ratio range of 50:50 to 90:10 and a plasticizer; and

(c) formulating the pellet from (b) into a suitable dosage form.

4,938,969

METHOD FOR THE TREATMENT OF AGING OR PHOTO-DAMAGED SKIN

Michael R. Schinitsky, and Lorraine F. Meisner, both of Madison, Wis., assignors to Milor Scientific, Ltd., Madison, Wis.

Filed Nov. 14, 1988, Ser. No. 271,213
Int. Cl.[5] A61K *33/32, 31/34, 31/195*
U.S. Cl. 424—642 **2 Claims**

1. A method of treatment to reduce the depth of wrinkles in a patient's skin affected by intrinsic aging or photo-induced aging, said method comprising the step of applying a composition comprising about 2 to about 20% of ascorbic acid, about 1 to about 10% tyrosine, and about 0.5 to about 5% of a non-toxic zinc salt in a pharmaceutically acceptable carrier, said composition being applied topically to the locus of said wrinkles.

4,938,970

PAINLESS ELECTROLYTE SOLUTIONS

Robert E. Hustead, 2401 N. Pershing, Wichita, Kans. 67220, and David R. Hustead, 3201 41st St., Sioux City, Iowa 51108

Continuation-in-part of Ser. No. 11,809, Feb. 6, 1987. This application Jul. 17, 1987, Ser. No. 74,806
Int. Cl.[5] A61K *33/14*
U.S. Cl. 424—678 **11 Claims**

1. A composition consisting of:

(a) electrolytes selected from the group consisting of K^+, Ca^{++}, Na^+ and Mg^{++} salts of anions, wherein said K^+ is present at a concentration of 2–10 meq/L, said Ca^{++} is present at a concentration of 0–3 meq/L, said Mg^{++} is present at a concentration of 1–5 meq/L, and said Na^+ is present at a concentration of 110–150 meq/L; and

(b) a solution of pH 6.85–8.0;

wherein said composition is painless when administered internally, ophthalmically or by irrigation of a wound, abrasion, laceration or burn, and wherein said solution is obtained by titrating aqueous acetic acid to pH 6.85–8.0 with aqueous sodium hydroxide and diluting to a final concentration of 110–150 meq/L Na^+ and 80–125 meq/L Cl^- or by titrating aqueous HCl to a pH of 6.85–8.0 with aqueous sodium acetate and diluting to a concentration of 110–150 meq/L Na^+ and 80–125 meq/L Cl^-.

5. A method for providing painless irrigation of a wound, abrasion, laceration or burn, comprising irrigation with a composition consisting of:

(a) electrolytes selected from the group consisting of K^+, Ca^{++}, Na^+ and Mg^{++} salts of anions, wherein said K^+ is present at a concentration of 2–10 meq/L, said Ca^{++} is present at a concentration of 0–3 meq/L, said Mg^{++} is present at a concentration of 1–5 meq/L, and said Na^+ is present at a concentration of 110–150 meq/L; and

(b) a solution of pH 6.85–8.0;

wherein said composition is painless when administered internally, ophthalmically or by irrigation of a wound, abrasion, laceration or burn, and wherein said solution is obtained by titrating aqueous acetic acid to pH 6.85–8.0 with aqueous sodium hydroxide and diluting to a final concentration of 110–150 meq/L Na^+ and 80–125 meq/L Cl^- or by titrating aqueous HCl to a pH of 6.85–8.0 with aqueous sodium acetate and diluting to a concentration of 110-150 meq/L Na^+ and 80–125 meq/L Cl^-.

6. A method for inducing painless anesthesia comprising administering to an animal a composition comprising:

(a) electrolytes selected from the group consisting of K^+, Ca^{++}, Na^+ and Mg^{++} salts of anions, wherein said K^+ is present at a concentration of 2–10 meq/L, said Ca^{++} is present at a concentration of 0–3 meq/L, said Mg^{++} is present at a concentration of 1–5 meq/L, and said Na^+ is present at a concentration of 110–150 meq/L;

(b) a solution of pH 6.85–8.0; and

(c) one or more local anesthetics;

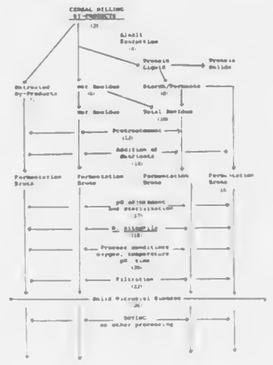
wherein said composition is painless when administered internally, ophthalmically or by irrigation of a wound, abrasion, laceration or burn.

4,938,972

PROCESS FOR UPGRADING CEREAL MILLING BY-PRODUCTS INTO PROTEIN-RICH FOOD PRODUCTS

Murray Moo-Young, Waterloo; Robert E. Burrell, Kingston, and John Michaelides, Mannheim, all of Canada, assignors to Robin Hood Multifoods Inc., Ontario, Canada

Filed Jul. 8, 1988, Ser. No. 217,008
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—31 **15 Claims**



1. A process for the production of a proteinaceous material suitable for human consumption, from the by-products of cereal milling including cellulose, comprising:

aerobically fermenting, said by-products in a culture of the fungus *Neurospora sitophila;*

at a pH of 5.5–7.5;

with agitation;

in the presence of a suitable nutrient broth;

at a temperature of 20°–40° C.; and

for a time sufficient to increase the microbial biomass protein to yield a proximate composition including 30-60% crude protein on a dry basis.

4,938,971

FLUID FRUIT JUICE AND EDIBLE PLASTICIZER COMPOSITION HAVING LOW MOISTURE CONTENT

Albert H. Chapdelaine, Naperville, and Michael R. Dzija, Chicago, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Jun. 29, 1988, Ser. No. 213,081
Int. Cl.[5] A23L *2/02*
U.S. Cl. 426—3 **24 Claims**

1. A pourable fluid fruit juice concentrate-plasticizer composition for use as an additive to chewing gum or foods, consisting essentially of:

(a) a fluid fruit juice concentrate; and

(b) a plasticizer selected from the group consisting of glycerin, propylene glycol and mixtures thereof;

(c) wherein the ratio of fluid fruit juice concentrate solids to plasticizer is between about 0.5:1 and about 100:1;

(d) wherein the moisture content of the fruit juice concentrate-plasticizer composition is from about 2 per cent to about 25 percent; and

(e) wherein the fruit juice concentrate-plasticizer composition is in a fluid condition.

4,938,973

PROCESS FOR PRODUCING FERMENTED MILK PRODUCTS

Franciscus A. M. Klaver, and Fedde Kingma, both of Ede, Netherlands, assignors to Nederlands Instituut Voor Zuivelonderzoek, Ede, Netherlands

Filed Nov. 28, 1988, Ser. No. 276,814
Claims priority, application Netherlands, Dec. 14, 1987, 8703019
Int. Cl.[5] A23C *9/12*
U.S. Cl. 426—42 **16 Claims**

1. Process for producing fermented milk products comprising fermenting a raw milk material with two or more species of microorganisms in a membrane fermenter wherein during fermentation and subsequent storage, the microorganisms that degrade product quality during storage but are beneficial for product production are kept apart from the fermenting raw milk material by a semipermeable membrane in a membrane fermenter.

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4,938,974
MINERAL ENRICHED SUGAR BEET
Stanley E. Bichsel; Michael F. Cleary, and Roland F. Olson, all of Fargo, N. Dak., assignors to American Crystal Sugar Company, Moorhead, Minn.
Filed Jan. 9, 1987, Ser. No. 1,755
Int. Cl.[5] A23L *1/304*
U.S. Cl. 426—74 46 Claims

1. A process of making a milled mineral-enriched dietary composition suitable for human consumption; said process including the steps of:
(a) combining pieces of whole, unprocessed, sugar beet and a source of mineral selected from the group consisting of iron, magnesium, copper, zinc, manganese, potassium, and combinations thereof at a sufficient temperature and for an effective length of time such that the sugar beet pieces absorb and retain at least a portion of the mineral to form mineral-enriched sugar beet pieces; and
(b) milling said mineral-enriched sugar beet pieces to form a milled composition;
(i) said milling being conducted to yield a milled mineral-enriched dietary composition without any additional prior step of reacting the mineral-enriched sugar beet pieces with a chemical composition to further chemically modify the nature of the absorbed mineral therein.

4,938,975
FOOD PRODUCT AND METHOD OF MAKING SAME
Roland Waller, 54 Hubbard St., Chicago, Ill. 60610
Filed Sep. 6, 1988, Ser. No. 241,035
Int. Cl.[5] A23L *1/00*; A21D *13/00*
U.S. Cl. 426—91 4 Claims

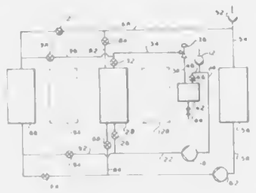


1. A food product, comprising an elongated cooked dough crust body formed from an edible dough sheet and having an upper end and a lower end, said cooked dough crust body having an inner cavity that enclosed a food filler concentrically disposed in and axially along said elongated crust body, said elongated crust body having an upper crimped crusted end seal to prevent the escape of the upper portion of the food filler with the lower portion of said food filler being seated on a disc transverse to the longitudinal axis, said disc being initially placed a predetermined distance inwardly from an edge of said edible sheet to permit crimping of the edible sheet below said disc, said disc being enclosed in said crust body, a handle fixedly secured to said disc and extending out of said crust body and axially aligned with said elongated crust body, there being substantially no extension of said handle beyond one side of said disc into the food product and said crust body having a lower portion adhesively crimped to both said disc and to a portion of said handle that extends out of said crust body to seal the lower end of the dough body to prevent the escape of said food filler, the cooked dough and its crimped affixation to the handle and disc being sufficient to provide sufficient rigidity and self-support of the product without the need to extend the stick into the product beyond the disc.

4,938,976
GLUTEN POSSESSING A FIBROUS STRUCTURE ITS MANUFACTURE AND MEAT-LIKE PRODUCTS OBTAINED THEREBY
Michael Shemer, Haifa, Israel, assignor to Tivall, Oshrat, Israel
Filed Jun. 10, 1988, Ser. No. 204,726
Claims priority, application Israel, Jan. 21, 1987, 82929
Int. Cl.[5] A23J *3/00*
U.S. Cl. 426—104 16 Claims

1. A gluten which is free of added sulfiting agents comprising wheat gluten having a viscosity above 70,000 cps with a fibrous structure and possessing binding properties, obtained by a method which comprises:
(a) agitating wheat gluten with ascorbic acid in the presence of a solution of an edible acid at a pH in the range of between 5.0 and 7.0 and at a temperature below 70° C. to obtain a relaxed gluten in the form of a viscous liquid-like structure; and
(b) generating a stable fibrous structure by incorporating a textured vegetable protein in said relaxed gluten obtained in step (a).

4,938,977
PROCESS FOR THE PRODUCTION OF DECAFFEINATED TEA
Manfred Gehrig, and Adrian Forster, both of Wolnzach, Fed. Rep. of Germany, assignors to Hopfen-Extraktrion HVG Barth, Raiser & Co., Fed. Rep. of Germany
Continuation-in-part of Ser. No. 121,946, Nov. 18, 1987, abandoned. This application May 11, 1989, Ser. No. 350,228
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1986, 3640333; May 25, 1988, 3817736
Int. Cl.[5] A23F *3/36*
U.S. Cl. 426—386 13 Claims



1. In a process for the production of an aromatic decaffeinated tea comprising the steps of
(a) charging the tea to be treated to a pressurizable vessel
(b) dearomatizing the tea by treatment with carbon dioxide at a pressure of from about 60 to about 150 bar at a temperature of from about 20° to about 70° C.;
(c) separating the carbon dioxide from the tea, reducing the pressure of the carbon dioxide and separating therefrom an aroma containing fraction;
(d) decaffeinating the tea which has been dearomatized in accordance with step (b) by treating said dearomatized tea with carbon dioxide at a pressure of from about 150 to about 500 bar at a temperature of from about 10° to about 100° C. in the presence of moisture;
(e) separating said moist, caffeine containing carbon dioxide from the tea and releasing the carbon dioxide from said caffeine containing extract;
(f) drying the decaffeinated tea; and
(g) restoring the aroma by addding to said decaffeinated and dried tea the aroma fraction isolated in step (c);
the improvement comprising raising the water content of the tea of step (b) to about 10 to 50% by weight of said tea, whereby the aroma fraction of step (c) is obtained as a caffeine free aqueous suspension/solution and wherein step (d) is carried out in the same vessel utilized to step (b); after step (c), adding sufficient water to maintain the water content of the dearomatized tea at between 10 and 50% by weight of said tea; and
restoring the aroma by adding said aqueous aroma fraction to the decaffeinated and dried tea at ambient pressure.

4,938,978
TREATMENT OF GREEN COFFEE
Saeed A. Husaini, Marysville, Ohio, assignor to Nestec S.A., Vevey, Switzerland
Filed Oct. 31, 1988, Ser. No. 265,266
Int. Cl.[5] A23F *5/02*
U.S. Cl. 426—461 12 Claims

1. A process for treating coffee beans comprising:
increasing the moisture content of green coffee beans for obtaining moisturized beans having a moisture content of at least about 25% by weight based upon the total weight of the moisturized beans;
heating the moisturized beans in a vessel containing the beans in the presence of a substantially inert gas atmosphere under a positive pressure at a temperature sufficient and for a time sufficient for hydrolyzing and pyrolyzing the moisturized beans while avoiding charring them; and then
drying the hydrolyzed and pyrolyzed beans to a stable moisture content.

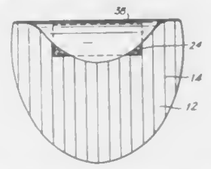
4,938,979
GREEN COFFEE TREATMENT
David L. Belville, Marysville; Donald L. Wetherilt, Powell, and James E. Wimmers, Marysville, all of Ohio, assignors to Nestec S.A., Vevey, Switzerland
Filed Oct. 31, 1988, Ser. No. 265,059
Int. Cl.[5] A23F *5/02*
U.S. Cl. 426—461 16 Claims

1. A process for treating coffee beans comprising:
increasing the moisture content of green coffee beans contained in the presence of a substantially inert gas atmosphere under a positive pressure for obtaining moisturized beans having a moisture content of at least about 25% by weight based upon the total weight of the moisturized beans;
heating the moisturized beans contained in a substantially inert gas atmosphere to a temperature sufficient and for a time sufficient for hydrolyzing and pyrolyzing the moisturized beans while avoiding charring them; and then
drying the hydrolyzed and pyrolyzed beans to a stable moisture content.

4,938,980
LOW SODIUM CAKE MIX AND PROCESS OF PREPARING LOW SODIUM CAKE
Henry Arciszewski, Franklin Lakes; Linda A. Porzio, Kinnelon; Bin Y. Chiang, Cedar Knolls, and Clyde E. Spotts, Jr., Ridgewood, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.
Continuation of Ser. No. 917,897, Oct. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 584,868, Feb. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 480,431, Mar. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 773,927, Sep. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 584,868, Feb. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 480,431, Mar. 30, 1983, abandoned. This application Mar. 16, 1989, Ser. No. 325,031
Int. Cl.[5] A21D *8/00, 2/00, 10/00*
U.S. Cl. 426—553 18 Claims

1. Low sodium cake mix comprising a shortening portion, a non-shortening portion and a leavening portion, the leavening portion comprising a basic leavening agent comprising potassium carbonate, and an edible acidic leavening agent, such that, upon baking of the cake mix, the acidic leavening agent will react with the basic leavening agent to liberate carbon dioxide and thereby leaven the cake mix, the two types of leavening agents being present in such a balanced proportion that after baking the pH of the resultant cake product is in the range of about 6.8 to about 7.5.

4,938,981
EGG ROLL LEAF
Dickson L. Hee, 22 Sunset Rd. West, Searingtown, N.Y. 11507
Continuation of Ser. No. 186,361, Apr. 25, 1988, abandoned. This application Nov. 1, 1989, Ser. No. 430,971
Int. Cl.[5] A21D *13/00*
U.S. Cl. 426—556 6 Claims



1. A wrapping leaf, specifically for use in the automated production of egg rolls closely simulated hand rolled egg rolls in neatness, appearance and delectability;
said wrapping leaf being formed from a rolled edible pastry material, and having a weight in the range of 14–18 leaves to the pound weight;
said wrapping leaf being elliptical in plan form, and, after relaxation of the rolled pastry material, having a major longitudinal axis extending parallel to the grain of the rolled pastry material and constituting the direction of rolling of an egg roll, and having a minor axis constituting the direction of inward folding of the sides of said egg roll;
said minor axis having a length of (1.5L+2D) and not greater than (2L+2D) where L is the axial length of a stable cylindrical form of an edible product to be wrapped in said leaf and D is the diameter of said stable cylindrical form;
whereby, when said edible product is placed on said leaf with the longitudinal axis of said edible product extending substantially parallel to said minor axis of said leaf, the lateral sides of said leaf are capable of extending over the ends of said product and then towards each other, the lateral edges of said leaf remaining spaced one from the other in the absence of any overlapping of the lateral edges of said leaf, thus permitting the said lateral edges to collapse downwardly as the edible product and leaf is rolled to encapsulate said edible product.

4,938,982
CEREAL SNACKFOODS AND COMPOSITIONS AND METHODS FOR MAKING THE SAME
Alan N. Howard, 39 Gilmerton Court, Long Road, Trumpington, Cambridge CB2 2HQ, England
Continuation of Ser. No. 750,678, Jun. 28, 1985, abandoned, which is a continuation of Ser. No. 600,559, Apr. 17, 1984, Pat. No. 4,526,800, which is a continuation-in-part of Ser. No. 257,320, Apr. 24, 1981, abandoned. This application Jun. 25, 1987, Ser. No. 67,436
Claims priority, application United Kingdom, Apr. 26, 1980, 8013858
Int. Cl.[5] A23L *1/308, 1/10*
U.S. Cl. 426—559 14 Claims

1. An expanded snackfood prepared from cereal bran of the type that has amylolytic activity and prepared from a dough composition of predetermined volume and comprising cooked portions of dough composition comprising gelatinized starch and added cereal bran selected from the group consisting of wheat bran, barley barn, oat bran, rye bran, maize bran and mixtures thereof, the snackfood containing from about 5% to

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about 35% by weight of oil or fat and from about 10% to about 70% by weight of bran, and having a volume at least about 1.25 times said predetermined volume, the amylolytic activity of the bran being controlled to minimize breakdown of gelatinized starch in the dough composition subsequent to formation of the dough composition to be cooked and up to cooking of the dough.

4,938,983

STABLE SUSPENSIONS OF SOLID PARTICULATES IN AQUEOUS MEDIA

Michel Peignier, Versailles, and Marie-Madeleine Besnard, Antony, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 695,372, Jan. 28, 1985, abandoned. This application Jun. 10, 1987, Ser. No. 60,980

Claims priority, application France, Jan. 31, 1984, 84 01443

Int. Cl.[5] A23L *1/0522, 1/0526, 1/054*

U.S. Cl. 426—573 **14 Claims**

1. A composition of matter which comprises a suspension of water insoluble solid particulates in an aqueous medium, said aqueous medium comprising a suspension stabilizing amount of a mixture of xanthan and carob gums, wherein the suspension stabilizing amount comprises from 0.01 to 0.1 percent by weight of dissolved xanthan and carob gums in said aqueous medium, the ratio by weight of xanthan gum to carob gum ranging from 30/70 to 70/30.

4,938,984

NUTRITIVE COMPOSITIONS CONTAINING FATTY SUBSTANCES

Helmut Traitler, and Heike Winter, both of Vevey, Switzerland, assignors to Nestec S. A., Vevey, Switzerland

Continuation of Ser. No. 95,550, Sep. 11, 1987, abandoned, which is a division of Ser. No. 542,149, Oct. 14, 1983, Pat. No. 4,703,060, which is a continuation-in-part of Ser. No. 482,429, Apr. 6, 1983, abandoned. This application May 5, 1989, Ser. No. 349,896

Claims priority, application Switzerland, Apr. 16, 1982, 2314/82

Int. Cl.[5] A23C *11/00*

U.S. Cl. 426—580 **8 Claims**

1. Food compositions for human and animal nutrition having an added γ-linolenic acid component comprising a food containing from 0.44% [2%] to 15% by weight of an oil extracted from pips of Ribes genus fruits selected from a group consisting of *Ribes nigrum, Ribes rubrum, Ribes ovacrispa, Ribes grossularia*, hybrids thereof and combinations thereof containing at least 4% by weight of γ-linolenic acid and being substantially free from waxes, odorous compounds, colorings and free fatty acids for providing an equivalent of γ-linolenic acid in the foods in an amount by weight based on the total weight of the foods which corresponds with an amount of γ-linolenic acid in human mother's milk by weight to 2.5% by weight.

4,938,985

COMMERCIALLY PROCESSED ORANGE JUICE PRODUCTS HAVING A MORE HAND-SQUEEZED CHARACTER

Robert L. Swaine, Jr., Springdale; Thomas F. Rich; Rudolf G. K. Strobel, both of Cincinnati; Raju V. Thundathil, and Chee-Hway Tsai, both of West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 18, 1987, Ser. No. 52,088

Int. Cl.[5] A23L *2/02*

U.S. Cl. 426—599 **20 Claims**

1. A single-strength orange juice product prepared by blending together:

(I) orange juice concentrate comprising:

(A) from about 30 to 100% evaporated orange juice concentrate having

(i) a juice solids content of from about 55° to about 75° Brix;

(ii) a viscosity of from about 500 to about 6000 centipoise at a temperature of 8° C.;

(iii) pectinesterase activity of about 0.5×10^{-4} P.E. units or less per °Brix; and

(iv) at least about 28% retained valencene;

(B) from 0 to about 70% other orange juice concentrate;

(II) aroma and flavor materials;

(III) sensible pulp; and

(IV) water;

said single-strength product having:

(1) a juice solids content of from about 11° to about 13° Brix;

(2) a viscosity of about 4 to about 7 centipoise at a temperature of 8° C.;

(3) pectinesterase activity of about 0.5×10^{-4} P.E. units or less per °Brix;

(4) a titratable oil content of about 0.015% or less; and

(5) an orange aroma and flavor component having:

(a) from about 400,000 to about 1,200,000 ppb ethanol;

(b) from about 4000 to about 20,000 ppb acetaldehyde;

(c) from about 10,000 to about 60,000 ppb methanol;

(d) from about 500 to about 2000 ppb ethyl butyrate;

(e) from about 100 to about 700 ppb ethyl 3-hydroxyhexanoate;

(f) from about 2000 to about 20,000 ppb valencene;

(g) a ratio of the combined amount of acetaldehyde, ethyl butyrate, ethyl 3-hydroxyhexanoate and valencene, to the combined amount of hexanal, alpha-pinene, myrcene, decanal, linalool, octanol, 4-terpineol, alpha-terpineol, dodecanal and nootkatone of at least about 2:1;

(6) from about 4 to about 10% sinking pulp; and

(7) from about 0.5 to about 3% sensible pulp.

4,938,986

RECOVERING ROUGHAGE FROM DRAFF AND PRODUCT PRODUCED ACCORDING TO THE METHOD

Christian Zürcher, Eppertshausen, and Rüdiger Gruss, Weiskirchen, both of Fed. Rep. of Germany, assignors to Binding-Brauerei AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1987, Ser. No. 138,729

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1986, 3644600

Int. Cl.[5] A23K *1/00, 1/06*

U.S. Cl. 426—624 **11 Claims**

1. A method of recovering roughage from draff, comprising:

(a) adding water to draff in a weight ratio of about 1:1, said draff comprising a soft protein fraction and a hard roughage fraction which are partially separated from each other;

(b) mixing said draff and water to enhance the separation of said soft protein fraction from said hard roughage fraction;

(c) mechanically separating said soft protein fraction from said hard roughage fraction by using at least one of a screen press or a decanter,

(d) removing water from said separated roughage fraction, and

(e) drying said separated roughage fraction.

4,938,987

PRODUCTS AND PROCESS FOR PREPARING LOW-FAT ROASTED NUTS

Peter Gannis, Stamford, and Howard Wilkins, Brookfield, both of Conn., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Aug. 31, 1989, Ser. No. 401,103

Int. Cl.[5] A23L *1/36*

U.S. Cl. 426—632 **23 Claims**

1. A process for preparing low-fat roasted nuts, comprising:

(a) pressing raw redskin nuts having a moisture content of 6% or greater under conditions effective to remove about 40% to about 52% of the oil content of the nuts and to form compressed nuts and

(b) roasting the compressed nuts at substantially the moisture content existing after pressing under conditions effective to develop a roasted nut flavor and color and to return the nuts to an uncompressed, reconstituted form during said roasting.

4,938,988

POULTRY SAUSAGE AND METHOD OF MAKING SAME

John H. Fankhauser, La Costa, Calif., assignor to User Friendly Foods, Inc., Calif.

Continuation-in-part of Ser. No. 111,104, Oct. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 622,995, Jun. 21, 1984, abandoned. This application Oct. 28, 1988, Ser. No. 264,192

Int. Cl.[5] A22C *11/00*

U.S. Cl. 426—644 **22 Claims**

1. A method of making a poultry sausage from poultry meat without the use of artificial binders, comprising the steps of:

using fowl skin of a sufficient quantity for natural binding and moisture producing purposes;

using Spanish brown onion of a sufficient quantity for sticky, moist consistency purposes; and

grinding the poultry meat, fowl skin and onion together to release sufficient natural animal fat from the skin to be distributed uniformly throughout the resulting mixture to provide moisture therefor and to help bind it naturally cohesively together by reacting with the onion to cause the resulting mixture to adhere cohesively in a sausage consistency.

4,938,989

METHOD OF MAKING PURE MAPLE SYRUP SUBSTITUTE AND THE SYRUP PRODUCTED THEREFROM

Roger W. Steeves, P.O. Box 44, Elgin, New Brunswick, Canada E0A 1P0, and Peter F. McKelvey, 220 Woodbridge Street, Fredericton, New Brunswick, Canada E3B 4R3

Filed Jan. 9, 1989, Ser. No. 294,402

Claims priority, application Canada, Jun. 10, 1988, 569233

Int. Cl.[5] A23L *1/09*

U.S. Cl. 426—658 **17 Claims**

1. A syrup capable of acting as a pure maple syrup substitute, said syrup having the following composition:

Ingredient	Percent by Weight
White sugar	36.975–61.625
Fructose	3.19–5.31
Glucose	3.19–5.31
Maple flavour	0.0975–0.1625
Maple syrup	11.25–18.75
Water	Balance

said maple flavour having been added to other ingredients at such a time and at such a temperature that said syrup has a similar flavour irrespective of the flavour of said maple syrup employed as an ingredient, and said syrup being capable of conversion to a product substantially identical to a natural product selected from the group consisting of maple butter, maple sugar and maple candy.

4,938,990

PATTERN METALLIZING

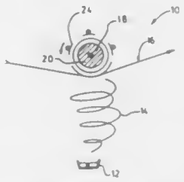
Donald G. Beckett, Acton, Canada, assignor to Beckett Packaging Limited, Oakville, Canada

Filed Mar. 13, 1989, Ser. No. 322,287

Claims priority, application United Kingdom, Mar. 11, 1988, 8805860

Int. Cl.[5] B05D *5/00, 1/00*

U.S. Cl. 427—14.1 **5 Claims**



1. A method of providing a substrate metallized in a desired pattern, which comprises:

providing a metal in depositable form,

electrostatically charging said metal with one polarity,

electrostatically charging said substrate to provide regions corresponding to said desired pattern of the opposite polarity to said one polarity, thereby to attract metal to said substrate and to deposit thereon said pattern, and to provide regions of the same polarity as said one polarity to repulse metal from deposition therein.

4,938,991

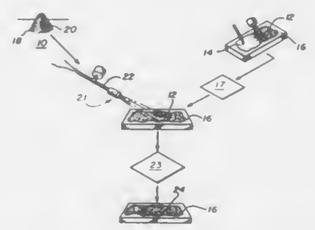
SURFACE PROTECTION METHOD AND ARTICLE FORMED THEREBY

Jay S. Bird, Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 30,408, Mar. 25, 1987, Pat. No. 4,814,234. This application Dec. 6, 1988, Ser. No. 280,444

Int. Cl.[5] B05D *1/36*

U.S. Cl. 427—190 **18 Claims**



1. A method of forming a layer of wear resistant material, inlcuding a heavy metal refractory carbide, on selective surface areas of a metal alloy surface comprising the steps of:

a. applying a heavy metal refractory carbide materials to said selective surface areas;

b. heating said surface areas to the incipient surface melting temperature of said alloy;

c. applying a fine powder super-alloy based matrix metal to said previously heated surface areas;

d. heating the powder matrix metal to a temperature sufficient for the matrix metal to become molten, but below the melting temperature of said heavy metal refractory carbide, while maintaining said surface areas at said surface areas at said incipient surface melting temperature for a predetermined controlled time duration less than a time duration in which significant alloying diffusion can occur;

e. permitting the molten matrix metal to flow to cover said selective surface areas and encapsulate said unmolten carbide material; and

f. cooling said molten metal to metallurgically bond the matrix metal to said surface areas while mechanically encapsulating said heavy metal refractory carbide.

4,938,992

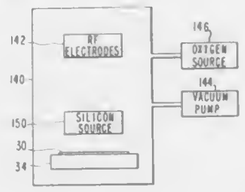
METHODS FOR THERMAL TRANSFER WITH A SEMICONDUCTOR

Eric L. Mears, Rockport, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 331,698, Mar. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 141,709, Jan. 7, 1988, Pat. No. 4,832,781. This application Oct. 25, 1989, Ser. No. 427,921

Int. Cl.[5] **B05D** *3/06, 5/00;* **B44C** *1/22;* **B29C** *37/00*

U.S. Cl. 427—38 **17 Claims**



1. A method for treating a thermally-conductive polymer layer used for thermal transfer with a workpiece to prevent adherence of the workpiece to a surface of the polymer layer, comprising the steps of:

treating said polymer layer with oxygen plasma; and

providing silicon at the surface of said polymer layer during oxygen plasma treatment to cause formation of a thin surface film on said polymer layer, said surface film being harder than said polymer layer.

4,938,993

PROTECTIVE COATINGS FOR ALLOYS

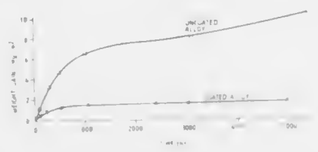
Michael J. Bennett, South Moreton, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Oxfordshire, England

Filed Mar. 29, 1989, Ser. No. 330,041

Claims priority, application United Kingdom, Apr. 5, 1988, 8807868.8

Int. Cl.[5] **B05D** *3/06*

U.S. Cl. 427—38 **3 Claims**



1. A method of providing an aluminum-containing nickel-base superalloy with a protective surface coating substantially of alumina which comprises

(i) coating a surface of the alloy with an adherent, amorphous coating of silica by a vapour depositing coating technique; and

(ii) heat treating the coated alloy at a temperature greater than 800° C. under conditions such that a coherent, protective alumina coating is formed on the surface of the alloy.

4,938,994

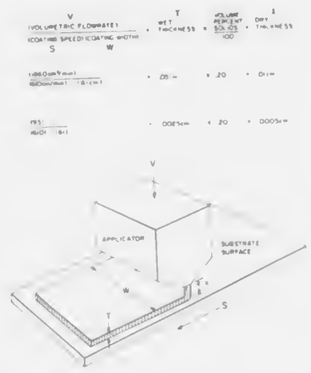
METHOD AND APPARATUS FOR PATCH COATING PRINTED CIRCUIT BOARDS

Edward J. Choinski, Wayland, Mass., assignor to Epicor Technology, Inc., Wayland, Mass.

Filed Nov. 23, 1987, Ser. No. 123,790

Int. Cl.[5] **B05D** *5/12;* **G03C** *5/00*

U.S. Cl. 427—96 **124 Claims**



1. A method for applying a layer of a liquid with a controlled volume per unit area of the liquid to a printed circuit board comprising the steps of:

A. fluidly coupling a source of the liquid to a liquid containing chamber, said liquid containing chamber being fluidly coupled to an applicator slot having an exit aperture so that both the chamber and applicator slot are filled with the liquid;

B. moving a printed circuit board and the applicator slot exit aperture into proximity with each other;

C. sending a controlled volumetric flowrate of the liquid from the source of the liquid to the liquid containing chamber and then through the applicator slot to create a uniform volumetric flowrate of liquid exiting from each point along the applicator slot exit aperture;

D. generating a pulse to control the formation of a connecting bead of liquid coating between the applicator slot exit aperture and the printed circuit board, said connecting bead of liquid coating being formed prior to, at the same time as, or after the sending of the controlled volumetric flowrate of the liquid; and,

E. relatively moving the printed circuit board and the applicator slot exit aperture with respect to each other to apply a uniform layer of the liquid with a controlled volume per unit area of the liquid on the printed circuit board.

4,938,995

FLUOROPOLYMER THIN FILM COATINGS AND METHOD OF PREPARATION BY PLASMA POLYMERIZATION

Paul J. Giordano, Hudson; George W. Prohaska, Willoughby, and Richard C. Smierciak, Streetsboro, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 94,473, Aug. 8, 1987, abandoned. This application May 10, 1989, Ser. No. 352,676

Int. Cl.[5] **B05D** *3/06;* **C08G** *73/24, 65/22*

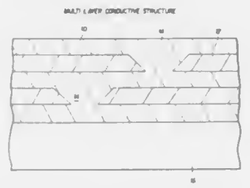
U.S. Cl. 427—41 **6 Claims**

1. A process for the deposition of an oxygen-containing, high fluoropolymer thin film onto an appropriate substrate comprising:

(a) loading said substrate in an enclosed reactor;

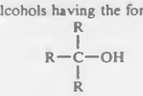
(b) evacuating said reactor;

(c) charging said reactor with an inert carrier gas and an oxygen-containing fluorocarbon monomer feed gas; and

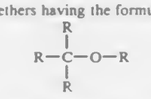


(d) plasma-polymerizing said feed gas such that a thin film of polymerized monomer is deposited onto said substrate, wherein said monomer is a compound selected from the group consisting of:

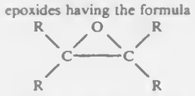
alcohols having the formula



ethers having the formula



epoxides having the formula



peroxides having the formula

R—O—O—R

wherein at least one R is defined as a per fluorinated linear, branched or cyclic saturated alkyl group having at least 1 to 9 carbons, and the remaining R groups are selected from the group consisting of H; linear, branched or cyclic saturated alkyl groups; fluorinated linear, branched or cyclic saturated alkyl groups; perfluorinated linear, branched or cyclic saturated alkyl groups; and each of said alkyl groups may optionally contain one or more alcohol, ether, peroxide or epoxide functionalities.

4,938,996

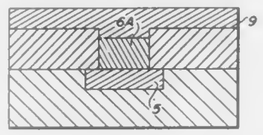
VIA FILLING BY SELECTIVE LASER CHAMICAL VAPOR DEPOSITION

Alan R. Ziv, 3129 E. Nora St., Mesa, Ariz. 85213, and Michael N. Kozicki, 2035 S. Elm St., Tempe, Ariz. 85282

Filed Apr. 12, 1988, Ser. No. 180,780

Int. Cl.[5] **B05D** *3/06, 5/12*

U.S. Cl. 427—53.1 **13 Claims**



1. A method of forming an integrated circuit via connection, comprising the steps of:

(a) providing a semiconductor substrate and an electrical connection site on the substrate, the substrate at the electrical connection site being absorptive of laser light;

(b) forming an insulative layer on the substrate, the insulative layer being relatively transparent to the laser light;

(c) forming a via hole in the insulative layer extending from the electrical connection site to an outer surface of the insulative layer;

(d) providing a gaseous atmosphere containing atoms of a metal above the insulative layer;

(e) aiming a laser beam through the atmosphere at the via hole;

(f) repetitively pulsing the laser beam, the pulses having enough energy to heat material at the bottom of the via hole to a deposition threshold temperature to cause deposition of atoms of the metal onto the bottom of the via hole, the intervals between the pulses being great enough to allow enough thermal decay of the temperature at the interface between the substrate and the insulative layer by conduction of heat through the substrate that upper portions of the walls of the via hole are not heated to the deposition threshold temperature, whereby the via hole becomes filled with the metal without prior build-up of the metal on the upper portions of the walls of the via hole.

4,938,997

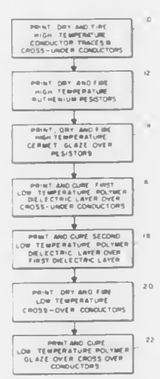
PROCESS FOR MAKING HYBRID MICROCIRCUITS PROVIDING ACCURATE THICK FILM RESISTOR PRINTING

William R. Keaton, Genoa, Ill., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed May 1, 1989, Ser. No. 345,805

Int. Cl.[5] **H01C** *17/06*

U.S. Cl. 427—103 **4 Claims**



3. A process for fabricating thick film hybrid microcircuits on a dielectric substrate comprising the steps of:

printing a plurality of first conductor means to said substrate, and firing in a high temperature environment;

printing a plurality of resistive means on selected areas of said first conductor means and said substrate intermediate said selected areas of said first conductor means, and firing in a high temperature environment;

printing first dielectric means over said resistive means and firing in a high temperature environment;

printing at least a second dielectric means over selected portions of said first conductor means, and firing in an environment having a temperature lower than the environment temperature used to fire said resistive means;

printing second conductor means on said substrate and said second dielectric means, and firing in an environment

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having a temperature lower than the environment temperature used to fire said second dielectric means; and

printing third dielectric means over the portions of said second conductor means which were printed over said second dielectric means, and firing in an environment having a temperature equal to the environment temperature used to fire said second dielectric means.

4,938,998

PROCESS FOR TREATING THE SURFACE OF A PLASTIC ARTICLE

Juergen Stock, Am Buelten 3, 3300 Braunschweig, Fed. Rep. of Germany

Filed Aug. 20, 1986, Ser. No. 898,307

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1985, 3530366

Int. Cl.[5] **B05D** *3/08, 3/02;* **B32B** *27/38*

U.S. Cl. 427—223 **12 Claims**

1. A process for treating the surface of a plastic article, comprising the steps of:

dissolving a naturally-occurring, enzymatically-functionalized cellulose derivative having a functional phosphate, sulfate, carbonate or amino group in water to form a solution;

adding to the solution of the cellulose derivative a monomer or polymer, which is capable of reacting with the functional group of the cellulose derivative and which is further capable of forming a matrix embedding the cellulose derivative;

applying the solution to a surface of the plastic article; and drying the solution to form a film on said surface.

4,938,999

PROCESS FOR COATING A METAL SUBSTRATE BY CHEMICAL VAPOR DEPOSITION USING A METAL CARBONYL

William C. Jenkin, 382 Dorchester Rd., Akron, Ohio 44320

Filed Jul. 11, 1988, Ser. No. 217,329

Int. Cl.[5] **C23C** *16/16*

U.S. Cl. 427—252 **28 Claims**

1. A process for coating a metal surface of a substrate by chemical vapor deposition with a metal which will not adhere firmly to the substrate when deposited directly thereon from a metal carbonyl at a temperature from about 225° C. to about 275° C., said process comprising:

(a) forming on said surface of said substrate a thin layer of an undercoat metal which adheres to said substrate metal and which does not or substantially does not chemisorb carbon monoxide;

(b) heating the undercoated substrate to from about 225° C. to about 275° C. in reducing atmosphere, thereby reducing any metal oxide impurities present on the surface of the undercoat layer; and

(c) contacting a heat decomposable metal carbonyl with said undercoat layer under reducing conditions at a temperature of from about 225° C. to about 275° C., thereby depositing a metal outercoat layer on said undercoat layer.

4,939,000

CARBON SLURRY REGENERATION METHOD

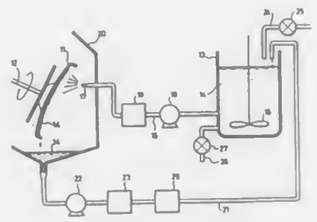
Robert E. Dodds, San Diego, Calif.; Tsutomu Inose, and Yoshimitsu Kato, both of Aichi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1989, Ser. No. 396,847

Int. Cl.[5] **B05D** *3/12, 5/06;* **B01D** *15/04*

U.S. Cl. 427—345 **5 Claims**

1. A method for regenerating a carbon slurry used to produce a black matrix-type phosphor screen of a cathode ray tube which comprises the steps of: (a) collecting excess carbon slurry remaining after the completion of a carbon-coating process onto a cathode ray tube panel; and, (b) regenerating



said collected carbon slurry by contacting it with an ion-exchange resin.

4,939,001

PROCESS FOR SEALING ANODIZED ALUMINUM

Dieter Brodalla; Winfried Kirchhoff, both of Duesseldorf; Willi Wuest, Ratingen; Helmut Blum, and Wolfgang Riedel, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 14, 1989, Ser. No. 365,869

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820650

Int. Cl.[5] **B05D** *1/18*

U.S. Cl. 427—419.2 **20 Claims**

1. In a process for sealing, at temperatures between 80° C. and the boiling temperature, a decorative anodized oxide layer on aluminum or an aluminum alloy by contacting the oxide layer with an aqueous solution having a pH value between about 5.5 and about 8.5 and containing constituents selected from the group of phosphonic acids and the alkali metal salts and alkanolamine salts of phosphonic acids, the improvement wherein said constituents are selected from the group of 1-phosphonopropane-1,2,3-tricarboxylic acid, 1,1-diphosphonopropane-2,3-dicarboxylic acid, and the alkali metal and alkanolamine salts of 1-phosphonopropane-1,2,3-tricarboxylic acid and 1,1-diphosphonopropane-2,3-dicarboxylic acid.

4,939,002

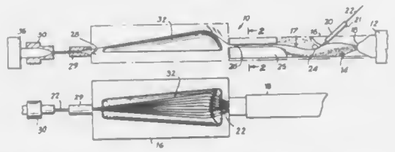
POLTRUSION APPARATUS AND METHOD FOR IMPREGNATING CONTINUOUS LENGTHS OF MULTI-FILAMENT AND MULTI-FIBER STRUCTURES

William Hilakos, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 15, 1987, Ser. No. 133,417

Int. Cl.[5] **B05D** *1/18*

U.S. Cl. 427—434.4 **8 Claims**



8. A method of impregnating a continuous length of a multifilament or a multifiber continuous length, which comprises; providing apparatus which comprises;

(A.) a thermoplastic polymeric resin extruder;

(B.) vessel means positioned adjacent to the extruder, for receiving and containing thermoplastically extruded polymeric resin, said vessel means having

(i) a first inlet for receiving the extruded resin;

(ii) a second inlet for receiving into the contained resin, the continuous length for impregnation; and

(iii) an outlet for the impregnated continuous length;

(C.) a sizing die on the vessel means outlet;

(D.) means adjacent to the sizing die, for tensioning the continuous length and tracting the tensioned continuous length along a predetermined path into the second inlet, through the vessel means, through the outlet and through its sizing die;

(E.) a multifilament or multifiber spreading member positioned within the vessel means, between the second inlet and the outlet, said member comprising an elongate body having

(i) a first end distal to the outlet;

(ii) a second end adjacent to the outlet; and

(iii) a multifilament or multifiber spreading surface between the first and second ends;

said body also having a taper beginning at the first end and terminating at the second end;

said body being further defined by a shape characterized in part by

(i) a first curvilinear line, when the body is viewed in cross-section along a plane perpendicular to the lengthwise axis of the elongate body, with a point on the line between the ends of the line;

(ii) a second curvilinear line, when the body is viewed in cross-section along a plane parallel to the lengthwise axis of the elongate body, with a point on the second line between the first and the second ends;

said member being aligned between the second inlet and the outlet so that a portion of the multifilament or multifiber spreading surface, including the points on the first and second curvilinear lines, lies on the predetermined path;

receiving molten resin from the extruder into the vessel means; and poltruding the length on the predetermined pathway through the vessel means of the provided apparatus and in sequence over the spreading surface and through the sizing die.

4,939,003

LIQUID CRYSTAL ELEMENT

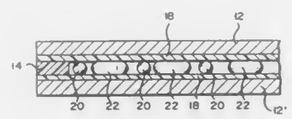
Takao Aoki, Otsu; Takamasa Harada, Inzaimachi; Kokichi Ito, Matsudo; Koji Iwasa, Funabashi; Norio Kawabe, Otsu, and Hiroyuki Ikeuchi, Kyoto, all of Japan, assignors to Toray Industries, Inc. and Seiko Instruments & Electronics Ltd., both of Tokyo, Japan

Filed Jan. 22, 1988, Ser. No. 147,202

Claims priority, application Japan, Jan. 23, 1987, 62-12304; Nov. 18, 1987, 62-291155

Int. Cl.[5] **C09K** *3/34*

U.S. Cl. 428—1 **15 Claims**



1. A liquid crystal element comprising:

a pair of substrates secured by a sealing material to face each other so as to define a chamber therebetween;

an orientation layer formed on the inner side of each of the substrates which consists essentially of a polymer with a Mark-Houwink coefficient of not less than 0.85 in at least one solvent, the Mark-Houwink coefficient being represented by the formula (I):

$$(\eta)=K\cdot M^{\alpha} \quad (I)$$

wherein (η) represents intrinsic viscosity of the polymer determined by solution viscosity measuring method, K represents a constant, M represents molecular weight of the polymer, and α represents the Mark-Houwink coefficient; and

a liquid crystal contained in the chamber,

wherein the polymer consists essentially of a poly(substituted)acetylene, a polyfumaric acid ester, or a copolymer thereof.

4,939,004

CHRISTMAS TREE ORNAMENT

Lloyd J. Fuss, 132 Fox Chase Dr., Delran, N.J. 08075

Filed Oct. 26, 1989, Ser. No. 426,674

Int. Cl.[5] **A47G** *33/06, 33/10*

U.S. Cl. 428—9 **2 Claims**



1. Christmas tree ornaments for decorating a tree in a manner simulating a human individual, comprising:

a first elongated adjustable strut having a plurality of relatively slidable telescoping sections;

a first ornament member secured adjacent one end portion of said strut;

said first ornament member including a first electrical light and a representation of a human head;

a second elongated adjustable strut having a plurality of relatively slidable telescoping sections;

a second ornament member secured adjacent one end portion of said second strut;

said second ornament member including a second electrical light and a representation of a human hand;

a third elongated adjustable strut having a plurality of relatively slidable telescoping sections;

a third ornament member secured adjacent one end portion of said third strut;

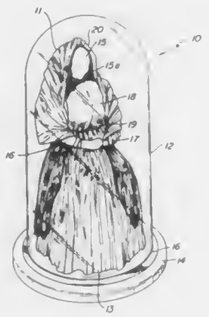
said third ornament member including a third electrical light and a representation of a human hand;

power cord means extending through each of said struts and connected to each of said electrical lights; and

a plurality of arcuate clamps on each of said struts for securing said struts to a Christmas tree, each of said clamps having a pair of spring biased jaws.

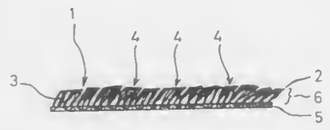
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,005
TOBACCO FIGURINE
Fred W. Whitson, 320 E. Pike St., and Freda G. Saunders, Millcrest Ct. Apt. #5, both of Cynthiana, Ky. 41031
Filed Aug. 14, 1989, Ser. No. 393,244
Int. Cl.[5] A01N *3/00*; A63H *3/00*
U.S. Cl. 428—13 13 Claims



1. A figurine comprising:
(a) a plurality of pliable tobacco leaves;
(b) a plurality of sections made of said tobacco leaves which when combined with one another form said figurine; and
(c) an air-tight container for displaying said figurine, said container maintaining said leaves in an integral state.

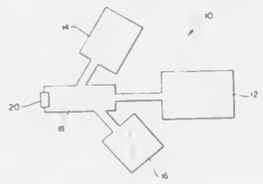
4,939,006
THREE DIMENSIONAL FABRIC HAVING A UNIQUE STRUCTURE AND ITS METHOD OF PREPARATION
Tamotu Nakajima, Shiga, and Sbusuke Yoshida, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Oct. 21, 1988, Ser. No. 311,563
Int. Cl.[5] B32B *33/00*
U.S. Cl. 428—25 5 Claims



1. A three dimensional fabric having a face surface, an opposite fabric surface and a piled body of pile fibers therebetween, said pile fibers, at the apex end at said face surface of said structure being abutted and joined to form contiguous, substantially flat, scaly-like areas each bounded by a boundary, and said scaly-like areas cover said face surface of the fabric.

4,939,007
ARTICLE HAVING A HEMOCOMPATIBLE SURFACE
Can B. Hu; Donald D. Solomon, both of Spring Valley, and Stanley C. Wells, Centerville, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 7, 1988, Ser. No. 164,948
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—34.1 9 Claims

1. An article having a hemocompatible surface comprising a thermoplastic polymeric base material having thereon a layer of a copolymer comprising a polyurethane segment and a



hydroxyalkyl-terminated siloxane segment said layer being from 5 to 50% by weight of said material.

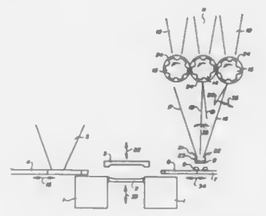
4,939,008
COMPOSITE FILM
Michael B. Kemski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 16, 1988, Ser. No. 232,863
Int. Cl.[5] C09J *5/02*; B32B *7/12*; G03C *1/80*; G11B *5/62*
U.S. Cl. 428—34.3 30 Claims

1. A film comprising
(a) a dimensionally stable polymeric first layer having opposed, substantially parallel major surfaces;
(b) an aziridine-functional layer which is essentially free from other organic resins on at least one of said major surfaces;
(c) a polyolefin top layer on said aziridine-functional layer which has a calculated thickness of at least about 0.075 microns thick.

4,939,009
MULTILAYERED SHEETS HAVING EXCELLENT ADHESION
Randy S. Beavers, Kingsport; Bradley L. Willingham, Mount Carmel; Richard V. Brooks; Michael C. Carmody, both of Kingsport, and Burns Davis, deceased, late of Kingsport, all of Tenn. (by Bessie Anne Davis), assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 169,556, Mar. 17, 1988, abandoned. This application Feb. 27, 1989, Ser. No. 317,884
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—35.2 12 Claims

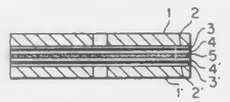
1. Sheet material comprising a first layer of copolyesterether, copolyester or a blend thereof, a second layer of polyolefin and a layer of ethylene copolymer intermediate said first and second layers.
(I) said copolyester having an I.V. of about 0.8 to 1.5 and repeat units from
(A) a dicarboxylic acid component consisting essentially of 1,4-cyclohexanedicarboxylic acid having a trans isomer content of at least 70%,
(B) a glycol component consisting essentially of
(1) about 95 to about 65 mol % 1,4-cyclohexanedimethanol, and
(2) about 5 to about 35 mol % poly(oxytetramethylene) glycol having a molecular weight of about 500 to about 1100,
(II) said copolyester having repeat units from terephthalic acid and at least two glycols having 2 to 10 carbon atoms, and
(III) said ethylene copolymer being a copolymer of ethylene and at least one other unsaturated monomer, said ethylene copolymer having a density of about 0.85–0.91.

4,939,010
CERAMIC FLOORING TILE, SET OF MUTUALLY DISTINGUISHABLE FLOORING TILES
Johannes F. H. Goossens, Chambertinlaan 12, 6213 EW Maastricht, Netherlands
Filed Jul. 8, 1988, Ser. No. 216,278
Claims priority, application Netherlands, Jul. 8, 1987, 8701601
Int. Cl.[5] B32B *3/14*
U.S. Cl. 428—49 4 Claims



1. A ceramic, non-glazed flooring tile comprised of a ground layer and a comparatively thinner upper layer adhered thereto, said upper layer comprised of a top layer applied directly to said ground layer and a separate pattern layer adhered to said top layer, said pattern layer extending over at least a portion of said top layer and having color and grain size characteristics different from the colors and grain sizes used in said top layer.

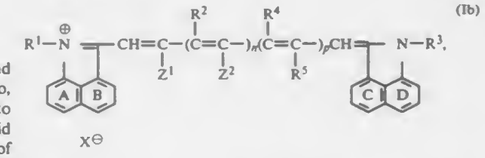
4,939,011
OPTICAL DISK
Hidekazu Takahashi; Tadanori Michimoto; Yasuo Mitoh, and Eiji Takabatake, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed Feb. 24, 1989, Ser. No. 315,098
Claims priority, application Japan, Feb. 24, 1988, 63-43033
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 8 Claims



1. An optical disk comprising:
a pair of substrates, each having a recording surface and a metallic reflective layer in superposition on one side, said pair of substrates positioned in such a manner that the reflective layer on one substrate faces the reflective layer on the other substrate, and
a smooth-surfaced silicone-made double-side pressure-sensitive adhesive member bonding said pair of substrates together.

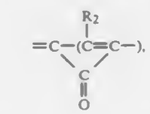
4,939,012
NAPHTHOLACTAM DYES AND OPTICAL RECORDING MEDIUM CONTAINING THESE DYES
Matthias Dust, Mannheim; Peter Neumann, Wiesloch; Ernst Schefczik, Ludwigshafen; Heidi Benthack-Thoms, Limburgerhof; Helmut Barzynski, Bad Duerkheim; Klaus-Dieter Schomann, Ludwigshafen; Harald Kupplemaier, Heidelberg, and Eberhard Koester, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Division of Ser. No. 24,988, Mar. 12, 1987, Pat. No. 4,876,356. This application Aug. 21, 1989, Ser. No. 396,117
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1986, 3608214
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 3 Claims

1. An optical recording medium consisting of a base and a laser-sensitive, dye-containing layer of a polymer, said polymer being selected from thermoplastics or crosslinked plastics wherein the polymer contains one of more naptholactam dyes of the formula Ib

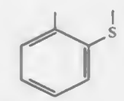


(Ib)

where
R^1 and R^3 are identical or different and independently of one another are each C_4–C_{20}-alkyl which may be interrupted by ether oxygen or each are benzyl,2-phenylethyl or C_5 or C_6-cycloalkyl
R^2, R^4 and R^5 are identical or different and independently of one another are each hydrogen, C_1–C_4-alkyl, C_5–C_6-cycloalkyl, phenyl, alkoxycarbonyl in which alkoxy is C_1–C_4, carboxyalkyl in which alkyl is methyl or ethyl, hydroxyl, chlorine or bromine,
n is 0 or 1,
p, independently of n, is 0, 1 or 2,
Z^1 and Z^2 are each hydrogen or, where n is 1, may together form an unsubstituted or C_1–C_4-alkyl-substituted C_2- or C_3-alkylene chain or together with the moiety to which they are attached from the radical



and
X- is an anion, and
the rings A, B, C and D are unsubstituted or substituted by methyl, ethyl, phenyl, C_1–C_4-alkoxy, C_1–C_6-alkylthio, cyano, dialkylamine in which each alkyl is methyl or ethyl, chlorine, bromine, hydroxysulfonyl, phenylthio or the radical,



with the proviso that if
(a) at least one of the rings A, B, C, or D are unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkoxy, dial-

kylamino in which each alkyl is methyl or ethyl, n and p are not simultaneously 0,

(b) at least one of the rings A, B, C or D are unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkoxy, dialkylamino in which each alkyl is methyl or ethyl, n is 1, p is 0 and Z^1 and Z^2 are each hydrogen R^2 is not hydrogen,

(c) at least one of the rings A, B, C or D are unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkoxy, dialkylamino in which each alkyl is methyl or ethyl, n is 0 and p is 1 or 2, R^4 and R^5 are not simultaneously hydrogen, and

(d) at least one of rings A, B, C or D are unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkoxy, dialkylamino in which each alkyl is methyl or ethyl, n and p are each 1 and Z^1 and Z^2 are each hydrogen, one or more of the radicals R^2, R^4 and R^5 is not hydrogen.

4,939,013

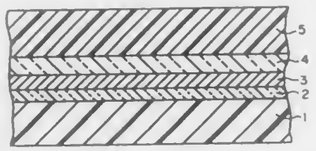
OPTICAL INFORMATION STORING MEDIUM

Kunio Kimura; Noboru Yamada, both of Hirakata; Susumu Sasai, and Eiji Ohno, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 890,325, Jul. 29, 1986, abandoned. This application Mar. 9, 1989, Ser. No. 320,789

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—64 3 Claims



1. An optical information storing medium consisting essentially of an oxygen free composition of a quaternary system of Te, Ge, Sn and Au,

wherein atomic ratios of a ternary system consisting of said Te, said Ge and said Sn lie within an area in ternary system defined by contents A (Te_{93}, Ge_5, Sn_2), B (Te_{93}, Ge_2, Sn_5), C (Te_{68}, Ge_2, Sn_{30}), D (Te_{52}, Ge_{18}, Sn_{30}) and E (Te_{52}, Ge_{46}, Sn_2) and

further said quaternary system containing Au at a concentration of 1–40 atom % thereof.

4,939,014

COMPOSITE POLYMER/DESICCANT COATINGS FOR IC ENCAPSULATION

James E. Anderson, Ann Arbor; Vlado Markovac, Lathrup Village, both of Mich., and Philip R. Troyk, Morton Grove, Ill., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1987, Ser. No. 133,820

Int. Cl.[5] B32B *1/04*

U.S. Cl. 428—76 11 Claims

1. A composite coating for maintaining low moisture levels at the surface of solid substrates, which composite coating comprises:

a substantially continuous first layer comprising first elastomeric polymer on said substrate, said first elastomeric polymer being substantially non-reactive with said substrate and being present in a thickness of at least about 0.1 millimeter;

a substantially continuous second layer disposed on said first layer and comprising desiccant; and

a substantially continuous third layer covering said second layer and comprising second elastomeric polymer having low permeability to water.

4,939,015

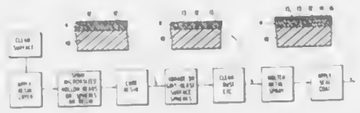
COMBINATION THERMALLY SPRAYED ANTIFOULING METAL COATING AND SEAL COAT ON A MARINE SURFACE AND METHOD OF PREPARING SAME

Louis M. Riccio, P.O. Box 81, DeVault, Pa. 19432, and Alexander A. Bosna, 135 Summit Rd., Malvern, Pa. 19355

Filed Aug. 29, 1988, Ser. No. 237,124

Int. Cl.[5] B32B *3/06;* **B05D** *5/00*

U.S. Cl. 428—142 2 Claims



1. In an antifouling coating on a base surface comprising, in combination, a resin adhesion layer on said surface and means forming, at the surface of said adhesion layer opposed to said base surface, a plurality of undercuts and surface roughness, one or more thermally sprayed melted layers of a metal selected from the group consisting of copper and copper based alloys wherein molten particles of said thermally sprayed melted layers shape themselves to lock to said undercuts and surface roughness due to the impact velocity of said molten particles, the improvement comprising:

a seal overcoat applied to the outer surfaces of said one or more thermally sprayed layers, said seal overcoat when applied having the following properties: a low surface tension to permit wetting and penetration of the outer one of said thermally sprayed metal layers, leveling and flattening properties to produce a smooth finish, abalative properties to result in a uniform leaching rate and a high copper oxide content for antifouling, and said overcoat including a thickening agent to provide thixotropic properties on vertical surfaces.

2. A method of forming an antifouling metal coating on a marine surface comprising the steps of:

A. applying a resin coating on said marine surface;

B. thermally spraying molten metal particles on said resin coating to impinge and interlock with said resin coating, and form one or more metal layers; and

C. applying a seal overcoat to the last one of said one or more metal layers, said seal overcoat when applied having low surface tension to permit wetting and penetration of the outer one of said one or more metal coatings, leveling and flattening properties to produce a smooth finish on said one or more metal coatings, thixotropic properties, and abalative properties to result in a uniform leaching rate, said overcoat having a high copper oxide content for antifouling.

4,939,016

HYDRAULICALLY ENTANGLED NONWOVEN ELASTOMERIC WEB AND METHOD OF FORMING THE SAME

Fred R. Radwanski, Norcross, Ga.; Lloyd E. Trimble, Dustin, Okla.; Roland C. Smith, Gainesville, Ga.; Cherie H. Everhart, Alpharetta, Ga., and Deborah A. Kimmitt, Demarest, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 18, 1988, Ser. No. 170,209

Int. Cl.[5] D06N *7/04*

U.S. Cl. 428—152 40 Claims

1. A composite nonwoven elastomeric web comprising:

a first fibrous layer including meltblown fibers; and

a second fibrous layer;

wherein the fibers of at least one of the layers are elastomeric and the layers are joined by hydraulic entanglement of the fibers of at least one of the layers with the fibers of the other layer and wherein the composite nonwoven elastomeric web has substantially smooth outer surfaces.



4,939,017

ABSORPTIVE DEVICE WITH PROTECTIVE POCKETS

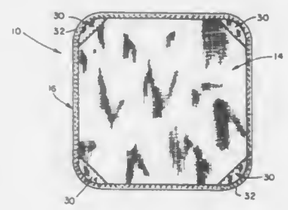
Charles Foxman, St. Louis County, Mo., assignor to Medpat, Inc., Maryland Heights, Mo.

Continuation-in-part of Ser. No. 148,023, Jan. 25, 1988, Pat. No. 4,844,965. This application May 22, 1988, Ser. No. 189,151

The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.

Int. Cl.[5] B32B *1/04*

U.S. Cl. 428—192 10 Claims



1. An absorptive device comprising a liquid permeable absorptive member having an outer facing layer of thermal plastic material and an inner backing layer, said inner backing layer being a material blend of thermal plastic and cellulosic fibers, the outer facing layer of thermal plastic material being ultrasonically welded to the thermal plastic fibers of the blended material inner backing layer to join the layers together while allowing liquid communication throughout the layers, a liquid impervious barrier member underlying the liquid permeable absorptive member to restrict the flow of liquid therethrough, and means attached to the liquid impervious barrier member for lifting and folding the absorptive device without contacting the liquid permeable absorptive member.

4,939,018

RADIATION IMAGE STORAGE PANEL

Katsuhiro Kohda, and Kenji Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

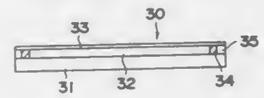
Continuation of Ser. No. 851,524, Apr. 14, 1986, abandoned. This application Feb. 3, 1989, Ser. No. 308,940

Claims priority, application Japan, Apr. 12, 1985, 60-78155; Apr. 13, 1985, 60-78748; Apr. 13, 1985, 60-78749

Int. Cl.[5] B32B *19/04;* **G03C** *5/16*

U.S. Cl. 428—192 13 Claims

1. A radiation image storage panel comprising a support, a phosphor layer which comprises a binder and a stimulable phosphor dispersed therein and a protective film, superposed in this order, which is characterized in that substantially a whole side surface of said phosphor layer is coated with a sealing means comprising a water-repellent material having a melting point of not higher than 100° C., the sealing material being kept in contact with the side surface of the phosphor layer by aid of a fixing means arranged in contact therewith on the outer surface thereof.



4,939,019

COMPOSITIONS AND PROCESS FOR PRODUCING FOAM PLASTICS

Ching-Chi Kuo, Pleasanton; Mark Robertson, Fremont, and Kyu W. Lee, Danville, all of Calif., assignors to Hexcel Corporation, Dublin, Calif.

Division of Ser. No. 243,383, Sep. 12, 1988. This application Nov. 15, 1989, Ser. No. 436,834

Int. Cl.[5] B32B *9/00, 3/26, 27/00*

U.S. Cl. 428—318.4 7 Claims

1. A composite structure comprising:

(a) a foam polymer core formed by the polymerization of the following components:

1. a member selected from the group consisting of acrylic acid and methacrylic acid,

2. a member selected from the group consisting of acrylonitrile and methacrylonitrile,

3. acrylamide in an amount ranging from about 5 to about 20 parts by weight per 100 parts by weight of components (a) and (b) combined, and

4. at least one member selected from the group consisting of water, a urea and a formamide, such that components (iii) and (iv) combined comprise at least about 24 parts by weight per 100 parts by weight of components (i) and (ii) combined; and

(b) at least one face sheet bonded to the surface of said foam polymer core.

4,939,020

CORE MEMBER FOR FABRICATION OF SHAPED PLASTIC

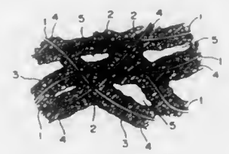
Katsuhiko Takashima, and Katsuhiro Moriwaki, both of Sennan, Japan, assignors to Toyo Coth Co., Ltd., Sennan and Japan U-PICA Co., Ltd., Tokyo, both of, Japan

Filed Jun. 24, 1988, Ser. No. 210,965

Claims priority, application Japan, Jun. 24, 1987, 62-156989

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—220 8 Claims



1. A porous core member for fabricating a fiber-reinforced shaped plastic having a matrix structure comprising matrix portions and voids between the matrix portions capable of being infiltrated by a liquid resin, said matrix portions being formed of fibers randomly arranged in a non-woven fabric, said fibers having adhered thereto a cured vinyl resin having microvoids therein, and said vinyl resin containing a thiocyanate compound.

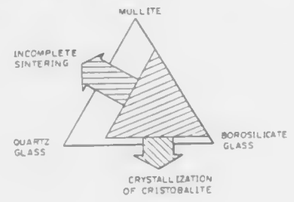
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,021

MULTILAYER CERAMIC COPPER CIRCUIT BOARD

Shigenori Aoki, and Yoshihiko Imanaka, both of Atsugi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 110,254, Oct. 20, 1987, abandoned. This application May 12, 1989, Ser. No. 352,714
Claims priority, application Japan, Oct. 23, 1986, 61-250755
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—209 1 Claim



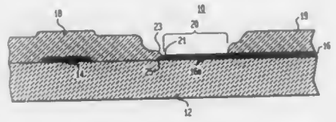
1. A multilayer ceramic copper circuit board comprising layers of copper conductor patterns and layer of a glass ∠ ceramic composite of 3% to 75% by weight of mullite, 25% to 97% by weight of borosilicate glass having a softening temperature of at least 720° C., and 0% to 72% by weight of quartz glass, based on the total weight of the glass ∠ ceramic composite, said glass ∠ ceramic composite being sintered, the amount of residual carbon being less than 100 ppm.

4,939,022

ELECTRICAL CONDUCTORS

Ponnusamy Palanisamy, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Division of Ser. No. 177,285, Apr. 4, 1988, Pat. No. 4,847,003. This application Mar. 27, 1989, Ser. No. 328,991
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—209 6 Claims



1. A combination of a workpiece and a first thick film conductor thereon, said conductor comprising a composition comprising, by weight, silver (60–90%), palladium (0.5–5%), and one or both of aluminum oxide (0–25%) and silicon dioxide (0–15%), the ingredients of said composition being fused together and fused to said workpiece.

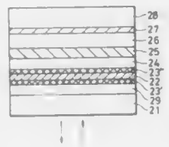
4,939,023

OPTO-MAGNETIC RECORDING MEDIUM

Hiroshi Omata; Shigeharu Iijima, both of Kawasaki; Eizou Sasamori, Yokohama; Katsuhiko Takano, Yokohama; Eiichi Fujii, Yokohama; Ichiro Saito, Kawasaki, and Yoichi Osato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,212, Aug. 7, 1985, abandoned. This application Aug. 18, 1988, Ser. No. 233,921
Claims priority, application Japan, Aug. 13, 1984, 59-169517; Oct. 1, 1984, 59-204109
Int. Cl.[5] G11B 7/24
U.S. Cl. 428—215 19 Claims

1. An opto-magnetic recording medium comprising:
(a) a transparent substrate;
(b) an opto-magnetic recording layer overlying said transparent substrate; and
(c) a protective layer composed of a nitride of a substance selected from the group consisting of tungsten, zirconium, titanium, niobium, vanadium, tantalum, and chromium



and formed at least between said substrate and said recording layer, wherein the thickness of said protective layer formed between said recording layer and said substrate is equal to or less than 1500 Å so that a light beam directed through said substrate is transmitted to said recording layer.

4,939,024

RADIOWAVE ABSORBING BODY OF THE HIGH ELECTRICAL POWER-RESISTANT TYPE

Shigeru Oosawa, Sanda Atsugi; Haruyuki Yoshigahara, Minamiyama Hatano, and Toshio Yukuta, Hase Kamakura, all of Japan, assignors to Grace Japan Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1989, Ser. No. 349,015
Claims priority, application Japan, May 27, 1988, 63-128545
Int. Cl.[5] B32B 5/14
U.S. Cl. 428—218 7 Claims

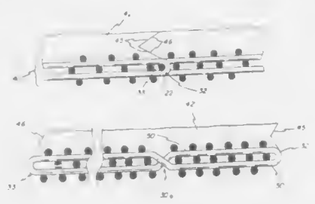
1. A radiowave absorbing body comprising a plurality of carbon fiber fabrics arranged so as to form a concentration gradient of the carbon fibers in said body.

4,939,025

PAPERMAKER'S FELT WITH FLEX JOINT SEAM FOR PIN

Dimitri P. Nicholas, Savannah, Ga., and Pieter S. Diehl, Pleasant Hill, Ohio, assignors to The Orr Felt Company, Piqua, Ohio

Filed Feb. 1, 1989, Ser. No. 305,320
Int. Cl.[5] B32B 3/04
U.S. Cl. 422—223 5 Claims



1. A papermaker's felt having a woven base fabric joined at a transverse pin seam and a batting applied to at least one surface of said bas fabric, in which said felt is relatively stiff and difficult to join at the pin seam, the improvement comprising:
means in said base fabric adjacent said pin seam defining a transverse region of increased transverse flexibility through said felt to facilitate the bending of said felt about said region during the threading of a pin through said pin seam.

4,939,026

ORIENTED SHEETS

Robert R. Luise, Boothwyn, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 319, Jan. 5, 1987, Pat. No. 4,786,348. This application Aug. 31, 1988, Ser. No. 238,506
Int. Cl.[5] D03D 3/00
U.S. Cl. 428—224 2 Claims

1. A transparent sheet formed from a warp of optically anisotropic melt-forming polymer filaments aligned essentially in a single direction and having crystals that are highly oriented in the filament direction, said sheet having a tensile strength of at least 180 Kpsi in the filament direction.

4,939,027

ELECTROCONDUCTIVE THERMOPLASTIC RESIN SHEETS AND MOLDED ARTICLES

Takashi Daimon; Hideshi Sakamoto, and Osamu Akimoto, all of Chiba, Japan, assignors to Chisso Corporation, Japan

Filed Jul. 7, 1989, Ser. No. 376,566
Claims priority, application Japan, Jul. 8, 1988, 63-168952; Sep. 5, 1988, 63-220475
Int. Cl.[5] B32B 5/06
U.S. Cl. 428—284 17 Claims



1. An electroconductive thermoplastic resin sheet comprising a first thermoplastic resin film; an electroconductive nonwoven fabric composed mainly of electroconductive fibers and heat-meltable fibers superposed on one or both surfaces of said first thermoplastic film; and a second thermoplastic resin film in contact with said nonwoven fabric as a protecting layer, said first thermoplastic film, said nonwoven fabric and said second thermoplastic film being heated and contact-bonded at a temperature of the melting point of said heat-meltable fibers or higher.

4,939,028

MICROPOROUS COMPOSITES AND ELECTROLYTIC APPLICATIONS THEREOF

Jean Bachot, Bourg la Reine, and Jean-Claude Kiefer, Blaincourt les Precy, both of France, assignors to Rhone-Poulenc Chimie de Base, Courbevole, France

Filed Aug. 4, 1986, Ser. No. 892,432
Claims priority, application France, Aug. 2, 1985, 85 11857
Int. Cl.[5] B32B 3/26, 9/00
U.S. Cl. 428—311.5 12 Claims

1. A microporous material comprising a regular, homogeneous and consolidated deposit of monodispersed carbon fibers, said carbon fibers having a distribution by length such that the length of at least 80% of the individual fibers corresponds to the means length of said fibers to within plus or minus 20%.

4,939,029

COMPRESSIBLE TEMPORARY SUPPORT FOR TRANSFER LAYER

William E. Delaney, Hockessin, Del., and Helmut H. Frohlic, Heusenstamm, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,438, Feb. 25, 1988, Pat. No. 4,902,363. This application Jul. 20, 1989, Ser. No. 383,329
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1987, 3706528
Int. Cl.[5] B32B 3/26
U.S. Cl. 428—314.4 8 Claims

1. A transfer layer sheet comprising a temporary support, a transfer layer, and, optionally, one or more auxiliary layers, the improvement wherein the temporary support consists essentially of a compressible material, the compressibility of which is at least 15%.

4,939,030

FILM FOR RETAINING FRESHNESS OF VEGETABLES AND FRUITS

Shoichi Tsuji, Nagoya; Hazime Musika, Niwagun; Michiyasu Itoh, Kuwana; Junko Hayakawa, Okazaki, and Eiji Miyashita, Chuo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Ferric Inc., both of Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 395,040
Claims priority, application Japan, Aug. 19, 1988, 63-206730
Int. Cl.[5] B32B 3/26
U.S. Cl. 428—315.5 7 Claims

1. A freshness retaining film comprising a synthetic resin film, a microporous resin film and a water-absorbing layer interposed between both said films, said microporous resin film having a maximum pore diameter not larger than 30 microns and a moisture permeability not lower than 100 g/m^2/24 hr.

4,939,031

THERMAL CONTROL COATINGS AND METHOD FOR IMPROVING ATOMIC OXYGEN RESISTANCE

Larry P. Torre, Renton, and Bruce L. Zornes, Jr., Bothell, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 907,950, Sep. 15, 1986, abandoned. This application Jul. 26, 1988, Ser. No. 223,978
Int. Cl.[5] B32B 5/16, 15/08
U.S. Cl. 428—323 14 Claims

1. A flexible second surface mirror, comprising:
(a) a film comprising a material selected from the group consisting of fluorophosphazene or a fluorosilicone-fluorophosphazene copolymer and a fine powder filler, the filler selected from the group consisting of zinc oxide, barium fluorosilicate, zinc orthotitanate, barium silicate, aluminum oxide, zirconium fluorosilicate, titanium oxide, zirconium silicate, silica, zirconium oxide, silicon nitride, magnesium oxide, zinc fluorosilicate, magnesium fluorosilicate, zinc silicate, barium orthotitanate, aluminum fluorosilicate, zirconium orthotitanate, aluminum silicate, aluminum orthotitanate, or mixtures thereof; and
(b) metallization deposited on at least one surface of the film defining a mirror surface at the interface of the film and metallization.

2. The mirror of claim 1 wherein the filler is no larger than about 200 ANSI mesh.

4,939,032

COMPOSITE MATERIALS HAVING IMPROVED FRACTURE TOUGHNESS

Jocelyn I. Petit, New Kensington; Philip E. Bretz, Plum Boro, both of Pa.; Henry G. Paris, San Diego; Ralph R. Sawtell, Lafayette, both of Calif., and Diana K. Denzer, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 25, 1987, Ser. No. 66,180
Int. Cl.[5] B32B 5/16; C22C 21/00
U.S. Cl. 428—328 11 Claims

1. A composite material having an improved fracture toughness, formed of a matrix and areas of inclusions within the matrix, the matrix being formed of a first high strength aluminum alloy which consists essentially of aluminum, iron and cerium, the inclusions being formed from a material having a greater ductility than that of the first alloy, there being sufficient bonding between the matrix and the inclusions so that a crack propagating in the composite material is forced to pass through at least one inclusion.

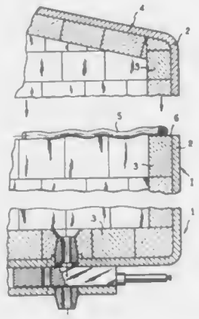
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,033

PASTY GASKET FOR PRODUCING A LEAKPROOF SEAL BETWEEN SURFACES WHICH ARE SUBJECTED TO HEAT AND WHICH HAVE TO BE JOINED

Jean C. Daussan, Metz; Gérard Daussan, and André Daussan, both of Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Nov. 9, 1987, Ser. No. 118,428
Claims priority, application France, Nov. 13, 1986, 86 15741
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—331 **8 Claims**



1. Pasty gasket (5) adapted to be squashed between two surfaces which are subjected to heat and which have to be joined so as to be leakproof to gas, wherein this gasket (5) is constituted by a homogenous pasty mixture containing by weight as plasticizing substance 5 to 10% of at least one element from the group formed by clay and bentonite, and 90 to 95% of inorganic refractory particles and 20 to 30% by weight of water relative to the weight of the dry constituents, the mixture of these constituents being produced shortly before application of the gasket.

4,939,034

CORROSION RESISTANT, COATED METAL LAMINATE

Tamotsu Sobata; Masaaki Takimoto, both of Osaka, and Yuichi Yoshida, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 103,013, Sep. 30, 1987, Pat. No. 4,853,285, which is a division of Ser. No. 869,852, May 28, 1986, Pat. No. 4,719,038, which is a continuation-in-part of Ser. No. 687,004, Dec. 27, 1984, abandoned. This application Mar. 31, 1989, Ser. No. 331,384
Claims priority, application Japan, Dec. 27, 1983, 58-248312; Dec. 29, 1983, 58-245747; Dec. 29, 1983, 58-245748; Jan. 21, 1984, 59-008678; Mar. 2, 1984, 59-040874; Mar. 29, 1984, 59-062555; Mar. 29, 1984, 59-062556
Int. Cl.[5] B32B *15/04, 15/08;* H01B *1/06*
U.S. Cl. 428—336 **6 Claims**

1. An anti-corrosive, coated metal plate comprising a metal substrate with or without anti-corrosive chemical pretreatment; an anti-corrosive layer coated on the metal substrate and formed by a composition containing, as essential components, at least one hexa-valent chromium containing chromium compound having a solubility of 20 to 10^{-5} and aqueous silica and/or aqueous resin as binder, and as optional component, a water soluble chromium compound having a solubility of more than 20; and an overcoated paint layer which is substantially free from chromium compound.

2. The coated metal plate according to claim 1 wherein the thickness of the paint layer is 1 to 10μ.

4,939,035

EXTRUSION COATABLE POLYESTER FILM HAVING AN AMINOFUNCTIONAL SILANE PRIMER, AND EXTRUSION COATED LAMINATES THEREOF

Howard W. Swofford, Taylors, S.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 6, 1988, Ser. No. 240,701
Int. Cl.[5] B32B *27/16, 27/36, 31/12*
U.S. Cl. 428—341 **17 Claims**

1. An oriented polyester film having a primer coating composition on at least one side thereof, said primer coating composition comprising the dried residue of a hydrolyzed aminosilane compound having the formula in the unhydrolyzed state:

$$(R^1)_a Si(R^2)_b(R^3)_c$$

wherein R^1 is a functional group with at least one primary amino group, R^2 is a hydrolyzeable group selected from the group consisting of a lower alkoxy group having 1–8 carbon atoms, C_1 to C_8, an acetoxy group, or a halide group, and R^3 is a nonreactive, nonhydrolyzeable group selected from the group consisting of a lower alkyl having 1–8 carbon atoms, or a phenyl group; with (a) being greater than or equal to 1; (b) being greater than or equal to 1; (c) being greater than or equal to zero, and with $a+b+c=4$, said primer coating composition being present at a weight effective to improve the adhesion of one or more extrusion coated polymers to said polyester film.

4,939,036

METHOD FOR PREPARING TUFTED PILE CARPET AND ADHESIVE THEREFOR

Robert A. Reith, Glen Ellyn, Ill., assignor to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 108,115, Oct. 14, 1987, Pat. No. 4,844,765. This application Jul. 6, 1989, Ser. No. 376,385
Int. Cl.[5] B32B *27/00;* C08K *5/01;* C08L *45/00*
U.S. Cl. 428—349 **6 Claims**

1. A hot melt adhesive composition comprising about 25 to about 40 weight percent low density polyethylene having a melt index of about 15 to about 30 grams per ten minutes, about 25 to about 40 weight percent of a polyterpene resin having a ring and ball softening point of about 90° to about 105° C., about 10 to about 20 weight percent of a paraffin wax having a melting point of about 140° F. to about 165° F., about 10 to about 20 weight percent polybutene having a viscosity of about 500 to about 5000 centistokes at 210° F. and up to about 1 weight percent antioxidant.

4,939,037

COMPOSITE SIGN POST

Earl M. Zion, Newark, Ohio; John E. Freeman, 706 W 14th St., Big Spring, Tex. 79720, assignor to John E. Freeman, Big Spring, Tex.

Filed Mar. 2, 1988, Ser. No. 164,424
Int. Cl.[5] B32B *17/00, 17/04*
U.S. Cl. 428—36.3 **16 Claims**



1. A thin walled tubular highway sign support post compris-

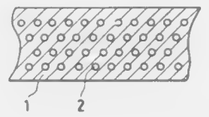
ing at least one segment, wherein each segment is of substantially even cross-section along its entire length constructed from glass fiber stands and resin composite providing impact load failure control means for controlling the mode and location of post failure, wherein said failure control means comprises orientation of glass fibers transverse to the longitudinal axis of said post and a glass percentage by weight within the range of 55% to 75%, further comprising ground anchor means wherein said ground anchor means comprises a socket fixed in the ground that slidingly receives said post and locking means for installing said post and to selectively prevent the removal of said post.

4,939,038

LIGHT METALLIC COMPOSITE MATERIAL AND METHOD FOR PRODUCING THEREOF

Tadao Inabata, Tokyo, Japan, assignor to Inabata Techno Loop Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 5,856, Jan. 21, 1987, abandoned. This application Nov. 30, 1987, Ser. No. 127,536
Claims priority, application Japan, Jan. 22, 1986, 61-9830; Apr. 15, 1986, 61-84891; Apr. 15, 1986, 61-84893
Int. Cl.[5] B32B *17/02;* C22C *29/12*
U.S. Cl. 428—402 **10 Claims**



1. A method of producing a uniform, light metallic composite material, comprising the steps of:

(a) adding and uniformly mixing fine granular additives into matrix powders, said matrix powders being formed of a material selected from the group consisting of light metallic materials selected from the group consisting of aluminum, magnesium, zinc, copper, brass and bronze, and light metal aluminum alloys, said additives consisting of at least one material selected from the group consisting of heat-resistant glasses selected from the group consisting of borosilicate glass, silica glass, silica-alumina glass and silica-alumina-calcium glass; sintered metals; and ceramic materials selected from the group consisting of silica, alumina and zirconia, each of said additives having a density smaller than that of said matrix powder and a diameter less than 300 microns, the amount of said additives added into said matrix powder being in the range of 10% to 70% by volume of said matrix;

(b) forming the mixture obtained in the step (a) into a desired shape; and

(c) simultaneously with or succeeding the step (b), heating the mixture up to a predetermined temperature at which 30 to 70% of said matrix powders contained in the mixture are softened and the remainder of the matrix powders and the entire amount of said fine granular additives are not melted, so that said fine granular additives are positively composited with the matrix powders and the uniform distribution of said fine granular additives in said matrix powders is maintained.

4,939,039

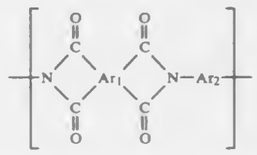
FLEXIBLE BASE MATERIALS FOR PRINTED CIRCUITS AND METHOD OF MAKING SAME

Hisashi Watanabe, Fukuoka, Japan, assignor to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

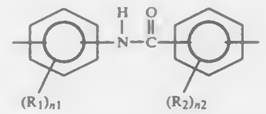
PCT No. PCT/JP87/00698, § 371 Date May 27, 1988, § 102(e) Date May 27, 1988, PCT Pub. No. WO88/02591, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 25, 1987, Ser. No. 205,396
Claims priority, application Japan, Sep. 29, 1986, 61-228384; Nov. 20, 1986, 61-275325
Int. Cl.[5] B32B *15/08, 27/06*
U.S. Cl. 428—458 **6 Claims**

1. Flexible base materials for printed circuits which comprise at least one conductor and an insulator coated thereon, said insulator containing resins of low thermal expansivity having structural units of the general formula (I)

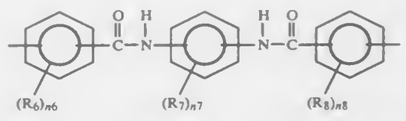
(I)



in which Ar_1 is a tetravalent aromatic radical, Ar_2 is



or



R_1 and R_8 are lower alkyl groups, lower alkoxy groups, or halogen atoms, identical with or different from each other, and n1 to n8 are each independently 0 to 4, and wherein each Ar_2 has at least one lower alkoxy group pendant therefrom.

4,939,040

MULTILAYER FILM FOR PACKAGING ITEMS UNDER CONTROLLED ATMOSPHERE

Aurelio Oreglia, Como, and Mario Gillio-Tos, Nerviano, both of Italy, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 158,825, Feb. 12, 1988, abandoned. This application Dec. 8, 1989, Ser. No. 449,093
Claims priority, application Italy, Apr. 24, 1987, 20270 A/87
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—518 **14 Claims**

1. A stretchable, gas barrier multilayer film for packaging items under controlled atmosphere comprises at least one barrier layer made of a material selected from polymers and copolymers having gas barrier properties, said barrier material being modified by the inclusion therein of 1 to 20% by weight

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of the barrier layer of a stiffness modifying agent selected from plasticizers and gas barrier elastomers to make said barrier layer stretchable; and, at least one stretchable layer selected from olefin polymers and copolymers, said multilayer film having sufficient plasticizer in said barrier layer so that the film can be stretched to an elongation of at least 500% while maintaining a gas permeability of less than 50 cm^3 0_2/24 hours/m^2/atm and an elastic recovery after stretch of at least 60% after 100% elongation.

4,939,041

METAL FILM COATINGS ON AMORPHOUS METALLIC ALLOYS

Lawrence T. Kabacoff, Columbia, Md., and Kristi B. Hathaway, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1989, Ser. No. 377,997
Int. Cl.[5] B32B *15/02*; C23C *14/35*
U.S. Cl. 428—607 **19 Claims**

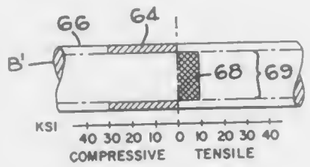
1. A process for coating a magnetostrictive Fe-metalloid amorphous metallic alloy structure having a high magnetomechnical coupling factor with a protective coating against corrosion comprising: cathode magnetron sputter coating the magnetostrictive Fe-metalloid amorphous metallic alloy structure with a crystalline metal selected from the group consisting of copper, gold, silver, and aluminum while the amorphous metallic alloy structure is magnetically saturated in a bias field and wherein care is taken to minimize inherent stresses produced in the amorphous metallic alloy by the deposition of the coating.

4,939,042

FATIGUE LIFE OF A COMPONENT SUCH AS A BAR

Erik Thuse, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 118,062, Nov. 9, 1987, Pat. No. 4,836,866. This application Apr. 17, 1989, Ser. No. 322,840
Int. Cl.[5] C21D *9/00*
U.S. Cl. 428—610 **13 Claims**



1. An elongated axially extending metal component as an article of manufacture having properties of softening before melting when subjected to being quickly heated to a high temperature while being axially stressed and thereafter being quickly cooled for creating ligh residual compressive stresses in an outer layer for providing an improved fatigue life when subjected to outside loads and/or bending loads comprising:

a thin outer member having high residual compressive stresses of at least 10,000 psi therein acting on a small area, and

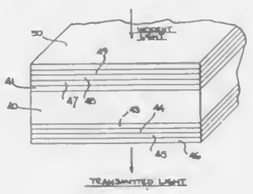
an inner core integral with said outer member and having residual tensile stresses therein acting in a second direction on a large area to provide equal internal forces in opposite directions when outside forces acting on said axially extending metal component are absent.

4,939,043

OPTICALLY TRANSPARENT ELECTRICALLY CONDUCTIVE SEMICONDUCTOR WINDOWS

V. Warren Biricik, Palos Verdes Estates; James M. Rowe, Torrance; Paul Kraatz, Redondo Beach, and John W. Tully, Rolling Hills Estates, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 14,326, Feb. 13, 1987, Pat. No. 4,778,731. This application Oct. 14, 1988, Ser. No. 258,239
Int. Cl.[5] B21D *39/00*
U.S. Cl. 428—620 **11 Claims**



10. A conductive window transparent to infrared radiation comprising

a substrate made of material selected from the group consisting of zinc sulfide, zinc selenide, sapphire, spinel and aluminum oxy nitride,

said substrate being made to be transparent to infrared radiation,

a thin coating of semiconductor material deposited on the surface of said substrate in a manner to be transparent to infrared radiation,

a dopant contained in said semiconductor coating

said dopant being selected to thereby form with said coating a semiconductor having significant carrier concentration of donors or acceptors,

said dopant thereby causing said coating to exhibit conductivity with a sheet resistance of less than about 30 ohms per square, and

the thickness of the semiconductor coating and the concentration of the dopant being adjusted to cause said coating to remain substantially transparent while exhibiting said conductivity.

4,939,044

ALUMINUM ALLOY SUPPORT FOR LITHOGRAPHIC PRINTING PLATE

Azusa Ohashi, Shizuoka; Akira Shirai, Shizuoka; Kazushige Takizawa, Shizuoka; Shiro Terai, Aichi; Shin Tsuchida, Aichi, and Yoshikatsu Hayashi, Aichi, all of Japan, assignors to Fuji Photo Film Co., Ltd. and Sumitomo Light Metal Industries, Ltd., both of, Japan

Continuation-in-part of Ser. No. 648,348, Sep. 7, 1984, abandoned, which is a continuation of Ser. No. 385,941, Jun. 7, 1982, abandoned. This application Jun. 18, 1985, Ser. No. 745,976
Claims priority, application Japan, Jun. 5, 1981, 56-86460
Int. Cl.[5] B41N *1/08*
U.S. Cl. 428—654 **6 Claims**

1. An aluminum alloy support for a lithographic printing plate, comprising a cold rolled plate of aluminum alloy comprising, in % by weight:

98.0% or more Al;

Fe in an amount of from 0.15 to 1.2% as an alloying element;

Si in an amount of from greater than 0.0% but less than or equal to 0.15%; and

impurities, each of which is present in an amount of from 0.0% but less than or equal to 0.15%,

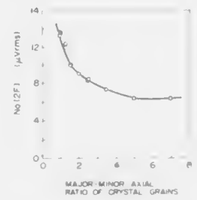
wherein the cold rolled plate has a distribution of Al—Fe and Al—Fe—Si based intermetallic compounds formed from the alloy, having grain sizes of greater than 0 microns but less than or equal to 3 microns, which are positioned directly under an outer surface of the cold rolled plate and wherein the surface of the cold rolled plate is roughened by chemical etching or electrochemical etching and anodically oxidized.

4,939,045

MAGNETIC RECORDING MEDIUM

Kazuetsu Yoshida, Kodaira; Yoshihiro Shiroishi, Hachioji; Makoto Saito, Tokyo; Norikazu Tsumita, Kanagawa; Takeo Yamashita, Tachikawa; Hiroyuki Suzuki, Kawasaki; Yasushi Kitazaki; Masaki Ohura, both of Odawara; Sadao Hishiyama, Sayama; Tomoyuki Ohno; Yoshibumi Matsuda, both of Kokubunji; Kazumasa Takagi, Tokyo; Katsuhiro Kuroda, Hachioji, and Sadanori Nagaike, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1988, Ser. No. 172,194
Claims priority, application Japan, Mar. 23, 1987, 62-65697; Jul. 8, 1987, 62-84731
Int. Cl.[5] G11B *5/64*
U.S. Cl. 428—664 **22 Claims**



11. A continuous magnetic recording medium comprising a substrate, and a thin film metal magnetic layer consisting of metal containing crystal grains substantially randomly arranged on an upper surface of said magnetic layer so that each grain is in the form of an ellipsoid or needle having an axial ratio not smaller than 2.

4,939,046

MAGNETIC RECORDING MEDIUM

Kenji Yazawa, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 167,085
Claims priority, application Japan, Mar. 25, 1987, 62-70967
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—694 **3 Claims**



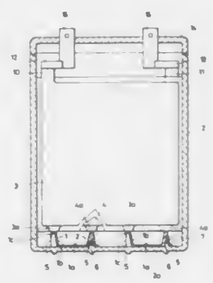
1. A magnetic recording medium comprising a nonmagnetic substrate and a magnetic layer formed on said substrate having anisotropy along a surface of said magnetic layer, said magnetic layer being formed of micro grains of ferromagnetic metal or alloy and nonmagnetic metal and nonmagnetic metal oxide distributed mainly around said micro grains of said first ferromagnetic metal or alloy, said nonmagnetic metal and nonmagnetic metal oxide having a uniform concentration distribution throughout the thickness of said magnetic layer.

4,939,047

MOLDED SADDLE FOR STORAGE BATTERY PLATES, STORAGE BATTERY CONTAINER, AND STORAGE BATTERY

Takashi Nagashima, Imaichi, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 3, 1989, Ser. No. 305,682
Claims priority, application Japan, Feb. 29, 1988, 26810[U]
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—66 **4 Claims**



1. A molded saddle for electrode plates of a storage battery being securely attached to the bottom surface of a battery container body, comprising:

a horizontal base plate portion being fixed to the inner bottom surface of the battery container; and

a flexible raised support plate portion for supporting legs of positive plates, said support plate portion rising upwards from one end of said horizontal base plate portion and having an upper end portion so as to form a large vertical space between said upper end portion and a horizontal plane being attached to said inner bottom surface of the battery container.

4,939,048

ELECTROCHEMICAL CELL HAVING AN ALKALINE ELECTROLYTE AND A ZINC NEGATIVE ELECTRODE

René Vignaud, Aulnay Sous Bois, France, assignor to Societe Anonyme dite: Wonder and Societe Anonyme dite: Cipel, both of Levallois-Perret, France

Filed Jul. 17, 1989, Ser. No. 380,357
Claims priority, application France, Jul. 25, 1988, 88 10015
Int. Cl.[5] H01M *4/75*
U.S. Cl. 429—161 **7 Claims**



1. A electrochemical cell having an alkaline electrolyte and a gelled negative electrode containing zinc powder free from mercury, cadmium, and lead, and 1 ppm to 1000 ppm of at least

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one organic stabilizer compound selected from polyfluorine compounds of ethoxyl fluoroalcohol and compounds of alcoyl sulfide and polyethoxyl alcohol, said electrode being provided with a negative current collector immersed in the gell and connected to the negative terminal, wherein said current collector comprises a bundle of conducting fibers which are fixed together at their ends closest to the negative terminal, said fibers having a diameter lying in the range of 0.05 mm to 1 mm, and being coated by a metal selected from the group consisting of indium; gallium; cadmium; and pure zinc.

4,939,049

NON-AQUEOUS ELECTROLYTE CELL AND METHOD OF PRODUCING THE SAME

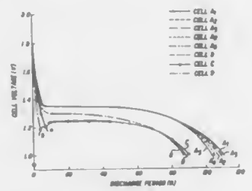
Chikanori Ishibashi, Yawata; Kazuro Moriwaki; Toshihiko Saito, both of Kyoto, and Nobuhiro Furukawa, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 7, 1988, Ser. No. 267,594

Claims priority, application Japan, Nov. 20, 1987, 62-294331; Jul. 25, 1988, 63-184801

Int. Cl.[5] H01M *6/14*

U.S. Cl. 429—194 **6 Claims**



1. A non-aqueous electrolyte cell comprising:
a positive electrode having as an active material copper oxide containing lithium obtained by pyrolyzing copper hydroxide containing lithium prepared by mixing an aqueous solution of copper salt and an aqueous solution of lithium hydroxide;
a negative electrode having lithium or lithium alloy as an active material; and
a non-aqueous electrolyte.

4,939,050

ELECTRIC CELLS

Shinichi Toyosawa, Tokorozawa; Isamu Shinoda, Sendai; Katsuhiko Arai, Iruma; Toyoo Harada, Sendai; Yuko Maeda; Hideharu Daifuku, both of Akishima; Shigeru Kijima, Tokorozawa; Kinya Suzuki, Kodaira; Yoshitomo Masuda, Tachikawa; Masao Ogawa, Kawagoe; Takahiro Kawagoe, Tokorozawa; Tadashi Fuse, Kodaira, and Tetsuro Amano, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo and Seiko Electronic Components, Ltd., Sendai, both of, Japan

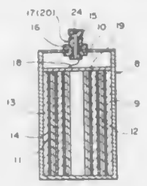
Filed Nov. 10, 1988, Ser. No. 269,449

Claims priority, application Japan, Nov. 12, 1987, 62-286000; Dec. 7, 1987, 62-309275; Jan. 21, 1988, 63-011240; Feb. 23, 1988, 63-040465; Mar. 23, 1988, 63-068869; Apr. 5, 1988, 63-083660; Jun. 7, 1988, 63-138307

Int. Cl.[5] H01M *4/70, 2/12*

U.S. Cl. 429—241 **12 Claims**

1. An electric cell comprising a positive electrode, a negative electrode, and an electrolyte, wherein said positive electrode is an electroconductive polymer composite including a mesh stainless steel having a wire diameter of about 35 to about



120 μm and an electroconductive polymer integrally deposited onto the mesh by electrolytic polymerization.

4,939,051

GRID FOR USE IN LEAD ACID BATTERIES AND PROCESS FOR PRODUCING SAME

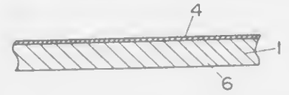
Hiroshi Yasuda; Sadao Furuya, both of Toyohashi; Naoto Hoshihara, Shizuoka; Takashi Yamaguchi, Kosai; Katsuhiro Takahashi, Toyohashi, and Teruaki Ishii, Kosai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 135,485, Dec. 21, 1987, Pat. No. 4,805,277, which is a continuation of Ser. No. 870,781, Jun. 5, 1986, abandoned. This application Dec. 12, 1988, Ser. No. 282,733

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] H01M *4/68*

U.S. Cl. 429—245 **7 Claims**



4. A grid for use in lead acid batteries which is constructed from a sheet bar larger of a lead-calcium-tin alloy and a layer, having a thickness smaller than that of the sheet bar and pressure-bonded onto at least one side of the sheet bar, of an alloy consisting of 0.01–0.5% by weight of silver, 1–8% by weight of tin and a residual quantity of lead and has grid meshes for holding a pasty active material.

4,939,052

X-RAY EXPOSURE MASK

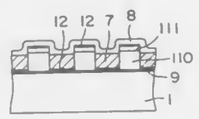
Kenji Nakagawa, Isehara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 10,543, Feb. 3, 1987, abandoned. This application Dec. 15, 1988, Ser. No. 289,394

Claims priority, application Japan, Feb. 3, 1986, 61-22562

Int. Cl.[5] G03F *1/00*

U.S. Cl. 430—5 **6 Claims**



1. An X-ray exposure mask for patterning a semiconductor wafer with semiconductor chip patterns by using an X-ray beam, a position of the mask relative to the semiconductor

wafer being aligned during patterning by using a light beam, said exposure mask comprising:
(a) a mask substrate which is translucent to the X-ray beam and the light beam;
(b) an electrically conductive layer disposed on said mask substrate, being translucent to the X-ray beam and the light beam;
(c) stencil means, formed on said electrically conductive layer, as patterns located on first parts of the electrically conductive layer and apertures therebetween located on second parts of the electrically conductive layer, for forming the semiconductor chip patterns on the semiconductor wafer by passing the X-ray beam through said stencil means, said stencil means being translucent to the light beam for executing the alignment of the exposure mask to the semiconductor wafer;
(d) a metal layer, a first portion of which is formed on the second, parts of said electrically conductive layer, and a second portion of which is formed on said stencil means, each portion being in the thickness range of greater than 1 but less than 67 angstroms and being translucent to the X-ray beam and the light beam, said first portion providing a plating base by combining with said second parts of said electrically conductive layer and said second portion allowing the X-ray beam and the light beam to pass therethrough; and
(e) X-ray absorption means formed on said first portion of said metal layer in the apertures of said patterns of said stencil means for forming the semiconductor chip patterns on the semiconductor wafer by absorbing the X-ray beam.

4,939,053

PHOTOSENSITIVE MEMBER INCLUDING AZO COMPOUND

Hideaki Ueda, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

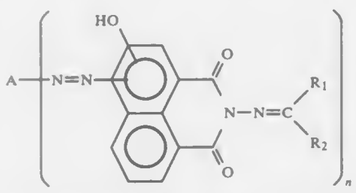
Filed Feb. 10, 1988, Ser. No. 154,385

Claims priority, application Japan, Feb. 12, 1987, 62-30481

Int. Cl.[5] G03G *5/06, 5/14*

U.S. Cl. 430—58 **11 Claims**

1. A photosensitive member comprising a photosensitive layer on an electroconductive substrate, said photosensitive layer comprising an azo compound represented by the formula (I):



(I)

wherein A represents an aromatic hydrocarbon ring or a heterocyclic ring; R_1 and R_2 independently represent hydrogen, halogen, an alkyl, an aralkyl, a phenyl group, a condensed polycyclic ring or a condensed heterocyclic ring; or R_1 and R_2 combinedly form a cyclic ring; n represents an integer from 1 to 4.

4,939,054

PHOTOSENSITIVE MEMBER COMPOSED OF AMORPHOUS CARBON CHARGE TRANSPORTING LAYER AND CHARGE GENERATING LAYER

Hideo Hotomi, Saita; Izumi Osawa, Ikeda; Mitsutoshi Nakamura, Osaka, and Shuji Iino, Hirakata, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 34,920, Apr. 6, 1987, abandoned. This application Jul. 18, 1989, Ser. No. 382,015

Claims priority, application Japan, Apr. 9, 1986, 61-83128; Apr. 9, 1986, 61-83129; Apr. 9, 1986, 61-83132

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—58 **7 Claims**



1. A photosensitive member comprising:
an electrically conductive substrate;
a charge generating layer; and
a charge transporting layer comprising amorphous carbon containing hydrogen in an amount of 20 to 67 atomic % and having a thickness of about 5 to about 50 microns, said amorphous carbon comprising hydrogen-bonded carbon N_1 and carbon N_2 free from linking with hydrogen, the ratio of the amount of N_1 to that of N_2 being 1:0.1 to 1:1, said hydrogen-bonded carbon N_1 comprising unsaturated carbon N_3 and saturated carbon N_4, the ratio of the amount of N_3 to that of N_4 being about 1:1 to about 1:16, and said carbon N_2 free from linking with hydrogen comprising unsaturated carbon N_5 and saturated carbon N_6, the ratio of the amount of N_5 to that of N_6 being about 1:0.5 to about 1:20.

4,939,055

PHOTOSENSITIVE MEMBER WITH BUTADIENE DERIVATIVE CHARGE TRANSPORT COMPOUND

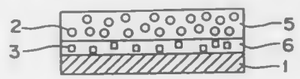
Hideaki Ueda, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1988, Ser. No. 282,061

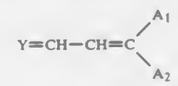
Claims priority, application Japan, Dec. 12, 1987, 62-315017

Int. Cl.[5] G03G *5/06, 5/14*

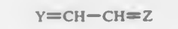
U.S. Cl. 430—59 **17 Claims**



1. A photosensitive member with a charge generating layer and a charge transporting layer laminated on or over an electrically conductive substrate, wherein the charge transporting layer comprises a binder resin and a butadiene compound of the following general formula



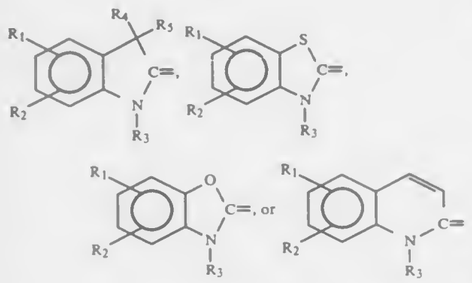
[I]



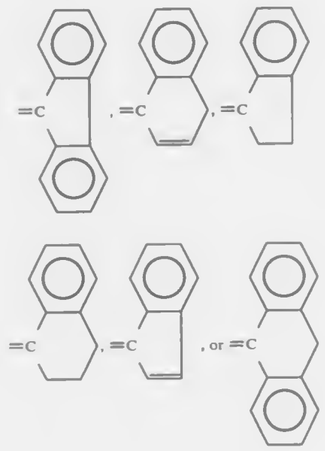
[II]

wherein Y is a divalent group derived from a heterocyclic ring and is a compound of one of the formulas;

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R_1 and R_2 are independently a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group, R_1 and R_2 may form a benzene ring in combination with each other; R_3 is an alkyl group, an aralkyl group or an aryl group, each of which may have a substituent; R_4 and R_5 are independently a hydrogen atom or an alkyl group; A_1 and A_2 are independent an alkyl group, an aralkyl group, or an aryl group, each of which may have a substituent, and Z is a divalent group derived from a hydrocarbon ring and is a compound of one of the formulas;



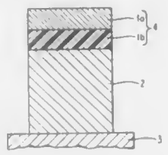
4,939,056

PHOTOSENSITIVE MEMBER

Hideo Hotomi; Izumi Osawa; Kenji Masaki, and Hideaki Ueda, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1988, Ser. No. 255,839
Claims priority, application Japan, Sep. 25, 1987, 62-242340; Nov. 18, 1987, 62-294477; Jun. 24, 1988, 63-157647
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—66 30 Claims

1. A photosensitive member of a laminated type comprising a surface protective layer on a photoconductive layer formed over an electrically conductive substrate, wherein the surface protective layer comprises first and second layers, said first layer comprising resin as a main constituent and being from 0.05 to 5 μm in thickness, said second layer as an outermost



surface layer comprising an amorphous hydrocarbon layer and being from 0.01 to 5 μm in thickness.

4,939,057

SURFACE-TREATED METAL BODY, PROCESS FOR PRODUCING THE SAME, PHOTOCONDUCTIVE MEMBER USING THE SAME AND RIGID BALL FOR TREATING METAL BODY SURFACE

Mitsuru Honda, Kashiwa; Atsushi Koike, Chiba; Tomohiro Kimura, Ueno; Kyosuke Ogawa, Nabari, and Kelichi Murai, Kasbiwa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 894,958, Aug. 8, 1986, abandoned. This application Jan. 9, 1989, Ser. No. 294,995
Claims priority, application Japan, Aug. 10, 1985, 60-176172
Int. Cl.[5] G03G *5/10*
U.S. Cl. 430—69 26 Claims

1. A surface-treated metal body which comprises a cylindrical metal body for an electrophotographic photoconductive member having a plurality of spherical indent recesses as irregularities formed on the surface, and further having fine irregularities formed in the spherical indent recesses, wherein the ratio of the radius of curvature R and the width r of the spherical indent recesses are in a range of $0.035 \leqq r/R \leqq 0.5$ and wherein the radius of curvature R of the spherical indent recesses is in a range of $0.1\ mm \leqq R \leqq 2.0\ mm$.

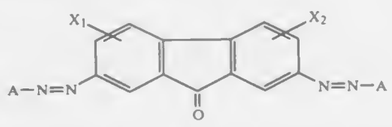
4,939,058

BISAZO PHOTO-RECEPTOR FOR ELECTROPHOTOGRAPHY

Toyoko Shibata, Zama; Takahiro Takagi, Kawasaki; Shinchi Suzuki, Hachioji; Hiroko Fukawa, Hachioji, and Osamu Sasaki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

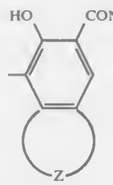
Filed Nov. 30, 1988, Ser. No. 278,304
Claims priority, application Japan, Dec. 2, 1987, 62-304861; Dec. 2, 1987, 62-304862; Dec. 10, 1987, 62-312558; Dec. 30, 1987, 62-336384
Int. Cl.[5] G03G *5/06, 5/087*
U.S. Cl. 430—72 14 Claims

1. An electrophotographic photoreceptor comprising a conductive support and provided thereon a photoconductive layer containing a binder, a carrier transport substance and at least one azo compound from the group consisting of those represented by the formulae I, IV, and V;



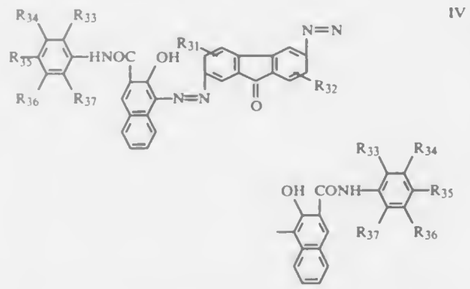
I

wherein X_1 and X_2 independently are a hydrogen atom or a halogen atom, provided that X_1 and X_2 are not simultaneously a hydrogen atom; A is a group represented by formula a;



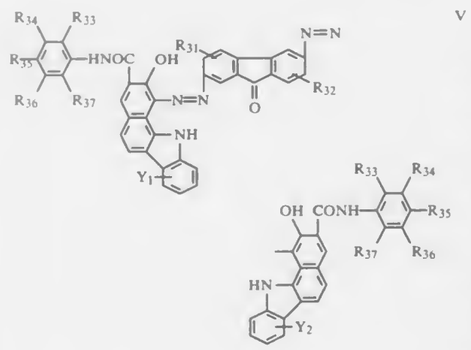
a

wherein Ar is an aromatic hydrocarbon ring having a fluorinated hydrocarbon group or an aromatic heterocyclic group having a fluorinated hydrocarbon group; Z is a group of non-metal atoms necessary to complete a substituted or unsubstituted aromatic group or a substituted or unsubstituted aromatic heterocyclic group;



IV

wherein R_{31} and R_{32} independently are a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, a cyano group, or a hydroxyl group; R_{33}, R_{34}, R_{35}, R_{36}, and R_{37} independently are a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a cyano group, or a nitro group;



V

wherein R_{31}, and R_{32} independently are a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, a cyano group or a hydroxy group; R_{33}, R_{34}, R_{35}, R_{36}, and R_{37} independently are a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a cyano group or a nitro group; Y_1 and Y_2 independently are a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a cyano group or a nitro group.

4,939,059

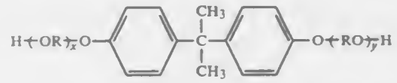
ELECTROPHOTOGRAPHIC DEVELOPER FOR FIXING ROLLER PROCESS USING POLYESTER RESIN

Kuniyasu Kawabe; Masayoshi Nawa, and Norihiro Hayashi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 26, 1987, Ser. No. 89,437
Claims priority, application Japan, Sep. 10, 1986, 61-213511
Int. Cl.[5] G03G *13/20*
U.S. Cl. 430—99 8 Claims

1. In a method for electrophotography wherein a latent electrostatic image is developed and fixed by a fixing roller, the improvement using a developer composition which comprises a polyester as the major component, said polyester obtained by co-condensation polymerization of components

(i) a diol represented by the formula:



wherein R is an ethylene or propylene group and x and y are each an integer of 1 or more, with the proviso that the average sum total of x and y is 2 or 7, with

(ii) a dicarboxylic acid, an anhydride or a lower alkyl ester thereof; and

(iii) a polycarboxylic acid having at least three carboxyl groups, an anhydride or a lower alkyl ester thereof, or a polyhydric alcohol having at least three hydroxyl groups and having an OHV/AV value of at least 1.2 wherein AV is an acid value of said polyester and OHV is a hydroxyl value thereof, and at least two charge controllers, wherein at least one of which is positively chargeable and at least one of which is negatively chargeable.

4,939,060

MAGNETIC TONER FOR DEVELOPING ELECTROSTATIC IMAGES

Koichi Tomiyama, Kawasaki; Seiichi Takagi, Yokohama; Ichiro Ohsaki, Kawasaki; Satoshi Yasuda, Matsudo, and Yoshihiko Hyosu, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,457, Feb. 22, 1989, abandoned. This application Oct. 12, 1989, Ser. No. 420,732
Claims priority, application Japan, Feb. 29, 1988, 63-44360; Feb. 29, 1988, 63-44363; Feb. 29, 1988, 63-46891
Int. Cl.[5] G03G *9/14*
U.S. Cl. 430—106.6 24 Claims

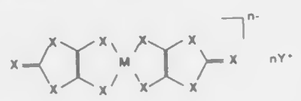
1. A magnetic toner for developing electrostatic images, comprising at least a binder resin and a magnetic powder; said binder resin having 10 to 70 wt. of a THF (tetrahydrofuran)-insoluble and a THF-soluble, the THF-soluble providing a molecular weight distribution in the chromatogram of GPC (gel permeation chromatography) thereof such that it provides a rate (Mw/Mn) of weight-average molecular weight (Mw)/number-average molecular weight (Mn)$\geqq$5, there are a peak in the molecular weight range of 2,000 to 10,000 and a peak or shoulder in the molecular weight range of 15,000 to 100,000, and a component having a molecular weight of 10,000 or smaller is contained in an amount of 10–50wt. % based on the binder resin; said magnetic powder comprising spherical magnetic particles having a bulk density of 0.6 g/ml or larger.

4,939,061

TONER COMPOSITIONS WITH NEGATIVE CHARGE ENHANCING ADDITIVES

John L. Haack, and Robert J. Gruber, both of Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 25, 1989, Ser. No. 356,481
Int. Cl.[5] G03G *9/10, 13/22*
U.S. Cl. 430—110 27 Claims



1. A negatively charged toner composition comprised of resin particles, pigment particles, and as a charge enhancing additive dithiolene complexes of the formulas of FIGS. 1, 2, 3 or 4, wherein X is selenium or sulfur, M is a metal, R is alkyl, Y is a cation, Z represents zinc, and n represents the valence of the cation and anion components.

4,939,062

NON-IMPACT ELECTRIC IMAGE TRANSFER RECORDING METHOD

Toshiyuki Kawanishi, and Masato Igarashi, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 14, 1988, Ser. No. 257,881
Claims priority, application Japan, Oct. 14, 1987, 62-258609; Feb. 19, 1988, 63-037233; Aug. 5, 1988, 63-195687
Int. Cl.[5] G03G *13/10*
U.S. Cl. 430—117 5 Claims

1. A non-impact electric image transfer recording method comprising the steps of:

applying a recording voltage-signal to a recording medium comprising an electroconductive support and a polymer gel layer containing therein a liquid ink formed on said electroconductive support, thereby causing said liquid ink to ooze from said polymer gel layer, and

transferring said liquid ink to a recording sheet to form images thereon.

4,939,063

LIGHT-SENSITIVE MATERIAL COMPRISING LIGHT-SENSITIVE LAYER PROVIDED ON SUPPORT COMPRISING A COATING LAYER CONTAINING A RESIN

Shigehisa Tamagawa, Shizuoka, and Masayuki Kuroishi, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1988, Ser. No. 207,973
Claims priority, application Japan, Jun. 17, 1987, 62-150974
The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.
Int. Cl.[5] G03C *1/87, 1/68*
U.S. Cl. 430—138 17 Claims

1. A light-sensitive material comprising a light-sensitive layer containing silver halide, a reducing agent and an ethylenic unsaturated polymerizable compound provided on a paper support, wherein the paper support comprises a coating layer containing a petroleum resin into which maleic anhydride is partially introduced provided on a base paper sheet, and the paper support has a low water absorptiveness of not more than 1 g/m^2 on the surface of the coating layer on which the light-sensitive layer is provided, said water absorptiveness being a value measured according to the Cobb test method.

4,939,064

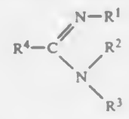
LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND BASE PRECURSOR COMPOUND

Taku Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 28, 1988, Ser. No. 225,456
Claims priority, application Japan, Jul. 28, 1987, 62-188580
Int. Cl.[5] G03C *1/68, 1/72*
U.S. Cl. 430—138 15 Claims

1. A light-sensitive material comprising a support and a light-sensitive layer containing silver halide, a reducing agent, an ethylenic unsaturated polymerizable compound and a base precursor in the form of a salt of an organic base with a carboxylic acid, said silver halide, reducing agent and polymerizable compound being contained in microcapsules which are dispersed in the light-sensitive layer,

wherein the base precursor is contained in the microcapsules, and the organic base of the base precursor is a diacidic to tetraacidic base which is composed of two to four amidine moieties and at least one residue of a hydrocarbon or a heterocyclic ring as a linking group for the amidine moieties, said amidine moiety corresponding to an atomic group formed by removing one or two hydrogen atoms from an amidine having the following formula (I):



(I)

wherein each of R^1, R^2, R^3 and R^4 independently is a monovalent group selected from the group consisting of hydrogen, an alkyl group, an alkenyl group, an alkynyl group, a cycloalkyl group, an aralkyl group, an aryl group and a heterocyclic group, each of which may have one or more substituent groups, and any two of R^1, R^2, R^3 and R^4 may be combined together to form a five-membered or six-membered heterocyclic ring consisting of nitrogen and carbon atoms.

4,939,065

UV-CURABLE ORGANOPOLYSILOXANE COMPOSITIONS AND NEGATIVE PHOTORESISTS COMPRISED THEREOF

Jacques Cavezzan, Villeurbanne; Sylvianne Dumas; Louis Giral, both of Montpellier; Christian Prud'Homme, Lyons; Francois Schué, Strasbourg-Robertsau, all of France; assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Montedipe S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 37,991, Apr. 14, 1987, abandoned. This application Jul. 11, 1988, Ser. No. 217,498
Claims priority, application France, Apr. 14, 1986, 86/05483
Int. Cl.[5] G03C *1/52, 1/94, 1/76*
U.S. Cl. 430—167 10 Claims

1. A substrate bearing on at least one face surface thereof, (a) an essentially uniform adherent film comprised of a stable, UV-curable organopolysiloxane composition comprising

(1) at least one organopolysiloxane containing, per molecule, at least x alkenyl unsaturated hydrocarbon groups bonded to a silicon atom, wherein x is greater than or equal to 2;

(2) at least one organohydropolysiloxane containing, per molecule, at least y hydrogen atoms bonded to a silicon atom, wherein y is greater than or equal to 2, and the sum (x+y) is less than 5, with the proviso that the SiH and Si-alkenyl moieties may be borne by the same molecule;

(3) a catalytically effective amount of a platinum group metal compound; and

(4) an amount of at least one azodicarboxylate which is effective in inhibiting the formation of gel at ambient temperature, but which is insufficient to prevent crosslinking on exposure of the composition to ultraviolet radiation; and (b) a flattening layer for said at least one face surface positioned between said face surface and said adherent film.

4,939,066

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT

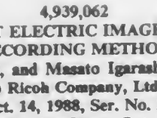
Masaharu Toriuchi, and Keizo Koya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

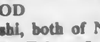
Filed Oct. 30, 1987, Ser. No. 115,070
Claims priority, application Japan, Oct. 30, 1986, 61-259326
The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—219 15 Claims

1. A color diffusion transfer photographic material comprising a base having thereon at least one silver halide emulsion layer and a dye image-receiving layer, at least one layer thereof containing a dye-releasing redox compound and at least one layer thereof containing a development inhibitor-releasing compound represented by the following general formula (I):

(I)

wherein A represents



linked to 
through at least one of R^1, R^2 and EAG; R^1 and R^2, which may be the same or different, each represents a single bond or a substituent other than a hydrogen atom, provided that R^1 and R^2 may be linked to form a ring; EAG represents an electron-accepting group; Time represents a group capable of releasing DIG after EAG accepts an electron and the N—O bond is cleaved in A; DIG represents a development inhibitor precursor; and t is an integer of 0 or 1.

4,939,067

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Yoshihiro Takagi, and Shingo Nishiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 27, 1988, Ser. No. 199,828
Claims priority, application Japan, May 28, 1987, 62-133020
Int. Cl.[5] G03C *1/10*
U.S. Cl. 430—264 20 Claims

1. A silver halide photographic material comprising at least one silver halide emulsion layer on a support, wherein the emulsion layer(s) comprises cubic silver halide grains having a mean grain size of 0.15 μm or less and containing silver chloride in an amount of 99 mol % or more.

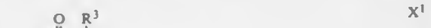
4,939,068

ANODIC OXIDATION OF THE SURFACE OF ALUMINUM OR ALUMINUM ALLOYS

Harald Lauke, Mannheim; Bernhard Nick, and Reinhold J. Leyrer, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 1, 1988, Ser. No. 278,366
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1987, 3740698
Int. Cl.[5] G03C *1/94, 1/74;* C25D *5/00, 11/08*
U.S. Cl. 430—278 10 Claims

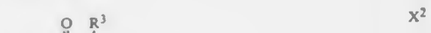
1. A process for the anodic oxidation of the surface of plates, foils or ribbons consisting of aluminum or aluminum alloys, which comprises: (1) preparing an aqueous electrolyte as the anodizing bath by adding one or more silanes of the formula I



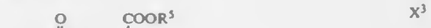
I

wherein y is an integer from 1 to 4, n, independently of y, is 0, 1 or 2, R^1 and R^2 are each C_1–C_9-alkyl or C_6–C_{12}-aryl, X is selected from the group consisting of X^1 to X^{11}

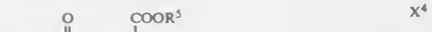
X^1



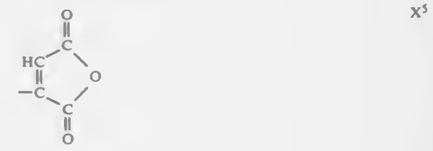
X^2



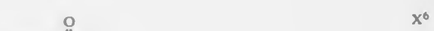
X^3



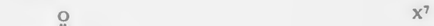
X^4



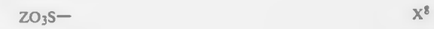
X^5



X^6



X^7



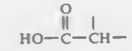
X^8

$HalO_2S-$ X^9

ZO_3S-Ar- X^{10}

$HalO_2S-Ar-$ X^{11}

where R^3 is hydrogen, C_1–C_9-alkyl, an alkanecarboxylic acid group of 1 to 9 carbon atoms or a carboxylic anhydride ring obtained by reacting one of the said alkanecarboxylic acid groups of 1 to 9 carbon atoms with the methylenecarboxylic acid group



bonded to R^3, R^4 and R^5 are each C_1–C_9-alkyl or C_6–C_{12}aryl, R^6 is hydrogen, C_1–C_9-alkyl or C_6–C_{12}-aryl, Z is hydrogen or an alkali metal cation, Ar is C_6–C_{12}-arylene and Hal is chlorine or bromine;

or an aqueous solution of the said silane or silanes I or an aqueous alcoholic solution of the said silane or silanes I to water, to an aqueous solution of additives, to an aqueous solution of organic or inorganic acids or to an aqueous solution of organic or inorganic acids and additives, (2) dipping the said plates, foils or ribbons consisting of aluminum or aluminum alloys into the anodizing bath and (3) anodizing the surface of the plates, foils or ribbons, consisting of aluminum or aluminum alloys to obtain a surface layer consisting essentially of aluminum oxide.

10. A process as defined in claim 1 for the production of a photosensitive lithographic printing plate or offset printing plate, wherein the surface layer which consists essentially of

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aluminum oxides and is obtained by anodic oxidation of 0.05 to 1.5 mm thick plates, foils or ribbons consisting of aluminum or aluminum alloys is covered with a photosensitive recording layer.

4,939,069

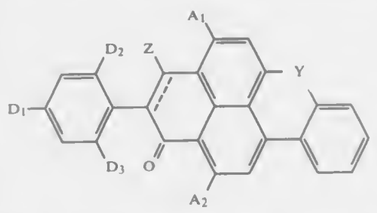
PHOTOPOLYMERIZABLE COMPOSITION

Masami Kawabata, Takatsuki; Masahiko Harada, Suita, and Yasuyuki Takimoto, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 10, 1988, Ser. No. 269,711
Claims priority, application Japan, Nov. 10, 1987, 62-285017
Int. Cl.[5] G03C *1/68*
U.S. Cl. 430—281 **4 Claims**

1. A photopolymerizable composition comprising a polymerizable compound having an ethylenically unsaturated double bond and a photopolymerization initiator wherein the photopolymerization initiator comprises:

(a) a sensitizer represented by the following formula:



(I)

wherein Y represents an oxygen atom or a sulfur atom, Z represents an oxygen atom, an alkoxy group having 1 to 3 carbon atoms or an alkanoyloxy group having 2 to 4 carbon atoms, provided that when Z is an oxygen atom the bond between said oxygen atom and the carbon atom adjacent thereto is a double bond and the dotted line in the formula (I) is removed, A_1 and A_2, which are the same or different, are a hydrogen atom or an electron attractive group, D_1, D_2 and D_3, which are the same or different, are a hydrogen atom and an electron donative group, with the proviso that all of A_1, A_2, D_1, D_2 and D_3 are not simultaneously hydrogen atoms; and

(b) a radical forming agent the said polymerizable compound having an ethylenically unsaturated double bond being present in an amount of 1 part by weight, the said sensitizer being present in an amount of 0.001 to 0.2 parts by weight and the said radical forming agent being present in an amount of 0.005 to 0.2 parts by weight.

4,939,070

THERMALLY STABLE PHOTORESISTS WITH HIGH SENSITIVITY

William R. Brunsvold, 22 Clover Hill Rd., Poughkeepsie, N.Y. 12603; Ming-Fea Chow, Beyer Dr., Poughguag, N.Y. 12570; Willard E. Conley, 16 Chadeayne Ave., Cornwall, N.Y. 12518; Dale M. Crockatt, 29 Warren St., Somers, N.Y. 10589; Jean M. J. Fréchet, 810 Stanstead Road, Ottawa, Ontario K1V 6Y7, Canada; George J. Hefferon, High View Rd., Fishkill, N.Y. 12524; Hiroshi Ito, 722 Via Colina, San Jose, Calif. 95139; Nancy E. Iwamoto, 11700 SW. Butner Rd., Apt. 212, Portland, Oreg. 97225, and Carlton G. Willson, 1982 University Ave., San Jose, Calif. 95126

Continuation of Ser. No. 890,427, Jul. 28, 1986, abandoned. This application Jul. 7, 1988, Ser. No. 215,966
Int. Cl.[5] G03C *5/16*
U.S. Cl. 430—312 **15 Claims**

1. A method of creating a lithographic resist structure comprising the steps of:

1. applying a layer of resist comprising a polymeric material to a substrate, wherein said substrate is comprised of a second resist material;
2. exposing said resist to radiation capable of creating a latent image within said resist; and,
3. developing said radiation-exposed resist to provide a resist structure;

wherein the improvement comprises:

said polymeric material having acid labile or photolabile groups pendant to the polymer backbone, and wherein after removal of said acid labile or photolabile groups, the resultant polymeric structure is thermally stable to temperatures greater than about 160° C. and contains a hydrogen bond donor and a free hydrogen bond acceptor, such that a hydrogen bonded network is generated upon said removal of said acid labile or said photolabile group and where in said hydrogen bonded network requires energy to break.

3. A method of creating a lithographic resist structure comprising of the steps of:

1. applying a layer of resist sensitive to deep UV, electron beam, or X-ray radiation comprising a polymeric material to a substrate;
2. exposing said resist to deep UV, electron beam or X-ray radiation capable of creating a latent image within said resist; and
3. developing said radiation-exposed resist to provide a resist structure; wherein the improvement comprises: said polymeric material being selected from the group consisting of maleimide polymers, 1,2,4-triazoline-3,5-dione condensation polymers and styrene addition copolymers, said polymeric material having acid labile or photolabile groups pendant to the polymer backbone, and wherein after removal of said acid labile or photolabile groups, the resultant polymeric structure is thermally stable to temperatures greater than about 160° C. and contains a hydrogen bond donor and a free hydrogen bond acceptor, such that a hydrogen bonded network is generated upon said removal of said acid labile or said photolabile group and wherein said hydrogen bonded network requires energy to break.

5. A method of creating a lithographic resist structure comprising the steps of:

1. applying a layer of resist to a substrate comprising a second resist material;
2. exposing said resist to radiation capable of creating a latent image within said resist, wherein said radiation does not significantly affect said underlaying second resist material;
3. developing said radiation-exposed resist to provide a patterned resist structure;
4. blanket exposing said patterned resist structure with radiation capable of creating a second latent image within said underlaying second resist material; and
5. developing said second latent image to create a composite resist structure of at least two layers;

wherein the improvement comprises:

said second resist material having acid labile or photo labile groups pendant to the polymer backbone, and wherein after removal of said acid labile or photo labile groups, the resultant underlaying second resist material is thermally stable to temperatures greater than about 160° C.

4,939,071

METHOD FOR FORMING LOW RESISTANCE, SUB-MICROMETER SEMICONDUCTOR GATE STRUCTURES

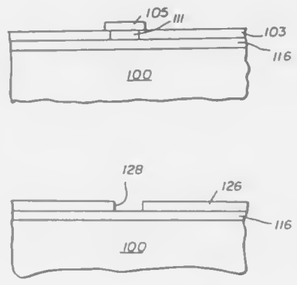
Joseph S. Barrera, Los Altos, and Charles T. Strouth, Cupertino, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 6, 1984, Ser. No. 586,703
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—314 **9 Claims**

1. A method of providing on a support of a substrate a covering layer having at least one sub-micron-size recess therein, comprising the steps of:

covering at least a section of the support surface that includes the desired location of the recess with a photoresist layer;

masking an area of the photoresist layer that covers said location, such masked area having a size exceeding the desired size of the recess;



subjecting the photoresist layer to overexposure with an attendant reduction in the size of said masked area down to said desired size of the recess;

removing the photoresist layer from a region of the support surface surrounding the reduced-size area;

applying the covering layer at least to said region; and

clearing said reduced-size area to provide the recess.

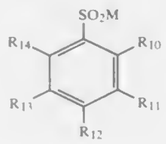
4,939,072

COLOR PHOTOGRAPHS AND PROCESS FOR MAKING THE SAME

Masakazu Morigaki; Nobuo Seto; Osamu Takahashi, and Hideaki Naruse, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

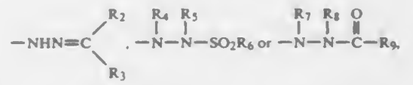
Continuation-in-part of Ser. No. 81,517, Aug. 5, 1987, abandoned. This application Oct. 12, 1988, Ser. No. 256,263
Claims priority, application Japan, Aug. 5, 1986, 61-183920; Jun. 25, 1987, 62-158642
Int. Cl.[5] G03C *7/32, 7/26*
U.S. Cl. 430—372 **5 Claims**

1. A process for making a color photograph, which comprises subjecting, after imagewise exposure, a color photographic light-sensitive material having on a support at least one silver halide emulsion layer containing a color image-forming coupler forming a dye by the oxidative coupling reaction with an aromatic amine color developing agent to color development, bleach, and fix or color development and blix in the presence of a storage stability improving compound forming a chemically inert and substantially colorless compound by causing chemical combination at a pH of 8 or less with the oxidation product of the aromatic amine color developing agent remaining therein after processing, said storage stability improving compound not being a polymer and being represented by formula (II):

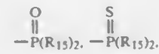


(II)

wherein M represents



wherein R_2 and R_3 may be the same or different, and each represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group, provided that R_2 and R_3 may be linked to form a 5- to 7-membered ring; R_4, R_5, R_7 and R_8 may be the same or different, and each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, a sulfonyl group, a ureido group or urethane group, provided that at least one of R_4 and R_5 and at least one of R_7 and R_8 each represents a hydrogen atom; R_6 and R_9 each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; or R_9 may represent an alkylamino group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, or an aryloxycarbonyl group, provided that at least two of R_4, R_5 and R_6 may be linked to form a 5- to 7-membered ring, and at least two of R_7, R_8 and R_9 may be linked to form a 5- to 7-membered ring; and R_{10}, R_{11}, R_{12}, R_{13} and R_{14}, which may be the same or different, each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a halogen atom, $—SR_{15}$, $—OR_{15}$ or $—NR_{15}R_{16}$ in which R_{15} and R_{16}, which may be the same or different in the case of $—NR_{15}R_{16}$, each represents a hydrogen atom, an aliphatic group, an alkoxy group, an aromatic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfonyl group, a sulfonamido group, a sulfamoyl group, a ureido group, a urethane group, a carbamoyl group, a sulfo group, a carboxy group, a nitro group, a cyano group, an alkoxyallyl group, an aryloxyallyl group, a sulfonyloxy group,



$—P(R_{15})_3$, $—P(OR_{15})_3$ in which R_{15} is defined the same as R_{15} above, or a formyl group.

4,939,073

STABLIZED METHOD OF LIGHT SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeharu Koboshi, Sagamihara, and Masayuki Kurematsu, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 150,455, Jan. 28, 1988, abandoned, which is a continuation of Ser. No. 828,609, Feb. 12, 1986, abandoned, which is a continuation of Ser. No. 643,766, Aug. 24, 1984, abandoned, which is a continuation of Ser. No. 530,001, Sep. 7, 1983, abandoned, which is a continuation of Ser. No. 399,219, Jul. 19, 1982, abandoned. This application Oct. 6, 1989, Ser. No. 418,950
Claims priority, application Japan, Jul. 21, 1981, 56-112939
Int. Cl.[5] G03C *7/40, 5/26*
U.S. Cl. 430—372 **41 Claims**

4. A method of stabilizing a light-sensitive silver halide color photographic material, comprising the step of contacting in multiple stabilizing tanks subsequent to a processing step in a bleach-fixing bath or a fixing bath, a developed silver halide color photographic material at the last stage of color processing of said photographic material with a dye stabilizing solution adjusted to a pH value between about 3 and about 9 and comprising a soluble complex salt of an iron ion, said soluble complex salt being present in the last of said multiple tanks in a stabilizing concentration of at least 1×10^{-4} mol/l.

VOL 1116 ISS 1 JL 3 1990 UMI

4,939,074

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takatoshi Ishikawa, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Apr. 26, 1988, Ser. No. 186,232

Claims priority, application Japan, Apr. 28, 1987, 62-105627

Int. Cl.[5] G03C *7/42*

U.S. Cl. 430—393 **9 Claims**

1. A method for processing a silver halide color photographic light-sensitive material which comprises color developing a silver halide color photographic light-sensitive material, the coating amount of silver thereon being not more than 0.8 g/m^2, bleach-fixing the developed material and then water washing and/or stabilizing the bleach-fixed material, wherein the method further comprises that the total concentration of bleaching agent(s) in a bleach-fixing solution is not more than 0.1 mole/l and the total concentration of fixing agent(s) in the solution is not more than 0.50 mole/l.

4,939,075

BLEACHING BATHS CONTAINING BLEACHING ACCELERATORS

Peter Bergthaller, Bergisch Gladbach; Helmut Häseler, Leverkusen, and Heinz Meckl, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 9, 1988, Ser. No. 282,121

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743783

Int. Cl.[5] G03C *5/38, 5/44*

U.S. Cl. 430—460 **9 Claims**

1. Bleaching and bleaching/fixing baths containing an iron-(III) ion complex salt as bleaching agent, characterized in that they additionally contain a 5-membered to 7-membered heterocyclic compound which contains at least one N atom and at least one other heteroatom from the group consisting of O, N, S and which is substituted by —S^{63} and, at a quaternary ring nitrogen atom, carries a positive charge arranged in such a way that a tautomeric charge compensation to a neutral thione form is not possible.

4,939,076

BARRIER STRETCH FILM

Walter B. Mueller, Inman, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation-in-part of Ser. No. 168,290, Mar. 15, 1988, abandoned. This application Jul. 26, 1988, Ser. No. 224,842

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—476.9 **6 Claims**



1. A barrier stretch film comprising:
(a) an outer layer comprising a heat sealable polymeric material selected from the group consisting of ethylene vinyl acetate copolymer, ethylene butyl acrylate copolymer, linear low density polyethylene, and polyester;
(b) a first interior layer comprising an oxygen barrier polymeric material;
(c) a second interior layer comprising a high molecular weight polymeric material;
(d) an inner layer comprising a copolyamide, and
(e) a polymeric adhesive disposed between the second interior and inner layers; wherein said film is a lay-flat tubular film having its interior lay-flat surfaces self-welded.

4,939,077

PHOTOGRAPHIC RECORDING MATERIAL CONTAINING POLYESTER COMPOUNDS HAVING FREE ACID GROUPS

Günter Helling, Odenthal, and Wolfgang Himmelmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

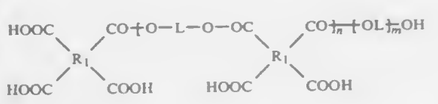
Filed Aug. 25, 1989, Ser. No. 399,625

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1988, 3830522

Int. Cl.[5] G03C *1/82*

U.S. Cl. 430—527 **6 Claims**

1. Photographic silver halide recording material comprising a support, at least one light-sensitive silver halide emulsion layer, a protective layer and optionally other layers, characterised in that at least one layer which is arranged closer to the support than the protective layer contains a compound which, in the form of the free acid, corresponds to the following formula



(I)

wherein
R_1 denotes alkylene, arylene, aralkylene or cycloalkylene,
L denotes the residue of a polyester diol having an average molecular weight of from 500 to 20,000,
m denotes 0 or 1,
n denotes 0 to 30, preferably 0 to 10, and
$m+n \geqq 1$.

4,939,078

DIRECT POSITIVE-TYPE SILVER HALIDE LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL

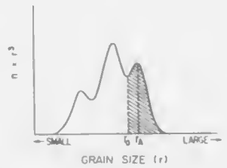
Kazuya Kuramoto; Bunzo Ueda, and Yasuo Tosaka, all of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 21, 1988, Ser. No. 247,172

Claims priority, application Japan, Sep. 22, 1987, 62-238229; Oct. 3, 1987, 62-250258

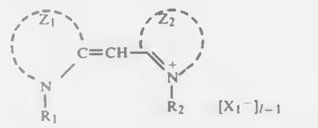
Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **22 Claims**



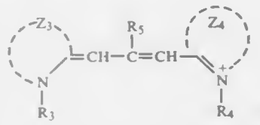
1. A direct positive type silver halide photographic light-sensitive material comprising a support having thereon at least one blue-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer and at least one red-sensitive silver halide emulsion layer, which, after being imagewise exposed, are to directly form a positive image by being light-fogged while in developing or by developing in the presence of a fogging agent,
wherein each of said silver halide emulsion layers are comprised of at least two silver halide emulsions being different in average silver halide grain size, and in each of said emulsion layers, average diameter S of silver halide grains of the emulsion having the smallest average grain size and the average diameter L of silver halide grains of the emulsion having the largest average grain size have a proportional relation of $1.6 \leqq L/S$; and
the ratio by weight of silver halide grains of the emulsion having the smallest average grain size in each silver halide emulsion layer to the whole silver halide grains contained in each silver halide emulsion layer is within the range of from 2% to 50% in said blue-sensitive emulsion layer, from 2% to 40% in said green-sensitive and red-sensitive emulsion layers; and said blue-sensitive emulsion layer contains at least one sensitizing dye represented by the following Formula I, said green-sensitive emulsion layer contains at least one sensitizing dye represented by the following Formula II and said red-sensitive emulsion layer contains at least one sensitizing dye represented by the following Formula III,

Formula I



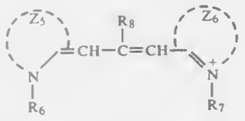
wherein Z_1 and Z_2 each represents a group of atoms necessary to complete a ring of benzothiazole, naphthothiazole, benzoselenazole or naphthoselenazole; R_1 and R_2 each represents an unsubstituted or substituted alkyl group, provided that at least one of the R_1 and R_2 represents an alkyl group substituted by a sulfo group or a carboxyl group; X_1^- respresents an anion;
and l represents an integer of 1 or 2,

Formula II



wherein Z_3 and Z_4 each represents a group of atoms necessary to complete a ring of benzoxazol or naphthoxazole; R_3 and R_4 each represents an unsubstituted or substituted alkyl group, provided that at least one of the R_3 and R_4 represents an alkyl group substituted by a sulfo group or a carboxyl group; R_5 represents a lower alkyl group; X_2^- represents an anion; and m represets an integer of 1 or 2,

Formula III



wherein Z_5 and Z_6 each represents a group of atoms necessary to complete a ring of benzothiazole, naphthothiazole, benzoselenazole, or naphthoselenazole; R_6 and R_7 each represents an unsubstituted or substituted alkyl group, provided that at least one of the R_6 and R_7 represents an alkyl group substituted by a sulfo group or a carboxyl group; R_8 represents an alkyl group or an aryl group; X_3^- represents an anion; and n represents an integer of 1 or 2.

4,939,079

PHOTOGRAPHIC RECORDING MATERIAL

Erich Wolff, Solingen; Hans Langen, Bonn; Wolfgang Himmelmann, Leverkusen, and Günter Helling, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa/Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 22,983, Mar. 6, 1987, abandoned. This application Feb. 15, 1989, Ser. No. 313,302

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3608998

Int. Cl.[5] G03C *1/30, 7/38*

U.S. Cl. 430—558 **6 Claims**

1. A photographic recording material comprising at least one photosensitive silver halide emulsion layer and at least one layer containing a hardened protein-like binder which contains free primary amino groups in its non-hardened state, characterized in that the hardened protein-like binder contains amino groups corresponding to the formula —NH—R, in which R is the residue of a low molecular weight monofunctional compound which has been reacted with the free primary amino groups of the hardened protein-like binder under storage conditions without significantly contributing towards hardening, wherein said low molecular weight monofunctional compound corresponds to one of the following formulae I and II:

X—R I

Y—R′ II

in which
X represents an activated atom or an activated group which is attached to a C-atom of the substituent R and may be displaced therefrom by an N-atom of a primary amino group;
R is an organic radical containing at least one group by which the atom or the group X is activated;
Y represents an activated group not which a primary amino group may be added in a 1,2- or 1,4-addition reaction;
R′ is an organic radical by which the group Y may optionally be activated.

4,939,080

SILVER HALIDE PHOTOSENSITIVE MATERIAL

Takanori Hioki; Naoto Ohshima, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

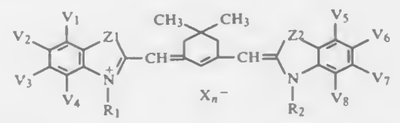
Filed Oct. 19, 1988, Ser. No. 259,633

Claims priority, application Japan, Oct. 19, 1987, 62-263320; Mar. 31, 1988, 63-78466

Int. Cl.[5] G03C *1/20*

U.S. Cl. 430—576 **13 Claims**

1. A silver halide photosensitive material comprising at least one layer of a silver halide emulsion layer provided on a base, wherein said at least one silver halide emulsion layer comprises at least one dye compound represented by general formula (I):



(I)

wherein
Z_1 and Z_2 each independently represents a sulfur atom or a selenium atom;
R_1 and R_2 each independently represents an alkyl group, provided that at least one of R_1 or R_2 must represent an unsubstituted alkyl group selected from the group consisting of a butyl group, a pentyl group, a hexyl group, a heptyl group and an octyl group;
V_1, V_2, V_3, V_4, V_5, V_6, V_7 and V_8 each independently

represents a hydrogen atom, a halogen atom, an alkyl group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a carboxy group, a cyano group, a hydroxy group, an amino group, an acylamino group, an alkoxy group, an alkylthio group, an alkylsulfonyl group, a sulfonate group, or an aryl group, provided that adjacent groups represented by V_1 to V_8 can bond to each other via their carbon atoms to form a condensed ring;

X represents a charged ion in equilibrium, and n is a value necessary to neutralize the electrical charge of said dye compound.

4,939,081

CELL-SEPARATION

Carl G. Figdor, Hertogenbosch, and Peter Sloot, Aerdenhout, both of Netherlands, assignors to The Netherlands Cancer Institute, Amsterdam, Netherlands

Filed May 27, 1987, Ser. No. 54,436

Int. Cl.[5] A01N *1/02*; G01N *21/00*

U.S. Cl. 435—2 **7 Claims**

1. A method for separating blood and bone-marrow cells on the basis of specific mass and volume with the aid of an elutriation rotor and a monitor system coupled to the output thereof and in which on the basis of the scattering of a light beam on the cells of a part of the separated fraction this fraction is tested for the quantitative presence of cells having particular cell properties and on the basis of such tests elutriator parameters of rate-of-flow and rotational speed are controlled during the process, characterized in that the intensity of the scattered beam is measured three-dimensionally and simultaneously in the direction of the light beam, in the reverse direction and in a direction perpendicular thereto so that data concerning the degree to which cells having specific properties corresponding to each of the directions to be measured becomes available during the separation process, and that date is used during the separation process to control elutriator parameters to improve the cell separation.

4,939,082

PROCESS AND MONOCLONAL ANTIBODY FOR THE SPECIFIC DETERMINATION OF PANCREAS ALPHA-AMYLASE IN THE PRESENCE OF SALIVA ALPHA-AMYLASE

Kurt W. Naujoks, Gauting; Willie Gerhardt, Helsingborg; Christa Hübner-Parajsz, Tutzing; Karl Wulff, Weilheim; Herbert Jungfer; Helmut Lenz, both of Tutzing; Winfried Albert, Pähl, and August W. Wahlefeld, HohenpeiBenberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 673,855, Nov. 21, 1984, abandoned. This application Mar. 21, 1989, Ser. No. 326,885

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342736

Int. Cl.[5] G01N *33/537, 33/541, 33/543*; C12N *15/00*

U.S. Cl. 435—7 **24 Claims**

1. Method for determining pancreatic alpha amylase in a body fluid sample which also contains salivary alpha amylase comprising contacting said body fluid sample with a monoclonal antibody which specifically binds to but does not inhibit salivary alpha amylase and has cross reactivity with pancreatic alpha amylase of 5% or less under conditions favoring formation of a complex of said monoclonal antibody and said salivary alpha amylase which removes said salivary alpha amylase from said fluid, adding a system for detection of alpha amylase to said body fluid sample and determining reaction of said system with pancreatic alpha amylase.

22. Monoclonal antibody which specifically binds to but does not inhibit salivary alpha amylase and has cross reactivity of 5% or less with pancreatic alpha amylase.

4,939,083

CARBOHYDRATE SPECIFIC TO CHRONIC MYELOGENOUS LEUKEMIA GRANULOCYTES

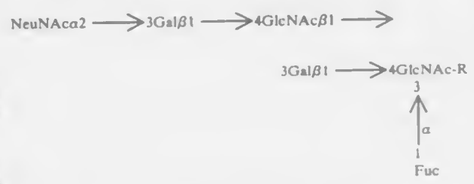
Minoru Fukuda, and Michiko Fukuda, both of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Oct. 30, 1986, Ser. No. 924,935

Int. Cl.[5] G01N *33/53*; A61K *39/00*; C07H *5/04*; C07G *37/00*

U.S. Cl. 435—7 **17 Claims**

1. An essentially pure carbohydrate having the following structure:



wherein R = 1→3Galβ1→4Glcβ1→1Cer or H,

said carbohydrate having no fucose attached to the subterminal N-acetyl glucosamine.

4,939,085

OXIDIZED COENZYME-CONTAINING DRY ANALYTICAL ELEMENT

Fuminori Arai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1987, Ser. No. 107,673

Claims priority, application Japan, Oct. 9, 1986, 61-240287

Int. Cl.[5] C12Q *1/32*

U.S. Cl. 435—26 **10 Claims**

1. A dry multilayer analytical element comprising a light-transmissive, water-impermeable support and at least two reagent layers provided on the support, the reagent layers containing dehydrogenase, pyruvate, NAD^+ or $NADP^+$ coenzyme, an electron transport compound and an electron acceptor dye-forming compound wherein the coenzyme is contained in a layer other than a layer containing pyruvate and the electron acceptor dye-forming compound is contained in a layer other than the layer containing pyruvate.

4,939,086

PRODUCTION AND USE OF A HIGH-INTENSITY RED NATURAL COLORANT DERIVED FROM CARROT CELL TISSUE CULTURES

Rou Vunsh, Moshav Shilat, and Michael B. Matilsky, Rehov Yasmin, both of Israel, assignors to International Genetic Sciences Partnership, Research Triangle Park, N.C.

Filed May 24, 1985, Ser. No. 737,432

Int. Cl.[5] C12P *23/00*

U.S. Cl. 435—67 **6 Claims**

1. A process for producing a colorant prepared from an anthocyanin synthesized by cells in culture of a cell line *Daucus carota* comprising—

cultivating *Daucus carota* cells in a cell tissue culture;

subculturing the cultivated *Daucus carota* cells without separating colored cells from uncolored cells in the cultivated cells;

harvesting the cultured cells;

purifying the extracted cells to isolate the anthocyanin; and

lyophilizing the isolated anthocyanin to yield a water-soluble anthocyaninic powder.

4,939,087

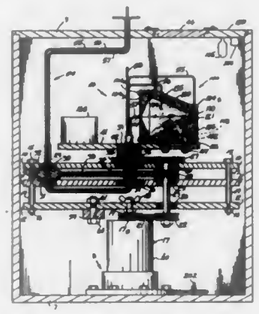
METHOD FOR CONTINUOUS CENTRIFUGAL BIOPROCESSING

Bernard J. Van Wie, Pullman; Michael L. Elliott, Richland, and Thomas M. Brouns, Pullman, all of Wash., assignors to Washington State University Research Foundation, Inc., Wash.

Filed May 12, 1987, Ser. No. 48,718

Int. Cl.[5] C12N *5/02*

U.S. Cl. 435—240.25 **22 Claims**



12. A method for long term culturing of cells or other microorganisms forming at least one microorganism culture, comprising:

installing at least one microorganism within at least one reaction chamber of a bioreactor having at least one rotatable rotor which mounts at least one reactor which defines at least portions of said at least one reaction chamber; said bioreactor being capable of centrifugally rotating the at least one reactor and reaction chamber;

rotating the at least one microorganism culture contained within the at least one reaction chamber to thereby create centrifugal forces acting upon microorganisms forming the microorganism culture;

supplying at least one flow of at least one fluid culture medium to the rotating rotor and reaction chamber;

circulating at least one flow of at least one fluid culture medium to the rotating rotor, through the reaction chamber, and from the rotating rotor;

controllably forcing at least one fluid culture medium through the microorganism culture held within the at least one reaction chamber in opposition to the centrifugal forces applied to the microorganisms;

fluidizing the at least one microorganism culture by controlling the flow of the at least one fluid culture medium through the at least one reaction chamber to maintain microorganisms of the at least one microorganism culture in at least one fluidized mass within the at least one reaction chamber;

suspending the microorganisms of the at least one microorganism culture within the at least one reaction chamber substantially balanced by countervailing fluid drag forces and centrifugal forces; said microorganisms being suspended for periods of at least one day;

removing fluid culture medium from the rotating rotor and at least one reaction chamber;

feeding the microorganisms of the at least one microorganism culture suspended in the at least one reaction chamber by passing suitable nutrients for the microorganisms in the at least one fluid culture medium as the fluid culture medium is forced through the at least one reaction chamber.

4,939,088

SUSTAINED PRODUCTION OF RECOMBINANT GAMMA INTERFERON USING AN EPSTEIN-BARR VIRUS REPLICON

Janet M. Young, Washington, D.C.; Nava Sarver, Potomac, Md., and William N. Drohan, Springfield, Va., assignors to Meloy Laboratories Inc., Springfield, Va.

Filed Feb. 18, 1987, Ser. No. 16,044

Int. Cl.[5] C12P *21/00*; C12N *15/00, 5/00*

U.S. Cl. 435—69.51 **20 Claims**

1. An Epstein-Barr virus based expression vector having the identifying characteristics of p222 (pEBv-gamma-IFN), p239 (pEBV-gamma-IFN), or p147 (pEBV-gamma-IFN).

17. A process for producing human gamma interferon comprising:

providing a stable, extrachromosomally replicable vector capable of directing the expression of a DNA sequence encoding human gamma interferon in mammalian cells, said vector comprising a cis-acting Epstein-Barr virus origin of replication; a trans-acting EBNA-1 gene; a pUC12 multiple cloning site; a selectable marker expression cassette oriented in an opposite transcriptional direction as said EBNA-1 gene and comprising a hygromycin phosphotransferase expression cassette; a human gamma interferon expression cassette oriented in the same transcriptional direction as said EBNA-1 gene and comprising, in order of transcription, an enhancer region selected from the group consisting of M-MSV and H-CMV enhancer, a promoter region selected from the group consisting of M-MT promoter and SV40 early promoter, a nucleotide sequence encoding human gamma interferon and an SV40-derived polyadenylation sequence;

transforming said mammalian cells with said vector; and

maintaining said transformed mammalian cells under conditions permitting the expression of said human gamma interferon.

4,939,089

PROCESS FOR THE PREPARATION OF FESTUCLAVINE

Detlef Wilke, Weanigsen, and Alfred Weber, Berlin, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE85/00189, § 371 Date Feb. 3, 1986, § 102(e) Date Feb. 3, 1986, PCT Pub. No. WO85/05634, PCT Pub. Date Dec. 19, 1985

PCT Filed May 30, 1985, Ser. No. 842,110

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420955

Int. Cl.[5] C12P *17/18*; C12N *1/14*

U.S. Cl. 435—49 **2 Claims**

1. A process for the preparation of festuclavine, characterized by cultivating the microorganism *Claviceps paspali DSM* 2838 and isolating the thus-formed festuclavine after termination of fermentation.

4,939,090

METHOD OF REACTING IMMISCIBLE LIQUIDS WITH A CATALYST-IMPREGNATED MEMBRANE

Frank Taylor, Ambler, Pa., assignor to United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 6, 1986, Ser. No. 860,360

Int. Cl.[5] C12P *7/64*; C12N *11/02, 11/08, 9/20*

U.S. Cl. 435—134 **5 Claims**

1. A method of reacting a liquid oil with an immiscible aqueous liquid by means of a catalyst-impregnated membrane disposed between said oil and aqueous liquid comprising

(a) impregnating a hydrophilic, microporous membrane with an enzyme catalyst to form said catalyst-impregnated membrane, said impregnating step consisting essentially of (i) passing an aqueous solution of said catalyst in contact

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with said hydrophilic, microporous membrane so that said catalyst is adsorbed by said membrane;

(ii) removing said solution after said catalyst has been absorbed by said membrane;

(b) thereafter passing said oil in contact with one side of said membrane, and passing said aqueous liquid in contact with the other side thereof;

(c) creating a pressure drop across said membrane to force said oil to flow through said membrane to intermingle with said aqueous liquid on said other side of said membrane, thereby forming a coarse mixture with said aqueous liquid; and

(d) separating said coarse mixture into two immiscible phases.

4,939,091

NOVEL AUEROBASIDIUM SP. MICROORGANISMS, METHOD FOR OBTAINING THE SAME AND METHOD FOR PREPARING ERYTHRITOL WITH THE SAME

Takashi Sasaki; Takafumi Kasumi; Naoya Kubo; Keiji Kainuma, all of Sakura; Katsuo Wako, Gyoda; Hiroaki Ishizuka, Yatabe; Gaku Kawaguchi, Gyoda, and Tsunero Oda, Akikawa, all of Japan, assignors to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Ibaraki and Nikken Chemicals Co., Ltd., Tokyo, both of, Japan

Filed Aug. 24, 1987, Ser. No. 88,858

Claims priority, application Japan, Sep. 9, 1986, 61-210669; Feb. 6, 1987, 62-024716

Int. Cl.[5] C12P *7/18, 1/645;* **C12N** *1/20;* **C12R** *1/01*

U.S. Cl. 435—158 **8 Claims**

1. A method for preparing erythritol by fermentation of sugar, which comprises inoculating artificial mutant of *Aureobasidium* sp. SN-124A strain (FERM BP-1429) on a liquid culture medium of pH 4 to 9 containing an assimilable carbon source in an amount of at least 30 % and an assimilable nitrogen source, and aerobically culturing them at a temperature of 30° to 38° C. to form and accumulate erythritol in said culture medium for collection.

4,939,092

PROTEINACEOUS DERIVATIVES CONTAINING IRON IN HIGHLY BIOAVAILABLE FORM, PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Flavio Villani, and Adriano Zamboni, both of Trecate, Italy, assignors to Unibois S.p.A., Novara, Italy

Filed Oct. 27, 1988, Ser. No. 263,542

Claims priority, application Italy, Nov. 13, 1987, 22631 A/87

Int. Cl.[5] C12N *9/36;* **A61K** *33/26;* **C07K** *15/00*

U.S. Cl. 435—206 **5 Claims**

1. A ferric or ferrous complex of lysozyme acyiated with glutaric anhydride or with the anhydride of 1,2-cyclohexanedicarboxylic acid.

4,939,093

HUMAN IL-2 LIKE POLYPEPTIDES, DNA SEQUENCES AND RECOMBINANT DNA MOLECULES THEREFORE AND METHODS FOR THE PRODUCTION AND USE THEREOF

Michael P. McGrogan, Albany; Ernest S. Kawasaki, Richmond; Michael V. Doyle, Oakland, and David F. Mark, Hercules, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 9,999, Feb. 2, 1987, abandoned, which is a continuation of Ser. No. 457,594, Jan. 13, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,059, Sep. 28, 1982, abandoned. This application Aug. 23, 1988, Ser. No. 236,296

Int. Cl.[5] C12N *1/20, 15/00;* **C12P** *21/00, 19/34*

U.S. Cl. 435—252.3 **12 Claims**

1. A messenger RNA preparation capabie of prouucing IL-2 in a *Xenopus laevis* oocyte translation system prepared by a process which comprises

recovering an mRNA preparation which preparation has been hybridized to a recombinant DNA useful for enriching mRNA encoding IL-2 comprising the sequence

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                10                  20                  30
TCCTGAGGAA CAGACTTAAG TATGCCCTGA
            40                  50                  60
CAGGAGATGA AGTAAAGAAG ATTTGCATGC
            70                  80                  90
AGCGGTTCAT TAAAATCGAT GGCAAGGTCC
           100                 110                 120
GAACTGATAT AACCTACCCT GCTGGATTCA
           130                 140                 150
TGGATGTCAT CAGCATTGAC AAGACGGGAG
           160                 170                 180
AGAATTTCCG TCTGATCTAT GACACCAAGG
           190                 200                 210
GTCGCTTTGC TGTACATCGT ATTACACCTG
           220                 230                 240
AGGAGGCCAA GTACAAGTTG TGCAAAGTGA
           250                 260                 270
GAAAGATCTT TGTGGGCACA AAAGGAATCC
           280                 290                 300
CTCATCTGGT GACTCATGAT GCCCGCACCA
           310                 320                 330
TCCGCTACCC CGATCCCCTC ATCAAGGTGA
           340                 350                 360
ATGATACCAT TCAGATTGAT TTAGAGACTG
           370                 380                 390
GCAAGATTAC TGATTTCATC AAGTTCGACA
           400                 410                 420
CTGGTAACCT GTGTATGGTG ACTGGAGGTG
           430                 440                 450
CTAACCTAGG AAGAATTGGT GTGATCACCA
           460                 470                 480
ACAGAGAGAG GCACCCTGGA TCTTTTGACG
           490                 500                 510
TGGTTCACGT GAAAGATGCC AATGGCAACA
           520                 530                 540
GCTTTGCCAC TCGACTTTCC AACATTTTTG
           550                 560                 570
TTATTGGCAA GGGCAACAAA CCATGGATTT
           580                 590                 600
CTCTTCCCCG AGGAAAGGGT ATCCGCCTCA
           610                 620                 630
CCATTGCTGA AGAGAGAGAC AAAAGACTGG
           640                 650                 660
CGGCCAAACA GAGCAGTGGG TGAAATGGGT
           670                 680                 690
CCCTGGTGAC ATGTCAGATC TTTGTACGTA
           700                 710                 720
ATTAAAAATA TTGTGGCAGG ATTAATAGC.
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or

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     90                  100                 110                 120
GTCC GAACTGATAT AACCTACCCT GCTGGATTCA
           130                 140                 150
TGGATGTCAT CAGCATTGAC AAGACGGGAG
           160                 170                 180
AGAATTTCCG TCTGATCTAT GACACCAAGG
           190                 200                 210
GTCGCTTTGC TGTACATCGT ATTACACCTG
           220                 230                 240
AGGAGGCCAA GTACAAGTTG TGCAAAGTGA
           250                 260                 270
GAAAGATCTT TGTGGGCACA AAAGGAATCC
           280                 290                 300
CTCATCTGGT GACTCATGAT GCCCGCACCA
           310                 320                 330
TCCGCTACCC CGATCCCCTC ATCAAGGTGA
           340                 350                 360
ATGATACCAT TCAGATTGAT TTAGAGACTG
           370                 380                 390
GCAAGATTAC TGATTTCATC AAGTTCGACA
           400                 410                 420
CTGGTAACCT GTGTATGGTG ACTGGAGGTG
           430                 440                 450
CTAACCTAGG AAGAATTGGT GTGATCACCA
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-continued

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           460                 470                 480
ACAGAGAGAG GCACCCTGGA TCTTTTGACG
           490                 500                 510
TGGTTCACGT GAAAGATGCC AATGGCAACA
           520                 530                 540
GCTTTGCCAC TCGACTTTCC AACATTTTTG
           550                 560                 570
TTATTGGCAA GGGCAACAAA CCATGGATTT
           580                 590                 600
CTCTTCCCCG AGGAAAGGGT ATCCGCCTCA
           610                 620                 630
CCATTGCTGA AGAGAGAGAC AAAAGACTGG
           640                 650                 660
CGGCCAAACA GAGCAGTGGG TGAAATGG

or

     250                 260                 270
GATCTT TGTGGGCACA AAAGGAATCC
           280                 290                 300
CTCATCTGGT GACTCATGAT GCCCGCACCA
           310                 320                 330
TCCGCTACCC CGATCCCCTC ATCAAGGTGA
           340                 350                 360
ATGATACCAT TCAGATTGAT TTAGAGACTG
           370                 380                 390
GCAAGATTAC TGATTTCATC AAGTTCGACA
           400                 410                 420
CTGGTAACCT GTGTATGGTG ACTGGAGGTG
           430                 440                 450
CTAACCTAGG AAGAATTGGT GTGATCACCA
           460                 470                 480
ACAGAGAGAG GCACCCTGGA TCTTTTGACG
           490                 500                 510
TGGTTCACGT GAAAGATGCC AATGGCAACA
           520                 530                 540
GCTTTGCCAC TCGACTTTCC AACATTTTTG
           550                 560                 570
TTATTGGCAA GGGCAACAAA CCATGGATTT
           580                 590                 600
CTCTTCCCCG AGGAAAGGGT ATCCGCCTCA
           610                 620                 630
CCATTGCTGA AGAGAGAGAC AAAAGACTGG
           640                 650                 660
CGGCCAAACA GAGCAGTGGG TGAAATGGGT
           670
CCCTGGTGAC ATGTCA;
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or their complements,

under conditions wherein the hybridization buffer contains 50% formamide and 800 mM NaCl and wherein hybridization has been conducted at 37° C. for 14–16 hours.

4,939,094

FUSED ANTIGEN POLYPEPTIDE

Tetsuro Kuga; Susuma Sekine, both of Machida, and Seiga Itoh, Sagamihara, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

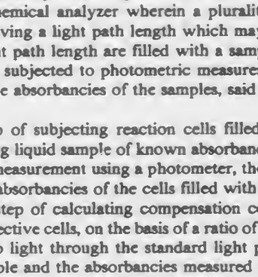
Filed Aug. 15, 1986, Ser. No. 896,734

Claims priority, application Japan, Aug. 28, 1985, 60-188868

Int. Cl.[5] C12N *1/20, 15/00;* **C07K** *13/00*

U.S. Cl. 435—252.33 **6 Claims**

1. A hybrid antigen polypeptide having the amino acid sequence: MetAspProTrpGlnMetLysAspLeuGlnAlaIleLysGlnGluvalSerGlnAlaAla ProGlySerProGlnPheMetGlnThrIleArgLeuAlavalGlnGlnPheAspProThr AlaLysAspLeuGlnAspLeuLeuGlnTyrLeuCysSerSerLeuValAlaSerLeuHis HisGlnGlnLeuAspSerLeuIleSerGluAlaGluThrArgGlyIleThrGlyTyrAsn ProLeuAlaGlyProLeuArgvalGlnAlaAsnAsnProGlnGlnGlnGlyLeuArgArg GluTyrGlnGlnLeuTrpLeuAlaAlaPheAlaAlaLeuProGlySerAlaLysAspPro SerTrpAlaSerIleLeuGlnGlyThrLeuGlnSerThrAsnTyrThrCysIlevalCys IleAspArgAlaSerLeuSerThrTrpHisvalLeuTyrSerProAsnvalServalPro SerSerSerSerThrProLeuLeuTyrProSerLeuAlaLeuProAlaproHisLeuThr LeuProPheAsnTrpThrHisCysPheAspProGlnIleGlnAlaIleValSerSerPro CysHisAsnSerLeuIleLeuProPro-



PheSerLeuSerProValProThrLeuGlySer ArgSerArgArgAlaValProLys.

4,939,095

AUTOMATIC CHEMICAL ANALYZER

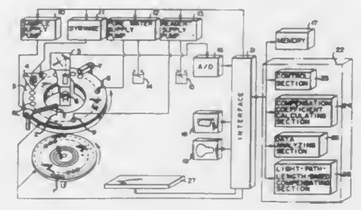
Noboru Yokotani, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 117,345, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 831,874, Feb. 24, 1986, abandoned. This application Jun. 22, 1989, Ser. No. 370,079

Claims priority, application Japan, Feb. 25, 1985, 60-35911

Int. Cl.[5] G01N *21/13, 35/02*

U.S. Cl. 436—47 **4 Claims**



1. An absorbancy-measuring method for employment in an automatic chemical analyzer wherein a plurality of reaction cells each having a light path length which may vary from a standard light path length are filled with a sample and a reagent and are subjected to photometric measurement, thereby measuring the absorbancies of the samples, said method comprising:

a first step of subjecting reaction cells filled with a light absorbing liquid sample of known absorbancy to a photometric measurement using a photometer, thereby measuring the absorbancies of the cells filled with the sample;

a second step of calculating compensation coefficients for the respective cells, on the basis of a ratio of known absorbancy to light through the standard light path length of the sample and the absorbancies measured of the cells in the first step;

a third step of reusing the reaction cells of the first step by replacing the light absorbing liquid sample of known absorbancy with liquid samples of unknown absorbancy, thereby measuring the absorbancies of the cells filled with said samples of unknown absorbancies; and

a fourth step of compensating the absorbancies measured in the third step for variations in the light path lengths of the cells from the standard light path by multiplying the ab-

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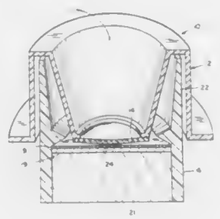
sorbancies measured in the third step by respective compensation coefficients calculated in the second step.

4,939,096

METHOD AND APPARATUS FOR ASSAYING WHOLE BLOOD

Quentin J. Tonelli, Portland, Me., assignor to Idexx, Corp., Portland, Me.

Filed Sep. 10, 1986, Ser. No. 905,856
Int. Cl.[5] C12Q 1/70; G01N 33/538
U.S. Cl. 435—5 18 Claims



1. A method for assaying a sample of whole blood for a first member of a specific binding pair, said method comprising treating the sample with a salt to alter the red blood cells in the sample to decrease the ability of the red blood cells to pass through filter media, exposing the treated sample to a filter which retains the altered red blood cells but allows passage therethrough of a sample filtrate, and contacting any of the first member in the filtrate with a second member of the specific binding pair to permit binding of the first member with the second member, whereby said first member is determined.

4,939,097

FECAL OCCULT BLOOD TEST METHODS

Paul J. Lawrence, Campbell, Calif., assignor to Litmus Concepts, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 869,573, Jun. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 680,357, Dec. 11, 1984, Pat. No. 4,615,982. This application Dec. 24, 1987, Ser. No. 138,496
Int. Cl.[5] G01N 21/78, 33/72
U.S. Cl. 436—66 29 Claims

1. In an improved method for detecting the presence of a peroxidatively active substance in a sample by contacting the sample with a chromogen and a hydroperoxide, the improvement comprising applying to the sample, along with the chromogen and the hydroperoxide, a modulating compound which is an accelerator selected from the group consisting of chloroquine, quinacrine, and mixtures thereof.

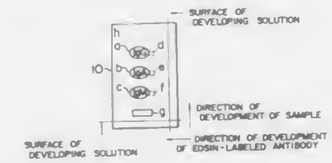
4,939,098

IMMUNOASSAY AND MEASUREMENT KIT USED THEREFOR

Masumi Suzuki; Kyoko Makiguchi, both of Katsuta, and Yasushi Nomura, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1986, Ser. No. 868,439
Claims priority, application Japan, May 31, 1985, 60-119228
Int. Cl.[5] G01N 33/558
U.S. Cl. 436—514 10 Claims

1. A kit for simultaneous immunoassay of at least two items in a single sample, which comprises:
a single development layer;
a concave-sample spotting well formed within said layer and located adjacent to one end of the development layer, said development layer comprising a development layer material permitting immobilization of reagents and permitting development of the single sample containing at least two items by movement of the sample by diffusion or by electrophoresis from the well towards another end of the development layer;
at least two reagents for testing said at least two items in said sample, each of said at least two reagents being enclosed in



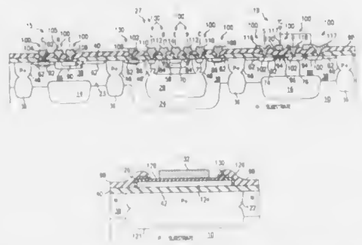
microcapsules and immobilized at two different locations spaced apart from each other and at appropriate positions along a path of movement of the sample within isolated portions of the development layer, each location containing a different antigen or antibody; and
a detectable label substance enclosed in said microcapsules with said antigen or antibody.

4,939,099

PROCESS FOR FABRICATING ISOLATED VERTICAL BIPOLAR AND JFET TRANSISTORS

Michael R. Seacrist, Grapevine; Joe R. Trogolo, Plano, and Kenneth M. Bell, Windom, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 211,641, Jun. 27, 1988, abandoned, which is a division of Ser. No. 209,449, Jun. 21, 1988. This application Sep. 21, 1989, Ser. No. 411,210
Int. Cl.[5] H01L 29/80
U.S. Cl. 437—31 24 Claims



1. A process for fabricating a vertical bipolar transistor and a junction field effect transistor (JFET) using a single semiconductor substrate of a first conductivity type, comprising the steps of:
forming a JFET buried region of a second conductivity type at a face of the semiconductor substrate;
forming a bipolar buried region of the second conductivity type at the face and spaced from the JFET buried region;
forming a collector region of the first conductivity type at the face and within the bipolar buried region;
forming an epitaxial semiconductor layer of the second conductivity type on the face of the semiconductor substrate;
extending the JFET buried region and the collector region into the epitaxial layer by thermal diffusion;
forming a deep collector region of the first conductivity type to extend from an outer face of the epitaxial layer to the collector region;

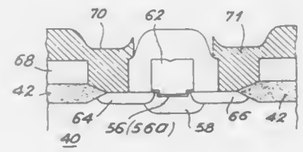
forming a base region of the first conductivity type at the face of the epitaxial layer over the collector region and spaced therefrom;
simultaneously forming an emitter region, a JFET source region and a JFET drain region of the first conductivity type at the face of the epitaxial layer, the emitter region formed within the base region, the JFET source and drain regions formed over and spaced from the JFET buried region and laterally spaced from each other; and
simultaneously forming a base contact region and a gate contact region of the second conductivity type at the face of the epitaxial layer, the base contact region formed within the base region and spaced from the emitter region, the gate contact region formed over the JFET buried region and spaced from the source and drain regions.

4,939,100

PROCESS FOR THE PRODUCTION OF A MIS TRANSISTOR WITH A RAISED SUBSTRATE/GATE DIELECTRIC INTERFACE END

Pierre Jeuch, Seyssins, and Jean-Jacques Niez, Grenoble, both of France, assignors to Commissariat a l'energie Atomique, Paris, France

Filed Dec. 15, 1988, Ser. No. 284,540
Claims priority, application France, Dec. 18, 1987, 87 17725
Int. Cl.[5] H01L 21/302
U.S. Cl. 437—44 8 Claims



1. A process for the production of a MIS transistor, comprising the following successive steps:
forming on the surface of a semiconductor substrate having a given doping type a first electrically insulating layer which surrounds a surface zone of the substrate;
forming a second layer on the first insulating layer and on said zone;
exposing part of said zone by eliminating a fragment of the second layer, said fragment extending about said part, which thus constitutes the bottom of a hole made in the second layer, and above a part of the first insulating layer;
forming a recess having at least one rising wall in the bottom of said hole;
forming a third electrically insulating layer on the surface of said part of said zone;
forming an electrically conductive layer on the substrate;
eliminating said electrically conductive layer except in a zone corresponding to said fragment, so as to obtain a transistor gate by etching back of the electrically conductive layer;
eliminating the remainder of the second layer; and
forming on either side of the gate source and drain zones of the transistor in such a way that said source and drain zones respectively have portions extending beneath the interface which the third layer has with the substrate, the source and drain zones having a doped type opposite to that of the substrate, the drain zone being located on the side of said rising wall of the recess, wherein, before or after forming the third insulating layer, ions giving rise to a doping of the same type as that of the substrate are locally implanted in the substrate in a zone thereof which corresponds to a transistor channel, under the third insulating layer.

4,939,101

METHOD OF MAKING DIRECT BONDED WAFERS HAVING A VOID FREE INTERFACE

Robert D. Black, Clifton Park; Stephen D. Arthur, Scotia; Robert S. Gilmore, Burnt Hills, and Homer H. Glascock, II, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1988, Ser. No. 240,332
Int. Cl.[5] H01L 21/324
U.S. Cl. 437—62 23 Claims

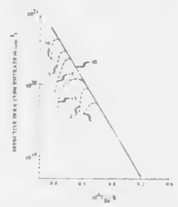
1. A method of thermally bonding a bonding surface of a first semiconductor wafer to a bonding surface of a second semiconductor wafer, said method comprising:
cleaning said bonding surfaces;
placing said bonding surfaces in contact to form a direct bond between said wafers;
annealing said direct bond at an elevated temperature under a hydrostatic pressure of at least 300 psi under conditions in which the interface between said bonding surfaces is at all times free of fluids.

4,939,102

METHOD OF GROWING III-V SEMICONDUCTOR LAYERS WITH HIGH EFFECTIVE HOLE CONCENTRATION

Robert A. Hamm, Staten Island, N.Y.; Roger J. Malik, Summit, N.J.; Morton B. Panish, Springfield, N.J., and John F. Walker, Westfield, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Jan. 17, 1989, Ser. No. 297,716
Int. Cl.[5] H01L 21/203
U.S. Cl. 437—107 6 Claims



1. A method of producing a semiconductor device comprising a first single crystal semiconductor region and a single crystal layer of III–V semiconductor material epitaxial with the first semiconductor region and comprising a non-amphoteric dopant species which imparts p-type conductivity to at least a portion of the layer of III–V material; the method comprising
(a) providing the first semiconductor region;
(b) forming the layer of III–V material by a deposition process comprising contacting the first semiconductor region with a flux of molecules and/or atoms or an atmosphere comprising precursor molecules, the flux comprising at least one column III element, at least one column V element, and the dopant species, with the first semiconductor region at a predetermined growth temperature T_g; associated with the III–V material and the deposition process being a temperature T_r at which the rate of loss from the III–V material of one of the constituents of the III–V material is 1% of the arrival rate of that constituent at the surface of the III–V material during the deposition process, with the rate of loss of all other constituents of the III–V material being less than 1% of the arrival rate of the respective constituents; associated with the III–V material being a maximum effective hole concentration in the material obtainable if $T_g = T_r$, this hole concentration to be designated N_o; and
(c) completing producing the semiconductor device;
characterized in that the method further comprises

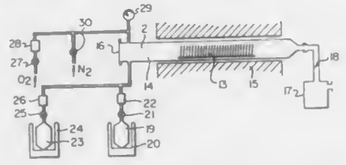
(d) selecting T_g to be at least 50° C. less than T_p, and such that the effective hole concentration in at least a portion of the III-V material is at least about 10^{20} cm^{-3}.

4,939,103

METHOD OF DIFFUSING PLURALITY OF DOPANTS SIMULTANEOUSLY FROM VAPOR PHASE INTO SEMICONDUCTOR SUBSTRATE

Laszlo Szolgyemy, Bromont, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Sep. 28, 1984, Ser. No. 655,439
Claims priority, application Canada, May 18, 1984, 454727
Int. Cl.[5] H01L *21/223*
U.S. Cl. 437—151 **7 Claims**



1. A method of diffusing a plurality of impurities into a semiconductor substrate, comprising the steps of:
(a) placing said substrate in a vacuum chamber, said substrate having a surface,
(b) creating a vacuum in said chamber,
(c) admitting a plurality of continuous flows of gas or vapor phase forms of different dopants in predetermined proportions into said chamber so as to simultaneously react with the surface of the substrate,
(d) controlling a plurality of flows so as to maintain a predetermined pressure of the flows against said surface of said substrate, and
(e) heating said substrate to a predetermined temperature for a predetermined length of time sufficient to initiate one or a plurality of reactions between respective ones of the dopants and said semiconductor surface, so that predetermined amounts of respective ones of the dopants diffuse into said substrate to a depth which is proportional to said temperature and time and in accordance with respective dopant concentrations which are proportional to said predetermined proportions and said pressure, whereby said controlling so as to maintain a predetermined pressure and said heating to a predetermined temperature for a predetermined time enables various dopant densities and dopant distributions in said substrate to be achieved.

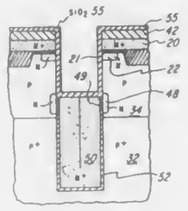
4,939,104

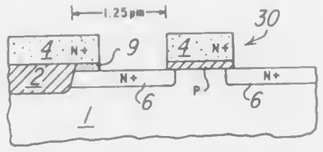
METHOD FOR FORMING A BURIED LATERAL CONTACT

Gordon P. Pollack, Richardson; Donald M. Bordelon, Garland; William F. Richardson, Richardson, and Satwinder S. Malhi, Garland, all of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Continuation of Ser. No. 799,048, Nov. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 666,715, Oct. 31, 1984, abandoned. This application Nov. 17, 1987, Ser. No. 122,604
The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.
Int. Cl.[5] H01L *21/225*
U.S. Cl. 437—162 **6 Claims**

1. A method for forming an interconnection in an integrated circuit comprising the steps of:
providing a semiconductive substrate of a first conductivity type;
forming a cavity in said substrate;
forming an insulating layer on the walls of said cavity;
forming a conductive layer on said insulating layer;
forming a crevice between said conductive layer and said





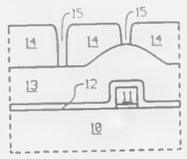
substrate by removing a portion of said insulating layer between said substrate and said conductive layer; and
filling said crevice with a conductive contacting material.

4,939,105

PLANARIZING CONTACT ETCH

Rod C. Langley, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 3, 1989, Ser. No. 388,841
Int. Cl.[5] H01L *21/00, 21/02, 21/283, 21/302*
U.S. Cl. 437—228 **15 Claims**



1. A planarizing contact etch method, for a semiconductor structure including a first layer of oxide over a pattered second layer of poly over a substrate, comprising the steps of:
(a) masking the semiconductor structure with resist patterned for first and second groups of contacts, a contact of said first group located over poly, and a contact of said second group located over substrate;
(b) providing a parallel plate plasma etch reactor, having a first electrode whereon the substrate is mounted, and having an inert second eletrode;
(c) performing a first plasma etch on the semicondictor structure while it is in a first atmosphere including approximately 5 to 20 sccm O_2, 0 to 200 sccm He, 0 to 30 sccm CHF_3, and 75 to 200 sccm CF_4, until contacts of said first and second groups are sufficiently sloped;
(d) performing a second plasma etch on the semiconductor structure while it is in a second atmosphere including approximately 0 to 200 sccm He, 0 to 30 sccm CHF_3, and 75 to 200 sccm CF_4, until a contact of said first group is etched to , or nearly to, poly;
(e) performing a third plasma etch on the semiconductor structure while it is in a third atmosphere including approximately 0 to 200 sccm He, 10 to 30 sccm CHF_3, and 25 to 75 sccm CF_4, there being more CF_4 provided than CHF_3, to quickly etch oxide out of a contact of said second group, until a predetermined limit of poly has been etched out of a contact of said first group; and
(f) performing a fourth plasma etch on the semiconductor structure while it is in a fourth atmosphere including approximately 0 to 200 sccm He, 30 to 60 sccm CHF_3, and 25 to 75 sccm CF_4, there being more CF_4 provided than CHF_3, until a contact of said second group is etched to substrate.

4,939,106

SINTERED CERAMIC BODY

Toshinobu Miyakoshi, Funabashi; Atsushi Yamada, Kawasaki; Akio Koyama, Chiba, and Hideaki Ninomiya, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Aug. 26, 1988, Ser. No. 237,158
Claims priority, application Japan, Aug. 31, 1987, 62-215242
Int. Cl.[5] C03C *1/00;* C04B *35/10*
U.S. Cl. 501—32 **4 Claims**

1. An electrically insulating ceramic body which is a sintered body of a powdery mixture composed of:
(A) from 30 to 50% by weight of a non-glassy phase of aluminum oxide Al_2O_3; and
(B) from 70 to 50% by weight of a glassy phase of a vitrified composition consisting essentially of from 46 to 60% by weight of silicon dioxide SiO_2, from 0.5 to 5% by weight of boron oxide B_2O_3, from 6 to 17.5% by weight of aluminum oxide Al_2O_3 and from 25 to 45% by weight of strontium oxide SrO or a combination of alkaline earth metal oxides of which at least 60% by weight is strontium oxide SrO.

4,939,107

TRANSFORMATION TOUGHENED CERAMIC ALLOYS

Thomas D. Ketcham, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 19, 1988, Ser. No. 245,523
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—103 **37 Claims**

1. A transformation toughened ceramic alloy consisting essentially, expressed in terms of mole percent on the oxide basis, of
(A) 79–99.5% of at least one member selected from the group consisting of ZrO_2, HfO_2, partially stabilized ZrO_2, partially stabilized HfO_2, ZrO_2-HfO_2 solid solution, and partially stabilized ZrO_2-HfO_2 solid solution;
(B) 0.25–15% of at least one stabilizer oxide in the indicated proportions selected from the group consisting of 0–7% Sc_2O_3, 0–7% Y_2O_3, 0–15% CeO_2, 0–15% TiO_2, and 0–7% RE_2O_3, wherein RE_2O_3 is a rare earth metal oxide selected from the group consisting of La_2O_3, Ce_2O_3, Pr_2O_3, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, and Lu_2O_3; and
(C) 0.25–6% of at least one toughening agent in the indicated proportion selected from the group consisting of 0–6% $MgWO_4$, 0–6% $MgMoO_4$, 0–6% $CaWO_4$, 0–6% $CaMoO_4$, 0–4% WO_3, and 0–4% MoO_3.

3. A ceramic alloy exhibiting resistance to attack by vanadium compounds at elevated temperatures consisting essentially, expressed in terms of mole percent on the oxide basis, of
(A) 65–99.5% of at least one member selected from the group consisting of HfO_2, partially stabilized ZrO_2, partially stabilized HfO_2, ZrO_2-HfO_2 solid solution, and partially stabilized ZrO_2-HfO_2 solid solution; and
(B) 0.5–35% MVO_4 wherein M consists of at least one cation selected from the group consisting of Mg^{+2}, Ca^{+2}, Sc^{+3}, Y^{+3}, Sn^{+4}, Ti^{+4}, La^{+3}, Ce^{+3}, Ce^{+4}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Ho^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, and Lu^{+3}.

4,939,108

PROCESS FOR PRODUCING DIELECTRIC CERAMIC COMPOSITION WITH HIGH DIELECTRIC CONSTANT, LOW DISSIPATION FACTOR AND FLAT TC CHARACTERISTICS

Terrence C. Dean, Youngstown, N.Y., assignor to TAM Ceramics, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 926,595, Nov. 3, 1986, abandoned. This application Nov. 2, 1988, Ser. No. 266,433
Int. Cl.[5] C04B *35/46, 35/48*
U.S. Cl. 501—137 **9 Claims**

1. A method for making dielectric ceramic having dopant particles uniformly dispersed therein comprising:
dispersing 1 micron diameter major component particles in a liquid medium;
precipitating 0.1 micron diameter particles of a first dopant from a liquid medium containing a precursor of the dopant;
dispersing the first dopant particles throughout the major component particles so that the dopant particles are associated with the major component particles;
dispersing particles of a second dopant, cobalt oxide, throughout the major component particles;
removing the liquid medium; and
sintering.

4,939,109

PASSIVATION OF METAL CONTAMINATED CRACKING CATALYSTS

Marvin M. Johnson, Bartlesville, Okla., and Donald C. Tabler, Fort Collins, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 15, 1986, Ser. No. 907,767
Int. Cl.[5] B01J *38/66, 29/38, 21/20;* C01G *11/04*
U.S. Cl. 520—26 **17 Claims**



1. In a method of restoring the activity of a hydrocarbon cracking catalyst in which the cracking activity of said cracking catalyst is at least partially decreased by contaminating metals deposited thereon, the improvement comprising contacting said cracking catalyst with a metals passivating agent comprising:
(a) water;
(b) antimony; and
(c) a vinyl copolymer, wherein said vinyl copolymer is the ammonium salt of hydrolyzed copolymers of methylvinyl ether and maleic anhydride.

15. A process for restoring the activity of a hydrocarbon cracking catalyst in which the cracking activity of said cracking catalyst is at least partially decreased by contaminating metals deposited thereon comprising the step of injecting a metals passivating agent comprising antimony onto said cracking catalyst while said cracking catalyst is in the catalyst regen-

eration cycle, further characterized by the fact that said metals passivating agent comprises

(a) water;

(b) antimony oxide; and

(c) a vinyl copolymer, wherein said vinyl copolymer is the ammonium salt of hydrolyzed copolymers of methyl vinyl ether and maleic anhydride.

4,939,110

CATALYST FOR THE ISOMERIZATION OF AROMATICS

J. W. Adriaan Sachtler, Des Plaines, and R. Joe Lawson, Palatine, both of Ill., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 259,086, Oct. 17, 1988, Pat. No. 4,899,012.
This application Aug. 14, 1989, Ser. No. 394,038
Int. Cl.[5] B01J *29/28*
U.S. Cl. 502—66 **12 Claims**

1. A catalyst for the isomerization of isomerizable alkylaromatic hydrocarbons comprising a combination of a group VIII metal component and a lead component with a carrier material containing about 1 to about 20 mass % of a pentasil zeolite and an inorganic oxide binder, wherein the atomic ratio of lead to Group VIII metal is about 2 to about 10 and wherein about 80% to about 100% of the Group VIII metal component and about 60% to about 100% of the lead component are combined with the inorganic oxide binder.

4,939,111

CATHODE FOR MOLTEN CARBONATE FUEL CELL

Thomas D. Kaun, New Lenox, and Franklin C. Mrazek, Hickory Hills, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 855,548, Apr. 25, 1986, Pat. No. 4,891,280.
This application Jun. 8, 1989, Ser. No. 362,982
Int. Cl.[5] H01M *4/88*
U.S. Cl. 502—101 **11 Claims**



1. A method of forming a cathode for a molten carbonate fuel cell, comprising mixing substantially equal quantities of first and second particulate materials having diameters of about 1 micron, and heating the mixture to cell operating temperatures in the presence of a carbonate electrolyte to sinter the mixture with the first material sintering to form a skeletal structure coated by particles of the second material to form a cathode having a stable porosity in the range of from about 60% to about 70% by volume at steady-state cell operating conditions.

4,939,112

CATALYST FOR SYNTHESIS OF VESICULAR PHENOXY RESINS

Everett W. Bennett, Easthampton, Mass., assignor to James River Paper Company, Inc., South Hadley, Mass.

Filed Oct. 6, 1988, Ser. No. 254,048
Int. Cl.[5] B01J *31/02*
U.S. Cl. 502—164 **10 Claims**

1. A catalyst for the preparation of a phenoxy resin comprising a water-insoluble complex of a phenol and a quaternary ammonium or phosphonium salt of the phenol.

4,939,113

HYDROGEN SULFIDE SUPPRESSING CATALYST SYSTEM USING AN OXIDE OF COPPER, MANGANESE, NICKEL OR IRON

Samuel Tauster, Englishtown; Lawrence Murrell, South Plainfield; Charles R. Penquite, Holmdel, and Joseph C. Dettling, Howell, all of N.J., assignors to Engelhard Corporation, Edison, N.J.

Filed Nov. 3, 1987, Ser. No. 116,598
Int. Cl.[5] B01J *23/40, 23/64, 23/72, 23/89*
U.S. Cl. 502—251 **19 Claims**

1. A catalyst system comprising:

inlet means for receiving an exhaust gas from an internal combustion engine; duct means operably connected to said inlet means for receiving exhaust gas from said inlet means; outlet means operably connected to said duct means for receiving and discharging to the atmosphere exhaust gas received from said duct means; three way catalyst means located within said duct means comprising a first section of refractory monolithic substrate, a particulate gamma alumina support dispersed on said first section of refractory monolithic substrate and catalyst metals chosen from the group consisting of palladium, the combination of platinum plus rhodium, and mixtures of platinum, palladium and rhodium, said catalyst metals being dispersed on said particulate gamma alumina support; and means for suppressing release of hydrogen sulfide comprising a second section of monolithic refractory substrate having CuO dispersed thereupon in an amount of at least about 0.005 g/in^3 of monolith, said means for suppressing release of hydrogen sulfide being disposed within said duct means between said three way catalyst means and said outlet means.

4,939,114

SILVER-DEPOSITED CATALYST FOR PRODUCTION OF ETHYLENE OXIDE

Naohiro Nojiri; Yukio Sakai; Yoshiaki Saotome, and Tomoatsu Iwakura, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 268,546
Int. Cl.[5] B01J *21/04, 23/04, 23/50*
U.S. Cl. 502—348 **3 Claims**

1. A silver-deposited catalyst for the production of ethylene oxide by the oxidation of ethylene, said catalyst comprising

(1) a carrier composed mainly of alpha-alumina, which carrier does not show acidity in a visual color change method in a toluene solvent using a dimethyl yellow indicator having a pKa of +3.3, and does not show basicity in a color reaction in a toluene solvent using a bromothymol blue having a pKa of +7.1,

the carrier having a surface area of 0.7 to 3 m^2/g, a water absorption of 20 to 50%, an average pore diameter of 0.5 to 3.5 microns, a sodium content of 0.05 to 1% by weight, a silica content of 0.5 to 10% by weight, and a silica/sodium weight ratio of from 3 to 40, and the content of silica per unit surface area of the carrier being 0.1 to 40% by weight/m^2, and the carrier having a crush strength of at least 3 kg, and

(2) as catalyst components, silver and at least one cationic component selected from sodium, potassium, rubidium and cesium.

4,939,115

ORGANIC ACID-TREATED AMORPHOUS SILICAS FOR REFINING GLYCERIDE OILS

Perry M. Parker, Finksburg, and William A. Welsh, Fulton, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 823,217, Jan. 28, 1986, Pat. No. 4,734,226.
This application Mar. 13, 1987, Ser. No. 25,748
Int. Cl.[5] B01J *20/10, 20/22*
U.S. Cl. 502—401 **9 Claims**

1. A composition suitable for use in the removal of trace contaminants, which are phospholipids and associated metal ions, from glyceride oils, comprising amorphous silica whose pores contain organic acid selected from the group consisting of citric acid, acetic acid, ascorbic acid, tartaric acid and solutions thereof, and which has a total volatiles content of at least about 10%.

7. The composition of claim 1 which is prepared by slurrying said amorphous silica in aqueous organic acid, separating the acid-treated silica and drying.

4,939,116

THERMOSENSITIVE RECORDING MATERIAL

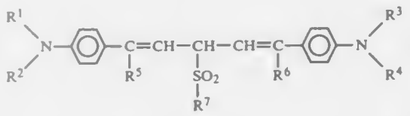
Takashi Ueda; Keiichi Maruta, and Hiroshi Yaguchi, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 63,869, Jun. 19, 1987, Pat. No. 4,857,502. This application May 10, 1989, Ser. No. 349,649
Claims priority, application Japan, Jun. 19, 1986, 61-143946; Sep. 10, 1986, 61-213593
Int. Cl.[5] B41M *5/18*
U.S. Cl. 503—204 **4 Claims**

1. A thermosensitive recording material comprising:

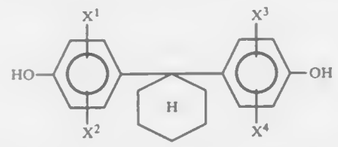
(a) a support material;

(b) a first thermosensitive coloring layer, which comprises a first colorless or light-colored leuco dye having formula (I),



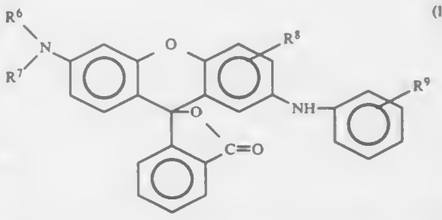
(I)

wherein R^1, R^2, R^3 and R^4 each represent hydrogen or an alkyl group having a substituent, R^5 and R^6 each represent hydrogen or a phenyl group which may have a substituent, and R^7 represents an alkyl group which may have a substituent or a phenyl group which may have a substituent, and a first color developer having formula (II) capable of inducing color formation in said first leuco dye upon application of heat thereto,



wherein X^1, X^2, X^3 and X^4 each represent hydrogen or an alkyl group having 1 to 4 carbon atoms, and

(c) a second thermosensitive coloring layer which comprises at least a second leuco dye having formula (III),



(III)

wherein R^6 and R^7 each represent a saturated or unsaturated hydrocarbon group having 1 to 10 carbon atoms, which may be in a cyclic or non-cyclic form and may include an ether bond therein, R^8 represents a hydrocarbon group having 1 to 2 carbon atoms, or halogen, and R^9 represents hydrogen, halogen, or a hydrocarbon group having 1 to 6 carbon atoms, and a second color developer capable inducing color formation in the second leuco dye upon application of heat thereto, said first and second thermosensitive coloring layers being formed in any order on said support.

4,939,117

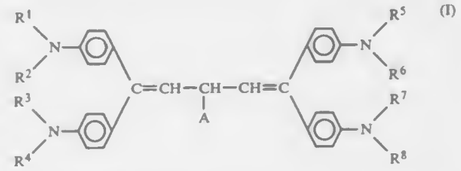
LEUCO DYES AND RECORDING MATERIAL EMPLOYING THE SAME

Shigeru Kusakata, Susono; Hiroshi Gotoh, Fuji, and Isao Shiojima, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 29, 1988, Ser. No. 291,675
Claims priority, application Japan, Jan. 8, 1988, 63-2155; Jan. 18, 1988, 63-8179; Mar. 17, 1988, 63-64892; Mar. 17, 1988, 63-64893
Int. Cl.[5] B41M *5/15, 5/18, 5/22*
U.S. Cl. 503—224 **14 Claims**

1. A recording material, comprising:

a support and a recording layer formed thereon, said recording layer being formed of a leuco dye of the formula (I):

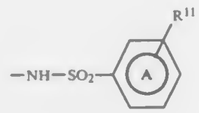


(I)

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 each represent a lower alkyl group; A represents



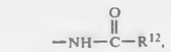
in which R^9 and R^{10} each represent hydrogen, —CN or —COR^{14} in which R^{14} represents a phenyl group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1to 4 carbon atoms, or a halogen, a naphthyl group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms or a halogen, or a lower alkoxy group,



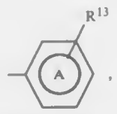
in which



represents a phenyl group or a naphthyl group, R^{11} represents hydrogen, a lower alkyl group, a halogen, an amino group, which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, or a nitro group, or



in which R^{12} represents a lower alkyl group, or



in which R^{13} represents hydrogen, a lower alkyl group, a halogen, a hydroxyl group, a trifluoromethyl group, a nitro group, an amino group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, or amide group, provided that both R^9 and R^{10} may not be hydrogen.

4,939,118

TRANSFER OF AZO DYES HAVING A PYRIDINE COUPLING COMPONENT

Karl-Heinz Etzbach, Frankenthal; Günther Lamm, Hassloch; Hermann Loeffler, Speyer; Helmut Reichelt, Neustadt, and Ruediger Sens, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

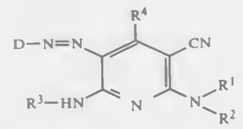
Filed Jun. 12, 1989, Ser. No. 364,153

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1988, 3820313

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 **2 Claims**

1. A process for transferring azo dyes from a substrate to a plastic-coated paper by diffusion with the aid of a thermal printing head, which comprises using a substrate on which there are one or more azo dyes of the formula I



(I)

where

R^1, R^2 and R^3 are identical or different and each is independently of the other (a) alkyl, alkoxyalkyl, alkanoyloxyalkyl, alkoxycarbonyloxyalkyl or alkoxycarbonylalkyl, each having up to 20 carbon atoms and being unsubstituted or substituted by phenyl, C_1–C_4-alkylphenyl, C_1–C_4-alkoxyphenyl, halophenyl, benzyloxy, C_1–C_4-alkylbenzyloxy, C_1–C_4-alkoxylbenzyloxy, halobenzyloxy, halogen, hydroxyl or cyano, (b) hydrogen, (c) unsubstituted or C_1–C_{15}-alkyl-, C_1–C_{15}-alkoxy-, halogen- or benzyloxy-substituted phenyl, (d) unsubstituted or C_1–C_{15}-alkyl-, C_1–C_{15}-alkoxy-, halogen- or benzyloxy-substituted benzyl or (e) a radical of the formula II

$$(-Y-O)_m-R^5 \qquad (II)$$

where

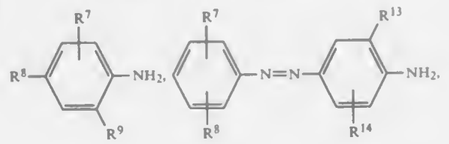
Y is C_2–C_6-alkylene,

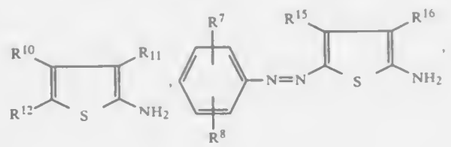
m is 1, 2, 3, 4, 5 and 6 and

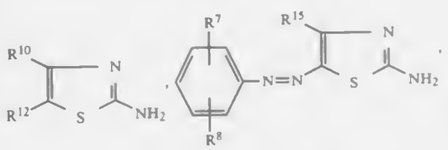
R^5 is C_1–C_4-alkyl or unsubstituted or C_1–C_4-alkyl-or C_1–C_4-alkoxy-substituted phenyl,

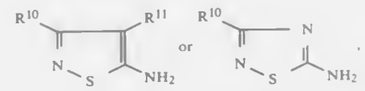
R^4 is C_1–C_4-alkyl and

D is the radical of a diazo component of the formula









where

R^7, R^8 and R^9 are identical or different and each is independently or the other (a) alkyl, alkoxyalkyl, alkoxycarbonylalkyl or alkanoyloxyalkyl, each having up to 12 carbon atoms, (b) hydrogen, (d) cyano, (d) halogen, (e) nitro, or (f) a radical of the formula

$$(-Y-O)_m-R^5$$

where Y, R^5 and m are each as defined above, or Y or R^5 are a radical of the formula —CO—OR^{17}, —CO—$NR^{17}R^{18}$, —SO_2—R^{17}, —SO_2—OR^{17} or —SO_2—$NR^{17}R^{18}$, where R^{17} are R^{18} are identical or different and each is independently of the other (a) alkyl, alkoxyalkyl, alkoxycarbonylalkyl or alkanoyloxyalkyl, each having up to 12 carbon atoms, (b) hydrogen or (c) a radical of the formula

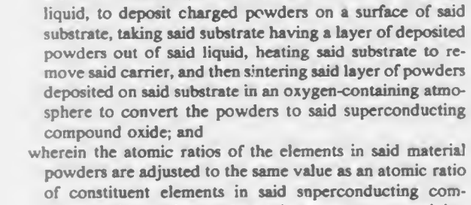
$$(-Y-O)_m-R^5$$

where Y, R^5 and m are each as defined above,

R^{10} is hydrogen, chlorine, cyano, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, alkoxyalkyl of up to 8 carbon atoms, phenyl unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or benzyloxy, benzyl, benzyloxy or a radical of the formula —CO—OR^{17} or —CO—$NR^{17}R^{18}$ where R^{17} and R^{18} are each as defined above,

R^{11} is hydrogen, cyano, nitro or a radical of the formula —CO—OR^{17} or —CO—$NR^{17}R^{18}$ where R^{17} and R^{18} are each as defined above,

R^{12} is cyano, nitro, formyl or a radical of the formula



where R^{17} and R^{18} are each as defined above,

R^{13} and R^{14} are identical or different and each is independently of the other hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, cyano, nitro or a radical of the formula —CO—OR^{17} or —CO—$NR^{17}R^{18}$ where R^{17} and R^{18} are each as defined above,

R^{15} is hydrogen, C_1–C_4-alkyl or chlorine, and

R^{16} is cyano or a radical of the formula —CO—OR^{17} or —CO—$NR^{17}R^{18}$ where R^{17} and R^{18} are each as defined above.

4,939,119

PROCESS FOR PRODUCING A SUPERCONDUCTING ARTICLE

Kouichi Iwata; Hiroyuki Fujikawa; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Filed Apr. 22, 1988, Ser. No. 184,962

Claims priority, application Japan, Apr. 22, 1987, 62-99388; Apr. 22, 1987, 62-99389; Apr. 22, 1987, 62-99390; Jul. 10, 1987, 62-172694; Apr. 20, 1988, 63-97564

Int. Cl.[5] C25D *13/00*

U.S. Cl. 505—1 **60 Claims**

1. A process for producing a high temperature superconducting article having a layer of superconducting compound oxide on a substrate characterized by the steps comprising dispersing at least one of material powders selected from a group consisting of:

(i) a powder mixture consisting of elements which are constituent elements of said superconducting compound oxide;

(ii) a powder mixture of compounds each containing at least one of said constituent elements; and

(iii) a sintered powder of compound oxide prepared by sintering a powder mixture of (i) and/or (ii) in an oxygen-containing atmosphere and by pulverizing the obtained sintered body;

in a liquid in which a carrier is fixed on said material powders, applying a direct current between said substrate and a counter electrode, both of which are immersed in said liquid, to deposit charged powders on a surface of said substrate, taking said substrate having a layer of deposited powders out of said liquid, heating said substrate to remove said carrier, and then sintering said layer of powders deposited on said substrate in an oxygen-containing atmosphere to convert the powders to said superconducting compound oxide; and

wherein the atomic ratios of the elements in said material powders are adjusted to the same value as an atomic ratio of constituent elements in said snperconducting compound oxide to be produced in an oxygen-containing atmosphere.

4,939,120

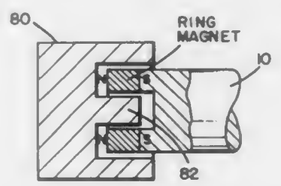
SUPERCONDUCTING ROTATING ASSEMBLY

Francis C. Moon, and Rishi Raj, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 227,066, Aug. 1, 1988, Pat. No. 4,886,778. This application Jul. 25, 1989, Ser. No. 384,996

Int. Cl.[5] F16C *39/06*

U.S. Cl. 505—1 **6 Claims**



1. A non-contacting, soft suspension, superconductive, rotating assembly comprising:

first and second bearing means comprised of a material exhibiting Type II superconducting properties, each said bearing means formed as a recess in said superconducting material in the form of a cylindrical, closed-end orifice;

a rotatable member having two extremities aligned along a common axis, each extremity encompassed by one said closed end orifice;

magnet means at each extremity, each magnet means having a polar axis which is colinear with said common axis of said rotatable member, each magnet means thereby presenting a single poleface to a bearing means;

means for maintaining each said bearing means at a temperature where said Type II superconducting properties are manifest; and

means for rotating said rotatable member, whereby each said magnet means is levitated and is adapted to rotate in a stable non-contacting position by repulsive fields generated by said first and second bearing means.

4,939,121

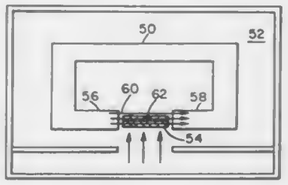
METHOD AND APPARATUS FOR INDUCING GRAIN ORIENTATION BY MAGNETIC AND ELECTRIC FIELD ORDERING DURING BULK SUPERCONDUCTOR SYNTHESIS

Theodore W. Rybka, El Cajon, Calif., assignor to General Dynamics Corporation, Electronics Division, San Diego, Calif.

Filed Oct. 20, 1988, Ser. No. 260,295

Int. Cl.[5] B06B *1/02;* **C22C** *1/04*

U.S. Cl. 505—1 **29 Claims**



1. A process for the formation or enhancement of superconducting properties in a superconductivity-susceptible material which comprises:

a. reacting reactants which produce said material in a formation zone at a temperature of at least the sintering temperature of said reactants to form said material; and

b. imposing across said formation zone during said formation of said material a continuous electric field of at least 0.1

MV/cm to form or enhance superconducting properties in said material.

4,939,122

LIPOPHILE DERIVATIVES OF MURAMYLPEPTIDES HAVING PROPERTIES OF ACTIVATING MACROPHAGES AND COMPOSITIONS CONTAINING THEM

Nigel Phillips, Pointe Claire, Canada; Françoise Audibert, Neuilly Sur Seine, France; Jean-Marie Bernard, Fontenay Le Fleury, France; Louis Chedid, Paris, France; Pierre Lefrancier, Gif S/Yvette, France; Michel Level, and Monique Parant, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

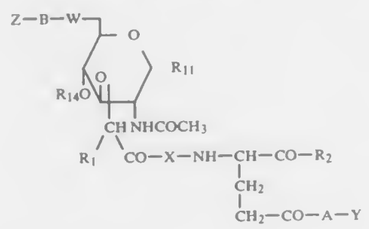
Continuation of Ser. No. 96,794, Sep. 15, 1987, abandoned, which is a continuation of Ser. No. 733,529, May 13, 1985, abandoned. This application Jun. 9, 1988, Ser. No. 206,959

Claims priority, application France, May 11, 1984, 84 07340

Int. Cl.[5] A61K *37/02;* C07K *9/00*

U.S. Cl. 514—8 22 Claims

1. A muramylpeptide of the formula:



wherein:

R_1 is —H or —CH_3;

R_2 is —NH_2, —OH or —OD, with D being a hydrocarbon group of 1 to 10 carbon atoms;

R_{11} is —H or a phenylamino group;

R_{14} is —H or an acyl group of 1 to 4 carbon atoms;

X is an aminoacyl residue which is selected from the group consisting of alanyl, valyl, isoleucyl, norleucyl, leucyl, seryl, threonyl, prolyl, glutaminyl, asparaginyl, methionyl, tryptophanyl, phenylalanyl, tyrosyl and glycyl and which may be N-substituted by a lower alkyl group;

Y is —NH_2, —OH, —OD or a —OCH_2—$CHO(R_3)CH_2O(R_4)$ lipophile group in which a hydrogen on a methylene in its glyceryl group may be replaced by a lower alkyl group; R_3 and R_4 being identical or different and being individually an acyl or alkyl group of 8 to 100 carbons atoms;

Z is —NH_2, —OH, —OD or a —CO—$CHO(R_3)CH_2O(R_4)$ lipophile group in which a hydrogen on a methylene in its glyceryl group may be replaced by a lower alkyl group; Y or Z or both being a lipophile group;

W is —O— or, when Z is a lipophile group, —NH—; and

A and B are either direct linkages or bridging arms which are identical or different and which comprises individually one to three aminoacyl residues, themselves identical or different from one another, said aminoacyl residues being selected from the group consisting of alanyl, valyl, isoleucyl, norleucyl, leucyl, seryl, threonyl, prolyl, glutaminyl, asparaginyl, methionyl, tryptophanyl, phenylalanyl, tyrosyl and glycyl and which may be N-substituted by a lower alkyl group, or a —NH—$(CH_2)_p$—CO group, with p being an integer of 2 to 10, or a —NH—$(CH_2)_2$—O— group;

a hydrogen on a methylene in a glutamyl group of said muramylpeptide being replaceable by a lower alkyl group.

4,939,123

GLYCOPEPTIDE AND OLIGOSACCHARIDE ANTIBACTERIAL COMPOSITIONS

Jean-Richard Neeser, Lausanne, and Pierre Würsch, La Tour-de-Peilz, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

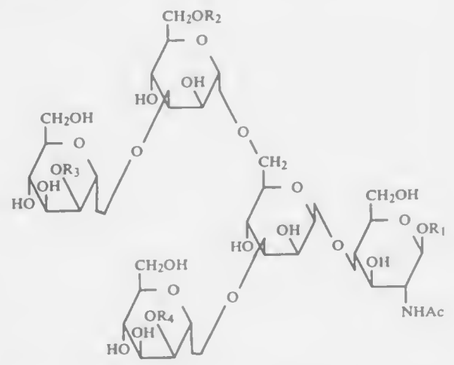
Filed Oct. 9, 1985, Ser. No. 785,914

Claims priority, application Switzerland, Oct. 26, 1984, 5136/84

Int. Cl.[5] A61K *35/78, 31/73, 47/42, 47/48*

U.S. Cl. 514—8 13 Claims

1. Antibacterial formulation compositions for prophylaxis and treatment of infectious diseases caused by bacteria having type I fimbriae comprising formulations containing active antibacterial constituent compounds in an amount of, by weight, from 0.1% to 90% and being in a form selected from a group consisting of a form for oral, enteral, parenteral and topical delivery and administration of the active constituent compounds to animal cells, wherein the active constituent compounds are derived enzymatically from a material selected from the group consisting of ovalbumin, soya flour and bean flour and wherein the active constituent compounds have a formula of:



wherein R_1 is selected from the group consisting of a hydrogen atom, a 4GlcNAcβ1→ASN residue and a



residue, wherein R' and R'' are selected from at least one of the group consisting of an amino acid residue and a polypeptide chain, and R_2, R_3 and R_4 are selected from at least one of the group consisting of a hydrogen atom, a mannose residue and an oligomannoside chain.

4,939,124

TREATMENT AND DIAGNOSIS OF DEMENTIA

Ramón Cacabelos, Santiago de Compostela, Spain, assignor to Laboratorios Serono S.A., Spain

Filed Jan. 26, 1988, Ser. No. 148,667

Int. Cl.[5] A61K *37/36;* G01N *33/74*

U.S. Cl. 514—12 4 Claims

1. A method of detecting early onset senile dementia of the Alzheimer type in a subject comprising administering to that subject an effective amount of growth hormone releasing factor and monitoring the growth hormone response thereto, whereby an elevated response versus normal controls is indicative of early onset senile dementia of the Alzheimer type.

4,939,125

ACYL DERIVATIVES OF URDAMYCIN A, THEIR PREPARATION AND THEIR USE

Axel Zeeck; Thomas Cieslolka, both of Göttinges; Hans Zähner, Tübingen, and Hannelore Drautz, Mössingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

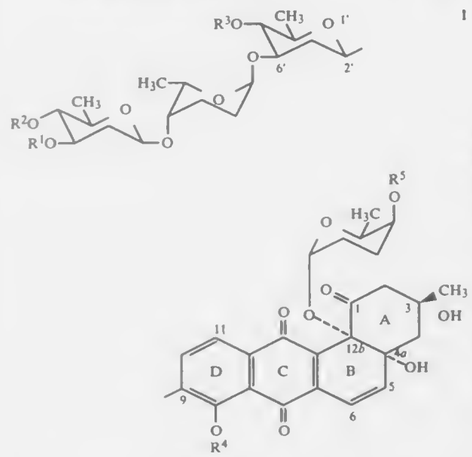
Filed Oct. 5, 1987, Ser. No. 89,442

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629273

Int. Cl.[5] A61K *31/71;* C07H *15/24*

U.S. Cl. 514—34 5 Claims

1. A compound of the formula I



in which R^1 to R^5, independently of one another, are hydrogen or a (C_1 to C_{18})-acyl group, wherein at least one of R_1 to R_5 are acyl, apart from 5',3B,4B,4C,8-penta-O-acetylurdamycin A.

4. A method of treating an animal or human suffering from leukemia comprising administering to said animal or human an amount of the compound of formula I as claimed in claim 1 effective to inhibit the growth of leukemia cells exposed to said compound.

4,939,126

1-PYRROLIDINEACETAMIDE DERIVATIVES AND USE THEREOF

Masayasu Kurono; Tsunemasa Suzuki; Tomoo Suzuki; Kiyotaka Hirooka; Yukiharu Matsumoto; Hiroshi Ozawa, and Kiichi Sawai, all of Nagoya, Japan, assignors to Sanwa Kagaku Kenkyusho Co. Ltd., Aichi, Japan

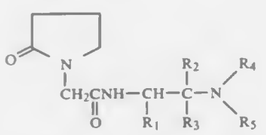
Filed Jul. 11, 1988, Ser. No. 217,523

Claims priority, application Japan, Jul. 17, 1987, 62-177173

Int. Cl.[5] A61K *31/695;* C07F *7/02, 7/10*

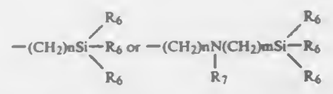
U.S. Cl. 514—63 10 Claims

1. A 1-pyrrolidineacetamide derivative of the formula

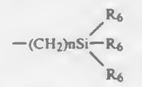


(I)

wherein R_1 is hydrogen or trialkylsilyl; when R_1 is hydrogen, R_2 and R_3 are hydrogen; R_4 is alkyl having 1 to 5 carbon atoms, R_5 is



in which R_6 and R_7 are alkyl having 1 to 5 carbon atoms, m and n are each an integer of 1 to 3, or R_4 together with R_5 and the nitrogen atom to which R_4 and R_5 are bonded forms a heterocyclic ring selected from the group consisting of 4,4-dimethyl-1-aza-4-silacyclohexane, 4,4-diethyl-1-aza-4-silacyclohexane and 3,3-dimethyl-1-aza-3-silacyclopentane, or forms a piperazine ring having a



substituent;

when R_1 is trialkylsilyl, R_2, R_3, R_4 and R_5 together with the nitrogen atom to which R_4 and R_5 are bonded form a heterobicyclic ring selected from the group consisting of 1-azabicyclo[3,3,0]octane and 1-azabicyclo[4,4,0]decane; or a pharmaceutically acceptable salt thereof.

4,939,127

ANTIHYPERTENSIVE PHOSPHATE DERIVATIVES

Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

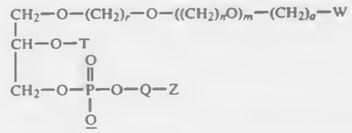
Continuation of Ser. No. 679,789, Dec. 10, 1984. This application Sep. 15, 1987, Ser. No. 96,910

The portion of the term of this patent subsequent to Oct. 27, 2004, has been disclaimed.

Int. Cl.[5] A61K *31/685;* C07F *9/10*

U.S. Cl. 514—77 14 Claims

1. A method of treating hypertension in a warm-blooded animal comprising administering to said animal an effective agmount of a compound, including the individual R and S enantiomers and racemic mixture, represented by the formula:

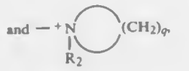


wherein W is selected from the group consisting of methyl and phenyl, alone or substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy and phenyl; r, n, m and a are integers such that the expression $r+(n+1)m+a$ is also an integer and has a value of 3 to 20; r is greater than or equal to 2; n is greater than or equal to 2; m is greater than or equal to zero and a is greater than or equal to zero; T is selected from the group consisting of hydrogen and



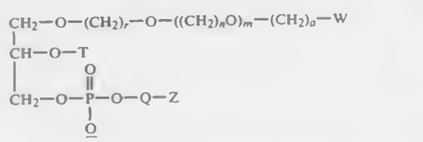
wherein R_1 is selected from the group consisting of hydrogen, C_1–C_4 branched or straight chain alkyl, C_1–C_4 branched or straight chain alkoxy and C_1–C_4 branched or straight chain alkylamino; Q is a bivalent radical selected from —$(CH_2)_p$— and —$(CHR)_p$—, wherein p is an integer 2–12 and the moiety —$(CHR)_p$— represents an alkylene chain which is substituted by one or more C_1–C_{10} alkyl groups or phenyl groups; Z is selected from the group consisting of $\pm N(R_2)_3$ and

VOL 1116 ISS 1 JL 3 1990 UMI



wherein R_2 may be the same or different and is selected from the group consisting of hydrogen and C_1–C_4 branced or straight chain alkyl and q is an integer from 4–7; in either the racemic or optically active forms.

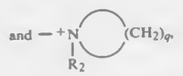
5. Compounds, including the individual R and S enantiomers and the racemic mixtures represented by the formula:



wherein W is selected from the group consisting of methyl and phenyl, alone, or substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy and phenyl; r, n, m and a are integers such that the expression $r+(n+1)m+a$ is also an integer and has a value of 3 to 20; r is greater than or equal to 2; n is greater than or equal to 2; m is greater than or equal to zero and a is greater than or equal to zero; T is selected from the group consisting of hydrogen and



wherein R_1 is selected from the group consisting of hydrogen, C_1–C_4 branched or straight chain alkyl, C_1–C_4 branched or straight chain alkoxy and C_1–C_4 branched or straight chain alkylamino; Q is a bivalent radical selected from $-(CH_2)_p-$ and $-(CHR)_p-$, wherein p is an integer 2–12 and the moiety $-(CHR)_p-$ represents an alkylene chain which is substituted by one or more C_1–C_{10} alkyl groups or phenyl groups; Z is selected from the group consisting of $\pm N(R_2)_3$ and



wherein R_2 may be the same or different and is selected from the group consisting of hydrogen and C_1–C_4 branced or straight chain alkyl and q is an integer from 4–7; in either the racemic or optically active forms.

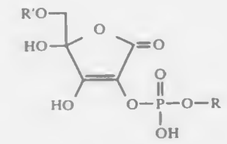
4,939,128

ESTER OF ASCORBIC ACID 2-PHOSPHATE AND PHARMACEUTICAL USE

Kaneyoshi Kato, Osaka, and Norio Shimamoto, Hyogo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 5, 1989, Ser. No. 333,234
Claims priority, application Japan, Apr. 25, 1988, 63-101935
Int. Cl.[5] A61K *31/665;* **C07F** *9/09*
U.S. Cl. 514—82 **12 Claims**

1. A compound represented by the formula:



wherein R^1 is a hydrogen atom, carboxylic acid acyl or carbamoyl which may be substituted with C_{1-3} alkyl, C_{1-3} alkoxy, methylenedioxy or halogen; and R is

(1) an aliphatic hydrocarbon group which may be substituted with hydroxy which may be substituted with C_{1-20} alkyl, phenyl which may be substituted with halogen, C_{1-3} alkoxy or C_{1-3} alkyl, quinonyl which may be substituted with C_{1-3} alkoxy or C_{1-3} alkyl, or chroman-2-yl which may be substituted with C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy or phenyl, or

(2) an alicyclic hydrocarbon group which may be substituted with C_{1-3} alkoxy, C_{1-3} alkoxycarbonyl, hydroxy, halogen, C_{1-10} alkyl, C_{2-10} alkenyl or C_{2-10} alkynyl, or a pharmaceutically acceptable salt thereof.

12. A method of preventing or treating a dysfunction in the circulatory system in a mammal which comprises administering to the mammal an effective anti-ischemic amount of the compound according to claim 1.

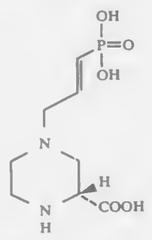
4,939,129

USES OF 4-(3-PHOSPHONO-2-PROPENYL)-2-PIERAZINECARBOXYLIC ACID

Arnold K. Dixon, Neuenegg, and Julian A. Gray, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Mar. 9, 1989, Ser. No. 321,422
Claims priority, application United Kingdom, Mar. 11, 1988, 8805875; Aug. 12, 1988, 8819192; Aug. 26, 1988, 8820344
Int. Cl.[5] A61K *31/675*
U.S. Cl. 514—85 **7 Claims**

1. A method of treating disorders characterized by reduced drive and/or social withdrawal comprising administering to a subject in need of such treatment a therapeutically effective amount of the compound of formula I



(I)

or a pharmaceutically acceptable acid addition salt thereof, or a corresponding hydrate thereof.

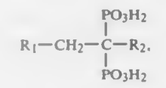
4,939,130

SUBSTITUTED ALKANEDIPHOSPHONIC ACIDS AND PHARMACEUTICAL USE

Knut A. Jaeggi, Basel, and Leo Widler, Müchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 120,284, Nov. 13, 1987, abandoned. This application Feb. 27, 1989, Ser. No. 315,962
Claims priority, application Switzerland, Nov. 21, 1986, 4666/86
Int. Cl.[5] A61K *31/675;* **C07F** *9/65*
U.S. Cl. 514—94 **5 Claims**

1. A heteroarylalkanediphosphonic acid of the formula



(I)

wherein R_1 denotes an 1-imidazolyl or 2-(1-methyl)imidazolyl radical and R_2 represents hydroxy, or a salt thereof.

5. A method of treating diseases associated with impaired calcium metabolism which comprises administering a therapeutically effective amount of a compound claimed in claim 1 in the free form or in a pharmaceutically acceptable salt form to a warm-blooded animal in need thereof.

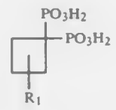
4,939,131

CERTAIN CYCLOALKANE-1,1-DIPHOSPHONIC ACIDS AND DERIVATIVES THEREOF HAVING THE ABILITY TO TREAT DISEASES ASSOCIATED WITH ABNORMAL CALCIUM AND PHOSPHATE METABOLISM

James J. Benedict, and Karen Y. Johnson, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 684,544, Dec. 21, 1984, Pat. No. 4,687,768. This application Aug. 14, 1987, Ser. No. 85,906
Int. Cl.[5] C07F *9/38;* **A61K** *31/66*
U.S. Cl. 514—102 **24 Claims**

1. A cyclic diphosphonic acid, or a pharmaceutically-acceptable salt thereof, having the structure:



wherein R_1 is selected from the group consisting of alkyl having from 1 to 6 carbon atoms, substituted alkyl having from 1 to 6 carbon atoms, phenyl, substituted phenyl, naphthyl, substituted naphthyl, benzyl, substituted benzyl, hydroxy, halogen, amino, substituted amino, acyl amino having from 1 to 6 carbon atoms, carboxy, carbonyl, and alkoxy; and said substituted R_1 groups are substituted with a member selected from the group consisting of methyl, amino, C_1-C_6 alkylamino, chloro, hydroxy and methoxy.

15. A method of treating diseases associated with abnormal calcium and phosphate metabolism, comprising administering to a person in need of such treatment a safe and effective amount of a compound of claim 1.

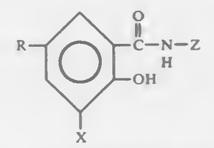
4,939,132

NOVEL 5-ALKYLSULFONYLSALICYLANILIDES AND MICROBIOCIDAL COMPOSITIONS FOR CONTROLLING THE GROWTH OF MICROORGANISMS

Robert A. Coburn, Williamsville; Richard T. Evans, East Amherst; Robert J. Genco, Buffalo, all of N.Y., and Michael T. Clark, Worthington, Ohio, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,080
Int. Cl.[5] C07C *147/11;* **A61K** *31/60, 31/165*
U.S. Cl. 514—166 **26 Claims**

1. A compound of the formula:



Where Z is a substituted phenyl ring of from 6 to 30 carbon atoms including substituents, R is a substituted or unsubstituted alkylsulfonyl group of from 1 to 20 carbon atoms including substituents and X is a radical selected from the group consisting of —CN, $—NO_2$, —H, halogen, lower alkyl or lower haloalkyl.

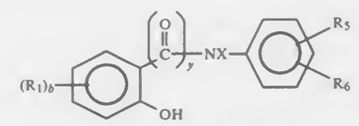
4,939,133

N-SUBSTITUTED-2-HYDROXY-α-OXO-BENZENEACETAMIDES AND PHARMACEUTICAL COMPOSITIONS HAVING ACTIVITY AS MODULATORS OF THE ARACHIDONIC ACID CASCADE

David T. Connor; Daniel L. Flynn; Wiaczeslaw A. Cetenko; Jagadish C. Sircar, all of Ann Arbor, Mich.; Charles F. Schwender, Califon, N.J.; Elizabeth A. Johnson, Corte Madera, Calif.; Roderick J. Sorenson, and Paul C. Unangst, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 1, 1985, Ser. No. 782,763
Int. Cl.[5] C07C *233/15, 233/29, 233/66, 233/75*
U.S. Cl. 514—166 **12 Claims**

1. A compound having the formula



(I)

and pharmaceutically acceptable salts thereof, where (1) y is two: (2) b is zero, one, two, three, or four; (3) R_1 is selected from a group consisting of alkyl of from one to four carbons, inclusive; alkoxy of from one to four carbons, inclusive; thioalkoxy of from one to four carbon atoms, inclusive; carboalkoxy of from two to four carbons, inclusive; alkanoyl of from one to four carbons; hydroxy; halogen; nitro; amino; mono- and di-alkylamino having each alkyl the same or different and when taken together are of from one to four carbons, inclusive; carbalkoxyamino of from one to four carbons, inclusive; alkylsulfinyl of from one to four carbons, inclusive; alkylsulfonyl of from one to four carbons, inclusive; and when b is one, then R_1 is —(CH=CH—CH=CH)— taken together with an adjacent ring carbon to form a benzo radical; (4) R_5 is hydrogen; alkyl of from one to four carbons, inclusive; alkoxy of from one to four carbons, inclusive; carboalkoxy of from two to four car-

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bons, inclusive; hydroxy; halogen; or —(CH=CH—CH=CH)— taken together with adjacent carbons to form a benzo radical; (5) R_6 is alkyl of from six to twenty carbons, —CH=CH—R_4, —$(CH_2)_nCOR_4$, or —$(CH_2)_n$—R_4 wherein n is zero to four, inclusive; and R_4 is phenyl optionally substituted at the two through six positions by lower alkoxy carbonyl; alkyl of from one to four carbons; alkoxy, or thioalkoxy of from one to four carbons, inclusive; phenalkoxy of from one to four carbons, inclusive; amino, monoalkyl and dialkyl amino having the alkyl of from one to four carbons, inclusive; alkanoylamino of from one to four carbons, inclusive; carboxyl; benzo; halogen; hydroxy; hydroxyalkyl of from one to four carbons, inclusive; alkanoyl of from one to four carbons, inclusive; nitro, alkanesulfonamido of from one to four carbons, inclusive; (6) X is hydrogen or lower alkyl of from one to four carbons.

12. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

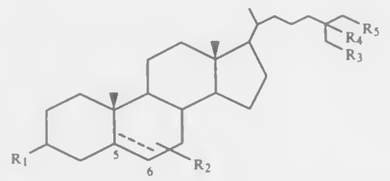
4,939,134

26-AMINOCHOLESTEROL AND DERIVATIVES AND ANALOGS THEREOF IN THE REGULATION OF CHOLESTEROL ACCUMULATION IN BODY TISSUE

Norman B. Javitt, New York, N.Y., and Stephen R. Wilson, Chatham, N.J., assignors to New York University, New York, N.Y.

Filed Sep. 19, 1988, Ser. No. 246,444
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—177 **22 Claims**

1. A method for reducing the rate of cholesterol synthesis by human tissue cells which comprises administering an effective cholesterol synthesis rate-reducing amount of a sterol of the formula:



wherein

the dashed lines represent the presence of single or double bonds

R_1 is a 3-hydroxyl group or a 3-keto group,

R_2 is selected from the group consisting of hydrogen, hydroxy and keto and

wherein at least one of R_3, R_4 and R_5 is an amino group and the others are each selected from the group consisting of hydrogen and an amino group.

4,939,135

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT TO PREVENT AND TREAT CORNEAL SCAR FORMATION PRODUCED BY LASER IRRADIATION

Stella M. Robertson, Arlington; Herman M. Kunkle, Jr., Mansfield, and Michael E. Stern, Grapevine, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Oct. 3, 1988, Ser. No. 253,009
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—179 **5 Claims**

1. A method for treating corneal haze as an artifact of incident UV laser irradiation, and resulting photoablation of corneal tissue comprising:

applying topically to the affected eye, a therapeutically effective amount of a steroid.

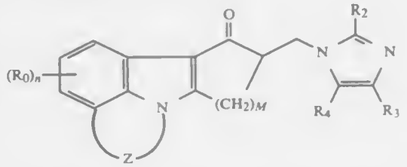
4,939,136

NEW ANELLATED INDOLE DERIVATIVES

Hans H. Haeck; Derk Hamminga; Ineke Van Wijngaarden, and Wouter Wouters, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Jun. 24, 1988, Ser. No. 210,976
Claims priority, application Netherlands, Jun. 29, 1987, 8701516; Mar. 16, 1988, 8800643
Int. Cl.[5] C07D *521/00, 403/06*
U.S. Cl. 514—183 **2 Claims**

1. A compound of formula (2)



(2)

wherein

R_0 is alkyl or alkoxy having 1–4 C-atoms, phenylalkoxy having 1–3 C-atoms in the alkoxy group, hydroxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, or a group $R_7S(O)_p$, wherein R_7 is alkyl having 1–4 C-atoms and p has the value 0, 1 or 2, or R_0 is a group R_8R_9N, R_8R_9N—CO—CH_2—or R_8R_9—N—CO wherein R_8 and R_9 are hydrogen or alkyl having 1–4 C-atoms and n has the value 0, 1 or 2, Z together with the carbon atom and nitrogen atom to which Z is bound and the intermediate carbon atom, forms a heterocyclic group consisting of 5–8 ring atoms in which, in addition to the nitrogen atom already present, a —CO— group or a second hetero atom from the group N, O, S, S-O or SO_2 may be present, which ring may be substituted with 1–3 alkyl groups having 1–4 C-atoms or a phenyl group, and m has the values 1–5, one of the groups R_2, R_3 and R_4 is hydrogen, alkyl having 1–6 C-atoms, cycloalkyl having 3–7 C-atoms, alkenyl having 2–6 C-atoms or phenylalkyl having 1–3 C-atoms in the alkyl group, and the two other groups independently of each other are hydrogen or alkyl having 1–6 C-atoms, or a pharmaceutically acceptable acid addition salt thereof.

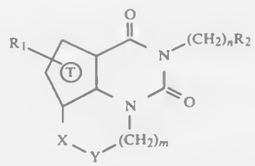
4,939,137

RING-FUSED THIENOPYRIMIDINEDIONE DERIVATIVES

Ronald K. Russell, Titusville, and Richard A. Rampulla, Whitehouse Station, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

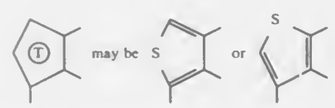
Filed Jun. 28, 1989, Ser. No. 372,505
Int. Cl.[5] A61K *31/55*; C07D *495/14*
U.S. Cl. 514—183 **18 Claims**

1. A compound of the formula



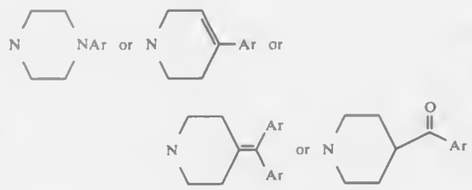
where X is C=O or $CHOR_3$ or C=NOR_4 or $CHNHR_3$ when Y is CH_2 or X and Y together are CH=CH or Y is NH when

X is C=O



R_1 is hydrogen, halogen, nitro or C_1–C_3 alkyl

R_2 is



R_3 is hydrogen, C_1–C_3 alkyl or COR_5;

R_4 is hydrogen or C_1–C_6 alkyl;

R_5 is C_1–C_6 alkyl, phenyl or phenyl substituted by halogen, C_1–C_6 alkyl, C_1–C_3 alkoxy, nitro, CF_3, amino or C_1–C_6 dialkylamino;

Ar is phenyl or phenyl substituted by halogen, C_1–C_6 alkyl, C_1–C_3 alkoxy, nitro, CF_3, amino or C_1–C_6 dialkylamino;

m is 1–5; and

n is 2–6

16. A method of treating cardiovascular disease in mammals by administering an effective amount of a compound of claim 1.

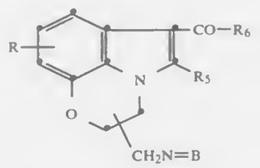
4,939,138

2- AND 3-AMINOMETHYL-6-ARYLCARBONYL-2,3-DIHYDROPYRROLO(1,2,3-DE)-1,4-BENZOXAZINES

Thomas E. D'Ambra, North Greenbush, and Malcolm R. Bell, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 291,905, Dec. 29, 1988, abandoned. This application Dec. 7, 1989, Ser. No. 447,469
Int. Cl.[5] C07D *243/02, 263/35, 279/12*
U.S. Cl. 514—218 **25 Claims**

1. A member of the group consisting of (A) compounds having the formula



I

where:

R is hydrogen or from one to two substituents selected from the group consisting of lower-alkyl, lower-alkoxy, hydroxy or halogen in the 7-, 8-, or 9-positions;

R_5 is hydrogen or lower-alkyl;

R_6 is phenyl, methylenedioxyphenyl (or phenyl substituted by from one to two substituents selected from halogen, lower-alkoxy, hydroxy, lower-alkyl, lower-alkylmercapto, lower-alkylsulfinyl or lower-alkylsulfonyl), 1- or 2-naphthyl (or 1- or 2-naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy, hydroxy, halogen, lower-alkylmercapto, lower-alkylsulfinyl or lower-alkylsulfonyl), 2-, 3-, 4-, 5-, 6-, 7- or 8-quinolyl; and

N=B is amino, N-lower-alkylamino, N,N-di-lower-alkylamino, 4-morpholinyl, 4-thiomorpholinyl, 1-piperidinyl, 1-pyrrolidinyl, 1-azetidinyl, 4-lower-alkyl-1-piperazinyl or 1-(hexahydro-4H-1,4-diazepinyl); (B) acid-addition salts thereof; and (C) the racemic mixtures and d- and l-enantiomers thereof.

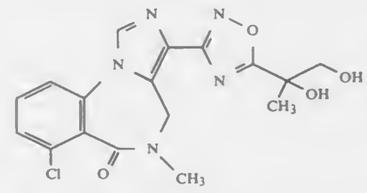
4,939,139

7-CHLORO-5,6-DIHYDRO-3-(5-(1,2-DIHYDROXY-ISOPROPYL)-1,2,4-OXADIAZOL-3-YL)-5-METHYL-6-OXO-4H-IMIDAZO[1,5A][1,4]BENZODIAZEPINE

Jiunn H. Lin, Ambler; Harri G. Ramjit; Steven M. Pitzenberger, both of Lansdale, and Edgar H. Ulm, Green Lane, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 26, 1989, Ser. No. 385,040
Int. Cl.[5] C07D *521/00*; A61K *31/55*
U.S. Cl. 514—220 **3 Claims**

1. A coumpound of structural formula:



or a pharmaceutically acceptable salt thereof.

3. A method of treating anxiety comprising the administration of an effective anxiolytic amount of the compound of claim 1 to a patient in need of such treatment.

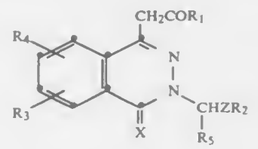
4,939,140

HETEROCYCLIC OXOPHTHALAZINYL ACETIC ACIDS

Eric R. Larson, Guilford, and Banavara L. Mylari, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 136,179, Dec. 21, 1987, which is a continuation-in-part of Ser. No. 916,127, Oct. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 796,039, Jul. 11, 1985, abandoned. This application Oct. 27, 1988, Ser. No. 263,577
Int. Cl.[5] C07D *237/32, 519/00*; A61K *31/50*
U.S. Cl. 514—222 **29 Claims**

1. A compound of the formula



I

wherein

X is oxygen or sulfur;

Z is a covalent bond, O, S, NH or CH_2, or CHR_5Z is vinylene;

R_1 is hydroxy, or a prodrug group;

R_2 is a heterocyclic 5-membered ring having one nitrogen, oxygen or sulfur, two nitrogens one or which may be replaced by oxygen or sulfur, or three nitrogens one of which may be replaced by oxygen or sulfur, said heterocyclic 5-membered ring substituted by one or two fluoro, chloro, (C_1–C_4)alkyl or phenyl, or condensed with benzo, or substituted by one of pyridyl, furyl or thienyl, said phenyl or benzo optionally substituted by one of iodo,

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cyano, nitro, perfluoroethyl, trifluoroacetyl, or (C_1–C_4)alkanoyol, one or two of fluoro, chloro, bromo, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkylthio, trifluoromethoxy, trifluoromethylthio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, or trifluoromethyl, or two fluoro or two trifluoromethyl with one hydroxy or one (C_1–C_4)alkoxy, or three fluoro, said pyridyl, furyl or thienyl optionally substituted in the 3-position by fluoro, chloro bromo, (C_1–C_4)alkyl or (C_1–C_4)alkoxy;

a heterocyclic 6-membered ring having two or three nitrogen atoms or one or two nitrogen atoms and one oxygen or sulfur, said heterocyclic 6-membered ring substituted by one or two (C_1–C_4)alkyl or phenyl, or condensed with benzo, or substituted by one of pyridyl, furyl or thienyl, said phenyl or benzo optionally substituted by one of iodo or trifluoromethylthio, or one or two of fluoro, chloro, bromo, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkylthio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, or trifluoromethyl, and said pyridyl, furyl or thienyl optionally substituted in the 3-position by fluoro, chloro, (C_1–C_4)alkyl or (C_1–C_4)alkoxy;

said benzo-condensed heterocyclic 5-membered or 6-membered rings optionally substituted in the heterocyclic 5-membered or 6-membered ring by one of fluoro, chloro, bromo, methoxy, or trifluoromethyl;

oxazole or thiazole condensed with a 6-membered aromatic group containing one or two nitrogen atoms, with thiophene or with furane, each optionally substituted by one of fluoro, chloro, bromo, trifluoromethyl, methylthio or methylsulfinyl;

imidazolopyridine or triazolopyridine optionally substituted by one of trifluoromethyl, trifluoromethylthio, bromo, or (C_1–C_4)alkoxy, or two of fluoro or chloro;

thienothiophene or hienofuran optionally substituted by one of fluoro, chloro or trifluoromethyl;

thienotriazole optionally substituted by one of chloro or trifluoromethyl;

naphthothiazole; naphthoxazole; or thienoisothiazole;

R_3 and R_4 are the same or different and are hydrogen, fluoro, chloro. bromo, trifluoromethyl, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkylthio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsufonyl, or nitro, or R_3 and R_4 taken together are (C_1–C_4)alkylenedioxy; and

R_5 is hydrogen methyl or trifluoromethyl; or

a pharmaceutically acceptable base addition salt of a compound of formula I wherein R_1 is hydroxy, or an acid addition salt of a compound of formula I wherein R_1 is di(C_1–C_4)alkylamino or (C_1–C_4)alkoxy substituted by N-morpholino or di(C_1–C_4)alkylamino.

29. A method of inhibiting aldose reductase activity comprising administering to a diabetic host an effective amount of a compound of claim 1.

4,939,141

(FUSED) BENZ (THIO) AMIDES AND PHARMACEUTICAL COMPOSITIONS, THEREOF

Masaaki Toda, Osaka; Tumoru Miyamoto, Kyoto, and Yoshinobu Arai, Osaka, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaki, Japan

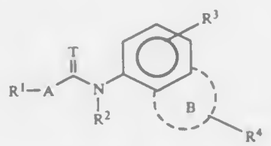
Division of Ser. No. 207,994, Jun. 17, 1988, Pat. No. 4,847,275, which is a divisiou of Ser. No. 767,538, Aug. 20, 1985, Pat. No. 4,780,469. This application Apr. 4, 1989, Ser. No. 332,930

Claims priority, application Japan, Aug. 20, 1984, 59-172570; Dec. 20, 1984, 59-243412; Dec. 22, 1984, 59-246363

Int. Cl.[5] **A61K** *31/415, 31/535;* **C07D** *265/36, 405/04*

U.S. Cl. 514—230.5 **35 Claims**

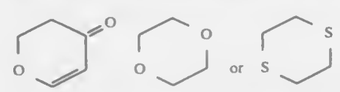
1. A novel (fused) benz(thio)amide of the general formula:



(I)

wherein A represents a single bond or a group of methylene, ethylene, trimethylene, tetramethylene, vinylene, propenylene, butenylene, butadienylene or ethynylene group optionally being substituted by one, two or three of straight or branched alkyl group(s) of from 1 to 10 carbon atom(s) and/or phenyl group(s);

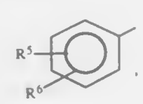
B repesents a heterocyclic ring of from 4 to 8 members containing one, two or three hetero atom(s) selected from the group consisting of oxygen, nitrogen and sulphur atom(s), wherein the said ring may optionally be substituted by group(s) selected from oxo, thioxo and/or hydroxy group(s) with the exclusion of a ring of formula:



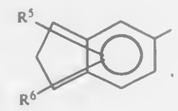
T represents an oxygen atom or a sulphur atom;

R^1 represents a group of general formula:

(i)

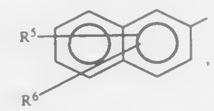


(iii)



or

(ii)



or

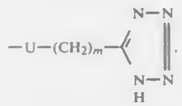
(iv) a straight or branched alkyl, alkenyl or alkynyl group of from 1 to 20 carbon atom(s), wherein R^5 and R^6 independently represent a hydrogen atom or a halogen atom or a straight or branched alkyl, alkenyl or alkynyl group of from 1 to 20 carbon atom(s) being unreplaced or replaced by one, two, three, four or five optional carbon atom(s), by oxygen atom(s), sulphur atom(s), halogen atom(s), nitrogen atom(s), benzene ring(s), thiophene ring(s), naphthalene ring(s), carbocyclic ring(s) of from 4 to 7 carbon atom(s), carbonyl group(s), carbonyloxy group(s), hydroxy group(s), carboxy group(s), azido group(s) and/or nitro group(s);

R^2 represents a hydrogen atom or a straight or branched alkyl group of from 1 to 6 carbon atom(s);

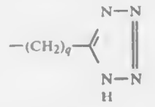
R^3 represents a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a group of general formula: —$COOR^7$, wherein R^7 represents a hydrogen atom or a straight or branched alkyl group of from 1 to 6 carbon atom(s), or a straight or branched alkyl, alkoxy or alkylthio group of from 1 to 6 carbon atom(s);

R^4 represents a group of general formula:

—U—$(CH_2)_n$—$COOR^8$,



—$(CH_2)_p$—$COOR^8$, or



wherein U represents an oxygen atom or a sulphur atom, R^8 represents a hydrogen atom or a straight or branched alkyl group of from 1 to 6 carbon atom(s), n and m represent an integer of from 1 to 10, respectively, p and q represent zero or an integer of from 1 to 10, respectively, or

non-toxic salts thereof.

4,939,142

SUBSTITUTED STYRENE DERIVATIVES

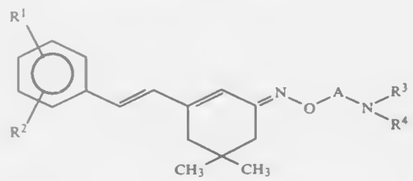
Zoltán Budai; Lujza Petocz; Tibor Mezei; Eniko Szirt née Kiszelly; Mária Szécsey née Hegedüs; Gábor Gigler; Klára Reiter née Esses; Aranka Lay née Kóuya; Éva Furdyga; István Gertyán, and István Gacsályi, all of Budapest, Hungary, assignors to EGIS Gyogyszergyar, Budapest, Hungary

Filed Jan. 26, 1989, Ser. No. 301,944

Int. Cl.[5] **A61K** *31/445*

U.S. Cl. 514—238.2 **17 Claims**

1. A compound of formula I Formula I



(I)

wherein

A stands for a C_{2-4} straight or branched chain alkylene group;

R^1 and R^2 may be same or different and each stands for hydrogen, halogen, lower alkyl or lower alkoxy; or

R^1 and R^2 together form a methylenedioxy group;

R^3 and R^4 may be the same or different and each stands for C_{1-5} alkyl or C_{3-6} cycloalkyl or

R^3 and R^4 together with the nitrogen atom to which they are attached, form a 4–7 membered ring which may contain as additional ring member an oxygen or sulfur atom or a further nitrogen atom and the latter nitrogen atom may optionally bear a C_{1-3} alkyl or benzyl substitutent

and pharmaceutically acceptable acid addition salts and quaternary ammonium salts thereof.

4,939,143

SUBSTITUTED CYCLOHEXENE DERIVATIVES AS HMG-COA REDUCTASE INHIBITORS

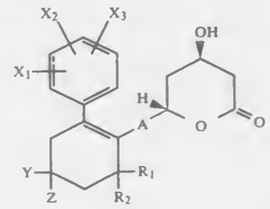
John R. Regan, Princeton, N.J.; Joseph G. Bruno, Sellersville, and Kent W. Nenenschwander, Ambler, both of Pa., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Continuation-in-part of Ser. No. 328,836, Mar. 27, 1989, Pat. No. 4,900,754, which is a continuation-in-part of Ser. No. 135,805, Dec. 21, 1987, Pat. No. 4,863,957. This application Sep. 25, 1989, Ser. No. 412,356

Int. Cl.[5] **A61K** *31/345;* **C07D** *405/02*

U.S. Cl. 514—326 **6 Claims**

1. A compound of the formula



wherein

A is CH_2—CH_2, CH=CH or —C≡C—;

X_1, X_2 and X_3 are independently:

H,

C_1-6 alkyl,

halogen,

$RO(CH_2)_m13$,

aryl,

Nr_1R_2 or

SO_mR_1;

Y is

azetidyl,

pyrrolidyl,

pyrrolyl,

piperidyl,

pyridyl,

succinimido or

phthalimido;

R, R_1, R_2 and Z are independently:

H or

C_{1-6} alkyl;

m is 0, 1 or 2;

its hydroxy acids and the pharmaceutically acceptable salts thereof.

4,939,144

TRICYCLIC KETONE DERIVATIVES AS 5-HT ANTAGONISTS

Ian H. Coates, Hertford; David C. Humber, London; James A. Bell, Royston; George B. Ewan, Gerrards Cross; Alexander W. Oxford, Royston, and William L. Mitchell, London, all of England, assignors to Glaxo Group Limited, London, United Kingdom

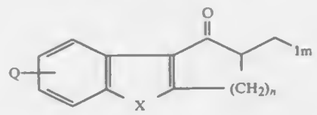
Filed Oct. 21, 1988, Ser. No. 260,680

Claims priority, application United Kingdom, Oct. 22, 1987, 8724729; Feb. 8, 1988, 8802808

Int. Cl.[5] **A61K** *31/55;* **C07D** *409/08*

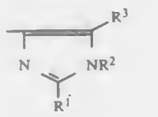
U.S. Cl. 514—212 **10 Claims**

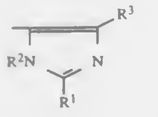
1. A compound of formula (I):



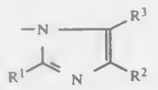
(I)

wherein Im represents an imidazolyl group of the formula:





or



one of the groups represented by R^1, R^2 and R^3 is a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenyl C_{1-3}alkyl group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6} alkyl group;

n represents 1, 2 or B 3;

Q represents a hydrogen atom, a halogen atom or a hydroxy, C_{1-4}alkoxy, phenyl C_{1-3}alkoxy or C_{1-6}alkyl group, or a group $-NR^4R^5$ or $-CONR^4R^5$, (wherein R^4 and R^5, which may be the same or different, each represents a hydrogen atom or a C_{1-4}alkyl or C_{3-4}alkenyl group, or together with the nitrogen atom to which they are attached form a saturated 5 to 7 membered ring); and

X represents an oxygen or a sulphur atom; or a physiologically acceptable salt or solvate thereof.

4,939,145

PHENOTHIAZONE DERIVATIVES AND ANALOGS

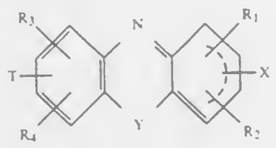
Chenk K. Lau, Pierrefonds; Joshua Rokach, Laval; Christiane Yoakim; Rejean Fortin, both of Montreal, and Yvan Guindon, Ile Bizard, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Division of Ser. No. 3,354, Jan. 14, 1987, Pat. No. 4,859,667, which is a division of Ser. No. 786,257, Oct. 10, 1985, Pat. No. 4,667,032, which is a continuation of Ser. No. 591,134, Mar. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 559,471, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 536,487, Sep. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 459,924, Jan. 22, 1983, abandoned. This application Jan. 19, 1989, Ser. No. 298,716

Int. Cl.[5] A61K *31/60, 31/54, 31/535, 31/525*

U.S. Cl. 514—224.2 **6 Claims**

1. A pharmaceutical composition for inhibiting mammalian leukotriene biosynthesis or action containing a pharmaceutically acceptable carrier and an effective amount of a compound of the Formula I:



I

(a) wherein
X is in the 1 or 3 position and is O, S or NR;
R is H, C_1–C_6 branched or linear alkyl, CN or phenyl;
Y is O, Se, S, SO, SO_2 or NR; and the broken line represents an optional double bond between the 1 and 2 or 2 and 3 position;
R_1, R_2, R_3 and R_4 are each independently selected from:

(b) (1) hydrogen,
(2) alkyl having 1–6 carbon atoms,
(3) alkenyl having 2–6 carbon atoms,
(4) $-(CH_2)_nM$ wherein n is 0–6 and M is
(a) OR_8,
(b) halogen,
(c) CF_3,

(c) (d) SR_8 wherein R_8 is H; lower alkoxyl-loweralkyl; lower acyloxy-loweralkyl; C_1–C_6 alkyl; benzyl; phenyl or substituted phenyl wherein the substituents are C_1–C_3 alkyl, halogen, CN, CF_2, $COOR_6$, CH_2COOR_6, $(CH_2)_nNR_8R_9$ wherein n is 0 to 2, C_1–C_3 alkoxy, OH, halo-C_1–C_6-alkyl; $-(CH_2)_mCOOR_8$, wherein m is 0 to 6 and R_6 is H, phenyl or C_1–C_6 alkyl; CN, formyl; perfluoralkyl; or CH_2—R_{12}, wherein R_{12} is C_1–C_5 alkyl, phenyl or dimethylamino;
(e) phenyl or substituted phenyl as defined above for R_8;
(f) $COOR_6$.

4,939,146

METHOD FOR ALLEVIATING ISCHEMIC-REPERFUSION INJURY

Richard S. Kramer, 24F - 1315 Morreene Rd., Durham, N.C. 27705, and Robert D. Pearlstein, 2901 Arnold Rd., Durham, N.C. 27707

Continuation-in-part of Ser. No. 8,378, Jan. 29, 1987, abandoned. This application May 26, 1987, Ser. No. 53,468

Int. Cl.[5] A61K *31/048*

U.S. Cl. 514—724 **6 Claims**

1. A method for alleviating ischemic-reperfusion injury in tissue in a mammal where said tissue has suffered from a deprivation of oxygen comprising administering to said mammal as the active reperfusion injury alleviating ingredient an amount of a primary aliphatic alcohol having from 2 to 6 carbon atoms concurrent with or during the restoration of oxygen in an amount effective to alleviate intracellular parenchymal cell damage when the cell is resupplied with oxygen.

4,939,147

SUBSTITUTED 3,4-DIHYDROXY PHENYLETHYLAMINO COMPOUNDS

John Dixon, Great Dalby; Brian Springthorpe, Shepshed, and Francis Ince, Loughborough, all of England, assignors to Fisons plc., Leicestershire, England

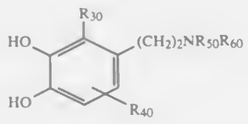
Division of Ser. No. 195,722, May 18, 1988, which is a continuation-in-part of Ser. No. 932,473, Nov. 19, 1986, Pat. No. 4,883,804. This application Aug. 2, 1989, Ser. No. 388,383

Claims priority, application United Kingdom, May 19, 1987, 8711779; May 19, 1987, 8711780; May 19, 1987, 8711781; May 19, 1987, 8711784; May 19, 1987, 8711785; Dec. 29, 1987, 8730254; Dec. 29, 1987, 8730255; Dec. 29, 1987, 8730256

Int. Cl.[5] A01N *37/30*; C07C *87/28*

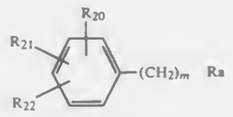
U.S. Cl. 514—603 **11 Claims**

1. Compounds of formula I,



I

in which
one of R_{30} and R_{40} represents a group Ra



and the other of R_{30} and R_{40} represent hydrogen or halogen,

R_{50} and R_{60}, which may be the same or different, each independently represent hydrogen or alkyl C_1 to C_6;

R_{20}, R_{21} and R_{22} independently represent hydrogen, alkyl C_1 to C_6, NHR_{25}, *SH, NO2*, halogen, CF_3, SO_2R_{26}, CH_2OH or OH, wherein R_{25} represents hydrogen, alkyl C_1 to C_6 or alkanoyl C_1 to C_6 and R_{26} represents alkyl C_1 to C_6 or NH_2

m represents 2, 3 or 4,

and pharmaceutically acceptable salts and solvates thereof.

11. A method of treatment of renal failure which comprises administration of an effective amount of a compound according to claim 1 to a patient suffering from such a condition.

4,939,148

AMINE DERIVATIVES, PROCESSES FOR THEIR PRODUCTION AND THEIR USE

Anton Stütz, Vienna, and Peter Nussbaumer, Maria Enzersdorf, both of Austria, assignors to Sandoz, Ltd., Basel, Switzerland

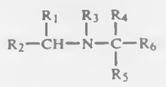
Filed Jan. 29, 1987, Ser. No. 8,198

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1986, 3602579; Mar. 19, 1986, 3609123; May 26, 1986, 3617635; May 26, 1986, 3617637

Int. Cl.[5] A61K *31/135*; C07C *87/28*

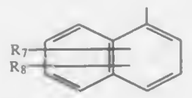
U.S. Cl. 514—649 **9 Claims**

1. A compound of formula I



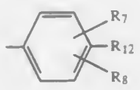
I

wherein
R_1 represents a group of formula



IIa

R_2 is hydrogen
R_3 is hydrogen or lower alkyl
R_4 and R_5 are both hydrogen,
R_7 and R_8 are each independently, hydrogen, halogen, trifluoromethyl, lower alkyl or lower alkoxy, and
R_6 is



IIIa

wherein
R_7 and R_8 are as defined above and
R_{12} is alkyl substituted by phenyl, halogenphenyl, lower alkylphenyl, or lower alkoxyphenyl, in free base form or in pharmaceutically acceptable acid addition salt form.

9. A method of combatting infections and diseases caused by mycetes which comprises administering to a subject in need to such treatment an effective amount of a compound of claim 1 in free form or pharmaceutically acceptable acid addition salt form.

4,939,149

RESINIFERATOXIN AND ANALOGUES THEREOF TO CAUSE SENSORY AFFERENT C-FIBER AND THERMOREGULATORY DESENSITIZATION

Peter M. Blumberg, Frederick, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Oct. 24, 1988, Ser. No. 261,627

Int. Cl.[5] A61K *31/12*

U.S. Cl. 514—691 **11 Claims**

1. A method for desensitizing a subject animal, which comprises administering to said subject animal a therapeutically effective desensitizing amount of resiniferatoxin for desensitizing the subject to neurogenic inflammation, to chemically and thermally induced pain, to responses involving sensory afferent pathways sensitive to capsaicin or to responses involving the hypothalamic temperature control region.

4,939,150

METHOD FOR PREPARING DENSE NUTRIENT MEDIUM FOR CULTURING MICROORGANISMS

Vladimir V. Gashinsky, ulitsa Repina, 7/13, kv. 11; Vladimir P. Shirobokov, ulitsa Malyshko, 3, kv. 538; Nikolai N. Marchenko, bulvar I. Lepse, 49, kv. 33; Valery G. Voltsekhovsky, ulitsa Betkhovena, 18; Tatyana I. Krainjukova, ulitsa Zakrevskogo, 11, kv. 120, all of Kiev, and Vladimir V. Onischenko, ulitsa Novaya, 6, kv. 140, Kievskaya oblast, Fastov, all of U.S.S.R.

PCT No. PCT/SU88/00006, § 371 Date Sep. 30, 1988, § 102(e) Date Sep. 30, 1988, PCT Pub. No. WO88/05794, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 7, 1988, Ser. No. 283,950

Claims priority, application U.S.S.R., Jan. 30, 1987, 4182247; Jun. 25, 1987, 4278310

Int. Cl.[5] C12N *1/20*

U.S. Cl. 435—253.6 **3 Claims**

1. A method for preparing a dense nutrient medium for culturing micoorganisms comprising copolymerization of acrylamide and N,N'-methylenebisacrylamide in the presence of an initiator in a physiological solution till the formation of a gel, washing and impregnation thereof with a nutrient substrate, characterized in that said copolymerization of acrylamide and N,N'-methylenebisacrylamide is conducted in the presence of a branched polyacrylamide with the mean molecular mass of 7.2×10^4 at a mass ratio thereof equal to 7.0–15:0.1-1:–0.21:0.028–0.11 respectively.

4,939,151

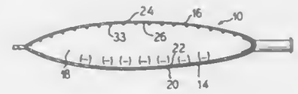
ADHERENT CELL CULTURE FLASK

David V. Bacebowski, Wildwood; Julian P. Breillatt, Jr., Mundelein; William Kolanko, Grayslake, and Sidney T. Smith, Lake Forest, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 264,595, Oct. 31, 1988, abandoned. This application Jul. 13, 1989, Ser. No. 382,051

Int. Cl.[5] C12M *3/00*

U.S. Cl. 435—284 **22 Claims**



1. A gas permeable cell culture flask for growing adherent cells in vitro comprising a body constructed from a gas permeable flexible film, the body having a first interior surface and a

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second interior surface that define a containment area, the first interior surface having a charged surface for facilitating attachment of adherent cells to the first interior surface and the second interior surface having a non-smooth surface for preventing the first interior surface from sticking to the second interior surface during a process for manufacturing and sterilizing the flask.

4,939,152

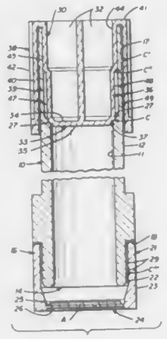
CELL CULTURE VIAL

Stephen M. Barr, San Jose, and Paul A. Rohlf, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 102,992, Sep. 30, 1987, Pat. No. 4,845,038. This application Feb. 2, 1989, Ser. No. 305,890

Int. Cl.[5] C12M *1/24*

U.S. Cl. 435—296 **64 Claims**



1. An apparatus for maintaining a biological sample on a support comprising

a hollow tubular member with internal and external surfaces open at first and second opposed ends having first stopping means on said internal surface proximate said first end and

first and second closure means adapted for sealing attachment to said tubular member at said first and said second ends, respectively, wherein said tubular member includes second stopping means on said external surface and said second closure means is open at a first end and closed by a bottom wall having internal and external surfaces at a second opposed end and a side wall having internal and external surfaces, the distance between said second open end of said tubular member and said internal surface of said bottom wall when said tubular member is firmly attached to said second closure means being less than the diameter of the support and the internal diameter of said tubular member at said second end is less than the diameter of the support.

4,939,153

SATURATION MONITOR AND PROCESS

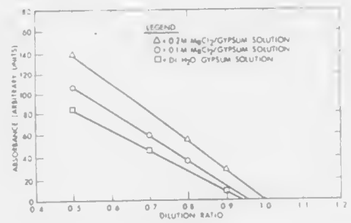
Frank B. Meserole, Austin, Tex., assignor to Radian Corporation, Austin, Tex.

Division of Ser. No. 301,647, Jan. 25, 1989, Pat. No. 4,906,647. This application Oct. 16, 1989, Ser. No. 421,648

Int. Cl.[5] G01N *37/00, 21/17, 33/38*

U.S. Cl. 436—56 **6 Claims**

1. A method of making a solid solution of gypsum and chromium wherein about 2-3% chromate is substituted for sulfate in the gypsum crystal lattice, which comprises providing a first aqueous solution of potassium chromate and calcium chloride at a pH of about 7, providing a second solution by dissolving potassium sulfate in heated water to effect complete dissolution, rapidly adding the second solution to the first solution with stirring, allowing the solids to settle, decanting supernatant liquor, washing the solids with a saturated aqueous solution of gypsum, and dewatering the washed solids.



4,939,154

METHOD OF FABRICATING AN INSULATED GATE SEMICONDUCTOR DEVICE HAVING A SELF-ALIGNED GATE

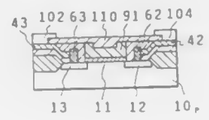
Masafumi Shimbo, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Mar. 23, 1988, Ser. No. 172,029

Claims priority, application Japan, Mar. 25, 1987, 62-71018; Apr. 2, 1987, 62-81659

Int. Cl.[5] H01L *21/265, 21/283*

U.S. Cl. 437—41 **12 Claims**



1. A fabrication method of an insulated gate semiconductor device comprising:

a first step of exposing an active region of a given with on a surface of a semiconductor substrate having a first conductivity type, and covering other regions with a field insulating film;

a second step of sequentially depositing a multiple layer film of at least three layers comprised of a first insulating film, a first semiconductor film having a second conductivity type and a second insulating film;

a third step of providing an opening in said multiple layer film on said active region in such a manner that said opening is narrower than the width of said active region so that one of the opposed sides of said opening is inside said active region while the other of the opposed sides is on said field insulating film, the walls of said opening being formed vertically or negatively inclined;

a fourth step of depositing a second semiconductor film containing an impurity of the second conductivity type;

a fifth step of etching anisotropically said second semiconductor film to expose said active region and said second insulating film for leaving said second semiconductor film along the walls of said opening in said multiple layer film;

a sixth step of depositing a third insulating film and etching anisotropically said third insulating film to expose said active region and leaving said third insulating film only on the side surface of said second semiconductor film formed along the walls of said opening in said multiple layer film;

a seventh step of providing a gate insulating film on the surface of said active region by thermal oxidization and providing source and drain regions of the second conductivity type in said active region by diffusion of the impurity from said second semiconductor film;

an eighth step of depositing a conductor film;

a ninth step of depositing a sacrificial planarizing layer over the entire surface, and etching-back the surface at an etch rate substantially equal to that of the sacrificial planarizing layer and said conductor film for leaving said conductor film inside said opening in said multiple layer film to an extent that at least said second insulating film is exposed; and

a tenth step of selectively removing unnecessary portions of said first and second semiconductor films and said conductor film to form parts of source and drain wirings with said first semiconductor film, source and drain electrodes with said second semiconductor film, and a gate electrode with said conductor film.

4,939,155

PESTICIDES BASED ON PYRIMIDINE DERIVATIVES

Hans-Ludwig Elbe, Wuppertal; Stefan Dutzmann, Duesseldorf, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

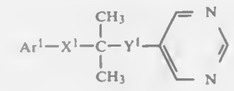
Division of Ser. No. 146,996, Jan. 22, 1988, Pat. No. 4,877,446. This application Jul. 21, 1989, Ser. No. 384,347

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1987, 3702962

Int. Cl.[5] A61K *31/495;* C07D *239/28*

U.S. Cl. 514—256 **3 Claims**

1. A substituted pyrimidine of the formula

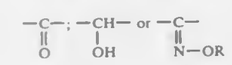


in which

Ar[1] represents phenyl which is unsubstituted or substituted by substituents independently selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulphinyl or alkylsulphonyl in each case having 1 to 4 carbon atoms, in each case straight-chain or branched halogenolkyl, halogenoalkoxy, halogenoalkylthio, halogenoalkylsulphinyl or halogenoalkylsulphonyl in each case having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, in each case straight-chain or branched alkoxycarbonyl or alkoximinoalkyl in each case having 1 to 4 carbon atoms in the individual alkyl parts, doubly linked dioxyalkylene which is unsubstituted or monosubstituted to polysubstituted by identical or different halogen, or phenyl or phenoxy which is in each case unsubstituted or monosubstituted to polysubstituted by identical or different halogen,

X[1] represents oxygen, sulphur, sulphinyl, sulphonyl or one of the groups $-CH_2-$; $-O-CH_2-$; $-CH_2-O-$; $-O-CH_2-CH_2-$; $-S(O)_n-CH_2-$; $-CH_2-S(O)_n-$ or $-S(O)_n-CH_2-CH_2-$, and

Y[1] represents one of the groups



where

R represents hydrogen or in each case straight-chain or branched alkyl having q to 6 carbon atoms, alkenyl having 3 to 5 carbon atoms or alkinyl having 3 to 5 carbon atoms, or benzyl or phenylethyl which is unsubstituted or monosubstituted to polysubstituted by identical or different substituents, suitable substituents in the phenyl part in the phenyl part in each case being those mentioned in the case of the Ar[1] radical, and

n represents a number 0, 1 or 2,

apart from the compounds 2,2-dimethyl-3-(4-fluorophenyl)-1-(pyrimidin-5-yl)-propan-1-one, 2,2-dimethyl-3-(3-chlorophenoxy)-1-(pyrimidin-5-yl)-propan-1-one, 2,2-dimethyl-2-(4-chlorophenoxy)-1-(pyrimidin-5-yl)-ethan-1-one 2,2-dimethyl-3-(4-chlorophenylthio)-1-(pyrimidin-5-yl)-propan-1-one, 1-(5-pyrimidyl)-2,2-dimethyl-3-(4-trifluoromethylthiophenyl)-propan-1-ol, and 1-(5-pyrimidinyl)-2,2-dimethyl-3-(4-trifluoromethoxy-phenyl)-propan-1-ol, or an acid addition salt or metal-salt complex thereof.

4,939,156

NEW TETRAMETHYL-CIS-DIAZA-BICYCLO{4.2.0}OCTANE-3,5-DIONE DERIVATIVES HAVING DIFFERENTIATION-INDUCING ACTIVITY AND ANTIVIRAL ACTIVITY

Motoo Hozumi, Ohmiya; Tsuneo Itoh, Tokyo; Yoshio Homma, Shobu; Norio Kawahara, Sapporo; Ichiro Ishikawa, Tokyo, and Haruo Ogura, Matsudo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Japan

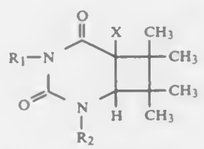
Filed Jul. 8, 1988, Ser. No. 219,200

Claims priority, application Japan, Jul. 11, 1987, 62-172091; Mar. 9, 1988, 63-53817

Int. Cl.[5] A61K *31/505;* C07D *239/70*

U.S. Cl. 514—258 **6 Claims**

1. A compound having the formula (I)



(I)

wherein R_1 denotes a hydrogen atom, a lower alkyl group or benzyl group and R_2 denotes a hydrogen atom, a lower alkyl group or benzyl group and X denotes a hydrogen or fluorine atom; provided that R_1 and R_2 are simultaneously not hydrogen and that R_1 and R_2 are simultaneously not methyl group.

6. An antiviral composition for the treatment of influenza virus, New Castle disease virus, Vesicular stomatitis virus and Vaccinia virus comprising an effective amount of a compound of the general formula (I) defined in claim 1 as the active ingredient, in association with a pharmaceutically acceptable carrier for the active ingredient.

4,939,157

PYRIDINE-N-OXIDES AND FUNGICIDAL COMPOSITIONS CONTAINING SAME AND FUNGICAL USE

Bernhard Zipperer, Dirmstein; Ernst Buschmann, Ludwigshafen; Manfred Lauer, Ludwigshafen; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

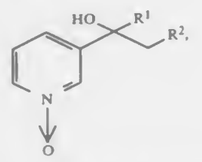
Filed Dec. 30, 1988, Ser. No. 292,439

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1987, 3744620

Int. Cl.[5] C07D *213/89;* A01N *43/40*

U.S. Cl. 514—277 **5 Claims**

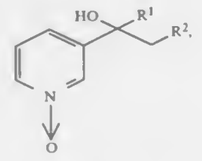
1. A 3-substituted pyridine-N-oxide of the formula



(I)

where R^1 is C_1–C_{12}-alkyl, and R^2 is phenyl or substituted phenyl bearing from one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and halogen, and its salts physiologically tolerated by plants.

3. A process for combating fungi, wherein the fungi or the materials, plants, soils or seeds threatened by fungus attack are treated with a fungicidally effective amount of a 3-substituted pyridine-N-oxide of the formula



(I)

where R^1 is C_1–C_{12}-alkyl, and R^2 is phenyl or substituted phenyl bearing from one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and halogen, or a salt thereof physiologically tolerated by plants.

4,939,158

PHENANTHRIDINE DERIVATIVES AND COMPOSITIONS CONTAINING THEM

Gabriele Fendrich, Basel; Willy Zimmermann, Buus; Johannes Gruner, Flüh, and John A. L. Auden, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

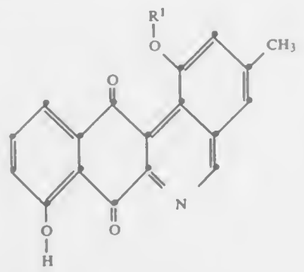
Filed Aug. 11, 1988, Ser. No. 230,941

Claims priority, application Switzerland, Aug. 20, 1987, 3196/87

Int. Cl.[5] **C07D** *221/18;* **A61K** *31/435*

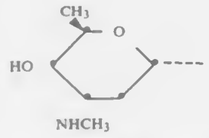
U.S. Cl. 514—284 **5 Claims**

1. 1,8-Dihydroxy-3-methylbenzo[b]phenanthridine-7,12-dione and its derivative of formula I



(I)

wherein R^1 is hydrogen or the radical of formula II



(II)

or a salt of the compound, wherein R^1 is the radical of formula II.

4,939,159

AZAINDOLE DERIVATIVES USEFUL AS CHOLESTEROL BIOSYNTHESIS INHIBITORS

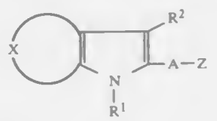
Paul L. Anderson, Randolph; Faizalla G. Kathawala, Mountain Lakes; Nicholas A. Paolella, Livingston, and Sompong Wattanasin, Hopatcong, all of N.J., assignors to Sandoz Pharm. Corp., E. Hanover, N.J.

Continuation-in-part of Ser. No. 165,656, Mar. 8, 1988, abandoned, which is a continuation of Ser. No. 905,897, Sep. 10, 1986, abandoned. This application Mar. 8, 1989, Ser. No. 320,664

Int. Cl.[5] **A61K** *31/435;* **C07D** *471/04*

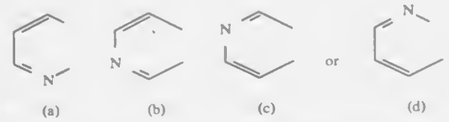
U.S. Cl. 514—300 **28 Claims**

1. A compound of the formula I:



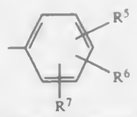
I

wherein
X is



(a) (b) (c) (d)

R^1 is a primary C_{1-6}alkyl not containing an asymmetric carbon atom or isopropyl;
R^2 is (a)

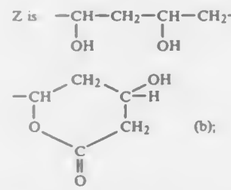


(a)

(b) a primary or secondary C_{1-6}alkyl not containing an asymmetric carbon atom, (c) C_{3-6}cycloalkyl or (d) phenyl—$(CH_2)_m$—,
wherein
R^5 is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy;
R^6 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy;
R^7 is hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, fluoro or chloro; and
m is 1, 2 or 3;
with the provisos that not more than one of R^5 and R^6 is trifluoromethyl, not more than one of R^5 and R^6 is phenoxy, and not more than one of R^5 and R^6 is benzyloxy;

A is (a) $-CH=CH-$ or (b) $-CH_2-CH_2-$; and

Z is



(b);

in which R^8 is hydrogen, R^9 or M,
wherein
R^9 is a physiologically acceptable and hydrolyzable ester group, and
M is a pharmaceutically acceptable cation.

4,939,160

HYDROPYRIDINE DERIVATIVES

Georg von Sprecher, Allschwil; Wolfgang Frröstl, and Armin Zäst, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

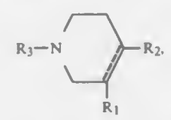
Division of Ser. No. 228,849, Aug. 3, 1988, Pat. No. 4,833,169, which is a continuation of Ser. No. 899,132, Aug. 21, 1986, abandoned. This application Dec. 9, 1988, Ser. No. 281,596

Claims priority, application Switzerland, Aug. 27, 1985, 3669/85; Jun. 26, 1986, 2586/86

Int. Cl.[5] **A61K** *31/44, 31/445;* **C07D** *211/74, 211/40*

U.S. Cl. 514—319 **13 Claims**

1. A hydropyridine derivative of the formula



(I)

in which R_1 represents carboxy, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl or N,N-di-lower alkylcarbamoyl, R_2 represents hydrogen hydroxy, lower alkoxy, phenyl-lower alkoxy which is unsubstituted or substituted, substituents being selected from the group consisting of lower alkyl, lower alkoxy and halogen, lower alkanoyloxy, benzoyloxy, puridoyloxy, lower alkanesulphonyloxy, lower alkoxycarbonyloxy, phenyl-lower alkoxycarbonyloxy, amino, lower alkoxoylamino, benzoylamino, pyridoylamino, lower alkanesulphonylamino, lower alkoxycarbonylamino or phenyl-lower alkoxycarbonylamino, R_3 represents a radical of the formula R—(Ia), R-alk$_1$- (Ib) or R'=alk2- (Ic), in which R represents a benzocycloalkenyl radical having a total of from 8 to 12 ring carbon atoms and which is bonded via a saturated carbon atom, said benzoycloakenyl moiety being unsubstituted or mono- or poly-substituted in the benzo moiety, substituents being selected from the group consisting of hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkyl and trifluoromethyl, and the alpha-carbon atom of said R next to the benzo portion being unsubstituted or substituted by lower alkyl, R' represents a benzocycloalkylidene radical having a total of from 8 to 12 ring carbon atoms, said benzocycloalkenylidene moiety being unsubstituted or mono- or poly-substituted in the benzo moiety, substituents being selected from the group consisting of hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkyl and trifluoromethyl, alk_2 represents lower alkylene or lower alkylidene and alk_2 represents lower alkyl-ω-ylidene, and the dotted line is intended to show that there may be a single bond or a double bond between the carbon atoms carrying the substituents R_1 and R_2, or a tautomer thereof, in each case in free form or in form of a salt.

13. A method of treatment of symptoms of cerebral insufficiency, characterized in that a therapeutically effective amount of a compound according to claim 1, in free form or in form of a pharmaceutically acceptable salt, is administered to a subject in need of such treatment.

4,939,161

ANALGESIC N-ARYL-N-[1-SUBSTITUTED-3,5-DIMETHYL-4-PIPERIDINYL]AMIDES

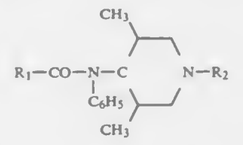
Nhora L. Lalinde, West Nyack; John Moliterni, Staten Island, both of N.Y., and H. Kenneth Spencer, Chatham, N.J., assignors to BOC, Inc., New Providence, N.J.

Filed May 12, 1989, Ser. No. 351,677

Int. Cl.[5] **A61K** *31/445;* **C07D** *401/06*

U.S. Cl. 514—326 **15 Claims**

11. A method of producing analgesia in a mammal, including respiratory depression, comprising administering to the mammal an analgesically effective amount of a compound having the formula:



(I)

an optically active isomeric form thereof, a cis/trans isomeric form thereof or a pharmaceutically acceptable acid addition salt thereof, wherein:
R_1 is selected from the group consisting of lower-alkyl, and lower-alkoxy lower-alkyl, each alkyl group having from 1 to 6 carbon atoms; and
R_2 is pyrazolyl lower-alkyl.

4,939,162

1-(2-ARYL-1,3-DIOXON-2-YLMETHYL)-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

Jan Heeres, Vosselaar; Leo Backx, Arendonk, both of Belgium, and Adolf Hubele, Magden, Switzerland, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 933,289, Nov. 20, 1986, abandoned, which is a continuation of Ser. No. 541,472, Oct. 17, 1983, abandoned, which is a continuation of Ser. No. 202,965, Nov. 3, 1980, abandoned, which is a continuation of Ser. No. 53,500, Jun. 29, 1979, abandoned. This application Feb. 24, 1989, Ser. No. 315,197

Claims priority, application Switzerland, Jul. 25, 1978, 8005/78; Jul. 25, 1978, 8041/78

Int. Cl.[5] **A01N** *43/653;* **C07D** *405/06*

U.S. Cl. 514—383 **6 Claims**

1. A chemical compound selected from the group consisting of 1-[2-(2,4-dichlorophenyl)-5,5-diethyl-1,3-dioxan-2-ylmethyl]-1H-1,2,4-triazole and the pharmaceutically acceptable acid addition salts, metal salt complexes and stereochemically isomeric forms thereof.

VOL 1116 ISS 1 JL 3 1990 UMI

4,939,163

ANTICONVULSANT AGENTS

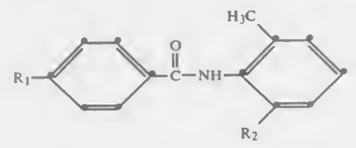
Edward E. Beedle, Indianapolis, and David W. Robertson, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 16,047, Feb. 18, 1987, Pat. No. 4,835,181. This application Apr. 10, 1989, Ser. No. 335,393

Int. Cl.[5] **A61K** *31/165, 31/415;* **C07D** *233/64;* **C07C** *103/26*

U.S. Cl. 514—399 **12 Claims**

1. A compound of the Formula



I

wherein

R_1 is $—S(O)_p—(C_1–C_4$ alkyl), trifluoromethyl, aminomethyl, cyano, aminocarboxy, 1-imidazolyl, or $—NR_3R_4$, where R_3 and R_4 are independently C_1 –C_3 alkyl, p is 0, 1 or 2, and

R_2 is methyl, trifluoromethyl, hydroxymethyl, or chloro; and pharmaceutically acceptable acid addition salts thereof.

4,939,164

STRONTIUM SALT

Michel Wierzbicki, Puteaux; Jacqueline Bonnet, Paris, and Yannis Tsouderos, La Celle St-Cloud, all of France, assignors to Adir Et Compagnie, Neuilly-sur-Seine, France

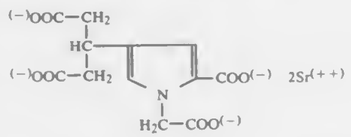
Filed Jun. 20, 1989, Ser. No. 368,593

Claims priority, application France, Jun. 29, 1988, 88 08729

Int. Cl.[5] **C07D** *207/416;* **A61K** *31/405*

U.S. Cl. 514—423 **5 Claims**

1. The distrontium salt of 3-(1-carboxymethyl-2-carboxypyrrol-4-yl)-pentanedioic acid of the formula I:



I

4. Pharmaceutical compositions containing, as active ingredient, the distrontium salt of 3-(1-carboxymethyl-2-carboxypyrrol-4-yl)-pentanedioic acid, with suitable pharmaceutical excipients.

4,939,165

PHOTOACTIVE BITHIENYL PESTICIDES

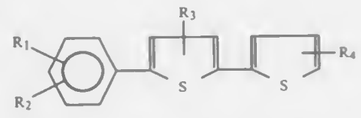
Susan E. Burkart, 1414 Dutch Neck-Edinburg Rd., Trenton, N.J. 08691; Richard B. Phillips, 2213 Cherrytree Lane, Riverbank, Calif. 95367, and David M. Roush, 322 Ewing St., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 120,781, Nov. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 56,353, May 27, 1987, abandoned, which is a continuation of Ser. No. 842,707, Mar. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 724,224, Apr. 17, 1985, Pat. No. 4,645,777. This application Feb. 28, 1989, Ser. No. 317,105

Int. Cl.[5] **A01N** *43/02;* **C07D** *409/00*

U.S. Cl. 514—444 **7 Claims**

1. A compound of the formula:



in which:

(a) R_1, R_2, and R_3 are hydrogen and R_4 is selected from C_1-C_2 alkyl, bromo, methylthio, C_2-C_4 polyfluoroalkenylthio having two fluorine atoms appended to a terminally double bonded carbon atom, formyl, C_1-C_2 alkoxycarbonyl, and dimethylphosphono;

(b) R_1 is lower alkyl, R_2 and R_3 are hydrogen, and R_4 is C_1-C_2 alkyl, chloro, or hydrogen when R_1 contains three or four carbon atoms;

(c) R_1 is halogen, R_2 is hydrogen or halogen, R_3 is hydrogen, and R_4 is selected from hydrogen when R_2 is halogen or when R_2 is hydrogen and R_1 is fluoro, 2-chloro, or 3-chloro; chloro when R_1 is a halogen other than chloro; C_1-C_2 alkyl; and benzoyl;

(d) R_1 is trifluoromethyl, C_1-C_2 alkoxy, C_1-C_2 polyfluoroalkoxy, polyfluoroethenyloxy, or phenoxy and R_2 is hydrogen or R_1 and R_2 together for a 13 C_4H_4— group bridging adjacent carbon ring atoms; R_3 is hydrogen, and R_4 is hydrogen or C_1–C_2 alkyl.

4,939,166

ANTIBIOTIC KSB-1939 COMPOUNDS AS WELL AS PESTICIDAL AGENTS CONTAINING SAME

Hideki Katoh, Kakegawa; Reisuke Kobayashi, Shizuoka; Tomonori Shimazu, Hamamatsu; Akinori Suzuki, Chiba; Akira Isogai, Chiba, and Osamu Tada, Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

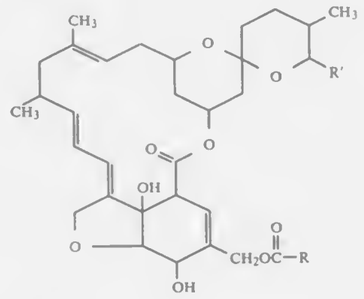
Filed Jul. 7, 1988, Ser. No. 216,128

Claims priority, application Japan, Jul. 7, 1987, 62-169447; Jul. 23, 1987, 62-184621; Feb. 2, 1988, 63-22543

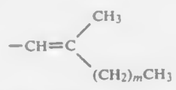
Int. Cl.[5] **A61K** *31/335*

U.S. Cl. 514—450 **9 Claims**

1. A KSB-1939 compound represented by the following general formula (I):



wherein R means



in which m denotes an integer of 0 or 1, and R' denotes a methyl or ethyl group.

4,939,167

USE OF 5-METHOXYPSORALEN AND OTHER FUROCOUMARINS AS JET LAG SUPPRESSANTS

Paul E. Foriot, Rungis, France, assignor to Jean Jacques Goupil, Boulange Billancourt, France

Continuation-in-part of Ser. No. 223,191, Jul. 22, 1988, abandoned. This application Jul. 29, 1988, Ser. No. 225,902

Int. Cl.[5] **A61K** *31/35*

U.S. Cl. 514—455 **11 Claims**

1. A method for suppressing the effects of jet lag in humans, comprising the step of administering to a host in need of such treatment, the host being accustomed to a first time zone and having travelled to a second time zone, a jet lag suppression effective amount of 5-methoxypsoralen.

4,939,168

DISCODERMOLIDE COMPOUNDS, COMPOSITIONS CONTAINING SAME AND METHODS OF PREPARATION AND USE

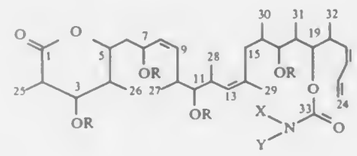
Malika Gunasekera; Sarath P. Gunasekera; Ross E. Longley, all of Vero Beach, Fla., and Neal S. Burres, Highland Park, Ill., assignors to Harbor Branch Oceanographics Institution, Inc., Fort Pierce, Fla.

Filed Aug. 11, 1989, Ser. No. 392,468

Int. Cl.[5] **A61K** *31/365;* **C07D** *309/14*

U.S. Cl. 514—459 **15 Claims**

1. A compound of the formula:



wherein:

R=—H, —A, —CH^2—Q, —COA or —COZ,

A=lower alkyl,

Z=

phenyl, p-tolyl, m-tolyl, p-bromophenyl, p-chlorophenyl, 3-ethyl-4-bromophenyl, 2,4-diethylphenyl, 2-methyl-3-hydroxyphenyl, 2,4-dimethyl-3-chlorophenyl, 2-bromo-3-amino-4-methylphenyl, and 2-iodo-3-ethyl-5-aminophenyl

Q=phenyl, tolyl or xylyl,

X=—H, —A, —Z or —CH_2—Z, and

Y=—H, —A, —Z, —CH_2—Z, —COA, —COZ, and acid-addition salts thereof.

13. A method of modulating and/or regulating immunological functions in humans and warm-blooded animals which comprises administering to said human or animal an effective immunomodulatory amount of one or more compounds of claim 1.

4,939,169

1,4-NAPHTHALENEDIOL AND 1,4-HYDROQUINONE DERIVATIVES

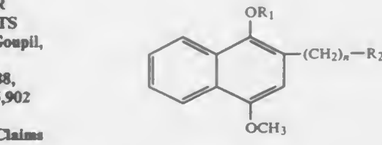
Gordon L. Bundy, and Chiu-Hong Lin, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 65,534, May 18, 1987, Pat. No. 4,851,586, which is a continuation of Ser. No. 778,339, Sep. 20, 1985, abandoned. This application Mar. 13, 1989, Ser. No. 322,436

Int. Cl.[5] **A61K** *31/35, 31/22;* **C07C** *125/07;* **C07D** *309/12*

U.S. Cl. 514—459 **9 Claims**

1. A compound having the formula



I

wherein R_1 is tetrahydro-2H-pyranyl, —C(O)CH_3, the residue of an amino acid having the structure —C(O)—CH-(isopropyl)-NH_2, the N-t-butylcarbonyloxy derivative or the HCl salt thereof, or the HCl salt thereof, or —C(O)—$(CH_2$-$)_2$—COOH or a pharmaceutically acceptable salt thereof; R_2 is $—C{\equiv}C—(CH_2)_m—C{\equiv}C—(CH_2)_p—OR_1$ and n is 3 or 4, m is 1 to 5, inclusive and p is 0 to 3 inclusive.

4,939,170

SUBSTITUTED AMINOPHENYL CARBAMATES

Bernd-Wieland Krüger, Wuppertal; Klaus Sasse, Berg.-Gladbach; Peter Heitkämper, Dormagen; Klaus König, Odenthal; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Albrecht Marbold, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

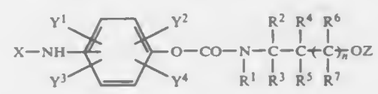
Filed May 20, 1988, Ser. No. 197,009

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1987, 3718522; Feb. 12, 1988, 3804288

Int. Cl.[5] **A01N** *37/44;* **C07C** *175/06*

U.S. Cl. 514—483 **13 Claims**

1. A substituted aminophenyl carbamate of the formula



(I)

in which

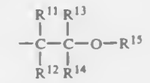
X represents alkoxycarbonyl with 1 to 6 carbon atoms per alkyl moiety or cycloalkylcarbonyl having 3 to 10 carbon atoms per cycloalkyl moiety;

Y^1 to Y^4 are identical or different and represent hydrogen, halogen, nitro, cyano, straight-chain or branched alkyl having 1 to 6 carbon atoms, halogenoalkyl having 1 to 6 carbon atoms in the straight-chain or branched alkyl part and 1 to 9 identical or different halogen atoms, alkoxy or halogenoalkoxy, alkylthio, alkylsulfonyl or halogenoalkylthio in each case having 1 to 6 carbon atoms in the straight-chain or branched alkyl part, and if appropriate, 1 to 9 identical or different halogen atoms;

R^1 to R^7 are identical or different and represent hydrogen, straight-chain or branched alkyl having 1 to 6 carbon atoms, halogenoalkyl having 1 to 6 carbon atoms in the straight-chain or branched alkyl part and 1 to 9 identical or different halogen atoms, or alkoxyalkyl having 1 to 6 carbon atoms in each straight-chain or branched alkyl part;

n represents 0 or 1, and

Z represents straight-chain or branched alkyl or halogenoalkyl each having 1 to 6 carbon atoms and, if appropriate, 1 to 9 identical or different halogen atoms, or the



radical, in which

R^{11} to R^{14} are identical or different and represent hydrogen, straight-chain or branched alkyl having 1 to 6

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carbon atoms, halogenoalkyl having 1 to 6 carbon atoms in the straight-chain or branched alkyl part and 1 to 9 identical or different halogen atoms, or alkoxyalkyl having 1 to 6 carbon atoms in each straight-chain or branched alkyl part, and

R^{15} represents straight-chain or branched alkyl, alkoxyalkyl or halogenoalkyl each having 1 to 6 carbon atoms in each alkyl part and, if appropriate, 1 to 9 identical or different halogen atoms,

with the proviso that at least one of Y^1 to Y^4 is halogen.

4,939,171

SEBOSUPPRESSIVE TOPICAL PREPARATIONS

Hinrich Moeller, Monheim, and Norbert Banduhn, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

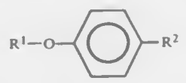
Filed Nov. 10, 1988, Ser. No. 269,941

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1987, 3738406

Int. Cl.[5] **A61K** *31/215, 31/19, 31/045*

U.S. Cl. 514—530 **16 Claims**

1. A preparation suitable for topical application to human skin, comprising a sebosuppressive effective amount of a compound corresponding to the formula:



(1)

in which

(a) R^1 is a monovalent saturated hydrocarbon group containing at least one cyclopentane, cyclohexane, or cycloheptane ring nucleus and a total of about 6–20 carbon atoms; or a mono- or polyunsaturated, linear, branched, or cycloaliphatic group having about 6–20 carbon atoms;

(b) R^2 is selected from the group consisting of about C_1–C_4 hydroxy-alkyl, about C_3 or C_4 hydroxyalkenyl, $—COOR^3$, $—CH_2—COOR^3$, $—CH_2—CH_2—COOR^3$, and $—CH=CH—COOR^3$,

wherein R^3 is an about C_1–C_4 alkyl group, an about C_2–C_4 hydroxyalkyl group, an alkoxyalkyl group with about 1 to 4 carbon atoms in the alkoxy group and about 2 to 4 carbon atoms in the alkyl group, hydrogen, or a salt-forming cation and a topical vehicle therefore.

4,939,172

NOVEL CYCLOPROPANE CARBOXYLATES

Joseph Cadiergue, Bois; Jácques Demassey, Montevrain; Jean-Pierre Demoute, Montreuil-sous-Bois, and Jean Tessier, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

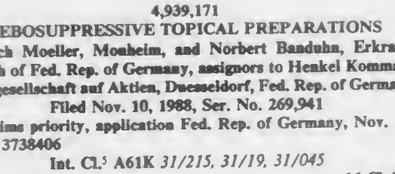
Filed Feb. 8, 1988, Ser. No. 153,157

Claims priority, application France, Feb. 6, 1987, 87-01458

Int. Cl.[5] **C07C** *255/33;* **A01N** *37/34, 53/00*

U.S. Cl. 514—531 **23 Claims**

1. Cyclopropane carboxylic acid esters of all possible stereoisomeric forms and mixtures thereof of the formula



1

wherein X is selected from the group consisting of hydrogen and fluorine, R is selected from the group consisting of alkyl of 1 to 8 carbon atoms and alkenyl of 2 to 8 carbon atoms unsubstituted or substituted with fluorine and, Z is selected from the group consisting of hydrogen, $—CH_3$and $—C\equiv CH$ and Y is selected from the group consisting of hydrogen, —OH, alkyl of 1 to 8 carbon atoms and alkenyl of 2 to 8 carbon atoms either being unsubstituted or substituted with halogen —CN, $—(CH_2)_m—OAlk$ and $—(CH_2)_m—S—Alk$, m is 0, 1, 2, 3 or 4, Alk is alkyl of 1 to 12 carbon atoms.

8. An acaricidal composition comprising an acaricidally effective amount of at least one compound of claim 1 and an inert carrier.

4,939,173

ARYLOXY ALKANOLS AS ANTI-RETROVIRUS AGENTS

Roger A. Parker, and Sai P. Sunkara, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Dec. 14, 1988, Ser. No. 284,146

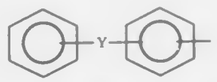
Int. Cl.[5] **A61K** *31/225, 31/22, 31/075*

U.S. Cl. 514—548 **14 Claims**

1. A method of treating a retroviral invention in a patient in need thereof which comprises administering to the patient an anti-retrovirally effective amount of a compound of the formula:

$$Ar—O(CH_2)_nOH$$

wherein n is an integer from 3 to 8 and Ar is a diphenyl moiety of structure



wherein Y is a bond, CH_2 or CH_2O. an ester thereof with a C_{1-4} alkanoic, alkenoic, alkanedioic or alkenedioic acid having from 1 to 4 carbon atoms, or a pharmaceutically acceptable salt thereof.

4,939,174

APPETITE SUPPRESSION WITH DOPAMINE-FATTY ACID CONJUGATES

Victor E. Shashoua, 176 Tappan St., Brookline, Mass. 02146

Filed Feb. 26, 1988, Ser. No. 160,667

Int. Cl.[5] **A61K** *31/165, 31/23*

U.S. Cl. 514—549 **25 Claims**

1. A method for suppressing appetite in a patient comprising, introducing into the patient a prodrug comprising a fatty acid coupled to dopamine.

4,939,175

USE OF N,N-DIMETHYL-1-[1-(4-CHLOROPHENYL)CYCLOBUTYL]-3-METHYLBUTYLAMINE

Kiyoharu Ukai, Shiga; Chiharu Masuda, Moriyama; Satoko Kubo, Otsu; Teruo Mukai, Joyo, and Terutake Nakagawa, Otsu, all of Japan, assignors to The Boots Co. PLC, Nottingham, England

Filed Mar. 29, 1989, Ser. No. 330,012

Claims priority, application Japan, Mar. 31, 1988, 63-80498

Int. Cl.[5] **A61K** *31/135*

U.S. Cl. 514—646 **5 Claims**

1. A method of treating an amnestic syndrome condition or a senile dementia condition in a patient having at least one of said conditions, said method comprising administering to the patient a therapeutically effective amount of N,N-dimethyl-1-[1-(4-chlorophenyl)-cyclobutyl]-3-methylbutylamine or a pharmacologically acceptable acid addition salt thereof.

4,939,176

VIRAL INACTIVATION PROCESS

Richard L. Seng, Guerneville, and John L. Lundblad, El Cerrito, both of Calif., assignors to Miles Inc., Elkhart, Ind.

Filed Dec. 20, 1988, Ser. No. 287,368

Int. Cl.[5] **A61K** *31/045, 35/14, 39/104, 39/395*

U.S. Cl. 514—724 **18 Claims**

1. A method of inactivating a lipid-enveloped virus in a solution of biologically active therapeutic proteins, the method comprising the step of contacting the solution with caprylic acid under conditions sufficient to substantially reduce the infectivity of the virus without adversely affecting the amount and biological activity of the proteins.

4,939,177

USE OF AVAROL FOR THE CONTROL OF AIDS AND ARC

Werner E. G. Müller, Wiesbaden-Biebrich, Fed. Rep. of Germany, assignor to Merz + Co. GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,440, Jan. 17, 1986. This application Jun. 4, 1987, Ser. No. 58,200

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619202

Int. Cl.[5] **A61V** *31/045*

U.S. Cl. 514—729 **2 Claims**

1. A method of treating AIDS/ARC comprising the step of administering an effective anti-AIDS/ARC amount of avarol or 3,4-dihydroavarol to a living animal body in need of said treatment.

4,939,178

USE OF AVAROL FOR THE CONTROL OF ADULT T-CELL LEUKEMIA/LYMPHOMA

Werner E. G. Müller, Wiesbaden-Biebrich, Fed. Rep. of Germany, assignor to Merz + Co. GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,440, Jan. 17, 1986. This application Jun. 4, 1987, Ser. No. 58,199

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619201

Int. Cl.[5] **A61K** *31/045*

U.S. Cl. 514—729 **1 Claim**

1. A method of treating adult T-cell leukemia or lymphoma comprising the step of administering an effective anti-adult T-cell leukemia or lymphoma amount of a compound avarol to a living animal body in need of said treatment.

4,939,179

COSMETIC EMULSIONS WITH HYDROCARBON THICKENING AGENTS

Michael C. Cheney, Fairfield; Dipak K. Ghosh, Monroe; Lorraine Williams, Stamford, and Philip D. Ziegler, Oxford, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jun. 22, 1989, Ser. No. 369,781

Int. Cl.[5] **A61K** *47/00*

U.S. Cl. 514—789 **9 Claims**

1. An aqueous cosmetic emulsion comprising:

i) an isoparaffin;

ii) a C_8–C_{22} alkyl phosphate salt;

wherein the isoparaffin and alkyl phosphate salt are present in a respective weight ratio of from about 40:1 to about 1:1, and said emulsion having a viscosity ranging from 35 to about 90 Brookfield units as measured with a Brookfield Viscometer Model LVT using a #4 spindle rotating at 60 rpm at 25° C.

4,939,180

PROCESS OF PRODUCING A COMPOSITE MEMBRANE

Brian N. Hendy, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, United Kingdom

Division of Ser. No. 24,198, Mar. 10, 1987, Pat. No. 4,866,099. This application Jul. 25, 1989, Ser. No. 384,838

Claims priority, application United Kingdom, Mar. 10, 1986, 8605817

Int. Cl.[5] **C08D** *5/20*

U.S. Cl. 521—27 **17 Claims**

1. A process for producing a composite membrane, which comprises the following steps:

(a) applying to the surface of a porous substrate a coating of a solution of a sulphonated polymer which contains repeating units:

$$(—Ar—Y—)$$

where Y is $—SO_2—$ and/or —CO—; and

Ar is a divalent aromatic radical which may differ from unit to unit in the polymer chain, at least 50% molar of groups Ar containing at least one group $—SO_3M$ where M is hydrogen or a monovalent cation;

(b) treating said coating in situ on the substrate with cations of a polyvalent metal; and

(c) converting the treated coating into a water-insoluble layer on the support.

4,939,181

POLYETHYLENE COMPOSITION, OBJECTS MADE THEREFROM AND PROCESS FOR THE MANUFACTURE OF FOAMED OBJECTS

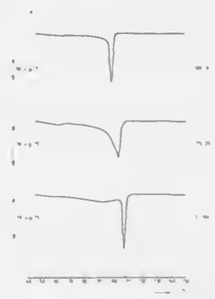
Franciscus J. J. Haselier, Schinnen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Division of Ser. No. 337,874, Apr. 14, 1989. This application Nov. 15, 1989, Ser. No. 436,750

Claims priority, application Netherlands, May 19, 1988, 8801297

Int. Cl.[5] **C08J** *9/10, 9/14*

U.S. Cl. 521—81 **4 Claims**



1. Process for the manufacture of foamed objects by mixing a polyethylene composition with at least one or more foaming agents at increased pressure and temperature and passing the composition via an extruder through an extrusion opening into a zone with a lower pressure and temperature, wherein the polyethylene composition includes 20–98 wt % branched polyethylene (a) with a density of between 915 and 940 kg/m^3 and a melt flow index of between 0.05 and 40 dg/minute, prepared by a high pressure radical process, and 2–80 wt % substantially linear polyethylene (b) with a density of between 850 and 915 kg/m^3, a melt flow index of between 0.05 and 25 dg/minute and a DSC crystallinity at 23° C. of at least 10%, prepared with the aid of a transition metal catalyst, the difference between the highest crystallization temperature of

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branched polyethylene (a) and the highest DSC crystallization temperature of linear polyethylene (b) being at most 10° C. and the mixture having a modulus of elasticity of at most 280 N/mm^2.

4,939,182

MELAMINE-ALKANOLAMINE CONDENSATES AND POLYURETHANES PREPARED THEREFROM

John E. Marugg, Boerhaavelaan; Johan A. Thoen, Dommelstraat, both of Netherlands, and Michael A. P. Gansow, Wadenswil, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 27, 1988, Ser. No. 225,311
Int. Cl.[5] C08L 61/00
U.S. Cl. 521—136 22 Claims

I. A condensate which is the reaction product of reactants consisting essentially of an amino-substituted s-triazine, about 0.9 to about 3.5 moles of formaldehyde per mole of amino-substituted s-triazine and about 0.75 to about 1.5 moles of at least one alkanolamine per mole of formaldehyde.

4,939,183

ELASTOMERIC MEMBRANE AND ITS METHOD OF MANUFACTURE

Iamat A. Abu-Isa, Rochester; Elio Eusebi, Troy; Craig B. Jaynes, Bloomfield Hills; Susan C. Moran, Ann Arbor, and Michael A. Roy, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 271,461, Nov. 14, 1988, which is a division of Ser. No. 119,965, Nov. 13, 1987, Pat. No. 4,842,257. This application Jan. 9, 1990, Ser. No. 462,192
Int. Cl.[5] B29D 7/01
U.S. Cl. 521—138 2 Claims



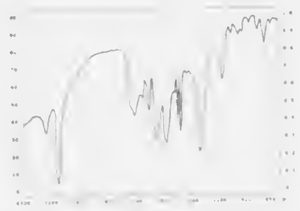
1. An elastomeric membrane for use in a vehicle seat assembly comprising an extruded sheet made from a block copolymer consisting of polytetramethylene terephthalate polyester and polytetramethylene ether, said extruded sheet having the molecules oriented therein and annealed to define a greater modulus in the direction in which the membrane is to be tensioned when suspended in a seat assembly.

4,939,184

POLYURETHANE FOAM

Joseph P. Kennedy, Akron, Ohio, assignor to University of Akron, Akron, Ohio

Filed Mar. 7, 1989, Ser. No. 320,119
Int. Cl.[5] C08G 18/04, 18/14
U.S. Cl. 521—170 10 Claims



1. A polyurethane foam having a polyisobutylene skeleton obtained by reacting a polyisobutylene having terminal hydroxy groups as a polyhydroxy compound with polyisocyanate in the presence of a blowing agent.

4,939,185

ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Arnold Factor, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 136,604, Dec. 22, 1987, abandoned, which is a division of Ser. No. 769,277, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1984, abandoned. This application Aug. 18, 1989, Ser. No. 396,727
Int. Cl.[5] C08K 5/45, 5/36
U.S. Cl. 523—136 11 Claims

1. A composition comprising an aromatic carbonate polymer in admixture with an effective amount of a stabilizing compound effective to inhibit yellowing upon exposure to sterilizing radiation, said compound is a cyclic thioether, said cyclic thioether being a dithiane.

9. A composition consisting essentially of an aromatic carbonate polymer in admixture with an effective amount of a stabilizing compound effective to inhibit yellowing upon exposure to sterilizing radiation, said compound is dilaurylthiodipropionate.

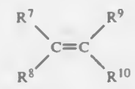
4,939,186

ENHANCING COLOR STABILITY TO STERILIZING RADIATION OF POLYMER COMPOSITIONS

Linda H. Nelson, Evansville, Ind.; Roger W. Avakian, Brasschaat, Belgium, and Factor Arnold, Scotia, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 136,603, Dec. 22, 1987, abandoned, which is a division of Ser. No. 769,277, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 579,103, Feb. 10, 1989, abandoned. This application Aug. 30, 1989, Ser. No. 401,533
Int. Cl.[5] C08K 5/13, 5/06, 5/01
U.S. Cl. 523—136 16 Claims

1. A composition comprising an aromatic carbonate polymer in admixture with an effective amount of a stabilizing compound effective to inhibit yellowing upon exposure to sterilizing radiation, said stabilizing compound being an alkene represented by the general formula



wherein R^{7-10} are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, aralkyl, alkaryl, alkoxy and aryloxy.

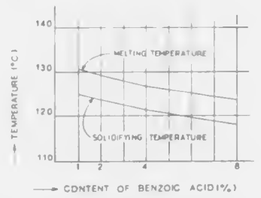
10. A composition comprising an aromatic carbonate polymer is admixture with an effective amount of a stabilizing alkene (>C=C<) compound effective to inhibit yellowing upon exposure to sterilizing radiation, said alkene being allylphenol.

4,939,187

PATTERN MATERIAL FOR MAKING FOUNDRY PATTERNS FOR USE IN INVESTMENT CASTING PROCESS

Tadao Fujita, 17-C-311, Yamatecho-3-chome, Suita-shi, Osaka-fu, Japan

Filed Nov. 22, 1988, Ser. No. 274,826
Claims priority, application Japan, Aug. 22, 1988, 63-209291
Int. Cl.[5] B22C 1/22
U.S. Cl. 523—139 2 Claims



1. A pattern material for making foundary patterns for use in investment casting process, said pattern material comprising urea and polyvinyl alcohol and a substance capable of forming an eutectic mixture with polyvinyl alcohol when urea is being melted, said eutectic mixture reducing the melting temperature of urea, the substance being benzoic acid, benzene sulfinic acid, benzene sulfonic chloride or barium salt, sulfonic acid, benzoyl chloride, glycine, naphtalene, or glutaric acid.

4,939,188

LITHIUM-CONTAINING RESOLE COMPOSITION FOR MAKING A SHAPED REFRACTORY ARTICLE AND OTHER HARDENED ARTICLES

Arthur H. Gerber, Louisville, Ky., assignor to Borden, Inc., Ohio

Filed Dec. 22, 1988, Ser. No. 288,090
Int. Cl.[5] B22C 11/22; C08G 8/08; C08L 61/10; C08K 3/34
U.S. Cl. 523—146 34 Claims

1. A curable binder composition comprising

(a) a phenol formaldehyde resole resin;

(b) an ester-functional curing agent in an amount sufficient to effect the ambient temperature cure of the resole resin; and,

(c) a lithium ion-generating alkalizing agent present in an amount sufficient to produce in the composition a mole ratio of lithium:phenol of from about 0.1:1 to about 1:1.

25. A shaped article for use in making a refractory article comprising aggregate material bonded together by a cured binder composition, said binder composition in its uncured state comprising a phenol formaldehyde resole resin, an ester-functional curing agent, and a lithium ion-generating alkalizing agent selected from the group consisting of lithium oxide, lithium hydroxide, lithium methoxide, lithium ethoxide, monolithium salt of ethylene glycol, and mixtures thereof, wherein the lithium ion-generating alkalizing agent is present in an amount sufficient to produce in the binder composition a mole ratio of lithium:phenol of from about 0.1:1 to about 1:1, and the ester-functional curing agent is present in an amount sufficient to cure at ambient temperature the resole resin and wherein the aggregate material is selected from the group consisting of magnesia, alumina, silica, zirconia, zircon sand, olivine sand, silicon carbide, silicon nitride, boron nitride, bauxite, corundum, pumice, perlite, vermiculite, limestone, quartz, sand, gravel, crushed rock, broken brick, air cooled blast furnace slag, and mixtures thereof.

4,939,189

WATER-BORNE COATING COMPOSITION

Kenshiro Tobinaga, Kawanishi; Hiroyuki Sakamoto, Nishinomiya; Hiroshi Tsushima, Takatsuki, and Yasuyuki Tsuchiya, Hirakata, al of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 11, 1989, Ser. No. 378,290
Claims priority, application Japan, Jul. 11, 1988, 63-172454
Int. Cl.[5] C08K 9/00; C08J 3/20
U.S. Cl. 523—205 4 Claims

1. A water-borne coating composition comprising a pigment and a water dispersible or water soluble resin, wherein said pigment is preliminarily ground with crosslinked resin particles having ionic groups on the surface.

4,939,190

AQUEOUS EMULSION-TYPE PRESSURE SENSITIVE ADHESIVES

Reizaburo Tomioka, Chiba, and Yasuhiro Shigematsu, Ichihara, both of Japan, assignors to Dainippon Ink And Chemicals, Inc., Tokyo, Japan

Filed May 24, 1988, Ser. No. 197,963
Claims priority, application Japan, May 25, 1987, 62-125843; Jun. 20, 1987, 62-152411
Int. Cl.[5] C08K 9/00
U.S. Cl. 523—206 19 Claims

1. An aqueous emulsion pressure sensitive adhesive prepared by the process comprising:

(i) a first step of emulsion polymerizing a first ethylenically unsaturated monomer comprising at least one monomer selected from the group consisting of styrene, alpha-methylstyrene, acrylonitrile, methyl methacrylate and vinyltoluene in the presence of an emulsion comprising at least one tackifier resin selected from the group consisting of a rosin ester, a petroleum resin and a terpene resin to form an aqueous emulsion containing particles of a two layered structure having a core layer of said at least one tackifier resin and a layer of a polymer A_1 formed from said first ethylenically unsaturated monomer, and

(ii) a second step of using said aqueous emulsion containing said particles of said two-layered structure as a seed and emulsion polymerizing a second ethylenically unsaturated monomer comprising at least one alkyl (meth)acrylate, said alkyl group having 4 or more carbon atoms, to form an aqueous emulsion containing particles of a multilayered structure having a layer of a polymer A_2 formed from said second ethylenically unsaturated monomer.

4,939,191

HIGH STRENGTH CURED CEMENT ARTICLE AND PROCESS FOR MANUFACTURING THE SAME

Nobuhiro Katsuka; Hideaki Igarashi, and Masanori Ohshima, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Feb. 17, 1988, Ser. No. 156,710
Claims priority, application Japan, Feb. 20, 1987, 62-35735
Int. Cl.[5] C04B 24/24, 41/62
U.S. Cl. 524—5 19 Claims

1. A cured cement article which contains in its voids a reaction product of a water-soluble organic polymer with an isocyanate compound which is impregnated into the voids of the cured cement by applying the isocyanate compound onto the surface of the cured cement article, said water-soluble organic polymer and said isocyanate compound being employed in amounts of 0.1 to 20 weight % and 0.1 to 32 weight %, respectively, per the amount of the cement, and said isocyanate compound being employed in an amount of 10 to 300 weight %, per the amount of the polymer.

4,939,192

BUILDING COMPOSITION CONTAINING 3-ALKOXY-2-HYDROXYPROPYLHYDROXYETHYL CELLULOSE

Harald E. t'Sas, The Hague, Netherlands, assignor to Aqualon Company, Wilmington, Del.

Division of Ser. No. 63,568, Jun. 17, 1987, Pat. No. 4,845,207.
This application Apr. 17, 1989, Ser. No. 339,545
Int. Cl.[5] C08B 11/08, 11/193
U.S. Cl. 524—44 15 Claims

1. A building composition comprising, based on the total weight of the composition, from about 2 to about 99 wt. % of at least one hydraulic or synthetic binder, up to about 95 wt. % of at least one filler, and from about 0.05 to about 5 wt. % of at least one nonionic, water-soluble 3-alkoxy-2-hydroxypropylhydroxyethylcellulose comprising about 0.05 to about 50%, based on the weight of the substituted hydroxyethyl cellulose, of at least one 3-alkoxy-2-hydroxypropyl group wherein the alkyl moiety is a straight or branched chain alkyl group having 1 to 10 carbon atoms.

4,939,193

USE OF THE ALPHA-MODIFICATION OF CIS-NAPHTHOYLENEBIS(BENZIMIDAZOLE) FOR PIGMENTING POLYOLEFINS

Erwin Dietz, Frankfurt am Main, and Siegfried Schiessler, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 6, 1988, Ser. No. 254,363
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734385
Int. Cl.[5] C08J 3/22; C08K 5/34; C08L 23/02
U.S. Cl. 524—90 9 Claims

1. A pigmented polyalkene mass comprising a single polyalkene or a mixture of at least two polyalkenes from the group consisting of polyethylene, polypropylene, a copolymer of ethene and propene, and a copolymer of ethene or propene or of ethene and propene having, respectively, a minor content of at least one further polymerizable alkene, wherein the polyalkene mass has been mass-colored by treatment in a melt with a pre-mixed pigmented formulation consisting essentially of:

a pigment consisting essentially of an α-modification of cis-naphthoylene-bis-benzimidazole and, if a residual amount of the corresponding trans-isomer is present, up to 20% by weight of the corresponding trans-isomer, mixed with

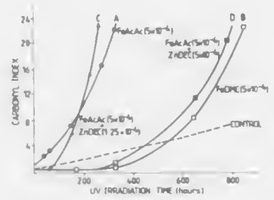
a second polyalkene and a low-molecular weight polyalkene wax.

4,939,194

CONTROLLABLY AND SWIFTLY DEGRADABLE POLYMER COMPOSITIONS AND FILMS AND OTHER PRODUCTS MADE THEREFROM

Gerald Scott, Lichfield, Great Britain, and Dan Gilead, Kibbutz Hazorea, Israel, assignors to Plastopil Hazorea, Kibbutz Hazorea, Israel

Continuation of Ser. No. 195,445, May 16, 1988, abandoned, which is a continuation of Ser. No. 120, Jan. 2, 1987, abandoned.
This application Aug. 4, 1989, Ser. No. 391,703
Claims priority, application United Kingdom, Feb. 27, 1986, 8604849
Int. Cl.[5] C08K 5/51
U.S. Cl. 524—134 12 Claims



1. Polymer compositions comprising a vinyl polymer and a combination of at least two metal complexes wherein the complexing agent of the first complex is attached to the metal through oxygen and the metal is a transition metal, and the complexing agent of the second complex is attached to the metal through sulphur and the metal is a transition metal or a metal of group II or IV of the periodic table of the elements, wherein the first metal complex is an activator for photodegradation and for thermal oxidation of the vinyl polymer and the second metal complex is a thermal stabilizer of the polymer, and wherein the molar ratio of the second metal complex to the first metal complex is 0.5 or less.

4,939,195

SELF-EXTINGUISHING POLYMER COMPOSITION

Iwao Ishino; Nobuhiro Usami, and Yayoi Ishikawa, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

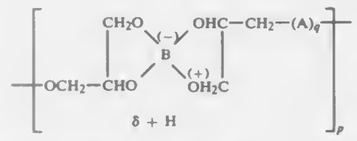
Filed Jul. 17, 1989, Ser. No. 380,519
Claims priority, application Japan, Jul. 25, 1988, 63-185187
Int. Cl.[5] C08K 5/55
U.S. Cl. 524—185 4 Claims

1. A self-extinguishing polymer composition characterized by consisting of 70 to 20% by weight of the component (A) described below, 30 to 80% by weight of the component (B) described below and the component (C) described below in an amount of 0.01 to 10 parts by weight relative to 100 parts by weight of the total amount of said components (A) and (B).

(A): one or more thermoplastic resins or elastomers derived from an α-olefin polymer

(B): a hydroxide of aluminum and/or magnesium

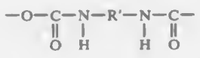
(C): a polymeric charge-transfer type complex which is a reaction product having a ratio of boron atoms to basic nitrogen atoms of 1:1 and is produced by reaction between at least one tertiary amine having at least one hydroxyl group and 5 to 82 carbon atoms in total and at least one semi-polar organic boron polymer compound expressed by the following Formula (I):



(I)

[wherein q denotes 0 or 1 and, when q=1, A denotes a —(X-)$_l$—(Y)$_m$—(Z)$_n$—group and p is 10 to 1000, in Formula (I), X and Z each denoting an oxygen-containing hydrocarbon group having one terminal ether residue and 100 or less carbon atoms in total, Y denoting a

group (wherein R represents a hydrocarbon group having 1 to 82 carbon atoms) or a



group (wherein R′ represents a hydrocarbon group having 2 to 13 carbon atoms), l, m and n each denoting 0 or 1].

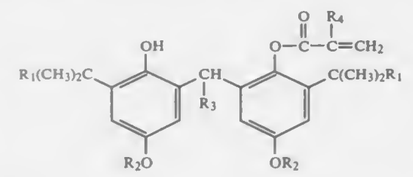
4,939,196

HYDROQUINONE TYPE COMPOUND AND ITS USE AS STABILIZER FOR SYNTHETIC RESIN

Manji Sasaki, Ibaraki; Shinichi Yachigo, Toyonaka; Kikumitsu Inoue, Nishinomiya; Shinya Tanaka, Takarazuka; Fumitoshi Kojima, Minoo, and Takeshi Takata, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 30, 1988, Ser. No. 291,965
Claims priority, application Japan, Jan. 13, 1988, 63-6371
Int. Cl.[5] C07C 65/28; C08K 5/10
U.S. Cl. 524—291 20 Claims

1. A compound represented by the formula of



wherein

R_1 represents an alkyl having 1 to 5 carbon atoms;

R_2 represents an alkyl having 1 to 18 carbon atoms;

R_3 represents hydrogen or an alkyl having 1 to 11 carbon atoms; and

R_4 represents hydrogen or methyl.

14. A stabilizer composition for a synthetic resin comprising a stabilizingly effective amount of a compound of claim 1 and at least one member selected from the group consisting of an inert carrier, ultraviolet light absorbers, light stabilizers, antioxidants, metal deactivators, metallic soaps, nucleating agents, lubricants, antistatic agents, fire retardants, pigments and fillers.

4,939,197

METHOD OF MODIFYING THERMAL PROPERTIES OF POLYCARBOSILANE

Sophia R. Su, Weston, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 3, 1988, Ser. No. 252,320
Int. Cl.[5] C08K 5/09
U.S. Cl. 524—300 9 Claims

1. A composition for injection molding a ceramic powder to make ceramic shapes comprising a ceramic powder, said ceramic powder comprising approximately 92 weight percent silicon nitride, approximately 6 weight percent yttria and approximately 2 weight percent alumina, and a binder system, said binder system comprising a distilled thermosetting polycarbosilane containing from about 0.4 to about 0.7 weight percent of a cross-linking inhibitor selected from the group consisting of p-benzoquinone, benzophenone, and mixtures thereof, and a surfactant, said surfactant comprising oleic acid.

4,939,198

SOLUTION FEED, SOLUTION POLYMERIZATION PROCESS FOR PRODUCTION OF COPOLYMERS OF MALEIC ANHYDRIDE AND AN ALKYLVINYL ETHER HAVING LOW VISCOSITIES AND HIGH SOLIDS CONTENT

Mohammed Tazi, Wayne, and Nikhil Kundel, Piscataway, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Apr. 7, 1989, Ser. No. 334,404
Int. Cl.[5] C08F 2/06, 222/16
U.S. Cl. 524—379 13 Claims

1. A solution feed, solution polymerization process for making half-ester copolymers of maleic anhydride and a C_1–C_5 alkyl vinyl ether having a predetermined low viscosity and high solids content which comprises:

(a) precharging a reactor with a molar excess of an alkyl vinyl ether,

(b) feeding maleic anhydride as a solution in acetone solvent into said precharged reactor,

(c) solution copolymerizing said reactants at a temperature of about 55°–85° C. in the presence of a free radical initiator to form a substantially quantitative and clear solution of the copolymer in acetone, and

(d) half-esterifying said copolymer with an alkanol with removal of acetone to form a solution of the half-ester copolymer in the alkanol having a specific viscosity of about 60 centistokes or less and a solids content of at least 35% by weight.

4,939,199

NOVEL POLY(ARYL ETHERS) USEFUL FOR MOLDING INTO A CIRCUIT BOARD SUBSTRATE

Robert J. Cotter, Bernardsville; Stephen B. Rimsa, Lebanon, and Robert Barclay, Jr., Trenton, all of N.J., assignors to Amoco Corporation, Chicago, Ill.

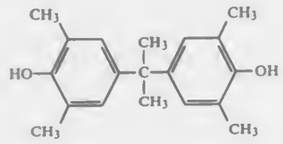
Continuation-in-part of Ser. No. 209,014, Jun. 20, 1988, Pat. No. 4,814,419, which is a division of Ser. No. 135,741, Dec. 21, 1987, Pat. No. 4,816,505. This application Dec. 19, 1988, Ser. No. 286,519
The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.
Int. Cl.[5] C08G 15/20; C08K 3/04, 3/34, 7/02
U.S. Cl. 524—425 23 Claims

1. A circuit board substrate molded from a composition comprising a poly(aryl ether) containing recurring units of the formula

—O—E—O—E′—

wherein E is selected from the residuum of

VOL
1116
ISS
1
JL
3
1990
UMI



(I)

Wherein (I) contains not more than 50 mole percent of or more of 4,4'-biphenol, bisphenol-A, hydroquinone, 4,4'-dihydroxydiphenyl ether, 4,4'-dihydroxydiphenyl methane, 4,4'-dihydroxybenzophenone, 3,3'-,5,5'-tetramethyl-4,4'-dihydroxydiphenyl methane, 1,4-bis(p-hydroxybenzoyl)benzene, 1,3-bis(p-hydroxybenxoyl)benzene, or mixtures thereof; and wherein E' is the residuum of 4,4'-dichlorodiphenyl sulfone; and wherein the poly(aryl ether) has a reduced viscosity of at least 0.3 dl/g, as measured in N-methylpyrrolidone, at a concentration of 1.0 g/100 ml at 25° C.

4,939,200

FAST CURING BINDER FOR CELLULOSE

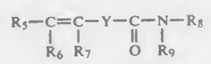
Dennis P. Stack, Santa Ana, and Paul J. Steinwand, Placentia, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jan. 28, 1988, Ser. No. 149,396

Int. Cl.[5] C08L *33/26, 33/24, 33/02;* **C09J** *133/24*

U.S. Cl. 524—501 **16 Claims**

1. A fast curing zero-formaldehyde binder for nonwoven cellulosic materials, said binder comprising a solution copolymer formed by the copolymerization in aqueous solution of a mixture comprising a first water-soluble comonomer selected from the group consisting of tetrahydrophthalic acid, the cis- and trans- forms of butenedioic acid, methylenesuccinic acid, the diacids resulting when one or more of the hydrogen atoms on the carbon chains of butenedioic acid or methylenesuccinic acid is replaced with ethyl or methyl groups, the C_1 to C_5 semi-esters of the cis-and trans- forms of butenedioic acid and methylenesuccinic acid, and mixtures thereof; and a second water-soluble comonomer comprised of one or more amides of olefinically unsaturated carboxylic acids, said amides having the general formula:



wherein R_5, R_6, and R_7 are independently selected from hydrogen halogen, nitro, amino, and organic radicals; R_8 and R_9 are selected from hydrogen and organic radicals; and Y is an organic radical or a covalent bond; with said solution copolymer being admixed in an amount between about 2 percent and about 20 percent, by weight, with a non-formaldehyde emitting latex carrier to produce said binder, said latex carrier being formulated with between about 0.5 percent and about 15 percent, by weight, of a substantially non-formaldehyde emitting reactive monomer selected from the group consisting of methylacryloamido glycolate—methyl ether and isobutoxymethyl acrylamide.

4,939,201

GLASS FIBER REINFORCED THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYESTERS AND GRAFT POLYMERS

Erhard Seiler; Karl Rappmich, both of Ludwigshafen; Manfred Knoll, Wachenheim; Walter Heckmann, Weinheim; Dietrich Lausberg, Ludwigshafen, and Rainer Bueschl, Roedersheim-Gronau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 255,028

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733829; Oct. 7, 1987, 3733824

Int. Cl.[5] C08K *7/14*

U.S. Cl. 524—504 **3 Claims**

1. A thermoplastic molding composition containing as essential components

(A) from 45 to 90% by weight of a mixture of

(a_1) from 50 to 80% by weight of a polyester

(a_2) from 10 to 25% by weight of a graft polymer built up from

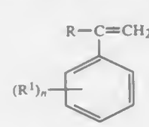
(a_{21}) from 50 to 90% by weight of a grafting base comprising an elastomeric polymer based on

(a_{211}) from 95 to 99.9% by weight of a C_2–C_{10}-alkyl acrylate and

(a_{212}) from 0.1 to 5% by weight of a polyfunctional monomer having at least two olefinic, non-conjugated double bonds

(a22) from 0.1 to 50% by weight of a graft surface comprising

(a221) from 50 to 90% by weight of styrene or substituted styrene of the general formula



(I)

where R is alkyl of from 1 to 8 carbon atoms, hydrogen or halogen, R^1 is alkyl of from 1 to 8 carbon atoms or halogen, and n is 0, 1, 2 or 3, or a mixture thereof, and

(a_{222}) from 10 to 49% by weight of acrylonitrile or metahcrylonitrile or a mixture thereof, and

(a_3) from 10 to 25% by weight of a copolymer of

(a31) from 50 to 90% by weight of styrene or substituted styrene of the general formula I or mixtures thereof and

(a32) from 10 to 49% by weight of acrylonitrile or methacrylonitrile or a mixture thereof,

(B) from 1 to 20% by weight of a polymeric component having carboxyl, carboxyl derivative, hydroxyl or epoxy groups and

(C) from 5 to 50% by weight of glass fiber.

4,939,202

BARRIER GUARD MOISTURE-PROOF ADHESIVE

Albert Maletsky, Franklin Lakes; Denis P. Nolan, Piscataway, and Betty Jean Polito, Hawthorne, all of N.J., assignors to The International Group, Inc., Lyndhurst, N.J.

Filed Mar. 9, 1988, Ser. No. 165,980

Int. Cl.[5] C08L *23/12*

U.S. Cl. 524—528 **8 Claims**

1. An adhesive moisture-proof coating composition which comprises:

(a) between about 40 wt. % and about 95 wt. % of an amorphous polymer containing at least 70% propylene monomer;

(b) between about 5 wt. % and about 40 wt. % of a hydrocarbon resinous mixture of C_4 to C_{10} hydrocarbons derived from the polymerization and hydrogenation of a petroleum feed stock; and

(c) between about 8 wt. % and about 50 wt % of a crystalline polymer containing at least 70% propylene monomer.

4,939,203

GEL FOR RETARDING WATER FLOW

Matthew L. Marrocco, Santa Ana, Calif., assignor to Cities Service Oil and Gas Corporation, Tulsa, Okla.

Continuation of Ser. No. 27,723, Mar. 19, 1987, abandoned, which is a division of Ser. No. 693,680, Jan. 22, 1985, Pat. No. 4,664,194, which is a continuation-in-part of Ser. No. 514,557, Jul. 18, 1982, Pat. No. 4,498,540. This application Aug. 1, 1988, Ser. No. 227,089

Int. Cl.[5] C08L *29/04*

U.S. Cl. 524—557 **45 Claims**

1. A gel formed by reacting

i. a first substance selected from the group consisting of polyvinyl alcohols, polyvinyl alcohol copolymers, and mixtures thereof wherein the amount of said first substance is from about 0.05 to about 5% of the weight of said gel,

ii. an effective amount of a second substance comprising an aldehyde operable for forming a gel in the presence of water with said first substance by effecting a crosslinking reaction with said first substance and the formation of acetal crosslinkages, wherein the amount of total aldehyde used in forming said gel is from about 0.005 to about 1.5% of the weight of said gel, and

iii. an effective amount of water operable for enabling a gel to be formed from said first substance, said second substance and said water, wherein said amount of said water is at least about 95% of the weight of said gel.

4,939,204

PROCESS FOR PREPARING STATIC DISSIPATIVE LINEAR SEGMENTED POLYURETHANES

Elizabeth A. Efford, Pittsburg, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 95,379, Sep. 10, 1987, abandoned, which is a continuation of Ser. No. 938,222, Dec. 5, 1986, abandoned. This application Nov. 2, 1988, Ser. No. 266,178

Int. Cl.[5] C08G *18/14*

U.S. Cl. 524—701 **16 Claims**

1. In a process for preparing an static dissipative phase-segregated polyurethane polymer wherein a polyfunctional polyether containing repeating oxyethylene units and a chain extender are reacted with an organic polyisocyanate in the presence of about 500 to 10,000 parts per million metal tetraorganoboron or fluorinated alkyl sulfonate salt, based on the weight of the polyurethane, the improvement comprising dissolving said tetraorganoboron or fluorinated alkyl sulfonate salt in all or a portion of said chain extender prior to contacting said chain extender with said polyfunctional polyether and said polyisocyanate.

4,939,205

THERMOPLASTIC MOLDING COMPOSITIONS CONTAINING POLYORGANOSILOXANE/POLYVINYL-BASED GRAFT POLYMER MODIFIERS

James L. Derudder, Mt. Vernon, Ind.; Frank J. Traver, Troy, N.Y., and I-Chung W. Wang, Williamstown, Mass., assignors to General Electric Company, Parkersburg, W. Va.

Filed Nov. 14, 1988, Ser. No. 271,223

Int. Cl.[5] C08L *51/08*

U.S. Cl. 525—63 **53 Claims**

1. A composition comprising a polycarbonate resin (A); a mixture (A-1) comprising (i) a polycarbonate resin and (ii) a saturated polyester resin; a mixture (A-2) comprising (i) a polycarbonate resin and (iii) a poly(etherester) elastomer, a poly(etherimide ester) elastomer or a mixture thereof; a mixture (A-3) comprising (i) a polycarbonate resin, (ii) a saturated polyester resin and (iii) a poly(etherester) elastomer, a poly(etherimide ester) elastomer or a mixture thereof; a mixture (A-4) comprising (ii) a saturated polyester resin and (iv) a polyphenylene ether resin; a mixture (A-5) comprising (i) a polycarbonate resin, (ii) a saturated polyester resin and (iv) a polyphenylene ether resin; or a mixture (A-6) of any of the foregoing; and

an effective modifying amount of a multi-stage polyorganosiloxane/polyvinyl-based graft polymer composition (b) comprising

(a) as a first stage, a substrate selected from

(i) a polymeric co-homopolymerized substrate comprised of, in combination, an organo-siloxane polymer and at least one vinyl-based polymer;

(ii) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and units which are derived from a cross-linking agent or agents;

(iii) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and units which serves as a graft-linking agent or agents;

(iv) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, units which are derived from a cross-linking agent or agents and units from the same or different agent or agents which serve as a graft-linking agent or agents; or

(v) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and a mixture of any of units which are derived from a cross-linking agent or agents, units which serve as a graft-linking agent or agents, or units derived from a cross-linking agent or agents and units from the same or different agent or agents which serve as a graft-linking agent or agents; and

(b) at least one subsequent stage or stages graft polymerized in the presence of any previous stage and which is comprised of a vinyl-based polymer.

4,939,206

FLAME RETARDANT POLYORGANOSILOXANE-BASED GRAFT POLYMERS

I-Chung W. Wang, Williamstown, Mass., assignor to General Electric Company, Parkersburg, W. Va.

Filed Nov. 14, 1988, Ser. No. 271,230

Int. Cl.[5] C08L *51/08*

U.S. Cl. 525—63 **44 Claims**

1. A flame retardant multi-stage polyorganosiloxane-based qraft polymer composition comprising:

(a) as a first stage, a substrate selected from

(i) an organosiloxane polymer with units derived from a cross-linking agent or agents, and optionally units which serve as a graft linking agent or agents;

(ii) a polymeric co-homopolymerized substrate comprised of, in combination, an organo-siloxane polymer and at least one vinyl-based polymer;

(iii) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and units which are derived from a cross-linking agent or agents;

(iv) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and units which serve as a graft-linking agent or agents;

(v) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, units which are derived from a cross-linking agent or agents and units from the same or different agent or agents which serve as a graft-linking agent or agents;

(vi) a polymeric co-homopolymerized substrate comprised of, in combination, an organosiloxane polymer, at least one vinyl-based polymer, and a mixture of any of units which are derived from a cross-linking agent or

agents, units which serve as a graft-linking agent or agents, or units derived from a cross-linking agent or agents and units from the same or different agent or agents which serve as a graft-linking agent or agents; or (vii) a mixture of (i), and at least one of (ii), (iii), (iv), (v) or (vi); and a functionally effective amount of

(b) at least one subsequent stage or stages graft polymerized in the pr previous stages, the outermost stage being comprised of a vinyl-based polymer, or a cross-linked vinyl-based polymer, capable of exhibiting flame retardant properties.

4,939,207

BLENDS BASED ON VINYL-AROMATIC POLYMERS ENDOWED WITH HIGH TENACITY AND CHEMICAL RESISTANCE

Gian C. Fasulo, S. Silvestro da Curtatone; Aanibale Vezzoli, Carugo, and Giorgio Vittadini, Milan, all of Italy, assignors to Montedipe S.p.A., Milan, Italy

Filed May 13, 1988, Ser. No. 193,587
Claims priority, application Italy, May 14, 1987, 20510 A/87
Int. Cl.[5] C08L *9/06, 47/00, 53/02*
U.S. Cl. 525—89 **13 Claims**

1. A blend based on aromatic vinyl polymers having high tenacity and good chemical resistance, comprising:

(a) a vinyl aromatic polymer containing, as an elastomer component, a small amount of a vinyl aromatic monomer-conjugated linear block copolymer;

(b) a polyolefine; and

(c) a vinyl aromatic monomer-conjugated diene star block copolymer, as a compatibilizing agent between the polyolefine and the vinyl aromatic polymer.

4,939,208

TRANSPARENT BLOCK COPOLYMERS HAVING TWO MONOVINYL-SUBSTITUTED AROMATIC BLOCKS OF DIFFERENT MOLECULAR WEIGHT

Emmanuel Lanza, Waterloo; Jean M. M. G. Naveau, Nivelles, and Michel Daumerie, Ghlin, all of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Dec. 3, 1987, Ser. No. 128,360
Claims priority, application Luxembourg, Dec. 4, 1986, 86698
Int. Cl.[5] C08F *297/04;* **C08L** *53/02*
U.S. Cl. 525—93 **23 Claims**

1. A process for producing transparent linear block copolymers referred to as S_1-B_1-B/S-S_2 which comprises forming:

(a) A monovinyl-substituted aromatic homopolymer block with a weight average molecular weight between about 5,000 and 50,000, referred to as S_1;

(b) A conjugated diene homopolymer block with a weight average molecular weight between 3,000 and 30,000, referred to as B_1 and linked to segment S_1;

(c) A conjugated diene/monovinyl-substituted aromatic random copolymer block with a weight average molecular weight between about 10,000 and 100,000, referred to as B/S and linked to segment B_1; and

(d) A monovinyl-substituted aromatic homopolymer block with a weight average molecular weight between about 10,000 and 150,000, referred to as S_2 and linked to segment B/S, wherein the molecular weight of the S_2 segment is significantly greater than the molecular weight of S_1.

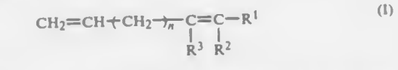
4,939,209

UNSATURATED COPOLYMER RESIN COMPOSITE

Sadao Kitagawa; Masaki Saito, both of Ibaraki; Shiroh Gotoh, and Shin-ichi Yamauchi, both of Mie, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 120,837, Nov. 16, 1987, abandoned.
This application Nov. 1, 1989, Ser. No. 430,970
Claims priority, application Japan, Nov. 18, 1986, 61-274339
Int. Cl.[5] C09F *255/06*
U.S. Cl. 525—285 **13 Claims**

1. An unsaturated copolymer resin composite prepared by subjecting 100 parts by weight of an unsaturated copolymer resin to conditions of radical graft polymerization together with more than 0 parts by weight but up to 300 parts by weight of a monomer capable of radical polymerization, said unsaturated copolymer resin being a copolymer composed of at least α-olefin selected from the group consisting of ethylene, propylene, 1-butene, 3-methyl-I-butene and 4-methyl-1-pentene, and at least one aliphatic nonconjugated diene represented by the following general formula (I), the content of said aliphatic nonconjugated diene being 0.05 to 50 mol %, and said unsatured copolymer resin having an elastic modules of 500 to 80,000 kg/cm^2;



(I)

wherein n is an integer of 1 to 10; and R^1, R^2 and R^3 are each a hydrogen atom or an alkyl group having 1–8 carbon atoms, wherein said monomer capable of radical polymerization is at least one member selected from the group consisting of styrene, α-methylstyrene, vinyl chloride, acrylonitrile, vinyl acetate, esters of acrylic acid, methacrylic acid, maleic acid or fumaric acid wherein the alcohol component contains an alkyl moiety having 1 to 8 carbon atoms, glycidyl acrylate, glycidyl methacrylate, an alkyl (C_{1-8}) glycidyl maleate, an alkyl (C_{1-8}) glycidyl fumarate, and maleic anhydride.

4,939,210

PROCESS FOR PRODUCING PARABANIC ACID RING-CONTAINING POLYMER

Yasuo Imashiro, and Satoshi Amano, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 311,749
Claims priority, application Japan, Mar. 19, 1988, 63-35134
Int. Cl.[5] C08G *18/02;* **C08K** *3/18, 5/09*
U.S. Cl. 525—452 **12 Claims**

1. A process for producing a parabanic acid ring-containing polymer, which comprises reacting a polycarbodiimide polymer with oxalyl chloride and then treating the reaction product with water.

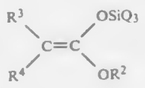
4,939,211

PHOSPHONATE-CAPPED POLYMERS

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 1, 1989, Ser. No. 317,507
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—287 **17 Claims**

1. A process for the conversion of silyl ketene acetal (SKA) terminated living polymers to phosphonate terminated polymers by contacting a silyl ketene acetal terminated living polymer of the formula



wherein:

each Q, independently, is selected from $—R^1$, $—OR^1$, $—N(R^1)_2$ and $—SR^1$;

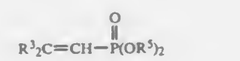
each R^1, independently, is a hydrocarbyl or substituted hydrocarbyl radical;

R^3 is H, hydrocarbyl or substituted hydrocarbyl;

R^2 is hydrocarbyl or substituted hydrocarbyl;

R^4 is a polymeric radical;

with a vinyl phosphonate of the formula



wherein:

R^3 is defined as above;

R^5 is R^1 or SiR^1_3;

in the presence of a catalyst which is a source of a selected anion or oxyanion; and optionally, in the presence of a solvent.

4,939,212

ELASTICIZED VINYL DISPERSION RESINS HAVING OUTSTANDING STORAGE STABILITY

Bela K. Mikofalvy, Avon Lake, and David J. Poledna, Grafton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 31, 1989, Ser. No. 332,672
Int. Cl.[5] C08F *267/02*
U.S. Cl. 525—301 **9 Claims**

1. An elasticized, dispersion-grade vinyl chloride resin powder having an average particle size between about 0.4 and about 4 microns and providing consistently outstanding performance in fluid plastisols even when said powder is not used to make a plastisol for several months, said powder containing between about 0.5% and about 20% by weight of discrete solid particles of elastomeric acrylic polymer material produced by emulsion polymerization of a comonomer mixture including, per 100 parts by weight of total comonomers, a combination of:

(a) about 80 to about 98 weight parts of alkyl acrylates averaging at least 2 carbon atoms in alkyl group;

(b) about 1 to about 10 weight parts of unsaturated dicarboxylic acids which contain between 4 and about 8 carbon atoms; and

(c) optionally up to 19 weight parts of compatible additional unsaturated monomers;

said solid particles being at least partly coated or occluded by hard thermoplastic vinyl chloride polymer formed in situ in their presence by emulsion polymerization of monomer material containing less than 15% by weight of monomers other than vinyl chloride, said vinyl chloride polymer representing substantially all of the remaining mass of said powder.

4,939,213

TRIAZINE CROSSLINKING AGENTS AND CURABLE COMPOSITIONS CONTAINING THE SAME

William Jacobs, III, Bethel, and Roland DiLeone, Rowayton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 19, 1988, Ser. No. 286,006
Int. Cl.[5] C08G *18/80*
U.S. Cl. 525—329.9 **11 Claims**

1. A curable composition comprising:

(a) a triazine compound selected from

(i) a triisocyanato triazine compound of the formula $C_3N_3(NC)_3$;

(ii) a tricarbamyl triazine compound of the formula $C_3N_3(NHCOXR)_3$;

(iii) an oligomer of (i) or (ii); or

(iv) a mixture of at least two of any of (i), (ii) and (iii), wherein the X-R moieties are independently, blocking groups; and optionally

(b) an active hydrogen-containing material; and further optionally

(c) a cure catalyst.

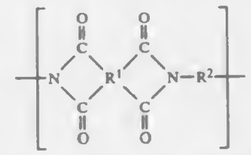
4,939,214

FILM COMPRISED OF AT LEAST ONE MONOMOLECULAR LAYER AND PROCESS FOR ITS PREPARATION USING A HIGHER ALKYL AMINE

Yoshio Imai, 9-2, Nakanagome 1-chome, Ota-ku, Tokyo; Taro Hino, 37-18, Shinoharanishi-machi, Kohoku-ku, Yokohama-shi, Kanagawa-Ken; Mitsumasa Iwamoto, Tokyo; Mass-aki Kakimoto, Yokohama; Mass-aki Suzuki, and Toru Konishi, both of Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation; Yoshio Imai, both of Tokyo and Taro Hino, Yokohama, all of, Japan

Filed Nov. 17, 1986, Ser. No. 930,910
Claims priority, application Japan, Nov. 18, 1985, 60-258203
Int. Cl.[5] C08G *73/10*
U.S. Cl. 525—426 **8 Claims**

1. A process for preparing a film comprised of at least one monomolecular layer composed essentially of a polyimide having repeating units of the formula:



wherein R^1 is a tetravalent organic group, and R^2 is a bivalent organic group, which comprises spreading on a water surface an organic solvent solution of a polyamic acid and an amine having a higher alkyl group, forming on a substrate a monomolecular film or monomolecular built-up film of the polyamic acid derivative, and then treating the film for conversion to a polyimide.

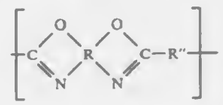
4,939,215

HEAT RESISTANT POLYBENZOXAZOLE FROM BIS-((AMINOHYDROXYPHENYL)HEXAFLUOROISOPROPYL)DIPHENYL ETHER

Werner H. Mueller, E. Greenwich, and Dinesh N. Khanna, W. Warwick, both of R.I., assignors to Hoechst Celanese Corporation, Summit, N.J.

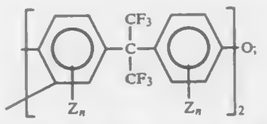
Division of Ser. No. 124,634, Nov. 24, 1987, Pat. No. 4,845,183.
This application Mar. 23, 1989, Ser. No. 327,761
Int. Cl.[5] C08G *73/22*
U.S. Cl. 525—434 **13 Claims**

1. A polybenzoxazole comprising the following recurring structure in the polymer chain:



wherein:

R is a tetravalent aromatic moiety having the formula:



R″ is selected from an alkylene, alicyclic or aromatic moiety; Z is independently selected from chloro, bromo, fluoro, iodo or lower alkyl of 1 to 6 carbons and n is independently 0 or 1.

VOL 1116 ISS 1 JL 3 1990 UMI

4,939,216

HEAT-CURABLE COATING MATERIAL HAVING A LOW BAKING TEMPERATURE

Dirk Lawrenz, Ditzingen; Hans Schupp, Worms, and Thomas Schwerzel, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Lacke+ Farben Aktengesellschaft, Muenster, Fed. Rep. of Germany

Filed Jul. 12, 1989, Ser. No. 378,841
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824552
Int. Cl.[5] C08F *283/04*
U.S. Cl. 525—454 7 Claims

1. A heat-curable coating material for cathodic electrocoating, which material is water-dilutable on protonation with an acid and contains

(A) from 50 to 95% by weight of a polymer, polycondensate or polyadduct containing primary and/or secondary amino groups, as a binder, and

(B) 5 to 50% by weight of a crosslinking agent obtained by reacting

(a) a polyurethane with

(b) formaldehyde or a formaldehyde-donating compound and

(c) one or more secondary aliphatic amines.

4,939,217

PROCESS FOR PRODUCING POLYOLEFINS AND POLYOLEFIN CATALYSTS

Phil M. Strickler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 3, 1987, Ser. No. 35,951
Int. Cl.[5] C08F *4/66, 10/00*
U.S. Cl. 526—114 27 Claims

1. A process for producing polyolefins having bimodal molecular weight distribution comprising:

polymerizing under polymerization conditions in a polymerization zone at least one olefin in the presence of an amount of hydrogen and a heterogeneous catalyst system comprising:

(a) an amount of at least two different metallocenes selected from mono, di, and tri-cyclopentadienyls and substituted cyclopentadienyls of a transition metal selected from the group consisting of Group IVB, VB, and VIB transition metals, each having different termination rate constants of olefin polymerization in the presence of hydrogen, and

(b) an amount of an aluminoxane,

wherein the initial amount of hydrogen, metallocenes, and aluminoxane in said polymerization zone is sufficient to produce a polyolefin having a bimodal molecular weight distribution.

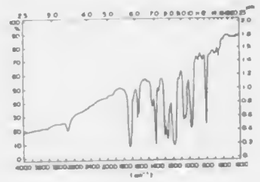
4,939,218

SULFUR-CONTAINING ALIPHATIC ACRYLIC COMPOUND, CROSSLINKED POLYMER ARTICLE, AND LENS

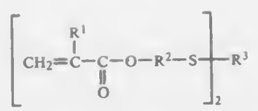
Takao Kawaki, Tokyo; Makoto Kobayashi, Nagareyama; Osamu Aoki, Matsudo, and Yoshie Hiramatsu, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 10, 1988, Ser. No. 269,901
Claims priority, application Japan, Nov. 13, 1987, 62-285456
Int. Cl.[5] C08F *28/04*
U.S. Cl. 526—289 3 Claims

1. A crosslinked polymer article obtained by polymerizing and curing a monomeric mixture composed of 100 to 60% by weight of at least one sulfur-containing aliphatic acrylic compound represented by formula [I]



[I]



wherein R^1 represents a hydrogen atom or a methyl group, R^2 represents an aliphatic hydrocarbon group having 1 to 8 carbon atoms, and R^3 represents an aliphatic hydrocarbon group having 1 to 8 carbon atoms which may contain oxygen or sulfur in the main chain, and 0 to 40% by weight of at least one copolymerizable monomer selected from the group consisting of radical-polymerizable vinyl compounds, acrylic compounds and allyl compounds, in a mold together with a radical initiator.

4,939,219

COATING COMPOSITIONS FOR PREVENTING ADHESION OF AQUATIC ORGANISMS

Hirokazu Terashima, Odawara, and Osamu Isozaki, Yokohama, both of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Jan. 27, 1989, Ser. No. 302,659
Claims priority, application Japan, Feb. 1, 1988, 63-21751
Int. Cl.[5] C08F *20/16*
U.S. Cl. 526—292.5 8 Claims

1. A coating composition for preventing adhesion of aquatic organisms to submersible substrates, comprising an organic solent and a copolymer prepared by copolymerizing about 5 to about 85% by weight of (A) a monohydric and/or polyhydric phenol ester of acrylic or methacryic acid; about 15 to about 75% by weight of (B) an ethylenically unsaturated monomer having a soluble parameter of about 8.0 to about 9.5 and a glass transition temperature of about 0° C. or higher; and about 5 to about 50% by weight of (C) a water-soluble, ethylenically unsaturated monomer containing a carboxyl group or amino group, based on the total monomer components.

4,939,220

ETHYLENE VINYL ACETATE-DIOCTYL MALEATE-2-ETHYLHEXYL ACRYLATE INTERPOLYMERS

Paul R. Mudge, Belle Mead, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 169,632, Mar. 17, 1988, Pat. No. 4,908,268.
This application Dec. 15, 1989, Ser. No. 450,949
Int. Cl.[5] C08F *20/10*
U.S. Cl. 526—318.43 9 Claims

1. Pressure sensitive adhesive compositions having a Tg of −45° to −25° C. suitable for application to plasticized polyvinyl chloride films consisting essentially of 25–40% by weight a vinyl ester of a alkanoic acid; 10–30% by weight ethylene; 20 to 30% by weight of di-2-ethylhexyl maleate or fumarate; 20 to 30% dry weight of 2-ethylhexyl acrylate; 1 to 10% by weight of a mono-carboxylic acid and 0–10% of at least one copolymerizable comonomer selected from the group consisting of acrylamide, N-methylol (meth)-acrylamide, N-vinylpyrrolidinone, diallyl adipate, triallyl cyanurate, butanediol diacrylate, tertiary octylacrylamide, hydroxyethyl acrylate, hydroxypropyl acrylate and the corresponding methacrylates.

4,939,221

POLYVINYL ACETATE/ALLYL ALCOHOL COPOLYMERS

Steven D. Gagnon, Detroit; Gregory T. Roginski, East Detroit, and Eric J. Lind, Trenton, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Aug. 10, 1989, Ser. No. 392,117
Int. Cl.[5] C08F *218/08*
U.S. Cl. 526—330 24 Claims

1. A copolymer, miscible in polyether or polyester polyols, comprising the reaction product of vinyl acetate and allyl alcohol.

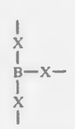
4,939,222

BORON/NITROGEN PRECERAMIC POLYMERS AND BORON NITRIDE CERAMIC MATERIALS PRODUCED THEREFROM

Gerard Mignani, Lyon, and Jean-Jacques Lebrun, Caluire, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

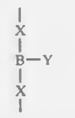
Filed Sep. 12, 1988, Ser. No. 242,907
Claims priority, application France, Sep. 11, 1987, 87 12587
Int. Cl.[5] C04B *35/56*; C08G *79/08*
U.S. Cl. 528—5 12 Claims

1. A crosslinked boron/nitrogen polymer, comprising (a) at least one recurring structural unit of the formula (I):



(I)

and (b) at least one recurring structural unit of the formula (II):



(II)

in which Y is N-R^1R^2 and X is N-R^3, wherein R^1, R^2 and R^3, which are identical or different, are each a hydrogen atom, or a hydrocarbyl, organosilyl or hydrogenoorganosilyl radical.

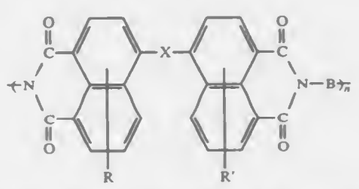
4,939,223

SILICON-MODIFIED POLYIMIDES

Yasuharu Yamada, and Nobuyuki Furukawa, both of Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

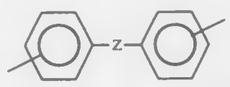
Filed Oct. 5, 1988, Ser. No. 253,534
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—28 4 Claims

1. A silicon-modified polyimide comprising a structure of the formula (1)

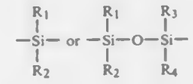


(1)

in which R and R^1 are hydrogen or alkyl, B is phenylene, substituted phenylene, biphenylene, substituted biphenylene, naphthylene, substituted naphthylene or



wherein Z is selected from —CH_2, —O—, —S—, or SO_2, n is the polymerization number, and X is a divalent radical



in which R^1 to R_4 are monovalent hydrocarbon groups with 1–6 carbon atoms.

4,939,224

VASOACTIVE INTESTINAL PEPTIDE ANALOGS

Gary F. Musso, Encinitas, Calif.; Emil T. Kaiser, New York, N.Y., and Gönül Velicelebi, San Diego, Calif., assignors to The Salk Institute Biotechnology/Industrial Associates, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 19,148, Feb. 26, 1987, Pat. No. 4,835,252. This application Jan. 21, 1988, Ser. No. 146,463
Int. Cl.[5] C07K *7/10*
U.S. Cl. 530—324 5 Claims

1. A VIP analog with a formula selected from the group consisting of:

H-S-D-A-V-F-T-D-A-Y-S-R-L-J-R-S-J-A-V-R-R-Y-L-S-S-V-L-T-$(NH_2)_i$ and

H-S-D-A-V-F-T-S-T-Y-S-R-L-J-R-S-J-A-V-R-R-Y-L-S-S-V-L-T-$(NH_2)_i$,

wherein i is 0 or 1, wherein 0 indicates that the peptide is not carboxy-terminal-amidated and 1 indicates that the peptide is carboxy-terminal-amidated, or a pharmaceutically acceptable salt thereof.

4,939,225

POLYMERIC HYDRIDOSILAZANES, PROCESSES FOR THE PREPARATION THEREOF, SILICON NITRIDE-CONTAINING CERAMIC MATERIALS WHICH CAN BE PREPARED THEREFROM, AND THE PREPARATION THEREOF

Tilo Vaahs, Kelkheim; Thomas Gerdau, Eppstein; Marcellus Peuckert, and Martin Brück, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 23, 1988, Ser. No. 289,901

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743825

Int. Cl.[5] C08G *77/20*

U.S. Cl. 528—32 7 Claims

1. A process for the preparation of a polymeric hydridosilazane, which comprises reacting a polymeric hydridothiosilazane of the formula



where R is C_1–C_6-alkyl or C_2–C_6-alkenyl wherein $x+y=1$ and x and y denote the molar fractions of the two structural units, with excess NH_3.

4,939,226

CATIONIC PAINT BINDERS BASED ON POLYETHER URETHANES AND PROCESS FOR PREPARATION THEREOF

Rudolf Schipfer; Wolfgang Daimer, and Gerhard Schmölzer, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Nov. 3, 1988, Ser. No. 266,561

Claims priority, application Austria, Nov. 3, 1987, 2882/87

Int. Cl.[5] C08G *18/18, 18/08*

U.S. Cl. 528—54 23 Claims

1. Process for preparing cationic paint binders comprising the steps of (1) reacting a polyhydroxypolyether containing primary hydroxyl groups with a diisocyanate having NCO-groups with different reactivities, said reaction being carried out at a temperature of from about 30° to 80° C. to selectively react said primary hydroxyl groups with one of the NCO-groups of said diisocyanate in the presence of 0.02 to 0.1 mole percent of 1,4-diazabicyclo-2,2,2-octane as catalyst; and subsequently (2) reacting at a temperature of 20° to 80° C. the remaining NCO-group of said diisocyanate with primary or secondary aliphatic amines, the components and proportions thereof being controlled so that a binder produced by the process will have an amine number of about 20 to about 150 mg KOH/g and a basicity which will permit said binder to be diluted with water after protonation.

4,939,227

NOVEL THERMOPLASTIC POLYMERS

Pen-Chung Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 15, 1989, Ser. No. 351,370

Int. Cl.[5] G08G *59/26, 59/28, 59/62*

U.S. Cl. 528—96 31 Claims

1. A thermoplastic polymer comprising (1) units of a 1,6-diaza [4.4] spirodilactam having oxyaryl substituents on the spiro ring nitrogen atoms, or optionally, di(oxyphenyl)compound, alternating with (2) units derived from a mono- to binuclear hydantoin by loss of hydrogens from the ring nitrogen atoms, the differing units being connected by 2-hydroxy-1,3-propylene linking groups.

4,939,228

POLYARYLETHERSULFONE POLYMER SOLUTION

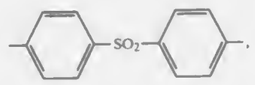
Lloyd M. Robeson, Whitehouse Station, and Louis M. Maresca, Belle Mead, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 80,729, Aug. 3, 1987, abandoned, which is a division of Ser. No. 536,843, Sep. 29, 1983, abandoned. This application Jul. 28, 1988, Ser. No. 225,491

Int. Cl.[5] C08G *8/02, 14/00*

U.S. Cl. 528—171 5 Claims

1. A solution for coating, comprising polyarylethersulfone containing units of the following formula:



(I)

and



(II)

wherein n is independently an integer of 1 or 2 and wherein the ratio of unit (I) to unit (II) is greater than 1; wherein the units are attached to each other by an —O— bond; said polymer produced by the reaction of at least one of hydroquinone or biphenol, with at least two of dichlorodiphenyl sulfone, dihydroxydiphenyl sulfone and chlorohydroxydiphenyl sulfone; said polymer dissolved in a solvent comprising methylene chloride.

4,939,229

METHOD FOR PREPARING LITHOGRAPHICALLY SENSITIVE BRANCHED NOVOLAKS USING A MANNICH BASE INTERMEDIATE

Leonard E. Bogan, Jr., Harleysville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 12, 1989, Ser. No. 351,154

Int. Cl.[5] C08G *8/16, 16/02*

U.S. Cl. 528—144 6 Claims

1. A method for preparing thermally stable, highly branched novolak polymers consisting essentially of reacting a tris(dialkylaminoalkyl)phenol or tetrakis(dialkylaminoalkyl) phenol with at least one molar equivalent of a phenol having at least one unsubstituted ortho- or para-ring position in the presence of an acid catalyst to form a highly branched novolak polymer, said acid catalyst being selected from the group of acids which sublime or distill, or decompose below the decomposition temperature of the highly branched novolak.

4,939,230

ELIMINATION OF MONOCARBONATE FROM POLYCARBONATE

Sarat Munjal; Che I. Kao, both of Lake Jackson, and Jimmy D. Allen, Freeport, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1988, Ser. No. 272,150

Int. Cl.[5] C08G *63/62*

U.S. Cl. 528—198 49 Claims

1. A composition comprising a carbonate polymer which is the product of the reaction of a dihydroxy compound with a carbonic acid derivative and a chain terminator containing a hydroxy group, which composition is free of monocarbonate.

4,939,231

PROCESS FOR PRODUCING FATTY ACID-TERMINATED POLYCARBONATE RESIN

Mitsuhiko Masumoto; Toshiaki Takata, and Satoshi Kanayama, all of Osaka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 12, 1988, Ser. No. 246,574

Claims priority, application Japan, Sep. 11, 1987, 62-226490

Int. Cl.[5] C08G *64/24*

U.S. Cl. 528—198 8 Claims

1. In a process for producing a polycarbonate resin having excellent heat stability by an interfacial polymerization method which comprises reacting a dihydric phenol compound represented by formula (1) or a mixture of the dihydric phenol compound and a terminator, and phosgene, in an inert organic solvent and an aqueous alkali solution to conduct phosgenation, and adding a polymerization catalyst and a terminator, when the terminator is not added during the phosgenation reaction, to the phosgenation reaction solution to effect emulsion polymerization,

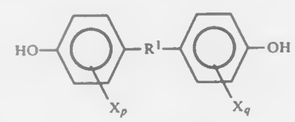
the improvement wherein

(a) the terminator is a compound represented by formulae (2), (3), (4) or (5),

(b) a quaternary ammonium salt is the polymerization catalyst, wherein the emulsion polymerization is conducted for 5 to 40 minutes, and

(c) wherein a tertiary amine is added to cause the emulsion polymerization

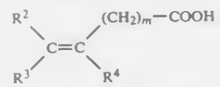
Formula (1):



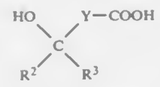
Formula (2):

$$C_nH_{2n+1}COOH$$

Formula (3):



Formula (4):



Formula (5):

$$(C_nH_{2n+1}CO)_2O$$

wherein R^1 is a straight, branched or cyclic alkylidene group having 1 to 10 carbon atoms, an aryl-substituted alkylene group, an aryl group, —O—, —CO—, —S—, or —SO_2, X is halogen or a lower alkyl group, p and q are each an integer of 0 to 2, R^2, Rhu 3 and R^4 are each hydrogen or a lower alkyl group, Y is a bond or Y represents an alkylene group having 1 to 10 carbon atoms, m is an integer of 0 to 10, and n is an integer of 1 to 30.

4,939,232

SHRINKABLE POLYESTER FILM

Yujiro Fukuda, and Shinobu Suzuki, both of Machida, Japan, assignors to Diafoil Company, Ltd., Tokyo, Japan

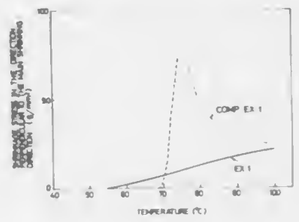
Filed Jun. 30, 1989, Ser. No. 373,586

Claims priority, application Japan, Jul. 5, 1988, 63-167430

Int. Cl.[5] C08G *63/02*

U.S. Cl. 528—272 3 Claims

1. A shrinkable polyester film having a shrinkage of not less than 40% after 5.minute treatment in a 100° C. air oven in one of either the machine direction or the transverse direction, and a shrinkage of not more than 15% after 5-minute treatment in



a 100° C. air oven and a maximum shrinkage stress of not more than 50 g/mm² at 40° to 100° C. in the other direction.

4,939,233

AQUEOUS POLYMER COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Waylon L. Jenkins; Kenneth R. Barton, both of Kingsport, Tenn., and Harold L. Jaffe, Millburn, N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1988, Ser. No. 279,672

Int. Cl.[5] C08G *63/02*

U.S. Cl. 528—272 16 Claims

1. An aqueous dispersion comprising a polyester (A) consisting essentially of repeat units from

(a) at least one difunctional aromatic, saturated aliphatic or saturated alicyclic dicarboxylic acid;

(b) from about 4 to about 25 mole percent, based on a total of all acid and hydroxyl monomer being equal to 200 mole percent, of at least one difunctional sulfomonomer containing at least one metal sulfonate-group attached to an aromatic nucleus wherein the functional groups are hydroxyl or carboxyl; and

(c) at least one glycol; and

a polymer (B) having repeat units from about 50 to 100 a weight percent vinyl acetate, said aqueous dispersion having been prepared by polymerizing monomers to form said polymer (B) in an aqueous dispersion of said polyester (A), and said aqueous dispersion containing about 50–95% of said polymer (B) and about 50–5% of said polyester (A) both said percentages being based on the combined weight of (A) and (B).

4,939,234

POLYMERIZATION OF LACTAM POLYISOCYANATE HAVING THE ISOCYANATE GROUPS BLOCKED WITH LACTAM

Sergio Tonti, Mistre; Piero Furlan, Treviso; Gianpiero Talamini, and Roberto Pernice, both of Mestre, all of Italy, assignors to Montedipe, S.p.A., Milan, Italy

Filed Jan. 10, 1989, Ser. No. 295,397

Claims priority, application Italy, Jan. 11, 1988, 19032 A/88

Int. Cl.[5] C08G *69/20*

U.S. Cl. 528—315 16 Claims

1. A process of preparing an impact-resistant polyamide, comprising polymerizing an ω-lactam in the presence of:

(a) poly-isocyanate with the isocyanate groups blocked with an ω-lactam;

(b) a poly-oxy-alkylene-amine having an amine functionality lower than three; and

(c) an alkali metal catalyst.

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4,939,235

BIAXIALLY ORIENTED ORDERED POLYBENZOTHIAZOLE FILM

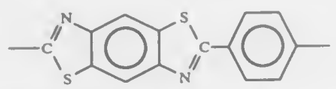
Andrew C. Harvey, Waltham; Richard W. Lusignea; Dirk M. Baars, both of Brighton, all of Mass.; Donald D. Bretches, Waynesboro, Va., and Robert B. Davis, Framingham, Mass., assignors to Foster-Miller, Inc., Waltham and Albany International Research Company, Mansfield, both of, Mass.

Division of Ser. No. 98,710, Sep. 21, 1987, which is a continuation of Ser. No. 780,648, Sep. 26, 1985, abandoned. This application Jun. 7, 1988, Ser. No. 203,329

Int. Cl.[5] C08G *75/32*

U.S. Cl. 528—337 7 Claims

1. Biaxially oriented film comprising an ordered polymer having the molecular structure of a rigid rod having the repeating unit:



and having the following physio-chemical characteristics:

(a) an ultimate tensile strength greater than about 50,000 psi ultimate tensile stress in one direction and greater than about 20,000 psi ultimate tensile strength in any direction;

(b) a tensile modulus greater than about 2×10^6 psi in one direction and greater than about 4×10^5 psi tensile modulus in any direction;

(c) a coefficient of thermal expansion (CTE) selected from either negative, positive or zero in any particular direction in the plane of the film;

(d) a dielectric constant less than about 6.0;

(e) a less than 1% weight loss in a vacuum at 125° for 24 hours, and;

(f) a less than 1% weight gain in water at 100° C. for 24 hours.

4,939,236

PROCESS FOR PREPARATION OF COPOLY(ARYLENE SULFIDE)

David R. Fagerburg; Joseph J. Watkins, both of Kingsport; Paul B. Lawrence, Blountville, and Mark Rule, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 322,335, Mar. 10, 1989, abandoned. This application Sep. 8, 1989, Ser. No. 404,811

The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.

Int. Cl.[5] C08G *75/14*

U.S. Cl. 528—389 6 Claims

1. A process for producing elemental iodine and a copoly-(arylene sulfide) corresponding to the structure:

$$[(-A-S-)_{1-x}(-A-S-S-)_x]_n$$

wherein A is a divalent substituted or unsubstituted aromatic radical, x is in the range of 0.5 to 0.001 and n is at least 200, comprising

(A) reacting in the absence of a basic material a diiodoaromatic compound and elemental sulfur which contains less than 0.05 weight percent organic carbon at a temperature above about 175° C. to produce the elemental iodine and the copoly(arylene sulfide), and

(B) recovering the elemental iodine.

4,939,237

PREPARATION OF HIGH VISCOSITY NYLON WITH P CATALYST COMPOSITION

Erica M. Besso, Manotick, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Nov. 2, 1988, Ser. No. 266,879

Claims priority, application United Kingdom, Nov. 3, 1987, 8725745

Int. Cl.[5] C08G *69/48*

U.S. Cl. 528—487 10 Claims

1. A process for producing a polyamide with a ratio of viscosity at 25° C. as an 8.4 wt. % solution of polyamide in 90 wt. % formic acid to the viscosity at 25° C. of the 90 wt. % formic acid alone of at least 100, comprising:

(a) adding a catalyst selected form the group consisting of ortho-phosphoric acid, meta-phosphoric acid, alkali-metal hypophosphite and phenylphosphinic acid to a polyamide, said polyamide having a ratio of viscosity as set forth above of from 30 to 70, said catalyst being at least 0.01 wt. % and in an amount sufficient that after processing in steps (b) and (c) the aforesaid ratio of viscosity of the resulting polyamide is at least 100;

(b) mixing the catalyst and polyamide at a temperature above the melting temperature of said polyamide under reduced pressure and for a time sufficient to increase the aforesaid ratio of viscosity of the polyamide to at least 100;

(c) extruding the resulting polyamide into shaped form and quenching said polyamide.

4,939,238

NITROGEN-CONTAINING CONDENSATION PRODUCTS BASED ON UNMODIFIED OR MODIFIED NATURAL RESINS, PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Heinz Uhrig, Steinbach/Taunus; Siegfried Schwerin, Hofheim am Taunus, and Reinhold Deubel, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1988, Ser. No. 211,214

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1987, 3720982

Int. Cl.[5] C08H *3/05;* C08L *93/04*

U.S. Cl. 530—212 8 Claims

1. A composition of matter having the formula (I)

$$A-[(X-O)_n-Y-Z]_m \quad (I)$$

in which

A is a radical of an unmodified or modified natural resin or of an esterification product thereof with a polyhydric alcohol,

X is a group of the formula $-CH_2CH_2-$, $-CH_2-CH(CH_3)-$ or $-CH(CH_3)-CH_2-$,

Y is a group of the formula $-CH_2CH_2-$, $-CH_2CH(CH_3)-$, $-CH(CH_3)-CH_2-$ or $-CH_2CH(OH)CH_2-$,

Z is a radical of the formula —OH or of the formula (Ia)

$$(-NH-Q)_a-N(R)-(Q-NH-)_bH \quad (Ia)$$

in which

R is a hydrogen atom, an alkyl radical having 1 to 24 carbon atoms, a radical of the formula $(-CH_2CH_2O)_p-H$, with p being an integer from 1 to 100, or a radical of the formula $(-Q-NH)_c-H$, Q is a straight-chain or branched alkylene group which has 1 to 24 carbon atoms and which can also be interrupted by one or more not directly adjacent oxygen atoms, a is an integer from 0 5, b is an integer from 0 to 5 and c is an integer from 0 to 5, at least one radical Z being other than —OH,

n is an integer from 0 to 150 and

m is an integer from 1 to 5,

and, in the case that there are several groups or radicals X, Y, Z, R or Q in the formula (I) and formula (Ia), the particular groups or radicals can have identical or different meanings.

4,939,239

HYPOSENSITIZATION AGENT OF CEDAR POLLEN ANTIGEN

Tyoku Matsuhashi, Saitama; Mitsuko Usui, Okayama; Masakazu Mitsuhashi, Okayama, and Shunsaku Ando, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seitbutsu Kangaku/Kenkyujo, Okayama, Japan

Filed Sep. 1, 1988, Ser. No. 240,347

Claims priority, application Japan, Sep. 12, 1987, 62-228781; Jul. 26, 1988, 63-184487

Int. Cl.[5] A61K *39/36*

U.S. Cl. 530—370 6 Claims

1. A hyposensitization agent for the prevention and/or treatment of cedar pollinosis comprising a cedar pollen allergen, said cedar pollen allergen comprising a partial amino acid sequence of Asp-Asn-Pro-Ile-Asp-Ser-beginning at the N-terminal of said cedar pollen allergen; and a saccharide covalently attached to said cedar pollen allergen, said saccharide being a member selected from the group consisting of homo- and heteroglycans.

4,939,240

MONOCLONAL ANTIBODIES TO HUMAN BREAST CARCINOMA CELLS AND THEIR USE IN DIAGNOSIS AND THERAPY

Tsann M. Chu, Williamsville, and Lawrence D. Papsidero, Orchard Park, both of N.Y., assignors to Health Research, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 472,222, Mar. 4, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 775,062

Int. Cl.[5] C12N *5/040;* C07K *15/04;* A61K *43/00, 45/05*

U.S. Cl. 530—387 7 Claims

1. A monoclonal antibody, produced by hybridoma cell line F36/22, which shrinks a solid tumor, said tumor-shrinking ability being demonstrated by a shrinkage of a human breast tumor xenograft in a nude mouse of about 15% to about 75% of tumor volume within about 3 days after administration of a tumor-shrinking effective amount of said antibody to a nude mouse bearing said human tumor xenograft.

4,939,241

AMINO ACID DERIVATIVES OF ANTITUMOR ACTIVITY

Masakuni Okuhara; Toshio Goto; Masami Ezaki; Miho Tanaka; Shigehiro Takase; Hidesori Nakajima; Hideo Hirai, and Akira Katayama, all of Tsukuba, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 25, 1988, Ser. No. 173,294

Claims priority, application United Kingdom, Mar. 30, 1987, 8707515

Int. Cl.[5] C07C *245/12, 245/18;* A61K *31/655*

U.S. Cl. 534—556 1 Claim

1. O-[2-Diazo-3(R)-hydroxy-1-oxobutyl]-L-serine.

4,939,242

PROCESS FOR THE PREPARATION OF THE LITHIUM SALT OF A FIBER-REACTIVE AZO DYESTUFF

Konrad Opitz, Liederbach, Fed. Rep. of Germany, and Marcos Segal, Suzano, Brazil, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

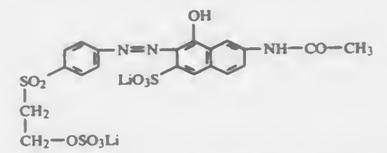
Filed Mar. 25, 1988, Ser. No. 173,716

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710176

Int. Cl.[5] C09B *62/51, 62/507, 67/26*

U.S. Cl. 534—581 11 Claims

1. A process for the preparation of the lithium azo compound of the formula (1)



(1)

with an Na content of less than 0.2% by weight, which comprises diazotizing the lithium salt of 4-(β-sulfatoethylsulfonyl)-aniline in an aqueous solution or in an aqueous solution containing a water-miscible organic solvent by means of nitrosylsulfuric acid, and coupling the product with the lithium salt of 1-hydroxy-7-acetylaminonaphthalene-3-sulfonic acid.

4,939,243

WATER-SOLUBLE COPPER COMPLEX DISAZO COMPOUNDS CONTAING A CHLORO TRIAZINYLAMINO GROUP AND A GROUP OF THE VINYLSULFONE SERIES AS FIBER-REACTIVE GROUPS AND THEIR DYESTUFFS

Fritz Meininger, and Ernst Hoyer, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

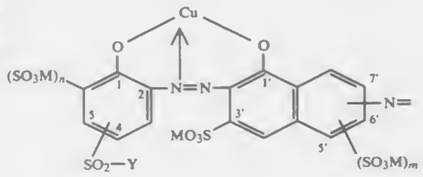
Continuation of Ser. No. 630,347, Jul. 13, 1984, abandoned, which is a continuation of Ser. No. 456,826, Jan. 10, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 702,687

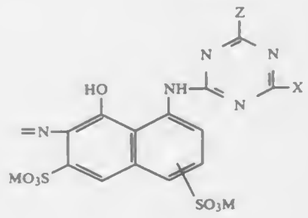
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202120

Int. Cl.[5] C09B *62/09, 62/513;* D06P *1/382, 1/384*

U.S. Cl. 534—625 11 Claims

1. A water-soluble copper complex disazo compound of the formula





in which

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m is zero or 1 (and if m is zero, this group means hydrogen);
n is zero or 1 (and if n is zero, this group means hydrogen);
the group —SO_2—Y is bonded to the 5-position of the benzene nucleus if n is zero, or is bonded in the 4-position of the benzene nucleus if n is zero or 1;
the free azo group is bonded to the 6'- or 7'-position of the middle naphthalene nucleus;
if m is 1, this sulfo group is boned to the 5'-position if the azo group is in the 6'-position, and is bonded to the 6'-position if the azo group is in the 7'-position;
X is an amino group of the formula



in which R^3 is hydrogen or alkyl of 1 to 4 carbon atoms or alkyl of 1 to 4 carbon atoms substituted by hydroxy or sulfo, and R^4, identical to or different from R^3, is hydrogen or alkyl of 1 to 4 carbon atoms or alkyl of 1 to 4 carbon atoms substituted by hydroxy, sulfo, methoxy or ethoxy, or is phenyl unsubstituted or substituted by one or two substituents selected from the group consisting of sulfo, methyl, ethyl methoxy, ethoxy, chlorine and carboxy or by β-sulfatoethylsulfonyl, is naphthyl unsubstituted or substituted by one, two or three sulfo groups, or R^3 and R^4 together with the nitrogen atom are morpholino,
Y is vinyl or a group of the formula

—CH_2—CH_2—R

in which
R is chlorine, acetoxy, phosphato, thiosulfato or sulfato;
Z is chlorine;
M is hydrogen or an alkali metal.

4,939,244

PSEUDOAGLYCONES OF LL-E33288 ANTIBIOTICS

May D. Lee, Monsey, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 30, 1987, Ser. No. 4,153
Int. Cl.[5] C07H *15/00, 1/00*
U.S. Cl. 536—17.6 **4 Claims**

1. A process for preparing the pseudoaglycone of an antibiotic of the LL-E33288 complex or the BBM-1675 complex which comprises
absorbing the antibiotic onto a column packed with a cation exchange resin in the hydrogen form,
eluting the column with large quantities of methanol to produce the pseudoaglycone of the antibiotic,
removing the resulting pseudoaglycone product from the acidic environment and
isolating the pseudoaglycone by chromatographic purification.

4,939,245

PROCESS FOR THE DIRECT PRODUCTION OF GLYSOSIDE PRODUCT IN THE PRESENCE OF SOLID SACCHARIDE

John F. Rasche; Carl E. Pickens, and Patrick M. McCurry, Jr., all of Decatur, Ill., assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 21, 1988, Ser. No. 287,953
Int. Cl.[5] C07G *3/00*; C07H *1/00*
U.S. Cl. 536—18.6 **7 Claims**

1. A process for preparing a glycoside product by reacting an alcohol having from 4 to 30 carbon atoms with a saccharide or oligosaccharide reactant, said process comprising:
(1) forming a mixture comprising an acid catalyst, a liquid phase containing an alcohol having from 4 to 30 carbon atoms and a solid phase containing an amount of the saccharide or oligosaccharide reactant in excess of the amount of saccharide or oligosaccharide which is soluble in the liquid phase;
(2) reacting the mixture to form the glycoside product under conditions in which the solid phase containing the saccharide or oligosaccharide reactant is present;
(3) separating the liquid phase from the solid phase and
(4) recovering the glycoside product from the liquid phase.

4,939,246

PURIFICATION OF LONG-CHAIN ALKYLGLUCOSIDES

Richard Baur, Matterstadt; Jochen Houben, Ludwigshafen; Hans-Ulrich Jaeger, Neustadt; Alfred Oftring, Bad Durkheim, and Johannes Perner, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 13, 1989, Ser. No. 309,150
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1988, 3804599
Int. Cl.[5] C07G *3/00*; C07H *1/00, 1/06*
U.S. Cl. 536—18.6 **9 Claims**

1. A process for purifying a long-chain alkylglucoside by extraction from a reaction mixture, obtained (i) by reacting a monosaccharide and an alcohol of 8 or more carbon atoms or (ii) by transacetalating a C_1–C_6-alkylglucoside with an alcohol or 8 or more carbon atoms, and in either case, adjusted to a pH above 6, which process comprises extracting the long-chain alkylglucoside from said reaction mixture with water, wherein one part by volume of said reaction mixture is extracted with from 0.5 to 4 parts by volume of water.

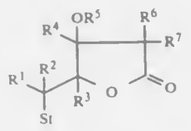
4,939,247

GAMMA-LACTONE DERIVATIVES AND PROCESS OF PREPARING SAME

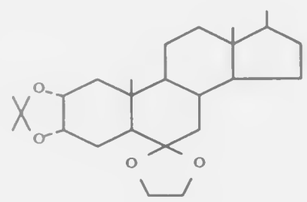
Tetsuji Kametani, Tokyo, and Toshio Honda, Yokohama, both of Japan, assignors to Itaro Horiuchi & Co., Ltd., Japan

Division of Ser. No. 34,734, Apr. 6, 1987, Pat. No. 4,874,551.
This application Jun. 23, 1989, Ser. No. 370,920
Int. Cl.[5] C01J *19/00, 21/00, 53/00, 63/00*
U.S. Cl. 540—16 **4 Claims**

1. Gamma-lactone derivatives represented by the formula (I)



wherein
R^1 is methyl group or is combined with R^2 to form a methylene group;
R^2 is hydrogen, a hydroxyl group or a trifluoroacetoxyl group, or is combined with R^1 as above recited, or is combined with R^3 to form a pi bond;
R^3 is hydrogen or is combined with R^2 as above recited; R^4 and R^6 are each hydrogen, or are combined to form a pi bond;
R^5 is hydrogen or a protecting group for a hydroxyl group;
R^7 is hydrogen or a straight-chain or a branched alkyl group; and
St is a steroid nucleus represented by the following formula (B):



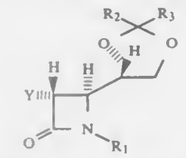
4,939,248

OPTICALLY ACTIVE AZETIDINONES

Takeo Yoshioka, Ayase; Machiko Watanabe, Fujisawa; Yasuo Fukagawa, Kamakura, and Tomoyuki Ishikura, Chigasaki, all of Japan, assignors to Sanraku Incorporated, Tokyo, Japan

PCT No. PCT/JP87/00991, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO88/04656, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 18, 1987, Ser. No. 246,826
Claims priority, application Japan, Dec. 22, 1986, 61-303915
Int. Cl.[5] C07D *405/04*
U.S. Cl. 540—200 **10 Claims**

1. A compound represented by the formula



wherein Y represents an acetyl, 1-hydroxyethyl or 1-fluoroethyl group, R_1 represents a hydrogen atom or a tri(lower alkyl) silyl group, a benzyl group which may be substituted by one or two lower alkoxy groups, or a phenyl group which may be substituted by one or two lower alkoxy groups, and R_2 and R_3 are identical or different and each represents a hydrogen atom, a lower alkyl group, a phenyl group, a benzyl group or a diphenylmethyl group, or R_2 and R_3 together represent a lower alkylene group.

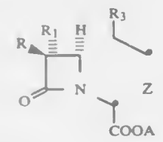
4,939,249

PROCESS FOR 1-CARBA(DETHIA) CEPHALOSPORINS

Larry C. Blaszczak, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

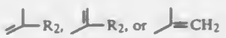
Filed Sep. 16, 1988, Ser. No. 245,185
Int. Cl.[5] C07D *487/04, 205/085*; C07B *37/06*
U.S. Cl. 540—205 **10 Claims**

1. A process for preparing a 1-carba(1-dethia)cephem compound of the formula



wherein
R is amino, protected amino or
R_1 is hydrogen or C_1–C_4 alkoxy;
Z is a divalent group of the formulae

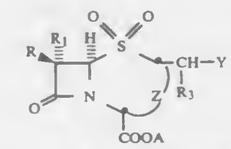
(B)



wherein R_2 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, halogen, C_1–C_4 alkoxy, C_1–C_4 alkylthio, tri(C_1–C_4 alkyl)silyloxy, C_2–C_6 alkanoyloxy, C_1–C_4 alkylsulfonyloxy, trifluoromethylsulfonyloxy, or a substituted methyl group of the formula

—CH_2R_2'

wherein R_2' is hydroxy, C_1–C_6 alkoxy, C_1–C_6 alkanoyloxy, benzyloxy, C_1–C_6 alkylthio, benzylthio, a hetero-cyclicthio group wherein the heterocycle is a 5- or 6-membered heterocyclic ring containing from 1 to 4 ring nitrogen atoms and/or oxygen or sulfur ring atoms and wherein the heterocyclic ring is bonded to the thio group via a ring carbon atom;
R_3 is hydrogen or C_1–C_3 alkyl; and
A is a carboxy-protecting group;
which comprises heating in an inert solvent at a temperature between about 45° C. and about 150° C. a 2-substituted methylcephalosporin 1,1-dioxide of the formula



(I)

wherein R, R_1, R_3 and A have the above-defined meanings and Y is a free radical precursor group; with a free radical initiator.

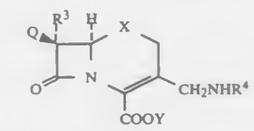
4,939,250

PROCESS FOR PREPARATION OF β-LACTAM DERIVATIVES

Frank Lotus; Stephen J. Pegg, both of MacClesfield, and Evan W. Snape, Congleton, all of United Kingdom, assignors to Imperial Chemical Industries Plc, London, England

Filed May 12, 1987, Ser. No. 48,882
Claims priority, application United Kingdom, May 15, 1986, 86 11823
Int. Cl.[5] C07D *501/04*
U.S. Cl. 540—222 **9 Claims**

1. A process for the preparation of the compounds of the formula (I):



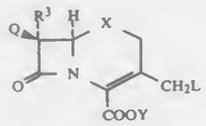
(I)

or a salt thereof wherein
X is sulphur, oxygen, methylene or sulphinyl (R or S configuration);
R^3 is hydrogen or methoxy;
R^4 is (1–4C)alkyl, halo(1–4C)alkyl, hydroxy(1–4C)alkyl, (1–4C)alkoxy(1–4C)alkyl, carboxy(1–4C)alkyl, amino (1–4C)alkyl, cyano(1–4C)alkyl, (1–4C)alkanoyl-amino(-1–4C)alkyl, allyl, furfuryl, benzyl or pyridyl-(1–4C)alkyl;
Y is hydrogen or a carboxyl protecting group; and
Q has one of the following meanings;
(i) an amino group;
(ii) a protected amino group;
(iii) a group required at the equivalent position in the final cephalosporin antibiotic or a precursor of such a group;

VOL 1116 ISS 1 JL 3 1990 UMI

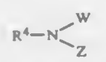
(iv) an acylamino group not falling within (iii) above but which can readily be converted to an amino group;

which process comprises reacting a compound of formula (II):



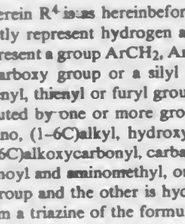
(II)

wherein Q, X, Y and R^3 are as hereinbefore defined and L is an acyloxy, halogen, carbamoyloxy, alkylthio, cyanothio, dialkylsulphonio, substituted-alkane, sulphonyloxy or o-phenylenephosphonyloxy group, with a compound of the formula (III):



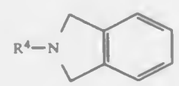
(III)

wherein R^4 is as hereinbefore defined and W and Z independently represent hydrogen atoms or W and Z independently represent a group $ArCH_2$, Ar_2CH, ArS, a sulphonyloxy group, a carboxy group or a silyl moiety wherein Ar represents a phenyl, thienyl or furyl group any of which is optionally substituted by one or more groups selected from halogen, nitro, cyano, (1–6C)alkyl, hydroxy, amino, (1–4C)alkoxy, carboxy, (2–6C)alkoxycarbonyl, carbamoyl, mono- or di(1–4C)alkylcarbamoyl and aminomethyl, or one of W and Z represents such a group and the other is hydrogen; or W and Z are joined to form a triazine of the formula IV:



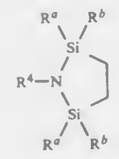
(IV)

wherein R^4 is as defined hereinabove or a compound of formula IVa



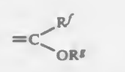
(IVa)

wherein R^4 is as defined hereinabove or IVb:



(IVb)

wherein R^4 is as defined hereinabove, and R^a and R^b are C_{1-4} alkyl groups; or W and Z together represent an alkylidene group or a group of the formula ArCH=, $ArC(R^a)$= or $(Ar)_3P$= wherein Ar and R^a are as hereinbefore defined or a group of formula IVc



(IVc)

wherein R′ and R^g represent (1–4C)alkyl groups, to yield a compound of the formula (I).

4,939,251

NOVEL SPIROLACTONES

Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 172,000, Mar. 23, 1988, and a continuation-in-part of Ser. No. 172,052, Mar. 23, 1988. This application Sep. 16, 1988, Ser. No. 245,618

Int. Cl.[5] *C07D 291/04, 419/04*

U.S. Cl. 540—489 **38 Claims**

1. A [4.4]spirolactam product selected from

(a) a [4.4]spirodilactam wherein the ring nitrogen atoms are in the 1- and the 6- ring positions and each nitrogen is substituted with a hydroxy-containing substituent of up to 30 carbon atoms and up to 4 aromatic rings, inclusive,

(b) a [4.4]spirodilactam wherein the ring nitrogen atoms are in the 1- and the 6-ring positions, one nitrogen atom is substituted with a hydroxy-containing substituent of up to 30 carbon atoms and up to 4 carbon aromatic rings, inclusive, and the other nitrogen is substituted with a hydroxy-free substituent of up to 30 carbon atoms and up to 4 aromatic rings, inclusive, or

(c) a [4.4]spirolactam-lactone wherein the lactam nitrogen and the lactone oxygen are in ring positions adjacent to the spiro carbon atom and the nitrogen is substituted with a hydroxy-containing substituent of up to 30 carbon atoms and up to 4 aromatic rings, inclusive.

4,939,252

NOVEL INTERMEDIATES FOR THE PREPARATION OF CARBOVIR

Alan Schwartz, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

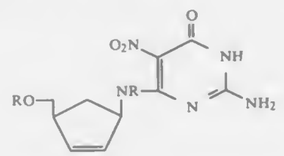
Filed Apr. 20, 1989, Ser. No. 340,648

Int. Cl.[5] *C07D 239/30, 239/50*

U.S. Cl. 544—321 **6 Claims**

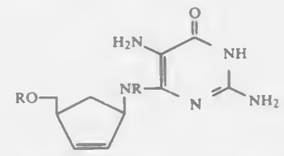
1. (±)-(1α,4α)-[(2-Amino-5-nitro-6(1H)-pyrimidinone)-amino]-2-cyclopentenyl carbinol.

3. A compound of the formula



wherein R is an acid-cleavable protecting group.

5. A compound of the formula



wherein R is an acid-cleavable protecting group.

4,939,253

2-OXOAZETIDIN-1-YLOXY ACETIC ACIDS AND ANALOGS

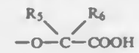
Hermann Breuer, Schoenhofen, and Henner Straub, Regensburg, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 404,945, Aug. 4, 1982, abandoned. This application Jul. 21, 1983, Ser. No. 515,727

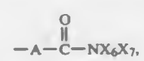
Int. Cl.[5] *C07D 205/08, 417/12;* **A61K** *31/395, 31/425*

U.S. Cl. 540—355 **25 Claims**

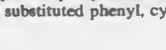
1. A 2-azetidinone having an



substituent in the 1-position and an acylamino substituent in the 3-position wherein the acyl portion of the group is derived from a carboxylic acid, or an ester or pharmaceutically acceptable salt thereof; wherein R_5 and R_6 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, phenyl, substituted phenyl, cycloalkyl or a 4,5, 6 or 7-membered heterocycle, or R_5 and R_6 together with the carbon atom to which they are attached are cycloalkyl or a 4,5,6 or 7-membered heterocycle, or one of R_5 and R_6 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, halogen, alkoxycarbonyl, alkenyl, alkynkyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl, $—CH_2—X_1$,



wherein X_1 is azido, amino, hydroxy, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkysulfonyloxy, phenylsulfonyloxy, (substituted phenyl)-sulfonyloxy, phenyl, substituted phenyl, cyano,



—S—X_2, or —O—X_2; X_2 is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylalkanoyl, (substituted phenyl)alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, or heteroarylcarbonyl; A is —CH=CH—, $—(CH_2)_n—$, $—CH_2—O—$, $—CH_2—NH—$, or $—CH_2—S—CH_2)_{n-1}$, 1, or 2; and X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl, or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, acylamino or alkyoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, 6 or 7-membered heterocycle,

wherein the terms "alkyl" and "alkoxy" refer to groups having 1 to 10 carbon atoms;

the term "cycloalkyl" refers to groups having 3, 4, 5, 6 or 7 carbon atoms;

the terms "alkanoyl", "alkenyl", and "alkynyl" refer to groups having 2 to 10 carbon atoms;

the term "substituted phenyl" refers to phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or carboxyl groups;

the term "substituted alkyl" refers to alkyl groups substituted with one or more azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, (4, 5, 6 or 7-membered heterocycle)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one or more halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "a 4, 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, azetinyl, oxetanyltietanyl, piperidinyl, piperazinyl, imidazoliddinyl, oxazolidinyl, pyrrolidinyl, tetrahyrdopyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms alkylsulfofnyl, phenyl, substituted phenyl, 2-furfurylideneimino, bengylideneiminio or substituted alkyl, wherein the alky group has 1 to 4 carbon atoms, groups; and

the term "substituted amino" refers to a group having the formula $—NY_1Y_2$ wherein Y_1 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, and Y_2 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino.

4,939,254

TEMPLATE SYNTHESIS OF MACROCYCLIC CATECHOLAMIDE COMPLEXES

Thomas J. McMurry, Rockville, Md., and Kenneth N. Raymond, Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 186,466, Apr. 26, 1988, abandoned. This application Oct. 30, 1989, Ser. No. 400,360

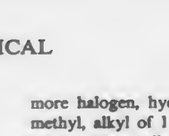
Int. Cl.[5] *C07D 487/18;* **A61K** *31/395*

U.S. Cl. 540—452 **2 Claims**

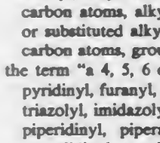
1. A method for making a compound of a formula selected from the group consisting of Ia, Ib and Ic



(Ia)

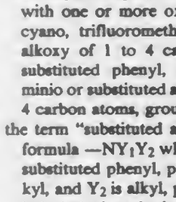


(Ib)



(Ic)

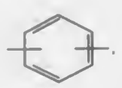
wherein each Q is independently



wherein
X is oxygen or sulfur, Y is OR_1 or SR_1; R_1 is hydrogen, alkyl of 1–4 carbon atoms or a hydroxy or mercapto protecting group, Z is hydrogen, alkyl of 1–4 carbon atoms, SO_3H, NO_2, CO_2R_1 or halo;
each R is independently

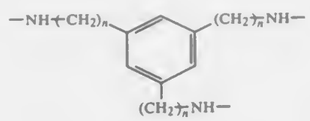
$$—NHCH_2—T—CH_2NH—$$

wherein T is $—(CH_2)_n—$, $—(CH_2)_nN—(CH_2)_n—$,



$(CH_2)_nCH_3$
each R' is independently

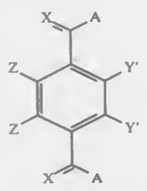
$+NH+CH_2\frac{}{n}\frac{}{n}N$ or



each R'' is independently

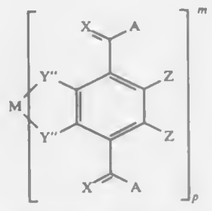
$C\{+CH_2\frac{}{n}NH\frac{}{4}$ or

and each n is independently integer from 0 to 6; comprising the steps of
(a) reacting a compound of the formula II



(II)

wherein Z and X are as defined hereinabove; Y' is OH or SH; and —CXA is an activated ester, imide or acid halide; with a metal salt, MB, perform a metal chelate of the formula III



(III)

wherein Y'' is oxygen or sulfur; MB is the metal salt of a hexadentate or octadentate metal ion and a counter ion B; X, A and Z are as defined hereinabove, m is a positive or negative integer or 0 from −6 to +6, p is a positive integer of 3 or 4;
(b) reacting one equivalent of said compound of formula III with two equivalents of a compound selected from the group consisting of RH_2, $R'H_3$ and $R''H_4$; to form compounds of the formula Ia, Ib or Ic or partially uncyclized intermediates thereto;
(c) optionally treating said intermediates from step (b), if present, with an acylation catalyst or acylation promoting agent to complete the cyclization of said intermediates to form compounds of the formula Ia, Ib or Ic.

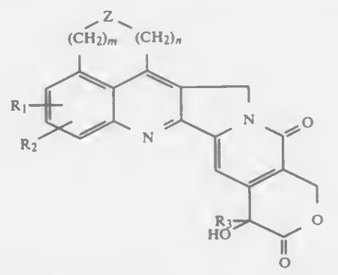
4,939,255

HEXA-CYCLIC CAMPTOTHECIN DERIVATIVES

Hiroaki Tagawa; Masamichi Sugimori; Hirofumi Terasawa; Akio Ejima, and Satoru Ohsuki, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd. and Kabushiki Kaisha Yakult Honsha, both of Tokyo, Japan

Filed Jun. 16, 1988, Ser. No. 207,718
Claims priority, application Japan, Jun. 24, 1987, 62-156990; Jan. 13, 1988, 63-005503
Int. Cl.[5] C07D *491/22*
U.S. Cl. 540—578 **3 Claims**

1. A compound represented by the following formula



(I)

wherein R_1 and R_2 independently represent hydrogen atoms, hydroxyl groups, C_{1-6} alkyl groups, C_{1-6} alkenyl groups, C_{1-6} alkynyl groups, C_{1-6} alkoxyl groups, C_{1-6} aminoalkoxyl groups, halogen atoms, nitro groups, cyano groups, mercapto groups, C_{1-6} alkylthio groups, C_{1-6} hydroxyalkyl groups, C_{1-6} halogenoalkyl groups, C_{1-6} cyanoalkyl groups, C_{1-6} nitroalkyl groups, amino groups which may contain protective groups, C_{1-6} aminoalkyl groups which may contain protective groups or C_{1-6} alkyl groups, C_{1-6} aminoalkylamino groups which may contain protective groups or C_{1-6} alkyl groups at the amino-position, heterocyclic C_{1-6} alkyl groups which may contain C_{1-6} alkyl, C_{1-6} alkoxyl, amino, halogeno, nitro, or cyano groups, heterocyclic C_{1-6} alkylamino groups which may contain C_{1-6} alkyl, C_{1-6} alkoxyl, amino (which may contain protective groups), halogeno, nitro, cyano groups, or protective groups, amino-heterocyclic groups which may contain protective groups or C_{1-6} alkyl groups at the nitrogen atom of the heterocyclic ring moiety or amino position, heterocyclic-amino groups which may contain protective groups of C_{1-6} alkyl groups at the nitrogen atom of the heterocyclic ring moiety or amino position, carbamoyl groups which may contain protective groups or C_{1-6} alkyl groups, heterocyclic carbonyl groups which may contain C_{1-6} alkyl, C_{1-6} alkoxyl, amino, hydroxyl, halogeno, nitro, or cyano groups, R_3 represents an C_{1-6} alkyl group, Z represents O, S, CH·—R_4 (R_4 stands for a hydrogen atom or a C_{1-6} alkyl group), or N—R_5 (R_5 stands for a hydrogen atom, a C_{1-6} alkyl group, or a protective group for the amino group), and m and n independently represent 0, 1 or 2 provided that m and n are not both equal to 2, and wherein said heterocyclic group is selected from the group consisting of azetidine, pyrrolidine, piperidine, piperazine, imidazoline, and morpholine, and wherein said protective group is selected from the group consisting of acetyl, formyl, trityl, tert-butoxycarbonyl, and p-methoxybenzoyloxycarbonyl.

4,939,256

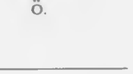
PLATINUM COMPLEX, ANTINEOPLASTIC AGENT CONTAINING THE SAME, AND INTERMEDIATE THEREFOR

Masanori Takamatsu, Toyonaka; Munetaka Matsui, Sakai, and Yoshiaki Ikeda, Osaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Nov. 23, 1988, Ser. No. 275,363
Claims priority, application Japan, Feb. 4, 1988, 63-25463; Aug. 1, 1988, 63-192274
Int. Cl.[5] C07F *15/00*; A61K *31/555*
U.S. Cl. 546—11 **9 Claims**

1. A platinum complex of the formula:

wherein n is an integer of 1 or 2 and A is a ligand of the formula:



4,939,257

PHENOXYPHENYLTHIOUREAS

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 93,433, Sep. 4, 1987, abandoned, which is a continuation of Ser. No. 616,372, Jun. 1, 1984, abandoned, which is a continuation of Ser. No. 344,580, Feb. 1, 1982, abandoned, which is a division of Ser. No. 185,078, Sep. 8, 1980, Pat. No. 4,328,247. This application Sep. 21, 1988, Ser. No. 248,304
Claims priority, application Switzerland, Sep. 19, 1979, 8474/79; Sep. 21, 1979, 8567/79; Nov. 12, 1979, 10084/79; Nov. 12, 1979, 10085/79; Jul. 18, 1980, 5541/80
Int. Cl.[5] C07C *157/07, 157/09*
U.S. Cl. 564—28 **8 Claims**

1. A compound of the formula



wherein each of R_1, R_2 and R_3 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl or nitro; each of R_4 and R_5 is isopropyl, isobutyl, or tertiary butyl; R_7 is propyl or butyl; and R_8 is hydrogen.

4,939,258

CYCLOALKANOL ESTERS OF DIHYDROLYSERGIC ACID

Kathleen R. Whitten, Zionsville; William L. Garbrecht, Indianapolis; Gifford P. Marzoni, Indianapolis, and C. John Parli, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 336,280, Apr. 11, 1989, Pat. No. 4,906,639, Division of Ser. No. 43,780, Apr. 29, 1987, Pat. No. 4,845,224, which is a division of Ser. No. 782,337, Oct. 1, 1985, Pat. No. 4,683,236. This application Jan. 10, 1990, Ser. No. 463,171
Int. Cl.[5] C07D *457/04*; A61K *31/48*
U.S. Cl. 546—69 **1 Claim**

1. A process for preparing a compound of the formula:

wherein R is primary or secondary C_{1-8} alkyl, CH_2–C_{2-4} alkenyl, C_{3-8} cycloalkyl or C_{3-6} cycloalkyl-substituted C_{1-5} primary or secondary alkyl, the total number of carbon atoms in R not to exceed 8; R^1 is H, allyl or C_{1-4} straight chain alkyl, and R^2 is C_{5-7} cycloalkyl or keto-substituted C_{5-7} cycloalkyl, which comprises
(A) estesrifying a 1-R-9, 10-dihydrolysergic acid, wherein R^2 is hydrogen, with a lower alkanol;
(B) reacting the resulting lower alkanol ester with CNBr to form a lower alkyl 1-R-6-cyanoergoline-8β-carboxylate;
(C) treating the resulting 6-cyano compound with an inorganic base in a glycol solvent having a boiling point above about 140° C. to form a 1-R-ergoline-8β-carboxylic acid.
(D) reesterifying said 1-R-ergoline-8β-carboxylic acid with an alcohol selected from the group consisting of a C_{5-7} cycloalkanols, C_{5-7} cycloalkandiol, keto-substituted C_{5-7} cycloalkanols, or an alkanol of the formula R^6-CHR^5OH wherein R^5 is H, CH_2-O-C_{1-3} alkyl or CH_3 and R^6 is hydroxy C_{1-3} alkyl, C_{1-3} alkyloxy C_{1-3} alkyl, di(C_{1-3} alkyloxy) C_{1-3} alkyl or keto C_{1-3} alkyl-;
(E) and then racting the 1-R-ergoline-8β-carboxylic acid ester thus formed with a C_{1-4} straight chain alkyl or allyl halide in the presence of base to form the corresponding 1-R-6-C_{1-4} straight chain alkyl (or allyl)ergoline-8β-caraboxylic acid ester, wherein R has its previous meaning.

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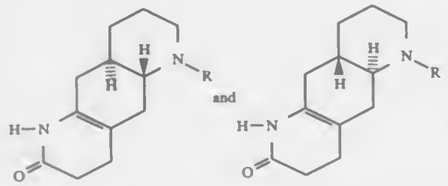
4,939,259

2-OXO-PYRIDO[2,3-G]QUINOLINE DERIVATIVES

John M. Schaus, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 24, 1989, Ser. No. 383,673
Int. Cl.[5] C07D *471/04*
U.S. Cl. 546—81 1 Claim

1. A compound of the formulae



and

wherein:

R is C_1–C_4 alkyl, allyl or cyclopropylmethyl; and acid addition salts thereof.

4,939,260

PROCESS FOR PRODUCING AROMATIC NITRILES OR HETEROCYCLIC NITRILES

Akira Inoue, Hirakata; Mitsuaki Ikeda, Himeji; Kunio Sano, Ako; Sadao Terui, and Toshihide Kanzaki, both of Hyogo, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed May 12, 1988, Ser. No. 193,084
Claims priority, application Japan, May 12, 1987, 62-113462
Int. Cl.[5] C07D *213/57, 213/84;* C07C *255/50, 255/52*
U.S. Cl. 546—286 19 Claims

1. A process for producing aromatic or heterocyclic nitriles, which comprises reacting an alkyl-substituted aromatic compound or an alkyl-substituted heterocyclic compound selected from the group consisting of C_1–C_3 alkyl-substituted benzenes C_1–C_3 alkyl-substituted naphthalenes and C_1–C_3 alkyl-substituted pyridines which each may be further substituted by a halogen, nitrile or alkoxy with ammonia and oxygen, in the gas phase, in the presence of a catalyst composition consisting of (a) at least one composite oxide selected from the group consisting of a binary composite oxide consisting of titanium and silicon, a binary composite oxide consisting of titanium and zirconium and a ternary composite oxide consisting of titanium, silicon and zirconium, and (b) an oxide of at least one metal selected from the group consisting of vanadium, molybdenum, tungsten, chromium, antimony, bismuth, phosphorous, niobium, iron, nickel, cobalt, manganese and copper;

wherein said reaction is carried out at a temperature of 180° to 600° C., under a pressure of 1 to 3 atmospheres;

wherein the concentration of said alkyl-substituted aromatic compound or alkyl-substituted heterocyclic compound in the feed gas is 0.5 to 4% by volume, the mole ratio of oxygen to the alkyl-substituted aromatic compound or alkyl-substituted heterocyclic compound in the feed gas is at least 2 and the mole ratio of ammonia to the alkyl-substituted aromatic compound or alkyl-substituted heterocyclic compound in the feed gas is at least 1.5; and

wherein the feed gas is fed at a space velocity of 400 to 3000 hr^{-1}, for NTP.

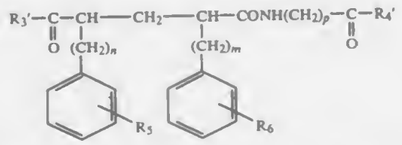
4,939,261

N-SUBSTITUTED BUTYRAMIDE DERIVATIVES USEFUL FOR TREATMENT OF CONDITIONS RESPONSIVE TO INHIBITION OF ENKEPHALINASE

Gary M. Knaader, Carmel, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 772,067, Sep. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 618,617, Jun. 8, 1984, abandoned. This application Sep. 17, 1987, Ser. No. 98,755
Claims priority, application PCT Int'l Appl., Jun. 1, 1985, PCT/EP85/00261
Int. Cl.[5] C07D *213/55;* C07C *101/02, 103/14;* A61K *31/44*
U.S. Cl. 514—357 14 Claims

1. A compound of the formula



(IV)

wherein m and n independently represent an integer from 1 to 4; p represents an integer from 2 to 4; R_3' and R_4' independently represent hydroxy, (C_1–C_{20})-alkoxy, pivaloyloxymethoxy, bornyloxycarbonylmethoxy, benzyloxy, pyridylmethoxy or 1-(lower alkoxycarbonyloxy)-lower alkoxy; R_5 and R_6 independently represent hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl or trifluoromethyl; or a pharmaceutically acceptable salt thereof.

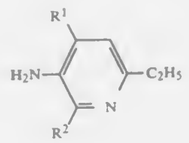
4,939,262

6-ETHYL-3-AMINO OR NITRO-2,4-DIHALOGENOPYRIDINE COMPOUNDS

Gerhard Bonse, Cologne; Werner Hallenbach, Langenfeld, and Hans Lindel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 320,132
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1988, 3808115
Int. Cl.[5] C07D *213/74*
U.S. Cl. 546—311 2 Claims

1. A 6-ethyl-3-amino-2,4-dihalogeno-pyridine of the formula



in which

R^1 and R^2 each is halogen.

4,939,263

CONTROL OF ISOMER DISTRIBUTION IN A CHLORINATION PROCESS

Richard K. Helling, Martinez; Philip D. Grover, Concord; Thomas J. Dietsche, Berkeley, and Mark L. Garibaldi, Martinez, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 28, 1989, Ser. No. 413,926
Int. Cl.[5] C07D *213/61*
U.S. Cl. 546—345 12 Claims

1. An improved process for chlorinating 2-chloro-6-(trichloromethyl)pyridine in the liquid phase at elevated temperatures and in the presence of a metal halide catalyst to obtain a chlorination mixture containing 5,6-dichloro-2-(trichloromethyl)pyridine and 3,6-dichloro-2-(trichloromethyl)pyridine isomers, wherein the improvement comprises controlling the ratio of said isomers by regulating the amount of hydrogen chloride present in the chlorination system by adding hydrogen chloride to obtain a mixture enriched in 5,6-dichloro-2-(trichloromethyl)pyridine or removing hydrogen chloride to obtain a mixture enriched in 3,6-dichloro-2-(trichloromethyl)-pyridine.

4,939,264

IMMUNOASSAY FOR OPIATE ALKALOIDS AND THEIR METABOLITES; TRACERS, IMMUNOGENS AND ANTIBODIES

Daniel F. Heiman, Libertyville; Daniel S. Raden, Hawthorn Woods, and Robert E. Dubler, Gurnee, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 14, 1986, Ser. No. 885,054
Int. Cl.[5] G01N *33/542*
U.S. Cl. 436—537 2 Claims

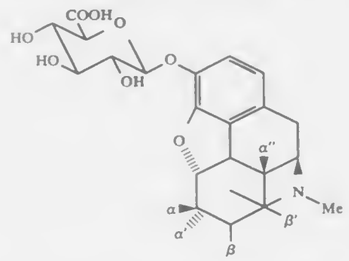
1. A method for detecting, or measuring the concentration of, one or more opiate alkaloids or their metabolites in a sample, comprising the steps of:

(a) contacting a sample with:

(1) riboflavin binding protein in an amount sufficient to substantially reduce the fluorescence of riboflavin;

(2) antisera containing an antibody prepared in response to an immunogen made by a method which comprises the steps of:

(a) oxidizing a glucuronide conjugate of an opiate alkaloid, represented by the structural formula:



wherein:

(1) one of α and α′ is hydrogen and the other is hydroxyl, or both are taken together to form =O (ketone);

(2) β and β′ are both hydrogen, or both are taken together to form a bond joining the carbon atoms to which they are attached; and

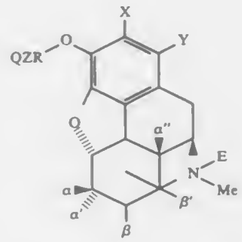
(3) α″ is hydrogen or hydroxyl; with a water-soluble periodate;

(b) allowing the aldehyde compound so formed to react with primary alkyl amino groups on an immunogenic carrier substance; and

(c) reducing the resulting condensation product with a borohydride reagent;

or containing another antibody raised against a substituted opiate alkaloid which is coupled to an immunogenic carrier substance at the 3-position; and

(3) a compound comprising the structure:



wherein:

(a) one of X and Y is hydrogen and the other is hydrogen, flourine, chlorine, bromine, cyano or C_1 to C_3 alkyl;

(b) Z is >NH, >C=O), >C=NH or $>SO_2$;

(c) Q is fluorescein or a fluorescein derivative;

(d) R is a linking group consisting of from 0 to 20 carbon atoms and heteroatoms, including not more than twelve heteroatoms, said heteroatoms being N, O, S, Cl, I or Br, arranged in a straight or branched chain, with the proviso that not more than four heteroatoms may be linked in sequence, nor may more than two sulfur or two nitrogen or one oxygen atom be linked in sequence;

(e) E is a nonbinding electron pair, an oxygen atom or methyl;

(f) α and α′ are both hydrogen or one of them is hydrogen while the other is hydroxyl, methyl or fluoro, or both taken together to form =O (ketone);

(g) α″ is hydrogen or hydroxyl; and

(h) β and β′ are both hydrogen, or both are taken together to form a bond joining the two carbon atoms to which they are attached, with the proviso that β and β′ do not form a bond when α is H, α′ is HO, E is an election pair and α″, X and Y are all hydrogen.

(b) passing plane-polarized light through the solution resulting from step (a) to obtain a fluorescence polarization response; and

(c) detecting the fluorescence polarization response of the solution of step (b) as an indicator of the presence or amount of opiate alkaloids or their metabolites in the sample.

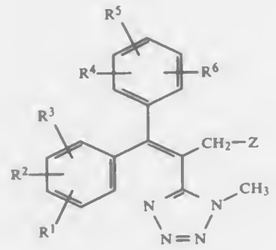
4,939,265

INTERMEDIATES AND PROCESS FOR THE PREPARATION OF ANTIHYPERCHOLESTEROLEMIC TETRAZOLE COMPOUNDS

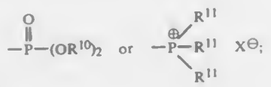
John J. Wright, Middletown; Sing-Yuen Sit, Meriden; Neelakantan Balasubramanian, Bristol, and Peter J. Brown, Cromwell, all of Conn., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 151,512, Feb. 18, 1988, Pat. No. 4,898,949, which is a continuation-in-part of Ser. No. 18,558, Feb. 25, 1987, abandoned. This application Nov. 1, 1989, Ser. No. 430,029
Int. Cl.[5] C07F *9/28, 9/65*
U.S. Cl. 548—112 11 Claims

1. A compound of the formula

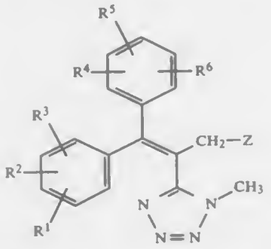


wherein
R^1 and R^4 each are independently hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy or trifluoromethyl;
R^2, R^3, R^5 and R^6 each are independently hydrogen, halogen, C_{1-4} alkyl or C_{1-4} alkoxy;
Z is

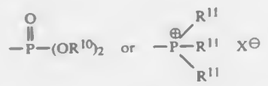


R^0 is C_{1-4} alkyl; and
R^{11} is phenyl which is unsubstituted or substituted by one or two C_{1-4} alkyl or chloro substituents.

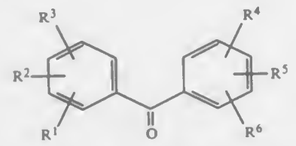
8. A process for preparing a compound of the formula



wherein R^1 and R^4 each are independently hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy or trifluoromethyl; R^2, R^3, R^5 and R^6 each are independently hydrogen, halogen, C_{1-4} alkyl or C_{1-4} alkoxy and Z is

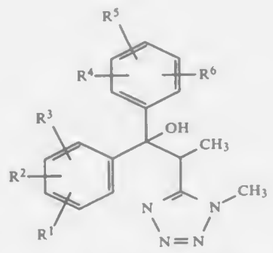


in which R^{10} is C_{1-4} alkyl; R^{11} is phenyl which is unsubstituted or substituted by one or two C_{1-4} alkyl or chloro substituents and X is bromo, chloro or iodo, comprising the steps of
(a) reacting a benzophenone compound of the formula



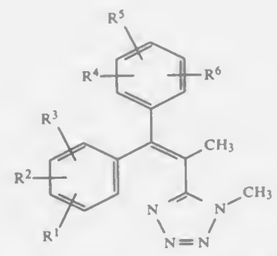
wherein R^1, R^2, R3, R^4, R^5 and R^6 are as defined above with 5-ethyl-1-methyl-1H-tetrazole, to produce a compound of the formula

VIIa



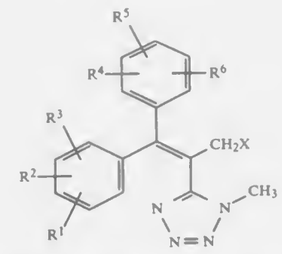
wherein R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above;
(b) dehydrating an alcohol of Formula VIIa to produce a compound of the formula

Id



wherein R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above;
(c) halogenating an olefin of Formula Id to produce a compound of the formula

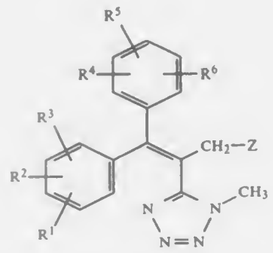
Ie



wherein R^1, R^2, R^3, R^4, R^5, R^6 and X are as defined above; and
(d) reacting a compound of Formula Ie with

$P(OR^{10})_3$ or $P(R^{11})_3$

wherein R^{10} is C_{1-4} alkyl and R^{11} is phenyl which is unsubstituted or substituted by one or two C_{1-4} alkyl or chloro substituents, to produce a compound of the formula



wherein R^1, R^2, R^3, R^4, R^5, R^6 and Z are as defined above.

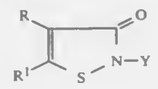
4,939,266

NITROSAMINE-FREE 3-ISOTHIAZOLONE

Horst O. Bayer; Barry C. Lange, both of Levittown, and Ramesh B. Petigara, Hatfield, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 383,858, Jun. 1, 1982, abandoned. This application Jul. 3, 1989, Ser. No. 376,199
Int. Cl.[5] C07D *275/02*
U.S. Cl. 548—213 **2 Claims**

1. A process for preparing a biologically active, metal nitrate salt-stabilized, 3-isothiazolone composition substantially free of nitrosamine impurities and precursors thereof which comprises:
(a) preparing a biologically active 3-isothiazolone substantially free of a by-product compound containing an amine moiety capable of being nitrosated to a nitrosamine, or a nitrosamine compound derived therefrom, which 3-isothiazolone may be represented by the formula:



wherein R and R' are independently selected from hydrogen, halogen or an alkyl group of 1 to 4 carbon atoms; Y is an alkyl group of 1 to 8 carbon atoms, a cycloalkyl group of 5 or 6 carbon atoms, an aralkyl group of up to 8 carbon atoms, or an aryl or substituted aryl group of 6 carbon atoms, wherein said 3-isothiazolone is prepared by a process comprising amidation of dimethyl dithiopropionate to form a dithioamide intermediate wherein formation of undesirable N-methyl-3-(N'-methylamino) propionamide by- product compound is inhibited by use of a nucleophilic scavenger selected from the group consisting of methyl mercaptan, ethyl mercaptan, propyl mercaptan, phenyl mercaptan. HS—CH_2CH_2COO—(alkyl) and H_2S—CH_2CH_2CONH—(alkyl) in said amidation process;
(b) adding to said 3-isothiazolone a ring-stabilizing metal nitrate salt in an amount sufficient to stabilize the ring of the 3-isothiazolone.

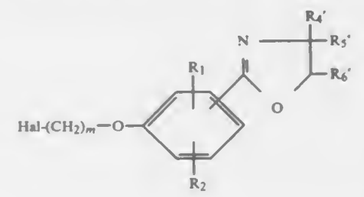
4,939,267

HALOALKOXY PHENYL 4,5 DIHYDRO OXAZOLES

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 63,182, Jun. 17, 1987, Pat. No. 4,843,087, which is a continuation-in-part of Ser. No. 751,348, Jul. 2, 1985, abandoned, which is a continuation-in-part of Ser. No. 624,302, Jun. 25, 1984, abandoned, which is a continuation-in-part of Ser. No. 527,583, Aug. 29, 1983, abandoned. This application Jun. 12, 1989, Ser. No. 364,913
Claims priority, application Canada, Jun. 24, 1986, 512264
Int. Cl.[5] C07D *261/04*
U.S. Cl. 548—237 **3 Claims**

1. A compound having the formula



wherein:
R_1 and R_2 are selected from the group consisting of hydrogen, lower-alkyl, lower-alkenyl, halogen, nitro, lower-alkoxy, lower-alkylthio, difluoromethyl, trifluoromethyl, amino, lower-alkanoylamino, di-lower-alkylamino, hydroxy, lower-alkenoyl, lower-alkanoyl, hydroxymethyl and carboxy;
R_4', R_5' and R_6' are each hydrogen, or alkyl or hydroxyalkyl of 1 to 3 carbon atoms;
Hal is chlorine, bromine or iodine;
m is an integer from 2 to 8;
and the oxazoline ring is in the meta or para position with respect to the phenoxy linkage.

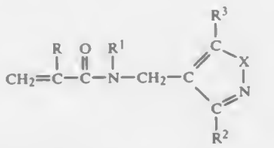
4,939,268

4-((METH)ACRYLAMIDOMETHYL)-PYRAZOLES AND -ISOXAZOLES, THEIR PREPARATION AND THEIR USE

Kaspar Bott, Mannheim; Bernhard Nick, Ludwigshafen, and Guenther Schulz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 2, 1989, Ser. No. 360,987
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1988, 3819456
Int. Cl.[5] C07D *231/12, 261/08*
U.S. Cl. 548—247 **8 Claims**

1. A 4-[(meth)acrylamidomethyl]-pyrazole or -isoxazole of the formula (I)



(I)

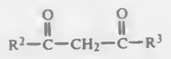
where R, R^1, R^2, R^3 and X independently of one another have the following meanings: R is hydrogen or methyl, R^1 is hydrogen, methyl or ethyl, R^2 and R^3 may be identical or different and are each alkyl of 1 to 6 carbon atoms or unsubstituted or substituted aryl of 6 to 20 carbon atoms and X is oxygen or an NR^4 group, where R^4 is hydrogen or a radical having the meanings of R^2 or R^3.

8. A process for the preparation of a 4-[(meth)-

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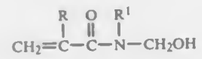
acrylamidomethyl]-pyrazole or -isoxazole, comprising the following steps:

(1) condensing a 1,3-diketone of the formula (II)



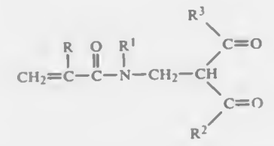
(II)

where R^2 and R^3 may be identical or different and independently of one another are each alkyl of 1 to 6 carbon atoms or unsubstituted or methyl, t-butyl or phenyl substituted aryl of 6 to 20 carbon atoms, with an equimolar amount of an N-methylol(meth)acrylamide of the formula III



(III)

where R is hydrogen or methyl and R^1 is hydrogen, methyl or ethyl, in 2 to 20 times the weight of the 1,3-diketone of the general formula (II) of a strong acid as a reaction medium at from 15° to 40° C. for a time period of from 1 to 48 hours, thereby obtaining a 2-[(meth)acrylamidomethyl]-1,3-diketone of the formula (IV)

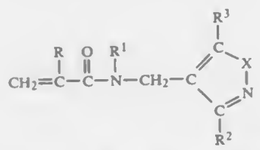


(IV)

where R, R^1, R^2 and R^3 have the meanings stated above for the formulae (II) and (III),

(2) isolating the said 2-[(meth)acrylamidomethyl]-1,3-diketone of the formula IV by pouring the reaction mixture obtained from process step 1 on a large excess of ice, thus precipitating the said 2-[(meth)acrylamidomethyl]-1,3-diketone, and

(3) condensing the said 2-[(meth)acrylamidomethyl]-1,3-diketone of the formula IV with an equimolar amount of a hydrazine or hydroxylamine in an aqueous reaction medium at the boiling point of said medium, thereby obtaining a 4-[(meth)acrylamidomethyl]-pyrazole or -isoxazole of the formula (I)



(I)

where R, R^1, R^2, R^3 and X independently of one another have the following meanings: R is hydrogen or methyl, R^1 is hydrogen, methyl or ethyl, R^2 and R^3 may be identical or different and are each alkyl of 1 to 6 carbon atoms or unsubstituted or substituted aryl of 6 to 20 carbon atoms and X is oxygen or an NR^4 group, R^4 is hydrogen or a radical having the meanings of R^2 or R^3.

4,939,269

3-SUBSTITUTED HYDANTOINS

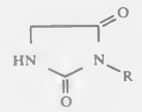
Akihiro Ohtsubo; Kouhei Morikawa, both of Kawasaki; Yohko Kataoka, and Sumio Soya, both of Yokohama, all of Japan, assignors to Showa Denko K. K., Tokyo, Japan

Filed Dec. 16, 1988, Ser. No. 285,632

Int. Cl.[5] C07D *233/74*

U.S. Cl. 548—308 **1 Claim**

1. A hydantoin compound represented by the following formula:



wherein R is one member selected from the group consisting of 2-ethylhexyl, n-tetradecyl, n-hexadecyl, n-octadecyl and n-eicosyl.

4,939,270

SPIRODILACTAM DIAMINES

Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 23, 1989, Ser. No. 314,513

Int. Cl.[5] C07D *487/10*

U.S. Cl. 548—410 **14 Claims**

4,939,271

MERCAPTO-MODIFIED N-(R-OXYMETHYL) ACRYLAMIDE/RUBBER-FORMABLE MONOMER/(METH)ACRYLONITRILE TERPOLYMERS

Richard A. Markle, Columbus, Ohio, assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 99,253, Sep. 21, 1987, Pat. No. 4,812,521. This application Jan. 5, 1989, Ser. No. 293,671

Int. Cl.[5] C07D *209/48*; C07C *103/60*

U.S. Cl. 548—477 **3 Claims**

1. An impact modifier for a thermoset polymer comprising a terepolymer formed by the reaction of an acrylamide monomer, a rubber formable monomer and a nitrile monomer in combination with a mercapto modifier wherein said acrylamide monomer comprises an N-(R-oxymethyl) acrylamide wherein R is selected from the group consisting of C_3 to C_{22} alkyl, ether, aldehyde, ketone, amide, ester, carboxylic acid,

phthalimide and imide other than phthalimide said rubber formable monomer is selected from the group consisting of isoprene, butadiene, alkyl esters of methacrylic acid and chloroprene and said nitrile monomer is selected from the group consisting of acrylonitrile and methacrylonitrile and wherein said mercapto modifier comprises a modifier selected from the group consisting of mercapto C_3–C_{10} alkyl acids and C_1–C_{10} alkyl ester derivatives thereof.

4,939,272

WATER SOLUBLE COMPLEXES OF POLYVINYLPYRROLIDONE, HYDROGEN CHLORIDE AND IODINE AND PROCESS FOR MAKING THE SAME

Robert B. Logia, Oakland, and John J. Merianos, Middletown, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed May 5, 1989, Ser. No. 347,648

Int. Cl.[5] C07D *403/14*

U.S. Cl. 548—543 **10 Claims**

1. A water soluble complex of PVP, HCl and I_2.

4,939,273

METHOD FOR CONVERSION OF ETHYLIDENE N,N'-BIS-PYRROLIDONE INTO 2-PYRROLIDONE

Kou-Chang Liu, Wayne, and Paul D. Taylor, West Milford, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Aug. 24, 1989, Ser. No. 397,931

Int. Cl.[5] C07D *207/12*

U.S. Cl. 548—543 **9 Claims**

1. A process for converting ethylidene-N,N'-bis-pyrrolidinone into 2-pyrrolidone which comprises pyrolyzing said ethylidene-N,N'-bis-pyrrolidinone at an elevated temperature.

4,939,274

HYDROXYBUTENOLIDE DERIVATIVES, PRODUCTION AND USE THEREOF

Shinji Terao, and Minoru Hirata, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

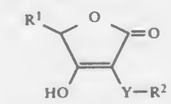
Continuation of Ser. No. 84,176, Aug. 12, 1987, abandoned. This application Aug. 7, 1989, Ser. No. 390,230

Claims priority, application Japan, Aug. 29, 1986, 61-204832

Int. Cl.[5] C07D *307/62*

U.S. Cl. 549—315 **11 Claims**

1. A compound of the formula:



wherein Y is an oxygen atom, a phenyleneoxy, or an oxyphenyleneoxy;

R^1 is hydrogen, C_{1-6} alkyl or phenyl unsubstituted or substituted with a hydroxy group or a carboxyl group; and R^2 is C_{2-20} alkyl, C_{2-20} alkenyl, or phenyl-C_{1-3} alkyl.

4,939,275

PERIPLANONE A

Peter Hofmeister, Neustadt; Wolfgang Krieg, Weingarten; Reinhard Neudert, Bissersheim, and Hagen Hauptmann, Regensburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

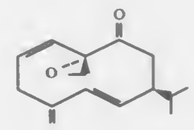
Filed Nov. 6, 1987, Ser. No. 117,294

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1986, 3639941

Int. Cl.[5] C07D *303/04*

U.S. Cl. 549—332 **1 Claim**

1. Substantially pure (±)-periplanone A having the structural formula:



4,939,276

CONCENTRATION OF NATURAL INGREDIENTS FROM NATURAL MATERIALS

Christian Finet, Zimmersheim, France, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 14, 1988, Ser. No. 270,604

Claims priority, application Switzerland, Nov. 19, 1987, 4509/87

Int. Cl.[5] C07D *311/72*; C07J *9/00*

U.S. Cl. 549—413 **13 Claims**

1. A process for concentrating naturally occurring ingredients in a material derived from natural sources wherein said natural occurring ingredients are selected from the group consisting of natural occurring tocopherols, steroids or mixtures thereof comprising treating said material with calcium hydroxide in a solvent medium containing water and a water-miscible inert organic solvent to form calcium salts of the fatty acids present in said material, removing the water miscible organic solvent from said treated material, thereafter adding a water-immiscible polar solvent to precipitate these calcium salts and removing said calcium salts to leave a residue containing the natural occurring ingredients.

4,939,277

TETRAHYDROFURAN DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

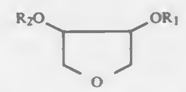
Naoshi Imaki, Atsugi; Isao Kawakami, and Sinichiro Nakamura, both of Tokyo, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Feb. 7, 1989, Ser. No. 306,932

Int. Cl.[5] C07D *307/04*

U.S. Cl. 549—476 **8 Claims**

1. A tetrahydrofuran derivative of the formula:



(I)

wherein each of R_1 and R_2 is an alkyl group having from 1 to 20 carbon atoms, and the two alkoxy groups OR_1 and OR_2 take a cis form to the plane of the tetrahydrofuran ring.

4,939,278

HERBICIDAL PYRONES

Janet E. Anderson-McKay, Newtown, and Andris J. Liepa, Wheelers Hill, both of Australia, assignors to Dunlena Pty. Limited, North Sydney, Australia

PCT No. PCT/AU87/00236, § 371 Date Apr. 13, 1988, § 102(e) Date Apr. 13, 1988, PCT Pub. No. WO88/00945, PCT Pub. Date Feb. 11, 1988

PCT Filed Jul. 27, 1987, Ser. No. 188,800

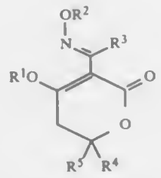
Claims priority, application Australia, Jul. 29, 1986, PH 07179

Int. Cl.[5] C07D *311/96*

U.S. Cl. 549—265 **13 Claims**

1. A compound of the general formula (2) and isomeric and/or tautomeric forms thereof

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(2)

characterized in that R^1 is selected from the group consisting of: "hydrogen; optionally substituted C_{1-6} alkyl; C_{2-6} alkenyl; C_{2-6} alkynyl; optionally substituted C_{3-6} cycloalkyl; C_{5-6} cycloalkenyl wherein the said substituted alkyl or cycloalkyl is substituted with a substituent selected from the group consisting of alkoxy, alkylthio and optionally substituted phenyl; optionally substituted phenyl; alkyl sulfonyl; optionally substituted benzene sulfonyl; C_{2-6} acyl group; and an inorganic or organic cation;

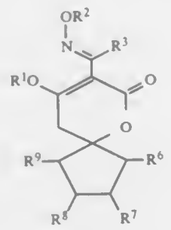
R^2 is selected from the group consisting of optionally substituted C_{1-6} alkyl; C_{2-6} alkenyl; optionally substituted C_{3-6} cycloalkyl; C_{5-6} cycloalkenyl; C_{2-6} haloalkenyl; C_{2-6} alkynyl; C_{2-6} haloalkynyl wherein the said substituted alkyl or cycloalkyl is substituted with a substituent selected from the group consisting of halogen, alkoxy, alkylthio and optionally substituted phenyl; and optionally substituted phenyl;

R^3 is selected from the group consisting of C_{1-6} alkyl; C_{1-6} haloalkyl; C_{2-6} alkenyl; C_{3-6} cycloalkyl; C_{5-6} cycloalkenyl; C_{2-6} alkynyl; and optionally substituted phenyl;

wherein any carbon-containing substituent on an R^1 and R^3 alkyl, cycloalkyl; phenyl or benzene sulfonyl group contains up to 6 carbon atoms; and

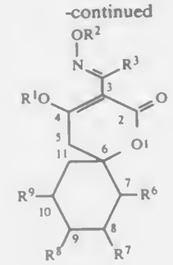
R^4 and R^5 together with the carbon to which they are attached form a substituted or unsubstituted saturated or partially saturated carboxylic ring containing 3 to 10 ring atoms, which ring may be bridged or fused and may contain substituents selected from the group consisting of hydrogen; C_{1-6} alkyl; C_{2-6} alkenyl; C_{2-6} alkynyl; substituted alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of alkoxy; alkylthio and optionally substituted phenyl wherein any carbon-containing substituent contains up to 6 carbon atoms; optionally substituted phenyl wherein any carbon containing substituent contains up to 6 carbon atoms; oxo; C_{2-6} acyl; C_{1-6} alkoxy; C_{1-6} alkylthio, C_{2-6} alkoxy carbonyl; C_{3-6} (alkoxyimino) alkyl; C_{1-6} ketal; and C_{1-6} carboxylic acid.

2. A compound as claimed in claim 1, having the general formula (3), (4) or (5)

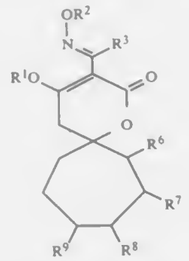


(3)

-continued



(4)



(5)

characterized in that R^1, R^2 and R^3 are as specified in claim 1, the non-lactone ring is saturated or partially unsaturated and "R^6, R^7, R^8 and R^9 are selected from the group consisting of: hydrogen; halo; C_{1-6} alkyl; C_{2-6} alkenyl; C_{2-6} alkynyl; substituted C_{1-6} alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of halo, C_{1-6} alkoxy, C_{1-6} alkylthio and optionally substituted phenyl wherein any carbon-containing substituent contains up to 6 carbon atoms; optionally substituted phenyl wherein any carbon-containing substituent contains up to 6 carbon atoms; oxo; C_{1-6} acyl; C_{1-6} alkoxy; C_{1-6} alkylthio; C_{1-6} alkoxycarbonyl; C_{3-6} (alkoxyimino) alkyl; C_{1-6} ketal; and C_{1-6} carboxylic acid."

4,939,279

LEUKOTRIENE ANTAGONISTS

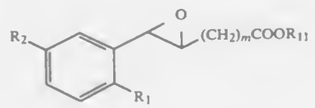
John G. Gleason, Downingtown; Ralph F. Hall, Villanova; Thomas W. Ku, Dresher, and Carl D. Perchonock, Philadelphia, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Division of Ser. No. 195,355, May 16, 1988, Pat. No. 4,820,719, which is a continuation of Ser. No. 926,314, Oct. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 848,608, Apr. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,264, Apr. 19, 1985, abandoned. This application Jan. 17, 1989, Ser. No. 298,448

Int. Cl.[5] **C07D** *303/16, 303/34, 333/24*

U.S. Cl. 549—549 **3 Claims**

1. A compound represented by the structural formula (X):



wherein

R_1 is C_{10} to C_{12} 1-alkynyl, 10-undecynyloxy, 11-dodecynyl, phenyl-C_4 to C_{10} alkyl, phenyl-C_3 to C_9 alkoxy, phenylthio-C_3 to C_9 alkyl with the phenyl optionally mono substituted with bromo, chloro, trifluoromethyl, C_1 to C_4 alkoxy, methylthio or trifluoromethylthio, thienyl-C_4 to C_{10} alkyl furyl-C_4 to C_{10} alkyl, trifluoromethyl-C_7 to C_{12} alkyl or cycloheyl-C_4 to C_{10} alkyl; and

R_2 is hydrogen, bromo, chloro, methyl, trifluoromethyl, hydroxy, C_1 to C_4 alkoxy to nitro;

m is 0, 1 or 2; and

R_{11} is lower alkyl.

4,939,280

CONVERSION OF 1,3-DIOXANES TO 4-OXAALDEHYDES

Wolfgang Hoelderich; Franz Merger, both of Frankenthal, and Helmut Lermer, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

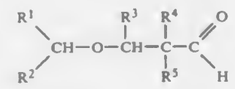
Filed Apr. 29, 1988, Ser. No. 188,416

Claims priority, application Fed. Rep. of Germany, May 12, 1987, 3715752

Int. Cl.[5] **C07D** *213/48, 307/46, 333/22*

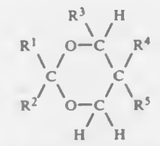
U.S. Cl. 549—13 **4 Claims**

1. A process for the preparation of a 4-oxaaldehyde of the formula (I)



(I)

by catalytic isomerization of a 1,3-dioxane, wherein a 1,3-dioxane of the formula (II) Hoelderich et al., Ser. No. 188,416



(II)

where R^1, R^2, R^4 and R^5 in the formulae (I) and (II) are identical or different and are each hydrogen, a straight-chain or branched alkyl, alkenyl or alkynyl radical of not more than 18 carbon atoms, a cycloalkyl or cycloalkenyl radical of 5 to 8 carbon atoms, an aryl, alkylaryl, aralkyl, aralkenyl or alkenylaryl radical of 5 to 16 carbon atoms or a heterocyclic radical selected from the group consisting of tetrahydrofuran, dihydrofuran, furan, tetrahydrothiophene, dihydrothiophene, thiophene, pyridine and thiopyran and moreover R_1 and R^2 and/or R^4 and R^5 together with the carbon atom to which they are bonded may be form a cycloalkane, cycloalkene or a heterocyclic radical, selected from the group consisting of tetrahydrofuran, dihydrofuran, furan, tetrahydrothiophene, dihydrothiophene, thiophene, pyridine and thiopyran and the stated radicals may furthermore carry one or more substituents which are inert under the reaction conditions selected from the group consisting of alkyl and halogen and R^3 is hydrogen or a straight-chain or branched alkyl radical,, is isomerized using a catalyst selected from the group consisting of aluminum phosphates having a zeolite structure and precipitated aluminum phosphates.

4,939,281

METHOD FOR RECOVERING SOLID MOLYBDENUM COMPOUNDS

Edward T. Marquis, Austin; John R. Sanderson, Leander, and Kenneth P. Keating, Georgetown, all of Tex., assignors to Texaco Chemical Co., White Plains, N.Y.

Filed Jan. 19, 1989, Ser. No. 368,009

Int. Cl.[5] **C01G** *39/00*

U.S. Cl. 549—529 **12 Claims**

1. A process for substantially completely removing molybdenum dissolved in a substantially anhydrous organic solution which comprises the steps of:

preparing an aqueous solution of sodium meta borate containing from about 1 to about 10 wt. % of dissolved sodium meta borate,

adding to said organic solution from about 1 to about 10 wt. % of said aqueous solution of sodium meta borate, based on the weight of said organic solution, in an amount sufficient to provide a molar excess of sodium meta borate, based on the gram atoms of dissolved molybdenum in said organic solution, to provide a mixture,

maintaining said mixture at a temperature of ranging from about ambient temperature up to about 100° C. at a pressure of about 0 to about 1,000 psig for about 0.5 to about 5 hours, sufficient to precipitate at least about 95 mol % of said soluble molybdenum from said mixture, and

filtering said mixture to provide a filtrate containing less than about 100 ppm of molybdenum.

4,939,282

THE PROCESS FOR PREPARING 6-DEOXYNTHRACYCLINES

Francesco Angelucci; Sergio Penco; Ermes Vanotti, all of Milano, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milano, Italy

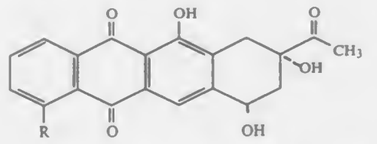
Filed Jun. 19, 1984, Ser. No. 622,177

Claims priority, application United Kingdom, Jun. 23, 1983, 8317037

Int. Cl.[5] **C07C** *50/16*

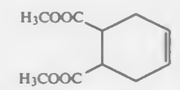
U.S. Cl. 552—206 **1 Claim**

1. A new process for the preparation of 6-deoxyanthracyclinones having the general formula I:



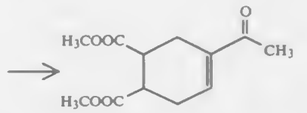
I

wherein R represents a hydrogen atom, a hydroxy group or a ower alkoxy group, characterized in that a dimethyl 1,2,3,6-tetrahydro-phthalate of formula II:



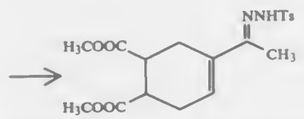
II

by treatment with acetic anhydride in the presence of tin tetrachloride, followed by treatment with a mild base or a mild acid, is transformed into dimethyl 1,2,3,6-tetrahydro-4-acetylphthalate III:



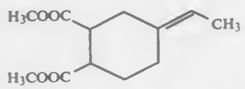
III

which, when reacted with tosylhydrazine gives the corresponding dimethyl 1,2,3,6-tetrahydro-4-(1-tosylhydrazonoethyl)-phthalate IV:



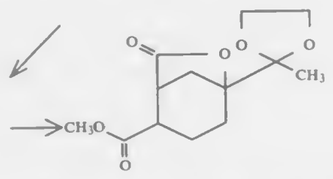
IV

reducing the compound IV with catechol borane and subsequent rearranging the double bond from an endocytlic to an exocyolic position in the presence of sodium acetate, to obtain 1,2-di-(methoxycarbonyl)-4-ethylidene-cyclohexane V:



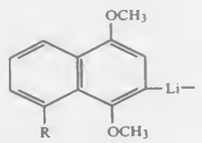
V

from which, after an oxidative treatment with potassium permanganate, the corresponding α-hydroxy ketone is obtained and subsequently reacted with ethylene glycol, in the presence of catalitic amount of p-toluensulphonlo acid, to give 2-methoxy-=1 [2-methyl-dioxolan-2]-6-oxa-hicyclo[3,2,1]octan-7-one VI:



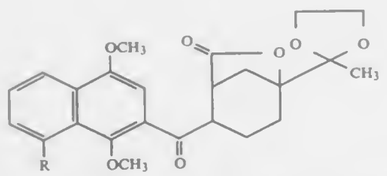
VI

which, dissolved in anhydrous telrahydrofuran is condensed, at a temperature of −78° C and for 1h, with an alkyltium derivative of formula VIII:



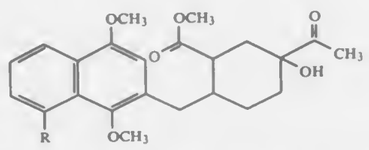
VIII

wherein R is as above defined, to obtain the lactone IX:



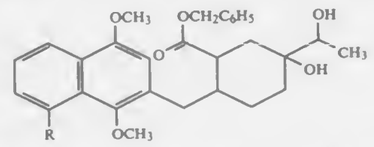
IX

opening the lactone ring of compound IX by) methanolysis and contemporaneously deprotecting the dioxolan protected keto group by acidic treatment to obtain the compound of formula X:



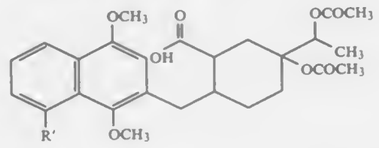
X

wherein R is as above defined, reducing the keto group of oompound X by treatment with a pyridine-borane complex in the presence of trifluoroacetic acid and convertinq the methoxycarbonyl qroup into a benzyloxycarbonyl qroup by treatment with phenyldiazomethane to obtain the compound of formula XI:



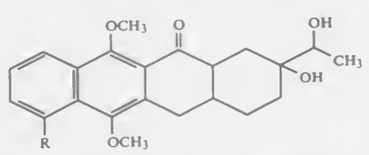
XI

esterifylng the hydroxy groups and deesterifying the benzyloxycarbonyl group of compound XI, wlerein R is above defined, by treatment with acetic anhydride in pyridine in the presence of 4-dimethylamino-pyridine followed by refluxing with cyclohexene in the presence of palladium-on-carbon catalyst, to give the compound of formula XII:



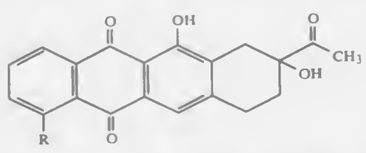
XII

wherein R′ represents a hydrogen atom, an acetoxy qronp or a lower alkoxy group, which is submittsd to a cyclization by treatment with a mixture of trifloroacetic anhydride and trifluoroacetic acid and to a subsequent hydrolysis of the acetoxy qroups with sodium methylate to obtain compound XIII:



XIII

wherein R is above defined, from which after an oxidative treatment of the 1-hydroxyethyl group with silver carbonate and demethylatlon of the resultant compound with aluminium trichloride in nitrobenzene, the compound of formula XIV is obtained:



XIV

from which, after protection of the 13-keto group by treatment with ethylene glycol, bromination of the resultant compound at C-7 with bromine in the presence of 2,2-azo-bis(isobutyronitrile) followed by hydrolysis of the 7-bromo derivative and removal of the ketal group by acid treatment, or alternatively by bromination with N-bromo-succinimide in the presence of 2,2′-azo-bis(isobutironitrile, by irradiation, treatment with silver acetate, hydrolysis of the ketal by acid treatment and finally hydrolysis of the acetate with sodium methoxide, the desired compounds of formula I are finally obtained.

4,939,283

SURFACE ACTIVE COMPOUNDS HAVING A POLYMERIZABLE MOIETY

Kinya Yokota, Shiga, and Akinobu Ichihara, Kameoka, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

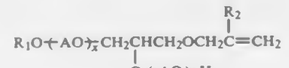
Division of Ser. No. 46,353, May 6, 1987, Pat. No. 4,814,514. This application Dec. 15, 1988, Ser. No. 284,588

Claims priority, application Japan, May 7, 1986, 61-105119; May 22, 1986, 61-118956; May 26, 1986, 61-121954; May 28, 1986, 61-124305; May 30, 1986, 61-127006

Int. Cl.[5] C07C *381/00*

U.S. Cl. 558—33 **20 Claims**

1. A sulfate ester, phosphate ester, sulfosuccinate half ester or sulfosuccinate diester of a compound of the formula:



wherein

R_1 is alkyl, alkenyl, alkylaryl or aralkylaryl of 8–30 carbon atoms,

R_2 is hydrogen or methyl,

A is alkylene of 2–4 carbon atoms,

x is 0, or 1–100, and

y is 1–200.

4,939,284

PROCESS FOR THE MANUFACTURE OF TETRAALKYL ETHENYLIDENEBISPHOSPHONATE ESTERS

Charles R. Degenhardt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

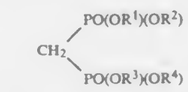
Division of Ser. No. 855,877, Apr. 23, 1986, Pat. No. 4,820,698, which is a continuation-in-part of Ser. No. 795,306, Nov. 4, 1985, abandoned. This application Jan. 24, 1989, Ser. No. 300,990

Int. Cl.[5] C07F *9/32*

U.S. Cl. 558—142 **9 Claims**

1. A method for synthesizing tetraalkyl ethenylidenebisphosphonates comprising the steps of:

(a) combining from about 20 to about 96 mole percent of a formaldehyde or formaldehyde precursor selected from the group consisting of formaldehyde, paraformaldehyde or trioxane; from about 2 to about 40 mole percent of a secondary amine; and from 2 to about 40 mole percent of a tetraalkyl methylenebisphosphonate of the formula:



wherein R^1, R^2, R^3 and R^4 are independently chosen from the group consisting of C_1 to C_7 straight or branched alkyl; in an alcohol solvent selected from the group consisting of methanol and ethanol;

(b) heating said mixture to a temperature of from about 40° C. to about 80° C., for a period of from about 0.5 hours to about 200 hours;

(c) replacing said alcohol solvent with an equivalent amount a of solvent selected from the group consisting of toluene, benzene and xylene; and

(d) adding a catalytic amount of an acid selected from the group consisting of paratoluenesulfonic acid and phosphoric acid, and allowing said mixture to react for a period of from about 2 hours to about 48 hours.

4,939,285

PROCESS FOR THE PREPARATION OF METAL SALTS OF PHOSPHORIC AND PHOSPHONIC ACID ESTERS

Claus D. Weis, Pfeffingen, and Peter Sutter, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

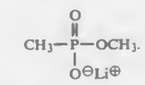
Filed Jul. 6, 1988, Ser. No. 215,845

Claims priority, application Switzerland, Jul. 13, 1987, 2657/87; Feb. 19, 1988, 634/88

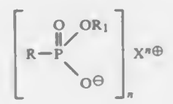
Int. Cl.[5] C07F *9/09, 9/38*

U.S. Cl. 558—214 **6 Claims**

1. The metal salt of formula



2. A process for the preparation of a metal salt of a phosphoric or phospbonic acid ester of formula



(I)

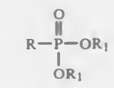
wherein

R is C_1–C_4alkoxy or straight chain or branched unsubstituted C_1–C_{20}alkyl or C_2–C_6alkenyl,

R_1 is C_1–C_4alkyl,

X is the cation of a metal of groups Ia, IIa, IIb, IIIa, IVa or VIII of the periodic table,

n is an integer from 1 to 3 corresponding to the valence of X, which process comprises reacting at a temperature of from 20° to 200° C. n moles of an ester of formula



(2)

wherein R, R_1 and n are as defined above, with 1 mole of a metal X^n, if desired with cooling.

4,939,286

PROMOTED BISMUTH CERIUM MOLYBDATE CATALYSTS

James F. Brazdil, Mayfield Village; Linda C. Glaeser, Middleburg Hts., and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company

Continuation of Ser. No. 798,064, Nov. 14, 1985, abandoned, which is a continuation of Ser. No. 781,547, Sep. 30, 1985, abandoned, which is a continuation of Ser. No. 671,267, Nov. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 391,785, Jun. 24, 1982, abandoned. This application Jul. 12, 1988, Ser. No. 218,173

Int. Cl.[5] C07C *253/26*

U.S. Cl. 558—324 **3 Claims**

1. In a process for ammoxidizing propylene to produce acrylonitrile wherein propylene, ammonia and an oxygen—containing gas are contacted with a catalyst at an elevated temperature to produce acrylonitrile, wherein the improvement comprises selecting an oxide having the formula:

VOL 1116 ISS 1 JL 3 1990 UMI

$A_aD_bSb_cBi_dCe_eW_fMo_gO_x$

wherein
A is Mn, Pb, Cu, U or mixtures thereof,
D is Ge, As, B, Se, a Group IIA element or mixtures thereof, and
wherein
a is greater than 0 to about 1,
b is 0 to 24,
c is greater than 0 to 16,
d is 0.01 to 24,
e is about 0.5 to 24,
d+e is 5 to 10,
a+b+c+d is 6 to 10,
d/e is ½ to 4/1
f is 0 to 8
g is 8 to 16
f+g is 8 to 16, and
x is the number of oxygen atoms required to satisfy the valence requirements of the other elements.

4,939,287

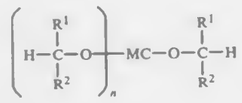
CHIRAL ESTERS OF MESOGENIC CARBOXYLIC ACIDS

Christian Bahr; Gerd Heppke; Detlef Lötzsch, and Feodor Oestreicher, all of Berlin, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

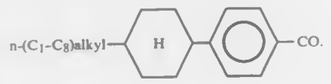
Filed Sep. 26, 1986, Ser. No. 912,790
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 3534778
Int. Cl.[5] C07C *69/773, 69/78, 69/80*
U.S. Cl. 560—66 **1 Claim**

1. An ester of a chiral alcohol and a mesogenic carboxylic acid, which ester is of the formula (I)

(I)



wherein:
n is 0 or 1,
R^1 is a straight-chain or branched (C_1–C_4)alkyl which is unsubstituted or substituted by fluorine,
R^2 is unsubstituted or substituted (C_6–C_{18})aryl or cyclo(C_5–C_{12})alkyl and
MC is a molecular radical of a mesogenic monocarboxylic acid MC-OH after elimination of an OH group where n=0, and is a molecular radical of a mesogenic dicarboxylic acid HO-MC-OH after elimination of two OH groups where n=1, with the exception of compounds in which n is 0, R^1 is CH_3, R^2 is phenyl and MC is



4,939,288

METHOD OF PREPARING (R)-SUCCINIC ACID DERIVATIVES

John J. Talley, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 23, 1989, Ser. No. 299,696
Int. Cl.[5] C07C *67/303*
U.S. Cl. 560—81 **20 Claims**

1. A method for preparing 2(R)-substituted succinic acid derivatives comprising asymmetrically cataytically hydrogenating the corresponding 2(E)-alkylidene succinate derivative in the presence of a rhodium complexed (R,R)-bisphoshine compound of the formula:



wherein A and B each independently represent substituted and unsubstituted alkyl radicals having from 1 to about 12 carbon atoms, substituted and unsubstituted cycloalkyl radicals having from about 4 to about 7 carbon atoms and substituted and unsubstituted aryl radicals; provided that such radicals provide no significant interference with the steric requirements around the phosphorus atom, and A and B are different.

4,939,289

FIBER SURFACE MODIFIERS

Bryce C. Oxenrider, Morris, N.J., and David J. Long, Amherst, N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 765,629, Aug. 15, 1985, abandoned. This application May 6, 1988, Ser. No. 190,987
Int. Cl.[5] C07C *69/76, 327/25;* C07D *303/08;* C07F *7/04*
U.S. Cl. 560—87 **15 Claims**

1. A compound of the formula:

(I)



(II)

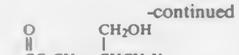
or oligomers thereof wherein two or more of compounds I and II are linked at the "B" substituent site by divalent moieties of the formula:

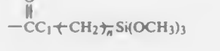
or

or

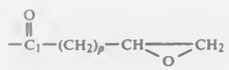
wherein:
B is a moiety of the formula

-continued

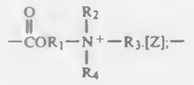




or



A is a moiety of the formula:



X is hydrogen, chloro or bromo;
Z is chloride, bromide or iodide;
R_1 is alkylene group having from about 1 to about 4 carbon atoms;
R_2 and R_3 are the same or different and are alkyl having from 1 to about 3 carbon atoms;
R_4 is alkyl having from 1 to about 20 carbon atoms, $(CH_2CH_2O)_nCH_3$, or $(CH_2CHCH_3O)_mOCH_3$;
n is an integer from 1 to about 10;
m is an integer from 1 to about 10;
p is 0 to about 4;
C_1 and C_2 are the same or different and are divalent oxygen, sulfur, amino or alkylamino moieties; and
R_5 is substituted or unsubstituted alkylene or arylene wherein permissible substituents are one or more halo or hydroxy groups.

4,939,290

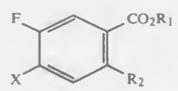
BENZOIC ACID DERIVATIVES

Brian T. O'Neill, Westbrook, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 23, 1988, Ser. No. 275,449
Int. Cl.[5] C07C *211/45, 225/18, 225/16*
U.S. Cl. 560—110 **4 Claims**

1. A compound of the formula

V



wherein R_1 is hydrogen or C_1-C_4 alkyl, R_2 is iodo, cyclopropylamino, phenylamino, 4-fluorophenylamino, 2,4-difluorophenylamino, or t-butylamino, and X is fluoro or chloro, with the proviso that when R_2 is iodo R_1 is hydrogen.

4,939,291

PROCESS FOR THE PREPARATION OF MERCAPTOETHANSULFONIC ACID AND SODIUM SALT THEREOF

Alberto Reiner, Cantù , Italy, assignor to Schering Spa, Milan, Italy

Continuation of Ser. No. 102,668, Sep. 30, 1987. This application May 1, 1989, Ser. No. 346,320
Claims priority, application Italy, Oct. 8, 1986, 21934 A/86
Int. Cl.[5] C07C *143/02*
U.S. Cl. 562—108 **4 Claims**

1. A process for the preparation of sodium mercaptoethansulfonate comprising the steps of:
(a) reacting sodium bromoethansulfonate with thiobenzoic acid in the presence of sodium bicarbonate at a temperature of 85°–90° C. in an aqueous solvent consisting essentially of water, to give sodium benzoyl thioethansulfonate; and
(b) reacting the obtained sodium benzoyl thioethansulfonate with ammonia in aqueous solution under nitrogen flow and at a temperature of about 50° C. with stirring to precipitate benzamide and give sodium mercaptoethansulfonate.

3. A process for the preparation of mercaptoethansulfonic acid comprising the steps of:
(a) reacting sodium bromoethansulfonate with thiobenzoic acid in the presence of sodium bicarbonate at a temperature of 85°–90° C. in an aqueous solvent consisting essentially of water, to give sodium benzoyl thioethansulfonate;
(b) reacting the obtained sodium benzoyl thioethanesulfonate with ammonia in aqueous solution under nitrogen flow and at a temperature of about 50° C. with stirring to precipitate benzamide and give sodium mercaptoethansulfonate; and
(c) releasing mercaptoethansulfonic acid from the obtained sodium mercaptoethansulfonate by use of a strong cationic resin under a nitrogen stream and at a temperature in the range of 5°–10° C.

4,939,292

SYNTHESIS OF ESTERS FROM ALCOHOLS CONTAINING CARBON MONOXIDE AS AN IMPURITY

David J. Elliott, and Filippo Pennella, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 761,444, Aug. 1, 1985, abandoned. This application Oct. 2, 1985, Ser. No. 782,779
Int. Cl.[5] C07C *67/40, 69/06, 69/14, 69/24*
U.S. Cl. 560—239 **36 Claims**

1. A process for preparing esters which comprises the steps of contacting a mixture comprising at least one primary aliphatic alcohol having from 1 to 4 carbon atoms per molecule and carbon monoxide with a catalyst composition consisting essentially of (a) copper or an oxide thereof, (b) zinc oxide, (c) at least one metal or compound of a metal selected from the group consisting of cobalt and rhenium, and (d) alumina, under such reaction conditions as to produce a reaction product comprising at least one ester having twice as many carbon atoms per molecule as the primary alcohol from which the ester is formed, and (B) separating at least a portion of said at least one ester from said reaction product.

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4,939,293

SULFONATED PHENOLIC MATERIAL AND ITS USE IN POST PRIMARY OIL RECOVERY

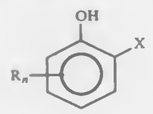
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 632,936, Jul. 20, 1984, Pat. No. 4,632,786, which is a division of Ser. No. 382,042, May 25, 1982, Pat. No. 4,469,604. This application Sep. 22, 1986, Ser. No. 910,560

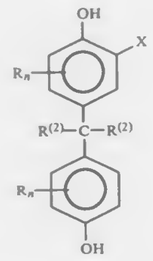
Int. Cl.[5] C07C *143/44*

U.S. Cl. 562—108 **11 Claims**

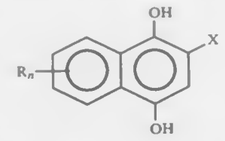
1. Process to produce sulfomethylated phenolic compounds comprising reacting a phenolic starting material comprising alkyl substituted hydroxy aromatic compounds having an unsubstituted aromatic carbon atom in an ortho position with respect to said phenolic starting material selected from the group consisting of alkyl phenols having the formula



alkylated bisphenols having the formula



and, alkylated naphthols having the formula



wherein, in each of the formulas above, R is alkyl or alkenyl having up to 30 carbon atoms, with the proviso that at least one radical R has 6 to 30 carbon atoms;

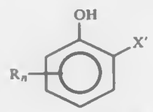
wherein, $R^{(2)}$ is H or CH_3;

wherein, n is the number 1 or 2; and

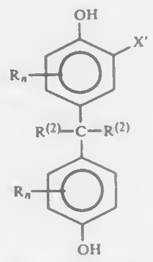
wherein, X is hydrogen,

with the further proviso that the total number of carbon atoms per molecule is 13 to about 40,

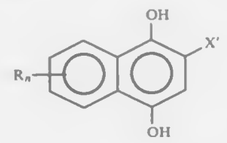
with formaldehyde in the presence of a sulfonating agent to produce compounds selected from the group consisting of sulfomethylated alkyl phenols having the formula



sulfomethylated alkyl bisphenols having the formula



and, sulfomethylated alkylated naphthols having the formula



respectively, wherein, R, n, and $R^{(2)}$ have the same meaning as defined above; and

wherein, X' is $CH_2—SO_3—Cat$, wherein Cat is selected from the group consisting of —Na, —K and $—NHR_3^{(1)}$ and wherein each of $R^{(1)}$ is selected from the group consisting of hydrogen, a alkyl radical having 1 to 3 carbon atoms and hydroxyalkyl with 2 or 3 carbon atoms.

4,939,294

PREPARATION OF ULTRA HIGH PURITY METHYL ACETATE

Victor H. Agreda, and Ronnie D. Lilly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1989, Ser. No. 354,578

Int. Cl.[5] C07C *67/08, 67/54;* B01D *3/40*

U.S. Cl. 560—265 **4 Claims**



1. In a process for the production of methyl acetate from methanol and glacial acetic acid wherein the acetic acid functions both as reactant and as extractive agent, the process comprising the steps of

(a) selecting a design for a single reactive distillation column which provides intimate contact sufficient to enable acetic acid to be used both as a reactant and as an extractive agent within the column, the column having an extractive distillation section and a methyl acetate/acetic acid rectification section located above the extractive distillation section,

(b) selecting a residence time for the single reactive distillation column which provides intimate contact sufficient to enable acetic acid to be used both as a reactant and as an extractive agent within the column,

(c) countercurrently flowing approximately stoichiometric quantities of said acetic acid and methanol through the single reactive distillation column in the presence of a catalytic amount of an acidic catalyst so as to provide intimate contact in the column between the acetic acid and methanol, between the acetic acid and methyl acetate/water azeotrope, and between the acetic acid and methyl acetate/methanol azeotrope, the residence time in the column being sufficient to accomplish high reactant conversion and to obtain methyl acetate, and

(d) continuously removing methyl acetate from the top of the single column and continuously removing water from the bottom of the column, the improvement which comprises producing ultra high purity methyl acetate by the additional step of introducing acetic anhydride and a salt-free acid catalyst into the single reactive distillation column between the extractive distillation section and the methyl acetate/acetic acid rectification section.

4,939,295

PROCESS FOR THE PREPARATION OF INTERMEDIATES FOR THE SYNTHESIS OF DILTIAZEM

Valeriano Merli, Occhiobello; Giorgio Sagramora, Padova, and Giorgio Soriato, Caldiero, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Jul. 25, 1989, Ser. No. 384,438

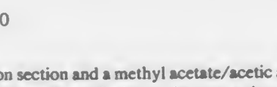
Claims priority, application Italy, Jul. 26, 1988, 21478 A/88

Int. Cl.[5] C07B *57/00*

U.S. Cl. 562—401 **7 Claims**

1. A process for the separation of the (2S, 3S)-threo enantiomer of 2-hydroxy-3-(2-aminophenylthio)-3-(4-methoxyphenyl)-propionic acid from a racemic mixture of it with the (2R, 3R)-threo enantiomer, comprising:

heating up to complete dissolution of a mixture of: the racemic mixture; a resolving agent, (1S, 2S)-threo-1-aryl-2-amino-1,3-propanediol, of the formula



(I, threo 1S,2S)

wherein X is H, CH_3S, NO_2 or CH_3SO_2;

in an amount substantially in the molar ratio of 0.5 with respect to the mixture to be resolved;

an alkaline hydroxide, in an amount substantially in the molar ratio of 0.5 with respect to the mixture to be resolved; and

an aqueous or alcoholic-aqueous solvent;

slowly cooling the resulting solution to the temperature at which crystallization of the salt of (2S, 3S)-threo-2-hydroxy-3-(2-aminophenylthio)-3-(4-methoxyphenyl)-propionic acid with (1s, 2S)-threo-1-aryl-2-amino-1,3-propandiol begins; and

collecting the salt and, optionally, isolating the (2S, 3S)-threo-2-hydroxy-3-(2-aminophenylthio)-3-(4-methoxyphenyl)-propionic acid by treatment with a mineral acid in an aqueous environment.

4,939,296

PROCESS FOR THE PRODUCTION OF CATALYTICALLY-ACTIVE METALLIC GLASSES

Volker Franzen, Basel; Hans-Joachim Güntherodt, Witterswil; Alphons Balker, Glattbrugg; Erich Armbruster, Allschwil, and Halim Baris, Dübendorf, all of Switzerland, assignors to Louza Ltd., Gampel/Valais, Switzerland

Continuation of Ser. No. 80,198, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 833,237, Feb. 27, 1986, abandoned, which is a division of Ser. No. 51,183, May 18, 1987, Pat. No. 4,727,202, which is a division of Ser. No. 758,829, Jul. 27, 1984, Pat. No. 4,735,789. This application Apr. 14, 1989, Ser. No. 338,401

Claims priority, application Switzerland, Jul. 27, 1984, 3679/84

Int. Cl.[5] C07C *51/265*

U.S. Cl. 562—415 **2 Claims**

1. Process for the oxidation of toluene comprising catalytically oxidizing the toluene in the presence of a catalytically effective amount of a catalytically-active metallic glass which consists of $V_{36}Zr_{64}$ or $V_{36}Ti_{64}$, the metallic glass being first activated by an oxidative and/or a reductive treatment or being activated in situ.

4,939,297

EXTRACTION PROCESS FOR REMOVAL OF IMPURITIES FROM TEREPHTHALIC ACID FILTRATE

Larry W. Browder; James C. Medlin, and Art T. Spaugh, Jr., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1989, Ser. No. 361,176

Int. Cl.[5] C07C *51/43*

U.S. Cl. 562—485 **15 Claims**

1. A method for removing impurities from an oxidative terephthalic acid synthesis mother liquor containing acetic acid, water, corrosion metals, a metal catalyst and organic impurities, comprising the steps of

(a) concentrating the mother liquor by evaporating from 50–90% of the acetic acid and water contained therein,

(b) adding an amount of water to the concentrated mother liquor sufficient to dissolve the metal catalyst and form an aqueous mixture,

(c) extracting the aqueous mixture by counter-current extraction with a substantially water-insoluble organic solvent to produce a lighter phase containing the organic solvent, a minor amount of the water, acetic acid and the organic impurities and a heavier phase containing a major amount of the water, corrosion metals, and the metal catalyst, and

(d) removing the corrosion metals from the heavier phase by heating and filtering, and

(e) removing the organic impurities from the lighter phase by distillation.

4,939,298

ISOMERIZATION OF CARBOXYLIC ACIDS

Patrick M. Burke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 283,157, Dec. 12, 1988. This application Aug. 10, 1989, Ser. No. 392,041

Int. Cl.[5] C07C *51/10, 51/353*

U.S. Cl. 562—591 **8 Claims**

1. A process for the isomerization of saturated alkyl carboxylic acids having 4 to 20 carbon atoms and having at least one hydrogen on a beta carbon atom, which comprises heating a reaction medium containing said saturated acid, a solvent for said saturated acid, an iodide or bromide promoted rhodium catalyst, and carbon monoxide to a temperature in the range of 170 to 250 degrees C. at a carbon monoxide pressure of 200 to 10,000 psi, where the amount of iodide or bromide promoted rhodium catalyst is in the range of 0.005 to 0.50% by weight of rhodium metal based on the weight of the reaction medium.

4,939,299

SUCCINYL DIHYDROXAMIC ACIDS

James P. Coleman, Maryland Heights; Charles R. Graham, St. Charles, and Bruce F. Mouzyk, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 125,821, Nov. 23, 1987, abandoned, which is a division of Ser. No. 937,849, Dec. 4, 1986, Pat. No. 4,741,887. This application Jul. 6, 1989, Ser. No. 383,309

Int. Cl.[5] C07C *83/10*

U.S. Cl. 562—623 **2 Claims**

1. N,N'-dialkyl α-alkyl succinodihydroxamic acid.

4,939,300

ARYLSUBSTITUTED AMIDINES

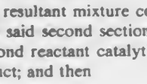
Linda A. Benjamin, Philadelphia, Pa.; Joseph E. Barbiarz, Dobbs Ferry, N.Y., and Stephen D. Pastor, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1987, Ser. No. 121,181

Int. Cl.[5] C07C *123/00*

U.S. Cl. 564—225 **3 Claims**

1. A compound of formula II



(II)

wherein R and R_1 are identical and are phenyl or phenyl substituted by C_1–C_8 alkyl or —NH—phenyl, and A is hydrogen.

4,939,301

PRODUCTION OF ETHANOLAMINE BY AMINATION OF ETHYLENE OXIDE OVER ACID ACTIVATED CLAYS

Neal J. Grice, and John F. Knifton, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Dec. 23, 1988, Ser. No. 289,105

Int. Cl.[5] C07C *89/02*

U.S. Cl. 564—477 **13 Claims**

1. A process for preparing monoalkanolamines which comprises reacting an alkylene oxide with an excess of ammonia in the presence of an acid treated clay catalyst comprising an acidic montmorillonite clay treated with a heteropoly acid selected from the group consisting of 12-tungstophosphoric acid, 12-tungstosilicic acid, 12-molybdophosphoric acid and 12-molybdosilicic acid, said monoalkanolamine being prepared at an operating temperature in the range of 50° to 300° C. and an operating pressure of 0 to 15,000 psi or greater.

4,939,302

PROCESS FOR PREPARING STABLE ORGANIC HYDROXYSULFIDE COMPOSITIONS

John S. Roberts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1988, Ser. No. 227,338

Int. Cl.[5] C07C *148/00*

U.S. Cl. 568—55 **17 Claims**

1. In a process for reacting a mercaptan with a second reactant selected from the group consisting of aldehydes and ketones in the presence of an acid catalyst in a reaction zone to produce an acid sensitive aliphatic hydroxyalkyl or hydroxyaryl sulfide product, the improvement comprising:

collecting said mercaptan, said second reactant and sulfide product produced therefrom in a first section of said reaction zone, said reaction zone also having a second section with a fixed bed of solid acid-type ion exchange resin catalyst disposed therein;

circulating the resultant mixture collected in said first section through said second section so that said mercaptan and said second reactant catalytically react to form said sulfide product; and then withdrawing the resultant reaction product from said reaction zone.

4,939,303

3,3-DIMETHYLHEX-5-EN-2-ONE DERIVATIVES, PREPARATION AND USE THEREOF

Jochen Wild, Deidesheim; Thomas Liese-Sauer, Weinheim; Norbert Goetz, Worms; Hans Theobald, Limburgerhof, and Bernd Wolf, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

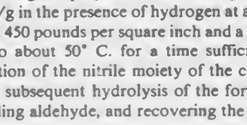
Filed Jan. 26, 1989, Ser. No. 301,857

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802273

Int. Cl.[5] C07C *49/24*

U.S. Cl. 568—415 **5 Claims**

1. A 3,3-dimethylhex-5-en-2-one derivative of formula (I):



(I)

wherein A is halogen, B is C_1–C_4-haloalkyl, X is hydrogen or halogen and R is hydrogen, arylsulfonyl, alkylsulfonyl or haloalkylsulfonyl.

4,939,304

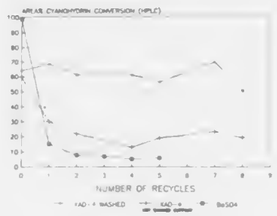
CONTINUOUS AND SELECTIVE CATALYTIC CONVERSION OF CYANOHYDRINS TO THEIR CORRESPONDING ALDEHYDES

Blaise J. Arena, Des Plaines, and Paul R. Kurek, Lake Zurich, both of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Feb. 1, 1989, Ser. No. 304,633

Int. Cl.[5] C07C *45/44*

U.S. Cl. 568—449 **18 Claims**



1. A method for continuously and selectively converting a cyanohydrin to its corresponding aldehyde comprising contacting an aqueous solution of a cyanohydrin, said aqueous solution containing acid in an amount sufficient to provide from about 0.5 to about 1.1 equivalents of acid, relative to cyanohydrin, in addition to that required to adjust the pH to 2, with a catalyst comprising zerovalent palladium dispersed on a porous solid organic polymeric resin having a surface area of at least 30 m^2/g in the presence of hydrogen at a pressure from 10 up to about 450 pounds per square inch and a temperature from about 10 to about 50° C. for a time sufficient to effect the hydrogenation of the nitrile moiety of the cyanohydrin to an imine with subsequent hydrolysis of the formed imine to the corresponding aldehyde, and recovering the reaction product.

4,939,305

ALKENYL COMPOUNDS

Horst Steinzenberger, and Peter Koenig, both Schriesheim, Fed. Rep. of Germany, assignors to Technochemie GmbH, Fed. Rep. of Germany

Division of Ser. No. 942,696, Dec. 17, 1986, Pat. No. 4,789,704. This application Nov. 30, 1988, Ser. No. 278,030

Claims priority, application United Kingdom, Jan. 18, 1986, 8601201; Sep. 12, 1986, 8622083

Int. Cl.[5] C07C *43/21, 69/83, 323/62, 49/786, 317/14*

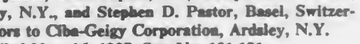
U.S. Cl. 568—640 **4 Claims**

1. An alkenyl compound of formula II



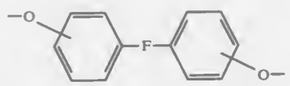
II

in which m is an integer from 1 to 4, G represents a phenyl ring substituted by at least one alkenyl group and D represents (i) a group of formula IIa



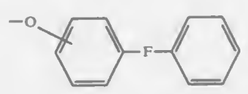
IIa

in which E is a n-valent group and n is an integer from 1 to 4, (ii) a divalent group of formula IIb



IIb

in which F is a divalent group chosen from $—SO_2—$, —SO—, $—CMe_2—$, —O—, $—C(CF_3)_2—$, $—CH_2—$ or —CO— , (iii) a group of formula IIc



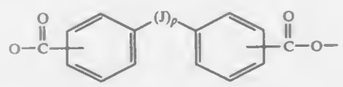
IIc

in which F is as defined in (ii) above, (iv) a divalent group of formula IId



IId

or (v) a divalent group of formula IIe



IIe

in which H is a divalent group chosen from $—SO_2—$, —SO—, $—CMe_2—$, —O—, $—C(CF_3)_2—$, $—CH_2—$ or —CO— and p is 0 or 1.

4,939,306

PREPARATION PROCESS OF 4,4'-BIPHENOL, PRECURSOR OF SAME AND PREPARATION PROCESS OF PRECURSOR

Tohru Miura; Teruyuki Nagata; Koju Okazaki; Masayuki Furuya, and Emiko Nishida, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

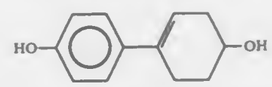
Division of Ser. No. 178,301, Apr. 6, 1988, Pat. No. 4,873,374. This application Apr. 14, 1989, Ser. No. 338,210

Claims priority, application Japan, Apr. 14, 1987, 62-089890; Dec. 18, 1987, 62-318701

Int. Cl.[5] C07C *39/14, 37/00*

U.S. Cl. 568—730 **18 Claims**

1. A preparation process of 4,4'-biphenol which comprises conducting a dehydrogenation reaction 4-(4-hydroxyphenyl)-3-cyclohexene-1-ol having the formula



(I)

in the presence of a dehydrogenation catalyst and in the absence of an acid or base at a temperature of 100° to 300° C.

4,939,307

PROCESS FOR HYDROGENATION OF ESTERS INTO ALCOHOLS

Eit Drent, and Willem W. Jager, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

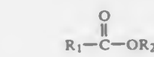
Filed Feb. 23, 1989, Ser. No. 313,918

Claims priority, application United Kingdom, Mar. 4, 1988, 8805264

Int. Cl.[5] C07C *27/04, 29/132*

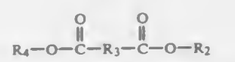
U.S. Cl. 568—864 **19 Claims**

1. A process for the hydrogenation of esters into alcohols, which process comprises contacting esters of the formula:



(I)

or



(II)

wherein R_1 represents hydrogen or a hydrocarbyl group having 1 to about 20 carbon atoms, R_2 and R_4 represent a hydrocarbyl group having 1 to about 20 carbon atoms, and wherein R_3 represents a hydrocarbylene group having 1 to about 10 carbon atoms, with hydrogen and carbon monoxide at a temperature in the range of from about 30° C. to about 150° C. and a pressure in the range of from about 5 bar to about 100 bar in the presence of a catalyst system comprising:

(a) a compound containing a cation of an element selected from Group VIII of the Periodic Table of the Elements,

(b) an alcoholate of an alkali metal and/or alkaline earth metal, and

(c) an alcohol.

4,939,308

METHOD OF FORMING CRYSTALLITE-ORIENTED SUPERCONDUCTING CERAMICS BY ELECTRODEPOSITION AND THIN FILM SUPERCONDUCTING CERAMIC MADE THEREBY

MacRae Maxfield, Plainfield; Ray H. Baughman, Morris Plains; Zafar Iqbal, Morristown, and Helmut Eckhardt, Madison, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 188,019, Apr. 29, 1988, Pat. No. 4,870,051. This application May 20, 1988, Ser. No. 197,248

Int. Cl.[5] C23C *14/34;* B05D *5/12*

U.S. Cl. 505—1 **11 Claims**

1. A method of forming crystallite-oriented deposits of superconducting ceramics comprising the steps of:

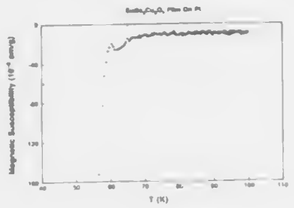
(a) Electrodepositing a mixture of metals onto a substrate to form thereon a layer of metals of the type and in proportions sufficient to be oxidized into superconducting ceramic:

(b) oxidizing said layer of metals by subjecting it at elevated temperature to an oxidizing atmosphere under conditions

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sufficient to result in a superconducting ceramic deposit: and

(c) orienting the crystallites in said superconducting ceramic deposit,



whereby there is obtained an increase in the critical current density of the superconducting ceramic.

4,939,309

PREPARATION OF BIARYL COMPOUNDS

Thomas A. Puckette, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1989, Ser. No. 346,769

Int. Cl.[5] C07C *1/20*

U.S. Cl. 585—469 **16 Claims**

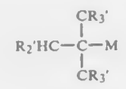
1. A process for the preparation of biaryl compounds of the structure, Ar-Ar, wherein Ar is an aromatic radical having in the range of 4 up to 20 carbon atoms,

said process comprising contacting an aryl halide of the structure, Ar-X, wherein X is a halogen, with a catalyst system comprising:

(i) a nickel compound,

(ii) an organophosphine ligand,

(iii) a tertiary-alkyl organometallic compound of the structure:



wherein each R' is independently selected from H or alkyl groups having in the range of 1 up to 20 carbon atoms, and M is selected from Li, Na, K, or MgX, wherein X is a halogen, and

(iv) a bidentate ligand containing at least one nitrogen atom;

wherein said contacting is carried out in a substantially anhydrous, non-polar, ethereal solvent system, optionally containing up to 95 volume percent of an aliphatic or aromatic hydrocarbon diluent at a temperature in the range of about 0 up to 100° C. for a time in the range of about 0.5 up to 24 hours.

4,939,310

CONVERSION OF METHANE TO HIGHER HYDROCARBONS

Steven R. Wade, Chertsey, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Oct. 11, 1988, Ser. No. 255,786

Claims priority, application United Kingdom, Oct. 17, 1987, 8724373

Int. Cl.[5] C07C *5/00, 2/10*

U.S. Cl. 585—500 **10 Claims**

1. A process for the conversion of methane into higher hydrocarbons which comprises contacting methane with a contact solid at a temperature in the range from 500° to 1000° C., said contact solid consisting essentially of:

(a) trimanganese tetroxide,

(b) an alkali or alkaline earth metal halide, and

(c) an element selected from the group consisting of tungsten, and tantalum.

4,939,311

CATALYSTS FOR THE OXIDATIVE CONVERSION OF METHANE TO HIGHER HYDROCARBONS

Don M. Washecheck; Aileen E. Alvarado-Swaisgood, both of Naperville; Mark P. Kaminsky, Lisle; Mark S. Kleefisch, Plainfield, and George A. Huff, Jr., Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 17, 1988, Ser. No. 233,063

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **10 Claims**

1. An improved method for converting methane to a higher hydrocarbon comprising the steps of: contacting a gas comprising methane with an oxidative coupling catalyst comprising a mixed oxide of: (a) a Group IIIB metal cationic species selected from the group consisting of yttrium, lanthanum, and scandium; (b) a Group IIA metal cationic species selected from the group consisting of barium, calcium and strontium; and (c) a Group IVA metal cationic species selected from the group consisting of tin, lead and germanium and wherein the Group IIIB metal, Group IIA metal and Group IVA metal are present in the approximate atomic ratio of 1:0.5-3:2-4-1 , respectively, in the presence of oxygen.

4,939,312

CONTINUOUS PROCESS FOR THE OXIDATIVE COUPLING OF METHANE TO C_{2+} HYDROCARBONS IN THE PRESENCE OF CATALYSTS

Manfred Baerns, Äskulapweg 20, D-4630 Bochum 1; Joao A. da Silva Palla Carreiro, Dortmund, and Wilfried Bytyn, Bochum, all of Fed. Rep. of Germany, assignors to Manfred Baerns, Bochum, Fed. Rep. of Germany

Filed Sep. 23, 1986, Ser. No. 910,872

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1985, 3534530

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **24 Claims**

1. A continuous process for the heterogeneously catalyzed oxidative coupling of methane in the presence of oxygen or an oxygen-containing gas to Cn Hm hydrocarbons ($n \geqq 2$, $m = 2n$ or $2n+2$) the steps of which comprise, introducing methane and oxygen or an oxygen-containing gas into a reactor, maintaining reaction zone conditions of temperatures between 500° and 900° C., methane partial pressures larger than 0.5 bar and a ratio of partial pressures of methane and oxygen or an oxygen-containing gas with supported or unsupported catalysts, comprising oxides, peroxides, hyperoxides, hydroxides, carbonates, sulfates, phosphates and silicates of elements selected from the group consisting of Li, Na, K, Rb, Cs and Be, peroxides, hyperoxides, hydroxides, carbonates, sulfates, phosphates and silicates of elements selected from the group consisting of Sr and Ba and the carbonates, sulfates, phosphates and silicates of elements selected from the group consisting of Pb, Sn, Ge, Mg and Ca.

4,939,313

OLEFIN DIMERIZATION USING ALKALI METAL CARBONATE SUPPORTS AND ELEMENTAL ALKALI CATALYSTS

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 220,639, Jul. 18, 1988, Pat. No. 4,895,819. This application Nov. 3, 1989, Ser. No. 432,100

Int. Cl.[5] C07C *2/24*

U.S. Cl. 585—516 **16 Claims**

1. A dimerization process comprising contacting at least one olefin under dimerization conditions with a catalyst comprising:

(a) at least one elemental alkali metal; and

(b) a support formed by preparing a thick paste comprising an alkali metal carbonate, water, and a water soluble ketone; forming a particulate product from said paste, and calcining said product;

wherein said elemental alkali metal is supported on said support.

4,939,314

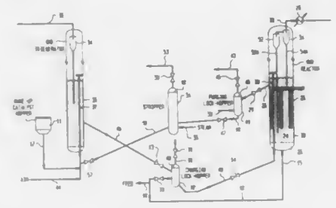
METHOD FOR ON-STREAM LOW-PRESSURE REGENERATION OF AN OLIGOMERIZATION CATALYST FROM A FLUID-BED REACTOR OPERATING AT HIGH PRESSURE WITH HYDROCARBONS IN A NON-LIQUID PHASE

Mohsen N. Harandi, Lawrenceville, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1988, Ser. No. 286,204

Int. Cl.[5] C07C *2/12*

U.S. Cl. 585—533 **21 Claims**



1. In a catalytic process for upgrading a light gas or light naphtha C_2+ olefin-containing feedstream to a heavier product stream rich in C_5+ aliphatic hydrocarbons said process comprising,

contacting said olefin feedstream with a finely divided medium pore zeolite metallosilicate catalyst having a silica:alumina ratio greater than 12, and a constrain index in the range from about 1 to about 12, said catalyst maintained as a turbulent fluid-bed,

flowing said olefin feedstream through said bed at a weight hourly space velocity (WHSV) in the range from about 0.1 to 20 hr^{-1}, without forming a liquid phase in said bed,

maintaining a catalyst fines content of from about 5% to about 20% by wt, based on the weight of the catalyst in the bed, said fines having a particle size less than 32 microns, and,

recovering said C_5+aliphatic hydrocarbons from said product stream leaving said bed, the improvement comprising:

(a) withdrawing less than 30 percent by weight of reactor catalyst per hour in a recirculated catalyst stream from an oligomerization zone in which said catalyst is fluidized by hydrocarbons in a non-liquid phase at above about 515 kPa (60 psig), said catalyst having less than 1% by weight of coke deposited on it (based on the weight/hr of olefins fed), and has said hydrocarbons sorbed in its voids and pores;

(b) confining said recirculated stream in a pressure-isolatable purging zone and depressuring it to below the operating pressure of said bed, to purge a major proportion by weight of said non-liquid hydrocarbons in said recirculated stream;

(c) transferring purged catalyst from said purging zone to a stripping zone;

(d) stripping said purged catalyst with a stripping medium under sufficiently low pressure to remove substantially all said hydrocarbons from said catalyst, and at a temperature at which said purged catalyst is not deleteriously affected, to produce a stripped catalyst;

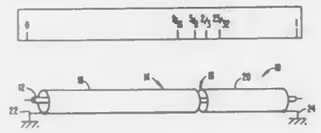
(e) oxidatively regenerating the stripped catalyst to produce a regenerated catalyst essentially free of deposited coke; and,

(f) returning said regenerated catalyst to the oligomerization zone via a pressure-isolatable charging zone, pressurizable to a pressure greater than the operating pressure of the oligomerization zone,

whereby regeneration of said recirculated catalyst enables said reactor to maintain less than 1% by weight (based on the weight/hr of olefins fed), of coke deposited on the catalyst, and upgrade said feed to said C_5+ aliphatic hydrocarbons continuously.

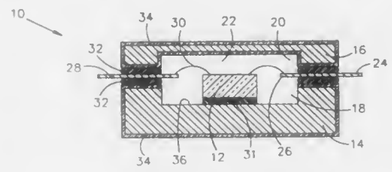
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4,939,315
SHIELDED AUDIO CABLE FOR HIGH FIDELITY SIGNALS
Donald E. Palmer, 1275 Vicente, #189, Sunnyvale, Calif. 94086
Filed Dec. 2, 1988, Ser. No. 279,391
Int. Cl.[5] H01B *11/18*
U.S. Cl. 174—36 **10 Claims**



1. An interconnection cable for audio frequency high fidelity applications comprising:
at least one signal-carrying insulated conductive lead; and
a conductive shielding forming a sheath surrounding said conductive lead, wherein said sheath is divided into two segments, wherein the sheath has a single electrical discontinuity separating each segment of the sheath, wherein each segment of the sheath is conductively terminated at its respective end of the cable in a signal common or ground, and wherein the electrical discontinuity is at between 9/16 and 23/32 of the distance from a reference end of said cable.

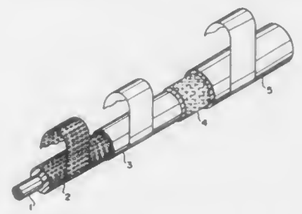
4,939,316
ALUMINUM ALLOY SEMICONDUCTOR PACKAGES
Deepak Mahulikar, Meriden, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Oct. 5, 1988, Ser. No. 253,639
Int. Cl.[5] H01L *23/06*
U.S. Cl. 174—52.4 **42 Claims**



1. A package for encasing an electronic device, comprising:
an aluminum or aluminum alloy base component;
an aluminum or aluminum alloy cover component;
said base component and said cover component defining a cavity;
a leadframe disposed between and adapted to be bonded to said base component and to said cover component; and
an anodization layer covering at least that portion of said base and cover components exposed to the atmosphere.

4,939,317
POLYIMIDE INSULATED COAXIAL ELECTRIC CABLE
John C. Hostler, Flagstaff, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Aug. 10, 1988, Ser. No. 230,632
Int. Cl.[5] H01B *7/18, 9/02*
U.S. Cl. 174—107 **10 Claims**

1. A coaxial electrical cable comprising in order:
(a) a conductive metal center conductor surrounded by;
(b) a first layer of a polyimide adhesive-coated perforated polyimide insulative tape surrounding said conductor;
(c) a second layer of polyimide adhesive-coated solid polyimide insulative binding tape surrounding said first layer;



(d) a conductive shield surrounding said second layer; and
(e) a polyimide outer coating surrounding said shield.

4,939,318
DIGITIZER PEN TILT CORRECTION EMPLOYING WIRES NEAR THE DATA POINT
James S. Watson, and Dana Doubrava, both of Phoenix, Ariz., assignors to Calcomp Inc., Anaheim, Calif.
Filed Nov. 6, 1989, Ser. No. 431,886
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 **2 Claims**

1. In a digitizer tablet system employing a tablet having equally spaced parallel grid wires disposed in a plane along an axis parallel to the tablet's upper surface and a pen cursor having a sensing coil disposed concentric with and perpendicular to a longitudinal axis of the pen cursor to develop a characteristic output waveform from electromagnetic inductance between the grid wires and the sensing coil, the method of compensating a calculation of the position of the pen's tip on the tablet's upper surface and along the axis determined from an interpolation of the characteristic output waveform to find its zero voltage crossing point for tilt of the pen cursor longitudinal axis from perpendicular to the tablet's upper surface comprising the steps of:
(a) using voltage values from two grid wires next on opposite sides of the zero crossing point to calculate the position of the zero crossing point along the axis by interpolation;
(b) determining a value "r" which is the fraction of the distance between the two grid wires of the zero crossing point;
(c) using voltage values from a grid wire B next adjacent the zero crossing point on one side and a grid wire A next following B on the one side as well as voltage values from a grid wire C next adjacent the zero crossing point opposite the one side and a grid wire D next following C, determining values for ΔP and ΔN according to the following formulas $\Delta P=(1-r)A+rB$ and $\Delta N=(1-r)C+rD$;
(d) using the values of ΔP and ΔN from step (c) to calculate

$$T = \frac{\Delta P - \Delta N}{\Delta P + \Delta N}$$

where the result "T" is a number roughly proportional to the pen tilt; and,

(e) adding a pre-established constant time T to the original "r" value in calculations of the pen tip position as a tilt correction.

4,939,319

STEP SELECTOR FOR A STEPPED TRANSFORMER

Alexander Bleibtreu, Regensburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Reinhausen GmbH, Regensburg, Fed. Rep. of Germany

Filed Aug. 3, 1989, Ser. No. 389,429
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1988, 3827386
Int. Cl.[5] H01H *19/54*
U.S. Cl. 200—11 TC **6 Claims**



1. A cylindrical step selector for a stepped transformer, comprising:
- a cylindrical hollow support of electrically insulating material;
- a plurality of switching contacts in a wall of said support in respective planes perpendicular to an axis of said support and engageable selectively to select respective stages of the transformer;
- a selector shaft rotatable about said axis in said support;
- a respective arm assigned to each of said contacts and affixed to said shaft;
- a respective stationary contact ring lying substantially in each of said planes and surrounding said shaft;
- a contact bridge on each of said arms, slidably engaging the respective ring and engageable with a respective one of said contacts;
- a respective conductor traversing said support and connected to each of said rings for supporting said rings and providing an electrical connection thereto, said conductors being generally aligned in a direction parallel to said axis and having respective portions substantially perpendicular to said axis projecting through said support and extending outwardly therefrom;
- a pair of clamping bars of electrically insulating material extending parallel to one another and generally parallel to said axis engaging said portions from opposite sides and lying generally along an outer surface of said support; and
- means for connecting said clamping bars at upper and lower ends thereof with said support.

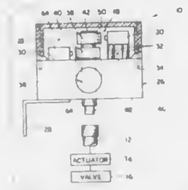
4,939,320

SELF-SETTING SWITCH-ACTUATING ASSEMBLY AND METHOD

Mark T. Graulty, 1019 Gatewood Dr., Bethel Park, Pa. 15102

Filed Mar. 1, 1988, Ser. No. 162,774
Int. Cl.[5] H01H *3/00*
U.S. Cl. 200—17 R **25 Claims**

1. A self-setting switch-actuating assembly, comprising:
(a) a mounting base for mounting a pair of switches in spaced apart relation at predetermined locations on said mounting base;
(b) a pair of cam members for actuating the switches when the switches are mounted at said predetermined locations on said mounting base and said cam members are placed in predetermined actuating positions relative thereto;
(c) a rotational motion transmitting member rotatably mounted on said mounting base adjacent to the switches when the latter are mounted at said predetermined locations on said mounting base, said motion transmitting member being connectible to a rotatable device whose rotational movement will cause rotation of said motion transmitting member; and
(d) mounting said cam members on said motion transmitting member one above the other with each cam member aligned with only one of said switches when the latter are mounted at said predetermined locations on said mounting



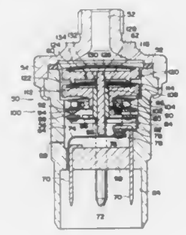
base, said mounting means for permitting self-setting of each of said cam members relative to said motion transmitting member by allowing movement of said cam member along a rotational path toward and away from one of said actuating positions relative to its aligned one of the switches in response to corresponding rotation of said motion transmitting member and stopping of movement of said cam member in response to reaching its actuating position and relative to continuing rotation of said motion transmitting member thereby permitting a predetermined degree of overtravel of said motion transmitting member relative to each of said cam members at their respective actuating positions for accomplishing said self-setting of said cam members.

4,939,321

PRESSURE SWITCH WITH LAMINATED DIAPHRAGM

Hazime Tanaka, Yokohama; Keiji Sasaki, Tokyo, and Hirayoshi Suzuki, Hadano, all of Japan, assignors to Fuji Koji Manufacturing Co., Ltd., Tokyo, Japan

Filed May 5, 1989, Ser. No. 347,995
Claims priority, application Japan, May 11, 1988, 63-113864
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 P **11 Claims**



1. A pressure switch comprising: a housing having an inner space and a pressurized fluid inlet hole for communicating the inner space with the outside space; a switch mechanism disposed in the inner space of the housing; a flexible diaphragm disposed between the pressurized fluid inlet hole and the switch mechanism in the inner space of the housing to divide the inner space into a pressurized fluid operating

chamber, communicating with the pressurized fluid inlet hole, and a switch mechanism chamber, containing the switch mechanism and not communicating with the pressurized fluid inlet hole; and an elastic seal member disposed in the inner space and hermetically fixing the peripheral edge of the diaphragm to the inner surface of the inner space of the housing;

wherein:

said switch mechanism includes urging means for urging the diaphragm toward the pressurized fluid operating chamber, and the switch mechanism is turned on or off as the diaphragm is transformed against the urging force of the urging means by means of the pressure of a fluid introduced through the pressurized fluid inlet hole into the pressurized fluid operating chamber;

said diaphragm is constructed by stacking a metal film and a flexible plastic film in layers so that the films are independent of each other;

said diaphragm, whose peripheral edge is fixed to the inner surface of the inner space of the housing is so located that the metal film faces the pressurized fluid operating chamber and the plastic film faces the switch mechanism chamber; and

the respective thicknesses of said metal film and said plastic film are so set that stress produced in the metal film when the metal film is elastically transformed by the transformation of the diaphragm is smaller than stress produced in the plastic film when the plastic film is elastically transformed by the transformation of the diaphragm;

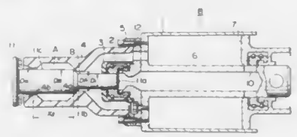
wherein an equalizing hole is formed in the housing and connects the switch mechanism chamber with the outside space.

4,939,322

PUFFER TYPE CIRCUIT BREAKER

Katsuichi Kashimura, Takahagi; Minori Sato, Hitachi; Osamu Koyanagi, Hitachi, and Yukio Kurosawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1989, Ser. No. 326,652
Claims priority, application Japan, Mar. 25, 1988, 63-69855
Int. Cl.[5] H01H *33/88*
U.S. Cl. 200—148 A **8 Claims**



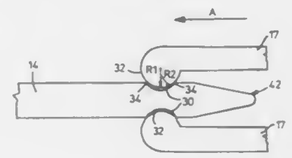
1. A puffer type circuit breaker, comprising:
- at least one set of a fixed contactor and a movable contactor separable from each other;
- said fixed contactor having a larger diameter portion located on the base side thereof and a smaller diameter portion located on the tip side thereof;
- a gas compressor for compressing a blowing gas for extinguishing an arc simultaneously with the separating operation of said both contactors;
- an insulating nozzle for conducting the high pressure gas obtained from said gas compressor so as to blow into the space between said both contactors; and
- said insulating nozzle having a first throat portion located on the upstream side of said blowing gas and adjusted by said smaller diameter portion as a gas inlet portion is formed between said first throat portion and said smaller diameter portion, and a second throat portion located on the downstream side of said blowing gas and adjusted by said larger diameter portion, said second throat portion having such a relation of the diameter to said larger diameter portion that said second throat portion is substantially closed by said larger diameter portion.

4,939,323

CIRCUIT BREAKER CONTACT ASSEMBLY

Frankie H. Allen, Acworth, and David A. Leone, Lawrenceville, both of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Dec. 19, 1988, Ser. No. 286,544
Int. Cl.[5] H01H *1/06*
U.S. Cl. 200—275 **6 Claims**



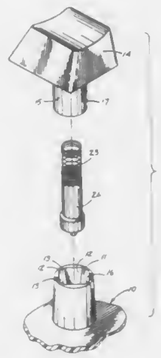
1. A primary disconnect assembly for a circuit breaker comprising:
- a terminal member defining a first side including a first depression and a second side including a second depression, wherein each depression opens away from the terminal member and each depression includes an arcuate contact surface having a first radius;
- at least two contact fingers each defining a contact portion having an arcuate contact surface having a second radius, wherein the second radii are greater than the first radii and the contact portions are adapted to engage the depressions of the terminal member such that at least two contact locations are present between each contact portion and the terminal member, and the terminal member is situated between the contact portions;
- means for holding the contact portions in engagement with the depressions of the terminal member, the contact portions being disposed within the depressions when the assembly is in a normal operating position; and
- means for coupling the contact fingers to the circuit breaker.

4,939,324

KEYSWITCH FOR COMPUTER KEYBOARD

George P. English, Hayden Lake, Id., and Stephen S. Damitio, Spokane, Wash., assignors to Key Tronic Corporation, Spokane, Wash.

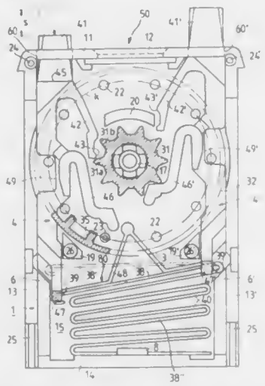
Filed Aug. 30, 1989, Ser. No. 400,512
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—345 **17 Claims**



1. In a keyswitch that is manually movable between a relaxed outer position and a depressed inner position:
- a bearing block containing a through bore centered about a

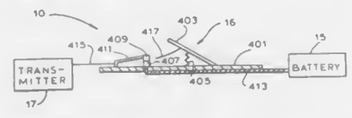
reference axis, the through bore being defined by a plurality of wall segments that extend between outer and inner bore ends;
the wall segments of the through bore including a plurality of alternating first and second wall surfaces abutting one another along their sides and extending axially between the outer and inner bore ends;
the first wall surfaces being flat and located in planes parallel to and radially spaced about the reference axis; and
the second wall surfaces being sections of a cone centered on the reference axis that diverge from the inner bore end to the outer bore end.

4,939,325
PUSH-BUTTON MULTI-POSITION SWITCH
Peter Wendel, Würenlos, and Heinz Waser, Schlieren, both of Switzerland, assignors to Contraves AG, Zürich, Switzerland
Filed May 1, 1989, Ser. No. 345,448
Claims priority, application Switzerland, May 6, 1988, 01720/88
Int. Cl.[5] H01H *13/00, 13/14*
U.S. Cl. 200—552 **6 Claims**



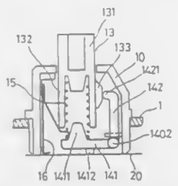
1. A push-button multi-position switch, comprising:
a switch housing;
a character drum rotatably mounted in said switch housing for stepwise rotation in two possible directions of rotation;
said character drum being provided with contact elements;
said character drum being further provided with a drive pinion;
said drive pinion having a predetermined number of teeth and defining two sides;
two individual actuation plungers each of which is arranged at one of said two sides of said drive pinion;
said two individual actuation plungers each defining a predetermined actuation path which extends in a predetermined direction of actuation;
restoring spring means provided in said switch housing and having a predetermined spring force;
said two individual actuation plungers being displaceable along said predetermined actuation path and against said predetermined spring force of said restoring spring means;
said two individual actuation plungers each comprising a switching arm and a latching arm for stepwise rotation of said character drum in said two possible directions of rotation;
said switching arms and said latching arms each having a free end for operative engagement with said predetermined number of teeth of said drive pinion;
detent means displaceably guided at said switch housing in a direction substantially transverse to said predetermined direction of actuation of said two individual actuation plungers;
said detent means being displaceable by each of said two individual actuation plungers into a locking position for the other actuation plunger;
said restoring spring means being structured as an undulatory spring;
said detent means being structured as a substantially rod-shaped end region of said undulatory spring;
said substantially rod-shaped end region of said undulatory spring bearing upon both said individual actuation plungers and having two end portions;
said switch housing having two guide surfaces each inclinedly extending relative to said predetermined direction of actuation; and
said two end portions of said substantially rod-shaped end region of said undulatory spring being slidably guided at respective ones of said two guide surfaces.

4,939,326
FLAT SWITCH INSERTABLE INTO A MAGAZINE AND USABLE AS PART OF A SURVEY TECHNIQUE FOR READERSHIP OF PUBLICATIONS
Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666
Continuation of Ser. No. 114,684, Oct. 29, 1987, abandoned, which is a division of Ser. No. 923,330, Oct. 23, 1986, Pat. No. 4,726,771, which is a continuation-in-part of Ser. No. 827,757, Feb. 7, 1986, Pat. No. 4,659,314. This application Dec. 19, 1988, Ser. No. 287,531
Int. Cl.[5] H01H *27/04*
U.S. Cl. 200—506 **8 Claims**



1. A switch comprising:
a first member having a substantially flat shape;
a second member of a substantially flat shape and having two opposite ends at least one of which is connected to said first member and the other of which is movable between a first position relatively close to the first member and a second position spaced relatively further from said first member;
a pair of facing contacts connected to said first member;
resilient means coupled to said first member to bring said pair of contacts into engagement with each other; and
insulating means connected to said second member for separating said pair of contacts from each other when said other end of the second member is in the first position and for permitting said pair of contacts to engage each other when said other end of the second member is in the second position.

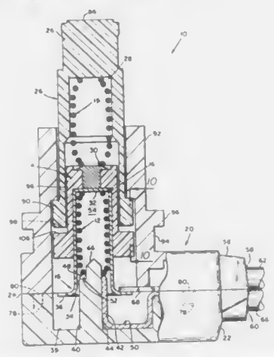
4,939,327
KEYBOARD SWITCH
Win Wu, Taipei; Ben Liao, Pan Chiau, and K. H. Lee, Taipei Hsieng, all of China, assignors to Acer Incorporated, China
Filed Oct. 31, 1988, Ser. No. 265,054
Int. Cl.[5] H01H *1/10*
U.S. Cl. 200—517 **11 Claims**



1. A keyboard switch for use with a membrane switch array to provide a tactile feeling, the switch comprising:

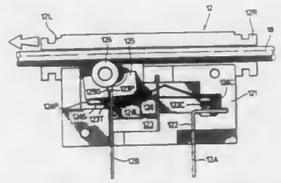
a housing positioned, in use, on the membrane switch array;
a plunger mounted for reciprocal movement within the housing and projecting outwardly from the housing, the plunger having an exterior wall with a single cam portion extending outwardly therefrom normal to the direction of movement of the plunger, said cam portion having a generally rectangular camming surface, when viewed normal to the direction of movement of the plunger, with one dimension of said surface lying parallel to said direction of movement;
an actuating arm pivoted to the housing and having a first portion extending beneath the plunger, said actuating arm having a second portion having a single cam follower which engages said single cam portion of the plunger during both directions of the reciprocal movement of said plunger, the first portion having a boss on its surface facing away from the plunger for engaging the switch array;
resilient means extending between the plunger and the first portion of the actuating arm to urge the plunger outwardly from the housing; and
a leaf spring mounted to the housing, said leaf spring having a rest position within said housing and a portion which normally engages the plunger, the arrangement of said switch being such that when the plunger is depressed into the housing to cause the boss on the actuating arm to actuate the membrane switch, the plunger flexes the leaf spring out of the rest position to a point at which the spring snaps back to the rest position thereby providing a tactile feeling in the operation of the switch.

4,939,328
QUIET SWITCHING APPARATUS AND METHOD OF OPERATION
Robert J. Smith, Farmington, Mich., assignor to Judco Manufacturing, Incorporated, Harbor City, Calif.
Filed Dec. 23, 1988, Ser. No. 289,376
Int. Cl.[5] H01H *13/58*
U.S. Cl. 200—526 **22 Claims**



1. A miniature switching apparatus comprising, in combination:
a housing;
contacting means mounted within said housing for communicating with a plurality of electrical circuits connected through said switching apparatus;
operating means mounted within said housing for rotating said contacting means;
an actuating element mounted within and projecting through said housing for rotatively driving said operating means;
a plurality of output terminals mounted within said housing, one of said output terminals alternately connecting a first of said electrical circuits to said contacting means while a second of said output terminals alternately connecting a second of said electrical circuits to said contacting means;
a common input terminal mounted within said housing, said input terminal in electrical communication with said contacting means for alternately energizing said first and second electrical circuits;
biasing means mounted within said contacting means for biasing said actuating element and for providing electrical continuity between said input terminal and said contacting means; and
damping means mounted within said actuating element for reducing audible noise produced by said switching apparatus.

4,939,329
ROLLER ACTIVATED SWITCH
Norman H. Dunkert, 221 Decatur St., Michigan City, Ind.
Division of Ser. No. 28,677, Mar. 20, 1987. This application May 22, 1989, Ser. No. 355,287
Int. Cl.[5] H01H *3/42*
U.S. Cl. 200—573 **4 Claims**



1. A switch unit with an independent, triggering actuator, comprising:
a housing with means to receive and locate switch components;
an actuating member, mounted in said housing, said actuating member reciprocating in opposite directions along a defined path through said housing said actuating member being reciprocated from the exterior of said housing;
said housing composed of non-conducting material;
a pair of conductive terminal members mounted in said housing with electric terminals which project from within the housing to the exterior of the housing;
an electrical contact means located inside said housing, for opening and closing an electrical conduction path between said pair of terminal members;
a fulcrum point defined by said pair of conductive terminal members;
a roller member mounted within said housing including means for contacting said actuating member; said roller member being mounted for movement between a first and second position; said first position located below said fulcrum point;
a pivoting member mounted in the housing on said fulcrum point so as to pivot;
said pivoting member rotatably receiving said roller member and limiting the first and second positions; said pivoting member being pivoted in response to said movement of said roller member; and
whereby upon movement of said actuating member in one direction causes the roller member to pivot the pivoting member over said fulcrum point and allow the roller to move from said first position to said second position; continued reciprocating movement of said actuating member in said one direction, to any extend, will maintain the roller member in said second position;
wherein movement of said actuating member, in said other direction, from any extent said actuating member has finally rested in after movement in said one direction, will cause said roller member to move from said second position to said first position while pivoting said pivoting member over said fulcrum point, said movement in said other direction of said actuating member needing only to be relatively short to cause said roller member to move from said second position to said first position, continued movement of said actuating member in said other direc-

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tion permitting the roller member to freely rotate in said first position;

said contact means being responsive to movement of said roller member between said first and second positions for opening and closing said conduction path.

4,939,330

METHOD AND ARRANGEMENT FOR CONTROLLING OUTPUT POWER OF A PLURALITY OF MAGNETRONS CONNECTED TO A COMMON POWER SOURCE

Benny Berggren, Vällingby, and Larsgöran Gustafsson, Uttran, both of Sweden, assignors to Alfastar AB, Tumba, Sweden

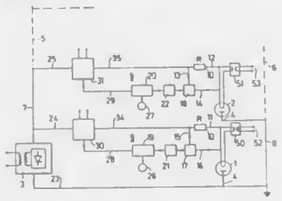
PCT No. PCT/SE87/00301, § 371 Date Mar. 1, 1988, § 102(e) Date Mar. 1, 1988, PCT Pub. No. WO88/00425, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 25, 1987, Ser. No. 159,594

Claims priority, application Sweden, Jul. 4, 1986, 8602990

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—10.55 B 19 Claims



1. A method for controlling magnetrons with regard to their microwave power in systems which incorporate a plurality of magnetrons, wherein two or more of said magnetrons (1, 2; 60, 61) are connected in parallel with a common power unit (3) which provides high-voltage for operating said magnetrons; said method comprising: the step of providing a separate regulating circuit (9) connected to and individual to a respective associated magnetron (1, 2; 60, 61), each said regulating circuit (9) including a control circuit and measuring means (10) by means of which the anode current passing through a respective associated magnetron is measured on the high-voltage side of said magnetron; the step of electrically separating each said measuring means (10) from its associated control circuit (19; 20); and providing that each said control circuit will control the anode current of its associated said magnetron in response to a signal received from the associated said measuring means (10).

4,939,331

ARRANGEMENT FOR CONTROLLING THE MICROWAVE POWER OF MAGNETRONS

Benny Berggren, Vällingby, and Larsgöran Gustafsson, Uttran, both of Sweden, assignors to Alfastar AB, Tumba, Sweden

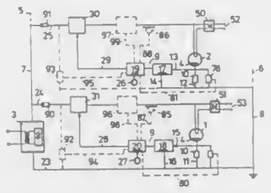
PCT No. PCT/SE88/00229, § 371 Date Jan. 4, 1989, § 102(e) Date Jan. 4, 1989, PCT Pub. No. WO88/09107, PCT Pub. Date Nov. 17, 1988

PCT Filed May 4, 1988, Ser. No. 295,603

Claims priority, application Sweden, May 7, 1987, 87018909

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—10.55 B 15 Claims



1. In a microwave heating apparatus including a power unit, a plurality of magnetrons, each having an anode, connected in parallel with the power unit, said power unit having two output terminals, one of which is grounded, enabling generation of a requisite high magnetron-operating voltage, a plurality of waveguides each of which is connected to an associated magnetron, a controlling device comprising for each magnetron (1, 2; 60, 61): a separate regulating circuit (9) which includes a measuring means (10) for measuring the anode current through respective magnetrons; the wave-guides (70), to which the magnetrons are connected, are connected to said ground potential; an electrically isolating means connecting the anode (4; 62, 63) of each magnetron (1, 2; 60, 61) to the grounded waveguide so that each said anode is isolated electrically from the ground potential; each said measuring means 91) being connected between the anode (4; 62, 63) of its associated magnetron and the other said output terminal (23), of the power unit (3), which has a positive potential; and an overvoltage protector (78) is connected in parallel to each said measuring means (10) so as to limit the voltage on the associated anode (4; 62, 63) of its associated magnetron in the event of a disruption or break-down of the associated measuring means (10).

4,939,332

SEALED FOOD PACKAGE FOR MICROWAVE HEATING

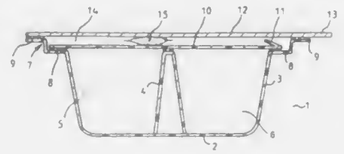
Herbert Hahn, Goettingen, Fed. Rep. of Germany, assignor to Conopco, d/b/a Thomas A. Lipton Co., Englewood Cliffs, N.J.

Filed Feb. 28, 1989, Ser. No. 316,990

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 3807445

Int. Cl.[5] H05B *6/80;* B65B *29/08*

U.S. Cl. 219—10.55 E 6 Claims



1. A package comprising:

a tray for receiving a food product to be packaged for microwave heating, said tray being formed from a material transparent to electromagnetic radiation and having a bottom wall, a sidewall extending upwardly from the periphery of the bottom wall and terminating at an upper end surrounded by an outwardly stepped rim having an inner step extending outwardly from the sidewall generally coplanar with the upper end of the sidewall, and having an outer step extending outwardly from the inner step and having an upper level disposed above the level of the inner step by a predetermined distance and lying in a plane parallel to the upper end of the sidewall, and partition wall means extending upwardly from the bottom wall and having an upper end at the level of the inner step of said rim and with said bottom wall and said sidewall defining a plurality of at least two compartments;

a radiation permeable plastic film extending over said tray in the plane of and peripherally sealed to the inner step of said stepped rim and sealed to the upper end of said partition wall means; and

an external cover formed from sheet material opaque to electromagnetic radiation extending over said tray and overlying said plastic film, said external cover being sealed to the outer step of said stepped rim so as to be spaced from and sealed separately from said plastic seal whereby said external cover may be removed from the tray without disturbing the plastic seal.

4,939,333

ELECTRIC APPARATUS WITH A CONTROLLED TURNTABLE

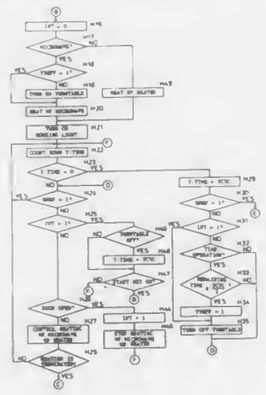
Sakai, Haruo; Sakai, Masayuki, both of Otsu, and Koide, Satoakhi, Ibaraki, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Sep. 15, 1989, Ser. No. 407,651

Claims priority, application Japan, Sep. 19, 1988, 63-234132; Dec. 27, 1988, 63-332842; Apr. 18, 1989, 1-98325

Int. Cl.[5] H05B *6/78*

U.S. Cl. 219—10.55 F 11 Claims



1. An electric apparatus powered by a power supply, comprising:

a housing;

a turntable arranged in the housing for rotating an object to be placed thereon;

driving means for driving said turntable;

controlling means for controlling the driving of said driving means, said controlling means comprising:

first means for determining and storing a first time period which is the time period required for one rotation of the turntable;

second means communicating with said first means and for determining whether a time period, which is approximately a natural number multiple of the first time period, has elapsed since the rotation of said turntable was started;

third means for stopping said driving means from driving said turntable; and

fourth means for communicating with said second and third means and for conditioning the activation of said third means on the basis of a determination that a time period, which is approximately a natural number multiple of said first time period, has elapsed.

4,939,334

METHOD FOR THE CONTROLLED WITHDRAWAL OF A COUNTERSINKING ELECTRODE IN AN ELECTROEROSION MACHINE

Hans-Peter Gruber, Losone; Renzo DeMaria, Bellinzona; Fabrizio Robbiani, Bissone, and Edwin Stutz, Versico, all of Switzerland, assignors to AG Fur Industrielle Electronix Agie, Losone, Switzerland

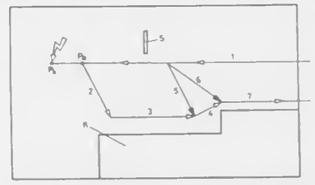
Filed May 19, 1989, Ser. No. 355,007

Claims priority, application Fed. Rep. of Germany, May 20, 1988, 3817302

Int. Cl.[5] B23H *7/26*

U.S. Cl. 219—69.12 17 Claims

1. In a method for controlled withdrawal of a countersinking electrode in an electroerosion machine in which the countersinking electrode is moved relative to a workpiece along an eroded path, the method comprising the steps of initially moving the countersinking electrode, in the case of a short-circuit, back by a predetermined distance along a previously covered path from a short-circuit point to an intermediate point, and moving the countersinking electrode away from the intermediate point over a given withdrawal path if the short-circuit is still present on reaching the intermediate point, the improvement comprising determining a first portion of the withdrawal path by a vector with fixed defined amount and direction in space and if the short-circuit is still present at said vector's tip, performing a further movement including a second portion of the withdrawal path of the countersinking electrode (S), said second portion being displaced in parallel relative to the eroded path and being directed in the opposite direction to that described by the electrode in the eroded path during erosion.



4,939,335

CIRCUIT FOR MEASURING THE VOLTAGE DROP BETWEEN THE WELDING ELECTRODES OF A RESISTANCE WELDING MACHINE

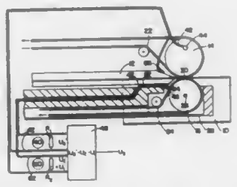
Willi Mueller, Berikon, Switzerland, assignor to Elpatronic AG, Zug, Switzerland

Filed May 25, 1989, Ser. No. 357,315

Claims priority, application Switzerland, Jun. 10, 1988, 02244/88

Int. Cl.[5] B23K *11/25*

U.S. Cl. 219—109 4 Claims



1. A circuit for measuring the voltage drop at the welding position between the welding electrodes of a resistance welding machine, comprising: a first measuring loop for measuring a first loop voltage which includes the voltage drop caused by the welding current between two tapping points at the welding electrodes and the voltage induced by the welding current in the first measuring loop, a second measuring loop for measuring a second loop voltage which includes the voltage induced by the welding current in the second measuring loop, and an evaluation circuit means to substract the second loop voltage from the first loop voltage, wherein the two measuring loops enclose substantially the same area and are twisted together—except in the region between the two tapping points.

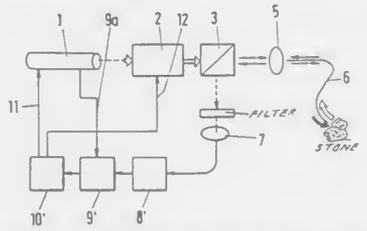
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,336

METHOD AND APPARATUS FOR MATERIAL PROCESSING WITH THE AID OF A LASER

Wilhelm Meyer, and Ralf Engelhardt, both of Lübeck, Fed. Rep. of Germany, assignors to Telemit Electronic GmbH, Fed. Rep. of Germany

Filed Oct. 3, 1988, Ser. No. 253,064
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1987, 3733489
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.62 19 Claims



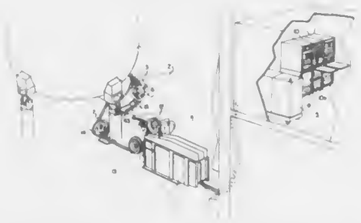
1. Method for material processing with the aid of a laser in which the laser light is directed via a laser optical system onto the material and the light reemitted or scattered back by the material is conducted via the laser optical system to a detector arrangement which is followed by an evaluating circuit for controlling the laser, wherein the amplitude-versus-time profile of the light incident on the detector arrangement is evaluated after passage of a predetermined period of time from the start of the laser light and is used for controlling the laser and/or an optical switch arranged in the output beam path of the laser.

4,939,337

APPARATUS FOR THE STORAGE AND HANDLING OF AT LEAST ONE ELONGATE FLEXIBLE ELEMENT, SUCH AS A FEEDER AND SIGNAL TRANSMISSION CABLE, FOR AN AUTOMATIC ORBITAL WELDING MACHINE

Daniel Gente, Villeurbanne, France, assignor to Framatome, Courbevoie, France

Filed Sep. 6, 1988, Ser. No. 240,313
Claims priority, application France, Sep. 4, 1987, 87 12322
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—125.11 7 Claims



1. Apparatus for the storage and handling of at least one elongate flexible element (7), such as a feeder and signal transmission cable for a machine for the orbital welding of large, rotationally symmetrical components, remotely controlled from a control station (5) and comprising a motorized welding head (6) which is mounted movably on a running rail (16) arranged around the components to be welded (2) and to which one end (17) of said elongate flexible element (7) is connected, said apparatus comprising

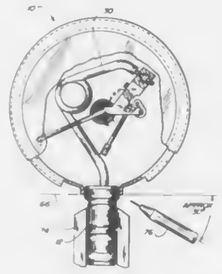
(a) a storage container (11) for said flexible element (7), said storage container being connected to said control station (5) by at least one junction cable (17) and comprising at least one compartment (11*a*, 11*b*) for a reserve length of said flexible element.

4,939,338

WELDED ARTICLE AND METHOD OF MANUFACTURE

Louis F. Bregy, Weston; Jack Conti, Wilton, and Joseph E. Gorgens, Trumbull, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 9, 1986, Ser. No. 312,680
Int. Cl.[5] B23K *9/23*
U.S. Cl. 219—137 WM 20 Claims



1. A method of directly welding pieces of dissimilar metals comprising the steps of:

providing a first piece of stainless steel to be welded;

providing a second piece of aluminum bronze to be welded;

positioning said first and second pieces in line contact with each other along a line at which said first and second pieces are to be welded; and

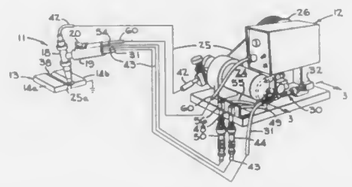
applying thermal energy from welding mechanisms along said line of contact to thereby weld said first and second pieces together without the use of a filler or insert material.

4,939,339

APPARATUS FOR QUICK DISCONNECT OF AN ARC WELDER TORCH

Bobby W. Folkening, and Ronald R. Stringer, both of San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 3, 1989, Ser. No. 332,318
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—137.63 3 Claims



1. Apparatus for quick connect and disconnect of a welding torch from a welder power supply control wherein the power supply control has a gas output lead, a fluid return lead and a fluid output/electrical output lead, and the welding torch has a gas input lead, a fluid outlet lead and a fluid input/electrical input lead, said apparatus comprising:

a first quick connector having a male portion and a female portion for connecting to said male portion, said male portion of said first connector being connected to a power supply control gas output lead and said female portion of said first connector being connected to a torch gas input lead to selectively support gas to said torch;

a fluid output/electrical output lead having an outer portion for carrying an electrical current and an axial bore for carrying fluid, said fluid output/electrical output lead being connected to a power supply control;

a flexible fluid input/electrical input lead having an outer portion for carrying an electrical current and an axial bore for carrying fluid, said fluid input/electrical input lead being connected to a torch;

a second quick connector having a male portion and a female portion for connecting to said male portion, said male and said female portions of said second connector each including an axial bore for conducting fluid through said second connector and said male and said female portions each having an outer portion for carrying an electrical current through said second connector, said male portion of said second connector being connected to said fluid output-/electrical output lead of said power supply control and said female portion of said second connector being connected to said fluid input/electrical input lead of said torch to selectively supply fluid and electrical power from said power supply control to said torch; and

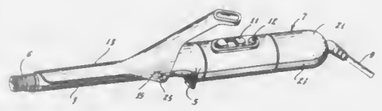
a third quick connector having a male portion and a female portion for connecting to said male portion, said male portion of said third connector being connected to a fluid return lead of said power supply control and said female portion of said third connector being connected to a fluid outlet lead of said torch to selectively return fluid to said power supply control.

4,939,340

MOLDABLE CURLING IRON

Richard H. Brill, Philadelphia, Pa., assignor to Conair Corporation, Stamford, Conn.

Filed Mar. 1, 1989, Ser. No. 317,528
Int. Cl.[5] A45D *1/04*
U.S. Cl. 219—225 16 Claims



1. A moldable curling iron, said curling iron including

a handle, a non-metallic barrel extending therefrom, and a spoon pivotally mounted thereon and spring-pressed towards said barrel, and an electrical heating element within said barrel,

a first molded section made of high-temperature thermoplastic material which is transparent to infra-red rays, and a second section made of similar thermoplastic material, said molded sections each defining a portion of said barrel and a portion of said handle integral with one another, said sections having a complementary interfit along a common line and together defining said handle and said barrel, and

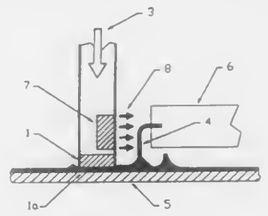
means for securing said sections together.

4,939,341

HEATED TOOL WITH MULTIPLE HEATING SURFACES

Gero Zimmer, Munich, Fed. Rep. of Germany, assignor to Productech Inc., Rolling Hills Estates, Calif.

Filed Nov. 22, 1988, Ser. No. 275,331
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739771
Int. Cl.[5] H05B *1/00*
U.S. Cl. 219—243 14 Claims



1. A heating tool for heating at least one object, comprising:

an electrically heated heater bar having a heat supplying contact surface for being pressed into contact with at least one object to be heated;

an electrically heated radiator having a radiant surface for radiating heat at at least one object to be heated, the radiator being positioned near the contact surface and the radiant surface being spaced from and facing substantially transversely to the contact surface; and

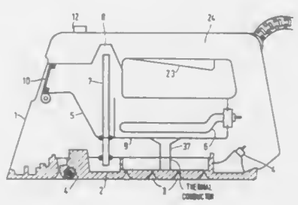
electrical current supplying means connected to the heater bar and the radiator for supplying electrical current thereto.

4,939,342

ELECTRIC STEAM IRON WITH SEPARATELY HEATED SOLE PLATE AND STEAM CHAMBER

Gerrit Frens, Eindhoven; Gregorius T. M. Neelen, Groningen; Franciscus N. M. Trines, Drachten, and Marjoleine H. Van Nieuwkasteele, Eindhoven, all of Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 876,542, Jun. 20, 1986, abandoned.
This application Apr. 11, 1988, Ser. No. 183,286
Claims priority, application Netherlands, Jan. 13, 1986, 8600048
Int. Cl.[5] H05B *1/02*; D06F *75/14, 75/26*; F22B *1/28*
U.S. Cl. 219—251 17 Claims



1. A steam iron comprising:

a sole plate including a plurality of apertures for conveying steam to a surface to be ironed, said sole plate including an electric heating element which is adapted to maintain said sole plate at a predetermined temperature that is at least sufficient to evaporate water condensed in the article to be ironed; and

a single flooded steam chamber for containing a supply of

water and for continuously generating steam, said steam chamber including a separate electric heating element for heating all the water in said steam chamber to form steam, and a steam tube for separating water from steam and for continuously conveying steam to said sole plate apertures, said steam chamber heating element generating more heat than said sole plate heating element, the combined heating power of said heating elements exceeding 1400 watts,

circuit means for energizing said heating elements to continuously generate steam and to heat said sole plate to said predetermined temperature,

whereby an article being ironed is heated by steam continuously produced in said chamber and continuously discharged through said apertures into contact with the article, the steam condensing to water in the article thereby increasing heat transfer to the article, the article being subsequently dried by the heat produced by said sole plate, the amount of heat produced by said sole plate being equal to at least the heat of evaporation of water condensed in the article being ironed.

4,939,343

STEAM GENERATOR FOR STEAM BATHS

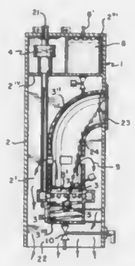
Josef B. Arnold, Alteggbalde 2, CH-6045 Meggen, Switzerland

Filed Sep. 28, 1988, Ser. No. 250,704

Claims priority, application Switzerland, Oct. 1, 1987, 03831/87

Int. Cl.[5] **F22B** *1/28*

U.S. Cl. 219—276 13 Claims



1. A steam generator for steam baths, comprising:

a column-shaped housing;

a ventilator sucking air into said housing;

a water bath within said housing, said bath being partially filled with water, said ventilator forcing air through said water in said water bath;

means for heating said water bath, steam emerging from said water bath flows around said water bath before emerging from said housing.

4,939,344

ELECTRIC SAUNA OVEN WITH SHIELD FOR TRANSMITTING HEAT RADIATION TO DETECTOR

Reijo Perilä, Hangonkylä, Finland, assignor to Oy Helo-Tehtaat, Hanko, Finland

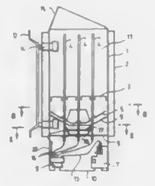
Continuation of Ser. No. 913,937, Oct. 1, 1986, abandoned. This application Oct. 25, 1988, Ser. No. 265,360

Claims priority, application Finland, Oct. 3, 1985, 853841

Int. Cl.[5] **H05B** *3/02*

U.S. Cl. 219—364 7 Claims

1. An electric sauna oven comprising a stone space, at least one electric resistor arranged in said stone space for heating the oven, a jacket for encasing said stone space and said at least one electric resistor, means for supplying current to said at least one electric resistor, means for detecting heat radiation from said at least one electric resistor, means for holding said detecting means, said holding means having a structure which minimizes heat energy transfer by thermal conduction to said detecting means and being arranged beneath said stone space and within said jacket, a means for transmitting to said detecting means heat radiation received from said at least one electric resistor, said transmitting means being arranged between said at least one electric resistor and said detecting means, and thermostatic means coupled to said detecting means for controlling the supply of current to said at least one electric resistor, said thermostatic means controlling the supply of current as a function of only the heat radiation emitted by said at least one electric resistor and detected by said detecting means, wherein said transmitting means comprises first and second plate-like parts arranged at upper and lower levels respectively between said at least one electric resistor and said detecting means.



4,939,345

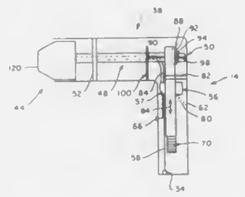
PORTABLE HAIR DRYER ASSEMBLY

Michelle J. Farina, and Jo-Ann Frontario, both of 40-38 - 220th St., Bayside, N.Y. 11361

Filed Mar. 21, 1989, Ser. No. 326,737

Int. Cl.[5] **F24H** *3/04*

U.S. Cl. 219—370 1 Claim



1. A portable hand-holdable hair dryer assembly comprising:

(A) a stand unit which includes

(1) a base,

(2) an upright cradle mounted on said base,

(3) an electrical connector element located in said base,

(4) means for connecting said electrical connector element to a source of electrical power;

(B) a portable hair dryer unit which includes

(1) a handle portion having an electrical connector therein for connection to said base electrical connector element,

(2) a rechargeable battery system mounted in said handle and connected to said handle electrical connector to be charged by said source of electrical power,

(3) a fan mounted in said handle portion,

(4) a motor mounted in said handle portion and connected to said rechargeable battery system to be operated therefrom and to said fan to drive said fan,

(5) a nozzle movably mounted in said hair dryer unit and receiving air therefrom and further including means for moving said nozzle, said nozzle moving means including

(a) a knob rotatably mounted on said handle portion,

(b) a pinion means on said knob and having teeth means,

(c) a rack reciprocally movably mounted on said handle portion and having first gear means meshed with said knob pinion means teeth means and a second gear means,

(d) a second pinion means rotatably mounted on said handle portion and including gear teeth means meshed with said rack second gear means to rotate said second pinion means as said rack means moves,

(e) an eccentric cam mounted on said second pinion means to rotate therewith,

(f) a cam follower abutting said cam to be moved as said cam rotates and connected to said nozzle to move said nozzle as said cam follower is moved by said eccentric cam; and

(C) an air intake system which includes a fine mesh screen.

4,939,346

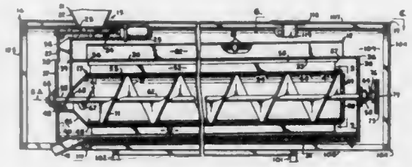
BULK MATERIAL PROCESSOR AND METHOD

Richard G. Bailey, Overland Park, Kans., and Merton R. Leggott, Lincoln, Nebr., assignors to Flakee Mills, Inc., Lincoln, Nebr.

Filed Dec. 12, 1988, Ser. No. 283,238

Int. Cl.[5] **F27B** *7/18;* **F26B** *23/04, 17/32*

U.S. Cl. 219—388 17 Claims



1. A processor for bulk material, which includes:

(a) a barrel assembly having:

(1) first and second opposite ends;

(2) a bore extending longitudinally between said first and second ends;

(3) a top with an opening to said bore extending longitudinally between said first and second ends;

(4) a bottom;

(5) opposite sides;

(6) an inlet to said bore located in proximity to said first ends;

(7) an outlet from said bore located in proximity to said first end; and

(8) insulation means thermally insulating said barrel assembly sides and bottom;

(b) a rotor assembly having:

(1) a generally cylindrical rotor body with a first end having a frusto-conical configuration converging on an inlet opening, a second end having a generally frusto-conical configuration converging an outlet opening, and a rotor bore extending longitudinally between said inlet and outlet openings;

(2) a rotational axis extending coaxially through said rotor body;

(3) a screw auger mounted generally within said rotor body bore and including a first section extending through said rotor body inlet and a second section extending from said first section to a position in proximity to said rotor body outlet, said screw auger second section having a greater diameter than said screw auger first section;

(4) first and second bearings mounted on said barrel assembly first and second ends respectively;

(5) said screw auger including a coaxial drive shaft with first and second ends journaled in said first and second bearings respectively; and

(6) a plurality of rotor vanes extending longitudinally along and projecting radially outwardly from said rotor body, each said vane having an inner edge attached to said rotor body, a free outer edge, a first end located in proximity to said rotor body first end and a second end located in proximity to said rotor body second end;

(c) a drive assembly including a motor drivingly connected to said drive shaft second end and adapted for rotating said rotor assembly;

(d) a heater assembly including:

(1) an open-bottom reflective enclosure mounted on said barrel assembly top over said opening therein; and

(2) infrared heater means positioned within said enclosure and adapted for communicating infrared radiation with said barrel assembly interior;

(e) a feeder assembly adapted for conveying bulk material to said barrel assembly inlet;

(f) said processor being adapted for preheating bulk material within said rotor assembly, said rotor assembly vanes being adapted to simultaneously sweep bulk material around said barrel assembly bore and convey bulk materal from said barrel assembly second end to said barrel assembly first end whereby said material is intermittently exposed to direct infrared radiation from said infrared heater means;

(g) said heater assembly having first and second ends located in proximity to said barrel assembly first and second ends respectively; and

(h) at least one of said heater assembly ends being vertically adjustable with respect to said barrel assembly.

4,939,347

ENERGIZATION CONTROL APPARATUS FOR GLOW PLUG

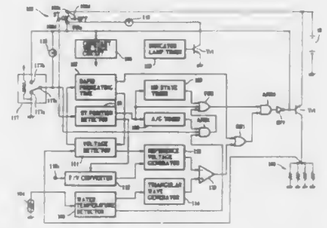
Mitsuake Masaka; Koji Hatanaka; Minoru Masaki, and Takashi Aota, all of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1988, Ser. No. 285,762

Claims priority, application Japan, Dec. 17, 1987, 62-317572; Feb. 17, 1988, 63-32853; May 12, 1988, 63-113481

Int. Cl.[5] **H05B** *1/02*

U.S. Cl. 219—492 9 Claims



1. An energization control apparatus for a glow plug, comprising:

a battery;

a glow plug having a low rated voltage which allows rapid heating at a low battery voltage during cranking of a diesel engine in a severe wintertime condition;

power control means, arranged between said battery and said glow plug, for controlling a power supplied to said glow plug; and

energization control means for controlling said power control means so as to control a root-mean-square value of a voltage applied to said glow plug to be equal to the low rated voltage when a voltage applied to said glow plug at

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the start of the diesel engine is detected to be higher than the low battery voltage, wherein said energization control means controls a duty ratio for controlling an ON/OFF operation of said power control means, and said energization control means comprises:

first and second timers started in association with a key switch operation, said first timer setting a rapid heating time at an initial period of energization;

reference voltage setting means controlled in accordance with an output from said first timer;

battery voltage detecting means; and

duty ratio control means for controlling the duty ratio for controlling the ON/OFF operation of said power control means,

said first timer counting a time shorter than that of said second timer,

said second timer setting an after glow time, and

said reference voltage setting means changing the reference voltage by an ON/OFF operation of said first timer.

4,939,348

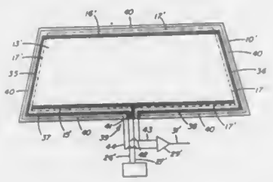
DISCONTINUITY DETECTOR IN A HEATED TRANSPARENCY

Russell C. Criss, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 144,153, Jan. 15, 1988. This application Jun. 30, 1989, Ser. No. 374,333

Int. Cl.[5] H05B *3/10*

U.S. Cl. 219—547 9 Claims



1. An electrically heated transparency comprising: a transparent sheet, a transparent electroconductive coating on a major surface of the sheet, a first bus bar in contact with the coating along a first marginal edge portion of the sheet, a second bus bar in contact with the coating along a second marginal edge portion of the sheet, the second bus bar having an electroconductive extension out of contact with the coating extending from an end of the bus along a third marginal edge portion of the sheet toward a terminal connection area, and an electroconductive voltage sensor lead on the sheet extending along a fourth marginal edge portion of the sheet toward the terminal connection from the end of the second bus bar opposite from the extension, whereby a break at any marginal edge portion of the sheet is detectable.

4,939,349

CERAMIC THERMISTOR HEATING ELEMENT

Chi Liu, Annandale, Va., assignor to Uppermost Electronic Industries Co., Ltd., Kaohsiung, Taiwan

Filed Jun. 23, 1989, Ser. No. 370,719

Int. Cl.[5] H05B *3/10*

U.S. Cl. 219—552 5 Claims

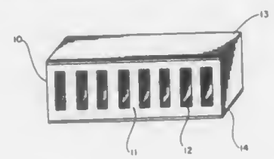
1. A heating element consisting essentially of:

a rigid rectangular structural body having a top surface and a bottom surface, a front and a back surface, and two ends,

said rigid rectangular structural body consisting of ceramic material having a positive temperature coefficient of resistance,

said rigid rectangular structural body having a plurality of substantially uniform parallel rectangular channels through the body from the front to the back surfaces thereof,

each of said channels being separated by a partition wall of substantially uniform thickness,



said rigid rectangular structural body having electrodes affixed to the top and bottom surfaces thereof, and in electrical contact therewith.

4,939,350

APPARATUS FOR COUNTING BUNDLED NOTES, ESPECIALLY BANKNOTES

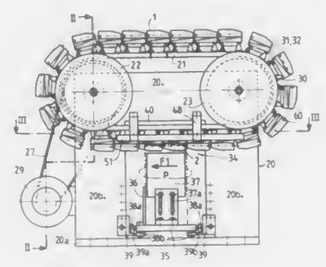
Harmut K. Sauer, Himmelstadt, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Switzerland

Filed Oct. 5, 1988, Ser. No. 253,980

Claims priority, application Switzerland, Oct. 9, 1987, 03970/87

Int. Cl.[5] B65H *3/12*; G06M *3/02*

U.S. Cl. 235—98 C 16 Claims



1. An apparatus for counting bundled notes having narrow side edges, including a displaceably mounted packet holder for supporting a packet (P) of said notes and a device for separating individually the notes to be counted (S), comprising a plurality of shovel-shaped separating elements (1) which are arranged successively in a direction of movement on a carrier (21) moved continuously past a counting station (34) and which, on a side facing the notes to be counted (S), each of said separating elements having a suction face (2), said suction face provided with open suction orifices (3) connectable to a suction-air source, a marginal region of each of said notes to be counted is laid against said suction face as a result of a suction effect, is simultaneously lifted off from the packet (P), and thereby temporarily assumes a counting position, said region of said notes resting against the suction face of each of said separating elements when the following separating element arrives, engages behind a following separating element on arrival of said following separating element and all counted notes of the packet pass successively onto a side opposite the suction face of the separating elements forming a sliding face (7), and a counting device (60, 61, 62) for counting particular individually separated notes associated with said counting station wherein the carrier of the separating elements (1) is a rotating endless band (21), with at least one straight portion, wherein the counting station (34) is installed at said straight portion, and

wherein the suction face (2) of the separating elements (1) overlaps an edge strip oriented essentially parallel to side narrow side edges of the notes.

4,939,351

AUTOMATIC PAYMENT MACHINE DELIVERING A VOUCHER

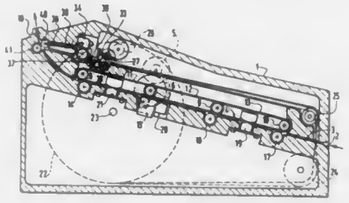
Bernard Alaux; Jacques Caillet, both of Valence, and Jacques Perge, St. Marcel Les Valence, all of France, assignors to Crouzet, Montrouge, France

Filed Mar. 29, 1988, Ser. No. 174,685

Claims priority, application France, Mar. 30, 1987, 87 04463

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 2 Claims



1. An automatic payment machine for checking the validity of an instrument of payment by means of control electronics, giving a voucher back with the instrument of payment and comprising two separate kinematic chains, one for processing the instrument of payment and the other for making out the voucher and for driving the instrument of payment and voucher towards a common outlet, wherein the kinematic chain for the voucher comprises means for maintaining this voucher in a waiting position, in the path of the instrument of payment so that this latter carries it along with it when it passes and the instrument of payment and the voucher arrive simultaneously at the common outlet.

4,939,352

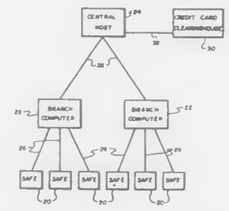
CREDIT CARD BILLING SYSTEM

Steven L. Sunyich, 402 E. Springhill Clr., North Salt Lake, Utah 84054

Continuation of Ser. No. 338,740, Apr. 17, 1989, Pat. No. 4,883,948. This application Nov. 2, 1989, Ser. No. 430,889

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—382 13 Claims



1. A credit card billing system for use with an automated device for providing goods or services based upon input of a credit card, said credit card billing system comprising:

a card reader associated with said device and adapted to read card information from a credit card;

computer means associatively linked with said card reader for controlling said device, said computer means being programmed to: read card information from said card reader, control said device to provide said goods or services, develop use information, store said use information, and periodically relay said use information to a central host system;

a central host billing system (central host) communicatively linked to said branch computer, said central host being adapted to receive said use information from said computer means and to develop billing information.

4,939,353

PROCESSING SYSTEM FOR ENABLING DATA COMMUNICATION WITH A SELF-DIAGNOSE DEVICE

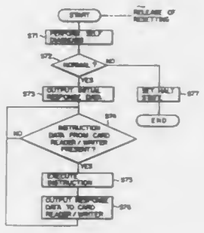
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 13, 1988, Ser. No. 143,654

Claims priority, application Japan, Jan. 22, 1987, 62-12709; Mar. 23, 1987, 62-68239; Mar. 23, 1987, 62-68241; Mar. 27, 1987, 62-71624

Int. Cl.[5] G06F *15/30, 11/00*; G06K *19/06*

U.S. Cl. 235—438 21 Claims



1. A processing system for enabling data communication between first and second electronic devices,

said first electronic device including sending means for sending a control signal to a second electronic device so as to initiate operation of said second electronic device, and

said second electronic device including:

self-diagnosing means for self-diagnosing, prior to transmission of the initial response data to said first electronic device, whether a normal processing is performed when the control signal is received from said first electronic device;

initial response data transmitting means for transmitting the initial response data to said first electronic device when the self diagnosis result of said self-diagnosing means indicates that the normal processing can be performed;

inhibiting means for inhibiting the transmission of the initial response data when the self diagnosis result of said self-diagnosing means indicates that the normal processing cannot be performed; and

processing means for receiving the instruction data from said first electronic device, performing processing of the instruction data, and sending a processing result to said first electronic device.

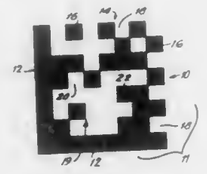
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,354

DYNAMICALLY VARIABLE MACHINE READABLE BINARY CODE AND METHOD FOR READING AND PRODUCING THEREOF

Dennis G. Priddy, Safety Harbor, and Robert S. Cymbalski, Clearwater, both of Fla., assignors to Datacode International, Inc., Safety Harbor, Fla.

Filed May 5, 1988, Ser. No. 190,205
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—456 **10 Claims**



1. A method for determining the size and density of a dynamically variable machine optically readable binary code forming a matrix having a perimeter having a first side and a second side, the first side and second side each being formed of a solid line of equal lengths and intersecting at a first corner and a third side of the perimeter and a fourth side of the perimeter, each being formed of an identical broken line pattern formed of alternating dark areas and light areas, the third side and the fourth side intersecting at a second corner corresponding to the density of data contained within the matrix comprising the steps of:

scanning the binary code with an optical scanner to convert the matrix and the surrounding area of the matrix to a sequence of electronic impulses, wherein the binary code and visual code are located in a visual field;

converting the signal of electronic impulses into a series of electronic data bits corresponding to the scanned image;

forming a bit mapped image of the matrix;

locating and determining the length of the first and second sides of the perimeter; and

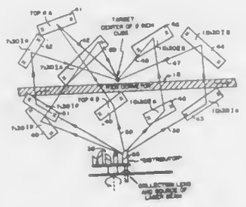
determining the product of the number of light areas and dark areas of the third side and the number of light areas and dark areas of the fourth side.

4,939,355

AUTOMATIC PACKAGE LABEL SCANNER

Joseph F. Rando, Los Altos Hills, Calif., and H. Nicks Roberts, Eugene, Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Jan. 22, 1988, Ser. No. 147,815
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **30 Claims**



1. An automatic scanner for automatically scanning bar code labels of selected items substantially without an attendant, comprising:

item conveyor means for automatically moving items through an item path including a scan region,

bar code laser scanner means for scanning with one or more laser beams a volume of space in which an item bar code label might be located, including means for scanning for the label on substantially all surfaces of the item,

item gate means for determining the presence of an item on the product conveyor means as the item reaches a preselected point in the item scan path and for determining whether the item has exited the scan region at the time a succeeding item approaches the scan region, and for inhibiting the progress of the succeeding item until the first item has exited the scan region and then enabling the succeeding item to continue its movement into the scan region, and

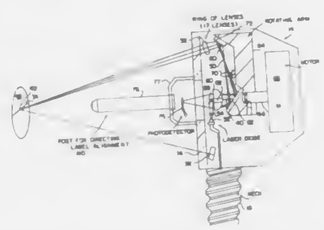
decoding means for receiving signals from the scanning of the bar code labels and for compiling data relating to the items whose bar codes have been read and for preparing a tabulation of said items.

4,939,356

BAR CODE SCANNER WITH ASTERISK SCAN PATTERN

Joseph F. Rando, Los Altos Hills, Calif.; H. Nick Roberts, and John F. O'Brien, both of Eugene, Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed May 2, 1989, Ser. No. 346,434
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **45 Claims**



1. A compact versatile laser bar code scanner, comprising,

a scanner head having means for scanning and detecting returned scattered light from a laser beam generally in an asterisk pattern focused a distance in front of the head such that a bar-coded item or package can be moved manually to or past the scanner head to conveniently scan a bar code label on the item or package with the scanner, substantially without the need for label orientation by the user,

flexible head support means connected to the scanner head for adjusting the position and angle of the head in three-dimensional space, and

a base connected to the flexible head support means.

4,939,357

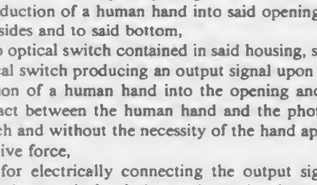
OPTICAL SYSTEM FOR A FOCAL POINT DETECTING DEVICE

Osamu Shindo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Nov. 17, 1988, Ser. No. 272,470
Claims priority, application Japan, Nov. 20, 1987, 62-293750; Mar. 10, 1988, 63-56777
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.1 **5 Claims**

1. An optical system of a focal point detecting device comprising:

a condenser lens disposed behind a film equivalent plane, the radius of curvature of a front surface of said condenser lens at the film equivalent plane side being larger than that of a rear surface of said condenser lens, a path length L from said film equivalent plane to the rear surface of said condenser lens being in a range of $3.2\ mm < L < 3.6\ mm$ when the path length is not substantially expanded by a refractive material;



a pair of light splitting means disposed behind the condenser lens and in symmetry with respect to a meridian plane of said condenser lens; and

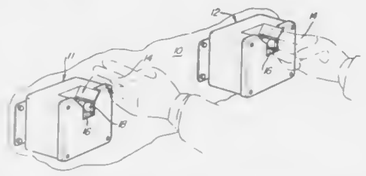
a focal point detecting means adapted to detect a focal point by finding a relative positional displacement of an objective image which is reimaged by said pair of light splitting means.

4,939,358

SWITCH APPARATUS INCLUDING A PAIR OF BEAM-TYPE SWITCHES

Jeffrey G. Herman, Lake Orion, and Mark C. Matzka, Rochester, both of Mich., assignors to Jeffries, Inc., Warren, Mich.

Continuation of Ser. No. 916,525, Oct. 8, 1986, abandoned. This application May 23, 1988, Ser. No. 198,613
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **5 Claims**



1. For use in conjunction with a machine having a mode of operation in which the machine is actuated to perform a machining operation and a circuit responsive to two input signals, said circuit preventing operation of said machine in said mode unless said circuit receives said input signals substantially simultaneously,

a pair of switch assemblies for producing said input signals, each switch assembly comprising:

a housing having a generally U-shaped opening having sides and a bottom, said opening being dimensioned to allow the introduction of a human hand into said opening between said sides and to said bottom,

a photo optical switch contained in said housing, said photo optical switch producing an output signal upon the introduction of a human hand into the opening and without contact between the human hand and the photo optical switch and without the necessity of the hand applying an exertive force,

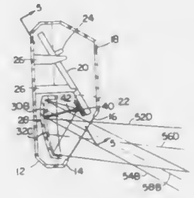
means for electrically connecting the output signal from each photo optical switch as an input signal to said circuit to enable operation of said machine in said mode.

4,939,359

INTRUSION DETECTION SYSTEM WITH ZONE LOCATION

Stanley B. Freeman, Jericho, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed Jan. 17, 1988, Ser. No. 208,057
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **20 Claims**



1. An intrusion detection system comprising

housing structure including structure defining a radiation entrance aperture,

a sensor responsive to infrared radiation mounted in said housing structure,

optical system structure in said housing structure for receiving infrared radiation through said radiation, entrance aperture defining structure from a monitored zone and focusing said received infrared radiation onto said sensor,

means in said housing structure connected to said sensor for providing an output signal in response to movement of an infrared radiating object in said monitored zone, and

diffuse reflector structure adapted to be located in a first position immediately in front of said sensor for reflecting visible radiation from a source of visible radiation located in said monitored zone in a beam directed back through said optical system to said monitored zone provided by said optical system structure.

4,939,360

PARTICLE BEAM IRRADIATING APPARATUS HAVING CHARGE SUPPRESSING DEVICE WHICH APPLIES A BIAS VOLTAGE BETWEEN A CHANGE SUPPRESSING PARTICLE BEAM SOURCE AND THE SPECIMEN

Katsuhiko Sakai, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1989, Ser. No. 310,917
Claims priority, application Japan, Feb. 26, 1988, 63-41930
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—251 **8 Claims**



1. A particle beam irradiating apparatus comprising:

a particle beam irradiating means for irradiating a charged particle beam to a specimen;

a charge suppressing means having a charged particle source for irradiating a negatively charged particle beam to the specimen and an electrode for extracting the negatively charged particle beam from the charge suppression means towards the specimen; and

a voltage supply for applying a bias voltage difference be-

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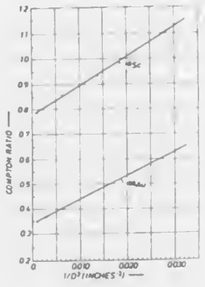
tween the charged particle source and the specimen, wherein the absolute value of said bias voltage difference is not more than 10 V.

4,939,361

METHOD FOR CORRECTING GAMMA RAY SPECTRA FOR BOREHOLE TRACER INTERFERENCE

Harry D. Smith, Jr., and Larry L. Gadeken, both of Houston, Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Filed Jun. 24, 1988, Ser. No. 211,521
Int. Cl.[5] G01V *5/00*
U.S. Cl. 250—260 **6 Claims**



1. A method for performing gamma ray well logging of plural radioactive tracer element isotopes in an unknown cased well borehole wherein standard gamma ray energy spectra of selected individual tracer elements taken at least substantially with the individual tracer elements disposed within a case standard borehole and disposed without a cased standard borehole are used in the analysis of gamma ray count data taken in the unknown borehole, comprising the steps of:

moving a well logging instrument sized and adapted for passage through a well borehole through the unkown well bore and detecting gamma radiation emitted from plural selected radioactive tracer isotopes at different depth levels in the well borehole;

separating said detected gamma radiation into a measured unknown gamma ray energy spectrum at each of a plurality of depth levels in the unknown borehole;

at such depth levels in the unknown borehole, separating said measured unknown gamma ray energy spectrum into components parts attributable to each such selected radioactive tracer isotope disposed within the unknown borehole and disposed without the unknown borehole by comparing said measured unknown gamma ray energy spectrum with said plurality of standard gamma ray energy spectra of said selected tracer elements disposed within and without the cased standard boreholes in which said standard gamma ray spectra are obtained and recording said component parts as a function of borehole depth.

4,939,362

BOREHOLE FLUID DENSITY WELL LOGGING MEANS AND METHOD

Irwin R. Supernaw, and Jackie C. Sims, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1988, Ser. No. 276,734
Int. Cl.[5] G01V *5/12*
U.S. Cl. 250—269 **6 Claims**

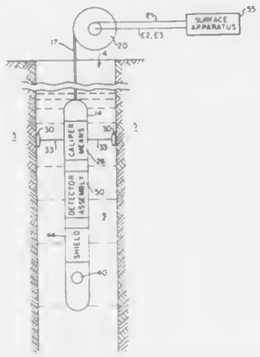
1. A well logging system which measures the density of a fluid in a borehole traversing an earthen formation, comprising:

sonde means including:

source means for emitting gamma rays into the borehole fluid,

detector means for detecting gamma rays from the borehole fluid and providing a count rate signal corresponding to a count rate of the detected gamma rays, and

caliper means for continually measuring the diameter of the borehole and providing a caliper signal corresponding thereto;



cable means connected to the detector means and to the caliper means for conveying the count rate signal and the caliper signal to the surface, and

surface electronics including:

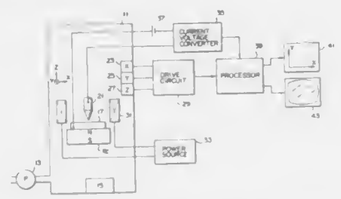
processing means connected to the cable means for processing the count rate signal and the caliper signal to provide a density signal corresponding to the density of the fluid in the borehole.

4,939,363

SCANNING TUNNELING MICROSCOPE

Hiroshi Bando, Tsukuba, and Akira Sakai, Kawasaki, both of Japan, assignors to Director General of Agency of Industrial Science and Technology, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

Filed Jun. 23, 1989, Ser. No. 370,819
Claims priority, application Japan, Jun. 23, 1988, 63-153487
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 **8 Claims**



1. A scanning tunneling microscope for investigating the distribution of the electron spins at the surface of a specimen, comprising:

a tip disposed above the surface of the specimen;

means for emitting electrons whose spins are polarized in one direction;

means for supporting said tip at a specified distance from the surface of the specimen and letting said tip scan the surface of the specimen;

means for applying a specified voltage between the tip and the specimen and causing a tunnel current to flow between said tip and the specimen;

means for detecting the tunnel current; and

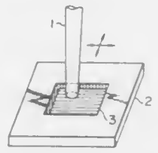
means for forming and displaying an image according the tunnel current detected.

4,939,364

SPECIMEN OR SUBSTRATE CUTTING METHOD USING FOCUSED CHARGED PARTICLE BEAM AND SECONDARY ION SPECTROSCOPIC ANALYSIS METHOD UTILIZING THE CUTTING METHOD

Toru Ishitani, Sayama; Tsuyoshi Ohnishi, Kokubunji, and Yoshimi Kawanami, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 253,558
Claims priority, application Japan, Oct. 7, 1987, 62-251492
Int. Cl.[5] H01J *37/305*
U.S. Cl. 250—309 **15 Claims**



1. A specimen or substrate cutting method of cutting a predetermined portion of a specimen or substrate in a direction of depth thereof by generating a focused charged particle beam from a particle beam source and uniformly irradiating said predetermined portion of said specimen or substrate with said focused charged particle beam, in which a particle species of said charged particle beam is selected such that each of the melting point of said particle species itself and the melting point of an alloy or compound of said particle species and constituent atoms of said specimen or substrate is a temperature not lower than 3/2 times the temperature of said specimen or substrate in units of absolute temperature.

4,939,365

AUTOMATIC PRELIMINARY IRRADIATION APPARATUS IN TRANSMISSION ELECTRON MICROSCOPE

Hiroyuki Kobayashi, Mito; Teruo Suzuki, Chigasaki; Akio Mori, Katsuta; Sadahiko Okamura, Katsuta, and Shoji Kamimura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instrument Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Aug. 30, 1988, Ser. No. 238,141
Claims priority, application Japan, Sep. 2, 1987, 62-217872
Int. Cl.[5] H01J *37/147*
U.S. Cl. 250—311 **12 Claims**

1. A preliminary irradiation apparatus for a transmission electron microscope, comprising:

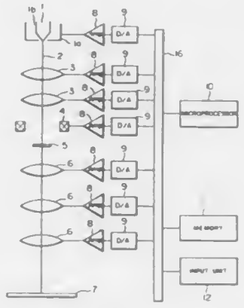
means for illuminating a specimen with an electron beam;

electron beam intensity adjusting means for adjusting the intensity of the electron beam of said illuminating means to an intensity required for preliminary irradiation;

electron beam deflecting means for deflecting said electron beam to thereby scan said specimen over a surface thereof with said electron beam;

scan range setting means for setting a scanning range within which said specimen is to be scanned with said electron beam;

scan number setting means for setting the number of times said scanning with said electron beam is to be performed, said electron beam intensity adjusting means enabling an increase of the electron beam intensity in accordance with the number of times of said scanning, while maintaining the electron beam intensity during each time of scanning; and



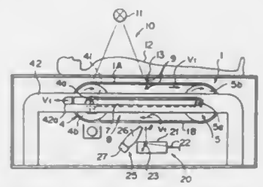
control means for controlling said deflection means so that said specimen is scanned with said electron beam within said scanning range set by said scan range setting means the number of times set by said scan number setting means.

4,939,366

RADIATION IMAGE RECORDING AND READ-OUT APPARATUS, AND RADIATION IMAGE RECORDING, READ-OUT AND REPRODUCING APPARATUS

Shuji Ono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 23, 1988, Ser. No. 210,883
Claims priority, application Japan, Jun. 25, 1987, 62-158609; Jul. 13, 1987, 62-174551
Int. Cl.[5] G03G *5/16*
U.S. Cl. 250—327.2 **10 Claims**



1. A radiation image recording and read-out apparatus comprising:

(i) a stimulable phosphor belt section constituted by a stimulable phosphor belt, which is composed of an endless belt provided with a stimulable phosphor layer, and a pair of roller sections for supporting said stimulable phosphor belt therearound so as to define first and second surfaces, and for moving said stimulable phosphor belt therearound;

(ii) an image recording section provided to face said first surface of said stimulable phosphor belt for exposing said first surface of said stimulable phosphor belt to radiation carrying an image to have a radiation image of an object stored on said stimulable phosphor layer;

(iii) an image read-out section disposed to face said second surface of said stimulable phosphor belt and provided with a stimulating ray scanning means for scanning said stimulable phosphor layer carrying said radiation image stored thereon by stimulating rays which cause said stimulable phosphor layer to emit light in proportion to the stored radiation energy, and a photoelectric read-out means for obtaining electric image signals by reading out the light emitted by said stimulable phosphor layer scanned with the stimulating rays;

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(iv) an erasing section for releasing the radiation energy remaining on said stimulable phosphor layer prior to image recording on said stimulable phosphor layer after the radiation image has been read out therefrom at said image read-out section; and

(v) a movement means for moving said second surface relative to said image read-out section at the time of the image read-out such that said first surface is held substantially stationary relative to said image recording section.

4,939,367

RECORDING AND READ-OUT APPARATUS

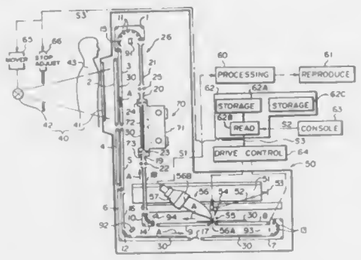
Yuuma Adachi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 903,167, Sep. 3, 1986, abandoned. This application Jan. 18, 1989, Ser. No. 298,817

Claims priority, application Japan, Sep. 3, 1985, 60-194218

Int. Cl.[5] G03B *42/02*

U.S. Cl. 250—327.2 **10 Claims**



1. A radiation image recording and read-out apparatus, comprising:

(i) a circulation and conveyance means for conveying a plurality of stimulable phosphor sheets for recording a radiation image thereon along a predetermined circulation path;

(ii) an image recording section positioned on said circulation path for recording a radiation image of an object on each of said stimulable phosphor sheets by exposing said stimulable phosphor sheets to a radiation passing through said object;

(iii) an image read-out section positioned on said circulation path and provided with a stimulating ray source for emitting stimulating rays for scanning each of said stimulable phosphor sheets carrying said radiation image stored thereon at image recording section and a photoelectric read-out means for detecting light emitted by said stimulable phosphor sheet scanned by said stimulating rays to obtain an electric image signal;

(iv) an erasing section positioned on said circulation path for, prior to the next image recording on said stimulable phosphor sheets for which the image read-out has been conducted at said image read-out section, having said stimulable phosphor sheets release the radiation energy remaining on said stimulable phosphor sheets;

a control section including storage means for storing image recording menus representing the portion of the object to be recorded with corresponding stimulating ray scanning sizes;

means for receiving a signal representing one of said image recording menus;

reading means for reading the scanning size corresponding to said image recording menu represented by said signal from said storage means; and

means for sending a signal representing said scanning size to said image read-out section, wherein

said image read-out section includes means for adjusting said stimulating ray scanning size in response to said scanning size signal such that said stimulating ray scans a portion of said stimulable phosphor sheet corresponding to said scanning size signal.

4,939,368

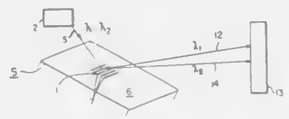
POLYCHROMATIC OPTICAL STRAIN GAUGE

Stuart B. Brown, Sommerville, Mass., assignor to Massachusetts Institute of Technology, Sommerville, Mass.

Filed Apr. 13, 1989, Ser. No. 337,317

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.10 **33 Claims**



1. A method for measuring strain of an object comprising:

providing said object with a diffraction grating,

illuminating said grating with radiation including at least two frequencies to produce an interference pattern corresponding to said frequencies,

detecting at least a portion of the interference pattern corresponding to one of said frequencies, and

analyzing said interference pattern to determine strain.

4,939,369

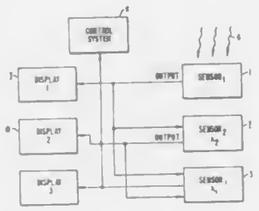
IMAGING AND TRACKING SENSOR DESIGNED WITH A SANDWICH STRUCTURE

Hammam Elabd, Sunnyvale, Calif., assignor to Loral Fairchild Corporation, Syosset, N.Y.

Filed Oct. 4, 1988, Ser. No. 253,271

Int. Cl.[5] H01L *27/14, 31/04*

U.S. Cl. 250—332 **42 Claims**



1. Apparatus for detecting and imaging a target comprising:

(a) means for detecting light reflected from the target, said means for detecting comprising a low angular resolution array;

(b) means for imaging a target detected by the means for detecting, said means for imaging comprising a higher angular resolution array; and

(c) means for control of said means for imaging connected to said means for detecting, said means for detecting light controlling said means for imaging the target.

4,939,370

METHOD OF AND DEVICE FOR INSPECTING AND/OR CONTROLLING METALLIZATION PROCESSES

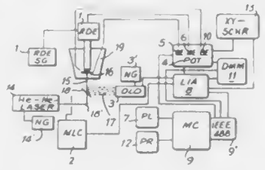
Heinrich Meyer; Waldfried J. L. Plieth, and Martin Kurpjoweit, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 2, 1988, Ser. No. 266,382

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1987, 3737489

Int. Cl.[5] G05B *11/00*; G01N *21/51, 27/26*

U.S. Cl. 250—372 **37 Claims**



1. A method of controlling a process of a galvanic or chemical metallization of a surface immersed in an electrolytic or chemical bath, comprising the steps of exposing a surface portion being metallized to an incident beam of light, measuring the amount of light which is scattered off or reflected from said surface portion to determine a deviation from a nominal value; and varying at least one parameter of the process to neutralize the measured deviation.

4,939,371

CHARGED PARTICLE BEAM DEVICE

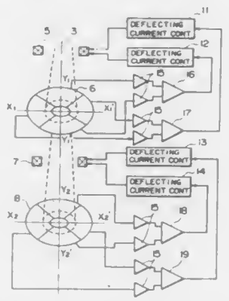
Susumo Goto, Hachiohji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 828,997, Feb. 13, 1986, abandoned. This application Mar. 16, 1988, Ser. No. 170,052

Claims priority, application Japan, Feb. 19, 1985, 60-029457

Int. Cl.[5] H01J *3/10*

U.S. Cl. 250—397 **15 Claims**



1. A charged-particle beam apparatus, comprising:

a source of a beam of charged particles;

first deviation detecting means operable to detect, at a first position, any positional deviation of an axis of the charged-particle beam emitted from said source;

first deflecting means operable, in accordance with the detection by said first deviation detecting means, to deflect the charged-particle beam so as to correct the positional deviation of the axis of the charged-particle beam at the first position;

second deviation detecting means operable to detect, at a second position which is downstream of the first position with respect to a path of the charged-particle beam, any positional deviation of the axis of the charged-particle beam; and

second deflecting means operable, in accordance with the detecting by said second detecting means, to deflect the charged-particle beam at the first position so as to correct the positional deviation of the axis of the charged-particle beam at the second position, so that the axis of the charged-particle beam passes said second deviation detecting means substantially without inclination.

4,939,372

PROCESS FOR MARKING OBJECTS BY THE USE OF MEMORY MICRO-CRYSTALS AND MARKERS FOR ITS IMPLEMENTATION

Max Schvoerer, and Claude Ney, both of Bordeaux, France, assignors to Microtrace International, Luxembourg, Luxembourg

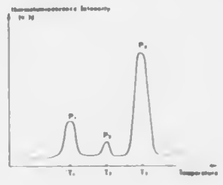
PCT No. PCT/FR88/00078, § 371 Date Oct. 12, 1988, § 102(e) Date Oct. 12, 1988, PCT Pub. No. WO88/06330, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 12, 1988, Ser. No. 278,945

Claims priority, application France, Feb. 13, 1987, 87 01970

Int. Cl.[5] G01N *23/00*

U.S. Cl. 250—484.1 **10 Claims**



1. A method for marking objects using memory micro-crystals comprising the steps of:

selecting micro-crystal powder of very small sized crystals exhibiting stability under conditions for introduction and reading of object specific information;

doping each micro-crystal;

emptying trap centers present in said micro-crystals;

irradiating said micro-crystals with a predetermined dose of high energy rays or particles to trap charge carriers released by atom ionization;

wherein an amount of said charge carriers is trapped proportional to said dose and a metastable state of said micro-crystals determines object specific identification or signature in accordance with said crystal selection and doping and irradiating conditions;

applying an amount of said micro-crystals to an object in a fashion calculated to maintain said micro-crystals for subsequent comparisons.

4,939,373

ELECTRON IMAGE PROJECTOR

Thomas V. Elliston, 1 Pagoda Avenue, Richmond, Surrey, United Kingdom CB4 3EU; Julian P. Scott, 33 Surrenden Crescent, Brighton, Sussex, United Kingdom BN1 6WE, and Rodney Ward, 38 The Millbank, Ifield, Crawley, Sussex, United Kingdom

Continuation of Ser. No. 645,881, Aug. 30, 1984, abandoned. This application Jul. 7, 1986, Ser. No. 883,007

Claims priority, application United Kingdom, Sep. 5, 1983, 8323769

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.3 **11 Claims**

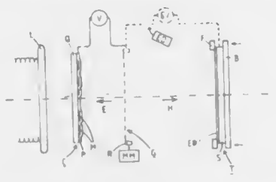
1. In an electron image projector for projecting electrons, comprising:

VOL 1116 ISS 1 JL 3 1990 UMI

an electron emissive cathode for emitting electrons in a predetermined spatial pattern under a substantially uniform high voltage electric field, said spatial pattern extending transversely to said electric field,

anode means comprising a grid having an array of electron-permeable regions for providing said electric field with said cathode, said array being at least as extensive as said spatial pattern of electrons, wherein said high voltage electric field is produced between said cathode and said grid,

target means for receiving said spatial pattern of electrons, wherein said grid is disposed between said cathode and said target means and there is a negligible voltage difference between said grid and target means in comparison



with the potential difference between said grid and cathode, and

magnetic means for producing a substantially uniform magnetic field parallel to said electric field,

the improvement wherein:

the surface of said grid facing said cathode is spaced from said cathode a distance to be substantially at one magnetic focus, and the target means is spaced from said grid to be substantially at another magnetic focus, and

wherein means are provided for detecting electrons backscattered from said target means during electron irradiation, said detecting means detecting locations of marker regions of said target means and being disposed between said grid and said target means outside said spatial pattern of electrons.

4,939,374

IRRADIATION DEVICE

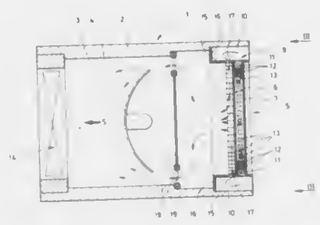
Albert Greutert, Sachseln, Switzerland, assignor to Maxs AG, Sachseln, Switzerland

Filed Oct. 14, 1988, Ser. No. 258,288

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 8713930[U]

Int. Cl.[5] H01K *1/26*

U.S. Cl. 250—504 R **23 Claims**



1. An irradiation device comprising a radiation source arranged within a housing and a filter arranged in the path of the rays of said irradiation source, two transparent and essentially plane-parallel discs supported within said housing by a frame and defining therebetween a sealed hollow space containing a medium which selectively influences the spectrum of said rays, outwardly projecting cooling fins arranged on the outer circumference of said frame and extending from the frame to a surrounding portion of the housing, at least one of said discs being flexible to accommodate expansion of said medium between the discs during use of the device.

4,939,375

SOLID STATE RELAY WITH SHIELD MEANS

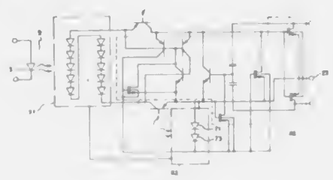
Michael D. Walters, San Jose; Joseph Peranyeszi, Scotts Valley, and John F. Petrilla, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 207,809, Jun. 17, 1988, Pat. No. 4,864,126.

This application Jun. 13, 1989, Ser. No. 366,090

Int. Cl.[5] G02B *27/00*; H01J *40/14*

U.S. Cl. 250—551 **6 Claims**



1. A solid state relay comprising:

a light emitting diode having an emission wavelength longer than 750 nanometers, connectable to a control circuit;

a primary photodiode array in face to face alignment with the light emitting diode, optically coupled to the light emitting diode across a gap, for receiving light from the light emitting diode and for generating a voltage;

an output device having inputs for receiving the voltage and output terminals connectable to a switched circuit, the output device providing a low impedance path between the output terminals in an on-state and a high impedance path in an off-state; and

a shield layer of polysilicon less than three quarters of a micron thick overlaying the primary photodiode array, for shunting an electrical signal coupled across the gap, the shield means being optically transmissive and electrically conductive and being connected to an electrically relatively neutral point.

4,939,376

LIGHT COLLECTION DEVICE FOR FLAME EMISSION DETECTORS

Stephen D. Woodruff; Ronald G. Logan, and Richard L. Pineault, all of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 14, 1989, Ser. No. 337,979

Int. Cl.[5] G01J *1/00, 3/30*

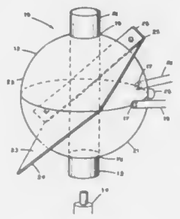
U.S. Cl. 250—554 **4 Claims**

1. A light collection device for enhancing sensitivity and reducing noise in a flame emission detection system comprising:

a hollow sphere having interior walls coated with a highly diffuse reflective material and having openings through the interior walls at upper and lower ends of the sphere with said openings being of a diameter less than about three times the diameter of a flame provided in the interior of the sphere;

burner means in registry with the lower opening in the sphere for providing a vertically extending flame in the interior of the sphere intermediate said openings so that light emitted by the flame is uniformly reflected from the coated walls by diffuse scattering within the sphere;

an elongated transparent tube means extending through the interior of said sphere and said upper and lower openings and disposed about said flame and for uniformly distributing the light emitted by the flame throughout the interior of the sphere; and



light receiving means in registry with the interior of the sphere for transferring light indicative of essentially all portions of the vertical flame from within the sphere to a detection means.

4,939,377

OPTICAL APPARATUS FOR DETECTING DOCUMENT SIZE FOR USE IN A COPYING APPARATUS

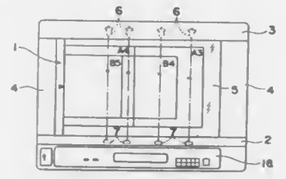
Masakiyo Okuda, Kashiwara, and Toshihisa Matsuo, Yamatokooriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1988, Ser. No. 241,953

Claims priority, application Japan, Sep. 8, 1987, 62-224863; Nov. 26, 1987, 62-298462; Dec. 21, 1987, 62-194324

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **12 Claims**



1. A photocopy document sheet size detecting apparatus comprising:

a document sheet platform means having a generally planar flat plate for placing a document sheet substantially planar in a dimension perpendicular to the plane of said document sheet platform thereon;

at least one pair of the light emitting element and a light receiving element, said light emitting element disposed on a first side of said document sheet platform for transmitting detection light, along a surface of said document sheet platform spaced a predetermined value thereabove, to said light receiving element disposed on an opposite second side of said document sheet platform; and

judgement means, coupled to said light receiving element, for determining if said light receiving element receives said detection light and for outputting a signal indicative of the document sheet size of a document sheet placed on said document sheet platform.

4,939,378

PROCESS FOR LENGTH MEASUREMENT BY MEANS OF A PHOTOSENSITIVE NETWORK CAMERA

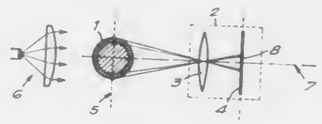
René Joannes, Herve, and Robert Malbrouck, Alleur, both of Belgium, assignors to Fabrique Nationale Herstal, Herstal, Belgium

Filed Feb. 10, 1989, Ser. No. 308,554

Claims priority, application Belgium, Feb. 12, 1988, 8800167

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **14 Claims**



1. Method for measuring lengths of an object from a negative of the image of said object detected by a photosensitive network camera comprising:

projecting said negative on said photosensitive network detector;

scanning said negative to obtain scan lines;

generating video signals for each of said scan lines;

integrating said video signals over all or part of each of said scan lines to produce an integral curve;

following the evolution of said integral curve during successive scans in the vicinity of the edges of said negative; and

locating points in said integral curve corresponding to said edges in said negative.

4,939,379

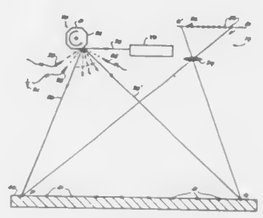
CONTOUR MEASUREMENT USING TIME-BASED TRIANGULATION METHODS

James N. Hora, Seattle, Wash., assignor to Automation Research Technology, Inc., Seattle, Wash.

Filed Feb. 28, 1989, Ser. No. 316,811

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **12 Claims**



1. In a non-contact surface contour measurement system having radiation emitting and guiding means to produce a scanning beam of radiation, radiation receiving means to receive a reflection of said scanning beam from the surface of an object to be measured and to focus said reflection upon a signal producing radiation sensitive detector array, and signal processing and data processing means to convert scanning beam positional data from said radiation emitting and guiding means and from said detector array to contour plotting data points, the improvement comprising:

a radiation channeling surface acting as the front stage of said radiation sensitive detector array; and

one or more signal producing radiation receivers acting as the rear stage of said radiation sensitive detector array;

wherein said channeling surface comprises a substantially linear array of the radiation receiving ends of a plurality of

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radiation feeders, each for conducting said reflected radiation to a radiation receiver, and

wherein each of said radiation receivers is coupled by a set of said radiation feeders to said radiation channeling surface to comprise a single receiving channel in such a way that successively numbered receivers and their associated channels are connected to successively positioned feeders in their linear array on the channeling surface in sequential alternation.

4,939,380

TOPOGRAPHICAL CAMERA OPERABLE BY APPLYING A GRID-GENERATED MOIRE IMAGE ONTO A CCD IMAGE SENSOR

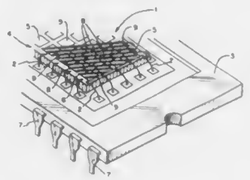
Christa Berger, Freiburg; Heinrich Hofler, Teningen, and Otmar Fichter, March, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 346,952

Claims priority, application Fed. Rep. of Germany, May 24, 1988, 3817559

Int. Cl.[5] H01J *40/14;* **G01B** *11/14*

U.S. Cl. 250—578.1 **8 Claims**



1. Camera for recording the topography of a specimen surface by generation of a Moire image with the aid of an object grid applied on the object and a reference grid coordinated with the camera, characterized in that the reference grid is applied as physical grid structure directly, without use of an intermediate projection lens, on the light incidence surface of the lightsensitive image sensor.

4,939,381

POWER SUPPLY SYSTEM FOR NEGATIVE IMPEDANCE DISCHARGE LOAD

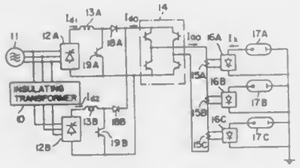
Mitsuhiro Shibata; Osamu Tanaka, both of Fuchu, and Teruo Nakagawa, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 108,640, Oct. 15, 1987, abandoned. This application May 2, 1989, Ser. No. 346,460

Claims priority, application Japan, Oct. 17, 1986, 61-246630; Nov. 6, 1986, 61-262708

Int. Cl.[5] H02M *3/337*

U.S. Cl. 307—17 **5 Claims**



1. A power supply system for a negative impedance discharge load, said power supply system comprising:

a direct current source, said direct current source including a plurality of direct current source units whose outputs are connected in parallel with each other through a reverse-current blocking diode circuit;

reactor means connected in series to an output of said direct current source;

inverter means for converting direct current supplied from said direct current source through said reactor means into an alternating current;

current transformer means for transforming alternating current derived from said inverter means at a desired level and supplying transformed alternating current to said negative impedance discharge load; and

current control means for controlling output current derived from said direct current source at a desired level.

4,939,382

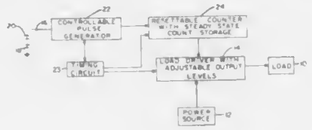
TOUCH RESPONSIVE POWER CONTROL SYSTEM

Victor Gruodis, 212 Graney Dr., River Vale, N.J. 07675

Filed Apr. 20, 1989, Ser. No. 340,805

Int. Cl.[5] H05B *37/02*

U.S. Cl. 307—116 **20 Claims**



1. A touch responsive power control system comprising:

circuit means having a control input producing a capacitive change responsive to human touch;

means responsive to said capacitive change for generating a digital pulse train, the number of pulses in said pulse train in a selected time period being a function of the magnitude of said capacitive change;

digital circuit means for counting the number of pulses in said pulse train in said selected time period to generate a present count;

digital storage means for storing a selected reference count;

digital comparator means for comparing said present count with said reference count and to generate an error signal responsive to a difference between said present count and said reference count;

means for generating a corrective signal responsive to said error signal;

means for updating said reference count in a direction selected to make said reference count equal to said present count;

load driver means adjustable to control the power level from a power source to a load at a selected power level; and

means for connecting said corrective signal to said load drive means to adjust the selected power level in response to said corrective signal.

4,939,383

WALLBOX-MOUNTABLE DIMMER AND SWITCH

Darryl W. Tucker, Royersford; Russell J. Jacobs, Center Valley, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Oct. 14, 1988, Ser. No. 257,499

Int. Cl.[5] H01C *10/38*

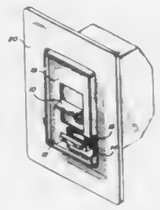
U.S. Cl. 307—139 **10 Claims**

1. A wallbox-mountable device for controlling power to an electrical load, comprising, in combination,

(a) a switch actuated by a push button, to alternately turn power to said load on and off

(b) a dimmer, including a manually-operable actuator, for adjusting power to said load

(c) means for transmitting to said switch a force exerted on said push button, and



(d) an opening in said force transmitter to permit a section of said manually-operable actuator to pass through it.

4,939,384

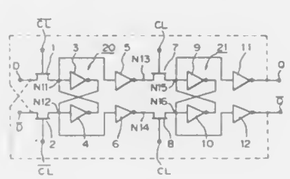
FLIP-FLOP CIRCUIT

Makoto Shikata; Koutaro Tanaka; Masahiro Akiyama, and Yasushi Kawakami, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd, Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 253,219

Int. Cl.[5] H03K *3/26, 3/29, 3/284*

U.S. Cl. 307—279 **1 Claim**



1. A flip-flop circuit comprising:

(a) a first and a second basic flip-flop circuits each composed of two inverter circuits respectively having an output terminal being connected to an input terminal of the other inverter circuit;

(b) first two field effect transistors each having a source connected to the input terminal of each inverter circuit of the first basic flip-flop circuit, a drain connected respectively to a data input terminal and an inverse data input terminal, and a gate to which inverse clock pulses are applied;

(c) second two field effect transistors each having a source connected to the input terminal of each inverter circuit of the second basic flip-flop circuit, and a gate to which clock pulses are applied;

(d) first two amplifiers each composed of an inverter circuit having an input terminal connected to each source of the first two field effect transistors, and an output terminal connected to each drain of the second field effect transistors; and

(e) second two amplifiers each composed of an inverter circuit having an input terminal connected to each source of the second two field effect transistors, an output terminal and an inverse output terminal respectively connected to each drain of the first two field effect transistors.

4,939,385

REENERGIZING CIRCUIT FOR A MOS TECHNOLOGY INTEGRATED CIRCUIT

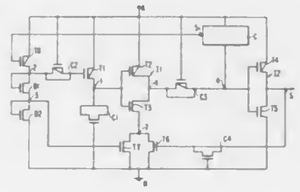
Bruno Dubujet, Le Tholonet, France, assignor to SGS-Thomson Microelectronics SA, Gentilly, France

Filed Dec. 27, 1988, Ser. No. 290,141

Claims priority, application France, Dec. 30, 1987, 87 18369

Int. Cl.[5] H03K *17/687, 3/01*

U.S. Cl. 307—296.8 **11 Claims**



1. A power-on reset circuit to start operation of MOS integrated circuit, comprising:

a power supply terminal for receiving a power supply voltage, a ground terminal, and an output terminal for supplying an output pulse signal upon powering of the integrated circuit;

a first capacitor which is connected between said ground terminal and a first circuit node, said first capacitor having its charge controlled through a first p-type transistor connected between said power supply terminal and said first circuit node;

an inverter gate with a modifiable threshold voltage, said inverter gate having an input connected to said first circuit node;

an inverter circuit connected between an output of said inverter gate and said output terminal;

a current source connected in series with a divider circuit between said power supply terminal and said ground terminal, said divider connected to a gate of said first p-type transistor;

and a feedback circuit having an inverting transfer function, said feedback circuit having an input connected to the output of said inverter gate and having an output connected to control operation of said current source.

4,939,386

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH MISFETS USING TWO DRAIN IMPURITIES

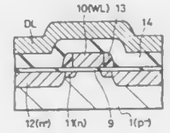
Ryuuji Shibata; Ken Uchida, both of Higashiyamato; Toshifumi Takeda, and Youichi Matsumoto, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1987, Ser. No. 118,537

Claims priority, application Japan, Nov. 12, 1986, 61-267533

Int. Cl.[5] H03K *3/353;* **H01L** *29/78, 27/02, 29/167*

U.S. Cl. 307—304 **44 Claims**



1. A semiconductor integrated circuit device, comprising:

a semiconductor substrate of a first conductivity type having a main surface;

a first field effect transistor (FET) which is formed on said main surface, said first FET having a gate electrode formed on said main surface through an insulating film, source and drain regions formed at portions of said semiconductor substrate which correspond to both sides, respectively, of said gate electrode, and a corresponding channel forming portion disposed between said source and drain regions thereof, at least said drain region thereof having a first semiconductor region of a second conductivity type and a second semiconductor region, of said second conductivity type, which has a higher impurity concentration than that of said first semiconductor region, said first semiconductor region being disposed between said second semiconductor region and the portion of said semiconductor substrate in which the channel of said first FET is formed, wherein a first power potential is applied to said drain region of said first FET; and

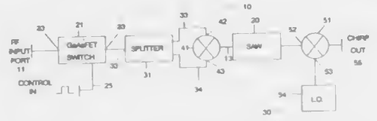
a second field effect transistor (FET) which is formed on said main surface, said second FET having a gate electrode formed on said main surface through an insulating film, source and drain regions formed at portions of said semiconductor substrate which correspond to both sides, respectively, of said gate electrode, and a corresponding channel forming portion disposed between said source and drain regions thereof, at least said drain region thereof having a third semiconductor region of said second conductivity type and a fourth semiconductor region, of said second conductivity type, which has a higher impurity concentration than that of said third semiconductor region, said third semiconductor region being disposed between said fourth semiconductor region and the portion of said semiconductor substrate in which the channel of said second FET is formed, wherein a second power potential which is higher in magnitude than said first power potential is applied to said drain region of said second FET, and wherein the value of the diffusion coefficient of an impurity element which is employed to form said first semiconductor region is smaller than that of an impurity element employed to form said third semiconductor region.

4,939,387

IMPULSE WAVEFORM DRIVE APPARATUS FOR SURFACE ACOUSTIC WAVE CHIRP SYSTEM

Marc H. Popek, Indian Harbour Beach, and Pat O. Bentley, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 5, 1988, Ser. No. 190,658
Int. Cl.[5] H03K *5/159;* **H03C** *3/00*
U.S. Cl. 307—529 **9 Claims**



1. An apparatus for controlling characteristics of a signal applied thereto comprising:

an input port to which a signal, characteristics of which are to be controlled, is applied;

an output port;

switch means having an input coupled to said input port and an output, for controllably passing therethrough and interrupting the transmission of a signal applied to said input port to its output; and

a mixer having first and second inputs coupled to the output of said switch means and an output coupled to said output port.

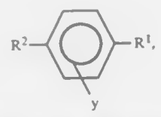
4,939,388

SECOND HARMONIC GENERATION BY INCLUSION COMPLEXES OF CYCLODEXTRIN COMPOUNDS

David F. Eaton, and Ying Wang, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

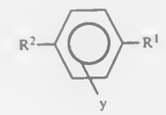
Filed May 10, 1985, Ser. No. 732,652
Int. Cl.[5] G02F *1/35;* **H01S** *3/10*
U.S. Cl. 307—427 **19 Claims**

1. A nonlinear optical element capable of secondary harmonic generation, comprising an inclusion complex of a host compound selected from the group consisting of cyclodextrin compounds and substituted derivatives of cyclodextrin compounds, and a guest compound selected from the group consisting of



pyridines, pyrimidines, quinolines, and naphthalenes.

12. A second harmonic generator comprising a laser source of coherent light radiation at a fixed fundamental frequency, a non-centrosymmetric inclusion complex comprising an inclusion complex of a host compound selected from the group consisting of cyclodextrin compounds and substituted derivatives of cyclodextrin compounds, and a guest compound selected from the group consisting of anilines of the formula



wherein

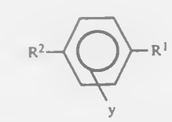
R^1 is $-NH_2$, $-NHCH_3$, or $-N(CH_3)_2$

R^2 is $-NO_2$, and

Y is H or CH_3,

means for directing the output radiation of the laser onto the complex, and output means for utilizing the second harmonic frequency, said complex being transparent to radiation at said fixed fundamental frequency and said second harmonic frequency.

13. A nonlinear optical element capable of secondary harmonic generation, comprising an inclusion complex of a host compound selected from the group consisting of cyclodextrin compounds and substituted derivatives of cyclodextrin compounds, and a guest compound selected from the group consisting of anilines of the formula



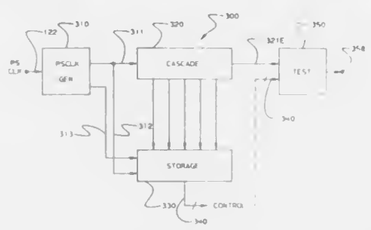
wherein R^1 is $-NH_2$, $-NHCH_3$, or $-N(CH_3)_2$; R^2 is $-NO_2$ or $-CN$; and Y is $-H$, $-CH_3$, $-OCH_3$, $-OH$, $-F$ or $-Cl$.

4,939,389

VLSI PERFORMANCE COMPENSATION FOR OFF-CHIP DRIVERS AND CLOCK GENERATION

Dennis T. Cox; David L. Guertin; Charles L. Johnson; Bruce G. Rudolph, all of Rochester, Minn.; Mark E. Turner, Colchester, Vt., and Robert R. Williams, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1988, Ser. No. 240,853
Int. Cl.[5] H03K *19/017, 19/096*
U.S. Cl. 307—443 **46 Claims**



1. An integrated-circuit chip including a performance-sensing circuit for detecting the speed of other circuits on the same chip, comprising:

means for receiving a pulse signal having a known interval;

means for receiving a strobe clock signal having a known tie relation to said pulse signal;

a cascade of circuit elements, coupled to said means for receiving a pulse, responsive to said pulse signal and having a plurality of taps between successive ones of said elements;

storage means coupled to said plurality of taps and responsive to said strobe clock signal for storing and generating control signals indicating the position of said pulse signal in said cascade at the time of said strobe signal;

control means, coupled to said storage means, for transmitting said control signals to said other circuits on said chip.

4,939,390

CURRENT-STEERING FET LOGIC CIRCUIT

Timothy Coe, Oxnard, Calif., assignor to Vitesse Semiconductor Corporation, Camarillo, Calif.

Filed Jan. 6, 1989, Ser. No. 294,271
Int. Cl.[5] H03K *19/003, 19/01, 19/094, 3/356*
U.S. Cl. 307—450 **13 Claims**

1. An integrated circuit for performing a current steering logic function comprising:

first and second transistor means, each having respective pairs of main terminal means and a respective gating means for selectively electrically coupling the main terminal means of the respective transistor means;

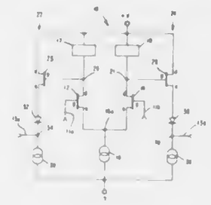
first and second load resistors formed from respective segments of sheet resistance material, each of the first and second load resistors being coupled to a respective one of the main terminal means of a respective one of the first and second transistor means;

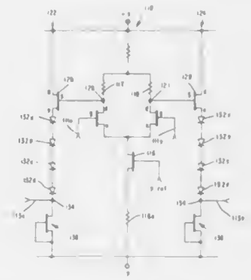
first high impedance current source means coupled to the other of the main terminal means of the first and second transistor means for selective coupling to the load resistances via a selected one of the first and second transistor means in response to an input signal at the gating means thereof, the impedance of said current source means being primarily derived from the same sheet resistance material as that of the load resistors; and

third and fourth field effect transistor means, each having respective pairs of main terminal means and respective gating means for selectively electrically coupling the main terminal means of the respective transistor means,

the gating means of the third and fourth transistor means being coupled to different ones of the load resistances so as to render the third and fourth transistor means responsive to the coupling the load resistances to the current source;

high impedance follower current source means coupled to said third and fourth transistor means and including a





semiconductor device of the threshold voltage type, the impedance of the follower current source being primarily dependent on the threshold voltage of the semiconductor device so that process-induced variations in the threshold voltage of the third and fourth transistor means and of the semiconductor device are mutually compensatory.

4,939,391

PROGRAMMABLE LOGIC DEVICE WITH OBSERVABILITY AND PRELOAD CIRCUITRY FOR BURIED STATE REGISTERS

Michele Young, San Francisco, and Kapil Shankar, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 868,970, May 30, 1986, Pat. No. 4,758,747.
This application Jul. 12, 1988, Ser. No. 217,942
Int. Cl.[5] H03K *17/60*
U.S. Cl. 307—465 **11 Claims**

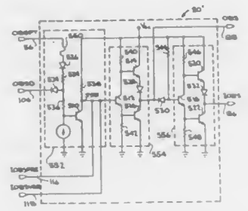
1. An observability buffer comprising:

an input stage responsive to a first input signal, a second input signal, a third input signal, and a fourth input signal and operative to develop an intermediate signal;

a first inversion stage coupled to said input stage, said first inversion stage being responsive to said intermediate signal and operative to develop an output signal; and

a second inversion stage coupled to said first inversion stage, and second inversion stage being responsive to said output signal and operative to develop an inverted output signal,

wherein said input stage includes transistor means having a base, and wherein said first input signal and said second



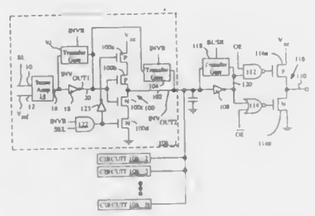
input signal are both coupled to said base of said transistor means.

4,939,392

OUTPUT CIRCUIT FOR DRIVING A MEMORY DEVICE OUTPUT LEAD INCLUDING A THREE-STATE INVERTING BUFFER AND A TRANSFER GATE COUPLED BETWEEN THE BUFFER INPUT LEAD AND THE BUFFER OUTPUT LEAD

Alexander Shubat, Newark, and Barmak Sani, Cupertino, both of Calif., assignors to WaferScale Integration, Inc., Fremont, Calif.

Filed Aug. 11, 1988, Ser. No. 231,123
Int. Cl.[5] H03K *19/00, 19/096*
U.S. Cl. 307—473 **11 Claims**



1. Circuit for providing an output signal, said circuit comprising:

buffer means having a buffer means input lead for receiving an input voltage at or between a first voltage and a second voltage, a buffer means output lead, and a three-state control lead, said buffer means providing an output signal on said buffer means output lead having a value depending on said input voltage, said buffer means exhibiting a continuous transfer function, said buffer means going into a three-state mode in response to a three-state control signal on said three-state control lead, wherein said buffer means provides substantially no current on said buffer means output lead when said buffer means is in said three-state mode and wherein said buffer means consumes substantially no power when said buffer means is in said three-state mode; and

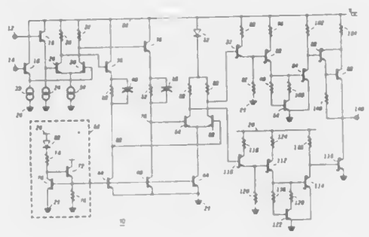
means for causing said buffer means input lead and buffer means output lead to be held at a third voltage between said first and second voltages when said buffer means is in said three-state mode, said means for causing comprising a first switch coupled across said buffer means input and output leads.

4,939,393

ECL TO TTL/CMOS TRANSLATOR USING A SINGLE POWER SUPPLY

Cleon Petty, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 2, 1989, Ser. No. 415,846
Int. Cl.[5] H03K *17/16, 19/086, 19/092*
U.S. Cl. 307—475 **32 Claims**



1. A circuit responsive to a differential logic input signal having first predetermined logic levels for providing an output signal having second predetermined logic levels, comprising:

an input stage responsive to the differential logic input signal and having first and second outputs for providing first and second differentially related signals in response thereto wherein said first and second differentially related signals have a predetermined differential magnitude;

means for translating said first and second differentially related signals wherein said means for translating is responsive to a bias signal for establishing first and second single-ended levels of said translated first and second differentially related signals while maintaining said predetermined differential magnitude;

a buffer circuit responsive to said translated first and second differentially related signals for providing first and second drive signals each having a predetermined slew rate; and

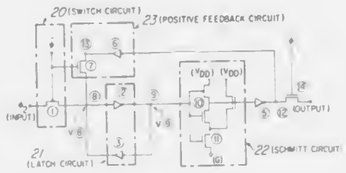
an output stage including first and second switching means serially coupled between first and second sources of operating potential, said first and second switching means being responsive to said first and second drive signals for providing the second predetermined logic levels of the output signal wherein said predetermined slew rates of said first and second drive signals prevent simultaneously conduction through said first and second switching means.

4,939,394

SYNCHRONOUS CIRCUIT SYSTEM HAVING ASYNCHRONOUS SIGNAL INPUT

Masashi Hashimoto, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1988, Ser. No. 245,863
Int. Cl.[5] H03K *03/26, 19/02*
U.S. Cl. 307—480 **11 Claims**



1. A synchronous circuit system comprising:

switch circuit means having an input for receiving an asynchronous input signal and being responsive to a synchronizing signal for transmitting said asynchronous input signal only within a specified time period as determined by the logic state of the synchronizing signal;

latch circuit means connected to said switch circuit means for receiving said asynchronous input signal when transmitted by said switch circuit means and latching the data imparted by said asynchronous input signal in a logic state of one of a high logic state and a low logic state;

signal transmission circuit means connected to the output of said latch circuit means and holding the logic state of the latched data until a predetermined input level of said asynchronous input signal is attained for reception by said latch circuit means, said signal transmission means providing an output; and

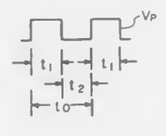
feedback circuit means connected between the output of said signal transmission circuit means and the output of said switch circuit means to enable stable operation to be accomplished even though an asynchronous input signal may appear at the only unstable point in said latch circuit means.

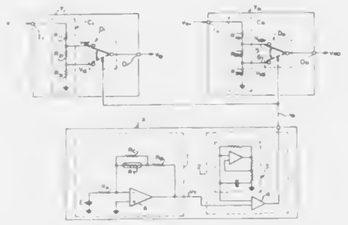
4,939,395

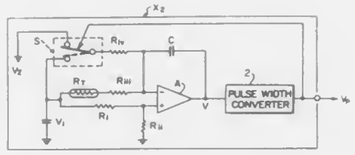
TEMPERATURE COMPENSATING CIRCUIT

Ichiro Asano; Nobutaka Kihara, and Satoshi Inoue, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Nov. 8, 1988, Ser. No. 268,585
Int. Cl.[5] H03K *3/017, 3/013, 5/156, 17/14*
U.S. Cl. 307—491 **9 Claims**







1. A temperature compensating circuit in a measuring system producing a signal representative of the measured parameter, said compensating circuit comprising:

temperature sensing pulse width conversion means for sensing the ambient temperature and generating a pulse signal having a duty ratio responsive to the sensed temperature; and

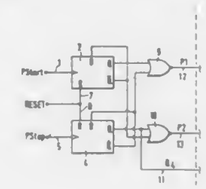
at least one temperature compensating means for receiving the signal to be temperature compensated and generating a temperature compensated signal responsive to the pulse signal generated by said temperature sensing pulse width conversion means.

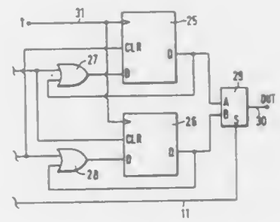
4,939,396

DETECTOR CIRCUIT

Ulrich Schoettmer, Gechingen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 27, 1989, Ser. No. 303,693
Claims priority, application European Pat. Off., Jan. 28, 1988, 88101209.0
Int. Cl.[5] G01R *19/145;* **H03K** *19/02*
U.S. Cl. 307—518 **8 Claims**





1. Apparatus for detecting a state change of an unknown binary signal during predetermined time windows for integrated circuit testing devices, comprising:

first flip-flop means having a signal input, a clear input, and an output connected to receive the unknown binary signal for detecting and signaling a state change in the unknown binary signal within a first time window;

second flip-flop means having a signal input, a clear input, and an output connected to receive the unknown binary signal for detecting and signaling a state change in the unknown binary signal within a second time window; and

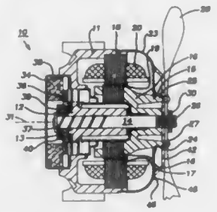
control means for generating a first pulse sequence for the first flip-flop means signal input and the second flip-flop means clear input and for generating a second pulse sequence for the second flip-flop means signal input and the first flip-flop means clear input, which sequences are shifted in time from each other such that the pulses of the two sequences are not overlapping in time, wherein the first pulse sequence defines the first time window and clears the second flip-flop means whereby the second flip-flop means is held inactive for the first time window, and the second pulse sequence defines the second time window and clears the first flip-flop means whereby the first flip-flop means is held inactive for the second time window.

4,939,397

SPRAY-RESISTANT ELECTRIC MOTOR

Giles W. Morrill, 3 Matson Ct., Johnson City, Tenn. 37604

Filed Oct. 5, 1989, Ser. No. 417,499
Int. Cl.[5] H02K *5/10*
U.S. Cl. 310—88 9 Claims



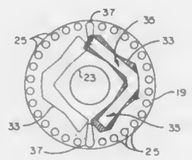
1. A spray-resistant electric motor comprising, in combination:
a frame;
a stator having a magnetic portion and mounted in said frame;
a shaft journaled in said frame;
a rotor mounted on said shaft and having a magnetic portion disposed for cooperation with said stator magnetic portion through an air gap;
said frame enclosing said electric motor except for an aperture through which a distal end of the shaft extends;
means for driving a load from the distal end of said shaft;
a coaxial water shield mounted for rotation with said shaft and having a periphery;
means establishing an urging of said rotor to a position of axial displacement of said rotor magnetic portion relative to said stator magnetic portion to establish a moisture-proof seal between the periphery of said water shield and said frame to inhibit entering of water inside said electric motor; and
whereby upon energization of said electric motor said rotor magnetic portion moves axially toward a smaller air gap with said stator magnetic portion against the urging of said urging means to relieve said moisture-proof seal during running of the motor.

4,939,398

LAMINATED ASSEMBLIES WITH IN SITU MOLDED MAGNETS

Jerry D. Lloyd, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 916,005, Oct. 6, 1986, Pat. No. 4,845,837.
This application Jan. 17, 1989, Ser. No. 298,101
Int. Cl.[5] H02K *1/06, 1/30*
U.S. Cl. 310—156 25 Claims



1. A rotor for a dynamoelectric machine comprising:
a rotor body of ferromagnetic material or the like, said body being composed of a plurality of laminations and defining at least one magnet slot therein;
a permanent magnet formed in situ in its respective slot without an air gap between the magnet and the slot, said magnet being formed from a cured mixture of magnetizable particles in a binder, said slot being configured to retain the magnet in place therein;
the laminations being skewed with respect to each other, said permanent magnet slot being thereby skewed as well, said permanent magnet being formed in situ in said skewed configuration.

4,939,399

SERIES-WOUND ELECTRICAL ROTATING FIELD MACHINE HAVING INTEGRATED RADIAL LOOP COILS AND DRUM COILS

Sang S. Oh, and Jang K. Oh, both of 1404 Rose Rd., both of Villanova, Pa. 19085

Filed Sep. 7, 1988, Ser. No. 241,911
Int. Cl.[5] H02K *3/00*
U.S. Cl. 310—198 15 Claims



1. An electrical dynamo comprising a stator and a rotor constituted as concentric cylindrical members forming an annular air gap therebetween, said rotor being rotatable relative to said stator, a first of said cylindrical members being a magnetized member having North and South poles to provide a main flux field and form a magnetic circuit through the rotor and stator, one of said cylindrical members having a cylindrical surface bounding said air gap and being provided with slots in the vicinity of said air gap, said one of said cylindrical members including an annular region of non-magnetic material which opposes passage of magnetic flux therethrough and thereby alters said main field flux produced by the magnetized member, and a plurality of windings on at least one of said cylindrical members for cutting the main flux field during relative movement of the rotor and stator, said windings comprising a succession of radial loop windings connected in series to one another at the surface of said one member and to the radial loop windings located 180 electrical degrees therefrom, each radial loop winding having one leg extending in a respective slot, opposite radial end portions and a second leg in said slot radially displaced from said one leg, said windings further comprising connection lengths effecting connection of said radial loop windings in series at 180° electrical degrees from one another at one of the opposite radial end portions of said radial loop windings, said radial loop windings being operative to provide a dynamo function by said one legs of said radial loop windings cutting the main flux field and concurrently being operative in combination with said non-magnetic material for generating and positioning a counter flux in said air gap to neutralize change of the main field flux in said air gap due to armature reaction, leakage reactance and rotor reactance and low-high pulsating flux.

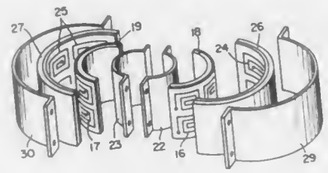
4,939,400

TRANSMISSION APPARATUS HAVING SPLIT-COIL TYPE COAXIAL COUPLER

Akira Matsushita, and Shohkichi Nakano, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Nihon System Kenkyusho, Kawasaki, Japan

Filed Feb. 17, 1989, Ser. No. 312,002
Claims priority, application Japan, Feb. 19, 1988, 63-36824
Int. Cl.[5] H02K *13/14, 3/46*
U.S. Cl. 310—208 6 Claims

1. A transmission apparatus having a split-coil type coaxial coupler, comprising
an inner coil mounted on a rotating shaft,
a cylindrical coupler member which is coaxial with respect to said inner coil,
an outer coil fixed to said coupler member,
said outer coil being positioned at the outer circumference of the inner coil without making contact with the inner coil,
means connected to a said coil for providing electric power for non-contact transmission to another said coil,



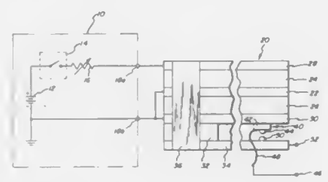
means connected to a said coil for providing an information signal for non-contact transmission to another said coil,
at least one of said coils being a cylindrical coil formed of plural blocks which each comprise a split coil which is mounted on said shaft without threading through said rotating shaft.

4,939,401

METHOD AND SYSTEM FOR ACTIVATION OF A PIEZOELECTRIC BENDER SWITCH

George A. Farrall, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 17, 1989, Ser. No. 380,570
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—317 13 Claims



1. A method of selecting an optimum resistance (R) for a resistor and an optimum voltage output (Vo) for a voltage source, said resistor and said voltage source being connected in series for activating a piezoelectric bender switch, said bender switch including a beam having at least one layer of piezoelectric ceramic mounted at one end to a support and being free to move at the opposite end, said switch further including a contact mounted adjacent the free end of said beam and a stationary contact opposite and spaced from said movable contact to define a gap therebetween, said method comprising the steps of:
determining the damping coefficient and the natural angular frequency of said beam;
determining the deflection constant of said beam;
determining the capacitance of said layer of piezoelectric ceramic;
determining the fully open gap length between said movable and stationary contact;
selecting said resistance (R) to substantially equal:

$$\frac{1}{(\alpha * C)}$$

where:
α=said damping coefficient of said beam, and
C=said capacitance of said first layer of piezoelectric ceramic;
selecting a ratio between a time interval (t) for contact impact to occur and an integer (N) corresponding to a selected period at which the instantaneous velocity of movable contact will be zero to substantially equal:

$$2*pi/(\Omega*(1-(p/\Omega)^2)^{\frac{1}{2}}$$

where:
$p=1/(R*C)=\alpha$
Ω=said natural angular frequency of said bender switch;
selecting a ratio of gap/D_{max} to substantially equal:

$$[1-e^{(-\alpha*t)}]$$

where:
gap=said fully open gap length between said contacts,
D_{max}=a maximum unblocked displacement of said movable contact when voltage (Vo) is applied to said beam; and
selecting said voltage output (Vo) to substantially equal:

$$(D_{max})/[\gamma*L^2].$$

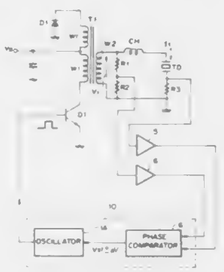
where:
γ=said deflection constant, and
L=the length of said beam.

4,939,402

DRIVING CIRCUIT FOR DRIVING A PIEZOELECTRIC VIBRATOR

Hiromitsu Hirayama, Funabashi; Takashi Urano, Ichihara, and Minoru Takahashi, Funabashi, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 19, 1989, Ser. No. 355,457
Claims priority, application Japan, May 19, 1988, 63-120708
Int. Cl.[5] H01L *41/08;* H02M *3/335*
U.S. Cl. 310—316 7 Claims



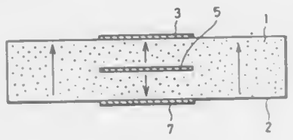
1. A driving circuit for a piezoelectric vibrator including transformer means having primary winding means and secondary winding means, switching transistor means comprising a single transistor connected in series with said primary winding means, piezoelectric vibrating means connected with said secondary winding means, transistor driving means for applying driving current to said switching transistor means so that the switching transistor means is alternately turned on and off to thereby drive said vibrating means at or in the vicinity of a resonating frequency of the vibrating means, the improvement comprises coil means connected in series with the piezoelectric vibrating means so that current and voltage of sinusoidal form are applied to the vibrating means, phase comparator means for comparing phase of the sinusoidal current at the piezoelectric vibrating means with phase of voltage at the secondary winding means of the transformer means to produce a phase difference signal, and means for controlling frequency of the driving current in accordance with the phase difference signal.

4,939,403

ENERGY-TRAPPING-BY-FREQUENCY-LOWERING-TYPE PIEZOELECTRIC RESONANCE DEVICE

Toshihiko Kittaka; Akira Ando, and Yukio Sakabe, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 29, 1988, Ser. No. 291,793
Claims priority, application Japan, Dec. 29, 1987, 62-335920
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—320 **6 Claims**



1. An energy-trapping-by-frequency-lowering-type piezoelectric resonance device utilizing higher order harmonics above the fundamental wave of a thickness extensional mode of vibration, said device comprising:

a plate-shaped body formed of piezoelectric material layers; and

electrodes arranged so as to be separated by said piezoelectric material layers in a direction of thickness of said body and to trap vibration energy by lowering the resonance frequency; wherein

the portions of the piezoelectric material layers sandwiched by said electrodes are polarized;

at least portions of the piezoelectric material layers which are not interposed between said electrodes are polarized; and

said piezoelectric material has such an effective Poisson's ratio that the piezoelectric material is not usable for fundamental mode energy trapping of the thickness extensional vibration mode by lowering the resonance frequency.

4,939,404

VIBRATION WAVE MOTOR

Akio Inagaki, Okazaki; Kiyotaka Nakai, Chita, and Hitoshi Tauchi, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 24, 1989, Ser. No. 341,820
Claims priority, application Japan, Apr. 22, 1988, 63-100694
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **6 Claims**

1. A vibration wave motor comprising:

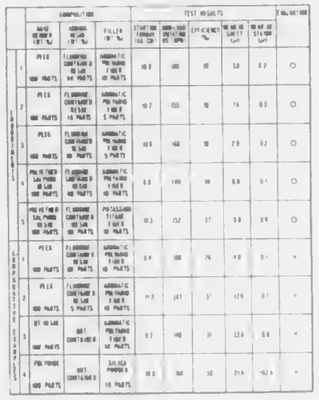
A vibration wave motor comprising:

a stator having an upper surface at which is generated a travelling vibration;

a rotor having a lower surface that is rotatably mounted on the upper surface of the stator;

urging means for applying a frictional force between the upper surface of the stator and the lower surface of the rotor; and

a sheet member secured to one of either of the upper surface of the stator and the lower surface of the rotor, said sheet member including means for increasing the durability of the sheet member against friction, a filler in the form of fibers, and a base member having ultra heat-resistant properties, said means for increasing the durability of the sheet



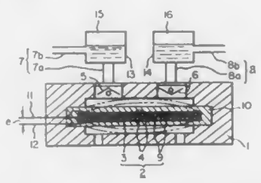
member against friction including a fluorine-containing resin.

4,939,405

PIEZO-ELECTRIC VIBRATOR PUMP

Hidenori Okuyama, Hinagahigashi, and Katsumi Aoyagi, Agataganoka, both of Japan, assignors to Misuzuerie Co. Ltd., Hinagahigashi, Japan

Filed Dec. 23, 1988, Ser. No. 289,625
Claims priority, application Japan, Dec. 28, 1987, 62-332600
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—330 **9 Claims**



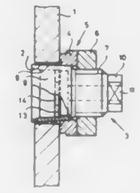
1. A piezo-electric vibrator pump comprising; at least one piezo-electric vibrator mounted in a casing having a peripheral part secured to a portion of said casing, a suction non-return valve through which fluid is sucked from a suction line and a discharge non-return valve through which the fluid is discharged from a discharge line by means of a piezo-electric vibrator vibrated by applying an alternative current voltage between electrodes of said piezo-electric vibrator, said suction and discharge non-return valves both being in said casing wall and on the same side of said piezo-electric vibrator; said piezo-electric vibrator pump having both sides of the piezo-electric vibrator coated with elastic elastomer layers of approximately 0.8 to 10 mm thickness; said elastic elastomer layers having a modulus of longitudinal elasticity of less than about 5×10^8 dynes/cm^2.

4,939,406

ARRANGEMENT FOR FASTENING A HOUSING

Harald Jeschouneck, and Hartmut Schultze, both of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Mannesmann Kienzle GmbH, VS-Villingen, Fed. Rep. of Germany

Filed Dec. 12, 1988, Ser. No. 283,169
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1987, 3742647
Int. Cl.[5] H02B *1/04*
U.S. Cl. 310—154 **10 Claims**



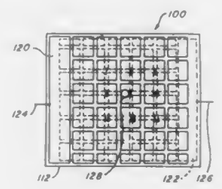
1. Arrangement fastening an electrical transducer transmitter element in a housing in a cylindrical bore located in a wall, characterized in that the outer contour surface of the housing (3) comprises a conical segment (8) which has a diameter which increases into the bore, and on which a clamping or tightening sleeve (5) is arranged, said clamping or tightening sleeve including a stop collar with an inside cone (9) surface with a slope corresponding to the slope of the conical segment (8) of the contour surface of the housing, said stop collar (4) having an external diameter corresponding to the diameter of the cylindrical bore (2) in the wall (1), a clamping or tightening element is connected to the housing (3) and exerts an axial thrust upon the housing (3) by abutting with its end face on the clamping sleeve (5).

4,939,407

BLOCK PATTERNING OF THE METALLIZATION OF POLYVINYLIDENE FLUORIDE TRANSDUCERS

Gee-In Goo, Silver Spring, and Thomas A. Waters, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1988, Ser. No. 215,136
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—366 **16 Claims**



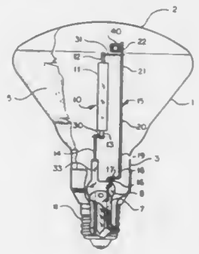
1. In a transducer for producing electrical charges in response to stimulation thereof, including a polymeric sheet having opposite sides and a pair of electrode assemblies between which the polymeric sheet is sandwiched, the improvement residing in each of said electrode assemblies including a plurality of conductively separated film blocks on areas of each of the opposite sides of the polymeric sheet, each of the film blocks on one of the opposite sides overlapping a plurality of the film blocks on the other of the opposite sides of the polymeric sheet.

4,939,408

HIGH PRESSURE SODIUM DISCHARGE REFLECTOR LAMP

Ray G. Gibson, III, Bath, N.Y., assignor to North American Philips Corp., New York, N.Y.

Filed Jun. 29, 1988, Ser. No. 212,811
Int. Cl.[5] H01J *61/34*
U.S. Cl. 313—25 **10 Claims**



1. A high pressure sodium discharge reflector lamp, comprising:

a blown glass envelope having a translucent dome end, a narrow base end, and a mid-section converging from the dome end to the base end, and a reflective layer disposed covering a portion of said converging mid-section for reflecting light emitted within said envelope out through said dome end;

a high pressure sodium discharge device within said envelope and positioned to emit light incident on said reflective layer for reflection out through said dome end of said lamp envelope;

support means for supporting said discharge device within said envelope at a selected position effective to impart a predetermined beam spread to the light emitted from said dome end of said envelope; and

a quantity of rare gas within said outer envelope having a fill pressure slightly less than one atmosphere and having a pressure at lamp operating temperature of approximately one atmosphere so that upon breakage of said blown glass envelope no substantial implosion or explosion occurs.

4,939,409

SPARK PLUG WITH A SURFACE DISCHARGE SECTION

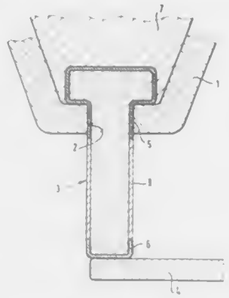
Karl-Hermann Friese, Leonberg; Werner Grünwald, Gerlingen, and Kurt Schmid, Ditzingen-Schöckingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE87/00235, § 371 Date Dec. 7, 1988, § 102(e) Date Dec. 7, 1988, PCT Pub. No. WO87/07778, PCT Pub. Date Dec. 17, 1987
PCT Filed May 23, 1987, Ser. No. 290,168
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1986, 3619854
Int. Cl.[5] H01T *13/20, 13/52*
U.S. Cl. 313—130 **5 Claims**

1. A spark plug for internal combustion engines comprising an insulation body having an inner cavity and a bore extending from said cavity; a mass of an electrically conductive material located in said inner cavity; a central electrode extending through said bore and contacting said mass; a counter-electrode facing said bore; and a surface discharge section extending between said central electrode and said counter-electrode, said central electrode and said surface discharge section being formed as a single part made of an electrically non-conductive ceramic material and having an outer surface which is covered

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in the area of said mass and said bore with a first electrically conductive film and in the area defining said surface discharge



section, with a second film which after sintering has no intrinsic conductivity but provides for a high displacement current.

4,939,410

ELECTRODE ARRANGEMENT WITH LIQUID-METAL ELECTRODE OF CONTROLLABLE SURFACE

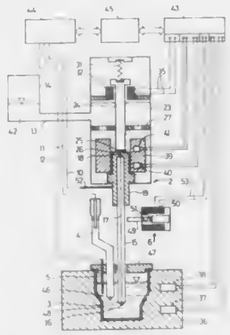
Géza Nagy; József Tarcali; Erno Pungor; Klára Toth; Veronika, nee Mohacsi Karpati; Zsófia Fehér; Gyorgy Horvai; Peter Sarkany, and István Bokor, all of Budapest, Hungary, assignors to Magyar Tudományos Akadémia Kutatás- és Szervezetelemzo Intézete, Budapest, Hungary

Filed Sep. 27, 1988, Ser. No. 249,742

Claims priority, application Hungary, Oct. 5, 1987, 4464/87

Int. Cl.[5] H01J *13/10, 13/14;* **G01N** *27/34*

U.S. Cl. 313—231.01 **9 Claims**



1. An electrode arrangement with liquid-metal electrode of controllable surface, comprising

a reservoir for the liquid-metal having a bottom part,

a capillary having upstream and downstream ends for producing a liquid-metal drop at said downstream end,

a metal body for holding said capillary at said upstream end and being attached to said bottom part of said reservoir, said metal body comprising a capillary section formed therein as a continuation of said capillary and having a surface surrounding an opening of said capillary section,

a controllable valve for passing the liquid-metal selectively from said reservoir to said capillary passage, said valve including an elastic closing element fitting to said surface of said metal body,

connecting means for establishing an electric contact to said metal body,

thermostating means for controlling the temperature of the liquid-metal, and

a drop dislodging device to dislodge the liquid-metal drop produced at said downstream end of said capillary.

4,939,411

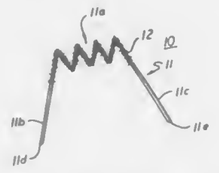
COMPOSITE VACUUM EVAPORATION COIL

Edmund R. Kera, Auburn, Me., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 932,256, Nov. 19, 1986, abandoned. This application Mar. 8, 1988, Ser. No. 169,152

Int. Cl.[5] H01J *1/16*

U.S. Cl. 313—344 **8 Claims**



1. A composite vacuum evaporation coil comprising a base coil and an overwind coil, the base coil consisting of a single wire having a central portion with a plurality of coil turns, and two leg portions extending from the central portion, the overwind coil consisting of a wire having a smaller thickness than the base coil wire, with a plurality of turns surrounding the base coil wire, characterized in that both the base coil and the overwind coil are of circular cross-section, and in that the location of the overwind coil is confined substantially to the turns of the base coil and an upper portion of the legs of the base coil.

4,939,412

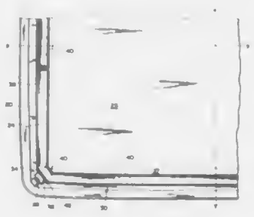
COLOR PICTURE TUBE HAVING IMPROVED SHADOW MASK-FRAME ASSEMBLY

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Licensing Corporation, Princeton, N.J.

Continuation of Ser. No. 175,895, Mar. 30, 1988, abandoned. This application Oct. 30, 1989, Ser. No. 428,447

Int. Cl.[5] H01J *29/81*

U.S. Cl. 313—407 **9 Claims**



1. In a color picture tube comprising an envelope including a rectangular faceplate panel and a neck interconnected therewith, said tube also comprising a rectangular shadow mask attached to a peripheral frame mounted by support means within said panel, a cathodoluminescent screen located on an interior surface of said panel, and an electron gun positioned within said neck for forming a plurality of electron beams and directing said beams through said shadow mask to said screen, the improvement comprising

said frame comprised of two substantially perpendicular flanges that are attached along their respective edges in an L-shaped cross-sectional configuraiton,

a first of said flanges extending from a second of said flanges away from said faceplate, and the second of said flanges extending from the first flange inwardly toward said shadow mask, the second of said flanges including spaced tabs extending therefrom away from said faceplate, and said shadow mask being only attached to said tabs.

4,939,413

FLAT TYPE CATHODE RAY TUBE

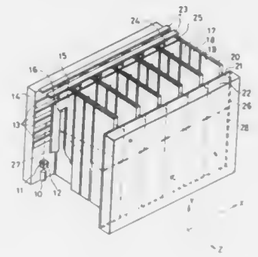
Kaoru Tomii, Isehara; Hiroshi Miyama, Yokohama; Yoshikazu Kawauchi, Kawasaki, and Jun Nishida, Shibuya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 18, 1987, Ser. No. 134,662

Claims priority, application Japan, Dec. 19, 1986, 61-304165

Int. Cl.[5] H01J *29/70*

U.S. Cl. 313—422 **20 Claims**



1. A flat type cathode ray tube comprising:

a phosphor screen;

a plurality of vertical scanning electrodes which each have an oblong configuration in the horizontal direction and are separated from each other in the vertical direction, the plurality of vertically separated scanning electrodes forming a plane which is substantially parallel to said phosphor screen, said electrodes for vertically scanning electron beams onto said phosphor screen by changing potentials which are to be applied to respective electrodes;

a plate-shaped shield electrode, disposed between said vertical scanning electrodes and said screen, and having inner surfaces that define a plurality of slit apertures for passing electron beams in each of a plurality of partitioned spaces;

a plurality of first supporting means for partitioning into said plurality of partitioned spaces, said first supporting means being separated from one another in the horizontal direction and being disposed between said phosphor screen and said shield electrode and arranged in parallel in the horizontal direction;

a plurality of horizontal focusing and deflection electrodes, each attached to each surface of a first supporting means, for horizontally scanning and focusing electron beams within predetermined ranges onto said phosphor screen;

a plurality of second supporting means which are disposed between said vertical scanning electrodes and said shield electrode in locations corresponding to locations of each of said first supporting means and separated therefrom, to form corresponding partitioned spaces across said shield electrode, each of said second supporting means having a conductive surface thereon;

a plurality of electron beam emitting means which are disposed between said vertical scanning electrodes and said shield electrode, one to correspond to each said corresponding partitioned space formed between said second supporting means for emitting electron beams in a substantially vertical direction substantially in parallel with said plane formed by said vertical scanning electrodes,

vacuum enclosure means for enclosing the above-mentioned parts.

4,939,414

COLOR CATHODE RAY TUBE WITH MAGNETIC FIELD CONDUCTING PLATES WITHIN ENVELOPE

Albertus A. S. Sluyterman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1988, Ser. No. 162,528

Claims priority, application United Kingdom, Mar. 25, 1987, 8707171

Int. Cl.[5] H01J *29/50, 29/56*

U.S. Cl. 313—431 **7 Claims**

1. A color cathode ray tube comprising:

an envelope including, in sequence, a faceplate, a cone, and a neck, said faceplate having a cathodoluminescent screen thereon, said envelope having a longitudinal axis centrally disposed in said neck and substantially perpendicular to said faceplate, and said cone and neck being joined at a neck-cone transition portion of the envelope,

a shadow mask adjacent to but spaced from the faceplate,

an in-line electron beam producing means disposed within the neck for producing three electron beams which lie, when undeflected, substantially in a single plane on which the longitudinal axis lies, the axis of the central of said beams, when undeflected, substantially coinciding with said longitudinal axis,

a deflection unit arranged on the neck-cone transition portion of the envelope and comprising a field deflection coil defining a central deflection area within the transition portion and a line deflection coil,

magnetic field conducting means disposed within the neck-cone transition portion of the envelope and arranged on opposite sides of said plane such that, when the field deflection coil is energized, the deflection field produced at the central deflection area is barrel shaped.

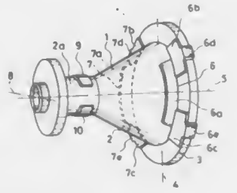
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,415

DEFLECTION YOKE

Katsuyo Iwasaki, Nishinomiya; Shigeya Ashizaki, Takatsuki, and Osamu Konosu, Nagaokakyo, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Dec. 29, 1988, Ser. No. 291,644
Claims priority, application Japan, Dec. 29, 1987, 62-334566
Int. Cl.[5] H01J *29/70;* **H04N** *5/645;* **H01F** *3/12*
U.S. Cl. 313—440 **14 Claims**



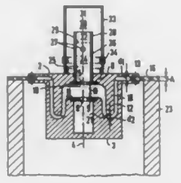
1. A deflection yoke for a CRT having a neck portion and a screen portion, comprising:
a horizontal deflection coil for generating a horizontal deflection magnetic field distorted in pin-cushion shape;
a vertical deflection coil for generating a vertical deflection magnetic field distorted in barrel shape;
a frame for holding said horizontal deflection coil and said vertical deflection coil and having a cone part adapted to conform to a neck portion of a CRT, and a flange part formed on a larger diameter end part of said cone part; and
a pair of magnetic members provided symmetrically with respect to a vertical plane including a center axis of said frame, said magnetic members each respectively having a first magnetic part disposed on the outer surface and on a larger diameter end part of said cone part adjacent to said flange, and an upper second magnetic part and lower second magnetic part extended radially from said center axis and substantially perpendicular to said first magnetic part and disposed along a backside surface of said flange, and an upper and lower third magnetic part substantially perpendicular to said upper and lower second magnetic parts and respectively protruding therefrom toward a screen part of a CRT.

4,939,416

GAS DISCHARGE SWITCH

Robert Seeboeck, Bubenreuth, and David-Walter Branston, Igelsdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Siemens Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 335,281
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1988, 3812018
Int. Cl.[5] H01J *19/42, 19/68*
U.S. Cl. 313—590 **18 Claims**



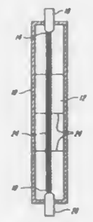
1. A gas discharge switch, comprising:
at least two coaxial electrodes having coaxial holes, with space between said coaxial electrodes forming a central discharge region for a gas discharge path, an insulating region at edges of said coaxial electrodes and a shielding region between the discharge region and the insulating region,
a control device coupled to the coaxial electrodes and having a cathode backspace, said control device firing a gas discharge by injecting charge carriers in said cathode backspace;
a washer-shaped insulator having flat sides and an inner edge, and respectively coupled on each side with one of said coaxial electrodes in said insulating region; and
means for shielding the insulator arranged in said shielding region;
wherein spacing D of said coaxial electrodes in said discharge region is larger than spacing d_1 of said coaxial electrodes in said insulating region at the inner edge of said insulator, with said spacing d_1 in said insulating region being at least as large as spacing d_2 of said coaxial electrodes in said shielding region.

4,939,417

HIGH PRESSURE DISCHARGE LAMP WITH INCANDESCENT FILAMENT FOR STARTING

Oscar Biblarz, Swampscott, Mass.; Joseph D. Michael, University Hgts., Ohio, and Paul Thibault, Danvers, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 20, 1988, Ser. No. 287,311
Int. Cl.[5] H01J *61/54*
U.S. Cl. 313—595 **16 Claims**



1. An arc tube assembly comprising:
a light-transmitting arc tube that encloses a discharge region and contains a fill material for supporting an arc discharge;
a pair of electrodes sealed in said arc tube;
a filament located within the arc tube and extending between opposite ends thereof, said filament being electrically connected to said electrodes and providing an electric field of at least 20 volts per centimeter in said discharge region prior to initiation of an arc discharge, said electric field being sufficient to initiate an arc discharge within said discharge region when said electrodes are energized.

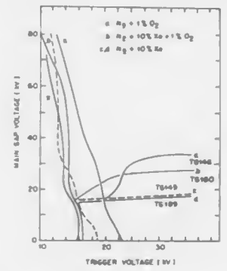
4,939,418

GAS MIXTURE FOR TRIGGERABLE SPARK GAPS

Roy E. Wootton, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Air Force., Washington, D.C.

Filed Mar. 12, 1986, Ser. No. 838,976
Int. Cl.[5] H01J *17/46*
U.S. Cl. 313—595 **2 Claims**

1. In a triggerable spark gap discharger containing three electrodes with a spark gap therebetween, said spark gap being filled with a gas mixture which serves as an insulator and allows the triggerable spark gap discharger to be triggered over a range of trigger voltages, the improvement comprising a selection of about 90 percent nitrogen, and about 10 percent



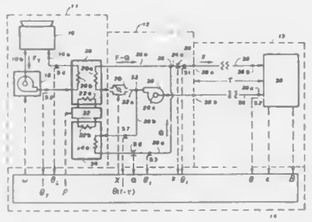
xenon as the gas mixture to widen the range of trigger voltages of the triggerable spark gap discharger.

4,939,419

RFQ ACCELERATOR TUNING SYSTEM

Victor W. Bolie, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 12, 1988, Ser. No. 180,498
Int. Cl.[5] H05H *9/02;* **H01J** *25/10*
U.S. Cl. 315—5.41 **16 Claims**



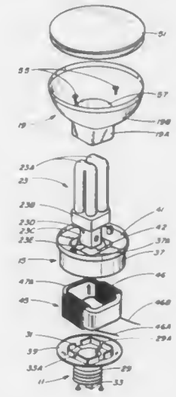
6. A cooling system for maintaining a preselected operating temperature by circulating a fluid in a quadrupole accelerator having a variable heat removal requirement and remote from said cooling system, comprising:
means for generating an estimated error signal from parameters indicative of said heat removal requirement and functionally related to a difference between a first temperature at which said accelerator has a predetermined resonant frequency and a second temperature functionally related to a current operating temperature of said quadrupole;
sensor means for outputting temperature signals from predetermined locations in said cooling system;
computation means defining a control signal functionally related to said temperature signals and said estimated error signal for returning said device to said preselected operating temperature in a stable manner;
a first heat sink responsive to a first portion of said control signal for removing heat from a major portion of said circulating fluid;
a second heat sink responsive to a second portion of said control signal for removing heat from a minor portion of said circulating fluid;
means for mixing said major and minor portions of said circulating fluid; and
valve means responsive to a mixing portion of said control signal effective to proportion said major and minor portions of said circulating fluid wherein said mixing means establishes a mixed fluid temperature effective to define said preselected operating temperature for said quadrupole.

4,939,420

FLUORESCENT REFLECTOR LAMP ASSEMBLY

Kenneth S. Lim, 47 St. James Pl., Piedmont, Calif. 94611

Continuation-in-part of Ser. No. 35,016, Apr. 6, 1987, Pat. No. 4,746,840. This application May 23, 1988, Ser. No. 197,704
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 **1 Claim**



1. A fluorescent reflector lamp assembly for use in screw-type sockets in recessed lighting applications comprising:
a generally cylindrical base connector adapted to engage screw-type sockets for incandescent bulbs;
a ballast housing connected to the base connector to define a generally annular enclosure for containing a reactance ballast, the generally annular enclosure providing a central recess which is generally rectangular;
a reflector member formed of substantially heat-conductive material and having a reflective shell with a surface formed of a reflective material to reflect heat and light;
a reactance ballast transformer mounted within the annular enclosure, the reactance ballast transformer including a ballast core formed of two generally U-shaped laminated members mounted with the ends of their legs opposite one another and of windings wound about the opposing legs of the U-shaped laminated members; and
receiving means mounted within said central recess to receive the base of the reflector member and a fluorescent illuminator tube assembly in heat-conducting contact with a substantial area of the reflector base whereby heat is dissipated from the reactance ballast transformer and illuminator tube assembly by conduction while light and heat are reflected from the reflective interior surface of the reflector member.

4,939,421

METHOD AND APPARATUS FOR REDUCING INTERFERENCE FROM LIGHT SOURCES

Richard C. Sagers, Fort Worth, and Ralph E. Menick, Euless, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 877,040, Jun. 23, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 203,379
Int. Cl.[5] H01J *1/52*
U.S. Cl. 315—85 **14 Claims**

1. An apparatus for reducing radiated interference from light

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sources operating in vehicles having automatic vehicle location equipment, comprising in combination:

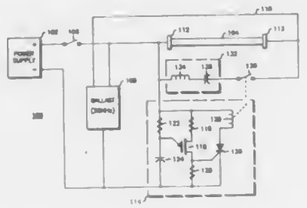
(a) a vehicle having automatic vehicle location equipment operating at an operational frequency; and,

(b) at least one light source that may radiate interference at said operational frequency of said automatic vehicle location equipment thereby degrading proper performance of said automatic vehicle location equipment, said at least one light source comprising:

(i) a DC power source;

(ii) ballast means, selectably coupled to said DC power source;

(iii) means for generating light, coupled to said ballast means and selectably coupled to said DC power source;



(iv) means for mounting said means for generating light within said vehicle having said automatic vehicle location equipment;

(v) timer means, coupled to said ballast means and selectably coupled to said DC power source, for providing a signal after a predetermined time delay; and

(vi) filter means for filtering said radiated interference generated by said means for generating light, said filter means having a frequency approximately equal to said operational frequency of said automatic vehicle location equipment, and said filter means being selectably coupled across said means for generating light in response to said signal thereby facilitating proper performance of said automatic vehicle location equipment.

4,939,422

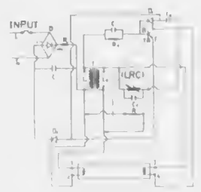
ELECTRONIC BALLAST FOR TUNGSTEN LAMP TUBES

Mao J. Liao, 8-1, Jsun Shih Rd., Wei Jsuo Hamlet, Hsi Chou Village, Chang Hua Country, Taiwan

Filed Oct. 25, 1988, Ser. No. 262,344

Int. Cl.[5] H05B *41/14*

U.S. Cl. 315—101 **4 Claims**



1. An electronic ballast for tungsten lamp tubes including first and second contacts arranged to be connected by a first tungsten filament and third and fourth contacts arranged to be connected by a second tungsten filament, comprising:

rectifier means for providing DC power to the ballast;

a resistor and a condenser connected by a parallel connection, said parallel connected resistor and condenser being further connected with said rectifier means to provide an oscillating wave form;

a high frequency transformer comprising a primary winding having first and second contacts and a secondary winding having first and second contacts, said first contact of said primary winding being directly connected to said parallel connected resistor and condenser, to the first contact of the lamp tube, the second contact of the lamp tube being connected to the first contact of the secondary winding which is connected via the second contact of the secondary winding to the third contact of the lamp tube;

a transistor including a collector, emitter, and base, the collector being connected to the fourth contact of the tube, the emitter being connected to the DC supply means, and the base being connected to a second resistor and a second condenser, the second resistor and second condenser being connected in parallel to each other and in series between the base of the transistor and the second contact of the primary winding, whereby said transistor and transformer form a transformer negative feedback circuit; and

a third resistor connected between the first contact of the primary winding and the first contact of the secondary winding through a parallel connection which enables the transformer negative feedback circuit to oscillate even when the first tungsten filament is missing or broken.

4,939,423

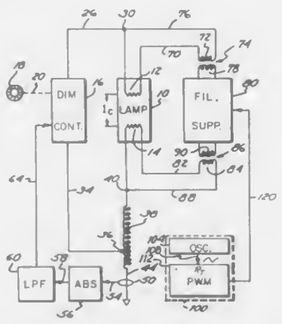
REDUCTION OF EFFECTS OF BEAT FREQUENCIES IN SYSTEMS WITH MULTIPLE OSCILLATORS

Joseph H. Ruby, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 6, 1988, Ser. No. 280,493

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—105 **16 Claims**



1. A method of reducing the effects of beat frequencies in a system having more than one source of oscillating energy comprising:

modulating at least one of the sources so that its oscillating energy changes frequency by an amount Δf and does so at a frequency F, Δf and F being chosen so that any beat frequency varies at a rate greater than that detectable by the human eye.

4,939,424

APPARATUS FOR PRODUCING A PLASMA AND FOR THE TREATMENT OF SUBSTRATES

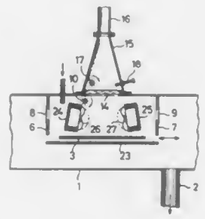
Jörg Kieser, Albstadt; Michael Geisler, Wächtersbach; Rolf Wilhelm, Calw-Stammheim, and Eberhard Räuchle, Remseck, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 31,103, Mar. 26, 1987, abandoned. This application May 23, 1989, Ser. No. 355,886

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705666

Int. Cl.[5] H01J *19/80, 7/46*

U.S. Cl. 315—111.21 **35 Claims**



1. Apparatus for producing a plasma and treating substrates therein comprising

a microwave generator;

a chamber having metal walls and an entry window which admits microwave from said generator, said entry window being impermeable to gas;

means for promoting a substantially uniform wavefield throughout said chamber;

means for introducing a gas into said chamber;

a magnet system for producing a magnetic field within said chamber, said magnetic field being sufficient to produce, in combination with said wavefield and a gas introduced into said chamber, a region of electron-cyclotron resonance within said chamber, said magnet system being movable so that the location of the magnetic field in the chamber is freely selectable, whereby, a region of plasma may be freely located in said chamber.

4,939,425

FOUR-ELECTRODE ION SOURCE

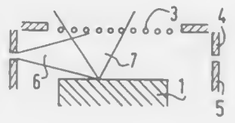
Henri Bernardet, Saint Michel Sur Orge, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 10, 1988, Ser. No. 205,124

Claims priority, application France, Jun. 12, 1987, 87 08196

Int. Cl.[5] H01J *29/00, 17/26*

U.S. Cl. 315—111.21 **8 Claims**



1. A vacuum arc ion source comprising

anode means and cathode means for forming a main arc between said anode means and said cathode means, said anode means facing toward said cathode means, and said anode means being biased at a different potential than said cathode means;

anode grid means and cathode grid means for forming a control plasma between said anode means and said cathode means to trigger said main arc into a plasma, said anode grid means being independent of said cathode grid means, and said anode grid means and said cathode grid means being appropriately biased relative to said anode means and said cathode means.

4,939,426

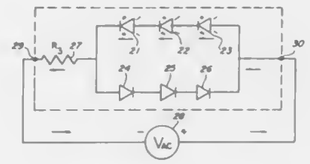
LIGHT EMITTING DIODE ARRAY

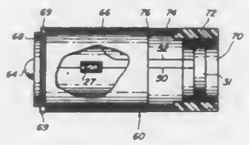
Peter F. Menard, Windsor, and Paul R. Allen, North Adam, both of Mass., assignors to United States of America, Washington, D.C.

Continuation of Ser. No. 27,910, Mar. 19, 1987, abandoned. This application Dec. 11, 1979, Ser. No. 449,319

Int. Cl.[5] H05B *43/00*; H03K *3/42*

U.S. Cl. 315—192 **3 Claims**





1. A light emitting diode lamp for indicating the presence of an AC input signal that has a higher voltage level than the operating voltage of selected light emitting diode means, comprising:

(a) A cylindrical cluster plate;

(b) A first light emitting diode means arranged in series in a first electrical direction and mounted in a first semicircular configuration on the cluster plate, for allowing AC current to pass therethrough when the AC input signal has a positive voltage relative to a reference voltage, said first means being free of a resistor, wherein the first light emitting diode means has a multiple number of light emitting diodes therein;

(c) A second light emitting diode means arranged in series in a second electrical direction and connected in a parallel circuit with the first series of light emitting diodes and mounted in a second semicircular configuration on the cluster plate, the first and second light emitting diode means forming a circular configuration on the cluster plate, for allowing an AC current to pass therethrough when the AC input signal has a negative voltage relative to a reference voltage, said second means being free of a resistor, wherein the second light emitting diode means has the same multiple number of light emitting diodes therein;

(d) First and second terminals connecting the first and second light emitting diode means, the first and second terminals being opposite of each other in the circular configuration, said light emitting diodes of said first and second light emitting diode means being at regular intervals in said circular configuration;

(e) A first lead connected to the first terminal, the first lead extending inward of the circular configuration and extending thence through the cluster plate and beyond;

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(f) A second lead connected to the second terminal, the second lead extending inward of the circular configuration and extending thence through the cluster plate and beyond; and

(g) A modifying resistor means connected to a free end of a said lead, the modifying resistor thus being in series circuit with both the first and second light emitting diode means for reducing the voltage level of the AC input signal to a useable value alternatively for the first and second light emitting diode means.

4,939,427

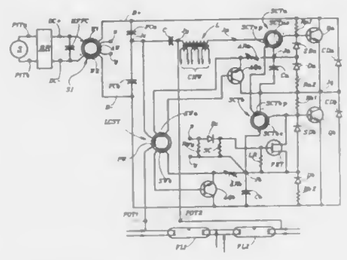
GROUND-FAULT-PROTECTED SERIES-RESONANT BALLAST

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 80,865, Aug. 3, 1987. This application Jan. 23, 1989, Ser. No. 299,231

Int. Cl.[5] H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 R **12 Claims**



1. An arrangement comprising:

an electric utility power line having power line conductors electrically connected with ground;

a power conditioner means connected with the electric utility power line and operative to provide a DC voltage at a set of DC terminals; and

inverter means connected with the DC terminals by way of an EMI filter means, the inverter means having control means receptive of a control signal and, in absence of the control signal, being: (i) operative to provide a high-frequency AC voltage at a set of AC output terminals, which AC voltage is suitable for powering a load means such as a gas discharge lamp; (ii) apt to produce a flow of ground-fault current if one of the AC output terminals were to be electrically connected with ground, which ground-fault current would then flow between the electric utility power line and the inverter means by way of the power conditioner means and the EMI filter means; and (iii) apt to generate electro-magnetic interference which in the absence of the EMI filter means would flow from the inverter means to the electric utility power line by way of the power conditioner means, the EMI filter means: (i) being operative significantly to reduce the amount of electro-magnetic interference that would flow from the inverter means to the electric utility power line compared to what such amount would have been in the absence of the EMI filter means, (ii) being connected in circuit with said . control means, and (iii) having an auxiliary output operative to provide said control signal in response to the flow of groundfault current.

4,939,428

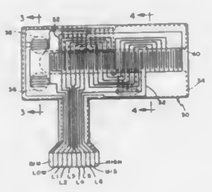
TOUCH SWITCHING SYSTEM

John F. DePaull, San Diego, Calif., assignor to Westek Associates, San Diego, Calif.

Filed Jan. 26, 1988, Ser. No. 148,767

Int. Cl.[5] H05B *37/02, 41/04, 41/18;* **G05F** *1/10*

U.S. Cl. 315—291 **9 Claims**



1. A low pressure electrical switch comprising:

a flexible membrane;

a plurality of spaced apart electrical pattern conductors disposed in a continuous single column array upon a first surface of said membrane;

a plurality of electrically conductive range leads disposed upon said membrane, each range lead coupled to alternate ones of said pattern conductors in a respective region of said conductor array;

a plurality of electrically conductive level leads disposed upon said membrane, each level lead coupled to a respective other one of said conductors in each respective region of said conductor array;

a rigid member having a flat surface, a recessed portion of said rigid member surface aligned and facing said conductor array; and

a fixed conductor formed in said recessed portion, said membrane being attached to said rigid member with said conductor array suspended over said recessed portion so that certain ones of said pattern conductors come in contact with said fixed conductor when pressure is applied to a second surface of said membrane above said recessed portion.

4,939,429

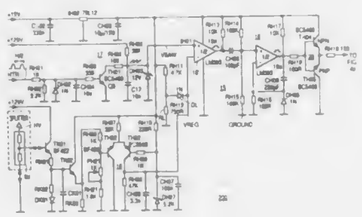
HIGH VOLTAGE REGULATOR CIRCUIT FOR PICTURE TUBE

Enrique Rodriguez-Cavazos, Indianapolis, Ind., and Hans-Günter Bicheler, VS-Villingen, Fed. Rep. of Germany, assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Aug. 24, 1989, Ser. No. 398,515

Int. Cl.[5] H01J *29/70;* **H04N** *5/63, 5/68*

U.S. Cl. 315—411 **22 Claims**



1. A high voltage regulator circuit for a picture tube comprising:

a horizontal deflection circuit including a resonant output stage for generating a retrace voltage signal having pulses of a given width and retrace frequency;

a flyback transformer having a primary winding receiving the retrace voltage signal from the resonant output stage of the horizontal deflection circuit and a secondary winding for generating a high voltage component of an ultor voltage to be applied to the picture tube in accordance with the retrace frequency;

an auxiliary resonant circuit for generating an auxiliary voltage signal having pulses of the given retrace frequency for compensating beam current variations affecting the ultor voltage;

an auxiliary transformer in series with the flyback transformer having a primary winding receiving the auxiliary voltage signal from the auxiliary resonant circuit and a secondary winding for generating an auxiliary voltage component which is added to the high voltage component of the ultor voltage; and

a phase control circuit responsive to the ultor voltage for controlling the phase position of the auxiliary voltage signal pulses such that they lag the retrace voltage signal pulses at a low beam current, and are advanced so that leading parts thereof overlap the retrace voltage signal pulses at a high beam current, whereby the ultor voltage is maintained substantially constant despite variations in the beam current, and secondary ringing in the auxiliary voltage component of the ultor voltage is precluded.

4,939,430

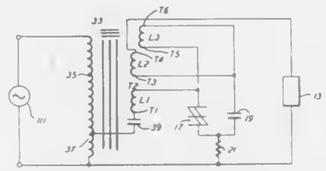
IGNITOR CIRCUIT FOR DISCHARGE LAMPS WITH NOVEL BALLAST

Joseph S. Drobo, Chicago, Ill., assignor to Advance Transformer Company, Chicago, Ill.

Filed Dec. 16, 1987, Ser. No. 133,705

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—291 **13 Claims**



1. A ballast reactance for the starting and operating circuit of a discharge lamp, said ballast reactance having a a core and including a coil with first, second and third coil segment means on said core, each with a number of windings, at least one of said first and second coil segment means having a substantial number of more windings than said third coil segment means, each coil segment means with two ends, said third coil segment means being electrically connected in series between said first coil segment means and said second coil segment means and forming a series electrical connection therewith regardless of the physical location of said third core segment means on said core relative to the physical locations of said first and second coil segment means.

4,939,431

CONTROL SYSTEM FOR SYNCHRONOUS ROTATION OF CUTTER HEADS, FOR USE IN SHIELD MACHINE

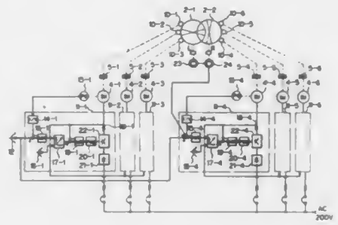
Hidetsugu Yamazaki, Ibaraki; Ryuzaburo Otsuka, Aichi; Takashi More, Ibaraki; Toshifumi Yuzawa, Aichi; Seiji Tadano, Kanagawa, and Kiyoshi Tsuchiya, Ibaraki, all of Japan, assignors to Ishikawajima-Harima Kukogyo K.K.; Hitachi Construction Machinery Co., Ltd.; Obbayashi Corp.; Taisei Corp. and Daiho Construction Co., Ltd., all of, Japan

Filed Jul. 21, 1989, Ser. No. 383,533

Claims priority, application Japan, Nov. 29, 1988, 63-299664

Int. Cl.[5] H02P *7/74*

U.S. Cl. 318—41 **3 Claims**



1. A control system for controlling synchronous rotation of a plurality of rotating cutter heads in a multi-cutter shield machine, said rotating cutter heads are generally disposed in the same plane and the distance between the centers of the adjoining rotating cutter heads is larger than the radius but smaller than the diameter of the rotating cutter heads, comprising:

a plurality of electric drive systems to respectively and independently drive said plurality of rotating cutter heads, each drive system includes a plurality of motors which are coupled to the respective cutter head by means of a pinion and reducing gears;

a control means for synchronously rotating the adjoining first and second ones of said rotating cutter heads with an allowable deviation angle which will not cause interference between the first and the second cutter head;

said control means comprising:

a means for detecting an angle of deviation, or the difference in rotation angle between the first and second rotating cutter heads, and for delivering a deviation angle detected value signal corresponding to the detected angle of deviation;

a first means for detecting the rotation speed of a master motor in the plurality of motors comprising a first one of said electric drive systems which drives said first rotating cutter head, wherein said first means delivers a rotation speed signal corresponding to the detected rotation speed of the master motor of the first drive system;

a second means for detecting the rotation speed of a master motor in the plurality of motors comprising a second one of said electric drive systems which drives said second rotating cutter head, wherein said second means delivers a rotation speed signal corresponding to the detected rotation speed of the master motor of the second drive system;

a speed setting means for setting a speed command to the master motor of each of said first and second drive systems;

a first speed control means for comparing the rotation speed signal delivered from said first means with the speed command given by said speed setting means, and for adjusting the power supplied to the master motor of the first drive system so that the deviation resulting from the comparison becomes zero;

a second speed control means for comparing the rotation

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speed signal delivered from said second means with the sum of said speed command and said deviation angle detected value signal, and for adjusting the power supplied to the master motor of the second drive system so that the deviation resulted from the comparison becomes zero;

a first torque setting means for detecting the current through the master motor of the first drive system, and for setting a torque command based on a detected current value of the master motor and for providing said torque command to the slave motors in the first drive system;

a second torque setting means for detecting the current through the master motor of the second drive system, and for setting a torque command based on a detected current value of the master motor and for providing said torque command to the slave motors in the second drive system; and

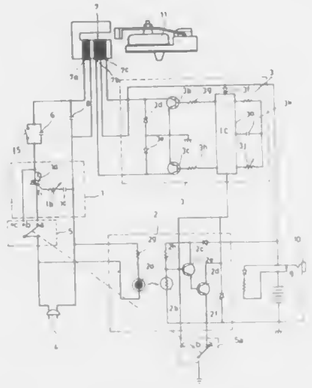
torque controlling means for adjusting power supplied to the slave motors in the first and second drive system so that the torques generated by the slave motors in the respective drive system are the same as the torques generated by the master motor of the respective drive system.

4,939,432

AC/DC AUTOMATIC CHANGEOVER AND AUTOMATIC CHARGE DEVICE

Shian-Fun Tsai, 2nd F., No. 20, Alley 7, La. 23, Nanking E.Rd. Sec. 5, Taipei, Taiwan

Filed Jun. 14, 1988, Ser. No. 206,425
Int. Cl.[5] H02K *33/12*
U.S. Cl. 318—124 **6 Claims**



1. An AC/DC auto-switching device for controlling an air pump for use in an aquarium and the like, and for driving said air pump substantially continuously with DC power immediately on AC per disruption, said device comprising:

an electromagnet including a first loading coil and a second loading coil;

AC power-connecting means for connecting said first loading coil to a source of AC power for the provision of an electromagnetic force to operate said air pump;

an optical-electron DC non-contact switch circuit for detecting the presence of AC power;

DC power-connecting means for electrically connecting said second loading coil of said electromagnet to a battery for enabling said electromagnet to operate substantially continuously immediately upon occurrence of AC power disruption said air pump;

oscillating signal generating means operatively connected to said DC power-connecting means, for generating an oscillating signal, at said second loading coil; and

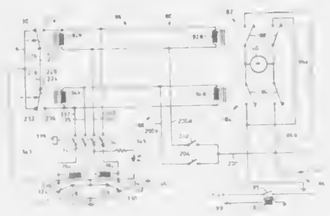
an AC/DC switching means including a two-interlock three-position selector switch, one of said two-interlock being connected to an input end of said AC power-connecting means and, the other of said two-interlock switch being capable of controlling said optical-electron DC non-contact switch circuit.

4,939,433

CONTROL SYSTEM FOR ROLL-UP DOORS

Jan Ballyns, 1125 Meadowlane Crescent, Pickering, Ontario, Canada L1X 1E5; John C. Martin, 1 Annesley Avenue, Toronto, Ontario, Canada M4G 2T5, and Paul H. Martin, 124 Lawrence Crescent, Toronto, Ontario, Canada M4N 1N6

Division of Ser. No. 92,571, Sep. 2, 1987, Pat. No. 4,860,813.
This application Jul. 11, 1989, Ser. No. 378,159
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—280 **1 Claim**



1. A control system for controlling the direction in which a reversible D.C. motor is driven to control the opening and closing of an overhead door, comprising:

(a) a first motor driving circuit communicating between a D.C. power source and said motor for driving said motor to rotate it in a first direction,

(b) first switch means in said first motor driving circuit which when open interrupts the supply of power to said motor and when closed will permit power to be supplied to the motor to drive it in said first direction,

(c) a second motor driving circuit communicating between said D.C. power source and said motor for driving said motor to rotate it in a second direction,

(d) second switch means in said second motor driving circuit which when open interrupts the supply of power to said motor and when closed will permit power to be supplied to the motor to drive it in said second direction,

(e) a first master control circuit comprising primary and secondary relays, the primary relay being operable to control said first switch means, a first control switch which can be latched in a first position by said secondary relay for grounding said first master control circuit, a first power supply line for supply power from said D.C. power source to said primary and secondary relays, a first normally closed limit switch in said first power supply line which is operable to open to interrupt the first power supply line when the door reaches a first limit of its travel,

(f) a second master control circuit comprising primary and secondary relays, the primary relay being operable to control second switch means, a second control switch which can be latched in a first position by said secondary relay for grounding said second master control circuit, a second power supply line for supplying power from said D.C. power source to said primary and secondary relays, a second normally closed limit switch in said second power supply line which is operable to open to interrupt the second power supply line when the door reaches a second limit of its travel,

(g) first and second grounding lines extending from said first and second master control circuits respectively,

(h) said first and second control switches each having first, second and base terminals and a switch member for selectively connecting the base terminal to said first or second terminal, the base terminal of the first control switch and the base terminal of the second control switch being connected to one another, the first terminal of the first control switch being connected to said first grounding line, the second terminal of the first control switch being connected to the secondary relay of the first master control circuit, the first terminal of the second control switch being connected to said second grounding line, the second terminal of the second control switch being connected to the secondary relay of the second master control circuit, each of said switch member being normally located in contact with its associated first terminal and being latched in contact with its associated second terminal when their associated relay is activated,

(i) a first slave control circuit comprising; a tertiary relay connected in parallel with the primary and secondary relays of the first master control circuit through first slave lines, a first slave switch which can be latched in a first position by said tertiary relay, said first slave switch having first, second and base terminals and a switch member for selectively connecting the base terminal to said first or second terminal, said first terminal being connected to the tertiary relay,

(j) a second slave control circuit comprising; a tertiary relay connected in parallel with the primary and secondary relays of the second master control circuit through second slave lines, a second slave switch which can be latched in a first position by said tertiary relay, said second slave switch having first, second and base terminals, and a switch member for selectively connecting the base terminal to said first or second terminal, the first terminal being connected to the tertiary relay, the base terminal of the first slave switch being connected to the base terminal of the second slave switch, the first terminals of the first and second control switches also being connected to the base terminals of the first and second slave switches and to one of said first or second slave lines,

(k) a slave control switch which, when in its first position serves to disconnect the master and slave control circuits and when in its second position, serves to connect the master and slave control circuits,

(l) the control system being operable to drive the motor in one direction by means of the master control circuits alone when the slave control switch is in its first position and by means of the master control circuits and the slave control circuits when the slave Control switch is in its second position.

4,939,434

APPARATUS AND METHOD FOR AUTOMATIC GARAGE DOOR OPERATION

Alfred A. Elson, 1440 NW. 28 Ave., Delray Beach, Fla. 33445

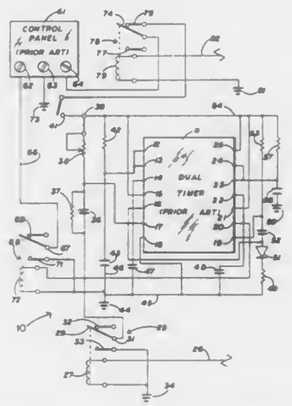
Continuation-in-part of Ser. No. 215,232, Aug. 17, 1988. This application May 30, 1989, Ser. No. 357,811
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—285 **5 Claims**

1. An apparatus for automatically initiating the closing of a garage door after a preselected time of delay comprising:

(A) closing circuit means for said door,

(B) switching means for supplying current to said closing circuit means,

(C) timing means connected in series between said switching means and said closing circuit means, said timing means comprising cascaded timers and a trigger input wherein grounding said trigger input energizes one of said timers which then starts another of said timers,



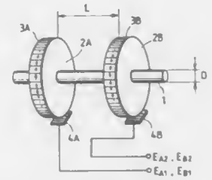
(D) means for opening said door, said opening means automatically energizing said switching means.

4,939,435

TORQUE DETECTING APPARATUS

Tadashi Takahashi, 1415-7, Ishinazaka-cho, Hitachi-shi, Ibaraki 319-12; Syoichi Kawamata, 19-34, Namekawahon-cho 4-chome, Hitachi-shi, Ibaraki 317; Kunio Miyashita, 45-15, Nishinarusawa-cho 4-chome, Hitachi-shi, Ibaraki 316; Ryoosoo Masaki, 401, 17-1, Moriyama-cho 3-chome, Hitachi-shi, Ibaraki 316, and Shigeru Kuriyama, 853-32, Tsuda, Katsuta-shi, Ibaraki 312, all of Japan

Filed Apr. 20, 1989, Ser. No. 340,682
Claims priority, application Japan, Apr. 22, 1988, 63-98146
Int. Cl.[5] G01L *3/10*
U.S. Cl. 318—432 **34 Claims**



1. A torque detecting apparatus comprising a first rotary body fitted on a drive side of a rotating drive shaft, a second rotary body fitted on a load side of said rotating drive, a first position detecting means disposed opposite to and facing said first rotary body, a second position detecting means disposed opposite to and facing said second rotary body, said first position detecting means generates a first output and a second output corresponding to positions of rotation of said first rotary body, said second position detecting means generates a third output and a fourth output corresponding to positions of rotation of said second rotary body, and a torque calculating means for calculating a first angle from said first output and said second output, for calculating a second angle from said third output and said fourth output, and further for calculating a torque from a phase difference between said first angle and said second angle, wherein

said torque detecting apparatus further comprises a means

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for determining a fault and for outputting an abnormality signal when one of said first output and said second output is determined to be faulty, wherein said one of said first output and said second output is not varied while the other output of said first output and said second output is varied.

17. A torque controlling apparatus for an electric driven power steering apparatus comprising a rotating drive shaft to which a driving force is provided, a first rotary body fitted on a drive side of said rotating drive shaft, a second rotary body fitted on a load side of said rotating drive shaft, a first magnetic angular sensor disposed opposite to and facing said first rotary body, a second magnetic angular sensor disposed opposite to and facing said second rotary body, said first magnetic angular sensor generates a first output and a second output corresponding to positions of rotation of said first rotary body, said second magnetic angular sensor generates a third output and a fourth output corresponding to positions of rotation of said second rotary body, a torque calculating means for calculating a first angle from said first output and said second output and for calculating a second angle from said third output and said fourth output and further for calculating a torque from a phase difference between said first angle and said second angle, and a control means for controlling an assist torque means which generates an assist torque to be given to the load side of said rotating drive shaft in response to an output of said torque calculating means wherein

said torque detecting apparatus further comprises a means for determining a fault in response to said first output and said second output, said fault being determined when one of said first output and said second output is varied while the other of said first output and said second output is not varied, and said assist torque means is made ineffective in response to the determination of said fault.

4,939,436

MOTOR DRIVEN TYPE POWER STEERING CONTROL DEVICE

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

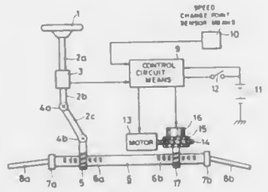
PCT No. PCT/JP87/00497, § 371 Date Mar. 11, 1989, § 102(e) Date Mar. 11, 1989, PCT Pub. No. WO88/00546, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 11, 1987, Ser. No. 196,207

Claims priority, application Japan, Jul. 11, 1986, 61-164159

Int. Cl.[5] H02K *17/32*

U.S. Cl. 318—434 **2 Claims**



1. A motor driven type power-steering control device comprising:

speed change point sensor means for sensing a speed change point;

torque sensor means provided on an intermedial portion of a steering shaft, for sensing a rotational force applied to a steering wheel;

control unit means responsive to output signals of said speed change point sensor means and said torque sensor means;

d.c. motor means driven by a vehicle mounted battery through said control unit means; and

electromagnetic clutch means connected directly to an output shaft of said d.c. motor means, and on-off controlled by said control unit means.

4,939,437

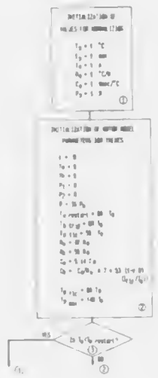
MOTOR CONTROLLER

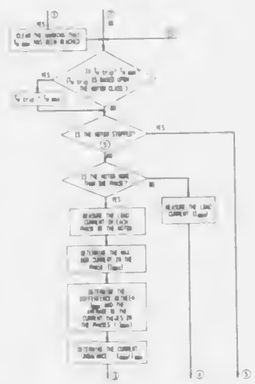
Samir F. Farag; Robert G. Bartheld, both of Roswell, Ga.; Tom N. Thiele, Bell Mead, and Mario La Valva, Kingston, both of N.J., assignors to Siemens Energy & Automation, Inc., Atlanta, Ga.

Filed Jun. 22, 1988, Ser. No. 210,068

Int. Cl.[5] H02P *3/18, 1/04*

U.S. Cl. 318—473 **12 Claims**





1. An apparatus for controlling a motor comprising: means for monitoring the load current in at least one phase of the motor and providing a signal (I) representative of the load current;

means for converting I to values for a Tw and a Th, wherein Tw is a value representative of the temperature of the motor windings and Th is a value representative of the temperature of the motor housing, the means for converting, providing an integral of time (Δt) over which Tw and Th are recalculated and converting I in accordance with the following relationships:

$P=I/Ifl$c;

$Tw=Two+((P/Po)-(P1/Po))*\Delta t*To*(Co/Cw)$;

$P1=((Tw/To)-(Th/To))*(Ro/Rw)*Po$;

$Th=Tho+((P1/Po)-(P2/Po))*\Delta t*To*(Co/Ch)$; and

$P2=((Th/To)*(Ro/Rh))*Po$; wherein Ifl$c$ is the rated full load current of the motor, Two is the previously calculated temperature of the motor windings, Cw is the thermal capacitance of the motor windings, Ch is the thermal capacitance of the motor housing, Tho is the previously calculated temperature of the motor housing, Rw is the thermal resistance of the motor windings, Rh is the thermal resistance of the motor housing, and Po, Co, To and Ro are constants for normalization; and

means for comparing Tw and Th to respective predetermined threshold values and generating a trip signal when Tw or Th exceed the respective threshold value.

4,939,438

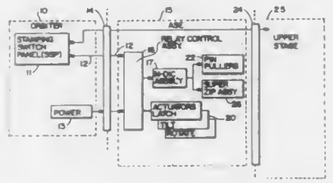
RELAY CONTROL ASSEMBLY

Richard J. Bartzlaff, Denver, and Christopher D. Tillman, Lakewood, both of Colo., assignors to Orbital Sciences Corporation II, Fairfax, Va.

Continuation of Ser. No. 840,118, Mar. 14, 1986, abandoned. This application Jun. 2, 1987, Ser. No. 57,920

Int. Cl.[5] H02P *3/08*

U.S. Cl. 318—564 **15 Claims**



1. A relay control apparatus for providing redundant control of a plurality of pairs of mechanical actuators, one actuator in each pair being a primary actuator and the other actuator in each pair being a secondary actuator, both the primary and secondary actuator in each pair being adapted to perform the same operation, each actuator being driven in a deploy mode from a stow position to a deploy position and in a stow mode from the deploy position back to the stow position by a first motor, comprising:

a plurality of actuator switch means for selecting the operation of each of said actuators, each said actuator switch means corresponding to a pair of said actuators, each said actuator switch means generating an actuator select signal that is in a first state when said switch means is actuated and in a second state otherwise;

deploy/stow switch means for selecting between the deploy and stow operating modes of said actuators, said deploy/stow switch means generating a deploy signal that is in a first state and a stow signal that is in a second state when the deploy operating mode is selected and a deploy signal that is in the second state and a stow signal that is in the first state when the stow operating mode is selected;

actuator select means responsive to the actuator select signals and the deploy and stow signals for producing a plurality of actuator select output signals, there being an actuator select output signal corresponding to the deploy operating mode for each actuator and to the stow operating mode for each actuator, each actuator select output signal being in a first state when the corresponding actuator and operating mode are selected and in a second state when the corresponding actuator and operating mode are not selected;

primary/secondary switch means for selecting between the primary and secondary actuator of each pair of said actuators, said primary/secondary switch means generating a primary signal and a secondary signal, the primary signal being in a first state and the secondary signal being in a second state when the primary actuator of each pair is selected, and the primary signal being in the second state and the secondary signal being in the first state when the secondary actuator of each pair is selected;

primary/secondary select means responsive to the primary and secondary signals and to the actuator select output signals for producing a plurality of motor relay signals, there being a motor relay signal for the deploy mode and the stow mode for each of the primary and secondary actuators, each motor relay signal being in a first state when the actuator and mode to which it corresponds are selected as indicated by the state of the corresponding primary or secondary signal and the state of the actuator select output signal, each motor relay signal being in a second state otherwise; and

motor power relay means responsive to the motor relay signals for providing operating power to the first motor that drives the actuator for which the corresponding actuator select output signal and primary signal or secondary signal are in the first state, such operating power driving such motor in the operating mode corresponding to the actuator select output signal that is in the first state.

4,939,439

ROBOT VISION AND OPTICAL LOCATION SYSTEMS

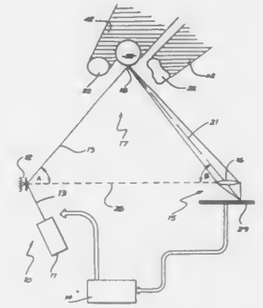
Robert L. Dalglish, Abbotsford, Australia, assignor to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 905,164, Sep. 9, 1986, abandoned. This application Sep. 1, 1988, Ser. No. 239,080

Claims priority, application Australia, Sep. 26, 1985, PH02632

Int. Cl.[5] G06F *7/48*

U.S. Cl. 318—568.1 **23 Claims**



1. An object location system for generating a three-dimensional map of the visible surfaces of objects disposed within a predefined field of view comprising:

projection means situated at a first known location for projecting a beam of radiation into the field of view and periodically scanning said beam over the entire field of view;

encoding means for continuously encoding said beam of radiation with information indicative of its instantaneous direction of projection;

detection means situated at a second known location spaced apart from said first known location for monitoring the field of view to detect radiation from said beam scattered or reflected from surfaces of the objects in said field and producing detection signals indicative of the directions from which said scattered or reflected radiation is received by said detection means;

decoding means connected to said detection means and responsive to the encoding carried on the projected beam direction;

map storage means comprising an array of memory elements

representing a map of the field of view having one more dimension than that of said detection means; and

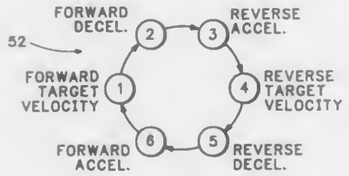
map generating means responsive to successive detected signals and decoded signals to store information in respective memory array elements to model the location in said field of view of detected points on the surfaces of the objects located therein.

4,939,440

FRICTION-COMPENSATING MASS MOTION CONTROLLER

Edward F. Burke, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 4, 1989, Ser. No. 445,579
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—646 **11 Claims**



1. A system for controlling the reciprocating movement of a mass along a predetermined surface by a motor coupled to the mass and responsive to a control signal, the system comprising:

means for generating a movement signal representative of the movement of the mass along the surface, the movement signal including a deceleration portion and an acceleration portion representative of a direction reversal of the mass on the surface; and

motor control means responsive to the movement signal and connectable to the motor for generating a motor control signal representative of the movement signal, the motor control signal including a deceleration portion and an acceleration portion corresponding to the deceleration portion and the acceleration portion, respectively, of the movement signal, with the deceleration portion producing less torque output of the motor than the acceleration portion.

4,939,441

EXCITATION SYSTEM FOR A BRUSHLESS GENERATOR HAVING SEPARATE AC AND DC EXCITER FIELD WINDINGS

P. John Dhyanchand, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

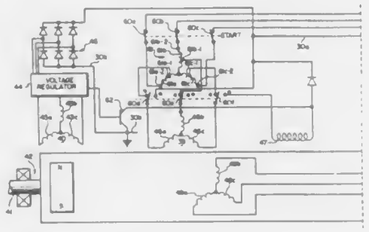
Filed Oct. 27, 1989, Ser. No. 427,821
Int. Cl.[5] F02N *11/04*; H02P *9/36*
U.S. Cl. 318—718 **10 Claims**

1. An excitation system for a brushless generator having a main generator portion including a field winding disposed on a rotor and which receives field current and an armature winding disposed in a stator wherein the rotor is movable with respect to the stator and the generator is operable in a generating mode to convert motive power into electrical power which is developed in the armature winding and in a starting mode to convert electrical power provided to the armature winding into motive power, comprising:

an exciter portion having a set of polyphase field windings and an additional field winding, all of the exciter portion field windings being disposed in the stator, the exciter portion further having an armature winding disposed on the rotor and coupled to the main generator portion field winding;

a source of polyphase, constant frequency AC power;

means coupled to the set of polyphase field windings for connecting the source of polyphase, constant frequency AC power thereto at a beginning of operation in the starting mode wherein AC power is induced in the exciter portion armature winding by transformer action and wherein the rotor is accelerated during such time wherein such connecting means connects at least one of the windings of the set of polyphase field windings in series with the additional exciter field winding when the speed of the rotor reaches a predetermined speed; and



means for delivering a DC current of controlled magnitude to the series-connected exciter field windings after the rotor reaches the predetermined speed.

4,939,442

BANDGAP VOLTAGE REFERENCE AND METHOD WITH FURTHER TEMPERATURE CORRECTION

Fernando D. Carvajal, McKinney, and Thomas A. Schmidt, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 30, 1989, Ser. No. 330,660
Int. Cl.[5] G05F *1/567, 3/30*
U.S. Cl. 323—281 **13 Claims**

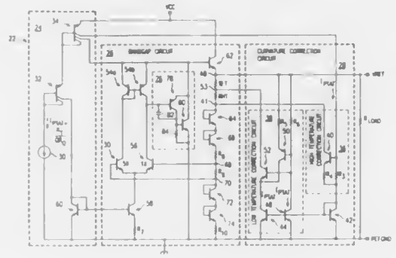
1. A circuit for generating a stable reference voltage over a wide temperature range, comprising:

a voltage generator for providing a relatively stable output voltage within a known temperature range, said generator including (i) first and second mismatched bipolar transistors, the emitters of said first and second bipolar transistors tied together, (ii) a first resistor connected between the bases of said first and second bipolar transistors, and (iii) a second resistor in series with said first resistor and passing said first current, said generator providing said relatively stable output voltage from current determined by said first resistor; and

circuitry for adjusting said output voltage responsive to a predetermined temperature to maintain a stable output voltage, said circuitry providing current at through said second resistor and parallel said first resistor for temperatures outside of said known temperature range.

9. The method of generating a stable output voltage reference comprising the steps of:

generating a relatively stable output voltage over a known temperature range by the use of emitter tied mismatched bipolar transistors with bases connected by a first resistor and with said relatively stable output voltage determined by a first current through said first resistor;



detecting a predetermined temperature; and

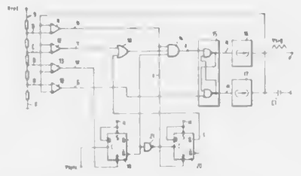
adjusting said output voltage in response to said temperature detection in order to provide a stable voltage reference by drawing a second current through a second resistor, said second resistor in series with said first resistor and said second resistor passing said first current.

4,939,443

METHOD AND APPARATUS FOR THE GENERATION OF VOLTAGE PULSES

Werner Pollmeier, Verl, and Manfred Götz, Brakel, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Jan. 10, 1989, Ser. No. 295,633
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1988, 3800511
Int. Cl.[5] G05F *1/565*
U.S. Cl. 323—284 **29 Claims**



1. A method for generating voltage pulses used to control the operation of a switching power supply of the type responsive to synchronizing signals for synchronizing the voltage pulses with a synchronization reference, comprising the steps of:

(A) generating a voltage pulse having an amplitude which normally increases from a first voltage value to a third voltage value in the absence of one of said synchronization signals;

(B) resetting the amplitude of the voltage pulse generated in step (A) to said first voltage value if said synchronization signal occurs during the increase of amplitude of the voltage pulse generated in step (A) from said first voltage value to said third voltage value;

(C) then, generating a voltage pulse having an amplitude which normally increases from said first voltage value to a second voltage value higher than said third voltage value; and

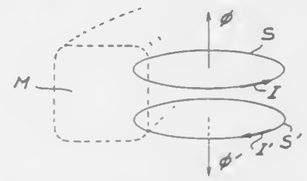
(D) resetting the amplitude of the voltage pulse generated in step (C) to said first voltage value if said synchronizing signal occurs during the increase of the amplitude of the voltage pulse generated in step (C) from the fourth voltage value to said second voltage value, wherein said fourth voltage value lies between said first and third voltage values.

4,939,444

DUAL COIL SUPER CONDUCTING APPARATUS FOR STORING ELECTRICAL ENERGY

Jean Cacheux, Castanet Tolosan, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed Dec. 5, 1988, Ser. No. 279,720
Claims priority, application France, Dec. 21, 1987, 87 17846
Int. Cl.[5] H01F *36/00*
U.S. Cl. 323—360 **11 Claims**



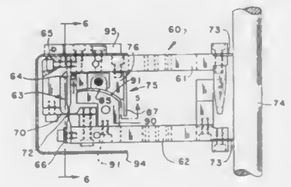
1. Electrical energy storage apparatus comprising at least one superconductor material coil (S), a means (42,44,46) for injecting a current into said coil and for extracting the current therefrom, characterized in that it also comprises a second superconductor material coil (S') coupled by mutual induction to the first coil (S) and in that it comprises a high permeability magnetic material (M) in the vicinity of the two coils.

4,939,445

PIVOTED ARM CAPACITIVE EXTENSOMETER

Harry R. Meline, Minnetonka, and Eric L. Paulsen, Wayzata, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 103,538, Oct. 1, 1987, Pat. No. 4,841,226, which is a continuation-in-part of Ser. No. 893,799, Aug. 6, 1986, Pat. No. 4,831,738. This application May 8, 1989, Ser. No. 348,866
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] G01D *7/02*
U.S. Cl. 324—663 **7 Claims**



1. A capacitive extensometer assembly comprising;

a first mounting arm and a second mounting arm, each having first and second ends;

means at said first ends of the mounting arms for engaging a specimen to be tested;

means for pivotally connecting said first and second mounting arms together about a pivot axis at second ends thereof

to hold the arms spaced apart to form an extensometer assembly for permitting relative movement along a reference axis at second ends of the mounting arms; and

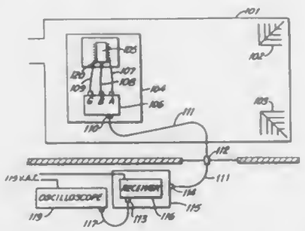
a capacitive reactance sensor mounted on the extensometer assembly to sense movement between the first and second mounting arms, said sensor including a first capacitive reactance sensor portion mounted on the first mounting arm, and a second capacitive reactance sensor portion mounted on the second mounting arm in alignment with said first capacitive reactance sensor portion, the first and second sensor portions being mounted to be spaced from the pivot axis, the sensor portions changing in relative position and means for providing an output indicating such change in positions of the sensor portions.

4,939,446

VOLTAGE TRANSMISSION LINK FOR TESTING EMI SUSCEPTIBILITY OF A DEVICE OR CIRCUITS

Wesley A. Rogers, 707 Balfour, Grosse Pointe Park, Mich. 48236

Filed Mar. 30, 1988, Ser. No. 175,168
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—72 **18 Claims**



1. An electromagnetically transparent voltage transmission link for determining the susceptibility of a device under test to EMI over certain frequencies of interest, by monitoring voltages of said device, comprising:

conduction means, having first and second ends, said conduction means being electrically overdamped along its length for said frequencies of interest, the first end of said conduction means adapted to be connected to said device under test and exposed to said EMI, and

a transmission device having very high impedance input port to which the second end of said conduction means is connected, for receiving at least one first signal from said device under test by way of said conduction means and for transmitting at least one second signal, related to said first signal, to a location remote from said device under test.

4,939,447

FIBER-OPTIC VOLTAGE SENSOR

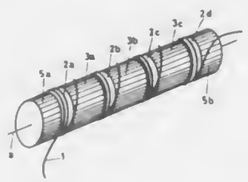
Klaus Bohnert, Niederrohrdorf, and Rolf Kirchhofer, Mellingen, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Nov. 10, 1988, Ser. No. 269,649
Claims priority, application Switzerland, Nov. 13, 1987, 4432/87
Int. Cl.[5] G01R *19/00*
U.S. Cl. 324—96 **9 Claims**

1. Fiber optic voltage sensor comprising:

plural fiber-optic, piezoelectric sensor elements which measure exclusively one predeterminable directional component of a local electric field strength;

the piezoelectric sensor elements arranged on a common axis and are all connected serially to one fiber, each piezoelectric sensor element respectively measuring a directional component of the local field strength, which field component lies parallel to a path element assigned to the sensor element, all path elements together forming a path of integration which is represented by the common axis; and



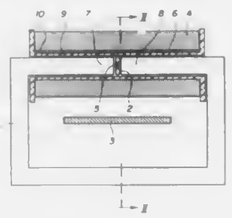
each sensor element having a gain which is proportional to a length of the path element assigned to it.

4,939,448

ELECTRIC CURRENT SENSING DEVICE OF THE MAGNETIC FIELD COMPENSATION TYPE

Claude Gudel, Annemasse, France, assignor to Liaisons Electroniques-Mecaniques LEM SA, Switzerland

Filed Oct. 14, 1988, Ser. No. 260,727
Claims priority, application Switzerland, Oct. 16, 1987, 4072/87
Int. Cl.[5] G01R *1/04, 33/00*
U.S. Cl. 324—117 R **8 Claims**



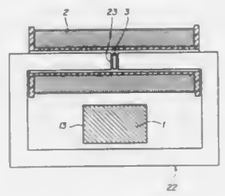
1. An electric current sensing device to be used for measuring a relatively high current flowing in a primary conductor and/or for producing an image thereof, comprising at least one magnetic circuit capable of being magnetically coupled with said primary conductor and having at least one air gap, at least one measuring coil coupled with said magnetic circuit, magnetic field detector means arranged inside said air gap, a control circuit and an associated current source having input terminals coupled with said magnetic field detector means, and having output terminals connected to a series connection of said measuring coil and current measuring and/or displaying means, said sensing device further comprising at least one yoke part of high magnetic permeability arranged inside said measuring coil in the vicinity of said air gap, so as to constitute a magnetic shunt between the two magnetic circuit portions forming said air gap.

4,939,449

ELECTRIC CURRENT SENSING DEVICE OF THE MAGNETIC FIELD COMPENSATION TYPE

Pierre Cattaneo, Collonges-sous-Salève, France, and René Chaut, Plan-Les-Ouates, Switzerland, assignors to Liaisons Electroniques-Mecaniques Lem SA, Plan-Les-Ouates, Switzerland

Continuation of Ser. No. 131,226, Dec. 10, 1987, abandoned.
This application Jun. 29, 1989, Ser. No. 373,667
Claims priority, application Switzerland, Dec. 12, 1986, 4957/86
Int. Cl.[5] G01R *33/00*; H01F *40/06*
U.S. Cl. 324—117 R **2 Claims**



1. An electric current sensing device for measuring an electric current flowing in a primary conductor and/or for producing an image thereof, comprising:

magnetic circuit means capable of being magnetically coupled with said primary conductor, said magnetic circuit means comprising at least one air gap and at least one measuring coil magnetically coupled with said magnetic circuit means, said measuring coil comprising first and second ends, said first and second ends comprising first and second nodes;

magnetic field detector means disposed in said air gap;

electric current control means including a current source and a current control circuit,

said current control circuit having first and second current supply terminals,

said current control circuit further having a control input and a measuring current supply output, said control input being connected to said magnetic field detector means and said measuring current supply output being connected to said first node of said measuring coil; and

electric current output means, comprising at least one of measuring means and display means, connected to said second node of said measuring coil;

a printed circuit board;

said electric current control circuit comprising a printed circuit formed on said printed circuit board;

said measuring coil, said magnetic field detector means, said current output means, and said current source being connected to said printed circuit;

said printed circuit having first conductive portions directly connected to said first node, and second conductive portions directly connected to said control input;

said first and second portions being arranged at a substantial distance from each other;

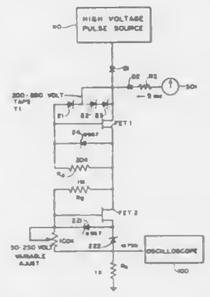
said printed circuit board having an aperture for receiving said primary conductor, said aperture being surrounded on at least one face of said printed circuit board, along the major part of the perimeter of said aperture, by conductive portions at a constant potential.

4,939,450

PRECISION HIGH VOLTAGE FET PULSE SENSE AND CLAMP APPARATUS STATEMENT OF GOVERNMENT INTEREST

Walter E. Millberger, Severna Park; Franklin B. Jones, Catonsville, and Charles S. Kerfoot, Pasadena, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 17, 1989, Ser. No. 324,841
Int. Cl.[5] G01R *19/22, 1/36*
U.S. Cl. 324—119 **6 Claims**



1. A precision high voltage field effect transistor pulse sense and clamp apparatus for measuring and viewing a high voltage square wave pulse produced by a high voltage pulse sense, said precision high voltage field effect transistor pulse sense and clamp apparatus comprising:

a rectifying diode which receives and rectifies said high voltage square wave pulse from said high voltage pulse source to produce a rectified square wave pulse;

a tapped shunt regulator circuit which is electrically connected with said rectifying diode and which receives said rectified square wave pulse therefrom, said tapped shunt regulator circuit outputting a detection signal by regulating the square wave pulse's voltage amplitude;

an oscilloscope which measures and displays pulses which have voltage levels within its threshold of detection said thresbold of detection including a minimum voltage threshold level which said pulses received by said oscilloscope must reach in order for said oscilloscope to measure and display them; and

a variable shunt regulator threshold circuit which is electrically connected with said tapped shunt regulator circuit and which receives said detection signal therefrom, said variable shunt regulator threshold circuit outputting to said oscilloscope a regulated detection signal which represents said high voltage wave pulse and which has a voltage amplitude within said threshold of detection of said oscilloscope to permit the measuring and viewing of said high voltage square wave by said oscilloscope.

4,939,451

WIDE DYNAMIC RANGE A.C. CURRENT SENSOR

Paul Baran, Menlo Park, and Timothy J. Knutson, San Jose, both of Calif., assignors to Metricom, Inc., Campbell, Calif.

Division of Ser. No. 88,931, Aug. 24, 1987, Pat. No. 4,835,463.
This application Jan. 6, 1989, Ser. No. 294,036
Int. Cl.[5] G01R *1/20, 19/00*; H01C *7/00*
U.S. Cl. 324—127 **9 Claims**

1. An apparatus for providing an isothermal current shunt, said isothermal current shunt comprising:

a current transformer having a primary and a secondary;

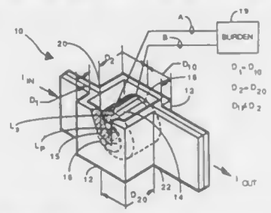
separate first and second solid conductive bars of equal length, said first and second bars being electrically and

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thermally coupled at a first or current input node and at a second or current output node; and

a separate third round solid conductive bar electrically and thermally coupled to said first bar at a first hole at a third node and to said second bar at a second hole at a fourth node to form the primary of said current transformer, said third bar being constructed of the same material as said first and second bars,

the length between said input current node and said third



node being different than the length between said input current node and said fourth node, and

the length between said output current node and said third node being equal to the length between said input current node and said fourth node, and

wherein said current transformer comprises a core formed of a toroid mounted around said third bar and between said first bar and said second bar;

thereby to form an unbalanced bridge with a current transformer at the shunt.

4,939,452

ARRANGEMENT FOR TESTING PRINTED-CIRCUIT BOARDS

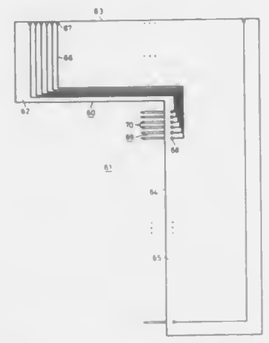
Robby Reinholz, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 28, 1989, Ser. No. 317,287

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1988, 3806792

Int. Cl.[5] G01R *1/06, 31/02*

U.S. Cl. 324—158 F **9 Claims**



1. An arrangement for testing printed-circuit boards having an electric connection panel linked to an evaluator arrangement and having an adaptor device adapted to be connected to the printed-circuit board to be tested and to the electric connection panel, wherein the adaptor device comprises a plurality of adjacently disposed adaptor printed circuit-boards lying at a right angle to a surface of the printed-circuit board to be tested, said adaptor printed circuit-boards each having fixed contacts on a narrow input-side directed toward the printed circuit-board to be tested, said contacts being connected by circuit-board conductors to contact elements on the adaptor printed-circuit boards directed toward the connection panel, the contact elements directed toward the connection panel being disposed in an area of at least one narrow output-side of each adaptor printed-circuit board, the narrow output-side of each adaptor printed circuit board extending at substantially a right angle to the narrow input-side, the contact elements being arranged in a row in the direction of said narrow output-side, contact pieces of the electric connection panel being located in bore holes which lead from said at least one narrow output-side of each adaptor printed-circuit board to the contact elements.

4,939,453

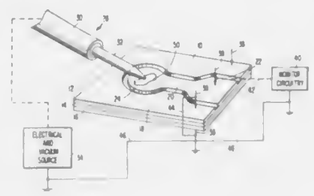
PROBE FOR USE WITH CIRCUITRY FOR MONITORING SIGNALS EMANATING FROM HEATED TIP OF SOLDERING IRON OR SOLDER EXTRACTOR OR THE LIKE

William J. Kautter, Columbia; Mark D. Wecht, Reisterstown, and Louis A. Abbagnaro, Silver Spring, all of Md., assignors to Pace Incorporated, Laurel, Md.

Filed Feb. 22, 1988, Ser. No. 158,781

Int. Cl.[5] G01R *1/06*

U.S. Cl. 324—158 P **12 Claims**



1. A circuit for monitoring electrical signals emanating from a heated electrical appliance, said circuit comprising:

a planar probe having three layers, the first layer including at least a first electrically conductive portion adapted to support a pool of molten solder, the second layer being an electrically insulating layer disposed between the first layer and a third layer, the third layer being electrically conductive and grounded; and

circuit means connected to said first portion of said first layer of the probe to monitor said electrical signals emanating from said heated appliance through the molten solder pool and said first portion of the first layer of the probe to said circuit means.

4,939,454

CONNECTOR SYSTEM FOR PRINTED CIRCUIT BOARD TEST FACILITY

William R. Miner, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 224,091, Jul. 26, 1988, abandoned. This application Aug. 7, 1989, Ser. No. 393,067

Int. Cl.[5] G01R *31/02, 1/06*

U.S. Cl. 324—158 F **32 Claims**

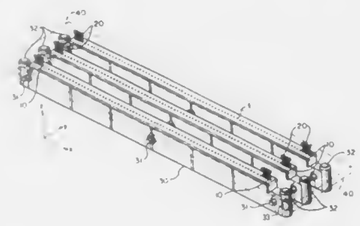
1. Apparatus for a printed circuit board test facility to implement a matrix of scanner pins that interface said printed circuit board test facility to a printed circuit board under test, comprising:

receiving plate having a plurality of identical apertures cut in the face thereof and having cylindrical alignment holes at opposite ends of each of said apertures;

a like plurality of connector blocks connectable to said receiving plate at a corresponding one of said apertures, each of said connector blocks comprising:

a number of scanner pins inserted into a first surface of said connector block, where said first surface is juxtaposed with said aperture such that said scanner pins protrude through said aperture in said receiving plate,

a like number of lead wires, each electrically connected to a corresponding one of said scanner pins at a first end



and at a second end to a contact point on a printed circuit card associated with said connector block,

cylindrical, chamfered alignment bosses positionally oriented to match said cylindrical alignment holes in said receiving plate for precisely orienting and securing said connector block to said receiving plate.

4,939,455

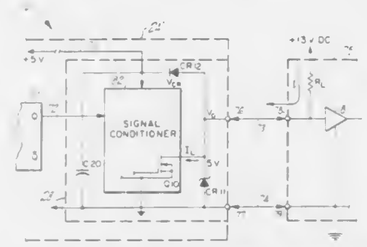
SENSOR HAVING TWO-WIRE CONNECTION TO LOAD

Terumi Tsugawa, Fountain Valley, Calif., assignor to Hamilton Standard Controls, Inc., Farmington, Conn.

Filed Sep. 2, 1988, Ser. No. 240,785

Int. Cl.[5] G01P *3/488*

U.S. Cl. 324—168 **3 Claims**



1. In the combination of a speed sensing circuit for connection with a load circuit, the sensing circuit having one or more active elements requiring a regulated operating potential and a reference potential and output circuit means for providing an output signal to the load circuit, the output signal being representative of the phenomenon being sensed, and wherein said load circuit is adapted to receive said output signal and is the relative source of a source potential and the reference potential, the improvement comprising:

said load circuit including first and second terminals, impedance means and signal processing means, said impedance means and said signal processing means each being operatively connected to said load circuit first terminal, said impedance means being adapted to be connected to a supply voltage for providing the source potential, unregulated, at said load circuit first terminal and said signal processing means being adapted to receive said output signal from said sensing circuit;

said sensing circuit including first and second terminals for conductive connection with said first and said second terminals respectively of said load circuit to provide said source potential and said reference potential respectively thereat;

said output circuit means being operatively connected to said sensing circuit first terminal for providing said output signal at said first terminal for connection to said load circuit;

said sensing circuit including regulated voltage supply means operatively connected to said first and said second terminals for receiving said source potential and said reference potential and for providing said regulated operating potential; and

said output circuit means including a power buffer, said buffer comprising a bipolar transistor operatively connected to said reference potential and to said source potential at said first terminal and having a base electrode for receiving a control signal from said sensing circuitry for said transistor to provide said output signal at said first terminal, and further including current shunting means operatively connected with said transistor for preventing lock-up conduction by said transistor during powering-up of the sensing circuitry with the unregulated source potential and until said regulated operating potential is substantially at steady state.

4,939,456

POSITION SENSOR INCLUDING A THIN FILM INDIUM ARSENIDE MAGNETORESISTOR ON A PERMANENT MAGNET

Donald T. Morelli, Walled Lake; Joseph P. Heremans, Troy; Dale L. Partin, Sterling Heights; Christopher M. Thrush, Utica, and Louis Green, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 289,641, Dec. 23, 1988, abandoned. This application Oct. 25, 1989, Ser. No. 426,249

Int. Cl.[5] G01B *7/14;* **G01R** *33/02;* **H03K** *17/90;* **H01L** *27/22*

U.S. Cl. 324—207.21 **22 Claims**



1. A position sensor providing unamplified electrical output changes of the order of one volt in response to changes in applied magnetic field over a temperature range of several hundred degrees Centigrade;

said position sensor including a magnetic circuit that comprises;

an exciter portion including a series of teeth spaced apart by gaps for defining a tooth pitch, and a sensing portion for relative movement therebetween;

said sensing portion including a permanent magnet having a width at least several times wider than the width of an exciter tooth and supporting a magnetoresistive sensing element;

said magnetoresistive sensing element including a thin film of monocrystalline indium arsenide having inner and outer surfaces, with the inner surface being supported on a substantially electrically insulating monocrystalline indium phosphide substrate;

said indium arsenide film including a substantially rectangular sensing area having an electrical conductor extending along the length of each long edge of the rectangular sensing area, and also having a dimension along its short edges that is about 10%–60% that of its long edges;

said exciter tooth having a width that is greater than dimensions of said sensing area; and

said thin film of indium arsenide being approximately 1 to 3 micrometers thick and nominally undoped, and having an

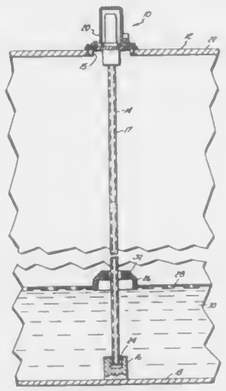
average electron density of the order of 10^{16} electrons per cubic centimeter or lower and an average electron mobility of about 10,000 to 32,000 $cm^2volt^{-1}second^{-1}$ but which exhibits a magnetic sensitivity and temperature insensitivity as if the indium arsenide film were at least an order of magnitude thinner, had an electron density at least an order of magnitude greater, and a significantly higher mobility.

4,939,457

FLEXIBLE TUBE SONIC WAVEGUIDE FOR DETERMINING LIQUID LEVEL

Jacob Tellerman, Bayside, N.Y., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed May 3, 1989, Ser. No. 346,654
Int. Cl.[5] G01B *7/26*; G01F *23/30*; H04B *11/00*; H03H *9/22*
U.S. Cl. 324—207.13 **17 Claims**



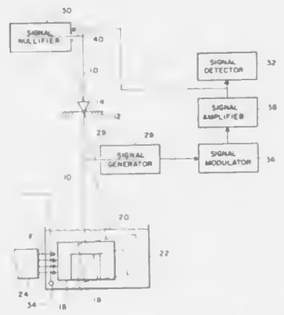
1. A sonic delay line comprising: a headend;
an electrically conductive, magnetostrictive rod, the rod being attached at a proximate end to the headend and anchored at a distal end to place the rod under tension, thereby providing a sonic waveguide;
means for applying electrical pulses to proximate end of the sonic waveguide;
a flexible tube housing the sonic waveguide;
a return wire connected to a distal end of the sonic waveguide and to the headend to return electrical pulses applied to the sonic waveguide to the headend, the return wire being coiled in a cylindrical helix against the inside of the flexible tube to support shape of the tube;
a carrier positionable along the outside of the flexible tube carrying a source of a static magnetic field, the static magnetic field interacting with magnetic fields associated with electrical pulse on the sonic waveguide to generate sonic pulses on the sonic waveguide; and
transducer means connected to the sonic waveguide at a known point near the distal end of the sonic waveguide for converting sonic pulses on the waveguide to electrical signals.

4,939,458

METHOD AND APPARATUS FOR QUANTIFYING SUPERCONDUCTIVITY

Baki Yarar, Golden, and Herbert R. Bird, Arvada, both of Colo., assignors to Colorado School of Mines, Golden, Colo.

Filed Feb. 8, 1988, Ser. No. 153,208
Int. Cl.[5] G01N *27/72*; G01R *33/12*
U.S. Cl. 324—228 **9 Claims**



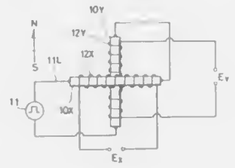
7. The method for detecting and quantifying superconductivity which comprises the steps of: hanging a sample of superconductive material from a rigid-stemmed pendulum in a state of equilibrium, cooling the sample to a temperature at least as low as that at which it becomes superconductive, maintaining said sample in a state of superconductivity while placing it in a magnetic field effective to repel same and move it from its equilibrium position, impressing a force upon said pendulum effective to return it together with the sample suspended therefrom to their equilibrium position, and measuring magnitude of the force thus impressed.

4,939,459

HIGH SENSITIVITY MAGNETIC SENSOR

Yoshiaki Akachi, Yachiyo, and Mutumi Kinosita, Narita, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 21, 1988, Ser. No. 287,153
Claims priority, application Japan, Dec. 21, 1987, 63-323201; Aug. 29, 1988, 63-214464; Aug. 29, 1988, 63-214465
Int. Cl.[5] G01R *33/02*
U.S. Cl. 324—247 **26 Claims**



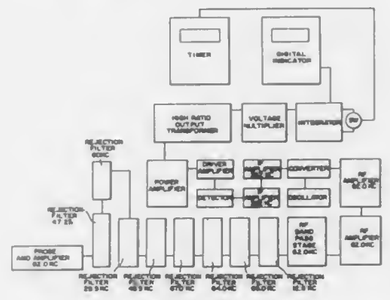
25. A magnetic sensor for use in the detection of an external magnetic field, comprising
an elongated, electrically conductive, magnetic body,
means for applying pulse or alternating current i_d across the magnetic body in its longitudinal direction to create a non-saturating internal magnetic field in the magnetic body such that a pulse output v_o is obtained during the rise or fall time of said current i_d, and
detecting means associated with the magnetic body for detecting the interaction of the internal and external magnetic fields as an electric signal.

4,939,460

INDIGENOUS ELECTROMAGNETIC RADIATION BASED METHOD FOR DETECTING GEOLOGIC DEPOSITS

Louis J. Patla, Huntington, Ind., and Donald L. Patla, executor, 101 W. 81st St., New York, N.Y. 10024

Filed Dec. 14, 1987, Ser. No. 132,591
Int. Cl.[5] G01V *3/08*
U.S. Cl. 324—303 **20 Claims**



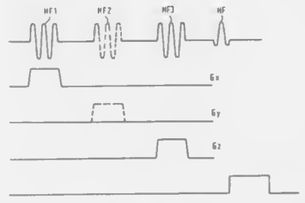
1. A method for detecting geological deposits comprising the steps of finding at one or more measurement sites at a first location on the earth's surface a detectable intensity of the earth's geomagnetic field, detecting and measuring during selected time intervals at each of said sites the induced amplitude of the indigenous terrestrial alternating electromagnetic radiation at a measurement by an inducer frequency, said frequency being in the vicinity of said geomagnetic field intensity multiplied by the Larmor constant of the selected substance and divided by 2π, and comparing said measurements to induced measurements of the earth's geomagnetic field at locations known to have and known not to have the geologic deposit sought thereby to locate the sought geologic deposits.

4,939,461

METHOD OF DETERMINING THE NUCLEAR MAGNETIZATION DISTRIBUTION, AND DEVICE FOR PERFORMING THE METHOD

Dietmar W. Kunz, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1989, Ser. No. 321,492
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808281
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **14 Claims**



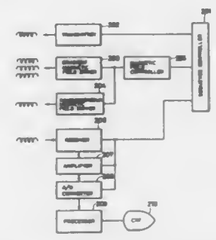
1. A method of determining the nuclear magnetisation distribution, where a plurality of sequences act on an examination zone in the presence of a uniform, steady magnetic field, each sequence comprising an r.f. pulse whereby, in conjunction with a magnetic gradient field for varying Larmor frequency in a direction of layer selection, the nuclear magnetisation in two zones situated on opposite sides of a selected layer to be examined is excited, said r.f. pulse being formed by amplitude modulating a carrier whose frequency corresponds to a Larmor frequency in a center of the selected layer to be examined with a signal having a frequency which varies in a range which corresponds to differences between a Larmor frequency in the center of said layer and Larmor frequencies in one of the zones.

4,939,462

METHOD AND APPARATUS FOR MRI

Akira Maeda, Machida; Koichi Sano, Sagamihara; Tetuo Yokoyama, Tokyo, and Hideaki Koizumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 156,745, Feb. 18, 1988, abandoned. This application Jul. 3, 1989, Ser. No. 376,216
Claims priority, application Japan, Mar. 6, 1987, 62-50032
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **4 Claims**



1. A magnetic resonance imaging apparatus comprising means to generate a static magnetic field, a gradient magnetic field and a high-frequency magnetic field; inhomogeneous field generation means to additionally generate a spatially inhomogeneous magnetic field in a region to-be-imaged; means to detect a nuclear magnetic resonance signal from an object to-be-examined; means to convert the detected signal into digital data; and means to subject the digital data to various calculations including reconstruction of an image; wherein said inhomogeneous field generation means includes means to generate a pulsed inhomogeneous magnetic field.

4,939,463

IMAGE RECONSTRUCTION METHOD IN NMR IMAGING

Kensuke Sekihara, Musashimurayama; Shigeru Matsui, Kodaira, and Hideki Kohno, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

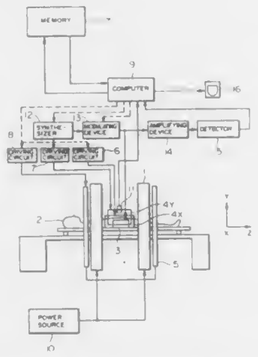
Filed Jul. 7, 1988, Ser. No. 218,694
Claims priority, application Japan, Jul. 8, 1987, 62-168644
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **7 Claims**

1. An image reconstruction method in a nuclear magnetic resonance (NMR) imaging device having means for generating a static magnetic field in an inspection mode; means for generating first, second and third gradient magnetic fields for application along each of three directions perpendicular to one another in said static magnetic field; means for generating a high frequency magnetic field; means for detecting NMR signals coming from an object to be tested; a computer for effecting operations on said NMR signals; and output means for outputting the results of said operations obtained by using said computer; the method comprising the steps of:
(a) observing NMR signals while applying both of said first and second gradient magnetic fields, said first gradient magnetic field being stationary with respect to time, and said second gradient magnetic field oscillating periodically between a positive and a negative range so that a

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data train aligned oo a zig-zag trajectory in a spatial frequency domain (k_x, k_y) is obtained, where k_y is a first spatial frequency axis corresponding to a direction of the field gradient given by said first gradient magnetic field, and k_x is a second spatial frequency axis corresponding to a direction of the field gradient given by said second gradient magnetic field, and that two data parts of said data train nearest to each other on a line parallel to said first axis k_y and at a value of k_x are spaced from each other by η (k_x);

(b) dividing said observed NMR signal into a first data group of signals obtained during periods in which said second gradient magnetic field is positive and a second data group of signals obtained during periods in which said second gradient magnetic field is negative;



(c) Fourier-transforming each of said first group and said second group of signals with respect to the first spatial frequency axis k_y to obtain each of data $g_P(k_x, y)$ for said first data group of signals and data $g_N(k_x, y)$ for said second data group of signals;

(d) multiplying a first complex number calculated from $\eta(k_x)$ to each term of the data $g_P(k_x, y)$ for each value of k_x;

(e) multiplying a second complex number calculated from $\eta(k_x)$ to each term the data $g_N(k_x, y)$ for each value of k_x;

(f) adding each term of the result of the multiplication of said step (d) to each term of the result of the multiplication of said step (e) to obtain two-dimensional data $g(k_x, y)$; and

(g) Fourier-transforming the result of said addition with respect to the second spatial frequency axis k_x to obtain NMR image data M(x, y).

4,939,464

NMR-PET SCANNER APPARATUS

Bruce E. Hammer, Latham, N.Y., assignor to Intermagnetics General Corporation, Guilderland, N.Y.

Filed Jul. 11, 1989, Ser. No. 378,396

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 12 Claims

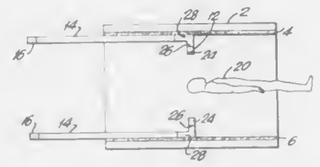
1. NMR-PET scanner apparatus comprising:

means for establishing a substantially uniform magnetic field in a first direction through a defined volume;

scintillation means disposed in said defined volume in a plane which is at least partially transverse to said first direction;

photodetector means disposed at a location removed from said defined volume to reduce interaction with said uniform magnetic field; and

means for establishing light communication between said scintillation means and said photodetector means to enable light pulses generated by said scintillation means to be



transduced into electrical signals by said photodetector means.

4,939,465

PROBE HEAD FOR NUCLEAR MAGNETIC RESONANCE (NMR) MEASUREMENTS, IN PARTICULAR FOR USE IN NMR TOMOGRAPHY

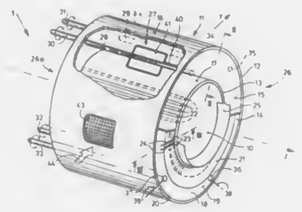
Reinhard Biehl, Karlsruhe, and Gunther R. Laukien, Rheinstetten, both of Fed. Rep. of Germany, assignors to Bruker Medizintechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Jun. 18, 1986, Ser. No. 875,809

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522401

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 15 Claims



1. A probe head for nuclear magnetic resonance (NMR) measurements, in particular for use in NMR tomography, comprising a hollow cylindrical housing having an outer cylindrical wall, an inner cylindrical wall, end faces located between said cylindrical walls and coupling means, said outer cylindrical wall comprising a substantially uniform and electrically conductive material, said inner cylindrical wall surrounding a sample area and being provided with a plurality of axially extending electric conductors having a predetermined, fixed position, said conductors being equidistantly arranged in a parallel relationship with respect to each other over the circumference of a tubular carrier body of dielectric material, said end faces comprising electrically conductive material and being electrically and rigidly connected to said outer cylindrical wall, said coupling means generating electric radio-frequency currents in said conductors, wherein each of said conductors is capacitively connected at each end to an adjacent end face, said end faces and said outer cylindrical wall forming a return conductor for said conductors.

4,939,466

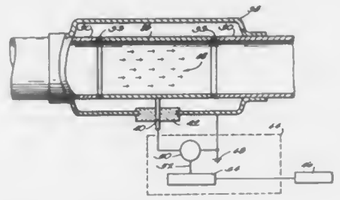
METHOD AND APPARATUS FOR SENSING THE REGENERATION OF A DIESEL ENGINE PARTICULATE TRAP

John H. Johnson, Houghton, Mich., and Peter V. Woon, Columbus, Ind., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Apr. 10, 1989, Ser. No. 336,201

Int. Cl.[5] G01N *27/62*

U.S. Cl. 324—464 19 Claims



7. A sensor for detecting the presence of charged particulates in the exhaust passage of an internal combustion engine, said sensor comprising

electrode means connected in said exhaust passage with the inner surface thereof exposed to and electrostatically responsive to charged particulates passing through said exhaust passage and past said electrode means, said electrode means being generally cylindrical and the inner surface thereof having an extension along the path of exhaust through said passage and

means connected to said electrode means and responsive to the current in said electrode means for indicating the passage of charged particulate through said electrode means.

4,939,467

FUEL SENSOR FOR SENSING THE MIXTURE RATIO OF GASOLINE AND METHANOL

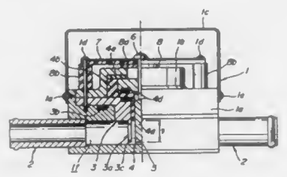
Yasuhiro Noglami, and Hisao Nunokawa, both of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Jul. 14, 1989, Ser. No. 379,883

Claims priority, application Japan, Jul. 21, 1988, 63-183765

Int. Cl.[5] G01R *27/26;* **G01N** *27/22*

U.S. Cl. 324—663 8 Claims



1. A fuel sensor for sensing a mixing ratio of a mixed fuel, said fuel sensor comprising:

a housing;

a structure disposed in said housing, said structure having a fuel passage formed therethrough;

an electrode assembly disposed in said housing and held by said structure, said electrode assembly including paired electrodes which have respective probe portions exposed to said fuel passage;

an integrated circuit board on which an output control circuit is disposed, said output control circuit issuing an amplified voltage output which varies in accordance with a small information signal applied to an input portion of said output control circuit; and

at least two fastening screws connecting said integrated circuit board to said structure to form a tight mechanical connection therebetween said fastening screws constructed of electrically conductive material;

wherein said fastening screws have respective upper portions directly in contact with mutually insulated sections of said input portion of said output control circuit, and respective lower portions directly in contact with said paired electrodes respectively.

4,939,468

CAPACITIVE FLUID SENSOR

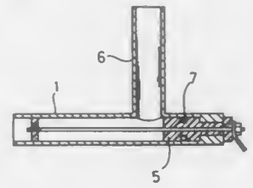
Kiyoshi Takeuchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 30, 1989, Ser. No. 302,881

Claims priority, application Japan, Jan. 30, 1988, 63-20900

Int. Cl.[5] G01N *27/22*

U.S. Cl. 324—690 12 Claims



1. A capacitive fluid sensor for sensing a dielectric constant of fluid, said capacitive fluid sensor comprising:

(a) a sensor housing within which fluid to be sensed flows from a first housing end toward a second housing end, said sensor housing forming an external electrode;

(b) a fluid outlet pipe connected to said sensor housing between said first and second housing ends;

(c) an internal electrode;

(d) a first insulating support member, disposed within said sensor housing between said fluid outlet pipe and said second housing end, supporting said internal electrode within said sensor housing and closing said second housing end; and

(e) a sealing member, disposed between said first insulating support member and said sensor housing near said second housing end, sealing fluid to be sensed in said sensor housing such that sealing force increases fluid pressure.

4,939,469

NON-DESTRUCTIVE METHOD FOR EVALUATION OF PRINTED WIRING BOARDS

Frank A. Ludwig, Rancho Palos Verdes, and John McHardy, Westlake Village, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 1, 1988, Ser. No. 226,709

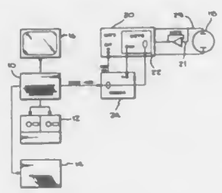
Int. Cl.[5] G01R *27/00, 27/20*

U.S. Cl. 324—694 19 Claims

1. A method for evaluating the moisture content, delamination or interlayer thickness of a printed wiring board wherein said printed wiring board includes at least one layer having a conductor pattern formed thereon, said method comprising the step of measuring the alternating current impedance spectra

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between said conductor pattern and another conductor over a plurality of frequencies within the range of about 0.1 millihertz



to 20 kilohertz to evaluate the moisture content, delamination or interlayer thickness of said printed wiring board.

4,939,470

CIRCUIT FOR GENERATING DUAL-TONE MULTI-FREQUENCY SIGNALS AND HIGH/LOW-TONE SIGNALS

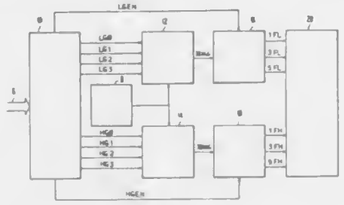
Seo-Won Kang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyounggi, Rep. of Korea

Filed Mar. 2, 1989, Ser. No. 317,757

Claims priority, application Rep. of Korea, May 27, 1988, 1988-6252

Int. Cl.[5] H04M *1/50, 1/74;* **H03K** *4/92;* **H03L** *7/16*

U.S. Cl. 328—14 **30 Claims**



1. A circuit for generating dual-tone multi-frequency and high/low-tone signals from digital data, comprising:

a signal controlling logic circuit for decoding the digital data, in response to a digital control signal, to generate a plurality of low-frequency selecting decoding signals for selecting the frequency of a low-frequency group, a plurlaity of high-frequency selecting decoding signals for selecting the frequency of a high-frequency group, a low-frequency group enabling signal and a high-frequency group enabling signal;

a circuit means for generating first clock pulses exhibiting a fixed frequency;

a low frequency dividing circuit for generating second clock pulses having a second frequency of a fixed multiple of a particular frequency selected from said low-frequency selecting decoding signals by counting and decoding said first clock pulses;

a high frequency dividing circuit for generating third clock pulses having a third frequency of a fixed multiple of a particular frequency selected from said high-frequency selecting decoding signals by counting and decoding said first clock pulses;

first clock means, enabled by said low-frequency group enabling signal, for generating a plurality of fourth pulses having a duty cycle of 50% through division of said second clock pulses, said fourth pulses having an odd frequency component of a higher-harmonic wave;

second clock means, enabled by said high-frequency group enabling signal, for generating a plurality of fifth pulses having a duty cycle of 50% through division of said third clock pulses, said fifth pulses having an odd frequency component of a higher-harmonic wave; and

a signal synthesizing circuit coupled to said first and second clock means, for synthesizing dual-tone multi-frequency signals to eliminate said odd frequency higher-harmonic wave components of said fourth and fifth pulses upon reception of said fourth and fifth clock pulses.

4,939,471

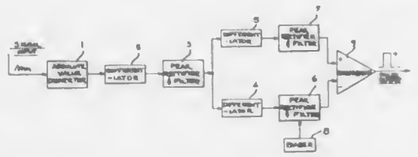
IMPULSE DETECTION CIRCUIT

Doan R. Werrbach, Los Angeles, Calif., assignor to Aphex Systems Ltd., Sun Valley, Calif.

Filed May 5, 1989, Ser. No. 347,827

Int. Cl.[5] H03K *5/153*

U.S. Cl. 328—108 **7 Claims**



1. A device for the detection of impulses in an electrical signal comprising:

a differentiator having an input and an output, the differentiator receiving the electrical signal at its input and generating at its output a differentiated signal approximating the time rate of change of the electrical signal,

a first peak-rectifier and filter having an input and an output, the first peak-rectifier and filter receiving at its input the differentiated signal output by the differentiator, the first peak-rectifier and filter operating to peak-rectify and filter the signal at its input to generate at its output a first peak-rectified and filtered signal,

a second peak-rectifier and filter having an input and an output, the second peak-rectifier and filter also receiving at its input the differentiated signal output by the differentiator, the second peak-rectifier and filter operating to peak-rectify and filter the signal at its input to generate at its output a second peak-rectified and filtered signal,

the first peak-rectifier and filter having a first set of filter time constants, and the second peak-rectifier and filter having a second set of filter time constants, the first set of filter time constants differing from the second set of filter time constants, and

a comparator having a first input and a second input and an output, the comparator receiving at its first input the first peak-rectified and filtered signal and receiving at its second input the second peak-rectified and filtered signal, the comparator outputting a pre-selected signal whenever the first peak-rectified and filtered signal is greater than the second peak-rectified and filtered signal.

4,939,472

INTEGRATING CIRCUIT

Yoshitaka Uchida, and Masaharu Mori, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1989, Ser. No. 293,111

Claims priority, application Japan, Jan. 14, 1988, 63-7140

Int. Cl.[5] H03K *5/00;* **G06G** *7/18*

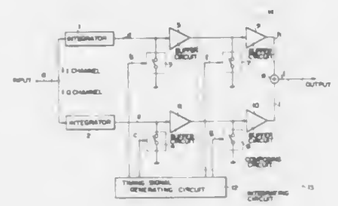
U.S. Cl. 328—127 **9 Claims**

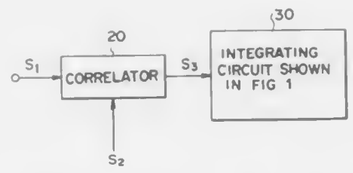
1. An integrating circuit for a spread-spectrum receiver comprising:

correlating means for correlating a received signal with a reference signal to produce correlation spikes of positive and negative polarity;

first and second integrating and dumping circuits each for integrating said correlating spikes for a predetermined time and subsequently dumping the obtained integrated output;

control means for controlling said first and second integrating and dumping circuits so when one of them operates in





a dumping mode the other operates in an integrating mode; and

a composing circuit for forming a composite waveform representing the outputs of said first and second integrating and dumping circuits.

4,939,473

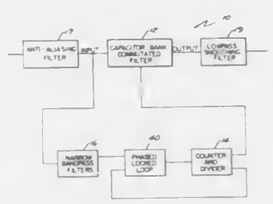
TRACKING HARMONIC NOTCH FILTER

Frederick L. Eno, Pawcatuck, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1989, Ser. No. 326,776

Int. Cl.[5] H03B *1/00;* **H03K** *5/00*

U.S. Cl. 328—167 **5 Claims**



1. A tracking harmonic filter for automatically tracking and removing harmonically related interfering electrical signals which comprises:

a relatively narrow band electronic commutated capacitor-bank comb-notch filter and receiving the interfering electrical signals and providing an output of the tracking harmonic filter;

a counter/decoder circuit connected to said comb-notch filter to provide an input thereto;

a phase locked loop circuit connected to said counter/decoder circuit for providing an input to said counter/decoder circuit;

a pair of narrow band analog filters tunable respectively to two lowest harmonics of said interfering electrical signals and receiving the interfering electrical signals;

summing means for adding the outputs of said two analog filters; and

means for applying the summed output of said two analog filters as an input to said phase locked loop circuit.

4,939,474

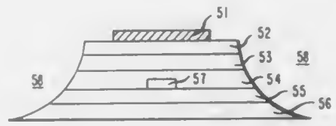
SEMICONDUCTOR OPTICAL AMPLIFIER WITH SHORTENED GAIN RECOVERY TIME

Gadi Eisenstein, Middletown; Per B. Hansen, Shrewsbury; Rodney S. Tucker, Freehold, and Jay M. Wiesenfeld, Lincroft, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 237,252, Aug. 26, 1988, abandoned. This application Nov. 3, 1989, Ser. No. 431,693

Int. Cl.[5] H01S *3/19*

U.S. Cl. 330—4.3 **4 Claims**



1. An optical communications system comprising

(a) a semiconductor optical amplifier comprising

(1) a gain region, and

(2) means for confining an optical field, propagating in the gain region, in a direction transverse to the direction of propagation, and to a degree greater than that resulting from diffraction,

(b) an optical data bit stream

(c) means for coupling the optical data bit stream into the optical amplifier

(d) means for detecting the amplified optical data bit stream emitted by the optical amplifier,

the invention characterized in that

(a) the optical amplifier further comprises a carrier-storage region, the mean time for carriers to move from the carrier-storage region to the gain region being less than or equal to the intrinsic lifetime of the carriers in the gain region, and

(b) the data bit rate associated with the optical data bit stream is greater than 1 GHz.

4,939,475

CIRCUIT ARRANGEMENT COMPRISING AN AMPLIFIER CONNECTED TO AN OPTO-ELECTRICAL TRANSDUCER

Karl-Heinz Prasse, Mittenwald, Fed. Rep. of Germany, and Hermann Danzer, Weidling, Austria, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1989, Ser. No. 407,885

Claims priority, application European Pat. Off., Sep. 15, 1988, 88115132.8

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—59 **4 Claims**

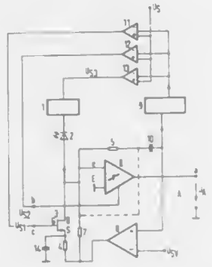
1. A circuit arrangement comprising:

an amplifier including an input and an output and having a gain which is controllable with the assistance of a control element that modifies its load resistance;

an opto-electrical transducer connected to said input;

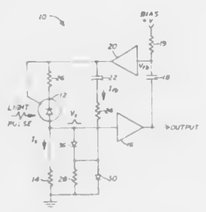
a feedback circuit, including a capacitor, connected between said output and said input;

a field effect transistor including a drain, a source, and a gate, and a drain-source path connected in parallel with said input of said amplifier; and



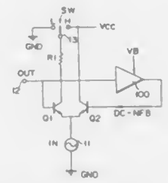
a comparator including a first input connected to said output of said amplifier, a second input connected to a reference potential, and an output connected to said input of said amplifier.

4,939,476
LASER RANGEFINDER RECEIVER PREAMPLIFIER
Ian D. Crawford, 1805 Meadowbend Dr., Longwood, Fla. 32750
Filed Dec. 27, 1988, Ser. No. 290,567
Int. Cl.[5] H03F *17/00*
U.S. Cl. 330—59 **12 Claims**



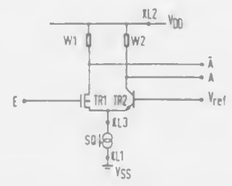
1. A preamplifier for a laser rangefinder receiver having two signal level modes comprising:
a light detector having a first load resistor,
a buffer having an input connected across said load resistor and an output to said receiver,
a first diode in series with a second diode, said second diode connected in parallel with a second load resistor, said series connected first and second diodes connected in parallel with said first load resistor, and
a positive feedback path from said output to the junction of said first and second diodes wherein the first and second diodes are nonconductive during a low signal level mode, and said first and second diodes are conductive during a high signal level mode.

4,939,477
OUTPUT CIRCUIT HAVING A TERMINAL USED FOR A PLURALITY OF SIGNALS
Masashi Itoh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 26, 1989, Ser. No. 357,751
Claims priority, application Japan, Jun. 2, 1988, 63-136367
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **10 Claims**



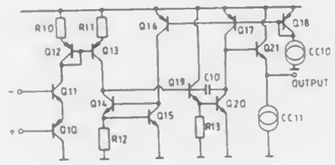
1. An output circuit built in a semiconductor integrated circuit having an output terminal comprising:
a first transistor having a base and a collector connected to the output terminal;
a second transistor having a collector connected to a power source circuit;
an input signal source connected to emitters of said first and second transistors; and
a DC amplifier circuit having an input end connected to the output terminal and an output end connected to the base of said second transistor, and operated under a preset bias potential,
wherein a signal occurring at the output terminal is fed back to the base of said second transistor, via said DC amplifier circuit.

4,939,478
ASYMMETRICAL DIFFERENTIAL AMPLIFIER AS LEVEL CONVERTER
Wolfgang Heimsch, and Ernst Muellner, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Dec. 12, 1988, Ser. No. 282,695
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1988, 3803544
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **14 Claims**



1. An asymmetrical differential amplifier having a first and a second transistor, a constant current source and first and second resistors, whereby a first terminal of the first transistor and a first terminal of the second transistor are connected in common to a first circuit terminal via the constant current source and a second terminal of the first transistor is connected to a second circuit terminal via the first resistor and a second terminal of the second transistor is connected to the second circuit terminal via the second resistor, a first input is connected to a control terminal of the first transistor, a second input (V_{ref}) is connected to a control terminal of the second transistor and a first output ($\overline{A}$) is connected to the second terminal of the first transistor and a second output (A) is connected to the second terminal of the second transistor, comprising the first transistor being a MOS transistor and the second transistor being a bipolar transistor; input signals for the MOS transistor being received on the first input and a reference signal that lies between a maximum and minimum of the input signals for the MOS transistor being received on the second input.

4,939,479
AUDIO AMPLIFIER
Gee H. Loh, Singapore, Singapore, assignor to SGS-Thomson Microelectronics (Pte) Ltd., Singapore, Singapore
Filed Aug. 31, 1989, Ser. No. 401,056
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—257 **3 Claims**



1. An audio amplifier comprising a first current mirror having an input and ar output, a cascade differential pair having an output, a first constant current source having an output a second constant current source, a resistor, and a power supply line, said input of said first current mirror being coupled to said output of said cascade differential pair and said output of said first current mirror being coupled to said output of said first constant current source, said first constant current source comprising first and second transistors each having a base, a collector, and an emitter, said collector of said first transistor providing said output of said first constant current source, said base of said first transistor being coupled to said collector of said second transistor, said emitter of said first transistor being coupled to said base of said second transistor and via said resistor to said power supply line, said emitter of said second transistor being coupled to said power supply line, said second constant current source being connected to said collector of said second transistor.

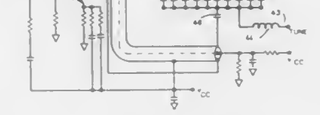
4,939,480
METHOD AND APPARATUS FOR AMPLIFYING SIGNALS
William H. Frye, Goleta, and James E. Sorenson, Nipomo, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Nov. 16, 1987, Ser. No. 121,327
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—260 **18 Claims**

1. An apparatus for amplifying the output from an elemental detector comprising:
a preamplifier for amplifying the output of said elemental detector, said preamplifier comprising:
(a) a first differential amplifier comprising a first plurality of transistors,
(b) means for lowering the gain of said first differential amplifier comprising a second plurality of transistors,
(c) a third plurality of transistors operable to receive the output of said elemental detector, said third plurality of transistors being larger than said first and second plurality of transistors; and
a postamplifier for amplifying the output of said preamplifier, said postamplifier comprising:
(a) a second differential amplifier, and



(b) means for lowering the gain of said second differential amplifier.

4,939,481
LOW PHASE NOISE VOLTAGE CONTROLLED OSCILLATOR
Marcus DaSilva, Spokane, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 29, 1988, Ser. No. 212,849
Int. Cl.[5] H03B *5/12, 5/18*
U.S. Cl. 331—117 R **9 Claims**



1. A voltage controlled oscillator comprising:
an RF amplifier circuit;
an LC resonant circuit including a predetermined length of coaxial cable forming an inductive element and a plurality of varactor diodes connected in parallel forming a capacitive element, said length of coaxial cable having dimensions selected to provide a desired range of inductance in a desired frequency range, the values of said inductive element and said capacitive element selected such that said LC resonant circuit has a predetermined range of impedance in said desired frequency range;
first coupling means coupling an output of said RF amplifier circuit to said LC resonant circuit, the LC resonant circuit impedance presented to said RF amplifier output being less than a predetermined maximum impedance;
said RF amplifier circuit including current limiting means to limit its output signal current for maintaining a predetermined signal-to-noise ratio and for maintaining a value of RF voltage applied to said LC resonant circuit;
second coupling means coupling a feedback signal from said LC resonant circuit to an input of said RF amplifier circuit; and
means for supplying a bias voltage to said plurality of parallel connected varactor diodes for tuning said LC resonant circuit to a predetermined frequency within said desired frequency range.

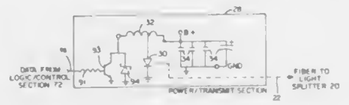
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,482

REMOTE OPTICAL SENSING DEVICE AND METHOD

David K. Nergaard, Littleton; Richard Scarlet, Boxborough, and Seymour Goldberg, Saugus, all of Mass., assignors to EG&G, Inc., Wellesley, Mass.

Filed Jan. 24, 1987, Ser. No. 66,210
Int. Cl.[5] H04B 9/00
U.S. Cl. 455—613 10 Claims



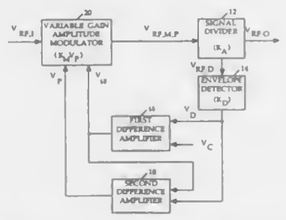
1. A low-power device for converting a voltage signal into optical data, comprising:
a light emitting diode having a predetermined forward current condition threshold;
power supply means coupled to said diode for maintaining a voltage bias across said diode at a level below said forward current conduction threshold;
circuit means receiving said voltage signal and being coupled to said diode and to said power supply means for delivering voltage pulses to said diode in accordance with said voltage signal, said voltage pulses, when combined with said bias voltage, having a level greater than said forward conduction threshold for causing said diode to emit optical data corresponding to the voltage signal;
means for generating a first light signal; and
means for optically coupling said first light signal to said diode so as to produce said voltage bias.

4,939,483

MODULATION FREQUENCY RESPONSE STABILIZED AMPLITUDE MODULATION CIRCUIT

Jeffrey S. Bottman, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Oct. 31, 1989, Ser. No. 430,318
Int. Cl.[5] H03C 1/06
U.S. Cl. 332—162 9 Claims



1. A modulation frequency response stabilized amplitude modulation circuit comprising:
first means for generating an output signal of amplitude varying with a product of amplitudes of a radio frequency input carrier, gain control and modulating signals; and
second means responsive to the output signal and an audio input signal for providing the modulating and gain control signal inputs to said first means, the modulating signal having an amplitude varying with a difference between amplitudes of the input signal and the modulation envelope of the output signal, and the gain control signal having an amplitude varying in response to the relative amplitudes of said modulating signal and the modulation envelope.

4,939,484

TRANSMISSION CHANNEL COUPLER FOR ANTENNA

Takuji Harada, Hiratsuka, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 45,622, May 1, 1987, abandoned. This application Nov. 6, 1989, Ser. No. 432,343
Claims priority, application Japan, Sep. 24, 1986, 61-147067[U]
Int. Cl.[5] H01P 5/02, 7/00; H01Q 1/27
U.S. Cl. 333—24 R 3 Claims



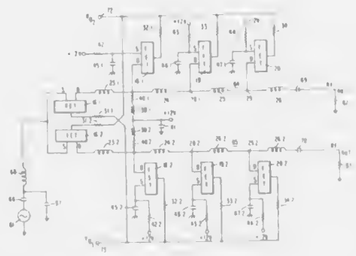
1. An inductance coupling type transmission channel coupler comprising:
a helical conductor;
an outer conductor provided outside of said helical conductor, said outer conductor being coaxial with said helical conductor;
a means for electrically connecting one end of said helical conductor to an inner wall of said outer conductor; and
a conductor fixing means for fixing an other end of said helical conductor within a plane defined by the end surface of said outer conductor; and
wherein a ratio between the inner diameter of said outer conductor and the outer diameter of said helical conductor is in the range of 1.1 to 2.0; and
said helical conductor and said outer conductor form a helical resonator having a resonant frequency of one third of a frequency of transmission of said transmission channel coupler.

4,939,485

MICROWAVE FIELD EFFECT SWITCH

John A. Eisenberg, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 9, 1988, Ser. No. 282,181
Int. Cl.[5] H01P 1/15
U.S. Cl. 333—104 18 Claims



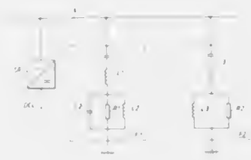
1. A wide frequency band switch for selectively supplying a microwave signal to a load comprising:
a first field effect device having a source drain path in series between a source of the signal and the load; inductive transmission line means in series with the source drain path of the first field effect device between the signal source and the load, said inductive transmission line means including N taps, where N is an integer greater than 1; N second field effect devices, the kth second field effect device having a shunt source drain path connected to tap k, where k is selectively every value of N; and means for selectively biasing the source drain paths of said first and second field effect devices so (1) during a first time interval the source drain paths of the first device and the N second devices respectively have first and second impedance states, and (2) during a second time interval the source drain paths of said first device and the N second devices respectively have said second and first impedance states, the first impedance state being a low resistive impedance, the second impedance state being a high capacitive impedance having a magnitude approximately on the order of magnitude of the impedance of the inductive transmission line means for frequencies of the microwave signal, whereby during the first time interval the capacitive impedances of the N second field effect devices and the inductive transmission line means form a matched low pass filter having a cut off frequency in excess of the highest frequency in the band so that the signal from the source is coupled through the first field effect device via the matched low pass filter to a load, and during the second time interval the N second field effect devices shunt current of the source flowing in the inductive transmission line means away from the load.

4,939,486

FILTER EQUIPMENT FOR POWER LINES

Bernt Bergdahl, and Jan T. Holmgren, both of Ludvika, Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed Jan. 4, 1989, Ser. No. 293,777
Claims priority, application Sweden, Jan. 4, 1988, 8800006
Int. Cl.[5] H03H 7/01; H02M 1/12
U.S. Cl. 333—175 19 Claims



1. Filter equipment for a power line with a double-tuned shunt filter for reduction of voltage or current harmonics which originate from the static convertors connected to the power line, said shunt filter having a series resonance circuit with a first capacitor bank and a first inductor, and a parallel resonance circuit with a second capacitor bank and a second inductor, wherein one of the capacitor banks has a capacitance having a positive temperature coefficient and wherein the other capacitor bank has a capacitance having a negative temperature coefficient.

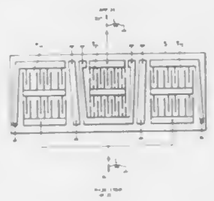
4,939,487

SURFACE ACOUSTIC WAVE FILTER

Akitsuna Yuhara, Kawasaki; Hitoshi Watanabe, Yokohama; Jun Yamada, Yokohama, and Tetsuya Hirashima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1988, Ser. No. 219,250
Claims priority, application Japan, Jul. 20, 1987, 178892
Int. Cl.[5] H03H 9/25
U.S. Cl. 333—193 3 Claims

1. A surface acoustic wave filter comprising: a piezo-electric substrate including first and second propagation paths thereon for propagation of surface acoustic waves;
first, second and third transducers each including electrodes provided on said first propagation path, said first transducer being disposed between said second and third transducers in the direction of said first propagation path;
fourth, fifth and sixth transducers each including electrodes provided on said second propagation path, said fourth transducer being disposed between said fifth and sixth transducers in the direction of said second propagation path;
first series connection means for connecting said first and fourth transducers in series to form a first series-connected-transducer;
second series connection means for connecting said second and fifth transducers in series to form a second series-connected-transducer;



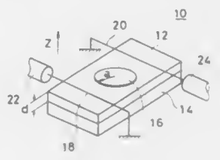
third series connection means for connecting said third and sixth transducers in series to form a third series-connected-transducer;
parallel connection means for connecting said second and third series-connected-transducers to form a parallel-series-connected-transducer;
an input terminal connected to said parallel-series-connected-transducer for supplying said parallel-series-connected-transducer with an electrical signal from a signal source connected thereto; and
an output terminal connected to said first series-connected transducer for outputting an electrical signal transduced by said first series-connected-transducer to a load circuit connected thereto.

4,939,488

MAGNETOSTATIC WAVE DEVICE

Makoto Tsutsumi, Hirakata, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 3, 1988, Ser. No. 189,557
Claims priority, application Japan, May 6, 1987, 62-110038
Int. Cl.[5] H01P 1/20
U.S. Cl. 333—202 7 Claims



1. A magnetostatic wave device comprising:
a ferrimagnetic base,
a conductor formed on a surface of said ferrimagnetic base, and
an input antenna and an output antenna formed on said ferrimagnetic base and connected respectively to an input terminal and an output terminal, said input antenna and said output antenna each being spaced from said conduc-

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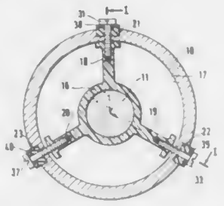
tor and each being magnetostatically coupled with said conductor only through said ferrimagnetic base.

4,939,489

FILTER HAVING A DIELECTRIC RESONATOR

Jean-Michel Guèble, Colomiers; Bernard Théron, Saint-Orens; Yannick Latouche, Leguevin, and Jean-Bernard Ducrocq, Ramonville Saint Agne, all of France, assignors to Alcatel Espace, Courbevoie, France

Filed Feb. 13, 1989, Ser. No. 310,117
Claims priority, application France, Feb. 12, 1988, 88 01696
Int. Cl.[5] H01P *1/207, 7/10*
U.S. Cl. 333—202 **8 Claims**



1. A filter comprising a member including at least one cylindrical cavity, symmetrical about one axis, a cylindrical dielectric resonator having an axis colinear with the axis of said cavity, a mandrel clamped around the cylindrical dielectric resonator for holding said resonator in a longitudinally asymmetrical position inside said cavity and including at least two radially outwardly projecting spokes at circumferentially spaced positions thereon including at least one first spoke and at least one second spoke, means for connecting said spokes to said member including first means for fixing a radially outboard end of said first spoke to said member defining the cylindrical cavity, and second means for connecting a radially outboard end of said at least one second spoke to said member defining said cylindrical cavity with a radial gap between said second spoke member permitting radial play between said member defining said cylindrical cavity and said mandrel.

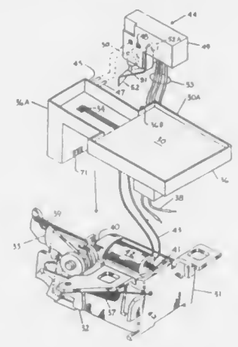
4,939,490

MOLDED CASE CIRCUIT BREAKER BELL ALARM UNIT

Richard E. Bernier, Southington, and Joseph G. Nagy, Plainville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 17, 1989, Ser. No. 311,794
Int. Cl.[5] H01H *73/12*
U.S. Cl. 335—17 **9 Claims**

1. An electric circuit interrupter comprising in combination:
a circuit interrupter case and cover;
a pair of separable contacts and an operating mechanism supported within said circuit interrupter case;
an electronic trip unit within said circuit interrupter cover for controlling operation of said operating mechanism to separate said contacts upon occurrence of an overcurrent condition through said contacts;
an actuator unit connecting with said trip unit and interacting with said operating mechanism in response to overcurrent signals generated by said trip unit;
a bell alarm within said circuit interrupter cover and interacting with said operating mechanism to provide remote indication of the condition of said contacts;
said bell alarm comprising:
a molded plastic body member;
an electric switch partially embedded within said body member and having a button extending beyond said body member for ON-OFF operation of said switch;
a double-ended spring interfacing with said button at one end and having an opposite end embedded within said body member; and
at least one wire conductor having one end connecting



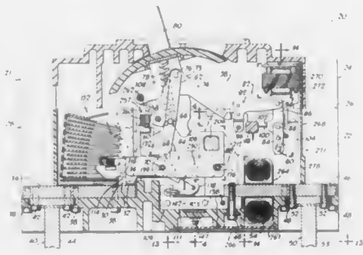
with said electric switch and at least part of said wire conductor being partly embedded within said body member to provide strain relief to said end connecting with said switch.

4,939,491

COMBINATION BARRIER AND AUXILIARY CT BOARD

Gregg J. Nissly, Greentree; Alan B. Shimp, Monroeville, and Lance Gula, Aliquippa, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 226,655, Aug. 1, 1988, abandoned. This application Oct. 26, 1989, Ser. No. 428,430
Int. Cl.[5] H01H *83/02*
U.S. Cl. 335—18 **2 Claims**



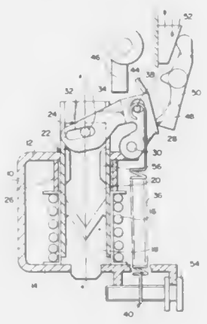
1. A circuit breaker comprising:
a housing having a base portion, partially open on one side defining an open portion and a cover portion;
one or more pairs of separable contacts carried by said housing;
an operating mechanism operatively coupled to said contacts for actuating said pairs of separable contacts;
an electronic trip unit mechanically coupled to said operating mechanism for actuating said operating mechanism;
one or more main current transformers electrically coupled to said electronic trip unit for sensing the current flowing through the circuit breaker;
one or more auxiliary current transformers electrically coupled to said one or more main current transformers and said electronic trip unit; and
a board having a barrier portion which closes said open portion to prevent contact with components inside of said circuit breaker, a printed circuit portion having electrical circuitry disposed thereon for electrical connections between said one or more main current transformers and the electronic trip unit and a transformer portion for carrying said one or more auxiliary transformers.

4,939,492

ELECTROMAGNETIC TRIP DEVICE WITH TRIPPING THRESHOLD ADJUSTMENT

André Raso, Claix; Pierre Laffont, Sassenage, and Denis Vial, Fontaine, all of France, assignors to Merlin Gerin, France

Filed Jan. 18, 1989, Ser. No. 298,365
Claims priority, application France, Jan. 28, 1988, 88 01100
Int. Cl.[5] H01H *75/10*
U.S. Cl. 335—42 **10 Claims**



1. An electromagnetic trip device for an electrical protective device, with adjustment of the instantaneous tripping threshold, comprising a yoke presenting a lower face and an upper face, a movable plunger core movable axially across an orifice arranged in the upper face, a coil fitted between said faces and arranged around the movable core, a stationary core securedly fixed to the lower face of the yoke, a return spring urging the movable core in the opposite direction from the stationary core, a magnetic circuit comprising said yoke, the movable core and the stationary core and having a first air-gap defined between the movable core and the stationary core, an adjustment device of the position of the movable core between a maximum separation position from the stationary core and a minimum position and an annular groove provided in said movable core over a greater axial distance than the axial distance between said maximum and minimum positions, in the zone of said upper face, in such a way that the latter is in proximity to a first edge of the groove in one of said positions and in proximity to the a second edge of the groove in the other of said positions, a second air-gap defined between said upper face and said first edge and a third air gap defined between said upper face and said second edge.

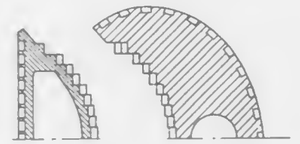
4,939,493

MAGNETIC FIELD GENERATOR

Frank Krienin, Shoreham, N.Y., assignor to Boston University, Boston, Mass.

Filed Sep. 27, 1988, Ser. No. 249,666
Int. Cl.[5] H01F *7/00*
U.S. Cl. 335—210 **26 Claims**

1. A magnetic field generating device comprising:
a first axial current conducting structure which supports a current density approximating a cosine distribution about a truncated cylinder; and
a second axial current conducting structure which supports a current in an axial direction opposite to the direction of current carried by the first structure, the second structure supporting a current density which causes a near zero



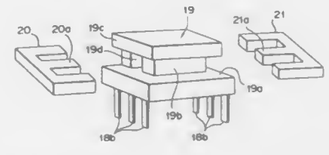
field due to the first and second conductors to the side of the second conductor away from the first conductor.

4,939,494

SURFACE-MOUNTED-TYPE INDUCTANCE ELEMENT

Yoshiaki Masuda; Hiraku Imaizumi; Takashi Shioura; Tadashi Mitsui, and Tokio Tadano, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 24, 1989, Ser. No. 342,216
Claims priority, application Japan, Mar. 13, 1989, 64-28180[U]
Int. Cl.[5] H01F *27/02*
U.S. Cl. 336—96 **29 Claims**



1. A surface-mounted-type inductance element comprising:
a coil structure having a bobbin,
said bobbin including a portion around which wires are coiled, a pair of flanges integrally formed at opposing ends of said bobbin, a pair of bases integrally formed at lower edge portions of said flanges in a manner to project laterally from said flanges, and a plurality of external terminals attached to each of said bases in a manner to penetrate each said base, each said external terminal including a first portion projecting laterally from said base and a second portion projecting downward from said base, around which first portion of each said external terminal a termination of any one of said wires is wound;
a mold covering said coil structure in a manner to allow said second portions of said external terminals to be projected outward from said mold, said mold being formed of resin material exhibiting heat resistance; and
a pair of cores assembled to said coil structure through said resin mold.

4,939,495

CIRCUIT BREAKER WITH AUXILIARY STATUS INDICATING SWITCH

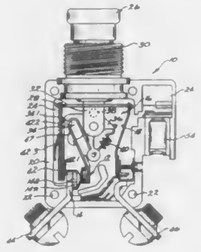
Robert W. Peterson, Attleboro, Mass., and Jacques Chammas, Warwick, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

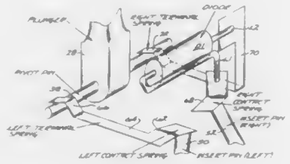
Filed Dec. 19, 1989, Ser. No. 452,865
Int. Cl.[5] H01H *71/04, 73/12*
U.S. Cl. 337—79 **5 Claims**

1. A switching device comprising an electrically insulative base, a first contact means mounted on the base, manual actuating means mounted on the base for movement between first and second switch positions, means biasing the actuating means

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to the first switch position, and electrically conductive shaft rotatably mounting a first latch on the actuating means for movement therewith between the first and second switch positions, second contact means carried by the first latch, a catch movably mounted on the base to normally engage the first latch during movement of the actuating means into the second switch position for rotating the first latch to engage the second contact means with the first contact means, a second latch holding the actuator means in the second position when the first latch is engaged with the catch, the second latch being releasable by manual movement of the actuating means for permitting the actuating means to move to the first switch position to disengage the first and second contact means, and current responsive means mounted for movement on the base to move the catch out of engagement with the first latch for





permitting the actuating means to move to the first switch position to disengage the first and second contact means, first and second electrically conductive, resilient terminal spring members mounted in spaced apart relation on the base, the members each having a free distal end portion located such that the distal end portions engage spaced portions of the electrically conductive shaft when the actuating means is in the first switch position, and first and second auxiliary terminal connecting pins mounted on the base in physical and electrical engagement with the respective first and second terminal spring members whereby a continuous electrical path extends from one auxiliary terminal connecting pin through a terminal spring member, the electrically conductive shaft, the other terminal spring member and the other auxiliary terminal connecting pin when the actuating means is in the first, contacts disengaged position.

4,939,496

REGULATABLE CREEP STRAIN GAUGES AND PROCESS FOR OBTAINING SUCH GAUGES

Louis Destannes, Jarrie, France, assignor to Commissariat a l'Energie Atomique, Paris, France

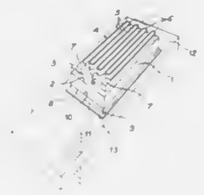
Filed Oct. 13, 1988, Ser. No. 257,701

Claims priority, application France, Oct. 15, 1987, 87 14249

Int. Cl.[5] G01L *1/22*

U.S. Cl. 338—2 **5 Claims**

1. A strain gauge for bonding on a metallic support subject to creep, comprised of a flexible film having an upper face and a lower face, a piezoresistive pattern adhering to the upper face of the flexible film and a layer having an upper face and a lower face, the upper face of the layer adhering to the lower face of the flexible film, and the lower face of the layer being



adapted to be bonded on the metallic support, wherein the layer is made of material capable of relaxation and has a thickness between its lower and upper faces which substantially eliminates the influence of the creep of the metallic support on the gauge reading.

4,939,497

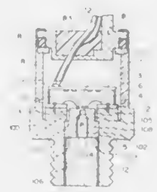
PRESSURE SENSOR

Minoru Nishida, Okazaki; Yosiyasu Ando, Nishio; Tadashi Hattori, and Youiti Kotanishi, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 18, 1989, Ser. No. 339,826

Int. Cl.[5] G01L *1/22*

U.S. Cl. 338—4 **10 Claims**



1. A pressure sensor which comprises:

a housing having an internal space therein,

a sensing body mounted inside said internal space of said housing and provided with a cavity, one end thereof being open and other end thereof being closed, as a pressure introducing portion, said closed end thereof having a thin thickness forming a diaphragm for receiving a pressure, and

a semiconductor chip including a strain gauge therein mounted on one surface of said closed end opposite to said diaphragm for receiving the pressure,

said pressure sensor being characterized in that said sensing body is attenuated at a portion including at least said closed end thereof and has a diameter smaller than that of the remaining portion thereof and a shoulder is provided therebetween, said sensing body being fixedly connected to said internal space of said housing by abutting said shoulder thereof against a stopper provided in said internal space of said housing and placing the external surface thereof in contact with the inner surface of said internal space of said housing, whereby movement of the sensor body toward said closed end is prevented by said abutting of the shoulder against the stopper.

4,939,498

PTC THERMISTOR DEVICE WITH PTC THERMISTOR UNIT HOUSED IN CASE

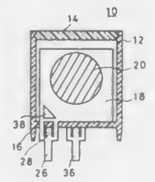
Yoshihiro Yamada, and Hisao Enomoto, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 24, 1989, Ser. No. 314,981

Claims priority, application Japan, Feb. 26, 1988, 63-045609

Int. Cl.[5] H01C *7/10*

U.S. Cl. 338—22 R **7 Claims**



1. A PTC thermistor device, comprising: a case;

a holding member housed in said case and made from metallic material;

a PTC thermistor unit having electrodes formed on both main surfaces thereof, one of said electrodes being connected to said holding member;

a first terminal connected to said holding member and exposed to outside said case;

a second terminal connected to the other of the electrodes of said PTC thermistor unit and exposed to the outside of said case; and

a heat conduction-suppressing portion formed in a heat conduction path between said holding member and said first terminal for suppressing heat flow from said holding member to said first terminal.

4,939,499

MAGNETIC POLE DETECTING HALL ELEMENT

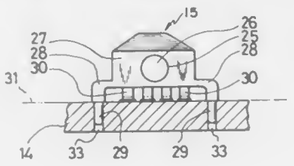
Masayoshi Hara, Komagane, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Japan

Filed Jun. 30, 1989, Ser. No. 373,884

Claims priority, application Japan, Jul. 11, 1988, 63-91813[U]

Int. Cl.[5] H01L *43/00;* **H03K** *17/90;* **H01F** *7/00*

U.S. Cl. 338—32 H **8 Claims**



1. A magnetic pole detecting Hall element comprising:

a Hall element chip molded in a unitary resin package, and having a magnetic pole-detecting face portion;

leg portions integral with said package for mounting said Hall element on a surface;

a mounting plane defined by said leg portions, said mounting plane being spaced from said package and being perpendicular to said face portion, said mounting plane coinciding with said surface when said package is mounted thereon, whereby said package is spaced a predetermined distance from said surface to accurately locate said face portion with respect to magnetic poles to be detected, whereby said Hall element is capable of detecting variations in the magnetic poles.

4,939,500

ELECTRODE WATER CIRCULATION AND PROCESSING SYSTEM AND HOODED RADIATOR FOR WATER RHEOSTAT

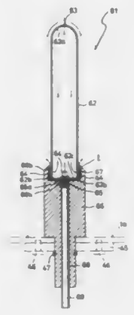
Kesafumi Matsumoto, Atsugi, Japan, assignor to Kouken Co., Ltd., Atsugi, Japan

Filed Jun. 21, 1989, Ser. No. 369,486

Claims priority, application Japan, Jul. 11, 1988, 63-171021; Aug. 22, 1988, 63-206454

Int. Cl.[5] H01C *10/02, 1/082*

U.S. Cl. 338—80 **6 Claims**



1. An electrode water circulation and processing system for a water rheostat comprising, said water rheostat having a main electrode unit, an electrode water circulation pump and an air and water cooling radiator provided in an electrode water cooling and circulation passage line which is communicated with said water rheostat and is for feeding and draining a prescribed quantity of electrode water so that he temperature and amount of said water in said water rheostat are kept constant, a flow meter provided in said line at the outlet side of said pump, and a safety circuit breaker provided in the halfway portion of a power cable for connecting said main electrode to a power supply so that said breaker is turned off when said meter has detected that the flow rate of said water is lower than a prescribed value, said main electrode unit comprising a main electrode shaped as a hollow cylindrical body and provided with an electrode water inlet port in the top of the hemispherical upper end portion of said electrode and electrode water outlet ports at equal intervals in said electrode near the bottom thereof along the total circumference of said electrode, an electrically insulating support having a circular recess in the top portion thereof and fitted in the center of the bottom of a base electrode so that said support extends through said center, and an electrode connection rod extending through the axial hole of said support and having an upper end portion which projects from the upper end of said axial hole and is fixedly coupled to the bottom of said main electrode, which is inserted in said recess so that a circumferential gap is defined between said bottom of said main electrode and the inside circumferential surface of said top portion of said support.

4,939,501

SLIDING FOOT CONTROLLER

Rubert P. Well, 22416 Ocean Ave., #213, Torrance, Calif. 90505

Filed Sep. 18, 1989, Ser. No. 408,282

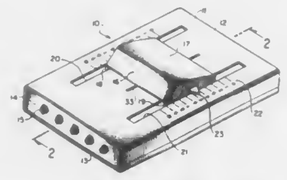
Int. Cl.[5] H01C *10/00*

U.S. Cl. 338—153 **2 Claims**

1. A foot controller for sliding an electrical contact along a linear resistive element, the combination comprising:

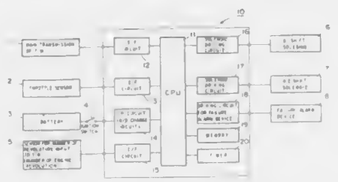
a rectangular housing enclosing a component compartment defined between a top panel and a bottom panel; pl an

elongated central slot provided in said top panel communicating with said component compartment;
a foot treadle movably disposed on said housing adjacent to said top panel adapted to be moved rectilinearly across said top panel slot between the opposite ends of said housing;
a linear resistive element carried in said component compartment under said top panel;



an electrical contact secured to said treadle and downwardly projecting through said elongated slot into operative contact with said resistive element;
means cooperatively carried on said housing and said treadle to rollably support said treadle on said housing;
said rollable support means includes a pair of rails fixed on said housing bottom panel in spaced-apart relationship; and
wheel sets downwardly depending from said treadle in rollable contact with rails.

4,939,502
DEVICE AND METHOD OF FAIL-SAFE CONTROL FOR ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION
Yasunobu Ito; Kenji Suzuki, and Kazuhiro Mikami, all of Aichi, Japan, assignors to Aisin Aw Kabushiki Kaisha, Japan
Filed Dec. 9, 1988, Ser. No. 282,274
Claims priority, application Japan, Dec. 28, 1987, 62-329510
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—438 6 Claims



1. A fail-safe control device for an electrically controlled automatic transmission including a plurality of shift solenoids comprising:
(a) means for detecting a battery voltage;
(b) means for storing a standard battery voltage range;
(c) means for comparing said detected battery voltage and said stored standard battery voltage range to each other;
(d) means for determining when said detected battery voltage is outside of said stored standard battery voltage range for a duration of time greater than a predetermined duration of time; and
(e) means for switching to an emergency mode control by turning off all of the shift solenoids when said detected battery voltage is determined to be outside of said stored standard battery voltage range more than said predetermined duration of time.

4,939,503
TOWED VEHICLE ELECTRICAL SYSTEM WIRING DEVICE
Carl S. Swanson, P.O. Box 4251, Brownsville, Tex. 78523
Filed Apr. 12, 1989, Ser. No. 337,209
Int. Cl.[5] B60Q *1/46*
U.S. Cl. 340—468 2 Claims

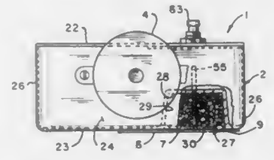


1. A wiring and protection device for use between:
a towed vehicle having signal lights and first control means for providing control signals to said signal lights; and
a towing vehicle having second control means for providing control signals;
said wiring and protection device comprising:
(A) signal blocking means coupled to said first control means for simultaneously allowing control signals to be received therefrom and for preventing other signals from being provided thereto;
(B) output means for substantially permanently coupling to said signal lights;
(C) first input means for substantially permanently coupling to said output means and to said signal blocking means to allow provision of said control signals as provided by said first control means to said signal lights;
(D) second input means for substantially temporarily coupling said output means to said second control means to allow provision of said control signals as provided by said second control means to said signal lights;
such that control signals from either said first control means or said second control means are provided to said signal lights to control said signal lights, and signals provided by said second control means are prevented from influencing said first control means.

4,939,504
FLUID DETECTING ALARM SYSTEM
Robert A. Miller, 315 Nicklaus Blvd., North Fort Myers, Fla. 33903
Filed Sep. 27, 1989, Ser. No. 413,130
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—604 5 Claims

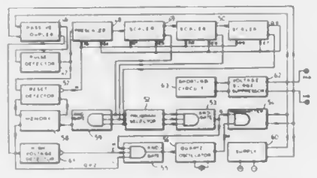
1. A self-contained liquid water detection alarm system comprising a case having a well with a mouth opening through a lower wall of said case, electrically operated alarm means carried by said case, and an electric circuit inside said case, said circuit comprising a battery, electrically connected on one side to said alarm means and on the other side to one of two electrodes projecting into said well, the other of said electrodes being electrically connected to the said alarm means, said electrodes being spaced from one another a distance to ensure

that no current will pass between them in the absence of a conducting medium, a dry medium bridging the space between said electrodes, said medium being a pulverulent salt, substan-



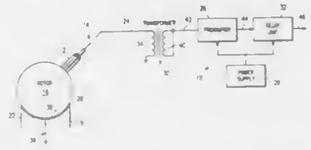
tially non-conductive when dry and conductive when wet, and water pervious closure means over said open mouth to retain said salt and to permit ingress of water.

4,939,505
MONITORING AND WARNING SYSTEM FOR SERIES FED RUNWAY VISUAL AIDS
Luigi Cappellini; Cesarino Moretti, and Daniele Cappelini, all of Rome, Italy, assignors to Vitroselenia S.P.A., Rome, Italy
Filed Jul. 18, 1988, Ser. No. 220,550
Claims priority, application Italy, Jul. 29, 1987, 48251 A/87
Int. Cl.[5] G08B *24/00, 25/00*
U.S. Cl. 340—642 9 Claims



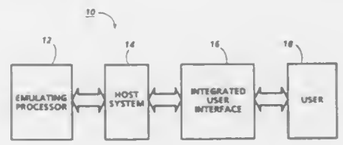
1. A method of monitoring and controlling a multiplicity of series-fed lighting circuits, each having a lamp connected by an isolating transformer to a supply circuit in which primaries of said transformers are connected in series, said method comprising the steps of:
(a) feeding said supply circuit with a periodic voltage from a constant-current generator over mains conductors;
(b) inductively detecting at a central control unit remote from said lighting circuits and from at least one of said mains conductors a first signal representing periodicity of said source and time-spaced second signals representing status of said lighting circuits;
(c) generating at said control unit counting pulses from said first signal and determining from a count of said pulses which of said lighting circuits is represented by a specific one of said second signals;
(d) at each of said lighting circuits in a respective detector probe, generating a first signal representing periodicity of said source and forming a respective count from said first signal at each detector probe representing the respective lighting circuit;
(e) upon failure of a lamp at a respective one of said lighting circuits, generating a warning signal and transmitting said warning signal over at least one of said mains conductors upon the formation of said respective count at said onee of said lighting circuits matching a count at said control unit representing said one of said lighting circuits;
(f) inductively detecting at said control unit the warning signal transmitted by said one of said lighting circuits and, upon the count at said control unit matching the count at the detector probe of said one of said lighting circuits, displaying at said control unit an identification of said one of said lighting circuit with a warning indication of failure of the respective lamp; and
(g) upon failure of said lamp at said one of said lighting circuits, suppressing any voltage surge resulting from said failure and applying a short circuit across the failed lamp.

4,939,506
GROUNDING BRUSH MONITOR
James A. Gram, Andover, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.
Filed Jan. 26, 1988, Ser. No. 148,671
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—649 6 Claims



1. An apparatus for monitoring the grounding circuit for a rotating member rotating within a machine, the rotating member supported for rotation by the machine through a film of lubrication, a capacitance of predetermined value existing between the rotating member and machine through the lubrication film, a grounding brush utilized in the grounding circuit, comprising:
a proximitor for generating an oscillating signal;
a coupling transformer having a primary and a secondary, the primary connected in series between the grounding brush and the machine, the secondary connected to the proximitor and carrying the oscillating signal;
the proximitor sensing the impedance presented by the circuit formed by the grounding brush, primary, lubrication film and machine, and generating an output signal correlating to the impedance sensed; and
means for processing the output signal from the proximitor and for generating an alarm when the sensed impedance exceeds a predetermined impedance, indicating an anomaly in the grounding circuit.

4,939,507
VIRTUAL AND EMULATED OBJECTS FOR USE IN THE USER INTERFACE OF A DISPLAY SCREEN OF A DISPLAY PROCESSOR
Marian H. Beard, Sunnyvale; Perry A. Caro, Palo Alto; Jennifer B. Hsiao, San Jose; Kevin J. Mackey; James G. Sandman, Jr., both of Palo Alto; Gary R. Steinbach, Mountain View, and Donald R. Woods, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 856,525, Apr. 28, 1986. This application Aug. 15, 1988, Ser. No. 232,061
Int. Cl.[5] G09G *1/00*
U.S. Cl. 340—706 5 Claims



1. A virtual object for use in a user interface on a display screen of a multiprocessor system including memory means for

VOL 1116 ISS 1 JL 3 1990 UMI

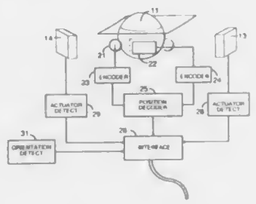
displaying data including metaphoric objects with which a user interacts via input means to access said objects, said data being generated from at least two different data processors, said virtual object representative of a physical data medium with the data content thereof accessible by either of said data processors with memory therefore allocated in said memory means, means in said user interface to format said virtual object to a selected filing system compatible with one or the other of said data processors.

4,939,508

POINT AND SELECT DEVICE

James G. Lawrence, Buckeye; Oscar R. Diaz, Phoenix, and Robert E. Erdmann, Jr., Tempe, all of Ariz., assignors to Emtek Health Care Systems, Inc., Tempe, Ariz.

Filed Oct. 31, 1988, Ser. No. 264,646
Int. Cl.[5] G06F *3/033*
U.S. Cl. 340—710 5 Claims



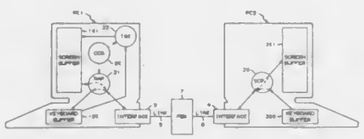
1. A point and select device which can function in either a mouse or a trackball mode comprising:
a housing having an aperture in one major surface thereof;
a spherical member located within said aperture;
encoder means in contact with said spherical member for converting the rotation of said spherical member into a first electrical signal;
orientation means for sensing the orientation of said housing and producing a second electrical signal indicative thereof; and
interface means for combining said first and second electrical signals into an output signal indicative of the motion of said sphere and indicative of the proper sense of rotation, whether said device is oriented as a trackball or as a mouse, thereby enabling said device to function as either a trackball or a mouse.

4,939,509

DATA CONFERENCING ARRANGEMENT FOR STATIONS HAVING KEYBOARDS AND DISPLAYS, USING A KEYBOARD BUFFER AND A SCREEN BUFFER

Randy L. Bartholomew, Broomfield, and Peter L. Johnson, Westminster, both of Colo., assignors to AT&T Company, Murray Hill, N.J.

Filed Jan. 25, 1988, Ser. No. 148,329
Int. Cl.[5] G06F *3/14, 15/62*; H04M *3/56, 11/00*
U.S. Cl. 340—717 15 Claims



1. An arrangement for interactively coupling a first and a second station each having a keyboard and a display, the second station further having a screen buffer for storing display signals that represent images dis by the display of the second station and a keyboard buffer for storing keystroke signals generated by the keyboard of the second station, which stations are interconnected by a signal transmission path, the arrangement comprising:
first control means resident at the first station for transmitting keystroke signals generated at the first station's keyboard to the second station, and responsive to display signals received from the second station for displaying an image represented by the received display signals on the first station's display; and
second control means resident at the second station responsive to keystroke signals received from the first control means for storing the received keystroke signals in the keyboard buffer of the second station as keystroke signals received from the second station's keyboard, and responsive to the second station storing in the screen buffer of the second station signals representing an image for display by the second station's display, f transmitting display signals representing the image to the first control means

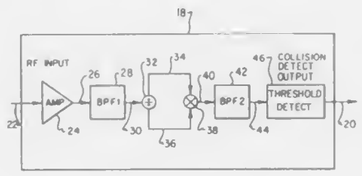
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4,939,510

BROADBAND COMMUNICATIONS RF PACKET COLLISION DETECTION

Michael S. Masheff, St. Petersburg, and Graig A. Gemmer, Largo, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 234,593, Aug. 22, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 433,396
Int. Cl.[5] H04Q *9/00*; H04J *6/00*
U.S. Cl. 340—825.5 8 Claims



1. An apparatus including a data channel and multiple signal transmitting sources coupled to the data channel for transmitting fundamental FM data frequencies to the data channel, the transmitting sources having the possibility of transmitting their respective data simultaneously and causing unwanted data collisions, an improved collision detection apparatus including:
a first bandpass filter coupled to the data channel to eliminate interference from any adjacent channel and for generating output frequency signals representing a bandpass frequency spectrum which includes the fundamental data frequency from more than one of the multiple signal transmitting means,
frequency shifting means coupled to the first bandpass filter for receiving the output signals and shifting the frequency of the signals a first amount if only one fundamental signal is present on the data channel and at least a second amount if more than one fundamental signal is present on the data channel, wherein said frequency shifting means further includes:
a signal splitter coupler to the output of the first bandpass filter for generating two substantially similar signals, and
a mixer coupled to the two signal outputs of the splitter for multiplying the two signals together to generate an output having first shifted frequency components if only one fundamental signal is present on the data channel and second shifted frequency components if at least a second fundamental signal is also present on the data channel, and
a second bandpass filter for generating a collision detecting

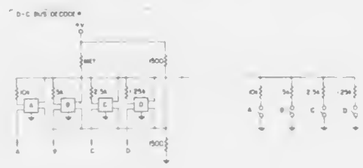
output signal only when the frequency shifted a second amount is present so as to indicate a data collision.

4,939,511

DC BUS FOR DISCRETE SIGNALS

Paul H. Hinckley, Hicksville, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,043
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—825.78 4 Claims



1. A bus circuit for coupling multiple discrete signals from multiple discrete signal sources with multiple receivers remote from the signal sources, comprising:
a. multiple signal sources, each having two discrete positions or levels, such as opened or closed, and each signal source having an encoding impedance connected thereto, with no active components, and each encoding impedance having a discrete impedance value which is at least a power of two times a reference impedance, and each signal source transmitting its signal by grounding or ungrounding its encoding impedance; and
b. multiple receivers at locations remote from said multiple signal sources and connected thereto by a common DC bus, and each receiver having a decoder circuit which compares the voltage on the DC bus with a reference voltage generated by the voltage drop across at least one reference impedance, and each receiver having a balance impedance equal to the encoding impedance for that receiver, and each receiver ungrounding or grounding the balance impedance in response to detection of its encoding impedance being grounded or ungrounded to restore the DC bus to a balanced voltage state.

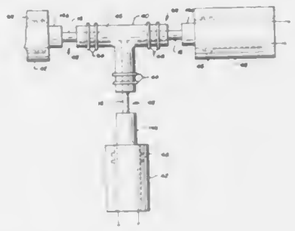
4,939,512

MODULAR, NON-METALLIC, HARD SHELL, PREDIMENSIONED, PREFORMED AND SEALED INDUCTION LOOP VEHICLE DETECTION SYSTEM AND METHOD OF INSTALLATION

James L. Dennison, 213 Tait Ave., and Douglas B. MacDonald, 204 Tait Ave., both of Los Gatos, Calif. 95030

Continuation-in-part of Ser. No. 930,726, Nov. 13, 1986. This application Jul. 13, 1987, Ser. No. 72,098
Int. Cl.[5] G08G *1/01*
U.S. Cl. 340—933 14 Claims

1. In an introduction loop vehicle detector for installation in a vehicular roadway a modular, predimensioned, sealed induction loop vehicle detector assembly comprising:
a plurality of flexible conduit sections housing a conductor and forming a predetermined loop placeable in the bed of a roadway;
a plurality of couplings joining said conduit sections, said couplings being axially slidable with respect to said conduit sections during and after installation of said assemlbly in sid roadway to enable longitudianal displacement of said conduit sections relative to said couplings to accommodate relative dimensional changes between said loop detector and said roadway; and



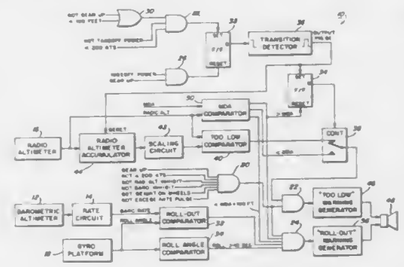
a flexible sealant completely filling said conduit sections to thereby surround and seal said conductor.

4,939,513

SYSTEM FOR ALERTING A PILOT OF A DANGEROUS FLIGHT PROFILE DURING LOW LEVEL MANEUVERING

Noel S. Paterson, Bothell, and Everette E. Vermilion, Seattle, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 494,590, May 13, 1983, abandoned. This application Aug. 20, 1984, Ser. No. 642,544
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—970 55 Claims



1. A warning system for alerting the pilot of an aircraft of a dangerous flight condition after take-off and during low altitude maneuvering, comprising:
means for monitoring the radio altitude of the aircraft after take-off and storing an indication of the highest radio altitude reached during the flight;
means for selecting a minimum desired radio altitude; and
means responsive to a signal representation of the radio altitude of the aircraft, to said altitude indication storing means and to said minimum altitude selecting means for providing a first specific warning if the altitude of the aircraft drops below the minimum desired altitude or below a predetermined percentage of the highest radio altitude reached during the flight if the aircraft has not yet reached the predetermined minimum desired altitude.

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4,939,514

FOLDABLE DATA COLLECTING AND PROCESSING DEVICE

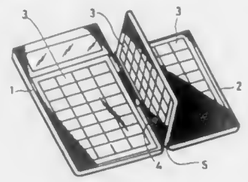
Shinichi Miyazaki, Tokyo, Japan, assignor to Seiko Instruments, Inc., Chiba, Japan

Filed Dec. 19, 1988, Ser. No. 286,128

Claims priority, application Japan, Dec. 22, 1987, 62-195640[U]

Int. Cl.[5] G06F *1/00*

U.S. Cl. 341—22 **3 Claims**



1. A foldable electronic data collecting device comprising:

housing means including a first case and a second case, each said case having opposed first and second faces;

supporting means connecting said first and second cases together and forming, between said cases, a hinge permitting said cases to move relative to one another between an open position in which said cases lie side-by-side and a closed position in which said first face of said first case faces said first face of said second case;

at least one plate having two opposed faces, said plate being pivotally mounted to said supporting means and being interposed between said first case and said second case;

keyboard means for entering data into said device when said cases are in the open position, said keyboard means comprising a sheet-like keyboard member mounted on said first face of each said case and on each face of said plate; and

display means connected for displaying data entered via said keyboard means.

4,939,515

DIGITAL SIGNAL ENCODING AND DECODING APPARATUS

Edward H. Adelson, Cambridge, Mass., assignor to General Electric Company, Princeton, N.J.

Filed Sep. 30, 1988, Ser. No. 252,223

Int. Cl.[5] H03M *7/00*; H04N *11/04*

U.S. Cl. 341—51 **7 Claims**

1. Apparatus for encoding an analog signal with a digital signal, comprising:

quantizing means for sampling said analog signal at an input and producing a first quantized signal representative of said analog signal, said first quantized signal having a predetermined number of output levels in a first range of values, and producing a second quantized signal representative of said analog signal, said second quantized signal having a predetermined number of output levels in a second range of values, said output levels of said first range of values being offset from said output levels of said second range of values by a predetermined amount, said quantizing means having a control input and having an output at which is developed said first quantized signal or said second quantized signal in response to a control signal applied to said control input; and

means for receiving said digital signal and applying said digital signal to said control input of said quantizing means as said control signal; wherein said quantizing means produces output signals having levels in said first range of values when said digital signal is in a first state, and produces output signals having levels in said second range of values when said digital signal is in a second state.

4,939,516

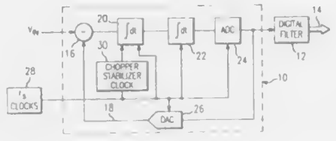
CHOPPER STABILIZED DELTA-SIGMA ANALOG-TO-DIGITAL CONVERTER

Adrian B. Early, Buda, Tex., assignor to Crystal Semiconductor, Austin, Tex.

Filed Jun. 13, 1988, Ser. No. 205,996

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **19 Claims**



1. An analog-to-digital converter, comprising:

a delta sigma analog modulator operating at a predetermined sampling frequency for receiving an analog input signal, and converting the received analog input signal to a digital output signal which is representative of the analog input signal, said analog modulator having undesirable low frequency noise associated therewith, said analog modulator including at least one stage of amplification;

a digital filter for receiving the digital output of said analog modulator and having a predetermined frequency response and sampling rate for providing a predetermined amount of attenuation over a predetermined frequency range to reject unwanted signal; and

means for transposing the low frequency noise in the analog modulator to said predetermined frequency range.

4,939,517

CIRCUIT FOR SYNCHRONIZING TRANSITIONS OF BITS IN A DIGITAL CODE

Peter G. Baltus, Sunnyvale, Calif., and Rudy J. van de Plassche, Waalre, Netherlands, assignors to North American Philips Corporation, Signetics Division, Sunnyvale, Calif.

Filed Feb. 12, 1988, Ser. No. 155,403

Int. Cl.[5] H03M *1/14*

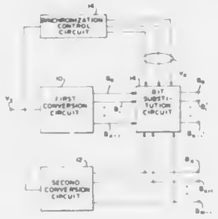
U.S. Cl. 341—156 **14 Claims**

1. An electronic circuit comprising a main stage for producing a digital code formed with a plurality of binary bits that make transitions between a pair of binary values as a function of an input parameter, the transitions ideally occurring in accordance with a prescribed algorithm as the input parameter traverses an input range, the bits divided into a first set of at least one bit and a second set of at least one bit, characterized by a synchronization stage comprising:

control means responsive to the input parameter for generating at least one synchronization signal, each synchronization signal reaching a specified condition when the input parameter is in a transition region of the input range where a bit in the first set associated with that synchronization signal makes a single transition and where a corresponding bit in the second set makes a single transition; and

substitution means responsive to each synchronization signal

when it is at its specified condition for replacing the value of each associated bit in the first set either with the value of the corresponding bit in the second set or with the



value of the binary complement of the corresponding bit in the second set in such a manner as to satisfy the prescribed algorithm.

4,939,518

ANALOG TO DIGITAL CONVERTER

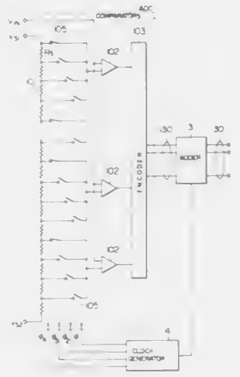
Masao Hotta, Hanno; Toshihiko Shimizu; Kenzi Maio, both of Tokyo, and Yoshito Nejime, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1988, Ser. No. 248,374

Claims priority, application Japan, Sep. 24, 1987, 62-237137; Jul. 6, 1988, 63-166711

Int. Cl.[5] H03M *1/36*

U.S. Cl. 341—159 **6 Claims**



1. An analog to digital converter comprising:

an input terminal adapted for receipt of an analog input signal;

a reference voltage source for supplying N reference voltages of differing values;

N/M sets of switches, each set including M switches, each switch having a first terminal connected to said reference voltage source for receipt of a uniquely associated one of the N reference voltages and having a second terminal, the second terminal of each switch connected to the second terminal of each of the other switches within the associated set of switches, each switch being operable between a conducting condition in which the first and second terminals of the switch are electrically interconnected to provide the associated reference voltage at the second terminal and a non-conducting condition in which the first and second terminals are electrically isolated;

clock means for simultaneously operating each set of switches in cyclical sampling periods to cause during each sampling period each switch of the set in turn to assume the conducting condition while the remaining switches of the associated set are in the non-conducting condition and to cause each conducting switch to assume the non-conducting condition when the next switch of the set is caused to assume the conducting condition;

N/M comparators, each comparator having a first input connected to the second terminals of the switches of a uniquely associated one of said N/M sets of switches and having a second input connected to said input terminal for receipt of the analog input signal therefrom; and

an adder circuit for adding the outputs of the N/M comparators to provide a digital output signal.

4,939,519

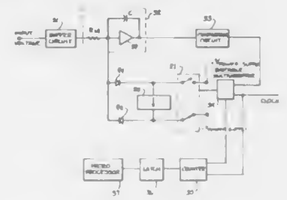
APPARATUS FOR METHOD AND A HIGH PRECISION ANALOG-TO-DIGITAL CONVERTER

Hubert F. Elbert, Tucson, Ariz., assignor to Thaler Corporation, Tucson, Ariz.

Filed Feb. 3, 1986, Ser. No. 825,566

Int. Cl.[5] H03M *1/50*

U.S. Cl. 341—167 **11 Claims**



1. Apparatus for controllably charging and discharging a capacitor comprising;

capacitor means including a reference capacitor, said reference capacitor having a first terminal coupled to a reference potential;

a first diode having a cathode terminal coupled to a second terminal of said reference capacitor;

a second diode having an anode terminal coupled to said reference capacitor second terminal;

a current source having a current input terminal coupled to a cathode terminal of said second diode and a current output terminal coupled to an anode terminal of said first diode; and

switching means coupled to said current source, said switching means applying a first potential to said current source input terminal for charging said reference capacitor in a first switching means mode, said switching means applying a second potential to said current source output terminal for discharging said reference capacitor in a second switching means mode.

4,939,520

ANALOG TO DIGITAL CONVERTER USING AN INTEGRATOR HAVING A PARTIALLY CONTROLLED OUTPUT SIGNAL

James W. Biglow, Worcester, Mass., assignor to Analogic Corporation, Peabody, Mass.

Filed Oct. 26, 1988, Ser. No. 262,624

Int. Cl.[5] H03M *1/52*

U.S. Cl. 341—167 **17 Claims**

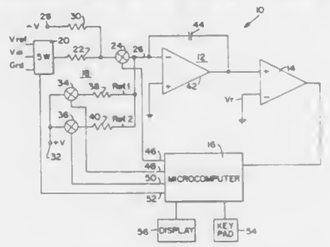
1. An analog to digital converter, comprising:

VOL 1116 ISS 1 JL 3 1990 UMI

an integrator means for producing an output signal and having an input;

means for connecting an input signal to the integrator means input;

control means including means for periodically applying a first reference signal to the integrator means input for



causing the integrator means output signal to have a predetermined average value, means for measuring the amount of time that the reference signal is applied to the integrator means input, and means for calculating a digital representation of the analog signal based upon the measured amount of time.

4,939,521

DUAL HORN, MULTI-BAND RADAR DETECTOR

Marian M. Burin, Mississauga, Canada, assignor to B.E.L-Tronics Limited, Mississauga, Canada

Filed Sep. 12, 1988, Ser. No. 242,536

Claims priority, application Canada, Dec. 23, 1987, 555195

Int. Cl.[5] G01S *7/42, 13/50;* H05K *11/02*

U.S. Cl. 342—20 **7 Claims**



1. A radar detection device for detecting frequencies in a plurality of frequency bands comprising:

a plurality of horn antennae;

a wave guide and microstrip line for signal from said antennae;

local oscillators associated with the microstrip line, each local oscillator being selected to produce an intermediate signal of similar frequency when mixed, at its fundamental frequency and/or twice its fundamental frequency, with signal detected by a respective antenna;

a mixer common to the microstrip line and the local oscillators;

and signal processing circuitry to further process said intermediate signal to actuate alarm means.

4,939,522

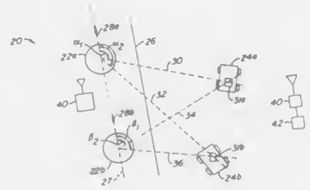
METHOD AND SYSTEM FOR MONITORING VEHICLE LOCATION

Dennis P. Newstead, Dyfed, Wales, and Colin J. Whitebead, Trowbridge, England, assignors to Bechtel Group, Inc., San Francisco, Calif.

Filed May 15, 1989, Ser. No. 351,910

Int. Cl.[5] G01S *1/24*

U.S. Cl. 342—387 **14 Claims**



1. A method for locating mobile objects within a predetermined search space, said method comprising:

transmitting at least two reference transmissions from spaced-apart locations, each transmission including (1) an omnidirectional initialization signal followed by (2) a positioning signal having a sweeping null;

each said mobile object receiving the reference transmissions and measuring elapsed time between detection of the initialization signal and detection of the null in the positioning signal, said elapsed time corresponding to the relative angle between the location of the transmission and the object; and

determining the position of each object based on comparison of each said relative angle.

4,939,523

AIRCRAFT RADAR ANTENNA

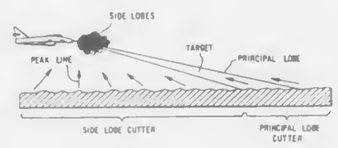
Franz Jehle; Eugen Arnold, both of Ulm, and Erwin Woelfle, Risstissen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH

Filed May 19, 1988, Ser. No. 195,978

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716585

Int. Cl.[5] H01Q *1/28*

U.S. Cl. 343—705 **6 Claims**



1. An aircraft radar antenna system including an antenna aperture and a radar antenna having a directional pattern and including a sharply focused principal lobe for sweeping over a given space angle range to detect a target, and a side lobe pattern having a first zone above and a second zone below the principal lobe, the improvement comprising:

means for reducing the signal strength of side lobes within said second zone for producing an asymmetrical configuration of the antenna signal field in the elevational direction wherein the configuration of the second zone with respect to the first zone results in the directional pattern of the antenna signal exhibiting side lobe radiation peaks spaced much farther apart below the radiation pattern of the principal lobe than above the radiation pattern of the principal lobe thereby reducing the effect of non-target induced reflections.

4,939,524

PORTABLE ANTENNA

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

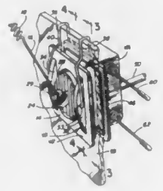
Division of Ser. No. 164,246, Mar. 4, 1988, Pat. No. 4,804,969.

This application Aug. 10, 1988, Ser. No. 230,424

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—715 **2 Claims**



1. A portable antenna for mounting on a motor vehicle's side window and enabling easy and rapid mounting and removal, which comprises:

an outer transfer member comprising a weather-resistant carrier having a first electrically conductive member on its underside for engagement with the outside of the side window;

a radiator for location on the outside of the side window and connected to said first electrically conductive member;

an inner transfer member including a housing and having a second electrically conductive member on its underside for engagement with the inside of the side window;

means for pivotally connecting said outer transfer member with respect to said inner transfer member, said pivotally connecting means bridging said inner transfer member and said outer transfer member so as to overlie the side window when the antenna is mounted thereon, said pivotally connecting means including a pair of generally parallel wire members for overlying the side window.

4,939,525

TUNABLE SHORT MONOPOLE TOP-LOADED ANTENNA

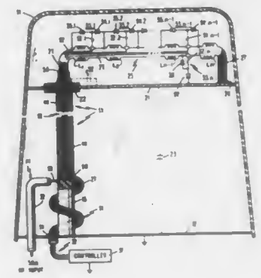
John E. Brunner, Hamilton, Ohio, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Mar. 31, 1988, Ser. No. 177,917

Int. Cl.[5] H01Q *9/00*

U.S. Cl. 343—745 **23 Claims**

1. An RF antenna tunable in response to a control signal over a predetermined frequency band having a minimum frequency with a predetermined wavelength, said antenna to be mounted on a ground plane and to be connected to an RF feed, the antenna comprising a metal tubular radiating element extending generally at right angles to the ground plane, the radiating element having an electrically short length relative to the predetermined wavelength, a metal top load electrically coupled to the radiating element extending approximately parallel to and spaced by about the length of the radiating element from the ground plane, the radiating element extending between the top load and the ground plane, stray capacitance being between the ground plane and top load, and means responsive to the control signal for tuning the antenna and the stray capacitance to a frequency in the predetermined frequency band, said tuning means including plural series connected inductors $L_1 \ldots L_n$ in proximity with the top load, means for electrically connecting an end of inductor L_1 to the radiating element and an end of inductor L_n to the top load, voltage controlled switch means responsive to the control signal for selectively connecting different ones of inductors $L_1 \ldots L_n$ in circuit with the radiating element and top load, and



plural leads extending through the interior of the tubular element between a source of the control signal and the switch means for supplying the control signal to the switch means to control the value of inductance between the top load and radiating element.

4,939,526

ANTENNA SYSTEM HAVING AZIMUTH ROTATING DIRECTIVE BEAM WITH SELECTABLE POLARIZATION

George I. Tsuda, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1988, Ser. No. 289,336

Int. Cl.[5] H01Q *15/22, 19/195*

U.S. Cl. 343—756 **27 Claims**



21. A scanning antenna system comprising:

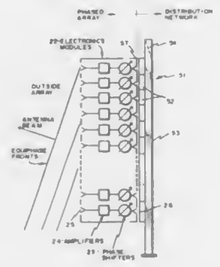
reflector means rotatable about an axis for forming a beam, for scanning the beam, for reflecting energy of the beam and for reflecting energy along the axis, and comprising a first circular polarizer for polarizing the energy processed by the reflector means;

a fixed feed which is non-rotating about the axis and which has a first port disposed along the axis for feeding circularly polarized energy along the axis between the first port and the reflector means, and having a second port through which linearly polarized energy is fed; and

a second circular polarizer coupled to the fixed feed for polarizing the energy traversing the first and second ports of the fixed feed, the second circular polarizer having the same sense of polarization as the first circular polarizer.

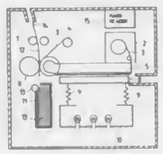
VOL 1116 ISS 1 JL 3 1990 UMI

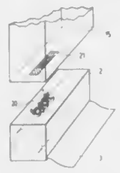
4,939,527
DISTRIBUTION NETWORK FOR PHASED ARRAY ANTENNAS
Bernard J. Lamberty, Kent; Edward J. Vertatschitsch, Bothell, and George W. Fitzsimmons, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 23, 1989, Ser. No. 299,458
Int. Cl.[5] H01Q *3/30*
U.S. Cl. 343—771 **12 Claims**



1. A phased array antenna, comprising:
a planar array of electronic antenna elements;
a means for distributing energy to the antenna elements of the planar array, comprising at least one waveguide parallel to the planar array and having an array of radiating slots; and
a means for exciting the means for distributing energy, comprising an orthogonal waveguide having a row of slots adjacent to the radiating slots.

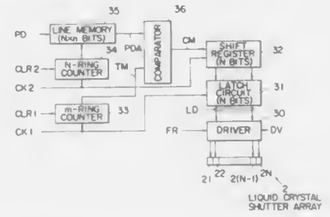
4,939,528
EQUIPMENT REQUIRING EXTERNAL CARTRIDGE TO BE ASSEMBLED THEREIN
Takemi Yamamoto; Masashi Ueda; Kazuo Sangyoji; Morimasa Mano, all of Nagoya, and Kazuhiko Matsuda, Konan, all of Japan, assignors to Brother Kogyo Kabushika Kaisha, Aichi, Japan
Filed Dec. 22, 1988, Ser. No. 288,555
Claims priority, application Japan, Dec. 23, 1987, 62-195157[U]
Int. Cl.[5] G01D *9/00*
U.S. Cl. 346—17 **8 Claims**





7. Equipment first operable upon installation of an external unit thereinto, the external unit being provided with a predetermined identification mark indicative of a first information, the equipment comprising:
a detection means provided at a position in confrontation with said identification mark upon assembly of said external unit for detecting said identification mark;
means for starting operation of said equipment when said predetermined identification mark is detected by said detection means, said starting means being connected to said detection means;
said identification mark further containing second information, said detection means further comprises means for reading out said second information; and
wherein said identification mark is represented by a difference in optical reflection characteristics from said external unit, and wherein said second information is indicated by said difference.

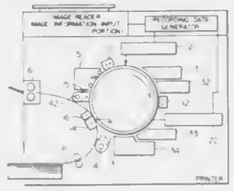
4,939,529
METHOD FOR DRIVING AND CONTROLLING LIQUID CRYSTAL AND DEVICE
Toshikiyo Kanayama, Kaisei, and Kenichi Morimoto, Osaka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Osaka, Japan
Filed Feb. 12, 1987, Ser. No. 14,041
Claims priority, application Japan, Feb. 20, 1986, 61-35784
Int. Cl.[5] G02F *1/13*; H04N *1/21*; G01D *9/42*
U.S. Cl. 346—108 **10 Claims**



1. A liquid crystal drive/control device which controls a liquid crystal shutter array at a writing cycle T comprising liquid crystal cells of N number to record an image of n-bit gradation on a photosensitive material, which comprises an m-notation ($m \leqq 2^n - 1$) ring counter which counts a first clock signal and divides said writing cycle T with m, an N-notation ring counter which counts a second clock signal, a line memory of $N \times n$ bits which uses an output from the N-notation ring counter as address signals, a comparator which compares an image data outputted from the line memory with an output from the m-notation ring counter and outputs binary data in accordance with a comparison result therein, an N-bit shift register which receives as input said binary data in synchronism with said second clock signal and a driving circuit which feeds in parallel output from the N-bit shift register to said liquid crystal cells in the number N for driving the same.

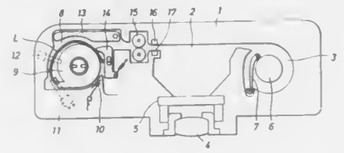
4,939,530
MULTI-COLOR IMAGE FORMING APPARATUS
Hisashi Shoji; Satoshi Haneda, and Kunihisa Yoshino, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan
Division of Ser. No. 171,836, Mar. 22, 1988, Pat. No. 4,884,149.
This application Aug. 10, 1989, Ser. No. 393,026
Claims priority, application Japan, Mar. 26, 1987, 62-72810; Mar. 30, 1987, 62-76978; Mar. 30, 1987, 62-76979; Apr. 9, 1987, 62-88138; Apr. 9, 1987, 62-88139; Jun. 22, 1987, 62-156335
Int. Cl.[5] G01D *15/06*; H04M *1/32*
U.S. Cl. 346—157 **9 Claims**

1. An image forming apparatus comprising
a data introducing means for introducing an image data having plural color components which are arranged in either one of at least two kinds of data format,
an image carrying means for producing an image thereon,
at least two sets of writing means for writing the image data onto said image carrying means, the respective sets of said writing means being assigned a color component of the image data to be written,
a transmission means for transmitting the image data from said data introducing means to said writing means, said transmission means having



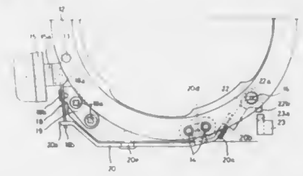
a selection means for selectively transmitting respective color components of the image data into a corresponding set of said writing means and
a timing means for adjusting the transmission timing of the respective color components of the image data, and
a control means for controlling said timing means in accordance with both the kind of data format and the kind of the color components of the introduced image data.

4,939,531
AUTOMATIC FILM LOADING CAMERA
Masataka Sawamura; Minoru Yamada; Yasushi Hoshino; Hiroyuki Horiuchi; Makoto Yoshida; Kenji Miyama; Tsuyoshi Kakita, and Keiko Nishihaba, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Jun. 15, 1989, Ser. No. 366,909
Claims priority, applicatioo Japan, Jun. 17, 1988, 63-148012; Sep. 6, 1988, 63-221413
Int. Cl.[5] G03B *1/12*
U.S. Cl. 354—173.1 **10 Claims**



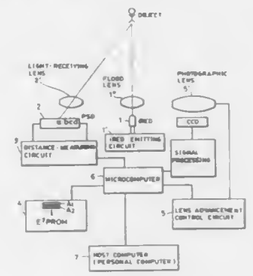
1. An automatic film loading camera comprising:
a patrone chamber for housing a patrone, a film being inserted in the patrone in a winding shaft direction thereof while the film is wound around an outer surface of the patrone;
a rotating shaft, engaged with a winding shaft of the patrone when the patrone is housed in said patrone chamber, for rotating the winding shaft;
detecting means for detecting an extracted state of a leader portion of the film; and
control means for controlling a rotating direction of said rotating shaft on the basis of a detection value from said detecting means.

4,939,532
MOUNT APPARATUS OF INTERCHANGEABLE LENS CAMERA
Tatsuhide Takebayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 26, 1989, Ser. No. 301,982
Claims priority, application Japan, Feb. 5, 1988, 63-13599[U]
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—286 **14 Claims**



1. A mounting apparatus for an interchangeable lens camera having a mount lock member which is provided on a body mount of a camera body and which can be disengageably engaged within a lock hole provided on the interchangeable lens mount, a mount lock releasing member which moves in association with the mount lock member and which is adapted to retract the mount lock member from the body mount when the mount lock member is pushed in, and at least one contact member respectively on the body mount and the lens mount which are adapted to be brought into contact with each other when the interchangeable lens is locked to the camera body, wherein the at least one contact member provided on the camera body comprises at least one contact pin which can be retractably projected from the body mount and which is continuously biased to project from the body mount, said contact pin, said mount lock releasing member and said mount lock member being associated with each other in such a way that in response to the mount lock member being retracted from the body mount the contact pin is also retracted from the body mount.

4,939,533
AUTO-FOCUSING DEVICE STORING PREDETERMINED CALIBRATION INFORMATION
Masaki Okada, Kawasaki, and Ryosuke Miyamoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 7, 1988, Ser. No. 254,801
Claims priority, application Japan, Oct. 15, 1987, 62-260853
Int. Cl.[5] G03B *3/00*
U.S. Cl. 354—402 **8 Claims**



1. An auto-focusing device having a photosensor unit for receiving luminous flux from an object and generating an

output in accordance with a distance from the object, comprising:

(a) storage means for storing predetermined data regarding lens drive amounts corresponding to the output from said photosensor unit;

(b) selection means for selecting lens drive amount data stored in said storage means in accordance with the output from said photosensor unit; and

(c) lens drive means for driving a lens according to the lens drive amount data selected by said selection means;

wherein a correspondence between the data selected by said selection means and the output from the photosensor unit is predetermined in a calibration operation when the object is disposed at a predetermined distance from the lens and when luminous flux from the object is actually received by said photosensor unit.

4,939,534

FLASH PHOTOGRAPHY SYSTEM

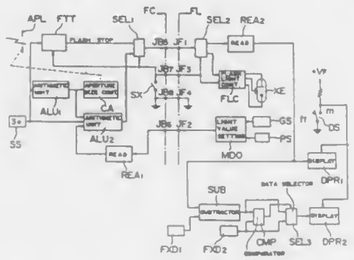
Nobuyuki Taniguchi, Tondabayashi; Masaaki Nakai, Nara; Takanobu Omaki, Sennan; Hiroshi Hosomizu, Nara; Masatake Niwa, Sakai; Toru Inoue, Toyonaka, and Minoru Sekida, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 132,910, Dec. 11, 1987, Pat. No. 4,839,687, which is a continuation of Ser. No. 801,303, Nov. 25, 1985, Pat. No. 4,755,845, Division of Ser. No. 554,870, Oct. 24, 1983, Pat. No. 4,558,939. This application Dec. 2, 1988, Ser. No. 279,042

Claims priority, application Japan, Oct. 22, 1982, 57-186640; Oct. 29, 1982, 57-190996; Dec. 14, 1982, 57-219565

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—416 **4 Claims**



1. A flash light photography system having a camera using an interchangeable lens in conjunction with a flash light emitting device, comprising:

input means for serially inputting a plurality of kinds of data fed from said interchangeable lens including data for controlling said flash device;

selecting means for selecting the data for controlling said flash device; and

transmitting means for transmitting serially the data for controlling said flash device selected by said selecting means to said flash light emitting device.

4,939,535

METHOD OF CONTROLLING TRANSPORT OF PHOTORECEPTIVE SHEET

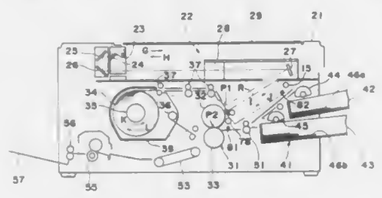
Osamu Hashimoto, Ikoma; Kunio Ohashi, Nara, and Shougo Iwai, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1989, Ser. No. 323,869

Claims priority, application Japan, Mar. 16, 1988, 63-64426; Mar. 16, 1988, 63-64427; Mar. 17, 1988, 63-64901

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 **6 Claims**



1. A method for controlling transport of a photreceptive sheet, comprising the steps of:

feeding the photoreceptive sheet from a roll of the photoreceptive sheet to an exposure position so as to subject the photoreceptive sheet to image forming exposure at a first speed;

transporting the exposed photoreceptive sheet to a buffer region, said buffer region including an independent suspension member;

tensioning said photoreceptive sheet in said buffer region with said independent suspension member;

transporting the photoreceptive sheet disposed at the buffer region to an image forming position; and

feeding the photoreceptive sheet disposed between the exposure position and the image forming position to the image forming position at a second speed, wherein said suspension member in said buffer region controls the first speed of the photoreceptive sheet at the exposure position.

4,939,536

THERMAL FIXING DEVICE IN AN IMAGE RECORDING APPARATUS

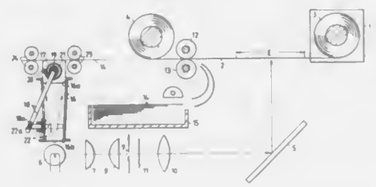
Yumio Matsumoto, Kasugai, and Osamu Takagi, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 21, 1988, Ser. No. 222,577

Claims priority, application Japan, Jul. 21, 1987, 62-182806; Sep. 25, 1987, 62-241073

Int. Cl.[5] G03B *27/32*

U.S. Cl. 355—27 **19 Claims**



1. In an image recording apparatus including an exposure light source for exposing a photosensitive and pressure-sensitive recording sheet to an image bearing light to form a latent image thereon, said exposure light source generating heat, and a pressure developing device for pressure developing said latent image on said photosensitive and pressure-sensitive recording sheet into a visible image and transferring said visible image onto a color developer sheet, a thermal fixing device for thermally fixing said visible image on said color developer sheet, said thermal fixing device comprising:

a heat storing/radiating means disposed between said exposure light source and said color developer sheet on which said visible image is formed, in substantial contact with said color developer sheet, for storing said heat generated by said exposure light source and radiating said heat stored therein toward said color developer sheet for thermally fixing said visible image thereon;

a heat collecting means disposed between said exposure light source and said heat storing/radiating means for collecting said heat generated by said exposure light source, the heat collected by said heat collecting means being applied to said heat storing/radiating means;

a temperature sensing means for sensing a temperature of said heat storing/radiating means and producing a temperature signal representative of said temperature of said heat storing/radiating means; and a heat amount control means responsive to said temperature signal for controlling an amount of heat applied to said color developer sheet to be maintained substantially constant,

said temperature sensing means comprising a bimetallic element thermally coupled to said heat storing/radiating means and deformable in accordance with a temperature change in said heat storing/radiating means; said heat amount control means comprising a shutter means provided in said heat collecting means and operable in response to said deformation of said bimetallic element to control an amount of heat collected by said heat collecting means.

4,939,537

EXPOSURE CONTROLLING APPARATUS

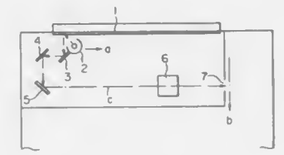
Keiji Masuda, and Fumiaki Hiraike, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

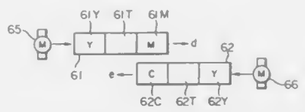
Continuation of Ser. No. 201,303, May 26, 1988, abandoned, which is a continuation of Ser. No. 925,228, Oct. 31, 1986, abandoned. This application Oct. 3, 1989, Ser. No. 418,711

Claims priority, application Japan, Nov. 5, 1985, 60-246271

Int. Cl.[5] G03B *27/72, 27/76*

U.S. Cl. 355—35 **9 Claims**





1. A color copying machine for copying an image on a photosensitive material, said machine comprising;

a scanning exposure means having a light source for irradiating a document to be copied and projecting light reflected from said document through a window,

said window confining a sectional plane of a light path so that a path of said photosensitive material corresponding to the sectional plane of said light path is exposed with light passing through said window,

said scanning exposure means scanning the overall document;

a conveying means for conveying the photosensitive material in a predetermined direction in synchronization with the scanning of said scanning exposure means so as to expose said photosensitive material to an overall image of said document,

a filter means for correcting the spectral intensity of light by inserting, at most, two of three primary color correction filters in said light path in a direction transverse to the said predetermined direction wherein the area ratio of the total area of said sectional plane of said light path and the area of the sectional plane covered by said color correction filter is adjusted to obtain the required spectral intensity; and

a means for regulating the sectional plane of said light path by inserting at least one diaphragm in said light path in said predetermined direction whereby the controlled diaphragm does not cause a change in the adjusted ratio, so that the amount of light is regulated without changing the corrected spectral intensity thereof.

4,939,538

MICROFILM IMAGE PROCESSING APPARATUS

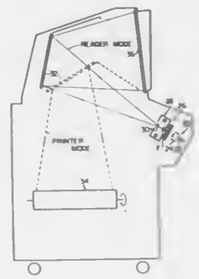
Kuniaki Kamimura; Kenji Sawada, and Yasushi Yamade, all of Azuchi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

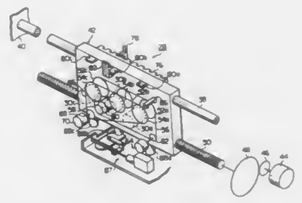
Filed Dec. 23, 1988, Ser. No. 289,032

Claims priority, application Japan, Dec. 25, 1987, 332952; Dec. 25, 1987, 63-332953; Dec. 25, 1987, 62-332955; Dec. 25, 1987, 62-332956

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—45 **10 Claims**





1. An image processing apparatus comprising

(a) light projecting means for projecting a beam of light carrying an image onto a target plane, said light projecting means comprising a plurality of zoom lenses respectively having different ranges of magnification and each capable

of providing a magnification/reduction ratio within a range proper to the particular zoom lens, each of said plurality of zoom lenses selectively being movable into and out of a position aligned with a path of incoming light,

(b) magnification/reduction ratio designating means for designating a desired magnification/reduction ratio to be achieved by said light projecting means,

(c) lens exchange means operative to select from among said plurality of zoom lenses a particular zoom lens having a range of magnification providing the magnification/reduction ratio designated by said magnification/reduction ratio designating means, said lens exchange means being further operative to move the selected zoom lens into said position aligned with the path of incoming light, and

(d) zooming means for zooming the selected zoom lens so that the selected lens provides a magnification to achieve the magnification/reduction ratio designated by said magnification/reduction ratio designating means.

4,939,539

PRINT SIZE ADJUSTING METHOD

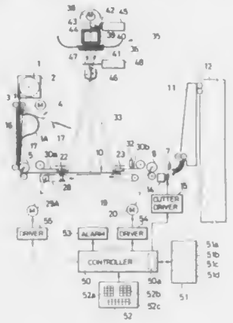
Takao Shigaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 1, 1989, Ser. No. 359,901

Claims priority, application Japan, Jun. 1, 1988, 63-134609

Int. Cl.[5] G03B *29/00, 27/32*

U.S. Cl. 355—77 **6 Claims**



1. A method of making a print by the use of a photographic printer of the type having a variable masking frame at an exposure position, said frame having a mask opening which is variable in size by means of a first pulse motor, a transporting system including a second pulse motor for transporting a photographic paper after exposure, and a cutter located apart from said exposure position, said print being made by exposing said photographic paper after moving back a leading end of said photographic paper from said cutter and then forwarding said exposed photographic paper to said cutter for separating the exposed part thereof from the rest of said photographic paper, said method comprising the steps of:

controlling a rotation of said first pulse motor by means of a corrected number of drive pulses P_f obtained by calculating the following expression:

$$P_f=(\alpha_c K1)\times(\alpha_p/K2)\times P_{fo}$$

where α_c is a correction value common to all print sizes;

α_p is a correction value for a specific print size;

K1,K2 is a constant which is any integer other than 0 (zero); and

P_{fo} is a number of drive pulses obtained by dividing a distance of transportation of said photographic paper by a distance d_f of transportation of said photographic paper per one pulse; and

controlling a rotation of said second pulse motor by means of a corrected number of drive pulses P_m obtained by calculating the following expression:

$$P_m=P_{mo}+(\beta_c-K3)+(\beta_p-K4)$$

where β_c is a correction value common to all print sizes;

β_p is a correction value for a specific print size;

K3, K4 is a constant which is any one of integers including 0 (zero); and

P_{mo} is a number of drive pulses obtained by dividing a distance of movement of said masking frame by a distance d_m of movement of said masking frame per one pulse.

4,939,540

WINKER AUTOMATIC CANCELING DEVICE

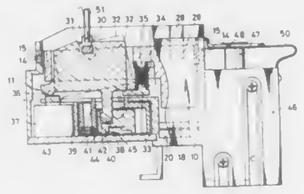
Soetsu Kamada, Furukawa, and Shinji Sasaki, Minamikata, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 319,207

Claims priority, application Japan, May 12, 1988, 63-61587[U]

Int. Cl.[5] H01H *3/16*

U.S. Cl. 335—190 **1 Claim**



1. An automatic canceling device for a winker comprising

a case;

a lever pivotally disposed within said case, said lever having a pair of pivots, the straight line distance between said pivots defining a fulcrum, said lever also having a first end and an opposing second end;

a resilient member having a first resilient end and an opposing second resilient end, said first resilient end operably connected to said first end of said lever;

a first cam follower disposed on said second resilient end of said resilient member such that said first cam follower is biased in a substantially radial direction away from said fulcrum;

a first cam disposed in said case adjacent said first cam follower, said first cam defining a first neutral area and at least one first non-neutral area such that when said first cam follower is adjacent said neutral area, said resilient member is at a lowest biased state, and when said lever is pivoted such that said first cam follower is adjacent said non-neutral position, said resilient member is in a greatest biased state;

a second cam follower disposed on said second end of said lever;

a second cam disposed within said case and adjacent said second cam follower, said second cam follower having a second neutral area and at least one second non-neutral area such that when said first cam follower is in said first neutral area of said first cam, said second cam follower is in said second neutral area of said second cam; and when said first cam follower is in said first non-neutral area of said first cam, said second cam follower is in said second non-neutral area of said second cam;

a solenoid disposed within said case and operably connected to said second cam such that when said solenoid is activated, said second cam is pressed against said second cam follower;

wherein

when said first and second cam followers are adjacent said neutral areas of said first and second cams, respectively, said second cam follower is disposed against said second cam such that pivoting of the lever about the fulcrum is impeded,

and when said first and second cam followers are adjacent said non-neutral areas of said first and second cams, respectively, said lever is locked into position by means of said resilient member pressing said first cam follower against said non-neutral area of said first cam,

and when said solenoid is activated, said second cam follower is pressed against said second cam such that said lever is forced to rotate about said fulcrum, thereby causing said first cam follower to slide along said first cam toward said neutral area without significantly deforming said resilient member.

4,939,542

IMAGE FORMING APPARATUS WITH POTENTIAL CONTROL

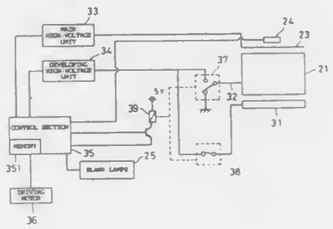
Shigeo Kurando, Takatsuki; Hiromi Sakata, Nara; Masami Yamada, Osaka; Hidehiro Tabuchi, Sakai; Yukio Hashimoto, Kadoma, and Yoshinobu Takemura, Nara, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 10, 1989, Ser. No. 349,850

Claims priority, application Japan, May 23, 1988, 63-125142; May 23, 1988, 63-125143

Int. Cl.[5] G03G *15/00, 15/02*

U.S. Cl. 355—208 **11 Claims**



1. An image forming apparatus comprising

a photoreceptor;

a charger disposed in an opposite position to the surface of the photoreceptor, for charging the surface of the photoreceptor opposite thereto at a fixed potential by corona discharge;

exposure means for exposing an original image so as to form an electrostatic latent image on the surface of the photoreceptor which has been charged by the charger at a fixed potential;

a developing device for developing the electrostatic latent image which has been formed by exposure, into a toner image;

transferring means for transferring the toner image thus developed onto a copy sheet;

a voltage generation circuit for generating a voltage lower than a voltage to be actually induced at the surface of the photoreceptor in the course of image formation;

switching means for switching a state so that said photoreceptor is connected to the voltage generation circuit or earthed;

a potential sensor for measuring an electric potential at the surface of said photoreceptor;

switching signal generating means for outputting a switching signal to the switching means so that a voltage is directly applied to the photoreceptor from the voltage generation circuit at a predetermined timing;

arithmetic operation means for estimating by arithmetic operation a value of a surface potential on the photoreceptor when a high voltage is actually induced on the surface of the photoreceptor during the image formation, said value being estimated on the basis of the value of the surface potential of the photoreceptor which has been measured by the potential sensor at the time when a voltage is applied to the photoreceptor from the voltage generation circuit by operating the switching means:

charger-output control means for controlling an output of the charger based on the estimated value which has been obtained by arithmetic operation by the arithmetic operation means, when applying a voltage to the surface of the photoreceptor by the charger.

4,939,541

IMAGE FORMING APPARATUS

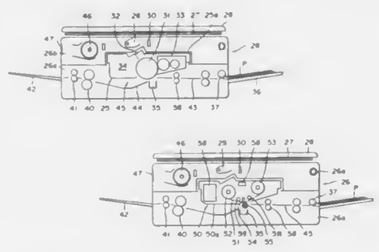
Mitsushi Sugiura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 11, 1989, Ser. No. 336,237

Claims priority, application Japan, Apr. 13, 1988, 63-90742; Apr. 25, 1988, 63-103431; Apr. 25, 1988, 63-103432; Apr. 25, 1988, 63-103433; Apr. 25, 1988, 63-103434; Apr. 25, 1988, 63-103435

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—202 **14 Claims**



1. An image forming apparatus, comprising:

a main assembly incorporating therein a paper transport mechanism for transporting a paper,

a first unit and a second unit interchangeably set in place in said main assembly, said first unit including a photosensitive member and a processing device for copying an image on said paper by the electrophotographic copying process and said second unit including a thermal head and an ink ribbon transport device for transporting an ink ribbon carrying an ink thereon,

wherein the formation of an image on said paper is effected by said first unit using said electrophotographic copying process or by said second unit, using thermal transfer printing process resorting to said thermal head and said ink ribbon.

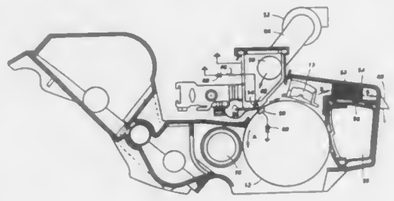
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,543

IONOGRAPHIC OZONE FILTERING SYSTEM

Laurence S. Barker, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1988, Ser. No. 242,768
Int. Cl.[5] G03G *21/00, 15/00, 15/02*
U.S. Cl. 355—215 6 Claims



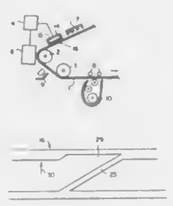
1. A fluid jet assisted ion projection machine for providing latent images on an image bearing member comprising:
an ion generator,
an inlet channel and an outlet channel connected to the ion generator,
a source of transport fluid in communication with the inlet channel for delivering transport fluid to move ions through the outlet channel, the outlet channel being located near the image bearing member,
modulation means located adj·cent the outlet channel for controlling the passage of ions therethrough to the image bearing member,
an ozone filter supported within the machine,
a transport fluid path disposed between the outlet channel and the ozone filter, and
a source of generated ozone disposed within the transport fluid path, the transport fluid conveying the ozone in the transport fluid path to the ozone filter.

4,939,544

MASK FOR RADIATION EMITTING PANEL

James H. Cain, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 1, 1989, Ser. No. 430,224
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—228 8 Claims



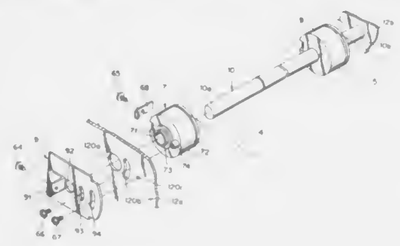
1. A mask having a narrow elongated aperture for use in masking a surface of a member which member is moved across a short dimension of said aperture, said mask comprising means defining a narrow elongated aperture having elongated opposed sides, and at least one connecting strip of masking material connecting said elongated sides to maintain the width of the aperture, said connecting strip running obliquely with respect to the intended movement of said member, and a portion of one or both of said elongated sides being recessed to compensate for the portion of said member masked by said connecting strip.

4,939,545

APPARATUS FOR ADJUSTING OPTICAL SYSTEM OF AN IMAGE FORMING APPARATUS

Naoki Sakamoto, Hirakata, and Masanori Itakiyo, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 12, 1989, Ser. No. 364,369
Claims priority, application Japan, Jun. 15, 1988, 63-147795
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—55 5 Claims



1. Apparatus for adjusting optical system of an image forming apparatus, adapted to adjust the positions of a first moving frame and a second moving frame respectively engaged with a pair of wrapping power transmission members which are wrapped round pulleys and being installed with a predetermined distance provided therebetween, comprising:
a shaft rotatably supported by a pair of lateral plates;
an adjustment plate disposed at one end of said shaft so as to be rotatable integrally therewith, said adjustment plate being attached to one of said lateral plates so as to be adjustable in rotation in the rotation direction of said shaft;
a first member to be wrapped rotatably supported by said one end of said shaft, to which one of said wrapping power transmission members is secured; and
a second member to be wrapped secured to the other end of said shaft, to which the other wrapping power transmission member of said wrapping power transmission members is secured,
said adjustment plate and said first member to be wrapped being engaged with each other so as to be adjustable in relative rotation in the circumferential direction of said first member to be wrapped.

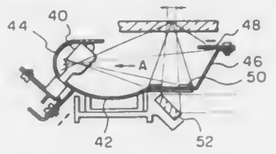
4,939,546

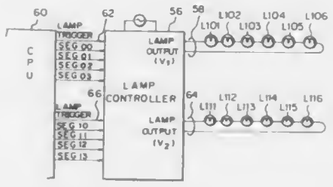
ILLUMINATING DEVICE FOR COPIER

Nobuo Kasahara, and Yukio Noguchi, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 20,903, Mar. 2, 1987, abandoned. This application Feb. 8, 1989, Ser. No. 310,001
Claims priority, application Japan, Feb. 28, 1986, 61-42998
Int. Cl.[5] G03B *27/54, 27/72;* G03G *15/04*
U.S. Cl. 355—70 3 Claims

1. A lighting device for an electrophotographic color copier having a plurality of color copying cycles for illuminating a document, said copier including a single slit exposing means, a single photoconductive element, and a means for performing a plurality of times of exposure and a corresponding number of times of development, said plurality of times corresponding to the number of color copy cycles, said lighting device having at least a lengthwise direction and comprising:
a single reflector extending in said lengthwise direction of said lighting device;
a plurality of pairs of lamps arranged along a line of focus of said reflector in said lengthwise direction of said lighting device, a first lamp of each pair of lamps being connected in a first lamp circuit and a second lamp of each pair of lamps being connected in a second lamp circuit; and
a control means for separately controlling the voltage applied to each of said first and second lamp circuits at each of said plurality of times of exposure corresponding to each color copying cycle to separately control the intensity of said lamps in each circuit and the number of circuits





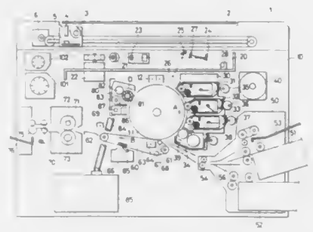
actuated, the total intensity of said lighting device being determined by the number of circuits actuated and the voltage applied to each circuit so that different total intensities occur for each color copying cycle.

4,939,547

MULTICOLOR ELECTROPHOTOGRAPHY APPARATUS

Noboru Miyaji, Osaka; Hiroshi Terada, Ikoma; Hayato Kamada, Osaka, and Hidenori Kunishige, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 15, 1988, Ser. No. 188,163
Claims priority, application Japan, Apr. 17, 1987, 62-95663; Apr. 17, 1987, 62-95665; May 15, 1987, 62-119445; Nov. 20, 1987, 62-294424; Dec. 23, 1987, 62-325814; Dec. 23, 1987, 62-325815
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—245 15 Claims



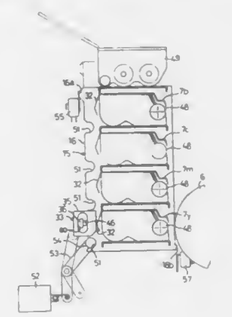
1. A multicolor electrophotography apparatus comprising:
image-holding means substantially shaped cylindrically and arranged to be rotatable about its own axis, said image-holding means being arranged to hold an electrostatic image on its circumferential surface;
exposing means for linearly exposing the circumference of said image-holding means in a direction of the axis of said image-holding means so as to form said electrostatic image thereon;
a plurality of developing means movably provided along the circumference of said image-holding means, said plurality of developing means for developing a plurality of overlapping different-color toner images, each of said plurality of developing means having developer-holding means for application of a predetermined developer to said image-holding means;
drive means for allowing each of said plurality of developing means to take a developing position and a non-developing position, each of said plurality of developing means being close to said imaging-holding means when it is at said developing position and being separated therefrom when it is at said non-developing position, whereby said drive means causes rotational motion of at least one of said plurality of developing means which comprises a black-color developing device for forming a black-color toner image and horizontal motion of the other developing means which comprise color developing devices for forming different-color toner images between said developing position and said non-developing positions;
selection means coupled to said drive means for selectively controlling said plurality of developing means so as to selectively perform formations of said plurality of different-color images, said selection means controlling said drive means so that, when said exposing means is in a non-operated state, at least one of said plurality of developing means takes said developing position and the other developing means takes said non-developing position.

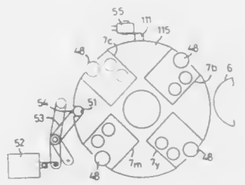
4,939,548

IMAGE FORMING APPARATUS

Takanobu Yamada, and Nobuyuki Kawai, both of Osaka, Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Mar. 29, 1989, Ser. No. 329,975
Claims priority, application Japan, Apr. 1, 1988, 63-81973
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—245 21 Claims





1. An image forming apparatus having a plurality of developing units which are accommodating different colored developers for developing an electrostatic latent image on an image supporting member, comprising:
a movable support member for attachably and detachably supporting a plurality of developing units wherein the developing units are moved upwardly and downwardly;
a balance means for balancing with the movable support member provided with a plurality of developing units

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wherein a balanced state is maintained at any moving position of the movable support member;

a lock means capable of engaging with an engaging portion provided on the movable support member to lock the movable support member at a desired position; and

a first detection means for detecting whether the movable support member moves or not from the position it was locked when the movable support member is released from a locked state by the lock means.

15. An image forming apparatus having a plurality of developing units which are accommodating different colored developers for developing an electrostatic latent image on an image supporting member, comprising:

a rotary support member for attachably and detachably supporting a plurality of developing units which maintain mutual balance on a common circle orbit by its own rotation and moves the developing units along the circular orbit;

a lock means capable of engaging with an engaging portion provided on the rotary support member to lock the movable support member at a desired position excepting at least either one of the positions where the rotary support member is positioned at a developing location; and

a detection means for detecting whether or not the rotary support member moves from the position it was locked when the rotary support member is unlocked by the lock means.

4,939,549

IMAGE FORMING APPARATUS WITH TEMPERATURE CONTROLLING SHIELD

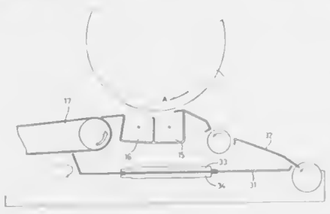
Hideki Endo, Osaka; Noboru Fukuoka, Ohzu, and Mitsuharu Okada, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1989, Ser. No. 378,353

Claims priority, application Japan, Jul. 11, 1988, 63-92095[U]

Int. Cl.[5] G03G *15/14, 21/00*

U.S. Cl. 355—271 **4 Claims**



1. An apparatus for the formation of images comprising a transfer unit for transferring a toner image formed on a photosensitive drum onto a sheet of copy paper, a conveying belt disposed adjacent to the transfer unit for conveying the copy sheet in a given direction, and a shield having a part which is located in a region where air flow is generated from below the upstream end of the conveying belt by the movement thereof, said shield interrupting said air flow and being located so as to cover the entire region below the transfer unit, dividing said entire region into upper and lower portion.

4,939,550

TRANSFER PAPER GUIDE DEVICE FOR AN ELECTROSTATIC PHOTOGRAPHIC APPARATUS

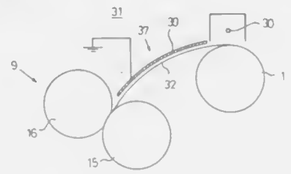
Hiromi Takada, Yokohama; Toshio Shimazaki, Tokyo; Keiji Okamoto, and Hideo Aoki, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 17, 1988, Ser. No. 195,502

Claims priority, application Japan, May 18, 1987, 62-119120

Int. Cl.[5] G03G *15/20, 21/00*

U.S. Cl. 355—282 **3 Claims**



1. An electrostatic photographic apparatus having a photosensitive drum,

a fixing device composed of a pair of rollers in pressure-contact with each other over a predetermined nip width, and

a guide member having a guide surface extending so as to slidably engage and guide an upper surface of a transfer paper between a separation point of said transfer paper from said photosensitive drum and inlet end of said nip of said pair of rollers of the fixing device, said transfer paper having a toner image transferred onto a lower surface thereof from said photosensitive drum and being separated therefrom at said separation point to be sent off horizontally, said separation point being above said nip portion,

wherein said guide surface of said guide member is formed into circular arc having a radius of curvature smaller than a radius of curvature formed by a transfer paper having smallest stiffness among the paper which may be used for said electrostatic photographic apparatus when the transfer paper is being supported horizontally at said separation point on said photosensitive drum,

wherein a tangential line of said guide surface at an end thereof closest to said photosensitive drum is horizontal, and

wherein a tangential line of said guide surface at an end thereof closest to said fixing device is substantially coincident with a tangential line of said rollers at a center of said nip portion.

4,939,551

CLEANING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

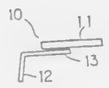
Mitsuaki Hashiyama; Atsushi Inoue, and Yoshio Yamada, all of Ibaraki, Japan, assignors to Toyo Tire & Rubber Company Limited, Osaka, Japan

Filed Dec. 28, 1988, Ser. No. 291,029

Claims priority, applicatioo Japan, Mar. 3, 1988, 63-50884

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—299 **2 Claims**



1. A cleaning device for an electrophotographic copying machine having a structurally unified cleaning member comprising a blade member and a holding member bonded together by a heat-sensitive adhesive having a contact angle with water at 23° C. of 90° to 100°.

4,939,552

COPYING APPARATUS WITH DRUM OR FIXING ROLLER CLEANING BELT DRIVEN FROM DOCUMENT SCANNER

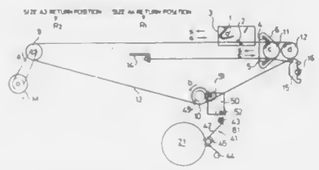
Masahiro Nakanishi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1988, Ser. No. 238,821

Claims priority, application Japan, Aug. 31, 1987, 62-133322[U]; Aug. 8, 1988, 63-105089[U]; Aug. 11, 1988, 63-106251[U]

Int. Cl.[5] G03G *21/00, 15/20*

U.S. Cl. 355—300 **18 Claims**



1. A copying apparatus, comprising:

a photoconductive drum;

a scanning means for scanning a document placed on a document support table and irradiating an image of the scanned document on a surface of said photoconductive drum, said scanning means having a scanning member movable from a scanning starting position and a scanning ending position and back to said scanning starting position, and a means for driving said scanning member in said movement;

a developing means for developing an electrostatic latent image formed on the photoconductive drum into a toner image;

a cleaning means for removing toner remaining on the surface of said photoconductive drum after a toner image has been removed from said drum, said cleaning means having a cleaning web in contact with said surface and a means for transporting said cleaning web for changing the portion of said cleaning web contacting said surface; and

a connecting means for connecting said transporting means for the cleaning web to said driving means for said scanning means, said connecting means including means for transmitting a driving force of said driving means to said transporting means as said scanning member returns to the scanning starting position from the scanning ending position.

4,939,553

ORIGINAL DETECTION APPARATUS

Isamu Sato, Yokohama, and Yoshihiro Funamizu, Soka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 331,172

Claims priority, application Japan, Apr. 4, 1988, 63-81212; May 11, 1988, 63-112561; Feb. 22, 1989, 01-42053

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—311 **27 Claims**

1. An original detection apparatus comprising:

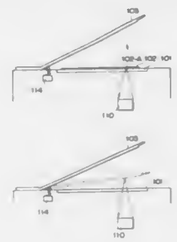
a placing table for placing an original thereon;

an openable/closable pressing member for covering the original placed on said placing table;

original detection means, arranged below said placing table, for detecting a presence/absence of the original on said placing table;

open/closed detection means for detecting an open/closed state of said pressing member; and

means for judging whether or not the original is placed on said placing table, on the basis of an output from said original detection means obtained when said open/closed detection means detects that said pressing member is in an



open state and an output from said original detection means obtained when said open/closed detection means detects that said pressing member is in a closed state.

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SHEET CONVEYANCE APPARATUS

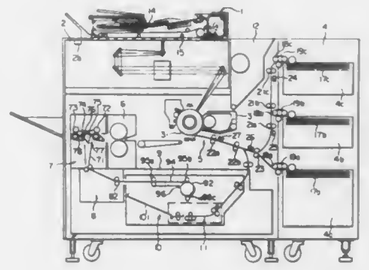
Tsugio Hirabayashi; Masahito Kuratsune; Kohji Yoshie; Hiroyuki Ari; Yoshikazu Maekawa; Masaru Ushio, all of Hachioji; Masayuki Miyazaki, Tama, and Chiharu Kobayashi, Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 30, 1987, Ser. No. 126,615

Claims priority, application Japan, Dec. 1, 1986, 61-286261; Jan. 20, 1987, 62-11162; Jul. 21, 1987, 62-181680; Jul. 21, 1987, 62-181675

Int. Cl.[5] G03G *15/00*; B65H *7/00*

U.S. Cl. 355—317 **10 Claims**



1. An electrophotographic copying machine comprising:

at least one sheet tray for holding a plurality of sheets;

a light source for generating exposure light;

a photoreceptor for receiving a toner image;

scanning exposure means for scanning the exposure light onto a document to be copied, and for forming an image of the exposure light reflected from the document onto the photoreceptor, said scanning means performing the scanning operation for each of the plurality of sheets;

means for moving said photoreceptor at a predetermined line speed;

registration means disposed along said sheet path for transporting a sheet to said photoreceptor with a registration timing so that a toner image disposed on the photoreceptor is transferred onto the sheet;

transport means disposed along said sheet path for transporting a sheet to said registration means;

feed means disposed along said sheet path for feeding a sheet

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out of said sheet tray to said transport means, at a desired feed timing;

means for coordinating the sequential operation of said feed means, said transport means and said registration means to transport the sheet at a speed equal to said line speed of said photoreceptor so that a plurality of sheets serially fed out by said feed means are concurrently transported along said sheet path;

timing means for generating a timing reference signal in response to the scanning operation of said scanning exposure means; and

control means for controlling the feed timing of said feed means and the registration timing of said registration means in response to the timing reference signal of said timing means so that said feed means feeds a sheet out of said sheet tray in response to the timing reference signal generated in response to the scanning operation for a previously fed out sheet, said control means including an initial timing means for supplying the timing reference signal before a predetermined number of sheets are fed to said sheet path at an initial stage of continuous copy operation.

4,939,555

TRELLIS CODING ARRANGEMENT

Arthur R. Calderbank, Plainfield, and Neil J. A. Sloane, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 13, 1987, Ser. No. 49,747
Int. Cl.[5] H04L *25/34*
U.S. Cl. 375—17 16 Claims



1. A transmitter adapted to generate a sequence of output signals in response to a sequence of (k+n)-bit input words, each of said output signals representing a respective point of predetermined p-dimensional lattice, k and n being integers and p being an integer greater than 4, said transmitter comprising

coding means responsive to at least the values of n bits of each input word in said input word sequence for identifying one of 2^m predetermined cosets in said lattice, m being an integer greater than n, said predetermined cosets being other than the cosets **1** through **16** defined as follows:

11	Coset 7	Coset 4	Coset 9	Coset 10
12	A0A0B1A1	A0A0B1A0	A0A0B0B1	A0A0B0B0
13	A0B1A0A0	A0B1A0A1	A0B1A1B0	A0B1A1B1
14	A0B0A1A0	A0B0A1A1	A0B0A0B0	A0B0A0B1
15	A0A1B0A1	A0A1B0A0	A0A1B1B1	A0A1B1B0
16	B1A0B0B0	B1A0B0B1	B1A0B1A0	B1A0B1A1
17	B1B1A1B1	B1B1A1B0	B1B1A0A1	B1B1A0A0
18	B1B0A0B1	B1B0A0B0	B1B0A1A1	B1B0A1A0
19	B1A1B1B0	B1A1B1B1	B1A1B0A0	B1A1B0A1
20	B0A0B0B1	B0A0B0B0	B0A0B1A1	B0A0B1A0
21	B0B1A1B0	B0B1A1B1	B0B1A1A0	B0B1A0A1
22	B0B0A0B0	B0B0A0B1	B0B0A1A0	B0B0A1A1
23	B0A1B1B1	B0A1B1B0	B0A1B0A1	B0A1B0A0
24	A1A0B1A0	A1A0B1A1	A1A0B0B0	A1A0B0B1
25	A1B1A0A1	A1B1A0A0	A1B1A1B1	A1B1A1B0
26	A1B1A1A1	A1B0A1A0	A1B0A0B1	A1B0A0B0
27	A1A1B1A0	A1A1B0A1	A1A1B1B0	A1A1B1B1
28	Coset 5	Coset 6	Coset 11	Coset 8
29	A0A0B1B1	A0A0B1B0	A0A0B0A1	A0A0B0A0
30	A0B1A0B0	A0B1A0B1	A0B1A1A0	A0B1A1A1
31	A0B0A1B0	A0B0A1B1	A0B0A0A0	A0B0A0A1

-continued

32	A0A1B0B1	A0A1B0B0	A0A1B1A1	A0A1B1A0
33	B1A0B0A0	B1A0B0A1	B1A0B1B0	B1A0B1B1
34	B1B1A1A1	B1B1A1A0	B1B1A0B1	B1B1A0B0
35	B1B0A0A1	B1B0A0A0	B1B0A1B1	B1B0A1B0
36	B1A1B1A0	B1A1B1A1	B1A1B0B0	B1A1B0B1
37	B0A0B0A1	B0A0B0A0	B0A0B1B1	B0A0B1B0
38	B0B1A1A0	B0B1A1A1	B0B1A0B0	B0B1A0B1
39	B0B0A0A0	B0B0A0A1	B0B0A1B0	B0B0A1B1
40	B0A1B1A1	B0A1B1A0	B0A1B0B1	B1A1B0B0
41	A1A0B1B0	A1A0B1B1	A1A0B0A0	A1A0B0A1
42	A1B1A0B1	A1B1A0B0	A1B1A1A1	A1B1A1A0
43	A1B0A1B1	A1B0A1B0	A1B0A0A1	A1B0A0A0
44	A1A1B0B0	A1A1B0B1	A1A1B1A0	A1A1B1A1
45	Coset 15	Coset 12	Coset 1	Coset 2
46	A0A0A1A1	A0A0A1A0	A0A0A0B1	A0A0A0B0
47	A0B1B0A0	A0B1B0A1	A0B1B1B0	A0B1B1B1
48	A0B0B1A0	A0B0B1A1	A0B0B0B0	A0B0B0B1
49	A0A1A0A1	A0A1A0A0	A0A1A1B1	A0A1A1B0
50	B1A0A0B0	B1A0A0B1	B1A0A1A0	B1A0A1A1
51	B1B1B1B1	B1B1B1B0	B1B1B0A1	B1B1B0A0
52	B1B0B0B1	B1B0B0B0	B1B0B1A1	B1B0B1A0
53	B1A1A1B0	B1A1A1B1	B1A1A0A0	B1A1A0A1
54	B0A0A0B1	B0A0A0B0	B0A0A1A1	B0A0A1A0
55	B0B1B1B0	B0B1B1B1	B0B1B0A0	B0B1B0A1
56	B0B0B0B0	B0B0B0B1	B0B0B1A0	B0B0B1A1
57	B0A1A1B1	B0A1A1B0	B0A1A0A1	B0A1A0A0
58	A1A0A1A0	A1A0A1A1	A1A0A0B0	A1A0A0B1
59	A1B1B0A1	A1B1B0A0	A1B1B1B1	A1B1B1B0
60	A1B0B1A1	A1B0B1A0	A1B0B0B1	A1B0B0B0
61	A1A1A0A0	A1A1A0A1	A1A1A1B0	A1A1A1B1
62	Coset 13	Coset 14	Coset 3	Coset 0
63	A0A0A1B1	A0A0A1B0	A0A0A0A1	A0A0A0A0
64	A0B1B0B0	A0B1B0B1	A0B1B1A0	A0B1B1A1
65	A0B0B1B0	A0B0B1B1	A0B0B0A0	A0B0B0A1
66	A0A1A0B1	A0A1A0B0	A0A1A1A1	A0A1A1A0
67	B1A0A0A0	B1A0A0A1	B1A0A1B0	B1A0A1B1
68	B1B1B1A1	B1B1B1A0	B1B1B0B1	B1B1B0B0
69	B1B0B0A1	B1B0B0A0	B1B0B1B1	B1B0B1B0
70	B1A1A1A0	B1A1A1A1	B1A1A0B0	B1A1A0B1
71	B0A0A0A1	B0A0A0A0	B0A0A1B1	B0A0A1B0
72	B0B1B1A0	B0B1B1A1	B0B1B0B0	B0B1B0B1
73	B0B0B0A0	B0B0B0A1	B0B0B1B0	B0B0B1B1
74	B0A1A1A1	B0A1A1A0	B0A1A0B1	B0A1A0B0
75	A1A0A1B0	A1A0A1B1	A1A0A0A0	A1A0A0A1
76	A1B1B0B1	A1B1B0B0	A1B1B1A1	A1B1B1A0
77	A1B0B1B1	A1B0B1B0	A1B0B0A1	A1B0B0A0
78	A1A1A0B0	A1A1A0B0	A1A1A1A0	A1A1A1A1

wherein A0, A1, B0 and B1 respectively represent 2-dimensional symbols of 2-dimensional subsets A0, A1, B0 and B1 of a predetermined 2-dimensional symbol constellation, said 2-dimensional symbols being represented by said 2-dimensional subsets in such a way that B1 alternates with A0 within first rows of said 2-dimensional symbols, A1 alternates with B0 within second rows of said 2-dimensional symbols, said first rows alternate with said second rows in said 2-dimensional symbol constellation, B1 alternates with A1 within first columns of said 2-dimensional symbols, B0 alternates with A0 within second columns of said 2-dimensional symbols, and said first columns alternate with said second columns in said 2-dimensional symbol constellation,

means responsive at least to the k bits of said each input word other than said n bits for identifying an individual one of the lattice points in said one predetermined coset, and

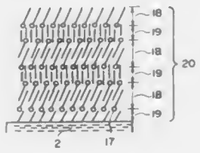
means for generating a signal representing said individual one of said lattice points, that signal being an individual one of said sequence of output signals.

4,939,556

CONDUCTOR DEVICE

Ken Eguchi; Haruki Kawada, both of Atsugi; Kunihiro Sakai, Yamato; Yoshinori Tomida; Hiroshi Matsuda, both of Atsugi; Toshiaki Kimura, Sagamihara; Kiyoshi Takimoto, Wako; Toshihiko Miyazaki, Atsugi, and Yuko Morikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1987, Ser. No. 71,393
Claims priority, application Japan, Jul. 10, 1986, 61-160931; Jul. 11, 1986, 61-161978; Sep. 16, 1986, 61-217818; Oct. 8, 1986, 61-239847; Nov. 28, 1986, 61-282053
Int. Cl.[5] H01L *27/12, 45/00, 49/02, 29/28*
U.S. Cl. 357—4 36 Claims



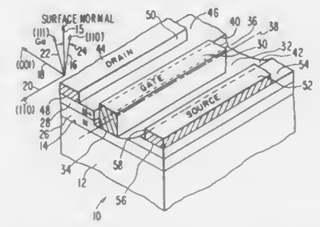
1. A non-linear type device capable of resonance tunnel phenomenon comprising a semiconductor and electrodes, said semiconductor including alternating laminated insulating and conductive layers, each layer being made of an organic material, said insulating layer being a monomolecular film or monomolecular built-up film of an organic compound wherein said organic compound is a charge transfer complex having an insulating, hydrophobic part and a conductive, hydrophilic part in combination.

4,939,557

(110) GAAS MICROWAVE FET

Yi-Ching Pao, San Jose, and James S. Harris, Stanford, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 15, 1989, Ser. No. 311,903
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—22 31 Claims



1. A FET suitable for use at microwave frequencies comprising:

a body of semi-insulating single crystal GaAs having a substantially planar surface wherein the (110) axis is tilted from the normal of said substantially planar surface in the direction to expose more of the (111) Ga face in a range from 2° to 8°;

a first layer of N type semiconductor material epitaxially grown above said substantially planar surface;

a second layer of GaAs material epitaxially grown on said first layer;

an elongate gate electrode disposed along the bottom of an anisotropically etched trench extending through portions of said second layer, said trench having a longitudinal center line disposed parallel said planar surface and rotationally aligned such that said trench possesses first and second longitudinal sidewalls, said first sidewall being substantially vertical and said second sidewall being tilted outwardly;

a drain electrode formed in ohmic contact on selected portions of said second layer, said drain electrode possessing an elongate edge disposed proximate and parallel said first longitudinal sidewall; and

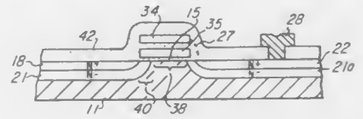
a source electrode formed in ohmic contact on other selected portions of said second layer, said source electrode possessing an elongate edge disposed proximate and parallel said second longitudinal sidewall.

4,939,558

EEPROM MEMORY CELL AND DRIVING CIRCUITRY

Michael C. Smayling, Missouri City, and Sebastiano D'Arrigo, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 65,699, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 780,851, Sep. 27, 1985, abandoned. This application Nov. 21, 1988, Ser. No. 273,670
Int. Cl.[5] H01L *29/78, 29/34*
U.S. Cl. 357—23.5 12 Claims



1. An electrically erasable programmable semiconductor memory cell, comprising:

a floating gate on a face of a semiconductor body;

a channel beneath said floating gate;

a dielectric layer disposed between said channel and said floating gate;

heavily- and lightly-doped, spaced-apart source and drain regions of a first conductivity type in said face on either side of the channel;

a single control gate spaced from and overlying said floating gate, said control gate aligned with said floating gate on both sides of said channel;

a sidewall spacer adhered to one side of said floating gate and said overlying control gate;

wherein one of the lightly-doped regions of said heavily- and lightly-doped source and drain regions forms a reach through region beneath and overlapped by an edge portion of said floating gate opposite said sidewall spacer, said reach-through region being separated from said floating gate by said dielectric layer and providing a source of electrons over a surface uniformly spaced from said floating gate from which tunneling to and from the floating gate can take place;

wherein the thickness of said dielectric layer between said floating gate and said channel is approximately the same as the thickness of said dielectric layer between said floating gate and said overlapped portion of said reach-through region;

wherein tunneling of electrons between said reach-through region and said floating gate takes place upon the electric field between the channel and floating gate exceeding a threshold value.

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4,939,559

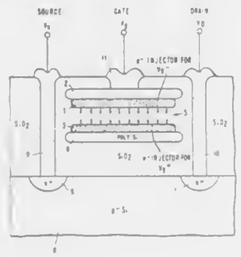
DUAL ELECTRON INJECTOR STRUCTURES USING A CONDUCTIVE OXIDE BETWEEN INJECTORS

Donelli J. DiMaria, Ossining, and David W. Dong, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 701,815, Feb. 19, 1985, abandoned, which is a continuation of Ser. No. 330,913, Dec. 14, 1981, abandoned. This application Apr. 1, 1986, Ser. No. 847,127

Int. Cl.[5] H01L *49/02, 29/78, 29/34*

U.S. Cl. 357—23.5 **33 Claims**



1. A dual electron injector structure comprising first, second and third vertically disposed insulator regions each containing excess conductive material sufficient to render said regions conductive said second region being less conductive than and contiguous with said first and third regions.

4,939,560

CHARGE TRANSFER DEVICE

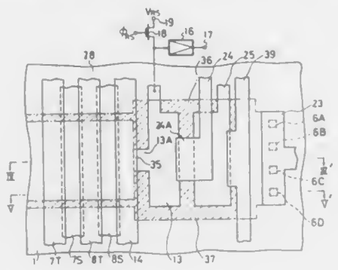
Tadakuni Narabu; Yasuhito Maki, and Tetsuya Kondo, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 116,256, Nov. 3, 1987, abandoned. This application Mar. 29, 1989, Ser. No. 331,000

Claims priority, application Japan, Nov. 10, 1986, 61-267264

Int. Cl.[5] H01L *29/78, 27/02, 27/04*

U.S. Cl. 357—24 **7 Claims**



1. A charge transfer device, comprising:

a charge detecting section including a floating gate electrode and channel stopper regions formed substantially about ends of said floating gate electrode that extend perpendicularly to a charge transfer direction so that said ends are substantially confined between said channel stopper regions; and

a charge transfer section including an output gate electrode formed adjacent said floating gate electrode; and

said floating gate electrode having a protruding portion that overlaps said output gate electrode, said protruding portion having a width less than a width of said overlapped output gate electrode, said widths being measured perpendicularly to the charge transfer direction at a point of overlap, said protruding portion being confined between said channel stopper regions.

4,939,561

INFRARED SENSOR

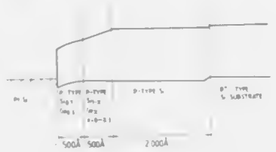
Eiso Yamaka, Ushiku; Fumio Hasegawa, Tsukuba; Takashi Moriyama, Kashiwa, and Tamisuke Koizumi, Matsudo, all of Japan, assignors to National Space Development Agency of Japan and Foundation for Advancement of International Science, both of, Japan

Filed Mar. 22, 1989, Ser. No. 327,455

Claims priority, application Japan, Mar. 24, 1988, 63-70808

Int. Cl.[5] H01L *27/14, 31/00, 29/48, 29/161*

U.S. Cl. 357—30 **10 Claims**



1. An infrared sensor, comprising a PtSi metal and a semiconductor contacted to each other via a rectifying potential barrier, the semiconductor including a p-type $Si_{1-X}Ge_X$ epitaxial alloy crystal layer grown on an Si substrate, wherein X denotes the Ge atomic fraction in the p-type $Si_{1-X}Ge_X$ epitaxial alloy crystal layer, wherein the Ge atomic fraction X in the p-type $Si_{1-X}Ge_X$ epitaxial alloy crystal layer increases from zero to a predetermined upper limit in a direction away from the Si substrate toward the PtSi metal, and wherein the upper limit is in the range of 0.25 to 0.35.

4,939,562

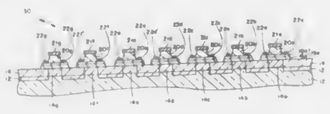
HETEROJUNCTION BIPOLAR TRANSISTORS AND METHOD OF MANUFACTURE

Michael G. Adlerstein, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 7, 1989, Ser. No. 334,350

Int. Cl.[5] H01L *29/72*

U.S. Cl. 357—34 **18 Claims**



1. A heterojunction bipolar transistor, comprising:

a substrate having first and second opposing surfaces with a ground plane conductor disposed over a first surface thereof;

a first layer comprised of a first wide band gap Group III-V material disposed over at least a portion of the second surface of said substrate;

a composite base layer comprising:

(i) a second layer comprised of a second, different Group III-V material disposed over said first layer having a narrower band gap than the material of the first layer;

(ii) a third layer of a third, different Group III-V material disposed over said second layer having a narrower band gap than the first and second materials;

a fourth layer of said second Group III-V material disposed over said third layer;

first means for providing an ohmic collector contact to said fourth layer; and

second means for providing an ohmic base contact to said third layer.

4,939,563

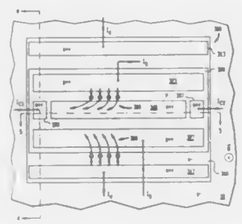
DOUBLE CARRIER DEFLECTION HIGH SENSITIVITY MAGNETIC SENSOR

Frank F. Fang, Yorktown Heights, and Denny D. Tang, Pleasantville, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 18, 1989, Ser. No. 395,836

Int. Cl.[5] H01L *27/22, 29/82, 29/96, 43/00*

U.S. Cl. 357—35 **18 Claims**



1. A semiconductor magnetic field sensor comprising:

an emitter region having two emitter connections associated therewith for establishing a bias lateral majority carrier flow through said emitter region, wherein said bias majority carrier flow in said emitter region is oriented substantially perpendicular to both a direction of a magnetic field that is to be detected with the sensor and to a direction of transistor current that will flow through said sensor;

a base region adjoining at least a portion of said emitter region so as to form an emitter-base junction with a junction voltage occurring therebetween, said base region having two base connections associated therewith for establishing a bias lateral majority carrier flow through said base region, wherein said bias majority carrier flow in the base region is oriented substantially opposite to the direction to said bias majority carrier flow in the emitter region and substantially perpendicular to both the direction of the magnetic field and to the direction of the transistor current;

first and second collector regions oppositely situated on said base region, whereby, when said magnetic field is applied to said sensor in the presence of both of said bias lateral majority carrier flows, both of the bias lateral majority carrier flows will deflect in substantially the same direction so as to locally increase the junction voltage located in a vicinity of the first collector region and decrease the junction voltage located in a vicinity of the second collector region so as to exponentially increase the collector current that will flow through said first collector region and exponentially decrease the collector current that will flow through said second collector region.

4,939,564

GATE-CONTROLLED BIDIRECTIONAL SEMICONDUCTOR SWITCHING DEVICE WITH RECTIFIER

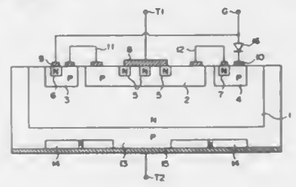
Kouichi Asakura, Tokyo, and Junichi Miwa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 4, 1989, Ser. No. 347,085

Claims priority, application Japan, May 13, 1988, 63-116697

Int. Cl.[5] H01L *29/747*

U.S. Cl. 357—39 **8 Claims**



1. A gate-controlled bidirectional semiconductor switching device comprising:

a first conductive layer of a first conductivity type;

second to fourth conductive layers, of a second conductivity type, which are formed separately in a first surface area of said first conductive layer;

fifth to seventh conductive layers, of the first conductivity type, respectively formed in the surface areas of said second to fourth conductive layers;

an eighth conductive layer, of the second conductivity type, formed in a second surface area of said first conductive layer;

a ninth conductive layer, of the first conductivity type, formed in the surface area of said eighth conductive layer;

a first electrode layer, formed in continuous contact with said second and fifth conductive layers;

first and second gate electrodes respectively in contact with said fourth and sixth conductive layers;

a gate terminal coupled with said second gate electrode;

a rectifier means connected between said gate terminal and said first gate electrode, said rectifier means allowing a current to flow from said gate terminal to said fourth conductive layer, and prohibiting a current from flowing from said fourth conductive layer to said gate terminal;

a first wiring, for connecting said second and third conductive layers to each other;

a second wiring, for connecting said second and seventh conductive layers to each other; and

a second electrode layer, formed in continuous contact with said eighth and ninth conductive layers.

4,939,565

SEMICONDUCTOR DEVICE

Kazumi Suzuki, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 174,514

Claims priority, application Japan, Apr. 9, 1987, 62-98110; May 15, 1987, 62-119220

Int. Cl.[5] H01L *29/747, 29/74*

U.S. Cl. 357—39 **18 Claims**

1. A semiconductor device comprising:

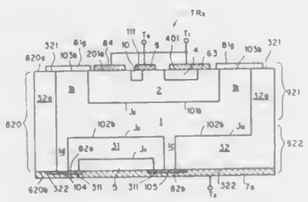
a semiconductor chip having:

a first semiconductor layer of a first conductivity type,

a first base layer of a second conductivity type formed on a part of a first major surface of said first semiconductor layer,

a gate portion base layer of said second conductivity type formed oo another part of said first major surface of said first semiconductor layer,

a first emitter layer of said first conductivity type formed in a part of a surface of said first base layer,
a gate portion emitter layer of said first conductivity type formed in a part of a surface of said gate portion base layer,
an isolation layer formed between said first base layer and said gate portion base layer to spatically isolate said first base layer from said gate portion base layer, said isolation layer being different in conductive character from said first base layer and said gate portion base layer,
a second base layer of said second conductivity type formed on a second major surface of said first semiconductor layer, and
a second emitter layer of said first conductivity type formed in a part of a surface of said second base layer;
a first layer of a first main electrode formed on a surface of said first emitter layer;



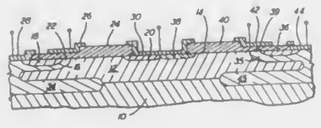
a second layer of said first main electrode formed on said surface of said gate portion base layer, said second layer of said first main electrode being electrically connected with said first layer of said first main electrode in the exterior of said semiconductor chip;
a first layer of a gate electrode formed on a surface of said gate portion emitter layer;
a second layer of said gate electrode formed on said surface of said first base layer, said second layer of said gate electrode being electrically connected with sid first layer of said gate electrode in the exterior of said semiconductor chip; and
a second main electrode layer formed over both of said surface of said second base layer and a surface of said second emitter layer.

4,939,566

SEMICONDUCTOR SWITCH WITH PARALLEL LDMOS AND LIGT

Barry M. Singer, New York City; Gert W. Bruning, Tuckahoe, and Satyendranath Mukherjee, Yorktown Heights, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 30, 1987, Ser. No. 115,478
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—41 **11 Claims**



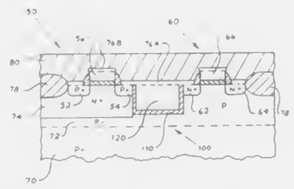
2. A semiconductor device having a major surface comprising a semiconductor substrate of a first conductivity type, an epitaxial layer of a second conductivity type opposite to that of the first conductivity type on said substrate forming part of said major surface, a major surface-adjoining source region of said second conductivity-type, a major surface-adjoining drain region of said second conductivity type, a major surface-adjoining first channel region of said first conductivity type located between said source region and said drain region forms a lateral double diffused MOS transistor, a major surface-adjoining cathode region of said second conductivity type, a major surface-adjoining anode region of said first conductivity type, a major surface-adjoining second channel region of said first conductivity type located between said anode and said cathode regions, said anode and cathode regions and said second channel region forming a lateral insulated gate transistor, said source region being in said first channel region and said drain region being in said epitaxial layer, said cathode region being in said second channel region and said anode region being in said epitaxial layer and wherein said second channel region extends down to said substrate for isolating purpose except in a small section of said device wherein said epitaxial layer isolates an auxiliary channel region from said substrate, said auxiliary channel region in said small section isolating a cathode region in said small section from said cathode region in the rest of said device, said auxiliary channel region in said small section being separated from said second channel region in the rest of said device by said epitaxial layer.

4,939,567

TRENCH INTERCONNECT FOR CMOS DIFFUSION REGIONS

Donald M. Kenney, Shelburne, Vt., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 135,954, Dec. 21, 1987, abandoned. This application Jan. 30, 1989, Ser. No. 303,986
Int. Cl.[5] H01L *27/02, 29/78, 29/04, 23/48*
U.S. Cl. 357—42 **5 Claims**



1. In a semiconductor circuit formed on a substrate of a first conductivity type having a well region therein of a second conductivity type, a structure for coupling a first diffusion region of a second conductivity type formed in the substrate to a second diffusion region of said first conductivity type formed within said well region, comprising a trench having sidewalls and a bottom, said trench being filled with a material of substantially uniform conductivity and having a dielectric structure of a thickness less than approximately 200 Å disposed on said sidewalls and bottom thereof, said trench providing a sub-surface electrical contact to both of said first and second diffusion regions and establishing a gate-to-source parasitic coupling that prevents parasitic device formation.

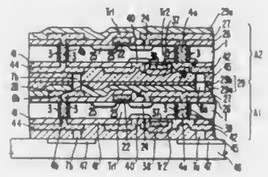
4,939,568

THREE-DIMENSIONAL INTEGRATED CIRCUIT AND MANUFACTURING METHOD THEREOF

Takashi Kato, and Masao Taguchi, both of Sagamihara, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 27,199, Mar. 17, 1987, abandoned. This application Mar. 17, 1989, Ser. No. 325,122
Claims priority, application Japan, Mar. 20, 1986, 61-62981; May 20, 1986, 61-116470
Int. Cl.[5] H01L *23/12, 23/52, 27/10*
U.S. Cl. 357—75 **15 Claims**

1. A semiconductor integrated circuit comprising:
a plurality of unit semiconductor integrated circuits stacked together, each of said unit semiconductor integrated circuits comprising:
a substrate having first and second surfaces, said second surface having a smooth mirror finish;
an integrated circuit including at least one of an active and passive functional element, formed on at least said first surface of said substrate;
a conducting post having first and second end portions, said conducting post penetrating through said substrate to said first and second surfaces, and insulated therefrom; and
a wiring, formed on said first and second surfaces of said



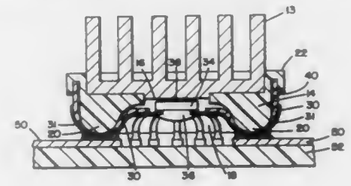
substrate including said conducting post and said integrated circuit, being selectively connected to said integrated circuit and to said first and second end portions of said conducting post;
an insulating layer, formed on the surface of said unit semiconductor integrated circuits, for connecting two adjacent ones of said plurality of unit semiconductor integrated circuits; and
an interconnection terminal, formed in said insulating layer and extending to said wiring, for connecting said two adjacent ones of said plurality of unit semiconductor integrated circuits.

4,939,570

HIGH POWER, PLUGGABLE TAPE AUTOMATED BONDING PACKAGE

Harry R. Bickford, Ossining; Lawrence S. Mok, Yorktown Heights, and Michael J. Palmer, Walden, all of N.Y., assignors to International Business Machines, Corp., Armonk, N.Y.

Filed Jul. 25, 1988, Ser. No. 223,580
Int. Cl.[5] H01L *23/02, 23/12, 23/48, 29/44*
U.S. Cl. 357—81 **9 Claims**



1. A circuit package comprising:
a flexible dielectric film having an outer edge, back and front faces and an aperture therein, said front face provided with a plurality of beam leads affixed thereto, said beam leads extending into said aperture;
a semiconductor chip positioned in said aperture and having back and front faces, said front face having electrical contacts connected to said beam leads, said chip oriented such that it extends from said back face of said dielectric film;
thermally conductive body means having a surface defined by a well substantially circumscribed by an outer rim, the back face of said semiconductor chip thermally connected to said thermally conductive body means and said back face of said flexible dielectric film substantially following said surface, whereby said beam leads are made available for electrical connection in the vicinity of said outer rim; and
means for attaching said outer edge of said film to said thermally conductive body means outboard of said outer rim to enable flexure of said beam leads in the event of differential expansion or contraction at a point of electrical connection thereto.

4,939,569

ULTRAVIOLET TRANSMITTING GLASSES FOR EPROM WINDOWS

Gerald J. Fine, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 316,184, Feb. 27, 1989. This application Dec. 11, 1989, Ser. No. 448,309
Int. Cl.[5] H01L *39/02, 23/28, 23/30, 23/02*
U.S. Cl. 357—80 **3 Claims**

1. An EPROM package comprising:
(a) an insulating board having a chip mounting portion and having conductive interconnecting patterns thereon; one end of each of said patterns being adjacent to said chip mounting portion;
(b) an EPROM chip mounted on said chip mounting portion; said chip having a plurality of electrodes on a surface thereof;
(c) means for connecting said electrodes to one end of each of said patterns; and
(d) a covering insulating board containing a window composed of an ultraviolet transmitting glass;
in which said ultraviolet transmitting glass has a composition which is free of fluoride and consists essentially, expressed in terms of mole percent on the oxide basis, of

SiO_2	60–70	Na_2O	2.5–5
B_2O_3	16–20	K_2O	0–3
Al_2O_3	1–8	Li_2O	1–6

Wherein the mole ratio $R_2O:R_2O_3$ is greater than 0.3, but less than 0.5.

4,939,571

INSULATED-GATE TYPE TRANSISTOR AND SEMICONDUCTOR INTEGRATED CIRCUIT USING SUCH TRANSISTOR

Jun-ichi Nishizawa, and Tadahiro Ohmi, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 669,741, Nov. 7, 1984, abandoned, which is a continuation of Ser. No. 238,968, Feb. 27, 1981, abandoned, which is a continuation of Ser. No. 32,219, Apr. 23, 1979, abandoned. This application Aug. 4, 1987, Ser. No. 82,979
Claims priority, application Japan, May 1, 1978, 53-53194
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.3 **6 Claims**

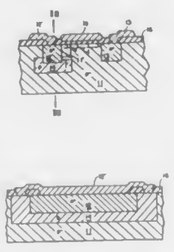
1. An insulted-gate type transistor, comprising:
a semiconductor body having a first conductivity type and a low impurity concentration and having a main surface;
a heavily-doped source region formed in said main surface of the semiconductor and having a second conductivity type opposite to said first conductivity type;
a heavily-doped drain region formed in said main surface of the semiconductor body at a site separate from said source region and having said second conductivity type;
a subsidiary semiconductor region formed adjacent to and contiguous with the bottom of said source region and having said first conductivity type and an impurity concentration greater than that of said semiconductor body,

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said subsidiary semiconductor region having a portion extending laterally beyond said source region toward said drain region and another portion exposed at said main surface;

a source electrode formed on said main surface in contact with both said source region and said subsidiary semiconductor region;

a channel semiconductor region of said first conductivity type located in said semiconductor body, between said source and drain regions, adjacent to said source region



between said main surface and said laterally extending portion of said subsidiary semiconductor region, and having an impurity concentration lower than that in said subsidiary semiconductor region;

an insulated-gate structure including an insulating layer formed on said channel semiconductor region and a conductive gate electrode formed on said insulating layer; and

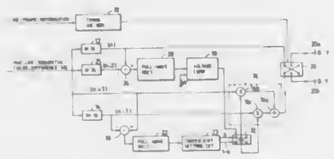
said channel region having such dimensions and a resistivity that form a potential barrier between said source and drain regions and that drain current is controlled exponentially by said potential barrier.

4,939,572

VIDEO SIGNAL PROCESSING APPARATUS

Yositeru Kosaka, Zushi, and Kunio Yamada, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 15, 1989, Ser. No. 323,716
Claims priority, application Japan, Mar. 17, 1988, 63-64091
Int. Cl.[5] H04N *11/22*
U.S. Cl. 358—11 **8 Claims**



1. A video signal processing apparatus for processing a video signal including first and second color difference signals transmitted line-sequentially for outputting simultaneously two fundamental color difference signals of a television system comprising:

(a) time-adjusting means for time-adjusting said first and second color difference signals of successive first, second, and third lines of said video signal relative to each other;

(b) vertical correlation error detection means for detecting the degree of vertical correlation error between said time-adjusted first and third lines of said first color difference signal;

(c) mixing means for combining said time-adjusted first line of said first color difference signal with said third line of said first color difference signal at a ratio determined by an output signal from said vertical correlation error detection means; and

(d) switching means for outputting simultaneously said time-adjusted second line of said second color difference signal and an output signal from said mixing means being interchanged each other with respect to output terminals therefor in response to a timing signal produced from said video signal.

4. A video signal processing apparatus for processing a video signal including first and second color difference signals transmitted line-sequentially for outputting simultaneously two fundamental color difference signals of a television system comprising:

(a) time-adjusting means for time-adjusting said first and second color difference signals of sucessive first, second, third, and fourth lines of said video signal relative to each other;

(b) first vertical correlation error detection means for detecting the degree of vertical correlation error between said time-adjusted second and time-adjusted fourth lines of said first color difference signal;

(c) second vertical correlation detection means for detecting the degree of vertical correlation error between said time-adjusted first and said time-adjusted third lines of said second color difference signal;

(d) comparing means for comparing an output signal of said second vertical correlation error detection means with a reference value;

(e) mixing ratio setting means for producing first and second control signals responsive to an output signal from said first vertical correlation error detection means;

(f) first switching means for outputting said first and second control signals being interchanged each other in response to a signal from said comparing means;

(g) mixing means for combining said time-adjusted second line of said first color difference signal with said time-adjusted fourth line of said first color difference signal with a ratio determined by said first and second control signals; and

(h) second switching means for outputttting simultaneously said time-adjusted third line of said second color difference signal and an output signal from said mixing means being interchanged each other with respect to output terminals therefor in respose to a timing signal produced from said video signal.

4,939,573

COLOR FILTER ARRANGEMENT COMPRISING TRANSPARENT OR WHITE FILTERS FOR SOLID STATE COLOR IMAGING APPARATUS

Nobukazu Teranishi, and Akiyoshi Kohno, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 246,899, Sep. 16, 1988, abandoned, which is a continuation of Ser. No. 105,967, Oct. 2, 1987, abandoned, which is a continuation of Ser. No. 8,093, Jan. 23, 1987, abandoned, which is a continuation of Ser. No. 590,693, Mar. 19, 1984, abandoned. This application May 31, 1989, Ser. No. 361,669
Claims priority, application Japan, Mar. 17, 1983, 58-44737; Sep. 5, 1983, 58-162745
Int. Cl.[5] H04N *9/077*
U.S. Cl. 358—44 **7 Claims**

1. An array of color filters for controlling the color of light falling on a corresponding array of picture elements in a solid-state imaging apparatus, said color filters and said picture elements being arrayed in rows and columns with two horizontally adjacent and four vertically adjacent color filters making a recurring cycle of eight color filters, said color filters being arranged so that the picture elements arranged along each row corresponding to said recurring cycle of eight color filters contain at least one picture element for generating an output signal representative of red light and at least one picture element for generating an output signal representative of blue light, wherein said recurring cycle comprises a first vertical column of two white filters, a yellow filter and a white filter adjacent a second vertical column of a green filter, a white filter, a cyan filter and a white filter, individual color filters in said first and second vertical columns being respectively next to each other to form four horizontal rows, each with two color filters.

3. An array of color filters for controlling the color of light falling on a corresponding array of picture elements in a solid-state imaging apparatus, said color filters and said picture elements being arrayed in rows and columns with two horizontally adjacent and four vertically adjacent color filters making a recurring cycle of eight color filters, said color filters being arranged so that the picture elements arranged along each row corresponding to said recurring cycle of eight color filters contain at least one picture element for generating an output signal representative of red light and at least one picture element for generating an output signal representative of blue light, wherein said recurring cycle comprises a first vertical column of a first type of white filter, a second type of white filter, a cyan filter and a second type of white filter adjacent a second vertical column of a green filter, a first type of yellow filter, a second type of yellow filter, and a first type of yellow filter, the second type of white filter transmitting red light in the range of 25%–75% of the red light transmitted by the first type of white filter, and the first type of yellow filter transmitting red light in the range of 25%–75% of the red light transmitted by the second type of yellow filter, individual color filters in said first and second vertical columns being respectively next to each other to form four horizontal rows, each with two color filters.



6. An array color filter arrangement for a solid-state imaging apparatus comprising a plurality of picture elements arranged in horizontal rows and vertical columns, a plurality of vertical register means associated with the columns of picture elements for transferring charges from said columns of picture elements toward ends of the respective columns, horizontal register means at said ends of said vertical columns for serially transferring said charges from said plurality of vertical register means to form an output signal for each row of picture elements, and an array of color filters positioned in front of said picture elements to control the amount of said charges as a function of the color of image light falling on said picture elements, a horizontal arrangement of said color filters repeating after each two columns and a vertical arrangement of said color filters repeating after each four rows, whereby a resulting cycle of eight color filters has a width of two filters and a height of four filters, said cycle of color filters being repeated said array of color filters, with at least one red transmitting color filter in each row of each cycle, wherein output signals of each five rows of picture elements l_1, l_2, l_3, l_4, l_5 are grouped to provide interlaced picture signals in a manner described by the formulas:

$$S(l_1 + l_2) = R + 2G + B + \tfrac{1}{2} R\cos\omega t + B\cos\omega t,$$

$$S(l_3 + l_4) = R + 2G + B - \tfrac{1}{2} R\cos\omega t + B\cos\omega t,$$

$$S(l_2 + l_3) = R + 2G + B - \tfrac{1}{2} R\cos\omega t + B\cos\omega t, \text{ and}$$

-continued

$$S(l_4 + l_5) = R + 2G + B + \tfrac{1}{2} R\cos\omega t + B\cos\omega t,$$

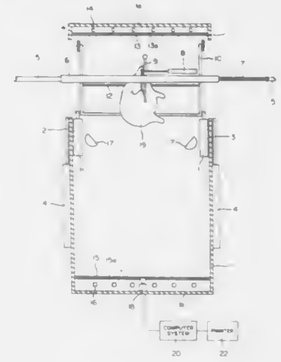
where R=a signal representative of red light, G=a signal representative of green light, and B=a signal representative of blue light.

4,939,574

METHOD AND APPARATUS FOR CLASSIFYING LIVESTOCK CARCASSES AND IN PARTICULAR CATTLE CARCASSES USING A DATA PROCESSING SYSTEM TO DETERMINE THE PROPERTIES OF THE CARCASS

Freddy Petersen, Jyllinge; Svend E. Soerensen, Albertslund, and Signe Klastrup , Valby, all of Denmark, assignors to Slagteriernes Forskningsinstitut, Roskilde, Denmark

Filed Dec. 21, 1988, Ser. No. 287,117
Claims priority, application Denmark, Dec. 22, 1987, 6764/87
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—93 **15 Claims**



1. A method of classification of a livestock carcass comprising the following steps:

(a) arranging a carcass in a light-screening chamber having opposite first and second outer walls, said first wall constituting a light-emitting surface, said carcass having a first side surface facing said first wall constituting said light-emitting surface and a second side surface facing said second wall,

(b) generating a registration of said second side surface of said carcass by means of an electronic camera arranged in said second wall for providing a high contrast registration of said second side surface of said carcass in which high contrast registration said second side surface of said carcass is represented by a totally darkened area in relation to an illuminated background representing said light-emitting surface,

(c) determining a contour of said second side surface of said carcass by processing said registration by means of a data processing system,

(d) determining a measurement representing a classification of said carcass on the basis of said determination of said contour by means of said data processing system, and

(e) outputting said measurement representing said classification of said carcass.

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4,939,575

FAULT-TOLERANT SERIAL VIDEO PROCESSOR DEVICE

Jimmie D. Childers, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 323,045, Mar. 10, 1989, abandoned, which is a continuation of Ser. No. 256,150, Oct. 6, 1988, abandoned, which is a continuation of Ser. No. 119,889, Nov. 13, 1987, abandoned. This application Sep. 5, 1989, Ser. No. 402,975

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—160 **34 Claims**



1. A fault-tolerant, serial video device system for real-time processing of raster-scanned video, comprising:

an input for receiving digitized, multi-bit video data;

a set of N serial video processors, each one of said set of N video processors having: an input register connected to receive said multi-bit video data from said input; an output register connected to transfer multi-bit processed data from the video processor; first and second random-access memories each having data inputs and outputs connected to said input and output registers and each having an address input; a serial ALU having a plurality of one-bit registers and means to connect inputs and outputs of each said registers to data input and outputs of said first and second random-access memories, cross-connect means connecting inputs and outputs of the serial ALU to the serial ALU of adjacent video processors on the left and right; control inputs in common with all of said video processors receiving control and address sets of bits to select operation of the sense ALU and addressing of said first and second random-access memories to thereby perform one-bit serial arithmetic/logic operations in each of the set of N video processors for each set of control and address bits;

commutator means having N stages addressing the input registers of said set of N serial video processors in a repeating sequence correlated with a raster scan to load said multi-bit video data from said input into said input registers; and commutator means having N stages also addressing the output registers of said set of N serial video processors in a repeating sequence correlated with a raster scan to transfer processed multi-bit video data to an output;

control means having a multi-bit parallel output connected in common to said control inputs of all of said serial video processors to apply sequences of sets of control and address bits to said control inputs to result in real-time processing of said multi-bit video data,

wherein each of said set of N serial video processors and said commutator means include by-pass means whereby selected ones of said serial video processors are omitted from operation of the device, the number N exceeding the number of processors needed for one line of said scan.

4,939,576

ADAPTIVE RINGING REDUCER FOR TELEVISION SIGNAL PROCESSING

Jack J. Campbell, 1161 De Haro St., San Francisco, Calif. 94110

Filed Jul. 24, 1989, Ser. No. 384,325

Int. Cl.[5] H04N *5/14, 5/208, 5/213*

U.S. Cl. 358—166 **14 Claims**



1. A method for reducing ringing artifacts caused by low pass filtering of a baseband television signal, the method comprising the steps of:

detecting the occurrence of a horizontal transition in the baseband television signal,

developing a control signal from the detected occurrence of the horizontal transition,

applying the control signal to an adaptive low pass filter structure smoothly to modify its characteristics during the duration of the control signal to minimize ringing response of the structure.

4,939,577

RECEIVER AND DEMODULATION CIRCUIT SUITABLE FOR SAID RECEIVER

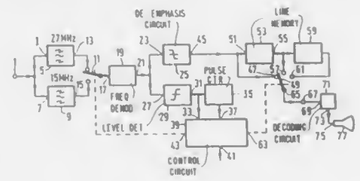
Louis P. M. Schreurs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1989, Ser. No. 326,578

Claims priority, application Netherlands, Apr. 5, 1988, 8800849

Int. Cl.[5] H04N *5/44, 7/01, 9/65, 3/66*

U.S. Cl. 358—188 **4 Claims**



1. A receiver for television signals which are frequency-modulated on a carrier, said receiver comprising a demodulation circuit provided with a frequency demodulator, a detector with a level detector for detecting a disturbed television signal, and a correction circuit for correcting the disturbed television signal, said correction circuit having a control signal input coupled to an output of the detector, characterized in that an input of the level detector for detecting interference pulses in a demodulated television signal is coupled to an output of the frequency demodulator, the correction circuit comprising a delay circuit.

4,939,578

METHOD OF DRIVING MULTIPLE CHIP CCD IMAGE SENSOR

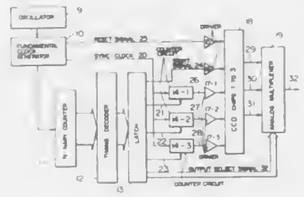
Mitsunari Kano, Seto, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Dec. 20, 1988, Ser. No. 286,829

Claims priority, application Japan, Dec. 21, 1987, 62-321229

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—213.11 **4 Claims**



1. A method of driving an image sensor comprised of a plurality of image sensor chips to sequentially deliver image outputs from said image sensor chips, comprising the steps of:

initially applying start signals to all of said image sensor chips at the beginning of the drive timing;

applying a shift clock for an image output to only each one of said plurality of image sensor chips which is so selected as to deliver an image output;

taking out image output sequentially from the individual image sensor chips by sequentially applying shift clocks to selected image sensor chips so as to provide a continuous sensor output signal; and

applying shift clocks for discharging residual electric charge in each image sensor chip after an image output has been delivered out of the final image sensor chip.

4,939,579

SOLID-STATE IMAGE PICK-UP DEVICE INCLUDING STATIC INDUCTION TRANSISTORS WITH PHOTOMETRIC FUNCTION

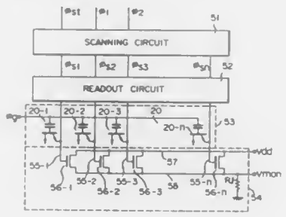
Junichi Nakamura, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1988, Ser. No. 227,369

Claims priority, application Japan, Aug. 8, 1987, 62-198717

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—213.12 **1 Claim**



1. A solid-state image pickup device comprising:

a plurality of static induction transistors for constituting pixels, arranged in a line, and integrating charges corresponding to amounts of received light;

readout means for reading out a pixel signal representing the amount of charges integrated in each of said static induction transistors;

scanning means for controlling said readout means; and

photometric means coupled to sources of said static induction transistors for controlling integral time of said static induction transistors;

said photometric means comprising:

a plurality of MOS transistors having their gates connected, respectively, to the sources of said static induction transistors and their drains being commonly connected to a positive power source; and

a load resistor connected to sources of said MOS transistors.

4,939,580

PICTURE READING APPARATUS

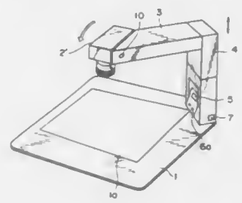
Tadashi Ishikawa, Urawa; Yoshitaka Watanabe, Tokyo, and Yoshiyuki Mizoguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 15,952, Feb. 18, 1987, Pat. No. 4,831,455, This application Mar. 6, 1989, Ser. No. 319,181

Claims priority, application Japan, Feb. 21, 1986, 61-37715; May 14, 1986, 61-108486; May 14, 1986, 61-108490; Jul. 11, 1986, 61-162080; Nov. 14, 1986, 61-269825

Int. Cl.[5] H04N *1/28*

U.S. Cl. 358—229 **15 Claims**



1. A picture reading apparatus comprising:

(a) picture pickup means supported movably for picking up an object to be read and outputting a video signal;

(b) means for outputting said video signal to a monitor; and

(c) means for inhibiting said video signal from said outputting means from being outputted during movement of said pickup means.

4,939,581

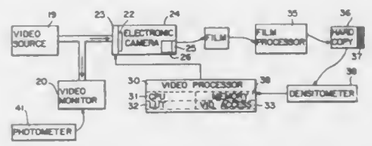
METHOD AND SYSTEM IN VIDEO IMAGE HARD COPY REPRODUCTION

Hanoch Shalit, 86 Edwards St. - Apartment 2A, Roslyn, N.Y. 11577

Filed Nov. 23, 1988, Ser. No. 275,218

Int. Cl.[5] H04N *5/84, 9/79*

U.S. Cl. 358—244 **17 Claims**



1. The method of producing a series of photographs from black-white electronic camera video screen images which are accurate tone reproductions of the luminance ratios of the video images on a separate video monitor screen, including the steps of:

forming a gray scale test video image on the screen of the video monitor, measuring the luminances in the gray scale of the test image on the monitor screen using a photometer to provide a set of monitor screen gray scale luminance

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values, and entering the set of monitor screen gray scale luminance values into a computer;

forming a gray scale camera test video image on the video screen of an electronic camera, said camera including said camera video screen and electronic means to vary the video signals to control the luminance values on said camera video screen on a pixel-by-pixel basis, the camera test video image having a predetermined tone scale including defined areas differing in luminance ratios;

photographing said camera test video image to produce a latent image of said camera test video image using the same batch of black-white photosensitive film as will be thereafter used to photograph the camera video screen; developing the latent image of the film to produce a film test image using the same developing chemicals and conditions as will be thereafter used for developing the batch of film; density sensing the density differences in the gray scale on the developed film test image using a photoelectric densitometer and entering the sensed density differences values into the computer, comparing said entered film density differences values with the set of monitor gray scale luminance values stored in computer memory; using the computer to automatically produce a set of corrections to said video signals for each luminance value for each pixel of said camera video screen based on the said comparison, and altering the tones on the camera video screen according to said set of computer produced corrections using the electronic means of said camera video device.

4,939,582

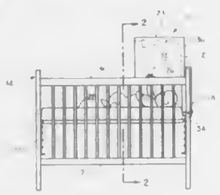
CONVERTIBLE VISUAL DISPLAY DEVICE

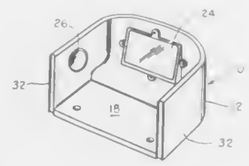
Terry K. Holdredge, and Susan S. Holdredge, both of 1303 Hanover Rd., Anderson, S.C. 29621

Filed Apr. 6, 1987, Ser. No. 34,691

Int. Cl.[5] H04N *5/64*

U.S. Cl. 358—254 **26 Claims**





1. A convertible audio-visual display center adapted to display video images in substantially vertical or horizontal planes when supported on a table or desk top or when supported above an infant's crib, comprising:

(a) a support member having at least two walls, extending in planes at substantially right angles to each other, and first and second side members connected to at least one of said walls at respective first and second sides of said one wall;

(b) a recess in one of said walls;

(c) a video display unit for displaying video images, disposed at least partially within said recess for proper viewing by an infant lying in said crib in a supine position;

(d) means for supporting said video display unit so that the top of said screen is closer to the plane of another of said two walls than is the bottom of said screen for proper viewing by an infant lying in said crib in a supine position; and

(e) means for supporting said support member generally in either the vertical or the horizontal plane either above said crib or on the surface of a table or desk top.

4,939,583

ENTROPY-CODING SYSTEM

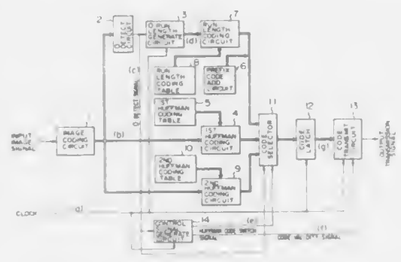
Yukitoshi Tsuboi, Yokohama, and Masaaki Takizawa, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1988, Ser. No. 241,388

Claims priority, application Japan, Sep. 7, 1987, 62-221953; Sep. 7, 1987, 62-221954

Int. Cl.[5] H04N *1/419*

U.S. Cl. 358—261.1 **9 Claims**



1. An entropy coding system comprising:

transform means for transforming an image signal into coded data;

run length coding means operative to particular data having a particular value in the coded data for effecting a run length coding on a run length of the particular data; and

Huffman coding means, having a second Huffman coding table not including prefix codes and a first Huffman coding table including prefix codes, for effecting a Huffman coding on nonparticular data immediately following the particular data based on the first Huffman coding table and for effecting a Huffman coding on nonparticular data not immediately following the particular data based on the second Huffman coding table.

4,939,584

IMAGE RECORDING SYSTEM

Kenji Sakakibara, Ichinomiya; Shigeyuki Hayashi, Nagoya; Michitoshi Akao, Nagoya, and Jun Sakai, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 263,264, Oct. 27, 1988, and a continuation-in-part of Ser. No. 230,665, Aug. 9, 1988, which is a continuation-in-part of Ser. No. 20,956, Mar. 2, 1987, abandoned. This application Dec. 5, 1988, Ser. No. 280,216

Claims priority, application Japan, Mar. 4, 1986, 61-47018; Jun. 2, 1986, 61-82508; Jun. 13, 1986, 61-136187

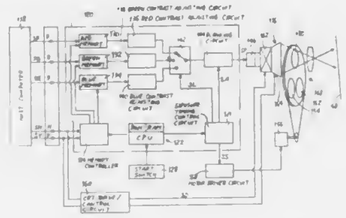
Int. Cl.[5] G01D *9/42;* **G03C** *1/72*

U.S. Cl. 358—296 **11 Claims**

1. An image recording system comprising:

a photosensitive medium having a layer of microcapsules formed on a substrate, said microcapsules comprising at least two groups of microcapsules corresponding to respective at least two colors, each of said microcapsules of each of said at least two groups including a photosensitive resin whose strength is varied according to an amount of exposure thereof to a radiation, and containing a chromagenic material which corresponds to each of said at least two colors and which is capable of chemically reacting with a developer material, to form a visible image;

an exposing device including a cathode ray tube which emits said radiation according to image signals corresponding to said at least two colors and representative of a picture frame, for imagewise exposing said at least two groups of microcapsules of said photosensitive medium and thereby forming a latent image of said picture frame on said photosensitive medium, said latent image being developed into a visible image; and



CRT control means connected to said exposing device, for controlling said cathode ray tube, said CRT control means comprising (a) at least two memories for storing said image signals of said picture frame corresponding to said at least to colors, (b) a blanking circuit which receives said image signals from said at least two memories and applies the received image signals to said cathode ray tube of the exposing device for irradiating said at least two groups of microcapsules of said photosensitive medium with said radiation for respective controlled exposure times, and (c) an exposuretiming control circuit for determining said respective controlled exposure times for said at least two groups of microcapsules.

4,939,585

METHOD AND APPARATUS FOR RECORDING A VIDEO FORMAT SIGNAL HAVING A TIME CODE

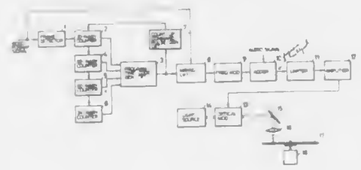
Tomoyuki Kawaguchi, and Kaoru Kobayashi, both of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo and Pioneer Video Corporation, Yamanashi, both of Japan

Filed Apr. 20, 1988, Ser. No. 183,963

Claims priority, application Japan, Apr. 24, 1987, 62-102394

Int. Cl.[5] H04N *5/76;* **G11B** *27/10*

U.S. Cl. 358—335 **10 Claims**



1. A method of recording a video format signal having a vertical blanking interval on a recording medium, the method of comprising the steps of:

counting a number of frames of the video format signal to be recorded on the recording medium;

generating, with a plurality of counters, a first time code such that one second corresponds to L-frames of the video format signal;

incrementing the first time code N-times within a predetermined period of the video format signal, thereby obtaining a second time code representing the incremented first time code; and

inserting, with a mixing circuit, said second time code in the vertical blanking interval of the video format signal.

4,939,586

PROCESS OF STORAGE OF HIGH RESOLUTION IMAGES ON VIDEO DISKS ENCODER AND DECODER FOR THE IMPLEMENTATION OF SAID PROCESS

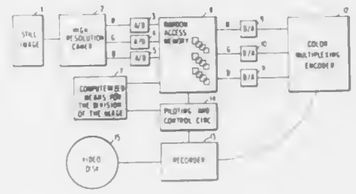
Bahman Nabati, Maisons Alfort, and Georges Broussaud, Sceaux, both of France, assignors to Eduvision (Societe Anonyme), France

Filed Jun. 23, 1988, Ser. No. 210,437

Claims priority, application France, Jun. 26, 1987, 87 09071

Int. Cl.[5] G11B *7/00;* **H04N** *5/76, 5/92*

U.S. Cl. 358—342 **10 Claims**



1. A method of storing and reproducing high resolution images, said method comprising the steps of:

dividing a high resolution image signal into partial image signals;

recording said partial image signals on preferably successive turns of a video disk type recording medium, said partial image signals corresponding to partial images having a horizontal overlapping of at least one point per line of said high resolution image;

reproducing said partial image signals from said recording medium; and

combining said partial image signals while eliminating said overlapping points to reconstruct said high resolution image signal from the partial image signals recorded on said recording medium.

4,939,587

METHOD FOR READING A RECORDED MOVING SCENE, IN PARTICULAR ON A VIDEODISK, AND APPLICATION OF SAID METHOD TO DRIVING SIMULATORS

Christian Deslypper, Jouy le Moutier, France, assignor to Giravions Dorand, Suresnes, France

Filed Jun. 28, 1988, Ser. No. 212,706

Claims priority, application France, Nov. 24, 1986, 8616329

Int. Cl.[5] G11B *7/00*

U.S. Cl. 358—342 **8 Claims**

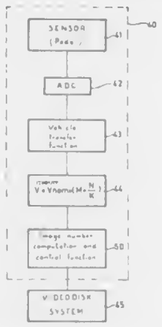
1. A method for creating an optical sensation of a moving apparatus speed by reading images representing a moving scene previously recorded at a predetermined nominal speed Vnom in the form of frames in which said images are displayed by reading successive frames each corresponding to one image, said successive frames being read consecutively to follow each other at a predetermined rate corresponding to the nominal speed of displacement of the moving scene, said method comprising the steps of:

simulating an apparent speed V at which said moving scene is required to travel, and representing said apparent speed

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as a function which expresses the speed ratio of said apparent speed V to said nominal speed Vnom by a number of recorded frames to be skipped or to be repeated periodically at the time of reading;

electronically selecting the images to be read in accordance with said function which contains a first term expressing a



whole number M of frame jumps at each reading and a second term expressing a fractional part of said speed ratio, either added to or subtracted from the first term, said fractional part being formed by a whole number N representing the number of times a subsequent frame is to be skipped or repeated in a series of frames comprising a predetermined number K of frames.

4,939,588

ELECTRONIC COPYING MACHINE

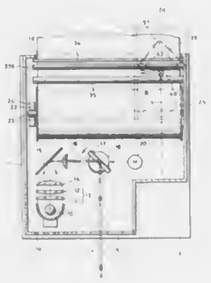
Seimei Ushiro; Kenta Namioka; Hiroshi Ohmura; Michio Cho, and Kimiaki Nakada, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1988, Ser. No. 233,458

Claims priority, application Japan, Aug. 14, 1987, 62-202873

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—401 **12 Claims**



1. An electronic copying machine for making a hard copy from an original remote therefrom, comprising:

a housing comprising a supporting base of the machine;

an image pick-up unit pivotally mounted on said housing for vertical swinging movement relative to the housing about a horizontal axis, between a raised operative position and a lowered inoperative position;

a line image sensor disposed in said image pick-up unit for sensing a remote original line by line to generate line image signals;

shift means in said image pick-up unit for moving said line image sensor in a direction parallel to a said sensed line image;

a recording head disposed in said housing for recording an image of said remote original according to said line image signals; and

a line illuminating system in said housing for directly projecting a line of light onto said remote original in the longitudinal direction of said line image sensor.

4,939,589

PROCESS FOR RECORDING SEMIHALFTONE IMAGES AND DEVICE FOR CONVERSION OF IMAGE DOT TONAL VALUE DATA

Gerhard Fischer, Offenbach, and Helmut Quabeck, Babenhausen, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1988; Ser. No. 204,155

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1987, 3718521

Int. Cl.[5] H04N *1/23, 1/46*

U.S. Cl. 358—448 **16 Claims**

1. A process for recording semihalftone images, in which process an original is reproduced on a recording medium by individual recording elements with a tone value of "print" or "no print", the original is divided into multiple scan fields comprising individual scan elements, each scan field being reproduced on the recording medium by multiple recording elements, and each of the scan fields being subdivided successively into higher order subfields and then into smallest subfields of a predetermined size equal to at least two recording elements, characterized in that, within each one of the smallest subfields as well as for each of the higher order subfields to which the one smallest subfield belongs there is at least one once only selected recording element and for each one of the smallest subfields and the higher order subfields an average value is determined or estimated from the tonal values of the scan elements in the subfield being considered, and in that at least one of the selected recording elements assigned to the subfield being considered is printed, if the average value is greater than a predetermined reference tonal value.

4,939,590

IMAGE READING APPARATUS CAPABLE OF ELIMINATING MOIRE PATTERN

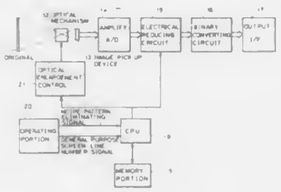
Kaoru Tada, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Higashi, Japan

Filed Aug. 25, 1988, Ser. No. 236,647

Claims priority, application Japan, Aug. 28, 1987, 62-215998

Int. Cl.[5] H04N *1/393*

U.S. Cl. 358—451 **13 Claims**



1. An image reading apparatus capable of eliminating a moire pattern, comprising:

an image sensor for converting an image of an original into electrical data;

optical projecting means for projecting the image of the original on said image sensor and capable of changing a magnification rate of projection;

data reducing means for electrically reducing the electrical data converted by the image sensor;

magnification rate data setting means for setting, in order to eliminate a moire pattern generated at the time when the image of the original formed by using a dot screen is converted by said image sensor, magnification rate data in correspondence with a screen line number of said dot screen, said magnification rate data setting means including an input key provided in correspondence with the number of lines of said dot screen;

memory means for storing, in correspondence with said input key, magnification rate data suitable for eliminating the moire pattern based on said screen line number in correspondence with said input key, said magnification rate data setting means outputting the magnification rate data stored in said memory means in response to an input by said input key, and

control means which controls said optical projecting means so that said optical projecting means projects the image of the original at the projection magnification rate based on the magnification rate data set by said magnification rate data setting means and controls said data reducing means such that said reducing means reduces the electrical data at the reducing magnification rate in correspondence with the projection magnification rate of said optical projecting means.

4,939,591

CONTACT-TYPE IMAGE SENSOR

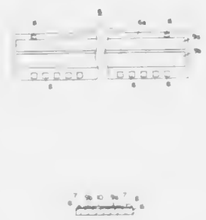
Masataka Itoh, Nara; Atsushi Yoshinouchi, Ohjichobou; Satoshi Nishigaki, Nara; Takashi Nukii, Nara, and Shuhei Tsuchimoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1988, Ser. No. 209,882

Claims priority, application Japan, Jun. 30, 1987, 62-165030

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—482 **3 Claims**



1. A contact-type image sensor comprising a light source that illuminates the manuscript to be read; photodetectors that convert the light reflected by said manuscript into an electrical signal; a substrate that is disposed between said photodetectors and said manuscript, a bundle of optical fibers being buried in said substrate; and wiring electrodes that are disposed on the top surface of said substrate corresponding to the light-emitting face of said bundle of optical fibers and that are disposed on the light-receiving surfaces of said photodetectors, wherein said photodetectors are disposed in such a manner that the light-receiving surfaces of said photodetectors face the light-emitting face of said bundle of optical fibers, said wiring electrodes disposed on said photodetectors being directly electrically bonded to said wiring electrodes disposed on said substrate.

4,939,592

CONTACT PHOTOELECTRIC CONVERSION DEVICE

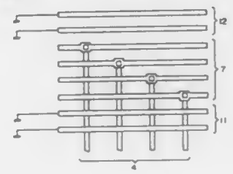
Toshihiro Saika, and Noriyuki Kaifu, both of Hiratsuka, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1988, Ser. No. 205,893

Claims priority, application Japan, Jun. 12, 1987, 62-146373

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—482 **10 Claims**



1. A photoelectric conversion device comprising:

a substrate;

M common lines, M being a predetermined positive integer;

a matrix N×M of photoelectric conversion elements arranged in an array disposed on said substrate and connected to said M common lines forming a matrix wiring, wherein N is a predetermined positive integer;

a transparent protective layer disposed on said photoelectric conversion elements and said M common lines of the matrix wiring; and

grounding wirings maintained at a ground potential disposed at least on both sides of said M common lines of the matrix wiring.

4,939,593

STILL PICTURE PROCESSING APPARATUS FOR A STILL CAMERA

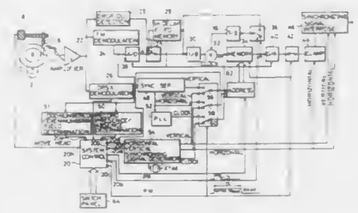
Takahiro Yuuchi, Katano, and Tatsuo Tanaka, Tsuzuki, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 10, 1988, Ser. No. 166,341

Claims priority, application Japan, Mar. 11, 1987, 62-55567; Oct. 20, 1987, 62-160241[U]

Int. Cl.[5] H04N *5/91*

U.S. Cl. 360—11.1 **12 Claims**



1. A still picture signal processing apparatus which stores a video signal of a still picture, reproduced from a recording medium, in a memory and supplies a still picture signal to a display apparatus by repeatedly reading stored contents of the memory, wherein said recording medium comprises a plurality of tracks arranged concentrically, the video signals of one field are independently recorded in each track or the video signals of one frame are recorded separately on two adjacent tracks, said still picture signal processing apparatus comprising:

record presence/absence detection means for detecting whether a vide signal is recorded or not in a track, which

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is presently being reproduced, based on reproduction output from said recording medium;

determining means for determining whether the track which is presently being reproduced is a field recorded-type track or a frame recorded-type track on a field/frame discriminating signal included in a reproduction signal reproduced from said recording medium; and

control means for controlling writing of the video signal reproduced from said track into said memory based on the detection of said record presence/absence detection means and based on the result of the determination of said determining means, wherein

said control means comprises a frame writing control means for controlling, after the video signal reproduced from one first track, constituting a first field of a frame recorded on two adjacent tracks of said recording medium, is written in said memory and when the video signal reproduced from a second adjacent track is processed, whether the reproduction video signal of the second adjacent track is written in said memory as the second field video signal constituting one frame together with the video signal of the first track which is stored in said memory, based on the result of the determination of said determining means.

4,939,594

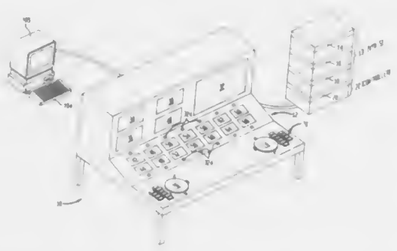
METHOD AND APPARATUS FOR IMPROVED STORAGE ADDRESSING OF VIDEO SOURCE MATERIAL

Edwin C. Moxon, Boxboro, and William F. Westland, Southboro, both of Mass., assignors to Lex Computer and Management Corporation, New York, N.Y.

Continuation of Ser. No. 556,534, Dec. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 452,287, Dec. 22, 1982, Pat. No. 4,538,188. This application Jun. 16, 1989, Ser. No. 367,453

Int. Cl.[5] H04N *5/782;* **G11B** *27/02*

U.S. Cl. 360—14.1 **4 Claims**



1. Apparatus for composing image source material stored on a plurality of video tape recorders, said source material being composed of a sequence of stored frames representing a time sequential visual image, sequences of said frames being associated to form a video segment, said composing apparatus comprising:

means for directing said source material to each of a plurality of video recorders;

a plurality of video recorder interface circuitries, each of said plurality of recorders connected to a said interface circuitry;

a system clock generator to each interface circuitry; and

each interface circuitry further having:

means for writing an internal time code associated with each frame being recorded on its connected video recorder:

each said time code, when combined with other time codes, representing sequential addresses such that the number of frames between two frames can be identified; and

said interface circuitries and said system clock generator being connected so that the same video source frame, when written on different video recorders carries with it the same internal time code identification.

4,939,595

DIGITAL AUDIO TAPE RECORD/PLAY-BACK SYSTEM FOR RECORDING/PLAYING BACK CHARACTER DATA TOGETHER WITH DIGITAL AUDIO DATA

Itsuro Yoshimoto, and Kuniyoshi Otsuki, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

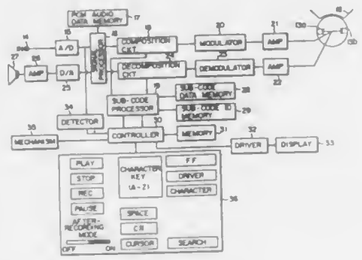
Continuation of Ser. No. 138,912, Dec. 28, 1987, Pat. No. 4,833,549. This application Mar. 14, 1989, Ser. No. 323,618

Claims priority, application Japan, Jan. 7, 1987, 62-505; Sep. 26, 1987, 62-241069; Sep. 26, 1987, 62-241091

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—19.1 **10 Claims**



1. An apparatus for recording character data together with digital audio data on a magnetic tape by using a rotary head, comprising:

a rotating drum means provided with said rotary head for performing recording on said magnetic tape, said magnetic tape being wound around said rotating drum means within a predetermined angular range, and said rotary head including means for recording oblique tracks, each of which has a PCM audio recording area and sub-code recording areas;

signal processing means for receiving the digital audio data, and including means for adding an error correction code to the digital audio data, and for generating PCM audio data complying with an R-DAT format;

source means for supplying the digital audio data to said signal processing means;

travel state input means for designating a travel state of the magnetic tape;

character data input means for inputting character data;

drive means coupled to said travel state input means for driving said magnetic tape and said rotating drum means in response to an operation of said travel state input means;

sub-code processing means for generating sub-code block data having sub-code ID data and pack data corresponding to the R-DAT format, the sub-code ID data including control ID data said control ID data comprising four independent ID's, one of said independent ID's being a start ID, including 8 symbols PC1–PC8, the symbol PC1 including 4 bits of pack item data, a remainder of the symbol PC1 and the symbols PC2–PC7 including 52 bits of data block, and the symbol PC8 being a parity block;

frame composing means coupled to said signal processing means and to said sub-code processing means, for composing the PCM audio data at a timing corresponding to said PCM audio recording area and the sub-code block data at a timing corresponding to said sub-code recording area,

and for outputting the composed data as track format data corresponding to the R-DAT format;

recording means coupled to said rotary head and to said frame composing means, for modulating the track format data and for outputting a recording signal to said rotary head;

control means coupled to said travel state input means, to said character data input means, to said sub-code processing means, and to said mechanism drive means, (1) for controlling said mechanism drive means for setting said magnetic tape and said rotating drum means in a corresponding drive state responsive to operation of said travel state input means, (2) for supplying character code data corresponding to characters input by said character data input means to said sub-code processing means, (3) for controlling said sub-code processing means so that the sub-code processing means generates the sub-code block data including start ID data which is set to "1", and pack data having the character code data of a character mode and (4) for controlling said mechanism drive means for recording the generated sub-code block data in the sub-code recording area of said magnetic tape for a plurality of frames.

4,939,596

INFORMATION SIGNAL RECORDING AND REPRODUCING APPARATUS

Nobutoshi Takayama; Isao Harigaya, and Kenichi Nagasawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 15,959

Claims priority, application Japan, Sep. 10, 1982, 57-158372; Sep. 10, 1982, 57-158373; Sep. 10, 1982, 57-158374; Sep. 13, 1982, 57-160161

Int. Cl.[5] G11B *5/02, 15/18*

U.S. Cl. 360—27 **3 Claims**



1. A video tape recorder, comprising:

(a) first recording means including at least one rotary head for recording a video signal on a first area of a magnetic tape;

(b) first reproducing means including at least one rotating head for reproducing the video signal from the first area of the magnetic tape;

(c) moving means for moving the magnetic tape in its lengthwise direction;

(d) manually operable means for designating a mode of the video tape recorder among a plurality of modes, said plurality of modes including a recording mode, a normal reproduction mode, a searching reproduction mode, and a quick feeding mode;

(e) second recording means including at least one fixed head for recording a mark signal on the second area of the magnetic tape, said fixed head recording said mark signal on the second area of the tape for a specific period in response to a specific manual operation for designating the recording mode of said manually operable means;

(f) second reproducing means for reproducing the mark signal from the second area of the tape;

(g) mode cotnrol means for changing over the video tape recorder among said plurality of modes in response to manual operations of said manually operable means and said mark signal reproduced by said reproducing means,

said mode control means being arranged to be able to bring the recorder into the searching reproduction mode only for a predetermined period in response to the reproduction of the mark signal being started by said second reproducing means and to maintain the recorder in the quick feeding mode for periods other than said predetermined period;

wherein when the recorder is in the recording mode, said first recording means records the video signal and said moving means moves the tape at a first speed,

when the recorder is in the reproducing mode, said first reproducing means reproduces the video signal and said moving means moves the tape at said first speed;

when the recorder is in the searching reproduction mode, said first reproducing means reproduces the video signal and said moving means moves the tape at a second speed faster than said first speed, and when the recorder is in the quick feeding mode, said first reproducing means does not reproduce the video signal and said moving means moves the tape at a third speed faster than said first speed.

4,939,597

VIDEO CAMERA AND RECORDER SYSTEM HAVING TWO STANDBY MODES

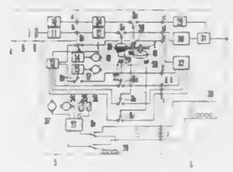
Masaya Maeda; Hiroyuki Takimoto, and Susumu Kozuki, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 153,463, Feb. 1, 1988, abandoned, which is a continuation of Ser. No. 57,714, Jun. 1, 1987, abandoned, which is a continuation of Ser. No. 729,682, May 2, 1985, abandoned, which is a continuation of Ser. No. 351,605, Feb. 23, 1982, Pat. No. 4,531,164. This application Feb. 8, 1989, Ser. No. 308,128

Claims priority, application Japan, Feb. 26, 1981, 56-27140; Mar. 6, 1981, 56-632106; Mar. 6, 1981, 56-32107; Jun. 24, 1981, 56-97913

Int. Cl.[5] H04N *5/782*

U.S. Cl. 360—33.1 **5 Claims**



1. An information signal recording apparatus, comprising:

(a) a rotary head for recording information signals on a tape-shaped recording medium;

(b) a cylindrical member for supporting the rotary head, said cylindrical member having a peripheral surface;

(c) a head driving motor for rotating the rotary head at a predetermined speed;

(d) tape loading means for shifting the tape-shaped recording medium between a first position and a second position, wherein when said medium is at a first position it does not contact the peripheral surface, while said medium is aligned with the peripheral surface when said medium is at said second position;

(e) a trigger switch operated by a manual operation for instructing a recording start by said rotary head;

(f) a control circuit for controlling said head driving motor and said tape loading means; and

(g) mode setting means for setting the apparatus among a plurality of modes, said plurality of modes including:

(a) a first mode in which said control circuit controls said

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head driving motor and said tape loading means so that said rotary head rotates at the predetermined speed and the tape-shaped recording medium is at said second position, and in which said trigger switch is able to instruct the recording start; and

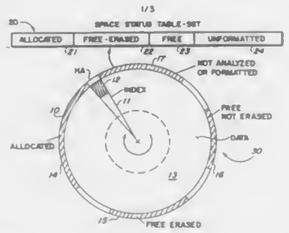
(b) a second mode in which said control circuit controls said head driving motor and said tape loading means so that said rotary head does not rotate and the tape-shaped recording medium is at said second position, and in which said trigger switch is able to instruct the recording start.

4,939,598

MANAGING DATA STORAGE SPACE ON LARGE CAPACITY RECORD MEDIA

John E. Kulakowski, and Rodney J. Means, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1988, Ser. No. 153,673
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—48 27 Claims



1. In a machine-sensible and recordable record medium for storing data, the medium having a large multiplicity of addressable rewritable data storage areas for being initialized for receiving and storing data and some but not all of the data storage areas being initialized:

the improvement including, in combination:

a volume table of contents (VTOC) recorded on the medium for indicating the data contents of the medium;

first machine-sensible indicia in VTOC for indicating allocated ones of the initialized addressable data storage areas;

second machine-sensible indicia on VTOC for indicating unallocated ones of the initialized addressable data storage areas that are still storing data;

third machine sensible indicia in VTOC addressable data storage areas that are erased as to not be storing any data; and

fourth machine-sensible indicia in VTOC indicating uninitialized unformatted ones of the addressable data storage areas that cannot receive data for storage until predetermined format signals are recorded therein, whereby the record medium is usable for recording and reading operations without requiring the entire medium to be initially formatted.

4,939,599

METHOD AND APPARATUS FOR MEASURING DYNAMIC TRACK MISREGISTRATION

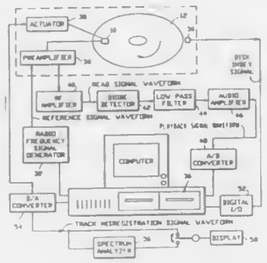
Timothy J. Chainer, and Edward J. Yarmchuk, both of Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1988, Ser. No. 158,957
Int. Cl.[5] G11B *33/10*
U.S. Cl. 360—77.03 31 Claims

23. An apparatus for measuring dynamic track misregistration in a record/playback device, said device comprising a transducer and a recording medium, said apparatus comprising:

means for recording a reference signal waveform onto a track on the recording medium, said track having a center line and an off-center line parallel to the center line;

means for reading the recorded reference signal waveform a plurality of times with the transducer centered approximately above the off-center line of the track to produce a plurality of off-track playback signal waveforms;



means for averaging a number of off-track playback signal waveforms to produce an average off-track playback signal waveform; and

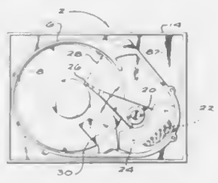
means for calculating the difference between one off-track playback signal waveform and the average off-track playback signal waveform to produce a track misregistration signal waveform.

4,939,600

EFFICIENT HEAD POSITIONER POWER AMPLIFIER

Ashok K. Desai, Westlake Village; Russell H. Jacobs, Thousand Oaks, and Bipin V. Gami, Northridge, all of Calif., assignors to Micropolis Corporation, Chatsworth, Calif.

Filed Jan. 5, 1989, Ser. No. 293,818
Int. Cl.[5] G11B *33/12*
U.S. Cl. 360—78.04 22 Claims



1. A disk drive digital storage system including an efficient power amplifier for the head positioner, comprising:

means for providing first and second substantially complementary pulse width modulated signals at a frequency above 100 kilohertz;

means for varying the pulse width in accordance with input control signals;

a head positioner assembly including a head positioner coil;

means including filter circuitry for applying unidirectional current to said head positioner coil;

H-bridge circuit means including first and second pairs of power transistors;

means for controlling said first and second pairs of power transistors, respectively, by said first and second complementary pulse width modulated signals, to apply power pulses to said filter circuitry in one direction or the other;

said filter circuitry including a first coil for receiving pulses from the first of said pairs of power transistors and a second coil for receiving pulses from the second of said pairs of power transistors; and

means for mounting said first and second filter coils on a single core with the coils opposed so that the opposing flux from the unidirectional head positioner coil current flowing through both coils maintains the core unsaturated to provide high inductance to block high frequency pulse signal components from the head positioner coil;

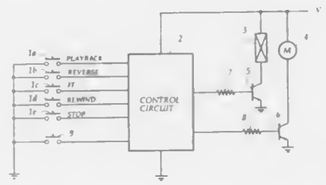
whereby, from an input-output standpoint, said amplifier operates in the manner of a linear Class AB transconductance amplifier with no zero cross-over distortion; and during deceleration, the back EMF from the head positioner coil reduces the duty cycle of pulse width modulation and the power requirements of the system.

4,939,601

PLAYBACK APPARATUS HAVING A SINGLE MODE SELECTING PUSHBUTTON

Hirotaka Endo; Hiroshi Hamanaka, and Atsushi Nagayoshi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 22, 1988, Ser. No. 223,696
Claims priority, application Japan, Jul. 23, 1987, 62-183998; Jul. 23, 1987, 62-184004; Jul. 23, 1987, 62-184005
Int. Cl.[5] G11B *5/00*
U.S. Cl. 360—137 19 Claims



1. A playback apparatus having function keys each selecting one of a plurality of operating modes thereof, said playback apparatus further including a remote control device comprising:

a manually operating single pushbutton; and

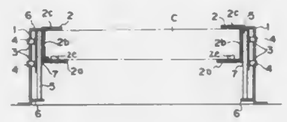
control means connected to said pushbutton for selectively determining one of the plurality of operating modes of said apparatus in accordance with successive depressions of said pushbutton.

4,939,602

CASSETTE HOLDER MECHANISM

Kimichika Yamada; Hitoshi Okada; Hidenori Muramatsu; Katsuya Nozawa; Yoshihiko Goto, and Hiroyuki Ohkawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1987, Ser. No. 61,054
Claims priority, application Japan, Jun. 18, 1986, 61-139970; Jun. 18, 1986, 61-139969; Aug. 12, 1986, 61-122870[U]
Int. Cl.[5] G11B *15/00*
U.S. Cl. 360—96.5 11 Claims



1. A cassette holder mechanism, comprising:

spaced, vertically extending first and second chassis side plates each having therein a plurality of elongate guide holes, each said guide hole having first and second portions respectively extending in horizontal and vertical directions;

a respective set of vertically extending shafts fixedly supported adjacent each said chassis side plate on a side thereof nearest the other of said chassis side plates; and

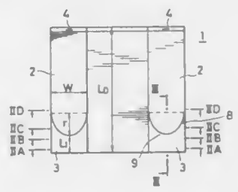
spaced, physically separate first and second cassette holders each having a guide opening which slidably receives a respective said set of shafts and each having guide means cooperable with said guide holes in a respective said chassis side plate to guide movement thereof along said guide holes, and each said cassette holder further including a side surface portion, a bottom surface portion and an upper surface portion respectively engageable with side, bottom and top surface portions at a respective end of a cassette to support and position the cassette.

4,939,603

MAGNETIC HEAD SLIDER HAVING A CONVEX TAPER SURFACE WITH THE CURVATURE FACING A MAGNETIC MEDIUM

Mitsuo Inumochi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,209, Nov. 3, 1987, abandoned. This application May 25, 1989, Ser. No. 357,615
Claims priority, application Japan, Nov. 6, 1986, 61-264451; Aug. 28, 1987, 62-214501
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 5 Claims



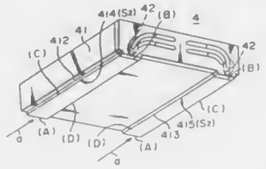
1. A magnetic head slider for positioning a magnetic head relative to a rotating magnetic medium including first and second parallel guiding members having first and second air bearing surfaces, respectively, said first and second air bearing surfaces having a predetermined width and being substantially flat across said width in a first region of said guiding members so as to maintain said slider in a flying state when said medium is rotated with respect to said slider, and first and second tapered surfaces located on a second, air-intake region of each of said guiding members for cutting through an air flow generated with a movement of said magnetic medium, wherein each of said tapered surfaces is a convex surface with a curvature facing said magnetic medium, wherein an imaginary line connecting between each of said air-bearing surfaces and each of said tapered surfaces on said first and second guiding members, respectively, and extending across each of said air-intake regions of said first and second guiding members to respective side edges of said air-intake regions of said first and second guiding members, is outwardly convexed with respect to the direction of the incoming air flow, and a merging portion between each of said tapered surfaces and each of said air-bearing surfaces, being a smooth curve, and wherein each of said tapered surfaces on each of said air-intake regions of said first and second guiding members are symmetrical with respect to the side edges of said first and second guiding members in said air-intake regions thereof.

4,939,604

MAGNETIC RECORDING AND REPRODUCING APPARATUS AND A MAGNETIC HEAD USED FOR THE APPARATUS

Kazumasa Fukuda; Masanori Sakai; Joichiro Ezaki, and Mikio Matsuzaki, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,699
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **17 Claims**



1. A magnetic recording and reproducing apparatus of a type wherein a magnetic head is disposed on a magnetic disk having a magnetic recording layer formed on a rigid substrate while the disk is rotated at a high speed so that magnetic recording and reproducing are conducted between the magnetic head and the magnetic disk, characterized in that the surface roughness R_{max} of the magnetic disk is at most 100 Å and the surface area of a medium opposing surface of a slider holding reading/writing elements is at most 2 mm^2, the surface of the slider facing the magnetic disk and constituting a lifting force generating part.

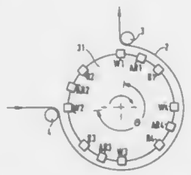
13. A magnetic head which comprises a slider which holds recording/writing elements at its medium opposing surface constituting a lifting force generating part, wherein the surface area of the medium opposing surface is at most 2 mm^2.

4,939,605

APPARATUS INCLUDING A HEAD WHEEL CARRYING ADVANCED READ, WRITE AND NORMAL READ HEADS FOR FACILITATING PROCESSING OF TELEVISION AUDIO SIGNALS RECORDED ON MAGNETIC TAPE

Jürgen Heitmann, Alsbach; Rolf Looe, Münster, and Hannfried Preissler, Darmstadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1988, Ser. No. 286,317
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744077
Int. Cl.[5] G11B *27/02*; H04N *5/782*
U.S. Cl. 360—14.1 **20 Claims**



1. Apparatus for reproducing audio signals which are recorded as digital signals on track sections allocated thereto in tracks on a magnetic tape also used for recording digital video signals, said apparatus having a rotary head wheel having four write heads and four normal read heads, for recording and reproducing audio and video signals on and from oblique tracks on said tape, said read heads being located for reading recorded signals of said tape during time intervals following the time intervals in which the respective write heads pass over the same respective track portions, and four advanced read heads so disposed on said head wheel that said advanced read heads read recorded signals of said tape during time intervals which precede the time intervals in which the respective write heads pass over the respective track portions in which the same signals were previously recorded, and wherein, in accordance with the invention:

said write heads are spaced at substantially equal intervals around the head wheel circumference, said normal read heads are spaced at substantially equal intervals around the head wheel circumference and said advance read heads are spaced substantially equal intervals around the head wheel circumference;

said advanced read heads are positioned in a first plane of said head wheel, said write heads are positioned in a second plane, different from and parallel to said first plane, of said head wheel and said normal read heads are positioned in a third plane of said head wheel different from and parallel to said first and second planes, and

said advanced read heads are disposed at such an angular spacing from the respectively nearest thereto of said normal read heads that while one of said advanced read heads is reading a section of track on said tape allocated to audio signal recording, the one of said normal read heads which is nearest to being located on said head wheel diametrically opposite to said one of said advanced read heads is out of contact with said tape, said angular spacing being less than about ½ of the angle subtended by the portion of the circumference of said head wheel which is out of contact with said tape.

4,939,606

ROTARY HEAD ASSEMBLY FOR DIGITAL AUDIO TAPE RECORDERS

Tsutomu Nakanishi, Kunitachi, Japan, assignor to C.S.U. Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,587
Claims priority, application Japan, Apr. 13, 1987, 62-54708; Jul. 3, 1987, 62-101865; Nov. 13, 1987, 62-173617; Dec. 28, 1987, 62-200788; Dec. 28, 1987, 62-200789
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—107 **18 Claims**



1. A rotary head assembly comprising:

a fixed winding drum having a curved surface on which a magnetic tape runs, said drum having opposite ends and including a flange part at one end for engaging and positioning the magnetic tape laterally on said curved surface, said drum having a slot which is open at said curved surface, a rotating disc mounted within said fixed drum for rotation about an axis which is oblique relative to said drum, a plurality of circumferentially spaced heads on said disc which are exposed through said slot in the drum as said disc rotates, said heads tracing a path on the tape which is desirably rectilinear and forms a given angle on the tape but which tends to deviate from rectilinearity along a curved distortion path having peaks and valleys, said flange part having a surface which engages said tape, said surface of said flange part being curved to correct the deviation from the rectilinear path traced on the tape,

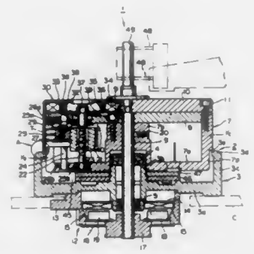
push means on said drum for engaging the tape to push the tape against said curved surface of said flange part and means resiliently mounting said push means on said drum.

4,939,607

HEAD CARRIAGE FOR USE WITH A LONGITUDINAL RECORDING SYSTEM UTILIZING A ROTARY RECORDING AND/OR REPRODUCING HEAD

Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 7, 1988, Ser. No. 254,707
Claims priority, application Japan, Oct. 16, 1987, 62-261374
Int. Cl.[5] G11B *5/52, 21/12*
U.S. Cl. 360—107 **9 Claims**



1. A longitudinal scanning system for a tape recording and/or reproducing apparatus comprising:

a rotary drum rotatably mounted on a chassis and having at least one opening in the periphery thereof;

tape guiding means for guiding a tape medium around said rotary drum;

tape transporting means for transporting said tape medium perpendicular to a rotating axis of said rotary drum;

head carriage means for carrying a head which contacts said tape medium through said opening of said rotary drum, said head carriage means having a surface which is proximal to said periphery of said rotary drum ground said opening; and

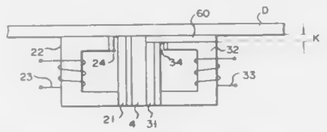
shifting means for shifting said head carriage means, within said opening of said rotary drum, in the direction of said rotating axis.

4,939,608

LOW-NOISE MAGNETIC READ/WRITE HEAD

Hiroshi Okamura, Tokyo; Susumu Kimura, Hamura, and Masahiro Kusunoki, Tachikawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 935,011, Nov. 26, 1986, abandoned.
This application Dec. 21, 1988, Ser. No. 289,401
Claims priority, application Japan, Nov. 30, 1985, 60-269677; Dec. 27, 1985, 60-295715
Int. Cl.[5] G11B *5/265, 5/187*
U.S. Cl. 360—121 **8 Claims**



1. A magnetic head apparatus comprising;

recording/reproducing head means for recording data on a magnetic recording medium and reproducing data from the medium;

erasing head means disposed adjacent the recording/reproducing head means, for erasing data from the recording medium, including erasing core means having an erasing gap means for generating magnetic flux to erase data recorded on the medium thereby, coil means on the erasing core means, non-magnetic spacer means between the erasing core means and the recording medium for decreasing the intensity of magnetic fields extending from the recording medium on the erasing gap means, the non-magnetic spacer means covering the erasing gap means; and

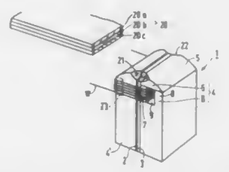
isolation layer means for magnetically separating the recording/reproducing head means from the erasing head means.

4,939,609

VERTICAL RECORDING HEAD WITH THIN FILM POLE ON NON-MAGNETIC BLOCK

Victor Zieren, and Steven B. Luitjens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1986, Ser. No. 854,209
Claims priority, application Netherlands, Apr. 26, 1985, 8501200
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—125 **2 Claims**



1. A magnetic head for use in vertical recording, comprising a contact surface for a magnetic recording medium, a main magnetic pole of a thin film of soft magnetic material extending up to the contact surface and enclosed between a first protective block and a second protective block together constituting the body of the magnetic head, the first protective block consisting of a magnetic part and a non-magnetic part, said parts being juxtaposed at a common boundary, said non-magnetic part extending from the boundary up to the contact surface, a first channel being provided at the boundary in the magnetic part, said first channel separating an auxiliary magnetic pole adjoining the main magnetic pole from a part constituting the return path for the magnetic flux from the main pole, a winding embracing the main pole and the auxiliary pole being wound through said first channel, characterized in that the second protective block consists entirely of a non-magnetic material which extends up to the contact surface and has a polished surface facing the first protective block, the main pole being provided on the polished surface, the winding further embracing the second protective block.

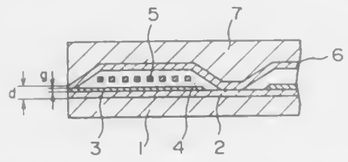
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4,939,610

THIN FILM MAGNETIC HEAD HAVING MAGNETIC CORE INCLUDING A THIN FILM OF COBALT ALLOY

Shinji Narishige, Mito; Masaaki Sano, Hitachi; Kouichi Nishioka, Hitachi; Takao Imagawa, Hitachi; Masanobu Hanazono, Mito; Tetsuo Kobayashi, Kanagawa, and Toshihiro Yoshida, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 252,603
Claims priority, application Japan, Oct. 5, 1987, 62-249829
Int. Cl.[5] G11B *5/16*
U.S. Cl. 360—126 18 Claims



1. A thin film magnetic head comprising a substrate, a first magnetic core disposed on said substrate, a second magnetic core forming a magnetic path in conjunction with said first magnetic core, a conductor coil wound in said magnetic path and a gap formed between ends of said first magnetic core and said second magnetic core, wherein at least one of said first magnetic core and said second magnetic core includes a thin film of cobalt alloy including:

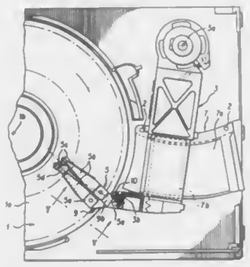
20 to 70 atomic percent of cobalt;
20 to 60 atomic percent of nickel;
12 to 30 atomic percent of iron; and
5 to 32 atomic percent of palladium.

4,939,611

VERTICAL DISPLACEMENT LIMIT STOP IN A DISK DRIVE FOR PREVENTING DISK SURFACE DAMAGE

Richard P. Connolly, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 20, 1988, Ser. No. 260,621
Int. Cl.[5] G11B *5/54, 21/22, 21/08*
U.S. Cl. 360—128 6 Claims



1. A vertical displacement limit stop structure for a disk memory drive, comprising:

a. a plurality of magnetic memory disk coaxially mounted along and rotatably mounted about a common central axis, each memory disk having concentric tracks of magnetic recordings in its opposite surfaces;

b. work function members projecting between adjacent disks for preforming a work function in association with said disks, said members each having opposite face parts, said face parts being respectively disposed in close proximity to a confronting surface of an adjacent disk adjacent a peripheral edge thereof, each face part and the confronting disk surface being subject to unwanted contact due to relative displacement between the disks and the work function members toward one another due to inertial reactions in response to accelerations which cause displacement; and

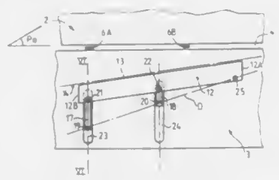
c. a vertical displacement limit stop on each of the opposite sides of each work function member, having an impact face projecting toward an adjacent disk surface beyond said face parts to make contact with said confronting face of the disk at a radial position overlapping the disk surface at the peripheral edge of the disk, outside of the tracks of magnetic recordings.

4,939,612

TAPE GUIDE DEVICE FOR A MAGNETIC RECORDER/READER

Pierre Abeille, Sceaux, and Jean-Claude Coulie, Boulogne-Billancourt, both of France, assignors to Schlumberger Industries, Montrouge, France

Filed Feb. 21, 1989, Ser. No. 312,152
Claims priority, application France, Feb. 26, 1988, 88 02367
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—130.24 12 Claims



1. A device for guiding a magnetic tape suitable for being wound helically around a cylindrical drum and for running past at least one magnetic head driven in rotation around the periphery of a slot provided in an equatorial plane of the drum, the device being of the type comprising elongate bearing means linked to the drum and defining at least two bearing points against which one of the edges (bottom edge or top edge) of the tape may bear, the device including link means linking the bearing means to the drum and suitable for modifying the inclination of the bearing means as a function of temperature, said link means being suitable under the effect of differential thermal expansion to cause the bearing means to rotate about a radial axis (extending transversely to the axis of the drum) passing through a point which is invariant in rotation, and whose position is fixed regardless of temperature.

4,939,613

TAPE CASSETTE WITH RIGID TAPE GUIDE

Victorio T. Flores, Jr., and Michael T. Bolong, both of Rancho Palos Verdes, Calif., assignors to Accurate Molded Products, Inc., Paramount, Calif.

Filed Feb. 24, 1988, Ser. No. 159,663
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 10 Claims

1. A tape cassette for holding a recording tape for use in a tape machine provided with a tape head, the tape cassette comprising:

(a) a cassette housing;

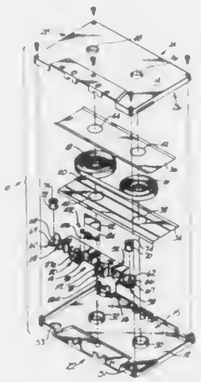
(b) a cassette cover for mounting on the cassette housing to thereby define between the housing and cover an enclosed space for mounting a tape supply reel and a tape takeup reel; and

(c) a rigid tape guide of unitary construction mounted in the enclosed space for properly positioning a tape relative to a tape head as the tape passes from the tape supply reel to the tape takeup reel, the tape guide comprising:

(i) a horizontal, flat top section and a horizontal, flat bottom section spaced vertically apart from each other and connected together by a vertical support section;

(ii) a first roller support mount integrally formed with the flat bottom section and extending horizontally away from a first one of its ends;

(iii) a second roller support mount integrally formed with the flat bottom section and extending horizontally away from its end opposite from the first end, wherein each such roller support mount includes both a pin for mounting a roller and a curved reinforcing member extending vertically therefrom, where both the pin and the reinforcing member are formed integrally with the support mount, and the pins are parallel to each other;



(iv) a pair of box-shaped guide structures integrally formed with the tape guide, adjacent each other, extending horizontally away from the vertical support section and open at their front-facing ends, wherein each such guide structure includes a horizontal top wall and a horizontal bottom wall, the top and bottom walls connected by a distal side wall on one side of the structure and an adjacent side wall on the opposite side of the structure, wherein each such adjacent side wall includes a vertical first tape guide surface along the height of its front-facing edge, and each such distal side wall includes a vertical second tape guide surface along the height of its front-facing edge; and

(v) a third vertical tape guide surface formed integrally with each roller support mount, wherein each of the first, second and third tape guide surfaces are parallel to each other and to the roller mounting pins in a direction that is perpendicular to the passing direction of the tape.

4,939,614

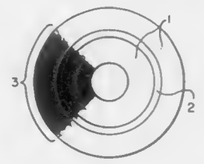
MAGNETIC DISK MEDIUM WITH CIRCUMFERENTIALLY TEXTURED SURFACES AND VARIED SURFACE ROUGHNESS AND METHOD OF PRODUCING THE SAME

Takaaki Shirakura, Chigasaki; Shinya Matsuoka; Hiroshi Yashiki, both of Odawara; Masanori Arayashiki, Hadano, and Masaki Ohura, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 175,527
Claims priority, application Japan, Apr. 3, 1987, 62-83466
Int. Cl.[5] G11B *5/82*
U.S. Cl. 360—135 24 Claims

1. A magnetic disk medium for use in a magnetic disk apparatus, comprising:

a circumferentially textured substrate;
magnetic films provided on said surfaces of said substrate;
protective films provided on said magnetic films;



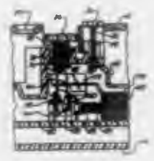
said substrate having surface roughness which varies in the radial direction of said disk medium.

4,939,615

LATCHING AND RELEASE SYSTEM FOR GROUND FAULT RECEPTACLE

Edward J. Brant, Mattydale, and Thomas N. Packard, Syracuse, both of N.Y., assignors to Pass & Seymour, Inc., Syracuse, N.Y.

Division of Ser. No. 5,086, Jan. 20, 1987, Pat. No. 4,802,052.
This application Jan. 23, 1989, Ser. No. 299,570
Int. Cl.[5] H02H *3/347*
U.S. Cl. 361—42 6 Claims



1. In a GFI receptacle having a first pair of fixed electrical contacts and a second pair of contacts carried on closely spaced, and forward end portions of substantially parallel, adjacent, electrically conducting arms movable between first and second positions wherein said second pair of contacts is in and out of engagement, respectively, with said first pair of contacts, means for preventing arcing as said second pair of contacts moves into and out of engagement with said first pair of contacts, said means comprising:

(a) a member of dielectric material mounted for movement together with and in the same direction as said arms;

(b) said member having a pair of spaced surfaces underlying and contacting said end portions of said arms to maintain the latter in said first position thereof, said surfaces having coextensive forward edges extending laterally across said member;

(c) a medial wall portion of dielectric material extending upwardly from a position between said spaced surfaces to a position physically separating and forming a dielectric barrier between said arms for a predetermined distance extending rearwardly from said forward edges for at least a portion of the length of said arms; and

(d) an end wall portion of dielectric material extending upwardly from a position at said forward edges of said spaced surfaces and extending laterally across said member to form a dielectric barrier forwardly of said first and second pairs of contacts, whereby said end wall portion cooperates with said medial wall portion to prevent line-to-line arcing as said second pair of contacts is moved into and out of engagement with said first pair of contacts.

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4,939,616

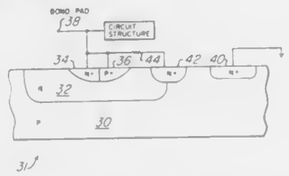
CIRCUIT STRUCTURE WITH ENHANCED ELECTROSTATIC DISCHARGE PROTECTION

Robert N. Rountree, Richmond, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 265,746, Nov. 1, 1988, abandoned. This application Nov. 13, 1989, Ser. No. 434,592

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 16 Claims



1. A silicon controlled rectifier device for protecting a circuit structure which is coupled to a first node, comprising in combination:

a lightly doped region having a first conductivity type formed in a lightly doped substrate having a second conductivity type;

a first heavily doped region formed in said lightly doped region having said first conductivity type, said first heavily doped region being electrically connected to said first node;

a second heavily doped region formed in said lightly doped region having said second conductivity type, said second heavily doped region being electrically connected to said first node;

a third heavily doped region formed in said substrate having said first conductivity type, said third heavily doped region being spaced from said lightly doped region and said third heavily doped region being electrically connected to a second node;

a fourth heavily doped region formed at the intersection of said lightly doped region and said substrate having said first conductivity type, said fourth heavily doped region positioned between said second and third heavily doped regions; and

a resistor having a first terminal electrically connected to said first node and having a second terminal electrically connected to said fourth heavily doped region, said combination forming a silicon controlled rectifier device which provides an over-voltage current path between said first and second nodes to protect the circuit structure from damage of the type caused by electrostatic discharge between said nodes.

4,939,617

METHOD AND APPARATUS FOR MONITORING AN AC TRANSMISSION LINE

Gary R. Hoffman, Setauket, N.Y., and Walter L. Hinman, New Providence, N.J., assignors to Dowty RFL Industries Inc., Boonton, N.J.

Filed May 5, 1989, Ser. No. 349,330

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—64 35 Claims

1. A method for producing indications of the status of an AC electrical transmission line connected between first and second locations, comprising the steps of:

generating, for said first location, first signal parameter values by time integrating between zero-crossings of an AC signal parameter measured at said first location;

storing said first signal parameter values in association with the respective time periods that give rise to said first signal parameter values;

generating, for said second location, second signal parameter values by time integrating between zero-crossings of said AC signal parameter measured at said second location;

transmitting said second signal parameter values to said first location, and receiving said second signal parameter values at said first location;

reading out a stored first signal parameter value associated with a time that is a predetermined time prior to the time at which a second signal parameter value is received at said first location; and

producing an indication of the status of said transmission line as a function of the second signal parameter value received at said first location and said read-out first signal parameter value.

4,939,618

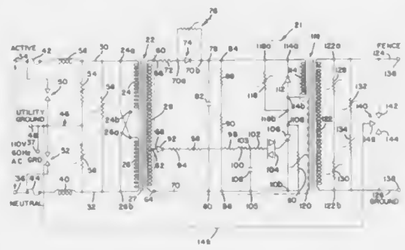
LIGHTNING PROTECTED ELECTRIC FENCE CONTROLLER SYSTEM AND METHOD

Conrad F. Fingerson, Chatfield, Minn.; Andrew J. McKean, Avalon, Australia, and Robert D. Eickhoff, Fountain, Minn., assignors to AMCO Partnership, Chatfield, Minn.

Continuation of Ser. No. 188,651, Apr. 29, 1988, abandoned, which is a continuation of Ser. No. 877,108, Jun. 23, 1986, abandoned. This application Sep. 11, 1989, Ser. No. 405,578

Int. Cl.[5] H02H *9/06*

U.S. Cl. 361—117 5 Claims



2. An electric fence controller used in electrifying an electric fence, comprising:

(a) energy storing circuit means for storing electrical energy;

(b) energy charging circuit means interconnected to said energy storing circuit means for charging said energy storing circuit means, the energy charging circuit means including first transformer means, input terminals of the first transformer means being interconnected to active and neutral leads from a source of electrical energy, each of the active and neutral leads including first and second circuit means for interconnecting the active and neutral leads to a utility ground, the first circuit means including a spark gap, the second circuit means including a varistor and choke in series, a third varistor being in parallel with the first transformer means interconnecting the active and neutral leads from the source of electrical energy;

(c) discharge circuit means interconnected to said energy storing circuit means for discharging said energy storage circuit means;

(d) voltage multiplying circuit means interconnected to said energy storage circuit means and the electric fence for impressing high voltage potentials at intervals on the electric fence; and

(e) three terminal spark gap means positioned intermediate of the voltage multiplying circuit means and the electric fence including three spaced apart terminals, a first terminal and a second terminal of the three terminal spark gap means interconnected to a hot wire of the electric fence and a ground wire of the electric fence, respectively, a third terminal of the three terminal spark gap means being interconnected to a utility ground.

4,939,619

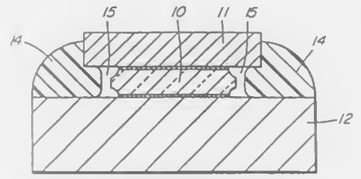
PACKAGED SOLID-STATE SURGE PROTECTOR

Jerzy Borkowicz, Ottawa; William P. Trumble, Kanata; James E. Anderson, Almonte, and Robin McIntyre, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 101,094, Sep. 25, 1987, Pat. No. 4,851,956. This application Jul. 20, 1989, Ser. No. 382,131

Int. Cl.[5] H02H *3/24*

U.S. Cl. 361—117 38 Claims



1. An electronic system comprising at least one circuit that includes surge-protecting means for protecting said circuit against a current surge up to 10 amps or more, said surge-protecting means comprising a first electrode and a second electrode; a semiconductor chip that is in electrical-conductive relation with said first and second electrodes, respectively, such that an interface region exists between said semiconductor chip and each of said first and second electrodes; and sealing means for sealing said interface region between said semiconductor chip and each electrode, said sealing means comprising a sealing layer that (a) is adhered to both electrodes, (b) defines with said electrodes a cavity wherein said chip is provided, and (c) is comprised of a dielectric resin material that is resilient under both room-temperature and high-heat conditions, wherein said electrodes are capable of moving into a electrical-conductive relation to sustain a short circuit in the event of chip destruction.

4,939,620

HIGH-VOLTAGE CERAMIC CAPACITOR AND METHOD OF ITS MANUFACTURE

Hajime Arakawa, and Motoaki Kakio, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 26, 1989, Ser. No. 357,545

Claims priority, application Japan, May 30, 1988, 63-132230

Int. Cl.[5] H01G *4/10, 7/00*

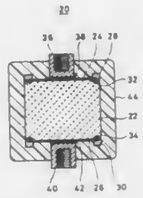
U.S. Cl. 361—321 6 Claims

1. A high-voltage ceramic capacitor comprising:

a dielectric ceramic element having an outer surface;

a pair of electrodes formed on said outer surface of the dielectric ceramic;

a respective reduced-resistivity region formed only in the vicinity of the end-edge of each of said electrodes and extending outwardly from respective depths into the ceramic element only as far as said outer surface of said dielectric ceramic element;



said electrodes being formed with silver material; and respective external terminals soldered to said electrodes.

4,939,621

DEVICES FOR REGULATING THE TEMPERATURE OF AN ELEMENT BY BLOWING A GAS AT APPROPRIATE TEMPERATURE

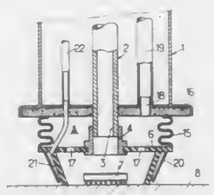
Francois Galian, Pontault-Combault, and André Feuillioux, Montlucon, both of France, assignors to Societe d'Applications Generales d'Electricite Generale et de Mecanique Sagem, France

Filed May 5, 1989, Ser. No. 350,299

Claims priority, application France, May 10, 1988, 88 06293

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—382 5 Claims



1. Thermal regulation device used for regulating, to a desired positive or negative value, the temperature of an element, particularly a semi-conductor component, during electric testing under variable thermal conditions, said temperature regulation being obtained by blowing a gas at the desired temperature on said element, said thermal regulation device comprising a body (1) supporting an intake duct (2) for the gas at the appropriate temperature and means for insulating the element with respect to the ambient atmosphere, said insulating means comprising an insulating bell (6) covering the element (7) and supported slidingly by the free end of said duct, resilient means being inserted between the insulating bell and the body of the device and holding said bell in sealed relation against a support (8) of the element, characterized by the combination of the following arrangements:

between the insulating bell (6) and the body (1) said resilient means comprises a tubular bellows (15) and is substantially coaxial with the gas intake duct and said bellows and is an annular chamber with the opposing walls of the insulating bell, of the body and of the duct, said bellows holding the bell resiliently and sealingly against the support of the element;

the bell (6) and the bellows (15) are both made from a material or from respective materials which are very good heat insulators;

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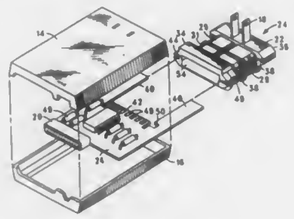
the bell (6) is provided with at least one passage (17) between its inner volume and said annular chamber;
the body (1) of the device has passing therethrough, over the whole of its height, a discharge tube (19) opening into the annular chamber at its lower end (at 18) and emerging into the atmosphere at its upper end.

4,939,622

REMOVABLE ELECTRICAL OR ELECTRONIC EQUIPMENT ASSEMBLY COMPRISING A BOX AND ITS HOUSING

Jean-Pierre Weiss, Argenteuil; René Estival, Saint Cloud, and Pascal Noble, Eaubonne, all of France, assignors to Avions Marcel Dassault-Breguet Aviation, France

Filed Apr. 7, 1989, Ser. No. 334,458
Claims priority, application France, Apr. 11, 1988, 88 04757
Int. Cl.[5] H02B *11/12*
U.S. Cl. 361—391 **7 Claims**



1. A removable electrical or electronic equipment assembly comprising:
a box containing the electrical or electronic equipment;
a housing for receiving said box;
at least one plug connector comprising a first element provided on said box and a second element provided within said housing, the first and second elements adapted to engage with one other;
an endless screw provided on said box;
a rack located within said housing and adapted to rotatably receive said endless screw;
first guide pieces located on said box;
second guide pieces located within said housing, said second guide pieces being spaced apart from said rack and adapted to be in sliding contact with said first guide pieces;
means for blocking the rotation of said endless screw when the first and second elements are engaged; and
means for releasing said endless screw when the first and second elements are disengaged,
whereby upon rotation of said endless screw in one direction, said box travels into said housing via said guide pieces until the first and second elements are engaged and the screw rotation is blocked by said blocking means, and whereby said box is removed upon rotation of said screw in an opposite direction.

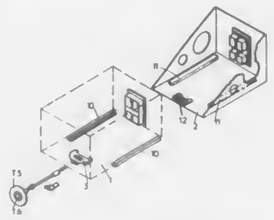
4,939,623

MODEM WITH IMPROVED TRANSFORMER ASSEMBLY

John E. Equi, Huntsville; Lelton C. Woodham, Arab, and John M. Butler, Huntsville, all of Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Apr. 25, 1989, Ser. No. 342,823
Int. Cl.[5] H05K *7/06*; H01F *15/02*
U.S. Cl. 361—399 **19 Claims**

1. A transformer assembly mounted to a printed circuit board (pcb) having a U-shaped slot extending inward from a perimeter edge comprising:
a core;
primary and secondary windings fixed to said core, said core and windings forming a core assembly;



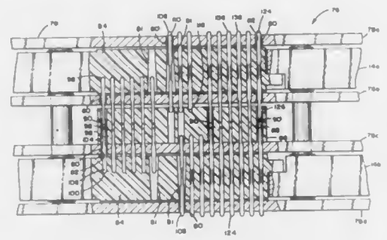
means attached to opposing ends of said core assembly releasably mounting said core assembly to said pcb, said mounting means slidingly engaging opposing edges of the U-shaped slot on said pcb.

4,939,624

INTERCONNECTED MULTIPLE CIRCUIT MODULE

Melvin C. August; Eugene F. Neumann; Stephen A. Bowen, and John T. Williams, all of Chippewa Falls, Wis., assignors to Cray Research, Inc., Minneapolis, Minn.

Filed Dec. 14, 1988, Ser. No. 284,912
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—424 **23 Claims**



1. A multiple circuit module apparatus for use in an electronic device, comprising:
a plurality of circuit boards, each circuit board having a plurality of pin receiving recesses defined therein;
a plurality of cold plate means, at least one of said cold plate means positioned between two of said circuit boards, said cold plate means conducting heat from said circuit boards, each of said cold plate means having an open space defined therein for allowing electronic communication between said circuit boards;
a plurality of pin headers, each of said pin headers positioned within each of said open spaces, respectively, each pin header having a plurality of through-holes defined therein;
at least one connector block interposed between two of said circuit boards, said connector block having a plurality of dual-entry contacts defined therein;
a plurality of electrically conductive signal pin means for conducting an electrical signal from one of said boards to at least one other of said circuit boards, a respective signal pin means being selectively insertable into at least a respective one of said pin receiving recesses, a respective one of said through-holes a respective one of said dual-entry contacts depending on the desired path of the signal between said circuit boards; and

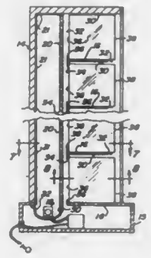
means associated with at least one of said pin headers or connector block for shielding a selected number of said signal pin means against induction from other signal pin means.

4,939,625

METHOD AND SYSTEM FOR DISPLAYING OBJECTS

Douglas M. Olson, 1980 Galena St., Aurora, Colo. 80010

Continuation-in-part of Ser. No. 184,933, Apr. 22, 1988, abandoned. This application Mar. 31, 1989, Ser. No. 332,566
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—154 **20 Claims**



1. A display system comprising:
a cabinet having at least one viewing platform;
a light source mounted in the back of said cabinet; and
a plurality of opaque objects each of which has a generally transparent outer covering, said transparent outer coverings being sized and configured to make substantial surface contact with each other when said objects are arranged on said viewing platform in an abutting side by side manner, said arranged objects further being positioned on said viewing platform so that those portions of said outer coverings making surface contact with each other are capable of receiving and transmitting light from said light source to illuminate said objects.

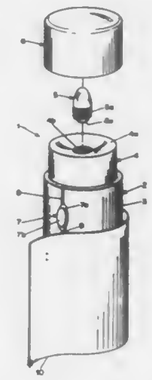
4,939,626

DISPOSABLE FLASHLIGHT

Matthaus T. Hohenstein, Milan, Italy, assignor to Tecmavest Maschinen AG, Zug, Switzerland

Filed Oct. 20, 1989, Ser. No. 424,806
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—189 **5 Claims**

1. A disposable flashlight comprising:
a battery having first and second terminals disposed on an external surface thereof;
bulb fixture means affixed to the external surface of the battery and being adapted to hold a bulb having a first and a second bulb terminal, the bulb fixture providing electrical contact between the first bulb terminal and the first terminal of the battery, and having a conducting portion for making electrical contact to the second bulb terminal;
a switch affixed to the external surface of the battery, the switch having a first and a second switch terminal;
first and second conducting means affixed to the external surface of the battery for making electrical connections between the first switch terminal and the conducting portion of the bulb fixture, and between the second switch terminal and the second terminal of the battery, respectively, whereby when the switch is closed, the bulb is energized by the battery; and



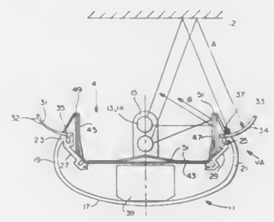
a relatively thin, pliable, insulating material covering at least exposed portions of the external surface of the battery and the first and second conducting means.

4,939,627

INDIRECT LUMINAIRE HAVING A SECONDARY SOURCE INDUCED LOW BRIGHTNESS LENS ELEMENT

Douglas J. Herst, Berkeley, and Peter Y. Y. Ngai, Danville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.

Continuation of Ser. No. 260,287, Oct. 20, 1988, abandoned. This application Sep. 14, 1989, Ser. No. 407,721
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—299 **11 Claims**



1. A system for indirect lighting comprising
a primary light source for indirect lighting,
structural means for positioning said primary light source proximate a reflective surface whereby said reflective surface acts as a secondary source of light,
at least one generally visible light transmissive element which modifies the direction of light incident thereon, said light transmissive element being positioned to receive reflected light from said secondary source of light,
means for causing at least a portion of the secondary source light incident on said light transmissive element to be directed into normal viewing angles for persons observing said light transmissive element, and
light foil means disposed between said primary light source and said light transmissive element for substantially blocking direct transmission of light to said light transmissive element from said primary light source whereby the ob-

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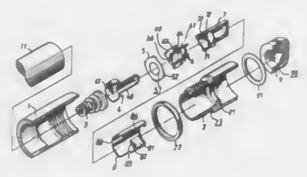
servable brightness of said light transmissive element is induced substantially entirely by said secondary source of light.

4,939,628

SWITCH MECHANISM FOR A FLASHLIGHT

Howard Wang, No. 7, Alley 14, Lane 64, Ching Ping Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Nov. 21, 1989, Ser. No. 439,481
Int. Cl.[5] F21L 7/00
U.S. Cl. 362—206 **3 Claims**



1. A switch mechanism for a flashlight, said flashlight having a cylindrical tube for receiving a plurality of batteries; said switch mechanism comprising:

an end cap threadedly engaged to a rear end of said cylindrical tube, a radially inward annular flange being formed on a middle portion of an inner surface of said cylindrical tube;

a plunger cylinder having a number of notches axially formed in a front end thereof, an even number of guide elements each with a front cam surface being formed in a rear end of said plunger cylinder, said plunger cylinder being fitted within a front end of said end cap;

an annular ring having a number of protrusions formed on an outer peripheral surface thereof corresponding to said notches of said plunger cylinder, said protrusions of said annular ring being force-fitted into said notches of said plunger cylinder so that said plunger cylinder is retained between said annular ring and said annular flange of said end cap;

a guide which has an even number of guide blocks and has a first cam surface formed on a front end thereof being slidable in said plunger cylinder, and rear end os said guide protruding out of said end cap;

a plunger which has an even number of ribs and a second cam surface being slidable in said guide such that said first cam surface of said guide is engageable with said second cam surface of said plunger;

a contact element passing through said annular ring and being freely slidable and rotatable within said plunger; and

a spring being biased between a rearmost battery and said contact element;

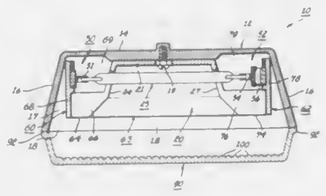
said contact element being pushed to overcome a biasing force of said spring by depressing said rear end of said guide, and said second cam surface of said plunger being engageable with said front cam surface of said plunger cylinder so that said contact element is contactable with said annular ring in order to turn on and turn off said flashlight.

4,939,629

COMPACT LUMINAIRE INCLUDING A DOUBLE-ENDED LAMP

George G. Glanton, Edgefield, S.C.; Omer E. Murray, Hendersonville, and Mitchell M. Osteen, Zirconia, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 5, 1989, Ser. No. 361,186
Int. Cl.[5] F21V 7/00
U.S. Cl. 362—223 **21 Claims**



1. A luminaire comprising:

(a) a metal housing comprising a back wall and a hollow body projecting from said back wall and surrounding an internal space within said housing having a mouth at the front side of the housing,

(b) a double-ended lamp within said housing comprising a tube of transparent material, terminals at opposite ends of the tube, and means within said tube for serving as a light source when traversed by current between said terminals,

(c) a pair of spaced-apart sockets within said housing each comprising contact structure for receiving one of said terminals and a ceramic support for supporting said contact structure,

(d) a ceramic reflector partially surrounding said transparent tube, the ceramic reflector and the ceramic supports of said sockets constituting portions of a single integral ceramic piece that is adapted to be inserted through said mouth into said housing as a single unit during assembly of the luminaire,

(e) means for attaching said integral ceramic piece to said housing after insertion thereof through said mouth,

(f) a lens, and

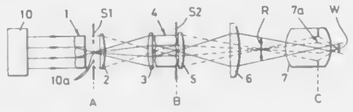
(g) means for attaching said lens to said housing in a position covering said mouth.

4,939,630

ILLUMINATION OPTICAL APPARATUS

Tetsuo Kikuchi, Tokyo; Masahiro Nakagawa, Kanagawa; Koichi Matsumoto; Haruo Ozawa, both of Tokyo; Hiroshi Shirasu, and Yuji Kudoh, both of Kanagawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 92,886, Sep. 4, 1987, abandoned. This application Aug. 26, 1988, Ser. No. 237,847
Claims priority, application Japan, Sep. 9, 1986, 61-212064; Jan. 29, 1987, 62-19412; Sep. 22, 1987, 62-238225
Int. Cl.[5] F21V 7/04; G02B 27/00
U.S. Cl. 362—268 **14 Claims**



1. An illumination optical apparatus comprising:

light source means for emitting collimated light beams;

first integrator means for forming a plurality of secondary light sources on a predetermined focal plane from the light beams from said light source means, said first integrator means having an entrance surface including a plurality of convex lens surfaces and an exit surface formed by a flat surface substantially perpendicular to an optical axis, each of said convex lens surfaces having a longer focal length than a distance between the entrance and exit surfaces;

second integrator means for forming a plurality of tertiary light sources from each of the plurality of second light sources formed by said first integrator means; and

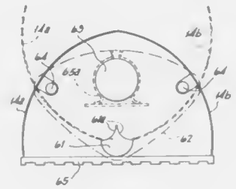
means for superposing the light beams from the tertiary light sources.

4,939,631

SPACE LIGHTING

Michael Burn, Woodbridge, and Colin Adby, Oxford, both of England, assignors to Light Years Ahead Limited, Woodbridge, England

Filed Jan. 17, 1989, Ser. No. 297,837
Claims priority, application United Kingdom, Jan. 20, 1988, 8801221; Mar. 1, 1988, 8804847
Int. Cl.[5] F21V 7/16
U.S. Cl. 362—284 **12 Claims**



1. A lighting fixture for illuminating a space and comprising:

support means for attaching the fixture to a wall or ceiling surface which borders the space;

lamp holder means connected to the fixture for holding an elongated lamp therein, the lamp having a longitudinal axis;

reflector means including a first reflector and a second reflector each extending along the lamp with the first reflector connected to the fixture pivotally about a first axis parallel to the longitudinal axis, the second reflector connected to the fixture pivotally about a second axis parallel to the first axis; and

a reflector actuator mechanism operable to move both the first reflector and the second reflector simultaneously each between a first position and a second position,

in the first positions the reflectors being between the surface and the lamp to seal light from the surface,

in the second positions the reflectors being remote from the lamp relative to the surface so as to reflect light from the lamp to the surface whereby to illuminate the space indirectly.

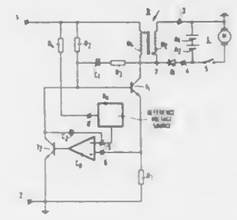
4,939,632

POWER SUPPLY CIRCUIT

Joseph A. M. Plagge, Nijmegen, and Johannes E. Algra, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1989, Ser. No. 404,931
Claims priority, application Netherlands, Feb. 14, 1989, 8900359
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—19 **17 Claims**

1. A power supply circuit for supplying a load from input voltages of different magnitude, comprising; a first series arrangement including a primary winding of a transformer and a main current path of a first semiconductor switch, a second series arrangement including a secondary winding of the transformer and a rectifier diode, said second series arrangement having terminals for connecting the load, a second semiconductor switch for switching the first semiconductor switch, means for generating a signal which is a measure of the current



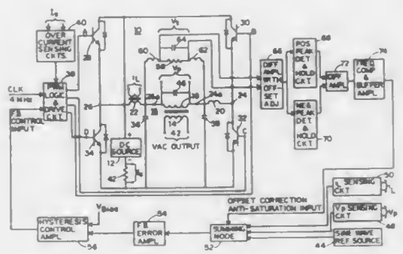
flowing through the primary winding, means coupling an output of said generating means to a non-inverting input of a comparator a having an inverting input connected to an output of a means for fixing a reference voltage, means coupling an output of the comparator to a control input of the second semiconductor switch, and means coupling the inverting input of the comparator via a capacitor to an output of the second semiconductor switch.

4,939,633

INVERTER POWER SUPPLY SYSTEM

Bruce R. Rhodes, Inverness, and Dennis W. Jodlowski, Buffalo Grove, both of Ill., assignors to General Signal Corporation, Stamford, Conn.

Filed Feb. 3, 1989, Ser. No. 306,595
Int. Cl.[5] H02M 7/00
U.S. Cl. 363—98 **6 Claims**



1. In an inverter power supply system having means which converts DC into an AC output, the improvement comprising means including a magnetic element and a resistor through which magnetizing current in said magnetic element flows for sensing and providing across said resistor a voltage signal corresponding to said AC output, means for detecting the difference between the positive and negative going peak amplitudes of said voltage signal, means for controlling said converting means to reduce said difference thereby reducing any DC component of said AC output, an output element having a winding across which said AC output appears, said power stage containing a bridge circuit with four arms, switching devices connected in each of said four arms, said output element being connected across junctions between opposite pairs of said arms said converting means comprising pulse generat-

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ing means for converting means switching devices at a frequency much higher than the frequency of said AC output, said sensing and peak amplitude difference detecting means being connected in feedback relationship with said pulse generating means for controlling the timing of pulses to provide said DC component reduction, said pulse generating means comprising means operated by repetitive pulses of frequency much higher than the frequency of said AC output for providing sequences of pulses of different widths to said switching devices, said means for providing said pulses of different widths having a pulse width control input to which said sensing and peak amplitude difference detecting means are connected in said feedback relationship,

means including said sensing and peak amplitude difference detecting means for providing in response to said signal across said resistor a first control signal for correcting said DC component, means responsive to said AC output and to a reference source of sine waves for providing second and third control signals, respectively, and means for applying said first, second and third control signals to said pulse width control input.

4,939,634

GROUP CONTROL OVERLOAD PROTECTION FOR ELEVATORS WITH IMMEDIATE ALLOCATION OF CALLS OF DESTINATION

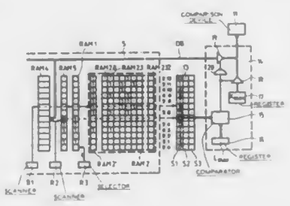
Joris Schroder, Lucerne, Switzerland, assignor to Inventio AG, Switzerland

Filed Jul. 27, 1988, Ser. No. 224,760

Claims priority, application Switzerland, Jul. 28, 1987, 02873/87

Int. Cl.[5] B66B *1/00*; G05B *1/00*; G06C *3/00*

U.S. Cl. 364—141 **8 Claims**



6. A group control for elevators having at least two cars for serving a plurality of floors and for the immediate assignment of floor calls of destination, comprising:

call registering devices at each floor for entering floor calls for desired floors of destination;

a floor call memory for each car for storing a floor call for a floor of entry;

a car call memory for each car for storing destination floor calls from said floor of entry;

a load measuring device associated with each car for indicating the number of passengers;

a selector for each car for indicating the floor at which the car can stop;

first and second scanners for each car having a position for each floor;

a computer for each car connected to said call registering devices and to the computers for the other cars and connected to said floor call memory, said car call memory, said load measuring device, said selector, and said first and second scanners for an associated car and responsive to said first scanner for calculating for each floor the operating costs corresponding to the waiting times of any passengers;

a comparison device for each car connected to said computer associated with the car for comparing the operating costs of all the cars at every floor designated by said second scanner to assign the floor call to the car with the smallest operating costs;

a load table for each car connected to said computer associated with the car for storing load values representing the number of passengers in the car and responsive to the input of floor calls and the storage of said destination floor calls in said car call memory for increasing the load value for the floor of entry proportionally to the number of entered destination floor calls and for decreasing the load values at the floors of destination proportionally to the number of calls for the respective floor, said computer utilizing said load values in calculating said operating costs; and

a monitoring circuit for each car connected to said comparison device and to said load table for the associated car and responsive to one of said load values exceeding a predetermined load limit value for preventing the assignment of the floor call to the associated car, said monitoring circuit including a first register for storing a load limit maximum value, a second register for storing an operating costs maximum value, a comparator having inputs connected to an output of said load table and to an output of said first register and an output connected through a Not-gate to a control input of a first tristate buffer and to a control input of a second tristate buffer, said first tristate buffer having an input connected to said computer and an output connected to said comparison device, and said second tristate buffer having an input connected to an output of said second register and an output connected to said comparison device.

4,939,635

AUTOMATIC PROGRAMMING SYSTEM

Masaki Seki; Takashi Takegahara, and Takeshi Arakaki, all of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

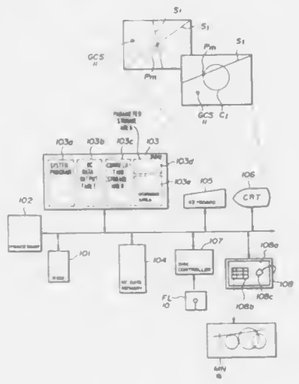
PCT No. PCT/JP87/00776, § 371 Date Jun. 15, 1988, § 102(e) Date Jun. 15, 1988, PCT Pub. No. WO88/03284, PCT Pub. Date May 5, 1988

PCT Filed Oct. 15, 1987, Ser. No. 231,838

Claims priority, application Japan, Oct. 21, 1986, 61-250361

Int. Cl.[5] G05B *19/403*; G06F *3/04*

U.S. Cl. 364—191 **3 Claims**



1. An automatic programming method for creating a numerical control part program by defining figure elements such as straight lines, circles and points constructing a part profile, defining a tool path by using symbols attached to the figure elements, and creating the numeral control part program by using a figure element definition statement for defining the figure elements and a motion statement for defining the tool path, said method comprising the steps of:

(a) providing a tablet surface with a menu table having menu items conforming to various methods of defining points, straight lines and circles;

(b) displaying previously input figure elements on a display screen;

(c) picking a menu item on the menu table for specifying the kind of new figure element to be defined and a figure element definition method for defining the new figure element;

(d) picking at least one figure element displayed on the display screen in accordance with the specified kind of figure element and the specified figure element definition method;

(e) defining a new figure element using the designated figure element definition method and the picked figure element and storing the new figure element in a memory; and

(f) displaying the new figure element on the display screen.

4,939,636

MEMORY MANAGEMENT UNIT

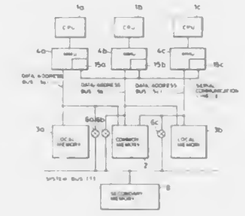
Norio Nakagawa, Kodaira; Katsuaki Takagi, Higashimurayama, and Tuneo Funabashi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,097

Claims priority, application Japan, Mar. 7, 1986, 61-48316

Int. Cl.[5] G06F *1/00*

U.S. Cl. 364—200 **20 Claims**



1. A multiprocessor system having a first CPU and a second CPU, comprising:

a first memory management unit coupled to said first CPU and including first buffer means having an address translation table storing memory control information to be used for converting a first logical address supplied from said first CPU to a first physical address based son said stored memory control information;

a second memory management unit coupled to said second CPU and including second buffer means having an address translation table storing memory control information to be used for converting a second logical address supplied from said second CPU to a second physical address based on said stored memory control information;

a common memory coupled to said first memory management unit and said second memory management unit through data transmission means and address transmission means; and

a communication line coupled between said first memory management unit and said second memory management unit;

each of said first and second memory management units having communication means for transmitting in series through said communication line multi-bit information relating to a change in said memory control information and for receiving multi-bit information relating to a change in memory control information from said communication line in series, and means for modifying the contents of the address translation table therein on the basis of the received multi-bit information, respectively.

4,939,637

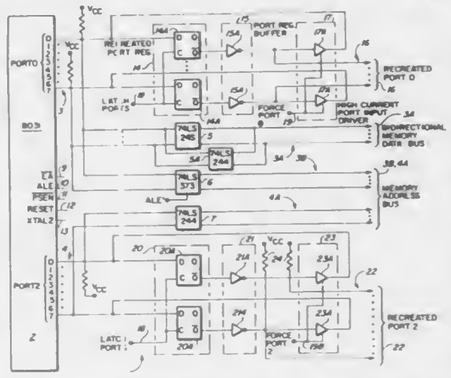
CIRCUITRY FOR PRODUCING EMULATION MODE IN SINGLE CHIP MICROCOMPUTER

Martin B. Pawloski, Gilbert, Ariz., assignor to Metalink Corporation, Chandler, Ariz.

Continuation-in-part of Ser. No. 157,104, Feb. 10, 1988, Pat. No. 4,809,167, which is a continuation of Ser. No. 751,806, Jul. 3, 1985, abandoned. This application Aug. 24, 1988, Ser. No. 235,956

Int. Cl.[5] G06F *9/44*

U.S. Cl. 364—200 **7 Claims**



1. A method of using a first single chip microcomputer that operates in a single chip mode when a control input is at a first logic level and causes an internal address bus and an internal data bus to be inaccessible from outside of the first single chip microcomputer, the first single chip microcomputer operating in a microprocessor mode when the control input is at a second logic level and causes the internal data bus and the internal address bus to be coupled to an external bus for outputting addresses and reading and writing data, in order to emulate a second single chip microcomputer operating in its single chip mode, the method comprising the steps of:

(a) providing an external register having a plurality of outputs, and a plurality of corresponding inputs connected, respectively, to a plurality of leads of a port of the first single chip microcomputer, and connecting corresponding outputs of the external register to a plurality of recreated external port conductors;

(b) coupling the leads of the port to a plurality of external data bus conductors;

(c) applying an external signal to the first single chip microcomputer to cause it to internally generate an emulation mode signal;

(d) operating the first single chip microcomputer to write a byte from its internal data bus into an internal latch of the port;

(e) outputting the byte from the internal latch via the leads of the port to the inputs of the external register in response to the emulation mode signal;

(f) latching the byte into the external register;

(g) tri-stating an output driver of the port in response to the emulation mode signal to produce a high output impedance;

(h) logically ORing the logic levels occurring on the outputs of the external register with logic levels produced on outputs of an external circuit connected to the recreated external port conductors; and

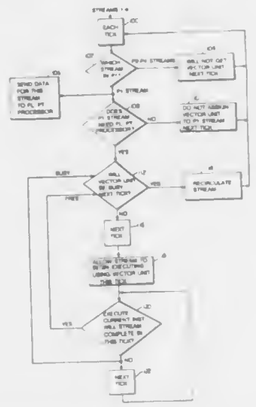
(i) applying the levels on the recreated external port conductors resulting from step (h) onto the leads of the port, respectively, while an internal CPU of the first single chip microcomputer reads the levels of the leads of the port.

4,939,638

TIME SLICED VECTOR PROCESSING

R. Ashley Stephenson, Tewksbury; Christopher Moriondo, Marlboro, and Kevin B. Normoyle, Ashland, all of Mass., assignors to Stellar Computer Inc., Newton, Mass.

Filed Feb. 23, 1988, Ser. No. 159,250
Int. Cl.[5] G06F *9/30, 13/00*
U.S. Cl. 364—200 **8 Claims**



1. A method for aiding management of access to a shared resource by a plurality of instruction streams executing in a pipelined manner in a synchronous-pipeline computer, comprising

preassigning arbitration time slots to each instruction stream, allowing, in each one of said arbitration time slots, only the instruction stream to which said one arbitration time slot is preassigned to request access to said shared resource, and

determining whether an instruction stream that has requested access during its preassigned arbitration time slot will be granted access to said shared resources, said determining step including detecting whether said shared resource will be available, and denying access when said shared resource is not available.

4,939,639

METHOD OF FACILITATING COMPUTER SORTING

Eddy Lee, North York, and Eugene Kulinek, Toronto, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 15, 1987, Ser. No. 61,510
Int. Cl.[5] G06F *7/08, 15/38, 7/00*
U.S. Cl. 364—200 **2 Claims**

1. A machine method of generating a language dependent sortkey, to facilitate the alphabetical sorting of another alphabet using a common sorting routine, said method comprising the steps of:

(a) storing in a master file encoded words, formed from characters each having a preselected value, to be sorted;

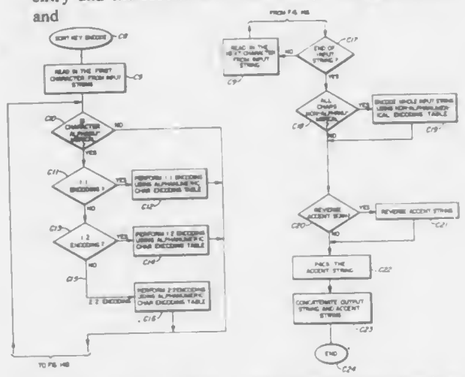
(b) providing a language dependent data file having an alphanumerical encoding table for the language of said another alphabet, the table including an encoding indicator, a first sort order entry and a second sort order entry;

(c) comparing said value of a character from one of the encoded words in the master file against the alphanumerical encoding table to determine its corresponding entry;

(d) retrieving the encoding indicator from said table, corresponding to said corresponding entry, which indicates if the encoding process will be a one-to-one character encoding, a one-to-two character encoding, or an ignore character encoding;

(e) if the encoding indicator indicates the encoding is one-to one, utilizing the value in the first sort order entry, for said sortkey;

(f) if the encoding indicator indicates that the encoding is one-to-two, utilizing the values in both the first sort order entry and the second sort order entry, for said sortkey; and



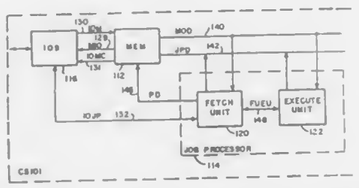
(g) if the encoding indicator indicates that the encoding is an ignore encoding, ignoring any values for said sortkey; and repeating from step (c) for each of the characters in the master file.

4,939,640

DATA PROCESSING SYSTEM HAVING UNIQUE MICROINSTRUCTION CONTROL AND STACK MEANS

Brett L. Bachman, Boston, Mass.; Richard A. Belgard, Saratoga, Calif.; Richard G. Bratt, Wayland, Mass., and Thomas M. Jones, Chapel Hill, N.C., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,537, May 22, 1981, abandoned.
This application Apr. 5, 1984, Ser. No. 597,195
Int. Cl.[5] G06F *09/22, 09/46*
U.S. Cl. 364—200 **7 Claims**



1. In a digital computer system for performing operations on operands, including processor means for performing said operations on said operands, memory means for storing instructions for directing the operations performed by said processor means, bus means for conducting instructions between said memory means and said processor means, and I/O means for conducting operands between devices external to said digital computer system and said processor means, said processor means comprising:

microcode control store means connected to said bus means for storing sequences of microinstructions corresponding to said instructions, said microcode control store means being responsive to said instructions for providing said corresponding sequences of microinstructions,

execution means responsive to said sequences of microinstructions for executing the operations defined by said microinstructions, said execution means including elements defining the machine state of said execution means when executing said microinstructions,

execution microinstruction stack means being connected to said execution means and containing at least one microinstruction stack frame for maintaining the machine state of said execution means when executing a microinstruction of a sequence of microinstructions when the execution of said microinstruction has been interrupted,

memory microinstruction stack means containing a plurality of further microinstruction stack frames for maintaining the machine states of said execution means when executing previous microinstructions of previous sequences of microinstructions when the execution of said previous microinstructions have been interrupted, and

microinstruction stack control means responsive to the operation of said microinstruction stack means and to said memory microinstruction stack means for controlling the transfer of microinstruction stack frames among said execution microinstruction stack means and said memory microinstruction stack means.

4,939,641

MULTI-PROCESSOR SYSTEM WITH CACHE MEMORIES

Martin J. Schwartz, Worcester, and Robert D. Becker, Shirley, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jun. 30, 1988, Ser. No. 213,556
Int. Cl.[5] G06E *13/00*
U.S. Cl. 364—200 **16 Claims**

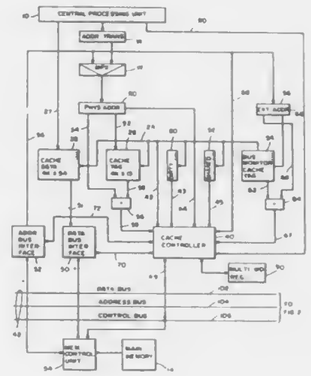
1. A data processing system including one or more central processing units, main memory means, and bus means, for each central processing unit the invention comprising:

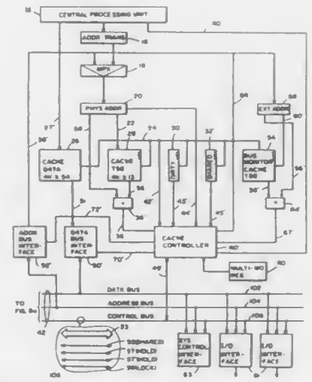
cache memory means coupled between the central processing unit and said bus means;

bus monitor means associated with said cache memory means and coupled to said bus means for detecting on said bus means an address associated with a data unit transferred from said main memory means to a bus connection requesting the data unit;

means coupled to said cache memory means and to said bus means for determining if data having the same address as said transferred data unit is present in said cache memory means, and if present, for asserting a hold signal on said bus means, the assertion of the hold signal indicating at least to the bus connection requesting the data unit that another data unit may be transmitted over said bus means; and

means for detecting whether data corresponding to the address of said transferred data unit and determined to be stored in said cache memory means may be different in content from said transferred data unit and, if so, transmitting said data from said cache memory means to said bud





means for reception by the bus connection requesting the data unit.

4,939,642

VIRTUAL BIT MAP PROCESSOR

William T. Blank, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Continuation of Ser. No. 306,270, Feb. 1, 1989, abandoned, which is a continuation of Ser. No. 882,793, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 558,024, Dec. 5, 1983, abandoned. This application Oct. 24, 1989, Ser. No. 426,539
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 **7 Claims**

1. A single instruction multiple data parallel processor, comprising:

an array of processing elements, including a plurality of edge processing elements along the periphery of said processing element array;

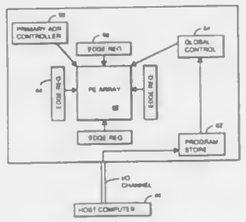
memory means in each said processing element for storing a multiplicity of data value at specified address locations; said memory means collectively storing an array of data values, said array of data values comprising a multiplicity of segments, each said segment comprising a set of data

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values equal in size to said array of processing elements and stored at a corresponding segment address in said memory means;

primary addressing means, coupled to all of said memory means, for generating a sequence of said segment addresses; said memory means including means for collectively accessing one segment of said array of data values for each said segment address generated by said primary addressing means;

edge addressing means for generating a plurality of edge address values corresponding to each segment address



generated by said primary addressing means, each edge address value comprising a segment address for a segment of said data array neighboring the segment of said data array corresponding to said segment address generated by said primary addressing means; and

neighbor means in each said processing element for accessing data values from each of its neighboring processing elements; said neighbor means in each of said edge processing elements including edge accessing means, coupled to said edge addressing means, for accessing data values stored in one of said memory means at a location corresponding to one of said edge address values.

4,939,643

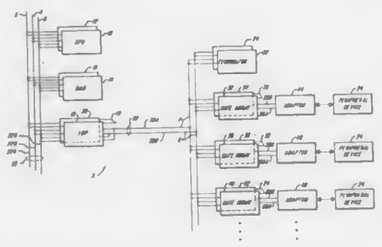
FAULT TOLERANT DIGITAL DATA PROCESSOR WITH IMPROVED BUS PROTOCOL

William L. Long, Pembroke; Robert F. Wambach, Attleboro; Kurt F. Baty, Medway, and Joseph M. Lamb, Hopedale, all of Mass., assignors to Stratus Computer, Inc., Marlboro, Mass.

Continuation-in-part of Ser. No. 18,629, Feb. 25, 1987, and Ser. No. 904,827, Sep. 8, 1986, Pat. No. 4,750,177, which is a continuation of Ser. No. 307,436, Oct. 1, 1981, abandoned. This application Jul. 29, 1987, Ser. No. 79,223

Int. Cl.[5] **G06F** *13/00, 13/42*

U.S. Cl. 364—200 **48 Claims**



1. In a digital data processor having a peripheral device controller for communicating with one or more peripheral devices connected along a common peripheral device bus, wherein each said peripheral device can include device interface means for transferring information-representative signals between the associated peripheral device and the peripheral bus means, the improvement wherein

A. said peripheral bus includes first and second input/output buses each for carrying information-representative signals, including at least one of data, address, control, and timing signals,

B. said peripheral device controller includes strobe means connected with said first and second input/output buses for normally transmitting thereon duplicative, synchronous and simultaneous strobe signals, said strobe signals defining successive timing intervals for information-representative signal transfers along said first and second input/output buses,

C. said peripheral device controller includes controller transfer cycle means, coupled to said first and second input/output buses, for controlling the execution of information transfer cycles for transferring information-representative signals between said peripheral device controller and said peripheral devices on said first and second input/output buses,

D. said controller transfer cycle means including controller cycle initiation means connected with said first and second input/output buses for initiating said information transfer cycles, said controller cycle initiation means including means for normally transmitting during a first said timing interval, duplicatively and synchronously on said first and second input/output buses, a first status signal indicative of cycle initiation,

E. said controller cycle initiation means further including means for normally transmitting during said first timing interval, duplicatively and synchronously on said first and second input/output buses, a second status signal indicative of at least one said peripheral device to be addressed during the information transfer cycle,

F. said one or more peripheral devices including means for detecting a selected fault condition during execution of said information transfer cycle and for generating a WAIT signal in response thereto, and

G. said peripheral device controller including means responsive to said WAIT signal for delaying transmission of further information-representative signals, including strobe signals, by said peripheral device controller along said first and second input/output buses.

4,939,644

INPUT/OUTPUT CONTROLLER FOR CONTROLLING THE SEQUENCING OF THE EXECUTION OF INPUT/OUTPUT COMMANDS IN A DATA PROCESSING SYSTEM

David M. Harrington, Upton; Steve A. Caldara, Wayland; Louis A. Lemone, Stow, and Kenneth R. Andrews, Jr., Northboro, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 496,173, May 19, 1983, abandoned. This application Jan. 9, 1987, Ser. No. 4,757

The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.

Int. Cl.[5] **G06F** *9/28, 9/30*

U.S. Cl. 364—200 **5 Claims**

1. A system for controlling input/output operations required by a host computer, which includes host processor means and host memory means, in communication with one or more input/output devices, said system comprising:

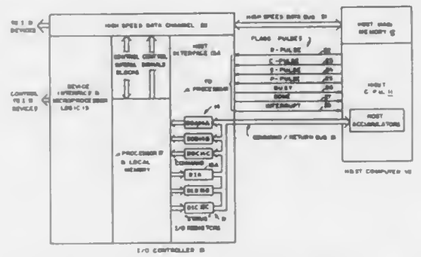
an input/output controller unit connected to said host computer and to said one or more input/output devices for controlling said input/output operation in response to input/output commands from said host processor means, said controller unit including controller processor means and controller memory means;

said host memory means being accessible to said controller unit for storing a plurality of control block lists, each control block list corresponding to one of said input/output commands and including control blocks of command information;

means for transferring one or more input/output commands from said host processor means to said controller processor means of said controller unit;

said controller processor means being responsive to said input/output commands transferred thereto for successively accessing from said host memory means the control block lists corresponding to said input/output commands;

said controller memory means being connected to said controller processor means for storing said control block lists, each including command information, control information



supplied by said host processor means, status return information supplied by said controller processor means, and error information concerning errors which arise during execution of the operation corresponding to said control block of command information;

said controller processor means includes

means for selecting one of plurality of different sequences of said control block of command information from said control block lists in accordance with a predetermined algorithm in said controller memory means; and

means responsive to said selected sequence of control blocks of command information for executing the operations required by said input/output commands.

4,939,645

METHOD AND APPARATUS TO REDUCE TRANSFORM COMPRESSION VISUAL ARTIFACTS IN MEDICAL IMAGES

James F. Hopkinson, Vernon Hills, Ill., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 9, 1988, Ser. No. 242,364

Int. Cl.[5] **G06F** *15/48*

U.S. Cl. 364—413.19 **26 Claims**

1. A method for substantially reducing visual artifacts resulting from transform compression of image data, comprising the steps of:

transforming spatial image data into spectral image data representing the frequency content and amplitude of said spatial image data;

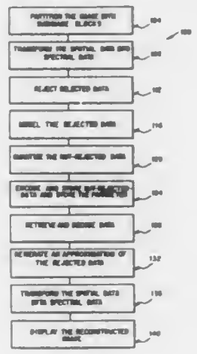
rejecting those of said spectral image data having selected frequency and amplitude characteristics;

computing at least one parameter which characterizes said rejected spectral image data in terms of a selected mathematical model;

encoding not-rejected spectral image data for data compression;

storing on a data storage device said encoded data and said parameter;

decoding said encoded spectral image data; and



generating an approximation of said rejected spectral image data by application of said parameter to said model.

4,939,646

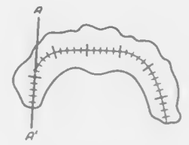
METHOD FOR REPRESENTING DIGITIZED IMAGE DATA

Jacques R. Essinger, Rancho Palos Verdes; Michael L. Rhodes, Los Angeles, and Dennis C. Coyle, Playa Del Rey, all of Calif., assignors to MPDI, Inc., Torrance, Calif.

Filed May 9, 1988, Ser. No. 192,586

Int. Cl.[5] **G06F** *15/42*

U.S. Cl. 364—413.22 **4 Claims**



1. A method for determining and displaying the coordinates of a curve passing through a set of initial Cartesian coordinate data points, comprising the steps of:

(a) generating a two-dimensional field of image data by a non-intrusive cross-sectional image generating device;

(b) selecting a set of initial data points represented in Cartesian coordinates from the image data;

(c) converting the initial data points from Cartesian coordinates to polar coordinates such that all of the points lie in the upper quadrants of the polar coordinate system;

(d) determining a set of cubic spline polynomials describing a curve passing through each of the converted initial data points;

(e) calculating the polar coordinates of intermediate data points between the converted initial data points at a selectable resolution using the determined set of cubic spline polynomials;

(f) converting the calculated intermediate data points from polar coordinates to Cartesian coordinates; and

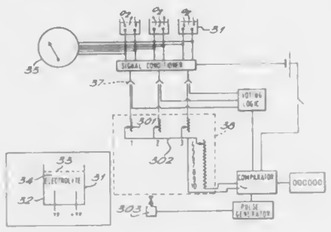
(g) displaying the converted intermediate data points and the initial data points on a display means as an apparent approximately continuous curve passing through the set of initial data points.

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4,939,647
RE-BREATHER DIVING UNIT WITH OXYGEN ADJUSTMENT FOR DECOMPRESSION OPTIMIZATION

Stuart J. Clough, Ellington, and Neil M. J. Cave, Huntingdon, both of England, assignors to Carmellan Research Limited, Nottingham, England

Filed Jul. 5, 1988, Ser. No. 215,472
Claims priority, application United Kingdom, Jul. 3, 1987, 8715719
Int. Cl.[5] **B63C** *11/24, 11/26, 11/14*
U.S. Cl. 364—413.31 **7 Claims**



1. A re-breather diving unit, comprising
a closed circuit breathing loop having a carbon dioxide scrubber for absorbing carbon dioxide exhaled by a diver,
oxygen storage means,
inert gas storage means,
pressure measuring means indicating dive depth,
means arranged to supply inert gas into said breathing loop from said inert gas storage means and to allow gas to escape from said breathing loop to maintain the volume of said loop substantially constant,
calibratable oxygen measuring means for measuring the partial pressure of oxygen in said breathing loop,
manual means for setting a threshold level for the partial pressure of oxygen in said breathing loop after calibration of said oxygen measuring means,
means connected for supplying oxygen into said breathing loop from said oxygen storage means to replace oxygen consumed by a diver while, in response to said oxygen measuring means connected thereto, maintaining the partial pressure of oxygen below said pre-set threshold level,
and a computer programmed to produce a real-time decompression schedule in response to time, dive table data and inputs from said pressure measuring means and said oxygen measuring means.

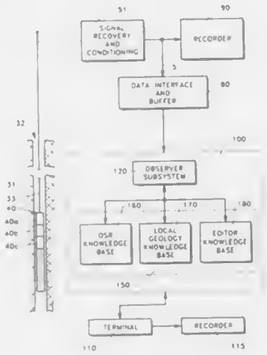
4,939,648
APPARATUS AND METHOD FOR MONITORING WELL LOGGING INFORMATION

Dennis M. O'Neill, Easton; Paul C. Gingrich, Bethel; Peter W. Mullarkey, New Fairfield, all of Conn., and Laurent Moinard, Seattle, Wash., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 128,658
Int. Cl.[5] **G01V** *11/00*
U.S. Cl. 364—422 **57 Claims**

1. Apparatus for monitoring well logging information obtained from logging apparatus moveable in a borehole in earth formations, comprising:
observation means, responsive to the logging information, for establishing observers which determine the presence of specified characteristics of the logging information and generating, as the logging apparatus traverses the borehole, observation-representative signals in response thereto; and
knowledge base means, containing a number of stored observations and stored situations which are linked by specified relationships, for responding to said observation-representative signals by computing and outputting, as the logging apparatus traverses the borehole, an inference of a stored situation which is inferred from a stored observation corresponding to said observation-representative signals.

21. Apparatus for monitoring well logging information obtained from logging apparatus moveable in a borehole in earth formations, comprising:
means for storing expected location range and expected loggign characteristics for at least one geological marker traversed by the borehole;
means for establishing an observer which detects the presence of a specified characteristics of the logging information to identify the locations of candidate beds within the expected location range of the marker;



means for establishing at least one further observer which detects the presence of at least one further specified characteristic of the logging information at the locations of the candidate beds;
means for screening the candidate beds by testing said at least one further specified characteristic against said expected logging characteristics, and removing candidates which do not meet the test;
means for combining any remaining candidates into groups;
means for selecting the group, if any, which most closely resembles the marker by comparison of observed characteristics with expected characteristics; and
means for generating output indications of the presence and location of the group which most closely resembles the marker.

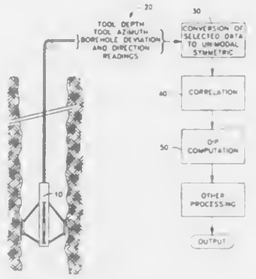
4,939,649
METHOD OF CORRECTING NONUNIMODALITY OF DIPMETER TRACES BY UNIQUELY TRANSFORMING INDIVIDUAL TRACES OR INTERVALS

John A. Duffy, Broken Arrow, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Jul. 29, 1988, Ser. No. 226,353
Int. Cl.[5] **G01V** *3/08*
U.S. Cl. 364—422 **6 Claims**

1. A method for preprocessing dipmeter traces for subsequent correlation, dip computation, and display of dip angle and direction of structural features intersecting a borehole, the method comprising:
transforming data in a first trace using transformation(s) selected for the first trace;
transforming data in a second trace using transformation(s) selected for the second trace;
wherein the first trace and the second trace are traces in a set of dipmeter traces obtained during one traverse of a dipmeter along a borehole;

wherein the transformation(s) selected for the first trace differ from transformation(s) selected for the second trace; and

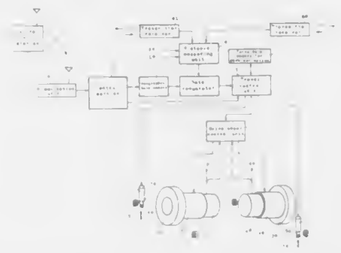


wherein the thus transformed first trace and second trace are characterized by data distribution(s) having symmetry and optionally modality more closely approximating a normal data distribution relative respectively to the first and second traces prior to transformation.

4,939,650
PATH CORRECTION METHOD FOR A SELF-CONTAINED UNMANNED VEHICLE

Yuji Nishikawa, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1988, Ser. No. 206,371
Int. Cl.[5] **G06F** *15/50;* **B62D** *1/02*
U.S. Cl. 364—424.02 **4 Claims**

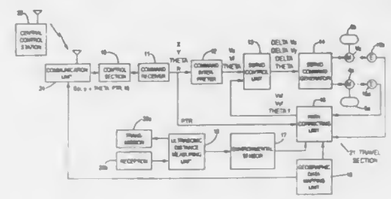


1. A method for controlling a robotic vehicle as the robotic vehicle is traversed from an origination node to a destination node, said method comprising the steps of:
(a) determining an optimal nodal path from the origination node to the destination node, the optimal nodal path being defined by a plurality of nodes, each of the plurality nodes representing a target location at which the robotic vehicle is to be traversed;
(b) determining an actual location of the robotic vehicle as the robotic vehicle is traversed from node to node;
(c) determining a deviation distance of the robotic vehicle, the deviation distance being a distance from the actual location of the robotic vehicle to the optimal nodal path;
(d) comparing the deviation distance with a specified distance; and, when the deviation distance exceeds the specified distance,
(e) determining whether correction of a travel path of the robotic vehicle by a combination of curves method would result in the robotic vehicle returning to the optimal nodal path beyond a node to be traversed next;
(f) correcting the travel path of the robotic vehicle by a combination of curves method if correction of the travel path by the combination of curves method would result in the robotic vehicle returning to the optimal nodal path prior to a node to be traversed next;
(g) correcting the travel path of the robotic vehicle by a side-step movement method if correction of the travel path by the combination of curves method would result in the robotic vehicle returning to the optimal nodal path beyond the node to be traversed next;
wherein the combination of curves method includes traversing the robotic vehicle in rectilinear and curvature motions to the optimal nodal path, and wherein the side-step movement method includes traversing the robotic vehicle directly to the optimal nodal path.

4,939,651
CONTROL METHOD FOR AN UNMANNED VEHICLE (ROBOT CAR)

Masanori Onishi, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1988, Ser. No. 206,369
Int. Cl.[5] **G06F** *15/50;* **B62D** *1/02*
U.S. Cl. 364—424.02 **8 Claims**



1. A method for controlling a robotic vehicle having a control section and a travel section, the travel section being equipped with a transport device for transporting the robotic vehicle from a start location to a target location, said method comprising the steps of:
(a) supplying to the control section the target location;
(b) determining an optimal nodal path from the start location to the target location, the optimal nodal path being defined by a plurality of successive nodes, wherein each of the plurality of successive nodes represents a proximity at which the robotic vehicle changes direction;
(c) preparing a plurality of command sets for each of the plurality of successive nodes respectively, each command set specifying at least a target speed and target direction of the robotic vehicle as the robotic vehicle is transported from a vicinity of one node to a vicinity of a next node;
(d) outputting the plurality of command sets from the control section to the travel section;
(e) determining an actual travel speed and travel path of the robotic vehicle as the robotic vehicle is transported from a vicinity of a first node to a vicinity of a second node and then to a vicinity of a third node, wherein the actual travel speed and travel path between the first node and the second node is determined based on the target speeds and target directions specified in a command set for the second node and a command set for the third node, and is further based on characteristics of the transport device of the robotic vehicle.

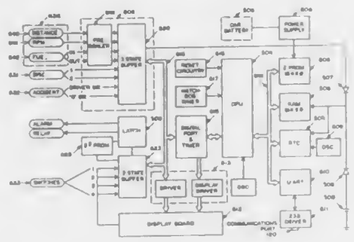
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,652

TRIP RECORDER

Jack Steiner, Quebec, Canada, assignor to Centrodyne Inc., Montreal, Canada

Filed Mar. 14, 1988, Ser. No. 167,871
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—424.04 **8 Claims**



1. A vehicle monitoring, recording and analyzing system comprising:

(a) a plurality of sensors located within said vehicle for the purpose of sensing operating parameters therefrom, said sensors generating data signals representing varying magnitudes corresponding to values of said operating parameters;

(b) a data processing and recording device located entirely on-board said vehicle and comprising:

(i) computing means, including a central processing unit (CPU) and a real time clock device, for periodically sampling each of said data signals in sequence and producing data samples representative of the magnitudes of said data signals from each of said sensors;

(ii) program memory storage means for storing an operating program for said CPU;

(iii) data memory storage means for receiving and storing said data samples;

(iv) program data memory storage means for storing program control parameters to control said operating program for said CPU;

(v) data compression means for implementing a data compression scheme operating in accordance with said operating program to store compressed data in a block of successively arranged memory locations in said data memory storage means and comprising:

(a) means for mathematically accumulating the said data samples from any one of said sensors for fixed time intervals for determining sums of the said data samples in each fixed time interval;

(b) means for storing consecutive sums in consecutive memory locations in said block of said data memory storage means;

(c) means for detecting occurrences of sums of zero in each of a predetermined number of consecutive fixed time intervals, said means for detecting said occurrences, upon detection of each occurrence, causing said means for storing to cease storing said consecutive sums and also forming summary blocks in said block in said data memory storage means;

(d) means for recording in each summary block the total length of time during which said consecutive sums remain zero;

(e) means for detecting reoccurrences of sums greater than zero, said means for detecting said reoccurrences causing said means for recording to cease recording said summary blocks, and said means for storing to resume storing said consecutive sums;

(vi) power supply means associated with said vehicle for operating said CPU, said program memory storage means, said real time clock device and said data memory storage means;

(vii) power supply means independent of said vehicle for operating said real time clock device and said data memory storage means in the absence of power from said power supply means associated with said vehicle;

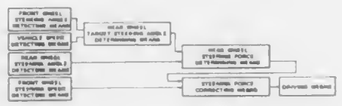
(viii) data communication means operative to read said compressed data from said data memory storage means and to transfer said compressed data to external data processing equipment.

4,939,653

METHOD OF AND APPARATUS FOR CONTROLLING STEERING OPERATION OF A MOTOR VEHICLE WITH STEERABLE FRONT AND REAR WHEELS

Osamu Tsurumiya; Masaru Abe; Yoshimichi Kawamoto; Takashi Kohata; Ikuo Nonaga, and Masataka Izawa, all of Tochigi, Japan, assignors to Honda Gikea Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1988, Ser. No. 226,070
Claims priority, application Japan, Jul. 29, 1987, 62-189705; Dec. 11, 1987, 62-314642; Jun. 13, 1988, 63-145362
Int. Cl.[5] B62D *5/04*
U.S. Cl. 364—424.05 **7 Claims**



5. An apparatus for controlling the steering operation of a motor vehicle in which rear road wheels are steerable in response to the steering of front road wheels, said apparatus comprising:

front wheel steering angle detecting means for detecting a steering angle of the front road wheels;

steering angle rate of change detecting means for detecting a rate of change in the steering angle of the front road wheels;

rear wheel steering angle detecting means for detecting an actual steering angle of the rear road wheels;

vehicle speed detecting means for detecting the speed of travel of the motor vehicle;

steering angle ratio determining means for determining a reference steering angle ratio between the front and rear road wheels dependent on the vehicle speed detected by said vehicle speed detecting means;

correcting means for correcting the reference steering angle ratio determined by said steering angle ratio determining means dependent on the rate of change in the steering angle detected by said steering angle change detecting means to determine a corrected steering angle ratio;

rear wheel target steering angle calculating means for calculating a target angle for the rear road wheels based on the corrected steering angle ratio determined by said correcting means and the steering angle of the front road wheels detected by said front wheel steering angle detecting means;

steering angle deviation calculating means for calculating a steering angle deviation of said actual steering angle of the rear road wheels from said target angle for the rear road wheels;

rear wheel steering force determining means for determining a rear wheel steering force based on said steering angle deviation and the rate of change in the steering angle of the front road wheels; and

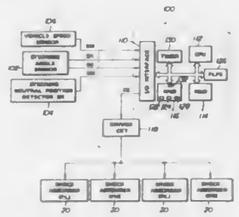
steering means for driving the rear road wheels to said target angle with the rear wheel steering force determined by said rear wheel steering force determining means.

4,939,654

FAIL-SAFE SYSTEM FOR VEHICULAR DRIVING CHARACTERISTICS CONTROL SYSTEM

Masanori Kouda; Tomoyoshi Sekiguchi; Yukio Ikeda; Minoru Taniguchi; Yasuhiro Shiraishi, and Junkichi Konishi, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama and Atsugi Motor Parts Company, Limited, Atsugi, both of, Japan

Filed Jun. 8, 1988, Ser. No. 203,856
Claims priority, application Japan, Jun. 12, 1987, 62-90343[U]
Int. Cl.[5] B62D *5/00*
U.S. Cl. 364—424.05 **21 Claims**



1. A steering behavior dependent control system for controlling vehicular driving characteristics, comprising:

a first sensor means for monitoring steering angular displacement to produce a first sensor signal indicative thereof;

a second sensor means for detecting steering in a predetermined neutral range to produce a second sensor signal indicative of steering in said predetermined neutral range;

third means for generating a reference angular position, wherein in relation to a reference point, a magnitude of steering angular displacement is to be controlled in accordance with said first and second sensor signals;

fourth means for deriving a magnitude of steering angular displacement in accordance with said first sensor signal and said reference angularly position to generate steering angle data;

fifth means for deriving a control signal in accordance with said steering angle data for performing vehicular driving characteristics control for optimizing vehicle driving behavior; and

sixth means for detecting failure of said second sensor and for initiating fail-safe operation in which steering angle data is generated irrespective of said second sensor signal.

4,939,655

VEHICLE LEVELING SYSTEM WITH STOP MODE

Kamal N. Majeed, Centerville, and James J. Kowalik, West Carlton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

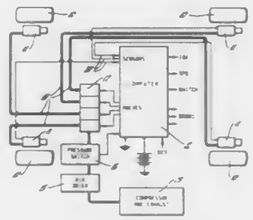
Division of Ser. No. 066,966, Jun. 29, 1987, Pat. No. 4,829,436. This application Mar. 3, 1989, Ser. No. 318,266
The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 **3 Claims**

1. A suspension system for a vehicle having a sprung mass supported relative to road wheels, the suspension system comprising at least one pressure fluid activated leveling device activatable to vary the level of the sprung mass of the vehicle, the suspension system further comprising a level sensor adjacent the leveling device effective to generate a level signal and control apparatus as follows:

intake means responsive to a low level signal to provide increased pressure fluid to the leveling device to raise the level of the sprung mass adjacent the leveling device;

exhaust means responsive to a high level signal to provide decreased pressure fluid to the leveling device to lower the level of the sprung mass adjacent the leveling device;

control means effective to control the response of the intake and exhaust means to the level signal to initiate leveling activity in closed loop operation for the leveling device as required to a target level when the level signal is outside



a dead band and discontinue the leveling activity when the level signal reaches the target level;

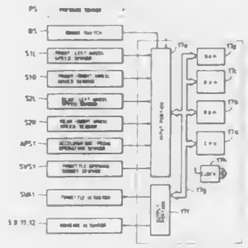
the control means further comprising means responsive to a vehicle speed signal and a vehicle door signal for preventing activation of the intake and exhaust means while the vehicle is not moving but has moved since the last opening of one or more selected vehicle doors.

4,939,656

CONTROL SYSTEM FOR EXCESSIVE SLIP PREVENTION ON STARTING AND ACCELERATION OF MOTOR VEHICLE

Yoshiaki Hoashi, Kariya, and Mamoru Shimamoto, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 1, 1988, Ser. No. 200,896
Claims priority, application Japan, Jun. 1, 1987, 62-138034
Int. Cl.[5] B60T *8/32*
U.S. Cl. 364—426.02 **14 Claims**



8. A wheel slip control apparatus for use in a motor vehicle, comprising:

engine-output regulating actuator means for regulating an output of an internal combustion engine mounted on said vehicle, said engine-output regulating actuator means including a throttle valve of said engine;

braking force regulating actuator means for regulating braking forces to be applied to wheels of said vehicle;

first wheel-speed detecting means for detecting rotational speeds of driven wheels of said wheels of said motor vehicle and for generating first detection signals indicative of the detected rotational speeds of the driven wheels;

second wheel-speed detecting means for detecting rotational speeds of non-driven wheels of said wheels of said motor vehicle and for generating second detection signals indica-

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tive of the detected rotational speeds of the non-driven wheels;

throttle detecting means for detecting an opening degree of said throttle valve and for generating a signal indicative of the detected throttle opening degree; and

electronic control means responsive to said first and second detection signals and said throttle opening signal for controlling said engine-output regulating actuator means and said braking force regulating actuator means, said electronic control means including:

first means for calculating wheel speeds and wheel accelerations on the basis of said first and second detection signals;

second means for calculating wheel speeds of said driven wheels under a condition of no occurrence of slipping on the basis of said second detection signals to obtain an average value of the driven-wheel speeds and an acceleration corresponding to the average value;

third means for calculating a speed and acceleration of said motor vehicle on the basis of said first and second detection signals;

fourth means for determining a slip reference speed on the basis of said second detection signals under a condition of no slip;

fifth means for comparing the determined slip reference speed with said average value of the obtained driven-wheel speeds;

sixth means for determining a target throttle opening degree when the determined reference speed is greater than the average value of the obtained driven-wheel speeds;

seventh means for comparing the determined target throttle opening degree with a value corresponding to an operation amount of an acceleration-pedal of said motor vehicle;

eighth means for operating said engine-output regulating actuator means when the value corresponding to the operation amount of said acceleration-pedal is greater than the target throttle opening degree, so that the throttle opening degree of said throttle valve becomes equal to the target throttle opening degree;

ninth means for calculating a reference control value for the braking of said driven wheels when the determined reference speed is smaller than the average value of the obtained driven-wheel speeds so as to control said braking force regulating actuator means in accordance with the calculated reference control value; and

tenth means for calculating an engine output control amount on the basis of the calculated reference control value and for controlling engine-output regulating actuator means in accordance with the calculated engine output control amount so as to decrease the engine output by a value corresponding to the calculated reference control value.

4,939,657

CONSTANT-SPEED CRUISING CONTROL SYSTEM

Takeshi Imai; Kouichirou Waki, and Yasuhiro Harada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

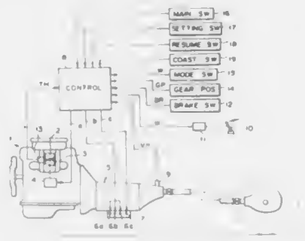
Filed Oct. 27, 1988, Ser. No. 263,421
Claims priority, application Japan, Oct. 28, 1987, 62-272022
Int. Cl.[5] B60K *31/00*
U.S. Cl. 364—426.04 **12 Claims**

1. A constant-speed cruising control system for a vehicle comprising:

a vehicle speed control means which uses feedback to control the throttle opening of the engine according to the difference between the actual vehicle speed and a target vehicle speed so that the actual vehicle speed matches the target vehicle speed;

an acceleration control means, which when the vehicle speed is increased in response to a driver's command, constantly detects the vehicle speed, and controls the throttle valve so that the throttle opening converges on a target throttle opening, which target throttle opening is predetermined according to the target vehicle speed; and

a constant acceleration correcting means which outputs to the acceleration control means a running condition signal representing the running condition of the vehicle to correct the target throttle opening so that the vehicle speed is



increased at a constant acceleration irrespective of the running condition of the vehicle, said constant acceleration correcting means makes said correction on the basis of the difference between an even road cruising throttle opening, which corresponds to the actual vehicle speed detected upon initiation of an acceleration, and the target throttle opening set when the acceleration is initiated.

4,939,658

CONTROL METHOD FOR A FUEL INJECTION ENGINE

Teruji Sekozawa, Kawasaki; Makoto Shioya, Tokyo; Motobisa Funabashi, Sagamihara; Mikihiko Onari, Kokubunji, and Masami Shida, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 142,334, Dec. 29, 1987, abandoned, which is a continuation of Ser. No. 782,535, Oct. 1, 1985, abandoned. This application Aug. 19, 1988, Ser. No. 235,809
Claims priority, application Japan, Sep. 3, 1984, 59-182628; Nov. 26, 1984, 59-248127
Int. Cl.[5] F02D *41/26, 41/34*
U.S. Cl. 364—431.06 **12 Claims**

4. An apparatus for controlling fuel injection into an engine comprising:

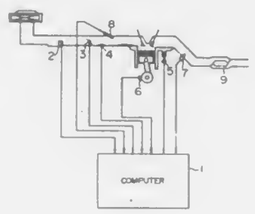
(a) means for determining a current fuel injection quantity G_f per stroke of said engine in a current computing cycle in accordance with the following equation:

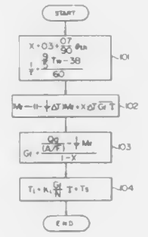
$$G_f = \frac{Q_a/(A/F) - \frac{1}{\tau} M_f}{1 - X}$$

said current fuel injection quantity determining means including means for calculating a deposition rate X of injected fuel on an intake manifold wall of said engine and a vaporization rate $1/\tau$ of a deposited film mass, means for calculating a current film mass quantity M_f from said calculated X and $1/\tau$ and a fuel injection quantity G_f in a preceding injection, and means for calculating a desired fuel quantity $Q_a/(A/F)$ to be supplied to each cylinder of said engine from an intake air flow Q_a and a desired air-fuel ratio A/F;

(b) means for calculating an air-fuel ratio feedback correction factor Y aiming at a stoichiometric air-fuel ratio based on a signal generated by an O_2 sensor in said current computing cycle;

(c) means for injecting an actual quantity of fuel corresponding to $G_f Y$ at the present time in said current computing cycle including means for converting said current fuel injection quantity G_f into a fuel injection pulse width per stroke of said engine based on the following equation:





$$T_i = k_i \cdot \frac{G_f}{N} \cdot \gamma + T_s$$

wherein N is the engine speed, k_i is a coefficient determined by the characteristics of an injector, Y is the air-fuel ratio feedback correction factor, and T_S is a dead fuel injection time;

(d) means for determining a film mass quantity M_f at a predetermined time in the next computing cycle based on the film mass quantity M_{fi} at the present time calculated by said current fuel injection quantity determining means (a) and said actual fuel injection quantity based on the following equation:

$$M_f = \left(1 - \frac{1}{\tau}\Delta T\right) M_{fi} + X \cdot \Delta T \cdot \gamma \cdot G_f$$

where ΔT is the length of one cycle period; and

wherein said current fuel injection quantity determining means, said air-fuel ratio feedback correction factor calculating means, said injecting means, and said film mass

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4,939,659

SPEED/RPM TRANSMITTING DEVICE

Stephen P. Moran, Elyria; James M. Lawson, Wellington; Ronald W. Friend, Amherst, and Duncan E. Estep, Elyria, all of Ohio, assignors to Allied-Signal, Inc., Morristown, N.J.

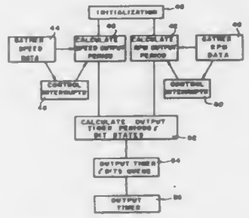
Filed Jan. 15, 1988, Ser. No. 144,365
Int. Cl.[5] G01P *3/489*
U.S. Cl. 364—431.04 **15 Claims**

1. A method of using a single microcontroller having a programmable timer for generating output signals representing the calibrated vehicle speed and engine rpm of a road vehicle, said microcontroller having a pair of output ports connected to speed and rpm utilization devices respectively and a pair of input ports connected respectively to first signal generating means for generating signals in response to rotation of the vehicle wheels and second signal generating means for generating signals in response to rotation of the vehicle engine crankshaft, said method comprising the steps of:

(a) reading the signals generated by said first and second signal generating means to provide output signals corresponding to vehicle speed and engine rpm, said output signals having generally different periods.

(b) determining the output signal having the longer period and the output signal having the sorter period,

(c) timing the output signal having the shorter period and



toggling the output port corresponding to the output signal having the shorter period each time a timer timing the output signal having the shorter period times out,

(d) timing the output signal having the longer period by using the output signal having the shorter period to time the output signal having the longer period, and

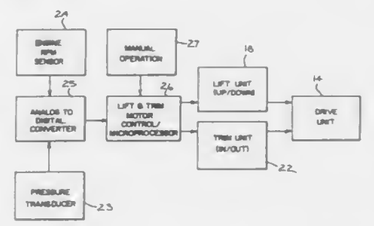
(e) toggling the output port corresponding to the output signal having the longer period each time the longer output signal is in a predetermined relationship with the shorter output signal.

4,939,660

FUEL CONSERVING CRUISE SYSTEM FOR A MARINE DRIVE UNIT

Neil A. Newman, Omro; Herbert A. Bankstahl; John M. Griffiths, both of Fond du Lac; Lyle M. Forsgren, Oshkosh, and Wayne T. Beck, Fond du Lac, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Aug. 23, 1988, Ser. No. 235,329
Int. Cl.[5] B63H *21/26*
U.S. Cl. 364—442 **16 Claims**



1. A system for positioning an engine-driven marine drive unit with respect to a boat on which it is mounted to optimize fuel consumption at cruising speeds comprising:

means for moving the drive unit relative to the boat;

means for sensing the boat speed and for providing an output signal indicative of the boat speed;

means for sensing engine speed and for providing an output signal indicative of said engine speed;

control means operative to cause the moving means to impart a first incremental movement in one direction to the drive unit and to compare the output signals of the boat speed and of engine speed before and after said first incre-

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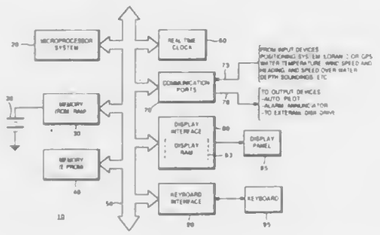
mental movement, and to calculate the percent change in boat speed and the percent change in engine speed, and being selectively responsive to a first signal indicative of a percent engine speed change greater than the percent boat speed change by an amount less than a minimum incremental percent, a second signal indicative of a percent engine speed change greater than the percent boat speed change by an amount less than a maximum incremental percent, and a third signal indicative of a percent engine speed change greater than the percent boat speed change by an amount in excess of said maximum incremental percent, to cause the moving means, respectively, to continue said first incremental movement of the drive unit in the same direction, to discontinue said first incremental movement of the drive unit, and to impart a first incremental movement to the drive unit in the opposite direction.

4,939,661

APPARATUS FOR A VIDEO MARINE NAVIGATION PLOTTER WITH ELECTRONIC CHARTING AND METHODS FOR USE THEREIN

Christopher Barker; Christian Kunz, both of New York; John A. Combs, Babylon, and John C. S. Park, New York, all of N.Y., assignors to World Research Institute for Science and Technology, Long Island, N.Y.

Filed Sep. 9, 1988, Ser. No. 243,317
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—443 30 Claims



1. In a video navigation plotter for displaying linear geographic data occurring within a pre-defined geographic region, a method of storing the geographic data in said plotter and displaying the geographic data on a display, said method comprising the steps of:

representing said linear geographic data occurring in said region as a sequence of data calls with each data cell carrying a different cell number, wherein each successive cell encompasses a different successive pre-defined area existing within the region;

storing each of said data cells as a memory cell within a memory, said memory cell containing a corresponding sequence of fields, said sequence defining a corresponding segment of said geographic data that occurs within the pre-defined area encompassed by said each data cell, wherein a first field in said sequence stores coordinates of a starting point of said segment and each successive field in said sequence stores a position offset value measured from a previous point in said segment to a next successive point in said segment, said segment point being defined by all offset values and said starting point that previously occur within said sequence;

maintaining a table of individual memory cell numbers that defines an order in which said memory cells should be accessed in order to generate the linear geographic data;

defining a numeric range of the memory cells, specified in said table, that collectively contain geographic data which forms a selected portion of the linear geographic data that is to be displayed on the display;

successively accessing from the memory each of the memory cells that lies within said range of memory cells; and

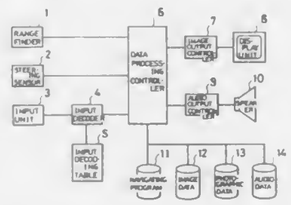
incrementally drawing, in response to each accessed memory cell, a pattern in a portion of a display screen, wherein said portion corresponds to the location of the data cell in the region and associated with said accessed memory cell and said pattern depicts the segment stored within said accessed memory cell and wherein said pattern is drawn as a series of connected line segments that begin at the starting point occurring within the sequence stored within the accessed memory cell, continue to a point specified by a first offset value occurring within the sequence stored within the accessed memory cell and extend to each corresponding point specified by each successive offset value occurring within the sequence stored within the accessed memory cell.

4,939,662

NAVIGATION APPARATUS

Mitsuhiro Nimura, and Shoji Yokoyama, both of Anjo, Japan, assignors to Aisin AW Co., Ltd., Anjo and Kabushiki Kaisha Shinsangyokai Hatsu, Tokyo, both of, Japan

Filed Jul. 11, 1988, Ser. No. 217,531
Claims priority, application Japan, Oct. 7, 1987, 62-173612
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 16 Claims



1. A navigation apparatus for a vehicle comprising:

a map data base;

departure point input means for inputting a departure point;

destination point input means for inputting a destination point;

course forming means for retrieving a course between said departure point and said destination point based upon said map data base and for forming course data indicative of said retrieved course;

distance sensor means for providing a signal indicative of a vehicle travel distance;

steering sensor means for providing a signal indicative of a vehicle steering angle;

present position detection means for detecting a present position of said vehicle based upon said signals received from said distance sensor and said steering sensor; and

guide information output means for receiving data concerning a distance between intersections where said vehicle should turn; determining based on said distance a point at which guide information is to be issued; and outputting said guide information when said present position coincides with said point.

4,939,663

ELEVATION MAP-REFERENCED MECHANISM FOR UPDATING VEHICLE NAVIGATION SYSTEM ESTIMATES

Charles A. Baird, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 4, 1988, Ser. No. 177,325
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 6 Claims



4. For use with a vehicle navigation system in which position estimate output signals representative of an estimate of the position of a vehicle to terrain over which said vehicle is travelling are produced by said navigation system, an arrangement for adjusting said output signals to be representative of an estimate of the position of said vehicle that more closely tracks the actual travel path of said vehicle comprising:

first means for measuring the elevation of the terrain over which said vehicle is travelling and generating first signals representative of said elevation;

second means, responsive to said first signals generated by said first means, for deriving from a terrain map data base second signals representative of a terrain contour line that follows an elevation profile containing the elevation represented by said first signals;

third means, coupled to said navigation system, for deriving therefrom third signals representative of the estimated position of said vehicle at the time its elevation is measured by said first means;

fourth means, coupled to said second and third means, for generating fourth signals representative of the separation between estimated position of said vehicle as represented by said third signals and the closest position thereto on said terrain contour line as represented by said second signals; and

fifth means, coupled to said third and fourth means, for adjusting said third signals in accordance with said fourth signals, so as to produce said output signals representative of an estimate of the position of said vehicle that more closely approximates the actual position of said vehicle at the time that said first means carries out said elevation measurement.

4,939,664

NUMERICAL CONTROL APPARATUS AND METHOD FOR PREPARING MACHINING DATA FOR CUTTING AN AREA WHICH IS NARROW IN THE MIDDLE

Shigeki Nankaku, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1988, Ser. No. 211,513
Claims priority, application Japan, Jun. 26, 1987, 62-157825
Int. Cl.[5] G05B *19/403*
U.S. Cl. 364—474.29 2 Claims

1. A numerical control apparatus capable of machining the interior of an area bounded by a closed curve, comprising:

means for setting the direction of rotation of data representing a final configuration of the area;

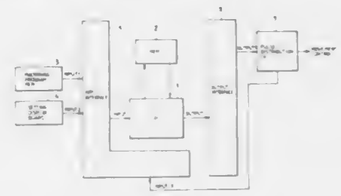
means for forming a tool path for the final configuration;

means for determining whether or not the tool path has an intersection with itself;

means for dividing, when the tool path has an intersection, the area defined by the tool path into a plurality of closed regions;

means for searching, when said tool path has no intersection, all closed regions for abnormal tags;

means for disregarding, when the closed region includes an abnormal tag, the closed region as being invalid, and searching a next closed region;



means for determining, when a closed region includes no abnormal tag, whether or not the rotation direction of the closed region is the same as the rotation direction set by said setting means;

means for outputting, when the direction of rotation of the closed region is the same as the rotation direction set by said setting means, the closed region as being valid; and

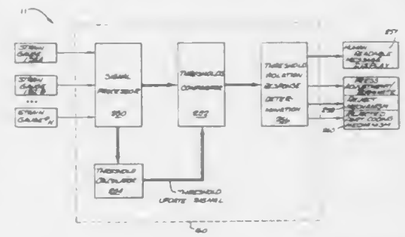
means for disregarding, when the direction of rotation of the closed region is not the same as the rotation direction set by said setting means, said closed region and searching said next closed region.

4,939,665

MONITOR AND CONTROL ASSEMBLY FOR USE WITH A CAN END PRESS

Phillip W. Gold, Westminster, and Bruce A. Moen, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Jul. 14, 1988, Ser. No. 219,203
Int. Cl.[5] G06F *15/46*; B30B *15/00*
U.S. Cl. 364—476 1 Claim



1. A control assembly for use in controlling the operation of a can end press of the type including: a stationary press frame having a bed, a crown positioned above said bed in spaced relationship therefrom, and a plurality of frame post members fixedly attached at opposite ends thereof to said bed and crown; a lower die shoe fixed attached to an upper portion of said bed; a drive motor; a drive shaft rotatably mounted in said crown and drivingly connected to said drive motor; an upper die shoe operably connected to said drive shaft and being vertically, reciprocally movable relative said lower die shoe through rotation of said drive shaft; a plurality of guide post assemblies operably connected between said upper die shoe and said lower die shoe for maintaining said upper die shoe in alignment with said lower die shoe; a plurality of stop block

assemblies each having an upper portion connected to said upper die shoe and a lower portion connected to said lower die shoe for limiting the downward movement of said upper die shoe; an upper chase fixedly mounted on a lower portion of said upper die shoe; a lower die base fixedly attached to an upper portion of said lower die shoe; a lower chase fixedly attached to an upper portion of said lower die base; a plurality of operating station assemblies positioned at longitudinally spaced operating stations along said chases for performing different operations on a can end as it moves from station to station; each operating station assembly comprising an upper tool portion fixedly associated with said upper chase and a lower tool portion fixedly associated with said lower chase; the apparatus comprising:

(a) at least one of:

(i) first strain gauge means mounted on at least one operating station assembly for sensing the force exerted on said lower tool portion by an associated upper tool portion and for providing at least one operating station force signal indicative thereof;

(ii) second strain gauge means mounted on at least one of said stop block means for sensing the force exerted on said stop block lower portion by said stop block upper portion and for providing at least one stop block force signal indicative thereof;

(iii) third strain gauge means mounted on at least one of said press frame post members for detecting the force exerted through at least one of said frame post members between said press crown and said press bed and for providing at least one press frame force signal indicative thereof;

(b) data processing means for receiving at least one of said force sensing signals and for comparing said signals to predetermined criteria for detecting at least one abnormal operating state of the press and for determining the cause of said abnormal operating state and for providing at least one of:

(i) a human-readable message indicative of corrective action to be taken to return the can end press to a normal operating state;

(ii) direct action on the press for returning the press to a normal operation or terminating operation thereof;

(iii) rejection and encoding of can ends produced during said detected abnormal operating state.

4,939,666

INCREMENTAL MACROMOLECULE CONSTRUCTION METHODS

Karl D. Hardman, Gaithersburg, Md., assignor to Genex Corporation, Gaithersburg, Md.

Filed Sep. 2, 1987, Ser. No. 92,147
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—496 **31 Claims**

1. A computer-assisted method for modifying a structure using at least two blocks disposed between a starting point and an end point, comprising the steps of:

(a) mapping onto said starting point a first one of said blocks to produce information including XYZ coordinates and at least one non-spatial parameter of said first one of said blocks;

(b) incrementally adding a second one of said blocks to said first one of said blocks or to said end point by mapping to produce information including XYZ coordinates and at least one non-spatial parameter of said second one of said blocks; and

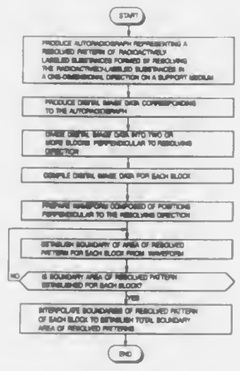
(c) synthesizing the structure with the first one and second one of said blocks as specified by steps (a) and (b), respectively.

4,939,667

SIGNAL PROCESSING METHOD FOR ANALYZING AUTORADIOGRAPH

Makoto Hara, and Shu Sato, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1987, Ser. No. 138,395
Claims priority, application Japan, Dec. 27, 1986, 61-309754
Int. Cl.[5] G06F *15/42*; G01N *33/50*
U.S. Cl. 364—497 **23 Claims**



1. A signal processing method for analyzing an autoradiograph to obtain locational information on radioactively labeled substances in a one-dimensional resolving direction on a support meduim, wherein the signal processing method subjects to digital signal processing digital image data containing an autoradiograph obtained by placing the support meduim and a stimulable phosphor sheet comprising a stimulable phosphor together in layers to record the autoradiograph of radioactively labeled substances on the support meduim on said phosphor sheet, irradiating said phosphor sheet with stimulating rays and photoelectrically detecting the autoradiograph as stimilated emission, wherein the autoradiograph is analyzed by:

(a) dividing the digital image data into two or more blocks along a direction perpendicular to the resolving direction;

(b) preparing a waveform composed of positions along the direction perpendicular to the resolving direction for each block by compiling the digital image data for each block;

(c) using the waveform to establish a boundary of an area of a resolved pattern for each block; and

(d) interpolating the boundaries of the resolved pattern area of each block to establish a total boundary area to the resolved patterns.

4,939,668

SYSTEM FOR DESIGNING INTERCOMMUNICATIONS NETWORKS

George T. Brown, Apalachin, N.Y.; David B. Millis, Friendsville, Pa.; Paul R. Reynolds, Morrisville, N.C., and Ronald P. Nowak, Endicott, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 24, 1987, Ser. No. 89,201
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—513 **22 Claims**

1. System for designing an intercommunication network among a plurality of devices comprising:

(a) means for storing rules to meet design requirements;

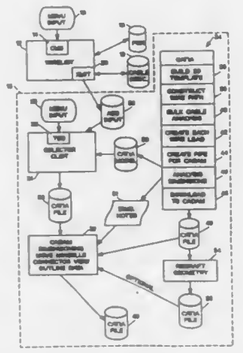
(b) means operatively connected to said rules storage means for dynamic revision of the contents thereof;

(c) means for storing data;

(d) means connected to said data storage means for revision of the contents thereof;

(e) means connected to said rules storage means and to said data storage means for allowing a requestor to access at least a portion of said rules and to input and revise a first type of said data to build part of a global knowledge base, said first type of data defining a first type of component;

(f) means connected to said rules storage means and to said data storage means for allowing a designer to access at least a portion of said rules and to input and revise a second type of said data to build another part of said



global knowledge base, said second type of said data having at least one sub-portion unrevisable by said requestor and defining some attributes of a second type of component which connects to said first type of component; and

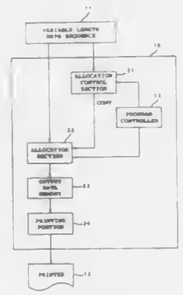
(g) means connected to said data storage means for determining if the data of said first type and the data of the second type define components which are compatible with each other.

4,939,669

PRINT CONTROL SYSTEM CAPABLE OF EFFECTIVELY ALLOCATING A VARIABLE LENGTH DATA SEQUENCE TO A PRINT ZONE

Rikio Nishino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 16, 1987, Ser. No. 39,128
Claims priority, application Japan, Apr. 18, 1986, 61-90893
Int. Cl.[5] G06F *15/419*
U.S. Cl. 364—519 **8 Claims**



1. A print control system for use in printing a sequence of variable length data on a report having a print zone which includes a plurality of print areas, said system comprising:

allocation signal producing means for producing allocation signals which indicate allocation of said sequence of variable length data to said plurality of print areas;

allocation detecting means, responsive to said sequence of variable length data and to said allocation signals, for detecting whether or not said sequence of variable length data includes blank data indicative of a blank to produce an allocation control signal when said blank data is present; and

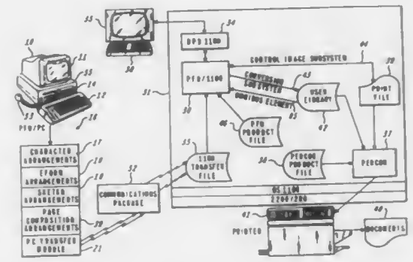
allocation determining means, responsive to said sequence of variable length data, to said allocation signals, and to said allocation control signal, for determining physical allocation of said sequence of variable length data to said print areas with physical allocation of said blank data being suppressed and non-blank data being printed in sequence.

4,939,670

PC DRIVEN PRINT FILE UTILITIES FOR MAINFRAME COMPUTER PRINTING

Alex C. Freiman, New Britain; Barbara E. Oster, Erdenheim; Robert Perugini, Horsham, and Joseph A. Reed, Cheltenham, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 18, 1988, Ser. No. 275,453
Int. Cl.[5] G06F *15/00, 3/23*
U.S. Cl. 364—519 **55 Claims**



1. Apparatus, for use with a mainframe computer facility having a mainframe digital computer and a pixel addressable printer, for creating and modifying print entities for printing on pages by said printer, said mainframe digital computer having a print file containing print control records and application data to be printed, a library file for storing elements containing said print entities, and printer control means responsive to said print file and said library file for controlling said printer to print said application data on said pages in accordance with said print entities in elements selected from said library file under control of said print control records in said print file, comprising

second digital computer means including a print entity data array memory, a display screen and a cursor movement control input device,

create/modify means in said second digital computer for a user interactively to create and modify print entity data defining said print entities,

said create/modify means including means for generating and displaying a print entity create screen on said display screen, said print entity create screen including a drawing area wherein said user can create and modify said print entities, said print entities being created and modified in said drawing area by said user by cursor movement controlled by user manipulation of said input device and means for storing in said print entity array memory, data representative of said cursor movement thereby storing said print entity data defining said print entities,

prepare means in said second digital computer responsive to said print entity data for converting said print entity data

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into a format suitable for transfer to said mainframe digital computer thereby generating a transfer module,

transfer means responsive to said transfer module for transferring said transfer module to a transfer file at said mainframe digital computer,

conversion means in said mainframe digital computer responsive to said transfer file for generating, from said print entity data transferred to said transfer file by said transfer means, said elements containing said print entities corresponding to said print entity data in a format suitable for said printer control means and for storing said elements in said library file, and

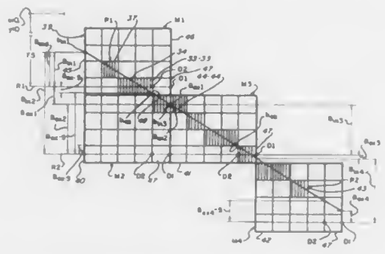
control image means in said mainframe digital computer for generating print control records, in a format suitable for said printer control means, corresponding to said print entities generated by said conversion means and for inserting said print control records into said print file.

4,939,671

METHOD AND SYSTEM FOR LINE DRAWING WITH NEXT MATRIX FEATURE

Carey J. Sasser, Itasca, Ill., assignor to Auto-trol Technology Corporation, Denver, Colo.

Filed Sep. 8, 1987, Ser. No. 94,370
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—521 **20 Claims**



1. A method of identifying pixels to be enabled to draw a line on a display screen between a first pixel and a last pixel, wherein said screen is organized into separate matrices each having a selected number of pixels in an x coordinate direction and a given number of pixels in a y coordinate direction, said first pixel being in a current one of said matrices and said last pixel being in a next one of said matrices, comprising:

selecting a decision pixel in said current matrix;

identifying a decision point on each of two opposite sides of said decision pixel; and

identifying the location of said next matrix relative to said current matrix according to where said line extends relative to at least one of said decision points, said pixels to be enabled being in said next matrix.

4,939,672

METHOD AND APPARATUS FOR CLASSIFYING GRAPHICS SEGMENTS TO FACILITATE PICK AND DISPLAY OPERATION

Robert D. Meadows, Vancouver, Wash., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 9, 1987, Ser. No. 118,481
Int. Cl.[5] H04N *5/14*; G06F *15/20*
U.S. Cl. 364—521 **14 Claims**

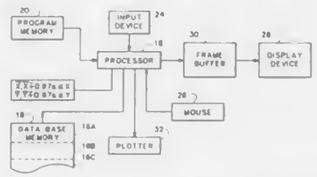
1. A display system comprising:

(a) a data base memory for storing data representing graphic objects, each object being represented in the data base memory by a segment which represents the object and the position of the object in a coordinate space,

(b) a display device for displaying a picture composed of the graphic objects represented by the data stored in the display memory, the display device having an address domain that lies within said coordinate space,

(c) user interface means for providing a signal for identifying a position within the address domain of the display device, and

(d) processor means programmed to (1) analyze statistical properties of the data and generate, on the basis of said statistical properties, an address word that identifies a



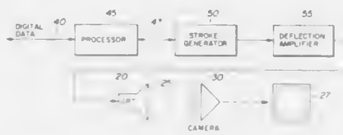
position along a first axis of the coordinate space at a position within the address domain of the display device, whereby the address domain is divided into two regions, (2) identify the region of the address domain in which the position identified by the user interface means lies, and (3) distinguish segments representing objects that lie at least partially inside the identified region of the address domain from other segments.

4,939,673

METHOD AND APPARATUS FOR ENHANCEMENT OF DISPLAY SCREEN RESOLUTION

Paul R. Hanau, Portland, Oreg., and M. David Blythe, Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 889,035, Jul. 22, 1986, abandoned. This application Jun. 7, 1989, Ser. No. 363,317
Int. Cl.[5] G09G *1/10*
U.S. Cl. 364—521 **1 Claim**



1. A method for increasing the visually perceptible resolution of a physically addressable analog-vector-display-screen coordinate system grid, said grid having a predetermined actual-resolution-density, until said resolution appears, to a viewer, to equal a greater predetermined virtual-resolution-density, and for drawings at least one composite line resolved at said virtual density, said method for increasing and drawing comprising the steps of:

(a) receiving a first endpoint virtual coordinate X,Y pair, said first virtual pair having a virtual resolution higher than the grid resolution;

(b) receiving a second endpoint virtual coordinate X,Y pair at the virtual resolution;

(c) determining D as the integer division of the virtual resolution by the grid resolution;

(d) creating a first anchor point X coordinate by dividing the first endpoint X coordinate by D using integer division;

(e) creating a first anchor point Y coordinate by dividing the first endpoint Y coordinate by D using integer division;

(f) creating a second anchor point X coordinate by dividing the second endpoint X coordinate by D using integer division;

(g) creating a second anchor point Y coordinate by dividing

the second endpoint Y coordinate by D using integer division;

(h) drawing, on said analog vector display screen with an electron beam, a component line from the first anchor point to the second anchor point;

(i) incrementing the first endpoint coordinate X,Y pair;

(j) incrementing the second endpoint coordinate X,Y pair;

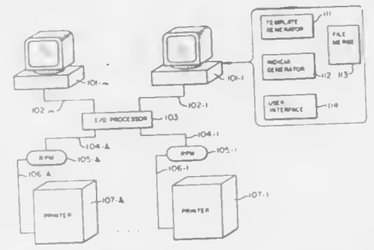
(k) repeating steps (d) through (j) until D component lines are drawn to form the composite line, such that the endpoints of the composite line visibly appear to be resolved at locations having said virtual density.

4,939,674

LABEL GENERATION APPARATUS

Macy J. Price, Golden, Colo.; Mario B. Accumanno, Cedar Grove, N.J.; Mack E. Johnson, Arvada; Norman J. Acker, Lakewood, both of Colo., assignors to Engineered Data Products, Inc. Broomfield, Colo.

Filed Apr. 22, 1988, Ser. No. 185,141
Int. Cl.[5] G09F *3/08*
U.S. Cl. 364—523 **63 Claims**



1. Apparatus for automatically producing a series of labels, each label in said series of labels containing a set of indicia individual to said label and ordered according to a user defined ordering, comprising:

means for defining a label template having one or more writable indicia fields;

means for automatically generating a set of indicia for each of said labels in said series of labels, wherein each successive set of indicia in said series of labels is ordered according to a user defined ordering;

means for color coding at least one of said indicia according to a predefined color to indicia correspondence;

means for inserting each of said sets of indicia, individual to each label in said series of labels, and said color coding into said one or more indicia fields for each label in said series of labels; and

means for automatically printing each of said individually identified labels in said series of labels on to label media.

4,939,675

DIGITAL SYSTEM FOR CONTROLLING MECHANICAL INSTRUMENT GAUGES

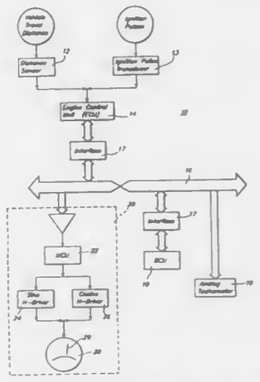
William V. Luitje, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 22, 1988, Ser. No. 288,373
Int. Cl.[5] G01F *3/48*
U.S. Cl. 364—550 **4 Claims**

1. A firmware/hardware electronic analog meter control system used with a multi-measurand data communication system for measuring a chosen measurand and then moving a needle of a gauge of the meter in a manner analogous to changes in magnitude of the measurand to positions indicated by a series of integer numbers arranged linearly over a display scale of the gauge, the scale representing a range of magnitudes of the measurand from a minimum to a maximum value, the meter containing digital to analog conversion circuits and coil drivers for controlling needle movement, said system having a transducer arranged to sense the magnitude of the measurand, said system comprising:

(a) first computing means connected to the transducer for (1) receiving the magnitude of the measurand, (2) establishing a number in an internal storage memory corresponding to the magnitude of the measurand occurring during each period of a succession of measuring periods, (3) converting each number into an equivalent measurement unit, (4) converting each said measurement unit into a digital coded message format, and (5) thereafter producing at an output the digital coded message at an end of each counting period;

(b) communications means including an input transmitter/receiver device, a communications link and an output transmitter/receiver device said communications means having said input transmitter/receiver device connected to an output of said first computing means for sequentially sending each of said digital coded messages in a chosen format over said link at the end of each period; and



(c) second computing means connected to said output transmitter/receiver device for (1) receiving each digital coded message, (2) converting each of said digital coded message into (i) a target deflection count and (ii) an update count from each of said digital coded messages, and thereafter computing a current deflection count using said target deflection and update counts, (3) incrementing said current deflection count by said update count at a chosen rate within each counting period of the measurand to establish a series of new current deflection counts such that each new current deflection count has an integer and a fractional part, and (4) upon the occurrence of a change of the integer part, producing at an output terminal another digital coded message that routes over said communications means to the meter, the meter containing a digital to analog converting circuit that responds to said another coded message to effect a deflection change of the needle.

4,939,676

MONITORING SHEET LENGTH

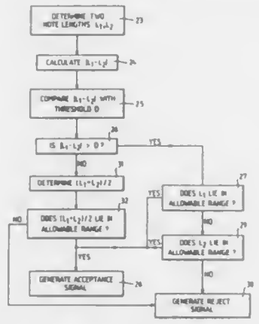
David R. Worsley, and Trevor J. Conner, both of Hampshire, England, assignors to De La Rue Systems Ltd., England

Division of Ser. No. 873,369, Jun. 12, 1986, Pat. No. 4,849,915. This application Aug. 11, 1988, Ser. No. 231,080
Claims priority, application United Kingdom, Jun. 17, 1985, 8515272
Int. Cl.[5] G06F *15/46*; B65H *43/08*
U.S. Cl. 364—562 **11 Claims**

1. A method of detecting an acceptability of sheets, said method comprising the steps of:

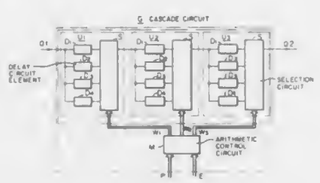
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(a) monitoring a length of a sheet at two laterally spaced positions;
(b) determining a difference between said monitored lengths;
(c) comparing said difference with a predetermined threshold and:
(i) if said difference exceeds said threshold, comparing each monitored length with a first set of at least one



predetermined reference value to determine the acceptability of said sheet; and
(ii) if said difference is less than said threshold, determining an average of said two lengths, and comparing said average with a second set of at least one predetermined reference value to determine said acceptability of said sheet.

4,939,677
TIMING-SIGNAL DELAY EQUIPMENT
Taiichi Otuji, Ebina, and Naoaki Narumi, Isehara, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
PCT No. PCT/JP87/00734, § 371 Date Jan. 15, 1988, § 102(e) Date Jan. 15, 1988, PCT Pub. No. WO88/02577, PCT Pub. Date Jul. 4, 1988
PCT Filed Oct. 2, 1987, Ser. No. 150,401
Claims priority, application Japan, Oct. 3, 1986, 61-236716
Int. Cl.[5] G04F *5/00*; H03K *5/13*
U.S. Cl. 364—569 **6 Claims**

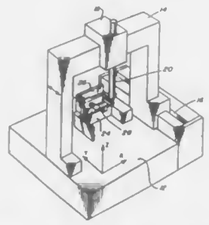


1. Timing-signal delay equipment, comprising;
a plurality of delay elements arranged in a matrix form, each of which gives a mutually different value of weighted delay time to an input signal;
a selector means operably connected to each matrix column for selecting one of said delay elements;
a means for connecting said selected delay elements in series;
an arithmetic control circuit means for controlling said selector means based on a set-up value delay time and an error lay time of each delay element, wherein delay time T_{ij} of said ay element satisfies following equation:

$$T_{ij}=T_d\,(i-1)m^{j-1}$$

where
T_d is set-up temporal resolution;
i is row number of the delay element;
j is column number of the delay element; and
m is column number of rows in matrix.

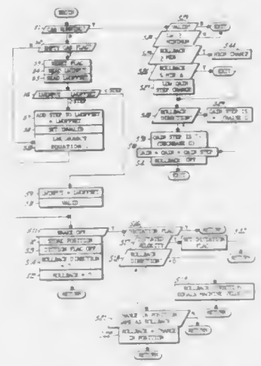
4,939,678
METHOD FOR CALIBRATION OF COORDINATE MEASURING MACHINE
Walter L. Beckwith, Jr., Warwick, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.
Continuation-in-part of Ser. No. 122,771, Nov. 19, 1987, Pat. No. 4,884,889. This application May 12, 1988, Ser. No. 193,069
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—571.02 **11 Claims**



1. In a coordinate measuring machine including a first element and a second element, said first element being movable relative to said second element, said coordinate measuring machine further including scales for monitoring the position of the first element relative to the second element and providing scale readings, and computer means for storing said scale readings, said coordinate measuring machine being subject to errors in said scale readings, said errors being characterized by a set of error parameters including rigid error parameters which are a function only of relative position along an associated measurement direction and nonrigid error parameters which are a function of relative position along an associated measurement direction and of relative position along a second direction, a method for providing corrected scale readings of a workpiece, comprising the steps of:
measuring each of said rigid error parameters at point along a line that is parallel to the measurement direction, the step of measuring each of said rigid error parameters being performed by a calibration apparatus;
measuring each of said nonrigid error parameters at corresponding sets of n points along n spaced-apart lines that are parallel to the measurement direction, each set of n points lying on a line parallel to said second direction to provide sets of nonrigid errors parameter measurements, the step of measuring each of said nonrigid error parameters being performed by said calibration apparatus;
substituting each of said sets of nonrigid error parameter measurements and corresponding first element positions into n simultaneous equations having n coefficients, said equations describing the relationship between said nonrigid error parameters and the position of the first element along said second direction, the step of substituting each of the sets of nonrigid error parameter measurements and corresponding first element positions being performed by said computer means;
for each of said sets of nonrigid error parameter measurements, solving the associated n simultaneous equations for said n coefficients, the step of solving the associated n simultaneous equations being performed by said computer means;
measuring a workpiece by bringing said first element into contact with the workpiece and storing scale readings in said computer means; and

using said rigid error parameters and said sets of n coefficients to correct said scale readings and provide corrected scale readings of the workpiece, the step of correcting said scale readings being performed by said computer means.

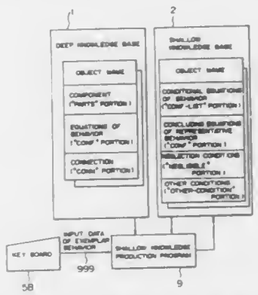
4,939,679
RECALIBRATING AN ELEVATOR LOAD MEASURING SYSTEM
George A. L. David, West Hartford, and David H. Sorenson, South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Aug. 9, 1988, Ser. No. 230,384
Int. Cl.[5] B66B *1/24*
U.S. Cl. 364—571.04 **7 Claims**



1. A method for load weighing in an elevator wherein a signal (LWINPUT) produced from a load in an elevator cab is multiplied by a stored coefficient (LWGAIN) and summed with a stored value (LWOFFSET) to provide a cab load signal used to control the torque of a motor connected to the cab, said method being characterized by an automatic calibration routine comprising the steps:
producing a first signal which indicates a stored first value for LWOFFSET at a first determination of an empty cab condition;
producing LWINPUT at a subsequent determination of an empty car condition;
storing a second value which indicates the magnitude of LWINPUT as LWOFFSET if the difference between said first value and LWINPUT is less than or equal to a stored third value; and
if said difference is greater than said third value, summing a stored fourth value with said first value to produce a fifth value and storing said fifth value as said LWOFFSET.

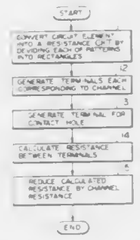
4,939,680
EXPERT SYSTEM USING DEEP KNOWLEDGE AND SHALLOW KNOWLEDGE
Kenichi Yoshida, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 14, 1989, Ser. No. 310,761
Claims priority, application Japan, Feb. 15, 1988, 63-30739; May 30, 1988, 63-130101
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **6 Claims**

1. An expert system for inferring by using deep knowledge and shallow knowledge, comprising:
first knowledge base means for storing a plurality of deep knowledges relating to an equipment to be inferred;
second knowledge base means for storing a plurality of shallow knowledges relating to representative behavior of the equipment to be inferred;
working memory means for temporarily storing information necessary for inference;
input means operated by a user to input information;
display means for outputting an inferred result; and
inference means responsive to the input information from



said input means for inferring by said first and second knowledge base means and said working memory means and outputting the result to said display means;
each of the shallow knowledges having a knowledge structure derived by neglecting a portion of the content of at least one deep knowledge or shallow knowledge necessary to explain the representative behavior of the equipment to be inferred.

4,939,681
CIRCUIT SIMULATION METHOD FOR SEMICONDUCTOR DEVICE INCLUDING FIELD EFFECT TRANSISTORS
Goichi Yokomizo; Akio Yajima, both of Tokyo; Toshiyuki Morioka; Akihisa Maruyama, both of Koknbunji, and Hirofumi Johnishi, Hachioji, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Apr. 28, 1988, Ser. No. 187,562
Claims priority, application Japan, Apr. 30, 1987, 62-104255
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **6 Claims**



1. A circuit simulation method performed by a computer executing a stored program for simulating an operation of a semiconductor device including field effect transistors (FETs) on a basis of a plurality of mask layout patterns corresponding to the semiconductor device, the circuit simulation method comprising:
a first step of determining an equivalent circuit of the semiconductor device from the mask layout patterns; and
a second step of producing a signal indicative of the operation of the equivalent circuit determined by the first step,

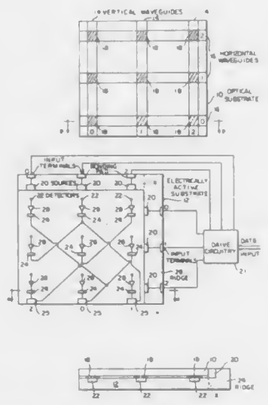
wherein the first step comprises sub-steps of:
extracting a resistive area pattern indicative of a first diffused region of a first FET serving as a source or drain region thereof, a first channel pattern indicative of a channel of the first FET and a second channel pattern indicative of a channel of a second FET, from the mask layout patterns, in a case where the first diffused region of the first FET is also used as a first diffused region of the second FET serving as a source or drain region thereof;
calculating a first resistance value indicative of an equivalent resistance between a contact hole provided on the first diffused region and a first side where the channel of the first FET is kept in contact with a second diffused region of the first FET serving as the drain or source region thereof, and a second resistance value indicative of an equivalent resistance between the contact hole and a second side where the channel of the second FET is kept in contact with a second diffused region of the second FET serving as a drain or source region thereof, from the resistive area pattern, the first and second channel patterns, a sheet resistance of the first diffused region and a sheet resistance of each of the channels of the first and second FETs put in an ON-state, under a condition that each of the first and second sides has a uniform potential and the potential of the first side is equal to the potential of the second side;
calculating a third resistance value indicative of an equivalent resistance of the channel of the first FET and a fourth resistance value indicative of an equivalent resistance of the channel of the second FET, from the length and width of each of the channels of the first and second FETs; and
calculating a difference between the first and third resistance values to obtain the equivalent resistance between a contact hole and the channel of the first FET, and calculating a difference between the second and fourth resistance values to obtain the equivalent resistance between the contact hole and the channel of the second FET.

4,939,682

INTEGRATED ELECTRO-OPTIC ARITHMETIC/LOGIC UNIT AND METHOD FOR MAKING THE SAME

R. Aaron Falk, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 15, 1988, Ser. No. 219,276
Int. Cl.[5] G06E *1/06*
U.S. Cl. 364—713 **18 Claims**



1. An integrated electro-optic arithmetic/logic device comprising:
(a) an optical substrate having a plurality of optical waveguides formed in a desired pattern thereon, said optical waveguides intersecting one another to form a plurality of intersection regions;
(b) a plurality of separately energized light sources corresponding in number to the number of said waveguides, wherein energized light sources correspond to inputs of a desired arithmetic or logic operation to be performed;
(c) means for coupling light from said plurality of light sources to said corresponding waveguides; and
(d) an electrically active substrate having a plurality of electro-optic detectors corresponding to said plurality of intersecting regions, and a plurality of output terminals, each detector positioned proximate said corresponding intersecting region for receiving light therefrom, said detectors connected in circuit to said output terminals of said electrically active substrate to provide an arithmetic or logical output of said desired arithmetic or logic operation respectively, and wherein said electrically active substrate has a ridge wherein said plurality of light sources are located.

4,939,683

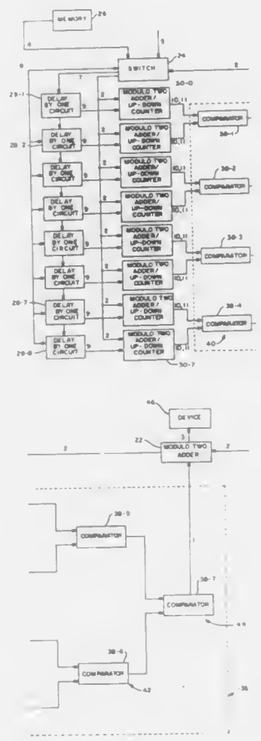
METHOD AND APPARATUS FOR IDENTIFYING THAT ONE OF A SET OF PAST OR HISTORICAL EVENTS BEST CORRELATED WITH A CURRENT OR RECENT EVENT

Pieter J. van Heerden, 18217 145th Court N. E., Woodinville, Wash. 98072; Robert J. Marks, II, 1131 - 199th St., S. W., Lynwood, Wash. 98036, and Oh, Seho, 4747 30th Ave., N. E. #K173, Seattle, Wash. 98105

Filed May 19, 1989, Ser. No. 355,202
Int. Cl.[5] G06F *15/336*
U.S. Cl. 364—715.11 **13 Claims**

1. A system for generating a set of data which can be inputted to a mechanical, electromechanical, electronic, or other device to control the operation of the device, said system comprising:
a. an array of function comparing means for comparing by modulo two addition a function f(t) representing a current event and presented as a string of binary digits to each of a series of functions $D^1f(t)$, $D^2f(t) \ldots D^kf(t)$ representing past or historical events and similarly presented to thereby generate a series of binary digit strings representing the series of sums $(1+D^1)f(t)$, $(1+D^2)f(t) \ldots (1+D^k)f(t)$;
b. a multiplicity of comparators arrayed in multiple levels with: the comparators in the first and any intermediate levels arrayed in parallel, the comparators in each level except for the first level having as inputs the outputs from an adjacent pair of comparators in the preceding level, their being a single comparator in the final level, each comparator in the first level having as inputs the outputs from two of said function comparing means which generate successive ones of said series of sums, and each said comparator comprising means for identifying and outputting that one of the two inputted string of binary digits having the greater number of excess zeros where the number of excess zeros in a sum-associated string of digits is that number of zeros which exceeds one-half of the number of digits in the string, whereby the string outputted from the comparator in the final level of the comparator array will be the string of binary digits with the largest number of excess zeros; and

c. means for comparing the string of digits representing the function f(t) to the string of digits with largest number of excess zeros by modulo two addition and for outputting the resulting string of digits from the system.



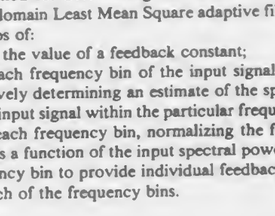
4,939,684

SIMPLIFIED PROCESSOR FOR DIGITAL FILTER APPLICATIONS

Wilfried Gehrig, March, and Werner Reich, Emmendingen, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed May 12, 1989, Ser. No. 351,627
Claims priority, application European Pat. Off., Jan. 2, 1988, 88108833.0
Int. Cl.[5] G06F *15/31, 7/52*
U.S. Cl. 364—724.01 **10 Claims**

1. A processor comprising:
a program memory that stores a plurality of program instructions that control the operation of said processor;
a data memory having data inputs and data outputs, said data memory storing a plurality of data words; and
an arithmetic logic unit, said arithmetic logic unit comprising:
a multiplier having first and second data inputs and a data output, said first and second data inputs receiving a first data word A and a second data word B, respectively, from said data memory, said data output providing the product of multiplying said data word A and said data word B;
a shifting device having a data input and a data output, said data input being provided with a third data word C from said data memory, said third data word being provided to said data input of said shifting device at the same time as said first and second data words are provided as inputs to said multiplier, said shifting device having a control input that receives a shift number q from said program memory, said shifting device providing a data word on said data output that is shifted from said data input in accordance with said shift number q; and



an adder having first and second inputs and an output, said first input receiving a data input responsive to said product output of said multiplier and, at the same time, said second input receiving said data output of said shifting device, a data word responsive to said output of said adder being provided as a fourth data word D to the data inputs of said data memory, where

$$D=A\times B+C\times 2^q.$$

4,939,685

NORMALIZED FREQUENCY DOMAIN LMS ADAPTIVE FILTER

Paul L. Feintuch, Covina, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 387,390, Jul. 28, 1989, abandoned, and a continuation of Ser. No. 871,008, Jun. 5, 1986, abandoned. This application Dec. 27, 1989, Ser. No. 455,893
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **11 Claims**



1. A method for determining the feedback coefficient in a frequency domain Least Mean Square adaptive filter, comprising the steps of:
(i) fixing the value of a feedback constant;
(ii) for each frequency bin of the input signal to the filter, adaptively determining an estimate of the spectral power of the input signal within the particular frequency bin; and
(iii) for each frequency bin, normalizing the feedback constant as a function of the input spectral power within said frequency bin to provide individual feedback coefficients for each of the frequency bins.

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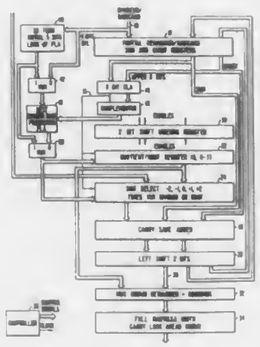
METHOD AND APPARATUS FOR SHARED RADIX 4 DIVISION AND RADIX 4 SQUARE ROOT

Jan Fandrianto, Los Gatos, Calif., assignor to Weitek Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 52,092, May 18, 1987, abandoned. This application May 30, 1989, Ser. No. 361,802

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—752 **12 Claims**



1. An apparatus for performing division and calculating a square root comprising:

partial remainder/radicand register means for storing a partial remainder or radicand in sum and carry form;

a carry save adder having an input coupled to an output of said partial remainder/radicand register means and an output coupled to an input of said partial remainder/radicand register means;

quotient/root register means for storing a quotient or root and having an output coupled to said carry save adder;

a carry look-ahead adder coupled to receive a plurality of the upper bits from said partial remainder/radicand register means;

prediction look-up table means, having an input coupled to said carry look-ahead adder and an output coupled to said quotient/root register means, for producing a predicted next divisor or root; and

initial look-up table means, having an input coupled to receive a radicand and an output coupled to said quotient-/root register means, for producing an initial plurality of digits of a root.

4,939,687

SERIAL-PARALLEL MULTIPLIERS USING SERIAL AS WELL AS PARALLEL ADDITION OF PARTIAL PRODUCTS

Richard I. Hartley, Schenectady, and Sharbel E. Noujaim, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1988, Ser. No. 265,734

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—757 **31 Claims**

1. A serial-parallel digital multiplier comprising:

means for supplying k bits of a multiplicand signal in parallel during an earlier of two consecutive successions of clock intervals, each n in number, k being an integer greater than one and n being a positive integer at least as large as k;

a battery of two-input port AND gates, k in number, having respective first input ports, respective second input ports, and respective output ports;

means for applying to the first input ports of said battery of AND gates, during each of said earlier succession of clock intervals except its last clock interval, k bits corresponding to respective bits of said multiplicand signal;

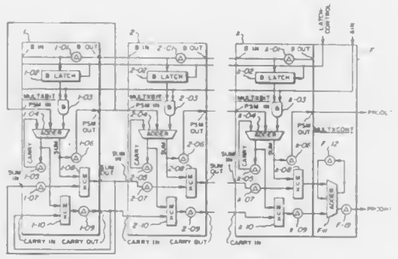
means for applying to the first input ports of said battery of AND gates during the last of said earlier succession of clock intervals, k bits that are the one's complement of respective bits of said multiplicand signal;

means for supplying to the second input ports of said battery of AND gates n successive bits of a bit-serial multiplier signal of bit length n as sequentially received during respective ones of said earlier succession of clock intervals, whereby the partial products of each of these bits with the signal applied to the first ports of said AND gates are successively generated at the output ports of said battery of AND gates during respective ones of said earlier succession of clock intervals;

a parallel adder, composed of k bit slices, for adding each successively generated partial product as a first addend to respective second and third addends to generate for each of said k bit slices a respective sum bit and a respective carry bit;

means for supplying during said earlier succession of clock signals a minor product signal obtained from the successive sum bits for the least significant of said k bit slices of said parallel adder;

means for delaying by one clock interval the sum bits generated by the parallel adder for the other, more significant ones of its k bit slices, to generate except for sign bit each successive said second addend for said parallel adder during said earlier succession of clock intervals;



means for applying during the last of said earlier succession of clock intervals a ZERO as the sign bit of said second addend;

means for applying during all other clock intervals in said earlier succession except the first, the sum bit generated in the most significant bit slice of said parallel adder and delayed by one clock interval as the sign bit of said second addend;

means for delaying by one clock interval the carry bits generated by the parallel adder to generate each successive said third addend for said parallel adder during said earlier succession of clock intervals;

first parallel-to-serial converting means for converting the sum bits supplied from said k bit slices of said parallel adder during the last of said earlier succession of clock intervals to appear serially during that clock interval and the ensuing next (k−1) clock intervals in a later of said two consecutive successions of clock intervals, to be followed by a ZERO the next clock interval of said later succession, to be followed by a repeat of the most significant of the sum bits for each remaining one of the n clock intervals of said later succession;

second parallel-to-serial converting means for converting the carry bits supplied from the k bit slices of said parallel adder during the last of said earlier succession of clock intervals to appear serially the ensuing next k clock intervals in said later succession, to be followed by a repeat of the most significant of the carry bits for any remaining one of the n clock intervals of said later succession; and

a serial adder for adding the sum bits supplied serially by said first parallel-to-serial converting means, the carry bits supplied serially by said second parallel-to-serial converting means, and the sign bit of said bit-serial multiplier signal during the last of said ensuing next k clock intervals of said later succession, thereby to generate a major product signal.

4,939,689

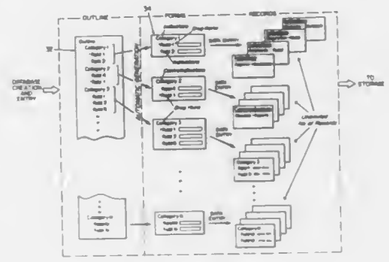
OUTLINE-DRIVEN DATABASE EDITING AND RETRIEVAL SYSTEM

Mary L. Davis; David Rose, both of Brookline, and Michael D. Barrow, Somerville, all of Mass., assignors to Crowninshield Software, Inc., Boston, Mass.

Filed Apr. 9, 1987, Ser. No. 37,384

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—900 **1 Claim**



1. A system for creating a database for a database management system comprising:

a CPU;

means coupled to said CPU for storing one or more database files, each file having large numbers of records, with each of said records corresponding to entered data, said records being stored in said storing means in accordance with corresponding file structure;

display means coupled to said CPU;

means coupled to said CPU for creating an outline comprising category and field definitions; and

means coupled to said outline creating means for automatically generating data entry forms having categories and field definitions corresponding to those of said outline, and for generating files having corresponding category and field definitions, whereby data entry into the records of said database can proceed based on said outline, and further including means coupled to said display means and said file generating means, and responsive to said automatic data entry forms generation for displaying a selected data entry form, for entering data into the file corresponding to said selected form and for displaying said data such that data is displayed along with the category and field of said selected form, said system further including field mapping means coupled to said display means and responsive to a change in said outline representing a change from an old outline to a new outline for displaying a field map of said old outline, said new outline and a mapping function to define the relationship between said old outline and said new outline, wherein said field mapping means includes means for generating a prompt after a successful user-authorized field mapping operation, means for updating files in accordance with changes in said outline, and means for enabling said data entry means only after a field mapping operation and a prompt from said field mapping means.

4,939,688

DYNAMIC RANGE CONVERTER PROVIDING A MULTIPLICITY OF CONVERSION RATIOS

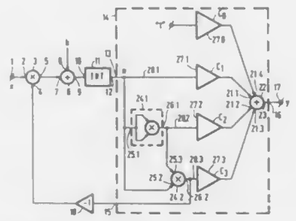
Wilhelmus J. W. Kitzen, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Mar. 14, 1988, Ser. No. 167,805

Claims priority, application Netherlands, Apr. 1, 1987, 8700763

Int. Cl.[5] G06G *7/32*

U.S. Cl. 364—813 **10 Claims**



1. An arrangement for converting a first electric signal into a second electric signal, comprising

an input terminal for receiving the first electric signal;

a first signal combination unit having a first input coupled to the input terminal, a second input and an output;

a signal processing unit having an input coupled to the output of the first signal combination unit, a first output coupled to the second input of the first signal combination unit, and a second output, the signal processing unit constructed and arranged to raise a signal coupled to the input thereof to a given power n and to couple the signal raised to the given power of n to the first output, and further constructed and arranged to process the signal coupled to the input of the signal processing unit and couple a processed signal to the second output thereof, and

an output terminal coupled to the second output of the signal processing unit whereat the processed signal is provided

characterized in that the signal processing unit comprises at least two signal paths coupled between the input of said signal processing unit and respectively, to at least two inputs of a second signal combination unit having an output coupled to said second output of said processing unit and in that one signal path of said at least two signal paths comprises first power-raising means for raising a signal to a power of one and a signal path of said at least two signal paths other than said one comprises second power-raising means for raising a signal to a power of two.

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4,939,690

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH NAND CELL STRUCTURE THAT SUPPRESSES MEMORY CELL THRESHOLD VOLTAGE VARIATION

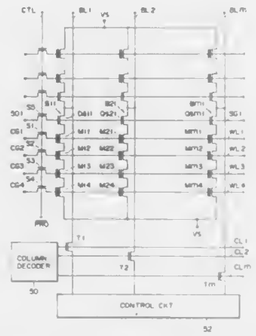
Masaki Momodomi, Yokohama; Riichiro Shirota, Kawasaki; Yasuo Itoh, Kawasaki; Satoshi Inoue, Kawasaki; Fujio Masuoka, Yokohama; Ryozo Nakayama, Yokohama, and Ryouhei Kirisawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1988, Ser. No. 290,427

Claims priority, application Japan, Dec. 28, 1987, 62-329782; May 10, 1988, 63-111621

Int. Cl.[5] **G11C** *11/40, 17/00*

U.S. Cl. 365—185 **15 Claims**



1. A nonvolatile dynamic semiconductor memory device comprising:

(a) a semiconductive substrate;

(b) parallel bit lines provided above said substrate;

(c) rewritable memory cells connected to said bit lines, said memory cells comprising NAND cell blocks each of which has a series array of memory cell transistors, each of said memory cell transistors having a floating gate and a control gate; and

(d) threshold adjusting means for carrying out an auxiliary write operation on all of said memory cells before erasing data stored in said memory cells simultaneously during a erase mode of said memory device, thereby suppressing or avoiding undesirable incremental variation of a threshold value of each of said memory cell transistors.

4,939,691

STATIC RANDOM ACCESS MEMORY

Shigeto Mizukami, and Makoto Segawa, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 20, 1988, Ser. No. 260,427

Claims priority, application Japan, Oct. 31, 1987, 62-276262

Int. Cl.[5] **G11C** *13/00*

U.S. Cl. 365—189.01 **17 Claims**

10. A static random access memory comprising:

paired bit lines;

a plurality of static memory cells connected in parallel between said paired bit lines;

paired data lines;

first and second switching elements respectively connected between said paired bit lines and said data lines, said first and second switching elements being turned on and off by a column decode signal;

a write means coupled with said data lines and for suppiying write data to said data lines;

a read means coupled with said data lines and for sensing data on the basis of the potentials on said data lines;

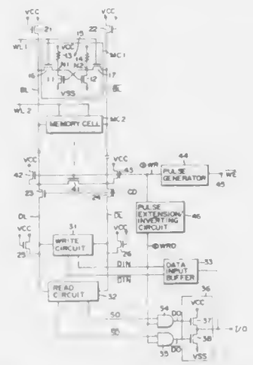
a data output means coupled with said read means and for outputting the data sensed by said read means;

a control signal terminal supplied with a write control signal, when data is written into said plurality of memory cells, said write control signal being set at a first level, and after the data write is completed, said write control signal being set at a second level;

a pulse generating means for generating a pulse signal with a given pulse width in response to a level change in said write control signal from the first level to the second level;

a pulse extension means for extending the pulse width of the pulse signal generated by said pulse generating means;

a third switching element connected between said bit lines, said third switching element being turned on and off by said pulse signal generated by said pulse generating means;



fourth and fifth switching elements respectively connected between said bit lines and applied points of power source potentials, said fourth and fifth switching elements being turned on and off by said pulse signal generated by said pulse generating means; and

a sixth switching element connected between said paired data lines, said sixth switching element being turned on and off by said pulse signal generated by said pulse generating means;

seventh and eighth switching elements respectively connected between said data lines and applied points of power source potentials, said seventh and eighth switching elements being turned on and off by said pulse signal generated by said pulse generating means; and

a gate circuit connected between said read means and said data output means and for controlling the supply of sensed data from said read means to said data output means according to the pulse signal extended by said pulse extension means.

4,939,692

READ-ONLY MEMORY FOR MICROPROCESSOR SYSTEMS HAVING SHARED ADDRESS/DATA LINES

Terry L. Kendall, Newcastle, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 15, 1988, Ser. No. 244,283

Int. Cl.[5] **G11C** *8/00*

U.S. Cl. 365—189.03 **4 Claims**

1. A read-only memory incorporated on a single substrate for use with a microprocessor system, wherein the microprocessor system has (1) a first plurality of lines that are shared for data and first address signals and (2) a second plurality of lines that provide second address signals, comprising:

a transceiver for passing the data and the first address signals, wherein the transceiver has a first side for coupling to the first plurality of lines;

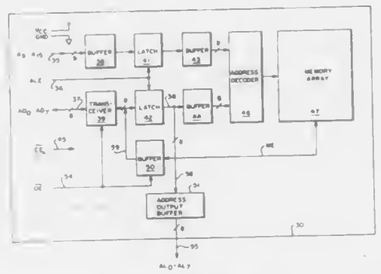
a first latch for latching the first address signals, wherein the first latch has a first side coupled to a second side of the transceiver;

a first buffer with a first side coupled to a second side of the first latch;

a second buffer for buffering the second address signals, wherein the second buffer has a first side for coupling to the second plurality of lines;

a second latch for latching the second address signals, wherein the second latch has a first side coupled to a second side of the second buffer;

a third buffer with a first side coupled to a second side of the second latch;



a memory array for storing the data;

an address decoder for decoding the first and second address signals for selecting the data from the memory array, wherein the address decoder has (1) a first input coupled to a second side of the first buffer, (2) a second input coupled to a second side of the third buffer, and (3) an output coupled to the memory array;

a fourth buffer for passing the data from the memory array to the transceiver, wherein the fourth buffer has (1) an input coupled to an output of the memory array and (2) an output coupled to the second side of the transceiver;

an output buffer having (1) an input coupled the second side of the first latch and (2) an output for providing latched address signals as an output from the read-only memory.

4,939,693

BICMOS STATIC MEMORY WITH IMPROVED PERFORMANCE STABILITY

Hiep V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 14, 1989, Ser. No. 310,796

Int. Cl.[5] **G11C** *7/00, 11/40*

U.S. Cl. 365—190 **21 Claims**

1. A memory device, comprising:

a plurality of memory cells arranged in rows and columns;

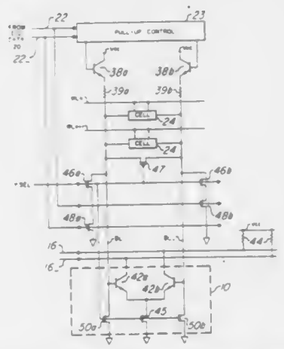
a row decoder for selecting a row responsive to an address signal;

a plurality of bit line pairs, each of said bit line pairs associated with a column of memory cells for carrying a differential signal from a memory cell in said column in a selected row; and

a sense amplifier connected to a bit line pair, said sense amplifier comprising:

first and second bipolar transistors, having their bases connected to first and second bit lines in said bit line pair, and having their emitters coupled together;

a sense current source connected between said emitters of said bipolar transistors and a first reference voltage; and



first and second pull-down current sources connected between the bases of said first and second bipolar transistors, respectively, and a second reference voltage.

4,939,694

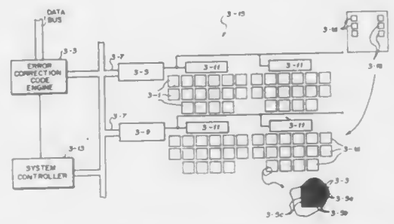
DEFECT TOLERANT SELF-TESTING SELF-REPAIRING MEMORY SYSTEM

Steven G. Eaton, Mt. View; Lawrence R. Hanlon, Menlo Park, and Marvin S. Keshner, Mt. View, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 926,620, Nov. 3, 1986, abandoned. This application Jul. 10, 1989, Ser. No. 377,787

Int. Cl.[5] **G11C** *8/00*

U.S. Cl. 365—200 **23 Claims**



1. A defect-tolerant memory system, capable of performing after manufacture a plurality of periodic self-test self-repair operations on itself during continuous operational use, comprising:

a plurality of memory chips having a plurality of memory cells including

(1) replacement memory cells, and

(2) an as yet uncharacterized mix of good memory cells and defective memory cells;

first means for testing and as a result characterizing each of said plurality of memory cells as being one of a plurality of good memory cells and a plurality of defective memory cells; and

second means:

(i) coupled to communicate with said first means:

(1) for causing the first means to periodically test and characterize some or all of said memory cells using test data in a manner other than the storage and retrieval of actual working data; and

(2) to receive the characterizing result;

(ii) coupled to communicate with said replacement memory cells; and

(iii) capable of causing, as a result of said characterizing result, said memory system to either:

(1) continue to use one or more defective memory cells; and

(2) replace one or more defective memory cells with replacement memory cells.

4,939,695

VIRTUAL TYPE STATIC SEMICONDUCTOR MEMORY DEVICE INCLUDING REFRESH DETECTOR CIRCUITRY

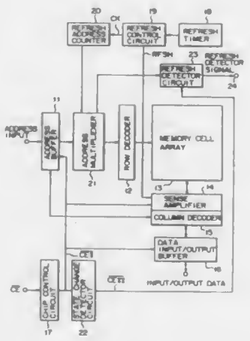
Mitsuo Isobe, Yokohama; Takayasu Sakurai, Tokyo; Kazuhiro Sawada, Yokohama; Kazutaka Nogami, and Hisashi Ueno, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 9, 1988, Ser. No. 268,927

Claims priority, application Japan, Nov. 10, 1987, 62-283702

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—222 **4 Claims**



1. A virtual type static semiconductor memory device comprising:

a memory cell array including a plurality of memory cells;

decoding means for selecting a desired one of said memory cells;

chip control means for generating an internal signal; and

refresh controlling means including

a refresh timer which generates a multicycle time signal,

refresh control circuit means for generating a refresh control signal for each cycle of the time signal and for generating a clock signal,

refresh address counter means for generating a refresh address by counting said clock signal and for outputting the refresh address to said decoding means, and

refresh detector circuit means for outputting a refresh detection signal only upon determining when the refresh control signal is enabled prior to the enabling of the internal signal, said refresh detection signal employed to delay the access of said memory cells in a normal access mode.

4,939,696

SEMICONDUCTOR MEMORY DEVICE

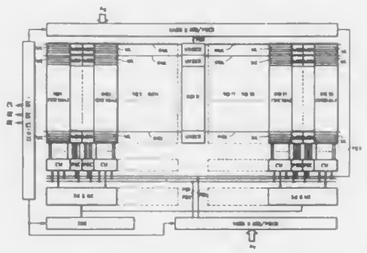
Sasaki Katsuo, Fuchuu; Toyoshima Hiroshi, Sagamihara; Hanamura Shoji, Kokubunji; Kubotera Masaaki, Akishima, and Komiyazi Kunihiro, Hachioji, all of Japan, assignors to Hitachi, Ltd., Chiyoda and Hitachi VLSI Engineering Corp., Kodaira, both of, Japan

Filed Jul. 28, 1988, Ser. No. 225,312

Claims priority, application Japan, Aug. 28, 1987, 62-212823; Jun. 13, 1988, 63-145436

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—230.03 **8 Claims**



1. A semiconductor memory device comprising:

a plurality of memory blocks each of which includes a plurality of word lines having memory cells coupled thereto, respectively,

a select signal line which is connected to said plurality of memory blocks,

first selection means coupled to said plurality of word lines and said select signal line, and for selecting at least one word line from among said plurality of word lines, and

second selection means coupled to said select signal line and said first selection means, and for supplying select signals thereto,

wherein said first selection means includes first variable resistance means having its conductivity varied by the select signal from said select signal line, a plurality of load means, a plurality of second variable resistance means coupled between the respective load means and said first variable resistance means and having their conductivities varied by the select signals supplied from said second selection means, and a plurality of coupling means coupled between said second variable resistance means and said plurality of word lines.

4,939,697

VARIABLE FOCUSING SONAR

Jesse L. Bealor, Jr., and Rufus L. Cook, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1968, Ser. No. 769,759

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—104 **10 Claims**

1. An echo detection and ranging system comprising:

timing means to produce a series of timed electrical pulses for synchronously triggering various components of said system;

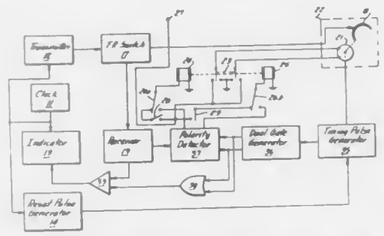
transmitter means electrically connected to said timing means for producing electrical pulses of a predetermined frequency in response to said timed pulses;

focusable transducer means electrically connected to said transmitter means for converting said electrical pulses into investigative energy pulses and for focusing said investigative pulses on a predetermined area;

receiver means electrically connected to said focusable transducer for processing return echo signals reflected by objects struck by said investigative energy pulses;

indicator means electrically connected to said receiver means for display of said processed echo signals and to said timing means for synchronous operation thereby;

pulse generator means effectively connected to said focusing transducer and said timing means for generating an electrical pulse at timed intervals corresponding to the range of the area upon which said investigative energy pulses are focused and having the output thereof connected to said indicator means for display of said range pulses thereon;



focus changing means mechanically connected to said focusable transducer means for changing the focal point thereof in response to predetermined electrical supply conditions; and

circuit means electrically connected to said focus changing means for supplying electrical signals thereto in accordance with predetermined conditions for altering the focus of said focusing transducer means in a predetermined manner.

4,939,698

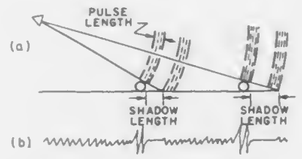
SONAR SYSTEM

Francis J. Murphree, Sunnyside, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1966, Ser. No. 546,474

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—88 **10 Claims**



1. A sonar system comprising in combination:

means for alternately transmitting for predetermined consecutive time periods a pair of acoustical signals, each of which has a frequency different from the other;

means for receiving said pair of transmitted acoustical signals after same have been reflected from a target and for converting same into a continuous unitary electrical signal having variable consecutive time periods which alternately contain the frequencies of said pair of acoustical signals;

adjustable means interconnecting said transmitting means and said receiving and converting means for respectively regulating each of the aforesaid variable consecutive time periods in accordance with a given program; and

means connected to the output of said receiving and converting means for timely reading out said continuous unitary electrical signal.

4,939,699

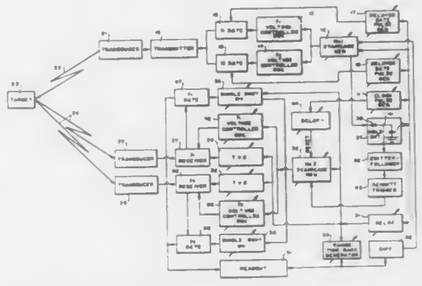
SONAR SYSTEM

Francis J. Murphree, Sunnyside; Henry L. Warner, and Edward G. McLeroy, both of Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 8, 1966, Ser. No. 600,701

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—88 **9 Claims**



1. A sonar system comprising in combination:

a clock pulse generator;

a staircase voltage genertor connected to the output of said clock pulse generator;

a first voltage controlled oscillator connected to the output of said staircase voltage generator for producing a first predetermined trio of successively increasing frequency signals within a first predetermined frequency range;

a second voltage controlled oscillator connected to the output of said staircase voltage generator for producing a second predetermined trio of successively increasing frequency signals within a second predetermined frequency range that is relatively lower in frequency than the aforesaid first predetermined frequency range;

means connected to the outputs of said first and second voltage controlled oscillators for alternately broadcasting within a subaqueous medium each of the trio of successively increasing frequency signals of said first predetermined frequency range with each of the corresponding signals of the trio of successively increasing frequency signals of said second predetermined frequency range;

means for receiving each of the aforesaid first and second trios of successively increasing frequency signals after they have been reflected from a target submerged within said subaqueous medium;

means connected to said receiving means for timely and respectively heterodyning third and fourth trios of successively increasing frequency signals with the aforesaid first and second trios of successively increasing frequency signals in such manner as to alternately produce a given constant intermediate frequency signal for each of said first and second frequency ranges; and

means connected to said heterodyning means and the output of said receiving means for reading out said alternately produced given constant intermediate frequency signals as a single continuous signal.

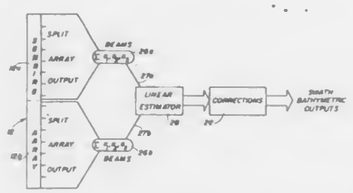
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4,939,700

BATHYMETRY USING COMPUTATIONAL ALGORITHM FIELD AND BACKGROUND OF THE INVENTION

J. Raymond Breton, Three Apple Tree La., Walpole, Mass. 02081

Filed Feb. 22, 1988, Ser. No. 158,564
Int. Cl.[5] G01S *15/89*
U.S. Cl. 367—88 7 Claims



1. In a method of steering a return beam of receiver, to a target, the receiver receiving reflected energy from the target which has been illuminated by a transmitted beam of energy which is narrower in a first direction than in a second direction, the return beam being wider in the first direction than in the second direction, the receiver having a plurality of transmitting elements lying in an array extending in the second direction, and wherein a prior steering angle for the target is known, the improvement comprising a method of estimating the actual steering angle for the target comprising:

dividing the array into at least two parts for producing two groups of transducing element signals;

combining and processing the signals of each group to steer each group to the known prior steering angle to form an initial beam for each group;

measuring the phase of the initial beam for each group;

combining and processing the signal of each group to steer each group by a known offset angle from the known prior steering angle to form an offset beam for each group;

the phase of the initial and offset beams changing in a linear fashion with an error difference between an actual steering angle from the target and the known prior steering angle for the target; and

finding an intersection of lines formed by plotting phase versus the error difference to find the phase at which the error difference is zero which represents an estimate of the actual steering angle for the target.

4,939,701

METHOD AND APPARATUS FOR ERROR REDUCTION WHEN MEASURING MOVEMENT IN SPACE OF TEST POINTS BY MEANS OF ULTRASONIC SIGNALS

Wolfgang Brunner, and Ludwig von Zech, both of Ringenberg 175, D-8999 Maierhoefen, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 230,335
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727837
Int. Cl.[5] G01S *15/74*
U.S. Cl. 367—128 24 Claims

1. A method of reducing errors when measuring movement in space of test points by means of ultrasonic signals, comprising the steps:

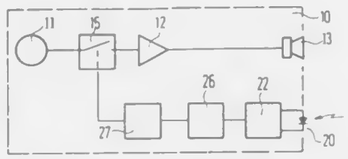
(a) measuring the transit time of ultrasonic signals between sound transmitters and sound receivers;

(b) monitoring the space between the sound transmitters and sound receivers by means of light waves to check whether obstacles from the ultrasonic waves lie in the space;

(c) deriving the distances between said sound transmitters and sound receivers from said step of measuring only if a sound path between said sound transmitters and said sound receivers is free for light waves;

(d) transmitting the light waves as pulse type signals and placing starting times for each ultrasonic signal at a defined time interval relative to the beginning of each pulse type signal;

(e) deriving a starting time for an ultrasonic signal from a



reception time of a light wave pulse signal emitted at a defined time interval from the ultrasonic signal for measuring the transit time of the ultrasonic signals; and

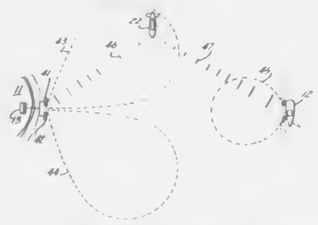
(f) deriving the relative positions of the respective test points to the test sites from the derived distances.

4,939,702

BARRIER SONAR

Francis J. Murphree, Maitland, Fla., assignor to United States of America as represented by the Secretary of Navy, Washington, D.C.

Filed Jul. 19, 1968, Ser. No. 747,037
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—138 8 Claims



1. A method of detecting the presence of an object in a predetermined area comprising the steps of:

placing a plurality of individual transducers in cooperative relationship to one another and in ordered spatial relationship to said predetermined area;

energizing certain of said transducers with a first alternating electrical signal;

energizing the remaining transducers with a second alternating electrical signal of the same frequency as said first alternating electrical signal and with a predetermined phase relationship thereto so as to establish throughout said predetermined area a pair of phase related energy fields which interact to produce, at their intersection, a narrow zone of cancellation;

positioning a receiver responsive to the frequency and relative phasing of said first and second alternating electrical signals remote from said plurality of individual transducers and along said zone of cancellation;

adjusting the phasing of said second alternating electrical signal until said receiver has a minimum output in the absence of an object disturbing said phase related energy fields; and

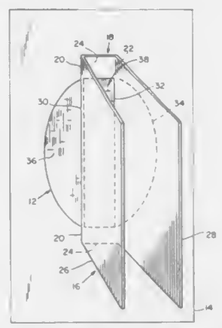
feeding the output of said receiver, via suitable communication links, to indicator devices to display receiver output upon reception of energy scattered in the forward direction by objects encroaching on either of said energy fields.

4,939,703

TRANSDUCER BAFFLE AND SENSOR USING SAME

Lon J. Muller, Groveland, Mass., assignor to Denning Mobile Robotics, Inc., Wilmington, Mass.

Continuation of Ser. No. 202,057, Jun. 3, 1988, abandoned. This application Jul. 17, 1989, Ser. No. 382,076
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—140 10 Claims



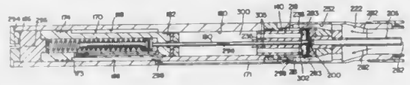
1. A baffle for a sensor apparatus having a transducer for transmitting and receiving radiation within a field of view of said transducer, the baffle comprising a base securable proximate the transducer, and at least one blade element extending from said base, said blade element including a proximal edge for transecting the transducer to establish at least two apertures for the transducer, said blade element being reflective of radiation to reflect radiation to and from a region outside of said field of view and in which said baffle includes first and second base portions and first and second blade elements, extending from said first and second base portions, respectively, for establishing a central, proximal aperture proximate said transducer and a central, distal aperture between said blade elements, and for further establishing first and second side apertures on either side of said central, proximal aperture.

4,939,704

METHOD, SYSTEM AND APPARATUS PRODUCING POWERFUL SEISMIC ENERGY IMPULSES BY IMPLOSION USEABLE IN WELLS IN THE EARTH

Stephen V. Chelminski, 63 Sidecut Rd., West Redding, Conn. 06896

Continuation of Ser. No. 191,768, May 4, 1988, abandoned, which is a continuation of Ser. No. 933,766, Nov. 21, 1986, abandoned. This application May 18, 1989, Ser. No. 355,084
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—146 41 Claims



1. A method of generating a powerful impulse at a depth within ambient liquid having hydrostatic pressure comprising the steps of:

positioning an impulse generating source in the ambient liquid at a depth,

maintaining a free piston in an initial position within the impulse generating source, said free piston having first and second ends,

providing an expandable/contractable compensating chamber filled with hydraulic liquid,

exposing said compensating chamber to ambient liquid for causing hydraulic liquid in said compensating chamber to be at about ambient pressure,

moving an operating piston by pumping hydraulic liquid away from the operating piston into said compensating chamber for moving said operating piston away from said first end of free piston while the free piston is being maintained in said initial position for creating a vacuum in a region between the operating piston and said first end of the free piston,

triggering the impulse generating source to cause ambient liquid pressure to produce an acceleration of the free piston from said initial position with the accompanying generation of a powerful impulse by implosion,

causing ambient liquid pressure to push hydraulic liquid against said second end of the free piston to produce said acceleration thereof,

allowing hydraulic liquid to rush into said region ahead of said first end of the free piston as it is accelerating,

causing the hydraulic liquid ahead of the free piston to damp, decelerate and arrest its imploding motion, and

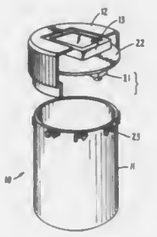
resetting the imploding free piston to said initial position for subsequent triggering by pumping hydraulic liquid from said compensating chamber to said operating piston for pushing said operating piston against said first end of the free piston for pushing the free piston back to said initial position.

4,939,705

DRUG DISPENSING EVENT DETECTOR

Richard G. Hamilton, Fremont, and David M. Lin, Los Altos, both of Calif., assignors to Aprex Corporation, Fremont, Calif.

Filed Nov. 23, 1988, Ser. No. 275,294
Int. Cl.[5] G04B *47/00*; G07F *11/00*
U.S. Cl. 368—10 9 Claims



1. A device for detecting the dispensing of drug from a container comprising

a container having an openable and reclosable dispensing aperture,

means capable of generating a first electrical signal in response to the opening of the openable aperture and a second electrical signal in response to the reclosing of the aperture,

means for measuring the elapsed time between the first electrical signal and the second electrical signal,

means for comparing the elapsed time with a predetermined accept/reject time range and determining if the elapsed time falls within the accept range, and

means for recording each time an elapsed time within the accept range is determined.

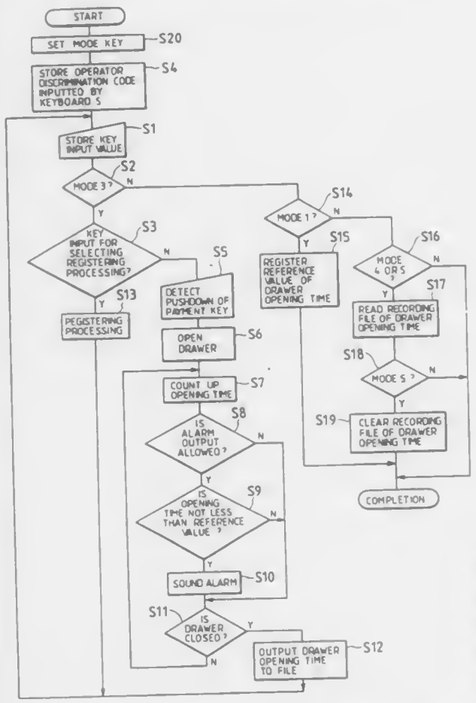
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,706

TRANSACTION PROCESSING APPARATUS WITH A MONITOR SYSTEM FOR MONITORING DRAWER OPENING AND CLOSING CONDITIONS

Eishi Nose, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 9, 1989, Ser. No. 391,027
Claims priority, application Japan, Aug. 19, 1988, 63-206750
Int. Cl.[5] G04B *47/00*; G08B *13/08*
U.S. Cl. 368—10 **7 Claims**



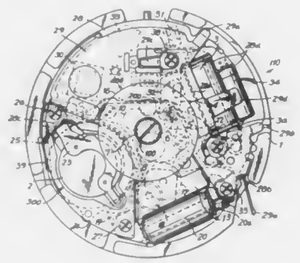
1. A transaction processing apparatus, comprising:
a housing;
an article holding means, supported by said housing, for opening and closing relative to said housing;
first determination means for determining when said holding means is open;
second determination means for determining when said holding means is closed;
counting means, responsive to said first determination means and said second determination means, for counting elapsed time from a first time when said first determination means determines that said holding means is open and a second time when said second determination means determines that said holding means is closed;
memory means for exploring a predetermined reference value relating to an open time of said holding means;
comparing means for comparing an elapsed time count provided by said counter means with said predetermined reference value stored in said memory means; and
alarm output means for generating an alarm output when said comparison means determines that said elapsed time count is greater than or equal to said predetermined reference value.

4,939,707

ELECTRONIC WRISTWATCH WITH GENERATOR

Shoichi Nagao, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 318,212
Claims priority, application PCT Int'l Appl., Jan. 25, 1988, PCT/JP88/00052
Int. Cl.[5] G04B *1/00*; H01M *10/46*
U.S. Cl. 368—64 **23 Claims**



1. An electronic wristwatch having an electric generator therein, the generator converting mechanical energy to electrical energy for driving the electronic wristwatch comprising mechanical energy means for producing mechanical energy; power transmission means for transmitting said mechanical energy to said generator by applying a torque to said generator; and limiting means for preventing mechanical energy transmission through said power transmission means when the torque to be applied to said generator exceeds a predetermined value and allowing said mechanical energy transmission through said power transmission means when said torque to be applied to said generator is less than or equal to the predetermined value.

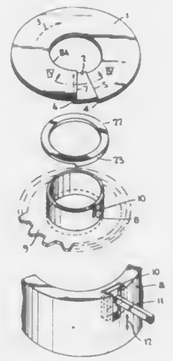
4,939,708

TIMEPIECE OF THE ANALOG TYPE

Luce R. G. Pincemy, 6 rue Ecole de Droit, 34000 Montpellier, France

Filed Feb. 16, 1989, Ser. No. 311,063
Claims priority, application France, Feb. 16, 1988, 88 01797
Int. Cl.[5] G04B *19/04*
U.S. Cl. 368—233 **9 Claims**

1. An analog timepiece comprising:
(a) first and second coaxial helically bent disk split radially forming a leading edge and a trailing edge in each of said disks, said first and second disks being positioned relative to each other so that each of said disks is rotatable in the same direction in such a manner that the portion of each of said disks intermediate said leading edge and said trailing edge passes between said leading edge and said trailing edge of the other of said disks;
(b) a barrel wheel positioned coaxially in relation to said first and second disks and said barrel wheel being connected to a clockwork mechanism which rotates said barrel wheel one revolution in a twelve hour period;
(c) driving means projecting from said barrel wheel and being axially movable along said barrel wheel so that said driving means initially bears on said first disk while simultaneously driving said second disk in rotation due to said rotation of said barrel wheel by said clockwork mechanism;
(d) means for moving said driving means axially to cause said driving means to bear on said first disk until said first disk and said second disk become superposed at which time said means for moving said driving means causes said



driving means to bear on said second disk and to drive said first disk;
(e) stop means for retaining said first disk in a stationary position during said rotation of said second disk by said driving means and for retaining said second disk in a stationary position during said rotation of said first disk; and
(f) means for repositioning said stop means when said first and second disks are superposed so that said stop means retains said second disk in a stationary position during said rotation of said first disk or retains said first disk in a stationary position during said rotation of said second disk.

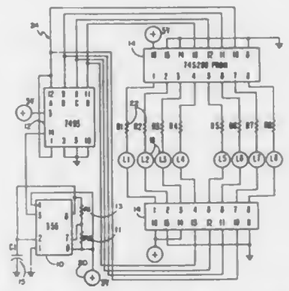
4,939,709

ELECTRONIC VISUAL DISPLAY SYSTEM FOR SIMULATING THE MOTION OF A CLOCK PENDULUM

Sean Doyle, 49 Plymouth St., East Bridgewater, Mass. 02333

Filed Jun. 15, 1989, Ser. No. 366,594
Int. Cl.[5] G04C *17/02*
U.S. Cl. 368—241 **2 Claims**

1. A visual display system for simulating the motion of a clock pendulum comprising in combination:
clock means for generating timing pulses;
counting means for counting said timing pulses and for generating a count signal upon the accumulation of a selected number of said pulses;
a series of tri-light emitting diodes (tri-LEDs) arrayed in a semi-circular array, each tri-LED having the property of alternatively emitting two distinct colors; and
logic means responsive to said count signal, said logic means arranged to activate sequentially said tri-LEDs in one of said colors from the beginning to the end of said series and



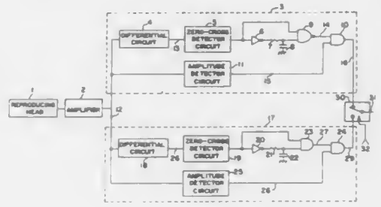
to then activate sequentially said tri-LEDs in the other of said colors from the end to the beginning of said series.

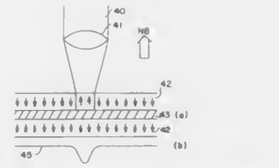
4,939,710

OPTICAL MAGNETIC MEMORY DEVICE UTILIZING NON-RECORDED PORTIONS OF RECORDING MEDIUM TO REPRESENT DATA

Hiroshi Fuji, Tenri; Shigemi Maeda, Yamatokoriyama; Takeshi Yamaguchi, Tenri; Toshihisa Deguchi, and Shozou Kobayashi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 916,648, Oct. 8, 1986, abandoned. This application Jul. 1, 1988, Ser. No. 214,930
Claims priority, application Japan, Oct. 8, 1985, 60-224601; Nov. 25, 1985, 60-266752
Int. Cl.[5] G11B *13/04, 11/12*
U.S. Cl. 369—13 **5 Claims**





1. An optical magnetic memory device, comprising:
an optical magnetic recording medium having a magnetic film on at least one surface thereof, said magnetic film having a magnetization axis biased in a predetermined direction;
irradiating means for recording information on said magnetic film by reversing the magnetization axis direction of selected portions of said film to be opposite to said predetermined direction, said information being recorded by a

return-to-zero (RZ) method in which recorded portions of said film are formed by said reverse magnetization axis portions and non-recorded portions of said film have a length substantially shorter than said recorded portions; and

means for reproducing information from said magnetic film including means for detecting the non-recorded portions of said film by the length thereof;

said means for reproducing interpreting said non-recorded portions as data "1" bits and interpreting intervals longer than a predetermined length between said non-recorded portions as data "0" bits.

4,939,711

ARRANGEMENT FOR MINIMIZING EFFECTS OF LEAKAGE MAGNETIC FIELDS IN OPTOMAGNETIC RECORDING/REPRODUCING APPARATUS

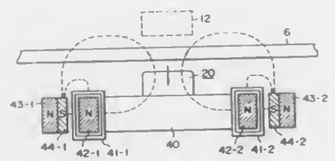
Yoshiro Yoda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1988, Ser. No. 159,760

Claims priority, application Japan, Mar. 3, 1987, 62-48177

Int. Cl.[5] G11B *13/04, 11/12*

U.S. Cl. 369—13 **10 Claims**



1. An optomagnetic recording/reproducing apparatus, comprising:

a light source for generating a light beam;

focusing means for focusing the light beam emitted from said light source;

a recording medium having a recording surface to be irradiated with the light beam focused by said focusing means;

pickup means for detecting the light beam from said recording medium;

bias magnetic field generating means for applying a bias magnetic field onto said recording medium; and

first magnetic field generating means for generating a first magnetic field, and second magnetic field generating means for generating a second magnetic field, the first and the second magnetic field generating means being associated with components of the recording/reproducing apparatus other than said bias magnetic field generating means, the first and the second magnetic fields being directed in directions opposite to one another onto that region of said recording medium which is irradiated with the light beam for minimizing interference with said bias magnetic field at said region.

4,939,712

MULTIPLE TRACK AND REVERSING ADDRESS SEARCH METHOD FOR USE IN A DISK PLAYER SYSTEM

Hiroyuki Abe; Kazuhiro Kiyoura; Kazunori Matsuo, and Takayuki Iijima, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 10, 1988, Ser. No. 230,417

Claims priority, application Japan, Aug. 13, 1987, 62-202440

Int. Cl.[5] G11B *21/08*

U.S. Cl. 369—32 **5 Claims**

1. An address search method for use in a disk player having a pickup for reading information from a plurality of tracks on a disk, said method comprising the steps of:

(a) providing information relating to a target address to which it is desired to move said pickup;

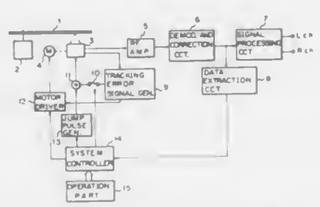
(b) jumping said pickup across the disk and over a first predetermined number of tracks in a first direction toward said target address;

(c) detecting a current address of said pickup;

(d) comparing the current address of said pickup with said target address;

(e) repeating steps (b)–(d) if said pickup does not pass said address in step (b);

(f) jumping said pickup across the disk and over a second predetermined number of tracks, less than said first predetermined number, in a second direction opposite to said first direction toward said target address if said pickup passes said target address in step (b) as determined in step (d);



(g) detecting the current address of said pickup;

(h) comparing the current address of said pickup with said target address;

(i) repeating steps (f)–(h) if said pickup does not pass said target address in step (f);

(j) decreasing said first and said second predetermined numbers and repeating steps (b)–(i) until the current address of said pickup equals said target address.

4,939,713

ERASABLE OPTICAL DISK AND OPTICAL INFORMATION RECORDING/REPRODUCTION APPARATUS

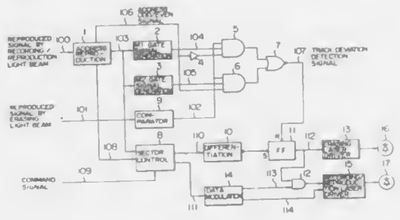
Isao Satoh, Neyagawa; Makoto Ichinose, Sakai; Yoshihisa Fukushima, Osaka, and Yuzuru Kuroki, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 24, 1988, Ser. No. 159,743

Claims priority, application Japan, Feb. 27, 1987, 62-45555; Mar. 6, 1987, 62-52533

Int. Cl.[5] G11B *11/10, 5/02*

U.S. Cl. 369—44.11 **6 Claims**



1. An optical information recording/reproduction apparatus for recording and reproducing information on a sector basis, characterized by comprising:

light beam sources for respectively projecting a recording-/reproduction light beam and an erasing light beam which precedes said recording/reproduction light beam;

drive means for driving said light beam sources, respectively; and

mark signal detecting means for detecting a track position identification mark signal disposed between a sector identifier and a data field in said sector;

wherein said mark signal detecting means detects said track position identification mark signal so as to determine that said erasing light beam is not positioned on the same track with said recording/reproduction light beam and to control said drive means, thereby preventing data recorded in said data field from being erased by said erasing light beam.

4,939,714

METHOD FOR FADING IN AND OUT REPRODUCED DIGITALLY RECORDED DATA

Koji Yamagishi; Naoki Masaki, and Nobuaki Hisamatsu, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 26, 1988, Ser. No. 161,054

Claims priority, application Japan, Feb. 27, 1987, 62-46355; Feb. 27, 1987, 62-46356; Feb. 27, 1987, 62-46359

Int. Cl.[5] H04N *5/76*

U.S. Cl. 369—59 **3 Claims**



1. A data reproducing method comprising the steps of:

continuously reproducing main data and address data from a recording medium at a normal speed;

during said step of continuously reproducing said main data and said address data, operating inputting means to effect storing of at least first and second address data indicative of positions where, during subsequent reproduction of said recording medium, a reproduced output level of said main data is to be faded out and faded in, respectively;

again continuously reproducing said main data and said address data from said recording medium at a normal speed; and

during said step of again continuously reproducing said main data and said address data, fading out said main data at said first position from a specified final output reproduction level to silence and fading in said main data at said second position from silence to said specified final output reproduction level, and maintaining silence in said final output reproduction level after said main data has been faded out until said main data is subsequently faded in.

4,939,715

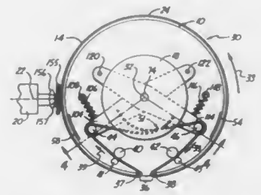
TAPE SCANNING APPARATUS

Peter J. Vogelgesang, Roseville, and Wayne M. Wirth, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 138,860, Dec. 29, 1987, abandoned. This application Dec. 22, 1988, Ser. No. 288,302

Int. Cl.[5] G11B *5/008, 15/00*

U.S. Cl. 360—93 **33 Claims**



30. An apparatus for retrieving information from magnetic tape which comprises:

a drum having a generally cylindrical outer surface and being rotatable about a central axis, with the drum having an annular groove in its generally cylindrical outer surface and with the groove extending in a plane perpendicular to the central axis of the drum;

tape supply means for supplying magnetic tape wound on a helical path on and about the generally cylindrical outer surface of the drum, the magnetic tape covering the annular groove;

magnetic tape advancing means for advancing the magnetic tape along the helical path;

rotating means for rotating the drum, the magnetic tape wound thereon and the magnetic tape supply means about the central axis; and

detecting and retrieving means for detecting and retrieving information on the magnetic tape as the magnetic tape is rotated and advanced along the helical path, the detecting and retrieving means being fixed in position relative to the drum and including at least one magnetic head on contact with the magnetic tape opposite the annular groove.

4,939,716

OPTICAL INFORMATION CARRIER

Vyacheslav V. Petrov, ulitsa Montazhnikov, 104, Kiev; Nikolai V. Gorshkov, Leninsky prospekt, 52, kv. 416, Moscow; Alexandr A. Antonov, prospekt Vernadskogo, 85, kv. 64, Kiev; Andrei A. Krjuchin, ulitsa Juliusa Fuchika, 8, kv. 13, Kiev; Alexandr P. Tokar, prospekt Korneichuka, 30, kv. 161, Kiev; Semen M. Shanollo, ulitsa A.Malyshko, 15, kv. 27, Kiev; Dmitry A. Grinko, ulitsa Akademika Dobrokhotova, 4, kv. 71, Kiev; Tatyana I. Sergienko, ulitsa Akademika Tupoleva, 7, kv. 111, Kiev; Gennady J. Judin, ulitsa Geroev Stalingrada, 15, kv. 70, Kiev; Evgeny E. Antonov, ulitsa Nekrasovskaya, 98, kv. 20, Kiev, and Vladislav I. Popovich, prospekt Vernadskogo, 67, kv. 78, Kiev all of U.S.S.R.

Division of Ser. No. 136,924, Oct. 6, 1987, Pat. No. 4,864,555. This applicatioo Mar. 6, 1989, Ser. No. 319,362

Claims priority, application U.S.S.R., Feb. 7, 1986, 3134542; Feb. 7, 1986, 3136659

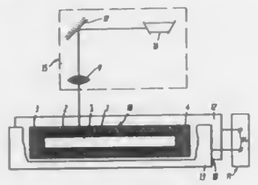
Int. Cl.[5] G11B *7/00;* **G01D** *15/10;* **H04N** *1/21*

U.S. Cl. 369—100 **4 Claims**

1. An optical information carrier comprising a hollow cylinder (1), a recording layer (2) connected with the hollow cylinder (1) and intended for recording information thereon, and two bushings (3, 4) located each at the ends of the hollow cylinder (1) to form an air-tight space (5), characterized in that each of said bushings having first and second outer diameters, the first outer diameter of each bushing being greater than the

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second outer diameter thereof, and said second outer diameters of said bushings not exceeding the inner diameter of the hollow



cylinder (1), said bushings serving to seal off the space (5) which is internal relative to the hollow cylinder (1).

4,939,717

METHOD AND APPARATUS FOR ERASING AND RECORDING INFORMATION USING THREE POWER LEVELS

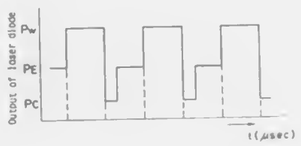
Eiji Ohno, Osaka; Kenichi Nishiuchi, Moriguchi, and Noboru Yamada, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 27, 1987, Ser. No. 113,105

Claims priority, application Japan, Oct. 31, 1986, 61-261263; Nov. 4, 1986, 61-262189

Int. Cl.[5] G11B *7/125*

U.S. Cl. 369—116 **15 Claims**





1. A method for erasing and recording information on an optical recording member of the type wherein a new signal is overwritten on a previously recorded track by means of a single laser spot passing only once on said previously recorded track in said optical recording member, comprising the steps of:

modulating a recording laser power to a recording power level (PW);

maintaining said laser power at said recording power level (PW) for a time corresponding to data to be recorded;

lowering said laser power to a cooling power level (PC) which is lower than said recording power level (PW); and

maintaining said laser power at said cooling power level (PC) for a predetermined period, to thereby record information.

4,939,718

ROUTING METHOD AND PACKET SWITCHING NETWORKS HAVING A DISTANCE INDICATOR FOR ROUTING

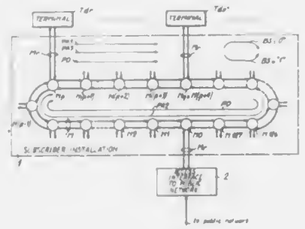
Michel Servel, Lannion; Jean-Paul Quinquis, and Albert Lespagnol, both of Perros Guirec, all of France, assignors to Etat Francais Represente par le Ministre des Postes, Telecommunications, et de l'Espace (Centre National d'Etudes des Telecommunications), Issy-les-Moulineaux, France

Filed Apr. 11, 1989, Ser. No. 335,926

Claims priority, application France, Apr. 20, 1988, 88 05236

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—60 **13 Claims**



1. A method of routing packets between first and second bidirectional connection multiplex ways connected to a packet time-division switching network, said network comprising plural packet switches chain-connected to form a bidirectional packet transmission artery, each of said switches connecting to said artery a respective bidirectional connection multiplex way,

during a communication set-up phase preliminary to said data packet transmission, activating said first and second connection multiplex ways to transmit in said artery (i) respectively first and second call packets which are disseminated to all said connection multiplex ways so as to measure respectively first and second distances between switches connecting said first and second multiplex ways to said artery, said first and second distances respectively including a number of switches to be crossed by a packet transmitted by said first connection multiplex way to reach said second connection multiplex way and a number of switches to be crossed by a packet transmitted by said second connection multiplex way to reach said first connection multiplex way, and (ii) a call packet including a distance word which is initially set to zero on transmission of said call packet, and incrementing the distance word by 1 as it crosses each switch to provide a measure of said corresponding distance, and

during a communication phase, transmitting data packets including distance words representing said first and second measured distances from said first to second connection multiplex ways and vice-versa so as to carry said data packets, decrementing by 1 a distance word included in a data packet transmitted during the communication phase by 1 as said packet is crossing a switch such that the packet reaches a switch to which a connection multiplex way addressee of said packet is connected, said distance word included in said packet has a null value indicating to said switch that said packet is to be switched to said connection multiplex way connected to it.

4,939,719

MANAGEMENT UNIT FOR A UNIT FOR SWITCHING DATA TRANSMITTED BY ASYNCHRONOUS TIME-DIVISION MULTIPLEXING

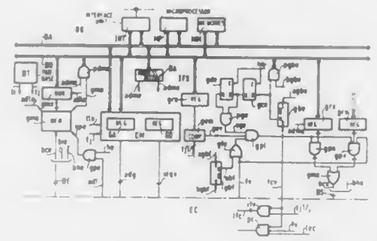
Raymond Bakka, Meudon, France, assignor to Societe Anonyme dite : Alcatel Cit, Paris, France

Filed Nov. 28, 1988, Ser. No. 276,755

Claims priority, application France, Nov. 27, 1987, 87 16476

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **7 Claims**



1. A management unit for a switching unit for switching data transmitted by asynchronous time-division multiplexing, said switching unit comprising receive circuits each associated with an input link and supplying on an input bus cells received via said input link, transmit circuits each associated with an output link and sending cells on said output link which are supplied to it by an output bus and a buffer memory system for transferring cells selectively from the receive circuits to the transmit circuits and to this end connected between the input and output buses, said management unit being characterized in that it comprises input means arranged to receive cells present on said input bus and output means for supplying cells on said output bus, in both cases under the control of said buffer memory system, and wherein said input bus and said output bus are the only communicating means between said input means and said output means and said buffer memory.

4,939,720

UNIT FOR SWITCHING DATA TRANSMITTED BY ASYNCHRONOUS TIME-DIVISION MULTIPLEXING

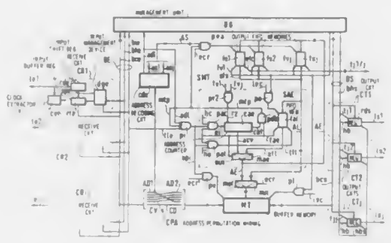
Raymond Bakka, Meudon, France, assignor to Alcatel Cit, Paris, France

Filed Nov. 28, 1988, Ser. No. 277,599

Claims priority, application France, Nov. 27, 1987, 8716475

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **13 Claims**



1. A unit for switching data transmitted by asynchronous time-division multiplexing comprising:

receive circuits each associated with an input link and supplying cells received via said input link;

transmit circuits each associated with an output link and transmitting retransmitted cells on said output link;

a buffer memory storing received cells supplied by the receive circuit and delivering cells to be retransmitted to the transmit circuit; and

a buffer memory addressing device for addressing said buffer memory comprising a write address source and a read address source;

characterized in that the switching unit further comprises a write disabling circuit (pi) conditioned by a signal (adl) derived from the content of at least one of said received cells or a signal (tle) derived from the absence of any of said received cells and supplying a disabling signal (spi) to said buffer memory addressing device and in that the write address source comprises a disabling device (pac, pal) influenced by said disabling signal (spi) such that no memory location is then written in the buffer memory (MT).

4,939,721

NODE FOR A FAST PACKET-SWITCHING NETWORK IN OPTICAL-ELECTRICAL TECHNOLOGY

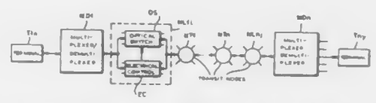
Alfredo De Bosio, Turin, Italy, assignor to CSELT- Centro Studi e Laboratori Telecommunicazioni SpA, Milan, Italy

Filed Jan. 13, 1989, Ser. No. 297,573

Claims priority, application Italy, Feb. 29, 1988, 67151-A/88

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—60 **11 Claims**



1. A node for a fast packet-switching network in optical-electrical technology, wherein switching takes place on the basis of routing information contained in a header of each of a succession of packets, comprising:

an optical switching matrix having a plurality of stages, each comprising a plurality of switching elements, for switching optical information packets transmitted as optical signals;

an electrical switching matrix for searching a routing through the node from information contained in the headers of the information packets and converted into electrical form; the configuration taken by the electrical switching matrix;

a first group of processing devices associated with the inputs of the electrical switching matrix for the electrical processings of information packet headers necessary to each for a connection path between an input and an output of the electrical switching matrix and for updating the headers in the optical information packets;

a second group of electrical processing devices associated with outputs of the electrical switching matrix for recognizing that a connection has been set up between an input and an output of the electrical switching matrix and forwarding a packet acknowledging such setup to the processing devices of the first group; and

a centralized node controller for the electrical processing of signalling packets.

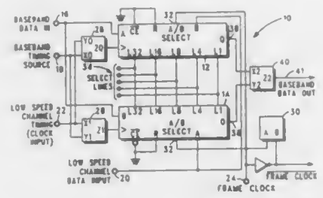
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,722

TIME DIVISION MULTIPLEXER HAVING DATA RATE AND NUMBER OF CHANNELS FLEXIBILITY

Richard A. Beichler, Huntsville, Ala., assignor to Universal Data Systems, Inc., Huntsville, Ala.

Filed Mar. 6, 1989, Ser. No. 318,987
Int. Cl.[5] H04J 3/04, 3/22
U.S. Cl. 370—84 16 Claims



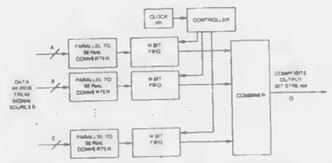
1. A time division multiplexer cell for receiving baseband data at a first rate and channel data at a second rate comprising:
first and second storage means for storing data, each of said storage means having an output;
input gating means for serially loading one of said first and second storage means with said channel data at said second rate while serially loading the other of said first and second storage means with said baseband data at said baseband rate, said input gating means alternately loading each of said storage means with channel data and baseband data, data stored in the first and second storage means being serially output as data is serially loaded;
output gating means for selecting the output of the one of said first and second storage means which is being loaded with baseband data, said selected output defining the output baseband data.

4,939,723

BIT-CHANNEL MULTIPLEXER/DEMULTIPLEXER

Thomas J. Harley, Jr., Palo Alto, and Philip F. Zimmers, Los Altos, both of Calif., assignors to Ford Aerospace Corporation, Newport Beach, Calif.

Filed Jun. 7, 1989, Ser. No. 362,905
Int. Cl.[5] H04J 3/22
U.S. Cl. 370—84 7 Claims



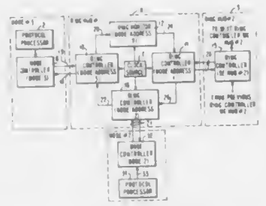
1. In a data communications system, a method for combining data words of a plurality of word rates and a plurality word sizes from a plurality of input digital data streams on input digital channels into a single digital bit stream, wherein the word rates and the word sizes on individual input digital channels are subject to frequent change, in order to maintain continuous communication over all of the input digital channels through an output digital channels, said method comprising the steps of:
establishing a predetermined integer wherein the product of the word rate of any expected input word and the word size for each one of all expected input digital signal formats is an integer multiple of said predetermined integer; and
placing individual bits of all input digital data streams satisfying one of said input signal formats into a preselected bit slot in a mini-frame defined by said integer of a single composite data stream in a time division multiplexing (TDM) format, such that no individual bit placed in the TDM format is moved to another bit slot in the format, wherein a plurality of mini-frames comprise exactly one frame.

4,939,724

CLUSTER LINK INTERFACE FOR A LOCAL AREA NETWORK

Ronald J. Ebersole, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1988, Ser. No. 291,756
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—85.15 10 Claims



6. Apparatus for communicating between nodes with different speed links comprising:
a ring bus (20, 22);
a ring controller (b) attached to said ring bus;
a node controller (a);
said node controller (a) attached to said ring controller (b) by means of a link (18, 19);
said ring controller having means (60) for transmitting messages to another controller on said bus (20, 22) in packets of a fixed byte size;
a buffer message mode bit input line (23) in said ring controller (b); and,
means (68) operative upon the condition that said Buffer Message mode bit input line (23) is asserted for causing all bytes of a message received from that link to be buffered (70) and further operative upon the condition that said Buffer Message mode bit input line (23) is not asserted for causing a fixed number of bytes to be buffered, said fixed number being equal to said fixed byte size.

4,939,725

MULTIPLEX TRANSMISSION SYSTEM

Yutaka Matsuda, Hiratsuka; Teruhisa Inoue, Ichikawa; Yusaku Himono, Tokyo; Yuichi Ito, and Osamu Michihira, both of Hiroshima, all of Japan, assignors to Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan

Filed Nov. 23, 1988, Ser. No. 276,222
Claims priority, application Japan, Nov. 30, 1987, 62-302424
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—85.3 8 Claims



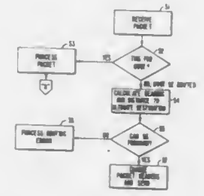
1. A multiple transmission system having a plurality of nodes including at least one transmission node coupled through a transmission path to transmit a frame of data therethrough to a plurality of reception nodes, comprising:
a transmitter circuit including
(a) means for providing a data area of a given bit length as a portion of said frame of data;
(b) means for providing a data valid/invalid area as another portion of said frame of data, said data valid/invalid area having the same bit length as said given bit length of the data area, and the bits in the data valid/invalid area, respectively, setting the valid/invalid state of the bits in the data area;
each of said reception nodes comprising means responsive to said frame of data for actuating an operation corresponding to the content of said frame of data; and
means for detecting when an abnormality is present in a received frame of data, and for determining that all the data in said received frame is invalid.

4,939,726

METHOD FOR ROUTING PACKETS IN A PACKET COMMUNICATION NETWORK

George H. Flammer, and Robert L. Kalkwarf, both of San Jose, Calif., assignors to Metricom, Inc., Campbell, Calif.

Continuation of Ser. No. 133,720, Dec. 16, 1987, abandoned.
This application Jul. 18, 1989, Ser. No. 383,273
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—94.1 2 Claims



1. A method for routing packets of data in a packet data communication network without a network directory comprising the steps of:
assigning to each node in a network an identifier indicative of geographic location, said identifier including a coordinate value referenced to a terrestrial grid; and
addressing a packet to an ultimate destination node by designating in a packet header said ultimate destination node only by said coordinate value of said ultimate destination node and without designating a complete intermediate path to said ultimate destination node such that the network is free to route the packet via any intermediate path to said ultimate destination node.

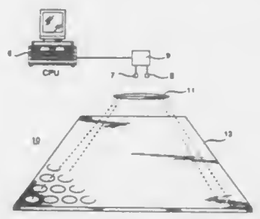
4,939,727

ASSOCIATED MEMORY COMPUTER WITH FLOATING NON-WIRED CELLS

Umberto F. Gianola, Vero Beach, Fla., and Allen L. Gorin, Fairlawn, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1988, Ser. No. 292,586
Int. Cl.[5] H04J 3/24
U.S. Cl. 370—94.1 9 Claims

1. Apparatus for controlling interactive processes between a Host machine linked through communications media with a plurality of separate processor elements, comprising:
means in each said element responsive to a signal from said Host for generating a label value unique to each individual element;
means in said Host for generating each of said unique label values;
means in said Host for associating with each said Host-generated unique label value a packet comprising data and an instruction set;
means for determining the existence, within the array of said elements, of a discrete element-generated label value



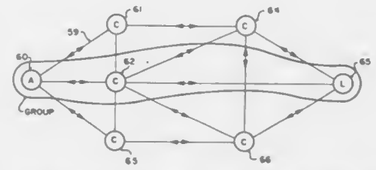
which matches a one of said Host-generated label values; and
means responsive to said determination for transmitting said packet to the element with said discrete label value.

4,939,728

NETWORK AND INTELLIGENT CELL FOR PROVIDING SENSING BIDIRECTIONAL COMMUNICATIONS AND CONTROL

Armas C. Markkula, Jr., Woodside; Wendell B. Sander, Los Gatos; Shabtai Evan, Saratoga; Stephen B. Smith, Scotts Valley, and William B. Twitty, Santa Cruz, all of Calif., assignors to Echelon Systems Corp., Los Gatos, Calif.

Division of Ser. No. 119,330, Nov. 10, 1987, Pat. No. 4,918,690.
This application Dec. 19, 1988, Ser. No. 259,697
Int. Cl.[5] H04J 3/26, 3/06
U.S. Cl. 370—94.3 6 Claims



1. A cell for a network which network provides for the sensing of conditions, communicating messages on said conditions and controlling objects based on said messages said cells communicating via at least one medium in said network, comprising:
a processor for preparing and interpreting said messages;
interface means for interfacing between said processor and said medium and for performing at least one of the functions of sensing one of said conditions or controlling one of said objects;
said processor encoding said messages into segments of 6 bit codes, each of said segments containing 3 binary ones and 3 binary zeroes and means for converting groups of 6 bit codes received over said medium into 4 bit nibbles, said messages beginning with a preamble which comprises a first one of said segments of 6 bit code followed by a second one of said segments of 6 bit code;
said interfacing means for providing bit synchronization from said first one of said segments and segment synchronization from said second one of said segments;
whereby a cell is realized.

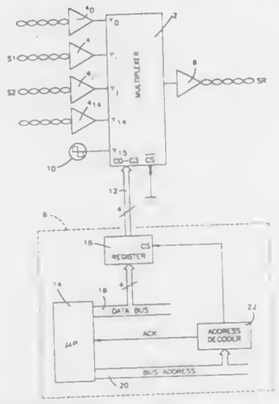
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,729

PROCESS FOR THE SWITCHING OF ASYNCHRONOUS DIGITAL SIGNALS AND DEVICE FOR THE IMPLEMENTATION OF THIS PROCESS

Alain Weisser, Clamart, France, assignor to Etablissement Public De Diffusion Dit Telediffusion De France, Paris, France

Filed Apr. 8, 1988, Ser. No. 179,257
Claims priority, application France, Apr. 10, 1987, 87 05135
Int. Cl.[5] H04J *3/04*
U.S. Cl. 370—112 **10 Claims**



1. A process for detectably switching between a first digital signal and a second digital signal, the first digital signal being applied to a first input connected to an output and the second digital signal being applied to a second input to be connected to the output instead of said first input, both signals being encoded, the process comprising:

disconnecting the first input from the output;

connecting a characteristic sequence signal to the output;

disconnecting said characteristic sequence signal from the output; and

connecting the second input to the output, whereby the output provides an output signal that provides indication of the switching upon decoding.

4,939,730

AUTO ISOLATION CIRCUIT FOR MALFUNCTIONING CURRENT LOOP

James V. Tarver, Greensboro, N.C., assignor to Gilbarco Inc., Greensboro, N.C.

Filed Oct. 11, 1988, Ser. No. 255,701
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—11.2 **14 Claims**

1. A data communication system comprising:

a plurality of remote devices each including a loop return line for passing data to and transmitting data from the remote device;

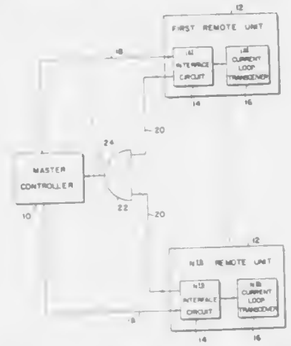
a plurality of remote devices each including a loop return line for passing data to and transmitting data from the remote device;

a plurality of interface circuits each associated with an individual one of said plurality of remote devices, respectively, each having a first terminal for connection to an end of said loop return line, the latter having another end connected to said remote device, a second terminal for receiving data to transfer to said loop return line, and a third terminal for transmitting data received from the associated said remote device via said loop return line;

master controller means having a plurality of transmit data lines connected individually to said second terminals of said plurality of interface circuits, respectively, and an input data line for receiving data from said plurality of remote devices;

AND gate means having a plurality of input lines connected individually to said third terminals of said plurality of interface circuits, respectively, and an output terminal connected to an end of said input data line of said master controller means; and

each one of said interface circuits include isolation circuit



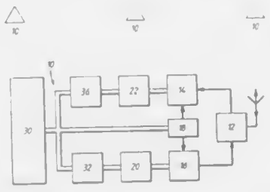
means for applying a digital "1" on the associated third terminal in response to said associated remote device faulting, by its loop return line becoming either open-circuited or shorted to a source of reference potential, thereby effectively isolating the associated remote device from said AND gate means, while permitting said AND gate means to be primed for passing data from the normally operating ones of said remote devices to said master controller means.

4,939,731

DATA TRANSMISSION SYSTEM WITH AUTOMATIC REPEAT REQUEST

Allyson Reed, Northmoor, and Jonathan N. Hopkinson, Totton, both of United Kingdom, assignors to Plessey Overseas Limited, Ilford, England

PCT No. PCT/GB87/00821, § 371 Date Sep. 29, 1988, § 102(e) Date Sep. 29, 1988, PCT Pub. No. WO88/04496, PCT Pub. Date Jun. 16, 1988
PCT Filed Nov. 19, 1987, Ser. No. 220,214
Claims priority, application United Kingdom, Dec. 2, 1986, 8628821
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—32 **10 Claims**



1. In an HF radio communication system for transmitting data comprising a plurality of radio stations, each station including a transceiver with associated encoding/decoding means for transmitting/receiving data, the method comprising the steps of:

(A) providing each radio station with a plurality of predetermined channel frequencies for transmission which have

acceptable levels of noise and interference, and providing each such channel frequency with a predetermined reserve channel frequency to which transmission may be changed;

(B) transmitting data from a first of said radio stations on one of said predetermined channel frequencies in the form of a data packet, said packet including one or more blocks of data encoded with an error correcting code;

(C) receiving and decoding the transmitted data packets at a second of said radio stations and correcting errors, and automatically transmitting a request to said first station for retransmitting of a data packet should it be received with more than a predetermined number of errors;

(D) determining the error rate at said second radio station in received data packets;

(E) transmitting a request to said first radio station from said second radio station to reduce the rate of data transmission if the error rate is greater than a predetermined amount over a predetermined time interval of data transmission; and

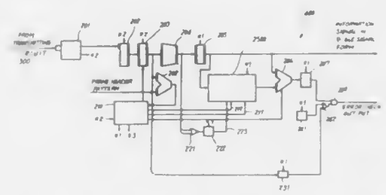
(F) transmitting a request to said first radio station from said second radio station to change the channel frequency to said predetermined reserve channel frequency if said step of transmitting a request to said first radio station to reduce the rate of data trasmission does not reduce the error rate below said predetermined amount.

4,939,732

METHOD AND SYSTEM FOR CHECKING ERRORS OF SIGNAL BEING TRANSFERRED THROUGH TRANSMISSION LINE

Koichi Okamoto, Kawasaki; Kousuke Nishimura, Komae; Kazuyoshi Miyazawa, Kawasaki; Kazuhiko Eado, Machida, and Tamotsu Mikuni, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP88/00508, § 371 Date Jul. 14, 1988, § 102(e) Date Jul. 14, 1988, PCT Pub. No. WO88/09590, PCT Pub. Date Dec. 1, 1988
PCT Filed May 26, 1988, Ser. No. 251,212
Claims priority, application Japan, May 29, 1987, 62-136784
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **10 Claims**



1. A method for detecting errors in information signals transferred from signal transmitting means to signal receiving means through signal transmission means as frames arranged in a serial transfer form, said method comprising the steps of:

providing, at the signal transmitting means, dummy codes in the frame instead of the information signals if there is no information signal in the frame;

providing, sat the signal transmitting means, attribute flags in the frame for identifying attributes of the information signals and said dummy codes in the frame;

providing, at the signal transmitting means, a first check code in the frame for checking errors of said attribute flags and the information signals in the frame, excluding said attribute flags for said dummy codes and said dummy codes;

providing, at the signal receiving means, a second check code based on received information signals in the frame, for checking errors of said attribute flags and the information signals in the frame, excluding said attribute flags for said dummy codes and said dummy codes;

detecting , at the signal receiving means, said first check code; and

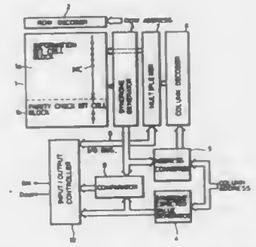
comparing, at the signal receiving means, said first check code with said second check code.

4,939,733

SYNDROME GENERATOR FOR HAMMING CODE AND METHOD FOR GENERATING SYNDROME FOR HAMMING CODE

Kiyohiro Furutani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1988, Ser. No. 247,293
Claims priority, application Japan, Sep. 24, 1987, 62-241824
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—40.1 **6 Claims**



1. A generator for generating a syndrome for Hamming (n,k) code by multiplying a check matrix of k rows and n columns with received n bit binary data which belong to said Hamming (n, k) code, comprising:

storage means for storing said received n bit data; and

calculating means for multiplying a predetermined check matrix of k rows and n columns with said received n bit binary data from said storage means to provide a syndrome of k bits for said received n bit binary data;

said predetermined check matrix consisting of n column vectors, wherein each said column vector is a non-zero vector and is different from other column vectors and the dot product of N-th column vector and (N+1)-th column vector in said n column vector is zero where N is an odd integer smaller than (n−1).

4,939,734

METHOD AND A SYSTEM FOR CODING AND DECODING DATA FOR TRANSMISSION

Johannes Heichler, Murrhardt 3, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Sep. 9, 1988, Ser. No. 242,318
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1987, 3730547
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—43 **16 Claims**

1. A method of processing an input data stream, comprising the steps of:

subdividing the input data stream into a plurality of data substreams of a slower processing speed than that of the input stream;

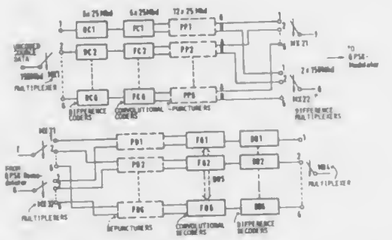
separately difference coding the data substreams;

after said step of difference coding, separately convolutionally coding each of the difference coded substreams in the form of a corresponding set of at least two convolutionally coded output streams, each output stream of the set having a different corresponding phase type, the different

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phase types associated with each of the respective sets of output streams being the same for all of the sets;

after said step of convolutionally coding, for each of the different phases types, combining into a separate corresponding phase component for transmission, the output streams that correspond to the phase type, from all of the sets, there being a separate phase component for each phase type;



after said step of combining, transmitting the phase components to a channel; and

receiving the transmitted phase components from the channel and convolutionally decoding all of the data substreams utilizing all of the data of each of the received phase components.

4,939,735

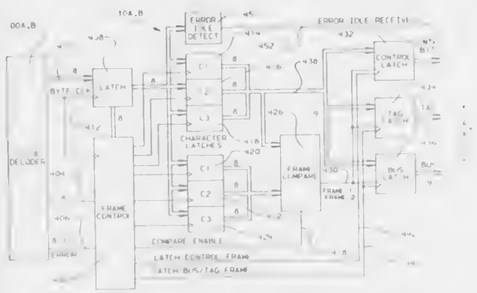
INFORMATION HANDLING SYSTEM HAVING SERIAL CHANNEL TO CONTROL UNIT LINK

Kenneth J. Fredericks, Poughkeepsie; Joseph J. Kubik, Wappingers Falls; Michael R. Wiegand, and Lee H. Wilson, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 21, 1988, Ser. No. 222,679

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—47.1 **11 Claims**



1. An information handling system for processing data communicated between a processor and one or more peripheral devices on a serial data link, comprising:

a processor for processing said data;

one or more channels for communicating between said processor and one or more peripheral device controllers;

one or more peripheral device controllers for controlling one or more peripheral devices in response to signals from said channel in accordance with a predetermined communications protocol;

a serial data link, adapter connected between one of said channels and one or more of said peripheral device controllers for extending the range of communications between said channels and said controllers, said adapter further comprising:

first and second sub-adapters, each communicating with the other across said serial data link and each sub-adapter having transmit and receive sections, said transmit section comprising:

frame generation means responsive to signals received from said channel and said peripheral device controller respectively, said signals conforming to said predetermined protocol, said frame generation means including means for generating one or more unique start frame characters in response to control signals received by said frame generation means;

means for generating predetermined idle characters, said idle characters having an error immune relationship with said start characters, such that idle characters having single and double bit errors transmitted on said serial data link will not be recognized as on start frame characters;

an encoder for encoding data for efficient and error free transmission over said data link;

a serializer for converting said encoded data from parallel format to serial format;

link interface and driver means for transmitting serialized encoded data across said serial data link; and said receive section of each of said sub-adapter, comprising:

a receiver for receiving said encoded serialized data;

a deserializer for converting said serial encoded data to parallel format;

a decoder for recovering digital data in an error free form; and

interface means for reconstructing data and control signals in said predetermined protocol for transmission to said one or more peripheral device controllers or to said channel.

4,939,736

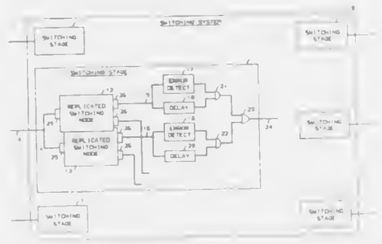
PROTECTION AGAINST LOSS OR CORRUPTION OF DATA UPON SWITCHOVER OF A REPLICATED SYSTEM

Kristio F. Kocan, Warrenville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 22, 1988, Ser. No. 247,962

Int. Cl.[5] G06F *11/20*

U.S. Cl. 371—8.1 **23 Claims**



1. An apparatus comprising:

a first and a second signal-handling component, for performing like signal-handling functions and adapted to receive a common input signal, each component for generating a separate output signal from the common input signal;

malfunction-detection means connected to both of the components, for detecting occurrence of a malfunction affecting either of the output signals and generating a malfunction signal to indicate detection of the malfunction;

signal-delay means connected to the first and the second components for receiving the separate output signals, delaying the received signals while the malfunction-detection means are detecting occurrence of a malfunction affecting either of the received output signals that are being delayed, and outputting the received separate output signals after a delay of time sufficient for the malfunction-detection means to detect a malfunction and to generate the malfunction signal; and

output means connected to the signal delay means for receiving the delayed signals and outputting a system output signal corresponding to at least one of the received delayed signals, the output means responsive to the malfunction signal for outputting a signal corresponding only to a received delayed signal which is unaffected by the malfunction.

4,939,737

SCANNING APPARATUS WITH REFRACTING AREA OF VARIABLE REREFRACTIVE INDEX

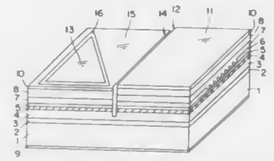
Sadayoshi Matsui, Tenri; mototaka Taneya, Tsukuba, and Mitsuhiro Matsumoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Feb. 16, 1988, Ser. No. 156,263

Claims priority, application Japan, Feb. 16, 1987, 62-33004

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—24 **3 Claims**



1. In a scanning apparatus with a refracting function, said scanning apparatus including a laser beam oscillating area and an optical waveguiding area that is optically coupled with said laser beam oscillating area, the combination of:

one or more refracting areas that are formed within said optical waveguiding area, said optical waveguiding area being surrounded with one or more boundary regions so that laser beams from said laser beam oscillating area are incident upon the waveguide of each of said refracting areas with an inclination to said waveguide; and

a means for applying an electrical field to the waveguide of said refracting area, by which the changes in the refractive index of the waveguide of said refracting area attained so that laser beams from said laser beam oscillating area undergo refraction while they pass through the waveguide of said refracting area.

4,939,738

HIGH-POWER WAVEGUIDE LASER

Hans Opower, Krailling, Fed. Rep. of Germany, assignor to Dentsche Forschung -und Versuchsanstalt, Bonn, Fed. Rep. of Germany

Continuation of Ser. No. 238,693, Aug. 30, 1988, abandoned. This application Aug. 30, 1989, Ser. No. 403,074

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1987, 3729053

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—95 **29 Claims**

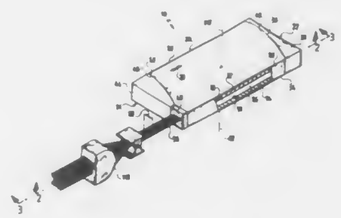
1. An electrically excited, diffusion-cooled high-power gas laser, comprising:

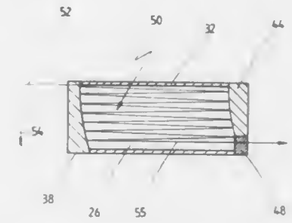
an optical waveguide formed by two constantly spaced wall surfaces extending in a longitudinal direction between two ends of said waveguide and in transverse direction to two outer side edges of waveguide and having a transverse width being a multiple of the space between them;

excitation means for applying high-frequency electrical energy to the wall surfaces;

a flow-free discharge chamber for a laser gas enclosed in one direction by said wall surfaces;

an optical resonator having first and second resonating mirrors disposed at first and second ends, respectively, of said optical waveguide, said resonator being an optically unstable resonator including a beam path extending lengthwise of a resonator axis oriented approximately parallel to





said longitudinal direction and said beam path expanding transversely to said resonator axis;

said resonator being arranged with respect to said waveguide such that said tranverse expansion of said beam path in a direction perpendicular to the wall surfaces extends over said space and, in a direction parallel to said wall surfaces, extends between said outer side edges of said waveguide and at the most to said outer side edges.

4,939,739

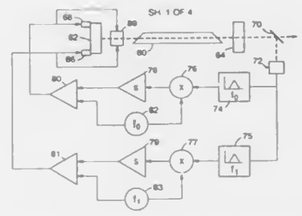
LASER ALIGNMENT SERVO METHOD AND APPARATUS

James L. Hobart; Wayne S. Mefferd, both of Los Altos Hills, and Bruce Peuse, San Carlos, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Apr. 24, 1989, Ser. No. 342,361

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—107 **55 Claims**



1. An apparatus for optimizing the performance of a laser

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having a resonator, wherein the laser generates a beam having an angular or lateral alignment within the resonator, including:

means for monitoring a laser operating parameter indicative of the angular to lateral alignment of the beam within the resonator and generating an angular or lateral alignment control signal from the monitored parameter; and

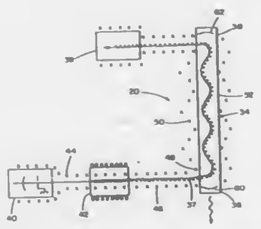
means for varying the angular or lateral alignment of the beam within the resonator in response to the angular or lateral alignment control signal to maintain the monitored operating parameter at an extremum value optimize the performance of the laser.

4,939,740

CYCLOTRON AUTORESONANCE MASER WITH HELICAL ELECTRON GUIDING CENTER

Robert R. Goforth, Encinitas, Calif., assignor to General Atomics, San Diego, Calif.

Filed Jan. 7, 1988, Ser. No. 203,487
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—2 **11 Claims**



1. A cyclotron autoresonance maser comprising:

an evacuated drift vessel;

electron beam means for introducing a beam of relativistic electrons into said drift vessel;

means for causing said relativistic electrons to gyrate within said drift vessel with the gyrations having relatively small radii;

magnetic field means for causing the beam of relativistic, gyrating electrons to spiral within said drift vessel about an axis defining an axial direction, the radii of the spirals being large relative to the radii of said gyrations; and means for establishing and directing a maser beam in said drift vessel in said axial direction, with the maser beam substantially encompassing said spiraling electron beam over a substantial portion of said drift vessel whereby the interaction length of said electron beam and said maser beam is substantially greater than in the absence of said spiraling, the phase velocity of the maser beam radiation along the electron beam being greater than the speed of light.

4,939,741

COMMUNICATION CONTROL SYSTEM

Takeshi Miyazaki, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1988, Ser. No. 198,518
Claims priority, application Japan, May 27, 1987, 62-128196
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **13 Claims**

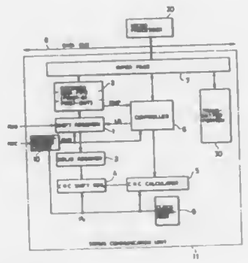
1. A communication controller comprising:

a calculator for calculating an error detection code of received data;

latch means for keeping the received data for a desired period of time;

a shift register for converting the data kept in said latch means into serial data and for supplying the serial data to said calculator wherein

said shift register and said calculator are operated in response to a clock signal which is asynchronous with respect to a reception clock synchronized with the received data and



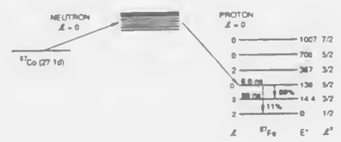
a counter for counting the reception clock so as to produce a calculation start signal for said calculator.

4,939,742

NEUTRON-DRIVEN GAMMA-RAY LASER

Charles D. Bowman, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 28, 1989, Ser. No. 329,710
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—5 **13 Claims**



1. A gamma-ray laser rod emitting a radiation beam of gamma-ray wavelength when excited with a neutron flux, comprising:

a lasing cylinder having a rolled foil material as a support structure;

a first nuclear species deposited on both sides of said foil, said first nuclear species interacting with said neutron flux for transition to a second nuclear species by a particle emission effective to impart a recoil velocity to atoms of said second nuclear species for separating said second nuclear species from said first nuclear species, said second nuclear species being formed from said first nuclear species in an excited state generating a population inversion with a ground state for spontaneous emission at said gamma-ray wavelength;

a high Debye temperature host material, binding said second species for recoilless Mossbauer emissions from said excited state of said second nuclear species, deposited on one of said deposits of said first nuclear species;

said first nuclear species being deposited to a first thickness enabling said recoil velocity to separate said second nuclear species from said first nuclear species and into said host material;

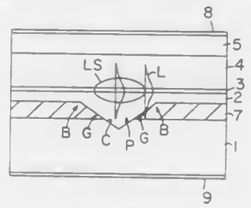
said host material being deposited to a second thickness to stop said second nuclear species with said recoil velocity for said binding said second nuclear species for said Mossbauer emission from said second nuclear species at said gamma-ray wavelength, thereby producing an amplified spontaneous emission device for producing a gamma-ray wavelength.

4,939,743

SEMICONDUCTOR LASER DEVICE

Saburo Yamamoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1989, Ser. No. 354,254
Claims priority, application Japan, May 18, 1988, 63-121561
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **6 Claims**



1. In a semiconductor laser device, the combination of a double-heterostructure in which an active layer with a flat surface is sandwiched between a first semiconductor layer and a second semiconductor layer, the forbidden bandgap of each of said first and second semiconductor layers being larger than that of said active layer,

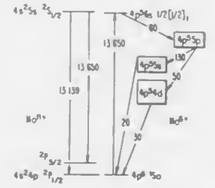
wherein at least one of said first and second semiconductor layers has a striped projection provided with two inclined surfaces in the longitudinal direction; said semiconductor layer with said striped projection is sandwiched between said active layer and a light absorption layer for absorbing laser light; and the thickness of the portion of said semiconductor layer with said striped projection that corresponds to the inside of the center area of each of two inclined surfaces of said projection is thick enough so that laser light cannot permeate into said absorption layer therethrough and the thickness of the portion of said semiconductor layer with said striped projection that corresponds to the outside of the center area of each of the two inclined surfaces of said projection is sufficiently thin so that laser light can permeate into said absorption layer therethrough.

4,939,744

METHOD AND APPARATUS FOR PRODUCING A PHOTOPUMPED VUV LASER IN MO6+ ION-CONTAINING PLASMA

Uri Feldman, Columbia, and Joseph Reader, Rockville, both of Md., assignors to United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 15, 1989, Ser. No. 436,839
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—76 **12 Claims**



1. A method for achieving reliable and prompt communications with a trunked radio repeater system having a digital control channel and plural working channels, which working channels are assigned for temporary use of individual radio

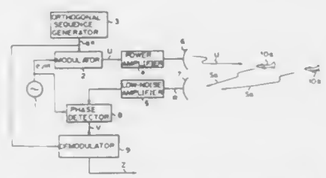
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4,939,745

APPARATUS FOR GENERATING ORTHOGONAL SEQUENCES

Tetsuo Kirimoto; Takashi Hotta, and Yoshimasa Ohashi, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 399,772
Claims priority, application Japan, Sep. 1, 1988, 63-219215; Feb. 28, 1989, 1-46790
Int. Cl.[5] H04L *9/04*
U.S. Cl. 375—1 **15 Claims**



1. An apparatus for generating an orthogonal sequence comprising M-sequence generating means for outputting a signal of M-sequence of which the component takes 0 or 1 and the period is N, and substitution means connected to an output of said M-sequence generating means for substituting the component of the M-sequence to provide an output signal as the orthogonal sequence signal, said substitution means substituting the component of the M-sequence with $A_0e^{j\phi 0}$ when the value of the component is 0 and with $A_1e^{j\phi 1}$ when it is 1, where each of A_0 and A_1 is a positive real number, and the substitution being made in such a manner that the phase difference of $\phi_1-\phi_0$ and the amplitude ratio of A_1/A_0 satisfy the following condition:

$$f_1(\phi_1 - \phi_0) = \frac{f_2(A_1/A_0)}{f_3(A_1/A_0)}$$

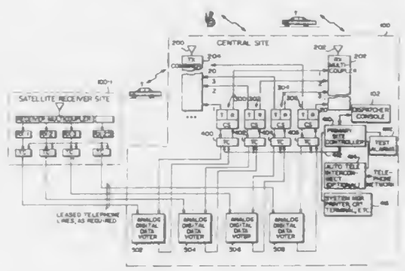
where, f_1 is a trigonometric function having the phase of $\phi_1-\phi_0$; f_2 is a quadratic function of A_1/A_0 with a coefficient of a linear function of N; and f_3 is a linear function of A_1/A_0 with a coefficient of a linear function of N.

4,939,746

TRUNKED RADIO REPEATER SYSTEM

Jeffrey S. Childress, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 56,922, Jun. 3, 1987, Pat. No. 4,905,032. This application Apr. 14, 1988, Ser. No. 181,441
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—33 **66 Claims**



17. A system as in claim 15 wherein:

said subaudible signal passing means includes means for reserving at least one time slot within said 150 bits per

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units specified by digital control signals on the control channel, said method comprising the steps of:

(1) operating a first radio unit on a first working channel in response to digital assignment signals passed over said control channel;

(2) operating a second radio unit on a second working channel in response to further digital assignment signals passed over said control channel;

(3) passing a stream of digital signals over said first working channel to said first radio unit indicating said second working channel assignment; and

(4) operating said first radio unit on said second working channel in response to said stream of signals transmitted by said transmitting step (3).

4,939,747

DIGITAL COMMUNICATION SYSTEM WITH ADDRESSABLE REPEATERS AND DEVICES FOR FAULT ISOLATION

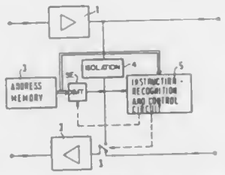
Klemens Adler, Eberdingen, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed Nov. 5, 1987, Ser. No. 117,595

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638147

Int. Cl.[5] H04B *3/36*

U.S. Cl. 375—3.1 **8 Claims**



1. A digital two-way communication system comprising two terminals and a plurality of repeaters connecting said terminals, wherein

at least one of said terminals comprises a fault finder, each said repeater comprises

a read-only memory for providing a digital repeater address which is an equipment-specific number which distinguishes its associated repeater from other repeaters of the same series of the same design,

a remotely controllable changeover facility for loop closure,

a transmitter for transmitting said address and an instruction-recognition and control circuit connected to said loop changeover facility and to said transmitter and responsive to control signals from said fault finder for closing the loop to said at least one terminal and transmitting said address, and

said fault finder comprises

a fault finder memory and

fault finder control means for, in a sequence corresponding to the physical order of the repeaters, activating the repeater's changeover facility,

interrogating the repeater for its address and

storing said address, together with an indication of said physical order, in said fault-finder memory.

4,939,748

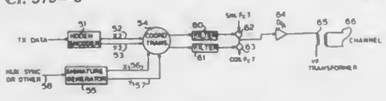
UNOBTRUSIVE SIGNATURE FOR MODULATED SIGNALS

William L. Betts, St. Petersburg, and Kenneth Matinez, Pinellas Park, both of Fla., assignors to Paradyne Corporation

Filed Aug. 7, 1987, Ser. No. 83,696

Int. Cl.[5] H04L *5/16, 7/04*

U.S. Cl. 375—8 **4 Claims**



4. A system for continuously verifying synchronization while transmitting data signals over a communication channel comprising:

a transmitter modem comprising means for encoding said data signals into first real and imaginary components, and a first signature generator for mixing a first unobtrusive signature signal on said encoded data signals, said first unobtrusive signature signal including second real and imaginary components; and

a receiver modem comprising means for receiving said encoded data signals from said transmitter modem, means for transforming said encoded data signals into third real and imaginary components, a second signature generator for mixing a second unobtrusive signature signal on said encoded data signals, said second unobtrusive signature signal including fourth real and imaginary components, said first and second unobtrusive signature signals being of substantially identical waveform and phase so that said first and second unobtrusive signature signals cancel each other if the transmitter and receiver modems are in synchronism;

wherein said first signature generator and said second signature generator are physically external to other elements of said transmitter modem, said receiver modem, said transmitter modem's and said receiver modem's other elements respectively having an external port which said first and second signature generators may be connected whereby a user of said system can substitute his/her signature generators for security purposes.

4,939,749

DIFFERENTIAL ENCODER WITH SELF-ADAPTIVE PREDICTIVE FILTER AND A DECODER SUITABLE FOR USE IN CONNECTION WITH SUCH AN ENCODER

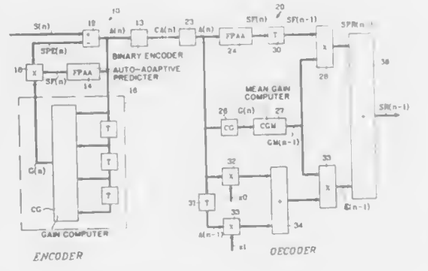
Frédéric Zurcher, Lannion, France, assignor to Etat Francais représenté par le Ministre des Postes Télécommunications et de l'Espace (Centre National d'Etudes des Télécommunications), Issy les Moulineaux, France

Filed Mar. 14, 1989, Ser. No. 322,952

Claims priority, application France, Mar. 14, 1988, 88 03288

Int. Cl.[5] H04B *14/06*

U.S. Cl. 375—30 **11 Claims**



1. A differential encoder comprising:

a prediction loop circuit,

a comparator having an additive input and a subtractive input and generating on an output an error signal and receiving, on said additive input, successive samples of an input signal to be encoded and, on said subtractive input, an estimated signal delivered by said prediction loop circuit which receives the error signal from the output of the comparator,

said prediction loop circuit comprising a self-adaptive predictive filter receiving said error signal from the output of said comparator, a gain control circuit, and a multiplier which receives that output of the predictive filter and of the gain control circuit and generates an output which is connected to said subtractive input of said comparator, wherein said self-adaptive predictive filter comprises a plurality of parallel channels assigned to different mutually adjacent spectral bands, and a common summer, each channel comprising an input pass-band filter, a quadratic detector fed by said pass-band filter, a multiplier, and a peak detector whose input is connected to the quadratic detector and whose output is applied to said multiplier which also receives the output signal from the respective pass-band filter, the outputs of the multipliers of each channel connected to and driving said common summer.

4,939,750

ADAPTIVE SIGNAL DISCRIMINATION CIRCUIT AND A METHOD FOR DISCRIMINATING HIGH AND LOW LEVEL OF DATA SIGNALS

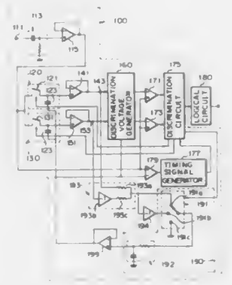
Seizo Nakamura, Tokyo, Japan, assignor to Oki Electric Industry, Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 323,382

Claims priority, application Japan, Mar. 17, 1988, 63-61915; Mar. 17, 1988, 63-61914

Int. Cl.[5] H04L *25/06*

U.S. Cl. 375—76 **40 Claims**



1. An adaptive signal discrimination circuit for discriminating high and low levels of data signals, comprising:

means for generating a reference signal having a reference level;

means for receiving data signals having values which vary between high and low levels;

a first sampling means for sampling the data signals at first discrete times and outputting a first sample signal having a level indicative of the level of the data signals at the first discrete time;

a second means for sampling the data signals at second discrete times and outputting a second sample signal having a level indicative of the level of the data signals at the second discrete time;

means for generating a discrimination signal having a discrimination level which varies in proportion to the reference level;

means for generating timing signals;

means, responsive to each of the timing signals for discriminating between the high and low levels of the data signals in relation to the discrimination level of the discrimination signal, the first discrete times substantially coinciding with the times of detecting the high level, the second discrete time substantially coinciding with the times of detecting the low level; and

means for generating an average signal having a value indicative of an average of an absolute value of the level of the first sample signal and that of the second sample signal, and for generating an inversion signal having a value indicative of the inversion of the value of the average signal;

the reference signal generating means including a low-pass filter having input and output terminals and further including means for selectively applying one of the average signal and the inversion signal to said low-pass filter, said applying means applying the average signal to the input terminal of said low-pass filter when said discriminating means detects the low level of the data signal, said applying means applying the inversion signal to the input terminal of said low-pass filter when said discriminating means detects the high level of the data signal, the reference signal being generated from the output terminal of the said low-pass filter, whereby the discrimination signal adapts to variations of the data signals.

4,939,751

PHASE SIGNAL FILTERING APPARATUS UTILIZING ESTIMATED PHASE SIGNAL

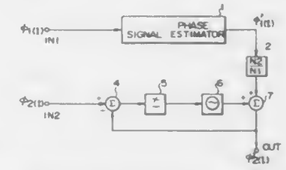
Masahiro Kuroda, Atsugi, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Filed Oct. 13, 1988, Ser. No. 257,326

Claims priority, application Japan, Oct. 23, 1987, 62-267416; Jul. 1, 1988, 63-165286

Int. Cl.[5] H04L *27/16*

U.S. Cl. 375—80 **12 Claims**



1. A phase signal filtering apparatus, comprising:

phase signal estimation means for receiving a first phase signal having a first frequency and for generating a first filtered signal phase-locked with the first phase signal as an estimated phase signal;

phase locked loop means for receiving a second phase signal having a second frequency which corresponds to a predetermined multiple of the first frequency of the first phase signal, and for outputting a second filtered signal phase-locked with the second phase signal as a desired phase signal, said phase lock means comprising:

phase comparator means for receiving the second phase signal and the desired phase signal, and for generating a phase difference signal;

filtering means for low-pass filtering the phase difference signal from said phase comparator means;

signal generating means for generating a signal having a predetermined frequency in accordance with the output from said filtering means; and

phase adder means for adding the signal having the predetermined frequency from said signal generating means and the estimated phase signal from said phase signal estimation means, and for outputting the desired phase signal; and

means connected to at least one of the estimated phase signal, the second phase signal, and the desired phase signal, for controlling said phase locked loop means to have substantially the same low-pass filtering response characteristic as the first frequency of the first phase signal;

wherein a ratio of the first and the second frequencies is a ratio of integers N_1 and N_2; and

said means for controlling includes frequency divider /multiplier means connected to an output section of said phase signal estimation means for causing said phase signal estimation means to output the estimated phase signal having a frequency N_2/N_1 times the frequency of the first filtered signal.

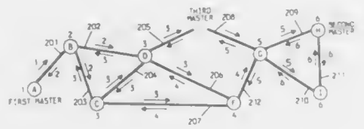
VOL 1116 ISS 1 JL 3 1990 UMI

4,939,752

DISTRIBUTED TIMING RECOVERY FOR A DISTRIBUTED COMMUNICATION SYSTEM

Alan J. Literati; Edward J. Mooney, both of Westminster, and Joseph S. Oliner, Denver, all of Colo., assignors to AT&T Company, Murray Hill, N.J.

Filed May 31, 1989, Ser. No. 359,314
Int. Cl.[5] H04L 07/10
U.S. Cl. 375—107 23 Claims



4. An apparatus for controlling the timing of each node in a multinode system wherein a clock source in one of a plurality of prioritized master nodes provides a reference clock signal for all other nodes in said system and the higher priority node of said plurality of prioritized master nodes has the lower priority number with the highest priority node having the lowest priority number, comprising:

means for interconnecting each of said nodes to one or more other ones of said nodes via links;

means for transmitting clock signals between each of said nodes directly interconnected by any one of said links;

means for activating one of said plurality of prioritized master nodes to provide reference clock signals for controlling the timing of said multinode system;

means for including a timing priority number (TPN) of M*N+i in the clock signals sent from said one of said plurality of prioritized master nodes to all of said nodes directly connected to said one of said plurality of prioritized master nodes by any one of said links where i is predefined number and M is the priority number of said one of said plurality of prioritized master nodes and N is equal to the number of links in the shortest path between the most distant nodes where distance is measured by counting the number of links between nodes;

means for operating all others of said nodes, other than said one of said plurality of prioritized master nodes, that receives a TPN so that all others of said nodes alter the received TPN by adding the number i to the received TPN and transmitting the altered TPN with clock signals to each node to which it is directly connected by any one of said links;

means for operating each node that receives more than a single TPN, other than said one of said plurality of prioritized master nodes, to select one of said received TPNs as a preferred received TPN;

means for controlling the timing of each node, other than said one of said plurality of prioritized master nodes, from clock signals transmitted over the link that applies the preferred TPN to said controlled node; and

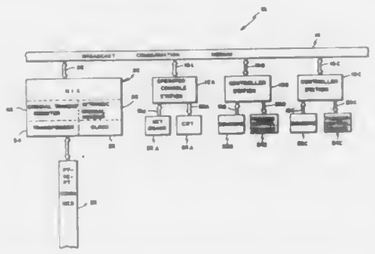
means for controlling the timing of said one of said plurality of prioritized master nodes from clock signals transmitted over a connected link upon the TPN received from said connected link being less than M*N thereby allowing another one of said plurality of prioritized master nodes having higher priority to control the timing of said system upon said other one of said plurality of prioritized master nodes becoming operational.

4,939,753

TIME SYNCHRONIZATION OF CONTROL NETWORKS

Gene H. Olson, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Feb. 24, 1989, Ser. No. 314,902
Int. Cl.[5] H04L 7/04
U.S. Cl. 375—107 20 Claims



15. An apparatus for providing time in a computer network through a preferred communications path, the apparatus comprising:

ordinal memory means for containing information comprising an ordinal containing priority information;

means for keeping time;

means for transmitting data on the computer network, the data including the ordinal and a time value;

means for receiving ordinal and time value data from the computer network, the ordinal data containing priority information; and

means for storing the received ordinal data in the ordinal memory means if the received ordinal data has a higher priority than the ordinal stored in the ordinal memory means which indicates that received time value data is preferred as a source of the time value.

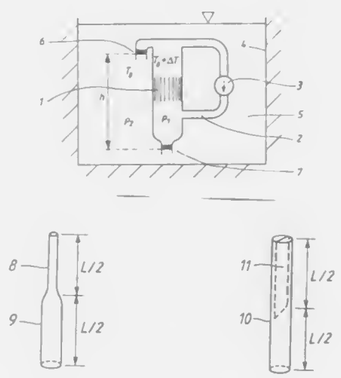
4,939,754

DEVICE FOR LIMITATION OF A FLOW THROUGH A DENSITY LOCK FOR A NUCLEAR REACTOR

Hans Ekander, and Rikard Gebart, both of Västerås, Sweden, assignors to ABB Atom AB, Sweden

Filed Sep. 30, 1988, Ser. No. 251,885
Claims priority, application Sweden, Oct. 6, 1987, 8703849
Int. Cl.[5] G21C 9/02
U.S. Cl. 376—282 3 Claims

1. A device for limiting flow through an upper or lower density lock of a nuclear reactor comprising a reactor core cooled by a primary cooling system in communication with a secondary cooling system at the upper and lower density locks, the device comprising:



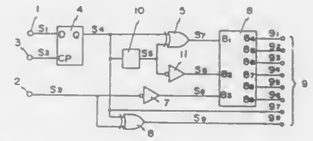
a honeycomb structure comprising a bundle of tube pieces arranged in parallel, each tube piece comprising two tube parts of equal length and unequal area.

4,939,756

TWO-PHASE ENCODER CIRCUIT

Gohji Uchikoshi, Higashimurayama, Japan, assignor to Nakamichi Corporation, Kodaira, Japan

Filed Oct. 21, 1988, Ser. No. 260,879
Claims priority, application Japan, Oct. 22, 1987, 62-161886[U]
Int. Cl.[5] H03K 21/02
U.S. Cl. 377—45 3 Claims



4,939,755

TIMER/COUNTER USING A REGISTER BLOCK

Ikuko Akita, and Mineo Akashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,515
Claims priority, application Japan, Nov. 12, 1986, 61-270144
Int. Cl.[5] G06F 7/02; H03K 21/38
U.S. Cl. 377—39 9 Claims

1. A timer/counter comprising:

an operation controller coupled to receive control information for generating control signals for a selected operation;

a register block coupled to a bus and including a plurality of count registers, a corresponding number of timer registers storing various set values, and a read/write buffer circuit controlled by said operation controller to sequentially read data from said count registers onto said bus, one count register at a time, and then write data from said bus into the same count register before data is read from a next count register;

an incrementer coupled to said bus to function commonly for all said count registers of said register block, said incrementer being controlled by said operation controller to increment data from said bus and to return incremented data to said bus, such that said count registers are sequentially read out one by one to output data held in a respective count register onto said bus so as to cause data outputted onto said bus to be incremented by said incrementer, and incremented data to be returned onto said bus, whereby a count register from which data has been read out is written with incremented data, with a result that said count registers are sequentially incremented by said incrementer one by one;

a coincidence flag coupled to said register block and set when incremented data in a count register of said register block has coincided with a value stored in a corresponding timer register; and

a clear controller coupled to said coincidence flag so as to clear a count register having a count value in coincidence with said value stored in said corresponding timer register.

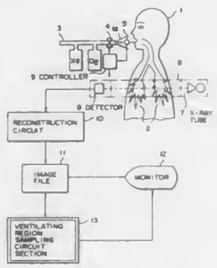
1. A two-phase encoder circuit for detecting the status of an article moving in first or second directions in accordance with first and second detecting signals which are input having a phase offset of 90 degrees and having repeated status of "H" and "L" according to either direction in which said article moves, the two-phase encoder circuit comprising signal receiving means connected to receive the first detecting signal in synchronization with a clock signal and to sequentially output a received signal, delay means connected to input at least the received signal and to output a delay signal more delayed than the received signal by a predetermined time less than one period of the clock signal, pulse signal output means connected to input at least the received signal and to output pulses in synchronization with an inversion of status of the received signal, and an up and down counter connected to input the pulse signal, either of the delay signal and a signal indicating a status thereof and either of the second detecting signal and a signal indicating a status thereof, respectively, and to count the number of pulses of the pulse signal while up-counting or down-counting it according to the status of the delay signal with the counting operation being made when the second detecting signal has one status of "H" and "L".

4,939,757

APPARATUS FOR DIAGNOSING PULMONARY VENTILATION FUNCTION

Kyojiro Nambu, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 33,629, Apr. 3, 1987, abandoned. This application May 2, 1989, Ser. No. 348,141
Claims priority, application Japan, Apr. 10, 1986, 61-83333
Int. Cl.[5] A61B 6/00
U.S. Cl. 378—8 10 Claims



1. An apparatus for diagnosing the pulmonary ventilation function of the lungs of the patient, comprising:

a. detecting means for detecting the breathing cycle of said patient;

b. contrast-medium supply means for supplying, in response to said detecting means, a gaseous contrast medium to said patient for inspiration into said lungs;

c. scanning means for CT-scanning said patient during one breathing cycle in response to said detecting means to obtain tomographic image data representing a plurality of images of said lungs;

d. storage means for storing said image data;

e. means for dectecting CT values of the stored image data for at least two of said images and comparing said CT values with at least one predetermined CT value which corresponds to the CT value of image data of a blood vessel to identify image data which corresponds to blood vessels;

f. means for distinguishing said image data with CT values which exceed said at least one predetermined CT value from the rest of said image data to thereby distinguish said image data corresponding to blood vessels; and

g. means for displaying at least one tomographic image from said image data, together with an indication of said areas of said lungs which correspond to said blood vessels.

4,939,758

APPARATUS FOR THE GENERATION OF TOMOGRAPHIC X-RAY IMAGES

Kurt Nowak, Zemendorf, Austria, assignor to Art Bickford & Co., Weiner Neustadt, Austria

PCT No. PCT/AT87/00004, § 371 Date Jul. 27, 1988, § 102(e) Date Jul. 27, 1988, PCT Pub. No. WO87/04830, PCT Pub. Date Aug. 13, 1987
PCT Filed Sep. 29, 1987, Ser. No. 243,554
Claims priority, application Austria, Jan. 30, 1986, 227/86
Int. Cl.[5] H05G 1/64
U.S. Cl. 378—22 12 Claims

1. An apparatus for obtaining tomographic X-ray images having improved contrast properties including:

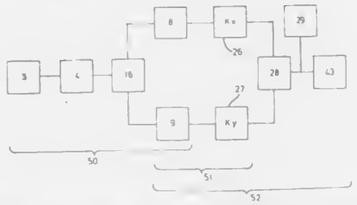
an X-ray source for passing radiation through an element;

a receiver for receiving the radiation of the X-ray source after the radiation has passed through the element;

mechanical means for producing tomographic relative movement between the receiver and the X-ray source during radiation;

an image converter for produceng electrical image signals of original corresponding element-by-element to the X-radiation received by the receiver;

an electronic circuit for conducting said electrical image signals to an image display device and for statistical calculation of contrast comparisons, said electronic circuit including an analyzing circuit for contrast comparison repeated over a plurality of original images between neighboring image elements and for determining the probability of occurence of particular signs of contrasts between neighboring image elements using the results of the statistical calculation;



a transformation circuit for varying the original image singals in dependence on the signals obtained from analyzing circuit and for selecting pairs of image elements for further contrast increase for which pairs the signs of the contrasts correspond to the signs of contrast of maximum probability; and

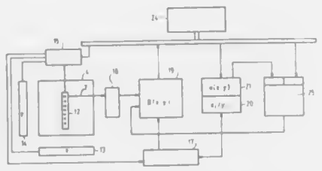
the output of the transformation circuit being connected to the image display device.

4,939,759

METHOD OF PRODUCING AN X-RAY IMAGE BY MEANS OF A PHOTOCONDUCTOR, AND DEVICE FOR PERFORMING THE METHOD

Stephan G. Rupp, Stolberg, and Ulrich Schiebel, Aachen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1989, Ser. No. 347,552
Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817027
Int. Cl.[5] B41M 5/00
U.S. Cl. 378—32 3 Claims



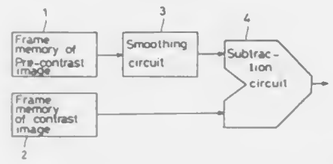
3. A device comprising an X-ray source, a photoconductor surface which is positioned to be exposed by X-rays from the X-ray source, a charging device for charging the photoconductor, an electrometer device for measuring the charge density on the surface of the photoconductor and for forming image values as a function of the charge density, and a first memory for storing the image values of an X-ray image, said device further comprising: a further memory for storing the position of fault locations and the variation of resultant artefacts in a zone surrounding said fault locations, an arithmetic unit for calculating the variation of the resultant artefacts in the X-ray image from the stored variation (a(x, y)) and from the amplitude ($A(x_i, y_i)$) of an artefact in the X-ray image, and means for correcting the image values (B(x, y)) within the surrounding zone based upon said calculated variation of the resultant artefacts.

4,939,760

APPARATUS FOR PROCESSING AN X-RAY IMAGE

Masumi Kawai, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 30, 1988, Ser. No. 292,073
Claims priority, application Japan, Feb. 29, 1988, 63-48209
Int. Cl.[5] H05G 1/64
U.S. Cl. 378—99 1 Claim



1. An apparatus for processing an X-ray image said apparatus comprising:

memory means for storing an X-ray image obtained before the injection of a contrast medium;

a subtraction means;

smoothing means responsive to said memory means for smoothing said X-ray image obtained before the injection of a contrast medium, and applying it to said subtraction means; and,

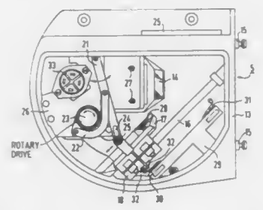
means for applying said X-ray image obtained after the injection of a contrast medium to said subtraction means simultaneously with the application of said smoothed X-ray image thereto.

4,939,761

LIGHT DISTRIBUTOR FOR AN X-RAY DIAGNOSTICS INSTALLATION

Arthur Gall, Langensendelbach, and Karl Weiss, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 7, 1988, Ser. No. 216,201
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1987, 8710425
Int. Cl.[5] H05G 1/64
U.S. Cl. 378—99 7 Claims



1. In an x-ray diagnostics installation having an x-ray image intensifier with a beam path for light forming an output image of said x-ray image intensifier, and a plurality of pick-up components for said light, the improvement of a light distributor comprising:

a housing into which light comprises said output image of said x-ray image intensifier on said x-ray image intensifier beam path is admitted in an incoming direction;

a first mirror disposed in said housing in said x-ray image intensifier beam path which deflects said light in a direction substantially perpendicular to said incoming direction onto a first of said plurality of pick-up components;

a second mirror in said housing moveable to a position to deflect light from said beam path of said x-ray image intensifier, after deflection by said first mirror, substantially perpendicularly to said incoming direction and substantially perpendicularly to the deflection of said light by said first mirror onto a second of said plurality of said image pick-up components; and

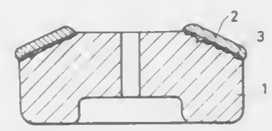
means for laterally moving said second mirror into a beam path between said first mirror and said first of said plurality of said pick-up components.

4,939,762

TARGET FOR X-RAY TUBE AS WELL AS METHOD OF MANUFACTURING THE SAME, AND X-RAY TUBE

Noboru Baba, Hitachiohta; Yasaku Nakagawa, Hitachi; Masatake Fukushima, Katsuta; Masateru Suwa, Naka, and Ichiro Inamura, Mobara, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

PCT No. PCT/JP88/00289, § 371 Date Nov. 15, 1988, § 102(e) Date Nov. 15, 1988, PCT Pub. No. WO88/07260, PCT Pub. Date Sep. 22, 1988
PCT Filed Mar. 18, 1988, Ser. No. 275,534
Claims priority, application Japan, Mar. 18, 1987, 62-60996
Int. Cl.[5] H01J 35/10
U.S. Cl. 378—144 26 Claims



1. In a target for an X-ray tube having an X-ray generating metal coating layer at that face of a graphite body which is irradiated with an electron beam; a target for an X-ray tube characterized in that the X-ray generating metal coating layer contains tungsten and has a thickness of at least 20 μm, that a metal interlayer which is non-reactive with graphite is comprised at a boundary between said graphite body and said coating layer, and that said interlayer has a part which percolates into said graphite body over a percolation depth of at least 10 μm.

4,939,763

METHOD FOR PREPARING DIAMOND X-RAY TRANSMISSIVE ELEMENTS

John M. Pinneo, Woodside, and Carey Bailey, Livermore, both of Calif., assignors to Crystallume, Menlo Park, Calif.

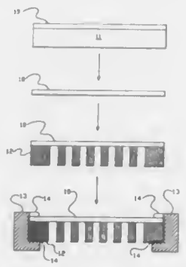
Filed Oct. 3, 1988, Ser. No. 252,804
Int. Cl.[5] G21K 1/00
U.S. Cl. 378—161 22 Claims

2. A method for forming an X-ray transmissive synthetic diamond window comprising the steps of:

depositing a diamond film upon a surface of a substrate for a period of time sufficient to obtain a film of preselected thickness;

masking selected areas on the opposite surface of said sub-

strate with masking material resistant to chemical attack by a selected substrate-etching agent;



applying said substrate-etching agent to said opposite surface to remove said substrate in unmasked areas, thereby exposing said diamond film in said unmasked areas.

4,939,764

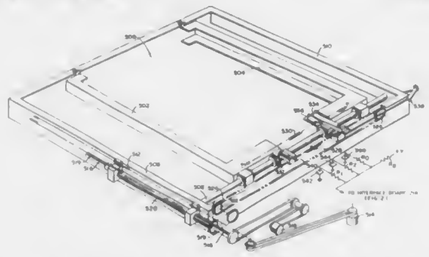
SPOT FILM APPARATUS AND METHOD OF OPERATING SAME

Mark A. Markos, Schiller Park, Ill., assignor to Fischer Imaging Corporation, Denver, Colo.

Filed Nov. 30, 1987, Ser. No. 126,544

Int. Cl.[5] G03B *42/02*

U.S. Cl. 378—181 **2 Claims**



1. In spot film apparatus wherein a rectangular cassette containing photographic film is to be loaded and then is to be moved from a known initial position along orthogonally disposed axes, an improved carriage assembly for the cassette, such carriage assembly comprising:

(a) a pair of opposing holding arms shaped to conform substantially with the sides of the cassette;

(b) means for mounting each one of the pair of opposing holding arms on a shaft parallel to a first one of the orthogonal axes; and

(c) means for selectively moving a first one of the pair of opposing holding arms along the shaft while maintaining the position of the second one of the pair of opposing holding arms or moving both of the holding arms simultaneously along the shaft, said moving means comprising,

a continuous chain drive disposed substantially parallel to the shaft, such drive supporting a pawl-like member projecting therefrom;

a helical spring having a first end attached to the first one of the opposing holding arms and a second end attached to the second one of the opposing holding arms; and

means for actuating the continuous chain drive to move the pawl-like member into contact with the mounting means of the first one of the opposing holding members thereby to move, against a restoring force engendered by the helical spring, only the first one of the opposing arms.

4,939,765

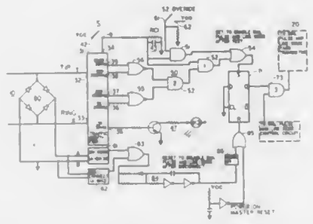
INTERLOCK CIRCUIT FOR PREVENTING CORRUPTION OF TELEPHONE LINE SIGNALS

Dean L. Benjamin, Ventura, and Wayne K. Wong, Camarillo, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 344,401, Apr. 28, 1989, abandoned. This application Nov. 24, 1989, Ser. No. 440,830

Int. Cl.[5] H04M *1/24, 3/22*

U.S. Cl. 379—29 **33 Claims**



1. An interface circuit for controllably coupling a telephone line to line test equipment comprising:

first means, to which a telephone line is to be coupled, for controllably monitoring said line for the presence of communication signals on said line;

second means, coupled to said first means, for causing said first means to monitor said line for the presence of communication signals on said line and, in the absence thereof, generating an output signal in response to which said line test equipment may cause said line to be seized.

4,939,766

RADIO TELEPHONE SYSTEM

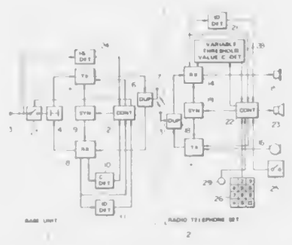
Yuji Umemoto, Hino, and Isao Sasaki, Hachioji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 8, 1988, Ser. No. 216,688

Claims priority, application Japan, Jul. 10, 1987, 62-173323

Int. Cl.[5] H01Q *7/04*

U.S. Cl. 379—58 **29 Claims**



1. A radio telephone system comprising:

base unit means connected to a wire telephone line;

telephone set means having dial means, transmitter means and receiver means; and

radio control means for controlling interconnection between said base unit means and said telephone set means through a radio line, said radio control means comprising:

detection means for detecting a received intensity of an electric field received through said radio line by comparing an actually received electric field intensity with a selected one a plurality of set threshold values for the field intensity;

control circuit means for maintaining an interconnection mode through said radio line when said detection means detects that said received electric field intensity is larger than said selected threshold value; and

an operating member for selecting an arbitrary one of said plurality of set threshold values according to an arbitrary manipulation by an operator;

wherein said detection means, said control circuit means and said operating member are disposed in said radio control means of said telephone system, said radio control means being located in said telephone set means; and

wherein said set threshold values of said detection means include a first threshold value corresponding to a first value of said received electric field intensity and a second threshold value corresponding to a second value smaller than said first value, and said detection means selects said first threshold value when said operating member is not operated and said second threshold value when said operating member is operated.

4,939,767

SYSTEM AND METHOD FOR TRANSMITTING IMAGE DATA ON A TELEPHONE NETWORK OR EQUIVALENT

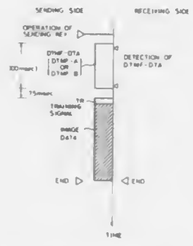
Yoshinori Saito; Hiroyuki Hayasaki; Hisashi Matsuyama, and Hisaharu Nakashima, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 17, 1988, Ser. No. 194,818

Claims priority, application Japan, May 20, 1987, 62-123567; Aug. 7, 1987, 62-198434; Nov. 19, 1987, 62-292402; Feb. 4, 1988, 63-24264

Int. Cl.[5] H04M *11/00;* H04N *7/14*

U.S. Cl. 379—53 **34 Claims**



1. A method for transmitting image data on a telephone network, comprising the steps of:

(a) establishing a telephone circuit between apparatuses of a sending party and a receiving party through said telephone network;

(b) sending the image data from the apparatus of the sending party to the apparatus of the receiving party regardless of a presence and regardless of an absence of a response from the apparatus of the receiving party to the apparatus of the sending party after sending a tone signal having a specified frequency for a predetermined time period in response to an image data sending command; and

(c) receiving in the apparatus of the receiving party the image data being sent from the apparatus of the sending party only when the specified tone signal is continuously received for the predetermined time period.

4,939,768

CAR TELEPHONE EQUIPMENT HAVING AUTOMATIC CALLING FUNCTION

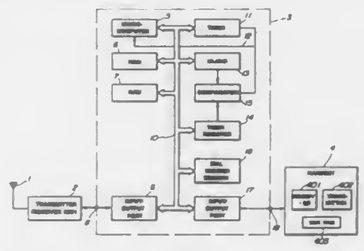
Tsutomu Inabe, Hachioji, and Kuniyoshi Marui, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1988, Ser. No. 245,256

Claims priority, application Japan, Sep. 18, 1987, 62-234432

Int. Cl.[5] H04M *1/65*

U.S. Cl. 379—58 **11 Claims**



1. A car telephone equipment installed on an automobile to be coupled with a base station disposed at a predetermined location through a radio communication circuit, said equipment comprising:

voice input means for inputting a telephone number of a destination party and a time period after passage of which a call is initiated;

voice recognizing means for recognizing the telephone number and time period inputted by the voice input means;

timer means;

means for setting, at the timer means, the time period recognized by the voiced recognizing means;

means for detecting a time-out state of said timer means; and

automatic calling means for establishing said radio communication circuit between said base station and the equipment in response to a detection output of said detecting means and for performing an automatic calling operation using said destination party telephone number recognized by the voice recognizing means.

4,939,769

CORDLESS TELEPHONE SYSTEM

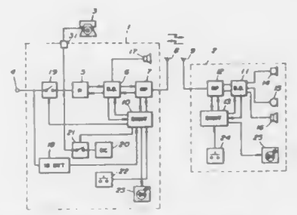
Masayuki Sakanishi, Tokyo; Koichi Ito, Hino, and Isao Sasaki, Hachioji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 8, 1988, Ser. No. 216,685

Claims priority, application Japan, Jul. 10, 1987, 62-173325

Int. Cl.[5] H04Q *7/04*

U.S. Cl. 379—61 **13 Claims**



1. A cordless telephone system comprising:

a wireless telephone set;

a connection unit connected to a wire telephone circuit for

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performing interconnection control between a wire telephone line and said wireless telephone set;

a wire telephone set connected directly to said connection unit;

extension-communication request generating means for generating an extension communication request;

a DC power source;

disconnecting means for disconnecting said wire telephone circuit from said connection unit in response to said extension communication request;

power supply means for supplying power from said DC power source to said connection unit in response to said extension communication request;

inhibiting means for selectively inhibiting operation of either one of said wireless and wire telephone sets; and

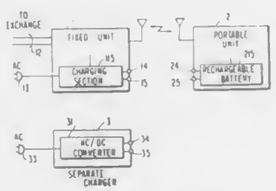
means for establishing an extension communication path between said wire and wireless telephone sets through said connection unit in response to said extension communication request.

4,939,770

CORDLESS TELEPHONE WITH BATTERY SAVING FUNCTION

Masayuki Makino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,145
Claims priority, application Japan, Jul. 16, 1987, 62-178285
Int. Cl.[5] H04Q *7/04*
U.S. Cl. 379—61 26 Claims



1. In a cordless telephone including a fixed unit and a portable unit which are communicatable with each other over a radio link,

said portable unit comprising:

rechargeable battery means; and

battery saving means responsive to a control signal for interrupting power supply to predetermined sections of said portable unit;

said fixed unit comprising:

charging means for converting an AC voltage into a DC voltage to produce a charging voltage;

detecting means for, when said battery means of said portable unit is charged by the charging voltage, detecting that said battery means is being charged and for outputting a detect signal; and

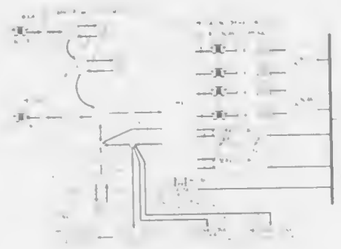
supplying means responsive to said detect signal for outputting said control signal and for supplying said control signal to said portable unit together with said charging voltage.

4,939,771

ATTENDANT-CONTROLLED CALL MESSAGE DELIVERY SYSTEM AND METHOD

Percy B. Brown, East Brunswick; Nga V. Chau, Middletown; A. R. Gore, Eatontown; Tung-Hai Hsiao, Freehold; Georg K. Karawas, West Long Branch; Richard E. LeCronier, New Monmouth; Dawn R. Parrott, Neptune; Usha Rao, Piscataway; Thomas L. Russell, Jr., Colts Neck, and Wen-Ping Ying, East Brunswick, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 20, 1989, Ser. No. 410,556
Int. Cl.[5] H04M *3/50*
U.S. Cl. 379—67 20 Claims



1. A method of operating a call message delivery system for use with a communication network for serving stations connectable to said network, the method comprising the steps of

storing a call message for delivery at a selected time to a specified party at a called station;

alerting a system attendant of a call message delivery attempt to the called station at the selected time;

announcing, when the call is answered at said called station, the existence of said call message for said specified party; and

in response to the attendant determining that the specified party has answered at the called station, the attendant enabling the system to complete the call message delivery by causing the call message to be outputted to the specified party.

4,939,772

SWITCHING CONTROL APPARATUS FOR A COMMUNICATION TERMINAL HAVING A VOICE TERMINAL DEVICE AND A NON-VOICE TERMINAL DEVICE

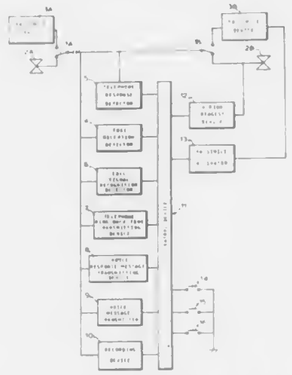
Tadashi Goto, Nagoya, Japan, assignor to Let's Corporation, Nagoya, Japan

Filed Apr. 10, 1989, Ser. No. 335,446
Claims priority, application Japan, Apr. 12, 1988, 63-89552
Int. Cl.[5] H04M *11/00, 1/64*
U.S. Cl. 379—96 6 Claims

1. A switching control apparatus for a communication terminal, connected to a communication circuit, having a voice terminal device and a non-voice terminal device, which maintains a connection with said communication circuit upon reception of a calling signal by said communication terminal, wherein said apparatus comprises:

(a) means for switching the connection with said communication circuit between said voice terminal device and said non-voice terminal device; and

(b) a call signal recognition detector which detects an incoming signal and distinguishes the incoming signal between a voice signal and a non-voice terminal call signal, said call signal recognition detector counting an ON-time of the incoming signal within a specified frequency range within a predetermined unit time period immediately after detecting the incoming signal, determining the incoming signal to be a non-voice terminal call signal if the counted ON-time is less than a specified time duration percentage against the predetermined unit time period, and determining the incoming signal to be a voice signal if the counted ON-time is greater than said specified time duration percentage against the predetermined unit time period.

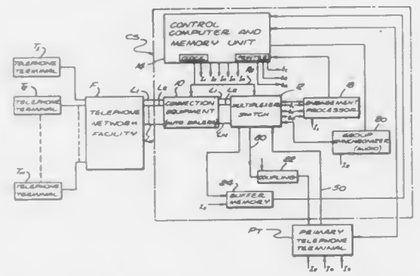


4,939,773

MULTIPLE PARTY TELEPHONE CONTROL SYSTEM

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources, Inc., Omaha, Nebr.

Filed Jun. 26, 1989, Ser. No. 371,188
Int. Cl.[5] H04M *3/56, 11/06*
U.S. Cl. 379—204 16 Claims



1. A multiple-party control system for use with a telephone facility to selectively interface a coupled primary terminal with a multiplicity of remote coupled terminals through said telephone facility, said system comprising:

preliminary screening structure for confirming calls at select terminals and indicating an audio status to persons at connected terminals;

gang holding structure for collectively communicating with persons at said select terminals collectively as a group; and

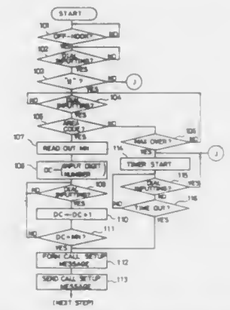
controlled switch means for coupling individual terminals to said preliminary screening structure during an engagement phase of operation, subsequently connecting said select terminals to said gang holding structure during a pending phase of operation and thereafter unilaterally connecting said gang holding structure to said primary terminal during an interface phase of operation.

4,939,774

METHOD FOR CONTROLLING A DIGITAL TELEPHONE SET AND A TELEPHONE SET BASED ON THE SAME

Mitsuji Sawada, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 7, 1989, Ser. No. 376,996
Claims priority, application Japan, Jul. 11, 1988, 63-170808
Int. Cl.[5] H04M *1/26*
U.S. Cl. 379—353 14 Claims



1. A method for controlling a digital telephone set coupled to an integrated services digital network, comprising the steps of:

determining whether a telephone number of a destination terminal which is given by sequentially inputting digits forming said destination telephone number, includes an area code;

identifying a total number of digits forming a telephone number related to said area code by searching a table in which a total number of digits forming a telephone number related to each of different area codes is defined;

outputting a first message requesting for setting up a call to said destination terminal when the number of digits forming said destination telephone number which has been input up to now becomes equal to said total number of digits forming a telephone number related to said area code included in said destination telephone number, said first message being formed based on said destination telephone number which has been input up to now; and

outputting a second message requesting for setting up a call to said destination terminal when it is determined that said destination telephone number does not include any area code and when the interval between consecutive digits included in said destination telephone number exceeds a predetermined interval, said second message being formed based on said destination telephone number which has been input up to now.

4,939,775

TELEPHONE RINGING DETECTOR

Kenneth A. Houck, Haverhill, Mass., and Dewayne A. Spires, Plaistow, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 13, 1988, Ser. No. 283,776
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—373 9 Claims

1. A ringing detector for indicating whether a valid ringing signal is present in an input signal (Δ TR) comprising:

magnitude comparator means (12) coupled to said input signal for producing a binary output signal (PK) indicative of whether the instantaneous magnitude of said input signal exceeds a predetermined magnitude (36, 38);

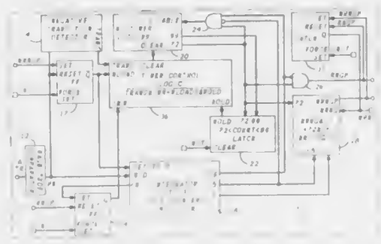
integrating means (18) connected to said magnitude compar-

ator means for integrating said magnitude comparator output signal to produce a time integral; and

integral comparison means (<16, 26, <5, 28) responsive to said integrating means for indicating the presence (RNGP) of a valid ringing signal when said time integral exceeds a first predetermined integral value (15);

Characterized In That

said ringing detector further comprises timing means (21, 22, 24, 36) connected to said integral comparison means for controlling the integrating time interval to distinguish valid ringing signals from other signals and noise;



said integrating means comprises an up-down counter (18) for accumulating periodic samples of said magnitude comparator binary output signal (PK), the accumulated sample count in said counter being indicative of said time integral; and

said integral comparison means comprises decoding means for providing binary counter output signals (<1, <5, <16) indicative of said accumulated count in said up-down counter and gating means (28, 26responsive to said counter output signals and said timing means for indicating the presence (RNGP) and absence (NRNGP) of a valid ringing signal.

4,939,776

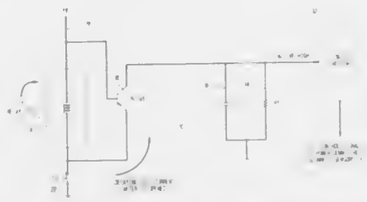
LOGIC SIGNAL CIRCUIT FOR A RELEASING RELAY

Bruce D. Bender, Phoenix, Ariz., assignor to Siemens Transmission Systems, Inc., Phoenix, Ariz.

Filed Sep. 20, 1988, Ser. No. 247,055

Int. Cl.[5] H04M *3/00*

U.S. Cl. 379—382 **11 Claims**



1. A circuit for reducing the inductive electrical surge of a releasing relay having switch contacts and a relay coil connected to a voltage source, and for generating a logic signal which is usable for controlling another circuit while said relay is being released comprising:

transistor circuit means coupled in parallel to said relay coil to dissipate coil energy stored in said relay coil when the voltage source across said relay coil is removed;

means, including proper selection of component values for said relay and said transistor circuit means, for bringing said transistor circuit means into saturation by a decaying coil current from said relay coil when it is released such that said transistor circuit means generates an output signal at a desired voltage level:

means for maintaining said generated output signal at said desired voltage level for a predetermined time period after said transistor circuit means comes out of saturation;

logic circuitry for providing a logic signal in response to input of a signal from said transistor circuit means; and

means for coupling said generated output signal to said logic circuitry for said predetermined time period, such that said generated output signal is active and provided to said logic circuitry while said relay coil is being released.

4,939,777

TERMINAL APPARATUS HAVING A FUNCTION FOR PREVENTING UNNECESSARY LINE CONNECTION

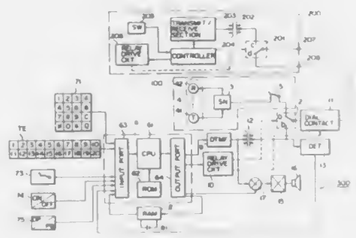
Tosho Oka, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1989, Ser. No. 323,929

Claims priority, application Japan, Mar. 16, 1988, 63-60255

Int. Cl.[5] H04M *1/00, 11/00*

U.S. Cl. 379—387 **9 Claims**



1. A terminal apparatus alternatively connected to a line with data terminal apparatus by first switching means, comprising:

a telephone set responsive to an operation for a call to generate a call signal;

an on-hook transmit circuit; and

second switching means for alternatively connecting the telephone set and on-hook transmit circuit to said line via the first switching means; wherein

said on-hook transmit circuit includes:

means, responsive to an on-hook transmit operation, for supplying a first switching control signal to the second switching means to connect the second switching means to an on-hook transmit circuit,

means, responsive to a dial signal transmit operation, for transmitting a dial signal to the line,

direct current closing means for maintaining the line in a connected condition with the second switching means switched to the on-hook transmit circuit,

line release detection means for generating a line release detection signal with the line released, and

control means, responsive to the line release detection signal, for supplying a second switching control signal to the second switching means to switch the second switching means from the on-hook transmit circuit to the telephone set.

4,939,778

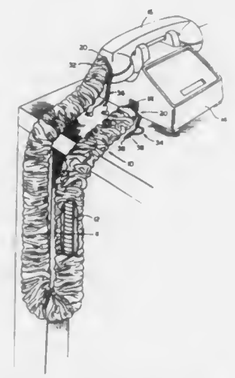
TELEPHONE CORD COVER

Anita A. Tomberlin, 305 W. Riverwood, Hopkinsville, Ky. 42240

Filed Jul. 14, 1988, Ser. No. 218,961

Int. Cl.[5] H04M *1/15*

U.S. Cl. 379—438 **10 Claims**



1. A telephone handset cord cover comprising:

an elongated tube having an inner diameter greater than a cross-sectional diameter of coils forming a coiled telephone handset cord and having a greater length than the coiled telephone handset cord in a relaxed condition for loosely surrounding the coiled telephone handset cord when the coiled cord is in either an extended or relaxed condition so as to prevent twisting and tangling of the coiled telephone handset cord, and

means at each end of said tube for securing each end of said tube to a respective end of the coiled telephone handset cord,

said tube being sufficiently flexible to gather together when the coiled cord is in the relaxed condition and movable to a less gathered condition when the coiled cord is in the extended condition.

4,939,779

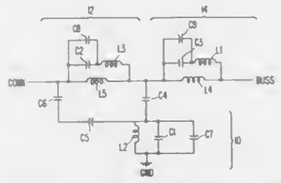
TEMPERATURE COMPENSATED TRAP FILTER

Bernard K. Hitchcock, 201 Alton Street, Syracuse, N.Y. 13215

Filed May 19, 1989, Ser. No. 354,113

Int. Cl.[5] H04K *3/00*

U.S. Cl. 380—7 **19 Claims**



1. A method for creating a wide range of capacitances and temperature compensating values in the production of a temperature stable television signal trap filter device for use in securing pay television systems, the method comprising the steps of:

(a) calculating the electrical parameter for passing a desired frequency band in said trap filter device using at least one parallel capacitor circuit in said trap filter device, said parallel capacitor circuit having a total capacitance and a total temperature compensting value:

(b) testing said electrical parameters of the trap filter device until said trap filter devices electrically operates properly; and

(c) compensating for temperature variations in the outdoor use of said trap filter device while continuing to pass the desired frequency band using at least two standard capacitors each having a temperature compensating value by:

i. placing a first one of said standard capacitors having a first standard temperature compensating value in a first branch of said parallel capacitor circuit,

ii. placing a second one of said standard capacitors having a second standard temperature compensating value in a second branch of said parallel capacitor circuit, and

iii. interpolating an exact desired total temperature compensating value while continuing to pass the desired frequency band in said filter device using said standard capacitors.

4,939,780

CATV CONVERTER

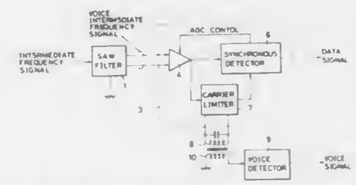
Katsuyuki Ohtsubo, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,264

Claims priority, application Japan, Aug. 18, 1987, 62-204841

Int. Cl.[5] H04N *7/16*

U.S. Cl. 380—10 **6 Claims**



1. A descrambler comprising:

a filter for extracting a voice intermediate frequency signal superposed with a data signal from the intermediate frequency signal,

a synchronous detector responsive to the extracted voice intermediate frequency signal for detecting the data signal,

a carrier limiter for tuning with a carrier of the voice intermediate frequency signal, to apply the carrier to the synchronous detector, and a voice detector for detecting the voice signal from an output of the carrier limiter.

4,939,781

DEVICE FOR ELIMINATING ABSOLUTE POLARITY INVERSION IN A HIGH-FIDELITY SOUND REPRODUCTION SYSTEM

Chuck LaMonica, 121 E. 24th St., New York, N.Y. 10010

Filed Nov. 14, 1988, Ser. No. 270,533

Int. Cl.[5] H03S *1/00*

U.S. Cl. 381—97 **15 Claims**

1. A device for eliminating Absolute Polarity inversion in a high-fidelity sound reproduction system, comprising:

a housing;

a coaxial input terminal comprising a first electrical input contact and a second electrical input contact both mounted to said housing;

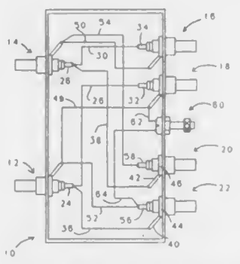
a first coaxial output terminal comprising a first electrical output contact and a second electrical output contact both mounted to said housing;

a second coaxial output terminal comprising a third electrical output contact and a fourth electrical output contact

VOL 1116 ISS 1 JL 3 1990 UMI

both mounted to said housing, said third electrical output contact and said fourth electrical output contact having a configuration relative to one another substantially identical to a relative configuration of said first electrical output contact and said second electrical output contact;

electrically conductive connection means for connecting said first electrical input contact to said first electrical output contact and said fourth electrical output contact



and for connecting said second electrical input contact to said second electrical output contact and said third electrical output contact; and

insulation means for insulating said first electrical input contact from said second electrical input contact, said first electrical output contact from said second electrical output contact and said third electrical output contact from said fourth electrical output contact.

4,939,782

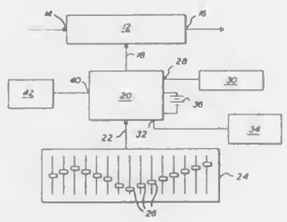
SELF-COMPENSATING EQUALIZER

Anthony A. Gambacurta, Jr., Rochester; Mitchell J. Milton, and Richard A. Neatrour, both of Webster, all of N.Y., assignors to Applied Research & Technology, Inc., Rochester, N.Y.

Filed Jun. 24, 1987, Ser. No. 65,966

Int. Cl.[5] H03G *5/00*

U.S. Cl. 381—103 **16 Claims**



1. An equalizer comprising:

a signal input;

a signal output;

graphic input means for setting a desired frequency response characteristic;

a plurality of controllable parametric frequency response determining elements connected between the signal input and the signal output;

control means connected to said graphic input means and said frequency response determining elements for supplying control signals to said frequency response elements to produce said desired response characteristic.

4,939,783

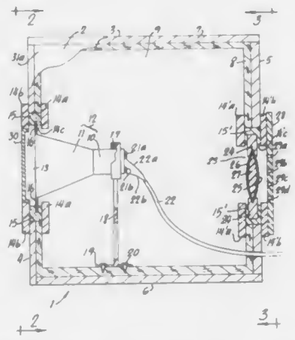
SUSPENDED SPEAKER SYSTEM

William S. Dunning, Hollow Rd., Clinton Corners, N.Y. 12514

Filed Jan. 30, 1989, Ser. No. 303,640

Int. Cl.[5] H04R *1/02*

U.S. Cl. 381—188 **17 Claims**



10. A speaker system comprising in combination: (a) a speaker unit integrally including a magnet and a diaphragm and a diaphragm support structure for mounting the diaphragm, and (b) a speaker cabinet having a mounting-port, the improvement comprising: (1) said mounting-port comprising a first inner peripheral portcircumscribing edge and a speaker support unit forming a first open-ended slot-space, said speaker support unit extending substantially continuously along and secured rigidly adjacent said inner peripheral edge; (2) first closed-cell foam mounted within and substantially throughout said first open-ended slot-space; and (3) said diaphragm support structure having a substantially continuous outer circumscribing edge, said outer circumscribing edge being mounted within and retainably supported by said first closed-cell foam such that said outer circumscribing edge and said first closed-cell foam are each free from rigid connection to said speaker cabinet and from rigid connection to said mounting port.

4,939,784

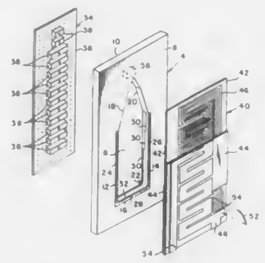
LOUDSPEAKER STRUCTURE

Paul F. Bruney, 12812 Meadowood Dr., Silver Spring, Md. 20904

Filed Sep. 19, 1988, Ser. No. 245,915

Int. Cl.[5] H04R *7/06, 9/04*

U.S. Cl. 381—202 **20 Claims**



1. A dipole loud speaker, comprising

(a) a support containing a through-opening;

(b) a generally planar diaphragm mounted on said support and extending across said opening, said diaphragm including

(1) at least one layer of thin flexible membrane material; and

(2) thin electrical conductor means arranged in a predetermined pattern on at least one surface of the membrane and adapted for connection with a source of sound signal currents;

(c) magnet means mounted in spaced relation opposite one surface of said diaphragm and said conductor means for vibrating said diaphragm to reproduce sound in response to sound signal currents through said conductor means; and

(d) flexible means for connecting at least one side edge of said diaphragm with said support adjacent said opening to permit lateral flexing of said diaphragm side edges within the plane containing said diaphragm while preventing longitudinal flexing of said edges in the excursion direction beyond the diaphragm plane, whereby long excursion of the median portion of said diaphragm in a direction toward and away from said magnet means is provided.

4,939,785

RADIO COMMUNICATION NETWORK SYSTEM COMPRISING A CONNECTING EQUIPMENT UNIT OPERABLE IN DIFFERENT MODES

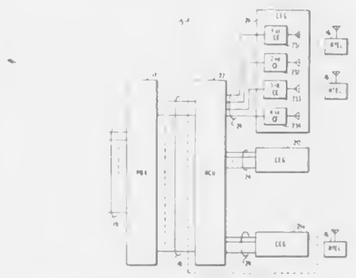
Yoshitoshi Murata; Masahiko Hirono; Toshihiko Shibata; Fumio Suzuki; Mitsuo Sato, all of Kanagawa, and Tadao Hashimoto, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo; Matsushita Communication Industrial Co., Ltd., Kanagawa and NEC Corp., Tokyo, all of, Japan

Filed May 31, 1988, Ser. No. 200,101

Claims priority, application Japan, May 29, 1987, 62-131856; Jul. 20, 1987, 62-180475

Int. Cl.[5] H04B *1/38;* H04M *1/72*

U.S. Cl. 455—54 **12 Claims**



1. A control station for use in processing a call in a radio communication network system to carry out communication with a cordless telephone set movable in a service area defined by said control station, with a control radio channel and a plurality of speech radio channels preassigned to said control station, said control station comprising:

a plurality of first means which have a common service zone and each of which is selectively operable in first and second control modes and a speech mode, each of said first means being for monitoring said control radio channel in said first and said second control modes to allow reception of said call in said first control mode and not to allow said reception of the call in said second control mode and for transmitting a speech signal in said speech mode through a selected one of said plurality of speech radio channels by forming a speech path through the selected one of said plurality of speech radio channels in said speech mode; and

second means coupled to said plurality of first means for successively controlling said plurality of first means to switch either one of said first and said second control modes and said speech mode to another so that at least one of said plurality of first means is selectively kept in said second mode.

4,939,786

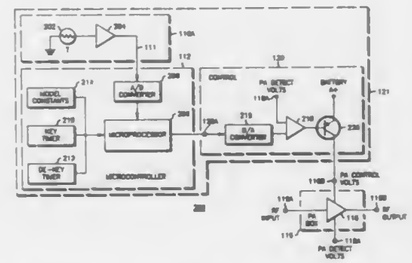
ADAPTIVE THERMAL PROTECTION FOR A POWER AMPLIFIER BY REMOTE SENSE

Kevin J. McCallum, Algonquin, Ill., and Leland B. Arms, Keller, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 9, 1987, Ser. No. 23,758

Int. Cl.[5] H04B *17/00;* H03C *1/52*

U.S. Cl. 455—67 **22 Claims**



1. A method for automatically ensuring a safe operating temperature for electronic equipment having heat-dissipating devices operated intermittently over a period of time, the method comprising the steps of:

(a) measuring present operating temperature within the electronic equipment at a location remote from the heat-dissipating device and elapsed time associated with a first and a second state of intermittent operation of the heat-dissipating devices;

(b) calculating a projected temperature for the heat-dissipating devices based upon a stored, predetermined thermal model which utilizes said measured operating temperature and said elapsed time, and an operating power level associated with the heat-dissipating devices; and

(c) adjusting said operating power level to a maximum permissible point within a range of operating power levels so that said projected temperature does not exceed a preset limit, thereby ensuring a safe operating temperature for the electronic equipment while providing a permissible maximum operating power level.

4,939,787

TEMPERATURE CONTROLLED RESISTIVE-LIQUID DUMMY LOAD

Irving Rubin, 209 Channel Dr., Monmouth Beach, N.J. 07750

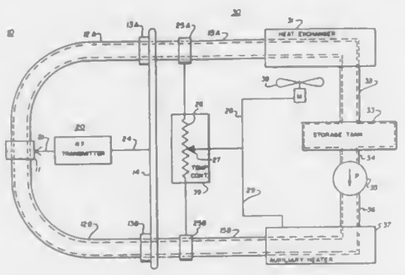
Filed Aug. 26, 1988, Ser. No. 237,273

Int. Cl.[5] H04B *1/72*

U.S. Cl. 455—115 **7 Claims**

1. A resistive unit for a dummy load for a radio frequency transmitter comprising; a tube of non-conductive material having electrically-conducting end terminals on either end connected to a common ground; a centrally-located electrical terminal within said tube between said end terminals; a resistive fluid within said tube to provide resistances in parallel between said centrally-located terminal and ground; a radio frequency transmitter; means for applying the output of said radio frequency transmitter between said centrally-located terminal and ground; and means for controlling the tempera-

ture of said resistive fluid within said tube of non-conductive material, to maintain said resistive fluid at a given temperature,



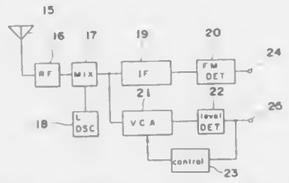
that will maintain a constant resistance between said centrally-located terminal and ground for all output loads of said radio frequency transmitter.

4,939,788

CIRCUIT ARRANGEMENT FOR INDICATING ELECTRIC FIELD STRENGTH

Hiroki Hasegawa, Ota, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 9, 1989, Ser. No. 308,268
Claims priority, application Japan, Feb. 16, 1988, 63-33273
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—241 **6 Claims**



1. A circuit arrangement for indicating an electric field strength of a high frequency FM signal received in an FM receiver that has means for receiving the high frequency FM signal and for providing an intermediate frequency (IF) signal, multistage IF limiting amplification circuit means responsive to said receiving and providing means for amplitude limit amplifying of said IF signal so as to produce output signals which are limited in amplitude, and means responsive to said multistage IF limiting amplification circuit means for detecting said output signals, the circuit arrangement comprising:

amplifying means for amplifying said IF signal to produce an amplified output signal, said amplifying means being connected to a signal path between said receiving and providing means and said multistage IF limiting amplification circuit means so that said IF signal being amplified by said amplifying means is free from being limited in amplitude by said multistage IF limiting amplification circuit means;

level detecting means responsive to said amplifying means for level detecting said amplified output signal to produce a level detected output signal; and

generating means for generating a control signal in accordance with said level detected output signal, said amplifying means having a gain and being responsive to said generating means so that said gain varies in accordance with said control signal and so that as an electric field strength of the high frequency FM signal received increases, said gain decreases so as to thereby enlarge a dynamic range for indicating said electric field strength of the high frequency FM signal received.

4,939,789

SIGNAL RECEIVER FOR TERRESTRIAL AND SATELLITE BROADCASTINGS

Seiji Sakashita, Yawata; Hiroaki Ozeki, Neyagawa, and Ippei Kanno, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 20, 1988, Ser. No. 145,872
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—260 **15 Claims**



1. A signal receiver for selectively receiving a frequency-modulated signal and an amplitude-modulated signal, comprising:

a radio frequency amplifying means for amplifying a radio frequency signal supplied from an input terminal;

a frequency converting means for frequency-converting the radio frequency signal into an intermediate frequency signal by mixing the radio frequency signal and an oscillation signal from a local oscillator in a mixer;

a signal selecting means for selecting a desired intermediate frequency signal from the signals having been subjected to the frequency conversion;

a channel selecting means for generating a signal required to select a desired receive signal;

a phase-locked loop means having a phase-locked loop circuit which operates in phase with a frequency of the intermediate frequency signal, an output of said phase-locked loop means being a demodulated frequency-modulated signal demodulated from said frequency-modulated signal when said input signal is said frequency-modulated signal;

a frequency feedback means for supplying the output of said phase-locked loop means so that an oscillation frequency of the local oscillator in said frequency converting means is changed in accordance with the output of said phase-locked loop means;

a control signal generating means for generating a control signal for changing respective working bandwidths of said phase-locked loop means, said signal selecting means and said frequency feedback means in response to the signal delivered from said channel selection means;

a tuning voltage generating means for generating and supplying a tuning voltage corresponding to the desired receive signal to the local oscillator in said frequency converting means in response to the signal delivered from said channel selection means;

a phase shifting means for $\pi/2$ phase-shifting the output of said phase-locked loop means;

a multiplying means for multiplying the output signal from said phase-locked loop means which has been $\pi/2$ phase-shifted in said phase shifting means and said intermediate frequency signal, an output of said multiplying means being a demodulated amplitude-modulated signal demodulated from said amplitude-modulated signal when said input signal is said amplitude-modulated signal;

a signal switch in means for selecting one of the outputs of said phase-locked loop means and said multiplying means to output said demodulated frequency-modulated signal when said input signal is said frequency-modulated signal and said demodulated amplitude-modulated signal when said input signal is said amplitude-modulated signal; and

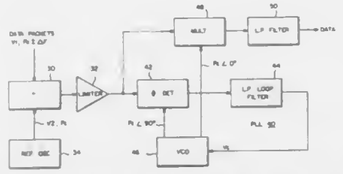
a signal processing means for processing an output of said signal switching means to a signal which is able to be displayed.

4,939,790

PLL FREQUENCY STABILIZATION IN DATA PACKET RECEIVERS

Gary J. Sgrignoli, Mount Prospect, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 28, 1988, Ser. No. 174,251
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—260 **7 Claims**



1. A data transmission system of the type including means for supplying data packets in the form of a phase shift keyed carrier signal to a limiter that is coupled to a phase locked loop having a voltage controlled oscillator, a filter and a detector for recovering the data, the improvement comprising:

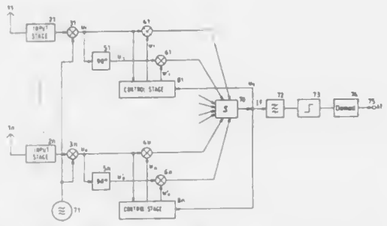
means for supplying a continuous signal having a frequency close to that of said carrier signal to said limiter.

4,939,791

DIVERSITY RADIO RECEIVER FOR USE WITH MULTIPLE ANTENNA, PARTICULARLY CAR RADIO

Harald Bochmann, Hanover, and Kurt Wiedemann, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Oct. 4, 1988, Ser. No. 253,054
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1987, 3741698
Int. Cl.[5] H04B *7/02*
U.S. Cl. 455—276 **4 Claims**



1. Diversity radio receiver having

a plurality of antenna inputs adapted for connection to individual antennas which are spaced from each other, and supplying individual incoming signals,

said receiver comprising

mixer means (**31** . . . **3***n*) mixing the individual incoming signals received from the respective antennas (**11** . . . **11***n*) with a local carrier and providing direct mixed signals (u_1 . . . u_n)

phase shift means (**51** . . . **5***n*) coupled to receive the mixed signals (u_1 . . . u_n) and providing mixed phase shifted signals (u'_1 . . . u'_n), phase-shifted by 90° with respect to the original phase position of the individual direct mixed signals (u_1 . . . u_n);

phase control means (**41** . . . **4***n*; **61** . . . **6***n*; **70**; **81** . . . **8***n*) including multipliers (**41** . . . **4***n*; **61** . . . **6***n*) coupled to the direct mixed signals and the 90 ° phase shifted mixed signals for controlling the phases of said mixed signals;

summing means (**70**) receiving said individual phase controlled direct and 90 ° phase-shifted mixed signals and providing a summed signal (u_s);

individual comparator and control means (**81** . . . **8***n*) receiving the summed signals (u_s) and the individual mixed signals (u_1 . . . u_n), for determining the phase difference between the summed signals (u_s) and the individual mixed signals (u_1 . . . u_n) and providing a control signal to the multipliers (**41** . . . **4***n*; **61** . . . **6***n*) of the phase control means representative of said difference to control the phase of the individual mixed signals being applied to the summing means (**70**) in a direction to maximize the summed signals (u_s);

wherein said control signals provided by the individual comparator and control means (**81** . . . **8***n*) form weighting or coefficient signals respresentative of weighting coefficients for weighting the individual mixed signals of original phase position and additionally for weighting the 90° phase shifted mixed signal by respective weighting coefficients;

wherein the individual comparator and control means form the respective weighting or coefficient signals by comparing the phase difference between the summed signal (u_s) and the respective original mixed signals (u_1 . . .u_n);

wherein each of the individual comparator and control means (**81** . . . **8***n*) includes a phase discriminator (**95**) having connected thereto the summed signal (u_s) and the individual mixed signal (u_1 . . . u_n)

a bandpass filter (**93, 94**) connected in advance of the respective inputs of the phase discriminator (**95**),

said phase discriminator having an output terminal (**96**) providing a signal representative of the sine function of the phase difference between the filtered input signals and a second output terminal (**97**) providing a signal representative of the cosine function of said phase difference;

and wherein respective low-pass filters (**100, 101**) are provided, respectively connected to the outputs from the phase discriminator and having output terminals (**98, 99**) coupled, respectively, to the means (**41** . . . **4***n*; **61** . . . **6***n*), for controlling the phases of the individual mixed signals and applying weighting or coefficient signals (w_i; w'_i) to said phase control means.

4,939,792

MOLDABLE/FOLDABLE RADIO HOUSING

Glenn F. Urbish, Coral Springs; John M. McKee, Coral Springs; Martin J. McKinley, Sunrise, and Anthony B. Suppelsa, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1987, Ser. No. 121,323
Int. Cl.[5] H04B *1/08*
U.S. Cl. 455—347 **13 Claims**

1. A moldable/foldable housing for an electronic device comprising in combination:

first and second housing members and a hinge joining said housing members, said housing members and said hinge being integrally molded;

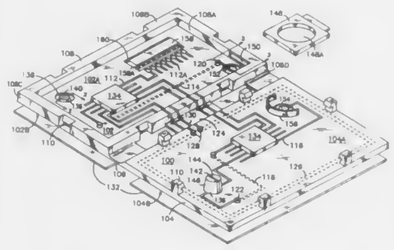
a first solderable printed circuit pattern disposed directly on a first surface of said first housing member;

a second printed circuit pattern disposed on a second surface

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of said first housing member, said second surface opposing said first surface; and

a conductive through-hole connected between said first and second printed circuit patterns.



4,939,793

INTEGRATED CIRCUIT ASSEMBLY WITH OPTICALLY COUPLED COMPONENTS

William J. Stewart, Northants, England, assignor to Plessey Overseas Limited, Ilford, United Kingdom

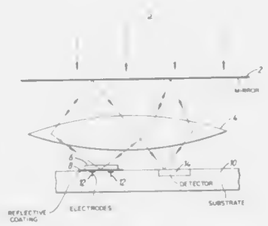
PCT No. PCT/GB87/00250, § 371 Date Jan. 28, 1988, § 102(e) Date Jan. 28, 1988, PCT Pub. No. WO87/06411, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 14, 1987, Ser. No. 137,532

Claims priority, application United Kingdom, Apr. 17, 1986, 8609447

Int. Cl.[5] H04B 9/00

U.S. Cl. 455—605 10 Claims



1. A system for optically coupling components of one or more integrated circuits comprising a source of electromagnetic radiation, focussing means for focussing the radiation from the source onto a modulator component associated one of the integrated circuits, wherein the modulator element is an electro-optic material applied to, formed in, or sputtered onto the substrate, a pair of electrodes being disposed in or attached to the substrate in the vicinity of the electro-optic material for creating an electric field in the electro-optic material when a voltage is applied across the electrodes, the electro-optic material and pair of electrodes forming an electro-optic phase modulator for phase modulating a beam of light passing through the electro-optic material when the electric field is applied, a reflective means located next to said modulator component for reflecting the resulting modulated radiation towards the focussing means, and a detector element associated with one of said integrated circuits for receiving the modulated radiation from the focussing means.

DESIGN PATENTS

GRANTED JUL. 3, 1990

ERRATA

For CLASS	See PATENT NO.
D25-036	309,024

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308,900
ONE PIECE BODY THONG
Charles Gabriels, 701B S. Garfield Ave., Alhambra, Calif. 91801
Filed Oct. 9, 1987, Ser. No. 107,657
Term of patent 14 years
U.S. Cl. D2—40



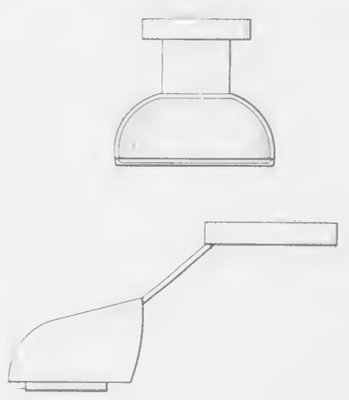
308,901
CUSHIONING PIECE FOR SHOE MID-SOLE
Yoshiaki Hase, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Feb. 11, 1987, Ser. No. 13,623
Claims priority, application Japan, Aug. 12, 1986, 61-31767
Term of patent 14 years
U.S. Cl. D2—314



308,902
SURFACE ORNAMENTATION FOR A SHOE OUTSOLE BOTTOM
Michael A. Aveni, Lake Oswego, Oreg., assignor to Nike, Inc. and Nike International, Ltd., Beaverton, Oreg.
Filed Jun. 30, 1989, Ser. No. 373,779
Term of patent 14 years
U.S. Cl. D2—314



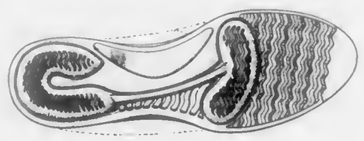
308,903
FOOT STRAP
Albert Rosas, 545 E. 144 #17c, Bronx, N.Y. 10454
Filed May 11, 1987, Ser. No. 48,000
Term of patent 14 years
U.S. Cl. D2—314



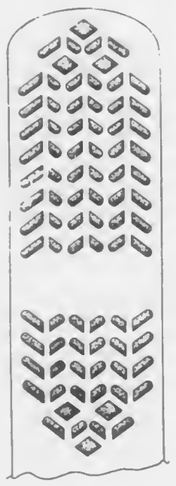
VOL 1116 ISS 1 JL 3 1990 UMI

308,904
SHOE SOLE
Juan A. Diaz, Weymouth; Christopher Kittle, Cohasset, and Ronald R. Tayag, Billerica, all of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Jun. 23, 1989, Ser. No. 370,302
Term of patent 14 years
U.S. Cl. D2—320





308,905
TREAD FOR FOOTWEAR OR THE LIKE
Barry Brinker, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed Apr. 24, 1989, Ser. No. 342,389
Term of patent 14 years
U.S. Cl. D2—320



308,906
SHOE SOLE
Junichi Kiyosawa, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Dec. 8, 1987, Ser. No. 130,188
Claims priority, application Japan, Jun. 10, 1987, 62-23673
Term of patent 14 years
U.S. Cl. D2—320





308,907
TREAD FOR FOOTWEAR OR THE LIKE
Barry Brinker, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed Apr. 24, 1989, Ser. No. 342,526
Term of patent 14 years
U.S. Cl. D2—320



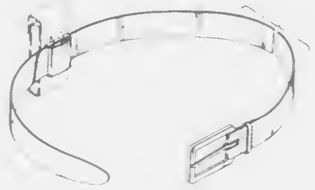
308,908
SHOE SOLE
Junichi Kiyosawa, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Oct. 26, 1988, Ser. No. 262,681
Claims priority, application Japan, Apr. 26, 1988, 63-16968
Term of patent 14 years
U.S. Cl. D2—320



308,909
SHOWER RING
Rosalie H. Levine, One Smith Rd., Greenwich, Conn. 06830
Filed Dec. 11, 1986, Ser. No. 940,257
Term of patent 14 years
U.S. Cl. D2—510

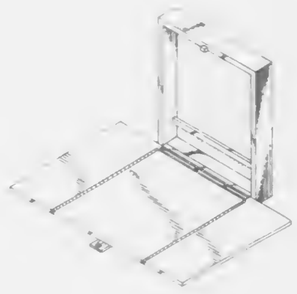


308,910
WAIST BELT OR SIMILAR ARTICLE
Charles M. Chang, No. 87, Chang-Lu Rd., Changhua City, Taiwan
Filed Dec. 23, 1986, Ser. No. 946,283
Term of patent 14 years
U.S. Cl. D2—627



308,911
HANGING, FOLDABLE CUTTING BOARD FOR SEWING
Paddie C. Walsh, 448 Helios, Metairie, La. 70005
Filed Nov. 17, 1986, Ser. No. 931,165
Term of patent 14 years
U.S. Cl. D3—18



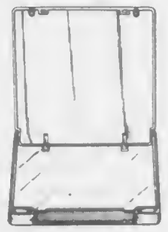


308,912
BACKPACK FRAME
Jerry L. Lee, Rte. 1, Box 998, Vashon, Wash. 98070
Filed Mar. 20, 1987, Ser. No. 45,649
Term of patent 14 years
U.S. Cl. D3—32



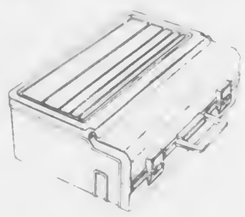
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308,913
DISKETTE CONTAINER
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft m.b.H., Eferding, Austria
Filed Jul. 21, 1986, Ser. No. 887,279
Claims priority, application Austria, Jan. 20, 1986, MR 25 429
Term of patent 14 years
U.S. Cl. D3—35



308,914
DISPLAY DRAWER FOR COMPACT DISCS OR THE LIKE
Yun S. Chow, Kowloon, Hong Kong, assignor to Sun Hing Audio Equipment Mfy., Limited, Kowloon, Hong Kong
Filed Nov. 12, 1986, Ser. No. 930,224
Term of patent 14 years
U.S. Cl. D3—35

308,915
TACKLE BOX
Charles A. Lanius, Prairie du Sac, Wis., assignor to Flambeau Corporation, Baraboo, Wis.
Filed Dec. 22, 1986, Ser. No. 945,315
Term of patent 14 years
U.S. Cl. D3—38



308,916
TOTE BAG FOR USE OVER A SEAT BACK
Calvin A. Dinham, 9310 Overlook Trail, Eden Prairie, Minn. 55344
Filed Apr. 28, 1987, Ser. No. 45,811
Term of patent 14 years
U.S. Cl. D3—40





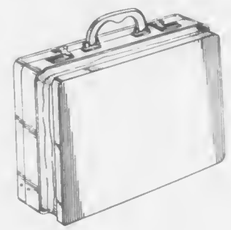
308,917
ACCESSORY STORAGE SHELF FOR A VEHICLE OR THE LIKE
Maxine T. Keel, P.O. Box 1865, Dothan, Ala. 36302
Filed Jul. 16, 1987, Ser. No. 86,461
Term of patent 14 years
U.S. Cl. D3—40



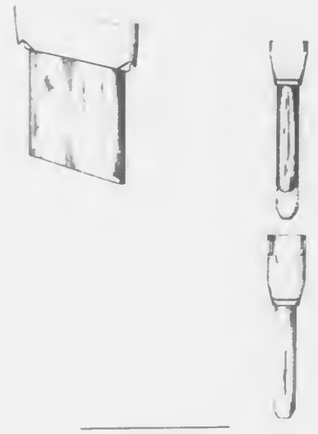
308,918
KEY HOLDER
Sumner MacDonald, 337 Water St., Warren, R.I. 02885
Filed Apr. 13, 1989, Ser. No. 337,435
Term of patent 14 years
U.S. Cl. D3—61



308,919
EXPANDABLE ATTACHE CASE
Celet Melih, Abdi Ipekci Cad., 56, 34160 Bayrampasa, Istanbul, Turkey
Filed Dec. 15, 1986, Ser. No. 942,004
Claims priority, application United Kingdom, Jun. 16, 1986, 1034793
Term of patent 14 years
U.S. Cl. D3—76



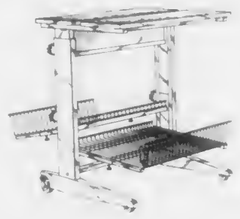
308,920
PRESSURE-FED TRIM PAINTBRUSH HEAD
Edward P. Murphy, Coon Rapids, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Nov. 9, 1987, Ser. No. 119,981
Term of patent 14 years
U.S. Cl. D4—114



308,921
VANITY TABLE
H. Thomas Keller, High Point, N.C., assignor to Rosalco, Inc., Louisville, Ky.
Filed Oct. 2, 1989, Ser. No. 416,128
Term of patent 14 years
U.S. Cl. D6—397

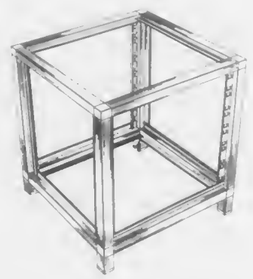


308,922
ADJUSTABLE PRINTER STAND
Michael C. M. Ng, and Kheng L. Tan, both of Block 29, #01-132 Defu Lane 10, Singapore, Singapore (1953)
Filed Nov. 10, 1986, Ser. No. 928,385
Term of patent 14 years
U.S. Cl. D6—429

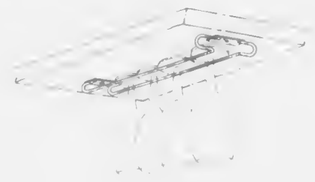


308,923
SHELVING FRAME OR SIMILAR ARTICLE
John Ewenson, 15 Nevana Street, Scoresby, Victoria, Australia
Filed Feb. 6, 1986, Ser. No. 826,578
Term of patent 14 years
U.S. Cl. D6—491

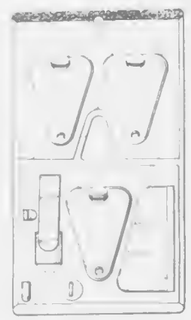




308,924
GLASSWARE RACK
Andrew J. Van Noord, Grand Rapids, Mich., assignor to Kent Design & Mfg., Inc., Grand Rapids, Mich.
Filed Apr. 28, 1988, Ser. No. 189,582
Term of patent 14 years
U.S. Cl. D6—513



308,925
COMBINED SHOWER CADDY AND TOILET KIT
Frank Laseca, 9925 Parkinson Ave., Whittier, Calif. 90605, and Roy Jones, Jr., 7333 Milton St., Apt. A, Whittier, Calif. 90602
Filed Dec. 4, 1987, Ser. No. 128,897
Term of patent 14 years
U.S. Cl. D6—525



308,926
PITCHER
Elliott N. Zivin, 8 Colony Rd., Westport, Conn. 06880
Filed Nov. 7, 1986, Ser. No. 929,144
Term of patent 14 years
U.S. Cl. D7—319



308,927
DECAL FOR A PLATE OR SIMILAR ARTICLE
Joanne Capella, Syracuse, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed May 5, 1987, Ser. No. 46,949
Term of patent 14 years
U.S. Cl. D7—396.5



308,928
GARDEN TOOL HEAD
Wilfred K. Jones, 117, Wrottesley Road West, Wolverhampton, West Midlands, United Kingdom
Filed Aug. 26, 1987, Ser. No. 89,629
Term of patent 14 years
U.S. Cl. D8—13

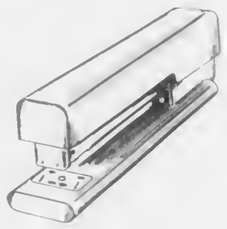


308,929
COMBINATION LIGHTER HOLDER AND BOTTLE/CAN OPENER
Daniel K. Greig, 4446 Booth, Kansas City, Kans. 66103, and James B. Tucker, 4738 Black Swan, Shawnee, Kans. 66216
Filed Oct. 27, 1988, Ser. No. 263,335
Term of patent 14 years
U.S. Cl. D8—34

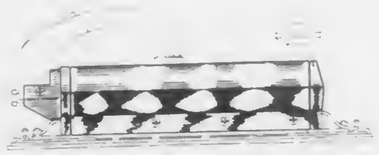


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308,930
STAPLER
John Leszczak, Roselle Park, N.J.; Robert B. Staubitz, Collinsville, and William H. Valis, Harwinton, both of Conn., assignors to The Bates Manufacturing Company, Hackettstown, N.J.
Filed Jul. 27, 1988, Ser. No. 225,074
Term of patent 14 years
U.S. Cl. D8—50



308,931
PORTABLE PNEUMATIC TOOL HOUSING
Hugh T. Greenlee, and Roy P. Hess, both of Gates Mills, Ohio, assignors to Upnenmat International, Inc., New Fairfield, Conn.
Filed Dec. 8, 1986, Ser. No. 938,835
Term of patent 14 years
U.S. Cl. D8—62

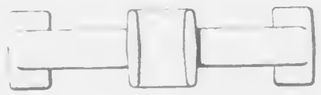


308,932
BASE FOR A GLUE GUN OR SIMILAR ARTICLE
Robert Straub, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Aug. 7, 1987, Ser. No. 82,702
Term of patent 14 years
U.S. Cl. D8—71

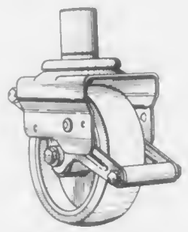


308,933
MID SPAN WIRE SPACER OR SIMILAR ARTICLE
Arthur B. Hube, P.O. Box C16, Holiowville, N.Y. 12530, and Thomas I. Halpin, P.O. Box 140, Ghent, N.Y. 12075
Filed May 15, 1987, Ser. No. 50,132
Term of patent 14 years
U.S. Cl. D8—356

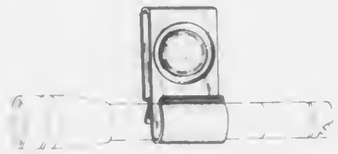




308,934
CASTOR
Douglas H. Howell, and John P. Gear, both of Christchurch, England, assignors to The Revvo Castor Company Limited, Dorset, England
Filed May 20, 1986, Ser. No. 865,246
Claims priority, application United Kingdom, Dec. 7, 1985, 1031004
Term of patent 14 years
U.S. Cl. D8—375



308,935
RETAINING CLIP FOR FLASHLIGHTS OR THE LIKE
Herbert L. Leatherman, 720 Lilac La., Glendora, Calif. 91740
Filed Dec. 7, 1987, Ser. No. 129,690
Term of patent 14 years
U.S. Cl. D8—395



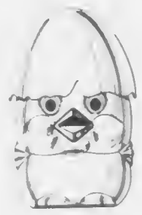
308,936
SPRING CLIP
Barbara D. Arner, 4924 Amalfi Way, Oxnard, Calif. 93035
Filed Jan. 11, 1988, Ser. No. 141,899
Term of patent 14 years
U.S. Cl. D8—395

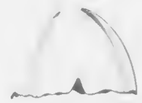


308,937
CHAIN LINK FOR FENCES, SUSPENDED SUPPORTS OR THE LIKE
Richard A. Rybak, Oldsmar, Fla., assignor to Markers, Inc., Avon Lake, Ohio
Filed Feb. 4, 1987, Ser. No. 10,629
Term of patent 14 years
U.S. Cl. D8—499



308,938
CONTAINER AND LID THEREFORE
Jan A. van Erkel, N. Miami Beach, Fla., assignor to United Standard Investors, Inc., North Miami, Fla.
Filed Nov. 4, 1986, Ser. No. 926,777
Term of patent 14 years
U.S. Cl. D9—317







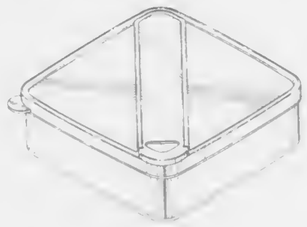
308,939
CONTAINER FOR COSMETIC CREAM
Joel Desgrippes, Paris, France, assignor to Albion Cosmetics Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1987, Ser. No. 39,665
Claims priority, application Japan, Jan. 13, 1987, 61-584
Term of patent 14 years
U.S. Cl. D9—377



308,940
PERFUME BOTTLE OR THE LIKE
Pierre Dinand, Levallois-Perret, France, assignor to S.I.R.-P.E.A. SpA, Italy
Filed Jul. 8, 1986, Ser. No. 883,485
Term of patent 14 years
U.S. Cl. D9—384



308,941
FOOD CONTAINER
Soo S. Kong, No. 22, Jalan SS21/11, Damansara Utama, 47400 Petaling Jaya, Malaysia
Filed Jun. 22, 1989, Ser. No. 369,910
Term of patent 14 years
U.S. Cl. D9—416



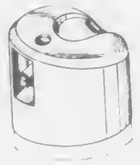
308,942
CONTAINER
Mark Thundercliffe, Fareham, England, assignor to Sweetheart International Limited, Hampshire, England
Filed Jun. 16, 1988, Ser. No. 207,649
Claims priority, application United Kingdom, Dec. 23, 1987, 1047367
Term of patent 14 years
U.S. Cl. D9—425



308,943
CONTAINER BUG GUARD
Robert H. Garza, 423 S. Ritter, Indianapolis, Ind. 46219
Filed Sep. 24, 1987, Ser. No. 100,441
Term of patent 14 years
U.S. Cl. D9—434



308,944
DISPENSER CLOSURE
Vincent J. Lasorso, Jr., Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Nov. 12, 1986, Ser. No. 929,585
Term of patent 14 years
U.S. Cl. D9—448



308,945
COMBINED WATCH AND BRACELET
Eric Bonnet, La Chanx-deFonds, Switzerland, assignor to North American Watch Corp., New York, N.Y.
Filed May 12, 1987, Ser. No. 25,921
Term of patent 14 years
U.S. Cl. D10—32



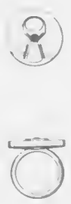
308,946
ULTRASONIC AIR-IN-LINE DETECTOR
Larry Wilson, Poway, and Laurence Walden, San Diego, both of Calif., assignors to Fisher Scientific Company, Pittsburgh, Pa.
Filed Mar. 18, 1988, Ser. No. 169,756
Term of patent 14 years
U.S. Cl. D10—46



308,947
SMOKE DETECTOR
Todd R. Downing, Glen Ellyn, Ill., assignor to Seatt Corporation, Downers Grove, Ill.
Filed Mar. 10, 1988, Ser. No. 166,172
Term of patent 14 years
U.S. Cl. D10—106



308,948
RING
LaJoyce Anderson, Rte. 1, Box 650, Henderson, Tex. 75652
Filed Feb. 16, 1988, Ser. No. 156,091
Term of patent 14 years
U.S. Cl. D11—30



308,949
PENDANT EARRING OR SIMILAR ARTICLE
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari, S.p.A., Rome, Italy
Filed Jul. 13, 1988, Ser. No. 218,041
Claims priority, application Int'l Pat. Institute, Jan. 14, 1988, DM/010065
Term of patent 14 years
U.S. Cl. D11—43



308,950
EARRING
Margaux Greenhouse, P.O. Box 93, Station K, Toronto, Ontario, Canada
Filed Dec. 23, 1986, Ser. No. 945,469
Claims priority, application Canada, Jun. 30, 1986, 30-06-86-2
Term of patent 14 years
U.S. Cl. D11—45



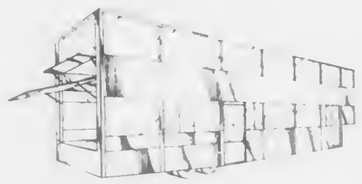


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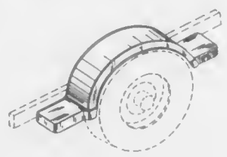
308,951
JEWELRY PENDANT
Noman Rinck, Long Island City, N.Y., assignor to Steven Rinck, Long Island City, N.Y.
Filed Mar. 23, 1989, Ser. No. 327,584
Term of patent 14 years
U.S. Cl. D11—79



308,952
ARTICULATED DOUBLE DECK BUS
James S. Mulhern, P.O. Box 847, Federal Square Bldg., Harrisburg, Pa. 17101
Continuation-in-part of Ser. No. 707,436, Mar. 1, 1985, abandoned. This application Jul. 27, 1988, Ser. No. 226,533
Term of patent 14 years
U.S. Cl. D12—84



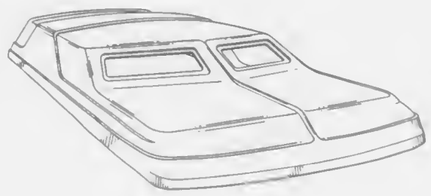
308,953
TRAILER FENDER
Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445
Filed Oct. 26, 1987, Ser. No. 113,199
Term of patent 14 years
U.S. Cl. D12—106



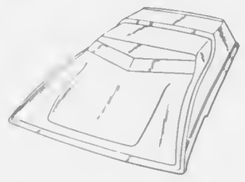
308,954
AUTOMOBILE TIRE
Yasutaka Enoki, Saitama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 22, 1987, Ser. No. 136,874
Claims priority, application Japan, Jun. 22, 1987, 62-25074
Term of patent 14 years
U.S. Cl. D12—142



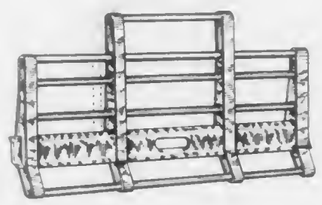
308,955
CONVERSION ROOF FOR VANS OR THE LIKE
Otis C. Borum, Silver Springs, and Martin O. Borum, Green Cove Springs, both of Fla., assignors to A & S Fiberglass, Inc., Jacksonville, Fla.
Filed Nov. 2, 1987, Ser. No. 115,197
Term of patent 14 years
U.S. Cl. D12—156



308,956
CONVERSION ROOF FOR VANS OR THE LIKE
Otis C. Borum, Silver Springs, and Martin O. Borum, Green Cove Springs, both of Fla., assignors to A & S Fiberglass, Inc., Jacksonville, Fla.
Filed Oct. 9, 1987, Ser. No. 106,330
Term of patent 14 years
U.S. Cl. D12—156



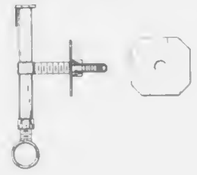
308,957
COMBINED VEHICLE FRONT BUMPER AND GUARD
Gibson Bennie, Houston, Tex., assignor to Aussie Bull Bars, Inc., Houston, Tex.
Filed Oct. 26, 1987, Ser. No. 114,533
Term of patent 14 years
U.S. Cl. D12—169



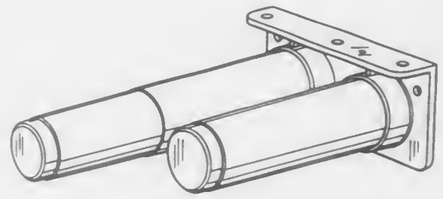
308,958
VEHICULAR MUDFLAP
Ronald A. Knox, 13262 Edinburgh Dr., Westminster, Calif. 92683
Filed Dec. 30, 1988, Ser. No. 291,993
Term of patent 14 years
U.S. Cl. D12—185



308,959
VEHICLE TIRE HOLDER
Ira J. Ware, Rte. 4, Box 143, Seminole, Okla. 74868
Continuation-in-part of Ser. No. 74,497, Jul. 7, 1987. This application Jan. 5, 1988, Ser. No. 140,815
Term of patent 14 years
U.S. Cl. D12—202

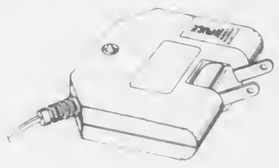


308,960
HOLDER FOR STORING FLARES FOR USE IN BOATS
Roy M. Grace, 6 Horatio Street, Modbury, South Australia, Australia
Filed Nov. 25, 1986, Ser. No. 934,930
Term of patent 14 years
U.S. Cl. D12—317



308,961
ENCLOSURE FOR CONTROL MODULES
Raymond Golden, Willowick, and George S. Whaley, Eastlake, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Oct. 6, 1986, Ser. No. 916,421
Term of patent 14 years
U.S. Cl. D13—162

308,962
FUSED ELECTRICAL ADAPTOR PLUG
Lam K. Duk, Sai Kung, Hong Kong, assignor to Sealand Industrial Co., Ltd., Kowloon, Hong Kong
Filed Oct. 13, 1987, Ser. No. 106,771
Claims priority, application United Kingdom, Jun. 4, 1987, 1042631
Term of patent 14 years
U.S. Cl. D13—138

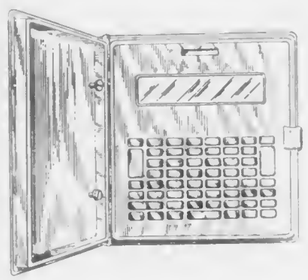


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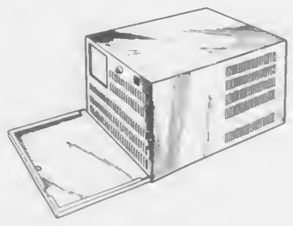
308,963
ROCKER SWITCH ASSEMBLY
Thomas F. Osika, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Apr. 27, 1988, Ser. No. 186,794
Term of patent 14 years
U.S. Cl. D13—169



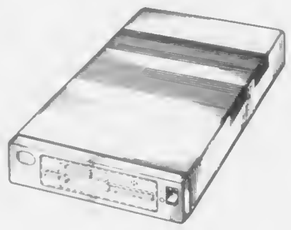
308,964
DATA INPUT/OUTPUT TERMINAL
Donald A. Deakins, 2740 E. Spring St., Long Beach, Calif. 90806
Filed Feb. 16, 1988, Ser. No. 155,682
Term of patent 14 years
U.S. Cl. D14—100



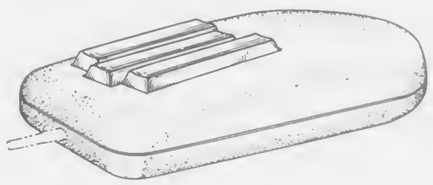
308,965
DESKTOP-COMPUTER HOUSING OR SIMILAR ARTICLE
Dale C. Bina, Wheaton, Ill., assignor to American Telephone and Telegraph Company, New York, N.Y.
Filed Sep. 2, 1987, Ser. No. 92,114
Term of patent 14 years
U.S. Cl. D14—102



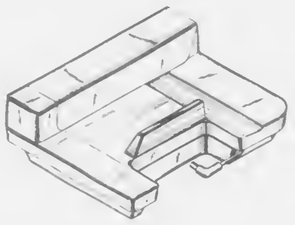
308,966
DISKETTE DRIVE CASING
Pedro M. Alfonso, Delray Beach, and Hunter T. Foy, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1987, Ser. No. 32,251
Term of patent 14 years
U.S. Cl. D14—109



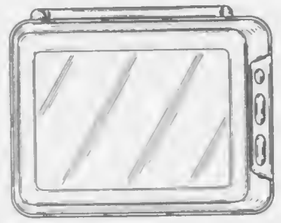
308,967
FUNCTION SELECTOR AND CURSOR CONTROLLER
Tim H. Roth, Wilton, Conn., assignor to Pansophic Systems, Incorporated, Lisle, Ill.
Filed Dec. 4, 1986, Ser. No. 938,737
Term of patent 14 years
U.S. Cl. D14—114



308,968
BAR CODE SCANNER CRADLE
Mark Morun, 9 Carriage Dr., Downingtown, Pa. 19335; Bob M. Dobbins, 2205 North Stone Ridge La., Villanova, Pa. 19085; Eric A. Schneider, 212 Rice St., Philadelphia, Pa. 19106, and Benjamin J. Beck, 114 Naudain St., Philadelphia, Pa. 19107
Filed Sep. 25, 1987, Ser. No. 101,659
Term of patent 14 years
U.S. Cl. D14—114



308,969
TELEVISION SET
Ryunosuke Kitagawa, and Kuniko Okazaki, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 17, 1988, Ser. No. 194,722
Claims priority, application Japan, Nov. 17, 1987, 62-47161
Term of patent 14 years
U.S. Cl. D14—126

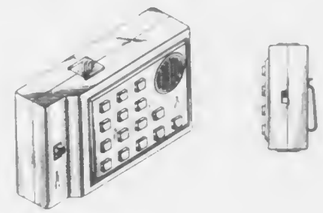




308,970
VIDEO COMMUNICATIONS TERMINALS INCLUDING HOUSING, TELEPHONE HANDSET, KEYBOARD AND IMAGE SCREEN
Kazuhito Takai, and Kazuhumi Takada, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1988, Ser. No. 287,083
Term of patent 14 years
U.S. Cl. D14—130



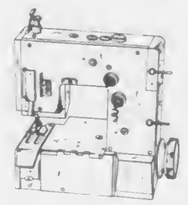
308,971
PORTABLE TELEPHONE UNIT
Margaret A. Weiser, and Issac Weiser, both of 4760 Corbin Ave., Tarzana, Calif. 91356
Filed May 1, 1989, Ser. No. 346,153
Term of patent 14 years
U.S. Cl. D14—138



308,972
TELEVISION RECEIVING ANTENNA
Atsuo Moriyama; Yutaka Aizawa, and Kazuhiko Tamura, all of Omiya, Japan, assignors to Yagi Antenna Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1986, Ser. No. 834,060
Claims priority, application Japan, Oct. 14, 1985, 60-42641
Term of patent 14 years
U.S. Cl. D14—235



308,973
INDUSTRIAL SEWING MACHINE
Toyokichi Gotou, Souka, Japan, assignor to Newlong Machine Works, Ltd., Tokyo, Japan
Filed Jul. 17, 1986, Ser. No. 886,773
Claims priority, application Japan, Mar. 25, 1986, 61-10512
Term of patent 14 years
U.S. Cl. D15—69

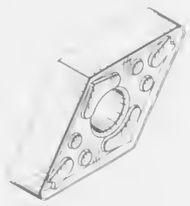


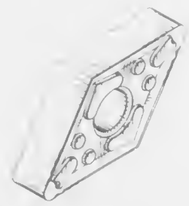
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308,974
SPACER BLOCK FOR FERTILIZER TUBE ON BLADE SHANK
Douglas G. Bruce, and William A. Secrest, both of Perry, Iowa, assignors to Osmundson Mfg. Co., Perry, Iowa
Filed Aug. 15, 1988, Ser. No. 232,382
Term of patent 14 years
U.S. Cl. D15—28

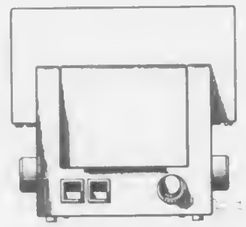


308,975
CUTTING TOOL INSERT
Kenneth L. Niebauer, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.
Filed Jan. 22, 1988, Ser. No. 147,002
Term of patent 14 years
U.S. Cl. D15—130

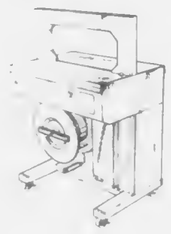




308,976
CURING OVEN FOR PHOTOPOLYMERIZATION
Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.
Filed May 29, 1987, Ser. No. 56,213
Term of patent 14 years
U.S. Cl. D15—144.1



308,977
AUTOMATIC STRAPPING MACHINE
Yasunori Sakaki, Tokyo, Japan, assignor to Strapack Corporation, Tokyo, Japan
Filed Nov. 19, 1987, Ser. No. 122,429
Claims priority, application Japan, May 27, 1987, 62-20659
Term of patent 14 years
U.S. Cl. D15—145



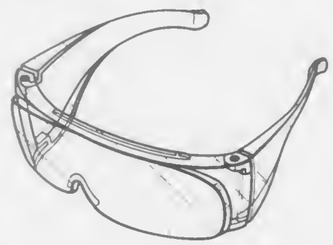
308,978
ADJUSTABLE EYEGLASSES
Wilhelm Anger, St. Moritz-Suvretta, Switzerland, assignor to Eyemetrics-Systems AG, Chur, Switzerland
Filed Feb. 8, 1988, Ser. No. 152,577
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1987, URA1165/87; Aug. 18, 1987, URA1197/87
Term of patent 14 years
U.S. Cl. D16—102



308,979
COMBINED EYEGLASSES AND SUN VISOR
Harold L. Rogers, 1336 W. Olive St., Oxnard, Calif. 93033
Filed May 11, 1987, Ser. No. 48,128
Term of patent 14 years
U.S. Cl. D16—110



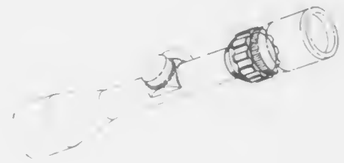
308,980
SPORTS GOGGLES OR THE LIKE
James E. McGee, 31635 Blue Meadow La., Westlake Village, Calif. 91361
Filed Jan. 21, 1988, Ser. No. 146,529
Term of patent 14 years
U.S. Cl. D16—112



308,981
COMBINED RIFLESCOPE ELEVATION ADJUSTMENT KNOB AND WINDAGE ADJUSTMENT KNOB
Sidney D. Moore, Claremont, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jul. 1, 1988, Ser. No. 214,626
Term of patent 14 years
U.S. Cl. D16—132



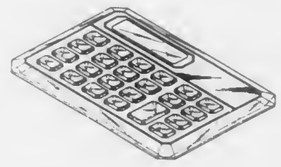
308,982
RIFLESCOPE OCULAR HOUSING AND POWER ADJUSTMENT RING
Sidney D. Moore, Claremont, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 3, 1988, Ser. No. 163,462
Term of patent 14 years
U.S. Cl. D16—132



308,983
DRUM
Clive W. L. Bonsor, Knighton, England, assignor to Premier Percussion Limited, Wigston, England
Filed Feb. 26, 1988, Ser. No. 163,386
Term of patent 14 years
U.S. Cl. D17—22



308,984
CALCULATOR
William H. K. Chu, 14 Fl. 156, Nan-King E. Rd., Sec. 5, Taipei, Taiwan
Filed Nov. 6, 1986, Ser. No. 927,668
Term of patent 14 years
U.S. Cl. D18—7



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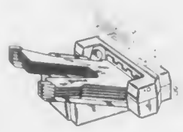
308,985
ELECTRONIC CALCULATOR WITH PRINTER
Masuji Sawada, and Katsuhiro Iida, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 28, 1987, Ser. No. 138,692
Claims priority, application Japan, Jul. 2, 1987, 62-27319
Term of patent 14 years
U.S. Cl. D18—7



308,986
CALCULATOR CASE
Joseph C. Sereika, Stanhope; Terry L. Barner, Morris Plains, and Thomas Perelli, Stanhope, all of N.J., assignors to Monroe Systems For Business, Inc.
Filed Oct. 13, 1987, Ser. No. 110,475
Term of patent 14 years
U.S. Cl. D18—11



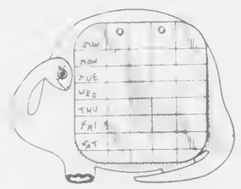
308,987
PAPER SORTER FOR A COPY MACHINE
Toshikazu Matsui, Osaka; Shigetoshi Ishikawa, Hyogo, and Yoshinari Itoi, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Aug. 2, 1988, Ser. No. 227,267
Claims priority, application Japan, Mar. 8, 1988, 63-9433
Term of patent 14 years
U.S. Cl. D18—42



308,988
COMMEMORATIVE DECAL FOR A PLATE OR SIMILAR ARTICLES
Ron L. Green, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 19, 1987, Ser. No. 27,961
Term of patent 14 years
U.S. Cl. D20—11



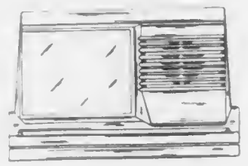
308,989
WALL MOUNTED DISPLAY BOARD FOR CHILDREN'S TOILET TRAINING
Judith A. Cohen, Allegheny County, Pa., assignor to Michael Cohen, Pittsburgh, Pa.
Filed May 14, 1987, Ser. No. 49,415
Term of patent 14 years
U.S. Cl. D20—39

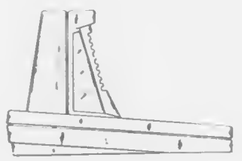


308,990
DISPLAY HOLDER
Avram M. Grossman, 4415 W. Vasconia Ave., Tampa, Fla. 33629
Filed May 9, 1988, Ser. No. 192,111
Term of patent 14 years
U.S. Cl. D20—43

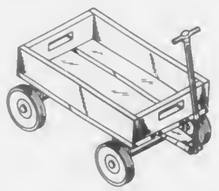


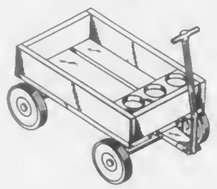
308,991
ELECTRONIC EDUCATIONAL GAME HOUSING
David Cheung, Hong Kong, Hong Kong, assignor to Video Technology Industries, Inc., Wheeling, Ill.
Filed Oct. 14, 1987, Ser. No. 108,047
Term of patent 14 years
U.S. Cl. D21—13





308,992
WAGON
John H. Wagner, 504 Academy, Paragould, Ark. 72450
Filed Jan. 2, 1987, Ser. No. 939
Term of patent 14 years
U.S. Cl. D21—71





308,993
TOY AUTOMATIC RIFLE
Alfred H. Kilby, Rte. 3, Box FM75, Tuttle, Okla. 73089
Filed Oct. 7, 1986, Ser. No. 916,419
Term of patent 14 years
U.S. Cl. D21—146



308,994
GAME BALL
Richard Norman; Sonja Norman, both of Sutton, and David Chamberlain, Knowlton, all of Canada, assignors to Profitable Entertainment Products, Inc.
Filed Nov. 25, 1987, Ser. No. 125,207
Term of patent 14 years
U.S. Cl. D21—204

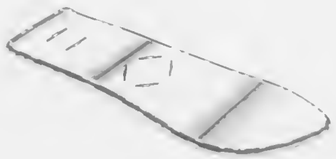


308,995
GOLF PUTTER HEAD
Nicholas Colucci, 67 Bache Ave., New York, N.Y. 10306
Filed Jun. 13, 1988, Ser. No. 181,241
Term of patent 14 years
U.S. Cl. D21—219

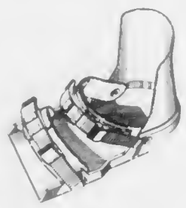


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308,996
SNOWBOARD
Robert Katz, Montreal, Canada, assignor to St-Lawrence Manufacturing Canada Inc./Mannfactures St-Laurent Canada, Beauport, Canada
Filed Aug. 30, 1988, Ser. No. 238,173
Claims priority, application Canada, Jun. 29, 1988, 29-06-88-18
Term of patent 14 years
U.S. Cl. D21—229



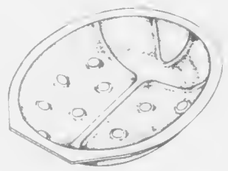
308,997
BINDING FOR SNOWBOARD
Robert Katz, Montreal, Canada, assignor to St-Lawrence Manufacturing, Canada, Inc./Manufactures St-Laurent Inc., Beauport, Canada
Filed Aug. 30, 1988, Ser. No. 238,175
Claims priority, application Canada, Jun. 29, 1988, 29-06-88-19
Term of patent 14 years
U.S. Cl. D21—230



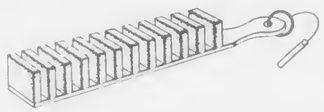
308,998
MOUNTABLE GOLF CLUB SHAFT INDICATOR
Glenn F. Cates, 2000 Hall Dr., Fayetteville, Tenn. 37334
Filed Oct. 13, 1987, Ser. No. 107,528
Term of patent 14 years
U.S. Cl. D21—234



308,999
WADING POOL, SAND BOX AND SIMILAR ARTICLE
Petrus J. Van Oers, Etten-Leur, Netherlands, assignor to Lekaplast Industrie en Handelsonderneming, Netherlands
Filed Mar. 18, 1987, Ser. No. 27,665
Claims priority, application Int'l Pat. Institute, Sep. 25, 1986, DM/007 525
Term of patent 14 years
U.S. Cl. D21—252



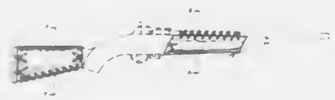
309,000
FLY HOLDER
Furman C. Stoop, Jr., 7 Darby Ct., Trenton, N.J. 08628
Filed Jul. 2, 1987, Ser. No. 69,559
Term of patent 14 years
U.S. Cl. D22—134



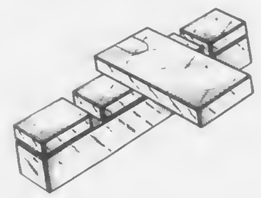
309,001
FISH HOOK REMOVER
Rudy Monsen, P.O. Box 254, Altamont, Utah 84001
Filed Feb. 8, 1988, Ser. No. 153,794
Term of patent 14 years
U.S. Cl. D22—149



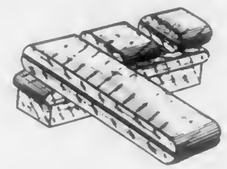
309,002
COMBINED GUN STOCK AND BUTT COVER
Robert C. Southard, P.O. Box 94, Locust Grove, Ark. 72550
Filed Sep. 8, 1987, Ser. No. 93,874
Term of patent 14 years
U.S. Cl. D22—108



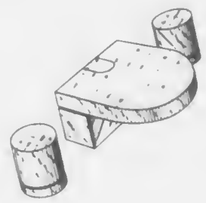
309,003
FAUCET
Joseph Strignano, New York, N.Y., assignor to I. W. Industries, Melville, N.Y.
Filed Apr. 16, 1987, Ser. No. 39,646
Term of patent 14 years
U.S. Cl. D23—241



309,004
FAUCET
Joseph Strignano, New York, N.Y., assignor to I. W. Industries, Melville, N.Y.
Filed Apr. 16, 1987, Ser. No. 39,636
Term of patent 14 years
U.S. Cl. D23—241



309,005
FAUCET SET
Joseph Strignano, New York, N.Y., assignor to I. W. Industries, Melville, N.Y.
Filed Apr. 16, 1987, Ser. No. 39,641
Term of patent 14 years
U.S. Cl. D23—242

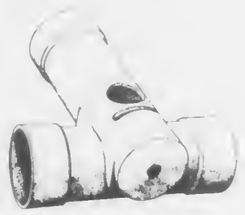


309,006
FAUCET HANDLE
Anthony G. Spangler, Sheridan, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed May 21, 1987, Ser. No. 52,568
The portion of the term of this patent subsequent to Mar. 14, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—252



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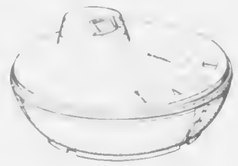
309,007
DISTRIBUTION JOINT OR THE LIKE
James E. Tyson, 10621 Six Forks Rd., Raleigh, N.C. 27614
Filed Sep. 17, 1986, Ser. No. 908,521
Term of patent 14 years
U.S. Cl. D23—262



309,008
AUTOMATIC AQUARIUM HEATER
Antonio Strada, Pordenone, Italy, assignor to Newa S.R.L., Lorregia, Italy
Filed Jan. 14, 1987, Ser. No. 3,322
Term of patent 14 years
U.S. Cl. D23—316



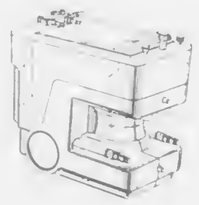
309,009
VAPORIZER
Donald W. Herritz, Reedsburg, Wis., assignor to Gerber Products Company, Fremont, Mich.
Filed Nov. 23, 1987, Ser. No. 124,185
Term of patent 14 years
U.S. Cl. D23—362



309,010
FAN PLATE
Richard B. Little, Amarillo, Tex., assignor to Litco International, Amarillo, Tex.
Filed Mar. 6, 1987, Ser. No. 22,425
Term of patent 14 years
U.S. Cl. D23—411



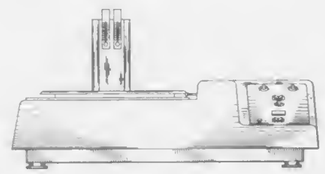
309,011
ARTIFICIAL LUNG
Tetsuya Arioka, and Masaru Wada, both of Tokyo, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1987, Ser. No. 103,264
Claims priority, application Japan, Apr. 1, 1987, 62-12186
Term of patent 14 years
U.S. Cl. D24—8

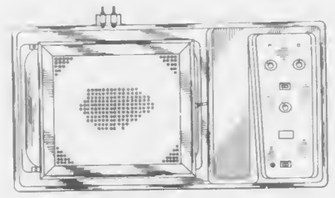


309,012
IMMUNOASSAY TEST KIT OR THE LIKE
John L. Vcelka, Zion, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Jun. 18, 1987, Ser. No. 64,275
Term of patent 14 years
U.S. Cl. D24—8



309,013
SHAKER BATH
Dirk E. Vander Hout, 236 Birch Dr., Glenwood, Ill. 60425
Filed Jul. 27, 1987, Ser. No. 78,187
Term of patent 14 years
U.S. Cl. D24—9

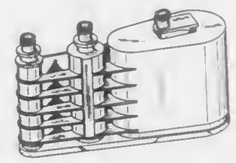




309,014
NEEDLE HEAD FOR BIOPSY STYLET
Dan Akerfeldt, Upsala, Sweden, assignor to C. R. Bard, Inc., Murray Hill, N.J.
Division of Ser. No. 28,322, Mar. 20, 1987. This application Aug. 30, 1989, Ser. No. 400,745
Term of patent 14 years
U.S. Cl. D24—25



309,015
FLUID CARTRIDGE FOR HOLDING REAGENTS IN AN AUTOMATED CLINICAL CHEMISTRY ANALYZER
Harold F. Fechtner, Claremont, and Bobby L. Hobbs, Ontario, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jul. 10, 1987, Ser. No. 73,119
Term of patent 14 years
U.S. Cl. D24—29

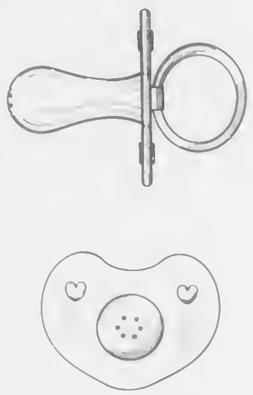


309,016
NOZZLE HOLDER FOR IN-BATH MASSAGING
Toshio Mikiya, and Kuniaki Shibuya, both of Tokyo, Japan, assignors to Nikki Co., Ltd., Tokyo, Japan
Filed Mar. 31, 1989, Ser. No. 331,545
Claims priority, application Japan, Oct. 7, 1988, 63-39412
Term of patent 14 years
U.S. Cl. D24—38



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309,017
FOOD DISPENSING PACIFIER
Mark J. Lindberg, HC1 Box 26-A, Canyonville, Oreg. 97417
Filed Nov. 21, 1988, Ser. No. 274,131
Term of patent 14 years
U.S. Cl. D24—45



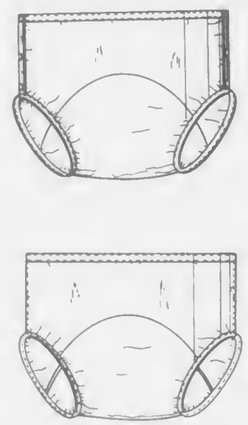
309,018
BABY BOTTLE HOLDER
Jamie S. Leach, Ada, Okla., assignor to C. J. Leachco, Inc., Ada, Okla.
Filed Jul. 3, 1989, Ser. No. 374,939
Term of patent 14 years
U.S. Cl. D24—48



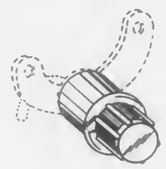
309,019
LEG CAST COVER
Katherine A. Holden, 3603 San Remo Dr., Santa Barbara, Calif. 93105
Filed Jan. 17, 1989, Ser. No. 297,547
Term of patent 14 years
U.S. Cl. D24—49



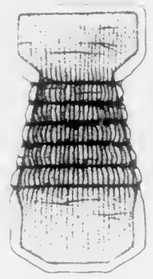
309,020
PROTECTIVE UNDERWEAR
Fredrica V. Coates, Earlysville, Va., and Richard Jannoni, Edison, N.J., assignors to Blessings Corporation, Liberty Corner, N.J.
Filed May 13, 1987, Ser. No. 48,924
Term of patent 14 years
U.S. Cl. D24—50



309,021
PROTECTIVE COVER FOR TRACHEOTOMY TUBE
Katherine K. Beevers, 11075 Montana Ave., Boise, Id. 83704
Filed Jnl. 13, 1987, Ser. No. 72,991
Term of patent 14 years
U.S. Cl. D24—51



309,022
INCONTINENCE PAD
Terje Vigmo, Gothenburg, Sweden, assignor to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed Dec. 21, 1987, Ser. No. 136,597
Claims priority, application Sweden, Jun. 22, 1987, 87-1433; Jun. 22, 1987, 87-1434
Term of patent 14 years
U.S. Cl. D24—51

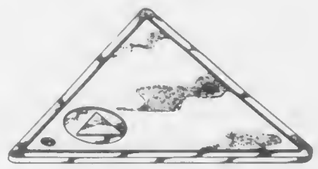


309,023
PORTABLE IRRIGATION WARMER
Galen N. Johnson, and Judi L. Johnson, both of 19 Westwind, North Little Rock, Ark. 72118
Filed Nov. 16, 1987, Ser. No. 122,350
Term of patent 14 years
U.S. Cl. D24—56





309,024
OBSERVATION MONITORING WELL MANHOLE COVER
Martin C. Pettesch, Roselle, N.J., assignor to Universal Valve Company, Inc., Elizabeth, N.J.
Filed Mar. 1, 1988, Ser. No. 162,583
Term of patent 14 years
U.S. Cl. D25—36

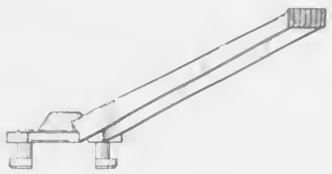


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309,025
MEDICAL BREATHING UNIT
Allan J. Beacham, Hants, United Kingdom, assignor to Virotherm Laboratories, Ltd., England
Filed Oct. 4, 1988, Ser. No. 253,721
Claims priority, application United Kingdom, Apr. 13, 1988, 1049943
Term of patent 14 years
U.S. Cl. D24—62



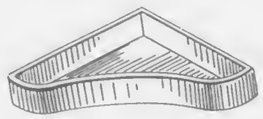
309,026
LADDER STABILIZER
David H. C. Harvey, Poynings, and Ian G. Menelaus, Burgess Hill, both of England, assignors to Stabilad Limited, Burgess Hill, England
Filed Nov. 19, 1987, Ser. No. 122,422
Term of patent 14 years
U.S. Cl. D25—68



309,027
TAB PORTION OF A SHINGLE
Michael J. Noone, Wayne; Waldo J. Gates, West Chester; Kermit E. Stahl, Norristown, and John R. Klein, Malvern, all of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jul. 15, 1983, Ser. No. 514,184
Term of patent 14 years
U.S. Cl. D25—139



309,028
LOWER HOUSING FOR AN ILLUMINATED DISPLAY STAND
Henry Von Kohorn, 945 Treasure La., Vero Beach, Fla. 32963
Continuation-in-part of Ser. No. 187,412, Apr. 28, 1988, abandoned. This application Feb. 22, 1989, Ser. No. 313,759
Term of patent 14 years
U.S. Cl. D26—24



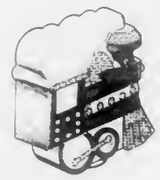
309,029
LAMP BASE
Marcia L. Potter, 814 Morrison St., Fremont, Ohio 43420
Filed Nov. 14, 1988, Ser. No. 270,120
Term of patent 14 years
U.S. Cl. D26—98



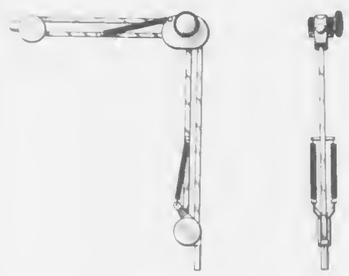
309,030
LIGHT DIFFUSER
Alan A. Archambault, Smithfield; Nicholas R. Palumbo, Cumberland, and Lyn C. Fletcher, East Providence, all of R.I., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 24, 1986, Ser. No. 934,087
Term of patent 14 years
U.S. Cl. D26—125



309,031
LIGHT DIFFUSER
Alan A. Archambault, Smithfield; Nicholas R. Palumbo, Cumberland, and Lyn C. Fletcher, East Providence, all of R.I., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 24, 1986, Ser. No. 934,534
Term of patent 14 years
U.S. Cl. D26—125



309,032
ADJUSTABLE SUPPORT ARM FOR LAMPS OR THE LIKE
Jerry Sharber, Cypress, and Mel Evenson, San Pedro, both of Calif., assignors to Eldon Industries, Inc., Inglewood, Calif.
Filed May 26, 1987, Ser. No. 54,364
Term of patent 14 years
U.S. Cl. D26—140



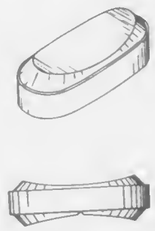
309,033
COMBINED CIGARETTE CASE AND ASHTRAY
Robert W. Mohr, 331 40th Ave., East Moline, Ill. 61244
Filed Jun. 6, 1988, Ser. No. 203,032
Term of patent 14 years
U.S. Cl. D27—106



309,034
CIGARETTE LIGHTER
Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Yokohama, Japan
Filed May 9, 1988, Ser. No. 191,659
Claims priority, application Japan, Nov. 17, 1987, 62-46766
Term of patent 14 years
U.S. Cl. D27—156



309,035
DRUG TABLET
Phillip F. Ni, Mattawan, and Larry F. Odar, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Continuation of Ser. No. 24,721, Mar. 11, 1987. This application Mar. 30, 1989, Ser. No. 331,882
Term of patent 14 years
U.S. Cl. D28—2

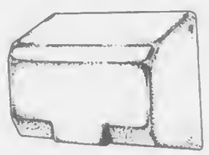


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309,036
COMBINED SHAVER AND LATHER DISPENSER
Tsu-Chen Cheng, 198 Lane 38, Da-Kuan Road, Sec. 1, Parchino City, Taiwan
Filed Sep. 13, 1988, Ser. No. 243,769
Term of patent 14 years
U.S. Cl. D28—46



309,037
CASING FOR HAND DRYER
Avrum Morrow, 5035 Mira Road, Montreal, Quebec, Canada H3W 2B9
Filed Feb. 25, 1987, Ser. No. 18,907
Claims priority, application Canada, Dec. 30, 1986, 30-12-86-3
Term of patent 14 years
U.S. Cl. D28—54.1



309,038
CLIPPED NAIL RECEPTACLE FOR NAIL CLIPPER
Gary Ladora, 8352 Place Croissy, Anjou, Quebec, Canada H1K 1R6
Filed Jan. 27, 1988, Ser. No. 212,423
Term of patent 14 years
U.S. Cl. D28—60



309,039
TOOTH PICK
Mats Ljungberg, Kryssgränd 4, Skåre S-231 00 Trelleborg, Sweden
Filed Feb. 10, 1988, Ser. No. 154,597
Claims priority, application Sweden, Aug. 17, 1987, 87-1801
Term of patent 14 years
U.S. Cl. D28—64



309,040
TOOTHPICK
Kwong S. Poon, Room 504, 5th Floor, Singga Commercial Centre, 144-141 Connaught Road West, Hong Kong, Hong Kong
Filed Jul. 6, 1987, Ser. No. 69,752
Claims priority, application United Kingdom, Jul. 1, 1987, 1039139
Term of patent 14 years
U.S. Cl. D28—64



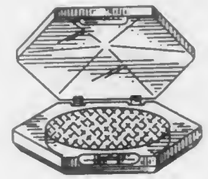
309,041
DENTAL FLOSS HOLDER
Peter Schneider, Koenigstein, Fed. Rep. of Germany, assignor to Gilette Canada Inc., Canada
Filed Oct. 17, 1988, Ser. No. 259,009
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1988, M8800027.3
Term of patent 14 years
U.S. Cl. D28—64

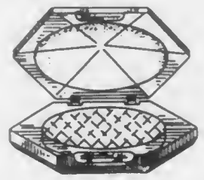


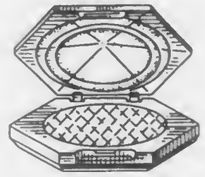
309,042
TOOTH PICK
Adib T. Reano, P.O. Box 135527 Shouran, Beirut, Lebanon
Filed Sep. 2, 1988, Ser. No. 239,968
Term of patent 14 years
U.S. Cl. D28—64



309,043
COSMETIC CASE
Karena Bakic, Varese, Italy, assignor to Cosmede Anstalt, Vaduz, Liechtenstein
Filed Nov. 12, 1987, Ser. No. 120,503
Claims priority, application Fed. Rep. of Germany, May 13, 1987, URA 690/87
Term of patent 14 years
U.S. Cl. D28—78







309,044
LIPSTICK CASE WITH TRIANGULAR DESIGN
Karen E. McCready, New City, N.Y., assignor to Elleance Ltd., New City, N.Y.
Filed Dec. 3, 1987, Ser. No. 128,521
Term of patent 14 years
U.S. Cl. D28—85

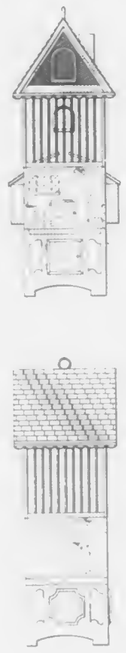


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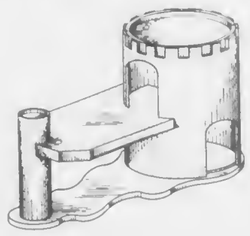
309,045
BIRD CAGE
Lowell Herrero, 433 Bryant St., San Francisco, Calif. 94107
Filed Apr. 24, 1989, Ser. No. 343,133
Term of patent 14 years
U.S. Cl. D30—112



309,047
BIRD CAGE
Tina Small, 3543 Glenwood Rd., Decatur, Ga. 30032
Filed Dec. 1, 1988, Ser. No. 278,423
Term of patent 14 years
U.S. Cl. D30—114



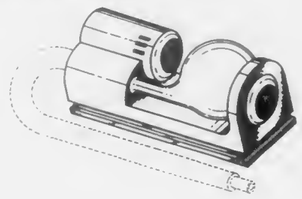
309,046
CAT PLAY HOUSE
Randal Andersen, 2954 S. Verbena Way, Denver, Colo. 80231
Filed Apr. 28, 1988, Ser. No. 189,583
Term of patent 14 years
U.S. Cl. D30—112



309,048
DRESSAGE GIRTH COVER
Irene F. Bray, 12583 Caves Rd., Chesterland, Ohio 44026
Filed Aug. 11, 1986, Ser. No. 895,208
Term of patent 14 years
U.S. Cl. D30—134



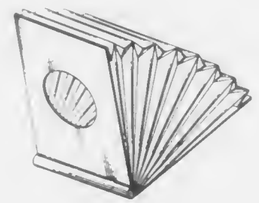
309,049
FLEA VACUUM
Jane Sid, and Stephan Sid, both of 30330 Via Victoria St., Rancho Palos Verdes, Calif. 90274
Filed Apr. 28, 1986, Ser. No. 857,824
Term of patent 14 years
U.S. Cl. D30—158



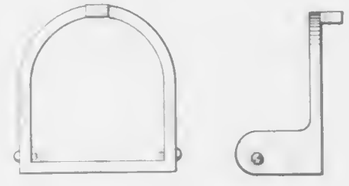
309,052
ELECTRONIC FUND TRANSFER UNIT
Stephan Feger, Stuttgart, and Wolfgang Fischer, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 30, 1986, Ser. No. 869,115
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1985, MR6007
Term of patent 14 years
U.S. Cl. D99—28



309,050
DISPOSABLE ANIMAL LITTER CONTAINER
Ronald G. Wolak, 221 Parkland, Rochester Hills, Mich. 48063
Filed Dec. 12, 1988, Ser. No. 283,522
Term of patent 14 years
U.S. Cl. D30—161



309,053
MAIL BOX DOOR
Donald P. Shantz, 1903 "C" St., Garden City, Kans. 67846
Filed Aug. 17, 1987, Ser. No. 86,162
Term of patent 14 years
U.S. Cl. D99—29



309,051
INDUSTRIAL TRUCK CONTROL HANDLE
Richard C. Laatsch, Warminster, Pa., assignor to Yale Materials Handling Corporation, Flemington, N.J.
Filed Oct. 22, 1987, Ser. No. 111,562
Term of patent 14 years
U.S. Cl. D34—35



309,054
SAVINGS BANK
William W. Knox, Mentor, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed Aug. 12, 1987, Ser. No. 84,116
Term of patent 14 years
U.S. Cl. D99—37



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Yazu, Shuji: *See*—
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Zurcher, Christian; and Gruss, Rudiger, to Binding-Brauerei AG. Recovering roughage from draff and product produced according to the method. 4,938,986, Cl. 426-624.000.
Zurcher, Frederic, to Etat Francais represente par le Ministre des Postes Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications). Differential encoder with self-adaptive predictive filter and a decoder suitable for use in connection with such an encoder. 4,939,749, Cl. 375-30.000.
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NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barree, Robert D., to Marathon Oil Company. High speed, high temperature three-way valve for switching high pressure fluids under low pressure control. Re. 33,246, Cl. 137-625.500.
Bossina, Japp, to Gap Gesellschaft fur Auswertungen und Patente AG. Dispenser for paste-like products. Re. 33,247, Cl. 222-257.000.
Cook, Kenneth P., to Site Microsurgical Systems, Inc. Microsurgical system cassette assembly. Re. 33,250, Cl. 604-34.000.
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Bossina, Japp, Re. 33,247, Cl. 222-257.000.
Gillis, Steven, to Immunex Corporation. Hybridoma antibody which inhibits Interleukin 2 activity. Re. 33,252, Cl. 530-387.000.
Immunex Corporation: *See*—
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Barree, Robert D., Re. 33,246, Cl. 137-625.500.
Schad, Robert D. Clamp mechanism. Re. 33,248, Cl. 425-135.000.
Schneider, Rudolf, to Erowa A.G. Coupling device. Re. 33,249, Cl. 464-93.000.
Site Microsurgical Systems, Inc.: *See*—
Cook, Kenneth P., Re. 33,250, Cl. 604-34.000.
Strauss, Paul, to Zenith Electronics Corporation. Component mounting means for a tension mask color cathode ray tube. Re. 33,253, Cl. 313-402.000.
Tomka, Ivan: *See*—
Wittwer, Fritz; and Tomka, Ivan, Re. 33,251, Cl. 156-275.100.
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Barker, Edward F.: *See*—
Faunce, Frank R., B1 3,986,261, Cl. 433-217.100.
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Faunce, Frank R., to Faunce, Frank R.; Browning, Tae Deborah Harrell Z.; Harris, James R.; Cook, Scott T.; and Barker, Edward F. Method and apparatus for restoring badly discolored, fractured or cariously involved teeth. B1 3,986,261, 7-3-90, Cl. 433-217.100.
Garrett, Clyde B.; and Thayer, William S., to United Container Machinery Group, Inc. Method and apparatus for accurate die-cutting. B1 3,899,945, 7-3-90, Cl. 83-38.000.
Glasstech, Inc.: *See*—
McMaster, Harold A., B1 3,994,711, Cl. 65-163.000.
Harris, James R.: *See*—
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Hemstreet, Harold S. Method and apparatus for identifying letters, characters, symbols, and the like. B1 3,713,100, 7-3-90, Cl. 382-34.000.
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Houghten, Richard: *See*—
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Howard, P. Guy, to Spectra-Physics, Inc. Optical beam scanner with rotating mirror. B1 4,699,447, 7-3-90, Cl. 350-6.900.
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McMaster, Harold A., to Glasstech, Inc. Glass tempering system including oscillating roller furnace. B1 3,994,711, 7-3-90, Cl. 65-163.000.
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Arner, Barbara D. Spring clip. 308,936, 7-3-90, Cl. D8-395.000.
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Holtkamp, Reinhold, Sr. African violet plant named Improved Ellen. 7,261, 7-3-90, Cl. 69.000.
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LIST OF STATUTORY INVENTION REGISTRATIONS

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Arszman, Jerrold H.: *See—*
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470 4,938,193
479 4,938,194
488 4,938,195
489 4,938,196
492 4,938,197
571 4,938,198
585 4,938,199
620 4,938,200

CLASS 125
13.01 4,938,201

CLASS 126
9 R 4,938,202
110 R 4,938,203
360 R 4,938,204

CLASS 127
60 4,938,804

CLASS 128
6 4,938,205
80 C 4,938,207
80 F 4,938,206
87 R 4,938,208
200.21 4,938,209
203.12 4,938,210
204.26 4,938,211
205.24 4,938,212
340 4,938,214
399 4,938,216
4,938,217
401 4,938,221
402 4,938,222
421 4,938,223
633 4,938,218
4,938,224
641 4,938,219
658 4,938,220
660.01 4,938,225
679 4,938,226
682 4,938,227
690 4,938,228
696 4,938,229
777 4,938,230
784 4,938,231
802 4,938,232
849 4,938,233
898 4,938,234

CLASS 131
110 4,938,235
194 4,938,236
282 4,938,237
365 4,938,238

CLASS 134
21 4,938,239
64 R 4,938,257
93 4,938,240
104.2 4,938,241
169 R 4,938,242

CLASS 135
105 4,938,243

CLASS 136
212 4,938,244

CLASS 137
2 4,938,245
15 4,938,246
68.1 4,938,247
78.3 4,938,248
82 4,938,249
244 4,938,250
269 4,938,251
486 4,938,252
508 4,938,253
541 4,938,254
565 4,938,255
4,938,256
625.5 Re.33,246
884 4,938,258

CLASS 138
45 4,938,259

CLASS 139
116.2 4,938,268
383 AA 4,938,269
457 4,938,270

CLASS 141
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20 4,938,260
39 4,938,261
114 4,938,262

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12 B 4,938,811
12 F 4,938,266
111 4,938,806
4,938,807
304 4,938,267
325 4,938,808
406 4,938,809
437 4,938,810

CLASS 149

19.1 4,938,812
19.2 4,938,813
19.9 4,938,814

CLASS 152

427 4,938,272

CLASS 156

62.2 4,938,816
69 4,938,818
73.1 4,938,817
78 4,938,819
83 4,938,820
85 4,938,821
144 4,938,822
166 4,938,823
173 4,938,824
244.17 4,938,828
245 4,938,825
4,938,829
269 4,938,826
270 4,938,830
272.6 4,938,827
275.1 Re.33,251
275.3 4,938,831
308.8 4,938,832
309.6 4,938,833
382 4,938,834
555 4,938,835
605 4,938,836
608 4,938,837
612 4,938,815
627 4,938,838
628 4,938,839
639 4,938,840
661.1 4,938,841

CLASS 160

201 4,938,273

CLASS 162

55 4,938,843
78 4,938,842
102 4,938,844

CLASS 164

4.1 4,938,274
46 4,938,275
133 4,938,276
137 4,938,277
429 4,938,278

CLASS 165

46 4,938,279
80.4 4,938,280
109.1 4,938,281
133 4,938,282
135 4,938,283
149 4,938,284

CLASS 166

55.8 4,938,291
241 4,938,285
280 4,938,286
288 4,938,287
305.1 4,938,288
342 4,938,289
387 4,938,290

CLASS 169

19 4,938,292
28 4,938,293
38 4,938,294

CLASS 172

313 4,938,295

CLASS 173

22 4,938,296

CLASS 174

36 4,939,315
52.4 4,939,316
107 4,939,317

CLASS 175

19 4,938,297
61 4,938,298
73 4,938,299

CLASS 177

164 4,938,300
212 4,938,301

CLASS 178

19 4,939,318

CLASS 180

53.1 4,938,302
68.1 4,938,303
165 4,938,308
197 4,938,304
199 4,938,305
233 4,938,306
247 4,938,307

CLASS 181

231 4,938,309

CLASS 182

129 4,938,310
155 4,938,311
206 4,938,312
221 4,938,313

CLASS 184

1.5 4,938,314
4,938,315
27.2 4,938,316

CLASS 186

61 4,938,317

CLASS 188

24.19 4,938,318
67 4,938,319
79.52 4,938,320
171 4,938,321
290 4,938,322
296 4,938,323
317 4,938,324
378 4,938,325

CLASS 190

109 4,938,326

CLASS 192

0.02 R 4,938,327
58 B 4,938,328
4,938,329
4,938,331
58 C 4,938,330
85 CA 4,938,332
415 4,938,333

CLASS 198

346.1 4,938,334
365 4,938,335
369 4,938,336
377 4,938,337
408 4,938,338
458 4,938,339
462 4,938,340
474.1 4,938,341
774.3 4,938,342

CLASS 200

11 TC 4,939,319
17 R 4,939,320
83 P 4,939,321
148 A 4,939,322
275 4,939,323
345 4,939,324
506 4,939,326
517 4,939,327
526 4,939,328
552 4,939,325
573 4,939,329

CLASS 202

169 4,938,845

CLASS 203

1 4,938,868
15 4,938,846

CLASS 204

29 4,938,850
44.6 4,938,851
67 4,938,848
73 R 4,938,849
86 4,938,852
4,938,853
130 4,938,854
153.22 4,938,847
157.46 4,938,855
182.3 4,938,856
192.27 4,938,857
298.25 4,938,858
403 4,938,860
425 4,938,861

CLASS 206

44 R 4,938,343
45.25 4,938,344
77.1 4,938,345
4,938,346
209 4,938,347
303 4,938,348
315.6 4,938,349
319 4,938,350
328 4,938,351
333 4,938,352
339 4,938,353
365 4,938,354
372 4,938,355
429 4,938,356
453 4,938,357
470 4,938,462
499 4,938,358
509 4,938,359
586 4,938,360
595 4,938,361
603 4,938,362
606 4,938,363

CLASS 208

67 4,938,862
120 4,938,863

CLASS 209

2 4,938,864
168 4,938,865
223.1 4,938,866

CLASS 210

220 4,938,867
437 4,938,869
490 4,938,870
634 4,938,871
639 4,938,872
646 4,938,873
662 4,938,874
695 4,938,875
708 4,938,876
723 4,938,877
744 4,938,878

CLASS 211

47 4,938,364
50 4,938,365
55 4,938,366
4,938,367
57.1 4,938,368
74 4,938,369

CLASS 215

252 4,938,370
352 4,938,371

CLASS 219

10.55 B 4,939,330
4,939,331
10.55 E 4,939,332
10.55 F 4,939,333
69.12 4,939,334
109 4,939,335
121.62 4,939,336
125.11 4,939,337
137 WM 4,939,338
137.63 4,939,339
225 4,939,340
243 4,939,341
251 4,939,342
276 4,939,343
364 4,939,344
370 4,939,345
388 4,939,346
492 4,939,347
547 4,939,348
552 4,939,349

CLASS 220

20.5 4,938,372
23.86 4,938,373
83 4,938,374
90.4 4,938,375
203 4,938,376
216 4,938,377
307 4,938,378
370 4,938,379
404 4,938,380

CLASS 221

45 4,938,382

CLASS 222

1 4,938,381
41 4,938,383
52 4,938,384
55 4,938,385
92 4,938,386
129.4 4,938,387
146.5 4,938,388
189 4,938,389
206 4,938,390
257 Re.33,247
278 4,938,391
321 4,938,392
380 4,938,393
456 4,938,394
478 4,938,395
641 4,938,396

CLASS 223

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CLASS 224

42.42 4,938,398
42.43 4,938,399
155 4,938,400
275 4,938,401
277 4,938,402
310 4,938,403

CLASS 226

10 4,938,404
74 4,938,405
97 4,938,406
196 4,938,407

CLASS 227

8 4,938,408

CLASS 228

178 4,938,409
180.1 4,938,410

CLASS 229

1.5 H 4,938,411
2.5 EC 4,938,412
92.8 4,938,414
101 4,938,413
120.29 4,938,415

CLASS 235

98 C 4,939,350
379 4,939,351
382 4,939,352
438 4,939,353
456 4,939,354
467 4,939,355
4,939,356

CLASS 239

1 4,938,416
5 4,938,417
4,938,418
55 4,938,419
68 4,938,420
309 4,938,421
553.5 4,938,422

CLASS 241

46.17 4,938,423
98 4,938,424
101.7 4,938,425
222 4,938,426

CLASS 242

18 DD 4,938,427
25 R 4,938,428
71.1 4,938,429
107.2 4,938,430
4,938,431
117 4,938,432
245 4,938,433

CLASS 244

3.16 4,938,434
142 4,938,435
151 R 4,938,436

CLASS 245

1.5 4,938,437

CLASS 246

406 4,938,438

CLASS 248

118.5 4,938,439
183 4,938,440
248 4,938,441
250 4,938,442
251 4,938,443
257.2 4,938,444
300 4,938,445
530 4,938,446
635 4,938,448
670 4,938,447

CLASS 249

216 4,938,449

CLASS 250

201.1 4,939,357
221 4,939,358
4,939,359
231.10 4,939,368
251 4,939,360
260 4,939,361
269 4,939,362
306 4,939,363
309 4,939,364
311 4,939,365
327.2 4,939,366
4,939,367
332 4,939,369
372 4,939,370
397 4,939,371
484.1 4,939,372
492.3 4,939,373
504 R 4,939,374
551 4,939,375
554 4,939,376
560 4,939,377
4,939,378
4,939,379
578.1 4,939,380

CLASS 251

30.03 4,938,450
129.14 4,938,451
305 4,938,452
313 4,938,453

CLASS 252

8.75 4,938,879
32.7 E 4,938,880
4,938,881
38 4,938,882
39 4,938,883
46.7 4,938,884
49.3 4,938,891
51.5 A 4,938,885
62.51 4,938,886
68 4,938,887
91 4,938,888
102 4,938,889
301.4 R 4,938,890
520 4,938,892
527 4,938,893
587 4,938,896
609 4,938,894
627 4,938,895

CLASS 254

356 4,938,454

CLASS 260

408 4,938,898

CLASS 261

123 4,938,899

CLASS 264

4.1 4,938,900
22 4,938,901
28 4,938,902
56 4,938,911
71 4,938,904
108 4,938,905
159 4,938,907
163 4,938,906
209.2 4,938,908
219 4,938,909
236 4,938,910
504 4,938,912
512 B1 4,486,378
565 4,938,903
570 4,938,913

CLASS 266

48 4,938,455
194 4,938,456
204 4,938,457
224 4,938,459
250 4,938,458
258 4,938,460
266 4,938,461

CLASS 267

140.1 4,938,463

CLASS 269

323 4,938,464

CLASS 270

52.5 4,938,465

CLASS 271

107 4,938,466
202 4,938,467
272 4,938,468

CLASS 272

69 4,938,469
4,938,473
70 4,938,474
73 4,938,475
93 4,938,476
119 4,938,477

CLASS 273

26 R 4,938,478
29 A 4,938,479
54 B 4,938,487
164 4,938,470
227 4,938,471
241 4,938,472
243 4,938,481
260 4,938,482
311 4,938,483
324 4,938,484
326 4,938,480
401 4,938,485
424 4,938,486

CLASS 277

235 B 4,938,488

CLASS 279

1 L 4,938,489
42 4,938,490
119 4,938,491

CLASS 280

33.992 4,938,492
43.12 4,938,493
91 4,938,494
477 4,938,495
511 4,938,496
625 4,938,497
675 4,938,498
707 4,938,499
731 4,938,500
4,938,503
4,938,504
743 4,938,501
804 4,938,502
808 4,938,914

CLASS 282

9 R 4,938,507
12 R 4,938,505

CLASS 283

105 4,938,506

CLASS 285

26 4,938,509
39 4,938,510
312 4,938,511

CLASS 289

2 4,938,512

CLASS 292

80 4,938,513
235 4,938,508

CLASS 294

16 4,938,514
25 4,938,515
50.9 4,938,516
101 4,938,517

CLASS 296

24.1 4,938,518
37.6 4,938,519
76 4,938,520
96.21 4,938,521
136 4,938,522
159 4,938,523
181 4,938,524
185 4,938,525
192 4,938,526

CLASS 297

216 4,938,527
284 4,938,528
4,938,529
287 4,938,530
300 4,938,531
301 4,938,532
337 4,938,533
417 4,938,534
483 4,938,535

CLASS 299

19 4,938,536
39 4,938,537
86 4,938,538

CLASS 300

21 4,938,539

CLASS 301

99 4,938,540

CLASS 303

10 4,938,541
20 4,938,542
100 4,938,543
103 4,938,544
119 4,938,545

CLASS 305

35 EB 4,938,546

CLASS 307

17 4,939,381
116 4,939,382
139 4,939,383
279 4,939,384
296.8 4,939,385
304 4,939,386
427 4,939,388
443 4,939,389
450 4,939,390
465 4,939,391
473 4,939,392
475 4,939,393
480 4,939,394
491 4,939,395
518 4,939,396
529 4,939,387

CLASS 310

88 4,939,397
154 4,939,406

156 4,939,398
198 4,939,399
208 4,939,400
316 4,939,402
317 4,939,401
320 4,939,403
323 4,939,404
330 4,939,405
366 4,939,407

CLASS 312

100 4,938,547
233 4,938,548
305 4,938,549

CLASS 313

25 4,939,408
130 4,939,409
231.01 4,939,410
344 4,939,411
402 Re.33,253
407 4,939,412
422 4,939,413
431 4,939,414
440 4,939,415
590 4,939,416
595 4,939,417
4,939,418

CLASS 315

5.41 4,939,419
58 4,939,420
85 4,939,421
101 4,939,422
105 4,939,423
111.21 4,939,424
4,939,425
192 4,939,426
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291 4,939,428
4,939,430
411 4,939,429

CLASS 318

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124 4,939,432
280 4,939,433
285 4,939,434
432 4,939,435
434 4,939,436
473 4,939,437
564 4,939,438
568.1 4,939,439
646 4,939,440
718 4,939,441

CLASS 323

281 4,939,442
284 4,939,443
360 4,939,444

CLASS 324

72 4,939,446
96 4,939,447
117 R 4,939,448
4,939,449
119 4,939,450
127 4,939,451
158 F 4,939,452
4,939,454
158 P 4,939,453
168 4,939,455
207.13 4,939,457
207.21 4,939,456
228 4,939,458
247 4,939,459
303 4,939,460
309 4,939,461
4,939,462
4,939,463
318 4,939,464
4,939,465
464 4,939,466
663 4,939,445
4,939,467
690 4,939,468
694 4,939,469

CLASS 328

14 4,939,470
108 4,939,471
127 4,939,472
167 4,939,473

CLASS 330

4 3 4,939,474
59 4,939,475
4,939,476
252 4,939,477
253 4,939,478
257 4,939,479
260 4,939,480

CLASS 331

117 R 4,939,481
161 4,938,583
211 4,938,584

CLASS 332

162 4,939,483

CLASS 333

24 R 4,939,484
104 4,939,485
175 4,939,486
193 4,939,487
202 4,939,488
4,939,489

CLASS 335

17 4,939,490
18 4,939,491
42 4,939,492
190 4,939,540
210 4,939,493

CLASS 336

96 4,939,494

CLASS 337

79 4,939,495

CLASS 338

2 4,939,496
4 4,939,497
22 R 4,939,498
32 H 4,939,499
80 4,939,500
153 4,939,501

CLASS 340

438 4,939,502
468 4,939,503
604 4,939,504
642 4,939,505
649 4,939,506
706 4,939,507
710 4,939,508
717 4,939,509
825.5 4,939,510
825.78 4,939,511
933 4,939,512
970 4,939,513

CLASS 341

22 4,939,514
51 4,939,515
143 4,939,516
156 4,939,517
159 4,939,518
167 4,939,519
4,939,520

CLASS 342

20 4,939,521
387 4,939,522

CLASS 343

705 4,939,523
715 4,939,524
745 4,939,525
756 4,939,526
771 4,939,527

CLASS 346

17 4,939,528
108 4,939,529
157 4,939,530

CLASS 350

3.71 4,938,550
6.7 4,938,551
6.9 B1 4,699,447
96.11 4,938,553
96.15 4,938,554
4,938,555
4,938,556
96.2 4,938,552
96.20 4,938,558
4,938,559
96.23 4,938,560
96.33 4,938,561
96.34 4,938,562
103 4,938,563
252 4,938,564
332 4,938,565
4,938,566
333 4,938,567
334 4,938,568
336 4,938,569
350 S 4,938,574
351 4,938,570
357 4,938,571
423 4,938,572
432 4,938,573
516 4,938,575
574 4,938,576
605 4,938,577
629 4,938,578
640 4,938,579

CLASS 351

47 4,938,580
156 4,938,581
158 4,938,582
103 4,939,603
4,939,604
107 4,939,606
4,939,607
121 4,939,608
125 4,939,609
126 4,939,610
128 4,939,611
130.24 4,939,612
132 4,939,613
135 4,939,614
137 4,939,601

CLASS 361

42 4,939,615
56 4,939,616
64 4,939,617
117 4,939,618
4,939,619
321 4,939,620
382 4,939,621
391 4,939,622
399 4,939,623
424 4,939,624

CLASS 362

154 4,939,625
189 4,939,626
206 4,939,628
223 4,939,629
268 4,939,630
284 4,939,631
299 4,939,627

CLASS 363

19 4,939,632
98 4,939,633

CLASS 364

141 4,939,634
191 4,939,635
200 4,939,636
4,939,637
4,939,638
4,939,639
4,939,640
4,939,641
4,939,642
4,939,643
4,939,644
413.19 4,939,645
413.22 4,939,646
413.31 4,939,647
422 4,939,648
4,939,649
424.02 4,939,650
4,939,651
424.04 4,939,652
424.05 4,939,653
4,939,634
4,939,655
426.02 4,939,656
426.04 4,938,604
4,939,657
431.04 4,939,659
431.06 4,939,658
442 4,939,660
443 4,939,661
449 4,939,662
4,939,663
474.29 4,939,664
476 4,939,665
496 4,939,666
497 4,939,667
513 4,939,668
4,939,680
519 4,939,669
4,939,670
521 4,939,671
4,939,672
4,939,673
523 4,939,674
550 4,939,675
562 4,939,676
569 4,939,677
571.02 4,939,678
571.04 4,939,679
578 4,939,681
713 4,939,682
715.11 4,939,683
724.01 4,939,684
724.19 4,939,685
752 4,939,686
757 4,939,687
813 4,939,688
900 4,939,689

CLASS 365

185 4,939,690
189.01 4,939,691
189.03 4,939,692
190 4,939,693
200 4,939,694
222 4,939,695
230.03 4,939,696

CLASS 366

76 4,938,605
134 4,938,606

CLASS 367

88 4,939,698
4,939,699
4,939,700
104 4,939,697
128 4,939,701
138 4,939,702
140 4,939,703
146 4,939,704

CLASS 368

10 4,939,705
4,939,706
64 4,939,707
233 4,939,708
241 4,939,709

CLASS 369

13 4,938,915
4,939,710
4,939,711
32 4,939,712
44.11 4,939,713
59 4,939,714
100 4,939,716
116 4,939,717

CLASS 370

60 4,939,718
4,939,719
4,939,720
4,939,721
84 4,939,722
4,939,723
85.15 4,939,724
85.3 4,939,725
94.1 4,939,726
4,939,727
94.3 4,939,728
112 4,939,729

CLASS 371

8.1 4,939,736
11.2 4,939,730
32 4,939,731
37.1 4,939,732
4,939,741
40.1 4,939,733
43 4,939,734
47.1 4,939,735

CLASS 372

2 4,939,740
5 4,939,742
24 4,939,737
46 4,939,743
76 4,939,744
95 4,939,738
107 4,939,739

CLASS 375

1 4,939,745
3.1 4,939,747
8 4,939,748
17 4,939,555
30 4,939,749
76 4,939,750
80 4,939,751
107 4,939,752
4,939,753

CLASS 376

110 4,938,916
253 4,938,917
260 4,938,918
282 4,939,754
446 4,938,919
457 4,938,920
4,938,921

CLASS 377

39 4,939,755
45 4,939,756

CLASS 378

8 4,939,757
22 4,939,758
32 4,939,759
99 4,939,760
4,939,761
144 4,939,762
161 4,939,763
181 4,939,764

CLASS 379

29 4,939,765
53 4,939,767
58 4,939,766
4,939,768
61 4,939,769
4,939,770
67 4,939,771
96 4,939,772
204 4,939,773
353 4,939,774
373 4,939,775
382 4,939,776
387 4,939,777
438 4,939,778

CLASS 380

7 4,939,779
10 4,939,780

CLASS 381

97 4,939,781
103 4,939,782
188 4,939,783
202 4,939,784

CLASS 382

34 B1 3,713,100

CLASS 383

4 4,938,607
7 4,938,608

CLASS 384

21 4,938,609
126 4,938,610
133 4,938,611
446 4,938,612
526 4,938,613
537 4,938,614
571 4,938,615

CLASS 400

120 4,938,616
241.4 4,938,617
642 4,938,618
708 4,938,619

CLASS 401

56 4,938,626
260 4,938,620
289 4,938,621

CLASS 403

2 4,938,622
45 4,938,623
195 4,938,624
231 4,938,625

CLASS 405

154 4,938,627
201 4,938,628
205 4,938,629
224 4,938,630
4,938,632
229 4,938,633
4,938,634
252 4,938,635

CLASS 406

31 4,938,636
56 4,938,637

CLASS 407

39 4,938,638
103 4,938,639
110 4,938,640
4,938,641

CLASS 409

182 4,938,642

CLASS 410

1 4,938,643

CLASS 411

132 4,938,644
508 4,938,645

CLASS 414

24.5 4,938,646
401 4,938,647
4,938,648
412 4,938,649
469 4,938,650
694 4,938,651
718 4,938,652
744.2 4,938,653
757 4,938,654
786 4,938,655
789.5 4,938,656
790.4 4,938,657

CLASS 415

27 4,938,658
55.1 4,938,659
90 4,938,660
199.1 4,938,661
214.1 4,938,662

CLASS 417

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48 4,938,667
83 4,938,664
174 4,938,665
295 4,938,666

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CLASS 419

23 4,938,673

CLASS 420

508 4,938,922
509 4,938,923
558 4,938,924

CLASS 422

12 4,938,925
58 4,938,926
64 4,938,927
98 4,938,928
100 4,938,929
197 4,938,930
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292 4,938,933

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648.1 4,938,946

CLASS 424

1.1 4,938,947
9 4,938,948
10 4,938,949
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59 4,938,951
63 4,938,952
70 4,938,953
71 4,938,954
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79 4,938,955
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85.2 4,938,956
114 4,938,959
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456 4,938,966
458 4,938,967
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606 4,938,961
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678 4,938,970

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522 4,938,680
549 4,938,681
593 4,938,682

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91 4,938,975
104 4,938,976
386 4,938,977
461 4,938,978
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553 4,938,980
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573 4,938,983
580 4,938,984
599 4,938,985
624 4,938,986
632 4,938,987
644 4,938,988
658 4,938,989

CLASS 427

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38 4,938,992
4,938,993
41 4,938,995
53.1 4,938,996
96 4,938,994
103 4,938,997
190 4,938,991
223 4,938,998
252 4,938,999
345 4,939,000
419.2 4,939,001
434.4 4,939,002

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9 4,939,004
13 4,939,005
25 4,939,006
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35.2 4,939,009
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49 4,939,010
64 4,939,011
4,939,012
4,939,013
76 4,939,014
142 4,939,015
152 4,939,016
192 4,939,017
4,939,018
209 4,939,021
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215 4,939,023
218 4,939,024
220 4,939,020
224 4,939,026
284 4,939,027
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314.4 4,939,029
315.5 4,939,030
318.4 4,939,019
323 4,939,031
328 4,939,032
331 4,939,033
336 4,939,034
341 4,939,035
349 4,939,036
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537 4,939,264

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228 4,939,105

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65 4,938,701
67 4,938,702
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95 4,938,704
125 4,938,705
202 4,938,706
218 4,938,707
239 4,938,708
4,938,709
4,938,710
405 4,938,711
490 4,938,712
492 4,938,713
607 4,938,714
621 4,938,715
635 4,938,716
669 4,938,717
680 4,938,718
714 4,938,719
839 4,938,720

CLASS 440

2 4,938,721
6 4,938,722
52 4,938,723
73 4,938,724
112 4,938,726

CLASS 441

75 4,938,725

CLASS 445

40 4,938,727

CLASS 446

130 4,938,730
133 4,938,728

CLASS 455

33 4,939,746
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115 4,939,787
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93 Re.33,249
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CLASS 475

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137 4,939,108

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251 4,939,113
348 4,939,114
401 4,939,115

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224 4,939,117
227 4,939,118

CLASS 505

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4,939,121
4,939,308

CLASS 514

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34 4,939,125
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77 4,939,127
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85 4,939,129
94 4,939,130
102 4,939,131
166 4,939,132
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169 4,938,897
177 4,939,134
179 4,939,135
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218 4,939,138
220 4,939,139
222 4,939,140
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230.5 4,939,141
238.2 4,939,142
256 4,939,155
258 4,939,156
277 4,939,157
284 4,939,158
300 4,939,159
319 4,939,160
326 4,939,143
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399 4,939,164
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444 4,939,166
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646 4,939,148
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691 4,939,146
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CLASS 521

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81 4,939,181
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CLASS 523

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146 4,939,188
205 4,939,189
206 4,939,190

CLASS 524

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90 4,939,193
134 4,939,194
185 4,939,195
291 4,939,196
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379 4,939,198
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4,939,206
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452 4,939,210
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289 4,939,218
292.5 4,939,219
318.43 4,939,220
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28 4,939,223
32 4,939,225
54 4,939,226
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144 4,939,229
171 4,939,228
198 4,939,230
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4,939,233
315 4,939,234
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389 4,939,236
487 4,939,237

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212 4,939,238
324 4,939,224
B1 4,683,291
370 4,939,239
387 Re.33,252
4,939,240

CLASS 534

556 4,939,241
581 4,939,242
625 4,939,243

CLASS 536

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18.6 4,939,245
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CLASS 540

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355 4,939,253
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CLASS 546

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206 4,939,282

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214 4,939,285
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81 4,939,288
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108 4,939,291
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CLASS 564

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516 4,939,313
533 4,939,314

CLASS 600

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36 4,938,740

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51 4,938,761
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158 4,938,765

CLASS 623

3 4,938,766
6 4,938,767
16 4,938,768
20 4,938,769
23 4,938,770
4,938,771
4,938,772
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27 4,938,775
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320 308,904
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45 308,950
79 308,951
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169 308,957
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169 308,963
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43 308,990
D21— 13 308,991
71 308,992
146 308,993
204 308,994
219 308,995
229 308,996
230 308,997
234 308,998
252 308,999
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149 309,002
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262 309,007
316 309,008
362 309,009
411 309,010
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	4,938,241		4,938,309		4,939,019		4,939,740
	4,938,547		4,938,346		4,939,042		4,939,763
	4,938,677		4,938,351		4,939,043		4,939,765
	4,938,817		4,938,360		4,939,071		4,939,773
	4,939,623		4,938,369		4,939,083		4,683,291
	4,939,722		4,938,373		4,939,093	08	Re.33,246
02	4,938,651		4,938,380		4,939,097		4,937,885
04	4,938,469		4,938,413		4,939,121		4,937,908
	4,938,713		4,938,416		4,939,152		4,938,075
	4,938,738		4,938,440		4,939,176		4,938,116
	4,938,907		4,938,445		4,939,200		4,938,206
	4,938,996		4,938,474		4,939,203		4,938,400
	4,939,317		4,938,475		4,939,204		4,938,435
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05	4,937,968		4,938,575		4,939,390		4,939,509
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	4,937,963		4,938,697		4,939,455		4,938,129
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	4,939,645		4,938,992	29 :	4,938,052		4,938,805
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	4,938,545		4,939,520	31 :	4,938,224		4,939,107
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	4,938,623		4,939,594	32 :	4,938,535		4,939,120
	4,938,860		4,939,638	33 :	4,938,257		4,939,127
	4,938,878		4,939,640		4,938,827		4,939,132
	4,939,002		4,939,641	34 :	4,937,897		4,939,134
	4,939,022		4,939,643		4,937,998		4,939,138
	4,939,163		4,939,644		4,938,127		4,939,161
	4,939,185		4,939,689		4,938,128		4,939,240
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	4,939,205		4,939,703		4,938,336		4,939,261
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	4,939,258		4,939,775		4,938,607		4,939,345
	4,939,259		4,228,225		4,938,675		4,939,359
	4,939,329	26 :	4,937,882		4,938,749		4,939,401
	4,939,429		4,937,945		4,938,756		4,939,408
	4,939,460		4,937,959		4,938,809		4,939,457
19	4,937,934		4,937,977		4,938,833		4,939,464
	4,938,027		4,938,011		4,938,841		4,939,493
	4,938,030		4,938,019		4,938,847		4,939,506
	4,938,091		4,938,043		4,938,877		4,939,511
	4,938,277		4,938,064		4,938,879		4,939,543
	4,938,425		4,938,097		4,938,880		4,939,544
	4,938,449		4,938,102		4,938,896		4,939,559
	4,938,678		4,938,110		4,938,935		4,939,563
20	4,938,010		4,938,122		4,938,952		4,939,566
	4,938,212		4,938,183		4,938,968		4,939,569
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	4,938,970		4,938,254		4,939,113		4,939,599
	4,939,346		4,938,332		4,939,137		4,939,615
21	4,937,949		4,938,349		4,939,143		4,939,617
	4,938,864		4,938,381		4,939,159		4,939,661
	4,939,005		4,938,404		4,939,165		4,939,668
	4,939,188		4,938,417		4,939,198		4,939,687
	4,939,778		4,938,418		4,939,199		4,939,735
22	4,938,247		4,938,437		4,939,202		4,939,779
	4,938,285		4,938,490		4,939,220		4,939,781
	4,938,288		4,938,496		4,939,228		4,939,782
	4,938,291		4,938,501		4,939,252		4,939,783
	4,938,415		4,938,514		4,939,272		3,713,100
	4,938,899		4,938,518		4,939,273	37	4,937,925
23	4,938,485		4,938,520		4,939,289		4,937,939
	4,938,906		4,938,524		4,939,308		4,937,986
	4,939,096		4,938,528		4,939,314		4,938,002
	4,939,411		4,938,530		4,939,326		4,938,054
24	4,938,026		4,938,578		4,939,382		4,938,236
	4,938,066		4,938,593		4,939,474		4,938,238
	4,938,117		4,938,613		4,939,555		4,938,251
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	4,938,363		4,938,644		4,939,787		4,938,401
	4,938,470		4,938,708	35 :	4,938,233		4,938,430
	4,938,472		4,938,709		4,939,419		4,938,436
	4,938,480		4,938,732		4,939,742		4,938,534
	4,938,580		4,938,768	36 :	4,937,930		4,938,639
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	4,939,041		4,938,953		4,937,975		4,939,146
	4,939,115		4,939,014		4,937,984		4,939,730
	4,939,149		4,939,133		4,938,012	38 :	4,938,974
	4,939,254		4,939,169		4,938,029	39 :	4,937,893
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	4,939,453		4,939,328		4,938,087		4,938,016
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	3,899,945		4,939,466		4,938,229		4,938,203
25	4,937,940		4,939,675		4,938,282		4,938,259
	4,937,972	27 :	4,937,976		4,938,283		4,938,260
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	4,938,216		4,937,987		4,938,355		4,938,328
	4,938,217		4,938,086		4,938,359		4,938,329
	4,938,292		4,938,138		4,938,364		4,938,365
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40 :	4,938,073		4,939,397				
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	4,939,026		4,938,546				
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	4,939,090		4,938,824				
	4,939,139		4,939,352				
	4,939,211	50	4,938,007				
	4,939,229		4,938,516				
	4,939,266		4,938,672				
	4,939,279		4,939,567				
	4,939,300	51	4,937,905				
	4,939,320		4,938,061				
	4,939,340		4,938,312				
	4,939,348		4,938,347				
	4,939,383		4,938,390				
	4,939,399		4,938,414				
	4,939,412		4,938,451				
	4,939,418		4,938,457				

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	4,938,602		4,938,624		4,939,513		4,937,927		4,938,338		4,938,757
	4,939,349		4,938,821		4,939,527		4,937,962		4,938,411		4,938,869
	4,939,746		4,938,932		4,939,672		4,938,144		4,938,424		4,938,969
53	Re.33,252		4,939,031		4,939,682		4,938,153		4,938,513		4,939,624
	4,937,950		4,939,087		4,939,683		4,938,180		4,938,647		4,939,660
	4,938,112		4,939,379	54	4,938,743		4,938,243		4,938,673		4,083,229
	4,938,482		4,939,481		4,939,376		4,938,261		4,938,753	56	4,937,941
	4,938,495		4,939,483	55	4,937,881		4,938,281				

DESIGN PATENTS

01	308,917		309,019	17	308,947		309,050		308,975		308,989
05	308,992		309,032		308,965	27	308,916		309,007		309,027
	309,002		309,045		309,012		308,920	39	308,905		309,051
	309,023		309,049		309,013	34	308,930		308,907	44	308,918
06	308,900	08	309,046		309,033		308,986		308,931		309,030
	308,925	09	308,909	18	308,943		309,000		308,961		309,031
	308,935		308,926		308,963		309,024		309,029	47	308,998
	308,936		308,967		309,006	36	308,903		309,048	48	308,948
	308,946	12	308,937	19	308,953		308,927		309,054		308,957
	308,958		308,938		308,974		308,933	40	308,959		309,010
	308,964		308,955	20	308,929		308,951		308,993	49	309,001
	308,971		308,956		309,053		308,995		309,018	51	308,988
	308,979		308,966	22	308,911		309,003	41	308,902		309,020
	308,980		308,990	24	308,932		309,004		309,017	53	308,912
	308,981		309,028	25	308,904		309,005	42	308,952	55	308,915
	308,982	13	309,047	26	308,924		309,044		308,968		308,944
	309,015	16	309,021		309,035	37	308,921		308,976		309,009

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06	7,263	39	7,258	7,259	7,260		

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01	H795		H799	25	H802		H797		
	H796	06	H798	34	H793	47	H800	51	H794		H801

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UNITED STATES PATENT AND TRADEMARK OFFICE
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1109 O.G. 3 on Dec. 5, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of March 1, 1990, and was announced in the *Official Gazette* at 1111 O.G. 24 on Feb. 20, 1990.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1242.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Apr. 30, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on July 7, 1987 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,677,694 through 4,679,252
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 5, 1983 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,390,995 through 4,392,256
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$245.00
By other than a small entity.....$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$495.00
By other than a small enttity.....$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED APRIL 29, 1990
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,326,427	06/221,239	4/27/82
4,326,438	06/216,624	4/27/82
4,326,454	06/251,275	4/27/82
4,326,695	06/225,413	4/27/82
4,326,722	06/236,066	4/27/82
4,326,783	06/247,189	4/27/82
4,326,867	06/248,842	4/27/82
4,326,998	06/247,323	4/27/82
4,327,008	06/221,146	4/27/82
4,327,089	06/215,777	4/27/82
4,327,094	06/225,749	4/27/82
4,327,114	06/223,335	4/27/82
4,327,123	06/236,243	4/27/82
4,327,132	06/240,703	4/27/82
4,327,159	06/220,281	4/27/82
4,327,160	06/220,282	4/27/82
4,584,725	06/754,658	4/29/86
4,584,727	06/623,089	4/29/86
4,584,728	06/540,437	4/29/86
4,584,730	06/631,435	4/29/86
4,584,731	06/649,078	4/29/86
4,584,744	06/417,078	4/29/86
4,584,752	06/667,576	4/29/86
4,584,754	06/641,742	4/29/86
4,584,769	06/468,990	4/29/86
4,584,774	06/674,913	4/29/86
4,584,779	06/744,697	4/29/86
4,584,783	06/600,352	4/29/86
4,584,784	06/320,063	4/29/86
4,584,790	06/668,890	4/29/86
4,584,791	06/646,373	4/29/86
4,584,800	06/352,343	4/29/86
4,584,801	06/772,645	4/29/86
4,584,809	06/559,097	4/29/86
4,584,813	06/485,596	4/29/86
4,584,824	06/494,020	4/29/86
4,584,828	06/607,515	4/29/86
4,584,833	06/648,724	4/29/86
4,584,837	06/541,247	4/29/86
4,584,838	06/690,315	4/29/86
4,584,841	06/619,221	4/29/86
4,584,844	06/647,189	4/29/86
4,584,847	06/647,356	4/29/86
4,584,864	06/611,847	4/29/86
4,584,867	06/640,125	4/29/86
4,584,869	06/522,673	4/29/86
4,584,871	06/751,662	4/29/86
4,584,872	06/722,116	4/29/86
4,584,873	06/644,527	4/29/86
4,584,875	06/606,774	4/29/86
4,584,881	06/621,118	4/29/86
4,584,889	06/684,781	4/29/86
4,584,896	06/773,105	4/29/86
4,584,898	06/334,977	4/29/86
4,584,899	06/707,105	4/29/86
4,584,901	06/499,105	4/29/86
4,584,902	06/500,008	4/29/86
4,584,909	06/559,173	4/29/86
4,584,918	06/638,960	4/29/86
4,584,919	06/773,518	4/29/86
4,584,924	06/513,120	4/29/86
4,584,931	06/728,599	4/29/86
4,584,946	06/651,687	4/29/86
4,584,952	06/678,276	4/29/86
4,584,961	06/526,360	4/29/86
4,584,966	06/718,566	4/29/86
4,584,972	06/684,576	4/29/86
4,584,977	06/718,312	4/29/86
4,584,980	06/525,629	4/29/86
4,584,983	06/536,720	4/29/86
4,584,985	06/513,835	4/29/86
4,584,991	06/561,879	4/29/86
4,584,997	06/583,724	4/29/86
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4,585,014	06/519,527	4/29/86
4,585,027	06/614,537	4/29/86
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4,585,087	06/740,288	4/29/86
4,585,090	06/753,106	4/29/86
4,585,111	06/671,903	4/29/86
4,585,112	06/628,501	4/29/86
4,585,118	06/579,307	4/29/86
4,585,120	06/638,282	4/29/86
4,585,123	06/761,962	4/29/86
4,585,124	06/615,803	4/29/86
4,585,137	06/593,925	4/29/86
4,585,141	06/687,057	4/29/86
4,585,155	06/604,707	4/29/86
4,585,168	06/599,545	4/29/86
4,585,170	06/638,851	4/29/86
4,585,178	06/265,061	4/29/86
4,585,193	06/617,418	4/29/86
4,585,194	06/570,197	4/29/86
4,585,196	06/583,606	4/29/86
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4,585,201	06/633,249	4/29/86
4,585,202	06/731,842	4/29/86
4,585,204	06/609,831	4/29/86
4,585,211	06/690,681	4/29/86
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4,585,228	06/646,901	4/29/86
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4,585,521	06/612,360	4/29/86
4,585,527	06/695,193	4/29/86
4,585,546	06/490,075	4/29/86
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4,585,562	06/578,364	4/29/86
4,585,587	06/663,057	4/29/86
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4,585,617	06/751,704	4/29/86
4,585,619	06/731,045	4/29/86
4,585,624	06/673,240	4/29/86
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4,586,175	06/605,722	4/29/86
4,586,178	06/539,511	4/29/86
4,586,180	06/469,628	4/29/86

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,715,644, Re. S. N. 07/458,186, Filed Dec. 28, 1989, Cl. 296/97, SPRING-LOADED HINGE ASSEMBLY FOR VEHICLE, Mark Lobanoff, et al., Owner of Record: *Irvin Industries, Inc., Rochester Hills, Mich.*, Attorney or Agent: Ronald W. Wangerow, Ex. Gp.: 312

4,743,349, Re. S. N. 07/520,802, Filed May 9, 1990, Cl. 204/242, ELECTRICALLY CONDUCTIVE FIBROUS WEB SUBSTRATE AND CATHODIC ELEMENT COMPRISED THEREOF, Jean Bachot, et al., Owner of Record: *Atochem, Paris La Defense, France*, Attorney or Agent: Bruce J. Boggs, Ex. Gp.: 112

4,743,406, Re. S. N. 07/521,346, Filed May 9, 1990, Cl. 261/30, SELF-CONTAINED AIR FRESHENER AND CARTRIDGE THEREFOR, Robert L. Steiner, et al., Owner of Record: *Steiner Co., Inc., Chicago, Ill.* Attorney or Agent: Harry M. Levy, Ex. Gp.: 135

4,744,728, Re. S. N. 07/536,251, Filed May 17, 1990, Cl. 416/223R, HELICOPTER BLADE AIRFOIL, David A. Lednicer, et al., Owner of Record: *United Technologies, Corp., Hartford, Conn.* Attorney or Agent: Troxell K. Snyder, Ex. Gp.: 341

4,745,398, Re. S. N. 07/524,919, Filed May 16, 1990, Cl. 340/500, SELF-POWERED SENSOR FOR USE IN CLOSED-LOOP SECURITY SYSTEM, William E. Abel, et al., Owner of Record: *Sentrol, Inc., Portland, Oreg.*, Attorney or Agent: William O. Geny, Ex. Gp.: 268

4,845,774, Re. S. N. 07/526,211, Filed May 18, 1990, Cl. 379/433, APPARATUS FOR ANCHORING A TELEPHONE HANDSET TO A TELEPHONE HOUSING, Raymond Arzounian, Owner of Record: *Inventor*, Attorney or Agent: Leslie L. Kasten, Ex. Gp.: 261

4,876,907, Re. S. N. 07/524,961, Filed May 18, 1990, Cl. 74/331, MOTOR VEHICLE GEARBOX, Lars Andersson, et al., Owner of Record: *AB Volvo, Gothenburg, Sweden*, Attorney or Agent: Robert J. Patch, Ex. Gp.: 352

4,886,139, Re. S. N. 07/524,513, Filed May 17, 1990, Cl. 182/146, MOBILE SCAFFOLD WITH POWER-OPERATED PLATFORM ELEVATION, Gaston L. DuPont, et al., Owner of Record: *Inventor*, Attorney or Agent: William H. Wright, Ex. Gp.: 355

4,895,747, Re. S. N. 07/522,141, Filed May 11, 1990, Cl. 428/42, PRESSURE SENSITIVE ADHESIVE LABEL, Ronald B. Birkholz, et al., Owner of Record: *Minnesota Mining & Manufacturing Co., Saint Paul, Minn.*, Attorney or Agent: Leland D. Schultz, Ex. Gp.: 158

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,713,099, Reexam. No. 90/002,037, Requested June 4, 1990, Cl. 382/034, METHOD AND APPARATUS FOR IDENTIFYING LETTERS, CHARACTERS, SYMBOLS AND THE LIKE, Harold S. Hemstreet, Owner of Record: *Inventor, Wilton, Conn.*, Attorney or Agent: Pro Se, Ex. Gp.: 266, Requester: Owner

3,870,474, Reexam. No. 90/002,038, Requested June 4, 1990, Cl. 23/277, REGENERATIVE INCINERATOR SYSTEMS FOR WASTE GASES, Reagan Houston, Owner of Record: *Salem Industries, Inc., South Lyons, Mich.*, Attorney or Agent: Donald L. Otto, Ex. Gp.: 150, Requester: Richard J. Greco, Mountainside, N. J.

4,646,271, Reexam. No. 90/002,033, Requested May 31, 1990, Cl. 365/049, CONTENT ADDRESSABLE MEMORY HAVING DUAL ACCESS MODES, Kunio Uchiyama, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan*, Attorney or Agent: Antonelli, Terry & Wands, Ex. Gp.: 230, Requester: Motorola, Inc., Schaumberg, Ill.

4,706,553, Reexam. No. 90/002,039, Requested June 4, 1990, Cl. 98/115, FUME HOOD CONTROLLER, Gordon P. Sharp, et al., Owner of Record: *Phoenix Control Corp., Boston, Mass.*, Attorney or Agent: Wolf, Greenfield & Sacks, Ex. Gp.: 340, Requester: Accu Aire Controls, Inc., Bryan, Tex.

4,716,175, Reexam. No. 90/002,032, Requested May 29, 1990, Cl. 514/357, SATURATED FATTY ACID AMIDES AS INHIBITORS OF ACYL-COA: CHOLESTROL ACYLTRANSFERASE, Milton L. Hoefle, et al., Owner of Record: *Warner-Lambert Co., Ann Arbor, Mich.*, Attorney or Agent: R. G. Newtson, Ex. Gp.: 120, Requester: Owner

4,727,416, Reexam. No. 90/002,036, Requested June 1, 1990, Cl. 358/98, ELECTRONIC VIDEO DENTAL CAMERA, David H. Cooper, et al., Owner of Record: *Fuji Optical System, Inc., Los Gatos, Calif.*, Attorney or Agent: S. F. Caseiza, Ex. Gp.: 260, Requester: Wall & Roehrig, Syracuse, N. Y.

4,755,741, Reexam. No. 90/002,035, Requested June 1, 1990, Cl. 323/289, ADAPTIVE TRANSISTOR DRIVE CIRCUIT, Carl T. Nelson, Owner of Record: *Linear Technology Corp., Milpitas, Calif.*, Attorney or Agent: Fish & Neave, Ex. Gp.: 210, Requester: Benoit, Smith & Laughlin, Arlington, Va.

4,815,104, Reexam. No. 90/002,034, Requested May 29, 1990, Cl. 375/036, DIGITAL TELECOMUNICATIONS NETWORK, CROSS-CONNECT MODULE, Wayne E. Williams, et al., Owner of Record: *Telect, Inc., Liberty Lake, Wash.*, Attorney or Agent: Wells, St. John & Roberts, Ex. Gp.: 260, Requester: ADC Telecommunications, Inc., Minneapolis, Minn.

4,839,597, Reexam. No. 90/002,040, Requested June 4, 1990, Cl. 324/433, BATTERY CONDITION MONITORING SYSTEM, Robert O. Rowland, Owner of Record: *Hudson Respiratory Care, Inc., Temecula, Calif.*, Attorney or Agent: Jerry L. Seiller, Ex. Gp.: 260, Requester: Owner

4,914,593, Reexam. No. 90/002,041, Requested June 4, 1990 Cl. 364/424, METHOD FOR AUTOMATIC DEPTH CONTROL FOR EARTH MOVING AND GRADING, Christopher O. Middleton, et al., Owner of Record: *Spectra Physics, Inc., San Jose, Calif.*, Attorney or Agent: Matthew C. Rainey, Ex. Gp.: 230, Requester: Ogtek Development Co., Inc., Livermore, Calif.

Patents Available for License or Sale

4,266,112 WEB-CUTTING PROCESS, William P. Niedermeyer, 1024 Mount Mary Dr., Green Bay, Wis. 54301

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4,482,939	DIRECTIONALLY VARIABLE LIGHTING ASSEMBLY, Andrew Tishman, 170 East 88th Street #8B, New York, N. Y. 10128
4,576,178	AUDIO SIGNAL GENERATOR, David W. Johnson, Box 68, 436 E. 69 Street, New York, N. Y. 10021
DES. 305,459	FEEDING NIPPLE, Lois G. Smith, 833 W. River Road, Tuscon, Ariz. 85704

Errata

"All reference to Patent No. 4,918,656 to Hiroshi Miyamoto, et al., of Japan for `DYNAMIC RANDOM ACCESS MEMORY WITH FET EQUALIZATION OF BIT LINES' appearing in the Official Gazette of April 17, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,909,885 to Douglas A. Swenson of Minnesota for `APPARATUS AND METHOD FOR APPLYING HEAT-SENSITIVE ADHESIVE TAPE TO A WEB MOVING AT HIGH SPEED' appearing in the Official Gazette of March 20, 1990 should be deleted since no patent was granted."

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on April 4, 1990 were mailed to 360 candidates. The following list contains the names of persons who successfully passed the examination. Persons entitled at this time to receive provisional recognition pursuant to 37 CFR 10.9 (a) have been given the same to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before Aug. 24, 1990. Send information to be considered to the following address: U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231.

June 11, 1990 CAMERON WEIFFENBACH, *Director*
Office of Enrollment & Discipline

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DEPARTMENT OF COMMERCE

Patent and Trademark Office
37 CFR Part 5
[Docket No. 900531-0131]
RIN: 0651-AA09

Patent Law Foreign Filing Amendments

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking
Summary: The Patent and Trademark Office (Office) proposes to amend the rules of practice in patent cases to implement the Patent Law Foreign Filing Amendments Act of 1988, Subtitle B of Public Law 100-418. The proposed rules reflect changes made to 35 U.S.C. 184 which specify that a license is not required to file amendments, modifications, and supplements containing additional subject matter to a previously licensed foreign patent application if such amendments, modifications, and supplements do not change the general nature of the invention disclosed in the application in a manner which would require a corresponding United States patent application to be made available for national security inspection under 35 U.S.C. 181. These proposed regulatory changes would be applicable to most existing foreign filing license holders if their patent application did not undergo security inspection under 35 U.S.C. 181. Also, under the proposed rules, a retroactive foreign filing license may be granted in situations where a proscribed foreign filing occurred through error and without deceptive intent as opposed to the earlier standard of inadvertence.
Dates: Comments must be submitted on or before Aug. 15, 1990. An oral hearing is not scheduled.
Address: Address written comments to the Commissioner of Patents and Trademarks, Attention: Mr. T. H. Tubbesing, Special Laws Administration Group, Licensing and Review, Washington, D.C. 20231. The written comments will be available for public inspection in Crystal Plaza 3, Room 11C17, Crystal City, Va.
For Further Information Contact: Mr. T. H. Tubbesing by telephone at (703) 557-4918, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The proposed rules are intended to implement the Patent Law Foreign Filing Amendments Act of 1988, Subtitle B of the Public Law 100-418 (hereinafter the Act), which amended §§ 184, 185 and 186 of title 35, United States Code, in order to simplify the procedures for United States inventors filing and prosecuting patent applications in foreign countries. The Office does not propose any rule changes to implement the amendments to 35 U.S.C. 185 or 186 since these changes affect matters outside its jurisdiction.

Section 184 of title 35 is intended to protect United States national security interests by preventing the disclosure of potentially sensitive inventions made in the United States to foreign nationals by the act of filing a patent application in foreign countries. An inventor may not apply for a foreign patent on an invention made in the United States until at least six (6) months after the inventor has filed a United States patent application unless the inventor receives a license from the Office permitting an earlier foreign filing. This six-month period assures the Office

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the opportunity to screen applications for information the disclosure of which might be detrimental to the national security. Also, § 184, as originally enacted, authorized the Office to grant a retroactive license for an unlicensed foreign filing of a patent application if the foreign filing was inadvertent and if the disclosure of the subject matter in the application would not be detrimental to United States security interests.

The original regulatory implementation of 35 U.S.C. 184 required applicants to obtain a license not only for the original foreign patent application but also for the filing of almost any information in support of the application thereby creating administrative problems for United States inventors seeking foreign patent protection. For example, foreign patent offices often demand that additional technical data, such as the melting point of a chemical, be added to a patent application. An additional foreign filing license was usually required before the inventor could submit modifications, amendments, or supplements to a previously licensed foreign patent application regardless of how trivial the change might be.

Recognizing the problems involved in obtaining these additional licenses, the Office promulgated rules in 1984 (see § 5.15(a) and 49 Fed. Reg. 13456 (April 4, 1984)) to streamline the licensing procedure. The 1984 rule change provided that an inventor may obtain in applications, the disclosure of the content of which is not potentially detrimental to United States security interests, a license which permitted the foreign filing of modifications, amendments, and supplements without further licensing if such changes were within the scope or character of the originally licensed invention (§ 5.15(a)). The 1984 rule change, however, could not be made retroactive and therefore had no effect on licenses granted under the old system. If an applicant wished to broaden a pre-April 4, 1984, foreign filing license to the scope allowed by § 5.15(a), this involved filing a separate petition under § 5.15(c) in each application.

The present Act clarifies the statutory basis for the current Patent and Trademark Office rules by providing that inventors, in most circumstances, are not required to obtain an additional license to file modifications, amendments, and supplements to their foreign applications for which a foreign filing license has been obtained under § 5.15(a). Unlike the present Office rules, the proposed rules would broaden the scope of most existing licenses provided that the conditions contained in the Act are met.

The Act and these proposed rules also address difficulties associated with attempts to procure a retroactive foreign filing license. Some applicants faced loss of their patent rights due to improper foreign filings even though they believed, in good faith, that a license was not necessary for certain minor changes to their foreign application. Court decisions have held that supplemental information filed abroad was exempt from the license requirement *only* when it was recited *verbatim* in the United States patent application, or was so commonly known that it could have been said to have been expressly disclosed in the United States application. In *re Application of Gaertner*, 604 F.2d 1348, 202 USPQ 714 (CCPA 1979). If a patent applicant did not obtain a foreign filing license from the Office, any corresponding United States patent was at risk of being held invalid under 35 U.S.C. 185 if technical information was added to the foreign application, even if the technical information was completely unrelated to United States security interests.

Loss of United States patent rights subsequent to an "inadvertent" unlicensed foreign filing could be avoided if a retroactive license was obtained under 35 U.S.C. 184. *Twin Disc, Inc. v. United States*, 10 Cl. Ct. 713, 231 USPQ 417 (Ct. Cl. 1986) and *Minnesota Mining and Manufacturing Co. v. Norton Co.*, 366 F.2d 238, 151 USPQ 1 (6th Cir. 1966), *cert. denied*, 385 U.S. 1005 (1967). While the *Gaertner* decision defined a broad range of circumstances under which a foreign filing license would be required, other court decisions made correction of licensing errors difficult by setting forth various strict interpretations of the standard of "inadvertence." *Compare Iron Ore Co. of Canada v. Dow Chemical Co.*, 177 USPQ 34 (D. Utah 1972), *aff'd*, 500 F.2d 189, 182 USPQ 520 (10th Cir. 1974) and *Reese v. Dann*, 391 F. Supp. 12, 185 USPQ 492 (D.D.C. 1975). An inventor could fail to meet the standard of "inadvertence" even if the information disclosed was not significant in nature and did not contain any sensitive national security information. For example, one decision suggested that the filing of information abroad was intentional because the inventor first considered the applicability of § 184. *Shelco, Inc. v. Dow Chemical Co.*, 322 F. Supp. 485, 168 USPQ 395 (N.D. Ill. 1970), *aff'd*, 466 F.2d 613, 173 USPQ 451 (7th Cir. 1972), *cert. denied*, 409 U.S. 876 (1972).

Under this standard, if supplemental information had been filed abroad as a considered, willful act, even though done through error in the belief that the information disclosed abroad did not exceed the scope of the disclosure in the United States patent application, the filing would not be "inadvertent"; and, therefore, the subject information could not qualify for a retroactive license.

The Act addresses these problems, and the proposed rules implement the intention of the Act. The Act changes the language of the statute to provide that an inventor may receive a retroactive license if the inventor can show that the premature filing of a foreign patent application, or the submission of supplemental information in support of a foreign patent application, was made "through error and without deceptive intent." This criterion is equivalent to that for reissue of a patent under 35 U.S.C. 251 to correct errors made without any deceptive intention. The reissue error requirement has been considered by the courts. See, e.g., *In re Weiler*, 790 F.2d 1576, 229 USPQ 673 (Fed. Cir. 1986). The applicant for a retroactive license also must show that the foreign filing did not disclose any information detrimental to the national security and that diligence was exercised in seeking a retroactive license once the applicant became aware of the proscribed foreign filing.

The Act became effective on August 23, 1988 but it does not affect any final decision made by the Office or a court, nor the rights or liabilities of any party under a patent in a case pending before a court on the above date or under any subsequent patent deriving priority rights from such patent under 35 U.S.C. 120 or 121. Therefore, the retroactive effect of the Act and the proposed rules is limited.

The text of the Patent Law Foreign Filing Amendments Act of 1988 in Public Law 100-418 is reproduced below:

Subtitle B-Foreign Filing
Sec. 9101. Increased Effectiveness of Patent Law.

(a) *Short Title.*—This section may be cited as the "Patent Law Foreign Filing Amendments Act of 1988."

(b) *Filing of Applications in Foreign Countries.*—

(1) Section 184 of title 35, United States Code, is amended—

(A) in the third sentence by—

(i) striking out "inadvertently"; and

(ii) insert ing "through error and without deceptive intent" after "filed abroad"; and

(B) by adding at the end thereof the following new paragraph:

"The scope of a license shall per mit subsequent modifications, amendments, and supplements containing additional subject matter if the application upon which the request for the license is based is not, or was not, required to be made available for inspection under section 181 of this title and if such modifications, amendments, and supplements do not change the general nature of the invention in a manner which would require such application to be made available for inspection under such section 181. In any case in which a license is not, or was not, required in order to file an application in any foreign country, such subsequent modifications, amendments, and supplements may be made, without a license, to the application filed in the foreign country if the United States application was not required to be made available for inspection under section 181 and if such modifications, amendments, and supplements do not, or did not, change the general nature of the invention in a manner which would require the United States application to have been made available for inspection under such section 181."

(2) Section 185 of title 35, United States Code, is amended by inserting immediately before the period in the last sentence the following: ", unless the failure to procure such license was through error and without deceptive intent, and the patent does not disclose subject matter within the scope of section 181 of this title.".

(3) Section 186 of title 35, United States Code, is amended by inserting "willfully" after "whoever", the second place it appears.

(c) *Regulations.*—The Commissioner of Patents and Trademarks shall prescribe such regulations as may be necessary to implement the amendments made by this section.

(d) *Effective Date.*—(1) Subject to paragraphs (2), (3), and (4) of this subsection, the amendments made by this section shall apply to all United States patents granted before, on, or after the date of enactment of this section, to all applications for United States patents pending on or filed after such date of enactment, and to all licenses under section 184 granted before, on, or after the date of enactment of this section.

(2) The amendments made by this section shall not affect any final decision made by a court or the Patent and Trademark Office before the date of enactment of this section with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired.

(3) No United States patent granted before the date of enactment of this section shall abridge or affect the right of any person or his successors in business who made, purchased, or used, prior to such date of enactment, anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used, if the patent claims were invalid or otherwise unenforceable on a ground obviated by this section and the person made, purchased, or used the specific thing in reasonable reliance on such invalidity or unenforceability. If a person reasonably relied on such invalidity or unenforceability, the court before which such matter is in question may provide for the continued manufact ure, use, or sale of the thing made, purchased, or used as specified, or for the manufacture, use, or sale of which substantial preparation was made before the date of enactment of this section, and it may also provide for the continued practice of any process practiced, or for the practice of which substantial preparation was made, prior to the date of enactment of this section, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before such date of enactment.

(4) The amendments made by this section shall not affect the right of any party in any case pending in court on the date of enactment of this section to have its rights or liabilities—

(A) under any patent before the court, or

(B) under any patent granted after such date of enactment which is related to the patent before the court by deriving priority rights under section 120 or 121 of title 35, United States Code, from a patent or an application for patent common to both patents, determined on the basis of the substantive law in effect before the date of enactment of this section.

For greater clarity of this rule proposal, the revised text of 35 U.S.C. 184 is reproduced below:

Section 184. Filing of application in foreign country

Except when authorized by a license obtained from the Commissioner a person shall not file or cause or authorize to be filed in any foreign country prior to six months after filing in the United States an application for patent or for the registration of a utility model, industrial design, or model in respect of an invention made in this country. A license shall not be granted with respect to an invention subject to an order issued by the Commissioner pursuant to section 181 of this title without the concurrence of the head of the departments and the chief officers of the agencies who caused the order to be issued. The license may be granted retroactively where an application has been filed abroad through error and without deceptive intent and the application does not disclose an invention within the scope of section 181 of this title.

The term "application" when used in this chapter includes applications and any modifications, amendments, or supplements thereto, or divisions thereof.

The scope of a license shall permit subsequent modifications, amendments, and supplements containing additional subject matter if the application upon which the request for the license is based is not, or was not, required to be made available for inspection under section 181 of this title and if such modifications, amendments, and supplements do not change the general nature of the invention in a manner which would require such application to be made available for inspection under section 181. In any case in which a license is not, or was not, required in order to file an application in any foreign country, such subsequent modifications, amendments, and supplements may be made, without a license, to the application filed in the foreign country if the United States application was not required to be made available for inspection under section 181 and if such modifications, amendments, and supplements do not, or did not, change the general nature of the invention in a manner which would require the United States application to have been made available for inspection under such section 181.

To implement the Act, the Office proposes to make changes to §§ 5.11(a) and (e), 5.15(a)-(c), (e) and (f), and 5.25(a).

The inspection provisions of 35 U.S.C. 181 delegate to the Commissioner of Patents and Trademarks the authority to decide which applications will be forwarded to United States defense agencies for national security inspection when the Government has no property interest in the invention. The fact that an application was forwarded to the defense agencies does not necessarily mean that the application was properly within the inspection scope of 35 U.S.C. 181.

Discussion of Specific Rule Change Proposals

Section 5.11(a), if amended as proposed, would specify when a license is required before filing any foreign application for patent including any modifications, amendments and supplements or divisions thereof. This proposal adopts the statutory definition of "application" in 35 U.S.C. 184. Also, the rule, if further amended as proposed, would clarify that the provisions of this section apply only to inventions made in the United States as stated in section 184. However, where an improvement or modification to a foreign-origin invention is made in the United States, a license would be required for the additional subject matter.

Section 5.11(e), if amended as proposed, would provide that an inventor need not obtain a supplemental license to file modifications, amendments and supplements containing additional subject matter to, or divisions of, a foreign application for which an initial foreign filing license was not required, so long as the corresponding United States application was not required to be made available for inspection under 35 U.S.C. 181 and § 5.1 and the changes did not alter the general nature of the invention in a manner which would require the United States application to have been made available for inspection under 35 U.S.C. 181 and § 5.1. The need for a supplemental license would depend on whether the changes altered the general nature of the invention, rather than the label applied to the changes, i.e., "Continuation", "Continuation-In-Part", "Division", etc.

Authorized parties may determine whether a particular application was forwarded to the defense agencies for inspection under 35 U.S.C. 181 either by reviewing the filing receipt to determine if a license is or was granted, in which case security inspection did not occur, or by reviewing the file wrapper to determine if an access acknowledgment under 35 U.S.C. 181 is present, in which case security inspection did occur. If verification of the security inspection status of an application is needed, the authorized parties may submit a written request therefor to the Office directed to the attention of Licensing and Review. A written response from the Office will be issued. In the event Office records are not available, a *de novo* determination by the Office will be made of the need for defense agency inspection under the present national security standards. If security inspection was not required under 35 U.S.C. 181, then the provisions of the Act will convert a previously granted or implied license into one having the scope of proposed § 5.15(a).

Section 5.15(a), if amended as proposed, would adopt the specific provisions of the Act and clarify the existing rules by expressly stating that the license provisions of the paragraph are applicable to United States applications which were not required to be made available for inspection under 35 U.S.C. 181 and § 5.1. Thus, if an application was not required to be inspected but was inspected by mistake, it would be eligible for such a license. The proposed changes to the regulation would expressly apply to modifications, amendments, and supplements to a previously licensed foreign application, and divisions thereof, provided the changes do not alter the general nature of the invention in a manner which would require a corresponding United States application to have been made available for inspection under 35 U.S.C. 181. The language of § 5.15(a)(1) also has been clarified. If the filing of the foreign application was pursuant to a license granted under § 5.15 and issued prior to publication of the notice at 49 Fed. Reg. 13456 (April 4, 1984) for subject matter which was not appropriate for inspection under 35 U.S.C. 181, the license is now expanded to cover amendments, modifications, and supplements thereto, or divisions thereof, which do not

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change the general nature of the invention in a manner which would require such application to be made available for security inspection under 35 U.S.C. 181. Also, paragraphs (a)(3) and (a)(4) of § 5.15 would be merged in order to more clearly define the type of subsequent changes to a previously licensed foreign patent application which may be filed without any additional license. In particular, it is made clear that these changes must not be such as to require the application to be made available for security inspection. Any questions about the security inspection status of any application or amendments, modifications, and supplements thereto or divisions thereof will be handled in the manner as described above.

Section 5.15(b), if amended as proposed, would clarify the existing rule by expressly stating that the license provisions of § 5.12(b) are applicable to United States applications which were required to be made available for inspection under 35 U.S.C. 181 and § 5.1. The proposed amendments also would clarify the language of the paragraph and indicate that the more restrictive license under this paragraph includes authority to take actions in the foreign or international application, provided subject matter additional to that covered by the license is not involved. Section 5.15(c), if amended as proposed, would clarify the existing rule by expressly stating that the granting of a § 5.15(a) scope to a license under § 5.15(b) and conversion provisions of this paragraph are only applicable to material submitted under § 5.13 or United States applications, which are not, or were not, required to be made available for inspection under 35 U.S.C. 181 and § 5.1.

Sections 5.15(e) and (f), if amended as proposed, would substitute a reference to § 5.15(a)(3) rather than to § 5.15(a)(4) which is proposed to be eliminated as a separate paragraph. Paragraph (e) also is proposed to be amended to state that changes to the general nature of the invention, which would require the application to have been made available for inspection under 35 U.S.C. 181 and § 5.1, require a separate license.

Section 5.25(a), if amended as proposed, would provide that the inventor may receive a retroactive license if the inventor can show that the premature filing of papers in a foreign patent office was made through error and without deceptive intent. This criterion is the same as that for "error without any deceptive intention" for reissue of a patent and replaces the previous standard of inadvertence. This section would also be amended to clarify that each country in which a proscribed filing occurred must be listed in a petition for retroactive license. Also, the rule would be amended to define a verified statement as being in the form of either an oath or a declaration. Finally, the rule would be clarified by defining the period over which error without deceptive intent must be shown as being the time leading up to and including the proscribed foreign filing.

Other Considerations

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Acting Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)) because the proposed rules simplify the procedures for all United States inventors who file and prosecute applications in foreign countries.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individuals, industries, Federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These proposed rules contain a collection of information requirement subject to the Paperwork Reduction Act which has previously been approved by the Office of Management and Budget under Control No. 0651-0011 with an expiration date of March 31, 1993. The average time for each petition for license under § 5.12(b) or § 5.25 is estimated to be approximately thirty (30) minutes, including time for reviewing instructions, gathering and maintaining data needed, and completing and reviewing the petition submission. Send comments regarding this burden estimate to the Patent and Trademark Office, Office of Management and Organization, Washington, D.C. 20231, and the Office of Management and Budget, Washington, D.C. 20503 (Attention: Paperwork Reduction Project 0651-0011).

List of Subjects

37 CFR Part 5
Classified information, Exports, Foreign relations, Inventions and patents.

For the reasons set forth in the preamble, 37 CFR Part 5 is proposed to be amended as set forth below. Additions are indicated by arrows (▶ ◀) and deletions by brackets ([ ]).

Part 5 - Secrecy of Certain Inventions and Licenses to Export and File Applications in Foreign Countries

1. The authority citation for Part 5 is proposed to be amended to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, ▶as amended by the Patent Law Foreign Filing Amendments Act of 1988, Pub. L. 100-418, 102 Stat. 1567;◀ the Export Administration Act of 1979, as amended, 50 U.S.C. App. 2401 *et seq.*, the Arms Export Control Act, as amended, 22 U.S.C. 2751 *et seq.*, the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*, and the Nuclear Non-Proliferation Act of 1978, 22 U.S.C. 3201 *et seq.*, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

2. Section 5.11, paragraphs (a) and (e), are proposed to be revised to read as follows:

§ 5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent ▶including any modifications, amendments, or supplements thereto or divisions thereof◀ or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if ▶the invention was made in the United States and◀:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No application on the invention has been filed in the United States.

* * * * *

(c) No license pursuant to paragraph (a) of this section is required [if]:

(1) ▶If the◀ [The] invention was not made in the United States, or

(2) ▶If the corresponding◀ [The] United States application is not subject to a secrecy order under § 5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country[.], or

(3) If the corresponding United States application was not required to be made available for inspection under 35 U.S.C. 181 and § 5.1, for subsequent modifications, amendments, and supplements containing additional subject matter to, or divisions of, a foreign patent application for which a license is not, or was not, required under paragraph (e)(2) of this section, provided such modifications, amendments, and supplements do not, or did not, change the general nature of the invention in a manner which would require any corresponding United States application to be or have been made available for inspection under 35 U.S.C. 181 and § 5.1

* * * * *

Section 5.15, paragraphs (a), (b), (c), (e) and (f), are proposed to be revised to read as follows:

§ 5.15 Scope of license.

(a) ▶Applications or other materials reviewed pursuant to §§ 5.12 through 5.14, which were not required to be made available for inspection by defense agencies under 35 U.S.C. 181 and § 5.1, will be eligible for a license of the scope provided in this paragraph. This license permits subsequent modifications, amendments, and supplements containing additional subject matter to, or divisions of, a foreign patent application, if such changes to the application do not alter the general nature of the invention in a manner which would require the United States application to have been made available for inspection under 35 U.S.C. 181 and § 5.1. This license also covers the inventions disclosed in foreign applications which had been granted a license under this part prior to April 4, 1984, and which were not subject to security inspection under 35 U.S.C. 181 and § 5.1.◀ Grant of ▶this◀ [a] license [under § 5.12(a)] authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority ▶:◀

(1) To export and file all duplicate and formal ▶application◀ papers ▶in◀ [to the] foreign ▶countries◀ [country] or ▶with◀ international agencies;

(2) To make amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application; ▶and◀

(3) To take any action in the prosecution of the foreign or international application ▶provided that the adding of◀ [; and

(4) To add| subject matter or ▶taking of◀ [take] any action under paragraphs (a)(1) ▶and (2)◀ [through (3)] of this section [which] does not change the general nature of the [subject matter disclosed at the time of filing, unless the subject matter added involves] ▶invention disclosed in the application in a manner which would require such application to have been made available for inspection under 35 U.S.C. 181 and § 5.1 by including◀ technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121 through 130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) ▶Applications or other materials which were required to be made available for inspection under 35 U.S.C. 181 and § 5.1 will be eligible for a license of the scope provided in this paragraph.◀ Grant of ▶this◀ [a] license [under § 5.12(b)] authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to ▶export and file◀ [forward] all duplicate and formal papers ▶in foreign countries◀ [to the foreign patent agency] or ▶with foreign and◀ international patent ▶agencies◀ [agency] and to make amendments, modifications, ▶and◀ [or] supplements to ▶, file divisions of,◀ and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under § 5.12(b) pursuant to § 5.13 or § 5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (§ 1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. ▶No such petition will be granted if the copy of the material filed pursuant to § 5.13 or any corresponding United States application was required to be made available for inspection under 35 U.S.C. 181 and § 5.1.◀ The change in the scope of a license will be ▶effective◀ as of the date of the grant of the ▶petition◀ [change in scope].

(e) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing ▶in a manner which would require such application to have been made available for inspection under 35 U.S.C. 181 and § 5.1◀ or which involves the disclosure of subject matter listed in paragraphs (a)[4] ▶3◀ (i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under § 5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)[4] ▶(3)◀ (i) or (ii) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under § 5.12(b), additional subject matter is not introduced.

4. Section 5.25, paragraph (a), is proposed to be revised to read as follows:

§ 5.25 Petition for Retroactive License.

(a) A petition ▶for a◀ [of] retroactive license under 35 U.S.C. 184 shall be presented in accordance with § 5.13 or § 5.14 ▶(a)◀, and shall include:

(1) A listing ▶of each◀ of the foreign countries in which the ▶unlicensed◀ patent application material was filed,

(2) The dates on which the material was filed ▶in each country◀,

(3) A verified statement ▶(oath or declaration)◀ containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order,

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was [inadvertently] filed abroad ▶through error and without deceptive intent◀ without the required license under § 5.11 first having been obtained, and

(4) The required fee (§ 1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of ▶action through error and without deceptive intent◀ [inadvertence]. The showing of facts ▶as to the nature of the error◀ should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute ▶error without deceptive intent◀ [inadvertence] should cover the period ▶leading up to and including each of the proscribed foreign filings◀ [from the time of filing until actual filing of the petition under this section].

May 16, 1990

HARRY F. MANBECK, JR.
Assistant Secretary and Commissioner of Patents and Trademarks

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PATENT NOTICES

Certificates of Correction For Week of July 10, 1990

D. 302,813	4,814,873	4,840,815	4,853,684
PP. 6,940	4,816,416	4,841,045	4,853,694
Re. 32,905	4,816,457	4,841,326	4,853,740
Re. 33,050	4,817,083	4,841,625	4,853,803
4,521,405	4,817,122	4,841,689	4,853,940
4,627,050	4,817,585	4,842,035	4,854,514
4,666,847	4,817,711	4,842,121	4,854,684
4,686,684	4,818,347	4,842,207	4,854,839
4,722,456	4,818,718	4,842,208	4,855,089
4,746,434	4,819,136	4,842,460	4,855,489
4,750,800	4,820,575	4,843,019	4,855,492
4,752,300	4,821,051	4,843,027	4,856,578
4,755,503	4,821,655	4,843,221	4,856,706
4,755,514	4,822,421	4,844,471	4,857,298
4,758,947	4,822,564	4,845,241	4,858,097
4,760,149	4,822,869	4,845,334	4,858,143
4,762,501	4,823,455	4,845,420	4,858,588
4,765,756	4,825,210	4,845,566	4,859,179
4,767,744	4,825,384	4,845,934	4,859,350
4,768,656	4,826,603	4,846,022	4,860,149
4,774,163	4,827,137	4,846,179	4,860,743
4,780,539	4,828,793	4,846,396	4,860,958
4,784,950	4,828,859	4,846,567	4,861,053
4,785,206	4,829,063	4,846,734	4,861,204
4,788,419	4,829,823	4,847,267	4,861,483
4,795,175	4,830,055	4,847,606	4,862,276
4,795,561	4,830,767	4,847,639	4,864,090
4,796,950	4,831,373	4,848,432	4,864,378
4,797,087	4,832,865	4,848,843	4,864,400
4,798,200	4,833,347	4,849,524	4,864,638
4,798,343	4,834,481	4,849,543	4,865,083
4,798,358	4,835,420	4,849,568	4,865,651
4,800,478	4,835,827	4,849,624	4,866,943
4,801,620	4,835,924	4,849,849	4,867,303
4,802,220	4,837,319	4,850,521	4,867,576
4,804,965	4,837,336	4,851,411	4,867,711
4,806,473	4,837,381	4,851,456	4,868,169
4,807,502	4,837,761	4,851,513	4,868,185
4,810,448	4,838,247	4,852,426	4,868,907
4,810,515	4,839,025	4,852,533	4,869,497
4,812,014	4,839,150	4,853,072	4,870,003
4,813,063	4,839,552	4,853,280	4,886,396
4,813,284	4,839,966	4,853,431	4,888,183
4,813,548	4,840,019	4,853,437	4,890,331
4,814,393	4,840,316	4,853,482	4,891,036

Erratum

IN THE NOTICE OF CERTIFICATE OF CORRECTION APPEARING AT 1115 O.G. 7, of June 5, 1990, Patent No. 3,931,423 should be Patent No. 3,831,423.

Disclaimers

4,745,215.—*Robert J. Cox*, Watsonville, Calif.; *William J. Summa*, Endwell; *David W. Wang*, Vestal, both of N. Y. FLUORINE CONTAINING DICYANATE RESINS. Patent dated May 17, 1988. Disclaimer filed Apr. 16, 1990, by the assignee, International Business Machines Corp.

Hereby enters this disclaimer to claims 1, 2, 3, and 4 of said patent.

4,837,384.—*Tasadduq Khan*, Jouy en Josas; *Pierre Caron*; *Jean-Louis Raffestin*, both of Les Ulis, all of France. NICKEL-BASED MONOCRYSTALLING SUPERALLOY, IN PARTICULAR FOR THE BLADES OF A TURBOMACHINE. Patent dated Jun. 6, 1989. Disclaimer filed July 3, 1989, by the assignee, Office National D'Etudes et de Recherches Aerospatiales.

The term of this patent subsequent to February 13, 2007, has been disclaimed.

4,895,912.—*Yoshikatsu Satake; Yo Iizuka; Toshitaka Kouyama; Takayuki Katto; Zenya Shiiki*, all of Iwaki; *Toshiya Mizuno*, Tsuchiura, all of Japan. STRETCHED POLY(ARYLENE THIOETHER-KETONE) FILMS AND PRODUCTION PROCESS THEREOF. Patent dated Jan. 23, 1990. Disclaimer filed Feb. 14, 1990, by the assignee, Kureha Kagaku Kogyo K. K.

The term of this patent subsequent to October 10, 2006, has been disclaimed.

Disclaimer and Dedication

4,661,332.—*David E. W. Vaughan*, Flemington; *Karl G Strohmaier*, Port Murray, both of N. J. ZEOLITE (ECR-18)ISOSTRUCTURAL WITH PAULINGITE AND A METHOD FOR ITS PREPARATION. Patent dated Apr. 28, 1987. Disclaimer and Dedication filed Apr. 19, 1990, by the assignee, Exxon Research and Engineering Co.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

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Box ITU	All Intent to Use documents excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
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Box Pat. Ext.	Applications for patent term extension.
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Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent application *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.
Box Assignments	All assignment documents except those filed in new patent applications.
Box SEQUENCE	All application papers, computer readable forms and fees related to applications containing nucleotide sequence and/or amino acid sequence disclosures in accordance with 37 CFR §§ 1.821 through 1.825.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Illinois	Chicago Public Library	(312) 269-2865
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nevada	Reno: University of Nevada-Reno Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(201) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 473-4636
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 737-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	Not Yet Operational
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 744-7086
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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372

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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 471-1610
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PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF May 19, 1990

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-7-87
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	10-18-88
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	5-12-88
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-5-88
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-28-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—ROBERT E. GARRETT, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	3-8-88
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M BLIX, Director	11-9-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	3-23-88
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP— 260 STEWART LEVY, Acting Director	3-31-88
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-24-89
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	6-23-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	10-25-88
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	5-5-89

Expiration of patents: The patents within the range of numbers indicated below expire during May 1990 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

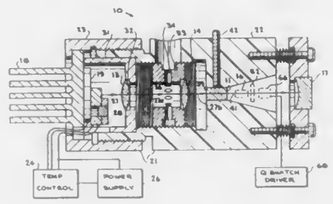
Patents ..... Numbers 3,729,744 to 3,736,594 inclusive
Plant Patents ..... 3,321 to 3,349 inclusive

REEXAMINATIONS

JULY 10, 1990

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,701,929 (1323rd)
LASER DIODE PUMPED SOLID STATE LASER
Thomas M. Baer, Mountain View, and Mark S. Keirstead, San Jose, both of Calif., assignors to Spectra-Physics Inc, San Jose, Calif.
Reexamination Request No. 90/001,831, Aug. 24, 1989.
Reexamination Certificate for Patent No. 4,701,929, issued Oct. 20, 1987, Ser. No. 29,,836, Mar. 24, 1987.
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—71



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 9, 12 and 13 are cancelled.

Claims 1, 3, 5, 10, 15 and 16 are determined to be patentable as amended.

Claims 4, 6–8, 11, 14 and 17–20, dependent on an amended claim, are determined to be patentable.

1. A high efficiency, laser diode *array* pumped, compact solid state laser, comprising:
- a rare earth doped solid laser rod having a front end and a back end;
- a housing with means holding the laser rod in fixed position in the housing with its front end forward;
- a laser diode *array* secured in the housing behind and in optical alignment with the rod, said diode *array* being focused on the back end of the rod for pumping the rod, said diode *array* having an output frequency which is absorbed by the rare earth to excite the laser rod;
- laser cavity means defining a laser cavity mounted in the housing with the rod in the cavity, the laser cavity means including output coupler means;
- means for matching inside the laser rod an image of the laser diode *array* with a lasing beam volume of the laser cavity.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,254

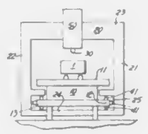
BRIDGE TYPE COORDINATE MEASURING MACHINE

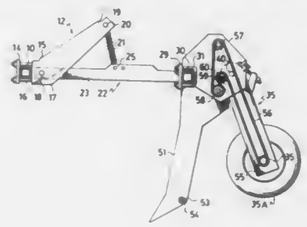
Robert W. Brandstetter, 418 Cherrywood Dr., Fairborn, Ohio 45324

Original No. 44,594,791, dated Jun. 17, 1986, Ser. No. 694,378, Jan. 24, 1985. Application for reissue Jun. 17, 1988, Ser. No. 208,315

Int. Cl.[5] **G01B** *5/03, 7/03*

U.S. Cl. 33—503 **89 Claims**





1. A bridge type coordinate measuring machine of the type having a base **(10)** having an upper surface **(11)** for supporting a work piece to be measured, a bridge **(20)** having two uprights **(21, 22)** and a first member **(23)** connecting the uprights **(21, 22)** together above the upper surface **(11)** of said base **(10)**, means **(12, 13, 41)** for [moveably] *movably* mounting the bridge **(20)** to the base **(10)**, a probe **(30)**, and means **(50, 31)** for mounting said probe **(30)** to the first member **(23)** of said bridge **(20)** for movement relative to said bridge and to said base **(10)**, characterized in that:

the bridge **(20)** has a closed configuration that encircles the upper surface **(11)** of said base **(10)** said closed loop configuration formed by a second member **(24)** connecting together the uprights **(21, 22)** of the bridge **(20)** below the upper surface **(11)** of said base **(10)** and below the means **(12, 13)** for [moveably] *movably* mounting the bridge **(20)** to the base **(10)**.

Re. 33,255

ROD WEEDER ATTACHMENT FOR AN AGRICULTURAL IMPLEMENT

Duane C. Haukaas, Box 8, Mortlach, Saskatchewan, Canada S0H 3E0

Original No. 4,690,223, dated Sep. 1, 1987, Ser. No. 872,920, Jun. 11, 1986. Application for reissue Jan. 30, 1989, Ser. No. 302,965

Int. Cl.[5] **A01B** *39/19*

U.S. Cl. 172—44 **30 Claims**

21. A tillage attachment device for mounting on an agricultural implement of the type comprising a tool bar, ground wheels for supporting the tool bar for movement across the ground and means for causing the tool bar to move in a direction transverse to its length, the device comprising clamp means for attachment of the device to the tool bar, pivot arm means mounted on said clamp means so as to extend rearwardly therefrom including a first portion extending from said clamp means so as to be pivotal about a horizontal axis at right angles to said arm means and a second rearward portion connected to the first portion at a rearward end thereof so as to extend downwardly therefrom, spring biasing means connected between said clamp means and said first portion of said pivot arm means for biasing said arm means downwardly around said axis, a ground engaging wheel having an axle mounted on said second portion of said arm means remote from said clamp means such that the ground wheel runs on the ground rearwardly of and following said tool bar, said ground wheel having a ground engaging periphery arranged to maintain said axle at a predetermined spacing from the ground, strut means rigidly mounted upon and extending transversely to said arm means, two horizontally spoced rigid shank means each rigidly mounted on said strut means and extending downwardly therefrom for engagement with the ground, a rod extending between said shank means at respective lower ends thereof, the position of the rod relative to the ground being controlled by the height of the first portion of the arm means above the ground, bearing means mounting said rod on each of said shank means for rotation relative thereto about a longitudinal axis of said rod, and drive means for communicating drive from said ground wheel to said rod for rotating said rod, said second portion of the arm means being mounted on the first portion of the arm means such that in an operating position thereof the rod is arranged at a vertical spacing lower than the lowest point of the periphery of the ground wheel and the ground wheel controls a working depth of the rod in the ground.

Re. 33,256

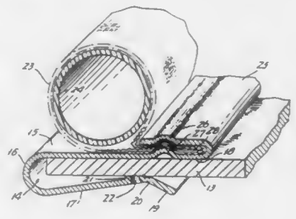
MESH-COVERED CORE STRIP FOR HIGH FREQUENCY RFI/EMI RADIATION SHIELDING

Robert B. Busby, Pawling, N.Y., assignor to Pawling Corporation, Pawling, N.Y.

Original No. 4,652,695, dated Mar. 24, 1987, Ser. No. 712,280, Mar. 15, 1985. Continuation-in-part of Ser. No. 506,010, Jun. 20, 1983, abandoned. Application for reissue Sep. 14, 1987, Ser. No. 95,874

Int. Cl.[5] **H05K** *9/00*

U.S. Cl. 174—35 GC **12 Claims**



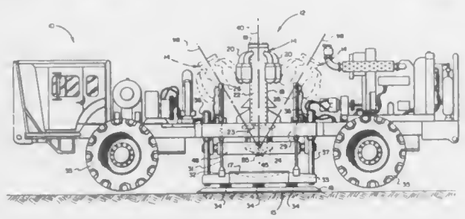
8. An RFI/EMI shielding strip for electronic cabinets and the like, which comprises

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(a) a continuous metal strip of great length in relation to its width,
(b) said strip being adapted to be mounted on the edge of a cabinet panel,
(c) a continuous core strip of resilient material extending along one side of said metal strip,
(d) a flattened, two-layer strip of circular knitted metallic mesh material extending along said core strip and wrapped around and enveloping said core strip,
(e) the width of the mesh strip being greater than the circumference of said core strip, and the opposite side edge margins of said two-layer mesh strip being brought together in face-to-face relation in four superposed layers, and
(f) means for securing said side edge margins to said continuous metal strip.

Re. 33,257
MOUNTING AND CONTROL MEANS FOR FULL WAVEFORM SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Original No. 4,660,674, dated Apr. 28, 1987, Ser. No. 676,762, Nov. 30, 1984. Application for reissue Apr. 28, 1989, Ser. No. 345,374
Int. Cl.[5] G01V *1/02*
U.S. Cl. 181—113 **7 Claims**



1. Apparatus for generating combined shear and compressional waves in the earth comprising in combination:
(a) a rigid target plate positionable on the earth,
(b) an upstanding cylindrical housing having an open bottom,
(c) means for supporting said cylindrical housing above said target plate for rotation about two mutually perpendicular [horizontal] axes,
(d) an impact mass slideably interfitted with said housing for movement axially thereof,
(e) means for rotation of said housing about said axes such that the longitudinal axis of said housing lies along a selected path, and
(f) means for accelerating said impact mass downwardly to impact said target plate along said slant path.

Re. 33,258
IRRIGATING, CUTTING AND ASPIRATING SYSTEM FOR PERCUTANEOUS SURGERY

Gary Onik, San Francisco, and Leonard Ginsburg, Oakland, both of Calif., assignors to Surgical Dynamics Inc., San Leandro, Calif.
Original No. 4,678,459, dated Jul. 7, 1987, Ser. No. 633,514, Jul. 23, 1984. Application for reissue Nov. 30, 1987, Ser. No. 126,905
Int. Cl.[5] A61B *17/32*
U.S. Cl. 604—22 **13 Claims**

1. A surgical instrument comprising:
a housing;
a needle supported by said housing, said needle having a forward portion extending distally of said housing;
said needle including a first elongated tubular wall member defining a first bore, and having a port formed entirely within the sidewall of the forward portion of said first tubular wall member;
said needle including a second elongated tubular wall member defining a second bore sized to permit passage of tissue therethrough when said second tubular wall member is connected to a source of suction, *the passage within said second bore being unobstructed*, said second tubular wall member having a forward portion extending radially outwardly and terminating in a cutting edge;
said second tubular wall member being positioned within said first tubular wall member with said cutting edge in contact with the sidewall defining said first bore, the forward portion of said first bore adjacent said port defining a tissue receiving portion communicating with said second bore;
said first and second tubular wall members being the only tubular wall members in said forward portion of said needle;
the wall of said second tubular wall member spaced inwardly from the wall of said first tubular wall member to define the opposing walls of an annular passageway adapted to be connected to a source of irrigating fluid, said

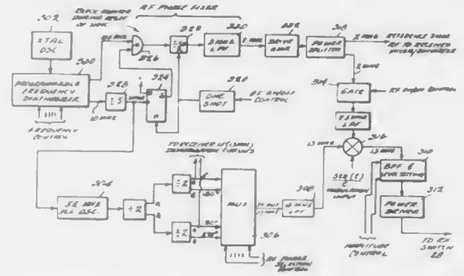


annular passageway being the sole annular chamber in said forward portion of said needle;
said second tubular wall member being disposed for movement within said first tubular wall member to cause said cutting edge to move from a first position where tissue is drawn through said port into said tissue receiving portion of said first bore under suction to a second position where said cutting edge traverses said port to sever the tissue drawn therethrough, and to permit the severed tissue to be captured in said tissue receiving portion;
said second tubular wall member having an opening formed in its sidewall [adjacent] *extending to* said cutting edge to provide internal communication between said annular passageway and said second bore to permit direct passage within said needle of irrigating fluid between said annular passageway *and said tissue receiving portion* and said second bore;
the forward portion of the sidewall of said first tubular wall member having no opening rearward of said cutting edge of said second tubular wall member when said cutting edge is in its first position;
whereby the severed tissue is evacuated through said second bore with the aid of the irrigating fluid.

Re. 33,259
METHOD AND APPARATUS FOR RAPID NMR IMAGING OF NUCLEAR PARAMETERS WITH AN OBJECT

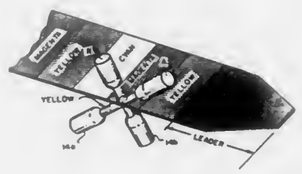
Lawrence E. Crooks, Richmond; John C. Hoenninger, III, Oakland; Mitsuaki Arakawa, Hillsborough, and Jerome R. Singer, Berkeley, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Original No. 4,471,305, dated Sep. 11, 1984, Ser. No. 331,008, Dec. 15, 1981. Continuation-in-part of Ser. No. 926,571, Jul. 20, 1978, Pat. No. 4,297,637, and Ser. No. 120,875, Feb. 12, 1980, Pat. No. 4,318,043. Application for reissue May 6, 1988, Ser. No. 191,025
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **46 Claims**

40. A method as in claim 39 including the step of generating r.f. reference signals for use in said r.f. receiving step subsequent to at least selected ones of said pulses, and including the step of accurately resetting the relative phase of said r.f. reference signals at the termination of or subsequent to said selected ones of said pulses.



Re. 33,260
THERMAL PRINTER COLOR DYE FRAME IDENTIFICATION USING RED AND YELLOW LIGHT SOURCES

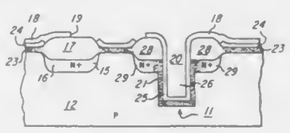
Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original No. 4,710,781, dated Dec. 1, 1987, Ser. No. 892,620, Aug. 4, 1986. Application for reissue May 2, 1988, Ser. No. 189,554
Int. Cl.[5] G01D *15/10*; B41J *3/20*
U.S. Cl. 346—76 PH **6 Claims**



4. In a thermal printer system including a printer which uses a carrier with a repeating series of spaced different colored dye frames, and a receiver which receives dye from the color frames of the series to form a colored image, means for moving the carrier and the receiver along respective paths so as to sequentially move each dye frame of a series and the receiver so that dye from each dye frame of a series is transferred to the receiver and forms a colored image in the receiver, means for identifying dye frames of such series comprising:
(a) a low frequency LED disposed adjacent to the carrier path for illuminating the carrier with low frequency light;
(b) a high frequency LED disposed adjacent to the carrier path for illuminating the same dye frame of the carrier illuminated by low frequency light with high frequency light;
(c) first and second spaced photodetectors disposed adjacent to the carrier path and respectively responsive to the intensity of light which passes through the dye frames for respectively providing electrical signals, the levels of such signals being a function of the intensity of source light which passes through a dye frame and representing logic patterns; and
(d) means responsive to the logic patterns of the electrical signals produced by such first and second photodetectors for identifying a particular dye frame being illuminated by the light sources.

Re. 33,261
TRENCH CAPACITOR FOR HIGH DENSITY DYNAMIC RAM

David A. Baglee, Albuquerque, N. Mex., and Ronald Parker, Houston, Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.
Original No. 4,721,987, dated Jan. 26, 1988, Ser. No. 627,372, Jul. 3, 1984. Application for reissue Mar. 2, 1989, Ser. No. 319,783
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.6 **14 Claims**



8. A dynamic memory cell formed in a face of a semiconductor body, said cell comprising:
an access transistor having a source-to-drain path at a channel area of said face, and a gate over said channel area separated therefrom by a thin gate oxide;
a bit line including an elongated N+ region of said face, the drain of said transistor being an edge of said N+ region;
a word line extending along said face perpendicular to said bit line, said gate being a part of said word line;
said N+ region of said bit line being insulated from said word line by thick thermal field oxide overlying said bit line;
a capacitor area at said face including a trench etched into said face and N+ region surrounding said trench, with a thick thermal field oxide overlying said N+ region;
a region of thermal field oxide encircling said trench inset into said N+ region surrounding said trench, a field plate including a conductive layer covering said face overlying said capacitor area, said bit line and all areas except said channel area of said transistor, and extending down into said trench to provide the capacitor, insulated from the silicon in said trench by a thin oxide.

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PLANT PATENTS

GRANTED JULY 10, 1990

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,264
ROSE PLANT NAMED 'VEROLWEK'
O. L. Weeks, 12610 Central Ave., Ste. 76, Chino, Calif. 91710, assignor to O. L. Weeks, Chino, Calif.
Filed Jan. 31, 1989, Ser. No. 304,490
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—15 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by relatively large, attractive, yellow flowers.

7,265
SWEET JENNY
William G. Ison, Rte. 1, Box 19, Hwy. 19, Brooks, Ga. 30205
Filed Mar. 10, 1988, Ser. No. 166,245
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of grape plant as described and illustrated.

7,266
PINEAPPLE
William G. Ison, Rte. 1, Box 19, Hwy. 19, Brooks, Ga. 30205
Filed Mar. 10, 1988, Ser. No. 166,243
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of the grape plant as described and illustrated.

7,267
SUPREME
William G. Ison, Rte. 1, Box 19, Hwy. 19, Brooks, Ga. 30205
Filed Mar. 11, 1988, Ser. No. 167,324
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of grape plant as described and illustrated.

7,268
JANEBELL
William G. Ison, Rte. 1, Box 19, Hwy. 19, Brooks, Ga. 30205
Filed Mar. 10, 1988, Ser. No. 166,247
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of grape plant as described and illustrated.

7,269
CHRYSANTHEMUM PLANT NAMED MAROON PRIDE
Richard E. Widmer, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Nov. 21, 1988, Ser. No. 274,010
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82 1 Claim

1. A new and distinct *Dendranthema grandiflora* cultivar substantially as shown and described herein, and particularly characterized by blooms which are reliably early, 7.5–9.0 cm in diameter, dark red, slow-fading double florets of decorative form, presented in open spray formation on uniform, medium high, mounded plants of moderate sturdiness and strength, with small to medium sized foliage.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
475-233	4,939,953
475-278	4,939,955
505-001	4,939,976
073-118	4,939,985
101-348	4,939,994
110-233	4,940,010
114-267	4,940,021
128-715	4,940,023
123-090	4,940,048
015-321	4,940,082
181-145	4,940,108
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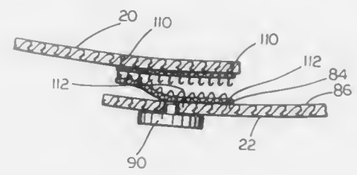
GENERAL AND MECHANICAL

4,939,794

ADJUSTABLE NECK AND CUFF CLOSURES FOR DRESS SHIRTS

Herbert R. Aronson, New York, N.Y., assignor to Salant Corporation, New York, N.Y.

Filed Nov. 25, 1988, Ser. No. 275,961
Int. Cl.[5] A41B *3/00, 7/00*; A41F *1/00*
U.S. Cl. 2—128 **5 Claims**



1. An adjustable closure for overlapping portions of a garment, comprising:

(A) closure means for continuously adjustably overlapping and fastening an outer garment portion over and to an inner garment portion, including

(i) a first, flexible fabric sewn on an inner surface of the outer garment portion, and having first fastening means extending lengthwise along the first fabric,

(ii) a second, flexible fabric sewn on an outer surface of the inner garment portion, and having second fastening means extending lengthwise along the second fabric,

(iii) said first and second fastening means facing and engaging each other when the outer garment portion overlaps the inner garment portion to a desired variable extent selected by a wearer, and is pressed against the inner garment portion, and

(iv) said first and second fastening means disengaging each other when the outer garment portion is peelably removed from the inner garment portion, and

(b) a dress button sewn on an outer surface of the outer garment portion to simulate the appearance of a conventional garment closure button used for fastening outer and inner garment portions together, said dress button constituting no part of said closure means which is solely responsible for fastening the outer and inner garment portions together, at least one of said first or second fabric being sewn on said garment only over a portion of its length, whereby the remaining portion is free to move relative to said garment.

4,939,795

METHOD OF ISOLATING A PRODUCT IN A PASSIVE DOSING DISPENSER BY TRAPPING INTERNALLY-GENERATED GAS BUBBLE

Stephen H. Iding, and Robert S. Dirksing, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

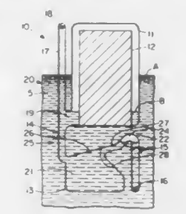
Division of Ser. No. 618,622, Jun. 8, 1984, abandoned. This application Sep. 28, 1987, Ser. No. 101,466
Int. Cl.[5] E03D *9/03*
U.S. Cl. 4—228 **20 Claims**

1. A method of isolating a product in a dispenser from a body of liquid, said dispenser including an internal reservoir and means for establishing fluid communication between said internal reservoir and said body of liquid, said fluid communication means including an inverted U-shaped section, said method comprising the steps of:

(a) partially immersing said dispenser in said body of liquid whereby a portion of said liquid flows into said internal reservoir and dissolves a portion of said product to form a solution, said inverted U-shaped section being bridged by a continuum of liquid/solution when said flow ceases;

(b) generating a plurality of gas bubbles in said solution;

(c) directing at least a portion of said gas bubbles to said inverted U-shaped section; and



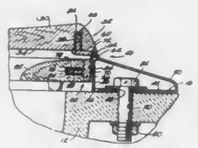
(d) trapping said at least a portion of said gas bubbles in said inverted U-shaped section, thereby establishing a gas lock thereacross and isolating said product from said body of liquid.

4,939,796

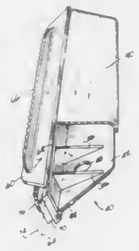
TOILET SEAT HINGE

Kenneth V. Pepper, Plymouth, Wis., assignor to Bemis Manufacturing Company, Inc., Sheboygan Falls, Wis.

Filed Oct. 19, 1988, Ser. No. 260,006
Int. Cl.[5] A47K *13/12*
U.S. Cl. 4—236 **16 Claims**







3. A toilet assembly comprising a toilet bowl, a member

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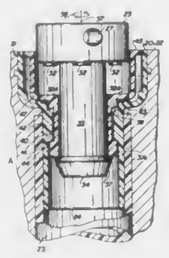
having a rearward end including therein a slot, a hinge including a hinge post portion connected to said toilet bowl, and a hinge leaf portion connected to said hinge post portion for pivotal movement relative thereto and including a projection extending into said slot, and connecting means for securing said projection on said hinge leaf portion in said slot in said member and comprising a substance adhesively secured to said member and mechanically interlocked with said projection.

4,939,797

WATER DELIVERY ASSEMBLY FOR CLEANING SWIMMING POOLS

John M. Goettl, Phoenix, Ariz., assignor to Sally Ghiz, Phoenix, Ariz.

Filed Mar. 29, 1989, Ser. No. 330,195
Int. Cl.[5] E04H *3/20*; B05B *3/00, 15/10*
U.S. Cl. 4—490 **13 Claims**



1. A water delivery assembly for cleaning the inner surfaces of a swimming pool, said assembly comprising:

inlet pipe means for introducing water under pressure into said pool,

a housing in fluid communication with said inlet pipe means, said housing having an outer open end communicating with the interior of said swimming pool and an inner open end fixedly attached to said inlet pipe;

a water delivery head retainer removably locked to the interior of said housing;

a water delivery head comprising a nozzle and a stem portion attached thereto, said nozzle having at least one water aperture therein to project a pressurized stream of water in adjacent parallel and scrubbing relation to the inner surface of said pool, said delivery head being mounted in said retainer and adapted for reciprocal motion therewithin to an extended operative position and a retracted inoperative position;

said water delivery head responsive to the application of pressurized water to said housing for extending to said extended operative position; said head also responsive to the removal of pressure from the water in said housing for retraction to said retracted inoperative position;

annular shoulder means located at the lower end of the stem portion of said delivery head;

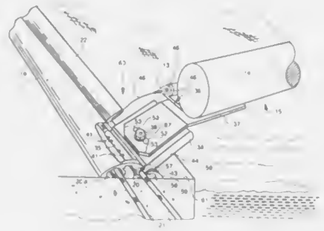
and stop means located on the interior of said housing, cooperating with said annular shoulder means to provide the upper limit of extension of said delivery head; said stop means being located in the bottom part of said housing and adjacent the point where the housing is attached to said inlet pipe, whereby the stop impact caused at said point produces minimum bending moment of stress force on said housing.

4,939,798

LEADING EDGE AND TRACK SLIDER SYSTEM FOR AN AUTOMATIC SWIMMING POOL COVER

Harry J. Last, 1246 Birchwood Dr., Sunnyvale, Calif. 94089

Filed Oct. 17, 1988, Ser. No. 258,000
Int. Cl.[5] E04H *3/19*
U.S. Cl. 4—502 **50 Claims**



1. A leading edge and track slider mechanism for carrying a front edge of a flexible cover above a liquid contained in a pool as the cover, winding and unwinding from a cover drum located at one end of the pool, is drawn back and forth across the pool comprising, in combination,

(I.) a rigid structural boom spanning the pool having a planer longitudinal surface with a "C" channel along one edge of the planer surface for receiving and capturing a front beaded edge of the pool cover,

(II.) a pair of rigid sliders each captured and sliding within a "C" channel of a pool cover track located along a side edge of the pool;

(III.) attachment means extending from the planer longitudinal surface of the boom at it's ends for establishing a translating and pivoting coupling between the ends of the boom and the sliders,

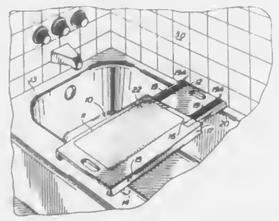
(IV.) means for anchoring each slider to a cable extending from a beaded tape secured to side edges of the pool cover proximate the cover's front corners, each beaded tape edge being captured and sliding within the same "C" channel of the track as a slider, the cables extending from the respective sliders to connect with and wind around at least one rotatable cable take-up reel.

4,939,799

PORTABLE, TRAVELER'S BATH SEAT

Brian V. Van Hovel, Phoenix, Ariz., assignor to At Ease Enterprises, Inc., Phoenix, Ariz.

Filed Apr. 28, 1989, Ser. No. 344,677
Int. Cl.[5] A47K *3/022, 3/12*
U.S. Cl. 4—578 **15 Claims**



1. In apparatus having means for supporting a person on and above a bathtub whereby a person may sit above a tub to bathe and shower, the improvement comprising:

first and second spanning supports, said first spanning support being a carrying case in which said second spanning support is housed for storage and transport;

adjustment means for adjustably coupling said first spanning support to said second spanning support to form a coupled combination such that the elongate dimension of the coupled combination may be minimized for ease of transport and extended to span across a bathtub for seating thereon;

means coupled to at least one of said first and second spanning supports for inhibiting movement of the coupled combination of said first and second support, in a direction along the elongate axis of said combination when said combination is emplaced spanning a bathtub; and

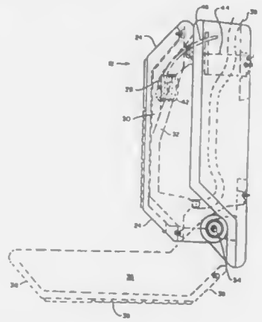
said means for inhibiting movement of said coupled combination comprises a locking leg pivotally coupled to at least one of said first and second spanning supports and extending downward adjacent an inner, non-wall-adjacent side of a tub across which said coupled combination is spanned.

4,939,800

EYE WASH STATION

Frank S. Fiorentino, Thousand Oaks, and Douglas M. Patton, Irvine, both of Calif., assignors to McKesson Corporation, San Francisco, Calif.

Continuation of Ser. No. 64,918, Jun. 19, 1987, abandoned. This application Dec. 21, 1988, Ser. No. 289,491
Int. Cl.[5] A61H *33/00*
U.S. Cl. 4—620 **4 Claims**



1. An eye wash station comprising:

(a) normally enclosed basin housing means including a base member adapted to be disposed in a normally upright position and a basin mounted to said base member for pivoting between a closed position generally parallel to said base member and a second operable position transverse to said base member,

(b) spray nozzle means mounted to said basin adapted to spray liquid upwardly when said basin is in an operable position,

(c) an eye wash feed tank having an outlet opening and disposed within said basin housing means, and

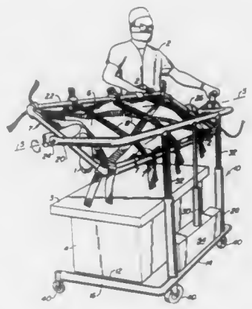
(d) liquid conduit means providing communication between said feed tank outlet openings and said spray nozzle means, said feed tank being removable from said basin housing means, said base member including a receptacle communicating with said liquid conduit means for seating the outlet opening of said feed tank so that an air inlet opening is provided, said spray nozzle means being above said air inlet opening with said base member and said basin in upright positions and being below said air inlet opening when said basin is pivoted to an operable position.

4,939,801

PATIENT TRANSPORTING AND TURNING GURNEY

Gary A. Schaal, and Diana L. Schaal, both of 11677 Hill Rd., Marysville, Calif. 95901

Filed Dec. 22, 1988, Ser. No. 288,650
Int. Cl.[5] A61G *7/00*
U.S. Cl. 5—61 **9 Claims**



1. A gurney for moving a hospital patient between a hospital bed having widely spaced supporting legs and an operating table supported from a central pedestal base, said gurney comprising:

a base, said base being horizontally disposed and U-shaped, said U-shaped base having spaced apart protruding arms connected by a central member, said spaced apart arms adapted to fit under and between the supporting legs of the hospital bed and straddle around the outside of the central pedestal base of the operating table;

said base supporting a plurality of wheels whereby said base can be rolled from support underneath the hospital bed to support around the central pedestal base of the operating table;

a stretcher support;

means for supporting said stretcher support from said base including a lifting ram connected to the base at the lower end and to the stretcher to support at the upper end whereby the stretcher support may be raised and lowered with respect to the base;

a stretcher frame elongate about a central longitudinal axis, said stretcher frame disposed for surrounding and supporting a patient within said stretcher frame;

means for rotatably connecting said stretcher frame to said stretcher support at the longitudinal axis of said stretcher frame, said means for rotatably connecting said stretcher frame to said stretcher support permitting the rotating of said frame about said longitudinal axis between distal ends of said stretcher support;

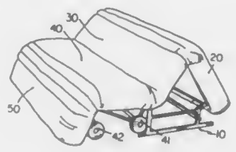
first and second tensile sheet members for being disposed on said patient at opposite sides of said patient, each said tensile sheet member being sufficiently strong to support said patient from said stretcher frame under tension;

first means for detachably supporting under adjustable tension one of said tensile sheet members form said stretcher frame;

second means for detachably supporting under adjustable tension said second tensile sheet embers from said stretcher frame whereby the patient is secured between said first and second tensile sheet members is trapped to said stretcher frame for rotation with said stretcher frame.

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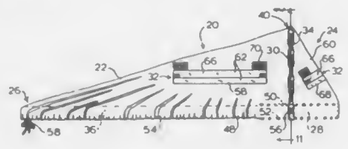
4,939,802
SOFA-BED
Percival Lafer, Rua Garcia Lorca, 301, Sao Bernard do Campo-SP, Brazil
Filed Dec. 30, 1988, Ser. No. 292,229
Claims priority, application Brazil, Dec. 30, 1987, 8707241
Int. Cl.[5] A47C *17/17*
U.S. Cl. 5—37 C 23 Claims



1. A SOFA-BED comprising a basic structure (10) defined by two lateral, parallel portions (11, 15) rearwardly interconnected to each other by means of a removable crossbeam (14); a back including a front portion (30) and a rear portion (20) articulated to each other by means of a pair of adjacent upper edges, the rear portion (20) having a lower extreme edge articulate to the structure (10); a seat (40) having a rear edge articulated to a lower extreme edge of the front back portion (30), and having a front edge articulated to an upper edge of a footrest (50), the seat (40) being supported on a pair of rear rollers (41) and a pair of front rollers (42) so as to be horizontally displaceable between a "sofa" condition, with the rollers (41, 42) positioned between the lateral portions of the basic structure (10) and the front (30) and rear (20) portions of the back maintained in a raised position, and a "bed" condition, with the rollers displaced forward of the basic structure (10) and with the front and rear back portions and the footrest (50) arranged horizontally coplanar with the seat portion (40), the pair of front rollers (42) being assembled on front stems (42*a*) articulated by an upper portion thereof to the seat (40) and also articulated in a middle portion thereof to the footrest (50) by means of a small stem (52) so as to be displaced between a rear position an a front position by an articulation of said front stems (42*a*) to seat (40) when the latter is displaced between the "sofa" condition and the "bed" condition, said seat occupying a horizontal position in the "bed" condition and being supported on the floor by means of the two pairs of rollers (41, 42), being raised the footrest (50) into the horizontal position by a long, rigid stem (51) having a front end articulated to the footrest (50) and a rear end articulated to an extension (31) of the front portion of the back (30) that projects downwards from the articulation axis of that back portion with seat (40), said back portions, the seat and the footrest being lined with a layer of flexible material (80, 90).

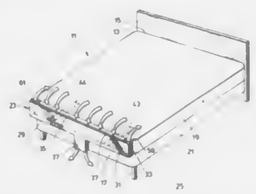
4,939,803
STRETCHER COVER
Phillip N. Waters, 102 Flint Ridge Apts., Bldg. 5, Hillsborough, N.C. 27278
Filed Aug. 31, 1989, Ser. No. 401,028
Int. Cl.[5] A47C *29/00*
U.S. Cl. 5—414 8 Claims

1. A stretcher cover, comprising:
(a) a flexible cover piece having an enlarged first end and a second end smaller than said first end, said cover piece having:
(i) a stretcher insertion pocket at said first end comprising two spaced parallel layers of material;
(ii) a plurality of support structure holders extending across said first end;
(iii) a means for securely holding the second end to a stretcher; and
(iv) a plurality of flap-covered opening areas on said cover piece; and



(b) a flexible support structure insertable in said support structure holders.

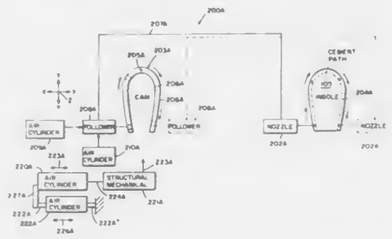
4,939,804
BED VENTILATING APPARATUS AND METHOD
William N. Grant, 8301 Forrest Oak Dr., Fort Worth, Tex. 76180
Filed Jul. 24, 1989, Ser. No. 384,561
Int. Cl.[5] A47C *21/04*
U.S. Cl. 5—468 10 Claims



1. An apparatus for ventilating a bed in a room, the bed having a head, a foot, and a mattress positioned above a box spring, the apparatus comprising:
an elongate housing having an upper extent and a lower extent and having a longitudinal axis which is positionable parallel to the foot of the bed, the upper extent of the elongate housing being provided with at least one air inlet opening for receiving stale air, the elongate housing also having an outlet duct for exhausting air into the room;
at least one mounting flange extending outwardly from the elongate housing generally perpendicular to the longitudinal axis thereof, the mounting flange being adapted to be received between the mattress and box spring for supporting the elongate housing on the bed;
filtration means located between the air inlet opening to the elongate housing and the outlet duct for filtering the stale air entering the housing;
at least one recirculating duct associated with the elongate housing for recirculating filtered air from the elongate housing back to the bed; and
fan means for drawing air through the air inlet opening, for exhausting filtered air out the outlet duct and for recirculating a portion of the filtered air through the recirculation duct.

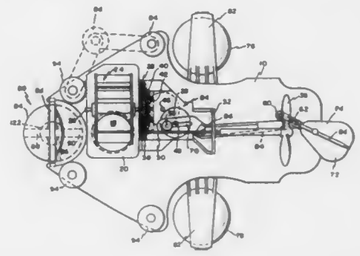
4,939,805
HEEL LASTER
William Walega, Hollis, N.H., assignor to International Show Machine Corporation, Nashua, N.H.
Filed Jun. 13, 1989, Ser. No. 365,396
Int. Cl.[5] A43D *21/16, 21/00*
U.S. Cl. 12—10.5 11 Claims

1. A heel laster to receive a footwear upper assembly that includes a last, a footwear upper draped about the last and an insole disposed on the last bottom, said heel laster being constructed to press and form the heel part of the footwear upper assembly about the heel and side parts of the last while leaving a margin that extends outwardly from the insole, forming of the heel part being effected in part by a heel pad, said heel laster comprising:
a spindle and toe support to receive the upper assembly and means to achieve mechanical attachment of the last to the heel laster and the toe support thereof;
means to press the last firmly onto the spindle and the toe support; and
mechanical means to apply a bead of adhesive ribbon onto the insole in the heel part thereof, said mechanical means comprising a nozzle and a mechanical tracer mechanism to position the nozzle appropriately with respect to the insole and guide the nozzle along an appropriate adhesive applicator path, said mechanical tracer mechanism comprising a pivotally angularly adjustable U-shaped cam track in an X-Y plane, a linkage which is substantially parallel to said insole at the heel part thereof connected to the nozzle at one end thereof and to a cam follower at the other end thereof such that the cam follower is positioned within the cam track, means connected to propel the cam follower along the track in the X-Y plane, said mechanical tracer mechanism, as a unit, having a predetermined and fixed position relative to the heel pad of the heel laster so as to establish exact longitudinal position of the last to the footwear upper assembly irrespective of last pin position; and
means comprising wipers operable to wipe the margin onto the insole whereby the margin is adhered to the insole.

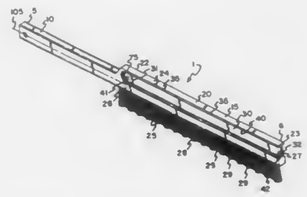


4,939,806
POOL CLEANER
Carl F. W. Supra, Johannesburg North, South Africa, assignor to Liberty Pool Products S.A., Geneva, Switzerland
Continuation-in-part of Ser. No. 153,201, Feb. 8, 1988, Pat. No. 4,849,024, and a continuation-in-part of Ser. No. 307,048, Feb. 7, 1989. This application Mar. 2, 1989, Ser. No. 317,845
Claims priority, application South Africa, Jan. 7, 1988, 88/0083; Jan. 14, 1988, 88/0237; Jan. 19, 1988, 88/0327; Apr. 13, 1988, 88/2571; Apr. 13, 1988, 88/2572
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 8 Claims

1. A device for cleaning a surface which is submerged in a liquid, the device including: a head having at least one inlet which opposes the surface to be cleaned, means for connecting the head to a suction source to cause liquid to flow through the inlet, turbine means which is driven by the flowing liquid, propellor means which is driven by the turbine means and which propels the head over the surface to be cleaned, and steering means for altering the direction in which the head is propelled over the surface to be cleaned, the steering means including at least one rudder and control means, actuated by the turbine means, for changing the orientation of the rudder relatively to the head.

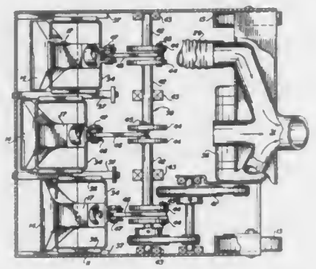


4,939,807
SNOW REMOVAL DEVICE
Edward T. Henez, 812 10th St., Fargo, N. Dak. 58103
Filed Dec. 1, 1988, Ser. No. 278,582
Int. Cl.[5] A47L *1/06*
U.S. Cl. 15—111 19 Claims



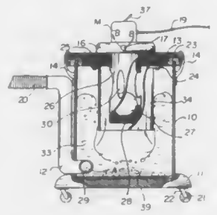
1. A snow removal device comprising:
(a) an elongate snow removal body member having first and second opposite ends, and plowing means;
(i) said plowing means including a longitudinal recessed channel portion having first and second ends and extending generally parallel to a longitudinal extension of said body member;
(ii) said snow removal body member further including first and second face portions generally parallel and spaced apart, said first face portion defining a generally concave plowing member of said plowing means;
(iii) said plowing means further including a snow-stopping portion proximate said first end of said snow removal body member, said snow-stopping portion closing said first end of said channel portion; and,
(iv) said plowing member including: an edge portion; a first curved portion adjacent said edge portion; a back wall portion adjacent said curved portion; and, a second curved portion adjacent said back wall portion; and,
(b) an elongate handle portion oriented proximate said first end of said snow removal body member and extending generally coplanar with said elongate snow removal body member.

4,939,808
CARPET CLEANING APPARATUS
James R. Roden, Phoenix, Ariz., and Gary D. Ingle, Mound, Minn., assignors to Professional Chemicals Corporation, Chandler, Ariz.
Filed Jan. 22, 1990, Ser. No. 468,177
Int. Cl.[5] A47L *11/30*
U.S. Cl. 15—322 10 Claims



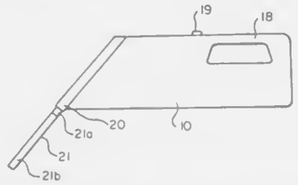
1. Carpet cleaning apparatus adapted to be moved across a carpet along a preferred path of travel, first and second vacuum nozzles having elongated inlet openings extending substantially normal to said preferred path of travel, means supporting said first and second vacuum nozzles for reciprocating movement along paths substantially parallel to said preferred path of travel, means for propelling said vacuum nozzles along their paths with the movement of said vacuum nozzles being out of phase with each other, and cleaning fluid discharge means associated with said vacuum nozzles.

4,939,809
TANK TYPE LIQUID VACUUM CLEANER
Chul Park, 1837 Green Place Ter., Rockville, Md. 20850
Filed May 1, 1989, Ser. No. 345,574
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—328 7 Claims



1. A tank type liquid vacuum cleaner which passes dirty air over a surface of a liquid which comprises:
- a liquid tank containing liquid, said liquid tank being supported on a supporting plate having a plurality of rollers,
- an air inlet having an L-shaped end at the one end thereof for inserting into a lower portion of said liquid tank for forcefully mixing air with the liquid, said air inlet connected to an intake hose at the other end thereof,
- a tank cover slidably and tightly attached to said liquid tank,
- an anti-overflow cylinder suspended by said tank cover,
- a ball valve containing tube disposed within said anti-overflow cylinder, said ball valve containing tube including a plurality of apertures disposed in the middle portion thereof, a ball valve seat closed at a lower outlet for seating a ball valve on the ball valve seat, and an upper outlet thereof extending to a vent opening,
- a fan housing including a fan, said fan housing containing said vent opening disposed in a side wall thereof,
- a motor connected to an electric source for actuating said fan, and
- a three-stage switch connected to said motor, wherein the three-stage switch includes an off position, a low power position, and a high power position, for actuating the off-switch, and for operatively selecting a vacuum cleaner or an air cleaner, whereby the vacuum cleaner can be converted to an air cleaner to effectively clean dirty air, and prevents the liquid from spilling on the floor when the cleaner is overturned.

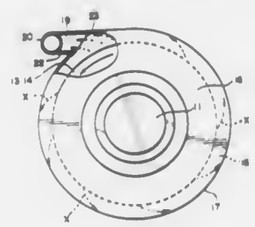
4,939,810
PORTABLE VACUUM CLEANER
Yasukazu Ataka, Ibaragi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 18,854, Feb. 24, 1987, Pat. No. 4,704.765, which is a continuation of Ser. No. 703,898, Feb. 21, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 80,976
Claims priority, application Japan, Jun. 11, 1984, 59-87247[U]; Jun. 14, 1984, 59-89905[U]; Jun. 14, 1984, 59-89909[U]; Jun. 15, 1984, 59-89647[U]; Jun. 22, 1984, 59-9434[U]; Jul. 9, 1984, 59-104258[U]
Int. Cl.[5] A47L *5/24*
U.S. Cl. 15—347 8 Claims



1. A portable vacuum cleaner comprising
- a housing having a front end, a back end and a bottom surface, said front end being formed with a suction inlet having an opening, the surface defining said opening being no higher than said bottom surface,
- a dust collecting means inside said housing,
- a suction-generating means behind said dust collecting means inside said housing, and
- an accessory piece which is removably attachable to said suction inlet and is L-shaped as a whole, said accessory piece comprising a base part which is detachably engagable to said suction inlet and a flat suction pipe part which is disposed on one side of said base part, said flat suction pipe part including an expandable bellows-like section.

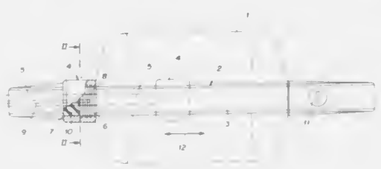
4,939,811
FLOOR POLISHER WITH A DUST COLLECTING DEVICE
Akira Matunaga; Hideo Inoue; Ken Ikezawa, and Tetu Arai, all of Shizuoka, Japan, assignors to Amano Corporation, Yokohama, Japan
Filed Dec. 12, 1988, Ser. No. 284,059
Claims priority, application Japan, Dec. 14, 1987, 62-315663
Int. Cl.[5] A47L *11/20*
U.S. Cl. 15—385 1 Claim

1. A floor polisher with a dust collecting device, comprising:
- a disc-shaped buffing pad rotatable about a center axis;
- a motor connected to said buffing pad for rotating said buffing pad at a high speed;
- a circular cover member spaced above and covering the upper surface of said buffing pad;
- a skirt depending from the peripheral edge of said cover member to the level of the bottom of said buffing pad and circumferentially encircling a space below said cover member and within said skirt and having a dust discharging opening therein;
- a dust collecting device for exerting a suction on said space; and
- a guide chamber extending outwardly of said skirt from said dust discharging opening and having a radially outer wall



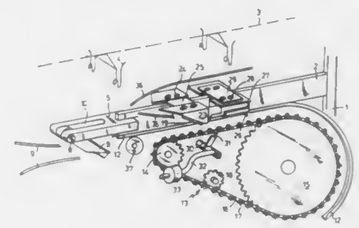
extending from said skirt on a line tangent to said skirt, a top wall extending from said cover, a radially inner wall spaced inwardly from and parallel to said outer wall, and an inclined bottom wall inclined upwardly from the position of the lower edge of said skirt at said dust discharging opening and in a direction parallel with said inner and outer walls, said guide chamber having an outlet port at the end remote from said dust discharging opening and communicating with said dust collecting device.

4,939,812
EXTERNAL DOOR HANDLE FOR A MOTOR VEHICLE
Karl-Heinz Bauer, Gärtringen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany
Filed Dec. 5, 1988, Ser. No. 279,561
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1987, 3741094
Int. Cl.[5] E05B *1/00*
U.S. Cl. 16—110 R 10 Claims



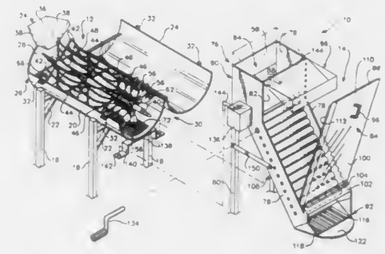
1. An outside vehicle door handle means for opening a vehicle door comprising:
- a strap which has a user gripping zone;
- the strap is attached to the outside of the vehicle door and is formed with an approximately uniform cross-sectional profile along its longitudinal direction;
- a displaceable slide means is provided and has portions which are arranged over the periphery of the strap for at least one of touching, scraping and brushing the gripping zone of the strap as the slide means is displaced along the strap to remove filth that has accumulated on the strap.

4,939,813
APPARATUS FOR REMOVING THE LEGS FROM BACK PORTION OF POULTRY
Jacobus E. Hazenbroek, Burg de Zeeuwastraat 52, Numansdorp, Netherlands
Continuation-in-part of Ser. No. 304,542, Jan. 31, 1989, Pat. No. 4,896,399. This application Nov. 8, 1989, Ser. No. 433,148
Int. Cl.[5] A22C *21/00*
U.S. Cl. 17—11 28 Claims



1. An apparatus for removing the legs and thighs from the back portion of poultry of which the breast portion has already been removed, comprising a suspension conveying system with a series of spaced shackles interspaced at regular intervals from which the poultry carcasses to be processed can be suspended upside down by their legs, and a processing station mounted at a level below the conveyor and comprising blades for separating the thighs from the back of the carcass, characterized in that the processing station (13) comprises a gripper member for gripping the back portion (8) of a poultry carcass and carrying the back portion along a path diverging from the path of the legs as the legs are carried by the overhead conveying system at a higher speed than that of the suspension conveyor (3), and a guide plate (12) adjacent the gripper member for maintaining the back portion (8) in the diverging path so that the back becomes removed from the thighs.

4,939,814
CULTURED MUSSEL CLEANING MACHINE
Diana R. Tillion, P.O. Box 6409, Halibut Cove, Ak. 99603
Filed Nov. 17, 1989, Ser. No. 438,579
Int. Cl.[5] A22C *29/04*
U.S. Cl. 17—74 20 Claims



1. A cultured mussel cleaning machine for cleaning fragile-shelled mussels, the machine comprising:
- means for containing a plurality of fragile-shelled mussels and water, said containing means having an inlet into which the mussels are placed and an outlet through which the mussels exit;
- means for agitating the mussels, said agitating means being positioned adjacent to and downstream from said inlet to

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break apart mussels clumped together and to remove unwanted material from the mussel shells;

means for brushing and rolling the mussels to remove additional unwanted material from the exterior of the mussels, said brushing and rolling means being positioned downstream from said agitating means; and

means for scrubbing the mussels, said scrubbing means being positioned downstream from said brushing and rolling means and adjacent said outlet.

4,939,815

LAP EVENING APPARATUS FOR A FIBER PROCESSING MACHINE

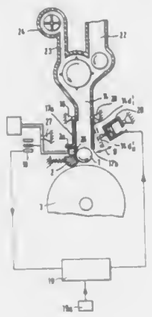
Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 255,258

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1987, 3734140

Int. Cl.[5] D01G *23/04*

U.S. Cl. 019—105 **14 Claims**



1. In a textile fiber feeder including

a feed chute adapted to be charged with fiber material, said feed chute having a width, a lower portion constituting a zone in which a fiber lap is formed from the fiber material and an outlet opening through which the fiber lap is discharged; said outlet opening being situated in said zone;

measuring means for measuring a distribution of the fiber material along the feed chute width and for generating signals representing said distribution;

said measuring means including a sensor member directly responding to said distribution of fiber material;

means for generating an air flow in the feed chute for affecting said distribution of the fiber material and causing densification thereof;

means defining air outlet openings in said feed chute in said zone for guiding said air flow out of said feed chute; and

regulating means for controlling the air flow along the feed chute width as a function of said signals; said regulating means including a movably supported setting member and force-exerting means connected to said setting member for changing the orientation thereof in response to a change of said signals, whereby said air flow is directly altered by said setting member as a function of said signals;

the improvement wherein said sensor member and said setting member are arranged in an adjoining relationship in said zone.

4,939,816

CONTROL APPARATUS FOR CONTROLLING FLOCK HEIGHT IN A FEED CHUTE FOR A FIBER PROCESSING MACHINE

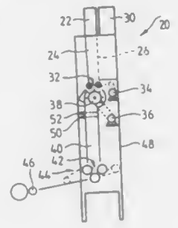
Thomas Scheakel, Effretikon, and Urs Staehli, Turbenthal, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Apr. 13, 1988, Ser. No. 181,074

Claims priority, application Switzerland, Apr. 13, 1987, 01455/87

Int. Cl.[5] D01G *23/06*

U.S. Cl. 19—105 **29 Claims**



1. In combination

a feed chute for a fiber processing machine including an infeed chute for receiving fiber blocks, forwarding means for forwarding fiber flocks from said infeed chute and a main chute for forming a flock column of the fiber flocks forwarded from said infeed chute; and

a control means for controlling said forwarding means in dependence upon the flock column in said main chute, said control means including first means for defining a set height of the fiber column in said main chute, a plurality of sensors distributed along a vertical line and adapted to react to the material in an operating region adjacent thereof, an interrogation device for interrogating said sensors in sequential manner to obtain a signal indicative of the height of the flock column, and second means for determining a magnitude of a deviation of the indicated height of the fiber column from said set height, said second means being connected to said forwarding means to control said forwarding means in response to a determined magnitude of deviation to eliminate the deviation.

4,939,817

PROCESS AND DEVICE FOR SEPARATING A SULFUR-LYE SUSPENSION

Guenter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 26, 1987, Ser. No. 66,598

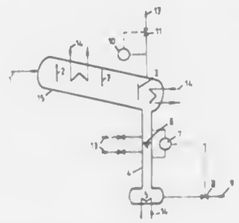
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1986, 3621481

Int. Cl.[5] C01D *3/20*

U.S. Cl. 23—308 S **22 Claims**

1. In a process for separating sulfur from a sulfur-lye suspension, the sulfur-lye suspension is fed into a separation tank, the temperature inside the separation tank is maintained above the melting temperature of sulfur, and liquid sulfur and lye are separated and withdrawn from the separation tank, the improvement wherein the separation tank is operated in the flooded condition, the liquid sulfur is fed into a vertical separation pipe in which a separation layer between the liquid sulfur and lye is established, and the liquid sulfur is drained out of the separation pipe.

3. Apparatus suitable for separating sulfur from a sulfur-lye suspension comprising a separation tank provided with a feed pipe for the sulfur-lye suspension, and a drain pipe for lye; discharge means for liquid sulfur positioned within said separation tank; a vertical separation pipe (4) in communication with the discharge means for the liquid sulfur, and in further communication with an outlet pipe (9) for liquid sulfur, and level



control means for continuously maintaining a separation layer within the vertical separation pipe between the liquid sulfur and lye.

4,939,818

ADJUSTABLE BUNDLING DEVICE

Blake S. Hahn, 26331 Governor Ave., Harbor City, Calif. 90710

Filed Sep. 2, 1988, Ser. No. 241,010

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—16 R **4 Claims**



1. A device for bundling objects, comprising

a flexible strap member having a first end portion, a second end portion, and a center portion, the flexible strap member having a top side and a bottom side;

hook and loop type fastener sections on portions of the flexible strap member comprising

a first loop fastener section on the top side of the first end portion,

a second loop fastener section on the bottom side of the second end portion, and

a first hook fastener section on the top side of the center portion,

wherein the hook and loop type fastener sections further comprise a third loop fastener section on the top of the second end portion and a second hook fastener section on the bottom of the center portion.

4,939,819

WRAPAROUND CLOSURE DEVICE

James D. Moyer, Downington, Pa., assignor to The Bentley-Harris Manufacturing Company, Lionville, Pa.

Filed Jun. 28, 1989, Ser. No. 372,893

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—16 R **3 Claims**



1. A closure device for a wraparound sleeve said sleeve being formed of interleaved monofilament material formed into an open web of flexible stretchable material, said closure device comprising a pair of interlocking closure strips extending lengthwise of the web, said strips being in spaced apart, parallel relationship, each said closure strip having a projecting enlarged male bead element running lengthwise thereof and a groove female receptacle portion extending lengthwise thereof, a stitching web between said bead element and the receptacle element for stitching the closure device to the web of flexible material along the side edges thereof, said web maintaining said receptacle element in spaced apart relationship with said projecting bead element, the bead element on each of said closure elements being adapted to interfit with the groove in said receptacle portion on the other closure element, the groove having side flanges adapted to retain the bead element.

4,939,820

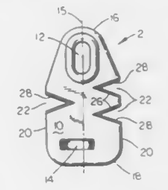
ROPE FASTENER

Martin P. Babcock, 2622 Guthrie Ave., N., Oakdale, Minn. 55119

Filed Jan. 3, 1989, Ser. No. 292,906

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—129 R **6 Claims**



1. A cordage coupler comprising:

(a) a rigid planar body having an outer periphery which relative to a longitudinal center axis provides for a first end whereat the peripheral edges taper inward to said longitudinal center axis as the edges extend forward, a mid-section wherein the peripheral edges are generally parallel and a relatively blunt, arcuate second end;

(b) a first through aperture in said first end adjacent said longitudinal axis;

(c) a plurality of V-shaped notches lengthwise staggered relative to one another along opposite sides of said mid-section, wherein opposite facing surfaces of each notch include a relatively thin co-extensive beveled region;

(d) a closed loop arm transversely projecting from a front surface of said body at said second end and having a bore parallel to said longitudinal axis; and

(e) wherein a first cordage member end is securable to said first aperture and a second cordage member end length adjustably mounts through said bore and said first aperture before being wrapped about a rear surface of said body and itself at each of said notches and passed back through said bore.

4,939,821

DROP WIRE CLAMP ASSEMBLY

George J. Frank, Jr., 664 Thompson Cir., Inverness, Ill.

Filed Feb. 9, 1989, Ser. No. 308,184

Int. Cl.[5] F16G *11/04*

U.S. Cl. 24—136 R **10 Claims**

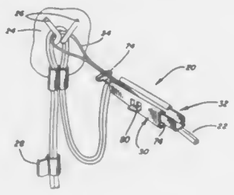
1. A drop wire clamp assembly for supporting an insulated wire, comprising:

a housing having a U-shaped cross section formed by a pair of side walls and a center wall, the side walls and center wall extending longitudinally to define an open channel for locating the insulated wire therein in abutment with the center wall, and an aperture formed in at least one of the walls,

a separate elongated pad extendable along the length of the open channel and spaceable from the center wall to sandwich the insulated wire between the pad and the housing

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and having a tab extending outwardly from the pad and insertable into the aperture in the housing to thereby form a retaining means for releasably capturing the pad relative to the housing to prevent the pad from dropping out of the open channel while allowing motion transverse to the axis of the open channel and tiltable within the channel, said retaining means allowing the pad to be attached to and



released from the housing, the tab on the elongated pad further includes a snap fit connector which expands to thereby retain the tab within the aperture of the housing, and

a slide assembly having an elongated shape interconnectable with the housing for movement within the open channel to press the elongated pad against the insulated wire to firmly hold the insulated wire within the assembly.

4,939,822
FASTENING ELEMENT
Klaus Heun, Engstetten 48, A-3352 St. Peter der Au, Austria
PCT No. PCT/AT88/00019, § 371 Date Dec. 5, 1988, § 102(e) Date Dec. 5, 1988, PCT Pub. No. WO88/08098, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 8, 1988, Ser. No. 295,310
Claims priority, application Austria, Apr. 10, 1987, A909/87
Int. Cl.[5] F16L *33/02*
U.S. Cl. 24—271 7 Claims



1. A fastening device manufactured of a strip of sheet material and comprising

(a) a flexible tongue capable of being looped around an element to be fastened, the tongue having

(1) a hook-shaped free end,

(2) an end opposite to the hook-shaped free end, and

(3) a widened portion adjacent the opposite end, and

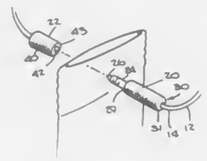
(b) a holding part projecting at an angle from the opposite tongue end and being bendable towards the tongue along a folding line adjacent the opposite tongue end, the holding part being integral with the tongue and

(1) having a hook-up edge spaced from the opposite tongue end and arranged to be engaged by the hook-shaped free end when the flexible tongue is looped around the element to be fastened,

(2) defining an elongated aperture having a width slightly exceeding the width of the tongue and extending from the folding line towards the hook-up edge into the widened tongue portion, the hook-up edge being constituted by a web bridging the elongated aperture, and

(3) being operable as a lever upon bending the holding part towards the tongue along the folding line for tightening and closing the fastening device when the tongue is looped around the element to be fastened and the hook-up edge of the holding part has been engaged by the hook-shaped free end of the tongue.

4,939,823
SOCK PAIRER AND HOLDER
Milton L. Klein, 30 E. 208th St., Bronx, N.Y. 10467
Filed Oct. 18, 1989, Ser. No. 423,017
Int. Cl.[5] A41F *1/00*
U.S. Cl. 24—590 1 Claim



1. A sock pairer and holder, comprising

(a) loop means, said loop means having two ends,

(b) clasp means, said clasp means comprising cooperating male and female threaded sections,

(c) loop securing means, said loop securing means connecting the ends of said loop to said male and female threaded sections,

(d) said loop securing embodying swivel means whereby said male and female threaded sections are axially rotatable relative to said loop,

(e) said loop securing means comprising ring means, said ring means securing the ends of said loop, said ring means being rotatably engaged with said male and female threaded section,

(f) said swivel means comprising head means joined to said ring means, said head means rotatably engaging sockets in said male and female threaded sections,

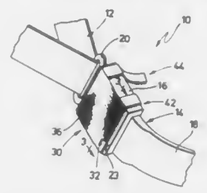
(g) said male threaded section comprising a male shoulder portion and a screw portion joined thereto, and said female threaded section comprising a female shoulder portion, the axial length of said male threaded section exclusive of said threaded screw portion being approximately three-quarters of an inch and the axial length of said clasp means when said male threaded section and said female threaded section are joined being approximately one and one-quarter inches, said threaded screw portion being pointed thereby being adapted to pierce the socks.

4,939,824
VEHICLE SAFETY BELT BUCKLE COVER
Delores A. Reed, 9739 Harmony Dr., Indianapolis, Ind. 46231
Filed Aug. 11, 1989, Ser. No. 392,599
Int. Cl.[5] A41F *1/00*; A44B *11/25*
U.S. Cl. 24—633 2 Claims

1. A cover for covering a buckle of a vehicle safety belt, said buckle having a safety belt releasing button on a surface thereof which is adapted to be depressed to open said safety belt, said cover comprising:

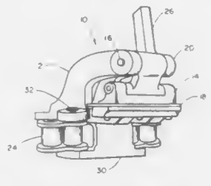
a generally rectangular-shaped covering member for substantially covering said surface of said buckle and said releasing button thereon, said covering member comprising an outer, flexible fabric layer and an inner, less flexible, relatively rigid sheet enclosed within said outer layer, said rigid sheet being sufficiently rigid to prevent or render more difficult the depressing of said button when said covering member covers said surface and said releasing button thereon; and

securing means for releasably securing said cover to said



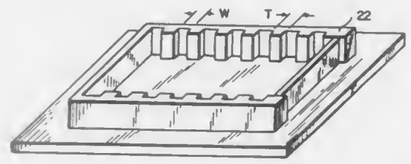
safety belt, said securing means including first and second pairs of spaced strap means attached to and extending from said covering member adjacent opposite edges thereof and adapted to be extended around said safety belt for securing said cover to said safety belt.

4,939,825
LIGHTWEIGHT TENTER FRAME CLIP
Tae H. Kwack, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 10, 1989, Ser. No. 349,677
Int. Cl.[5] D06C *3/04*
U.S. Cl. 26—93 6 Claims



1. In a tenter frame for the transverse stretching of an advancing web of a thermoplastic film material, fabric or foil, said tenter frame including a clip chain assembly having clips for engaging said webs, and chain links connected to said clips for moving the assembly along supporting rails; the improvement comprising in that at least some components of each of said clips are constituted from a lightweight polymeric material so as to reduce the weight of said clips.

4,939,826
ULTRASONIC TRANSDUCER ARRAYS AND METHODS FOR THE FABRICATION THEREOF
Thomas A. Shoup, Lowell, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 4, 1988, Ser. No. 164,273
Int. Cl.[5] H01L *41/12*
U.S. Cl. 29—25.35 10 Claims



1. A method of fabricating an ultrasonic transducer array adapter for scanning a selected object having a predetermined object wavelength comprising the steps of:

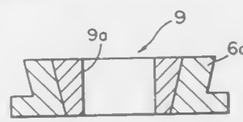
cutting a block of piezoelectric material having a top surface in a directions perpendicular to said top surface to form a plurality of wafers, each of said wafers being of a predetermined thickness;

affixing an etchable material of predetermined depth to one side of each wafer surface except for the wafer which is to be the end wafer on the one side of the array;

forming the wafers into a spaced parallel array with each adjacent pair of wafers in the array being spaced by a layer of affixed material, the predetermined thickness for etchable material being such that the center-to-center spacing between adjacent wafers in the array is substantially equal to one-half the object wavelength; and

etching away the affixed material to leave a spaced transducer array with a substantially one-half object wavelength center-to-center spacing.

4,939,827
METHOD OF MANUFACTURING A BEARING DEVICE INCLUDING A HOUSING WITH A FLANGE AT ONE END THEREOF AND A BEARING BUSH PRESS-FITTED THEREINTO
Akihiro Iizuka, Nagoya, Japan, assignor to Diado Metal Company Ltd., Nagoya, Japan
Filed Sep. 26, 1988, Ser. No. 251,352
Claims priority, application Japan, Oct. 20, 1987, 62-262706
Int. Cl.[5] B21D *53/10*; B23P *19/04*
U.S. Cl. 29—898.054 3 Claims



1. A method of manufacturing a bearing device, comprising the steps of:

forming a bearing bush having an inner bearing bore thereof tapered;

providing a housing having a flange at one end thereof and having a bore of a uniform inner diameter; and

press-fitting said bearing bush into the bore of said housing toward the side of the flange of said housing from the side of a non-flanged portion of the housing wherein the taper of said tapered bearing bore is selected such that, after said press-fitting step, said tapered bearing bore has an essentially uniform diameter.

4,939,828
METHOD OF PRODUCING STIFFENING PROFILES, PARTICULARLY OF REDUCED WEIGHT
Peter Maier, Gottlieb-Daimler-Strasse, 7700 Singen, Fed. Rep. of Germany
Filed Jun. 12, 1989, Ser. No. 364,235
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1988, 3821275
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—897.2 4 Claims



1. A method of producing extruded profiles comprising the steps of: extruding a plurality of elongated profile sections

along an extrusion direction, joining at least one elongated edge of one of said plurality of elongated profile sections which lies substantially parallel to the extrusion direction to an elongated edge of another of said plurality of elongated sections which lies substantially parallel to the extrusion direction, and cutting through the joined elongated profile sections at a desired thickness along a plane substantially perpendicular to the extrusion direction of said extruded profile sections.

4,939,829

METHOD OF AND APPARATUS FOR MANUFACTURING A GEAR

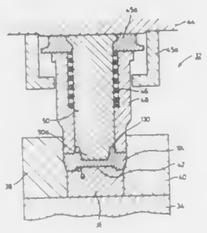
Toshio Maki; Chiyoshi Miura, and Michitoshi Kono, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1988, Ser. No. 218,248

Claims priority, application Japan, Jul. 13, 1987, 62-175416; Sep. 9, 1987, 62-225744; Sep. 9, 1987, 62-225745; Sep. 9, 1987, 62-137878[U]; Sep. 9, 1987, 62-137879[U]; Nov. 9, 1987, 62-281142; Nov. 9, 1987, 62-170108[U]; Nov. 25, 1987, 62-295386; Dec. 23, 1987, 62-323879

Int. Cl.[5] B21D *53/28*

U.S. Cl. 29—159.2 **20 Claims**



1. A method of manufacturing a gear, comprising the steps of:

upsetting a blank;

piercing said blank heated up to a warm forging temperature range;

forming gear teeth on said blank by warm extrusion; and

sizing said gear teeth by cold sizing.

4,939,830

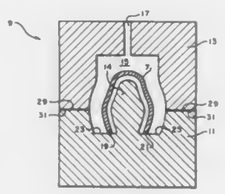
METHOD OF MAKING ELASTOMERIC EMBEDDED SPRING SEAL

Robert Janian, Encino, Calif., assignor to Tetrafluor, Inc., El Segundo, Calif.

Filed Mar. 6, 1989, Ser. No. 319,346

Int. Cl.[5] B21F *35/00*

U.S. Cl. 29—173 **7 Claims**



1. A method of forming a finished spring seal using a spring and an elastomer comprising the steps of:

(a) setting up a die, wherein said die comprises an independent male section and an independent female section;

(b) loading the spring around a protruding lip portion of said male section;

(c) positioning said female section so that a central portion thereof surrounds said protruding lip portion of said male section and at least part of the spring, and an outer peripheral portion of said female section abuts an outer peripheral portion of said male section;

(d) injecting the elastomer at a temperature which allows it to flow into said sections allowing the elastomer to flow around the spring and allowing a predetermined time for the elastomer to set; and

(e) obtaining the finished spring seal by separating said male and female sections and unloading the finished spring seal by flexing ends of the seal in said male section.

4,939,831

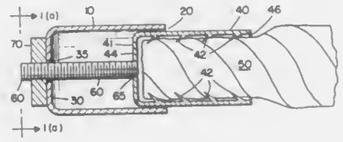
END FINISHING DEVICE FOR ROPE, WIRE, CABLE, AND THE LIKE

Michael B. Doninger, 1815 Yale Rd., Merrick, N.Y. 11566

Filed Aug. 2, 1989, Ser. No. 388,693

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—263 **20 Claims**



. 1. Apparatus for end finishing of a termination of an item such as a rope, cord, wire, cable, pole, rod, or the like which comprises:

(a) a hollow rigid sleeve member open at one end and having a relatively small opening at its opposite end;

(b) a threaded rod member adapted to pass freely through the relatively small opening in said sleeve member;

(c) a compressible gripping member having inwardly extending barbs for gripping said termination, said gripping member at least partially surrounding a longitudinal portion of the termination and configured to engage an end of said threaded rod at one end, and to be compressible and enable a close nesting fit within said sleeve member, said gripping member being thereby adapted to be drawn into said hollow sleeve member; and

(d) a threaded fastener located outside said sleeve member and adjacent the relatively small opening thereof and peripherally engaged with said threaded rod member so that upon advancement of the threaded rod through said peripherally engaged threaded fastener, the gripping member and the termination engaged therewith are advanced a corresponding amount into the hollow sleeve member, said compressible gripping member being thereby compressed and gripping said termination, whereby said termination of said item is finished and said item is available for its desired use with said apparatus fastened thereon.

4,939,832

APPARATUS FOR ASSEMBLING A SEAT FOR USE IN AN AUTOMOBILE

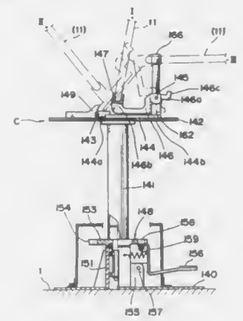
Yoshihiko Satuka, and Teturo Kusuhara, both of Hiroshima, Japan, assignors to Delta Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 20, 1989, Ser. No. 340,673

Claims priority, application Japan, Apr. 20, 1988, 63-54092[U]

Int. Cl.[5] B23Q *1/04*

U.S. Cl. 29—281.4 **4 Claims**



1. An apparatus for assembling a seat for use in an automobile comprising:

a table rotatably mounted on a base for rotation in a horizontal plane;

a first supporting arm whose front end portion is pivotally mounted on said table about a horizontal axis of a first hinge for movement between a forward position, in which said first supporting arm forms an angle of about 45° with said table, and at least one other position;

a second supporting arm whose rear end portion is pivotally mounted on the rear end portion of said first supporting arm about a horizontal axis of a second hinge for movement between a rearward position, in which said second supporting arm forms an angle of about 90° with said table, and at least one other position;

a setting base which is mounted on the front end portion of said second supporting arm and on which the lower corner of a seat back frame is adapted to be placed in a position in which the seat back frame is approximately perpendicular to said table;

a rotation locking mechanism for locking said table at a predetermined rotational position thereof;

a first stopper for contacting said first supporting arm when the first supporting arm is in said forward position so as to lock the first supporting arm in said forward position; and

a second stopper for contacting said second supporting arm when the second supporting arm is in said backward position so as to lock the second supporting arm in said backward position.

4,939,833

DOUBLE CONTAINMENT AND LEAK DETECTION APPARATUS

Horace F. Thomas, Houston, Tex., assignor to CoreTank, Inc., Houston, Tex.

Filed Aug. 2, 1989, Ser. No. 388,593

Int. Cl.[5] B65D *90/04, 90/24*

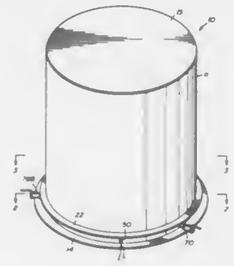
U.S. Cl. 29—401 **10 Claims**

1. A method for modifying a tank to allow containing and detecting leakage of stored material held in such tank, comprising the steps of:

(a) Providing a tank having a tank bottom and a shell extending above the tank bottom, and being capable of containing such stored material inside the tank above the tank bottom and within the shell;

(b) Placing a leak detection means in the tank above the tank bottom, such leak detection means being capable of detecting and sending signals in response to the presence of such stored material;

(c) Installing a leak-proof access to the leak detection means from outside the tank; and



(d) Assembling a containment baffle in the tank within the shell above the leak detection means, such containment baffle including a continuous sealing surface in continuous sealing contact with the shell, for sealingly isolating a space above the tank bottom and below the containment baffle and that contains the leak detection means.

4,939,834

MACHINE TOOL WITH TOOL CHANGE MECHANISM

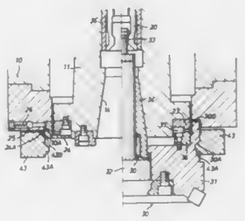
Hisamitsu Kawasaki, Kariya; Kunimichi Nakashima, Anjo; Kazunori Araki, Kariya, and Tsuyoshi Mizuno, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 28, 1988, Ser. No. 263,862

Claims priority, application Japan, Oct. 31, 1987, 62-276745

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **4 Claims**



1. A machine tool comprising a spindle head mounted thereon and a tool spindle rotatably supported within said spindle head and being formed with a tapered bore for selectively supporting a standard tool holder or a second tool holder of large diameter inserted thereinto, a first ring gear secured to a forward end of said tool spindle in a concentric relationship with the tapered bore of said tool spindle; and a second ring gear secured to said second tool holder to be brought into meshing engagement with said first ring gear when said second tool holder has been inserted into the tapered bore of said tool spindle; said machine tool further comprising:

a protection cover member to be coupled within a forward end of said spindle head in surrounding relationship with said first ring gear when said standard tool holder has been inserted into the tapered bore of said tool spindle, said

cover member being formed to contain therein said first ring gear when it has been coupled within the forward end of said spindle head;

means for removably retaining said protection cover member in place when coupled within the forward end of said spindle head;

a protection cover part integrally formed with an outer periphery of said second tool holder in surrounding relationship with said second ring gear to be coupled within the forward end of said spindle head when said second tool holder has been inserted into the tapered bore of said tool spindle, said cover part being formed to contain therein said first and second ring gears meshed with each other when it has been coupled within the forward end of said spindle head; and

a tool change mechanism including a tool change arm provided with a pair of tool grippers each having a first grip portion for engagement with said protection cover member and a second grip portion for engagement with said second tool holder, said tool change arm being arranged in such a manner that said tool grippers are operated to couple said protection cover member within the forward end of said spindle head and remove it therefrom for replacement with said second tool holder and to insert said second tool holder into the tapered bore of said tool spindle.

4,939,835

METHOD FOR ACHIEVING THE PLANAR SURFACE OF AN ACTIVE FACE FOR A MAGNETIC RECORDING/READING HEAD

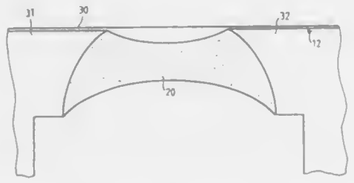
Jean-Marc Coutellier, Maurepas; Alain Jacobelli, St Michel Sur Orge; Henriette Magna, Antony, and Paul-Louis Meunier, Paris, all of France, assignors to Compagnie Europeenne de Composants Electroniques, Courbevoie, France

Filed Jun. 16, 1989, Ser. No. 366,955

Claims priority, application France, Jun. 24, 1988, 88 08527

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **2 Claims**



1. A method for achieving a plane surface on an active face of magnetic recording/reading heads during manufacture, wherein the active face is obtained by grinding to create magnetic pole surfaces and to expose a gap filled with non-magnetic material, the level of the material in the gap being recessed, with respect to adjacent magnetic pole surfaces, comprising the following steps:

depositing on said active face a thin layer of non-magnetic material with a thickness at least equal to the depth of the recess of the material in the gap, thereby filling said recess; and,

the deposited non-magnetic thin layer to obtain a planar surface on the active face.

4,939,836

METHOD FOR THE FABRICATION OF A MAGNETIC RECORDING/READING HEAD FROM A MAGNETIC SUBSTRATE

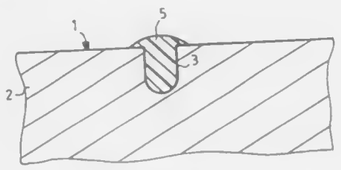
Paul-Louis Meunier, Paris; Alain Penot, Palaiseau; Jean-Marc Coutellier, Maurepas, and Claude Bussac, Ris Orangis, all of France, assignors to Compagnie Europeenne de Composants Electroniques LCC, Courbevole, France

Filed Jun. 16, 1989, Ser. No. 366,955

Claims priority, application France, Jun. 24, 1988, 88 08526

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **7 Claims**



1. A method for fabricating at least one magnetic reading-/recording head having two magnetic poles from a substrate made of magnetic material, the magnetic head having an active face defined by the magnetic poles of the head separated by a gap, comprising the steps:

making a groove having a predetermined width on a face of the substrate designed to become the active face of the head;

grinding the face of the substrate that has the groove to provide a planar surface; then

filling the groove with a non-magnetic material designed to form the gap to a level where the non-magnetic material juts out of the groove;

grinding the material that juts out until the planar surface of the substrate is reached and the ground surface of the material is coplanar with said planar substrate;

machining the substrate from a face other than the active face to obtain a gap of a predetermined depth;

fixing, on the magnetic poles, a part to close the magnetic field; and,

positioning a coil in the magnetic circuit formed by the poles and the closing part.

4,939,837

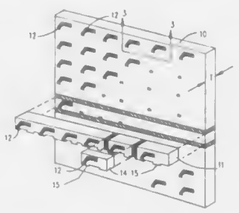
BATCH FABRICATION PROCESS FOR MAGNETIC HEADS

Mohamad T. Krounbi, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1988, Ser. No. 239,562

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **4 Claims**



1. The method for batch fabrication of a plurality of magnetic heads each comprising a magnetoresistive (MR) read transducer, said magnetic heads being formed in a plurality of rows on a substrate, each of said rows having a plurality of magnetic heads therein, said method comprising the steps of:

depositing a first layer of magnetic material over the substrate of a predetermined thickness;

depositing a layer of suitable electrically insulating material of a predetermined thickness over said first layer of magnetic material;

sputter depositing, in the presence of a magnetic field, a second layer of magnetic material of a predetermined thickness over said layer of electrically insulating material, said magnetic field being operable to orient said second layer of magnetic material in a preferred direction;

patterning said second layer of magnetic material to form a plurality of MR read transducers, each having its easy axis in a selected direction; and then

patterning said first layer of magnetic material to form a shield for each of said MR read transducers whereby said thickness and said preferred orientation of said MR transducers is maintained at the thickness and direction, respectively, established during said sputter depositing step.

4,939,838

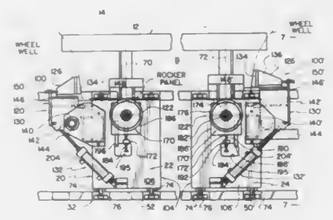
COMPLIANT POSITIONING SYSTEM FOR OPERATING ON ASSEMBLY LINE PRODUCTS

Raymond P. Gatta, 249 Ironwood Cir., Aurora, Ohio 44202

Filed Apr. 3, 1989, Ser. No. 332,473

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—795 **16 Claims**



1. A positioning system for automatically positioning first and second spaced apart portions of a fixture or tool holding platen in precise positions with respect to widely spaced locations on assembly line products wherein successive products have slightly differing pitch, yaw and roll orientations with respect to the positioning system, the positioning system comprising:

(a) a support unit;

(b) first and second positioner means supported by said unit for engagement with respective first and second product locations to position said first and second platen portions with respect to the first and second product locations, each of said positioner means comprising;

(i) a product locator structure for engaging a respective one of said first and second product locations and locating said product location with respect to said positioner means; and,

(ii) platen actuator means carried by said positioner means for moving a respective one of said platen portions to an operating position precisely positioned with respect to a respective one of said product locations;

(c) connecting means for securing said platen actuator means to respective ones of said first and second platen portions for limited relative motion to enable said positioning system to accommodate pitch, roll and yaw variations in product orientation.

4,939,839

KNIFE WITH RETRACTABLE BLADE

Alan Gorst, Cheshire, United Kingdom, assignor to The Paramo Tools Group Ltd., Sheffield, United Kingdom

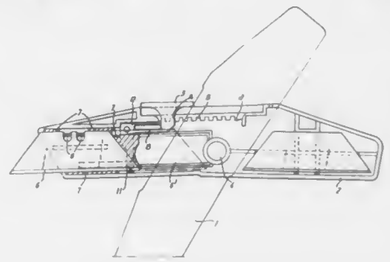
PCT No. PCT/GB88/00244, § 371 Date Nov. 1, 1989, § 102(e) Date Nov. 1, 1989, PCT Pub. No. WO88/07918, PCT Pub. Date Oct. 20, 1988

PCT Filed Mar. 31, 1988, Ser. No. 411,540

Claims priority, application United Kingdom, Apr. 4, 1987, 8708112

Int. Cl.[5] B26B *3/00*

U.S. Cl. 30—125 **7 Claims**



1. A knife comprises a handle formed in two handle portions, said handle portions being connected together by a pivot and being pivotally movable between an open position and a closed position, the handle portions in said closed position defining a housing, a retractable blade mounted on a blade carrier, the carrier being movable between a first position wherein the blade projects from the housing and a second position wherein the blade is retracted into the housing such that the blade is not substantially capable of further rearward movement characterised in that the two handle portions are locked in the closed position when the carrier is in the first position and are unlocked when the carrier is in the second position.

4,939,840

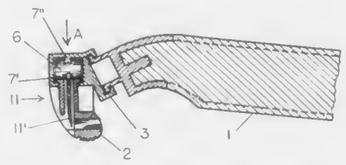
SAFETY RAZOR

Kemal Butka, 372 Central Park West, Apt. 20J, New York, N.Y. 10025

Filed Apr. 14, 1989, Ser. No. 339,231

Int. Cl.[5] B26B *21/00, 21/08, 19/38, 19/48*

U.S. Cl. 30—37 **4 Claims**



1. A safety razor, comprising a handle; a blade element movable relative to said handle in a direction which substantially corresponds to the direction of a working stroke of the safety razor during shaving; and an elastic element cooperating with said handle and said blade element and formed as a spring, said spring having one portion fixedly connected with said blade element and another portion acted upon by a force applied to said handle during a shaving stroke, said spring having two opposite ends and at least one bend located therebetween, said blade element having two blades, said one portion being formed by said ends of said spring so that one of said ends of

VOL 1116 ISS 2 JL 10 1990 UMI

said spring is connected with one of said blades while the other of said ends of the spring is connected with the other of said blades, said other portion acted upon by said handle is formed as said bend.

4,939,841

CUTTING TOOL

Lieng H. Sai, 3843 Muscatel Ave., Rosemead, Calif. 90770

Continuation of Ser. No. 917,555, Oct. 10, 1986, abandoned.
This application Sep. 6, 1988, Ser. No. 241,827
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—317 **11 Claims**



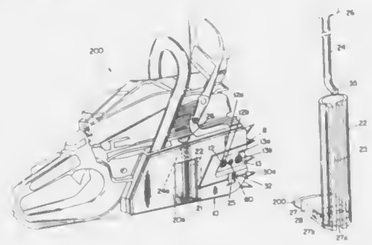
1. A cutting tool capable of manually cutting heavy growth such as tree branches with a minimum of cutting strokes, comprising an elongated handle, and an elongated rigid metal blade secured to an end of the handle, the blade having a length (L) of at least about 8 to 10 inches and a width of at least about 2 inches to provide a substantial mass of the blade distributed along the blade length, in which the handle is longer than the blade length, the blade being arranged relative to the handle for positioning a majority of the weight of the blade behind the central longitudinal axis of the handle, the blade having an inside portion tapering to form an elongated substantially straight cutting edge portion (C) extending for at least about half of the blade length, and wherein the majority of the long, straight cutting edge portion of the blade also lies behind the central longitudinal axis of the handle, the free end of the blade tapering narrower and forming a curved generally U-shaped end portion of the blade, in which the long, straight cutting edge portion of the blade merges into a curved inside cutting edge at the free end of the blade extending to the side of the central longitudinal axis of the handle opposite from the straight cutting edge portion, and in which the blade has a substantial portion of its length comprising a non-cutting outer portion behind the cutting edge with a blade thickness of at least about one-fourth inch to thereby balance the blade and provide mass for effective cutting by the straight cutting edge.

4,939,842

CASING FOR A POWER DRIVEN CHAIN SAW

Franz Rebhan, Am Birkenbach 31, 8729 Eltmann, Fed. Rep. of Germany

PCT No. PCT/DE87/00436, § 371 Date May 20, 1988, § 102(e) Date May 20, 1988, PCT Pub. No. WO88/03858, PCT Pub. Date Jun. 2, 1988
PCT Filed Sep. 23, 1987, Ser. No. 218,289
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1986, 3640162
Int. Cl.[5] B27B *17/02*
U.S. Cl. 30—386 **9 Claims**



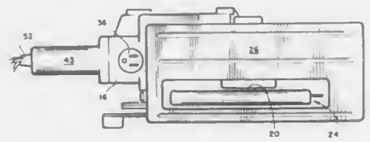
1. A casing for a power driven chain saw with a drive unit having a sprocket wheel driving a saw chain revolvingly on a saw rail, a rail supporting means having two fastening bolts penetrating a slot-like aperture constructed in the saw rail, a saw chain tightening device arranged within the area of the rail supporting means and a sprocket wheel cover that can be secured to the casing and covers the sprocket wheel and the rail supporting means, characterized in that the sprocket wheel cover (**10**) is constructed in two portions which comprise a protective cover (**20**) and a clamping cover (**30**) separable from the protective cover, the protective cover being contoured in the area of the chain tightening device to receive the clamping cover such that each of the protective cover and the clamping cover defines an outer exterior surface on the sprocket wheel cover, and the clamping cover (**30**) cooperating with the rail supporting means for holding the saw rail to the casing.

4,939,843

PORTABLE HANDHELD CIRCULAR SAW

Ronald S. Rogers, 10755 Felix Dr., Santee, Calif. 92071

Filed Sep. 14, 1989, Ser. No. 407,266
Int. Cl.[5] B23D *45/16*
U.S. Cl. 30—388 **4 Claims**



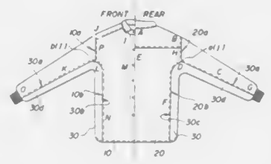
1. A portable handheld circular saw comprising:
a motor housing having a front end, a rear end, a top wall and a bottom wall;
an electric motor having a drive shaft mounted in said motor housing;
a circular saw blade mounted on said drive shaft;
a blade guard housing surrounding most of said circular saw blade;
a handgrip housing having a front end and a rear end, said front end being rigidly connected to the rear end of said motor housing, a chamber formed in said handgrip housing and a trigger switch having an electrical input terminal and an electrical output terminal and being mounted in said chamber;
an auxiliary female electrical socket mounted in the bottom wall of said motor housing;
a first pair of electrical wires having means on one of their respective ends for connecting them to an A.C. power source, the other end of said wires being connected to the input side of said trigger switch;
a second pair of electrical wires having one of their ends connected to the output side of said trigger switch and their opposite ends connected to said electrical motor; and
a third pair of electrical wires having one of their respective ends connected to the input side of said trigger switch and their opposite ends connected to said auxiliary female electrical socket.

4,939,844

MASTER PATTERN FOR UPPER GARMENTS

Shoji Fujimura, Yamatokoriyama, and Toru Kawai, Osaka, both of Japan, assignors to Shikibo Ltd., Osaka, Japan

Division of Ser. No. 74,179, Jul. 16, 1987, Pat. No. 4,802,282. This application Sep. 27, 1988, Ser. No. 249,936
Claims priority, application Japan, Jul. 18, 1986, 61-170490
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.
Int. Cl.[5] A41B *1/08*
U.S. Cl. 33—12 **2 Claims**



1. An upper garment comprising:
front and rear parts each of which having a first sewing side line at one side thereof, each of said first sewing side lines having an upper end, a first substantially straight lower portion and an outwardly projected upper portion therebetween, each of said outwardly projected upper portions having a bulging portion intermediate said upper end and said first substantially straight lower portion meeting to define an apex for constituting a sleeve root; and
a lateral part being sewn with said front and rear parts at each sides thereof, said lateral part having two second sewing side lines at each side thereof and including an upper portion for constituting a sleeve bottom and a lower portion for interconnecting said front and rear parts, each of said two second side lines having a substantially straight portion of said lower portion thereof,
wherein each of said first substantially straight lower portions and a lower half of each of said bulging portions of said first sewing side lines being sewn with each of said second substantially straight portions of said two second sewing side lines, and each of said upper ends, each of said apex and an upper half of each of bulging portion being sewn with said sleeve root.

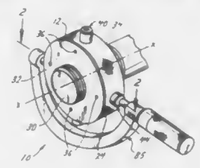
4,939,845

MULTI PURPOSE THREAD RING GAGE

Robert D. Porter, Florissant, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 17, 1989, Ser. No. 394,959
Int. Cl.[5] G01B *3/48*
U.S. Cl. 33—199 R **15 Claims**

1. A multi-purpose measuring device for use in determining various parameters of an externally threaded member, and comprising:
a housing having a pair of side walls oppositely disposed from and extending substantially parallel to one another and ending in an outer surface of said housing;
said housing including a cylindrical passageway extending between said opposite side walls, said cylindrical passageway having a continuously threaded surface with a maximum diameter no greater than the maximum diameter of an externally threaded member to be measured;
said housing further including at least one pair of openings, with each opening extending from said cylindrical passageway to said outer surface;
a separate gaging plug slidably disposed within each opening, each gaging plug having an inner end facing said



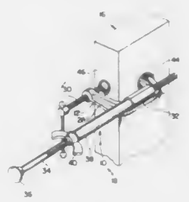
cylindrical passageway and an outer end extending beyond the outer surface of said housing, and an elongated slot through each plug extending along the longitudinal axis of said plug at a distance from said inner end facing;
biasing means disposed for biasing each of said gaging plugs away from said cylindrical passageway;
stop means attached to said housing, extending through said elongated slot for retaining said biasing means; and
gaging means supported by said gaging plugs for selectively engaging an externally threaded member following its insertion into said cylindrical passageway;
whereby specific parameters of said threaded member are determinable by manipulating a micrometer or the like to engage and slide said gaging plugs against the pressure of said biasing means until said gaging means enter the cylindrical passageway and engage said threaded member.

4,939,846

ADJUSTABLE GUIDE ASSEMBLY FOR STONE MASONS AND METHOD OF USE THEREOF

Louis Damiano, 53 Ashburton St., Providence, R.I. 02904, and Anthony G. Caputo, 7 Crow Point Rd., Lincoln, R.I. 02865

Filed Feb. 2, 1989, Ser. No. 305,271
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—404 **11 Claims**



1. An adjustable guide assembly for use in constructing a brick wall of a type including a plurality of substantially horizontal rows of bricks, the bricks in said rows having front surfaces which are substantially uniformly spaced forwardly from a substantially vertical subwall by a predetermined gauge distance, said guide assembly comprising an elongated guide member having an elongated substantially straight longitudi-

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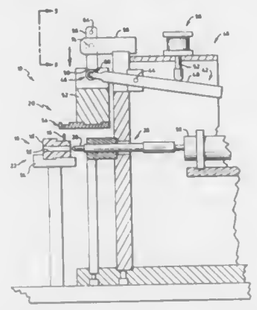
nally extending guide face theron, an elongated spacer element having a terminal end a C-clamp secured in clamping engagement on said guide member and means adjustably securing said spacer element to said C-clamp so that said terminal end is adjustably spaced outwardly from said guide face by said gauge distance, whereby when said guide member is positioned in a substantially vertical disposition with said guide face in engagement with the front surface of a bottom row of bricks in said brick wall and said terminal end in engagement with said subwall at a point which is spaced upwardly from said bottom row, said guide face defines a guide for positioning the front surfaces of the remaining rows of bricks in said brick wall.

4,939,847

TRUE POSITION GAUGE

Gerald M. Jones, Titusville, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 9, 1989, Ser. No. 308,067
Int. Cl.[5] G01B *21/16, 11/14*
U.S. Cl. 33—545 4 Claims



1. A true position gauge for checking the alignment of a plurality of electrical contacts positioned in an electrical connector, said contacts extending from the connector body and presenting a patterned array, said gauge comprising: a gauge work station; connector receiving means at said work station; connector alignment means at said work station for cooperating with said connector to present a consistent alignment to said gauge; a gauge plate at said work station, said gauge plate containing a plurality of apertures equal in number and pattern to said patterned contact array; gauge plate moving means operable to deposit said gauge plate upon said connector; and sensing means operable in conjunction with said deposit of said gauge to determine if said contacts have penetrated said apertures.

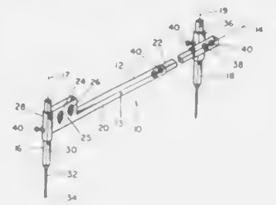
4,939,848

VEHICLE FRAME ALIGNMENT GAUGE

Orville D. Armstrong, 8221 Ave. M, Santa Fe, Tex. 77510

Filed Dec. 1, 1988, Ser. No. 278,563
Int. Cl.[5] G01B *5/25*
U.S. Cl. 33—608 16 Claims

1. An alignment gauge for checking the alignment of a vehicular frame having a plurality of reference points thereon while the alignment gauge is manually supported by an operator, comprising:
an elongate and adjustable length beam including a tubular outer beam member and a tubular inner beam member slidably movable within the outer beam member, the adjustable length beam further having a central beam axis;
a first elongate needle indicator carried on the beam and having a first tip end for positioning on the vehicle about a first reference point and selectively movable with respect to the beam along a first indicator axis perpendicular to and passing through the central beam axis;
a second elongate needle indicator carried on the beam and movable along the beam axis with respect to the first needle indicator, the second needle indicator having a second tip end for positioning on the vehicle about a second reference point and selectively movable with respect to the beam along a second indicator axis perpendicular to and passing through the central beam axis;



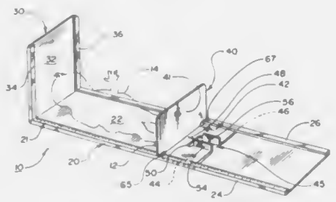
a T-shaped bracket including a first tubular portion carried about the tubular inner beam member and a second tubular-portion perpendicular to the first tubular portion and having an interior passage for receiving the first needle indicator; and
a level permanently secured to the tubular outer beam member for visually indicating when the beam is level.

4,939,849

INFANT MEASURING DEVICE

Diana L. Johnson, 10 Cty. Hwy. #4, Wrenshall, Minn. 55797

Filed Nov. 10, 1988, Ser. No. 269,423
Int. Cl.[5] G01B *5/02*
U.S. Cl. 33—811 13 Claims



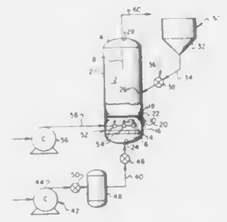
1. A device for measuring infants comprising:
an elongated measuring base having at least one sequence of linear measuring indicia thereon extending from one end of the measuring base parallel to the axis of elongation and further having a pair of opposed channels extending substantially the length of the measuring base parallel to the axis of elongation;
a fixed end stop extending upward from said one end; and
a measuring stop slidably connected between the pair of opposed channels of the measuring base, said measuring stop comprising:
a channel slide member that is a flat member having two opposed, generally parallel, channel-engaging edges with a spring opening lying therebetween, the normal distance between said channel-engaging edges being slightly greater than the distance between the interior channel surfaces that it engages such that the channel-engaging edges are biased to frictionally engage the interior of said opposed channels;
release means operably connected to said channel slide member for counteracting the bias toward frictional engagement of the interior of said opposed channels, said release means comprising a pair of opposed flanges, one connected on each side of said spring opening, such that when the flanges are squeezed together the width of the spring opening and the distance between the channel-engaging edges is reduced; and
an index panel extending upward from said channel slide member and having an indicating relationship with said at least one sequence of measuring indicia.

4,939,850

METHOD AND APPARATUS TO CONDUCT FLUIDIZATION OF COHESIVE SOLIDS BY PULSATING VAPOR FLOW

Lloyd A. Baillie, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 29, 1989, Ser. No. 330,330
Int. Cl.[5] F26B *17/00*
U.S. Cl. 34—10 4 Claims



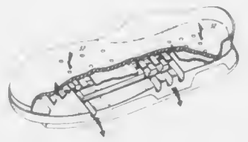
1. A process for fluidizing solids in a vessel which is divided into a first chamber and a second chamber by a gas-permeable partition peripherally associated with an inside wall of said vessel, said process comprising introducing a fluidizing fluid into the first first chamber, introducing fluidizable solid particles into the second chamber, passing the fluid through the gas-permeable partition to fluidize the solids in the second chamber, and moving the gas-permeable partition from a first position to a second position and back by pulsing the fluidizing fluid into the first chamber to disrupt coherence between the particles.

4,939,851

BOAT SHOE

Harry Miller, Boston, Mass., assignor to Omega Corporation, Boston, Mass.

Filed Jan. 3, 1989, Ser. No. 292,765
Int. Cl.[5] A43B *5/00, 5/08, 7/06, 13/00*
U.S. Cl. 36—3 B 4 Claims



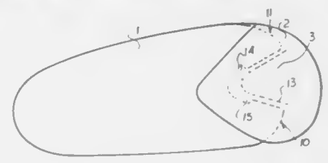
1. A shoe that allows water or another liquid entering the interior o the shoe to freely flow out, said shoe comprising:
an upper portion including side and top surfaces;
a sole portion attached to lower edges of side surfaces of said upper portion, said sole portion including:
an innersole including a series of perforations therethrough;
an outersole positioned below said innersole, said outer sole including a series of passageways that communicate with said perforations in order to receive water or another liquid that passes through said perforations and to lead said liquid to the exterior of said outersole; and
a lasting board positioned between said innersole and said outersole, said lasting board including openings that allow water or another liquid flowing through said perforations to enter said passageways.

4,939,852

ELASTIC FOOT SUPPORT TO BE BUILT-IN OR INSERTED IN SHOES

Edeltraud Brenner, Gartenstrasse 22a, 7918 Illertissen-Au, Fed. Rep. of Germany

PCT No. PCT/DE87/00579, § 371 Date Aug. 29, 1988, § 102(e) Date Aug. 29, 1988, PCT Pub. No. WO88/04898, PCT Pub. Date Jul. 14, 1988
PCT Filed Dec. 8, 1987, Ser. No. 243,100
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1987, 3700044
Int. Cl.[5] A43B *7/14;* A61F *5/14*
U.S. Cl. 36—44 9 Claims



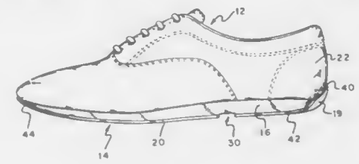
1. An elastic foot support for insertion into shoes comprising:
a support plate with upper and lower major opposite surfaces, said support plate being in an arched form and having a frontal portion on an end thereof, said frontal portion including an aperture position approximately symmetrically with a longitudinal axis of said support plate; and
an elastically flexible support body having at least two toroidally shaped projections on a botton surface thereof, said support body being fastened to said support plate in such a manner that some paart thereof presses through said aperture when said support plate is pressed downward by a foot and thereby provides a massaging effect upon said foot, and said support body overlapping both said upper and lower major opposite surfaces of said support plate.

4,939,853

MARCHING SHOE

Jon Farbman, 251 W. 74 St., New York, N.Y. 10023

Continuation of Ser. No. 139,653, Dec. 30, 1987, abandoned. This application May 15, 1989, Ser. No. 352,620
Int. Cl.[5] A43B *3/00, 13/00*
U.S. Cl. 36—103 12 Claims



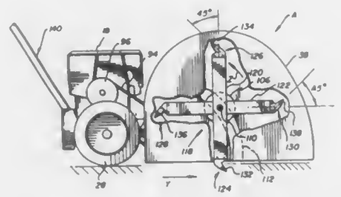
1. A formal dress marching shoe which comprises:
(a) a low-cut formal dress shoe upper portion formed of a

strong and substantially inextensible material which is compatible in appearance with a "dress uniform" having a close encircling foot enclosure including a counter section at the rear quarter section, a front quarter section with a plurality of eyelets for receiving laces, and a toe-box front section;

(b) a midsole having a foot bearing surface and a bottom surface, said midsole being secured to said upper substantially along the peripheral edge of said foot bearing surface and extending from the region below the counter section at the rear forwardly to the toe-box section with a peripheral line of demarcation between said upper and said midsole, said bottom surface having a tapered portion at the heel receiving portion of the shoe, the direction of which tapered portion is such as to converge beneath the shoe; and

(c) an elongated outer solepiece having a substantially planar ground engaging bottom surface secured to and covering said midsole bottom surface and extending upwardly over said tapered portion in a curving arcuate course from said heel-receiving region to about a portion of the outer surface of the couter section at the rear of said upper which thereby permits a wearer of said shoe to perform "corps style" marching maneuvers, said outer solepiece including a notch therein which extends across the solepiece transverse to the length thereof suitable to receive a "hold-down strap of a dress uniform" decorative adornment.

4,939,854
ROTARY TRENCHING MACHINE
Gary R. Boren, 22501 Rd. 19, P.O. Box 147, Vona, Colo. 80861
Filed Jul. 31, 1989, Ser. No. 386,977
Int. Cl.[5] E02F *3/08*
U.S. Cl. 37—94 19 Claims



1. A push or pull type of trenching machine, comprising:

(a) base frame means;

(b) said frame means having a first surface and a second surface;

(c) said frame means having first and second ends and sides;

(d) said first end including motor means and a first ground engaging means;

(e) means connecting said motor means to said first ground engaging means for driving said first ground engaging means;

(f) said second end including a second ground engaging means;

(g) digging means cantilevered from said first and second ends of said frame means;

(h) said second ground engaging means including an offset portion positioned inside of said first ground engaging means;

(i) said digging means having a portion positioned adjacent said offset portion of said second ground engaging means and in front of said first ground engaging means;

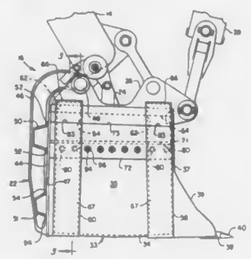
(j) said frame means being open on one side thereof;

(k) said digging means disposed adjacent said open side of said frame means;

(l) steering means secured to said frame means at first end thereof; and

(m) said first and second surfaces each including means for mounting said motor means on one of said first and second surfaces, depending upon the push or pull position of the trenching machine.

4,939,855
EXCAVATOR DIPPER WITH LIGHTWEIGHT REPLACEABLE SECTION
Robert A. McCreary, Jr., Gillette, Wyo., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 14, 1989, Ser. No. 393,603
Int. Cl.[5] E02F *3/30, 3/407*
U.S. Cl. 37—103 9 Claims



4. An excavating dipper for use with an earth excavating machine and having an enhanced payload capacity, said dipper comprising:

a topwall including bracket means for connecting said dipper to said excavating machine;

opposed upper sidewalls spaced apart from each other and connected to and depending from said topwall;

a lower section of said dipper including lower sidewall members and a bottomwall, at least said lower sidewall members being of a thickness less than said upper sidewalls and removably securable to said upper sidewalls by removable fastener means for disposing of said lower dipper section when it is worn or damaged without replacing said topwall and said upper sidewalls; and

support rib means on said upper sidewalls and said lower sidewall members, respectively, and secured to each other to strengthen said dipper.

4,939,856
ADJUSTABLE STEAM FLOW CONTROL FOR AN ELECTRIC STEAM IRON
Peter A. Czerner, Trumbull, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Sep. 25, 1989, Ser. No. 411,954
Int. Cl.[5] D06F *75/18*
U.S. Cl. 38—77.7 21 Claims

1. A steam control system for a steam iron, comprising:

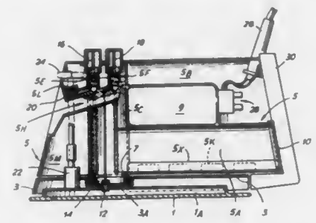
a housing including a water reservoir and a steam-forming chamber;

a valving orifice between said reservoir and said steam-forming chamber for admitting water from said reservoir into said steam-forming chamber;

a longitudinally extending metering member having a portion extending into said valving orifice and movable toward and away therefrom to control the water flow between said reservoir and said steam-forming chamber, said metering member mounted in threaded engagement with said housing whereby rotation of said metering member about its longitudinal axis causes a change in the water flow rate between said reservoir and said steam-forming chamber;

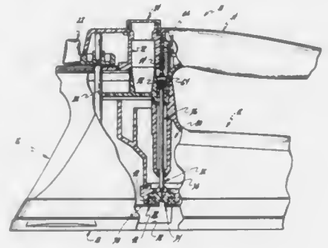
a first gear member connected to said metering member for rotation therewith,

a second gear member in engagement with said first gear



member and rotatable in one direction or the other to rotate said metering member and effect a change in the water flow rate between said reservoir and said steam-forming chamber.

4,939,857
IRON WITH A MAIN ASSEMBLY BODY AND A HEAT SEPARATOR
Mauro Biancalani, Via Ida Baccini No.11, 50100 Firenze, Italy
Filed Dec. 21, 1988, Ser. No. 288,283
Claims priority, application Italy, Dec. 23, 1987, 9583 A/87
Int. Cl.[5] D06F *75/20, 75/36*
U.S. Cl. 38—77.8 7 Claims



1. An iron assembly including a handle and an incorporated reservoir, comprising:

a single molded piece defining a reservoir cavity having a rear opening;

an obdurator fixable to said molded piece to seal said rear opening;

said single molded piece providing a handle portion defining an additional cavity with an opening at the rear;

said single molded piece defining a front funnel-shaped opening, said funnel-shaped opening communicating with said reservoir cavity at a top portion of said reservoir cavity;

said single molded piece defining a bottom opening communicating with said reservoir cavity;

a cover engageable with said single molded piece to close said bottom opening, said cover defining a fluid delivery opening;

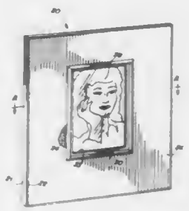
a heating plate having a fluid chamber communicating with said fluid delivery opening;

a heat separator positioned between said reservoir cavity and said heating plate;

said molded piece defining pumping seats positioned at a top side of said single molded piece opposite said bottom opening; and

pumping means positioned in said pumping seats for pumping fluid in said reservoir cavity.

4,939,858
PICTURE FRAME
Michael P. Dailey, 26 Preakness Ct., Lake Oswego, Oreg. 97035
Filed Jan. 6, 1989, Ser. No. 293,992
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152.1 23 Claims



1. A picture frame including in combination:

a one-piece unitary base member having an outside edge and a front surface having a first portion in a plane recessed from the outside edge, so that the edge of said base member extends a first predetermined distance perpendicularly beyond the plane of said first portion at a junction therewith;

a second recessed portion in said front surface of said base member and located within said first portion in a plane recessed from the plane of said first portion a second predetermined distance;

an inner clamping frame having a picture viewing opening therethrough, dimensioned for fitting within said second recessed portion, and having flange means overlying said first portion about the periphery of said second recessed portion.

4,939,859
AIR-LIQUID KINETIC SCULPTURE APPARATUS
Gordon E. Bradt, Rt. 2 Box 470, Eureka Springs, Ark. 72632
Filed Apr. 13, 1989, Ser. No. 336,781
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—406 7 Claims



1. In an air-liquid kinetic motion apparatus including an unsealed container with at least one transparent side suitable for viewing into said container, said container filled with a transparent liquid, an air supply means for discharging an array of air bubbles throughout the liquid;

wherein the improvement comprises; vessels submerged in said liquid, said vessels being substantially closed on all their sides except their bottoms which are substantially open, said vessels weighted so that they have a specific

gravity less than unity when containing a small amount of air but the weight is limited to allow the vessels to become buoyant when they accumulate a greater amount of air, and said vessels weighted so that their center of gravity remains below their center of buoyancy even when said vessels are in a buoyant state; a lower stop means to position the vessel at the bottom of its travel until it accumulates enough air to become buoyant, an upper stop means to terminate the rise of a buoyant vessel at some point below the surface of said liquid, said upper stop means combined with an escape means for discharging enough air to return the vessel to a non-buoyant state, said escape means functioning without the use of mechanical valves; whereby said vessels rise and fall within said container in a cyclical manner.

4,939,860

CYCLIC REARRANGEMENT DEVICE FOR STACKED RECTANGULAR SHEETS

Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

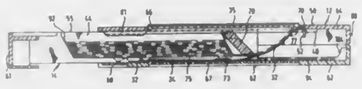
Continuation of Ser. No. 216,153, Jul. 7, 1988, Pat. No. 4,879,825, which is a continuation of Ser. No. 897,763, Jul. 11, 1986, Pat. No. 4,759,142. This application Apr. 5, 1989, Ser. No. 334,237

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1985, 3441488

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] G09F *11/30*

U.S. Cl. 40—513 **88 Claims**



1. Apparatus for the cyclic rearrangement of a pile of rectangular or square sheets, in particular a pile of photographic prints, said apparatus having first and second frame parts which are movable relative to one another and parallel to the main plane of the pile, and having means which, on movement of the frame parts backward and forward, remove an individual sheet at one end of the pile and add it to the other end of the pile, which means comprises:

(a) separating means for separating the individual sheet from the pile,

(b) feeding means for feeding sheets to the separating means,

(c) retaining means for retaining the individual sheet in the first frame part and the remainder of the pile in the second frame part, and

(d) guide means for guiding the separated individual sheet for the purpose of retaining it to the other end of the remainder of the pile;

wherein the separating means comprises:

a separator in the second frame part having surface portions bounded by an end edge for retaining the remainder of the pile; and

supporting means provided on one of the frame parts which positions the individual sheet;

and wherein, to form a through-slot for the individual sheet, there are provided spacer elements which hold the separated end edge and the supporting means at a fixed distance apart which is greater than the thickness of one sheet and less than the thickness of two sheets.

4,939,861

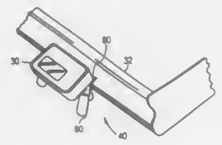
SHELF TAG MOULDING ATTACHMENT ASSEMBLY

Marc P. Soublière, Mississauga, Canada, assignor to Telepanel, Inc., Ontario, Canada

Filed Dec. 28, 1987, Ser. No. 138,585

Int. Cl.[5] G09F *3/20*

U.S. Cl. 40—651 **21 Claims**



1. An attachment assembly for cooperating with a shelf tag moulding, said moulding having two parallel oppositely disposed lips, the assembly comprising:

a mounting member including means, disposed at one end of said mounting member, for effecting biting engagement with one of said two parallel lips;

a lever arm rotatably coupled to said mounting member, having a cam at one end disposed to controllably engage the other of said parallel lips of said tag moulding;

said assembly being demountably secured to said tag moulding when said lever arm is rotated with respect to said mounting member.

4,939,862

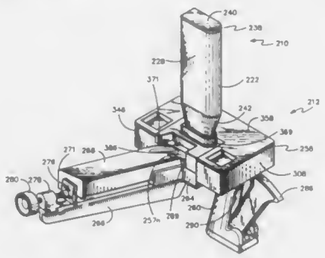
METHOD AND APPARATUS FOR ORIENTING AND LOADING CARTRIDGES

Ernest Brandenburg, Dallas, Tex., and M. Gaines Chesnut, Kremmling, Colo., assignors to Ram-Line, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 902,888, Sep. 2, 1986, Pat. No. 4,739,572. This application Nov. 5, 1987, Ser. No. 117,247

Int. Cl.[5] F41A *9/66*

U.S. Cl. 42—88 **14 Claims**



1. An apparatus for loading a plurality of cartridges into a magazine having an open end, comprising:

holding means for positioning the magazine;

cartridge moving means operably connected to said holding means for moving a first cartridge having a nose portion, said cartridge moving means defining a cartridge holding region and comprising a hook-shaped portion for engaging said nose portion of said first cartridge to limit movement of said first cartridge away from said cartridge holding region.

4,939,863

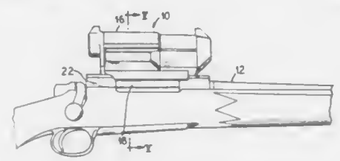
LASER AIMING DEVICE FOR FIREARMS, ARCHERY BOWS, AND CROSSBOWS

James R. Alexander, Scott; Acie G. Johnson, Pine Bluff, and Glenn W. Prentice, Little Rock, all of Ark., assignors to Emerging Technologies, Inc., Little Rock, Ark.

Filed Aug. 31, 1988, Ser. No. 239,133

Int. Cl.[5] F41G *1/34*

U.S. Cl. 42—103 **13 Claims**



1. A laser aiming device for firearms comprising:

a housing member having a cavity adapted to receive a laser plasma tube;

a laser plasma tube positioned within said cavity;

a cylindrical member positioned within said cavity so as to surround said plasma tube about a longitudinal axis; and

resilient means separating said cylindrical member and said plasma tube to cushion the plasma tube from shock forces generated by the firearm with which it is utilized;

wherein said cylindrical member includes interconnecting cylindrical sleeve portions, one of which can be partially inserted into one end of the other.

4,939,864

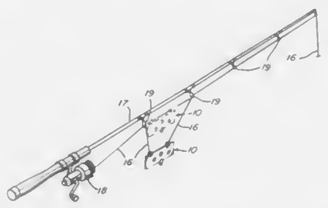
VISUAL FISHING AID

Thomas J. Bowles, P.O. Box 6034, Dayton, Ohio 45405

Filed Nov. 3, 1989, Ser. No. 431,749

Int. Cl.[5] A01K *89/01*

U.S. Cl. 43—17 **14 Claims**



1. A fish strike indicator comprising a substantially rectangularly shaped plate, a plurality of openings located on one longitudinal (long) portion of said plate, a plurality of spring ring means for attaching to a fishing line, said ring means positioned within said openings in said plate, a plurality of anti-sail openings located elsewhere in said plate and ballast means located on the lower portion of said plate.

4,939,865

METHOD AND CONTAINER FOR GROWING TRANSPLANTABLE PLANTS

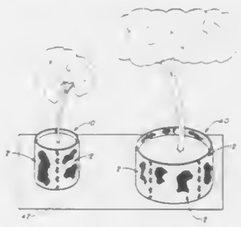
Carl E. Whitcomb, Rte. 5, Box 174, Stillwater, Okla. 74074, and Harold D. Stephens, P.O. Box 506, Jenks, Okla. 74037

Filed Apr. 14, 1988, Ser. No. 181,720

Int. Cl.[5] A01G *9/10*

U.S. Cl. 47—77 **16 Claims**

1. A plant container, comprising a plurality of identical upwardly extending removably joined substantially planar side panels which are bendable and which have vertical edge joints adapted so that said side panels are bent arcuately in response to being removably joined to form a generally cylindrical open-topped container of selected size for receiving a growing medium and a transplantable plant, wherein each of said side panels includes a plurality of holes and a lattice of root trapping outwardly pointed recesses formed in the interior surface thereof with each of said recesses terminating in one of said holes whereby said roots are directed by said recesses to said holes, and wherein all of said vertical edge joints permit said side panels to be disconnected and removed laterally outwardly from said growing medium.



4,939,866

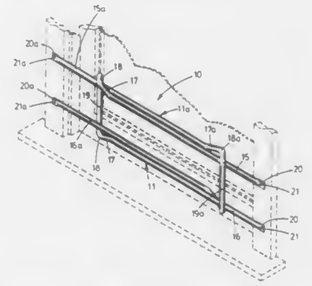
WINDOW GUARD ASSEMBLY

Richard G. Kluge, Pell Lake, Wis., assignor to John Sterling Corporation, Richmond, Ill.

Continuation of Ser. No. 275,321, Nov. 22, 1988, abandoned. This application Feb. 8, 1990, Ser. No. 478,718

Int. Cl.[5] E06B *3/68*

U.S. Cl. 49—55 **5 Claims**



1. A window guard assembly comprising:

two, unitary, generally U-shaped, rigid members of identical form and structure; each member having a pair of like, rigid co-planar, parallel, laterally spaced, linear legs, and means for interjoining said legs at one end; the opposite ends of said legs being free for attachment to suitable supports;

said means comprising a transverse portion extending across said one end of each member in offset parallelism to the plane of the legs thereof, and a pair of connector portions joining said legs with the outer ends of said transverse portion;

the connector portions of each member being configured and arranged to freely and openly receive the laterally spaced legs of the other member therebetween so that said other member's legs are only partially engaged by said connector portions;

whereby said two members are adapted to be slidably assembled and disassembled with each member positioned in inverted, superposed relation with respect to the other

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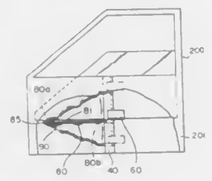
member and the transverse and the connector portions of each member cooperating to partially embrace and guide the legs of the other member for sliding movement.

4,939,867

POWER SUPPLYING SYSTEM FOR SELF-DRIVING CLOSURE DEVICE

Hiroyuki Harada, Hamamatsu; Kazuyoshi Kurahashi, Okazaki; Keago Yamamura, Shizuoka; Youji Higuchi, Okazaki; Yasuhiro Fukatsu, Hamamatsu, and Katsuhiko Torii, Shizuoka, all of Japan, assignors to Amso Co., Ltd., Shizuoka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Jul. 31, 1989, Ser. No. 387,276
Int. Cl.[5] E05F *15/16*
U.S. Cl. 49—349 **20 Claims**



1. A power supplying system for a self-driving closure device in which a driving source of driving a closure member for opening and closing an opening moves together with said closure member so as to open and close said opening, said power supplying system comprising:

a lead wire having one end connected to a power source and the other end connected to said driving source;

first supporting means for supporting the side of said lead wire connected to said power source substantially at a midpoint between the positions of upper and lower limits of movement of said driving source; and

second supporting means for supporting the side of said lead wire connected to said driving source in such a manner as to allow said side of said lead wire connected to said driving source to move together with said driving source;

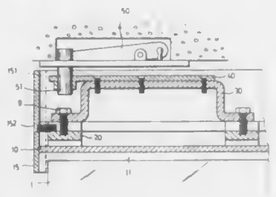
whereby said lead wire is made swingable with a portion thereof supported by said first supporting means as a center as said driving source moves.

4,939,868

DOOR HAVING A FRAME IN WHICH A SLIDING PIECE IS MOUNTED

Ching-Nan Lu, 16, Lane 83, Tsu-Chiang 1st Rd., Chien-Jin Dist., Kaohsiung, Taiwan

Filed Apr. 25, 1989, Ser. No. 343,076
Int. Cl.[5] E05D *7/08*
U.S. Cl. 49—388 **5 Claims**



1. A system for mounting top and bottom ends of a door between a pair of engaging members respectively mounted at the top and bottom and adjacent one side of an opening in a wall for pivotal movement of the door relative to the engaging members, comprising:

a pair of frame members respectively engaging the top and bottom of said door, each having an H-shaped cross-section configured to form therein a first guide channel for receiving an end of the door and a second guide channel, said second guide channel having opposing guide rails protruding inwardly from its inner sides;

an elongate slide piece disposed in each second guide channel on one side of said guide rails for slideable longitudinal movement relative to said frame member;

a connecting member having an inverted U-shape intermediate horizontally-oriented end portions disposed in each second guide channel on the side of said guide rails opposite said one side,

means including a mounting plate secured to the outer surface of each connecting member including a pivot pin projecting therefrom for defining a pivot axis of the door and adapted to be received and journalled in a respective engaging member; and

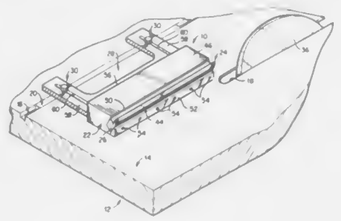
screw means interconnecting each connecting member and a respective slide piece for releasably clamping them against said guide rails for immobilizing said slide piece at an adjusted position relative to said channel at which each pivot pin correctly engages its respective engaging member.

4,939,869

METHOD AND APPARATUS FOR SHARPENING KNIVES

Noel E. Stoll, Post Office Box 5065, Avalon, Calif. 90704

Filed Oct. 20, 1988, Ser. No. 262,483
Int. Cl.[5] B24B *7/00*
U.S. Cl. 51—109 BS **15 Claims**



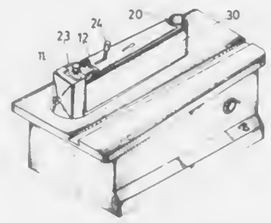
1. A combination of a table saw having a work piece table top through which an elongated slot is defined, a rotary grinding disk mounted for rotation about an axis located beneath said table top and extending upwardly through said slot where it resides in a plane intersecting said table top, and a guide channel defined in said table top and extending parallel to and displaced from said rotary disk, and a knife sharpening accessory comprising a channel following means adapted for sliding engagement in said guide channel, knife cradel means adapted to hold a knife with a knife blade such that said knife blade extends parallel to said rotary grinding disk and parallel to and in spaced separation from said channel following means at a fixed orientation relative to said work piece table top when said channel following means is engaged with said guide channel, and adjustable transverse positioning means for connecting said channel following means to said knife cradle means and for adjusting the distance of separation therebetween.

4,939,870

VERTICAL/HORIZONTAL DOUBLE-WAY GRINDING TYPE ABRASIVE BELT GRINDER

Tien-Wang Wang, No. 110-23, Hsing Pin Road, Tai Pin Hsiang Taichung Hsien, Taiwan

Filed Apr. 14, 1989, Ser. No. 337,972
Int. Cl.[5] B24B *21/00*
U.S. Cl. 51—135 R **3 Claims**



1. A vertical/horizontal double-way grinding type abrasive belt grinder, which comprises:

a base with a horizontal top plate and an assembly chamber arranged within a portion of said top plate, said assembly chamber including an opening with four positioning blocks spaced about said opening and extending from a bottom of said top plate for holding a cover plate and a self-contained horizontal grinding wheel head;

a permanently mounted vertical grinding wheel arranged at a corner of said opening and having means for angular adjustment within an angle of 45° with respect to said top plate;

said horizontal grinding wheel head having an abrasive belt wheel and a housing both arranged to cooperate with said vertical grinding wheel for mounting an abrasive belt thereabout;

vibration means for vibrating said horizontal grinding wheel head contained within said horizontal grinding wheel head and including a worm coaxially connected to said abrasive belt wheel, a worm gear engaging said worm and having an eccentric wheel thereon, and a roller wheel extending from said housing and contacting said eccentric wheel;

wherein said vertical grinding wheel provides vertical grinding when said cover plate is mounted within said opening and drives said abrasive belt for horizontal grinding with vibrating motion when said horizontal grinding wheel head plate is mounted within said opening.

4,939,871

CENTRIFUGAL PROCESSING MACHINE

Friedhold Ditscherlein, Bocholt, Fed. Rep. of Germany, assignor to Max Spaleck GmbH & Co., Bocholt, Fed. Rep. of Germany

Filed Jan. 27, 1989, Ser. No. 303,551
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1988, 3802542
Int. Cl.[5] B24B *31/02*
U.S. Cl. 51—163.2 **14 Claims**

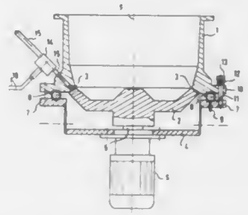
1. A centrifugal processing machine for the mechanical processing, e.g., grinding, polishing, cleaning and deburring of workpieces, with a container serving to accommodate the workpieces and processing agents, said container comprising

a substantially cylindrical casing;

a rotating bottom, in the form of a plate or similar dished structure, mounted coaxially with said casing, the peripheral edge of said bottom projecting towards the cylindrical casing and forming a narrow gap with respect to said casing;

said casing being adapted to be raised and lowered in relation to the bottom, for the purpose of adjusting automatically the width of the gap around the entire periphery of the container as a function of a controlled gap-width;

a measuring means chosen from the group consisting of mechanically, hydraulically, pneumatically, and electronically operated devices for measuring the width of the gap;



an adjusting means for automatically raising and lowering the casing and being controlled by the measuring means in such a manner that the gap-width is adjusted to a specific value and is held to this value; and

a support for said casing.

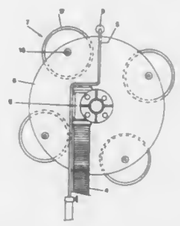
4,939,872

HONING MACHINE WITH ROTATING PLATE HAVING AT LEAST ONE HEAD WHICH DOES NOT ROTATE WITH RESPECT TO THE PLATE

Evaristo Revelin; Diego Revelin, and Fulvio Revelin, all of Aldo Noro, 7 - Isola Vicentina, Vicenza

Filed Oct. 25, 1988, Ser. No. 262,315
Claims priority, application Italy, Oct. 27, 1987, 85.625 A/87
Int. Cl.[5] B24B *23/02*
U.S. Cl. 51—180 **7 Claims**





1. A honing apparatus for removing plaster from a wall or a ceiling which comprises a dolly supporting mechanical moving means and a reservoir for water or other cooling liquid for spraying on said plaster, a flexible tube (4), a rotating command cable inserted therein, a second flexible tube (5) parallel to said flexible tube (4), said tube (5) connected to said reservoir and containing the water or liquid for spraying on the plaster, said flexible tube (4), and said flexible tube (5) exiting from said dolly at one end, a rotating plate (6) located at the other end of said flexible tube (4), said plate carrying at least one operating head (7), said operating head being fixed with respect to said rotating plate (6) and being provided with means for smoothing said plaster completely prior to the time said plaster becomes hardened, said apparatus being carried by an operator either vertically for honing a vertical wall or horizontally for honing the plaster on a ceiling, wherein said head (7) is provided with a flange (12), said flange having a central neck (11),

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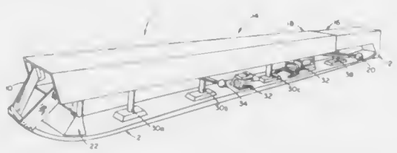
said neck having a central square opening, said head being mounted on the portion (10') of pin (10), said pin (10) emerging downwardly with respect to said rotating plate (6), said head being fixed thereto by means of a screw (16), spring (14) located between said neck and said screw, whereby rotation of said head with respect to said plate (6) is prevented and said head only oscillates elastically with respect to said plate whereby the honing action on said plaster is rendered more effective and more rapid with definite advantages with respect to the quality of the finished work and the rapidity of carrying out the work.

4,939,873

SKI GRINDING DEVICE

Edward B. Smialek, 2053 W. 13th Pl., Cleveland, Ohio 44113

Filed Jan. 24, 1989, Ser. No. 301,169
Int. Cl.[5] B24B *41/00, 41/06*
U.S. Cl. 51—281 R 14 Claims



1. A fixture for mounting onto a flattened ski for grinding by a grinding machine, the ski having a tail section, a top section, a longitudinal axis extending the length of the ski and a running surface, said fixture device comprising:

a longitudinally adjustable frame member selectively sizeable for fixed association with the ski said adjustable frame member being adjusted to maintain the ski in a flattened position;

a tail holding means for attaching the tail section of the ski to the adjustable frame member;

a tip holding means for attaching the tip section of the ski to the adjustable frame member; and,

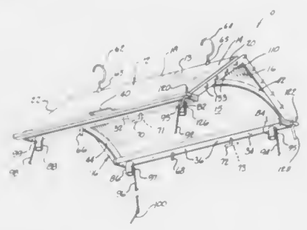
a plurality of biasing legs extending substantially transverse from the frame member to engage the ski and disposed to maintain the ski in the flattened position.

4,939,874

STACK CAP COVERING SYSTEM

Roy C. Compton, 1833 J and 610 Rd., Fruita, Colo. 81521

Filed Jul. 25, 1985, Ser. No. 758,884
Int. Cl.[5] E04D *1/34;* B66F *9/00*
U.S. Cl. 52—4 7 Claims



1. A field crop stack covering system for protecting stacked field crops such as hay from moisture and adapted for rapid mounting in an assembled state on an associated stack, comprising:

(a) an inserted V-shaped roof structure including a pair of generally planar roof panels integrally connected along a longitudinally extending roof peak line defining the top of said roof structure; said roof structure having an inverted V-shaped front edge, an inverted V-shaped back edge and a pair of parallel longitudinally extending side edges terminating in four roof corners and defining the bottom of said roof structure; said roof structure having an exterior surface and an interior surface;

(b) a first transversely extending beam attached at opposite ends thereof to laterally opposite lower portions of said first and second roof panels proximate said front edge of said roof structure and a second transversely extending beam attached at opposite ends thereof to laterally opposite lower portions of said first and second roof panels proximate said back edge of said roof structure; said first and second transversely extending beams being of substantially identical size and shape and being of an arcuate, downwardly concave configuration having a radius of curvature at least as small as an associated radius of curvature of an associated upper portion of a stack to be covered and being adapted to engage said associated upper portion of a stack, whereby said roof structure is positioned in spaced relationship from said stack, whereby air circulation about said upper portion of said stack is facilitated;

(c) stack mounting means for raising said inverted V-shaped roof structure in an assembled state onto the top of a stack;

(d) securing means for securing said roof structure to a stack;

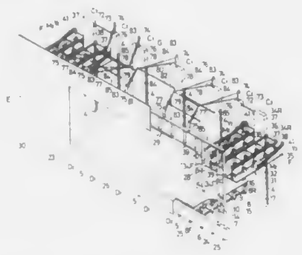
(e) alternate support means for selectively supporting an end portion of said roof structure above a removed portion of a covered stack.

4,939,875

FOLDING STAGE SYSTEM

Kazuo Fujita, 1-1, Hagiyamadai, Seto-shi, Aichi-ken, Japan

Filed Feb. 27, 1989, Ser. No. 315,847
Claims priority, application Japan, Aug. 27, 1988, 63-213412
Int. Cl.[5] E04H *3/24*
U.S. Cl. 52—7 11 Claims



1. A folding stage system comprising

(a) a plurality of guide posts fixed to an indoor or outdoor support wall structure,

(b) central stage components provided in conjunction with central ones of said guide posts, respectively,

(c) each said central stage component having a platform and a front end portion with wheels to enable said front end portion to move smoothly toward or away from a central guide post on a floor,

(d) a flame-shaped proscenium wall having a central opening and fixed to said front end portions of said central stage components at a lower portion thereof, said proscenium wall being provided at the bottom thereof with wheels to enable said proscenium wall to move smoothly toward or away from said guide posts on the floor,

(e) side link mechanisms connecting upper portions of two sides of said proscenium wall opposed to each other with said central opening located therebetween to outermost ones of said guide posts, respectively,

(f) a pair of opposed operating mechanisms provided for each said central stage component for folding the central stage component to a vertical position adjacent to the associated central guide post or unfolding the central stage component to a horizontal position on the floor,

(g) a pair of opposed operating mechanisms provided for each said side link mechanism for folding the side link mechanism to a vertical position adjacent to the associated outermost guide post or unfolding the side link mechanism to a horizontal position above the floor,

(h) each said operating mechanism including (i) a geared motor with an output shaft which is rotatable in either of opposed directions and (ii) an extensible swing arm member having one end fixed to said output shaft,

(i) each said geared motor for a central stage component being fixed to the central stage component at the substantial middle of the distance between front and rear ends of the central stage component,

(j) each said swing arm member for the central stage component having an opposed end connected, for pivotal movement, to a portion of the floor which is in close proximity to said support wall structure,

(k) each said geared motor for a side link mechanism being fixed to the side link mechanism at the substantial middle of the distance between front and rear ends of the side link mechanism,

(l) each said swing arm member for a side link mechanism having an opposed end connected, for pivotal movement, to said support wall structure,

(m) a central link mechanism connecting a top of said proscenium wall to tops of said guide posts, said central link mechanism being folded or unfolded simultaneously with said central stage components and said side link mechanisms, and

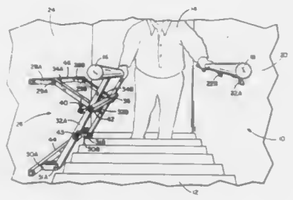
(n) said proscenium wall being moved toward said guide posts simultaneously with the folding of said central stage components and said side link mechanisms and moving away from said guide posts simultaneously with the unfolding thereof, said proscenium wall maintaining an upright position at all times.

4,939,876

POSITION ADJUSTABLE HANDRAIL FOR USE ALONG STAIRWAYS

John M. Berner, 4927 St. Croix Ave., Golden Valley, Minn. 55422

Division of Ser. No. 220,325, Jul. 18, 1988, Pat. No. 4,856,761.
This application Mar. 22, 1989, Ser. No. 327,257
Int. Cl.[5] E04F *11/00*
U.S. Cl. 52—64 10 Claims



1. A handrail support system for use along a passageway between first and second generally parallel walls comprising:

first and second handrails;

means for positioning the second handrail generally parallel to the second wall; and

means for positioning the first handrail in a first locked position generally parallel and substantially adjacent to the first wall and in a second locked position parallel to the first wall and spaced laterally further from said first wall than the first locked position.

4,939,877

ANCHOR DEVICE

Paul J. Claffey, 1013 Calloway, Hurst, Tex. 76053

Continuation-in-part of Ser. No. 140,590, Jan. 4, 1988, abandoned. This application Dec. 30, 1988, Ser. No. 292,523
Int. Cl.[5] E02D *5/74*
U.S. Cl. 52—155 1 Claim



1. A ground anchor assembly for removably supporting the post of a sign, flag, road marker or the like in the ground comprising:

a sleeve, a connector tube and a spike means, said sleeve having an elongated shape and a central bore extending therethrough lengthwise, said sleeve having a four-pointed star cross section configuration, said connector tube being of a generally quadrilateral shape with two planer faces and two faces with concave portions formed therein, and surface means on said connector tube for selective connecting to an angle, circular or square shaped post, the exterior surface of said sleeve being formed to receive said connector tube thereby removably connecting said post to said anchor assembly, said spike means comprising an elongated shaft with an enlarged head formed at one end thereof and a point formed on the end opposite said one end, said spike being mounted in said sleeve and being of sufficient length to extend through said sleeve with the head of said spike abutting the end of said sleeve whereby said pointed end of said spike can be inserted into the ground to anchor said assembly in place.

4,939,878

PROCESS FOR SEALING STRUCTURAL BODIES OR CAVITY-DEFINING WALLS WHICH MAY BE SUBJECT TO CRACKING

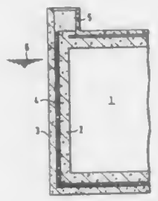
Alfred Schuhbauer, Hochstadt, Fed. Rep. of Germany, assignor to Alfred Kunz GmbH & Co., Munchen, Fed. Rep. of Germany

Filed Jan. 23, 1989, Ser. No. 299,370
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1988, 3802086
Int. Cl.[5] E04B *1/346, 1/66*
U.S. Cl. 52—169.14 13 Claims

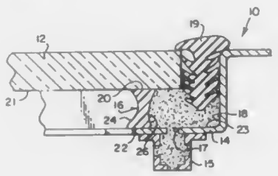
10. A structural body, cavity defining wall or other structure which is sealed by an enclosing wall defining a space between the structure and the wall, with a flowable high-viscosity sealing fluid contained in said space and said space containing granular material and the fluid filling voids in the granular material for transferring pressure applied to the walls which define the space from one wall to the other by the filler so that

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a pressure-transmitting, self-sealing seal is formed which will follow any deformation caused by volume changes or thermally induced movements and which will immediately close any crack formed by the walls defining the space.

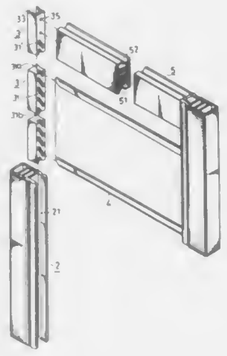


4,939,879
WINDOW SEALING STRIP FOR AUTOMOTIVE VEHICLES
Peter N. Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Feb. 15, 1989, Ser. No. 311,134
Int. Cl.[5] F06L *3/62*; B60J *1/02*
U.S. Cl. 52—208 3 Claims



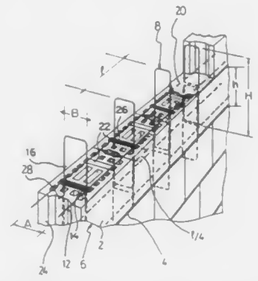
1. A rubber sealing strip of the type used in conjunction with a curable adhesive for spacing an automotive window panel from a flanged body panel of an automotive vehicle body retaining the window panel on the flanged body panel, a flange on the flanged body panel having an outer surface on which the window panel is retained by the curable adhesive, the rubber sealing strip having a surface engaging an inner surface of the window panel, the sealing strip comprising:
- a first surface forming the surface engaging an inner surface of the window panel;
- a second surface, opposite said first surface, forming the surface engaging the flange, said first surface having a width greater than said second surface;
- a midpoint between said first surface and said second surface;
- a first side surface extending from said first surface to said second surface;
- a second side surface extending from said first surface to said second surface at an angle with respect thereto, said first and second sides outwardly deformable upon engaging the flange; and
- wherein said second surface of said sealing strip engaging said flange bulges outwardly on deforming; and wherein said midpoint has less thickness than the thicknesss of said first surface and said second surface.

4,939,880
MODULAR CONSTRUCTION UNIT
Wen-Ping Wang, 39, Chung Shan Rd., Sec. 2, Kong Kuan Village, Hu-Ne Hsiang, Kaohsiung Hsien, Taiwan
Filed Sep. 14, 1988, Ser. No. 244,491
Int. Cl.[5] E06B *7/08*
U.S. Cl. 52—473 6 Claims



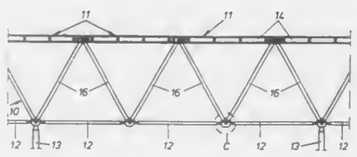
1. A modular construction unit comprising:
- a plurality of supporting means each being formed as a column and each being provided with a U-shaped vertical open trough on one side, said U-shaped vertical open trough including a wider bottom side and a narrower upper portion;
- a plurality of scarfing blocks, each being of sufficient width to releasably engage said U-shaped vertical open trough of said supporting means, said scarfing blocks being provided with scarfing means on one side and having said scarfing means facing outward for making combinations therewith when said scarfing blocks are inserted into said U-shaped vertical open trough of said supporting means;
- a plurality of junction blocks, each being of sufficient width to releasably engage said U-shaped vertical open trough, said plurality of junction blocks being provided with at least one threaded hole and scarfing means on one side for making connections therewith;
- a plurality of scarfing members, each being of sufficient width to be formed detachably secured in said scarfing means between two of said scarfing blocks and symmetrically inserted into said U-shaped vertical open troughs of said supporting means; and
- a plurality of intermediate beams, each being formed with an upper open groove and a lower open groove of sufficient width to releasably engage said scarfing members, and each end of said intermediate beams being provided with at least one screw opening for being connected to one of said junction blocks, said junction blocks being inserted into respective U-shaped vertical open troughs of said supporting means, wherein at least two of said plurality of junction blocks being positioned in opposite directions.

4,939,881
REINFORCING APPARATUS FOR A MASONRY WALL, AS WELL AS MASONRY WALL
Erwin Reiale, Zurich, Switzerland, and Guido Van de Loock, Beisele, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium
Filed May 8, 1989, Ser. No. 347,635
Claims priority, application Switzerland, May 5, 1988, 1725/88
Int. Cl.[5] E04C *1/04*
U.S. Cl. 52—565 20 Claims



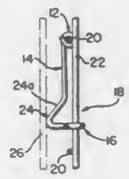
1. Reinforcing apparatus for a masonry wall made of a plurality of building stones having vertical recesses therein, comprising:
(a) a horizontal reinforcement for placement in a bed joint;
(b) a plurality of paired vertical reinforcement elements in overlapping relationship for placement into the vertical recesses, the vertical reinforcing elements having a height corresponding approximately to the height of at least two building stones.

4,939,882
PREFABRICATED PYRAMID-SHAPED STRUCTURAL MEMBERS FOR THREE-DIMENSIONAL FRAMEWORKS
Octavian Filip, Wurzburg, Fed. Rep. of Germany, assignor to Mero-Raumstruktur GmbH & Co., Fed. Rep. of Germany
Filed Aug. 10, 1988, Ser. No. 230,354
Int. Cl.[5] E04H *12/00*
U.S. Cl. 52—648 4 Claims



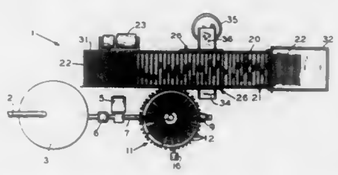
1. Prefabricated pyramid-shaped structural member for a three-dimensional framework, comprising rods which are connected with one another, wherein the rods extend diagonally toward the vertex of each structural member and are connected to a joint member, and the joint member includes a plurality of tapped boreholes for the screw connection of rods of the three-dimensional framework, characterized in that the diagonally running rods (16) are welded with their ends at the vertex of the pyramid-shaped structural member (11) to a cover plate (17), which is screwed onto the joint member (19) provided with a contact surface (20) for the cover plate (17), the cover plate (17) has a central projection (18) with a quadrangular base, and the ends of the diagonally running rods (16) are welded to the side surfaces of said projection (18) and to the cover plate (17).

4,939,883
SPACER FOR REINFORCING MESH AND SPIRAL REINFORCEMENT CAGES
Richard A. Swenson, 760 Norman Dr., Ridgewood, N.J. 07450
Continuation of Ser. No. 215,411, Jul. 5, 1988, abandoned. This application Nov. 20, 1989, Ser. No. 438,981
Int. Cl.[5] E04C *5/18*
U.S. Cl. 52—686 13 Claims



1. A spacer for positioning in spaced relation to a surface a reinforcement mesh having welded intersecting wires, comprising a unitary member of stiff but resilient spring steel wire material, said member having a central shank portion having axis of elongation B—B and a spacing projection extending outwardly from said axis of elongation in a plane containing said axis of elongation for positioning engagement with said surface, a generally corkscrew-shaped pigtail portion at one end of said shank portion and extending to one side of said shank portion along an axis of curvature A—A for engagement, along said axis of curvature, with one wire of a pair of intersecting wires of the mesh, said axis of curvature A—A of said pigtail portion lying in a plane that is generally perpendicular to the plane of said spacing projection and generally parallel to said axis of elongation B—B, and a hook portion at the other end of said shank portion for engagement with the other wire of said pair of intersecting mesh wires, said pigtail portion being adapted to be engaged with said one mesh wire along said axis of curvature A—A and said shank portion being adapted to be pivoted towards said other mesh wire against the resilience of said spring steel wire material in order to bring said hook portion into engagement with said other mesh wire.

4,939,884
HONEY STICK MACHINE
Glenn Peters, 1443 45th Ave., NE, Salem, Oreg. 97301
Filed Apr. 14, 1989, Ser. No. 338,988
Int. Cl.[5] B65B *3/04*, *43/54*, *63/08*
U.S. Cl. 53—127 7 Claims



1. An apparatus for placing fluid in a receptacle comprising:
(a) heating means for making the fluid less viscous with pump means to make the fluid flow;
(b) a conveyer for moving receptacles past filling and closing means;
(c) a filler with a plurality of feed tubes, each tube adapted to

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transfer fluid to a receptacle on said conveyor and with a hub where said hub has a stationary portion through which a feed hole extends in a direction generally towards said conveyor and has a rotating intermediate portion with a plurality of intermediate feed holes communicating with said feed hole and with said feed tubes; and

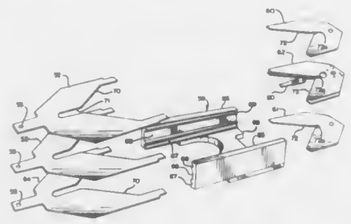
(d) means to close said receptacle.

4,939,885

CHUB MACHINE

Gary L. Steinke, Bettendorf, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Apr. 18, 1989, Ser. No. 339,726
Int. Cl.[5] B65B *9/12, 61/06*
U.S. Cl. 53—138 A **7 Claims**



1. In a machine for forming chub packages and having: means for forming a web of packaging material into a tube; means for continuously feeding said tube downwardly over a hollow mandrel; means for delivering a flowable product to said mandrel so as to discharge product from the lower end of said mandrel into said tube; and a vertically reciprocating closure head assembly through which said tube containing product passes and wherein during said passage short lengths of said tube are gathered and constricted between opposing sets of gathering plates carried on horizontally reciprocating support cams, pairs of spaced clips are applied to each said short length and each said short length is severed by a reciprocating cut-off knife between each said pair of applied clips, the improvement wherein;

one of said opposing sets of gathering plates includes a dual gathering plate comprising a pair of gathering plates fastened together in closely spaced relationship and within which said cut-off knife reciprocates, said one set of gathering plates comprises three gathering plates with said dual gathering plate being one of the three included in one of said sets and said other opposing set of gathering plates comprises three gathering plates with the center plate of the three comprising a single plate insertable between the plates of said dual gathering plate.

4,939,886

APPARATUS FOR FILLING TRAYS WITH CIGARETTES

Franco Vincenzini, Calata Pepoli-Crevalcore, Italy, assignor to Sasib S.p.A., Italy

Filed Jan. 23, 1989, Ser. No. 299,649
Claims priority, application Italy, Mar. 9, 1988, 12435A/88
Int. Cl.[5] B65B *19/10, 39/02*
U.S. Cl. 53—236 **15 Claims**

1. An apparatus for filling a tray with rows of rod-like articles such as cigarettes in a quincuncial arrangement comprising:

an article supplying hopper having an outlet through which the articles contained therein move by gravity;

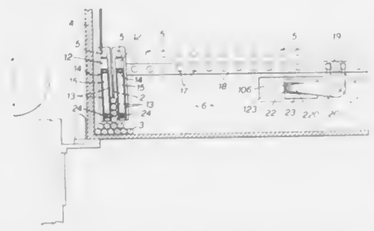
a frame;

a plurality equispaced lateral sidewalls arranged parallel to one antother and below the outlet of said hopper so as to define between respective adjacent said sidewalls respective article receiving channels through which the articles are singly stacked and moved by gravity, each said sidewall including two facing lateral plates;

a respective article roller disposed between an upper end of each respective said sidewall and said hopper, adjacent said article rollers defining therebetween an inlet for an associated said channel;

a roller moving means for imparting rotary motion to all of said article rollers;

a sidewall mounting means for mounting respective lower ends of all of said sidewalls for simultaneous and identical reciprocal motion relative to said frame and the tray;



a sidewall moving means for laterally moving all of said lower ends of said sidewalls in a reciprocating motion relative to said frame whereby the articles are deposited in the tray in a quincuncial arrangement; and

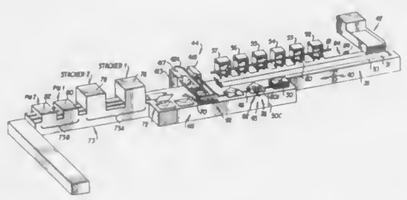
a spreading means for spreading apart associated said lateral plates of all of said sidewalls at any position of the reciprocating said sidewalls such that a distance between adjacent said sidewalls is immediately reduced from that which is larger than a diameter of the articles allowing passage of the articles along said channels to that which is smaller than the diameter of the articles to prevent passage of the articles along said channels regardless of the position of said reciprocating sidewalls.

4,939,887

INSERTION MACHINE

Dave Haas, Schaumburg; Gary VanderSyde, Naperville; Paul Beatty, and Ren Roxas, both of Chicago, all of Ill., assignors to Bell & Howell Phillipsburg Company, Allentown, Pa.

Division of Ser. No. 30,015, Mar. 25, 1987, Pat. No. 4,798,040.
This application Nov. 15, 1988, Ser. No. 271,259
Int. Cl.[5] B65B *51/02*
U.S. Cl. 53—460 **9 Claims**



7. A method of operating an insertion machine comprising the steps of:

transporting an envelope to an envelope flap opening means;

opening the flap of said envelope;

inserting at least one item into said flap-opened envelope;

moistening a flap of said envelope in which at least one item has been inserted, said moistening step including the steps of:

transporting said envelope toward a flap moistening means;

detecting when an envelope is in a position to be moistened, said detecting step comprising:

pivotally connecting an elongated member about an axis to a frame, said elongated member having a first end and a second end;

biasing said elongated member such that a first end of said elongated member is interposed in the path of transport of an opened envelope flap and is strikable by said flap in a manner to pivot said elongated member about its axis of connection to said frame, whereby a distance between said elongated member at a reference point on said frame changes;

creating a magnetic field in the vicinity of said reference point, said magnetic field having an electromagnetic flux density related to the distance separating said elongated member and said reference point;

determining a change in electromagnetic flux density of said magnetic field when said distance between said elongated member and said reference point changes; and,

using said change in flux density as an indication of whether an envelope having an open flap is being transported to said flap moistening means; and,

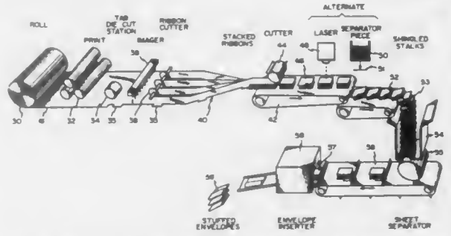
directing an atomized spray onto a gummed portion of said envelope flap.

4,939,888

METHOD FOR PRODUCING A MASS DISTRIBUTABLE PRINTED PACKET

Robert E. Katz, Florham Park; John H. Jones, Westfield; Frederick Grainger, Greenbrook; Donald W. Schoenleber, Belle Mead; George P. Hipko, Milltown; Patrick J. Donahue, Belle Mead; Stanford Silverschotz, Livingston, all of N.J., and James Hoffman, Doylestown, Pa., assignors to Webcraft Technologies, Inc., N. Brunswick, N.J.

Filed Jun. 1, 1989, Ser. No. 360,040
Int. Cl.[5] B65B *35/50, 61/02, 61/20*
U.S. Cl. 53—411 **27 Claims**



1. A method for producing a mass distributable printed packet, comprising the steps of:

(a) printing a format of successive rectangular pieces in a plurality of longitudinal side by side lines extending parallel to the edges of the web, the pieces of each line having the same longitudinal dimension and having their transverse edges in a fixed dimensional relationship with respect to pieces in adjacent longitudinal lines, the pieces being part of a common print repeat or a submultiple thereof,

(b) separating the longitudinal lines of successive pieces along their respective side edges to form a plurality of individual longitudinal ribbons containing successive printed pieces,

(c) superposing the separated longitudinal ribbons containing the different successive pieces with respect to each other such that the forward edges of the pieces in all of the superposed ribbons are in vertical registry with respect to each other,

(d) cutting the superposed ribbons simultaneously along the forward edges of each of the pieces to obtain a common set having a single piece from each of the superposed ribbons, and

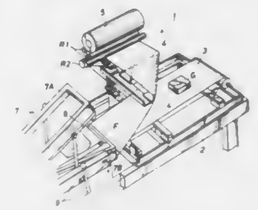
(e) placing each set of pieces as a unit within an outer container.

4,939,889

PACKAGE WRAPPING APPARATUS EQUIPPED WITH FILM HAULING DEVICE

Harumi Watanabe, Urawa, Japan, assignor to International Sankoh Kabushiki Kaisha, Omiya, Japan

Filed Jul. 19, 1988, Ser. No. 221,326
Int. Cl.[5] B65B *9/06, 51/30*
U.S. Cl. 53—450 **16 Claims**



1. A film wrapping apparatus for wrapping articles in packages of a heat-sealable thermoplastic packaging film comprising, a film-hauling device having traveling clamping runs of upper and lower endless belts for clamping a marginal selvage of a part of a folded strip of said packaging film and advancing it longitudinally, an infeed device for positioning articles successively at a position in which longitudinal superposed parts of the folded packaging film travel respectively over and under the articles for enveloping the articles successively and packaging the articles in corresponding successively formed film packages along a path of travel of the packaging film, a heat-sealing device having an upper and a lower jaw operable to an open position for allowing successive lengths of the folded packaging file to successively advanced thereinto and operable to a closed position for the jaws effecting heat sealing of the folded packaging film transversely across substantially the entire width along successive lengths of the film and simultaneously severing the corresponding sealed ends of successive film packages corresponding to successive lengths of the film advanced to define the individual film packages with corresponding articles therein, the jaws having heat-sealing means for sealing in said closed position free sides of overlapping parts of the folded film along the length of the corresponding individual lengths of film defining individual packages and for simultaneously severing the marginal selvage corresponding to the individual lengths of film defining corresponding film packages with articles therein, means for intermittently rolling up the severed marginal selvage in a roll as received intermittently from the film-hauling device, and a discharge conveyor for receiving the successive film packages with articles therein after each successive sealing of a leading end of a corresponding film package and discharging successively the complete packages when corresponding trailing ends thereof are heat sealed and severed.

4,939,890

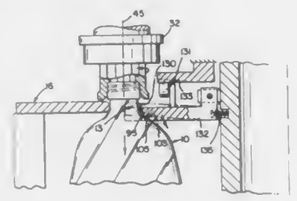
ANTI-ROTATION METHOD AND APPARATUS FOR BOTTLE CAPPING MACHINES

Michael H. Peronek, Chagrin Falls, and Robin C. Jones, Maple Hts., both of Ohio, assignors to FCI, Inc., Cleveland, Ohio

Filed Apr. 14, 1989, Ser. No. 337,870
Int. Cl.[5] B67B *3/20, 1/06;* **B65B** *7/28*
U.S. Cl. 53—486 **24 Claims**

1. A method for applying a cap to a bottle having a threaded

neck portion and a shoulder portion removed therefrom by means of a capping machine, said capping machine including a capper star wheel having a plurality of peripherally formed capper pockets and a retaining pocket underlying each capper pocket, at least one capper head for engaging a cap on a bottle positioned in a pocket at an entry position on said star wheel and tightening said cap onto said bottle with a downward force as said capping star wheel rotates said pocket to an exit position and a rear, stationary guide maintaining said bottle in said pocket when said star wheel rotates said pockets between said entry and exit positions, said method comprising the steps of



circumferentially supporting said neck portion to position said bottle in axial alignment with said capping head for a partial rotation of said capper star wheel until said capping head initially threadly engages said cap with said neck;

removing at the completion of said partial rotation at least a portion of said support from said neck so that said bottle is no longer positioned by said neck and

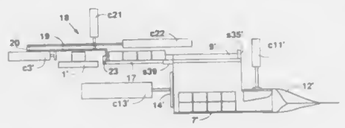
exerting an off-center, downwardly directed biasing force on said shoulder portion to wedge said bottle into engagement with said capper and retaining pockets while increasing the force at the base of the bottle with said capper star wheel whereby said bottle is prevented from rotating while said cap is tightened by said capping head.

4,939,891

AUTOMATIC BALER FOR BUNDLING TOGETHER INDIVIDUAL FOOD BAGS PREVIOUSLY FILLED IN AUTOMATIC PACKERS

Piergiorgio Podini, P.O. Box 62.149, Caracas 1060-A, Venezuela

Filed Dec. 1, 1988, Ser. No. 279,346
Int. Cl.[5] B65B *5/10, 35/50, 57/10*
U.S. Cl. 53—496 **2 Claims**



1. An automatic baler for bundling together packages previously filled, closed and sealed in a packer machine, comprising:

an endless conveyor constituting an inlet of said automatic baler, said endless conveyor operatively associated with an outlet of a packer machine in such a way that every new package therein formed is fed upon a moving surface of said conveyor;

a first station comprising a first pneumatic cylinder and a first sensor, said first station being disposed at an end of said endless conveyor in such a way that each of said packages, upon arrival at said first station is stopped and detected by said sensor and subsequently pushed by said first pneumatic cylinder in a lateral movement toward a second station;

said second station comprising a stacking hopper having a top side upon which said packages displaced from said first station by said first pneumatic cylinder are disposed side by side to constitute a layer of packages, said top side of said stacking hopper comprising a pair of endless bands of modifiable configuration, rotatably supported on respective pulley sets in such a way that said configurations are modifiable between a closed position and an open position such that when taken to said closed position said endless bands adjoin in coplanar relationship over said stacking hopper thereby closing said stacking hopper and constituting at the same time said second station for receiving said packages, and when taken to said open position, said endless bands are laterally separated in opposite directions leave open said stacking hopper allowing said packages grouped at said second station to drop downwardly into said stacking hopper, each of said endless bands being associated with a set of pulleys comprising a driven pulley, a fixed idle pulley, and a pair of moveable idle pulleys, said driven pulley and said fixed idle pulley having shafts mounted in rotatable fixed form and said pair of moveable idle pulleys having shafts mounted in rack and pinion form so as to be moveable in lateral, parallel, and opposite fashion between said closed position and said open position, said top side of said stacking hopper having a second sensor such that when said second sensor determines that a predeterminate number of said packages have been therein grouped said second senosr will activate said top side of said stacking hopper to separate said endless bands leaving open said top side of said stacking hopper in order that said layer of packages drops freely downward into said stacking hopper;

an extension of said stacking hopper defining a rear projecting mouth for receiving a mouth of bigger bag, said projecting mouth having therein associated a bag opener comprising a flat surface conforming to an upper moveable side of said rear projecting mouth capable of being moved in a vertical fashion driven by a second pneumatic cylinder between a lower position and an upper position, in such a way that when taken to said lower position said flat surface rests upon said upper side of said rear projecting mouth thereby reducing said rear projecting mouth in size so as to allow an operator to install said bigger bag, by surrounding a rear side of said rear projecting mouth with said mouth of said bigger bag, and when taken to said upper position said mouth of said bigger bag is displaced to an open condition readying said bigger bag to receive a stacking of said layers of packages integrated together by said stacking hopper;

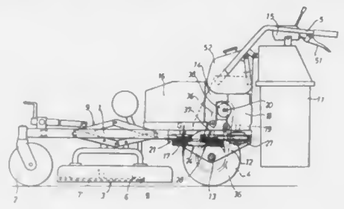
a third pneumatic cylinder disposed in association with said stacking hopper having a piston and a flat pusher on a distal end of said piston so as to be moveble in a path longitudinal to said stacking hopper when a third sensor determines that a predeterminate stack of said layers of packages has been formed in said stacking hopper, pushing in skidding fashion said stack of layers into said bigger bag while said flat surface keeps said mouth of said bigger bag open; said second pneumatic cylinder being operable to lower again said flat surface to a resting position upon said upper side of said projecting mouth freeing said mouth of said bigger bag in order that an operator can proceed to withdraw said bigger bag for later or consequently closing or sealing said bigger bag in any known manner.

4,939,892

GAIT TYPE MOWER

Masami Kawasaki, Osaka, Japan, assignor to Kubota Ltd., Osaka, Japan

Filed Aug. 4, 1989, Ser. No. 389,547
Claims priority, application Japan, Sep. 21, 1988, 63-237674
Int. Cl.[5] A01D *34/70, 35/22*
U.S. Cl. 56—11.1 **12 Claims**



1. A gait type mower comprising:

a vehicle;

a mowing unit mounted on a front part of said vehicle;

a pair of right and left driving wheels provided at a rear part thereof;

handles positioned on the back side of said vehicle;

an engine loaded on said vehicle;

a variable speed gear interlocking with said engine and likewise loaded on said vehicle;

a pair of right and left output shafts fitted to said variable speed gear; and

belt transmission mechanisms for imparting the power from said pair of right and left output shafts to said pair of right and left driving wheels, characterized in that: said engine is placed in front of an axle of said driving wheels, while said variable speed gear is placed in rear of said axle; said output shafts are positioned substantially upwardly of said axle in front of said variable speed gear; and said belt transmission mechanisms are disposed in the up-and-down directions.

4,939,893

SPINNING APPARATUS

Michiaki Fujiwara, Kameoka, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 20, 1988, Ser. No. 221,674
Claims priority, application Japan, Jul. 21, 1987, 62-181934
Int. Cl.[5] D01H *1/115, 15/00*
U.S. Cl. 57—22 **15 Claims**



1. A spinning apparatus of the type which includes a plurality of spinning units provided in a juxtaposed relationship, and a yarn splicing bogie for traveling along said spinning units to effect a yarn splicing operation for said spinning units, characterized in that each of said spinning units comprises:

a drafting device,

an air jetting nozzle for applying a twist to a fiber bundle drafted at said drafting device,

a winding device for winding a yarn spun out from said air jetting nozzle, and

a yarn splicing device supported by said yarn splicing bogie, the yarn splicing device comprising a pneumatic yarn splicing device, wherein said pneumatic yarn splicing device has a spun out side and a package side and further comprises:

a yarn splicing member provided with a yarn splicing hole having two openings,

a pair of yarn clamp devices, each yarn clamp device disposed adjacent one of the two hole openings,

a pair of yarn cutting devices, each yarn cutting device disposed between one of the yarn clamp devices and one of the yarn splicing hole openings,

a pair of control nozzles each control nozzle disposed between one of the yarn cutting devices and one of the yarn splicing hole openings,

a pair of yarn handling levers secured to upper and lower portions of a support shaft are disposed at a location sidewardly of the yarn splicing member,

a suction pipe for sucking and holding a yarn on the spun out side and introducing the same to the yarn splicing device and

a suction mouth for sucking and holding a yarn on the package side and introducing the same to the yarn splicing device,

wherein said yarn clamp devices and yarn cutting devices are controlled to be operated by cam means such that the timing for a first clamp device and a first cutting device for the yarn on the spun out side is later than the timing for a second clamp device and a second cutting device for the yarn on the package side,

wherein said control nozzle comprises suction means for sucking and untwisting cut yarn ends according to the control of the timing for the clamp devices and cutting devices,

wherein the spinning apparatus further comprising regulating means for regulating the time for untwisting the yarn end on the spun out side to untwist the yarn end to an untwisted condition by a minimum degree for effecting a splicing operation, the regulating means also for regulating the time for untwisting the yarn end on the package side to be longer than the time for untwisting the yarn end on the spun out side,

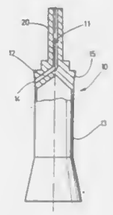
wherein the pneumatic yarn splicing device further comprises entangling means for entangling the untwisted yarn end on the package side with the untwisted yarn end on the spun out side.

4,939,894

FUNNEL FOR A FUNNEL SPINNING APPARATUS ON A TEXTILE MACHINE

Horst Wolf, Albershausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,911
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732968
Int. Cl.[5] D01H *7/26, 7/68*
U.S. Cl. 57—115 **6 Claims**



1. A yarn feeding funnel for feeding yarn onto a spindle of a textile spinning machine, comprising:

an upper shaft portion having an axial yarn passage extend-

ing vertically therethrough for passage of yarn therethrough; and

a body portion extending downwardly from said upper shaft portion, said body portion having a lower circumferential rim and having an outlet passage extending from said upper shaft portion passage to an opening in said body portion, said body portion having a radial extent above said opening greater than the radial extent of said opening, said body portion supporting yarn traveling in a path from said outlet passage, across said lower circumferential rim and onto a spindle of the textile spinning machine and said body portion permitting circumferential movement of yarn along said lower circumferential rim during travel of the yarn thereacross.

4,939,895

SPINNING MACHINE WITH CAN REPLACEMENT APPARATUS

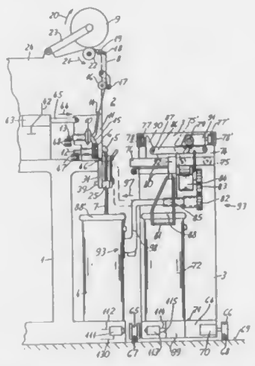
Hans Raasch, Monchen-Gladbach, and Paul Straaten, Straelen, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,729

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831637

Int. Cl.[5] D01H *4/50, 4/38, 9/18*

U.S. Cl. 57—263 **15 Claims**



1. The combination of an automatic open-end spinning machine of the type having a plurality of spinning positions each having a sliver inlet location supplied with a sliver from a sliver can, a sliver can replacement carriage for transporting sliver cans, said carriage being arranged for traveling movement alongside said spinning positions of said spinning machine, and can replacement means associated with said spinning machine and said carriage for replacing empty sliver cans at said spinning positions with full sliver cans, said can replacement means comprising means for transferring a full replacement sliver can from said carriage to a spinning position of said spinning machine, sliver guide means at each said spinning position of said spinning machine at a spacing from said sliver inlet location for guiding the sliver from the sliver can in operation to said sliver inlet location, each said sliver guide means being openable for receiving the sliver and closeable for retaining the sliver, sliver monitoring means at each said spinning position of said spinning machine in association with said sliver guide means for recognizing the presence and absence of sliver in said sliver guide means, signal transmitting means at each said spinning position of said spinning machine in association with said sliver monitoring means for producing a can-replacement signal when said sliver monitoring means recognizes the absence of sliver in said sliver guide means, signal receiving means on said carriage for receiving said can-replacement signal of said signal transmitting means, actuating means on said carriage for opening and closing said sliver guide means, means on said carriage for inserting sliver from a full replacement can into said sliver guide means, means on said carriage for joining a trailing end of sliver at a spinning position of said spinning machine with a leading end of sliver inserted from a full replacement can into said sliver guide means, and program control means on said carriage in association with said signal receiving means for actuating said can transferring means, said actuating means, said sliver inserting means, and said sliver joining means in response to said can-replacement signal.

4,939,896

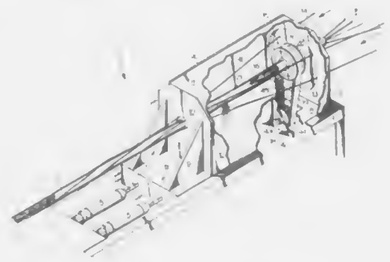
METHOD AND APPARATUS FOR S-Z STRANDING

Douglas J. Blew, Hickory, N.C., assignor to Slecor Corporation, Hickory, N.C.

Filed Jan. 26, 1990, Ser. No. 470,801

Int. Cl.[5] H01B *13/02;* **G02B** *6/10*

U.S. Cl. 57—293 **7 Claims**



1. An S-Z stranding device comprising:

(a) a first plate having an aperture therein;

(b) a second plate, having an aperture therein, spaced apart from said first plate;

(c) an elongated accumulator having first and second terminal end portions and first and second free edges, said first terminal end portion received in the aperture of said first plate and said second terminal end portion received in the aperture of said second plate;

(d) a reversing device engaged with the elongated accumulator for rotating the elongated accumulator first in one direction and then second in another direction;

(e) first stop means affixed to said elongated accumulator between said first plate and the free edge of said first terminal portion of said elongated accumulator;

(f) second stop means affixed to said elongated accumulator between said second plate and the free edge of said second terminal end portion; and,

(g) a device connected to said elongated accumulator for placing a tensile force on said elongated accumulator, said tensile force being not less than 124 pounds.

5. A method of S-Z stranding comprising:

(a) providing an elongated accumulator having a longitudinal axis;

(b) disposing a plurality of elongated strands on said elongated accumulator to be S-Z stranded; and,

(c) rotating the elongated accumulator and the elongated strands about the longitudinal axis of the elongated accumulator first in one direction and second in another direction while simultaneously applying a tensile force to said elongated accumulator of not less than 124 pounds.

4,939,897

OPENING CYLINDER UNIT FOR OPEN-END SPINNING MACHINES

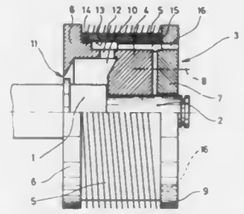
Karl-Heinz Schmolke, Neuweiler, Fed. Rep. of Germany, assignor to Hollingsworth GmbH, Fed. Rep. of Germany

Filed Jun. 30, 1989, Ser. No. 374,417

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1988, 8809697

Int. Cl.[5] D01H *4/32, 11/00*

U.S. Cl. 57—301 **9 Claims**



1. An opening cylinder unit for open-end spinning machines comprising a shaft rotatably mounted in a bearing housing, on whose free end projecting from the bearing housing an opening cylinder is fixedly mounted, which engages over the bearing housing forming a hollow space, which is sealed towards the bearing housing by an annular sealing gap, characterized in that at least two cleaning ducts (15) disposed substantially in parallel to the axis of the opening cylinder unit are formed in the opening cylinder (3), which extend from the hollow space (10) at least to a front side of the opening cylinder not facing the bearing housing.

4,939,898

EXHAUST SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES AND METHOD FOR CONTROLLING SAME

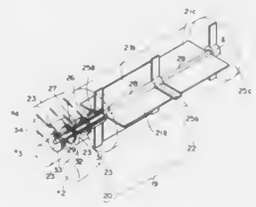
Takashi Ichimura; Koji Takamatsu; Takayuki Konuma, all of Saitama, and Takaaki Tsukui, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1989, Ser. No. 307,015

Claims priority, application Japan, Feb. 5, 1988, 63-024029; May 13, 1988, 63-116498; Aug. 10, 1988, 63-199383; Aug. 30, 1988, 63-216124; Aug. 31, 1988, 63-217904

Int. Cl.[5] F02B *27/02*

U.S. Cl. 60—274 **21 Claims**



1. An exhaust system for multi-cylinder internal combustion engines, the exhaust system comprising:

(a) an exhaust pipe connected at one end to each of the cylinders for receiving exhaust gas therefrom;

(b) a collector means connected with the other end of the exhaust pipes for receiving exhaust gas therefrom, said collector means including means for interconnecting the exhaust pipes in different combinations therein, and for varying the location at which the exhaust pipes are interconnected;

(c) means for sensing a plurality of operational conditions of the internal combustion engine; and

(d) a control means operated in response to said sensing means for controlling said interconnecting means for altering the combination of the exhaust pipes to be interconnected and the location of the interconnection, whereby the effective length of the respective exhaust pipes and combination thereof is altered according to operational conditions of the internal combustion engine.

4,939,899

BIDIRECTIONAL PRESSURE SUPPLY SYSTEM IN A MOTOR VEHICLE

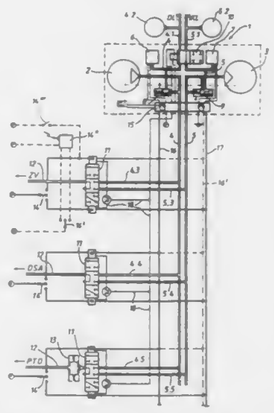
Horst Holzhauer, Schellbronn; Wolfgang Schneider, Calw; Günther Weikert, Weil der Stadt; Rudi Knefh, Sindelfingen, and Josef Schumacher, Reutlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,664

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1987, 3733212

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—412 **20 Claims**



1. Bidirectional pressure supply system for consumers in a motor vehicle which are to be operated with fluid, comprising a pneumatic pressure generator simultaneously admitting negative pressure to a negative pressure line system and positive pressure to a positive pressure line system;

directional control valve for the alternate connection of consumers to one of the completely separate line systems via consumer individual lines;

at least one pressure-dependently responding limit stop switch for the pressure generator;

directional control valves arranged parallel to each other and adapted to be electromagnetically switched independently of each other for selectively switching the respective consumer individual lines individually and in groups between positions connected to the respective negative and positive pressure line systems and position separated from both, and

electrical triggering means for initiating operation of the pressure generator and admitting the respective supply of negative and positive pressure to the respective negative and positive pressure line systems; and

wherein each of the negative and positive pressure line systems contain a pressure-dependently responding limit stop switch for the pressure generator and a safety valve

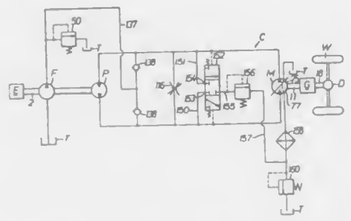
in the form of a blow-off valve in the positive pressure line system and an intake valve in the negative pressure line system, which safety valves only open after response of the associated limit stop switch in the same line system to protect the pressure generator against overloading when not consuming the respective pressure type (p_u or p_{um}) if the pressure generator is in operation via the limit stop switch assigned to the other line system.

4,939,900

HYDRAULICALLY OPERATED CONTINUOUSLY VARIABLE TRANSMISSION

Mitsumasa Furumoto; Eiichiro Kawahara; Kenichi Ikejiri, and Noboru Yamamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1987, Ser. No. 122,891
Claims priority, application Japan, Nov. 19, 1986, 61-275757
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—456 **13 Claims**



1. A hydraulically operated continuously variable transmission comprising:

a hydraulic motor having a motor swash plate and a motor cylinder supporting an annular array of slidable motor plungers held in slidable contact with said motor swash plate through mutually sliding surfaces which are supplied with oil from said pump cylinder for lubrication thereof;

a hydraulic pump having a pump swash plate and a pump cylinder supporting an annular array of slidable pump plungers held in slidable contact with said pump swash plate through mutually sliding surfaces which are supplied with oil from said pump cylinder for lubrication thereof;

a closed hydraulic circuit interconnecting said hydraulic pump and said hydraulic motor, said hydraulic pump having inlet and outlet ports connected to said closed hydraulic circuit;

a lubricating chamber surrounding the sliding surfaces of the swash plate and the plungers of at least one of said hydraulic pump and said hydraulic motor;

a pair of oil passages having ends connected to said inlet and outlet ports, respectively;

a shuttle valve having two input ports connected to the other ends of said oil passages, respectively, and an output port, said shuttle valve being shiftable to connect one of said oil passages which is of lower oil pressure to said output port when the differential pressure between said oil passages is relatively large;

a first relief valve connected to said output port and openable to communicate said output port to said lubricating chamber when the oil pressure in said output port exceeds a first pressure level; and

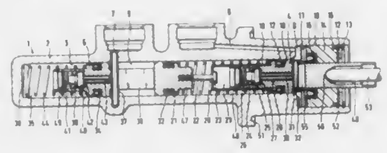
a second relief valve connected between said first relief valve and said lubricating chamber and openable when the oil pressure between said first relief valve and said lubricating chamber exceeds a second pressure level lower than said first pressure level.

4,939,901

TANDEM MASTER CYLINDER WITH PISTON STOPS AND CENTRAL VALVES

Kurt Saalbach, Moerfelden-Walldorf, and Kurt Bergelin, Niederhausen, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 21, 1988, Ser. No. 260,648
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1987, 3736057
Int. Cl.[5] B60T *11/20*; F15B *7/08*
U.S. Cl. 60—562 **2 Claims**



1. In a tandem master cylinder for an automotive hydraulic brake system including a housing having a bore sealed at its opposite ends, a first and a second piston sealingly and slidably received in said bore to define a first pressure chamber between said first and second pistons and a second pressure chamber between said second piston and one end of said bore, first and second stop means in said housing respectively engageable with said first and second pistons to define respective rest positions, first and second valve means associated respectively with said first and second pistons for hydraulically connecting said first and second pressure chambers to an unpressurized supply chamber when said first and second pistons are engaged with their respective first and second stops and movable to respective closed positions sealing said first and second chambers upon movement of said first and second pistons out of engagement with said first and second stops, first spring means biasing said first piston toward said first stop, and second spring means engaged bwetween said one end of said bore and said second piston biasing said second piston toward said second stop;

the improvement wherein said first spring means comprises a shoulder on said second piston defining a spring seat facing said first piston, a hollow guide sleeve having an end wall at one end and a radially outwardly projecting flange at its other end, a clamping bolt having a head seated in said guide sleeve at said one end and a shank projecting loosely from said sleeve through said end wall and threadably received in the end of said second piston facing said first piston, and a compression spring engaged between said shoulder and said flange, ssaid first piston having a at the end thereof facing said second piston slidably received with said other end of said guide sleeve, and said first valve means comprises a valve head slidably received within a passage extending inwardly of said projection from the end of said projection facing said second piston, and a valve spring seated in said passage and biasing said valve head inwardly of said passage.

4,939,902

AIR CONDITIONER FOR AN AUTOMOBILE

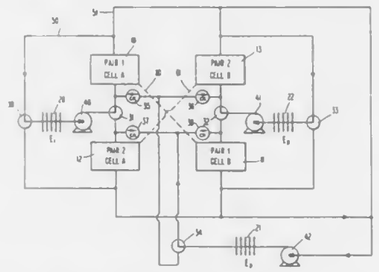
William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19382

Filed Oct. 24, 1989, Ser. No. 426,009
Int. Cl.[5] F17C *11/00*
U.S. Cl. 62—46.2 **8 Claims**

1. Apparatus for air conditioning an automobile, the automobile having an engine, the apparatus comprising:

(a) first and second pairs of hydrogen storage cells, both cells of each pair containing a material capable of forming a hydride,

(b) first, second, and third heat exchangers, the first exchanger continuously absorbing heat from the interior of the automobile, the second exchanger continuously rejecting heat to the ambient air outside of the automobile, the third exchanger continuously absorbing heat generated by the engine,



(c) a heat transfer fluid that circulates between the hydrogen storage cells and the heat exchangers, and

(d) means for routing the flow of heat transfer fluid as follows:

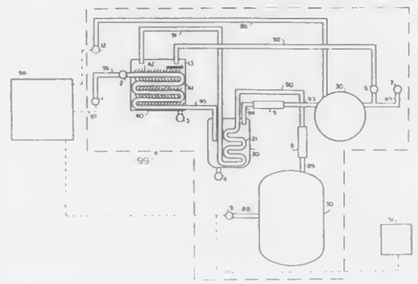
	During any interval of time	During the next interval of time
First exchanger:	First cell of the first pair	First cell of the second pair
Second exchanger:	Second cell of the first pair, and first cell of the second pair	Second cell of the second pair, and first cell of the first pair
Third exchanger:	Second cell of the second pair	Second cell of the first pair.

4,939,903

REFRIGERANT RECOVERY AND PURIFICATION SYSTEM AND METHOD

L. A. Goddard, P.O. Box 697, Hazelhurst, Ga. 31539

Filed Jul. 5, 1989, Ser. No. 375,864
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 **17 Claims**



10. A method for recovering and purifying refrigerant from a refrigeration unit, comprising the steps of:

providing purification means having an internal chamber and an internal coil, expansion means adjacent said internal coil, compressor means, storage means and conduit means for passage of said refrigerant;

passing said refrigerant from said refrigeration unit through said expansion means and into said internal coil thereby causing said internal coil to cool;

subsequently passing said refrigerant from said internal coil into said compressor;

subsequently passing said refrigerant from said compressor into said internal chamber, thereby externally contacting said refrigerant against said internal coils;

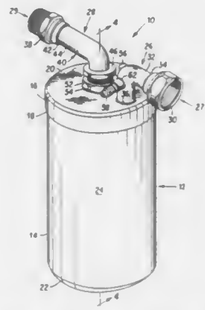
subsequently passing said refrigerant from said internal chamber into said storage means.

4,939,904

UNIVERSAL ACCUMULATOR

Billy M. Carlisle, Jr., 6415 Jetty, San Antonio, Tex. 78239

Division of Ser. No. 139,858, Dec. 30, 1987, Pat. No. 4,835,986.
This application May 22, 1989, Ser. No. 355,424
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—77 **3 Claims**



1. A method for replacing an automotive air conditioning system accumulator, comprising the steps of:

(a) removing said accumulator from said automotive air conditioning system;

(b) selectively rotating a first fitting of a replacement accumulator relative to a second fitting of said replacement accumulator, said first fitting having a first fitting port and said first fitting being received within a third fitting which is connected to a top of said housing of said replacement accumulator in approximately the center of said housing top, said second fitting having a second fitting port and being connected to said housing top, said first fitting being rotated so that said first fitting port of said replacement accumulator is at an angle relative to said second fitting port within the range of approximately fifteen degrees to three hundred forty five degrees, said replacement accumulator thereby being adapted to accommodate a variety of automotive applications; (c) connecting said replacement accumulator to a first line from an evaporator and a second line to a compressor.

4,939,905

RECOVERY SYSTEM FOR DIFFERING REFRIGERANTS

Kenneth W. Manz, Paulding, Ohio, assignor to Kent-Moore Corporation, Warren, Mich.

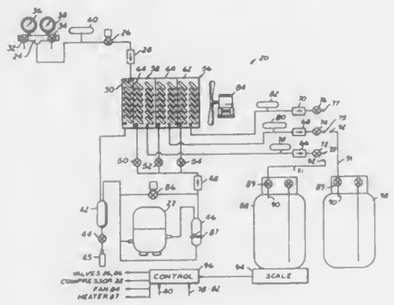
Filed Dec. 4, 1989, Ser. No. 445,763
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 **19 Claims**

1. In a refrigerant handling system that includes compressor means having an inlet and an outlet, means for connecting said compressor inlet to a refrigeration source, condenser means for withdrawing heat from and at least partially condensing refrigerant passing therethrough, and means for connecting said condenser means between said compressor outlet and a container for storing refrigerant, the improvement for handling differing types of refrigerants wherein:

said condenser means comprises at least first and second

condensers having independent refrigerant flow paths, and

said condenser connecting means comprise means for selectively connecting said compressor outlet alternately



through said first and second condensers to the storage container such that differing refrigerants are fed to associated containers through corresponding condensers without substantial intermixing or contamination.

4,939,906

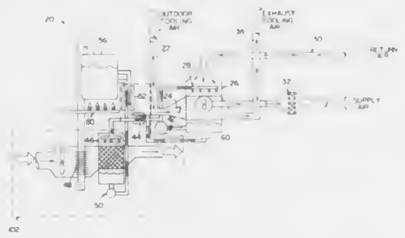
MULTI-STAGE BOILER/REGENERATOR FOR LIQUID DESICCANT DEHUMIDIFIERS

Mark W. Spatz, Nashua, N.H., and John J. Tandler, Arlington, Va., assignors to Gas Research Institute, Chicago, Ill.

Filed Jun. 9, 1989, Ser. No. 364,203

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—94 **11 Claims**



1. A process for regenerating liquid desiccant used in an air-conditioner comprising:

providing (a) a first and a second heat exchanger each accommodating a flow of liquid desiccant therethrough for transferring sensible energy, (b) a desiccant regenerator and, (c) a desiccant boiler;

removing diluted desiccant from the air conditioner and routing the desiccant through said first heat exchanger so that the temperature of the desiccant is raised, routing the diluted desiccant from said first heat exchanger to said desiccant regenerator wherein the diluted desiccant is partially regenerated, routing the partially regenerated desiccant through said second heat exchanger so that the temperature of the desiccant is raised, routing said partially regenerated desiccant through said desiccant boiler where said desiccant is fully regenerated with moisture from said desiccant being vaporized, routing the regenerated desiccant through said second heat exchanger to lower the temperature of said desiccant, routing said regenerated desiccant through said first heat exchanger to lower the temperature of said desiccant, returning said regenerated desiccant to the air conditioner; and

routing the vaporized moisture from said desiccant boiler to said desiccant regenerator to supply energy so that the diluted desiccant is partially regenerated.

4,939,907

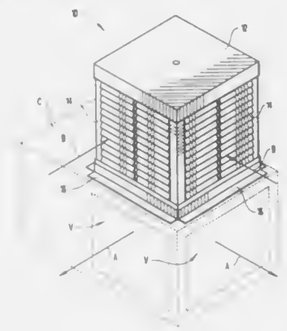
EVAPORATIVE PRECOOLER AIR-CONDITIONING SYSTEM

Marc F. Taylor, 208 Scottsburg St., Bakersfield, Calif. 93312

Filed May 16, 1989, Ser. No. 352,192

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—95 **8 Claims**



1. A method of improving the operating efficiency of a refrigerant type air-conditioning system having an exteriorly mounted compressor housing including a compressor, a condenser, a side air inlet, a top air outlet and a fan for directing air through said side air inlet and out said top air outlet, comprising the steps of:

providing an evaporative cooling unit including a housing having a bottom cooled air outlet dimensioned for registry with said top air outlet of said compressor housing;

reversing the fan blades of said compressor cooling fan;

securing said evaporative cooling unit housing on a top surface of said compressor housing with said cooled air outlet in registry with said air outlet of said compressor housing;

and

connecting said evaporative cooling unit for simultaneous operation with said compressor cooling fan to provide a reversed cooled air flow through said compressor housing.

4,939,908

APPARATUS FOR ADJUSTABLY CONTROLLING THE SIZE OF AN ICE BANK

Leonard G. Ewing, 2305 Brittany Grace, New Braunfels, Tex. 78130, and Milton L. Chesnut, 1404 Deer Run, San Antonio, Tex. 78232

Continuation-in-part of Ser. No. 51,080, May 15, 1987, Pat. No. 4,823,556. This application Nov. 14, 1988, Ser. No. 272,120

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] F25C *1/00*

U.S. Cl. 62—139 **18 Claims**

1. An apparatus for adjustably controlling the size of an ice bank around a cooling coil immersed in a water bath as part of a refrigeration system comprising:

a first controlling probe immersed in said water bath located at a distance from said cooling coil representing the minimum desired size of the ice bank;

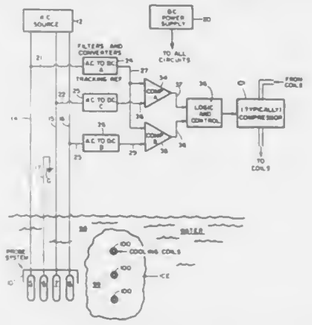
a second controlling probe immersed in said water bath and located at a distance from said cooling coil representing the maximum desired size of the ice bank;

a ground probe immersed in said water bath and located at a greater distance from said cooling coil than either of said first or second controlling probes;

a reference probe immersed in said water bath and located at a greater distance from said cooling coil than either of said first or second controlling probes;

means for producing a constant current between said first controlling probe and said ground probe, between said second controlling probe and said ground probe, and between said reference probe and said ground probe.

means for measuring the voltage potentials of said first controlling probe, said second controlling probe, and said



reference probe as constant current flows from each of said probes to said ground probe;

means for turning said refrigeration system on when the potential of said first controlling probe is equal to the potential of said reference probe;

means for maintaining the refrigeration system in an on condition even as the potential of said first controlling probe becomes greater than the potential of said reference probe due to ice formation around said first controlling probe and for turning off the refrigeration system when the potential of said second controlling probe becomes greater than the potential of said reference probe due to ice formation around said second controlling probe; and

means for adjusting the distance at which said first controlling probe is located from said cooling coil, thereby adjusting the minimum desired size of the ice bank.

4,939,909

CONTROL APPARATUS FOR AIR CONDITIONER

Yuji Tsuchiyama, and Masakazu Hosoya, both of Gumma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 35,899, Apr. 8, 1987, abandoned. This application Jul. 18, 1989, Ser. No. 383,287

Claims priority, application Japan, Apr. 9, 1986, 61-81595; Apr. 9, 1986, 61-81596; Apr. 9, 1986, 61-53206[U]

Int. Cl.[5] F25B *49/02*; H02H *7/00*

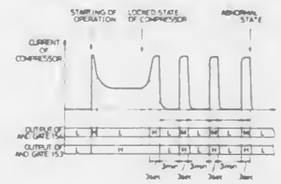
U.S. Cl. 62—158 **7 Claims**

1. A control apparatus of an air-conditioner comprising a refrigeration circuit having a compressor. a condenser, an expansion device and an evaporator connected by suitable refrigerant conduits in refrigerant flow relationship, comprising:

current detecting means coupled to a current path wherethrough a current to said compressor flows for detecting whether said current flow exceeds first and second predetermined values, said first predetermined value being a value which is exceeded only during abnormal operation of said compressor, and said second predetermined value being anon-zero value which can be exceeded during normal compressor operation,

time counting means for producing a counting output signal a predetermined time period from a time when a current in excess of said first predetermined value starts to flow through said compressor, said predetermined time period being less than the time required for a current in excess of said first predetermined value to damage said compressor, but being greater than the time required to start said compressor,

controlling means responsive to said counting output signal for controlling said current path so as to break a current



flowing through said compressor and, after a second predetermined time period, to carry a current again through said compressor,

counting means for counting and storing the number of times of repetition of breaking and re-making of a current by said controlling means,

current breaking means for breaking a current path of said compressor in response to the stored counted value of said counting means achieving a predetermined value, and

resetting means for resetting the stored counted value in said counting means when the current flow detected by said current detecting means lies between said first and second predetermined values.

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AIR CONDITIONER

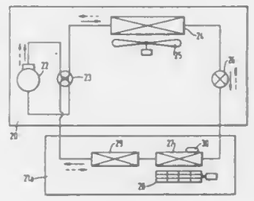
Kenji Umezu, 169-126, Kitamatsuno, Fujigawa-cho, Ihara-gun, Shizuoka-ken; Hiroshi Ito, 2348-13, Koizumi, Fujinomiya-shi, Shizuoka-ken, and Jitsuo Ikeya, 201-10, Gokanjima, Fuji-shi, Shizuoka-ken, all of Japan

Continuation of Ser. No. 114,989, Oct. 30, 1987, abandoned. This application May 22, 1989, Ser. No. 355,791

Claims priority, application Japan, Oct. 30, 1986, 61-259089; Nov. 27, 1986, 61-282922; Feb. 5, 1987, 62-23530

Int. Cl.[5] F25B *13/00, 5/00*

U.S. Cl. 62—160 **44 Claims**



2. An air conditioner provided with a heat-pump system refrigeration cycle comprising:

a compressor;

an outdoor heat exchanger;

a pressure reducing device;

an indoor heat exchanger installed within a room;

an indoor fan disposed adjacent in said indoor heat exchanger;

a radiation heat exchanger disposed in said room, said com-

pressor, said indoor heat exchanger, said radiant heat exchanger, said pressure reducing device and said indoor heat exchanger being connected in a circuit;

means for monitoring ambient temperature in said room;

means coupled to said indoor fan for allowing selection between warm-air heating during which said indoor fan is turned on and radiant heating during which an output of said indoor fan is less than the output during said warm-air heating, said allowing means including means for reducing an output of said indoor fan when the ambient temperature is close to a desired temperature during heating operation.

4,939,911

VEHICULAR KENNEL FOR PETS

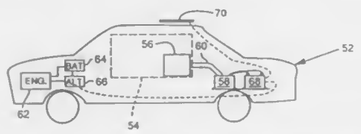
Gerald D. Mandell, 1111 Strawberry La., Ashland, Oreg. 97520

Filed Oct. 11, 1989, Ser. No. 420,141

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] B60H *1/32*

U.S. Cl. 62—239 **17 Claims**



1. A method of travelling with a pet, comprising the steps:

placing the pet in an enclosure;

placing the enclosure in the passenger compartment of a vehicle that includes a vehicle battery;

operating a cooling unit from an electrical energy source independent of said vehicle battery; and

cooling the enclosure with the cooling unit regardless of whether the vehicle engine is on or off.

4,939,912

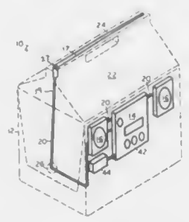
COMBINATION PORTABLE COOLER WITH AUDIO RECEIVER AND PORTABLE COOLER WITH AUDIO SYSTEM

George A. Leonovich, Jr., 270 Communications Way, Hyannis, Mass. 02601

Filed Oct. 26, 1989, Ser. No. 427,196

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—457.1 **9 Claims**



1. A portable cooler for carrying food and/or beverages comprising:

(A) an insulated container of generally rectangular conventional construction including a coolant packet comprising;

i. an outer shell of generally rectangular construction constructed of a sheet of molded plastic;

ii. an inner shell spaced inwardly and connected to the outer shell forming an intermediate void;

iii. an intermediate layer of insulating material having a composition adapted to permit pouring of the insulating material into the void to fill it during construction of the container;

(B) four adjoining walls, including a first wall and a second wall integrally connected to a base defining a space for storing and carrying items, being kept cool;

(C) an audio unit having an electrical circuit securely mounted in the first wall comprising;

i. a receiver securely attached to the first wall and extending into the void between the outer shell and the inner shell with conventional control knob means extending outwardly through a cutout in the outer shell and being sealably surrounded by the insulating material;

ii. a speaker member securely mounted on the first wall having mounting plate means positioned in the void between the outer shell and the inner shell with screw means extending outwardly through a cut-out in the outer shell and being sealably surrounded by the insulating material;

iii. a power source compartment formed in the void between the outer shell and the inner shell with an opening in the outer shell and being sealably surrounded by the insulating material;

(D) An antenna retractably mounted on the longitudinal handle having a first position in a slot provided in the handle and a second position in perpendicular relation to the handle for receiving transmission signals;

(E) a partially removable top, having hinged cooperation with the container,

(F) a plurality of wire means for connecting the power source compartment to the radio receiver and to the first and second speakers being disposed in the void and sealably surrounded by insulating material.

4,939,913

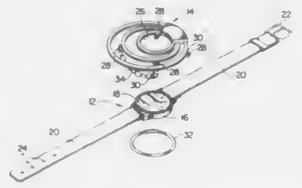
ORNAMENTAL WATCH ACCESSORY

Roger V. Scungio, 15 Roger Rd., Johnston, R.I. 02919, and Melodie A. Betters, 302 Lake Dr., Chepachet, R.I. 02814

Filed May 19, 1989, Ser. No. 354,120

Int. Cl.[5] A44C *25/00*

U.S. Cl. 63—21 **10 Claims**



1. A removable ornament for watches comprising a member adapted to be positioned on top of a watch housing, said member having an opening therein through which the watch face is visible when the ornament is operatively assembled to a watch, said member having an ornamental portion disposed outwardly of said opening, and means carried by said member for releasably attaching same to the watch housing so that the watch face and the opening in the member are in alignment, said attaching means comprising a plurality of posts extending from the underside of said member and adapted to be spaced around the periphery of said watch housing, and a resilient band extending around said posts in order to resiliently retain said member in assembled relation to the watch, said posts having recessed portions for receiving said resilient band, there being four of said posts equally spaced around the periphery of said watch housing, whereby the strap of the watch is adapted to extend between adjacent posts, and is clamped between the resilient band and the ornamental member.

4,939,914

JIG

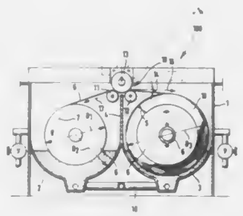
Manfred Driesen; Wolfgang Kurschatke, both of Krefeld, and Johannes Kutz, Tonisvorst, all of Fed. Rep. of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co KG, Krefeld, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,529

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341915

Int. Cl.[5] D06B *15/02*

U.S. Cl. 68—22 R **14 Claims**



1. A jig for carrying out liquid treatments on a textile web of material, comprising:

two substantially identical, mutually parallel winding rolls disposed approximately at the same height, between which the web of material is rewound;

a housing which comprises two adjacent troughs which have approximately semicircular cross-sections in their lower portions, meet along an approximately equatorial generatrix line, surround the winding rolls concentrically and are adapted to contain treatment liquor;

lines opening into lower regions of the troughs for feeding and discharging treatment liquor and for interconnecting the troughs;

a vertical partition extending up from a zone in which two troughs meet, approximately to an apex of a winding roll containing a full winding; and

a squeezing device for the web of material as it is transferred from one winding roll to the other, above the zone in which the two troughs meet, formed by two first rolls arranged horizontally side-by-side and a second roll resting thereon thereby defining two axially spaced rolling gaps, arranged immediately above the upper edge of the partition in such a manner that the passing web of material runs from the squeezing device downward toward the windings on both sides, the partition having an upper end disposed between the first rolls and an upper edge juxtaposed to a lowermost extent of the second roll, one of the first rolls being disposed above one of the troughs and the other of the first rolls being disposed above the other of the troughs whereby treatment liquor squeezed out of the web at the rolling gap formed above said one trough is prevented from passing into said other trough by the partition.

4,939,915

ELECTROMECHANICAL LOCKING DEVICE

Beano Voulanthen, Zollikofen, Switzerland, assignor to R. Berchtold AG, Zollikofen, Switzerland

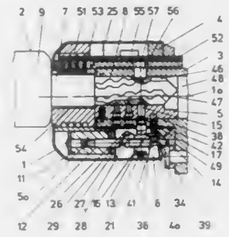
PCT No. PCT/CH88/00025, § 371 Date Oct. 4, 1988, § 102(e) Date Oct. 4, 1988, PCT Pub. No. WO88/05853, PCT Pub. Date Aug. 11, 1988

PCT Filed Feb. 2, 1988, Ser. No. 278,944

Claims priority, application Switzerland, Feb. 9, 1987, 456/87

Int. Cl.[5] E05B *47/00*

U.S. Cl. 70—277 **17 Claims**



1. An electromechanical locking device including a cylinder lock with a device for transmission of information signals between a lock and a key; a stator housing; a rotor rotatable in said housing; said rotor having an axis and a key channel to receive said key; holding means for mechanically blocking or releasing rotation of said rotor; and an electrically activated blocking device for controlling rotation of said rotor; the improvement comprising: said blocking device (6) having a release bolt (13) directed radially toward said rotor axis (10) and a blocking bolt (14) arranged parallel beside said release bolt (13), an end surface of said release bolt (13) lying against a sliding surface of a holding pin (15) positioned by said key (2) and guided in said rotor (5), said release bolt (13) engaging said blocking bolt (14) through a carrier (16) perpendicular to said release and blocking bolts (13, 14), and in their portions away from rotor (5) is arranged an electric switching element having a magnet anchor (12) with an electric coil (11), said magnet anchor (12) having at least one stop in which one end (40) of said blocking bolt (14) engages, the other end of said blocking bolt (14) engaging in a recess (38) in the rotor (5).

4,939,916

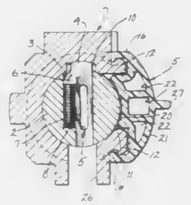
LOCK CONSTRUCTION

Bryan E. Gruenewald, Glendale, and Clayton A. Lokken, Waukesha, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Feb. 1, 1989, Ser. No. 304,705

Int. Cl.[5] E05B *9/04*

U.S. Cl. 70—373 **10 Claims**



1. In a lock construction, a case having a central aperture and having a ward communicating with said aperture, said

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ward having a bottom surface spaced radially outward of said aperture, a cylinder disposed within the aperture and having a central passage, a plurality of plate-like tumblers disposed within the passage and having aligned slots to receive a key, each tumbler having an end disposed to be received in said ward, spring means connecting each tumbler plate at a location spaced from said end and said cylinder for biasing said end outwardly into engagement with the bottom surface of said ward, said case having an opening in a side thereof communicating with the central aperture and spaced circumferentially from said ward, a pair of shoulders bordering opposed sides of said opening, and a cover to enclose said opening, said cover having side flanges constructed and arranged to removably engage the shoulders, said cover being removable from said opening to permit insertion and removal of said tumblers from said cylinder.

4,939,917

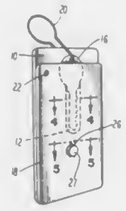
KEY CONTROL OF IMPORTANT SECURITY KEYS

Edward V. Cartwright, c/o Philadelphia Electric Co., 2301 Market St., P.O. Box 8699, Philadelphia, Pa. 19101

Filed Dec. 14, 1989, Ser. No. 450,543

Int. Cl.[5] **A47G** *29/10*

U.S. Cl. 70—456 R **10 Claims**



1. A tamperproof key holder for preventing the unauthorized use of a key contained therein comprising:

a first plate acting as a support for said holder having a routed region located therein for receiving a key;

a second plate superimposed over said first plate acting as a cover for said holder; connecting means between said first and second plates so that access to said key is facilitated, and,

tamperproofing means for determining, upon visual inspection, whether a key contained in said holder has been used.

4,939,918

MONITORABLE AND COMPENSATABLE FEEDBACK TOOL AND CONTROL SYSTEM FOR A PRESS

Daniel A. Schoch, Minster, Ohio, assignor to The Minster Machine Company, Minster, Ohio

Filed Aug. 27, 1987, Ser. No. 90,215

Int. Cl.[5] **B30B** *15/00;* **B21D** *22/00*

U.S. Cl. 72—20 **30 Claims**

1. In a press having a tool means, a control system for continuous tool load adjustment comprising:

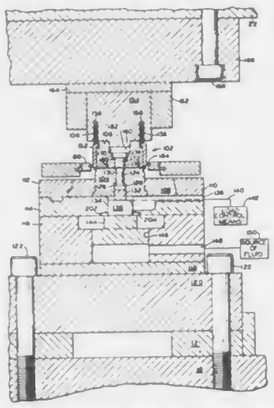
fluid pressure operated back-up load means for providing a variable back-up load to said tool means;

sensing means for sensing the load at said tool means and generating a single sensed back-up load signal indicative of said tool means load;

controller means for receiving an input reference signal and said sensed back-up load signals and providing an output control signal as a function only of said input signals;

a source of fluid at a pressure coupled to said back-up load means; and

a variable fluid pressure circuit means connected to said controller means and coupled between said source of fluid at a pressure and thereby said back-up load means for



varying dynamically the back-up load to said tool means as a function only of said controller means output signal.

4,939,919

ROLL FORMING MACHINE

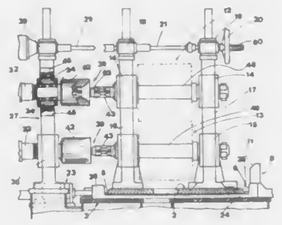
Aleardo Chezzi, Boretto, Italy, assignor to OTO MILLS S.p.A., Boretto, Italy

Filed Nov. 29, 1988, Ser. No. 277,660

Claims priority, application Italy, Sep. 23, 1988, 40140 A/88

Int. Cl.[5] **B21B** *35/14*

U.S. Cl. 72—181 **4 Claims**



1. A roll forming machine, comprising:

a plurality of stands (1) arranged in succession, each supporting at least two forming rolls (12, 13) disposed with axes parallel and mounted to shafts (48, 49) freely journaled at each end to blocks (14, 15) carried by massive uprights (16, 17) and caused to rotate about their respective axes in opposite directions, the axes extending horizontally with one shaft vertically spaced from the other;

at least one base (2), capable of being clamped to and removed from the bed (3) of the machine, to which the uprights (16, 17) of at least one stand (1) are permanently anchored;

at least one fixed upright (27), located a short distance to one side of the uprights of the stand, that carries two power take-off shafts (32, 33) aligned axially with the roll shafts (48, 49) and freely supported in rotation by relative journal blocks (34, 35) at least one of which is mounted to the upright (27) in such a way as to be allowed a marginal degree of shift transverse to the relative axis of rotation, said relative journal blocks being vertically spaced from one another in said fixed upright;

a geared motor unit (30), by which the power take-off shafts (32, 33) are driven;

two couplings (38, 39), by which the power take-off shafts (32, 33) and the roll shafts (48, 49) are caused to rotate as one, each of which consists in two connectable halves (42, 43), turning as one with the power take-off (32 or 33) and with the roll shaft (48 or 49), respectively, the embodiment of which is such that assembly of the coupling will automatically ensure mutual alignment of the axes of the interconnected shafts, wherein the base (2) to which the uprights (16, 17) of the stand (1) are anchored is clamped to and removed from the machine bed (3) by means of a device that comprises:

a horizontal table (4), on which the base (2) rests, and across which it is traversed, guided in a direction parallel to the axes of the power take-off shafts (32, 33);

a fixed stop (5), affording a locating surface (7) inclined to form an acute angle with the surface of the horizontal table (4) and designed to interact with a complementarily angled surface (6) offered by one side of the base (2), against which the base is clamped to the end of ensuring a faultless and predetermined axial position of the roll shafts (48, 49) in relation to the power take-off shafts (32, 33) when being connected thereto by way of the couplings (38, 39);

a movable stop (9), positioned at the side of the base opposite from the fixed stop (5) and affording a locating surface (11) that is inclined to form an acute angle with the surface of the horizontal table (4) and engages a complementarily angled surface (6) offered by the corresponding side of the base (2), said acute angles and the surface of the table forming openings which face one another and face in the direction of movement of the table has been inserted before.

4,939,920

MONITORING DEVICE FOR ROLL BEARINGS IN ROLLING MILLS

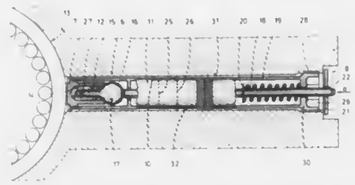
Werner Stahl, Kreuztal, and Axel Barten, Siegen-Sohlbach, both of Fed. Rep. of Germany, assignors to Achenbach Buschhutten GmbH, Kreuztal, Fed. Rep. of Germany

Filed May 11, 1988, Ser. No. 195,682

Claims priority, application Fed. Rep. of Germany, May 22, 1987, 3717316

Int. Cl.[5] **B21B** *31/00*

U.S. Cl. 72—237 **8 Claims**



1. Monitoring device for roll bearings of work rolls in cluster roll stands of rolling mills, comprising a thermal limit value pickup (6) in contact with a said bearing (7) and being installed in a roll chock (1), and a mechanical, spring-loaded transmission member (8) locked by way of said limit value pickup (6) in said chock (1) to act on a signal generator (9) arranged outside of said chock (1) in a said roll stand (5), this signal generator being activated by automatic outward movement of a transmission member (8) after release from locking means by said limit value pickup (6), upon attainment of a limit temperature of said roll bearing (7), to shut down an associated said rolling mill.

4,939,921

METHOD AND SYSTEM FOR ONE-LINE CALIBRATION AND VALIDATION OF PROCESS INSTRUMENTATION

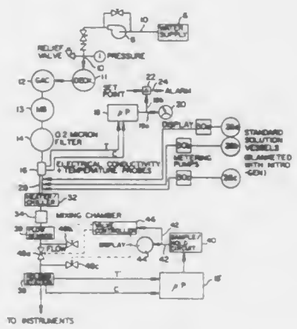
Hudson R. Carter, Alliance, and Eugene T. Upperman, North Canton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 202,090, Jun. 2, 1988, Pat. No. 4,887,453. This application Apr. 18, 1989, Ser. No. 339,757

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] **G01N** *27/26*

U.S. Cl. 73—1 R **8 Claims**



1. A method for producing a validating solution for a process instrument measuring the analyte content of a water solution, comprising the steps of:

providing a water supply;

producing pure water from the water supply with an outlet for the pure water;

measuring with a temperature measuring device the temperature of the pure water at the outlet and establishing a signal indicative thereof;

measuring with an electrical conductivity device the electrical conductivity of the pure water at the outlet near the temperature measuring device and establishing a signal indicative thereof;

transmitting the temperature and conductivity signals to a microprocessor for solving a water purity equation and establishing an output signal indicative thereof;

maintaining water purity responsive to changes in the output signal of the microprocessor; and

adding analytes to the pure water to provide a solution suitable for validating the measuring instrument.

4,939,922

METHOD AND DEVICE FOR EXAMINING THE WEAR AND FRICTION PROPERTIES OF SURFACE MATERIALS EXPOSED TO SLIDING FRICTION

Robert J. Smalley, Leerdam, and Maarten Noordman, Hilversum, both of Netherlands, assignors to SKF Industrial Trading and Development Co. B.V., Nieuwegein, Netherlands

Filed Jun. 6, 1988, Ser. No. 203,232

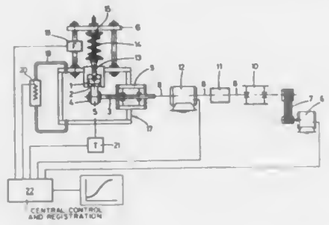
Claims priority, application Netherlands, Jul. 2, 1987, 8701557

Int. Cl.[5] **G01N** *19/02*

U.S. Cl. 73—10 **9 Claims**

1. Device for examining the sliding friction between exposed surfaces for different combinations of materials, characterized by a holder for a first test piece of a first material, a holder for a second test piece of a second material, driving means for moving the first and second pieces with regard to one another, means for loading the first and second test pieces with regard to one another, means for measuring the energy needed for the

relative displacement between the first and the second test pieces, means for supplying a lubricant to the exposed surfaces



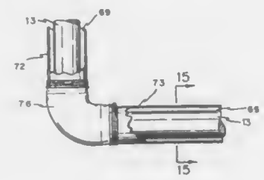
of the first and second test pieces, and means for heating the lubricant and keeping it at a certain temperature.

4,939,923

METHOD OF RETROFITTING A PRIMARY PIPELINE SYSTEM WITH A SEMI-RIGID PIPELINE

Bruce R. Sharp, 7685 Fields-Ertel Rd., Cincinnati, Ohio 45241

Division of Ser. No. 198,454, May 25, 1988, Pat. No. 4,870,856.
This application Oct. 3, 1989, Ser. No. 416,603
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.[5] G01M *3/08*
U.S. Cl. 73—40.5 R 6 Claims



1. A method of retrofitting a primary pipeline system having at least one junction to provide secondary containment, comprising the steps of:

(a) disconnecting a portion of the primary pipeline;

(b) sliding a semi-rigid pipeline over said disconnected primary pipeline;

(c) sliding the secondary semi-rigid pipeline over another section of an adjoining primary pipeline section;

(d) positioning a split fitting over the same or a second junction for said secondary semi-rigid pipeline sections, said split fittings comprised of (i) a pair of housing halves such that when mated and secured together a complete housing enclosure is formed which has at least two extremities with openings through which the primary pipeline passes, and said housing enclosure being capable of enclosing a portion of the pipeline and capable of having the secondary pipeline held to the extremities by clamping means, (ii) sealing means positioned on each mated surface to form a liquid tight seal between the housing halves, and (iii) a clamping means;

(e) mating said housing halve to form a housing enclosure;

(f) attaching said semi-rigid pipeline sections to the housing enclosure;

(g) clamping the secondary semi-rigid pipeline sections to the housing enclosure with a clamping means to form a liquid tight seal;

(h) reconnecting the disconnected portion of the primary pipeline to the junction; and

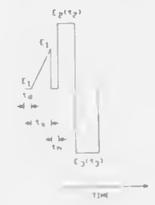
(i) attaching ends of said secondary pipeline sections to form a closed space providing the secondary containment.

4,939,924

PULSED COULOMETRIC DETECTION WITH AUTOMATIC REJECTION OF BACKGROUND SIGNAL IN SURFACE-OXIDE CATALYZED ANODIC DETECTIONS AT GOLD ELECTRODES IN FLOW-THROUGH CELLS

Dennis C. Johnson, Ames, Iowa, and Glen G. Neuburger, Freehold, N.J., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 26, 1988, Ser. No. 249,614
Int. Cl.[5] G01N *27/42, 30/62*
U.S. Cl. 73—61.1 C 10 Claims



10. The method of liquid chromatography quantitative analysis of a plurality of multiple chemical components in a liquid sample solution, said method comprising

flowing said solution through chromatographic separation means and separating said components upon elution therefrom,

passing the effluent from said chromatographic means through a flow-through cell wherein an electric potential is applied to a working electrode, and

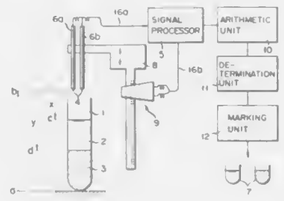
electrochemically detecting the separated chemical components in the cell using a cyclic pulsed coulometric detection technique having a potential sweep or a potential step function of a certain time period of duration, said method including the steps of applying current integration over the time period of said cyclic potential sweep.

4,939,925

METHOD OF PERFORMING MEASUREMENT OF HEMATOCRIT VALUE AND SEPARATE SAMPLING OF BLOOD COMPONENT

Hajime Sakuma, Hachioji; Toshiyuki Sasaki, Fussa, and Katsumi Komatsu, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1989, Ser. No. 323,568
Claims priority, application Japan, Mar. 23, 1988, 63-68739
Int. Cl.[5] G01N *33/49*
U.S. Cl. 73—61.4 7 Claims



1. A method of performing measurement of a hematocrit

value and separate sampling of first and second blood components, comprising the steps of:

lowering a probe from a predetermined initial height into a predetermined sample vessel containing a blood sample separated into a first component layer as an upper layer and a second component layer as a lower layer, the probe being integrally formed with a liquid surface detection electrode and a suction nozzle;

monitoring a descent distance upon descent of said probe;

generating a first liquid surface detection signal from said liquid surface detection electrode when a distal end of said probe reaches a liquid surface of the first component layer;

sampling a predetermined amount of the first component into separate sampling vessel means through said suction nozzle of said probe in response to the first liquid surface detection signal;

generating a second liquid surface detection signal from said liquid surface detection electrode when the distal end of said probe reaches a liquid surface of the second component layer;

sampling a predetermined amount of the second component into the separate sampling vessel means through said suction nozzle of said probe in response to the second liquid surface detection signal;

calculating liquid surface heights of the first and second component layers on the basis of the initial height of said probe, the monitored descent distance of said probe, and the first and second liquid surface detection signals; and

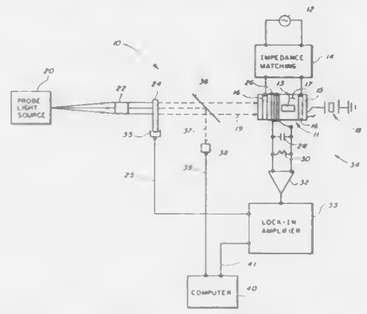
calculating a total volume of the blood sample and a volume of the second component on the basis of the liquid surface heights of the first and second component layers, and calculating a hematocrit value from the volumes.

4,939,926

APPARATUS AND METHOD FOR MONITORING PRESSURE LEAKS FROM A SEALED SYSTEM

Jeanne A. Welch, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 5, 1989, Ser. No. 361,074
Int. Cl.[5] G01M *3/40*
U.S. Cl. 73—49.3 14 Claims



14. A method for monitoring pressure changes associated with a sealed system that may leak, the method comprising the steps of:

establishing an ionizing discharge in association with the sealed system,

irradiating the established ionizing discharge with probe radiation from a radiation source,

providing signals representing monitored current flow through the ionizing discharge in response to the probe irradiating of the discharge,

providing signals representing monitored probe radiation prior to irradiating the ionizing discharge,

computing data representing pressure changes due to leaks from the sealed system based on the signals representing monitored current flow through the ionizing discharge and based on the signals representing monitored probe radiation whereby computed pressure changes are normalized with respect to changes in the radiation source.

4,939,927

DEVICE TO MEASURE THE TENDERNESS OF MEAT

Geoffrey Johnston, "Claremont", Bega, New South Wales, Australia 2550

PCT No. PCT/AU87/00296, § 371 Date Jun. 6, 1988, § 102(e) Date Jun. 6, 1988, PCT Pub. No. WO88/01742, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 31, 1987, Ser. No. 236,523
Claims priority, application Australia, Sep. 3, 1986, PH7822
Int. Cl.[5] G01N *3/42*
U.S. Cl. 73—81 9 Claims



1. A meat probe to aid in determining the tenderness of meat, said probe comprising:

a generally cylindrical body having a forward end having formed therein an aperture through which projects an elongated probe member, the probe member having a first piston directly affixed thereto, the first piston reciprocable within the body;

a second piston reciprocable within the body, the second piston having attached thereto a piston rod, the rod extending beyond a rear end of the cylindrical body opposite the forward end;

a resilient means interposed between the first and second pistons within the body;

the rear end of the body housing a means for advancing the piston rod and a means for releasing the piston rod;

the body having exterior calibrated markings which cooperate with a portion of the second piston to indicate the advancement of the second piston within the body.

4,939,928

METHOD OF DETERMINING THE CONTINUITY OF SOLENOIDS IN AN ELECTRONIC AUTOMATIC TRANSMISSION SYSTEM

Keith B. Carle, Hartland; Thomas Glowczewski, Washington Township, Macomb County; Gerald L. Holbrook, Rochester Hills; William R. Kissel, Milford; Maurice B. Leising, Clawson, and Michael R. Lindsay, Livonia, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 188,607, Apr. 29, 1988, abandoned.
This application Jun. 15, 1989, Ser. No. 366,361
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 16 Claims

15. In a vehicle transmission including an input member, an output member, a torque converter assembly for transmitting torque between an engine and the input member, a gear assembly for changing the ratio of torque between the input member and output member, a plurality of frictional units to shift the gear assembly, at least one solenoid-actuated valve being actuated in response to the presence or absence of electrical power to the valve for directing fluid flow between a fluid source and at least one of the frictional units, input sensors providing input

signals of predetermined conditions, a controller for processing the input signals and providing output signals to control the solenoid-actuated valves, a method of determining the electrical continuity of solenoids for solenoid-actuated valves in the vehicle transmission, said method comprising the steps of;

checking whether at least one predetermined event is occurring;

executing a solenoid test to determine the continuity of a plurality of solenoids based on the at least one predetermined event;

determining whether a predetermined solenoid is under test;

checking whether a torque converter in the transmission is being partially locked to the engine if a solenoid is under test;



turning on the solenoid under test if the method is at the start of a partial lockup period for the torque converter;

turning off the predetermined solenoid under test;

determining whether a spike response was received by the controller;

pointing to the next solenoid to be tested if a spike response was received by the controller;

determining whether all of the solenoids of the solenoid-actuated valves were tested; and

ending the test if all of the solenoids of the solenoid-actuated valves were tested, otherwise continuing the test for the next solenoid to be tested.

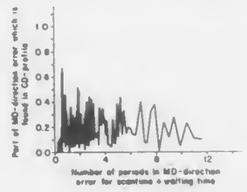
4,939,929

MEASUREMENT OF THE PROPERTIES OF A WEB IN PAPER PRODUCTION

Leif T. Östman, Spånga, Sweden, assignor to STFI, Stockholm, Sweden

Filed Dec. 8, 1988, Ser. No. 281,386
Int. Cl.[5] G01N *33/34, 33/44*
U.S. Cl. 73—159 **6 Claims**

1. A method of measuring variations in the properties of a continuously running paper web comprising indication of the paper properties by reciprocating a scanning device across the web, wherein movement of the scanning device is time controlled, so that said movement is out of phase with periodical



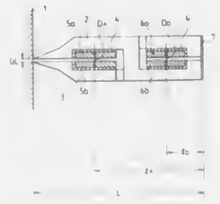
variation of the paper properties in the longitudinal direction of the web.

4,939,930

ELECTRIC CAPACITANCE STRAIN GAUGE

Toshio Ishizuki; Yoshio Fukuda, both of Hitachi, and Ken-ichi Honda, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Naka Electronics Co., Ltd., Ibaraki, both of, Japan

Filed Apr. 13, 1989, Ser. No. 336,784
Claims priority, application Japan, Apr. 13, 1988, 63-89085
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—780 **3 Claims**



1. An electric capacitance strain gauge provided with a pair of installing frames connected with each other, electrical insulating members with a stepped shape fixed on said pair of installing frames by insertion, and two pairs of electrode plates with a stepped shaped fixed onto said electrical insulating members by insertion, characterized in that a member for connecting the installing frames which constitutes a pair is a plate spring deposited at the end of each of said installing frames, and that a stepped part for positioning the plate spring is provided at the end surface of said installing frames.

4,939,931

RESIDENTIAL WATER METER WITH INTEGRAL FIRE HYDRANT

Kenneth Reeves, 102 Valleyview Dr., Old Hickory, Tenn. 37138

Continuation-in-part of Ser. No. 309,708, Feb. 2, 1989, abandoned. This application Dec. 12, 1989, Ser. No. 448,881
Int. Cl.[5] G01F *15/00*
U.S. Cl. 73—201 **12 Claims**

1. A residential water meter and integral fire hydrant unit comprising:

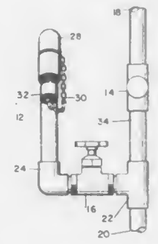
(a) an input means connecting said device to a water line;

(b) an output means connecting said device to a home water system;

(c) a dividing means diverging water flow between said output and a hydrant;

(d) a meter means measuring flow of water between said input means and said dividing means;

(e) valve means preceding said hydrant to control flow through said hydrant; and



(f) where said device is pre-assembled as a unit and is adapted for installation in place of a standard residential water meter assembly.

4,939,932

LEVEL MEASURING DEVICE

Hugo Ritzenthaler, Rochester Hills, and Scott Polando, Lake Orion, both of Mich., assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 28, 1989, Ser. No. 330,594
Int. Cl.[5] G01F *23/32*
U.S. Cl. 73—317 **7 Claims**



1. A level measuring device for measuring the level of the liquid in a container, the device comprising

an elongated support which extends approximately horizontally into the container and includes a first end and a second end opposite the first end, the support being fastened at its first end to a wall of the container while the second end of the support rests under intial spring pressure against a bottom of the container;

a carrier fixed to the support between the first and the second ends of the support;

a mechanical-electrical transducer supported by the carrier and having a lever mounted pivotally to the transducer, there being a float carried by the lever for controlling the transducer; and wherein

the support is formed as an elongated member, the elongated member being bent in the manner of a coil having at least one turn in a region between the carrier and said first end of the support, the coil functioning as an elastic spring; and

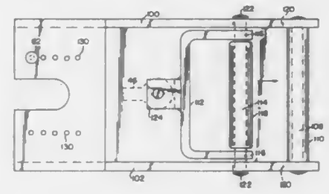
a plane of said at least one turn is approximately vertical and parallel to a vertical plane containing said first and said second ends fo the support.

4,939,933

ISOMETRIC STRENGTH TESTING METHOD AND EQUIPMENT FOR DISABILITY EVALUATION

Thomas M. Curran, 464 Springbrook, Saline, Mich. 48176

Division of Ser. No. 92,432, Sep. 3, 1987, Pat. No. 4,882,677. This application Sep. 19, 1989, Ser. No. 409,250
Int. Cl.[5] A61B *5/22*
U.S. Cl. 73—379 **17 Claims**



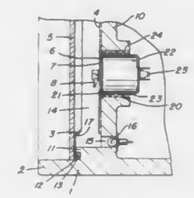
5. An isometric strength testing unit comprising a vertical post, a horizontal arm on the post, said arm selectably positionable on the post, a squeeze grip attachment on the arm, said squeeze grip attachment comprising a frame having two parallel members, an outboard frame bar joining the parallel members, a bifurcated handle positioned between the parallel members, said handle movable relative to the parallel members, a handle bar extending between the ends of the bifurcated handle, means on the handle engageable with the parallel members and means on the parallel members to guide movement of the handle relative to the frame bar and sensing means attached to the handle.

4,939,934

COMBINATION INSTRUMENT

Hugo A. Ritzenthaler, Rochester Hills, Mich., and Martin Haub, Winchester, Va., assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 300,099
Int. Cl.[5] G01D *11/24*
U.S. Cl. 73—431 **17 Claims**



1. A combination instrument, particularly for motor vehicles, including an instrument holder on which several display units can be mounted, and comprising further a cover glass which covers all of the display units jointly and is arranged in front of the instrument holder on the side towards the observer; and wherein

the display units are mountable on the instrument holder from the side facing away from the observer;

further comprising stops arranged on the instrument holder, there being mounted openings in the holder;

wherein the display units are inserted into the mounting openings of the instrument holder until the stops;

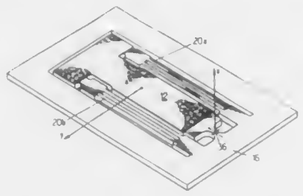
the display unit is provided, on a circumferential surface thereof, with elastic ribs which protrude radially more than the radial size of the mounting opening.

4,939,935

PENDULAR NON-SERVOED TUNING BEAM ACCELEROMETER

Yvon Amand, Soisy Sous Montmorency, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique, Paris, France

Filed Feb. 21, 1989, Ser. No. 312,753
Claims priority, application France, Feb. 22, 1988, 88 02079
Int. Cl.[5] G01P *15/10*
U.S. Cl. 73—517 AV **7 Claims**



1. Pendular accelerometer comprising a base, a pendular seismic mass of flat shape connected to the base by a flexure hinged connection for pivotal movement of said seismic mass about a hinge axis perpendicular to major surfaces of said pendular seismic mass, along a sense direction perpendicular to the hinge axis of the hinged connection and sensor means connecting the seismic mass to the base, wherein said sensor means comprises:

at least two vibrating beams of piezo-electric material, each connected to the base at an end thereof and to the seismic mass at the other end thereof, and each provided with electrode means for vibrating the respective beam at a tuning frequency thereof, said beams being directed orthogonally to the same axis and being located symmetrically with respect to the seismic mass on both sides of the hinge axis of the hinged connection, whereby any acceleration along the sense axis creates tractive stresses in one beam and compression stresses in the other beam, and

circuit means connected to the electrodes and arranged for delivering a signal which is responsive to the difference between the resonant frequencies of the two beams when said seismic mass is subjected to an acceleration.

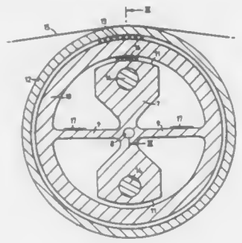
4,939,936

SHAPEMETER

Peter D. Spooner, Northwood, and Colin A. Scottow, High Wycombe, both of Great Britain, assignors to Protos Precision Systems Limited, Watford, United Kingdom

PCT No. PCT/GB87/00206, § 371 Date Oct. 21, 1988, § 102(e) Date Oct. 21, 1988, PCT Pub. No. WO87/05837, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 25, 1987, Ser. No. 250,682
Claims priority, application United Kingdom, Mar. 27, 1986, 8607729
Int. Cl.[5] G01L *5/10*; G01B *7/28*
U.S. Cl. 73—862.07 **4 Claims**

1. A rotor module for a shapemeter comprising a central arbor secured to a non-rotatable ring surrounding the arbor and an outer hollow cylinder rotatable on bearings on the ring in which the arbor is secured to the ring solely by two webs which are in substantial alignment and means to detect relative movement between the arbor and the ring in response to a force applied to the cylinder at such a position as to cause the webs to bend in order to provide output signals representative of such movement and in which said means detects a variation



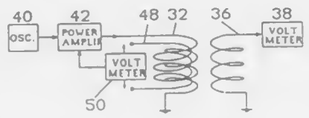
in a gap between the ring and the arbor at a location adjacent said position.

4,939,937

MAGNETOSTRICTIVE TORQUE SENSOR

Robert D. Klauber, and Erik B. Vigmostad, both of Fairfield, Iowa, assignors to SensorTech, L. P., Fairfield, Iowa

Filed Jul. 21, 1988, Ser. No. 222,838
Int. Cl.[5] G01L *3/10*
U.S. Cl. 73—862.36 **21 Claims**



1. A method for sensing torque comprising:

inducing a primary magnetic induction field flux in a torque transmitting element,

obtaining a signal which depends on a secondary magnetic induction field flux in said torque transmitting element whose secondary magnetic field direction arises at a non-zero angle from the primary magnetic field as a result of magnetostriction when torque is transmitted by the torque transmitting element, and

maintaining the primary magnetic induction field flux at effectively constant amplitude,

whereby the secondary magnetic induction field flux is affected minimally by non-torque induced variations in magnetic permeability in the torque transmitting element and the signal which depends on the secondary magnetic induction field flux is thereby used to determine the torque transmitted.

4,939,938

LOAD TRANSMITTING DEVICE FOR ELECTROMECHANICAL MEASUREMENT TRANSDUCERS

Arne Söderholm, Bromma, Sweden, assignor to S.E.G. Resistor AB, Vallingby, Sweden

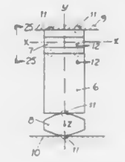
Filed Jan. 31, 1989, Ser. No. 304,260
Claims priority, application Sweden, Feb. 2, 1988, 8800313-2
Int. Cl.[5] G01L *1/26*
U.S. Cl. 73—862.38 **18 Claims**

1. An apparatus for measurement of forces, comprising:

measuring means for measuring a load, having two substantially parallel end planes;

first and second transmitting unit for transmitting forces corresponding to said load into said measuring means; said first transmitting unit contacting one said end plane of said measuring means and said second transmitting unit contacting the other end plane of said measuring means;

each said first and second transmitting unit having a longitudinal axis parallel to said end planes and perpendicular to each other;



each said first and second transmitting unit also including two curved surface portions one on either side of a plane parallel to said end planes;

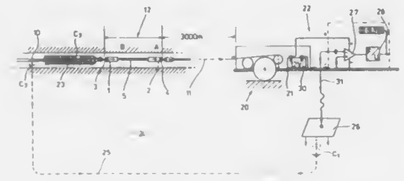
all points on each said curved surface portion being the same distance R away from an axis parallel to the longitudinal axis of a corresponding transmitting unit; said distance R being greater than half the height of each transmitting unit in a direction perpendicular to its longitudinal axis.

4,939,939

APPARATUS FOR MEASURING A TRACTION FORCE BY MEANS OF A TRACTION DYNAMOMETER

Helmut Vemmer, Wuppertal, Fed. Rep. of Germany, assignor to Peter Lancier Maschinenbau-Hafenhuette GmbH & Co.,KG, Muenster-Wolbeck, Fed. Rep. of Germany

PCT No. PCT/EP88/00208, § 371 Date Nov. 8, 1988, § 102(e) Date Nov. 8, 1988, PCT Pub. No. WO88/07184, PCT Pub. Date Sep. 22, 1988
PCT Filed Mar. 16, 1988, Ser. No. 283,485
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708748
Int. Cl.[5] G01L *5/10*
U.S. Cl. 73—862.44 **14 Claims**



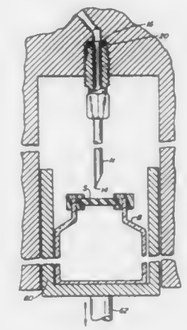
1. Apparatus for measuring a traction force which is measured during a cable-laying comprising: a traction dynamometer disposed between a cable and a conductive traction rope, the dynamometer including a force measuring sensor and a measuring circuit which amplifies the signals received from the force measuring sensor and converts them to frequency-modulated, traction-force-proportional measurement signals, a measurement receiver, the measurement signals being fed to the measurement receiver, the traction rope incorporating a first conductor to the measurement receiver and the ground incorporating a second conductor, the output of the measurement circuit, which is connected to the conductor carried through the ground, transferring the measurement signals through the ground to the measurement receiver with a capacitive coupling galvanically separated from the ground.

4,939,940

POST-ACCIDENT SAMPLE STATION NEEDLE SEAL

Robert S. Tsukida, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 17, 1989, Ser. No. 296,993
Int. Cl.[5] G01N *1/20*
U.S. Cl. 73—864.74 **3 Claims**



1. A needle assembly for sealing to a bore, the bore including a bottom surface; a passageway penetrating centrally of the bottom surface: a smooth cylindrical bottom extending from the bottom surface part way to and towards the opening of the bore; and female threads for receiving a needle retaining nut at complementary male threads, the improved needle assembly comprising;

a needle having a point at one end and an outward flare at the opposite end;

a resilient O-ring threaded over the end of said needle and captured at the flare of said needle at the end of said needle opposite said point;

a needle nut having a compression portion, a male threaded portion for mating to the female threads of said bore, and a socket portion for enabling securing of said needle interior of said bore;

said O-ring dimensioned with respect to said flare to fit interiorly of said bore without interference of the side walls thereof;

said O-ring having sufficient resiliency to expand in circumferential diameter beyond the edges of said flare for effecting a first seal between said flared needle end and said O-ring and effecting a second seal between said bore and said O-ring;

said O-ring effecting a self-centered seal for maintaining said seal under repeated, columnar impacts of said needle a respective septums for the deposit of radioactive sample in respective bottles without leaks.

4,939,941

COMBINED DISTANCE AND DIAMETER MEASURING APPARATUS FOR WHEEL BALANCING MACHINE

Robert Cellucci, Danville; Duncan R. MacKay, Sunnyvale, and Allan C. Madden, Woodside, all of Calif., assignors to Coats Wheel Balancer Corp., Milpitas, Calif.

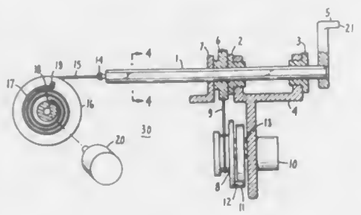
Filed Sep. 9, 1988, Ser. No. 243,075
Int. Cl.[5] G01B *5/08, 5/14, 7/00*; G01D *21/02*
U.S. Cl. 73—865.8 **5 Claims**

1. An apparatus for measuring both the diameter of an object having a plane with a substantially circular shape in said plane and the distance of the object from said plane to a reference plane comprising:

a major arm having an axis and two ends, with a non-circular shape along a cross-section of said axis;

a first stationary support bearing and a second stationary

support bearing for support said major arm along its axis such that said arm is axially slidable and rotatable;
a minor arm attached to a first end of said major arm for rotating said major arm;
a first pulley, adjacent to one of said support bearings, with a central hole, having substantially the same cross-sectional shape as the cross-sectional shape of said major arm, such that said major arm can slide through said first pulley without moving said first pulley, and rotate said first pulley as said major arm rotates;
a first rotational transducer for converting rotational movement into a first electrical signal;



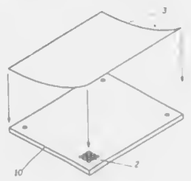
first means for connecting said first pulley to said first rotational transducer;
means for biasing said first rotational transducer to urge it to a resting position;
a second rotational transducer for converting rotational movement into a second electrical signal;
means for translating the axial movement of said major arm into a rotational movement; and
second means for connecting said translating means to said second rotational transducer.

4,939,942

METHOD FOR MEASURING THE ACCURACY OF INSERTION EQUIPMENT

John R. Thome, Fort Worth, and Sypyng B. Yu, Hurst, both of Tex., assignors to Motorola, Inc.

Filed Aug. 3, 1989, Ser. No. 389,237
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—865.9 **9 Claims**



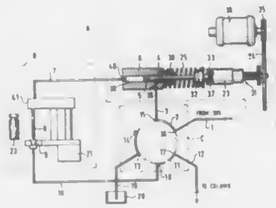
1. A method to characterize parametrically the accuracy of component insertion equipment, comprising the steps of:
(a) providing a test board with a plurality of cavities that are covered by a film and arranged in a known pattern to coincide with the components to be inserted;
(b) inserting the component leads through the film and into the cavities on the test board according to a desired pattern;
(c) removing the component leads from the test board;
(d) measuring the location of the resulting holes in the film caused by the insertion of the component leads; and
(e) comparing said measured locations to said desired pattern.

4,939,943

SAMPLE INJECTOR FOR A LIQUID CHROMATOGRAPH

Fred Strohmeier, Rheinmuenster, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 2, 1989, Ser. No. 305,888
Claims priority, application European Pat. Off., Feb. 11, 1988, 88102007
Int. Cl.[5] B01L *3/02*
U.S. Cl. 73—864.21 **12 Claims**



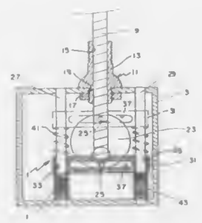
1. A sample injector for a liquid chromatograph comprising:
metering means having a bore, a piston, an inlet/outlet port, and a solvent inlet port;
an inlet/outlet conduit in liquid communication with said bore through said inlet/outlet port;
sample intake means adapted for admitting liquid sample into said inlet/outlet conduit so that at least partially withdrawing said piston can cause said liquid sample to move along said inlet outlet conduit toward said bore;
a discharge conduit for transferring said liquid sample to a chromatographic column, said discharge conduit being connectable to said inlet/outlet conduit; and
solvent introduction means for introducing solvent into said bore through said solvent inlet port while said discharge conduit is connected to said inlet/outlet conduit so that said liquid sample can be transported by solvent through said inlet/outlet conduit, through said discharge conduit, and, thence, onto said chromatographic column;
whereby said liquid sample can be drawn towards said metering means by at least partial withdrawal of said piston, and said liquid sample can be transported to said column by action of solvent while said piston is at least partially withdrawn, and whereby said metering means is flushed by solvent while said liquid sample is transported.

4,939,944

TRANSMISSION MECHANISM FOR MUSIC BOX ORNAMENT

Jack Hou, P.O. Box 78-95, Taipei, Taiwan

Filed Jun. 9, 1988, Ser. No. 204,507
Int. Cl.[5] A63J *31/00*
U.S. Cl. 74—49 **7 Claims**



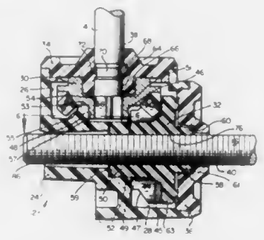
1. A mechanism for transmitting the power output of a power drive source to an ornament for imparting a desired movement thereto, which mechanism comprises:
(a) a drive wheel for rotation by a power output shaft of a power drive source, the drive wheel including an eccentrically disposed drive stub secured thereto;
(b) a pair of stationary parallel guide rods;
(c) a slide link provided with a longitudinal slot engageable by the drive stub and a pair of spaced holes therethrough at opposite ends of the link, each hole being configured and sized for slidably receiving a guide rod therethrough to support and guide the link during reciprocating movement along the guide rods;
(d) a tappet rod for supporting an ornament at one end thereof, with the other end of the tappet rod being rotatably secured to the drive stub; and
(e) whereby when the drive wheel is rotated, the slide link is caused to reciprocate along the guide rods and the drive stubs imparts simulataneous reciprocating and pivoting movements to the tappet rod.

4,939,945

GEARBOX DRIVE SYSTEM WITH PLASTIC OUTPUT GEAR

Francis E. Ryder, and Stephen P. Lisak, both of Arab, Ala., assignors to Ryder International Corp., Arab, Ala. and Textron Inc., Providence, R.I., a part interest

Filed Apr. 13, 1989, Ser. No. 337,298
Int. Cl.[5] B60Q *1/06*; F16H *25/24, 1/14*
U.S. Cl. 74—89.13 **23 Claims**



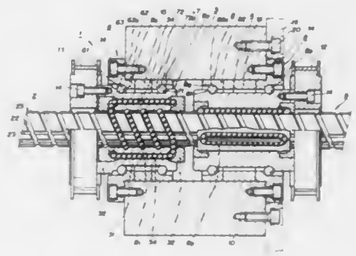
1. An adjustment mechanism for a headlamp or the like, said adjustment mechanism having a pair of bevel gears with intermeshing teeth for transforming rotational force exerted on a drive member operatively attached to a drive gear of said pair of bevel gears to rotate an adjustment gear of said pair of bevel gears which generally linearly moves a threaded adjustment member operatively coupled with said adjustment gear, said adjustment mechanism comprising; a housing member having formed therein a first gear receiving chamber and a second gear receiving chambers, said first and said second gear receiving chambers generally intersecting within said housing member, said drive gear being positioned in said first gear receiving chamber and cooperatively engaging said adjustment gear which is positioned in said second gear receiving chamber, wherein one of said pair of bevel gears is a plastic gear and the other of said pair of bevel gears is metal said plastic gear having teeth thereon that are integrally formed having a circumferential width that is significantly greater than the circumferential width of the teeth on said metal bevel gear member, such that said integrally formed teeth on the plastic gear can withstand the load and deflection forces imposed thereon by the metal gear teeth.

4,939,946

COMPOSITE MOTION GUIDE DEVICE

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Apr. 22, 1988, Ser. No. 185,168
Claims priority, application Japan, Mar. 5, 1988, 63-52460
Int. Cl.[5] F16H *25/22*
U.S. Cl. 74—89.15 **9 Claims**



1. A composite motion guide device comprising:
a single shaft means provided with helical ball screw grooves formed in an outer peripheral surface thereof and ball spline grooves formed in the outer peripheral surface thereof so as to extend in an axial direction of the shaft across the ball screw grooves, the respective ball screw grooves and ball spline grooves having groove depths equal to each other;
a ball screw nut mounted on said shaft means and provided with ball rolling grooves being engageable with said ball screw grooves through loaded balls;
a hollow ball spline outer cylinder mounted on said shaft means and provided with ball rolling grooves being engageable with said ball spline grooves through loaded balls;
a retainer means disposed in a bore of said spline outer cylinder, said retainer means being of a thin walled cylindrical form and having slits disposed facing the ball rolling grooves, the slits having opposed curved surfaces for receiving and guiding loaded balls in the longitudinal direction of the shaft, the opposed surfaces being defined by a diameter substantially equal to a diameter of the loaded balls;
a number of balls rolling in said ball screw grooves and ball spline grooves;
means for independently driving said nut and said spline outer cylinder from each other;
means for pre-loading the balls interposed between said nut and said shaft means in an axial direction thereof;
means for pre-loading balls incorporated in said support bearing in support of said nut; and
means for pre-loading balls interposed between said spline outer cylinder and said shaft means in a substantially rotating direction thereof.

4,939,947

RACK AND PINION TYPE STEERING APPARATUS

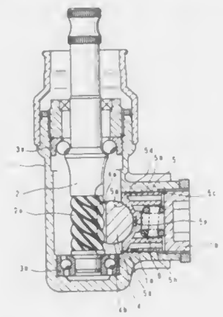
Hiromitsu Toyoshima; Hirokazu Yoneda; Hiroshi Ueno, and Shoji Hatabu, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed May 15, 1989, Ser. No. 351,907
Claims priority, application Japan, May 17, 1988, 63-64816[U]
Int. Cl.[5] B62D *3/12*
U.S. Cl. 74—422 **6 Claims**

1. A rack and pinion type steering apparatus comprising:

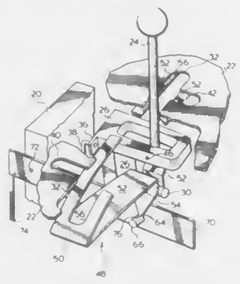
VOL 1116 ISS 2 JL 10 1990 UMI

a rack shaft with a circumferential surface which is engaged with a pinion shaft;
a housing which houses said rack shaft, wherein a bore is formed at a first side with no rack of said rack shaft in the direction perpendicular to said rack shaft; and
a cylindrical rack guide made of synthetic resin, which has taper-form ribs, is loosely fitted into said bore, has a first



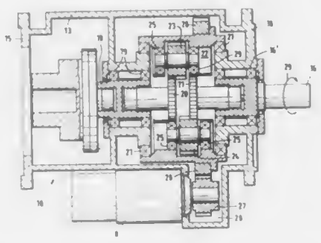
end surface in an axial direction formed to be a recess being contacted by the circumferential surface of said rack shaft, and is biased in order to press said rack shaft against the pinion shaft,
said taper-form ribs extending from a topmost portion of both outer sides of said first end surface of said rack guide toward a second end surface in the axial direction of said rack guide.

4,939,948
ON THE GO GEAR SHIFTER
Kenneth W. Stittle, Brampton, Canada, assignor to Noma Outdoor Products Inc., Brampton, Canada
Filed Sep. 5, 1989, Ser. No. 402,287
Int. Cl.[5] B60K *41/22*
U.S. Cl. 74—473 R **8 Claims**



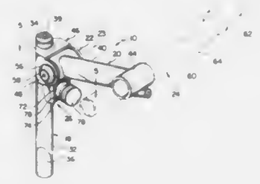
1. In an apparatus including:
a prime mover;
a drive train including a friction gear and a member driven thereby;
a gear shift handle;
means mounting said gear shift handle for movement along a path for varying the ratio of said friction gear;
a plurality of detent openings locating along said path, said mounting means permitting the engagement of said gear shift handle into selected detent openings for retaining selected gear ratios;
a clutch link movable between first and second positions respectively to couple and uncouple said driven member from said drive train;
the improvement wherein ones of said detent openings locate on transversely opposed sides of said path, and wherein over-centre toggle means is provided operatively interconnecting said clutch link and said gear shift handle so as to move said clutch link to said second position as said gear shift handle is moved out of engagement with a detent opening under the influence of a manually applied force, and to bias said gear shift handle into said detent openings upon release of said manually applied force, while simultaneously permitting the return of said clutch link to said first position.

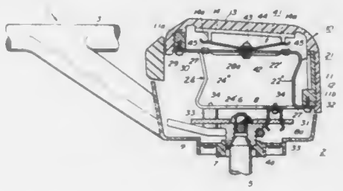
4,939,949
PLANETARY OVERRIDING GEARING AND OVERRIDING DRIVING FOR CHAIN BELTS AND THE LIKE, PARTICULARLY FOR CHAIN CONVEYORS AND CHAINDRAWN MINING MACHINES
Werner Langenberg, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia GmbH, Fed. Rep. of Germany
Filed Feb. 2, 1989, Ser. No. 305,786
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804168
Int. Cl.[5] F16H *37/06*
U.S. Cl. 475—2 **12 Claims**



1. In a drive system for propelling an endless traction member of a mineral mining installation having main and auxiliary drives each composed of an electric asynchronous drive motor and a gearing unit; the improvement comprising a planetary gearing unit interposed between at least one of the motors and an associated gearing unit, a further control motor operably associated with the planetary gear unit, the planetary gearing unit comprising an input shaft with a first sun wheel, an output shaft with a second sun wheel, sets of planet wheels meshing with the respective first and second sun wheels with planet wheels of one set also meshing with planet wheels of the other set, a common carrier for the sets of planet wheels, means drivably coupling the carrier to the control motor and means for sensing a load parameter derived from loading of at least one of the drive motors and indicative of imbalance between the drives and for operating the control motor to rotate the carrier; whereby the sensing means and the control motor co-operate to regulate the planetary gearing drive ratio from a value of 1:1 when the control motor is inoperative to cause the planetary gearing to override the drive ratio of said associated gearing to compensate for the sensed load parameter.

4,939,950
HANDLEBAR ASSEMBLY FOR CYCLES
Robert H. Girvin, Holliston, Mass., assignor to K G Engineering, Inc., Woonsocket, R.I.
Filed Oct. 24, 1988, Ser. No. 261,556
Int. Cl.[5] B62K *21/14*
U.S. Cl. 74—551.2 **24 Claims**



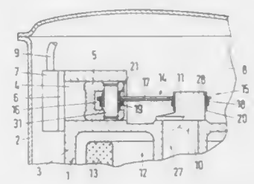


1. A handlebar assembly for use in connection with a cycle having a steering column axis, said handle bar assembly comprising:
a. a column member adapted to be rotatably mounted on said cycle so that said column member is disposed in substantially coaxial relation with said steering column axis;
b. a pivot arm;
c. means for mounting said pivot arm on said column member so that said pivot arm extends forwardly therefrom, and so that said pivot arm is downwardly pivotable about a pivot axis which is substantially perpendicular to said steering column axis;
d. a handlebar element mounted on said pivot arm at a location which is spaced forwardly from said pivot axis, said handlebar element including a pair of hand gripping portions which are adapted to be grasped by the hands of an operator of said cycle, said hand gripping portions being spaced forwardly from both said pivot axis and said steering column axis; and
e. means for resiliently resisting pivoting movement of said pivot arm comprising a downwardly extending compression arm on said pivot arm and inner compressible spring means interposed between said compression arm and said column member, said inner compressible spring means resiliently resisting movement of said compression arm toward said column member to resiliently resist downward pivoting movement of said pivot arm.

4,939,951
IMPACT ABSORBING STRUCTURE FOR USE IN STEERING WHEELS AND THE LIKE
Kazuhiro Kaneko, Shizuoka, Japan, assignor to Nihon Plast Co., Ltd., Fuji, Japan
Filed Jul. 12, 1988, Ser. No. 218,318
Claims priority, application Japan, Jul. 14, 1987, 62-107795
Int. Cl.[5] B62D *1/04*
U.S. Cl. 74—552 **8 Claims**

1. An energy absorbing support structure comprising:
a first laterally extending end member;
a first essentially L-shaped member, said first essentially L-shaped member having first and second leg portions, said first leg portion being straight and one-piece formed with said first laterally extending end member, said second leg portion being sent to facilitate buckling thereof upon the application of a predetermined force;
a second laterally extending end member;
a second essentially L-shaped member, said second essentially L-shaped member having first and second leg portions, said first leg portion of said second essentially L-shaped member being straight and one-piece formed with said second laterally extending end member, said second leg portion of said second essentially L-shaped member being bent to facilitate buckling thereof upon the application of a predetermined force, said second essentially L-shaped member being arranged mutually inverted with respect to the first essentially L-shaped member;
said first essentially L-shaped member being connected at a first end to said first laterally extending member and arranged so that a second end thereof is connected to said second laterally extending member, said second essentially L-shaped member being connected at a first end to said second laterally extending member and connected at a second end to said first laterally extending member, said first essentially L-shaped member and said second essentially L-shaped member being arranged so that said second leg portion of said first essentially L-shaped member is directly connected to said second laterally extending end member; and
said second leg portion of said second essentially L-shaped member is directly connected to said first laterally extending end member.

4,939,952
CONNECTING ROD FOR AN AXIAL PISTON COMPRESSOR
Bendt W. Romer, and Kurt G. Jorgensen, both of Sonderborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Jan. 9, 1989, Ser. No. 294,360
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1988, 3801802
Int. Cl.[5] F16C *7/08*
U.S. Cl. 74—579 E **8 Claims**



2. A connecting rod for an axial piston compressor, particularly a small hermetically sealed encapsulated refrigerator, comprising a sheet metal member having a longitudinal intermediate portion, a deep drawn cylinder mounting first end portion joined to the intermediate portion and a deep drawn cylinder second end portion joined to the intermediate portion opposite the first end portion and longitudinally offset from the first end portion, a first bushing extending within the first end portion and a second bushing extending within the second end portion, each bushing being made of a bearing material and extending axially in abutting relationship with the respective cylinder mounting end portion, the intermediate portion having a longitudinally extending strengthening bead and the first end portion having a first depression opening to the first bushing and to the bead.

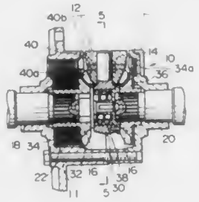
VOL 1116 ISS 2 JL 10 1990 UMI

4,939,953

LIMITED SLIP DIFFERENTIAL

Yasuyoshi Yasui, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 8, 1988, Ser. No. 281,328
Claims priority, application Japan, Dec. 8, 1987, 62-186844
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—233 4 Claims



1. A limited slip differential comprising:
a differential case;
a plurality of pinions comprising straight bevel gears and disposed in the differential case, each pinion having a plurality of teeth, each of which includes a first surface and a second surface;
a pair of side gears comprising straight bevel gears meshing with the pinions and disposed in the differential case, each side gear having a plurality of teeth, each of which includes a third surface and a fourth surface; and
frictional force generating means which limits a differential motion produced between shafts coupled respectively with the side gears, the generating means including a plurality of frictional plates,
wherein a pressure angle of the first surface of each pinion tooth is formed larger than a pressure angle of the second surface thereof,
pressure angles of the third and fourth surfaces of each side gear tooth being respectively formed equal to the pressure angles of said first and second surfaces of each pinion tooth,
said pair of side gears being arranged at first and second sides of said pinions such that the first surface of each pinion tooth is contacted with third surfaces of the side gear teeth of the side gear at said first side while the second surface of each pinion tooth is contacted with fourth surfaces of the side gear teeth of the side gear at said second side when said pinions and side gears are rotated in one direction by said differential case, and
said frictional force generating means being arranged such that the number of the frictional plates disposed respectively in a first position between the side gear at said first side and the differential case is different from the number of the frictional plates disposed respectively in a second position between the side gear at said second side and the differential case.

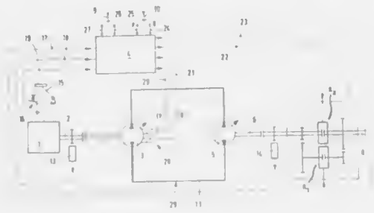
4,939,954

DRIVE SYSTEM FOR MACHINES AND VEHICLES, WITH A HYDRAULIC AND MECHANICAL TRANSMISSION ARRANGED THEREAFTER

Winfried Walzer, Elchingen, and Thomas Sommer, Ulm-Jungingen, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Feb. 15, 1989, Ser. No. 311,533
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 3807599
Int. Cl.[5] F16H *47/06*
U.S. Cl. 74—733.1 13 Claims

1. Drive system for machines and vehicles, in particular a traveling drive system for construction vehicles including wheel loaders, excavators and track-laying vehicles, comprising;
a driving motor;
a control member for variably continuously controlling the speed of said driving motor;
a hydraulic converter responsive to a control device, said control device controlling said hydraulic converter according to the speed of the driving motor and on the traveling pressure of the driving motor;
a transmission, in particular a change-under-load transmission, arranged after the hydraulic converter; and



means for shifting the transmission, said means having an electronic control circuit and an operating element for shifting said transmission;
wherein a shifting operation of said transmission from a higher to a lower gear occurs when the output speed of the hydraulic converter before shifting is below a certain predetermined value, and the transmission ratio of the converter before shifting is at a certain predetermined minimum value related to the working pressure of the motor.

4,939,955

PLANETARY GEARING FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 28, 1988, Ser. No. 225,189
Claims priority, application Japan, Jul. 28, 1987, 62-186752
Int. Cl.[5] F16H *57/10*
U.S. Cl. 475—278 9 Claims



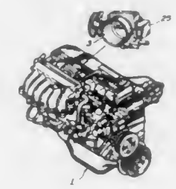
1. A planetary gearing for an automatic transmission, comprising:
a main planetary gearing which has n forward speed states, where n is an integer not less than four, said main planetary gearing including an input shaft and a single output member; and
an auxiliary planetary gearing including an output shaft and a single input member rotatable with said output member of said main planetary gearing, said auxiliary planetary gearing being shiftable between a reduction drive state where a predetermined reduction ratio is established between said input member and said output shaft and a direct drive state where said auxiliary planetary gearing is locked to rotate as a unit to establish the direct drive between said input member and said output shaft;
wherein, when said main planetary gearing is in any forward speed state among said n forward speed states, said auxiliary planetary gearing is conditioned in said reduction drive state, while said auxiliary planetary gearing shifts from said reduction drive state thereof to said direct drive state thereof after said main planetary gearing has shifted up to said predetermined forward speed state;
wherein said main planetary gearing is shiftable up to an n−1 forward speed state with said auxiliary planetary gearing kept in said reduction drive state thereof, said auxiliary planetary gearing shifts from said reduction drive state thereof to said direct drive state thereof when said main planetary gearing is in said direct drive state thereof when said main planetary gearing shifts up to an n forward speed state thereof.

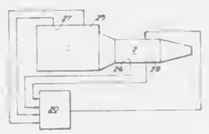
4,939,956

SYSTEM FOR CONTROLLING SERVO ACTIVATING HYDRAULIC PRESSURE OCCURRING IN VEHICULAR POWER TRAIN

Satoshi Takizawa, Yokosuka City, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed Aug. 9, 1988, Ser. No. 230,383
Claims priority, application Japan, Aug. 10, 1987, 62-121408[U]; Dec. 26, 1987, 62-197729[U]
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—858 7 Claims





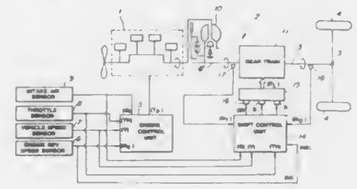
1. A system for a vehicular power train including an internal combustion engine with a throttle and an automatic transmission, the internal combustion engine producing an engine output torque variable in a first predetermined pattern against variation of a first predetermined variable, the internal combustion engine changing the pattern of variation of the engine output torque from the first predetermined pattern to a second predetermined pattern in response to a second predetermined variable, the system comprising:
means for detecting the first predetermined variable and generating a first predetermined variable indicative signal indicative of the first predetermined variable detected;
means for detecting the second predetermined variable and generating a second predetermined variable indicative signal indicative of the second predetermined variable detected;
a source of servo activating hydraulic fluid pressure;
a control unit connected to said first predetermined variable detecting means and said second predetermined variable detecting means for receiving said first predetermined variable indicative signal and said second predetermined variable indicative signal;
said control unit includig;
means for determining a first target value in response to said first predetermined variable indicative signal,
means for determining a correction value in respone to said second predetermined value indicative signal, and
means or combining said first target value with said correction value to determine a final target value and generating a control signal indicative of said final target value; and
means for controlling said servo activating hydraulic fluid pressure acting in a shiftinng friction unit in response to said control signal.

4,939,957

LINE PRESSURE CONTROL ARRANGEMENT FOR AUTOMATIC TRANSMISSION

Hiroshi Asano, Zama, and Shigeru Ishii, Atsugi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 5, 1989, Ser. No. 347,636
Claims priority, application Japan, May 6, 1988, 63-109101
Int. Cl.[5] B60K *41/18*
U.S. Cl. 74—866 4 Claims



1. In a vehicle;
an engine, said engine having a throttle valve;
a throttle position sensor for sensing the position of said throttle valve and outputting a signal indicative thereof;
an engine speed sensor, said engine speed sensor being arranged to output a signal indicative of the rotational speed of said engine;
an air flow sensor, said air flow sensor being arranged to output a signal indicative of the amount of air being inducted into said engine;
a transmission, said transmission having a line pressure control arrangement comprising circuit means for:
determining the amount of torque being applied to said transmission based on the outputs of said air flow sensor and said engine speed sensor;
determining the level of line pressure appropriate for the instant amount of torque being applied;
comparing the instant throttle opening degree with a predetermined value; and
increasing the level of line pressure for the amount of torque being applied to said transmission in the event that the instant throttle valve opening degree is greater than said predetermined value.

4,939,958

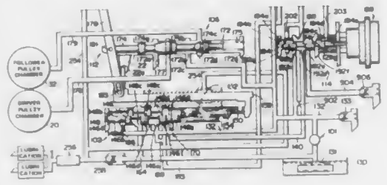
FAIL-SAFE HYDRAULIC CONTROL FOR A FORWARD CLUTCH IN A CONTINUOUSLY VARIABLE TRANSMISSION

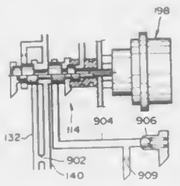
Koichi Hayasaki, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 28, 1988, Ser. No. 291,262
Claims priority, application Japan, Dec. 28, 1987, 62-329669
Int. Cl.[5] B60K *41/12*
U.S. Cl. 74—867 5 Claims

1. In a hydraulic pressure control system for a transmission having a frictional device which is hydraulically activated in response to a hydraulic fluid pressure build-up therein:
a source of regulated hydraulic fluid pressure;
a pressure reduction valve assembly having a first hydraulic

fluid line connectable to the frictional device, a second hydraulic fluid line connected to said source of regulated hydraulid fluid pressure, and a third hydraulic fluid line, said pressure reduction valve assembly including regulating means for regulating fluid supply to said first hydraulic fluid line from said second hydraulic fluid line and fluid discharge from said first hydraulic fluid line to said third hydraulic fluid line thereby controlling a hydraulic fluid pressure build-up in said first hydraulic fluid line;





wherein said regulating means comprises an orifice connecting said first hydraulic fluid line to said second hydraulic fluid line;

means for restraining discharge of hydraulic fluid from said third hydraulic fluid line to keep hydraulic fluid pressure in said third hydraulic fluid line above a predetermined value.

4,939,959

FASTENER HOLDING TOOL

Stephen Rokita, P.O. Box 100, Sussex, N.J. 07461

Filed Oct. 10, 1989, Ser. No. 419,318

Int. Cl.[5] B25B *23/10*

U.S. Cl. 81—44 **15 Claims**



1. A fastener holding tool for removing an installed fastener from a surrounding medium to which the fastener is insufficiently attached to allow normal removal, said tool comprising, in combination:

an elongated tool body having one end portion thereof forming a tool handle;

a pair of spaced jaws attached at the other end of said elongated tool body, said jaws being substantially flat and lying within a plant substantially normal to the longitudinal axis of the tool handle;

a throat portion extending between said jaws for receiving the head of said fastener to be removed and for holding during removal said fastener;

channel means for inserting a removal tool through the handle, said channel means substantially coaxial with said longitudinal axis of said elongated tool body; and,

a heel portion formed by the juncture of the jaws and the tool body and including one or more reinforcement indentations therein, said heel portion, upon the jaws receiving the fastener to be removed, dimensioned to pivot and to cause the fastener to grasp said surrounding medium;

whereby, the fastener holding tool holds the fastener to be removed with a force exerted parallel to the shaft of the fastener, and facilitates removal thereof.

4,939,960

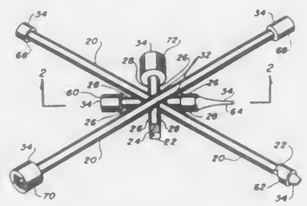
ELECTRICAL ENCLOSURE WRENCH

Lee A. Kinzli, P.O. Box 8714, Newport Beach, Calif. 92658

Filed Aug. 4, 1989, Ser. No. 389,791

Int. Cl.[5] B25B *13/06*

U.S. Cl. 81—124.4 **9 Claims**



1. An electrical enclosure wrench for lid and door fastener attachments comprising:

(a) a pair of crossbar shanks, centrally positioned at right angles to each other forming a cross, having a square tip on each end with an exposed spring loaded ball detent on the tip;

(b) a plurality of socket retaining parking stands having a first and second end, each stand contiguously spaced at the intersection of said shanks, further having a square tip on the first end with a spring loaded ball detent therein;

(c) center joining means rigidly attached to said crossbar shanks at their center and to the second end of said parking stands, said shanks providing an opposed handle for turning and a straight handle for gripping with a remaining end interfacing with a lid or door fastener; and

(d) each square tip having a different tool head socket affixed thereon, held in place by the ball detents, allowing different fasteners on an electrical enclosure lid or door to be rotated in either direction by turning and gripping the crossbar shanks, further the square ends of the shanks and stands allow said sockets to be changed and stored as required to fit a particular application.

4,939,961

REVERSIBLE WRENCH

Clark J. Lee, 429-6 Chung Cheng Rd., Fu Liao Li, Tsao Tun Town, Nantou Hsien, Taiwan

Continuation-in-part of Ser. No. 184,104, Apr. 20, 1988, abandoned. This application Mar. 30, 1989, Ser. No. 330,802

Int. Cl.[5] B25B *13/46*

U.S. Cl. 81—60 **7 Claims**

1. A reversible wrench comprising:

(a) A wrench body including a head and a handle extending therefrom, the head defining a driver housing having an opening perpendicular to the handle at one side;

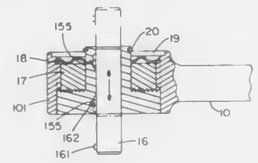
(b) a first gear face disc having an extended middle portion defining a non-circular hole therethrough and including one side defined by a set of profile teeth and an opposite smooth side, the first disc being rotatably received in the housing;

(c) a second gear face disc having a hole through its central portion and a set of profile teeth on one side thereof, the second disc being disposed within the housing in concentric alignment with the first gear face disc, the sets of profile teeth of both disc adapted to be disposed in meshed engagement with each other;

(d) a spring means having a hole through its central portion and disposed with the housing for biasing the first and second discs in meshed engagement with each other;

(e) a cover plate having a hole through its central portion covering the opening of the housing and enclosing the spring means therein;

(f) a driving stud having a non-circular cross-section corresponding to that of the hole through the first disc, the stud being slidably mounted through the holes of the first and



second discs, and the hole of the spring means, the stud having two ends for selective projection through either side of the driver head;

(g) means to non-rotatably connect the second gear face disc to the wrench body head comprising interengaging axial spline teeth formed on the second gear face disc and the wrench body head;

(h) attaching means to attach the cover plate to the extended middle portion of the first gear face disc;

(i) a pair of recesses defined by the extended middle portion, each of the recesses having a generally triangular cross-sectional configuration including an inclined wall and an end wall; and,

(j) a retaining element generally centrally loacted on the driving stud and biased outwardly into contact with the extended middle portion and located so as to enter one of the recesses to limit the sliding of the driving stud relative to the extended middle portion.

4,939,962

METHOD AND APPARATUS FOR INFLUENCING THE MOTION OF A MOVABLE MEMBER

Helmut Wittkopp, Erkelenz; Gerhardt Kluge, Ubach-Palenberg, and Hartwig Klosterhalfen, Dueren all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Continuation of Ser. No. 137,175, Dec. 23, 1987, abandoned. This application May 9, 1989, Ser. No. 349,924

Claims priority, application European Pat. Off., Dec. 24, 1986, 86118060

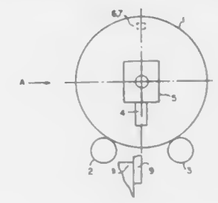
Int. Cl.[5] B23B *3/00*

U.S. Cl. 82—1.11 **8 Claims**

1. A method for controlling the motion of a movable tool (9), in response to varying time durations for the completion of one revolution of a rotatable work piece (1), comprising the following steps:

(a) contacting a circumferential surface of said rotatable work piece (1) with friction drive roller means (2, 3) and friction driving said rotatable work piece (1) by said friction drive roller means (2, 3), wherein the r.p.m. of said work piece changes during a machining operation on a circumferential surface of said work piece by said tool due to slipping between said friction drive roller means and said rotatable work piece, due to changes in the diameter of said friction drive roller means (2, 3), and due to changes in the diameter of said work piece when said machining operation proceeds,

(b) measuring directly at the work piece the time duration required by said rotatable friction driven work piece for completing one revolution, and repeating said time duration measurements during at least part of said machining operation for obtaining signals representing different time durations in accordance with said r.p.m. changes,



(c) converting said measured time duration signals into motion control signals, and

(d) using said motion control signals for controlling the motion of said movable tool during said machining operation, whereby the motion of said movable tool is responsive to said different time durations.

4,939,963

FIXTURE FOR PRECISION TURNING OF A LATERAL SURFACE

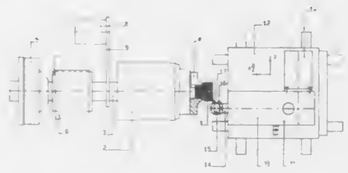
Hans-Jürgen Leiber, Tramelan, Switzerland, assignor to Kummer Freres Sa Fabrique De Machines, Tramelan, Switzerland

Continuation of Ser. No. 176,277, Mar. 31, 1988, abandoned. This application Sep. 7, 1989, Ser. No. 403,968

Claims priority, application Switzerland, Apr. 16, 1987, 1502/87

Int. Cl.[5] B23B *5/00*

U.S. Cl. 82—19 **9 Claims**



1. A device for high precision machining of circular surfaces on a workpiece rotatively driven in a lathe, comprising

a spindle having an axis and means for holding said workpiece secured to said spindle and for driving it in rotation about said axis;

a cross-slide mounted at a front end of said spindle; and

a tool fixture on said cross-slide, said tool fixture comprising:

a slide having a forward end and a rear end, and guiding means for guiding said slide in a direction parallel to said axis,

a tool carrier secured to said forward end,

a secondary shaft borne by said tool fixture and extending perpendicularly to said axis at said rear end, and

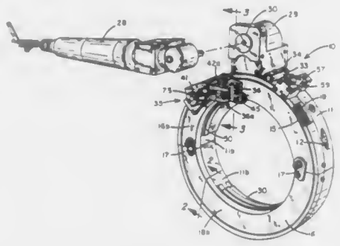
a radial cam secured to said secondary shaft, and a reciprocating means for providing a reciprocating movement of said slide in said fixture in response to a rotating movement of said cam,

wherein electrical coupling means are provided for coupling rotation of said secondary shaft and said spindle

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when the tool carrier is positioned in a machining position with respect to the workpiece.

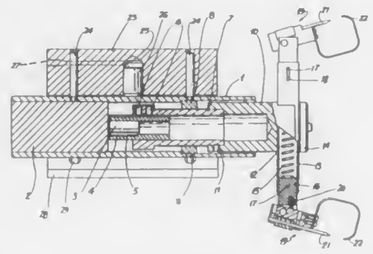
4,939,964
LOW-CLEARANCE PIPE LATHE
Donato L. Ricci, Rte. 1, Box 1067, Hager City, Wis. 54014
Filed Sep. 16, 1988, Ser. No. 245,360
Int. Cl.[5] B23D *21/04*; B23B *5/08*
U.S. Cl. 82—113 **7 Claims**



1. A portable machining lathe for machining a pipe or other work piece, comprising:
(a) a stationary member having a first and second generally semi-circular sections cooperatively connected, said stationary member having a top surface and an outer surface;
(b) locator means for securing said stationary member to the work piece;
(c) a gear member having first and second generally semi-circular sections cooperatively connected;
(d) a plurality of bearings cooperatively connected to said top surface of said stationary member said plurality of bearings forming a single set of bearings defining a circular path;
(e) a circular race member having first and second semi-circular race sections cooperatively connected to said gear member, said race having a groove, said groove having a top and a bottom whereby said race member rotates upon said set of bearings in a circular path; and
(f) said plurality of bearings having at least a first bearing and a second bearing, a first shim positioned between said first bearing and said top surface of said stationary member and a second shim positioned between said second bearing and said top surface of said stationary member, said second shim raising said second bearing relative to said first bearing, wherein said first bearing abuts said bottom of said race groove and said second bearing abuts said top of said race groove.

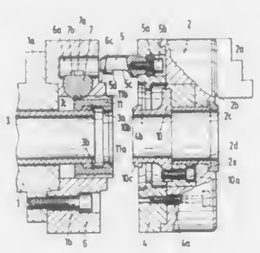
4,939,965
CUTTING AND THE LIKE TOOLS
Peter Bircumshaw, Sprotborough, England, assignor to W. E. McKenzie Limited, Grimsby, England
Filed Sep. 13, 1988, Ser. No. 243,807
Claims priority, application United Kingdom, Sep. 18, 1987, 8721974; Nov. 27, 1987, 8727825
Int. Cl.[5] B23B *5/00*
U.S. Cl. 82—113 **8 Claims**

1. A plastics pipe internal joint bead cutting tool comprising a body member, adjustable support means on the body member to locate the body member within the pipe, a motor associated with the body member, a drive shaft extending from the motor, a feed screw means slidably mounted on the shaft, the feed screw means engaging a threaded bore in a drive screw means located in the body member, bead cutter means removably secured to the end of the feed screw means, and said bead cutter means being formed as both a bead cutter and a bead



extraction means enable intact extraction of a cut bead within the pipe along with the cutting tool.

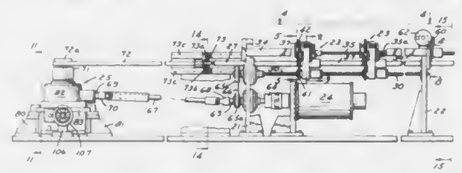
4,939,966
ARRANGEMENT FOR MOUNTING A POWER-OPERATED CLAMPING DEVICE ON A MACHINE-TOOL SPINDLE
Gerhard Grund, Düsseldorf, and Rainer Kempken, Erkrath-Hochdahl, both of Fed. Rep. of Germany, assignors to Paul Forkardt GmbH & Co., KG, Düsseldorf, Fed. Rep. of Germany
Filed Apr. 26, 1989, Ser. No. 344,303
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3813982
Int. Cl.[5] B23B *23/02*
U.S. Cl. 82—165 **9 Claims**



1. In an arrangement for mounting a poweroperated camping device for workpieces or tools on a hollow machine-tool spindle in which is disposed a securing rod that is adapted to be coupled with a drive member of the respectively mounted clamping device, and that is adapted to be actuated by a hydraulic or pressurized cylinder secured to a rear end of said machine-tool spindle, with a front end of said spindle being provided with a flange to which is secured an intermediate ring to which a body of said clamping device is adapted to be secured via at least two securing pins, with said clamping device being centered on said intermediate ring via central conical surface means, the improvement wherein:
said securing pins are secured to said clamping device and are axially oriented, with each of said securing pins being provided with notch means that has tightening surface means;
key rods, the number of which corresponds to the number of said securing pins, are displaceably guided in said intermediate ring, with each of said key rods being provided with a key that is introducible into a respective one of said notch means of said securing pins; and

a bayonet ring is rotatably yet axially non-shiftably mounted on a front end of said securing rod, and is adapted to cooperate with a bayonet flange formed on said drive member of said clamping device to effect said coupling of said securing rod to said drive member, with said bayonet ring being provided with an external tooth construction, and with at least one of said key rods being provided with a tooth construction that meshes with said tooth construction of said bayonet ring.

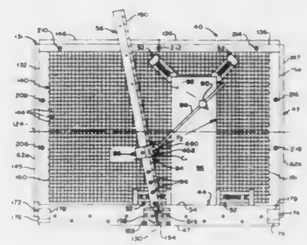
4,939,967
CUT-OFF MACHINE
Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128
Continuation of Ser. No. 43,035, Apr. 27, 1987, abandoned. This application Jan. 23, 1989, Ser. No. 300,754
Int. Cl.[5] B23D *21/00, 25/04*
U.S. Cl. 83—150 **32 Claims**



1. A cut-off machine adapted to be positioned downstream from a source for receiving moving lengths of tubing such as tubing from the mill and severing a length from the moving length,
said machine comprising a cut-off assembly which is reciprocated longitudinally of the moving length formed by the mill and operated during the movement toward the mill to sever a predetermined length,
means for supporting said cut-off assembly for reciprocating movement,
means for reciprocating said cut-off assembly in synchronism with the speed of moving lengths delivered by the mill to the machine,
said cut-off assembly including a non-rotating knife blade having a cutting edge for movement in an endless path, a portion of said endless path being in a direction transversely to the axis of movement of the moving length of tubing,
means for moving the knife blade for cutting off a length from said moving length of tubing,
supporting means for supporting said tubing adjacent the cut-off assembly, and
means for controlling said endless path such that the knife blade moves in a straight line adjacent each tube supporting means such that said cutting edge of said knife blade moves in a straight line transversely of its cutting edge with respect to said tubing at said support means to cut a length from said moving length of tubing in a single stroke.

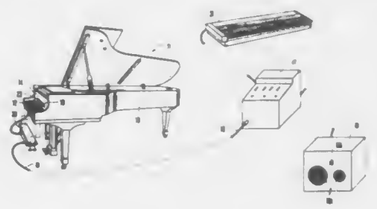
4,939,968
GLASS CUTTING APPARATUS
Robert E. Stoof, 3714 41st Ave. S.W., Seattle, Wash. 98116
Filed Aug. 4, 1988, Ser. No. 228,706
Int. Cl.[5] B26D *3/08*
U.S. Cl. 83—886 **27 Claims**

1. A system for scoring a piece of glass along a specified line so that the glass may subsequently be broken along said line to impart a selected contour to the glass, said system comprising:
a. a base with an exposed, horizontal surface;
b. stop means for positioning the piece of glass to be scored on said surface of said platform;
c. a pivotable guide which is rotatable about a pivot axis at one edge of and extending normally from said base; and
d. a glass cutter holder displaceable to and fixable at a selected position along said guide;
e. whereby an arc of a selected radius and with said pivot axis as a center can be scored on said piece of glass with a glass cutter mounted in said holder;
f. said guide having an edge along which a glass cutter can



be displaced to score a straight line in said piece of glass; and
g. said system also including means for securing said pivotable glass cutter guide to said base at a selected fixed angle relative to one edge of said base so that said guide can also and alternatively be employed to score said piece of glass along a straight line oriented at said selected fixed angle.

4,939,969
ACOUSTIC KEYBOARD MUSICAL INSTRUMENT
Hanzo Taguchi; Rokurota Mantani; Masatosi Murayama, and Toshihiro Nishino, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 11,498, Feb. 5, 1987, abandoned. This application Nov. 3, 1988, Ser. No. 267,722
Claims priority, application Japan, Feb. 6, 1986, 61-25231
Int. Cl.[5] G10C *3/04*; G10H *5/00*
U.S. Cl. 84—719 **5 Claims**



1. An acoustic keyboard musical instrument capable of driving an external electronic musical tone generating means, comprising:
a mechanical musical tone generating mechanism;
a keyboard including a plurality of keys aligned on a musical instrument body to drive said mechanical tone generating mechanism and to produce signals to drive said external electronic tone generating means;
a fallboard pivotally coupled to said musical instrument body and adapted to be closed/opened so as to cover/uncover said keyboard;
musical tone controlling means for controlling tones generated by said external electronic tone generating means and including a manual setting section for allowing a performer to set control information for said external electronic tone generating means;
said manual setting section being located at a position oppo-

site to the performer in an inner surface of said fallboard when said fallboard is open; and

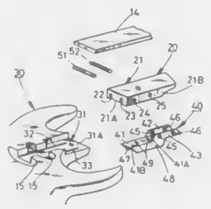
a cable for coupling said musical tone controlling means to said external electronic tone generating means which is spaced apart from said mechanical musical tone generating means, said cable for sending commands generated by said manual setting section to said external electronic tone generating means.

4,939,970

CONNECTOR FOR BODY AND NECK OF STRINGED INSTRUMENTS, LIKE GUITARS

Yoshihiro Hoshino, Nagoya, and Kazuhiro Matsui, Toyoake, both of Japan, assignors to Hoshino Gakki Corporation, Japan

Filed Feb. 3, 1989, Ser. No. 306,510
Claims priority, application Japan, Jun. 15, 1988, 63-79123[U]
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—293 **13 Claims**



1. A connector for connecting the body and the neck of a stringed instrument, the combination comprising:

a plate having a neck end portion that is disposed beneath the neck of the instrument, the plate having a body end portion that is disposed above the body of the instrument; and

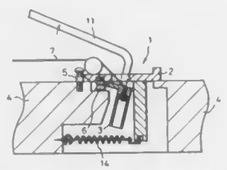
a neck flange extending up from the neck end portion of the plate, said neck flange extending into and connected to the underside of the neck; and a body flange extending down from the body end portion of the plate, said body flange extending into and connected to the top side of the body.

4,939,971

TREMOLO DEVICE FOR A GUITAR

Hiroaki Satoh, Townhouse Soshigaya 203, 6-14-1, Kamisoshigaya, Setagaya-ku, Tokyo, Japan

Filed Sep. 30, 1988, Ser. No. 251,896
Claims priority, application Japan, Oct. 6, 1987, 62-25057
Int. Cl.[5] G10D *3/12*
U.S. Cl. 84—313 **18 Claims**



1. A tremolo device for a guitar having a guitar head and a guitar body, comprising:

(1) an upper plate mounted on said guitar body to pivot about a first fulcrum, said upper plate being provided with holes through which strings of said guitar pass and having saddles on said upper plate for supporting said strings, said first fulcrum being located at a knife-edge-shaped front end of said upper plate in the direction of said guitar head;

(2) a lower plate, a substantial part of which is below said upper plate and which is pivotably mounted about a second fulcrum located at a knife-edge-shaped front end of said lower plate in the direction of said guitar head, said lower plate fixing one extremity of each of said strings in the vicinity of a rear end of said lower plate opposite to said lower plate front end;

(3) a tremolo arm secured at a rear side of said lower plate to pivot said lower plate about said second fulcrum;

(4) urging means for urging said upper plate in one rotating direction, said lower plate being urged due to the tension of said strings in another rotating direction opposite to said one rotating direction;

(5) a part of said guitar body coming in contact with a rear end of said upper plate on another side opposite to said guitar head to limit a degree of rotation of said upper plate in said one rotating direction, to thereby bring said upper plate to a predetermined position in contact with said part of said guitar body;

said upper plate cooperating with said part of said guitar body so that rotation of said lower plate is limited by contact of said upper plate of said part of said guitar body of said tremolo arm is inactivated, and

said upper and lower plates being rotated together in said another direction when said tremolo arm is activated in such a manner that said lower plate is rotated in said another direction, and

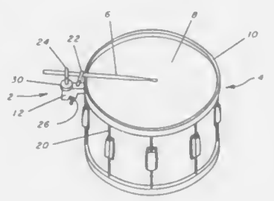
only said lower plate alone is rotated in said one rotating direction when said temolo arm is activated in such a manner that said lower plate is rotated in said one rotating direction.

4,939,972

ADJUSTABLE DRUM CLAMP

William H. Falberg, P.O. Box 1183, Carbondale, Colo. 81623

Filed Nov. 9, 1988, Ser. No. 269,624
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—422.4 **10 Claims**



1. An aid for effecting a rim shot on a drum, comprising:

a drum having a rim and a drum head;

a drumstick; and

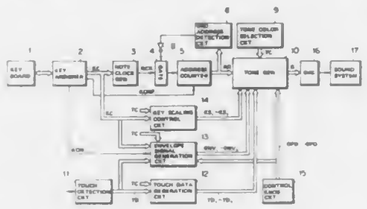
clamping means connected to said drum for rigidly holding said drumstick against said rim and said drumhead simultaneously such that one end of said drumstick rests on said drumhead and an intermediate portion of said drumstick rests on said rim, whereby striking said drumstick with another drumstick will effect said rim shot.

4,939,973

TONE SIGNAL GENERATION DEVICE HAVING WAVESHAPE CHANGING MEANS

Hideo Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 6,321, Jan. 14, 1987, abandoned, which is a continuation of Ser. No. 743,476, Jun. 10, 1985, abandoned. This application Sep. 14, 1988, Ser. No. 245,991
Claims priority, application Japan, Jun. 12, 1984, 59-119084; Nov. 4, 1984, 59-231294
Int. Cl.[5] G10H *1/14, 1/16, 7/04*
U.S. Cl. 84—605 **26 Claims**



23. A tone signal generation device comprising:

a waveshape memory storing waveshape data of a tone waveshape defining a first tone color which varies with time and including plural vibratory cycles which are at least portional extracts from a whole vibratory wave of a tone from its start of sounding to the end thereof; and

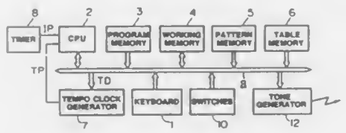
a non-linear conversion circuit, having an input and output, for converting a waveshape signal applied to said input and derived from a read-out output of said waveshape memory in accordance with a predetermined non-linear function to produce a second waveshape of a second tone color at the output of said conversion circuit said non-linear function including at least a first conversion characteristic for portions of the waveshape signal applied to said input having a first amplitude value and a second conversion characteristic different from the first conversion characteristic for portions of the waveshape signal applied to said input having a second amplitude value.

4,939,974

AUTOMATIC ACCOMPANIMENT APPARATUS

Takashi Ishida, and Yasunao Abe, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 28, 1988, Ser. No. 291,110
Claims priority, application Japan, Dec. 29, 1987, 62-333219; Dec. 29, 1987, 62-333220; Dec. 29, 1987, 62-333218
Int. Cl.[5] G10H *7/00, 1/36, 1/38, 1/40*
U.S. Cl. 84—609 **5 Claims**



1. An automatic accompaniment apparatus, comprising:

(a) clock generating means for generating a clock signal;

(b) memory means for storing rhythm pattern data designating a presence or absence of tone generation and a musical interval of a chord to be generated at each performance timing based on said clock signal;

(c) chord designating means for designating a chord to be performed;

(d) tone data generating means, including a tone data table having data for plural musical interval modes for each of plural chord types, for reading out said rhythm pattern data based on said clock signal and generating tone data representative of tones which constitute the chord to be generated based on a musical interval mode designated by said rhythm pattern data and the chord designated by said chord designating means; and

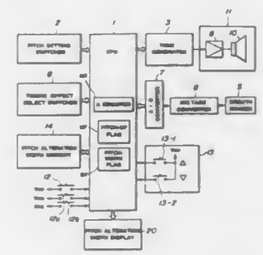
(e) musical tone generating means for generating the chord based on said tone data.

4,939,975

ELECTRONIC MUSICAL INSTRUMENT WITH PITCH ALTERATION FUNCTION

Shigeo Sakashita, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1989, Ser. No. 301,247
Claims priority, application Japan, Jan. 30, 1988, 63-11474[U]
Int. Cl.[5] G09B *15/04;* **G10H** *1/053, 7/00*
U.S. Cl. 84—626 **14 Claims**



1. An electronic musical instrument, comprising:

pitch designating means for permitting designation of a pitch designated by a pitch designating operation;

pitch alteration designating means including trill designating means for designating alteration of a pitch designed by said pitch designating means to execute a trill performance;

pitch alteration width programming means for manually programming an alternation width of a pitch to be altered by said pitch alteration designating means;

pitch alteration width memory means for storing pitch alteration width data designated by said pitch alteration width programming means; and

pitch alteration control means for, when pitch alteration is designated by said trill designating means under a condition that a predetermined pitch is designated by said pitch designating means, executing such a control that said pitch designated by said pitch designating means is altered to another corresponding pitch in accordance with said pitch alteration width data stored in said pitch alteration width memory means.

4,939,976

ELECTROMAGNETIC GROUND TO ORBIT PROPULSION METHOD AND OPERATING SYSTEM FOR HIGH MASS PAYLOADS

Michael A. Minovitch, 2832 St. George St. #6, Los Angeles, Calif. 90027

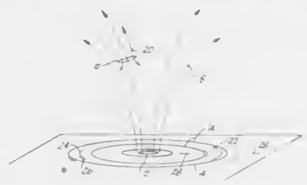
Filed Apr. 1, 1988, Ser. No. 176,679
Int. Cl.[5] F41F *1/02*
U.S. Cl. 89—8 **18 Claims**

1. A method for accelerating a body to high velocities comprising the steps of:

mounting a plurality of stationary spaced apart superconducting field coils with increasing radii with approxi-

mately concentric and coplanar relative positions on mounting structures;

charging said field coils with electric current thereby creating a primary magnetic field represented by the vector summation of magnetic fields generate by the individual field coils charged with said electric current;



charging a movable superconducting propulsion coil with current so as to create a secondary magnetic field opposing said primary magnetic field;

attaching said body to said superconducting propulsion coil; and

accelerating said body by magnetic repulsive forces exerted on said propulsion coil by said field coils acting simultaneously.

4,939,977

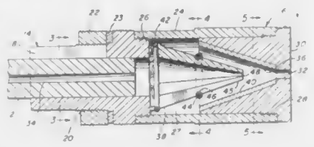
GUN SILENCER AND MUZZLE PROTECTOR

Larry J. Stroup, P.O. Box 743, Oswego, Ill. 60543-0743

Filed Jun. 7, 1989, Ser. No. 362,602

Int. Cl.[5] F41A *21/30*

U.S. Cl. 89—14.4 **4 Claims**



1. A gun silencer and muzzle protector comprising housing means having a passage therethrough, means attaching said housing means to a gun barrel with said passage being substantially longitudinally aligned with a bore of said gun barrel, and expansion means positioned within said housing means and serving to normally substantially close said passage through said housing means, said expansion means being expandable to permit a bullet exiting from said gun barrel to pass through said passage and then being rapidly closeable to substantially reduce the rate of air return to said bore of said gun barrel subsequent to passage of said bullet to substantially reduce noise generated when firing the gun, said attaching means including an adapter selectively connecting the housing means with said gun barrel, said adapter including legs providing pivotal attachment of said expansion means thereto.

4,939,978

AMMUNITION CHUTING FOR A MACHINE GUN

Frederick J. Bishop, Codsall; David T. Cooper, Faltings Park, and William H. Hill, Willenhall, all of United Kingdom, assignors to Lucas Industries Public Limited Co., West Midlands, England

Filed Mar. 27, 1989, Ser. No. 328,868

Claims priority, application United Kingdom, Mar. 31, 1988, 8807714

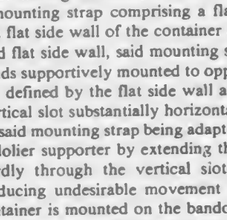
Int. Cl.[5] F41A *9.79*

U.S. Cl. 89—33.14 **5 Claims**

1. A flexible ammunition chuting for a machine gun, the chuting being capable of flexural bending in all planes perpendicular to a central axis extending along a length of the chuting and of torsional bending about said central axis;

the chuting comprising a plurality of loosely connected relatively slidable and articulated links,

a fixing member being provided at each of two points defined on the chuting, each said fixing member being located between, but unsecured to a plurality of adjacent links of the chuting;



and a non-compressible flexible strip-like spine linked between said two points to the articulated links throughout a portion of the length of the chuting, the spine being non-rigidly attached to each said fixing member, the spine defining a distance between said two points as measured along a path of the spine to prevent change of said distance, while permitting said flexural and torsional bending of the chuting.

4,939,979

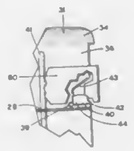
MACHINEGUN AMMUNITION CONTAINER RELATIONSHIP TO OTHER APPLICATIONS

Ross Capawana, 3250 Pollux Ave., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 929,339, Nov. 12, 1986, abandoned. This application Feb. 29, 1988, Ser. No. 162,098

Int. Cl.[5] F41C *25/02*

U.S. Cl. 89—34 **16 Claims**



1. A machinegun ammunition container for removably mounting on a bandolier supporter of a M60 machinegun comprises a box having a bottom, enclosed side walls, and an open top, a mounting strap comprising a flat, rigid member spaced from a flat side wall of the container and substantially parallel to said flat side wall, said mounting strap having first and second ends supportively mounted to opposing side walls, a vertical slot defined by the flat side wall and the mounting strap, said vertical slot substantially horizontally spanning the flat side wall, said mounting strap being adapted to fit slideably over the bandolier supporter by extending the bandolier supporter upwardly through the vertical slot, and stabilizing means for reducing undesirable movement of the container when the container is mounted on the bandolier supporter of the machinegun comprising first and second boss means extending inwardly from end portions of the mounting strap adapted to engage first and second notch means on the bandolier supporter when the container is mounted on the bandolier supporter.

4,939,980

TANK TURRET MAGAZINE SYSTEM WITH A PRIMARY MAGAZINE AND AN ADDITIONAL MAGAZINE

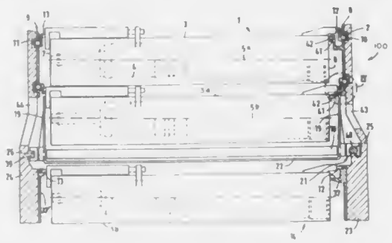
Erich Zielinski, Dusseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 25, 1989, Ser. No. 384,687

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1988, 3825292

Int. Cl.[5] F41A *9/34*

U.S. Cl. 89—46 **11 Claims**



1. A tank turret magazine system, comprising:

a primary magazine disposed at a first predetermined height, the primary magazine including elongated ammunition containers having ends and having pivot pins mounted adjacent the ends, the ammunition containers additionally having longitudinal axes, and means for circulating the ammunition containers along an endless path in superposed horizontal planes, the means for circulating including transporting chains, guide means for the transporting chains, and means for releasably connecting the pivot pins of the ammunition containers to the transporting chains so that the longitudinal axes of the ammunition containers are parallel to one another;

an additional magazine which is disposed at a second predetermined height, the second predetermined height being different from the first predetermined height; and

transfer mechanism means for transferring ammunition containers between the magazines, the transfer mechanism means including a pair of transporting levers having means for gripping the pivot pins of the ammunition containers, and means for pivotably mounting the transporting levers,

wherein the means for gripping the pivot pins comprises forks carried by the transporting levers, and wherein the means for releasably connecting the pivot pins to the transporting chains comprises chain link plates carried by the transporting chains and safety latches cooperating with the chain link plates.

4,939,981

HYDRAULIC SERVO CYLINDER DEVICE FOR CONTROLLING CONTINUOUSLY VARIABLE SPEED TRANSMISSION

Kazuya Maki, Aichi; Hideo Koyama, and Takeo Suzuta, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1988, Ser. No. 259,784

Claims priority, application Japan, Oct. 22, 1987, 62-267437

Int. Cl.[5] F01B *1/00*

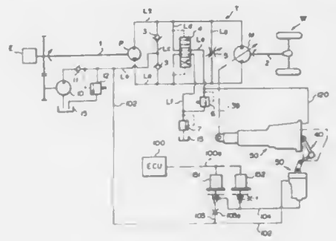
U.S. Cl. 91—166 **2 Claims**

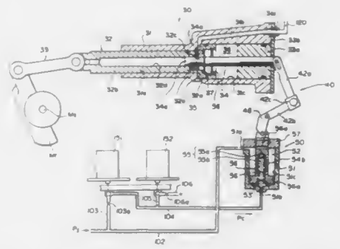
2.A hydraulic servo cylinder for use in a continuously variable tranmission, comrpising

a cylinder chamber defined in said cylinder, said cylinder chamber being divided by a piston into a rod-side cylinder chamber through which a piston rod extends, and a head-side cylinder chamber into which a piston head surface faces, said rod-side cylinder chamber being supplied with a hydraulic line pressure, said head-side cylinder chamber being supplied with a hydraulic control pressure for slidably moving said piston against said line pressure,

a communication passage having one end which opens into said rod-side cylinder chamber when said piston is moved to a position near a head-side stroke end and an opposite end which normally opens into said head-side cylinder chamber, and

a check valve disposed in said communication passage for allowing a flow of hydraulic fluid only from said rod-side





cylinder chamber to said head-side cylinder chamber, the arrangement being such that when said piston is moved to the position neqar the head-side stroke end, the line pressure is supplied from said rod-side cylinder chamber to said head-side cylinder chamber through said communciation passage to control the control pressure in said head-side cylinder chamber so that a hydraulic force which said piston receives from said control pressure in said head side cylinder chamber balances with a hydraulic force which said piston receives from said line pressure in said rod-side cylinder chamber.

4,939,982

AXIALLY CONTRACTABLE ACTUATOR

Guy Immega, 4490 West 11th Avenue, Vancouver, British Columbia, Canada V6R 2M3, and Mirko Kukolj, 5490 Bralawn Drive, Burnaby, British Columbia, Canada V6B 4R7

Continuation-in-part of Ser. No. 600,978, Apr. 16, 1984, Pat. No. 4,733,600. This application Oct. 16, 1985, Ser. No. 788,001

Claims priority, application Japan, Jun. 24, 1985, 60-136212

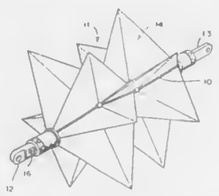
Int. Cl.[5] F15B *15/00*

U.S. Cl. 92—92 **15 Claims**

14. An inflatable axially contractable actuator bladder, comprising:

(a) a plurality of protrusions disposed about said bladder periphery, each such protrusion has a respective base with at least four sides, each base side of a protrusion is substantially straight and attached to a base side of an adjacent protrusion by a first flexible seam or continuous fold, each protrusion is foldable about a second flexible seam or

continuous fold, said second seam or fold being in a plane dividing the protrusion into two parts, from an axially



extended condition in which the protrusion encloses a reduced volume to an axially contracted condition in which the protrusion encloses a larger volume.

4,939,983

FLUID PRESSURE OPERATED POSITIONING APPARATUS

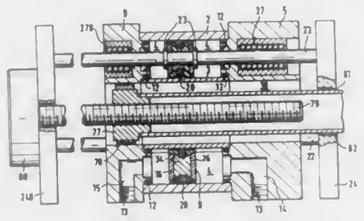
Reinhard Lipinski, Beethovenstr. 75, D-7310 Plochingen, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 298,631

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804163

Int. Cl.[5] F01B *7/20*

U.S. Cl. 92—62 **14 Claims**



1. Fluid pressure operated positioning apparatus having

an elongated cylinder element (**1**) closed at both ends;

a piston element (**7, 8**) slidable in said cylinder element; and

means for applying a pressure fluid to at least one side of the piston element to shift the position of the piston element axially with respect to the cylinder element,

the cylinder element (**1**) forming a ring cylinder having an outer wall (**2**) and a hollow inner wall (**3**) radially spaced from said outer wall, the interior of said inner wall defining a coaxial passageway (**30**),

said piston element comprising a ring piston having a ring structure (**7**) surrounding the inner cylinder wall (**3**), and positioned within the outer wall (**2**);

end closure means (**63, 64**) closing off the inner cylinder wall (**3**);

a linear stroke element (**64; 77, 79**) movable within said passageway (**30**) and positionable independently of the ring piston element (**8**) with respect thereto; and

wherein said linear stroke element comprises a spindle drive (**77, 79**), including mutually threaded spindle-spindle nut elements, at least one of said elements being coupled to said stroke element.

4,939,984

INVESTMENT-CAST PISTON CROWN CAP WITH ENCAPSULATED NON-METALLIC INSULATING CORE

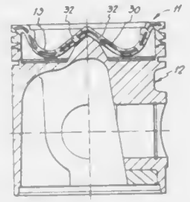
David F. Fletcher-Jones, Holly Grove Cottage, England, assignor to AE PLC, Cawston, United Kingdom

Filed Jun. 1, 1988, Ser. No. 200,961

Claims priority, application United Kingdom, Jun. 18, 1987, 8714287

Int. Cl.[5] F16J *1/01;* **F02F** *3/26, 3/14*

U.S. Cl. 92—176 **14 Claims**



1. A piston for an internal combustion engine, the piston comprising a crown portion and a body portion, the crown portion having a cap extending over the surface area thereof, said crown cap being an investment casting of an iron-based or a nickel-based alloy, said investment casting also having encasted and encapsulated therein a non-metallic insulating core.

4,939,985

TEST BENCH FOR TESTING THE DRIVE TRAIN OF A VEHICLE

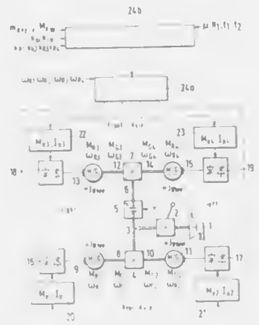
Hans-Jürgen Von Thun, Hemsbach, Fed. Rep. of Germany, assignor to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 337,561

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812824

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 **7 Claims**



1. Test bench for testing a drive train of a test vehicle from an internal combustion engine up to drive shafts for wheels, comprising a electronic function element or computer simulating moments of inertia, spring stiffnesses, and damping masses, said electronic function element or computer simulating the wheels and a vehicle acceleration process, with the exception of actually present vehicle components, at least two mutually independent moment-regulated electric load machines serving as a transmission element between said electronic function element or computer and the test bench having the test vehicle, said load machines being flanged directly to the drive shafts of the drive train to be tested, and a integrator having a time constant proportional to the vehicle moment of inertia, said integrator receiving the running resistance moment, reduced by the wheel moments, for picking up the angle speed proportional to the vehicle speed.

4,939,986

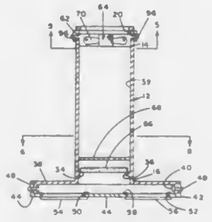
EXHAUST VENTILATOR

Charles R. Turner, Decatur, Ala., assignor to John C. Garvin, Jr. & Harold W. Hilton, Huntsville, Ala.

Filed Mar. 6, 1989, Ser. No. 318,850

Int. Cl.[5] F24F *7/007, 13/18*

U.S. Cl. 98—42.1 **8 Claims**



1. A ventilator assembly disposed for secured relation to a partition having an air opening therein, said ventilator assembly comprising:

a housing vertically disposed for passage of air therethrough, said housing having an elongated body portion provided with first and second end sections, said elongated body portion disposed for extending into said opening in said partition;

a first cap member removably secured to said first end section, said cap member having an opening for communication with the interior of said housing;

a second cap member removably secured in said second end section, said second cap member having air inlet means therein, said air inlet means disposed in communication with the interior of said housing;

an electric motor having blades secured thereto, and said motor mounted adjacent said first section of said housing and a source of electric energy connected to said electric motor for actuation thereof for rotation of said blades to exhaust air through said housing;

baffle means including a flexible member movably carried in unsecured relation to said housing intermediate said electric motor and said air inlet means;

support means for supporting said baffle member in said housing, said support means including an inwardly extending flange portion forming a central opening for passage of air therethrough, said baffle member disposed in loosely seated relation on said flange portion over said central opening and disposed for upward displacement from a closed seated position over said opening to an open position away from said opening responsive to entrainment of air past said baffle member as a result of blade rotation by said motor; and

restraining means disposed in spaced relation above said baffle member to limit said displacement thereof and to provide for said loosely seated relation of said baffle member on said flange portion.

4,939,987

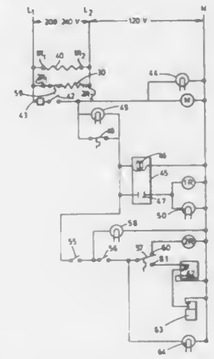
HUMIDITY CONTROL SYSTEM

Mark J. Smith, Fuquay-Varina, N.C., assignor to Anetsberger Brothers, Inc., Northbrook, Ill.

Filed Aug. 14, 1989, Ser. No. 393,967

Int. Cl.[5] F24H *9/00;* **H05B** *1/00, 3/10;* **A21C** *13/00*

U.S. Cl. 99—468 **7 Claims**



1. Apparatus for controlling the humidity of an enclosed atmosphere comprising: an open top steamer tray, a heater in intimate heat transfer relation with said tray, a time regulated valve operable to supply water to said tray for selected time periods, thermal responsive means operably responsive to the temperature of said tray for activating and deactivating said heater when said tray reaches selected low and high temperatures, respectively, and for actuating said valve to supply water to said tray when said heater is deactivated at said high temperature, and humidity responsive means for controlling activation of said thermal responsive means.

4,939,988

ANTI-CORING GRAIN TREATMENT SYSTEM

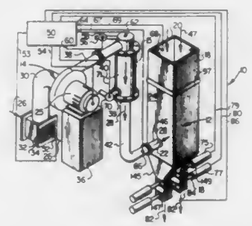
W. Gerald Wyatt, Arlington, Tex., and Jim Bleke, Wolcottville, Ind., assignors to VE Holding Corp., Arlington, Tex.

Continuation of Ser. No. 766,640, Aug. 16, 1985, Pat. No. 4,817,518. This application Oct. 25, 1988, Ser. No. 262,430

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] A23K *1/00*

U.S. Cl. 99—516 **13 Claims**



1. An improved grain treatment system for selectively conditioning substantially homogeneous plugs of grain with a conditioning medium comprising:

a substantially vertically disposed vessel having an upper and lower end, said vessel having an inlet in said upper

end and an outlet in said lower end such that said grain can be passed therethrough;

means for controlling the flow of grain within said vessel, said flow control means causing said grain to flow within said vessel in substantially homogeneous plugs; and

means for injecting said conditioning medium into said vessel for contact with said substantially homogeneous plugs of grain to produce substantially homogeneous plugs of conditioned grain;

said flow control means including first and second flow valves and means for sequentially opening and closing said first and second flow valves;

wherein the sequential opening and closing of said first and second flow valves cause said grain in said vessel to flow in substantially homogeneous plugs.

4,939,989

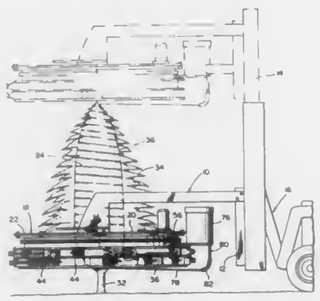
TREE LIMB FOLDING AND TYING APPARATUS

Donald Zacharias, R.D. #2, Box 151, Weatherly, Pa. 18255

Filed Mar. 2, 1989, Ser. No. 318,112

Int. Cl.[5] B65B *13/10*

U.S. Cl. 100—13 13 Claims



1. A tree limb folding apparatus including base means for support from an elevatable support, a generally annular horizontal frame mounted from said support for elevational shifting therewith and defining a central area therewithin in which to receive a lower trunk portion of a tree, said frame including at least two peripherally adjacent arcuate frame sections shiftable relative to each other and said support for movement between closed positions closing said annular frame and open positions with adjacent ends of said adjacent arcuate frame sections displaced apart and defining a passageway between said adjacent ends through which to receive the lower trunk portion of a tree into said central area of said annular frame upon horizontal advancement of said open frame toward said tree, said peripherally adjacent frame sections each including upper and lower sets of horizontal rollers, for engaging and folding tree limbs, supported from the corresponding frame section for guided shifting generally radially of the corresponding frame section between inward limit positions disposed about and defining said central area when said shiftable frame sections are in the closed positions thereof and outward limit positions spaced outward of said inward limit positions, each of said rollers being disposed generally normal to the path of guided shifting thereof relative to the corresponding frame section, biasing means yieldingly biasing said rollers toward their inward limit positions, the upper and lower rollers of each arcuate frame section being alternately spaced thereabout with adjacent ends of peripherally adjacent rollers of each frame section being end overlapped when said peripherally adjacent rollers are in said inward limit positions thereof.

4,939,990

MULTI-SURFACED ROTARY STAMPING APPARATUS

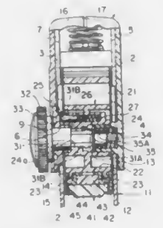
Shoichi Inaguma; Masayuki Hasegawa, and Akira Ichihashi, all of Nagoya, Japan, assignors to Shachibata Industrial Co., Ltd., Japan

Filed May 26, 1989, Ser. No. 357,765

Claims priority, application Japan, May 31, 1988, 63-72661[U]; Aug. 2, 1988, 63-102645[U]

Int. Cl.[5] B41J *1/36*

U.S. Cl. 101—109 8 Claims



1. A rotary stamping apparatus comprising:

a plurality of stamp cartridges, each of said stamp cartridges having a use position and at least one non-use position;

rotatable shaft means for holding said plurality of stamp cartridges faced outwardly, said shaft means having a plurality of edge faces and a polygonal transverse cross-section, and each of said stamp cartridges being slidably mounted on one of said edge faces;

a gripper case having a plurality of recesses formed therein;

elevator frame means for supporting said shaft means at its opposite sides, said elevator frame means having an inverted U-shaped configuration in cross-section and an outer end, and said elevator frame means further being slidably mounted within said gripper case and movable between an outer position in which said outer end is positioned outwardly from a plane including one of said stamp cartridges in its use position and in inner position in which said elevator frame means is retracted inwardly from said plane;

first biasing means for biasing said elevator frame means toward said outer position; and

selector knob means for rotating said shaft means to the desired position, said selector knob mean shaving a back face and a stopper formed in said back face;

said stopper and said recesses defining engagement means for holding said shaft means in place, said stopper being movable in and out of engagement with said recesses, said engagement means being movable between an operative position when said stopper is in engagement with one of said recesses and in inoperative position when said stopper is out of engagement with one of said recesses; and

second biasing means for normally biasing said selector knob means outwardly away from said gripper case, said selector knob means being movable against said second biasing means to move said engagement means into said operative position.

4,939,991

MULTICOLOR SCREEN PRINTING ASSEMBLY

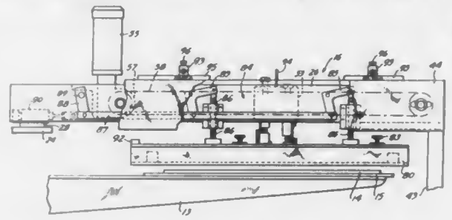
Sandor Szarka, Franklin Lakes, N.J., assignor to Precision Screen Machines, Inc., Hawthorne, N.J.

Continuation of Ser. No. 118,429, Nov. 6, 1987, abandoned. This application Feb. 2, 1989, Ser. No. 304,936

Int. Cl.[5] B41F *15/04*

U.S. Cl. 101—115 8 Claims

1. A screen printing machine comprising in combination a central base structure supporting thereupon a rotatable column, a plurality of circumferentially spaced radial arms projecting from said column and supporting each a corresponding pallet at the same radial distance from said column and in a common plane for receiving a fabric article to be screen printed, a plurality of printing head frame assemblies disposed in another common plane parallel to and spaced from said pallet common plane, said printing head frame assemblies being located about a circle spaced from one another and positioned radially from said column so that, for each of a plurality of indexable locations of said rotatable column, each printing head frame assembly will be aligned in juxtaposition



with a different pallet, and machine frame members interconnecting one end of each said printing head frame assembly with said rotatable column and connecting the opposite end of each said printing head frame assembly with said base structure whereby said printing head frame assemblies are integrated into a boxlike rigid skeletal machine frame, and means supported by each said printing head frame assembly for transferring a screen into a position proximate to a pallet-supporting article in a manner to permit screen printing onto said article, wherein each said printing head frame assembly and said means supported thereby comprise a single integrated unit located entirely on one side of said pallet common plane.

into the next liquid application station, to effect the drying of said images prior to the application of the rink images or a coating thereover.

4,939,993

DETONATOR

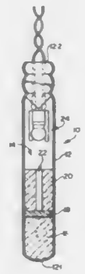
Jean L. Carutchet; Michael P. du Plessis, and André P. Crane, all of Johannesburg, South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Apr. 28, 1989, Ser. No. 344,803

Claims priority, application South Africa, Apr. 29, 1988, 88/3082

Int. Cl.[5] F42C *19/12*

U.S. Cl. 102—202.14 3 Claims



1. A detonator which includes

an elongate tubular member which defines a longitudinally extending passage;

said member having a closed first end and an open second end with an initiating means being received in the open end for initiating a primary charge;

a first base charge located at the closed end of the passage and a second base charge arranged intermediate the initiating means and the first base charge and

the primary charge which is shaped and dimensioned and which is located in the passage in a position relative to the base charges such that, upon initiation of the primary charge, a shock front generated by the primary charge is propagated by the base charges in a bi-directional manner, the primary charge being located between said base charges, said second base charge having an axially extending open bore in communication with said primary charge and said initiating means, the primary charge and the initiating means being positioned at opposite ends of said bore thereby permitting a flame front generated by the initiating means to pass to the primary charge to thereby initiate the primary charge and generate the shock front which is propagated by the base charges in said bi-directional manner.

4,939,992

FLEXOGRAPHIC COATING AND/OR PRINTING METHOD AND APPARATUS INCLUDING INTERSTATION DRIERS

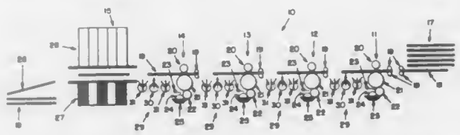
John W. Bird, Westport, Conn., assignor to Birow, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 65,914, Jun. 24, 1987, Pat. No. 4,841,903. This application Apr. 11, 1989, Ser. No. 336,219

The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.

Int. Cl.[5] B41F *5/24*

U.S. Cl. 101—183 11 Claims



1. In a flexographic, straight line printing machine comprising a plurality of liquid application stations each comprising a printing cylinder, at least one of which is an upstream ink printing station for the printing of ink images containing a volatile solvent/diluent onto a succession of individual cardboard copy sheets as such sheets are moved therethrough, and at least one of which is a downstream printing station , and means for continuously feeding said individual copy sheets, without bending, through said liquid application stations, the improvement which comprises an intermediate drying station comprising at least one forced hot air means positioned between each of said liquid application stations to apply a line of forced hot air across the direction of travel of said sheets as they move therepast to effect the evaporation of the solvent-/diluent from the ink images printed on said cardboard copy sheets prior to the movement of the ink-imaged copy sheets

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4,939,994

ENGRAVED PRINTING ROLLS

Sidney Puleston, Bridlington, England, assignor to Borden, Inc., Columbus, Ohio

Filed Sep. 26, 1988, Ser. No. 248,411

Claims priority, application United Kingdom, Jan. 23, 1988, 8801537

Int. Cl.[5] B41F *31/26, 27/28*

U.S. Cl. 101—348 8 Claims

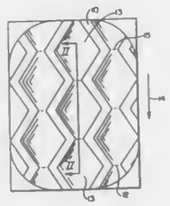
1. A mechanically engraved cylindrical printing roll having cells interconnected at weirs in a line defining a circumference of the roll, to form a plurality of circumferentially extending chains around the roll,

the walls defining each cell form an elongated rhombus

outline with a major axis and a minor axis, said major axis having a length greater than the length of the minor axis, said major axis extending in the direction of said circumference of the roll,

the corners of each circumferentially adjacent rhombus at both ends of the major axis overlapping to the extent that no rhombus includes an outline of a sharp point along said major axis, said circumference being coextensive with the major axis of each rhombus in said circumference,

said weirs defining a sharp dividing line between cells, said



weirs comprising the highest elevation on said circumference, said circumferential line substantially bisecting each weir,

the depth of each of said cells increasing in both directions from the said weirs,

each chain being spaced from adjacent chains by a zig-zag shaped wall of uniform elevation and width,

each said wall extending circumferentially around the roll such that no wall contacts any other wall, and

each wall is configured to be a mirror image of any next adjacent wall.

4,939,995

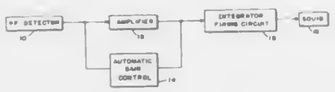
INTEGRATOR AND FIRING CIRCUIT FOR PROXIMITY FUZES

Arthur R. Feinberg, Brookeville, Md., assignor to The United States of America as represented by the Secretary of the Navy, D.C.

Filed Nov. 11, 1974, Ser. No. 523,785

Int. Cl.[5] F42C *13/04*

U.S. Cl. 102—214 **4 Claims**



1. An integrator firing circuit for use with a fuze for firing a grounded squib of an explosive weapon comprising:

a transistor biased to transform a negatively biased varying electrical signal to a fullwave rectified negatively biased signal at its collector lead;

means for integrating said fullwave rectified signal;

first switching means connected to said means for integrating for producing a first pulse upon detection of a signal from said means for integrating which exceeds a predetermined threshold level and,

capacitive discharge means connected to said first switching means for producing a second pulse to ignite said grounded squib of said explosive weapon.

4,939,996

CERAMIC MUNITIONS PROJECTILE

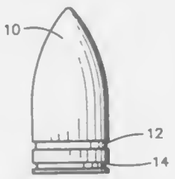
Brian I. Dinkha, Westminster; Paul B. Jaas, Denver; Brian Seegmiller, Arvada, and Alden C. Simmons, Boulder, all of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Continuation-in-part of Ser. No. 903,307, Sep. 3, 1986, Pat. No. 4,850,278. This application Aug. 31, 1988, Ser. No. 239,131

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] F42B *8/00*

U.S. Cl. 102—501 **14 Claims**



1. A tough, densified munitions projectile comprising a ceramic having a tensile strength greater than about 250 MPa, a critical stress intensity factor greater than about 6 $MPam^{\frac{1}{2}}$, and a Weibull modulus greater than about 10, said ceramic comprising material selected from the group consisting of zirconia, zirconia-toughened alumina, and SiC whisker-reinforced alumina.

4,939,997

ARTICLE OF AMMUNITION

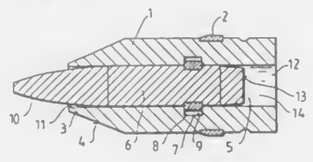
Dietrich Hoffman, Schramberg, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany

Filed Sep. 7, 1989, Ser. No. 404,117

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833001

Int. Cl.[5] F42B *10/34*

U.S. Cl. 102—503 **2 Claims**



1. Article of ammunition, especially for utilization with cannon mounted on board aircraft; comprising a subcaliber projectile core; a tubular projectile possessing a substantially constant internal diameter coaxially arranged on said projectile core to form an inherently stable secondary projectile for the assuming of an estimatable trajectory, a head end of the projectile core protruding beyond a forward end of said secondary projectile, said tubular projectile having an open tail end projecting beyond the trailing end of said projectile core to provide a rearwardly opening chamber for the receipt of gases generated by a propellent charge and to exert a propulsive force against said projectile core and said tubular projectile in the direction of firing thereof, the forward end of the tubular projectile being tapered down by a taper surface to form a conical leading end portion an open space intermediate the forward end of the tubular projectile and the head end of the projectile core; and spring ring securing means responsive to centrifugal force being arranged in aligned circumferential grooves intermediate said tubular projectile and said projectile core, said spring ring securing means forming a seal intermediate said tubular projectile and said projectile core to inhibit the passage of gases therebetween, and upon firing of said projectile, being radially outwardly expandable within said grooves responsive a spin of said projectile so as to release the engagement between said projectile core and said tubular projectile.

4,939,998

BALLAST TAMPING MACHINE

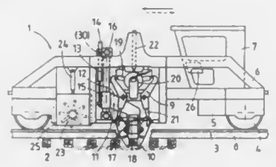
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Mar. 8, 1988, Ser. No. 165,510

Claims priority, application Austria, Jul. 23, 1987, 18774

Int. Cl.[5] B61D *15/00*

U.S. Cl. 104—12 **6 Claims**



1. In a mobile machine for tamping ballast under ties of a railroad track, each of the ties having opposite longitudinal sides extending transversely to the track, which comprises a machine frame, spaced undercarriages supporting the machine frame for mobility on the railroad track in an operating direction, and a ballast tamping assembly mounted on the machine frame and comprising a vertically adjustable tamping tool carrier, a drive for vertically adjusting the tamping tool carrier, pairs of vibratory and reciprocatory tamping tools immersible in the ballast upon vertical adjustment of the tamping tool carrier, and drives for vibrating and reciprocating the tamping tools in a direction extending parallel to the track for tamping ballast under respective ones of the ties positioned between the pairs of tamping tools;

(a) a vertically adjustable device associates with the ballast tamping assembly for gripping and transversely displacing and positioning a respective one of the ties, the device comprising

(1) pivotally adjustable clamps for gripping the longitudinal tie sides and

(2) drive means for adjusting the clamps,

(b) drives for vertically and transversely adjusting the device, the adjusting drives connecting the device to the machine frame,

(c) a vertically adjustable ballast broom device preceding the ballast tamping assembly in the operating direction and arranged for sweeping ballast off respecitve ones of the ties into an adjacent crib defined between successive ones of the ties, and

(d) a drive for vertically adjusting the broom device.

4,939,999

INTEGRATED CONVEYOR SYSTEM WITH CONSTANT SPEED DRIVE CHAIN

Harold S. Burt, Kansas City, and Benjamin P. Difalco, Overland Park, both of Kans., assignors to Mid-West Conveyor Co., Inc., Kansas City, Kans.

Filed Aug. 30, 1999, Ser. No. 238,831

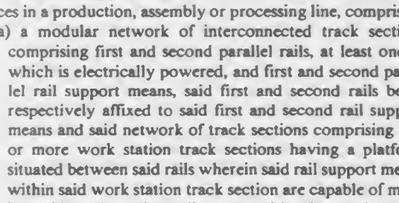
Int. Cl.[5] B61J *3/00*; B61B *13/00*; B65G *37/00*

U.S. Cl. 104—88 **24 Claims**

1. A conveyor system comprising:

(a) a first section comprising a power and free conveyor including power and free trolleys transporting product carriers on a first power and free track driven selectively by a first power and free chain;

(b) a second section connected with said first section; said second section including a second track operably supporting a continuous second drive chain that during normal operation of said system generally continuously moves at a constant speed and a third track positioned beneath said second track operably supporting said power and free trolleys while within said second section such that said power and free trolleys are driven about said second



section by said second drive chain; said second drive chain also continuously carrying at least one utility carrier depending therefrom;

(c) so that said trolleys are conveyable along said first section and transferable to said second section such that said transfered trolleys and associated product carriers are interspaced with said utility carrier.

4,940,000

MODULAR INSTALLATION FOR CONTROLLED TRANSPORT OF PARTS OR PRODUCTS

Laszlo Horvath, Geneva, Switzerland; Georges Martin, Collonges S/Saleve, France, and Heiner Schween, Gummersbach, Fed. Rep. of Germany, assignors to Sysmo S.A., Switzerland

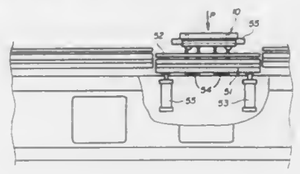
PCT No. PCT/CH86/00098, § 371 Date Apr. 16, 1987, § 102(e) Date Apr. 16, 1987, PCT Pub. No. WO87/00493, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 16, 1986, Ser. No. 44,847

Claims priority, application France, Jul. 17, 1985, 85 11048

Int. Cl.[5] B60L *15/38*

U.S. Cl. 104—295 **16 Claims**



1. A modular apparatus for the controlled transport of work pieces in a production, assembly or processing line, comprising

(a) a modular network of interconnected track sections comprising first and second parallel rails, at least one of which is electrically powered, and first and second parallel rail support means, said first and second rails being respectively affixed to said first and second rail support means and said network of track sections comprising one or more work station track sections having a platform situated between said rails wherein said rail support means within said work station track section are capable of moving said track section rails to a position lower than said platform;

(b) at least one self-propelled electrically powered wheeled vehicle adapted to ride upon said track section rails, said vehicle having a plate, mounted above said wheels, including a central support zone for engagement on the underside by said platform; and

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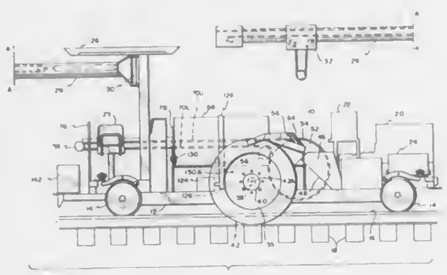
(c) a central data processing means capable of remotely controlling said vehicles.

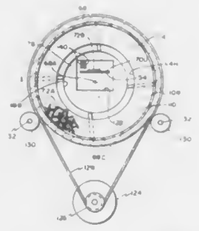
4,940,001

RAIL SPIKE CLEANING APPARATUS

John D. Holley, Montgomery, Ala., assignor to Holley Engineering Company, Inc., Montgomery, Ala.

Filed Nov. 9, 1988, Ser. No. 269,074
Int. Cl.[5] E01B *29/32*
U.S. Cl. 104—307 **38 Claims**





1. A spike cleaning apparatus comprising:
(a) a tumbler having a cleaning chamber therein;
(b) a motor means operatively connected to move said tumbler and for cleaning spikes by tumbling action of spikes within said cleaning chamber; and
(c) a vehicle frame having rail engaging wheels mounted thereto and operable to move along a railroad track, said tumbler mounted to said vehicle frame; and
further comprising input means to automatically pick up spikes and feed spikes continuously into said tumbler while it is tumbling and means to automatically discharge cleaned spikes from said tumbler while said tumbler is tumbling.

4,940,002

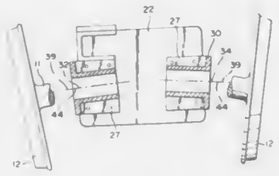
RAILWAY TRACTION MOTOR WITH SKEWED SUPPORT BEARINGS

Paul R. Bien, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1988, Ser. No. 280,799
Int. Cl.[5] B61C *17/00*
U.S. Cl. 105—136 **8 Claims**

1. A traction motor for a railway power vehicle of the type having a body, a rail engagable wheel and axle assembly including a pair of laterally spaced driving wheels fixed to an axle with motor support journals on the axle inwardly adjacent the wheels, said body being supported on at least one wheel and axle assembly by suspension means engaging the axle at support points outboard of the wheels, whereby the weight of the body causes slight concave downward bending of the axle between the wheels with resulting outwardly downward sloping of the support journals and respective axes thereof,

said traction motor having a frame with a pair of bearing supports disposed at spaced locations near opposite ends of the motor frame and each including an axle support bearing having a transverse bore centered on an axis, said bearing bores being engagable with the motor support journals of the axle at spaced locations between and relatively near the wheels to at least partially support the motor on the axle, and the improvement wherein



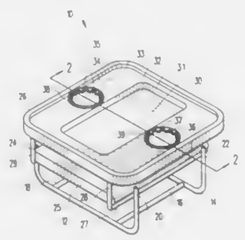
the axis of at least one of the bearing bores is sloped downwardly toward its respective end of the traction motor by a small amount sufficient to more closely align the axis of the said one bearing bore with the downwardly sloping axis of the associated motor support journal at the location of their engagement and thus improve the conformity of the engagable bearing bore and motor support journal surfaces.

4,940,003

CAR SEAT TABLE

Susan L. Mayhew, and Richard K. Mayhew, II, both of 4311 Landeros Ave., La Verne, Calif. 91750

Filed Jun. 23, 1989, Ser. No. 370,183
Int. Cl.[5] A47B *23/00*
U.S. Cl. 108—44 **1 Claim**



1. A car seat table, comprising:
an upper tray;
a central recessed area formed on said upper tray;
an upstanding peripheral rim on said upper tray, surrounding said central recessed area;
at least one circular opening formed through said upper tray for receiving a beverage container;
a removable insert having a reduced diameter opening dimensioned to be retained in said circular opening for use with different diameter beverage containers;
a plurality of resilient radially inwardly extending fingers spaced around said insert for engagement with various different diameter beverage containers;
an annular rim surrounding said circular opening in said tray for supporting said insert;
a lower tray;
an upper frame securing said upper and lower trays in parallel spaced relation, said frame formed by a plurality of rigid tubular members;
a parallelogram linkage mounting said first and second trays

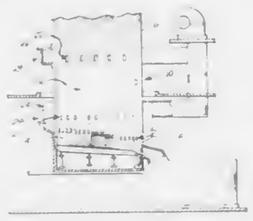
for simultaneous movement in fixed relation between vertically raised lowered positions;
said parallelogram linkage formed by four corner frame members each having a lower end pivotally mounted to corner portions of a fixed lower frame and an upper end pivotally mounted adjacent corner portions of said lower tray;
two of said corner frame member dimensioned to receive a vehicle lap type seat belt in surrounding relation when in a vertical position; and
said upper frame dimensioned for abutment with a vehicle seat back when in said raised position, whereby tightening of the vehicle seat belt will initially move said upper and lower trays to said raised position and will subsequently maintain said upper and lower trays in said raised position.

4,940,004

HIGH ENERGY COMBUSTION AIR NOZZLE AND METHOD FOR IMPROVING COMBUSTION IN CHEMICAL RECOVERY BOILERS

Johan H. Jansen, Bellevue, Wash., assignor to J. H. Jansen Company, Inc., Woodinville, Wash.

Filed Jul. 7, 1989, Ser. No. 376,824
Int. Cl.[5] F23L *5/00*
U.S. Cl. 110—182.5 **10 Claims**



1. For use in connection with a recovery boiler having a combustion chamber and at least one wind box positioned in surrounding relationship relative to said combustion chamber, an apparatus for improving the delivery of airflow from said wind box into said combustion chamber, said apparatus comprising:
a nozzle extending through said wind box and having a convergent portion; and
a damper section positioned outside of said wind box, said damper section defining an airflow path from inside said wind box into said nozzle, wherein said nozzle interconnects said damper section and a port leading into said combustion chamber, said convergent portion of said nozzle accelerating the airflow delivered into said chamber.

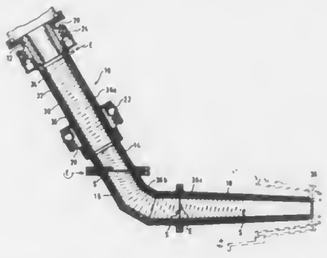
4,940,005

DEVICE FOR INJECTING PREHEATED AIR INTO A SHAFT FURNACE

Marc Solvi, Ehlange/Mess, Luxembourg, assignor to Paul Wurth S.A., Luxembourg, Luxembourg

Filed May 25, 1989, Ser. No. 357,552
Claims priority, application Luxembourg, May 25, 1988, 87226
Int. Cl.[5] F23L *5/00, 1/00*
U.S. Cl. 110—182.5 **5 Claims**

1. A device for injecting preheated air from an air supply into a shaft furnace, having a central conduit means for directing a stream of preheated air in a flow direction, said central conduit means being defined by a refractory lined downpipe, elbow and tuyere, wherein the improvement comprises a cooling coil means embedded in the refractory lining for circulating cooling air through the refractory lining in the flow direction, said cooling coil having an outlet for discharging the cooling air into the central conduit means.

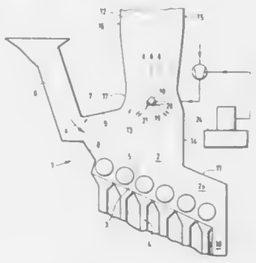


4,940,006

PROCESS FOR INCINERATION OF REFUSE

Sedat Temelli, Erkrath, Fed. Rep. of Germany, assignor to Mullverbrennungsanlage Wuppertal GmbH, Fed. Rep. of Germany

Filed Mar. 23, 1988, Ser. No. 172,085
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1987, 3712039; May 14, 1987, 3716088
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—243 **12 Claims**

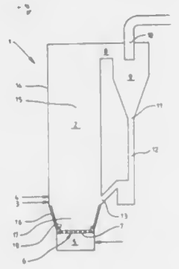


1. Process for incineration of refuse or the like, where the substances to be burned enter a furnace space and are burned on a grate in the furnace space, and the flue gases formed by combustion are exhausted from the furnace space through a throttled portion and turbulence is created in the gases by adding secondary air for the purpose of afterburning of the flue gases in an afterburning zone, comprising the steps of
damming the flue gases before entering the afterburning zone so as to increase the retention time of the flue gases in the furnace space in a uniform temperature zone of the furnace space, and then accelerating the flow of flue gases in a venturi-like manner in the afterburning zone, and then decelerating the flow of flue gases in a venturi-like manner in the afterburning zone; and
injecting the secondary air below the throttle portion across the entire cross section of flow of the flue gases in front of the point of entrance of the flue gases into the afterburning zone in a direction opposite to the flow of the flue gases toward the afterburning zone, so that the flue gases are additionally decelerated in said uniform temperature zone of the furnace space so as to further increase the residence time of the flue gases in the furnace space, and so that the combustible constituents entrained in the flue gases are

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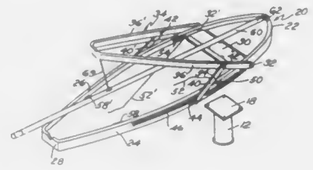
burnt out completely before entering the after burning zone;
so as to reduce the unwanted gaseous components in the flue gases.

4,940,007
FAST FLUIDIZED BED REACTOR
Matti Hiltunen, Karhula, Finland; Ragnar Lundqvist, Norwood, Colo., and Juha Sarkki, Karuna, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Aug. 16, 1988, Ser. No. 232,778
Int. Cl.[5] F27B *15/02*; B01J *8/18, 15/06*
U.S. Cl. 110—347 **25 Claims**



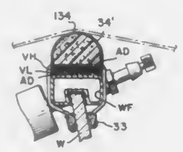
1. A fast fluidized bed reactor comprising:
an upright combustion chamber having an upper region with generally vertical peripheral walls and a lower region with walls including at least one generally downwardly and inwardly inclined peripheral wall for flow of a relatively dense layer of particles downwardly close to its surface;
an inlet in said combustion chamber for particulate material to be reacted;
an outlet disposed in the upper region of said combustion chamber for exhausting gas;
windbox means beneath said combustion chamber for maintaining fluidizing gas in said combustion chamber at a gas flow velocity in the bed of about 2–10 m/s;
a grid plate between said windbox means and said combustion chamber, said grid plate having openings for supplying gas from said windbox means to said combustion chamber to maintain said gas flow velocity in said bed, fluidize particulate material in the combustion chamber and provide an upward flow of gas and particles thereby transporting a portion of the particulate material out of the combustion chamber with the discharged exhaust gas;
a particle separator connected to said exhaust gas outlet for separating entrained particles from the exhaust gas, said separator having an outlet for clean gas and an outlet for particles connected to the lower region of the combustion chamber for recycling separated particles into the combustion chamber;
means spaced above the grid plate and disposed in said lower region at a height less than 1100 mm above said grid plate for changing the direction of flow of the particles flowing downwards close to the inclined wall and redirecting such particles for flow in a direction inwardly, to cross the upward flow of gas and particles, thereby preventing clogging and backflow of particles through the openings into the windbox means; and
said direction changing means adjoining the inclined wall and directing the particles to flow in a direction away from the wall.

4,940,008
FOLDABLE MAST ASSEMBLY
John G. Hoyt, Two Harbor View Dr., Newport, R.I. 02840
Filed Sep. 5, 1989, Ser. No. 402,816
Int. Cl.[5] B63H *9/08*
U.S. Cl. 114—39.1 **8 Claims**



1. A foldable mast assembly for a sailboat comprising a stub mast, a wishbone boom, said boom mounted upon the stub mast, as mast pivoted on the boom, struts having one end pivotally affixed to the mast, means slidably connecting the other end to the boom and means for pulling the struts along the boom.

4,940,009
SHAPE ADAPTABLE PROTECTIVE CUSHION DEVICE AND METHOD OF MAKING AND USING SAME
Howard W. Keithley, Jr., 9221 Willow Lane, Adelphi, Md. 20783
Continuation-in-part of Ser. No. 717,793, Mar. 29, 1985, Pat. No. 4,694,774. This application Sep. 18, 1987, Ser. No. 98,321
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—343 **2 Claims**



1. A protective device for covers comprising:
a base member;
said member being made of material which is bendable and has a shaped form retention characteristic;
retaining means which can be attached to an element to fasten the device thereto including lateral projections integral with and made of the same material as said base member for retaining the shape form after being bent about said element;
cushioning means affixed to said base member;
additional retention means affixed to said base member for preventing longitudinal movement thereof after being mounted on appropriate support structure;
said additional retention means including at least one pad having a plurality of hooks, and a complementary pad of loops for permanent affixation on support structure.

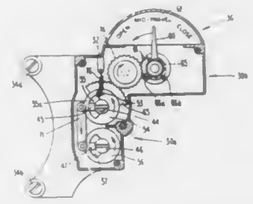
4,940,010
ACID GAS CONTROL PROCESS AND APPARATUS FOR WASTE FIRED INCINERATORS
Peter Z. Kubin, and Jiri E. Stepan, both of Livingston, N.J., assignors to Ogden-Martin Systems, Inc., Fairfield, N.J.
Filed Jul. 22, 1988, Ser. No. 222,909
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—233 **10 Claims**



1. An apparatus for incinerating waste material, comprising:
a furnace section having a turbulent combustion zone;
an additive injection device located adjacent to said turbulent combustion zone of said furnace section;
an additive metering and feeding device for supplying any one of a plurality of additives through said additive injection device and into said turbulent combustion zone of said furnace section to produce optimum adsorption reactions with combustion products of such waste materials;
a bulk storage silo for holding said additive;
a plurality of day bins connected to said bulk storage silo for receiving said additive and respectively supplying said additive to supply pipes;
an unloading device attached at one end to a top portion of said bulk storage silo and having an opposite end located at a point where additive can be supplied into said unloading device;
a venting device located on a top portion of said bulk storage silo and adapted to collect airborne matter;
a vibrating device formed along a portion of said bulk storage silo for vibrating said portion in order that additives stored therein flow freely out of said bulk storage silo;
a motorized metering feeder located adjacent to said vibrating device for controlling the flow rate of additives out of said bulk storage silo; and
a pneumatic conveying system attached to said bulk storage silo whereby additives are entrained into a pressurized air stream such that said additives are conveyed through said pneumatic conveying system to said day (surge) bins.

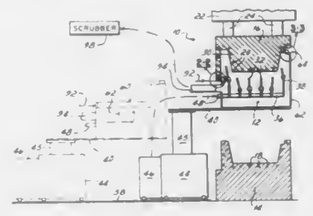
4,940,011
VALVE ACTUATOR TWO ROTOR THREE POSITION INDICATOR
Ivan E. Wilkerson, Lynchburg, and Robert W. Auxier, Forest, both of Va., assignors to Limitorque Corporation, Lynchburg, Va.
Filed May 19, 1989, Ser. No. 354,395
Int. Cl.[5] F16K *37/00*; G01D *13/00*
U.S. Cl. 116—277 **6 Claims**

4. A visual indicator for a valve actuator, that controls a valve stem, that is attached directly to the outer ends of two rotors connected to the geared limit switch of said actuator, comprising:
housing means attached to valve actuator;
a first means inside said housing means connected to a first rotor and rotatable therewith to drive a first lug;
a second means inside said housing means connected to a second rotor and rotatable therewith to drive a second lug;
a first gear means concentric with said first means and movably responsive to drive force exerted by said first lug;
a second gear means concentric with said second means and movably responsive to drive force exerted by said second lug;



linking means for rotatably connecting said first and second gear means; and
indicator means connected to said first gear means and controllably rotatable between predetermined positions to show relative location of the valve stem.

4,940,012
MOLD COATING APPARATUS WITH AIR FLOW CONTROL NUMBERS
Richard J. Zimmerman, Grand Rapids, Mich.; Phillip R. Barnett, Amherst, and Larry Suter, Concord, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio
Filed Dec. 23, 1986, Ser. No. 945,493
Int. Cl.[5] B05B *15/04*
U.S. Cl. 118—301 **11 Claims**



1. Apparatus for coating a molded article comprising:
a first mold member,
a second mold member movable into engagement with said first mold member,
one of said mold members being retractable from and movable into engagement with the other mold member,
said mold members having facing wall portions defining a cavity when said mold members are interengaged, said mold members having shear edges, said shear edges being interengageable when said molds are moved into interengagement,
apparatus for depositing a powder material against a cavity defining portion of the wall of at least one of said mold members,
said powder depositing apparatus including a spray gun and means for flowing said powder material from said spray gun,
a movable frame,
said spray gun being mounted upon said movable frame,
means for moving said frame to align and misalign said spray gun with said cavity defining portion of the wall of said first mold member,
means for masking the shear edge of said first mold member

from the cavity defining portion of the wall of said first mold member, said masking means being mounted upon said movable frame, said masking means comprising

an air flow duct, said duct having side walls defining an air flow chamber contained internally thereof, said duct having an opening communicating with said chamber and located adjacent said shear edge of said first mold member,

first and second air flow control members mounted upon said duct, said control members having opposed edges spaced apart so as to define an air flow gap therebetween, said air flow gap being operable to direct air flow from said duct onto said shear edge of said first mold member so as to effectively mask said shear edge from powder sprayed onto the cavity defining portion of the wall of said first mold member.

4,940,013

APPARATUS FOR COATING FABRIC WEBS

Johannes Zimmer, Ebentalerstrasse 133, A-9020 Klagenfurt, Austria

PCT No. PCT/AT87/00068, § 371 Date Sep. 2, 1988, § 102(e) Date Sep. 2, 1988, PCT Pub. No. WO88/03845, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 18, 1987, Ser. No. 243,551

Claims priority, application Austria, Nov. 18, 1986, A3066/86; Nov. 18, 1986, A3070/86

Int. Cl.[5] B05C *11/02*

U.S. Cl. 118—62 **12 Claims**



1. Apparatus for use in coating a fabric web, comprising:

a first squeegee device movably mounted at a location on a first side of a plane;

a second squeegee device located on a second side of said plane opposite said first side; and

magnet means for magnetically forcing said first squeegee device toward said second squeegee device, such that when a fabric web with coating compound thereon is fed along said plane, said first and second squeegee devices will contact respective sides of said fabric web and smooth said coating compound therealong.

4,940,014

DEVELOPING DEVICE

Hiromitsu Saijo; Masamichi Hayashi, and Takeji Morikawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1988, Ser. No. 251,083

Claims priority, application Japan, Sep. 29, 1987, 62-245285

Int. Cl.[5] G03G *15/09*

U.S. Cl. 118—658 **15 Claims**

1. A developing device comprising:

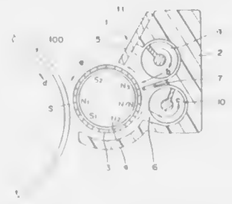
a latent image carrier means for carrying a latent image;

a casing having a sleeve chamber in which an upper chamber and a lower chamber are defined, the sleeve chamber being positioned adjacent the latent image carrier means with the upper and lower chambers disposed one above the other and on a side of the sleeve chamber remote from the latent image carrier means;

a developing sleeve rotatably supported in the device and housed within the sleeve chamber for delivering developing material to the latent image carrier means at a developing station, a fixed location defined at the outer peripheral surface of the sleeve confronting and spaced a predetermined distance from the latent image carrier means to define the developing station;

a conveyance means operatively housed within each of the upper and lower chambers for conveying developing material within the upper and lower chambers in respective directions opposite to each other and generally parallel to the central longitudinal axis of the developing sleeve;

a partition wall member extending generally parallel to the developing sleeve and separating said upper and lower chambers from each other, said partition wall defining a port at an end thereof that is downstream with respect to



the direction of conveyance of the developing material within the lower chamber, said port placing the upper and lower chambers in communication with each other; and

a plurality of magnets accommodated inside the developing sleeve and extending in a direction longitudinally of the developing sleeve while positioned circumferentially of the developing sleeve, said plurality of magnets including a weak magnetic pole disposed at a region confronting the conveyance means housed within the lower chamber and a strong magnetic pole generating a magnetic force of a magnitude greater than that generated by said weak magnetic pole, said strong magnetic pole disposed longitudinally of said weak magnetic pole in said sleeve at a region confronting both the conveyance means housed within the lower chamber and the port defined by the partition wall member.

4,940,015

PLASMA REACTOR FOR DIAMOND SYNTHESIS

Koji Kobashi, Nishinomiya; Kozo Nishimura, Kobe; Koichi Miyata, Akashi; Yoshio Kawate, Kobe; Kazuo Kumagai, Kobe; Norio Suzuki, Kobe; Yutaka Kawata, Kobe, and Kiyotaka Ishibashi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 13, 1989, Ser. No. 379,586

Claims priority, application Japan, Jul. 30, 1988, 63-190832; Nov. 15, 1988, 63-289641

Int. Cl.[5] C23E *16/50*

U.S. Cl. 118—723 **9 Claims**

1. A plasma reactor for diamond synthesis using a reaction gas comprising at least hydrogen and carbon atoms, capable of depositing diamond on a substrate placed in contact with a plasma produced by applying microwaves to the reaction gas to decompose the reaction gas, comprising:

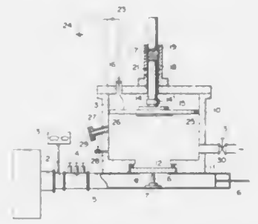
a microwave generator;

a waveguide having a rectangular cross section and connected to the microwave generator to guide the microwaves;

an antenna disposed on a quartz plate within the waveguide;

a microwave window facing the antenna and provided on the wall of the waveguide so as to extend perpendicularly to the axis of the antenna;

a reaction chamber defined by a cylindrical bottom member hermetically joined to the microwave window and the waveguide and provided with a circular hole to form a circular hole in the bottom wall of said reaction chamber, (b) an upper wall closing an upper end of the reaction chamber, and (c) a circumferential wall with a reaction gas inlet port and a gas outlet port; and



a substrate holder disposed within the reaction chamber in facing opposition to the microwave window, said substrate holder being movably mounted so as to be moved toward and away from the microwave window, so as to adjust the distance between the microwave window and the substrate holder.

4,940,016

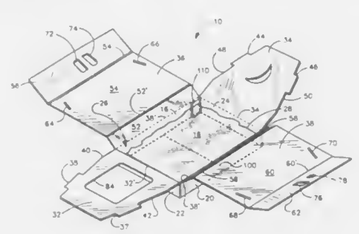
UNITARY COLLAPSIBLE AND DISPOSABLE PET LITTER CONTAINER

Edward A. Heath, 465 Arapahoe, Boulder, Colo. 80302

Filed Mar. 18, 1988, Ser. No. 170,282

Int. Cl.[5] A01K *1/035*

U.S. Cl. 119—1 **21 Claims**



1. An integral, disposable pet litter container foldable between a collapsed state for storage and disposal and an enclosed, erect state for use, said container comprising:

a lower box portion defining a litter-containing receptacle, said lower box portion including bottom means having a plurality of overlapping bottom flap members to provide structural strength to contain litter in both said collapsed and erect states as well as to inhibit seepage therethrough, first and second pairs of oppositely disposed peripheral wall members extending upwardly from said bottom means to form said litter-containing receptacle therewith, and foldable top means having overlapping portions in said collapsed state for covering said lower box portion in said collapsed state for covering said lower box portion and providing structural strength and integrity in said collapsed state;

an upper box portion selectively extendable from said lower box portion, said upper box portion including front and rear panels extending upwardly from said first pair of oppositely disposed peripheral wall members of said lower box portion and adapted for selective folding into said lower box portion of storage when in said collapsed state, and a pair of side panels projecting upwardly from said second pair of oppositely disposed peripheral wall members of said lower box portion to overlap each other and form said foldable top means when in said collapsed state; and

said side panels including means for interlocking with said front and rear panels to selectively maintain said container in said erect state and further including top flap members for overlapping engagement aligned substantially parallel to said bottom means when in said erect state, and including means for interconnecting the same, to form a top, substantially horizontal surface for said container to totally enclose said container and to provide a substantial width dimension at the top of said erect container for ample pet head room therewithin, said front panel having means for pet entry into and from the interior of said enclosed, erect container.

4,940,017

CAGE, ESPECIALLY FOR SMALL EXPERIMENTAL ANIMALS

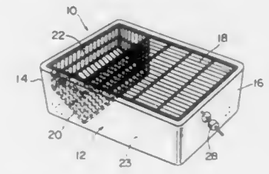
Etsuko Niki; Motohiro Niki, both of 2-22-11, Yushima, Bunkyo-ku, Tokyo-To, Japan; Kap J. Lee, R.R. #1, Box 123, Grand Forks, N. Dak. 58201; Misako Niki, and Mieko Niki, both of 2-22-11, Yushima, Bunkyo-ku, Tokyo-To, Japan

Filed Oct. 11, 1988, Ser. No. 256,309

Claims priority, application Japan, Oct. 30, 1987, 62-273318

Int. Cl.[5] A01K *1/03*

U.S. Cl. 119—18 **10 Claims**



1. A cage especially well suited for confining experimental animals, comprising:

(a) horizontally slidingly shiftable enclosure means including a casing for confining an animal, said casing having a vertical side wall;

(b) there being a hole defined in the side wall of the casing;

(c) a water dispenser fixedly connected to a stationary water conduit and having a stationary spout inserted in the casing through the hole therein for supplying water to the confined animal; and

(d) a connector cup of elastic material hermetically and fixedly mounted to the spout of the water dispenser, the connector cup having an open end held against an outer surface of said wall of the casing around said hole, said casing being held in position with the outer surface of the casing in pressed contact with the connector cup;

(e) whereby the enclosure means and the water dispenser can be readily interconnected as the elastic connector cup is pressed against the outer surface of the casing with the shifting movement of the enclosure means toward the water dispenser.

4,940,018

TOY FOR CATS

Theodore L. Edling, P.O. Box 593, Bethel Island, Calif. 94511

Filed Oct. 20, 1987, Ser. No. 111,816

Int. Cl.[5] A01K *15/02*

U.S. Cl. 119—29 **13 Claims**

1. A toy for exercising cats, comprising,

a base for resting on a floor or other surface and for stabilizing the toy,
a flexible rod,
resilient means positioned between the base and a base end of the flexible rod, for connecting the base end of the flexible rod to the base and for facilitating resilient swinging pendulum-like movement of the rod from a generally vertical position through angular tilting movements with respect to the base, said resilient means tending to bring the flexible rod back up to the generally vertical position, and including means associated with the resilient means for permitting quick removal of the flexible rod from the base so that the rod can be held manually by its base end, said resilient means comprising a coil spring fixed to the base and extending upwardly a short distance from the base, and sized to slidingly receive in its upper end the base end of the flexible rod,



a flexible line member extending from an upper end of the flexible rod, opposite the base end of the rod, hanging down from the upper end of the rod and extending near to the base in a rest position of the toy, and
a toy member connected to a lower end of the flexible line member,
means for offsetting the toy member slightly laterally away from the flexible rod as the rod sits in the spring in the base, in a normal rest position of the toy member,
whereby the toy member hanging from the flexible rod attracts play by a cat, and when the toy member is batted by the cat it moves in a complex pattern due to pendulum type motions of the line member and of the flexible rod line the coil spring, teasing the cat and inducing further play, and whereby the flexible rod maybe removed from the spring in the base so that a person can tease and play with the cat manually using the rod, the line and the toy member.

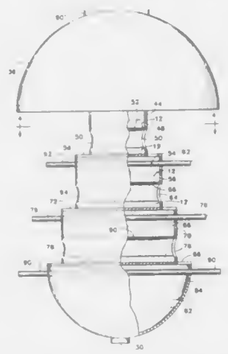
4,940,019

RECYCLING BIRD FEEDER

Jerry W. Coffer, 3207 S.E. 36th, Portland, Oreg. 97202

Filed May 31, 1988, Ser. No. 201,075
Int. Cl.[5] A01K *39/01*
U.S. Cl. 119—522 7 Claims

1. A bird feeder comprising:
(a) a first chamber for holding seed and other feed material;
(b) said first chamber having at least one feed opening defined therein to provide access to feed material contained therein;
(c) baffle means for preventing feed material from flowing freely out of said feed opening;
(d) perch means for supporting a bird, said perch means being located below said feed opening;
(e) a second chamber located below said first chamber, said second chamber having at least one second feed opening defined therein;
(f) second baffle means for preventing feed material from flowing freely out of said second feed opening;
(g) second perch means for supporting a bird, said second perch means being located blow said second feed opening;
(h) conduit means having an inlet positioned above said perch means and adjacent to said feed opening and communicating with said second chamber for passing feed material which is discharged from said feed opening by a bird into said second chamber;



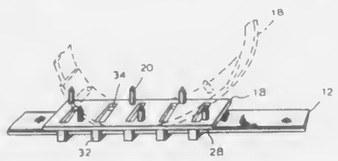
(i) a third chamber located below said second chamber; and
(j) second conduit means having an inlet positioned above said second perch means and adjacent to said second feed opening in communicating with said third chamber, for passing feed material which is discharged from said second feed opening into said third chamber.

4,940,020

ANIMAL RESTRAINING AND TRAINING DEVICE

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Aug. 17, 1988, Ser. No. 233,213
Int. Cl.[5] A01K *1/06*
U.S. Cl. 119—106 9 Claims



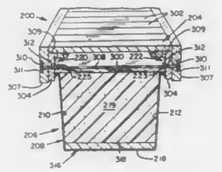
1. An animal collar comprising a cincture adapted to be removably fastened about the neck of the animal and a bendable strip having two opposed surfaces, said strip having a plurality of outwardly extending protuberances integrally formed on one surface and a plurality of guide elements on the other surface for slidably receiving said cincture, said cincture and strip being positionable about the neck of the animal so that when said cincture is fastened about the neck of the animal, the strip is bent into an arc transverse to its length to conform to the shape of the neck, the outer ends of said protuberances touch said animal and said strip and cincture are movable relatively to each other.

4,940,021

FLOATING DOCK

David H. Rytand, 2402 Killarney Way, S.E., Bellevue, Wash. 98004

Continuation of Ser. No. 106,150, Oct. 8, 1987, Pat. No. 4,887,654, which is a continuation-in-part of Ser. No. 816,204, Jan. 6, 1986, Pat. No. 4,709,647. This application May 30, 1989, Ser. No. 344,663
Claims priority, application New Zealand, Oct. 15, 1986, 217943
Int. Cl.[5] B63B *35/38*
U.S. Cl. 114—267 3 Claims



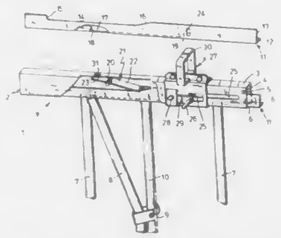
1. A float module for floating docks, said float module comprising:
a hollow open top container having a single contiguous bottom wall, end walls and sidewalls which together define a floatation chamber, said container containing a buoyant material to provide positive buoyancy to said container when water is admitted thereto;
a pair of opposing, load distributing flexural flanges integral with and extending upwardly one from each sidewall of said container; and
a compression resistant panel extending across the open top of said container and abutting said opposing flanges;
said container walls having at least one open hole therethrough at a location such that it will be positioned beneath the surface of the water when the float module is in operative floating position in a body of water and through which hole water can freely enter and leave said floatation chamber to ballast said module.

4,940,022

FEEDING GATE

Pieter Spinder, Le Harkema, Netherlands, assignor to Spinder Stalinrichting B.V., Le Harkema, Netherlands

Filed Dec. 14, 1988, Ser. No. 284,917
Claims priority, application Netherlands, Dec. 16, 1987, 8703045
Int. Cl.[5] A01K *1/08*
U.S. Cl. 119—148 12 Claims



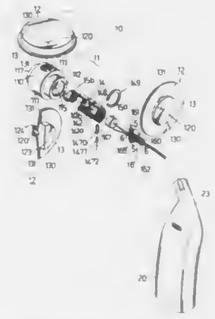
1. A feeding gate comprising a number of feeding openings that can be opened and closed by means of tiltable closing pipes and having a closing mechanism that can be unlatched or latched, respectively, by means of an operating member comprising recesses and being disposed entirely within an upper profile beam by sliding this operating member in the longitudinal direction of the profile beam, said recesses being disposed in the immediate vicinity of a latch that is mounted pivotably in the profile beams, said latch having an end that is automatically received in one of the recesses upon latching, which latching operation can be disconnected for all closing pipes simultaneously or for each closing pipe separately, characterized in that:
the operating member (11) has a first recess (17) having opposite ends for centrally closing and centrally opening the feeding openings, and a second recess (14) terminating in an obliquely rising edge (16) for centrally unlatching the closing pipe (10).

4,940,023

HIGH RESOLUTION STETHOSCOPIC APPARATUS

Ming-Jeag Shue, No. 14, Lane 8, Chung-I Street, Taichung City, Taiwan

Filed Nov. 17, 1988, Ser. No. 272,312
Int. Cl.[5] A61B *7/02*
U.S. Cl. 128—715 12 Claims



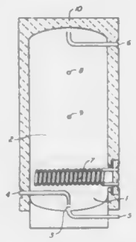
1. A stethoscopic apparatus comprising:
a handle member both for the installation of sound transmission circuit devices and for use as a handle;
a chestpiece assembly having a housing member with a rotatable shaft member positioned therein, a plurality of chestpieces attached on said housing member; and
an adaptor means disposed between said handle member and said chestpiece assembly, having means for connecting with said handle member and said rotatable shaft member of said chestpiece assembly;
wherein each of said chestpieces comprises a substantially concaved disc-shaped base member having a stem formed thereon and a sound transmission opening formed in the stem, and a resonance membrane having a shape conforming to that of said base member; said resonance membrane further including an engaging rim for engaging with said base member and a plateau-shaped protrusion integral with said membrane;
said plateau-shaped protrusions having a height of about one to two times the diameter of said sound transmission opening of said base member of said chestpiece.

4,940,024

HOT WATER HEATER

Joachim Grabietz, Altgesdorferstr. 41, Burgkirchen, Fed. Rep. of Germany 8269, assignor to Hans Terhorst, Burghausen and Joachim Grabietz, Neuotting, both of, Fed. Rep. of Germany

Filed Jun. 23, 1988, Ser. No. 210,604
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1987, 3720900
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—13 R 9 Claims



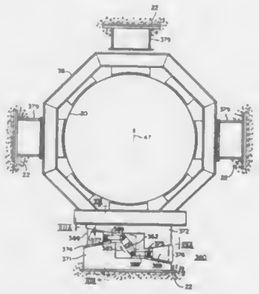
1. Hot water heater comprising a storage container having means through which hot and cold water flows for consumption by separately withdrawing hot and cold water from the container, a cold water inlet in the lower region of the container, a hot water outlet in the upper region of the container, a heating element arranged in the storage container, and a cold water outlet provided in the lower region of the container through which outlet cold water flows, said cold water outlet being for connection to a cold water domestic supply.

4,940,025

STEAM GENERATOR UPPER SUPPORT HAVING THERMAL DISPLACEMENT COMPENSATION

Howard L. Ott, Kiski Township, Armstrong County, and Steven A. Palm, N. Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 6, 1989, Ser. No. 319,591
Int. Cl.[5] F22B *37/24*
U.S. Cl. 122—510 24 Claims



1. A radial support assembly providing for a direct load path for loading forces between a generally cylindrical shell member and a housing generally surrounding the shell member, the support assembly also allowing for free thermal expansion and contraction of the shell member to be supported, said radial support comprising:

a ring girder generally encircling the shell member to be supported;

a plurality of rigid support blocks secured to the housing and radially spaced about the shell member; and

compensating support means operably associated with the housing and the ring girder and disposed proximate to the load path, said compensating support means responsive to said thermal expansion and contraction wherein a nominal gap is substantially maintained between said rigid support blocks of the support arrangement and the ring girder such that said loading forces are resisted by the radial support assembly.

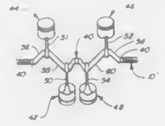
4,940,026

INTERNAL COMBUSTION ENGINE WITH BALANCING FORCES

Martin A. Fisher, 8308 S.W. 103rd Ave., Miami, Fla. 33173

Continuation-in-part of Ser. No. 49,308, May 13, 1987, abandoned. This application Nov. 25, 1988, Ser. No. 275,904
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—53 R 15 Claims





1. An internal combustion engine of the opposed cylinder type comprising:

(a) a crankshaft and at least one set of pistons movably connected thereto, each piston of said one set reciprocally mounted within a separate corresponding cylinder and rotatably drive said crankshaft during a power stroke thereof,

(b) said one set of pistons including at least a first piston and cylinder assembly mounted on one side of said crankshaft and at least a second and a third piston and cylinder assembly mounted on the other side of said crankshaft in directly opposed relation to said first piston and cylinder assembly,

(c) each of said cylinders of said second and third piston and cylinder assemblies comprising one half the displacement volume of said cylinder of said first piston and cylinder assembly,

(d) whereby vibration of the engine is substantially reduced at all running speeds.

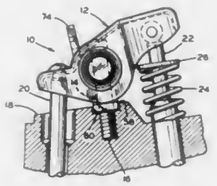
4,940,027

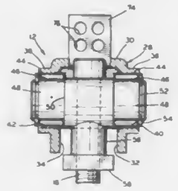
MARINE ENGINE WITH WATER COOLED FUEL LINE FROM REMOTE TANK

John F. Garms, Menasha, Wis., assignor to Brunswick Corp., Skokie, Ill.

Filed Apr. 15, 1988, Ser. No. 182,485
Int. Cl.[5] F02M *31/20;* F02B *47/00*
U.S. Cl. 123—73 AD 5 Claims

1. A marine propulsion system comprising a water cooled internal combustion engine, a remote fuel tank, a conduit connected between said fuel tank and said engine, said conduit having a first passage supplying fuel from said tank to said engine, said conduit having a second passage supplying cooling water from said engine towards said tank, said conduit having a third passage returning water from said second passage back to said engine.



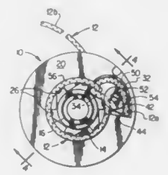


4,940,028

RECOIL PULL ROPE REEL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Lloyd H. Tuggle, Shreveport, La., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 8, 1989, Ser. No. 308,316
Int. Cl.[5] F02N *3/02*
U.S. Cl. 123—185 B 11 Claims



1. A rope reel for use in conjunction with a pull rope in a manual, recoil type starting system in an internal combustion engine, said rope reel comprising:

a hub extending along an axis;

first and second radially outwardly projecting flanges coaxially secured to said hub in an axially spaced relationship thereon and defining therebetween an annular cavity within which the pull rope may be operatively wound, each of said first and second flanges having outer and inner sides, an axial portion of said hub projecting outwardly from said first flange;

anchoring means, positioned on said outer side of said first flange, for clampingly securing an inner end portion of the pull rope on said outer side of said first flange; and

a first aperture formed axially through said first flange radially adjacent said projecting axial portion of said hub, said first aperture being sized, and circumferentially positioned on said first flange, in a manner permitting a second portion of the pull rope adjacent the clamped inner end portion thereof to be at least partially looped around said projecting axial portion of said hub and the free end of the pull rope inserted inwardly through said first aperture into said annular cavity and moved radially outwardly therethrough to snug the second pull rope portion around said projecting axial portion of said hub and ready the pull rope for operative winding thereof within said annular cavity;

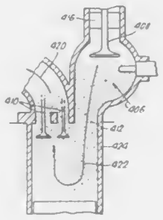
said anchoring means being operative to clamp a looped inner end portion of the pull rope on said outer side of said first flange and position said looped inner end portion to extend externally around said first aperture in a manner permitting said second pull rope portion to be wrapped entirely around said projecting axial portion to be wrapped entirely around said projecting axial portion of said hub, and permit the free and portion of the pull rope to be inserted sequentially through said looped inner end portion, inwardly through said first aperture and into said annular cavity for subsequent movement radially outwardly therethrough.

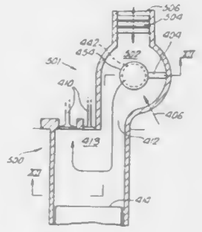
4,940,029

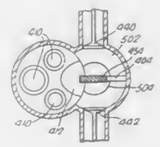
TURBOCOMPOUNDED TWO-STROKE PISTON ENGINES

John A. J. Rees, 7 Hollies Close, Newton Solney, Burton-on-Trent, Staffordshire, DE15 OSB, England

Continuation-in-part of Ser. No. 273,922, Nov. 21, 1988, abandoned, which is a continuation of Ser. No. 104,059, Sep. 16, 1987, Pat. No. 4,807,579. This application Oct. 27, 1989, Ser. No. 428,007
Claims priority, application United Kingdom, Jan. 16, 1986, 8601065
Int. Cl.[5] F02B *75/02*
U.S. Cl. 123—257 6 Claims







1. A turbocompounded 2-stroke piston engine having a cylinder head incorporating, for each cylinder of said piston engine, an indirect combustion chamber, inlet valve means for admitting turbocharging air to the cylinder, and exhaust valve means for exhausting combustion gases from the cylinder, the piston engine being adapted to perform an operating cycle, comprising a compression stroke and an expansion stroke, in which the expansion stroke expends the combustion gases to a pressure lower than the incoming turbocharging air, and in which scavenging of the combustion gases from the cylinder is

facilitated by arranging that both the inlet valve means and the exhaust valve means are open at the same time during an early part of the compression stroke so as to purge the cylinder with turbocharging air during said early part of the compression stroke, whereby the cylinder has a compression ratio which is substantially less than its expansion ratio; wherein the inlet valve means is incorporated in the indirect combustion chamber such that when the inlet valve means is open, the incoming turbocharging air flows through the indirect combustion chamber before entering the cylinder, the indirect combustion chamber having a cross-sectional area which decreases towards the cylinder to form passage means for connecting the indirect combustion chamber to the cylinder and directing the incoming turbocharging air towards the piston thereby to displace the combustion gases towards the exhaust valve means and maximize the efficiency of said scavenging, said passage means having a smaller cross-sectional area than said indirect combustion chamber to assist in directing incoming turbocharging air towards the piston so as to displace combustion gases towards the exhaust valve means, said exhaust and inlet valve means and said cylinder each having selected diameters with the sum of the diameters of the exhaust valve means and the inlet valve means being greater than the diameter of said cylinder, said passage means occupying a smaller portion of the cylinder head area than the exhaust valve means and the area of the inlet valve means in the indirect combustion chamber being substantially greater than the minimum cross-sectional area of said passage means, whereby mass flow rates of turbocharging air and combustion gases into and out of the cylinder are maximized and scavenging of combustion gases by turbocharging air is facilitated.

4,940,030

ABNORMALITY DETECTING SYSTEM FOR AN AUTOMOTIVE ENGINE

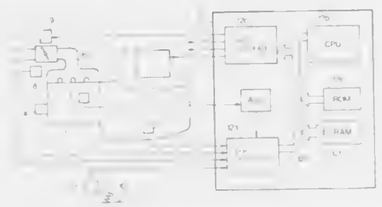
Koji Morikawa, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1989, Ser. No. 341,145

Claims priority, application Japan, Apr. 30, 1988, 63-059605[U]

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 D **3 Claims**



1. A system for detecting abnormality of an automotive engine for a motor vehicle having an accelerator pedal for controlling a throttle valve of the engine, comprising:

an accelerator sensor for detecting a depression degree of the accelerator pedal and for producing an accelerator signal;

an engine speed sensor for detecting an engine speed and for producing an engine speed signal;

a torque sensor for detecting output torque of the engine and for producing a torque signal representing the detected torque;

storing means for storing reference torques arranged in accordance with the depression degree of the accelerator pedal and the engine speed;

comparator means for comparing the detected torque represented by the torque signal with a reference torque derived from the storing means in accordance with the accelerator and the engine speed signals and for producing an abnormality signal when the detected torque deviates from a permissible range with respect to the derived reference torque; and

indicator means responsive to the abnormality signal for indicating an abnormality.

4,940,031

SETTING DEVICE FOR A FEED DEVICE OF AN INTERNAL COMBUSTION ENGINE

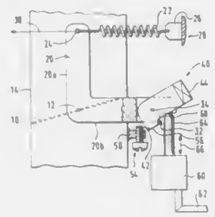
Arnold Mann, Biebergemünd, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1989, Ser. No. 381,123

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1988, 3827408

Int. Cl.[5] F02D *41/16*

U.S. Cl. 123—339 **13 Claims**



1. In a setting device for a feed device of an internal combustion engine with idling speed-of-rotation control, the setting device comprising

a displacement rod, a return spring, a first adjustable stop, a second fixed stop, and an actuating lever of the feed device; and wherein

the feed device is connected to the displacement rod and is pretensioned by the return spring;

the first adjustable stop and the second fixed stop are operative with the actuating lever of the feed device, the second fixed stop limiting the range of adjustment of the first stop for a minimum setting of the feed device; and wherein

the feed device further comprises a mechanical reset means, and an adjustable abutment element which cooperates with the fixed stop and the adjustable stop;

the abutment element is located on the actuating lever of the feed device, and is acted on by the mechanical reset means;

the abutment element, upon normal idling operation of the idling speed-of-rotation control is in engagement with the first adjustable stop and is disposed, against an action of the reset means, in a position out of engagement with the second fixed stop; and

the abutment element, in the event of an abnormal idling speed operating condition of the idling speed-of-rotation control in which the abutment element is out of engagement with the first adjustable stop and then reset, is in engagement, under the action of the reset means, with the fixed stop and holds the actuating lever for the feed device to permit an adjustment of the feed device somewhat greater than the minimum adjustment.

4,940,032

FUEL BOOSTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

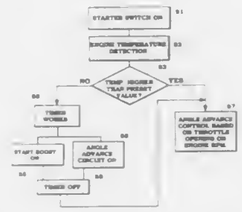
Hiroaki Fujimoto, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 30, 1989, Ser. No. 374,292

Claims priority, application Japan, Jul. 4, 1988, 63-166558

Int. Cl.[5] F02D *43/00*

U.S. Cl. 123—424 **9 Claims**



1. In an internal combustion engine including a crankcase, a crankshaft rotatably journaled in said crankcase and an intake manifold, the improvement comprising an automatic fuel boosting system including means for sensing if the engine temperature at the time of starting is below a predetermined value, means for supplying an optimum amount of fuel to the engine intake manifold based on the engine temperature, means, responsive to said sensing means, for advancing the ignition angle based on the engine temperature and means, responsive to said advancing means, for actuating said supply means based on the engine temperature, if said engine temperature is sensed to be below the predetermined value.

4,940,033

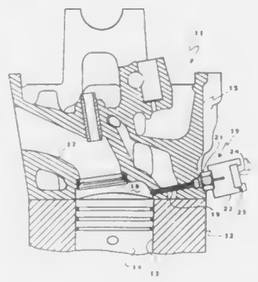
METHOD OF OPERATING AN ENGINE AND MEASURING CERTAIN OPERATING PARAMETERS

Steven L. Plee, Northborough; Peter Hartman, Worcester, both of Mass.; Jay K. Martin, Madison, Wis.; J. Paul Nolan; Donald J. Remboski, Jr., both of Northborough, Mass., and Richard R. Ross, Shrewsbury, Mass., assignors to Barrack Technology Limited, Marlborough, Mass.

Continuation of Ser. No. 193,918, May 13, 1988. This application Nov. 3, 1988, Ser. No. 266,682

Int. Cl.[5] F02D *41/22;* F02P *5/14;* G01L *23/22*

U.S. Cl. 123—425 **19 Claims**



1. The method of operating an internal combustion engine having a combustion chamber, means for forming a combustible fuel/air mixture within the combustion chamber and means for detecting the luminosity within the combustion chamber in the range of wave lengths about 300 nm to about 947 nm during each cycle of operating of the engine from prior to the initiation of combustion until after the completion of the combustion process, and adjusting the fuel/air ratio to maintain the desired luminosity characteristic.

4,940,034

CONTROL CIRCUIT AND METHOD FOR CONTROLLING THE SPEED OF AN ELECTRIC FUEL PUMP FOR AN INTERNAL COMBUSTION ENGINE EQUIPPED WITH FUEL INJECTION

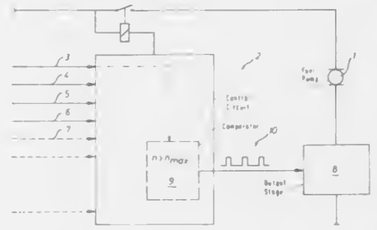
Hans Heim, Stuttgart, and Hermann-Josef Klein, Eberdingen-Hochdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 6, 1989, Ser. No. 294,732

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1988, 3800177

Int. Cl.[5] F02M *39/00*

U.S. Cl. 123—497 **4 Claims**



1. A control circuit for an internal combustion engine equipped with a fuel injection system wherein a pressure is generated in the system for injecting the fuel, the control circuit comprising:

an input for receiving an input signal having a magnitude indicative of the speed (n) of the engine;

control means connected to said input for receiving said input signal and for controlling and adapting the speed and delivery rate of said fuel pump to the quantity of fuel required by the engine;

speed limit-value means for controlling the speed of said fuel pump to a speed value below a minimum value when the speed (n) of the engine exceeds or is about to exceed a specific predetermined maximum speed (n_{max}), said speed value of said pump being sufficient for maintaining the system pressure in said system for injecting the fuel; and,

said speed limit-value means being a comparator which includes a unit for determining the speed gradient of the speed of the engine, said speed gradient being applied for controlling the speed and delivery rate of the fuel pump.

4,940,035

VARIABLE FLOW RATE PUMP FOR FLUID

Peter Waring, Wainuiomata, New Zealand, assignor to Her Majesty the Queen in right of New Zealand, New Zealand

Filed Nov. 9, 1988, Ser. No. 269,243

Claims priority, application New Zealand, Nov. 10, 1987, 222499

Int. Cl.[5] F02M *39/00;* F04B *1/28*

U.S. Cl. 123—497 **13 Claims**

1. An internal combustion engine fuel or fuel injection pump for delivering fuel to an engine over a range of fuel flow rates and engine operating condition, comprising:

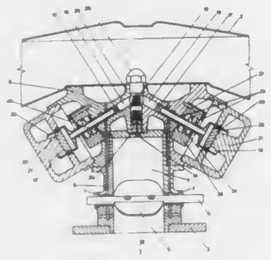
at least two reciprocating fluid delivery mechanisms fluid flow connected to each other and to an outflow from the pump and able to operate at a frequency sufficient to enable the phase of operation of the fluid delivery mechanisms relative to one another to be varied in a response time enabling the flow rate of fuel from the pump to

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satisfy or substantially satisfy the changing fuel requirements of the engine as the engine speed or load varies;

electromagnetic means associated with each fluid delivery mechanism for driving same;

means for providing alternating electric energizing currents to each said electromagnetic means for driving the fluid delivery mechanism, in a manner enabling alteration of the phase relationship between said electric energizing currents for varying said phase of operation of the fluid delivery mechanisms relative to one another and thus the delivery rate of fuel from the pump, with said alternating electric energizing currents driving said fluid delivery mechanisms at said frequency sufficient to enable the operation of the fluid delivery mechanisms relative to one another and thus permitting the flow rate of fuel from the pump to be varied in a response time enabling the pump to satisfy or substantially satisfy the changing fuel requirements of the engine as the engine speed or load varies, over said range of engine operating condition.



4,940,036

FUEL INJECTION PUMP

Gérard Duplat, Vaugneray, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

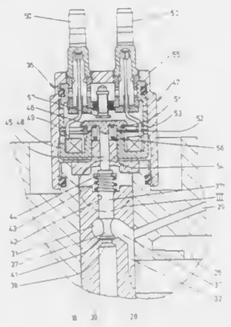
PCT No. PCT/DE88/00312, § 371 Date Feb. 13, 1989, § 102(e) Date Feb. 13, 1989, PCT Pub. No. WO88/09868, PCT Pub. Date Dec. 15, 1988

PCT Filed May 28, 1989, Ser. No. 315,895

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1987, 3719832

Int. Cl.[5] **F02M** *39/00*

U.S. Cl. 123—506 **9 Claims**



1. A distribution fuel injection pump for delivering fuel to a plurality of injection nozzles of an internal combustion engine, said distribution fuel injection pump comprising an inlet communicating with a source of fuel; an outlet for delivering fuel to the injection nozzles; a pump working space communicating with said inlet and outlet; at least one pump plunger defining at least partially said pump working space; a rotatable distributor piston having a distributor bore communicating said pump working space with said outlet; and a control valve for controlling fluid flow through said outlet, said distributor piston comprising a relief bore communicating with a relief space, said control valve comprising a valve opening located in said distributor piston and connecting said distribution and relief bores, a valve member located in said distributor piston for controlling fluid flow through said valve opening to thereby control the fluid flow between said distribution bore and said relief bore, and an electromagnet for controlling movement of said valve member; said distributor piston comprising an axial guide bore, said valve member being formed as a valve needle having an end remote from said valve opening, said control valve further including a tappet actuated by said electromagnet and engaging said remote end, and a spring for biasing said valve needle to an open position thereof, said electromagnet having an armature, said tappet having a rounded front end engaging said remote end of said valve needle.

4,940,037

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

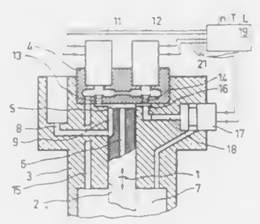
PCT No. PCT/DE88/00350, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO89/00242, PCT Pub. Date Jan. 12, 1989

PCT Filed Jun. 11, 1988, Ser. No. 347,887

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1987, 3722264

Int. Cl.[5] **F02M** *39/00*

U.S. Cl. 123—506 **14 Claims**



1. A fuel injection system for an internal combustion engine, said fuel injection system comprising:

a high-pressure pump including pump work space and means for delivering a constant fuel quantity per a pump cycle from said pump work space;

a first relief duct for returning a first return flow quantity;

first open/close control means for controlling the first flow quantity flowing through said first relief duct to thereby determine a start and an end of the delivery;

a second relief duct for returning a second return flow quantity and including a control throttle; and

electronic control means for controlling the fuel delivery in accordance with characteristic values of the internal combustion engine and said high-pressure delivery pump;

said control throttle having a constant cross-section, said fuel injection system further comprising quantity measuring means located in said second relief duct for measuring the second return flow quantity and a second open/close control means for controlling the second return flow quantity, said electronic control means comprising means for controlling the flow delivery in accordance with characteristic values of said quantity measuring means and said second open/close control means and in accordance with the constant fuel delivery quantity also used as a characteristic value.

4,940,038

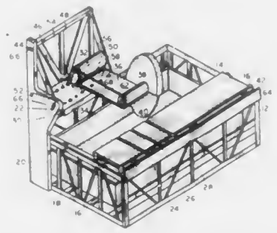
TILE AND MARBLE CUTTING SAW APPARATUS AND METHOD

Kevin M. O'Keefe, 18 Suffolk Ave., West Yarmouth, Mass. 02673

Filed Feb. 1, 1989, Ser. No. 305,415

Int. Cl.[5] **B28D** *1/04*

U.S. Cl. 125—13.01 **14 Claims**



1. A masonary cutting apparatus, which apparatus comprises in combination:

(a) a table support with a horizontal surface having a longitudinal and a lateral axis;

(b) a tray means on the horizontal surface of the table support, the tray means longitudinally moveable between a masonry cutting position wherein the masonry on the tray is cut, and a masonry non-cutting position;

(c) a motor means;

(d) a circular blade cutting means driven by the motor means, the circular blade cutting means adapted to cut masonry in a cutting position;

(e) a shelf support means to support the motor means and the cutting blade means and to move the motor means and the cutting blade means laterally on the shelf support means between preselected masonry cutting positions;

(f) locating means to locate the motor means and the cutting blade means in a preselected cutting position on the shelf support means;

(g) securing means to secure the located motor means and cutting blade means in the preselected cutting blade position and to permit the release of the securing means so that the motor means and cutting blade means can be easily moved laterally to a different preselected cutting position; and

(h) the tray means characterized by a plurality of generally longitudinally, preselected cutting grooves placed therein in preselected positions to permit the cutting blade means to cut the masonry in the preselected located and secured cutting positions, the grooves in the tray means matching the preselected, secured located position of the motor means and the cutting blade means for each preselected cutting position to which the motor means and the cutting blade means are laterally moved.

4,940,039

CUTTING TOOL

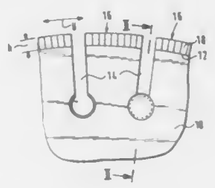
Rudolf Buettner, Scheide-Lahn-Strasse 8, D-6345 Eschenburg 4, Fed. Rep. of Germany

Continuation of Ser. No. 180,403, Apr. 12, 1988, abandoned. This application Aug. 8, 1989, Ser. No. 391,678

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 3712953

Int. Cl.[5] **B28D** *1/04*

U.S. Cl. 125—15 **6 Claims**



1. A cutting tool for cutting of natural stone, concrete, ceramics and the like, comprising:

a very large diameter disk having means defining a plurality of circumferentially spaced cutting segments on the periphery of said disk, said cutting segments being separated by means defining radially outwardly opening and axially opening grooves adapted to receive chip material so that it can be discharged during a cutting operation, said cutting segments each having a circumferentially extending length and means thereon for defining at least a pair of cutting pieces with the entire length of each cutting piece, including axially oppositely facing sidewalls thereof, having a uniform axial thickness and at least one of a wave-shape, or zigzag-shape in the circumferential direction, mutually adjacent and opposing axially facing cutting piece surfaces being spaced from one another to define a radially outwardly opening, continuous circumferentially extending channel therebetween, means on each cutting piece defining plural apex portions and plural grooved portions alternately spaced along the length of each cutting piece, said apex portions on one side of one cutting piece being received in said grooved portions on a side of the other cutting piece facing said one side to thereby provide a blockage to the otherwise unobstructed continuity of said circumferentially extending channel in a plane of rotation of said disk.

4,940,040

ADJUSTABLE COOKING OVEN

James E. Randall; Ronald D. Lemke, both of Huron, and Robert A. Mesteller, Toledo, all of Ohio, assignors to Stein, Inc., Sandusky, Ohio

Filed Jan. 31, 1989, Ser. No. 304,368

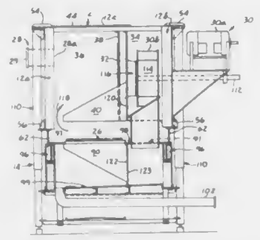
Int. Cl.[5] **F24C** *15/32*

U.S. Cl. 126—21 A **27 Claims**

1. A food cooking oven comprising an upper hood means and base means which are separable from one another and define a substantially closed vapor leak proof enclosure except for an inlet and outlet in said enclosure, wherein said hood means comprises side walls, end walls, and a top wall, and said base means comprises side walls, end walls and a bottom wall, said enclosure defining a cooking chamber for receiving food product therein, means for conveying food product through said chamber from said inlet and exiting through said outlet, heater means extending through a wall of said cooking chamber for heating a gaseous medium, suction fan means on a wall of said cooking chamber in relatively closely spaced relation from an outlet of said heater means, a source of moisture disposed in relatively closely spaced relation to said outlet of said heater means for mixing moisture with said gaseous medium

from said heater means, means disposed above and below said conveying means for directing said gaseous medium to opposite sides of said conveying means for impingement onto and cooking of food products thereon, a second chamber separate from said cooking chamber and in communication with the pressure side of said fan means for directing the mixture of gaseous medium and moisture to said means disposed above and below said conveying means for impingement of said gaseous medium onto said food products, wherein at least certain ones of said means disposed above and below said conveying means are adapted to be selectively movable relative to said conveying means during operation of said oven so as to vary the cooking characteristics of the oven.

25. A method of cooking food products in an oven including a substantially closed vapor leak proof elongated enclosure having an inlet and outlet in opposite end walls of the enclosure, and including conveyor means for conveying food product through the cooking chamber in said enclosure from said inlet and exiting through said outlet, wherein said enclosure



includes separable hood means and base means, comprising providing a source of gaseous cooking medium and directing it into said cooking chamber, applying moisture to said cooking medium closely adjacent to said source of gaseous cooking medium and then sucking by fan means the moisturized cooking medium from said cooking chamber into another chamber separate from but adjacent to said cooking chamber, then forcing the moisturized cooking medium via said other chamber to means disposed above and below said conveying means for directing said gaseous medium toward the respective confronting surfaces of said conveyor means to cause impingement of said gaseous cooking medium on the food product, and then recirculating said cooking medium from said cooking chamber back into said other chamber via said fan means, and providing for adjustment of the elevation of at least certain of said means disposed above and below said conveying means during operation of said oven whereby the cooking characteristics of the oven may be varied and the cooking operation may be optimized.

4,940,041

HEATER HAVING A CASING WITH AN INTEGRALLY CAST MOUNTING SPACE FOR CONTROL COMPONENTS

Josef Riedmaier, Penterried; Friedrich Widemann, and Bernhard Schmatelka, both of Munich, all of Fed. Rep. of Germany, assignors to Webasto AG Fahrzeugtechnik, Gauting, Fed. Rep. of Germany

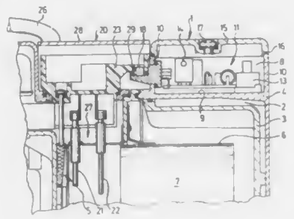
Filed Mar. 3, 1989, Ser. No. 318,543

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1988, 3807397

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R **24 Claims**

1. A vehicle auxiliary heater, of the type which operates with a liquid heat exchange medium that flows through a space between a heat exchanger and a jacket-like outer casing and having a control device with inputs and outputs for controlling essential operating parts, said parts comprising at least one of a combustion air fan, ignition device, flame monitor, circulating device for the heat exchanger medium, and a solenoid valve of a fuel feed device, wherein a mounting space is formed directly on the jacket-like outer casing by an integrally cast formation of said outer casing in which printed circuit boards and sensor



elements of said control device are mounted, said sensor elements comprising a temperature sensor for the heat exchange medium and a temperature safety device that are mounted on a bottom wall of the mounting space formed by the jacket-like outer casing.

4,940,042

SYSTEM AND APPARATUS FOR VENTING WATER HEATER

Henry J. Moore, Jr., Playa Del Rey, and Michael K. Garrett, Lakewood, both of Calif., assignors to Mor-Flo Industries, Inc., Cleveland, Ohio

Filed Aug. 24, 1988, Ser. No. 235,973

Int. Cl.[5] F24H *1/00*

U.S. Cl. 126—344 **12 Claims**

1. An indoor domestic type water heater vented directly to outdoor atmosphere under the force of natural convection and comprising:

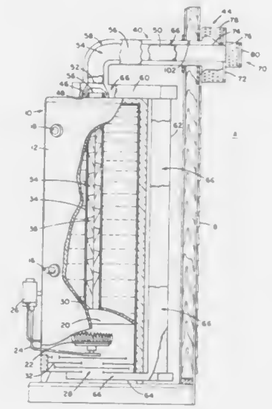
a generally cylindrical water heater body having a generally flat horizontal top surface, a bottom and a vertical side wall including a combustion chamber having a burner, a combustion air inlet opening and a flue gas outlet opening, and a flue pipe extending vertically from said outlet opening to an open end at the top of said water heater body;

a first conduit assembly extending from said water heater to an outdoor end communicating with outdoor atmosphere, said conduit assembly comprising a first conduit extending from said outdoor end of said conduit assembly to an indoor position adjacent said upper end of said fluid pipe, a closure member defining an airtight convective flow space between said first conduit at said indoor position and said open upper end of said flue pipe, a second conduit received telescopically over said first conduit to define an air flow plenum between said first and second conduits, said second conduit extending from said outdoor end of said conduit assembly to said indoor position of said first conduit;

duct work extending from said second conduit at said indoor position to said combustion air inlet opening, said duct work comprising an upper connecting duct extending horizontally radially outwardly from said air flow plenum at said top of said water heater body to said water heater body side wall, a vertical duct extending downwardly from said upper connecting duct to said water heater body bottom and a lower connecting duct extending from said vertical duct across the bottom of said water heater body to said combustion air inlet opening, said upper connecting duct, said vertical duct and said bottom connecting duct defining an airtight convective flow space communicating said air flow plenum with said combustion chamber; and,

said water heater body further includes air flow baffles within said water heater body adjacent said combustion air inlet opening and below said burner and above said inlet opening;

said inlet opening being positioned directly below said baffle,



whereby all combustion air must flow through said inlet opening and around said baffle.

4,940,043

CERVICAL COLLAR OF LAMINATE CONSTRUCTION

William R. Burns; Gary R. Burns, and Paul W. Burns, all of East Greenwich, R.I., assignors to Emergency Medical Products, Inc., Warwick, R.I.

Continuation-in-part of Ser. No. 943,655, Dec. 17, 1986, abandoned. This application Apr. 13, 1989, Ser. No. 337,418

Int. Cl.[5] A61F *5/01*

U.S. Cl. 128—75 **1 Claim**

1. A cervical collar comprising:

front and back halves adapted to fit around a person's neck;

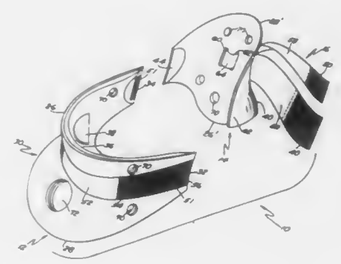
said halves being preformed from a laminated member comprising exterior layers of foamed polymeric material and an interior layer disposed between said exterior layers, said internal layer being of a substantially solid thermoplastic material and being centrally coextensive with the exterior layers to define an un-reinforced periphery;

said front half having a front most portion with a chin receiving depression formed in the top edge thereof, said portion extending generally downwardly and providing a lower edge means for engaging the upper portion of the chest, and end portions extending from said front most portion along both sides of the neck, said end portions tapering in height away from said front portion;

said rear half having a rear most portion curved in the vertical direction to correspond to the shape of the base of the head and neck along the spine, and end portions extending from said rear most portion along both sides of the neck, said end portions tapering in height away from said rear most portion, said rear portion having a pair of parallel slots substantially central of the rear half;

said halves being provided with a plurality of ventilation holes;

said ends of said front half tapering in thickness so as to overlap said ends of said back half to provide continuous encircling support around the neck;



strap means for positioning said halves on the neck and strap securing means being mutually cooperative for releasably securing the ends of said strap means and retaining said halves in a collar configuration;

said strap means including a first strap spanning said front half along its outer perimeter and securely fastened thereto at intermediate points and at said ends by stitching to the front half, and a second strap spanning said back half along its outer perimeter by being looped through parallel slots formed in said rear most portions, said second strap being gripped by said slots.

4,940,044

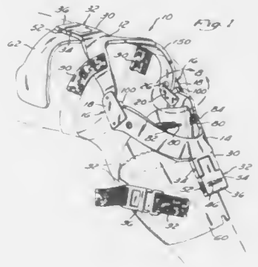
KNEE BRACE INCORPORATING ADJUSTMENT MEANS TO ACCOMMODATE ANATOMICAL VARIATIONS OF THE KNEE JOINT AND LEG

James D. Castillo, Mission Viejo, Calif., assignor to Innovation Sports, Inc., Irvine, Calif.

Filed Feb. 8, 1989, Ser. No. 308,117

Int. Cl.[5] A61F *3/00*

U.S. Cl. 128—80 C **14 Claims**



1. A knee brace comprising:

a pair of frame members sized to be positionable in an inverted relative orientation above and below the knee joint

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of a user with the end portions of said frame members disposed laterally on opposite sides of the knee joint and the central portion of said frame members disposed adjacent the front of the user's leg;

a pair of hinge members disposed substantially adjacent the knee joint and connected to the end portions of said frame members to pivot said frame members about the knee joint;

a first and second support member removably attachable to the front of the user's leg above and below the knee joint;

a flapper hinge member mounted to each of said first and second support members engageable with a respective one of said pair of frame members to affix and permit rotational movement of each of said frame members about an axis generally parallel to the pivot axis of said pair of hinge members, said rotational movement allowing said knee brace to accommodate plane variance conditions of the user's leg; and

means formed on said flapper hinge member for varying the lateral position of said first and second support member relative said pair of frame members, said means comprising a carriage slidably positioned on said flapper hinge member and mounted to each of said first and second support members.

4,940,045

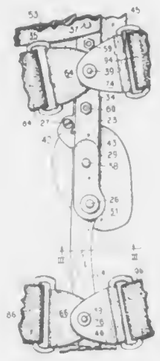
KNEE GUARD AND BRACE WITH ADJUSTABLE MEDIAL CONDYLE SUPPORT PAD

Hendrick L. Cromartie, 2 Ridgewood Rd., Rome, Ga. 30161

Filed Dec. 22, 1988, Ser. No. 288,637

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—80 C **4 Claims**



1. A knee guard and brace, which comprises:

(a) lateral and medial side members which are adpated to fit on the outer and inner sides, respectively, of a wearer's leg, the lateral side member having first and second ribs and a pair of elongated thigh and calf support pads, the first and second ribs being rigidly connected to the thigh and calf support pads, respectively; the medial side member having third and fourth ribs; an elongated condyle support pad; and means hingedly connected to the third rib for supporting the condyle support pad, the supporting means lacking means for applying a spring-like bias to the condyle support pad, the supporting means including a plate on which the condyle support pad is rigidly mounted;

(b) first means situated generally between the pads for interconnecting the first and second ribs, the first and second ribs and the first interconnecting means forming a lateral bridge over the knee joint;

(c) a thigh cross member which is rigidly connected to the first and third ribs and a calf cross member which is rigidly connected to the second and fourth ribs;

(d) second means situated generally between the thigh and calf cross members for interconnecting the third and fourth ribs, the third and fourth ribs and the second interconnecting means forming a medial bridge over the knee joint;

(e) the thigh cross member and the first and third ribs forming an upper frame and the second and fourth ribs and the calf cross member forming a lower frame, the upper and lower frames preventing the lateral bridge from deforming medially under the impact of a blow;

(f) means for suspending the upper and lower frames along the wearer's leg; and

(g) means mounted on said supporting means for limiting the travel, in a direction toward the second interconnecting means, of an end of the condyle support pad which is distal from points at which said supporting means is hingedly connected to the third rib, the limiting means including means for adjusting the extent to which said end of the condyle support pad can travel in a direction toward the second interconnecting means; the limiting means further comprising means including a spacer rotatable about a pivot on the plate for determining the angle at which the longitudinal centerlines of the condyle support pad and of the third rib can be inclined with respect to each other.

4,940,046

POST-OPERATIVE BUNION SPLINT

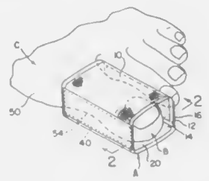
Richard P. Jacoby, 6021 E. Mockingbird La., Paradise Valley, Ariz. 85253

Division of Ser. No. 226,364, Jan. 19, 1981, Pat. No. 4,414,964.

This application Nov. 14, 1983, Ser. No. 551,331

Int. Cl.[5] A61F *5/00, 5/30*; A61B *19/00*

U.S. Cl. 128—81 R **10 Claims**



1. A toe protector device comprising a generally rectangular toe-enclosing pad portion of cushion material having opposite ends for wrapping around the toe of a patient and a generally rectangular-shaped forefoot-engaging pad portion of cushion material for wrapping around the forefoot of the patient, hook-loop separable fastener means on said toe-engaging and forefoot-engaging pad portions for holding them in place wrapped around the toe and forefoot of the patient, and connector means tying said pad portions together in place on the toe and forefoot of the patient; said conector means having a separate tie strap of hooked-type fastener fabric material connectable to said toe-engaging and forefoot-engaging pad portions in a selected tautened position therebetween to locate and hold the toe of the patient in a desired position relative to the forefoot of the patient.

4,940,047

TEXTILE SHEET-LIKE STRUCTURE WITH REACTIVE RESIN

Roland Richter, Cologne; Wolfram Mayer, Odenthal-Glöbusch; Günter Langen, Wolfstein, and Willy Leyser, Bedesbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Karl Otto Braun KG, Wolfstein, both of, Fed. Rep. of Germany

Filed Jun. 17, 1988, Ser. No. 208,348

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1987, 3720762; Aug. 7, 1987, 3726268

Int. Cl.[5] A61F *5/04*

U.S. Cl. 128—90 **19 Claims**

1. Textile sheet-like structure impregnated or coated with water-hardening synthetic resin wherein said impregnated or coated structure is sealed in a film which is impermeable to water, said textile comprising organic fibers with an elasticity modulus of 200 to 2500 daN/mm^2 and having an extensibility in the longitudinal direction of at least 10% before hardening of said resin.

4,940,048

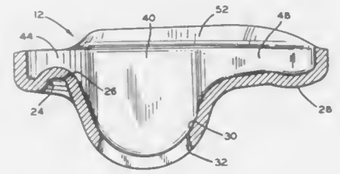
BOAT-TYPE ROCKER ARM WITH FLANGES

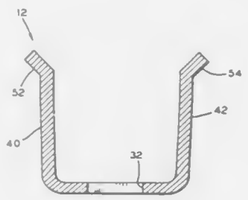
Jesse V. Mills, Toledo, Ohio, assignor to Henley Manufacturing Holding Company, Inc., Hampton, N.H.

Filed Nov. 9, 1989, Ser. No. 434,857

Int. Cl.[5] F01L *1/18*

U.S. Cl. 123—90.39 **22 Claims**





1. A cold-formed, boat-type rocker arm comprising an elongate, one-piece metal body of generally U-shaped configuration in transverse cross section throughout most of its length, said body having a bottom wall and side walls extending upwardly therefrom and structurally integral therewith, said body having means at a first end portion thereof for receiving a push rod, said body having additional means at a second end portion thereof for receiving an end of a valve stem, said bottom wall having an intermediate opening therein at an intermediate portion of said body to receive pivot means about which said rocker arm can pivot, upper edge portions of said side walls having outwardly-extending, continuous flanges to provide stiffness for said side walls and to resist buckling of said side walls during operation of said rocker arm.

4,940,049

GAS DISPENSING APPARATUS AND CASE THEREFOR

John Kirchgeorg, 1919 N. Summit Ave., Milwaukee, Wis. 53202, and Michael G. Hermann, West Bend, Wis., assignors to John Kirchgeorg, Milwaukee, Wis.

Continuation of Ser. No. 206,448, Jun. 14, 1988, abandoned, which is a division of Ser. No. 862,685, May 13, 1986, Pat. No. 4,788,973. This application Oct. 23, 1989, Ser. No. 425,501

The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.

Int. Cl.[5] A62B *7/02, 9/04, 25/00, 37/00*

U.S. Cl. 128—205.24 **17 Claims**



17. An oxygen delivery system, comprising:

(a) a unitary one-piece housing including a bottom, a fixed top wall, and at least one peripheral wall;

(b) an access opening formed in said top wall and in at least a part of said peripheral wall, and comprising an approximate open quarter of said one-piece housing;

(c) oxygen delivery apparatus disposed within said housing, including at least a tank and oxygen conducting means which terminates in a mask;

(d) a cover positionable over said access opening; and

(e) said access opening being sized and said fixed top wall being designed so that said oxygen delivery apparatus may be removed from said unitary one-piece housing by tilting said tank toward said opening and then pulling it out through said opening.

4,940,050

DEVICE FOR ENSURING THE PROPER POSITIONING OF ELECTRODES IN A LITHOTRIPTER

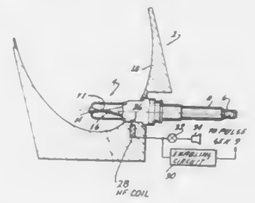
Bernd Forssmann, Germering; Wolfgang Hepp, Immenstaad; Gerold Heine, Uhldingen-Muehlhofen; Gustav Sell, Immenstaad, and Hendrik Zech, Ueberlingen, all of Fed. Rep. of Germany, assignors to Dornier Medizintechnik GmbH, Freidrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 917,854, Oct. 14, 1986, abandoned. This application Oct. 21, 1988, Ser. No. 262,143

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1985, 3536271

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—24 A **10 Claims**



1. In a lithotripter which includes a device for the generation

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and focussing of shock waves for purposes of comminution of concrements, the device including a pair of electrodes positioned in a rotational ellipsoid for focussing generated shock-waves, the ellipsoid having a body, said pair of electrodes extending from a holder, the holder being inserted in said body such that the electrodes center on a first one of the two focal points of the rotational ellipsoid, the improvement comprising,

a positioning device for the electrodes, in the body of rotational ellipsoid and including a position sensing means mounted in the body of the rotational ellipsoid, having a highly accurate and determined position in relation to said first focal point;

a position indicating and establishing means mounted on said electrode holder such that the position indicating and establishing means has a particular, highly accurate and predetermined position in relation to said electrodes; and

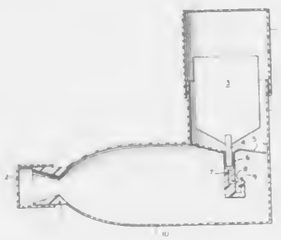
circuit means connected to said position sensing means to provide a signal representing an accurate position relation of alignment between the position sensing means and the position establishing means if, and only if, said position indicating and establishing means is in said accurate position relation of alignment with respect to said position sensing means, whereby said electrodes are positioned on said first focal point.

4,940,051

INHALATION DEVICE

Tapio Lankinen, Turku, Finland, assignor to Hubtamki Oy, Turku, Finland

PCT No. PCT/FI84/00100, § 371 Date Aug. 26, 1985, § 102(e) Date Aug. 26, 1985, PCT Pub. No. WO85/02778, PCT Pub. Date Jul. 4, 1985
PCT Filed Dec. 21, 1984, Ser. No. 777,085
Claims priority, application Finland, Dec. 28, 1983, 834816
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.18 **13 Claims**



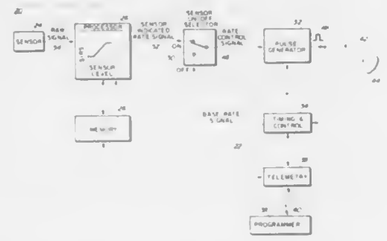
1. An inhalation device which comprises a tubular body defining an inhalation chamber, said tubular body having a sidewall, an endwall disposed at one end of said tubular body and a mouthpiece at the opposing end of said body, said sidewall having mounting means for mounting a container of medicament and conduit means for providing a medicament passageway from said mounting means to said inhalation chamber and for discharging medicament into said chamber in a direction toward said endwall, said device including means for deflecting medicament discharged by said conduit means in a direction towards said mouthpiece, and valve means for introducing air into said chamber during inhalation.

4,940,052

MICROPROCESSOR CONTROLLED RATE-RESPONSIVE PACEMAKER HAVING AUTOMATIC RATE RESPONSE THRESHOLD ADJUSTMENT

Brian M. Mann, Los Angeles, and John W. Poore, South Pasadena, both of Calif., assignors to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 25, 1989, Ser. No. 301,934
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 PG **47 Claims**



1. A rate-responsive pacemaker comprising:

pulse generator means for generating pacing pulses at a rate set by a rate control signal;

means for generating a base rate signal;

sensor means for generating a raw sensor signal having a value that varies as a function of a sensed physiological parameter;

processor means for generating a pacing rate signal as a function of said raw sensor signal, wherein said processor means comprises:

preprocessing means for generating one of a plurality of sensor level index signals as a function of the value of said raw sensor signal, said plurality of sensor level index signals including a minimum sensor level index signal corresponding to all values of said raw sensor signal below a first prescribed threshold, and a maximum sensor level index signal corresponding to all values of said raw sensor signal above a second prescribed threshold; and

conversion means for converting said one of a plurality of sensor level index signals to said pacing rate signal;

and

selection means for selecting one of said base rate signal or said pacing rate signal as the rate control signal for said pulse generator means, whereby said pulse generator means generates said pacing pulses at a rate determined by the selected one of said base rate signal or said pacing rate signal.

4,940,053

ENERGY CONTROLLED RATE-RESPONSIVE PACEMAKER HAVING AUTOMATICALLY ADJUSTABLE CONTROL PARAMETERS

Brian M. Mann, Los Angeles, and John W. Poore, South Pasadena, both of Calif., assignors to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 25, 1989, Ser. No. 301,935
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 PG **23 Claims**

1. A rate-responsive pacemaker comprising:

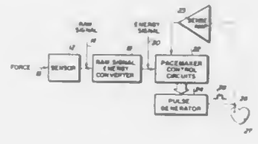
pulse generating means for generating stimulating pulses:

control means for controlling the rate at which said pulse generating means generates said stimulating pulses;

sensor means for sensing a physiological parameter and for generating an electrical signal representative of said sensed physiological parameter; and

signal processing means for processing said electrical signal and for generating a control signal representative of the energy content of said electrical signal, said control signal being applied to said control means, and said control means being responsive at least in part to said control signal in controlling the rate at which said stimulating pulses are generated, wherein said signal processing means comprises:

rectifying amplifier means for amplifying and rectifying said electrical signal;



voltage controlled oscillator means coupled to the output of said rectifying amplifier means for generating an oscillator signal having a frequency that varies as a function of the signal output from said rectifying amplifier means; and

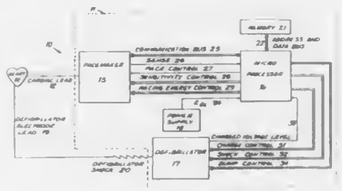
measurement means for measuring the frequency of said oscillator signal over a prescribed time interval, said frequency measurement comprising said control signal.

4,940,054

APPARATUS AND METHOD FOR CONTROLLING MULTIPLE SENSITIVITIES IN ARRHYTHMIA CONTROL SYSTEM INCLUDING POST THERAPY PACKING DELAY

Richard Grevis, Rose Bay, Australia, and Norma L. Gilli, Littletown, Colo., assignors to Telectronics N.V., Curacao, Netherlands Antilles

Filed Apr. 29, 1988, Ser. No. 187,797
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 PG **39 Claims**



1. An apparatus for administering electrotherapy to the heart comprising:

a detector responsive to an electrical signal from the heart, said detector providing an output signal in response to said electrical signal;

sensitivity control means connected to said detector for controlling the sensitivity of said detector to said electrical signal, said sensitivity control means controlling said sensitivity to a first sensitivity level at a first time;

tachyarrhythmia detection means for receiving said output signal from said detector set at said first sensitivity level to determine if a tachyarrhythmia is sensed at said first time;

tachyarrhythmia confirmation means for receiving said output signal from said detector set at said first sensitivity level to confirm the presence of said tachyarrhythmia at a second time after said first time;

tachyarrhythmia therapy means for delivering tachyarrhythmia therapy to the heart if said tachyarrhythmia confirmation means confirms the presence of tachyarrhythmia at said second time;

said sensitivity control means controlling said sensitivity of said detector to a second sensitivity level if a tachyarrhythmia is not sensed by said detector at said second time, said second sensitivity level being higher than said first sensitivity level; and

said tachyarrhythmia therapy means delivering tachyarrhythmia therapy if said detector, at said second sensitivity level, detects tachyarrhythmia.

4,940,055

HIGH-RESOLUTION SPECTRAL SIGNATURE OF HUMAN ARTERIAL PLAQUE

Michael F. Brown, Charlottesville, Va., assignor to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Nov. 3, 1987, Ser. No. 106,669
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653 A **7 Claims**



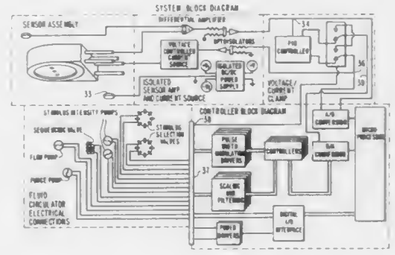
1. The noninvasive method of identifying and quantifying constituents of arterial plaque comprising subjecting arterial walls to localized proton NMR spectroscopy, obtaining a proton NMR spectra and evaluating the proton NMR spectra exclusive of water for sharp spectral lines indicative accumulation of lipids in walls of human arterial blood vessels and detecting early changes to arterial walls due to atherogenesis.

4,940,056

ELECTROGUSTOGRAPH

Gerard L. Heck, and John A. DeSimone, both of Richmond, Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Nov. 15, 1988, Ser. No. 271,317
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—639 **15 Claims**



1. A sensor for measuring a physiological response by attachment to the flexible surface of a living animal comprising:

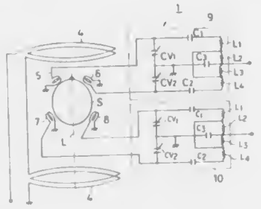
a housing having an outer wall with a first side for attachment to said flexible surface;
an outer ring on said first side;
an inner ring on said first side concentric with said outer ring and defining an annular recessed space between said rings;
a fluid receiving recess on said first side within the boundary of said inner ring;
a fluid inlet on said housing having a passageway connecting said inlet to said fluid receiving recess for receiving a fluid;
a fluid outlet on said housing having a passageway connecting said outlet to said fluid receiving recess; and
a vacuum inlet on said housing connected to said recessed annular space.

4,940,057

APPARATUS FOR MEASURING BRAIN FUNCTION USING NUCLEAR MAGNETIC RESONANCE

Hirotake Kamei, Ibaraki, Japan, assignor to Agency of Industrial Science & Technology, Ministry of Industrial Trade & Industry, Tokyo, Japan

Filed Jul. 15, 1987, Ser. No. 73,718
Claims priority, application Japan, Jul. 15, 1986, 61-166115
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653 A **3 Claims**



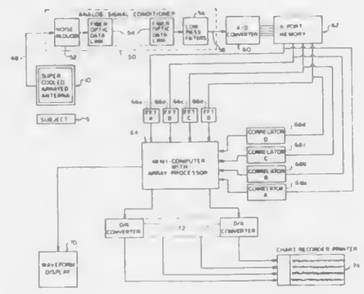
1. A brain function measuring apparatus employing nuclear magnetic resonance, comprising:
means for uniformly applying a static magnetic field to a subject so that the head of the subject is located at the center of the static magnetic field;
rotational magnetic field exciting means set in place about the head of subject for producing magnetization vectors perpendicular to the static magnetic field;
a plurality of signal detection coil means arranged about the head of the subject and each of said signal detection coil means comprising two coils arranged in symmetrical opposition to the left and right of a median line of the head of the subject and connected so that two nuclear magnetic resonance signals are produced wherein said two nuclear magnetic resonance signals are in phase opposition;
a plurality of balanced detector means each connected to one of said plurality of detection coil means for comparing said two resonance signals and detecting a differential component of said two resonance signals;
processing means for effecting Fourier transformation of the differential component into positional information and detecting the location of the site of brain activity from said positional information; and
display recorder means for three-dimensionally displaying the detected location of the site of brain activity.

4,940,058

CRYOGENIC REMOTE SENSING PHYSIOGRAPH

Barry E. Taff, 8665 Pickford St. #8, Los Angeles, Calif. 90035, and Kenneth P. Stoller, 1319 Stratford Ave., South Pasadena, Calif. 91030

Continuation-in-part of Ser. No. 871,925, Jun. 9, 1986, abandoned. This application Jun. 10, 1988, Ser. No. 205,085
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—653 R **9 Claims**



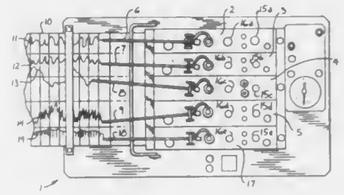
1. Apparatus for remotely monitoring the internal physiological processes of a human subject by measuring the electromagnetic signals emanating from the body of said subject and separating said signals into EKG, EEG, EMG, EOG and respiration waveform representing said physiological processes, comprising:
(a) an arrayed antenna adapted to be located in a spaced remote relationship of up to about 12 feet from the body of a human subject, the arrayed antenna including three like supercooled super-conducting metallic antenna plates for detecting electromagnetic signals in the 0.3 to 40 Hertz frequency range emanating from the physiological processes of said subject, said the arrayed antenna having three like supercooled analog circuitry packages each interconnected to one of said metallic plates for outputting said electromagnetic signals;
(b) an analog signal conductor having an input stage coupled to the analog circuitry packages of the arrayed antenna and including means adapted to receive and improve the signal-to-noise ratio of the detected electromagnetic signals and said signal conditioner having an output stage including a low-pass filter for filtering out signal frequencies of over 40 Hertz from said electromagnetic signals;
(c) an analog-to-digital converter coupled to the output stage of the analog signal conditioner to receive and convert the 0.3 to 40 Hertz electromagnetic signals to digital signals;
(d) a digital signal processor means coupled to the analog-to-digital converter to receive and separate said digital signals into component waveforms representing the internal physiological processes of said human subject, said digital signal processor means comprising a minicomputer including 4-port memory with serial in-time sequence overlapping memory windows and dedicated outboard Fast Fourier Transform and autocorrelator microprocessors coupled to said minicomputer with signal discriminating software for directing the separation of said digital signals by said minicomputer into component waveforms representing the physiological processes of said subject; and
(e) means coupled to said digital signal processor means for displaying and permanently recording said component waveforms.

4,940,059

POLYGRAPH WITH IMPROVED CARDIAC MONITORING

Michael H. Voelz, Battle Ground, Ind., assignor to Lafayette Instrument Co., Inc., Lafayette, Ind.

Filed Mar. 21, 1988, Ser. No. 170,743
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—688 **10 Claims**



1. A polygraph for detecting and recording physiological changes in an individual, comprising:
sensing means for sensing a physiological condition of an individual, said physiological condition representable by a periodic cyclic waveform having a leading upstroke portion and a trailing downstroke portion;
control means operatively connected to said sensing means for determining a rate of change over time of the upstroke portion of the waveform for said physiological condition; and
display means operatively connected to said control means for displaying a signal indicative of said rate of change over time, wherein said sensing means produces a source voltage signal indicative of said condition, said display means includes a housing, a record chart on said housing, a pen engageable with said record chart, means for mounting said pen on said housing, and means for driving said pen on said chart, and said control means includes a control circuit operably connected to said pen driving means and responsive to the source voltage signal from said sensing means to provide a driving signal to said pen driving means, said control circuit includes differentiator means for detecting a change in the source voltage signal and for producing a differential signal having a waveform indicative of the source voltage signal change, said control circuit further includes measuring means for measuring a parameter which is characteristic of said differential signal waveform over a given time interval and for providing said driving signal, said time interval occurs at regularly spaced time periods, and said measuring means includes timing means for determining said time interval, wherein said time interval is periodic, and wherein said measuring means includes peak detector means for detecting a peak differential signal, and a sample and hold circuit means operable between a sample mode for receiving said peak differential signal and a hold mode for holding said peak differential signal.

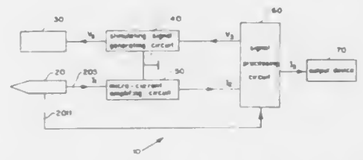
4,940,060

APPARATUS FOR DETECTING BIOELECTRIC SIGNALS

Hansen Gu, and Dumin Wu, both of Building 18, HongXu Road, Shanghai, China

Filed Sep. 9, 1987, Ser. No. 94,621
Claims priority, application China, Sep. 9, 1986, 86105980
Int. Cl.[5] A61H *39/02*
U.S. Cl. 128—735 **18 Claims**

1. An apparatus for stimulating and detecting bioelectric signals, comprising:
a detecting electrode, adapted to detect electrical signals when in contact with the skin of a patient at chosen acupoints on the body of the patient;
a reference electrode adapted to be held against the skin of a patient and the couple stimulating signals into the skin of the patient at a fixed reference point on the center line of the patient;
an amplifying circuit means connected to said detecting electrode for amplifying micro-current signals in the range of 10^{-11} and 10^{-4} amperes detected thereby:
a stimulating signal generating circuit means connected to said reference electrode for applying a stimulating voltage to the skin of the patient at said fixed reference point on the center line of the body of the patient;
wherein said detecting electrode, reference electrode, amplifying circuit means, and stimulating signal generating circuit means form a stimulating and detecting circuit means for stimulating and detecting bioelectric signals;
the apparatus further comprising a signal processing circuit means connected to the output of said amplifying circuit means for processing the output signals; and



output means connected to the output of said signal processing circuit means for displaying the processed output signals;
wherein said amplifying circuit means comprises:
a logarithmic micro-current amplifier;
a temperature compensating circuit; and
an inverting circuit;
wherein said logarithmic micro-current amplifier has an input connected to said detecting electrode, and an output connected to an input of said temperature compensating circuit which has an output connected in turn to the input of said inverted circuit, and the output of the inverting circuit is provided to the input of said signal processing circuit means, whereby a detected micro-current in the range of 10^{-11}–10^{-4} amperes is amplified to provide an output signal proportional to the negative logarithm of said micro-current.

4,940,061

BIOPSY INSTRUMENT

Richard A. Terwilliger, Alamo; Daniell Hebert, San Francisco, and Jack Hall, Portola Valley, all of Calif., assignors to Ingress Technologies, Inc., Phoenix, Ariz.

Filed Nov. 27, 1989, Ser. No. 441,776
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **20 Claims**



1. A motor powered instrument for removing a tissue sample from a tissue mass comprising a housing, a tissue penetrating means and severing means disposed at one end of said housing, operating means positioned in said housing and operably connected to said tissue penetrating means and severing means for causing relative linear movement of said tissue penetrating means and said severing means in a sequential manner whereby said tissue penetrating means proceeds by linear movement from a retracted to an extended position followed by linear

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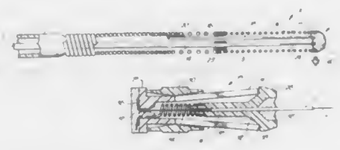
movement of said tissue severing means from a retracted to an extended position to effect a severing of a portion of said tissue mass, said operating means including motor means and means to convert rotary motion to sequential, reciprocating linear motion of substantially constant force and velocity to said tissue penetrating means and severing means.

4,940,062

GUIDING MEMBER WITH DEFLECTABLE TIP

Hilary J. Hampton, Santa Clara; John W. Gaiser, Mountain View; Charles S. Taylor, San Francisco, and Timothy R. Machold, Moss Beach, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed May 26, 1988, Ser. No. 199,099
Int. Cl.[5] A61M *25/00*
U.S. Cl. 128—772 **26 Claims**



1. A guide member for vascular catheters having a deflectable distal tip comprising:
   a. an elongated tubular member having a distal end;
   b. an elongated core element disposed within the tubular member and having a tapered distal portion which extends out the distal end of the tubular member;
   c. disposed about the tapered distal portion of the core element which extends out of the distal end of the tubular member, a helical coil element which has a proximal and distal ends, which has an expanded coil section at a location proximal to and spaced from the distal end of the coil element, which is secured to the core element at a location distal to the expanded coil section and proximal to the distal end of the coil and which has a rounded plug at the distal end thereof;
   d. an elongated reference element which is secured to an adjacent side of the helical coil element at a first location proximal to the expanded coil section and at a second location distal to the location where the coil section element is secured to the core element;
   e. means to provide columnar support to the proximal end for the coil; and
   f. means to axially move the core element with respect to the coil element along the longitudinal axis thereof, such longitudinal movement causing the expanded coil section to change the spacing between the turns thereof along the side of the coil opposite to the side adjacent to the reference element resulting in the deflection of the distal tip of the guide member.

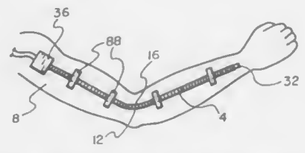
4,940,063

ANGULAR DISPLACEMENT MEASURING APPARATUS

Brian Challis, No. 9 Northridge Way, Sandy, Utah 84092

Filed Feb. 23, 1989, Ser. No. 314,441
Int. Cl.[5] A61B *5/10*
U.S. Cl. 128—774 **14 Claims**

1. An angular displacement measuring device comprising
   a bendable conduit having a side wall which is stretchable in the direction parallel to the longitudinal axis of the conduit but is substantially noncompressible in the same direction so that when the conduit is bent, the portion of the side wall on the outside of the bend elongates while the portion of the side wall on the inside of the bend remains substantially unshortened,
   a fiber having first and second ends disposed in the conduit so that the first end extends from one end thereof, where the fiber is fixed at the second end of said conduit so that it may not slide longitudinally relative to and out of the other end of the conduit and where the remainder of the fiber is free to slide relative to the remainder of the conduit, and



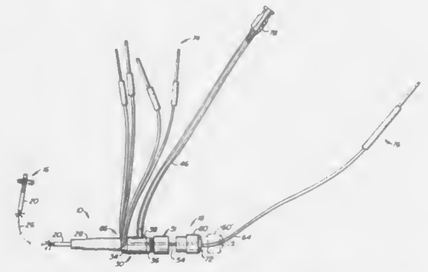
movement measuring means disposed at said other end of the conduit and coupled to said fiber for measuring movement of the fiber relative to the conduit as the conduit is bent to thereby measure the angle of bending of the conduit.

4,940,064

CATHETER FOR MAPPING AND ABLATION AND METHOD THEREFOR

Jawahar M. Desai, 2721 W. Browning, Fresno, Calif. 93711

Continuation-in-part of Ser. No. 931,696, Nov. 14, 1986, abandoned. This application Jun. 30, 1987, Ser. No. 68,833
Int. Cl.[5] A61N *1/04*
U.S. Cl. 128—784 **7 Claims**



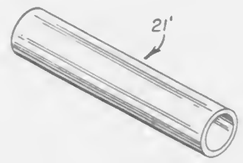
1. A percutaneous endocardial lead comprising:
   an elongated body member having an elongated hollow core therewithin, a proximal end portion, and a distal end portion;
   an elongated shaft member slidingly mounted within said elongated hollow core of the body member, said elongated shaft member having a proximal end portion and a distal end portion, and said shaft member distal end portion being operatively connected to said distal end portion of the elongated body member;
   a tip electrode at said distal end portion of the elongated shaft member and in electrical communication with said proximal end portion of the elongated body member;
   a plurality of elongated peripheral segments at the distal end portion of the elongated body member;
   a plurality of elongated conductors, each extending between each of said elongated peripheral segments and said proximal end portion of the elongated body member, said elongated conductors being insulated from each other;
   mapping electrode means including a plurality of electrodes, each said electrode being on each said elongated peripheral segment, each said electrode being in electrical communication with one of said elongated conductors, and said electrodes of the mapping electrode means provide an electrode array generally around the tip electrode;
   means for adjusting said electrode array between a closed configuration that is substantially isodiametric with said elongated body member and open configurations at which each elongated peripheral segment folds on itself and moves each electrode to an outwardly directed location including to a location generally coplanar with said tip electrode;
   said means for adjusting said electrode array including said elongated body member and said elongated shaft member slidingly mounted therewithin, whereby said elongated body member and said elongated shaft slidingly move relative to each other in order to adjust said electrode array between said closed configuration and said open configurations; and
   ablation means having an ablation surface generally at said tip electrode, said ablation surface being generally circumscribed by said electrode array at said open configurations thereof.

4,940,065

SURGICALLY IMPLANTABLE PERIPHERAL NERVE ELECTRODE

Emil A. Tanagho; Richard A. Schmidt, San Rafael; Curtis A. Gleason, Palo Alto, and Tom F. Lue, Millbrae, all of Calif., assignors to Regents of the Univ. of Calif., Berkeley, Calif.

Filed Jan. 23, 1989, Ser. No. 299,135
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—784 **15 Claims**



1. A peripheral nerve electrode adapted to be surgically implanted around a nerve comprising
   carrier means formable about a longitudinal wrapping axis thereof from an opened position to a closed position encircling a nerve, said carrier means composed of a biocompatible and dielectric material and when in its opened position said carrier means having a main body portion extending in the direction of said axis and flap portions extending transversely outwardly from opposite ends of said main body portion and from said axis and when in its closed position said carrier means having opposed edges of opposite sides of its main body and flap portions disposed in close abutting relationship relative to each other to form a tube, and
   electrode means secured on an inner surface of said carrier means for selectively electrically stimulating said nerve when said carrier means is in its closed position thereabout.

4,940,066

TIBIA RETRACTOR

Albert N. Santilli, 2832 Gates Mills Blvd., Cleveland, Ohio 44124, and Kenneth M. Kuzmick, 5601 Corporate Way, W. Palm Beach, Fla. 33407

Filed Nov. 17, 1988, Ser. No. 273,384
Int. Cl.[5] A61F *5/40*
U.S. Cl. 128—882 **17 Claims**

1. A tibia retractor, comprising:
   a flexible planar member having first and second opposed sides disposed generally parallel to each other and first and second ends disposed generally parallel to each other, the first and second sides being foldable toward each other to form a receptacle into which one's foot can be placed, the first end of the planar member defining a first portion of the receptacle adapted to receive the foot, and the second end of the planar member defining a second portion of the receptacle;
   means included as part of the receptacle for attaining a tight-fitting relationship between the foot and the receptacle;
   an extensible strap means having first and second ends, the strap means being connected at its first end to the first portion of the receptacle and being connectable at its second end to the first portion of the receptacle, the first



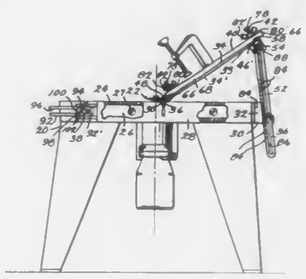
and second ends of the strap being connected to opposite sides of the first portion, the strap means for passing over the femur when the second end of the strap means is connected to the first portion of the receptacle and one's foot is disposed within the receptacle; and
   connecting means for releasably connecting the second end of the strap means to the first portion of the receptacle, the connecting means permitting the strap means to be securely connected to the receptacle in a variety of lengths, whereby the effective length of the strap means can be adjusted.

4,940,067

JOINING APPARATUS FOR CUTTING WORK PIECES

Paul R. Beard, 6409 Renaldo Way S., St. Petersburg, Fla. 33707

Filed Dec. 6, 1989, Ser. No. 446,800
Int. Cl.[5] B27F *5/00, 1/06*
U.S. Cl. 144—2 R **20 Claims**



1. Apparatus for cutting work pieces, said apparatus comprising:
   a first support;
   a cutting element attached to said support and projecting upwardly above said support;
   first and second guide elements attached to said support and in substantially parallel relationship with each other;
   a first slide element removably and slideably mounted on said first guide element;
   a second slide element removably and slideably mounted on said second guide element;
   a connecting element defining opposed ends and extending between and attached to said slide elements;
   a work piece support having a work piece support surface;
   means in operative relationship with said work piece support

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surface and said slide elements for enabling the adjustable positioning of said work piece support surface with respect to said first support and with respect to said cutting element; and

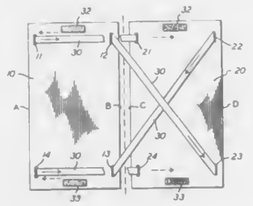
means in operative relationship with said first guide element and with said first slide element for adjustably limiting movement of said first slide element on said first guide element.

4,940,068

FOLDING CONTAINER

Herta M. Pokorny, 358 Castle Rd., Rochester, N.Y. 14623, and Stefania Pokorny, 28 Barton Street, Rochester, N.Y. 14611

Filed May 22, 1989, Ser. No. 355,297
Int. Cl.[5] A45C *1/06*
U.S. Cl. 150—132 3 Claims



1. A folder, including:

front and back rectangular covers, each having parallel top and bottom end edges and parallel inner and outer side edges, with an imaginary fold line between a side edge of said front cover and the adjacent side edge of said back cover;

said covers including inner apertures near the inner corners thereof and outer apertures near the outer corners thereof;

an elastic tie band connecting said front and back covers by interlacing sequentially through said apertures as follows:

a. from an outer aperture of said front cover,
b. to an inner aperture of said back cover,
c. to an outer aperture of said back cover,
d. to an inner aperture of said front cover,
e. to an outer aperture of said front cover,
f. to an inner aperture of said back cover,
g. to an outer aperture of said back cover, and
h. to an inner aperture of said front cover;

whereby, said elastic tie band overlies said covers to hold their contents in place and to facilitate insertion and removal of contents into and out of said folder, and said folder opens by rotation of one cover relative to the other on an imaginary fold line in either direction;

said covers further including mating top fastening strips positioned adjacent to and parallel with said top end edges and adapted to fasten to each other, and mating bottom fastening strips positioned adjacent to and parallel with said bottom end edges and adapted to fasten to each other said fastening strips effective to prevent slippage of contents from the top and bottom ends of said folder and to secure said folder when closed.

4,940,069

RUN-FLAT TIRE AND RIM ASSEMBLY FOR ATV

Eiji Nakaski, Kakogawa, and Yasuo Igarashi, Kawanishi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Nov. 30, 1988, Ser. No. 277,705
Claims priority, application Japan, Nov. 30, 1987, 62-304070
Int. Cl.[5] B60C *15/024*
U.S. Cl. 152—544 14 Claims



1. An assembly of a run-flat tire and a rim for all-terrain vehicles, said tire comprising;

a pair of beads having substantial inextensible bead cores;

a toroidal carcass comprised of ply cords and having a radial construction, said carcass extending across the beads and being turned up at both edge portions around said bead cores;

a tread disposed radially outward of said carcass;

a pair of sidewalls disposed on the outside of said carcass, each of said sidewalls extendng from an end of the tread to the bead of the tire, the rubber thickness of each sidewall being at least 10 times the diameter of the ply cords of said carcass;

a pair of bead apexes each disposed radially outside each of said bead cores so as to extend radially outwardly from said bead cores, a radially outward height of the radially outermost end of said bead cores from a heel point of the bead being within a range of 20 to 40% of the section height of the tire; and

said beads each having a bead toe disposed axially inward of said bead cores, said bead toe having a protrusion protruding radially inwardly from a bead base defined as a radial inward surface of the bead under the bead core, and each bead being provided with a hump groove between the bead base and the protrusion, said rim having:

a well in the center portion of the rim;

a pair of bead seats one on each side of side well;

a pair of humps each formed axially inward and adjacent to each bead seat to be engaged with said hump grooves of the tire beads; and

a pair of groove each formed axially inward of each hump to receive said protrusions of the tire bead toes

said bead toe comprising a toe strip made of a hard rubber compound having a JIS A hardness of 65 to 95 degrees, and a height of the toe strip from the bead base being in a range of 120 150% of the height of a flange of the rim from the bead base; and

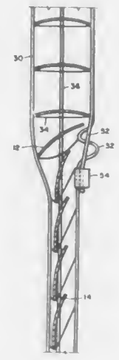
said bead having a width in an axial direction being in a range of 2.4 to 2.7 times the width of the bead seat.

4,940,070

BIFOLD PRIVACY MINIBLIND

Scott L. Warden, 1742 S. Louisville, Tulsa, Okla. 74112

Continuation-in-part of Ser. No. 174,984, Mar. 29, 1988, abandoned. This application Mar. 10, 1989, Ser. No. 321,726
Int. Cl.[5] E06B *9/26*
U.S. Cl. 160—176.1 4 Claims



1. A window blind comprising:

a top member;

a plurality of horizontal slats;

at least two ladder support systems supporting said slats and in which each system has a front ladder string exterior of said slats, a back ladder string and a plurality of slat support strings connecting the two ladder strings at spaced positions therealong;

a mechanism supported by said top member and operable by rotating the stem for adjusting the front ladder string with respect to the back ladder string so as to adjust the inclination of each slat;

each said slat having a hole therein adjacent said each said slat support string;

a drawstring support and locking mechanism supported by the top member;

a main drawstring and pull knob for lifting the slats and extending through the holes thereof;

a guide in the top member and having a passage means therethrough for the main drawstring and for each said front ladder string and for each said back ladder string;

the path of said main drawstring extending from adjacent one end of said slats upwardly through said drawstring support and locking mechanism, along said top member, down said passage means, through the holes in said slats and secured at the lower end of said window blind;

at least one privacy drawstring having a first end and a second end, the path of said privacy drawstring beginning at or near the first end of said main drawstring following upwardly along said main drawstring through said support and locking mechanism, then along said top member adjacent said main drawstring, thence down the opening means in said top along side and adjacent one of said ladder strings down to a selected located on such ladder string, the privacy drawstring passing over no pulley or support not passed over by said main drawstring;

means to attach the second end of said privacy drawstring to a ladder string at said selected location;

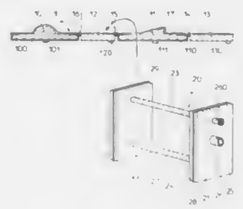
a privacy pull knob means slidably interconnected to said main drawstring, and said privacy pull knob means connected to said first end of said privacy drawstring.

4,940,071

METHOD AND DEVICE FOR FABRICATING MOULDS FROM GRANULAR MATERIAL

Jean-Jacques Mazeran, F-51000, Chalon sur Marne, France

PCT No. PCT/FR88/00377, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO89/00467, PCT Pub. Date Jan. 26, 1989
PCT Filed Jul. 20, 1988, Ser. No. 350,734
Claims priority, application France, Jul. 22, 1987, 87 10514
Int. Cl.[5] B22C *9/02, 21/02*
U.S. Cl. 164—7.2 14 Claims



1. A device for making a foundry mould comprising:

a support having first and second side, model plates and a bottom, sealing plate;

an armature defining first and second longitudinal end walls of said support, so that said support and said armature together define a mould cavity;

at least one polymer envelope element disposed within said mould cavity;

means for feeding a granular material for forming a foundry mould into said mould cavity; and

means for generating a vacuum within said mould cavity.

9. A method of making a foundry mould comprising:

provided a support including first and second side, model plates and a bottom, sealing plate;

installing on said side and bottom plates at least one polymer envelope by thermoforming by suction through said plates;

providing an armature including first and second end plates;

mounting said side and bottom plates in surrounding relation to said end plates of said armature so as to define a mould cavity having side walls, end walls and a bottom wall, said polymer envelope being clamped between the end plates of the armature and the side and bottom plate;

filling the mould cavity with granular material for forming said foundry mould, compacting said granular material and leveling the same;

sealing said mould cavity;

placing the volume contained in the polymer envelope within the mould cavity under vacuum; and

removing said plates.

4,940,072

REMOVING PATTERN MATERIAL FROM INVESTMENT CASTING MOLDS

Mark A. Pellman, Orefield; Paul T. Kilhefner, III, Wescosville, and Terrence S. Hahn, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 31, 1989, Ser. No. 359,244
Int. Cl.[5] B22C *9/04*
U.S. Cl. 164—35 10 Claims

1. A method of removing a relatively lower melting point pattern material from a relatively higher temperature stable investment casting mold comprising; heating said mold containing said pattern material in the vapor phase of a fluorochemical having a boiling point above the melting point of said pattern material to condense said vapor on said pattern material and transfer the latent heat of vaporization of said fluorochemical to said pattern material, melting the pattern material

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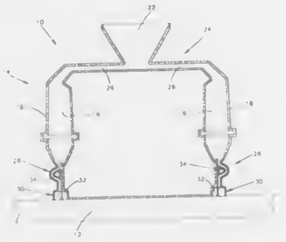
for facilitating removal from said mold, and removing the melted pattern material from said mold.

4,940,073

MOLD FOR CASTING A SINGLE CRYSTAL METAL ARTICLE

Arunachalam Jeyarajan, Euclid; Lawrence D. Graham, Chagrin Falls; John E. Brokloff, North Canton, and Louis H. Monte, Minerva, all of Ohio, assignors to PCC Airfoils, Inc., Cleveland, Ohio

Filed Jul. 19, 1989, Ser. No. 382,729
Int. Cl.[5] B22C *9/04*
U.S. Cl. 164—361 11 Claims



1. A mold for use in casting a single crystal metal article, said mold comprising article mold means for defining an article mold cavity having a configuration corresponding to the configuration of the article to be cast, starter means for defining a starter cavity in which molten metal solidifies as a plurality of upwardly extending elongated metal crystals, and selector means extending between an upper end portion of said starter means and a lower end portion of said article mold means for at least partially defining a crystal selector passage which extends between said starter cavity and said article mold cavity and from which a single crystal of metal solidifies upwardly into said article mold cavity, said selector means including a lower section connected with said starter means and in which a linear lower vertical portion of said selector passage extends upwardly away from an upper end portion of said starter cavity, an upper section connected with said article mold means and in which a linear upper vertical portion of said selector passage extends downwardly away from a lower end portion of said article mold cavity, a single bend section connected with said upper and lower sections and in which a single bend portion of said selector passage extends between an upper end of the lower portion of said selector passage and a lower end of the, upper portion of said selector passage, and a support element which extends upwardly from said lower section to said upper section of said selector means to at least partially support said bend section of said selector means, said single bend portion of said selector passage having a single arcuate bend and a longitudinal central axis which intersects coincident vertical central axes of said upper and lower portions of said selector passage, said longitudinal central axis of said single bend portion of said selector passage and the vertical central axes of said upper and lower portions of said selector passage being disposed in a single flat plane.

4,940,074

CORE PINNING MACHINE

Alan W. Menard, Bolton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 30, 1986, Ser. No. 880,602
Int. Cl.[5] B22C *19/00*; B23D *23/00*
U.S. Cl. 164—412 9 Claims

2. A core pinning machine adapted for inserting a core supporting wire pin of variable length into a wax pattern, said machine characterized by:

means for providing and feeding a continuous length of wire;

means for heating the wire prior to insertion into said wax pattern; and,

means for cutting the wire, said cutting means including a housing, a cylinderical shank disposed within said housing and rotatable therein, said shank including a central longitudinal axis and a cutting end, said shank further including a wire guide passage longitudinally extending therethrough, parallel to and offset from said central longitudinal shank axis, a cutter, abutted to the cutting end of said shank, said cutter having a sharp edged orifice, and, means for rotating said shank within said housing such that said passage is rotatable into alignment with said orifice, such that a wire is passable therethrough, wherein rotating said shank totally misaligns said passage with said orifice, severing said wire therein.

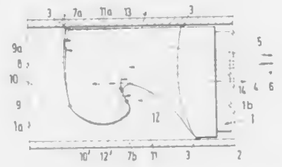


4,940,075

START-UP HEAD FOR HORIZONTALLY CONTINUOUS CASTING

Achim Kubon, Neukirchen-Vluyn, and Klaus-Peter Ehlert, Moers-Repelen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 24, 1989, Ser. No. 328,175
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1988, 3810304
Int. Cl.[5] B22D *11/08*
U.S. Cl. 164—446 1 Claim



1. Start-up head for continuous casting in a horizontal direction, the head having a coupling member that will be embedded from three sides in molten metal which forms a casting the coupling member having a hooklike portion, the improvement comprising

the hooklike portion having an undercut portion below the center line of the head and having a point of curvature

inflection, the undercut portion running from that point of inflection towards said center line along a circular path having a first center (6) of curvature above a horizontal plane that runs through the center line;

a front end of the hookline portion has a circular contour beginning from a point below the center line at a distance that is about the same distance the point of inflection has from the center line, the circular contour extending to the upper side of the member has also a second center (5) of curvature above said first center of curvature but at a larger distance from the center line; and

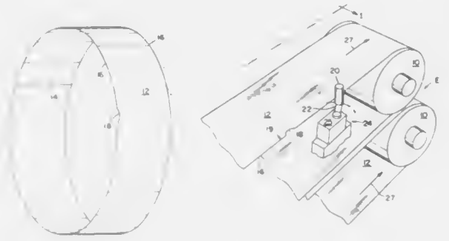
a center for uncoupling the member from the casting being situated between said first (6) and second (5) centers of curvature.

4,940,076

METHOD AND APPARATUS FOR STEERING CASTING BELTS OF CONTINUOUS METAL-CASTING MACHINES

S. Jerry Dessautels, and Timothy D. Kaiser, both of Colchester, Vt., assignors to Hazelett Strip-Casting Corporation, Colchester, Vt.

Filed May 9, 1989, Ser. No. 348,976
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—452 19 Claims



1. The method of steering a revolving endless flexible metallic casting belt of a continuous metal-casting machine, said machine including a steering sensor and mechanism that directly controls the lateral direction of belt tracking, the method including the steps of

applying a cue device to said casting belt,

by means of said steering sensor, sensing the lateral position of the belt edge in response to the passage of said cue device past a stationary sensing device,

signaling information of said position to an information processing device which excludes signals originating from other areas of the belt, with the final step of

employing the output of said information processing device to steer said casting belt by means of said mechanism that directly controls the lateral direction of belt tracking.

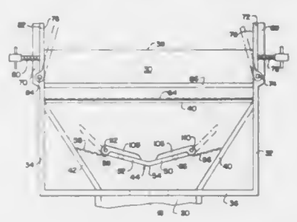
4,940,077

METHOD OF AND APPARATUS FOR DIRECT METAL STRIP CASTING

LeRoy Honeycutt, III; James C. Key, and Herbert Moody, III, all of Salisbury, N.C., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 21, 1988, Ser. No. 273,606
Int. Cl.[5] B22D *11/00, 11/10, 27/04*
U.S. Cl. 164—463 15 Claims

1. An open tundish for flowing molten metal directly onto a single moving chill surface for direct casting of a running length of thin metal strip of predetermined width, the tundish comprising a bottom wall, opposed sidewalls, an end wall having an inlet for admitting a stream of molten metal, an open end opposite said end wall providing an outlet for free flowing of molten metal onto the moving chill surface in a stream having a transverse width equal to the predetermined width



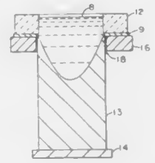
for solidification from said chill surface to form a strip, and strip width adjusting means for changing the width of strip being cast, the strip width adjusting means including means for changing the transverse dimension of said tundish open end at said outlet during strip casting to thereby change the width of the stream of molten metal flowing onto the moving chill surface.

4,940,078

OIL RING FOR CASTING

Diane D. Martin, Lafayette, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 30, 1988, Ser. No. 278,216
Int. Cl.[5] B22D *11/07*
U.S. Cl. 164—472 11 Claims



1. A method of using a flat ring comprising an alloy of 1 to 8% copper, balance aluminum, said method comprising situating the ring as an oil ring in a continuous casting apparatus for casting aluminum or aluminum alloy.

4,940,079

OPTIMAL CONTROL SYSTEM FOR REFRIGERATION-COUPLED THERMAL ENERGY STORAGE

Jerry Best, Sacramento; Richard C. Bourne; Marc Hoeschele, both of Davis, and Willem Bos, Sacramento, all of Calif., assignors to Phenix Heat Pump Systems, Inc., Elk Grove, Calif.

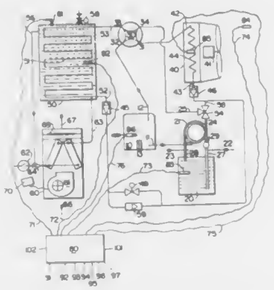
Filed Aug. 11, 1988, Ser. No. 230,897
Int. Cl.[5] F25B *13/00*
U.S. Cl. 165—2 66 Claims

1. A method of controlling both the heating and cooling modes of a refrigeration-coupled thermal energy storage system, the control method comprising the steps of:

selecting between the heating and cooling modes based upon outdoor temperature history;

establishing target cooling and heating storage conditions based upon outdoor temperature history;

operating the system in the cooling mode, when selected, until the target cooling storage condition is achieved, such that cooling storage quantity increases with increases in outdoor temperature; and



operating the system in the heating mode, when selected, until the target heating storage condition is achieved, such that heating storage quantity increases with decreases in outdoor temperature.

4,940,080

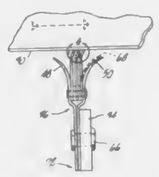
BI-DIRECTIONAL FLEXIBLE SEAL

Richard L. Reeves, Homeland, and Dennis Woodland, Corona, both of Calif., assignors to Reeves & Woodland Industries, Homeland, Calif.

Filed Jul. 20, 1989, Ser. No. 382,848

Int. Cl.[5] F28D *19/04*

U.S. Cl. 165—9 **13 Claims**



1. A flexible radial bi-directional seal for an air preheater comprising:

a first base plate;

a second base joined to said first base plate; each plate having a planar section and an oppositely curved flange; and

a plurality of flexible spaced apart leaves mounted at least partially in between said first and second base plates.

4,940,081

CHECKER BRICK

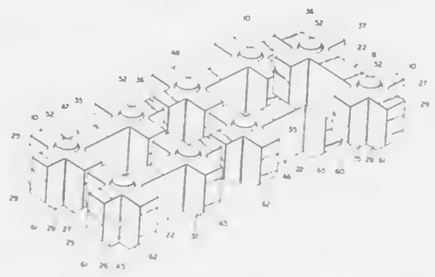
Jack Hyde, Pittsburgh, Pa., assignor to North American Refractories Company, Cleveland, Ohio

Filed Jul. 31, 1989, Ser. No. 386,947

Int. Cl.[5] F28D *17/02*

U.S. Cl. 165—9.1 **25 Claims**

1. A checker brick including walls intersecting at a plurality of spaced intersections having intersection centerlines, a common wall extending between each adjacent pair of said intersections, four walls (including said common walls) extending outwardly from each said intersection and being equidistantly-spaced therearound, said four walls at each intersection that are not common walls being independent walls, said brick having top and bottom surfaces, and each said intersection having a projection on one of said surfaces and a mating recess on the opposite one of said surfaces, whereby a plurality of



bricks are stackable in interlocked relationship with said projections and recesses on adjacent bricks interdigitated.

4,940,082

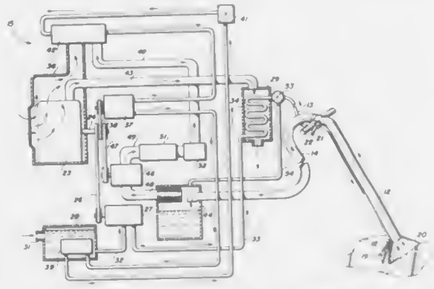
CLEANING SYSTEM

James R. Roden, Phoenix, Ariz., assignor to Professional Chemicals Corporation, Chandler, Ariz.

Filed Dec. 19, 1988, Ser. No. 286,616

Int. Cl.[5] A47L *7/00, 5/12, 11/34*; F25B *29/00*

U.S. Cl. 15—321 **4 Claims**



1. A cleaning system comprising in combination a liquid heating system comprising an air cooled internal combustion engine, means for conveying cooling air away from the engine, means for conveying exhaust gases away from the engine, first and second heat exchangers, means for conveying the liquid to be heated through said first and second heat exchangers, and a heat pump comprising a compressor driven by said engine, a condenser associated with said first heat exchanger, an expansion device and an evaporator associated with the means for conveying cooling air away from the engine, said second heat exchanger being associated with the means for conveying exhaust gases away from the engine, a spray nozzle operatively connected to the liquid conveying means to spray liquid heated by said first and second heat exchangers, a vacuum nozzle for retrieving liquid sprayed by said spray nozzle, a vacuum pump driven by said engine and connected to said vacuum nozzle for withdrawing liquid and air into said vacuum nozzle, and means for conveying air withdrawn into said vacuum nozzle to said heat pump evaporator.

4,940,083

APPARATUS FOR CONDITIONING AIR FOR A VEHICLE COMPARTMENT

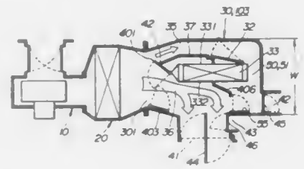
Yasushi Takenaka; Takeshi Sugiyama, and Shunsuke Kajita, all of Kanagawa, Japan, assignors to Nissan Shatai Company, Limited, Hiratsuka, Japan

Continuation of Ser. No. 89,968, Aug. 27, 1987, abandoned. This application Aug. 11, 1988, Ser. No. 231,225

Claims priority, application Japan, Aug. 29, 1986, 61-203189; Mar. 31, 1987, 62-48173[U]

Int. Cl.[5] B60H *1/02*

U.S. Cl. 165—42 **11 Claims**



1. A structure of an air conditioning apparatus comprising:

(a) a casing having at least one air inlet at one end thereof and at least one air outlet at the other end thereof, air outside the casing being introduced into an internal space of the casing via the at least one air inlet and formed into an air stream within the internal space and the air stream formed within the casing being supplied into a limited space via the at least one air outlet;

(b) a blower unit installed at the one end of the casing adjacent to the at least one air inlet for blowing the introduced air toward the other end of the casing to form the air stream;

(c) first means disposed downstream of the blower unit for cooling the air stream;

(d) a heater unit disposed downstream of the first means for heating the air stream passed through the first means to supply a heated air stream to the limited space via the at least one air outlet, the heater unit having an elongated rectangular shape in section including a pair of opposed first and second walls and a pair of opposed elongated third and fourth walls, the elongated third and fourth walls of heater unit being disposed substantially parallel to the air stream exiting from the first means so as to minimize air resistance against the air stream with a bypass air stream passage being defined by the second wall and a first wall of the casing;

(e) a first air mixing door member having a pivotal end located at a portion of the internal space adjacent to and upstream of the first wall of the heater unit for adjusting an amount of the air stream to be passed through the heater unit; and

(f) a first partitioning member disposed between a position at which the first air mixing door member is placed in a maximum cooling mode within the internal space and a substantial half portion of the third wall of said heater unit so that a first air stream passage is formed so as to face toward an upstream first half portion of the third wall and a second air stream passage is formed so as to face toward a downstream second half portion of the third wall, the bypass air passage placed between the second heater unit wall and the first wall of the casing also being formed.

4,940,084

HEAT EXCHANGER COMPRISED OF SECTIONS DETACHABLY AND SEALABLY CLAMPED TOGETHER AND ITS METHOD OF ASSEMBLY

Hubert Grieb, Germering, Fed. Rep. of Germany, assignor to MTU Motoren Und Turbinen- Union Munchen GmbH, Munich, Fed. Rep. of Germany

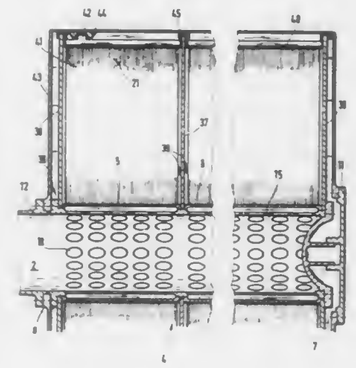
Filed Jan. 30, 1989, Ser. No. 303,921

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1988, 3803947

Int. Cl.[5] F28F *9/02*

U.S. Cl. 165—76 **12 Claims**





1. A heat exchanger comprising two substantially parallel manifold ducts and a plurality of heat exchange tubes connected to said ducts and arranged in bundles extending axially of the ducts, each of said ducts comprising a plurality of duct sections arranged axially one after the other in detachable abutting relation and a tension member extending axially of the ducts in spaced relation within the respective duct sections and applying compression to the endmost duct sections to press the duct sections against one another, said tension member having a smaller coefficient of thermal expansion than said ducts.

9. A method of assembling a heat exchanger comprising arranging in axial succession a plurality of sections each including a pair of parallel manifold duct elements connected by a plurality of heat exchange tubes, pressing the manifold duct elements of the adjoining sections together in detachable sealed relation by applying compressive forces to the endmost duct elements by a tension member extending axially of the duct elements in spaced relation therewith and clamping between adjoining duct elements an intermediate plate which extends between the heat exchange tubes of the adjoining sections.

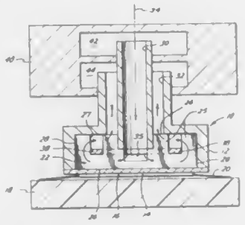
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4,940,085

FLUID HEAT EXCHANGER FOR AN ELECTRONIC COMPONENT

Richard D. Nelson, Austin, Tex.; Omkarnath R. Gupta, Fremont, Calif., and Dennis J. Herrell, Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 251,273, Sep. 30, 1988, Pat. No. 4,909,315. This application Nov. 27, 1989, Ser. No. 441,679
Int. Cl.[5] H01L *23/46*
U.S. Cl. 165—80.3 5 Claims



1. A fluid heat exchanger for cooling an electronic component comprising,

a housing having a base for receiving heat from an electronic component,

a plurality of spaced fins each having a top, bottom, and two ends, said bottoms connected to the base, and said fins being perpendicular to the base,

a first fluid tube communicating with the housing opposite the base and having a longitudinal axis perpendicular to the base, said axis directed towards the fins between the ends of the fins for transmitting a cooling fluid between the first tube and the fins, the base and the ends of the fins, and a second fluid tube in communication with the fins,

the tops of the fins including a recess in communication with the first tube for communicating fluid between all of the fins and the first tube, and

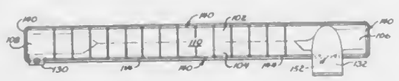
a plate between the top and bottom of the fins extending generally parallel to the base and extending toward but spaced from the ends of the fins for directing the cooling fluid in a double pass against the fins.

4,940,086

TANK FOR A HEAT EXCHANGER

Kevin E. Stay, Greenfield, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Apr. 16, 1987, Ser. No. 39,473
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 8 Claims



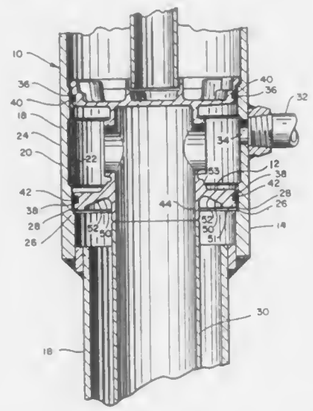
1. In a plastic tank for a vehicular radiator having an elongated trough-like configuration including two elongated, spaced, generally parallel walls subject to "suck-in", relatively short, opposed end walls interconnecting said parallel walls, and an elongated opening defined by said walls and by a peripheral flange having a planar sealing surface subject to "banana-ing", the improvement wherein said walls, in close adjacency to said flange, include a substantially peripheral step.

4,940,087

SEATING ARRANGEMENT AND STRUCTURE OF A SPOOL WITHIN A WELL CASING

Neil C. Lien, and Donald G. Olsen, both of Evansville, Wis., assignors to Baker Manufacturing Company, Evansville, Wis.

Filed May 26, 1989, Ser. No. 357,528
Int. Cl.[5] E21B *33/04, 43/00*
U.S. Cl. 166—88 10 Claims



1. A well construction having a vertical well casing and a spool, the spool being insertable into the well casing and the spool having a flange with a skirt that bottoms against a collar in the well casing to form a seated contact engagement between the skirt and the collar, a support web connected to the flange and extending substantially perpendicular to the skirt, the support web having an undersurface which extends upwardly and radially inwardly from the flange, a sleeve section connected to the web radially inwardly thereof from which a pipe section is suspended therefrom, and a ring portion at a junction of the support web and the sleeve about which transmitted forces are resolved, the skirt and the collar being angled at an angle θ relative to the vertical such that θ has a value less than tan θ equal to $1/\mu$ and greater than tan θ equal to μ where μ equals the coefficient of static friction between the skirt and the collar.

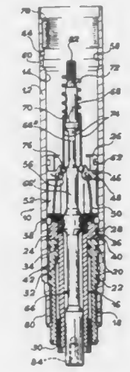
4,940,088

SONDE FOR TAKING FLUID SAMPLES, IN PARTICULAR FROM INSIDE AN OIL WELL

P. Goldschild, Vulaines/Seins, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 1, 1989, Ser. No. 317,709
Claims priority, application France, Mar. 3, 1988, 88 02680
Int. Cl.[5] E21B *49/08;* G01N *1/14*
U.S. Cl. 166—109 15 Claims

1. A sonde for taking fluid samples comprising: at least one sampling device, each said sampling device comprising a tubular body, a suction piston slidably mounted inside said tubular body in such a manner as to define a sampling chamber behind said suction piston, an admission orifice formed through said tubular body to admit fluid into said sampling chamber, and means for displacing said suction piston inside said tubular body, wherein said means for displacing said suction piston comprise a control rod which passes freely through said suction piston, and clutch means for coupling said control rod to said suction piston prior to taking a sample, and then for decoupling said control rod from said suction piston after the sample has been taken.

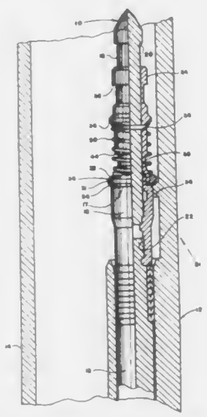


4,940,089

LATCHING DEVICE

Ben D. Terral, 118 Timberwilde, Huntsville, Tex. 77340

Division of Ser. No. 64,872, Jun. 19, 1987, Pat. No. 4,813,730. This application Dec. 5, 1988, Ser. No. 279,995
Int. Cl.[5] E21B *23/03*
U.S. Cl. 166—117.5 14 Claims



1. A latching device for selectively locking and retrieving a vertically oriented well tool from a vertically oriented tubular receiver having an inwardly projecting locking shoulder with upper and lower angularly bevelled surfaces, the latching device comprising:

a means for attaching the latching device to an upper portion of the well too;

a substantially cylindrical body provided with means to facilitate installation of the latching device within the tubular receiver;

a locking sleeve means mounted in axially slidable, surrounding relationship on the cylindrical body, said locking sleeve having an upper shoulder to facilitate retrieval of the latching device from the tubular receiver, an intermediate shoulder, a lower shoulder, a reduced diameter cylindrical body portion extending between the intermediate shoulder and the lower shoulder and further having an enlarged diameter lower portion;

an annular locking ring mounted on the locking sleeve means for effectively locking the latching device in the tubular receiver, an internal diameter of the locking ring being greater than an external diameter of the reduced diameter cylindrical body portion of said locking sleeve allowing the locking ring to be shifted by said locking shoulder to an axially angulated positioned relative to said locking sleeve when passing the locking shoulder of the tubular receiver, the locking ring having upper and lower angularly bevelled surfaces which are angled to be complementary to the bevelled surfaces of the locking shoulder of the tubular receiver and which contact the respective beveled surfaces of the locking shoulder during locking and retrieving of the well tool;

a spring means compressively arranged to urge the locking ring downwardly relative to said well tool, said spring means being compressed by the locking ring when the locking ring passes the locking shoulder of the tubular receiver and being released after passing of the locking shoulder by the locking ring.

4,940,090

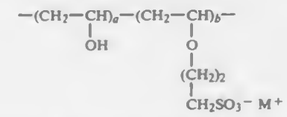
ORGANICALLY CROSSLINKED POLYVINYL ALCOHOL COPOLYMERIC GELS FOR USE UNDER HARSH RESERVOIR CONDITIONS

Dennis H. Hoskin, Lawrenceville, and Paul Shu, West Windsor, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

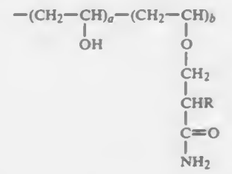
Filed May 11, 1989, Ser. No. 350,499
Int. Cl.[5] E21B *43/22, 43/24, 33/138*
U.S. Cl. 166—270 9 Claims

1. A process for recovering oil from a subterranean oil-bearing formation having relatively high permeability zones and relatively low permeability zones penetrated by at least one production well in fluid communication with a substantial portion of the formation, comprising the steps of:

(a) injecting into the formation an aqueous gel-forming composition comprising water, a water-dispersible polyvinyl alcohol copolymer, said polyvinyl alcohol copolymer selected from the group consisting of copolymers of vinyl alcohol and vinyl alkyl sulfonate ether having the structure:



and copolymers of vinyl alcohol and vinyl-acrylamido ether, having the following structure:



wherein:

R is an alkyl or aryl group having up to 10 carbon atoms;

M^+ is Na^+, K^+ or other counter ions; and

a and b are mole fractions of each co-monomer unit such that $a+b=1$, and $a>0$ and $b>0$;

and a crosslinking agent which is a mixture of a phenolic

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component and an aldehyde, said crosslinking agent present in an amount effective to cause gelation of said polyvinyl copolymer;

(b) injecting a flooding fluid into the formation that preferentially enters the low permeability zones; and

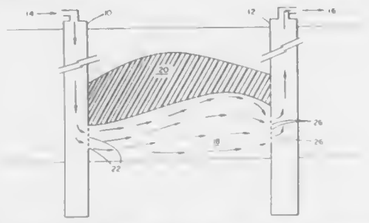
(c) recovering fluids including oil from the formation via the production well.

4,940,091

METHOD FOR SELECTIVELY PLUGGING A ZONE HAVING VARYING PERMEABILITIES WITH A TEMPERATURE ACTIVATED GEL

Paul Shu, West Windsor, N.J., and Winston R. Shu, Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 3, 1989, Ser. No. 292,795
Int. Cl.[5] E21B *43/22, 43/24, 33/138*
U.S. Cl. 166—270 **20 Claims**



1. A method for closing pores in a heated zone of a formation having zones of varying permeability comprising:

(a) heating by steam injection a zone of said formation to a temperature above about 300° F. sufficient to cause a temperature activated aqueous gellable mixture to form a solid gel which mixture contains

(i) a water dispersible polymer,

(ii) a phenolic compound, and

(iii) an aldehyde producing compound which upon reaching a temperature above about 300° F. decomposes to yield an aldehyde and form a phenolic resin in situ in combinaton with the phenolic compound sufficient to gel the polymer;

(b) terminating steam injection into the formation upon reaching said temperature; and

(c) injecting thereafter into said formation the temperature activated gellable mixture which mixture enters said zone heated to said temperature, where it is heated to a temperature sufficient to cause a solid gel to form and close pores in said heated zone regardless of the permeability of said zone.

4,940,092

WELL CLEAN OUT TOOL

Fred S. Ferguson, 23434 Wintergate Dr., Spring, Tex. 77373, and Lonnie K. Perry, P.O. Box 914, Wink, Tex. 79789

Filed Jul. 21, 1989, Ser. No. 383,005
Int. Cl.[5] E21B *37/00*
U.S. Cl. 166—311 **19 Claims**

1. A downhole well clean out tool for removing sand and debris from a well bore comprising:

an elongate string connectable to a source of reciprocating and rotating motion located at the surface, the string including;

at least one vertically extending debris-receiving and trapping sub positioned in said string having an outlet at the upper end thereof, and an inlet at the lower end thereof and at least one debris-trapping valve operatively positioned at the inlet end to open and close the inlet to said debris-receiving sub,

an elongate tubular pump barrel connected at its lower end in fluid communication with the outlet of said debris-receiving and trapping sub and having fluid outlets through its side wall near its upper end and enclosed at its top end,

an elongate vertically extending pump mandrel extending reciprocally through the enclosed top end of said pump barrel and keyed thereto to allow reciprocal vertical movement relative to said pump barrel while preventing rotational movement relative thereto whereby said pump barrel and said pump mandrel will rotate as a single unit upon rotation of said pump mandrel,

a top sub member connected at its lower end to the top end of said pump mandrel and its top end adapted to be connected in fluid communication to a drill string extending to the surface of the well bore and having fluid outlets through its side wall near its lower end,

a swab assembly reciprocally contained within said pump barrel including a swab bypass mandrel connected at its top end to the bottom end of said pump mandrel and having at least one longitudinal bypass channel on its circumference and axially spaced stop shoulders at each end of said bypass channel with a smooth cylindrical portion between the bottom end of said bypass channel and the lower stop shoulder, and at least one swab member slidable vertically on said bypass mandrel with the upper stop shoulder forming a stop for the swab member in its uppermost position and the lower stop shoulder



forming a stop for the swab member in its lowermost lifting position,

said swab member having an interior diameter configured to allow fluid circulation through said bypass channel in its uppermost position and in its lowermost lifting position to form a fluid sealing relation with said bypass mandrel smooth cylindrical portion to close off circulation through said bypass channel and having an exterior diameter configured to form a sliding fluid sealing relation with the interior surface of said pump barrel, whereby

after the tool is fully extended and on the down stroke said swab bypass mandrel will move downward relative to said swab member engaging it with the upper stop shoulder to allow passage of fluid through said bypass mandrel channel and said pump barrel and said top sub fluid outlets to relieve hydraulic action of fluid inside said pump barrel and allow said debris-trapping valve to close and capture sand and debris in said debris-receiving and trapping sub, and

when the tool is on the up stroke, said swab bypass mandrel moves upward relative to said swab member to engage said swab member with the lower stop shoulder in a sealing relation with said bypass mandrel smooth cylindrical portion below the channel and said swab member exterior diameter forms a sliding fluid sealing relation with said

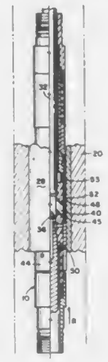
pump barrel interior surface and as said swab assembly is raised relative to said pump barrel causing hydraulic action to open said debris-trapping valve allowing sand and debris to enter said debris-receiving and trapping sub and the fluids within said pump barrel above said swab member to be discharged out through the fluid outlets near the top portion of said pump barrel.

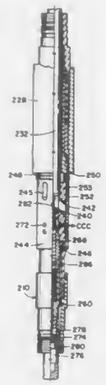
4,940,093

GRAVEL PACKING TOOL

Y. Gilbert Hillman, III, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Sep. 6, 1988, Ser. No. 241,170
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—332 **4 Claims**





1. An apparatus for closing a reverse circulation passage and opening a crossover fluid passage in a gravel packing service tool which sets a well packer comprising:

(a) closure means for closing said reverse circulation passage including (i) a valve ring having a substantially cylindrical bore and a radially disposed upper surface; and (ii) a substantially cylindrical rod and piston assembly movable within said bore, said assembly including a partial axial fluid flow passage and a connecting radially disposed fluid port whereby fluid flowing within said fluid flow passage flows outwardly of said assembly through said port when said port is in an open position axially away from said radially disposed upper surface and resilient damper means comprising restricted fluid passage openings between an upper fluid chamber and a lower fluid chamber of said cylindrical bore restraining movement of said piston within said bore and maintaining said port in said open position under relatively low fluid pressure conditions, and

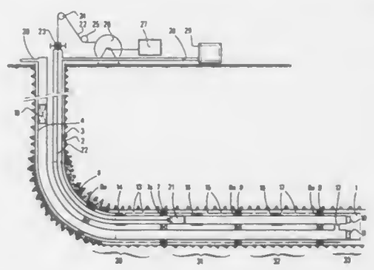
(b) opening means for opening said crossover fluid passage comprising a sliding sleeve and a snap ring intermediate said sliding sleeve and a packer which engages a corresponding shoulder on said packer in response to an axial lifting force on said service tool whereby said sliding sleeve moves axially to open said crossover passage.

4,940,094

METHOD AND DEVICE TO ACTUATE SPECIALIZED INTERVENTION EQUIPMENT IN A DRILLED WELL HAVING AT LEAST ONE SECTION HIGHLY SLANTED WITH RESPECT TO A VERTICAL LINE

Jacques Lessi, Maule, and Michel Tholance, Feucherolles, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 19, 1988, Ser. No. 234,076
Claims priority, application France, Aug. 19, 1987, 87 11749
Int. Cl.[5] E21B *34/14*
U.S. Cl. 166—373 **15 Claims**



1. Method for actuating specialized operating equipment in a drilled well having at least one well zone sharply slanted with respect to a vertical, said drilled well having at least one first tubular control column along which the specialized operating equipment are remotely installed, the method comprising the steps of:

introducing a control member into said first tubular control column,

attaching a cable means at one end of said control member,

lowering said control member into said first tubular control column by downward hydraulic pumping,

bypassing specialized operating equipment which is to remain inoperative while allowing the control member to be positioned so as to enable selective specialized operating equipment to be operated,

paying out the cable means from the surface into the first tubular control column,

raising the control member by pulling on the cable means from the surface, and

selectively maneuvering the specialized operating equipment while the control member is flush against said specialized operating equipment in a downward or upward travel of the control member in the drilled well.

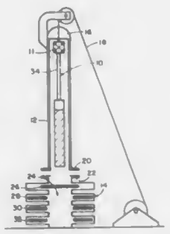
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4,940,095

DEPLOYMENT/RETRIEVAL METHOD AND APPARATUS FOR WELL TOOLS USED WITH COILED TUBING

Kenneth R. Newman, Richmond, Tex., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Jan. 27, 1989, Ser. No. 303,592
Int. Cl.[5] E21B *33/068, 23/00*
U.S. Cl. 166—378 5 Claims



1. A method of inserting a well service tool into a wellbore having a wellbore axis, the well service tool having a central bore and a valve within the bore comprising the sequential steps of:

(a) inserting the well service tool into a lubricator having a closed first end portion with a control cable extending therethrough and connected to the well service tool and a second open end portion incorporating means for connecting the lubricator to a wellhead;

(b) axially aligning the well service tool and the lubricator along the axis and connecting the lubricator to the wellhead;

(c) inserting at least a portion of the well service tool into the wellbore so that a portion of the tool is adjacent at least one pair of pipe rams in the wellhead;

(d) closing the pipe rams against an outer surface of the well service tool to hold the well service tool in position and effect a fluid-tight seal against the tool within the wellbore, and

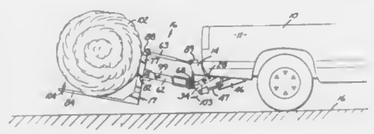
(e) removing the lubricator from the wellhead and disconnecting the control cable from the well service tool.

4,940,096

THREE POINT HITCH FOR TRUCK

Jerry A. Johnson, Rte. 1, Box 217, Devils Lake, N. Dak. 58301

Filed Sep. 11, 1989, Ser. No. 405,316
Int. Cl.[5] A01B *59/043*
U.S. Cl. 172—443 23 Claims



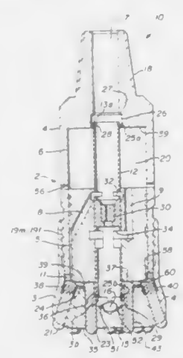
15. A hitch for a truck including longitudinally extended frame means having a rear end portion, a transverse rear bumper secured to the rear end portion of the frame means, comprising support means connected to the frame means, transverse tube means located below said bumper secured to the support means, shaft means rotatably mounted on and extended through said tube means, said shaft means having opposite ends, a first lift draft arm, a second lift draft arm, said first and second lift draft arms being movable from rearward extended positions to folded positions below said bumper, first upright pivot means connecting the first lift draft arm to one end of the shaft means, second upright pivot means connecting the second lift draft arm to the other end of the shaft means whereby said first and second lift draft arms can be folded adjacent each other below said bumper, means for holding the first and second lift draft arms folded adjacent each other, means limiting the rearward extended positions of the first and second lift arms, crank arm means secured to the shaft means, extendible and contractable means secured to the crank arm means and frame means, and means for operating the extendible and contractable means to rotate the shaft means to selectively raise and lower the first and second lift arms.

4,940,097

FLUID POWERED ROTARY PERCUSSION DRILL WITH FORMATION DISINTEGRATION INSERTS

Leo A. Martini, 2624 Montclair, Mesquite, Tex. 75150

Filed Dec. 13, 1988, Ser. No. 283,855
Int. Cl.[5] E21B *10/38, 10/46*
U.S. Cl. 175—296 13 Claims



1. A fluid powered rotary percussion drill for drilling earth bore holes with a conventional drill string comprising:

a percussion dri motor housing, the upper end thereof being hollow to pass fluid flow and adapted for threaded connection to said conventional rotary drill string;

a piston having upper and lower ends internally fitted to said drill motor housing for vertical reciprocating motion therein between upper and lower limits;

valving means passing through said piston for alternately directing fluid pressure admitted through said hollow upper end of said drill motor housing to said upper and lower piston ends thereby affecting said vertical reciprocating motion and for enabling the movement of said piston from a first position allowing for continuous piston oscillation to a second position disabling piston oscillation and permitting voluminous fluid flow through the drill;

a percussion drill bit body having an upper section adapted for threaded connection to the lower end of said motor housing and a lower section including a downwardly oriented drilling face;

a plurality of vertical and inclined inserts guide holes passing through said drill bit in a spaced pattern; and

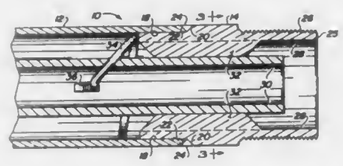
a substantially cylindrical insert having first and second send fitted in each said insert guide hole for longitudinal movement therewith wherein said first end is adapted for contact with said lower end of said piston and said second end is adapted for percussive contact with the bottom of said earth bore and wherein one or more of said plurality of inserts contacts said valving means when said insert is placed longitudinally, thereby shifting said piston from its second non-oscillation position to its first oscillation position.

4,940,098

REVERSE CIRCULATION DRILL ROD

Daniel H. Moss, 6942 E. Redbud Rd., Tucson, Ariz. 85715

Filed May 26, 1989, Ser. No. 357,117
Int. Cl.[5] E21B *17/18*
U.S. Cl. 175—320 11 Claims



1. In a reverse circulation drill rod of the dual tube type providing for passage of fluid down through the drill rod in one direction and for up return of the fluid, together with drill cuttings or rock fragments in the other direction, the drill rod consisting of connected multiple identical sections, a drill rod section comprising:

an elongated cylindrical outer tube having a first end and a second end;

an elongated cylindrical pin operably attached to said outer tube first end, said pin having an outer cylindrical surface with internal circular bore therethrough and a plurality of spaced apart radially directed inwardly protruding lands attached to said internal bore, said lands having end surfaces;

an elongated cylindrical box operably attached to said outer tube second end, said box having an outer cylindrical surface with internal circular bore therethrough and a plurality of spaced apart radially directed inwardly protruding lands attached to said internal bore, said lands having end surfaces;

an inner tube situated concentrically interiorly to and operably attached to said outer tube, pin, and box, said inner tube having limited longitudinal freedom of movement within said outer tube, pin, and box, said elongated cylindrical pin and elongated cylindrical box plurality of protruding lands end surfaces adapted to receive, secure, and align said inner tube situated concentrically interiorly of said pin and said box for connection to adjacent sections; and

means limiting the freedom of longitudinal movement of said inner tube within said outer tube, said means including a first coil spring having two ends, one end of which is operably attached to said inner tube and the second end is juxtaposed said pin and said outer tube whereby said inner tube may move longitudinally relative to said outer tube, pin, and box when connecting multiple sections of said drill rod, said pin of one section connective to said box of the adjacent section, the passage of fluid down through the drill rod passes through the cylindrical annulus formed between the outer tube and the inner tube, and between said pin internal circular bore lands and said inner tube, and the up return of the fluid, drill cuttings or rock fragments, passed through the inner tube.

4,940,099

CUTTING ELEMENTS FOR ROLLER CUTTER DRILL BITS

John D. Deane; Craig R. Ivie, and Percy W. Schumacher, all of Houston, Tex., assignors to Reed Tool Company, Houston, Tex.

Filed Apr. 5, 1989, Ser. No. 333,576
Int. Cl.[5] E21B *10/16, 10/50*
U.S. Cl. 175—374 2 Claims

1. A rotary drill bit for drilling a well bore hole and comprising:

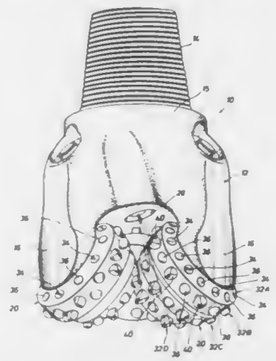
a bit body having an upper end adapted to be detachably secured to a drill string for rotation of the drill bit, and at least one depending leg at its lower end having a generally cylindrical bearing journal;

a roller cutter mounted for rotation on said journal and having a generally frusto-conical body defining a generally frusto-conical body defining a generally frusto-conical outer surface; and

a plurality of cutting inserts arranged in a plurality of spaced concentric annular rows on said body, said cutting inserts having outer cutting surfaces formed of a wear-resistant material and adapted to bear on the formation of the well bore hole for drilling the bore hole, each of said annular rows having a plurality of cutting inserts therein spaced from each other;

one of said rows of cutting elements being a reaming insert row positioned adjacent a gage row of cutting elements and adapted to engage the cylindrical side wall of the bore hole for maintaining the diameter of the bore hole, said reaming insert row comprising a plurality of spaced cutting elements each having a generally planar cutting face substantially flush with the adjacent outer surface of the cutter body and extending in a plane generally at right angles to the bottom of the bore hole for engaging the side wall surface of the bore hole;

at least some of the cutting surfaces of the cutting inserts in said reaming insert row being formed of a substantially harder wear-resistant material than the cutting surfaces of the remaining cutting inserts in said reaming insert row and intermingled in a generally uniformly spaced pattern with said remaining cutting inserts, the cutting surfaces of said remaining cutting elements being substantially tougher than the cutting surfaces of said cutting inserts having the substantially harder wear-resistant material whereby said reaming insert row of cutting inserts has cutting surfaces formed of predetermined different physical properties and intermingled in a predetermined pattern for increasing the life of the bit when different types of formations are encountered.



4,940,100

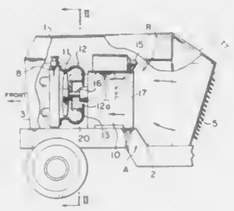
MOTOR VEHICLE

Yoshiteru Ueda, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Feb. 23, 1989, Ser. No. 313,901
Claims priority, application Japan, Feb. 23, 1988, 63-23685[U]
Int. Cl.[5] B60K *11/08*
U.S. Cl. 180—68.1 4 Claims

1. A motor vehicle comprising an engine housing having a closed front end; a radiator arranged in a front part of said engine housing; an engine arranged in a rear part of said engine

housing; an air inlet provided at a rear part of the engine housing so that cooling air for cooling said radiator passes across in contact with at least one side of the engine and then flows



toward a front side of said radiator; and an air guiding duct connected to a rear side of said radiator so that the air passed through the radiator is discharged out of the engine housing without encountering the engine.

4,940,101

VENTING DEVICE FOR THE FUEL TANK OF A MOTOR VEHICLE

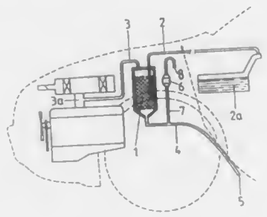
Armin Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to AUDI AG, Fed. Rep. of Germany

Continuation of Ser. No. 254,492, Oct. 6, 1988, abandoned. This application Nov. 21, 1989, Ser. No. 441,348

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1987, 3734414

Int. Cl.[5] F02M *23/12*

U.S. Cl. 180—69.4 **2 Claims**



1. A venting device for venting the fuel tank of a motor vehicle, comprising:

a fuel vapor filter connected by a first line to said fuel tank for collecting vapors and by a second line to the intake system of an internal combustion engine of the vehicle;

an aeration line connected to the lower end of said filter for aerating said filter, said aeration line extending downwardly to a location adjacent the road region of the vehicle and having an opening at it's lowermost end;

a vacuum limiting valve connected to said aeration line by a third line extending upwardly from said aeration lien to said valve; and

an air intake line extending from said valve with an opening for admitting air therein when the vacuum limiting valve opens in response to clogging of the aeration line.

4,940,102

MOTOR-DRIVEN POWER STEERING SYSTEM

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

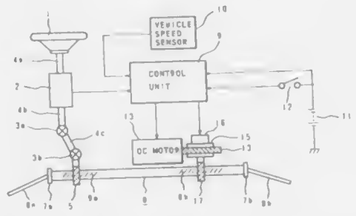
PCT No. PCT/JP87/00927, § 371 Date Sep. 20, 1988, § 102(e) Date Sep. 20, 1988, PCT Pub. No. WO88/04250, PCT Pub. Date Jun. 16, 1988

PCT Filed Nov. 30, 1987, Ser. No. 245,437

Claims priority, application Japan, Dec. 2, 1986, 61-288436

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **7 Claims**



1. A motor-driven power steering system including a control unit (9) for controlling the rotational force of a DC motor (13) as an auxiliary steering force on the basis of a steering torque signal from a steering torque sensor (2) which detects the rotational force of a steering wheel and on the basis of a vehicle speed signal from a vehicle speed sensor (10) which detects the running speed of a vehicle and for turning an electromagnetic clutch (16) on and off in order to effectively and ineffectively control, respectively, the rotational force of said DC motor as said auxiliary steering force, wherein the motor-driven power steering system further includes a fail-safe relay (91) having a normally open contact which is disposed on a line for supplying power to said electromagnetic clutch, one end of a drive coil (91*a*) of said fail-safe relay being connected to a positive terminal of a battery source (11) through a key switch (12), the other end of said drive coil being connected to a fail-safe drive means (99) which disconnects said drive coil from receiving power if said control unit detects that an abnormal condition is present on the basis of said steering torque signal and said vehicle speed signal, and a motor drive circuit (92), connected to the positive terminal of the battery source through a fuse (18), for supplying power to said DC motor.

4,940,103

POWER STEERING SYSTEM FOR USE IN MOTOR VEHICLE

Fujio Momiyama, Hino, Japan, assignor to Hino Jidosha Kogyo Kabushiki Kaisha (Hino Motors, Ltd.), Tokyo, Japan

Continuation of Ser. No. 108,213, Oct. 14, 1987, abandoned. This application Sep. 22, 1989, Ser. No. 412,537

Int. Cl.[5] B62D *5/08, 6/00*

U.S. Cl. 180—132 **6 Claims**

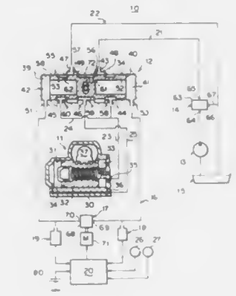
1. A hydraulic circuit power steering system for use in a motor vehicle, comprising:

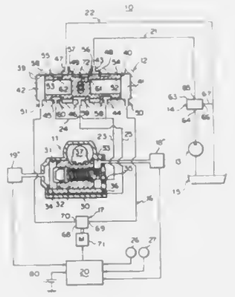
a power cylinder,

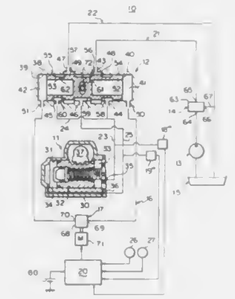
a control valve provided with a pair of reaction chambers,

a hydraulic pump,

a reaction passage intercommunicating said pair of reaction chambers,







a reaction regulating valve disposed in said reaction passage and including an actuator activated by electric current,

means for sensing actual hydraulic pressure in the hydraulic circuit which is equivalent to the actual slip friction coefficient μ of the road surface and for generating a signal therefore,

means for sensing an actual speed of the motor vehicle and for generating a signal therefore,

means for sensing an actual steering value of the motor vehicle and for generating a signal therefore, and

control means, in which is previously input a valve representing a desired hydraulic pressure of said reaction chambers corresponding to a particular slip friction coefficient μ of the road surface, a particular motor vehicle speed and a particular motor vehicle steering value, for calculating a value based on the signals from said hydraulic pressure sensing means, speed sensing means and said steering value sensing means, for comparing the calculated value with the desired value, controlling the current flowing to the electric actuator and for controlling said reaction regulating valve so that the hydraulic pressure in said reaction chambers is caused to correspond to the desired value.

4,940,104

POWER-ASSISTED STEERING APPARATUS

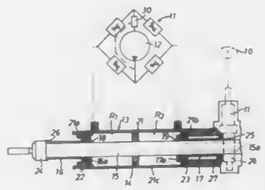
Akira Hasegawa, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 23, 1989, Ser. No. 370,684

Claims priority, application Japan, Jun. 24, 1988, 63-84404[U]

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—132 **4 Claims**



1. A power-assisted steering apparatus of the type which includes a control valve arranged to control hydraulic fluid under pressure supplied to a hydraulic power cylinder from a hydraulic pump therethrough in response to the driver's steering effort applied thereto, said power cylinder having a piston mounted therein for reciprocating movement and a piston rod supporting thereon said piston for movement therewith and extending outwardly from said cylinder in opposite directions, wherein a pair of axially spaced cylindrical reaction pistons are slidably mounted on said piston rod one at each end of said power cylinder in such a manner as to be axially engageable at their inner ends with a pair of axially spaced internal end walls of said cylinder and at their outer ends with a pair of axially spaced retainer members on said piston rod when said power cylinder piston is retained in a neutral position.

4,940,105

STEERING GEAR FOR A VEHICLE

Tsugiharu Matsunaga, Aichi; Yasutaka Hayashi, Seto, and Katsuhiko Hattori, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Tokyo, Japan

Filed Mar. 21, 1988, Ser. No. 170,726

Claims priority, application Japan, Mar. 20, 1987, 62-67179

Int. Cl.[5] B62D *5/00*

U.S. Cl. 180—133 **15 Claims**

1. A steering gear for a vehicle comprising

an input device for receiving steering input from a driver,

a steering device coupled to the wheels of the vehicle for changing the steering angle of said wheels,

a steering drive unit including force generating means for driving said steering device,

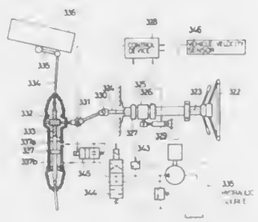
VOL 1116 ISS 2 JL 10 1990 UMI

a steering drive control device for operating said steering drive unit,

control means for controlling said steering drive control device on the basis of steering magnitude,

connecting means comprising two opposed members respectively coupled to the input device and the steering device, and

clutch means for selectively operatively connecting said two opposed members and thereby said input device and said steering device, said clutch means mechanically detecting relative displacement between said input device and said steering device and setting said clutch means in an engaged state in which the input device and steering device are operatively coupled when the relative displacement between the input device and the steering device reaches a predetermined abnormal value, said input device directly driving said steering device in said engaged state of said clutch means,



said two opposed members being movable relative to one another in a normal operation with said clutch means disengaged, said clutch means comprising a fitting portion on one of said members at a position corresponding to an abnormal value of relative displacement between said input device and said steering device, said two members being fitted together by said fitting portions to be integrally operable for both directions of movement of said members when the relative displacement between said input device and said steering device reaches said abnormal value,

releasable means for releasing said steering drive unit from said steering device, and

mechanical means for mechanically responding to the fitted condition of said two members for operating said releasable means when the clutch means achieves the engaged state whereby the input device is directly coupled to the steering device and the steering drive unit is released from the steering device.

4,940,106

ARTICULATED VEHICLE WITH HYDRAULIC STEERING

Harry E. Pedersen, and Ole V. Sorensen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

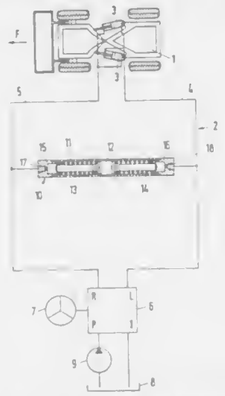
Filed May 1, 1989, Ser. No. 345,826

Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817031

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—139 **16 Claims**

1. An articulated vehicle steerable in a first direction and an opposite second direction comprising a first and a second conduit that each have first and second end portions respectively, a hydraulic steering motor connected between the first ends of the first and second conduits, a control unit connected between the second ends of the first and second conduits that is operable for controlling the flow of pressurized fluid through the first and second conduit respectively, a pump for providing pressurized fluid to the control unit, a steering wheel operable in two directions for operating the control unit, and a double acting hydraulic shock absorber that has a response pressure of a predetermined value, the shock absorber including a longitudinally elongated tubular housing having a first end portion, a second end portion and an intermediate portion, first closure means for closing the first end portion of the housing and fluidly connecting the housing first end portion to the first conduit, second closure means for closing the second end portion of the housing and fluidly connecting the housing second end portion to the second conduit, a piston disposed in a datum position in the intermediate portion of the housing and being longitudinally movable away from the datum position toward each of the housing end portions with the direction of longitudinal movement depending upon the fluid pressure in the housing, the piston having a first end facing toward the housing first end portion and a second end facing toward the



housing second end portion, first pre-stressing means acting between the piston first end and the first closure means for constantly resiliently urging the piston toward the second closure means only when the piston has been moved away from the datum position toward the housing first end portion by fluid pressure at the second closure means that is at least a preselected amount higher than that at the first closure means and the piston is between its datum position and the first closure means, and second pre-stressing means acting between the piston second end and the second closure means for constantly resiliently urging the piston toward the first closure means only when the piston has been moved away from the datum position toward the housing second end portion by fluid pressure at the first closure means that is at least a preselected amount higher than that at the second closure means and the piston is between its datum position and the second closure means.

4,940,107

METHOD AND APPARATUS FOR CONTROLLING A POWER ASSIST STEERING SYSTEM

John-Cyril P. Hanisko, Southfield, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Sep. 23, 1988, Ser. No. 249,369

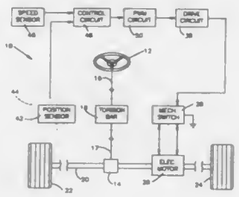
Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—142 **11 Claims**

9. An apparatus for providing a power assist control signal in an electrically controlled power assist steering system, said apparatus comprising:

means for providing a pulse-width modulated signal having a duty cycle that varies as a function of one of vehicle speed or applied steering torque;

means for controlling the amplitude of said pulse-width modulated control signal as a function of the other of vehicle speed or applied steering torque; and



means for averaging the value of the pulse-width modulated signal, the averaged value being said power assist control signal.

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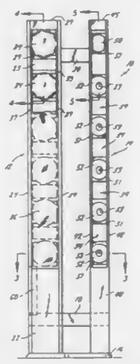
OPEN LINE SOURCE SPEAKER SYSTEM

John L. Selby, 1206 Perryville Rd., Cape Girardeau, Mo. 63701

Filed Feb. 24, 1989, Ser. No. 314,807

Int. Cl.[5] H05K *5/00*

U.S. Cl. 181—145 **22 Claims**



1. A loudspeaker system comprising:

a first vertical loudspeaker housing having a front, means mounting a first plurality of loudspeakers in a vertical column on the front of the first housing, the first plurality of loudspeakers including an uppermost loudspeaker and a lowermost loudspeaker in the column, the uppermost loudspeaker being at least four and one-half feet above the lowermost loudspeaker;

a second vertical loudspeaker housing having a front, the first and second housings being substantially equal in height, and means mounting a second plurality of loudspeakers in a vertical column on the front of the second housing, the second plurality of loudspeakers being equal in number to the first plurality of loudspeakers; and

spacer means connected between the first loudspeaker housing and the second loudspeaker housing, to maintain the first and second loudspeaker housings spaced apart by a predetermined distance.

4,940,109

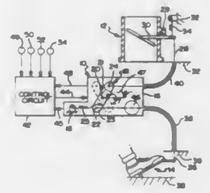
SPLIT ARM THROTTLE CABLE INTERVENTION DEVICE

David M. Preston, Madison Heights, and Donald R. Haefner, Oak Park, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 18, 1989, Ser. No. 381,551

Int. Cl.[5] B60K *13/02*

U.S. Cl. 180—197 **22 Claims**



1. A mechanism adapted to be interposed between an engine throttle body and an operator accelerator pedal for varying engine speed independently of operator demand, said mechanism comprising:

a first member adapted for slaved movement with said accelerator pedal between zero and full pedal travel positions;

a second member adapted for slaved movement with said throttle body between idle and full throttle positions;

motion transfer means including first and second lever portions mounted for limited relative rotation upon a pivot and interlinking said first and second members, said first member connected to said first lever portion at a first attachment point and said second member connected to said second lever portion at a second attachment point, said attachment points being spaced from one another and from said pivot;

means operative to fix the relative positions of said lever portions whenever said throttle is in other than said idle position and to permit relative rotation of said lever portions when said throttle is in said idle position; and

actuator means operative to selectively position said pivot to effect controlled displacement of said second member independent of displacement of said first member.

4,940,110

MOBILE WORK UNIT WITH RAISABLE AND LOWERABLE SUPPORT LEGS

Ulf Svensson, Badvägen 6 A, Sollentuna, Sweden S-191 43, and Bo Dahlgren, Sollentuna, Sweden, assignors to Ulf Svensson, Sollentuna, Sweden

PCT No. PCT/SE87/00295, § 371 Date Dec. 27, 1988, § 102(e) Date Dec. 27, 1988, PCT Pub. No. WO88/00262, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 24, 1987, Ser. No. 294,065

Claims priority, application Sweden, Jun. 24, 1986, 8602803

Int. Cl.[5] B62D *61/12*

U.S. Cl. 180—209 **11 Claims**

1. A mobile work unit comprising:

a body member;

a wheel through which the body member can be supported on a support surface;

a support leg having a support surface engaging end and another end which is pivotally connected to the body member;

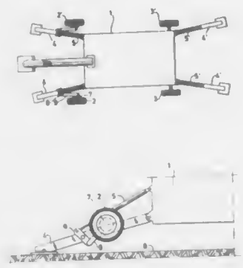
a piston-and-cylinder assembly operative between the support leg and the body member for raising the support leg from the support surface and lowering the support leg with its support surface engaging end in contact with the support surface;

a link-shaped member having a pair of opposed ends and

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pivotally connected, intermediate its opposite ends, to the support leg and extending in a transverse direction relative to the support leg;

the piston-and-cylinder assembly being pivotally connected at its one end to the body member and pivotally connected at its other end to one end of the link-shaped member;



interconnection means for transferring movement between the other end of the link-shaped member and the wheel; and

the link-shaped member being pivotable between a first restricting position in which the wheel is in load-bearing contact with the support surface and a second restricting position in which the wheel is out of load-bearing contact with the support surface.

4,940,111

MOTORCYCLE

Yoshio Nogami, Okayama; Yoshihiro Matsuo, Saitama; Takayuki Fujii, Saitama, and Seiichi Urashi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,602

Claims priority, application Japan, Jul. 17, 1987, 62-177172; Jul. 20, 1987, 62-180642

Int. Cl.[5] B62B *61/02*

U.S. Cl. 180—219 **22 Claims**



1. A motorcycle comprising:

a head pipe;

a pair of laterally spaced main frames extending rearwardly from said head pipe;

a receptacle supported on said main frames;

said receptacle having a bottom wall positioned between said main frames, said bottom wall having at least a portion positioned below a plane including an upper surface of said main frames; and

said receptacle being shaped for storing a crash helmet therein.

4,940,112

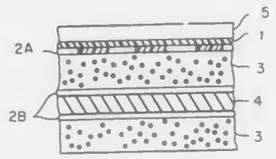
HIGH PERFORMANCE FLAME AND SMOKE FOAM-BARRIER-FOAM-FACING ACOUSTICAL COMPOSITE

Justin T. O'Neill, 185 Melba St., Unit 111, P.O. Box 175, Milford, Conn. 06460

Filed Jun. 20, 1989, Ser. No. 368,510

Int. Cl.[5] E04B *1/82;* **C04B** *43/00;* **B32B** *3/06, 5/32*

U.S. Cl. 181—290 **16 Claims**



1. A multilayered composite having improved flammability and smoke resistance properties comprising:

(a) a flame retardant flexible polyimide film facing layer,

(b) a first high temperature resistant silicone adhesive layer bonded to said polyimide film facing layer,

(c) a first open cell polyimide foam layer bonded to said first adhesive layer,

(d) a second high temperature resistant silicone adhesive layer bonded to said first open cell polyimide flame layer,

(e) a fire retardant flexible silicone sheet rubber layer bonded to said second adhesive layer,

(f) a third high temperature resistant silicone adhesive layer bonded to said silicone sheet rubber layer, and

(g) a second open cell polyimide foam layer bonded to said third adhesive layer.

4,940,113

METHOD OF ACOUSTICALLY INSULATING A TOILET BOWL

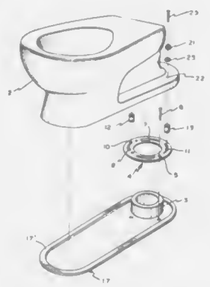
Ghislain L'Heureux, 911, rang St-Antoine, St Féréol Les Neiges, Quebec, Canada G0A 3R0

Filed Apr. 25, 1989, Ser. No. 342,907

Claims priority, application Canada, Dec. 8, 1988, 585333

Int. Cl.[5] F16F *15/00*

U.S. Cl. 181—296 **8 Claims**



1. A method of acoustically insulating a toilet bowl having a base resting on a building floor, comprising the steps of:

interposing a cushion of resilient, acoustically insulating material between the base of the toilet bowl and the said floor, so that the bowl base rests on the floor exclusively through the said cushion; and

attaching said base to the floor exclusively through at least one fastener including a first rigid end, a second rigid end, and an intermediate link of resilient, acoustically insulating material, by attaching the first rigid end to the floor and the second rigid end to the base of the toilet bowl;

whereby the toilet bowl and the floor are connected together through the cushion and the link both of resilient, acoustically insulating material, the said cushion and link preventing acoustic short circuits between the toilet bowl and the floor and transmission of acoustic vibrations from the toilet bowl to the building floor to thereby acoustically insulate the said bowl.

4,940,114

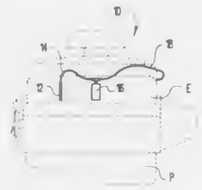
ENGINE PRELUBRICATING SYSTEM

Kenneth D. Albrecht, Box 2, Leader Sask., Canada S0N 1H0

Filed Sep. 5, 1989, Ser. No. 403,198

Int. Cl.[5] F01M *1/26*

U.S. Cl. 184—6.3 **7 Claims**



1. An engine prelubricating system for use with an internal combustion engine system including a block with internal oil passages, an oil sump, a dipstick well communicating with the sump, an electrically actuated starter motor and solenoid, a battery, and an ignition switch, comprising:

an oil intake tube dimensioned for insertion into the dipstick well;

said oil intake tube having a lower end portion provided with a graduated scale for measuring oil quantity in the sump;

handle means on an upper end portion of said intake tube for facilitating manual removal and replacement of said tube from the dipstick well;

an electric oil pump;

first conduit means connecting said oil intake tube to an inlet side of said oil pump;

quick release coupling means connecting said oil intake tube to said first conduit means;

second conduit means connecting an outlet side of said pump to the internal oil passages of the block;

first check valve means in said oil intake tube for preventing oil from flowing from said tube back into the sump;

second check valve means in said second conduit means for preventing oil from flowing from the block to said pump outlet side;

and

a pressure actuated switch connected in said second conduit means, said pressure actuated switch having a first low pressure position for connecting said electric pump to the battery when the ignition switch is closed and a second high pressure position for disconnecting the pump from the battery and for connecting the starter motor solenoid to the battery, whereby the engine cannot be started until a predetermined oil pressure is reached.

4,940,115

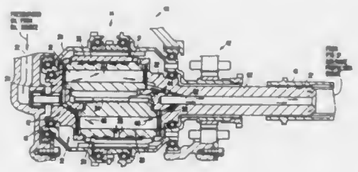
DIFFERENTIAL WITH BLEED HOLES FOR DEAERATION OF OIL FOR LUBRICATING JOURNALS

Kenneth B. Sugden, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 17, 1989, Ser. No. 324,751

Int. Cl.[5] F01M *9/10*

U.S. Cl. 184—6.12 **14 Claims**



1. A lubrication system comprising:

a source of pressurized oil;

a carrier, rotationally mounted on an axis of rotation, having an inlet for receiving pressurized oil from the source and an outlet for discharging a mixture of oil and air, and rotatably supporting a plurality of planetary gears as the carrier rotates;

a plurality of first ports, each first port being associated with a different planetary gear for supplying only oil to a journal rotatably supporting the planetary gear upon rotation of the carrier when pressurized oil is supplied to the inlet, each first port being disposed at a radial position on the carrier at a point displaced from the axis of rotation; and

deaerating means, in fluid communication with a mixture of air and oil moving radially outward from the axis of rotation during rotation of the carrier to each of the first ports, for removing air from the oil so that only oil moves radially outward to the first ports and for discharging a mixture of oil and air at the outlet.

4,940,116

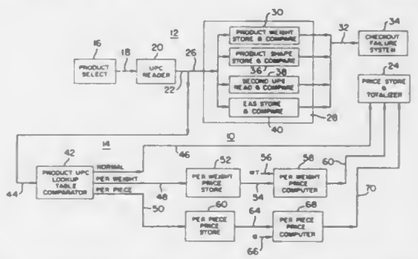
UNATTENDED CHECKOUT SYSTEM AND METHOD

David F. O'Connor, Delray Beach; Wesley Dickover, and Steven J. Tilidetzke, both of Coral Springs, all of Fla., assignors to Checkrobot Inc., Deerfield Beach, Fla.

Filed Mar. 7, 1989, Ser. No. 320,063

Int. Cl.[5] G06K *7/10;* **G07C** *11/00*

U.S. Cl. 186—61 **13 Claims**



1. In combination, in a system for operator-unassisted checkout of articles, inclusive of articles retailed by bulk weight and per piece pricing and bearing UPC indication thereon:

(a) reader means for reading article UPC indication and generating output signals indicative thereof;

(b) comparator means for receipt of said reader means output signals and for providing first and second separate output signals respectively indicating that

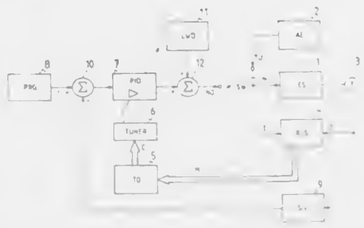
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(1) the UPC indication in said reader means output signals is for an article retailed by bulk weight pricing, and
(2) the UPC indication in said reader means output signals is for an article retailed per piece pricing.

4,940,117
PROCEDURE FOR THE TUNING OF THE POSITION CONTROLLER OF AN ELEVATOR

Seppo Ovaska, Hyvinkaa, Finland, assignor to Kone Elevator GmbH, Switzerland

Filed Feb. 15, 1989, Ser. No. 310,129
Claims priority, application Finland, Feb. 16, 1988, 880724
Int. Cl.[5] B66B *1/34*
U.S. Cl. 187—101 **10 Claims**



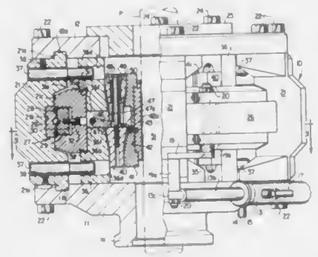
1. A procedure for tuning a position controller of an elevator drive system in an elevator system, wherein an artificial excitation signal is supplied to said position controller of said elevator drive system, the response corresponding to said artificial excitation signal is measured, a mathematical model of said elevator system is calculated, the behaviour of said elevator system is simulated, position control parameter values minimizing the difference between the values for target positions and the values for actual positions are calculated, individual differences in the vicinity of the ultimate target position are weighted by a large factor, said position control parameter values are reset to optimized values, a real excitation signal is input to said elevator drive system, said model parameter values are calculated again, and the above sequence of operations is repeated until said model parameter values and said control parameter values converge.

4,940,118
SLIP ASSEMBLY

Don C. Cox, Roanoke, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 31, 1988, Ser. No. 264,891
Int. Cl.[5] B23Q *5/033*
U.S. Cl. 188—67 **21 Claims**

1. An hydraulically operated double acting slip assembly comprising:
(a) housing means including,
a lower plate with a connector thereon and a passage for pipe therethrough,
an upper plate,
a cover secured to said upper plate with a passage for pipe therethrough, and
ring segments between said plates around said pipe passages,
said segments connected to said plates;
(b) a pair of guide rods anchored in each said ring segment;
(c) pipe gripping means, slidaly mounted on said rods for gripping pipe passing through said passages including
double acting slip means for initially gripping pipe and increasing gripping force on gripped pipe ,said slip means automatically increasing gripping force on gripped pipe by load on gripped pipe causing more than about 0.70 inches upward or downward movement of pipe, said double acting slip means including a wedge slidably mounted on each pair of guide rods, said wedge having a "T" slot across the outer surface thereof, spaced apart upper and lower downwardly and inwardly inclined surfaces on the inner surface thereof and an opening between said "T" slot and said inner surface, said opening having a lower flat surface,
a secondary wedge having spaced apart upper and lower downwardly and inwardly inclined surfaces on the outer surface thereof, upper and lower downwardly and outwardly inclined surfaces on the inner surface thereof and an opening between said inner and outer surfaces, said opening having a lower flat surface,
slip means including a slip having spaced apart upper and lower downwardly and outwardly inclined surfaces and a recess on the outer face thereof, said recess having a lower flat surface,
means slidably connecting said secondary wedges to said wedges and said slips to said secondary wedges so that said outer secondary wedge surfaces slide on said wedge inner surfaces and said outer slip surfaces slide on said inner secondary wedge surfaces, said slidably



connecting means including pawls swivelably connected into each side of said wedges and slips, each said pawl having a flat surface,
cam plates connected to each side of said secondary wedges, said cam plates having inner and outer grooves, said flat surfaces on said wedge pawls slidable in said cam plate outer grooves and said flat surfaces on said slip pawls slidable in said cam plate inner grooves,
means preventing said secondary wedges from sliding upwardly on said wedges, means preventing said slips from sliding downwardly on said secondary wedges, and means for positioning each slip and secondary wedge in mid neutral position on each wedge;
(d) operating means slidably connected in said wedge "T" slots for moving said gripping means inwardly and outwardly along said guide rods to initially grip and upgrip pipe; and
(e) means preventing said operating means from moving the gripping means outwardly to a position not gripping pipe when said acting slip means are automaticlly increasing gripping force on gripped pipe.

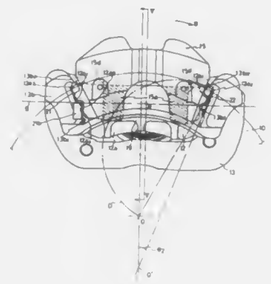
4,940,119
DISC BRAKE ASSEMBLY

Toshio Kondo, Okazaki; Kenji Urata, Anjo; Masayoshi Katagiri, and Kenichi Nakamura, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 30, 1988, Ser. No. 277,806
Claims priority, application Japan, Nov. 30, 1987, 62-303016; Mar. 31, 1988, 63-79926
Int. Cl.[5] F16D *55/00, 65/40, 65/38, 65/78*
U.S. Cl. 188—73.31 **4 Claims**

1. A disc brake assembly for use with a disc rotor, comprising:

a mounting member including a pair of arms,
a pair of brake pad means being mounted on respective ones of the arms so as to be disposed on opposite sides of the rotor, the brake pad means being movable toward and away from the rotor, each brake pad means including a backing plate having first and second circumferential ends which converge generally radially inwardly,
guide means fixed in the mounting member and extending in an axial direction generally parallel to an axis of rotation of the rotor,
a caliper member slidably supported on the guide means for movement in the axial direction, the caliper member having a piston portion and a reaction portion disposed on opposite sides of the rotor and arranged to press respective brake pad means against opposite surfaces of the rotor,
the mounting member having two pairs of first and second torque-resisting surfaces arranged opposite associated pairs of the first and second circumferential ends of the backing plates and arranged to be contacted thereby during a braking operation to resist circumferential movement of the pair of brake pad means, each pair of torque

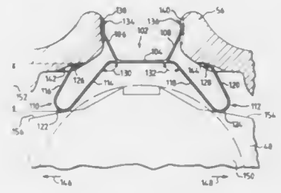


resisting surfaces being radially outwardly divergent such that the pair of brake pad means are guided for radial outward displacement during a braking operation,
generally circumferentially extending stop projections formed on the mounting member adjacent radially outer portions of the first and second circumferential ends of the backing plates for resisting the radial outward displacement of the associated brake pad means during a braking operation,
regulating means for locating a press center of each brake pad within a domain defined by a half circle whose arc extends from a center of rotation of the disc to a respective one of the stop projections, the regulating means comprising a shim disposed between a backing plate and the caliper member to form a gap between a radially outer portion of the caliper member and the backing plate,
circumferential ends of the backing plates including notches, the notches including generally radially extending supporting surfaces located at about the level of a radial center of the backing plate, and
springs mounted on the mounting member and engageable with the supporting surfaces for biasing the backing plates circumferentially.

4,940,120
DISC BRAKE, ESPECIALLY FOR USE WITH AUTOMOTIVE VEHICLES

Bodo Schmidt, Lauterbach, and Helmut Krause, Kelkheim, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 169,529, Mar. 17, 1988, abandoned. This application Jun. 23, 1989, Ser. No. 371,684
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1987, 3709396
Int. Cl.[5] F16D *65/02*
U.S. Cl. 188—73.36 **3 Claims**

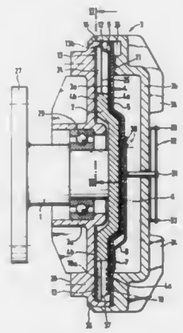


1. A disc brake for use with an automotive vehicle, comprising, in combination: a brake housing saddling the rim of a brake disc, brake pads located on either side of the brake disc, a spring supported on the brake housing and on the brake pads adapted to load the brake housing and the brake pads relative to one another, said spring including two circumferentially extending and spaced apart U-shaped spring arms with the base portion between the leg portions of each of said U-shaped spring arms being adapted to abut on a supporting face on the brake pad, another section of each of said spring arms of said spring adapted to abut on a supporting face formed on the brake housing wherein each of the spring arms forms an obtuse angle relative to a central section between said spring arms of said spring.

4,940,121
FLUID FRICTION CLUTCH

Jörg Digele, Freiberg, Fed. Rep. of Germany, assignor to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 6, 1988, Ser. No. 202,548
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1987, 3719279
Int. Cl.[5] F16D *31/00*
U.S. Cl. 192—58 B **16 Claims**



1. A fluid friction clutch comprising:

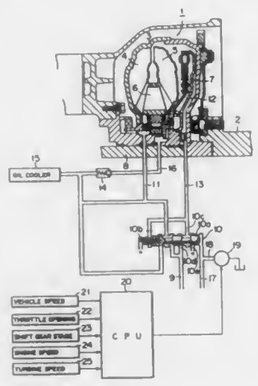
a clutch disk which serves as a primary part and is connected firmly with a driven shaft for rotation about a clutch axis;
a housing that serves as a secondary part and has a working chamber narrowly surrounding the clutch disk and a storage chamber for the clutch fluid which is separated from this working chamber by a dividing wall; and
an inflow opening provided in the dividing wall which leads from the storage chamber to the working chamber, and is controllably opened or closed by means of a valve member;
wherein said chamber includes a front working chamber part formed between the clutch disk and the dividing wall and a rear working chamber part formed between a clutch disk and a rear wall of the housing,
wherein the front and rear working chamber parts are separated from one another by means of a sealing arrangement between the clutch disk and the housing,
wherein a first damming body means and a deflecting duct are provided for guiding flow of clutch fluid from the front working chamber part to the rear working chamber part,
wherein a surrounding flow duct is provided which surrounds the disks and rear working chamber part, said deflecting duct being connected with the surrounding flow duct,
wherein a second damming body means and a return flow duct are provided for guiding flow of clutch fluid from the rear working chamber part to the front working chamber part with respect to the disk,
and wherein said return flow duct is sealed off with respect to the deflecting duct and leads out into a return flow passage leading to the storage chamber, thereby facilitating flow of clutch fluid at both sides of the clutch disk even with low clutch fluid flow volumes through the inflow opening in the dividing wall.

4,940,122

SLIP CONTROL SYSTEM FOR TORQUE CONVERTER OF AUTOMATIC TRANSMISSION

Fusao Fujieda, Hatsukaichi, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 14, 1989, Ser. No. 310,333
Claims priority, application Japan, Feb. 15, 1988, 63-32500
Int. Cl.[5] B60K *41/16*
U.S. Cl. 192—3.31 **13 Claims**



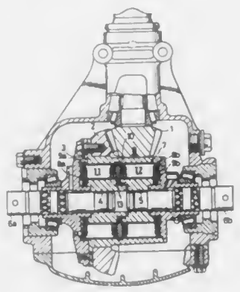
1. A slip control system of a lock-up clutch of an automatic transmission comprising a torque converter disposed between the engine and the automatic transmission for controlling an amount of a torque transmitted from the engine to the transmission, lock-up clutch means provided in the torque converter for connecting input and output members of the torque converter directly, slip control means for controlling an engaging force of the lock-up clutch means to establish a slip control in which a slippage is allowed between the input member and output member when a vehicle operating condition is in a predetermined slip control zone, transient control means for carrying out a transient control by setting a transient control factor to increase a change in the engaging force of the lock-up clutch means during a transient condition when the vehicle operating condition is changed between a non-slip control zone wherein the lock-up clutch is fully engaged or fully disengaged and said slip control zone, and the transient control factor being determined in accordance with the vehicle operating condition just before the vehicle operating condition falls into said slip control zone.

4,940,123

VISCOUS COUPLING

Masayuki Sayama, Tochigi, Japan, assignor to Viscodrive Japan Ltd., Japan

Filed Apr. 10, 1989, Ser. No. 335,425
Claims priority, application Japan, Apr. 11, 1988, 63-47758[U]
Int. Cl.[5] F16D *31/02*
U.S. Cl. 192—58 B **5 Claims**



1. A viscous coupling, comprising:
relatively rotatable first, second and third rotating members forming an operation chamber in which a viscous fluid is to be confined;
a dividing member placed inside the operation chamber for dividing the operation chamber into a first chamber formed by the dividing member and the first and third rotating members, and a second chamber formed by the dividing member and the second and third rotating members; and
pump means for controlling flow of the viscous fluid between the first and second chambers, said pump means being activated by a relative rotation of the first and second rotating members.

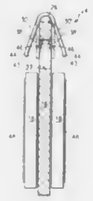
4,940,124

SPRING CLIP FOR PREVENTING CLUTCH PLATE FLUTTER

Raymond D. Galuska, Mt. Prospect, and Charles S. Murawski, Lindenhurst, both of Ill., assignors to Komatsu Dresser Company, Libertyville, Ill.

Filed Feb. 9, 1989, Ser. No. 309,278
Int. Cl.[5] F16D *13/52, 13/69*
U.S. Cl. 192—70.28 **21 Claims**

1. A spring clip adapted for attachment to a clutch plate of the type having an indention formed therein, said clip being effective to reduce flutter in a multiple clutch plate assembly, comprising:
a thin sheet of material having spring-like characteristics and folded to define opposing engaging sections so that when applied to a peripheral edge of the clutch plate by pushing said clip onto a external peripheral edge of the plate toward a center thereof, opposing engaging surface of each said engaging section extend outwardly from respective friction side surfaces of associated friction pads, and a



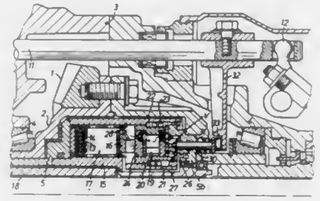
fastening tab attached to said clip, having a free end extending inwardly and angled so that said clip can be pushed onto the eternal peripheral edge of said clutch plate and locked during installment thereof, but said angled tab engages the indention of said clutch plate and prevents removal of the clip during clutch operation.

4,940,125

DRIVE MECHANISM IN PART-TIME FOUR-WHEEL DRIVE VEHICLE

Kiyoomi Sato, Toyota; Fumihiro Ushijima, Okazaki, and Kiyohito Murata, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 25, 1989, Ser. No. 301,105
Claims priority, application Japan, Jan. 25, 1988, 63-7926[U]
Int. Cl.[5] B60K *17/35*; F16D *25/14*
U.S. Cl. 192—85 AA **3 Claims**



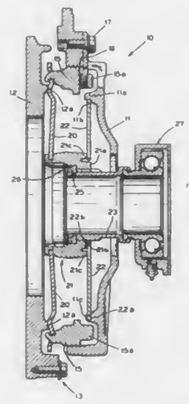
1. A drive mechanism comprising driving and driven members coaxially coupled with each other for relative rotation, friction clutch means operatively associated with said driving and driven members and operable between a first condition wherein said driving and driven members are drivingly connected and a second condition wherein relative rotation between said driving and driven members is permitted, said clutch means including friction members cooperating with said driving and driven members and arranged to be engaged when said clutch means is in the first condition, a fluid pump arranged between said driving and driven members to be driven by relative rotation therebetween, said fluid pump being located adjacent one side of said clucth means and axially movable in a direction to effect a frictional pressure engagement of said friction members when applied at one side thereof with a discharge pressure thereof, and a flow control valve disposed in a communication passage for fluid circulation between discharge and suction ports of said fluid pump to control an amount of fluid under pressure passing therethrough from the discharge port toward the suction port;
wherein said flow control valve includes an axially displaceable valve element disposed in said communication passage and shiftable between a first position in which it is retained to fully open said communication passage and and second position in which it is retained to close said communication passage for interrupting the flow of fluid under pressure from the discharger port of said pump, and wherein a shift mechanism is adapted to shift said valve element to and from the second position.

4,940,126

DIAPHRAGM SPRING CLUTCH

Richard A. Flotow, Butler; William H. Sink, Auburn, and Martin J. Hermanns, Ft. Wayne, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 11, 1988, Ser. No. 166,862
Int. Cl.[5] F16D *13/44*
U.S. Cl. 192—89 B **6 Claims**



1. A cover assembly for a diaphragm spring clutch comprising:
a cover having an annular shoulder and a slot formed through said shoulder;
a release retainer having an end surface and a recessed area formed into said end surface; and
diaphragm spring means including an inner peripheral surface engaged with said end surface of said release retainer, an outer peripheral surface engaged with said shoulder of said cover, and at least one tang extending from each of said inner and outer peripheral surfaces, said inner tang extending into said recessed area of said release retainer and said outer tang extending into said slot of said cover for preventing relative rotational movement between said diaphragm spring, said release retainer, and said cover.

4,940,127

WOUND YARN PACKAGE TRANSPORTING SYSTEM

Shnichi Kikuchi, Shiga, and Yoshihiko Kawasaki, Kyoto, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 9, 1987, Ser. No. 130,307
Claims priority, application Japan, Dec. 12, 1986, 61-296429; Dec. 23, 1986, 61-198052[U]; Dec. 25, 1986, 61-202559[U]
Int. Cl.[5] B65G *47/48*
U.S. Cl. 198—350 **9 Claims**

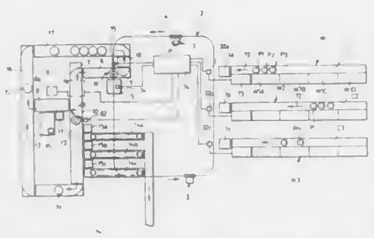
1. In a system for transporting a yarn package wound by a winder, the improvement comprising package transporting apparatus, comprising:
transport media for independently transporting packages thereon and for being fed along a transport line between a winder and an inspecting station,

VOL 1116 ISS 2 JL 10 1990 UMI

wherein said transport media comprise a hanger hung on a chain which travels along a track and a tray which carries a package erected thereon and is transported on a conveyor,

wherein said hanger and said tray are provided with a source indicating member which indicates a source of a package which is to be placed on the respective hanger or tray, and a device for writing on or reading from said indicating members is arranged at a suitable location of said transport line in order to identify a source of each package,

wherein said hanger has at least one pair of package supporting rods which extend in a direction substantially parallel to the direction of movement of said hanger and are



spaced by a predetermined distance from each other, whereby a package is transported in a condition wherein an outer peripheral surface of a layer of yarn on the package is placed on said supporting rods,

wherein a full wound package doffed from a winder is transferred by the hanger and then the package is unloaded from the hanger and fitted on and erected on a tray for transporting a package at a position of an unloading device,

wherein a reading device for reading the identifying member of the hanger and a writing device to write the same identifying marks as read from the hanger on the identifying information indicating member of the tray are provided at the position of the unloading device.

4,940,128

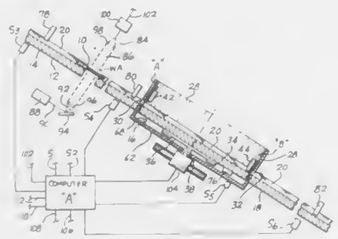
ARTICLE ORIENTATION SYSTEM AND METHOD

Robert L. Fuller, Jr., Issaquah; Paul E. Faville, and Mark C. Maier, both of Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 10, 1988, Ser. No. 270,251

Int. Cl.[5] B65G *47/244*

U.S. Cl. 198—395 **10 Claims**



1. An article orientation mechanism, comprising:

an elongated, rotatable conveyor section mounted for rotation about an axis extending perpendicular to said conveyor section, said conveyor section including a longitudinal slideway section along which articles slide in succession, and a gate at each of its ends, said gates being rotatable with the rotatable conveyor section, each gate having an open position and a closed position;

a lead-in conveyor section including a slideway section for delivering an article to the slideway section of the rotatable conveyor section;

a lead-out conveyor section including a slideway section for receiving an article from the slideway section of the rotating conveyor section and conveying it away from said rotating conveyor section;

said lead-in conveyor section, said rotatable conveyor section and said lead-out conveyor section being normally positioned with their slideways sections in linear alignment with each other; and

a drive for reversibly rotating the rotatable conveyor section 180° in position.

4,940,129

APPARATUS FOR REGROUPING ARTICLES FROM A FIRST CONVEYOR TO A SECOND CONVEYOR

Theo Walz, Neunkirch, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Apr. 7, 1989, Ser. No. 334,542

Claims priority, application Switzerland, Apr. 29, 1988, 1604/88

Int. Cl.[5] B65G *47/40*

U.S. Cl. 198—418.6 **11 Claims**



1. A conveyor apparatus for regrouping articles from parallel-arranged first columns to form parallel-arranged second columns, wherein each second column contains an article from every first column, comprising

(a) a first conveyor moving in a first direction of advance and carrying the first columns of articles; said first conveyor having a discharge end;

(b) two horizontally spaced endless carrier elements arranged to circulate in a closed path having an ascending zone extending upwardly and away from said discharge end of said first conveyor and a horizontal zone adjoining an upper end of said ascending zone;

(c) consecutively arranged elongate article support members extending between the two carrier elements transversely thereto and each having opposite ends pivotally supported by respective said carrier elements to be advanced thereby through said ascending and horizontal zones; each said article support member comprising an elongate plate having a longitudinal leading edge; each said plate being pivotal relative to said carrier elements at opposite ends of said leading edge about a horizontal pivot axis;

(d) transferring means for moving the articles from said discharge end of said first conveyor onto said article support members as said article support members travel sequentially past said discharge end;

(e) actuating means for pivoting said article support members into a first pivotal position to support articles in said ascending zone and for pivoting approximately simultaneously a plurality of said article support members in said horizontal zone into a second pivotal position in which the article support members are inclined such as to cause the articles to slide off therefrom; the number of said plurality of article support members pivoted substantially simultaneously corresponds to the number of said second columns; said actuating means comprising

(1) a guide roller mounted for rotation on at least one side

of each said plate at a distance from a respective said horizontal pivot axis;

(2) a first guide rail extending in the travelling direction of the plates and being supported in said horizontal zone; each said roller being arranged to run on a track face of said first guide rail; said track face of said first guide rail having linear portions and a plurality of depressions;

(3) a second guide rail extending alongside said first guide rail and having a throughout linear track face; said second guide rail having an operative position in which the track face of the second guide rail extends alongside the depressions in alignment with the linear portions of the track face of the first guide rail for engaging each roller in zones of said depressions, whereby the rollers are prevented from dipping into the depressions; said second guide rail having a withdrawn position in which the track face of the second guide rail is moved away from said depressions allowing each roller to run on the depressions of the rack face of the second guide rail, whereby each roller dips in the zone of the depressions from a linear course, causing the respective plates to pivot from the first pivotal position into the second pivotal position; and

(4) an actuating element connected to said second guide rail for selectively moving said second guide rail into said operative and withdrawn positions;

(f) a second conveyor extending below said article support members situated in said horizontal zone of said carrier elements; said second conveyor being moved in a second direction parallel to said article support members and perpendicular to said first direction, whereby the articles sliding off said article support members in the second pivotal position thereof drop onto said second conveyor to form said second columns thereon; and

(g) an abutment situated between each adjoining said article support member and extending away therefrom to a predetermined height; each said abutment travelling with said article support members and being arranged to abut a trailing edge of an article supported on a respective said article support member when in said first pivotal position; said depressions being spaced from one another at a distance corresponding to a distance between two consecutive said abutments.

4,940,130

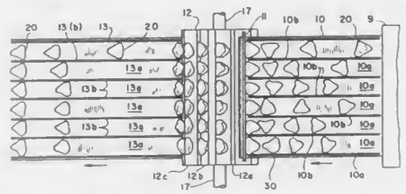
METHOD OF CONTROLLING THE FLOW OF BAKERY AND OTHER ITEMS

Agostino Aquino, Patterson, N.J., and Karl U. Lang, Port Jarvis, N.Y., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Nov. 30, 1988, Ser. No. 277,768

Int. Cl.[5] B65G *47/52*

U.S. Cl. 198—432 **31 Claims**



1. A method of controlling the flow of items in a conveyor system, comprising:

conveying said items by a first conveyor having a plurality of lanes to a rotating drum positioned transversely relative to said first conveyor and having a plurality of longitudinal transverse peripheral grooves with ledge portions;

holding said items at an end of each lane of said first conveyor until there is positioned an item in each lane to define a transverse row of items;

releasing and transferring the transverse row of items to said rotating drum so that said items are caught by said ledge portions as the grooves are being rotated upwardly as the drum rotates;

rotating said drum to a position at which said items can be removed from said grooves; and

depositing said items from said grooves onto a second conveyor.

4,940,131

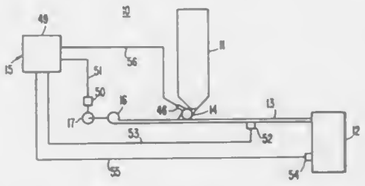
MATERIAL HANDLING SYSTEM AND CONTROL VALVE THEREOF

Roy Swartz, Muncy, Pa., assignor to Delaware Investments, Inc., Wilmington, Del.

Continuation of Ser. No. 192,916, May 12, 1988, abandoned. This application Nov. 16, 1989, Ser. No. 437,298

Int. Cl.[5] B65G *31/04*

U.S. Cl. 198—524 **8 Claims**



1. A rotary valve adapted for use in a particulate material handling system having an elevated means for holding a supply of said particulate material, a lower material receiving means and a remote control means, comprising:

a housing having a rotor chamber, a side inlet communicating with said rotor chamber and communicable with said material holding means and a lower outlet communicating with said rotor chamber and communicable with said material receiving means;

a rotor journalled in said rotor chamber having a plurality of radially disposed vanes defining a plurality of circumferentially spaced pockets registrable with said side inlet and lower outlet;

means for driving said rotor whereby each of said pockets will register with said inlet to receive therein material gravity fed through said inlet, rotate through said rotor chamber and register with said outlet to discharge material therefrom;

a slide valve disposed in said inlet for controlling the flow of material therethrough;

said side inlet having a lower material guiding wall disposed at an angle of 45° relative to a plane passing through the axis of rotation of said rotor;

said slide valve being displaceable in a plane disposed tangentially relative to a vane of said rotor and normal to said lower material guiding wall of said side inlet; and

means operatively connectable to said remote control means for operating said slide valve whereby when said remote control means is operated said side valve operating means will function to displace and said slide valve relative to said material guiding wall to correspondingly control the flow of material from said inlet into the pockets of said rotor and through said valve, said remote control means connected to sensing devices for sensing operating conditions of said material handling system, and said slide valve being operated in response to said sensed conditions.

4,940,132

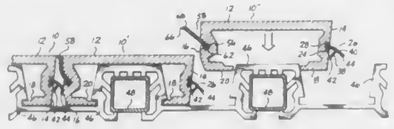
SEALS FOR RECIPROCATING CONVEYOR FLOOR MEMBERS

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Continuation-in-part of Ser. No. 185,840, Apr. 25, 1988, Pat. No. 4,858,748, which is a division of Ser. No. 59,376, Jun. 4, 1987, Pat. No. 4,785,929, which is a continuation-in-part of Ser. No. 680,069, Dec. 10, 1984, Pat. No. 4,679,686, which is a continuation-in-part of Ser. No. 346,865, Feb. 8, 1982, Pat. No. 4,492,303. This application May 3, 1989, Ser. No. 346,784

Int. Cl.[5] **B65G** *25/00*

U.S. Cl. 198—750 **12 Claims**



1. A reciprocating floor conveyor, comprising:

a plurality of adjacent elongated floor members, each floor member having first and second sides, said first side of each floor member including a longitudinal dovetail groove; and

a resiliently bendable elongated elastomeric seal for each floor member, said seal having an inboard base portion captured within the dovetail groove and an outboard portion, said outboard portion including a branch strip outwardly and downwardly extending from said inboard portion, said branch strip having a free edge positioned to contiguously contact a confronting surface of an adjacent floor member such that said reciprocating floor conveyor is substantially nonporous to upward movement of material between said adjacent floor members and having a stiff resiliency urging said free edge toward the confronting surface.

4,940,133

CONVEYOR BELT AND SYSTEM WITH A NON-COLLAPSING INSIDE EDGE

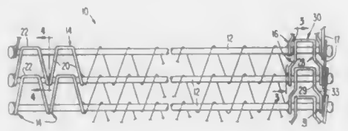
Gerald C. Roinestad, and Michael R. Straight, both of Winchester, Va., assignors to Ashworth Bros., Inc., Fall River, Mass.

Continuation-in-part of Ser. No. 171,390, Mar. 21, 1988, Pat. No. 4,867,301, which is a continuation-in-part of Ser. No. 83,272, Aug. 10, 1987, abandoned, and a continuation-in-part of Ser. No. 213,171, Jun. 29, 1988. This application Jul. 27, 1988, Ser. No. 224,696

The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.

Int. Cl.[5] **B65G** *15/02*

U.S. Cl. 198—831 **16 Claims**



1. A conveyor belt for conveying in both a straight line direction and around lateral curves in a single direction, the lateral curves having a predetermined maximum curvature with a predetermined radius of curvature, the conveyor belt comprising a plurality of rods and connecting means for connecting said rods to form a length of the belt, said rods extending transversely of the length of the belt between an inside end along the inside edge of the lateral curves and an outside end along the outside edge of the lateral curves, said rods being arranged adjacent one another longitudinally along the length of the belt, said connecting means including link means disposed adjacent said inside and outside ends of said rods for coupling adjacent pairs of said rods to one another, said link means including, along the inside concave edge of the belt, at least two generally U-shaped inside links joining the inside ends of each pair of adjacent rods and, along the outside convex edge of the belt, at least one outside link joining the outside ends of each pair of adjacent rods, said generally U-shaped inside links each having a pair of spaced leg portions joined by a connecting portion, each of said leg portions having holes for receiving said rods, each of said outside links having holes for receiving said rods, said holes in the legs of said inside links having end surfaces with a first predetermined longitudinal spacing, said holes in said outside links having end surfaces with a second predetermined longitudinal spacing, said first and second longitudinal spacings being correlated to one another and to the predetermined radius of curvature so that in straight line conveying motion the inside ends of said rods are kept at a first pitch and the U-shaped inside links are tractive while the outside links are non-tractive, and during lateral curved conveying motion the inside ends of said rods are kept at substantially the first pitch and at least one of said U-shaped inside links remains tractive while the outside ends of said rods move to a second greater pitch.

4,940,134

WASTE SOLUTION TREATMENT METHOD AND APPARATUS THEREFOR

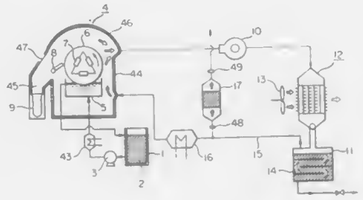
Syozo Aoki; Satoru Kuse, both of Hino, and Shigeharu Koboshi, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 32,633, Apr. 1, 1987, abandoned. This application Nov. 14, 1988, Ser. No. 271,383

Claims priority, application Japan, Apr. 4, 1986, 61-78885

Int. Cl.[5] **B01D** *3/08, 3/42*

U.S. Cl. 202—202 **3 Claims**



1. A waste liquid treatment apparatus for treating waste solutions resulting from photographic processing comprising:

evaporation means including a continuous enclosure means having an interior portion sealed by said enclosure means from communication with the ambient, and heating means for heating the waste solution to its evaporation point to form waste vapor;

a waste solution reservoir disposed in said interior portion of said enclosure means, for containing waste solution;

means for maintaining the waste solution in the reservoir at a constant level;

means for supplying said waste solution reservoir with waste solution;

the waste solution reservoir being located in said interior and sealed from the ambient to contain any offensive odors and toxic gases generated thereby;

condenser means for condensing the waste vapor to form waste condensate, said condenser means including a drain tank for collecting waste condensate, said drain tank having an interior portion, vent means in communication with said drain tank for exhausting a non-condensable gas component of said waste vapor from the interior portion of said drain tank, said vent means including gas treatment means for treating the non-condensable gas component, the gas treatment means including means for regulating the pressure of the interior portion of the enclosure means to establish a pressure differential between the pressure of the interior portion of the enclosure means and ambient pressure;

communication means for placing said condenser means in communication with said interior portion of said enclosure means; and

an air vent line for placing said vent means in communication with said gas treatment means, said air vent line having a branch line extending from a branch point between said drain tank and said gas treatment means, said branch line being connected to said enclosure means to place said drain tank in communication with said enclosure means.

4,940,135

CARTRIDGE HOLDER

Dennis C. Hall, Rte. 1, Box 625, Duncanville, Ala. 35456

Filed Oct. 5, 1989, Ser. No. 417,307

Int. Cl.[5] **B25C** *1/00*

U.S. Cl. 206—3 **4 Claims**



1. A cartridge holder for carrying firearm cartridges, comprising:

an elongated cylindrical tube having opposite open ends;

a plurality of firearm cartridges stacked in front end to rear end coaxial relation within said tube;

a removable cap at each of said opposite open ends of said tube;

each of said removable caps including a generally cylindrical rubber body having a reduced diameter stem dimensioned for insertion into and frictional engagement with an open end of said tube, said reduced diameter stem of each of said caps providing a shock absorbing end face for abutment with an end of a firearm cartridge;

an exterior radial flange on each of said caps having a diameter greater than an external diameter of said tube;

a plurality of frusto conical flanges stepped along said stem of each of said caps; and

indicia on an external surface of said tube indicating a forward facing direction of said firearm cartridges, whereby a selected one of said removable caps may be removed to load a forwardly or rearwardly opening firearm magazine.

4,940,136

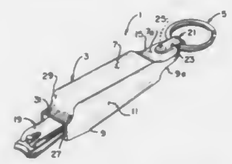
FINGERNAIL CLIPPER POUCH

Joseph T. Miller, Mehlville, and Edward F. Brown, Bonne Terre, both of Mo., assignors to Mocap, St. Louis, Mo.

Filed Jul. 3, 1989, Ser. No. 375,342

Int. Cl.[5] **A45D** *29/00;* **A45C** *15/00*

U.S. Cl. 206—38.1 **12 Claims**



1. A fingernail clipper pouch comprising an integral one-piece receptacle constructed of resilient and flexible material, said receptacle having an elongated shape with opposed ends and an interior compartment generally configured to the shape of a fingernail clipper adapted to be received therein, one end of said receptacle being closed and the other being open for entry and removal of the fingernail clipper associated therewith, and said open end having a restricted throat opening to restrict unauthorized removal of the fingernail clipper from said receptacle, said pouch entirely enclosing the clipper along its entire length when inserted therein.

4,940,137

COASTER CARRIER

Albert H. Straub, 13060 Skyline Blvd., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 932,451, Nov. 18, 1986, abandoned. This application Mar. 25, 1988, Ser. No. 178,765

Int. Cl.[5] **B65D** *23/20, 25/22, 25/24*

U.S. Cl. 206—139 **28 Claims**

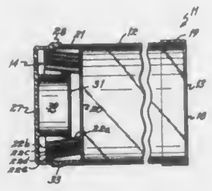


1. A coaster for a beverage container having generally cylindrical shape and a lateral projection free bottom end, which comprises an open ended ring having a side extending parallel to an axis of said ring, a plurality of projections and a plurality of recesses on an outer surface of said ring parallel to the axis, said plurality of projections and said plurality of recesses being configured and positioned to engage corresponding recesses and projections in interlocking engagement fastening said plurality of projections and recesses and the corresponding projections and recesses together, said ring having a plurality of resilient ribs on an inside surface of said ring, said ring having a width which is narrow when compared with a height of the beverage container, being dimensioned to fit around the beverage container in a friction fit in a location spaced from a bottom end of the beverage container and having sufficient rigidity to support the beverage container above a horizontal supporting surface when said ring is slid along the beverage container from the position spaced from the lateral projection free bottom end of the beverage container so that said ring extends partially beyond the lateral projection free bottom end of the beverage container, the friction of the friction fit and the width of said ring being sufficient to hold said ring at the lateral projection free bottom end of the beverage container and

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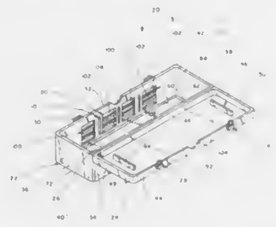
extending partially beyond the lateral projection free bottom end of the beverage container, the friction of the friction fit further being such that said ring may be slid by hand along the beverage container.

4,940,138
CONTAINER WITH COLLAPSIBLE CUP
Allan S. Hornstein, Matawan, N.J., assignor to Queen City Group, Cincinnati, Ohio
Filed Jan. 30, 1990, Ser. No. 472,092
Int. Cl.[5] B65D *77/00, 8/14*
U.S. Cl. 206—218 **7 Claims**



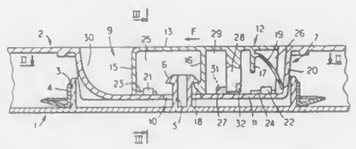
1. A storage container comprising:
a tube having a side wall and first and second end openings;
a closure for said first end opening;
a collapsible cup comprising a base with a rim, a series of annular cup segments of graduated diameters which are extendible to form a cup, the segment of smallest diameter being joined to said base, the segments being collapsible onto said base around the smallest segment, inwardly of said rim; and
a cover for said cup, said cover having a skirt which removably fits onto said rim of said base of said cup when said cup is collapsed, one of said rim and skirt being sized to frictionally fit within said second opening to form a removable closure for said second opening.

4,940,139
MOP HEAD CONTAINER
Jean Sandt, 402 King St., E. Stroudsburg, Pa. 18301
Filed Oct. 17, 1989, Ser. No. 422,521
Int. Cl.[5] A45D *44/18*
U.S. Cl. 206—362.2 **5 Claims**



1. A container for a mop head comprising:
(A) a rectangular case bottom portion having first and second end walls, first and second side walls and a bottom connected to said end and side walls;
(B) a rectangular top portion having end walls, side walls and a top connected to said end and side walls;
(C) a hinge means pivotally connecting said top portion to said bottom portion;
(D) vent means on said first side wall of said bottom portion and including a plurality of vent passage groups, said vent passage groups being spaced apart from each other and each including a plurality of spaced-apart vent openings;
(E) a drainage system in said case bottom and including
(1) two longitudinal troughs defined in said case bottom and extending beside said first and second side walls and from said first end wall to said second end wall, each longitudinal trough having a center section that is elevated with respect to the sections thereof to slope from said center section to said end sections,
(2) two transverse troughs defined in said case bottom and extending beside said first and second end walls and from said first side wall to said second side wall and having a center section that is elevated with respect to the sections thereof to slope from said center section to said end sections,
(3) drain holes in the end sections of said troughs, and
(4) a fluid catching compartment mounted on the bottom to depend therebeneath, said fluid catching compartment including a bottom, side walls connected to said first and second side walls, end walls connected to said first and second end walls and a door hingedably connected to one of said compartment end walls, and
(5) said drain holes fluidically connecting said troughs to said fluid catching compartment;
(F) said bottom being spherically shaped and curving to be convex with respect to said top and having a crown portion in the center and sloping continuously towards said longitudinal and transverse troughs;
(G) a desiccant and fluid deodorizing material in said fluid catching compartment;
(H) mop squeezing means on said top and including projections mounted on said top to extend toward said bottom when said top portion is in covering relation with said bottom portion, said projections being sized to contact a mop head which is located in said bottom portion and force such mop head against said bottom when said top portion is closed against said case bottom portion; and
(I) lock means on said bottom and top portions to lock said top portion to said bottom portion.

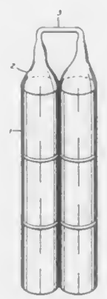
4,940,140
CASE FOR CONTAINING AND IMMOBILIZING A COMPUTER TAPE REEL
Patrick Posso, Pully, Switzerland, assignor to Gefitec S.A., Switzerland
Filed Oct. 6, 1989, Ser. No. 418,082
Claims priority, application France, Oct. 10, 1988, 88 13285
Int. Cl.[5] G11B *23/27;* **B65D** *45/00, 85/57*
U.S. Cl. 206—405 **1 Claim**



1. A case for containing a computer tape reel comprising:
a lower body having an integrally molded central post and a concentric sleeve;
a cover closing the lower body and enclosing said computer tape reel, wherein said computer tape reel is centered on a single immobilizing ring surrounding said concentric sleeve; said cover having a central dish, adapted to fit in said sleeve of said body and formed with an opening surrounding said post, said central dish having a guidable housing adapted to engage said post, said guidable housing comprising:

an intermediate bar, extending perpendicularly from said guidable housing and engaging said post;
a spring means having an integral leaf spring contacting said housing and providing slidable spring engagement of said intermediate bar with said post, said case having means for guiding said intermediate bar from an open position to a closed position in order to slidably disengage or engage said post; said spring means further comprising a flexible stop which is deformable in a plane perpendicular to the direction in which the housing is moved, said stop adapted to cooperate with a lug formed on said dish, said stop and lug having inclined raps to facilitate assembly and prevent retraction of said stop during assembly of said cover thereby rendering said intermediate bar captive of said cover.

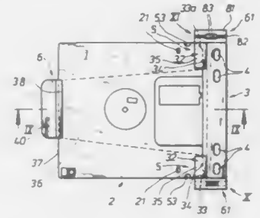
4,940,141
SHRINKWRAP BEVERAGE PACK
Terry Philpot, 1532, Chemong Road, R.R.1. Peterborough, Ontario, K9J 6X3, Canada
Continuation-in-part of Ser. No. 299,554, Jan. 17, 1989. This application Apr. 28, 1989, Ser. No. 344,749
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—430 **8 Claims**



1. A carrier and package assembly for a plurality of cylindrical articles, such as cans, and comprising:
(a) a plurality of articles arranged end to end in longitudinally extending and axially aligned groups, said groups being arranged in pairs with their longitudinal axes as being substantially parallel to each other;
(b) an open ended heat shrunk plastic film envelope means operatively, separately and tightly engaging each one of a pair of groups; and
(c) handle means integrally formed by a loop of said plastic film interconnecting the groups of each said pair of groups.

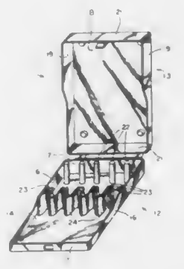
4,940,142
DEVICE FOR STORING DATA DISKETTES IN FILE FOLDERS
Dietmar Behrens, Dusseldorf; Waldemar Hoog, and Rudolf Zimmermann, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Elba-Ordner-Fabrik Krant & Meinenborn GmbH & Co., Fed. Rep. of Germany
Division of Ser. No. 180,363, Apr. 11, 1988, Pat. No. 4,884,691. This application Nov. 3, 1989, Ser. No. 431,436
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1987, 3712803
Int. Cl.[5] B65D *85/30;* **B42F** *5/00*
U.S. Cl. 206—444 **12 Claims**

1. Device for storing data diskettes in records and files such as folders or the like, comprising:
a flat holder part (2) for one planar diskette (1);
a binder margin (3) provided on one side edge of said holder part (2) said binder margin (3) having binder holes (4);
said holder part (2) having a receptacle (5) for securing the diskette (1) in the direction of the three side edges thereof as well as in a direction perpendicular to the plane of the diskette (1);
said receptacle (5) having an insertion opening on one side for insertion of the diskette (1) at one edge thereof into said receptacle (5) and for removal of the diskette (1), respectively, substantially in the direction of the diskette plane;



said holder part (2) together with said binder margin (3) forming a one-piece molded plastic part;
said binder margin (3) being opposite said insertion opening and extending along said one side edge of the holder part (2) transversely to the direction of insertion of the diskette (1); and
said holder part (2) further having holding means (6) reaching around the diskette (1) on a free end edge thereof opposite said one edge of the diskette (1) for holding the diskette (1) in said receptacle (5).

4,940,143
FLATWARE CASE HAVING CLAMPING MEANS
John Stanfield, 425 Riverhill Dr., Atlanta, Ga. 30328
Filed Apr. 17, 1989, Ser. No. 342,737
Int. Cl.[5] B65D *1/34;* **A45C** *11/00*
U.S. Cl. 206—553 **3 Claims**



1. A case for storing and carrying flatware of the type having stems extending from utility ends and with said case comprising:
a base having a floor bounded by two end walls and two side walls;
at least one pair of spaced posts mounted to said base floor closely adjacent to one of said end walls along a line extending generally parallel to said one end wall;
at least one pair of spaced pegs mounted to said base floor between said at least one pair of spaced posts and the other of said end walls along a line extending generally parallel to said one end wall, and

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a clamping means for clamping flatware mounted to said at least one pair of pegs with said clamping means including a pair of resilient arm spring biased towards mutual engagement of a point of engagement located along a line extending linearly between said at least one pair of pegs and said at least one pair of posts,

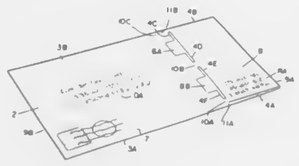
whereby a stack of flatware may be positioned upon the base floor with the stems of the flatware releasibly held by the clamping means and with the utility ends of the flatware captured between the at least one pair of posts.

4,940,144

AUTOMATIC ENVELOPE OPENER AND ENVELOPE FOR USE THEREWITH

William P. Barbour, 8021 Nicky Ct., Laurel, Md. 20707

Division of Ser. No. 278,495, Dec. 1, 1988. This application Jun. 7, 1989, Ser. No. 363,479
Int. Cl.[5] B65D *27/34, 27/36*
U.S. Cl. 206—610 18 Claims



1. An envelope for use in conjunction with an automatic envelope opener, said envelope comprising:

a first wall defined by top and bottom fold lines and at least one side fold line;

said top fold line including a top fold line weakened portion and said bottom fold line including a bottom fold line weakened portion;

said first wall including:

a plurality of first wall weakened portions;

a first connecting member defined by said top fold line weakened portion and one of said first wall weakened portions;

a second connecting member defined by said bottom fold line weakened portion and another one of said first wall weakened portions;

said weakened portions being comprised of continuous knife slit portions of a predetermined length; and

at least two apertures disposed in said first wall between a plurality of said first wall weakened portions.

4,940,145

APPARATUS FOR SIZING PRODUCE AND THE LIKE

Max M. Bibby, 6826 Labish Center Rd. NE., Salem, Oreg. 97305

Filed Oct. 7, 1985, Ser. No. 785,017
Int. Cl.[5] B07B *13/04*
U.S. Cl. 209—662 4 Claims

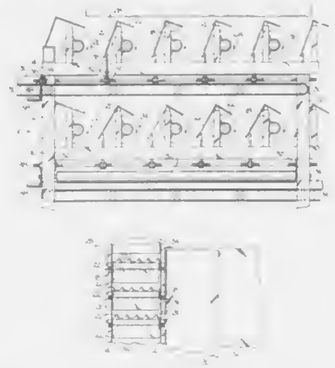
1. A sizing apparatus for produce comprising:

(a) a vertically extending framework,

(b) at least one substantially horizontal sizing level base mounted on the framework,

(c) a plurality of rotary driven screw conveyors on said sizing level base arranged in longitudinally extending condition and disposed at laterally spaced apart intervals, each said screw conveyor configured with a thread having a substantially semi-circular profile betwen crests, and

(d) a sizer blade mounted adjacent each said rotary driven screw conveyor and disposed to establish a sizing opening between it and its associated screw, the openings being of uniform size on a level whereby to allow produce and the like of smaller diameter to fall downwardly therethrough by gravity.

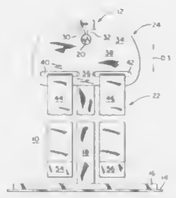


4,940,146

HANGER AND DISPLAY ARRANGEMENT FOR SUSPENDERS

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B & G Plastics, Inc., New York, N.Y.

Filed Dec. 5, 1988, Ser. No. 279,992
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 10 Claims



1. A countertop suspenders display arrangement including:

(a) a countertop stand having a base, a display rod and a support extending upstandingly from said base and supporting said display rod at a given distance from said base;

(b) suspenders having straps with end fittings, the full longitudinal extent of said suspenders being substantially in excess of said given distance; and

(c) a suspenders hanger supported by said display rod and configured as a resilient, flat body of synthetic material, said body having

(1) an upper portion defining a recessed opening about which the body is deflectable to receive the display rod and to self-biasingly resume an undeflected state to releasably ensnare the display rod, and

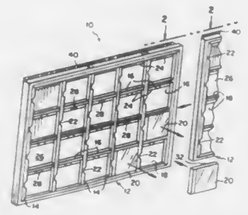
(2) a lower portion, spaced from the upper portion and including first and second laterally extending recessed openings of measure equal to or exceeding the width of said suspenders straps and first and second slots extending from a lower perimeter of said body into respective communication with said first and second lower portion openings, said body being deflectable about each of said slots to receive said straps and to self-biasingly resume an undeflected state to releasably ensnare said straps, said straps being so disposed in said first and second lower portion openings that said end fittings of said straps collectively reside in spaced relation to said base.

4,940,147

VISUAL COMPACT DISK WALL RACK

Douglas J. Hunt, 105 Lone Oak Path, Smithtown, N.Y. 11787

Filed Feb. 17, 1989, Ser. No. 311,969
Int. Cl.[5] H47F *5/08*
U.S. Cl. 211—40 3 Claims



1. A visual compact disc wall rack for removably storing compact music disc cases which comprises:

(a) a frame having two vertical members and two horizontal members;

(b) at least one additional vertical member equally spaced apart from each of the said two vertical members and fixedly secured at each end to said horizontal members of said frame;

(c) at least one additional horizontal member also equally spaced apart from each of the said two horizontal members and fixedly secured at each end to said vertical members of said frame and thereby defining compartments that removably receive said compact music disc cases;

(d) horizontal mounting strips fixedly secured into said frame, and hook and loop pile first fastener means attached to said mounting strips which cooperates with mating hook and loop pile for first fastener means secured to said compact music disc cases for holding the compact music disc cases into said frame;

(e) a back board fixedly secured to said frame;

(f) a second mating hook and loop pile fastener means secured to an edge of said frame for holding duplicate pluralities of said frames together when displayed in a grouping; and

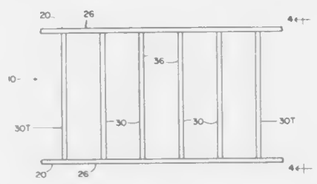
(g) a cut-out opening provided in some edges of one side of said vertical members whereby the tips of a person's finger may be received to remove a case of said compact music disc cases from said frame.

4,940,148

RETAIL DISPLAY WIRE CUBE

Joel H. Alperson, 3306 S. 157th St., Omaha, Nebr. 68130

Filed Apr. 10, 1989, Ser. No. 335,888
Int. Cl.[5] A47F *5/14*
U.S. Cl. 211—181 5 Claims



1. A retail display wire cube adapted for secure removable attachment to a similar cube stacked immediately therebelow, said retail display cube comprising:

(A) a pair of upright grids located in directionally transversely spaced and substantially parallel relationship, each of said grids horizontally and directionally longitudinally therealong having a top-end overlying a substantially parallel bottom-end;

(B) a plurality of substantially rectangular spacing members which are formed of metallic wire and are respectively affixed to said spaced grids, each of said spacing members being directionally longitudinally co-axially aligned with each other at incremental spacings, said spacing members including two terminal members and a plurality of intermediate members, and both of said terminal members including two spaced-apart vertical upper-lengths located above the grids' top-ends and also including two spaced-apart vertical lower-lengths extending below the grids' bottom-ends; and

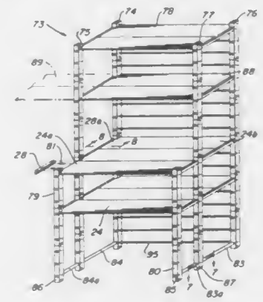
(C) U-shaped attachment means permitting secure removable attachment of said retail display wire cube to a similar cube stacked immediately therebelow, said attachment means being carried by all lower-lengths of said terminal spacing members, and each said attachment means lying along and below the upright plane of the cube grid portion and having a lower-terminus located deeply below its host transverse spacing member, the vertical legs of the U-shaped attachment means abuttably flanking the vertical upper-lengths of both terminal members of said similar cube stacked immediately therebelow.

4,940,149

BUILDING ASSEMBLY SYSTEM

Donna L. Vineis, 1042 Welsh Rd., Landsdale, Pa. 19446

Filed Jul. 15, 1988, Ser. No. 219,259
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—186 36 Claims



1. A kit for assembling a plurality of pieces into an article of manufacture comprising:

(a) a plurality of rectangular block members wherein each provides a first opening formed at either end as well as a plurality of openings through two of its rectangular faces, and wherein opposite and through each first opening a second opening is orthogonally formed;

(b) a first square block member having a male extension formed upon two adjacent faces for respectively mating with said first openings formed on the ends of two said rectangular members, and each said extension including a second orthogonally formed opening, said first square block member providing a means for joining together two rectangular members at right angles with respect to one another;

(c) a second square block member having a single male extension formed upon one of its faces for mating with one said first openings at the end of a rectangular block member wherein said single extension includes a second orthogonally formed opening and said second block member providing a means for joining with one said end location of a single rectangular block member; and

(d) first, second and third connecting means wherein said first connecting means is adapted to mate with any two first openings for joining respective rectangular block members to one another in a linear or alternatively, angular formation, said second connecting means being adapted to mate with any two openings formed through two of the rectangular faces for coupling said block members to one another, and said third connecting means adapted to mate with any said orthogonal openings for locking said joined and/or coupled rectangular members to one another;

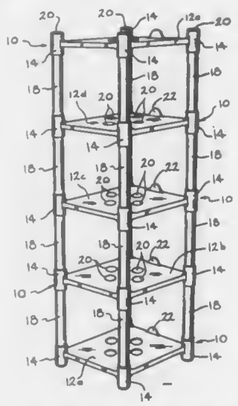
(e) a flat rectangular member having equal cut-outs located on opposite ends of one of its largest dimensional sides and adapted to form a shelf between four linear formations of said rectangular block member.

4,940,150

MODULAR STORAGE RACK

William E. Spengler, Perrysburg, Ohio, assignor to Tolco Corporation, Toledo, Ohio

Filed Jul. 14, 1989, Ser. No. 380,012
Int. Cl.[5] A47B 47/00
U.S. Cl. 211—188 4 Claims



1. A rack for storing items comprising in combination: a shelf member having pairs of opposed leg receptors positioned in spaced relationship about the perimeter of said shelf member, said shelf member having an upraised stop lip located proximate one edge for facilitation of positioning of such stored items on said shelf member; and leg members for mating with said receptors to extend in opposed directions from said shelf member, thereby providing for stacking of said shelf members to form a vertical rack with said leg members interspersed between said shelf members and wherein said shelf members include a plurality of knockout plugs in the surface of said shelf members, wherein said knockout plugs are removed from said shelf members and mated with any unused leg receptors thereby sealing any of said unused leg receptors.

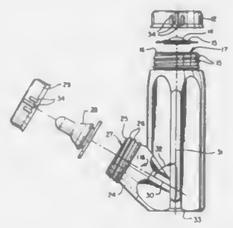
4,940,151

INFANT FLUID DRINKING CONTAINER

Michael E. Fett, P.O. Box 990, Little Elm, Tex. 75068

Filed Jul. 24, 1989, Ser. No. 383,524
Int. Cl.[5] A61J 9/00
U.S. Cl. 215—11.1 7 Claims

1. An infant fluid drinking/nursing container including a reservoir with a principal elongated section having a first principal axis and a lesser elongated section having a second principal axis, said second principal axis being disposed at an angle less than 90 degrees with respect to said first principal axis, a first opening in said principal elongated section at the outer extremity thereof, a second opening in said lesser elongated section at the outer extremity thereof, means at each of said openings adapted for attaching a feeding element thereto,



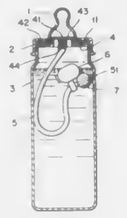
and means including a pair of handles attached to said principal elongated section for holding said container while fluid is being consumed therefrom.

4,940,152

NURSING BOTTLE

Tzong-Shyan Lin, No. 1, Lane 144, Min Sheng Road, Sec. 2, Tainan, Taiwan

Filed Jun. 27, 1989, Ser. No. 371,818
Int. Cl.[5] A61J 9/00, 9/04
U.S. Cl. 215—11.5 4 Claims



1. A nursing bottle, comprising:
a fixing disk mounted on the nursing bottle and including a first pipe connector projecting downwardly from the center of said fixing disk, said fixing disk functioning to cap said nursing bottle;
a nipple mounted on said fixing disk;
suction means for defining a suction opening and including a length of flexible suction pipe connected at one end to said first pipe connector, and
a weight element connected to the other end of said flexible suction pipe; and
a float attached to said suction means adjacent said weight element, said float having a buoyancy force greater than the weight of said weight element to keep said suction opening submerged near the surface of a liquid in said nursing bottle.

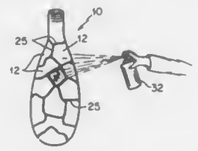
4,940,153

DECORATIVE BOTTLE AND METHOD OF FABRICATING

Noel I. Pilgrim, Jr., 171-14 119th Ave., St. Albans, N.Y. 11434

Filed Oct. 14, 1988, Ser. No. 258,009
Int. Cl.[5] B44C 1/10, 1/14
U.S. Cl. 215—12.2 2 Claims

1. A decorative bottle comprising design pieces of printed matter having irregular and complementary outlines getting cut out in puzzle manner from a printed sheet such as one of a newspaper, map and magazine picture, and adhered to said bottle's outer surface so as to fit adjacent to each other to form a composite and continuous decorative layout, at least one space between the design pieces filled with at least one metal foil piece cut to conform with the irregular outlines of the



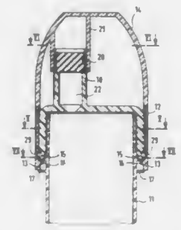
design pieces defining the space, a border line marked on borders of adjacent design pieces and on borders of design pieces and adjacent said at least one metal foil, and a spray application of sealant material covering the surface of the design pieces, said at least one foil piece and said border line.

4,940,154

LIQUID STORAGE CONTAINER WITH CLOSURE CAP

Herbert Vollmar, Much, Fed. Rep. of Germany, assignor to Walter Sarstedt Geraete und Verbrauchsmaterial fuer Medizin & Wissenschaft, Nuembrecht-Rommelsdorf, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 363,669
Claims priority, application Fed. Rep. of Germany, May 27, 1988, 3818115
Int. Cl.[5] B65D 41/46
U.S. Cl. 215—249 12 Claims



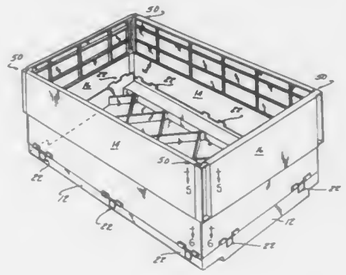
1. A liquid storage container for transporting liquids from a filling location to an investigation location, the container comprising:
a tubule having an open front end and an outer wall having a latching means adjacent to the front end;
a removable closure for the front end for filling and emptying the tubule;
a closure cap mountable on the front end of the tubule for covering the closure, the closure cap having an opening adapted to receive the closure therein and including a locking ring attached to the closure cap defining a tearable connection, the locking ring engaging the latching means on the tubule when the closure cap is mounted on the front end of the tubule for preventing the removal of the closure cap unless the tearable connection is first destroyed.

4,940,155

COLLAPSIBLE CONTAINER

Kenneth E. Hewson, 4884 Hardwoods Dr., West Bloomfield, Mich. 48033

Filed Mar. 14, 1988, Ser. No. 167,880
Int. Cl.[5] B65D 6/18
U.S. Cl. 220—6 19 Claims



15. A collapsible container comprising:
a rectangular bottom wall;
two opposed vertical side walls;
two opposed vertical end walls;
hinge means for pivotally and releasably attaching said side and end walls to said bottom wall, said side and end walls pivotable between an erected position generally perpendicular to said bottom wall and a collapsed position generally parallel to and overlying said bottom wall, said hinge means including each side and end wall having a first hinge portion with an integrally formed double pivot pin adjacent a bottom edge, said double pivot pin having outwardly extending, cylindrical projections generally parallel to said bottom edge integrally formed with a tab connecting said double pivot pin to each respective side and end walls, and each side and end wall having a corresponding cooperating second hinge portion, adjacent said first hinge portion, with an integrally formed pair of semi-cylindrical surfaces peripherally spaced from each other along an edge of said rectangular bottom wall, said semi-cylindrical surfaces each defining an aperture of sufficient size to allow said cylindrical projection of said double pivot pin to pass radially through said aperture into engagement with said semi-cylindrical surface; and
corner joint means for locking said side and end walls in said erected position, said corner joint locking means including said side wall having a groove formed on an exterior surface adjacent a vertically extending edge and said end wall having a flange extending generally parallel with said side wall, a second flange extending inwardly from said first flange and engageable within said groove, and a third flange having a surface generally parallel to said second flange engaging a corner edge of said side wall with a ridge formed on said surface to releasably lock said side and end walls in said erected position.

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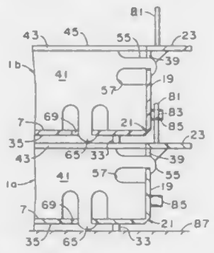
VOL 1116 ISS 2 JL 10 1990 UMI

4,940,156

THERMOPLASTIC MULTI-PURPOSE TRAY WITH VARIABLE COMPARTMENTS

James H. Cote; Jurgen Ekberg, both of Export; Bruce T. Cleevely, and Harry M. George, both of Pittsburgh, all of Pa., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 13, 1989, Ser. No. 383,102
Int. Cl.[5] B65D *73/02, 25/06, 6/18*
U.S. Cl. 220—22.3 **14 Claims**



1. A thermoplastic tray for the storage and transportation of leadframes, comprising:

a receptacle comprising a rectangular base having opposed first and second sides; a first side wall on said rectangular base, terminating in a flanged portion extending perpendicularly thereto, integrally molded to a first side of said base across a first hinge line; and a second side wall on said rectangular base, terminating in a flanged portion extending perpendicularly thereto, integrally molded to an opposed second side of said base across a second hinge line; and

a plurality of elongated dividers, each divider having a first engaging member at one end engageable with said first side wall and a second engaging member at the other end engageable with said second side wall; such that when at least one elongated divider extends across said base, with the first engaging member engaged with said first side wall to hold the same in upright position, said second side wall is pivotal to an upright position and engages the second engaging member to hold the second side wall in upright position.

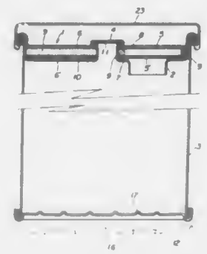
4,940,157

METHOD OF TREATING MEDICAL WASTES AND CONTAINERS TO BE USED FOR THE TREATMENT METHOD

Jitsuo Inagaki, 71, Aza Kamiyashiki, Oaza Itsusiki, Itsusikicho Hazugun Aichi, Japan

Filed Apr. 12, 1989, Ser. No. 337,078
Claims priority, application Japan, Feb. 27, 1989, 1-43120
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—254 **18 Claims**

1. An article for treatment of medical wastes comprising a container having an opening, a lid section including a certain amount of elastic filler material between an inner lid and a top lid and rigidly fitted into the opening of the container, a pair of input ports provided on said lid section for disposing medical wastes therethrough and a pair of rotary lids for opening and closing said input ports, wherein said input ports are provided with a larger opening and a smaller opening which is in communication with the larger opening and so dimensioned to come into engagement with a needle of a syringe so that the



needle can be removed from the syringe by pulling up the syringe from the opening.

4,940,158

CONTAINER AND SEAM RING FOR CONTAINER

Christopher J. Farrell, Arlington Heights; Thomas Hlobil, Fox River Grove, and George F. Nahill, Crystal Lake, all of Ill., assignors to American National Can Company, Chicago, Ill.

Filed Sep. 22, 1987, Ser. No. 100,293
Int. Cl.[5] B65D *51/00*
U.S. Cl. 220—258 **23 Claims**



1. A container comprising:

(a) a container body having a side wall and an outer and inner surface and a top peripheral edge portion defining the top opening of the container body;

(b) a closure secured to the container body at a seam along the peripheral edge portion to close the top opening thereof, the seam extending outwardly from the adjacent surface of the container body, the closure having a parting line interior of the top peripheral edge portion at which the area within the parting line can be removed from the remainder of the closure; and

(c) a plastic seam ring mounted over the seam which conceals the same, the seam ring having a top portion and inner and outer skirts descending downwardly from the top portion, and means for securing the seam ring to the container body, the inner skirt of the seam ring having an inner bottom edge which is spaced closely adjacent to the parting line in the closure such that the area of the closure bounded by the parting line can be readily removed from the container, said seam ring alone or in cooperation with the container body concealing all or substantially all of the closure which remains on the container body after removal of the area of the closure within the parting line, the means for securing the seam ring to the container body including an inwardly facing bead formed on the inner surface of the outer skirt which extends under the seam and holds the seam ring in position on the container body,

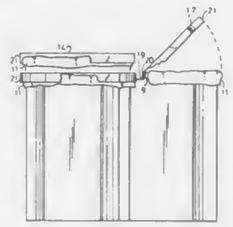
and wherein the outer surface of the outer skirt has a descending inwardly angled surface which extends to the container body side wall to make it difficult to remove the seam ring from the container body.

4,940,159

COMPARTMENTED REFUSE CONTAINER

Anise M. Callas, 1915 N. 31st Rd., Hollywood, Fla. 33021, and Steven S. Casper, 561 Bayshore Dr., Fort Lauderdale, Fla. 33304

Continuation-in-part of Ser. No. 361,432, Jun. 5, 1989, abandoned. This application Jul. 20, 1989, Ser. No. 382,398
Int. Cl.[5] B65D *25/16*
U.S. Cl. 220—404 **7 Claims**



1. A compartmented waste receptacle for segregating different types of solid wastes in separate covered and lined chambers, said receptacle comprising:

(a) a central chamber having vertical sides and an open top with an upstanding rim;

(b) a first adjoining chamber sharing one common vertical side with said central chamber and having an open top with an upstanding rim;

(c) a second adjoining chamber sharing one common vertical side with said central chamber and having an open top with an upstanding rim;

(d) a pair of opposed vertical bag-engaging notches extending downward from said upstanding rim of each of said chambers, said pair of notches arranged in combination with said rim to hold a bag liner folded over a portion of said rim and extending suspended between said notches;

(e) a separate cover arranged to cover each said chamber, each said cover having a downward directed edge flange extending over said rim and said bag liner, said cover having a top-opening movable portion hingedly connected to a fixed portion by hinge means, said hinge means arranged along a vertical side adjacent said pair of notches.

4,940,160

NEWSPAPER VENDING MACHINE AND PROMOTIONAL DISPLAY APPARATUS THEREFOR

Ronald E. Williams, Moscow, Id., assignor to Tribune Publishing Company, Lewiston, Id.

Filed Dec. 27, 1988, Ser. No. 290,502
Int. Cl.[5] G07F *11/04*
U.S. Cl. 221—34 **20 Claims**

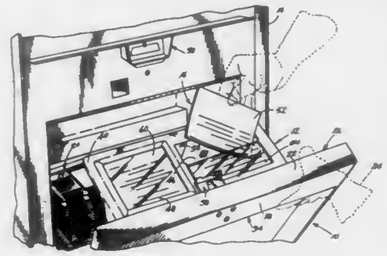
16. A newspaper vending machine comprising:

a housing having an internal cavity which retains newspapers in a stack;

a spring loaded and locked door which is pivotally mounted to the housing and swings away from the housing when unlocked and pulled upon by a user to enable access to newspapers within the housing cavity, the door having an inside door portion which faces internally into the housing cavity, the door having an outside door portion which faces externally away from the housing, the outside door portion having a handle for a user to grasp, the door being spring biased to a normally closed and locked state;

a money receiving and locking mechanism to receive a users money and unlock the door so it can be swung away from the housing to make a newspaper within the housing cavity accessible to the user;

a promotional display apparatus extending from the newspaper vending machine door, the promotional display apparatus including a display section for displaying promotional information, the display section projecting internally away from the inside door portion, the display section projecting into the housing cavity elevationally above and over a stack of newspapers therein when the newspaper vending machine door is closed, the display section in operation effectively displaying the promotional information to the user when the newspaper vending machine door is swung away from the housing.

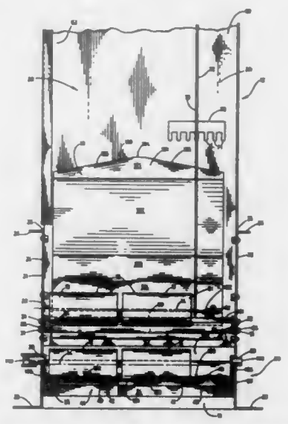


4,940,161

RAMP APPARATUS

Larry E. Hieb, Fresno, Calif., assignor to The Vendo Company, Fresno, Calif.

Filed Jun. 28, 1988, Ser. No. 212,580
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—67 **11 Claims**



1. In a vending machine for dispensing containers, the containers having a substantially common diametral dimension and outer surfaces individually substantially concentric to their respective longitudinal axes, and the vending machine having at least one staggered stack column of said containers defined by first and second walls borne by the vending machine and

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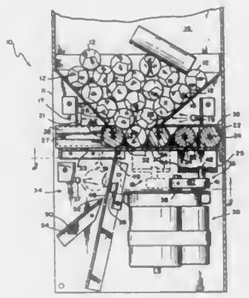
disposed in spaced relation to each other and operable gravitationally to channel the staggered stack column of containers toward a dispensing position and a dispensing mechanism operable successively to dispense the containers during vending, a ramp apparatus comprising a ramp mounted on the first wall in close proximity to said dispensing mechanism and having a sloped surface convergent in a downward direction toward the second wall to define a dispensing opening which has a dimension greater than said diametral dimension, and said ramp having an upper edge so configured that contact between said upper edge and the outer surface of each container passing thereover is substantially only along a line of contact on said outer surface of the container substantially parallel to said longitudinal axis of the container and is sufficiently less than the length of the container to promote shifting of the containers so as to inhibit bridging of said containers whereby said staggered stack column is caused to converge to form a single stack column in close proximity to the dispensing mechanism so that a maximum number of containers can be housed in said staggered stack column and a single column dispensing mechanism can be employed.

4,940,162

ROLLED COIN DISPENSER

Matthew G. Thie, Indianapolis, Ind., assignor to Autovend, Inc., Indianapolis, Ind.

Filed Oct. 17, 1988, Ser. No. 258,662
Int. Cl.[5] G07F *11/44*
U.S. Cl. 221—129 **8 Claims**



7. An apparatus for dispensing rolls of different denominations of rolled coins and paper money stored in tubes comprising

a reservoir for holding each denomination to be dispensed, each reservoir having a bottom with an opening extending therethrough;

means for dispensing each denomination, the dispensing means for a particular denomination disposed beneath the respective reservoir for each denomination, the dispensing means including at least a pair of spaced apart rollers forming a pocket therebetween for receiving a roll and means for mounting the rollers for reciprocal movement underneath the respective reservoir between a loading position wherein the pocket is beneath the opening in the bottom of the reservoir and an eject position, the roller mounting means comprising a roller mounting bracket to which the rollers are rotatably mounted, and further including an eject chute mounted at the eject position, a slide member mounted beneath the rollers and extending from beneath the opening in the bottom of the reservoir to an inlet of the eject chute, the coin roll riding on the slide member when moved by the rollers and being pushed into the eject chute from the slide member by the rollers to dispense the roll from the apparatus;

each dispensing apparatus having means for reciprocating its roller mounting means between the loading position and the eject position to permit a roll to move into the pocket when the rollers are in the loading position and to dispense the roll from the apparatus when the rollers are in the eject position and also to agitate the rolls in the reservoir by at least one of the rollers as the rollers are reciprocated between the loading position and the eject position, and

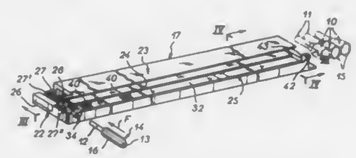
means for selecting which dispensing means to actuate to dispense a roll of a selected denomination.

4,940,163

WIRING ACCESSORY DISPENSER

Alain Baillet, Montville; Francois Loisel, Maromme, and Daniel Paulin, Bosc le Hard, all of France, assignors to Legrand, Limoges, France

Filed Feb. 3, 1989, Ser. No. 305,639
Claims priority, application France, Feb. 5, 1988, 88 01356
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—193 **17 Claims**



1. A dispenser for wiring accessories, the dispenser being of generally flat elongate configuration and comprising a baseplate, a bar overlying the baseplate and extending transversely across said baseplate a distance less than the entire width of said baseplate, said bar having a longitudinal groove parallel to said baseplate and running the full length of said baseplate, said longitudinal groove opening along a longitudinal edge of said bar, an upstanding lip on said baseplate disposed in parallel spaced relation with said one longitudinal edge of said bar, a longitudinal extension at one end of said baseplate, said extension having a transverse cradle for accommodating a wiring accessory, a longitudinal finger projecting cantilever-fashion from said bar and over said cradle for retaining a wiring accessory in said cradle.

4,940,164

DRINK DISPENSER AND METHOD OF PREPARATION

Mark W. Hancock, and Marvin M. May, both of Los Angeles, Calif., assignors to Aquatec, North Hollywood, Calif.

Filed Jun. 26, 1987, Ser. No. 68,017
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—66 **16 Claims**

1. Carbonator apparatus for operation on a bottled supply of water, the apparatus comprising:

a liquid reservoir having a top opening for receiving a bottled supply of water therein for automatically refilling said reservoir from the bottled supply of water;

means for cooling water in said reservoir to form a quantity of ice therein including means disposed to sense the thickness of said ice to maintain the quantity of ice within selected limits;

carbonator means disposed in thermal relationship to the water in said reservoir to be cooled thereby;

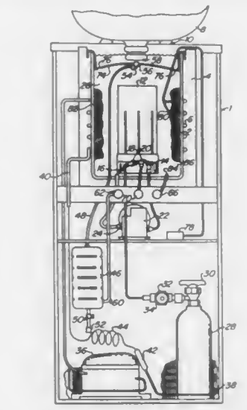
pumping means for pumping water from said reservoir into said carbonator means;

dispensing means for selectively withdrawing carbonated water from the carbonator means;

first means for sensing when the liquid level therein drops below a predetermined level;

second means for sensing when water in the reservoir is depleted below a selected level; and

control means responsive to first and second means to enable said pumping means when said liquid level in said carbonator means drops below said predetermined level, and to prevent said pumping means from pumping in response to water in the reservoir being depleted below said selected level.

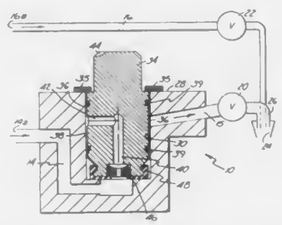


4,940,165

METHOD OF AND DISPENSING HEAD FOR INCREASED CARBONATION

John R. McMillin, San Clemente, Calif., assignor to The Cornelius Company, Anoka, Minn.

Filed Apr. 8, 1988, Ser. No. 179,331
Int. Cl.[5] B67D *5/56*; F16K *19/00*
U.S. Cl. 222—129.1 **18 Claims**



1. In a carbonated water dispensing head having a carbonated water inlet port leading to a flow control housing having a cylindrical inner surface, a carbonated water flow control body fixed in and sealed to said housing, a self compensating water flow rate control device in said body, a water feed port from the cylindrical inner surface to a normally closed water valve, and an outlet port from the water valve to a dispensing nozzle;

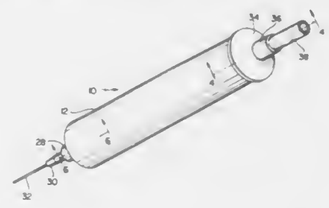
the improvement for providing increased carbonation in dispensed carbonated water, comprising a flow control body outer diametric surface (fitted) positionally fixed within and sealed to the housing cylindrical inner surface, a carbonated water flow port through the inside of said flow control body and said flow rate control device and into fluid communication with said inner surface, said housing cylindrical inner surface and said outer flow control body diametric surface jointly defining in a toroidal space between them a carbonated water decompression chamber downstream of said flow rate control device, said decompression chamber being fluidly between the inlet port and the feed port and downstream of the flow control body, said decompression chamber having a carbonated water passageway area which is less than the area of the feed port.

4,940,166

METHOD AND APPARATUS FOR APPLYING DECORATIVE COATING MATERIALS TO A SURFACE

Webster M. Pidgeon, 138 Webster Ave., Providence, R.I. 02909

Filed Oct. 14, 1988, Ser. No. 258,198
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—136 **1 Claim**



1. A dispenser for simultaneously applying a plurality of discrete decorative coating materials to a jewelry finding, comprising an elongated cylindrical housing having an upper end and a lower end, an elongated separator member formed of a rigid material, said separator member being located in said housing, said separator member having a central axis and including an axial portion which extends along said axis and a plurality of walls which radiate outwardly from said axial portion and cooperate with said housing to define a plurality of separate compartments, a different colored coating material being located in each of said compartments, a cap mounted on the upper end of said housing, a bottom portion located in said separator member at the lower end thereof and having a relatively small recess formed therein, feed passages of relatively small diameter formed in said bottom portion closely adjacent said axis that provide communication between said recess and said compartments, an elongated small diameter dispensing nozzle mounted on the lower end of said housing and communicating with said recess for receiving the coating materials in unmixed relation therein, said dispensing nozzle having an inlet end and being substantially aligned with said axis, said feed passages being directed substantially toward said inlet end to promote substantially direct flow of said materials from said feed passages to said inlet end and to thereby minimize intermixing of said materials as they pass from said feed passages to said inlet end, and means cooperating with said cap for introducing a fluid medium under pressure into the top of said housing wherein said fluid medium exerts a downward force on said coating materials as located in said compartments to simultaneously force said discrete coating materials into said recess, said coating materials thereafter being directed under pressure into and through said nozzle for application in unmixed discrete colorations onto a surface of a jewelry finding for imparting a decorative multicolor design thereon.

4,940,167

CHILD RESISTANT DISPENSING CLOSURE

William E. Fillmore, Toledo, and Timothy J. Fuchs, Perrysburg, both of Ohio, assignors to Owens-Illinois Closure Inc., Toledo, Ohio

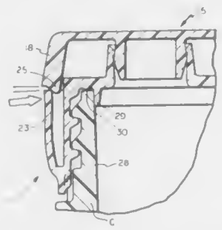
Filed Jan. 27, 1989, Ser. No. 302,850
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 **2 Claims**

1. A child resistant dispensing closure comprising

a first plastic part having a base wall and a peripheral skirt threaded onto a container,

said skirt of said first part including a radial flange,

said peripheral skirt including interengaging portions that engage portions of a container to resist removal from the container,
said closure including a second plastic part connected to the first part by an integral hinge,
said second part including a base wall and a peripheral skirt,
said base wall of said skirt having a dispensing opening,
said skirt of said second part having diameter smaller than the diameter of the flange so that the flange projects radially beyond the skirt of said second part and the skirt of said second part cannot be raised readily when the second part is in closed position with the skirt of said second part engaging said flange on the first part,
said skirt of said first part including a radial flange that extends circumferentially about most of the periphery of said skirt,
said first part having a deflectable wall panel spaced radially outwardly of said skirt and extending upwardly and axi-



ally outwardly and integrally joined to said skirt of said first part adjacent said free edge and along circumferentially spaced axis of said skirt,
said radially deflectable wall panel having an upper free edge at least a portion of which underlies the free edge of said skirt of said second part when the second part is in closed position,
said flange extending along said radially deflectable wall,
said skirt of the second part having an axial rib extending between the deflectable wall panel on the first part and the skirt of the first part such that when the deflectable panel is pressed radially inwardly, the panel engages the rib camming the skirt of the second part upwardly and exposing it so that it may be opened,
said base wall of said first part including a shoulder projecting axially for engaging and centering the second part and supporting the skirt of said second part against radial deflection.

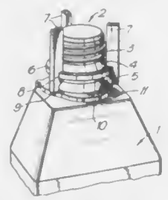
4,940,168

CONNECTOR

David W. Shadwell, Macclesfield, and Martin Joseph, Altrincham, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 64,567, Jun. 22, 1987, abandoned. This application Mar. 28, 1989, Ser. No. 332,397
Claims priority, application United Kingdom, Jun. 24, 1986, 8615410
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 12 Claims

1. A first fluid-handling device having a fluid outlet portion; a second fluid-handling device having a fluid inlet portion, wherein said first fluid-handling device is a container and the second fluid-handling device is a dispenser; means for coupling said fluid outlet portion to said fluid inlet portion including support means extending from one of said fluid handling devices towards the other; a member directly mounted to said fluid outlet portion and movable axially relative thereto between a first position and a second position so that in the first position said movable member and said support means are engaged and said fluid outlet portion is coupled to said fluid inlet portion and in the second position the movable member and the support means can be disengaged so that the said fluid outlet portion and said fluid inlet portion can be disconnected; and means for preventing axial movement of said movable member from said second position to said first position;



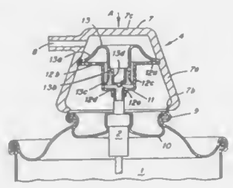
the support means comprising arms depending from the dispenser having formations adapted to engage with the member in the first position, and adapted to permit disengagement of the container therefrom when the number is in the second position.

4,940,169

AERATED LIQUID STORAGE/DISPENSING APPARATUS

Martin F. Ball, Wantage, England, assignor to Metal Box Public Limited Company, Reading, United Kingdom

Continuation of Ser. No. 908,992, Sep. 18, 1986, Pat. No. 4,785,977. This application May 26, 1988, Ser. No. 199,290
Claims priority, application United Kingdom, Sep. 24, 1985, 8523575
The portion of the term of this patent subsequent to Nov. 22, 2006, has been disclaimed.
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—399 19 Claims



1. Apparatus for storing and dispensing a quantity of aerated liquid for maintaining carbonation of a beverage in a container in which the extent of aeration is maintained as said quantity is progressively dispensed, said apparatus comprising a vessel containing a source of gas; a valve closing said vessel; a pressure regulator coupling said valve to said container, said regulator being capable of delivering said gas to said container at a substantially constant pressure substantially lower than said pressure under which said gas is kept in said vessel; said regulator comprising a housing, a diaphragm, and means supporting a diaphragm in the housing, said diaphragm having a ratio of the area downstream thereof to the area upstream thereof so that the gas is caused to be delivered to said container at said constant pressure lower than said pressure under which said gas is kept in said vessel and flow control means which permit delivery of said gas to, and dispensing of said liquid from, said container, said vessel being an aerosol can having a closure cup and containing carbon dioxide, and said regulator having a skirt portion arranged for engagement with said closure cup, the arrangement being such that in a transit condition of the apparatus, said valve is closed and in an operational condition

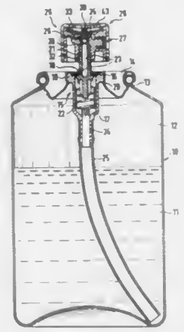
of the apparatus, said skirt portion is engaged with said cup and said pressure regulator engages said valve, thereby causing said valve to be open, wherein said skirt portion has an inturned rim that snap-fits with the aerosol can closure cup.

4,940,170

SPRAY HEAD FOR USE WITH A CAN CONTAINING A LIQUID EXPOSED TO THE PRESSURE OF A PROPELLANT

Hildegard Popp-Ginsbach, Munich, Fed. Rep. of Germany, assignor to F.P.D. Future Patent Development Co., S.A., Luxembourg

Filed Nov. 3, 1988, Ser. No. 266,815
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1987, 3738163; Dec. 17, 1987, 3742901
Int. Cl.[5] B05B *3/16*
U.S. Cl. 222—402.1 13 Claims



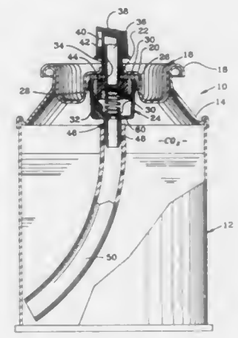
1. A spray head for a can (10) containing a liquid medium (11) exposed to the pressure of a propellant (12), and said spray head being disposed at the free end of a dispensing tube (21) of a dispensing valve connected to the can, said dispensing tube having a discharge duct, aid spray head comprising a spray nozzle (27) having a passageway in fluid-communication with the discharge duct (23) of the dispensing tube (21), a throttle member (29) in said fluid-communication passageway (28) and including a resiliently biased throttle body (30) connected to said spray nozzle and formed as a single piece element including a resilient element which is exposed to ambient pressure on one side and to the overpressure prevailing in the can interior on the other side thereof during the discharge of the liquid medium, and throttle body including a member integrally connected to said resilient element and positioned in said passageway for controlling the flow cross-section (31) of said passageway in dependence on the overpressure in the can to establish an approximately constant liquid quantity per unit of time of discharge through the spray nozzle (27) until the can (10) has been substantially emptied, said resilient element constructed and arranged to establish resilient bias of the throttle body (30) effective substantially only upon use when the dispensing valve (15) is opened to establish a varying discharge opening, such that with the overpressure in the can at a maximum, a minimum flow cross-section (31) is established and with a minimum residual overpressure in the can (10) the flow-cross-section (31) is maximum.

4,940,171

AEROSOL PACKAGE HAVING COMPRESSED GAS PROPELLANT AND VAPOR TAP OF MINUTE SIZE

Gordon C. Gilroy, R.F.D. 2, Darby La., Bedford, N.H. 03102

Filed May 18, 1989, Ser. No. 354,125
Int. Cl.[5] B65D *83/58*
U.S. Cl. 222—402.18 7 Claims



1. In an aerosol package comprising a container and a dispenser valve mounted on the container, the valve comprising a cylindrical body mounted upright at the center of the top of the container and having a bottom wall and a gasket at its upper end and a plunger in the body having a hollow stem passing up through the gasket and through the top of container and terminating in an actuator operable from the top of the container, a dip tube connected to and extending from the cylindrical body down in the container, the container being partly filled with liquid product and having thereabove an atmosphere of compressed gas selected from a group including carbon dioxide and nitrous oxide to propel the liquid up the dip tube and through the valve and out the actuator when the valve is open; the improvement of at least one vapor tap opening in the cylindrical body above the level of the liquid product whereby said compressed gas is free to flow through the vapor tap opening and through the dispenser valve when the valve is open, each vapor tap opening having a diameter in the range of only about 0.004 inch to only about 0.008 inch.

4,940,172

FILLING APPARATUS FOR FILLING A CONTAINER WITH A MEASURED AMOUNT OF A LIQUID, PASTY OR LUMPY PRODUCT

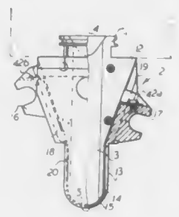
Dieter Möller, Haan, and Georg Fischer, Velbert, both of Fed. Rep. of Germany, assignors to Benz & Hilgers GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 6, 1989, Ser. No. 307,671
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1988, 3803230
Int. Cl.[5] B67D *3/00, 5/06*
U.S. Cl. 222—505 16 Claims

15. An apparatus for filling a container with a measured amount of a liquid, pasty or lumpy product comprising at least one mouthpiece having a supporting member on a side thereof and a filling duct whose outlet mouth is closable by at least one flexible steel cutoff band guided in a passage in a vicinity of said outlet mouth in an elongated outlet piece of said mouthpiece which is rounded on its bottom portion, said cutoff band being slidable in the vicinity of said outlet mouth of said

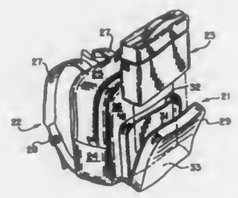
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mouthpiece in and opposite a transport direction of said container in said apparatus for filling, a carriage guided slidably in



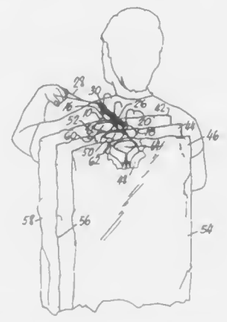
a T-groove of the supporting member and attached at one end to said cutoff band to drive said cutoff band.

4,940,173
BACKPACK AND INSULATED CONTAINER
Jeffrey M. Jacober, South Kingston, R.I., assignor to SGI Inc., Cranston, R.I.
Continuation of Ser. No. 59,250, Jun. 5, 1987, Pat. No. 4,767,039, which is a continuation of Ser. No. 830,522, Feb. 17, 1986, abandoned, which is a division of Ser. No. 669,862, Nov. 8, 1984, abandoned. This application Aug. 29, 1988, Ser. No. 239,032
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[5] A45C *15/00*
U.S. Cl. 224—151 **11 Claims**



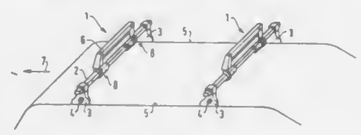
1. A combination backpack and removable insulated container, comprising:
- an insulated container component, said insulated container component including a plurality of pliable panels, said pliable panels including a bottom panel and side panels that are joined together at their respective edges into a compartment having a body and an open mouth defined by edges of the side panels, each of said panels having thermal insulation means, said insulated container component further including a pliable cover member for selectively opening and closing said open mouth;
- closure means for securing said pliable cover member to said body of the insulated container, said closure means selectively joining or disjoining less than the full periphery of the cover member to the body of the insulated container component, the remainder of said full periphery of the cover member being hingedly attached to said body of the insulated container;
- a backpack component, said backpack component including a plurality of pliable fabric panels that are joined together to form a pliable backpack body defining a backpack interior, said backpack body having an interior surface and an exterior surface, closure means for selectively gaining access to said interior of the backpack body; and
- a sleeve component secured to at least one of said fabric panels of the backpack component, said sleeve component having a mouth, and said sleeve component and its mouth are sized and structured to closely receive, hold and support said insulated container component and to permit quick and easy removal of the insulated container as a unit from said sleeve, and said sleeve component is sized for and is located on said backpack component for avoiding substantial reduction of the size of said interior of the backpack body.

4,940,174
GARMENT SUPPORTING SYSTEM INCLUDING TIE THEREFOR
Robert McD. Parker, 51 E. 78th St., New York, N.Y. 10021-0207
Filed Sep. 14, 1989, Ser. No. 407,353
Int. Cl.[5] A45F *3/14*
U.S. Cl. 224—257 **17 Claims**



1. A garment supporting system comprising in combination at least one garment supporting means provided with a hook-like neck having an aperture located therein and an elongated flexible tie having a less flexible segment located along the length thereof, gripping means disposed on one end and means located near the opposite end for passage of said gripping means and the elongated flexible portion of said tie adjacent thereto therethrough, said tie being disposed through the aperture in said garment supporting means, said gripping means and said elongated flexible portion of said tie being passed through the means for passage therethrough and said garment supporting means being supported on the less flexible segment of said tie, whereby a garment supported on said garment supporting means is transportable with greater ease and control by a user.

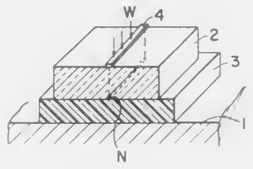
4,940,175
CAR-TOP CARRIER
Eberhard Tittel, Lagerstrasse 1, D-7981 Grunkraut-Gullen, Fed. Rep. of Germany
Filed Mar. 31, 1989, Ser. No. 331,493
Int. Cl.[5] B60R *9/04*
U.S. Cl. 224—324 **8 Claims**



1. A car-top carrier comprising:
supporting elements that can be attached to a vehicle;

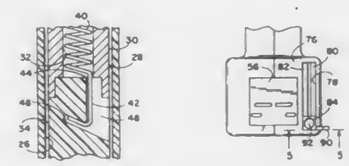
at least one supporting member attached to said supporting elements;
- at least one holding member disposed on said supporting member for holding objects to be transported; and
- a joint disposed between said supporting member and said holding member, a swiveling axis of said joint extending transversely to the direction of travel of said vehicle;
- said holding member being rotatable about said swiveling axis between a use position and a nonuse position;
- said joint comprising at least one joint member, said joint member being formed in the shape of a disc and comprising at least one circular-arc-shaped curved guide slit around said swiveling axis of said joint; and
- said joint comprising another joint member comprising at least one guide slide displacable in said slit.

4,940,176
APPARATUS FOR CUTTING WORKPIECES OF GLASS, CERAMICS, AND LIKE MATERIAL
Yasuo Sato, 9-8, Kami-Takaido 2-Chome, Suginami-Ku, Tokyo-To, and Kunio Saeki, 18-7, Higashi-Tamagawagakuen 1-Chome, Machida-Shi, Tokyo-To, both of Japan
Filed Jun. 15, 1988, Ser. No. 207,166
Claims priority, application Japan, Mar. 29, 1988, 63-75077
Int. Cl.[5] C03B *33/03*
U.S. Cl. 225—96.5 **6 Claims**



1. An apparatus for cutting a workpiece of glass, ceramic, or like material on a surface of which an incised line has been formed beforehand along an intended cutting line, said apparatus comprising:
- a rigid frame structure;
- a backing member supported on said frame structure and functioning to backingly support said workpiece placed thereagainst with said incised line in contact with said backing member, said backing member having a Young's modulus lower than that of the workpiece;
- a force applying device supported on the frame structure and operable to apply a localized pressing force on the surface of the workpiece opposite said surface having said incised line at a position directly opposite the point at which said backing member supports said workpiece; and
- a feeding mechanism supported on the frame structure and being operable to feed the workpiece, relative to said force applying device, in the direction of the incised line, thereby causing said localized pressing force to be applied along a line parallel to the incised line on said opposite surface of the workpiece, to impart a bending moment to the workpiece in the region thereof around the incised line, and thereby fracturing and cutting the workpiece along a section thereof in which the incised line lies.

4,940,177
ELECTRIC STAPLER HAVING ELECTRONIC CONTROL CIRCUIT
Carlos L. Jimena, 501 S. Marengo, Pasadena, Calif. 91101
Filed Dec. 30, 1988, Ser. No. 292,101
Int. Cl.[5] B25C *5/15, 7/00*
U.S. Cl. 227—7 **14 Claims**



1. In a machine for fastening a staple into one or more sheets of paper:
- a solenoid having an operating coil and an armature, the armature being movable inside a vertically disposed chamber, the armature having an interior air passage therethrough with said passage being open to a lower end of said chamber for cooling purposes;
- a staple driver attached to the armature of the solenoid;
- an anvil disposed to receive impact of the staple driver when the operating coil of the solenoid is energized to actuate the armature;
- spring means interiorly disposed in the armature for biasing the armature away from the anvil to a retracted position when the operating coil is de-energized;
- a photosensor near the anvil;
- a source of light illuminating the photosensor; and
- circuit means responsive to insertion of paper to be stapled between the light source and the photosensor for energizing the operating coil of the solenoid from a source of operating voltage to actuate the armature of the solenoid and drive a staple.

4,940,178
SOLDERING IRON
Fritz Hombrecher, Bad Wertheim, Fed. Rep. of Germany, assignor to ERSA Sachs KG GmbH & Co., Wertheim, Fed. Rep. of Germany
Filed Jul. 20, 1989, Ser. No. 383,191
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1988, 3825048
Int. Cl.[5] B23K *3/02, 3/03*
U.S. Cl. 228—55 **9 Claims**



1. A soldering iron, comprising: a tube member having a front section and a rear section, the diameter of said front section being smaller than the diameter of said rear section; a soldering tip positioned on said front section of said tube, said tip including a rear edge; a spring element positioned about said rear section of said tube and fixed at said rear section by a

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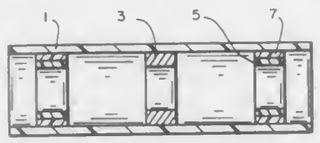
spring element winding portion which closely fits said rear section, said spring element including a front end engaging a hook portion of said soldering tip for fixing said tip axially with respect to said tube; and rotation preventing means connected to said tube and connected to said soldering tip rear edge at said tip rear edge, at a step formed at a top front surface of said tube, adjacent said front section and connected to said soldering tip rear edge said portion preventing means including a tip engaging surface defined at said step and a tube engaging surface defined at said rear edge of said soldering tip for a positive non-rotational locking between said tube and said tip.

4,940,179

DEVICE FOR FORMING A SOLDER CONNECTION

Pravin Soni, Union City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 20, 1989, Ser. No. 368,756
Int. Cl.[5] H01R *4/70*; B23K *3/00*
U.S. Cl. 228—56.3 **14 Claims**



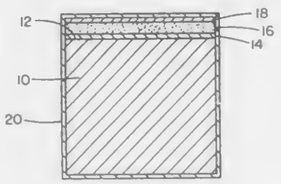
1. A device for forming a solder connection between a plurality of bodies, which comprises:
(a) a hollow, dimensionally heat-shrinkable sleeve;
(b) a solder preform positioned within the sleeve; and
(c) an annular composite adhesive insert positioned coaxially within the sleeve and comprising two layers of heat-activatable adhesive material, the viscosity of the radially inner layer being less than that of the outer layer at the temperature to which the sleeve is heated to cause it to shrink, the arrangement and the relative viscosities of the materials of the two layers being such that the outer layer restricts flow of the material of the inner layer when the sleeve is so heated.

4,940,180

THERMALLY STABLE DIAMOND ABRASIVE COMPACT BODY

Trevor J. Martell, 8 Erica Place, Vale Road, Weltevreden Park, Transvaal, South Africa

Filed Aug. 4, 1989, Ser. No. 389,613
Claims priority, application South Africa, Aug. 4, 1988, 88/5735; Feb. 2, 1989, 89/0823; Feb. 2, 1989, 89/0825
Int. Cl.[5] B23K *31/04*; C04B *35/52*
U.S. Cl. 228—122 **10 Claims**



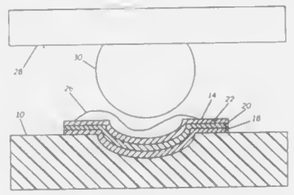
1. A method of producing a thermally stable diamond compact having a metallic layer bonded to a surface thereof, the thermally stable diamond compact comprising a mass of diamond particles containing diamond-to-diamond bonding and a second phase uniformly distributed through the diamond mass, and the metal of the metallic layer being selected from the group of molybdenum, tantalum, titanium and like high melting refractory metal, nickel and an alloy containing a dominant amount of any one of these metals, includes the steps of:
(i) preparing an assembly of a metallic layer, a mass of diamond particles on the metallic layer and a layer of the component or components necessary to form the second phase on the diamond particles, this component or these components having a melting point lower than that of the metallic layer; and
(ii) subjecting the assembly to conditions of elevated temperature and pressure for a period sufficient to produce the diamond abrasive compact, the temperature being controlled such that there is minimal infiltration of the metallic layer into the diamond mass.

4,940,181

PAD GRID ARRAY FOR RECEIVING A SOLDER BUMPED CHIP CARRIER

Frank J. Juskey, Jr., Coral Springs; Barry M. Miles, Plantation, and Anthony B. Suppelsa, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1989, Ser. No. 333,670
Int. Cl.[5] B23K *1/20*; H05K *3/34*
U.S. Cl. 228—180.2 **19 Claims**



1. A method for attaching a solder bumped member to a substrate, comprising the steps of:
(A) forming cavities in the substrate, said cavities being approximately two-third the size of the solder bumps:
(B) applying metal to said cavities:
(C) providing an effective amount of solder flux on said metallized cavities:
(D) positioning the solder bumped member so as to align the solder bumps within said metallized cavities;
(E) heating said solder flux so as to electrically couple said metallized cavities to a respective solder bump.

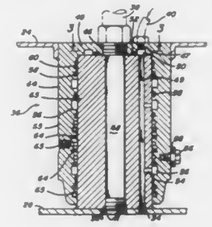
4,940,182

ROTARY SWIVEL FOR CAB HEATING SYSTEM

Dennis J. Heyne, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 27, 1989, Ser. No. 427,384
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 B **8 Claims**

1. A vehicle cab heating system comprising:
a vehicle cab having a floor;
a frame, said vehicle cab being mounted on said frame such that said vehicle cab is free to rotate 360 degrees with respect to said frame;
a source of heated fluid mounted within said frame;
a cab heating unit mounted in said cab, said cab heating unit utilizing fluid from said source of heated fluid to supply heat to said cab, said cab heating unit having a fluid inlet receiving heated fluid from said source, said cab heating unit removing heat from said heated fluid and having a fluid outlet for returning a cooled fluid to said source of heated fluid, a fluid supply line connecting said fluid inlet and said source of heated fluid, a fluid return line connecting said fluid outlet and said source of heated fluid;
said fluid supply line and said fluid return line passing from said cab through a rotary fluid swivel in said floor of said vehicle cab and into said frame to connect to said source of heated fluid; and
said rotary fluid swivel comprising a generally solid upstanding cylindrical boss of a first radius fixed to said frame, a generally hollow cylindrical spindle fixed to



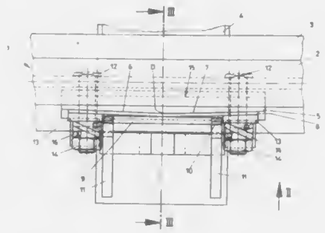
rotate with said vehicle cab floor and having an inner periphery received about said boss, said fluid supply line including a supply conduit extending through said boss at a central portion thereof, said supply conduit having a second radius, said first radius being much larger than said second radius, thus defining a solid portion between said first and said second radii, said fluid return line including a return conduit extending through said solid portion at a third radius between said first and second radii.

4,940,183

ARRANGEMENT FOR FASTENING RAILS

Johann Rieger, and Hermann Orasche, both of Zeltweg, Austria, assignors to Voest-Alpine Maschinenbau Gesellschaft m.b.H., Linz, Austria

Filed May 3, 1989, Ser. No. 346,746
Claims priority, application Austria, May 10, 1988, 1231/88
Int. Cl.[5] E01B *9/60*
U.S. Cl. 238—310 **7 Claims**



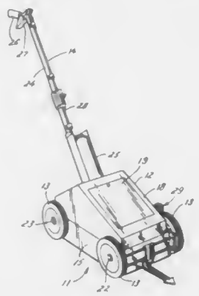
1. An arrangement for fastening a rail of the type having a running surface and a rail foot interconnected by a web and wherein the running surface has a running edge at one side thereof, the fastening arrangement comprising a strap pressed against said web at a location adjacent the edge of the running surface opposite the running edge, said strap being urged towards the web by leaf spring means positioned on the opposite side of the strap from said web and engaging a convex surface of the strap.

4,940,184

SPRAYING APPARATUS WITH SPEED INDICATING ASSEMBLY

Thomas J. Smrt, Cary, Ill., assignor to Fox Valley Systems, Inc., Cary, Ill.

Filed Mar. 30, 1989, Ser. No. 330,456
Int. Cl.[5] B05B *1/28, 9/04, 15/00*; E01C *23/16*
U.S. Cl. 239—71 **9 Claims**



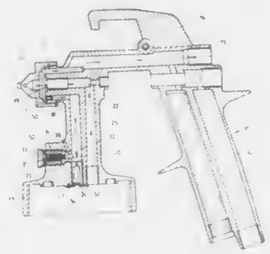
1. A movable marking apparatus for marking a supporting surface comprising: a housing member; wheel means rotatably mounted to said housing member for engaging the supporting surface and rolling on the supporting surface; handle means secured to said housing for controlling said housing and pushing or pulling the housing along the supporting surface; rotating means rotatably mounted to said apparatus for indicating the speed of the apparatus, said rotating means having an outer surface and being driven by said wheel means, said rotating means including a first set of indicia disposed in spaced intervals on the outer surface, said first set of indicia appearing to be a solid line at a first, predetermined speed.

4,940,185

SAFETY EXHAUST VALVE EQUIPPED SPRAY GUN

Hsueh-Chin Fu, No. 1, Lane 18, Ta Wei Rd., Ta Li Hsiang, Taichung Hsien, Taiwan

Filed Dec. 9, 1988, Ser. No. 282,238
Int. Cl.[5] B05B *7/32*
U.S. Cl. 239—126 **2 Claims**



1. A safety exhaust valve equipped spray gun, which comprises a spray gun incorporated with a spray bottle cover in one solid unit above a connecting portion connecting said one solid unit to a bottle body, said spray bottle cover including a safety exhaust valve means for exhausting excess air pressure and an air induction means for maintaining pressure within a limited value;
said exhaust valve means including an adjusting bolt threaded into a wall of said spray bottle cover with a nut

fixed thereon, said wall having an exhaust hole on its top side; and a lever coupled to said adjusting bolt through a spring, said lever having a steel ball covering an air hole communicating with said exhaust hole; and

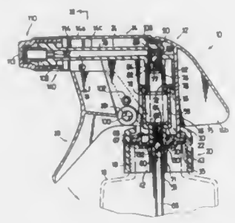
said air induction means including an air induction hole provided inside said spray bottle cover and having a bolt threaded therein at its bottom, said bolt providing a stepped hole means for permitting air below 50 psi to pass therethrough, exhausting excessive air pressure through said exhaust hole and controlling air pressure inside said bottle body within said limited value, said stepped hole means including a stepped hole with an inner diameter about 0.3 mm at its upper portion and a wider diameter at its lower portion, a check leaf at its bottom with one end of said check leaf fixedly attached adjacent to said stepped hole and with another end freely arranged, said check leaf having a circular convex portion blocking a bottom end of said air induction hole.

4,940,186

MANUALLY OPERATED TRIGGER TYPE DISPENSER, A SPINNER FOR USE IN THE DISPENSER, AND A FLOW-PATTERN SWITCHING MECHANISM FOR USE IN THE DISPENSER

Atsushi Tada, 2-6-3 Kakinokizaka, Meguro-ku, Tokyo, Japan

Filed Oct. 18, 1988, Ser. No. 259,274
Int. Cl.[5] B05B *11/00, 1/34*
U.S. Cl. 239—337 7 Claims



1. A manually operated trigger type dispenser, comprising:

a dispenser body made of a synthetic resin and including an upper portion and a lower portion vertically extending from the upper portion;

a bottle cap made of a bottomed hollow cylinder, for detachably coupling said lower portion of said dispenser body with a neck of a container filled with a liquid to be dispensed;

a cylinder defining a pump chamber and engaged with a swingable trigger, so as to reciprocate between an upper operational position and a lower non-operational position when said trigger is squeezed and released;

a substantially L-shaped piston made of a synthetic resin and including a horizontal nozzle interposed within the upper portion of said dispenser body, and a vertical piston body located within the lower portion of said dispenser body, for guiding said cylinder;

inlet conduit means formed within said cylinder and connected to said pump chamber through a primary valve, for supplying the liquid from said container into said pump chamber;

a nozzle cap having an orifice and attached to a distal end of the nozzle of said piston;

outlet conduit means formed within the nozzle of said piston and connected to said pump chamber through a secondary valve, for dispensing the liquid pressurized within said pump chamber, through the orifice of said nozzle cap; and

a return spring biasing said cylinder to the lower non operational position thereof; and

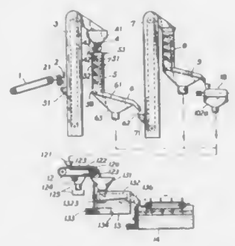
said lower portion of said dispenser body having a slit in the front section of a lower end of said lower portion to allow the passage of said L-shaped piston and the rear end of said trigger through said slit, and an engagement member fitting the lower end of said dispenser body in a proximal end of said bottle cap, by utilizing the elasticity imparted to the lower end of said dispenser body due to the existence of said slit, thereby holding the proximal end of said bottle cap between the lower edge of the rear section of said lower portion of said dispenser body and said engagement member.

4,940,187

SYSTEMATIC EQUIPMENTS FOR RECYCLING RAW MATERIALS FROM WASTE WIRES

Tocew Lee, P.O. Box 10160, Taipei, Taiwan

Filed Oct. 26, 1989, Ser. No. 426,980
Int. Cl.[5] B02C *21/00*
U.S. Cl. 241—79.1 6 Claims



1. A set of systematic equipments for recycling raw materials from waste wires comprising:

a charging conveyor handling waste wires having a cutter for cutting each waste wire in a predetermined length;

at least a vertical conveyor for carrying cut waste wires upwardly and unloading into a quantitative distributing means from a top portion of the vertical conveyor;

at least a vertical scraping machine having a plurality of scraping roller set consecutively vertically mounted in a vertical housing of said vertical scraping machine for scraping off plastic coatings of insulated copper wires;

at least a screening machine for filtering off fine wire scraps and for picking up stripped copper wire sections from an inclined screen formed in said screening machine;

a horizontal crushing machine receiving coarse wire scraps from said screening machine and crushing the scraps into particles or powder of copper, ferrous material and plastic materials;

a magnetic separator receiving the materials from said horizontal crushing machine and magnetically attracting the ferrous material to be separated from the copper and plastic materials;

a copper and plastic material classifier separating copper and plastic materials discharged from the magnetic separator; and

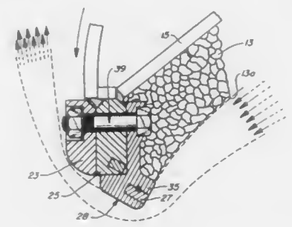
a wet gravity separator gravitationally classifying and separating the different plastic materials from said copper and plastic material classifier, depending on different densities and floating heights of the different plastic materials floating in a water stream in said gravity separator.

4,940,188

TIP HOLDER FOR MINERAL BREAKER

John Rodriguez, and Damian Rodriguez, both of 135 Lindberg Ave., Ste. A, Livermore, Calif. 94550

Filed Dec. 24, 1987, Ser. No. 137,953
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—275 31 Claims



1. An improved tip holder for the rotor of a centrifugal mineral breaker having discharge ports through which mineral material is passed out of said rotor, the tip holder comprising

a projecting mounting member portion for removably securing said tip holder to a rotor of a centrifugal mineral breaker proximate a discharge port thereof, said mounting member portion having an inner mounting surface and an outer mineral-contacting surface, the distance therebetween being the thickness of said mounting member portion;

a step integrally formed on one end of said mounting member portion and projecting therefrom into the path of the mineral material stream being passed out of said rotor, said step having a top surface for contacting said discharging mineral material, said step forming at least a portion of a material retaining surface disposed adjacent to said top surface and oriented toward said mounting member portion, said material retaining surface being formed for retaining a built-up bank of mineral materials extracted from the stream of mineral materials being passed out of said rotor, said material retaining surface being capable of retaining and stabilizing in said bank mineral materials having diameters of varying sizes up to 100 mm., said step also having at least one recess formed longitudinally therethrough;

an insert of abrasion resistant material at least partially enclosed in each recess of said step; and

a supporting and mineral flow-directing flange depending from the step in the general direction of the flow of discharged material.

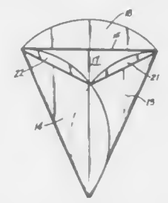
4,940,189

CONTAINER

Henry V. Cremonese, 125 Christopher St. #2H, New York, N.Y. 10014

Filed Aug. 1, 1988, Ser. No. 226,786
Int. Cl.[5] B65D *5/36*
U.S. Cl. 229—1.5 B 3 Claims

1. A container formed from a blank of generally circular form, two side panels folded over along fold lines which define first and second chords of said generally circular form, said side panels being affixed to each other to define a pocket having a base panel, another panel defined on said base panel by a third fold line which defines a third chord of said generally



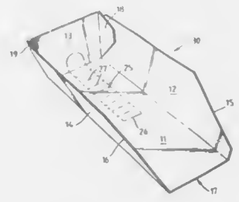
circular form and which is substantially co-terminal with said first and second chords.

4,940,190

CONTAINER

Maurice C. Groves, Brisbane, Australia, assignor to Amcor Limited, New South Wales, Australia

Filed May 16, 1989, Ser. No. 352,565
Claims priority, application Australia, Mar. 13, 1989, PJ3150
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—122 9 Claims



1. A tray for food such as a hotdog and the like, said tray having an open portion opposed to an end wall, said open portion enabling food to be presented for consumption, and two opposed side walls and a base panel from which said walls depend, said base panel having a portion between said side walls at least partially frangible therefrom, said frangible portion comprising a strip hinged at one end to said base panel at a location intermediate said end wall and said open portion and extending to said end wall at the opposite end, said frangible portion adapted to be urged by a user's finger from a position coplanar with the base panel to a position extending upwardly of the panel whereby when the frangible portion is moved to the extended position, the food within the tray can be moved towards the open portion by a user of the tray.

4,940,191

RECLOSEABLE BOX TOP LID

Timothy S. Dolby, 5 Till St., Enfield, Conn. 06082

Filed Mar. 29, 1989, Ser. No. 330,078
Int. Cl.[5] B65D *39/04*
U.S. Cl. 229—125 2 Claims

1. A reclosable box top lid which comprises:

(a) a base secured to a top of an opening in a front end of a box;

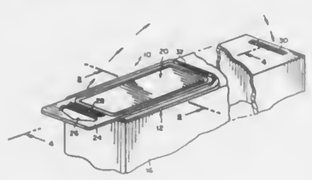
(b) a cover pivotally secured to and received in said base;

(c) a frame secured in said box and providing frictional locking means for a forward portion of said cover; and

(d) a tab over-hangs said box and is integrally attached to said cover and provides finger gripping means for lifting and disengaging said forward portion of said cover, wherein said cover includes a continuous rib formed un-

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derneath that engages with said frame that is fixedly secured in the opening in said front end of said box, and a forward portion of said rib frictionally engages with an angled forward portion of said frame and provides said frictional locking means, and said frame is fixedly secured



to inside surfaces of said box wherein said base is fixedly secured to said front end of said box and said rib is removably received in an opening through said base, and a loop is formed in an end portion of said cover and provides hinge means for pivoting said cover.

4,940,192

PACKAGE TRANSPORT APPARATUS FOR A TEXTILE MACHINE

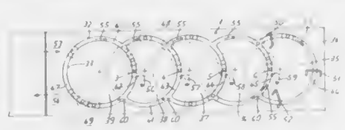
Wilhelm Knepper, and Heinz Kamp, both of Wegberg, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Mar. 30, 1989, Ser. No. 330,627

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1988, 3810785

Int. Cl.[5] **B65H** *67/06*

U.S. Cl. 242—35.5 A **14 Claims**



1. In a textile machine of the type having a plurality of stations at which yarn packages are unwound and wherein packages to be unwound are transported in an advancing path along one side of the machine to the stations, transporting means comprising:

a plurality of generally horizontally disposed, partially overlapping, package supporting plates arranged in a sequential series;

means for moving each plate about a generally vertical axis with the surface of each plate moving along said one side of the machine through said advancing path and transversely of the machine through an associated station, each said plate partially overlapping the adjacent plate in the directon of package advance with the overlap extending through a portion of the package advancing path in advance of the station associated with the overlapping plate for selective transfer of advancing packages from one plate to the next along the package advancing path.

4,940,193

SAFETY BELT RETRACTOR WITH IMPROVED DAMPENING

Richard M. Grabowski, Lockport, Ill., assignor to Gateway Industries, Inc., Olympia Fields, Ill.

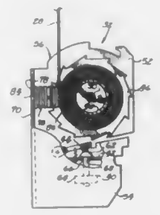
Filed Jan. 26, 1989, Ser. No. 303,283

Int. Cl.[5] **B60R** *22/40, 22/04*

U.S. Cl. 242—107.3 **17 Claims**

1. Safety belt retracting apparatus for use in a vehicle having at least one door and a chassis, said apparatus comprising:

a safety belt retracting mechanism including a reel about which a web of the safety belt is wound and which is adapted to rotate to take up and let out said web and a resiliently-compressible bellows device adjacent said reel



having a web-engaging surface which is spaced from said reel so that said bellows device is compressed by said web as said web is taken up on said reel with said bellows device applying a tension to said web during said take-up.

4,940,194

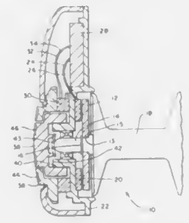
ELECTRONIC CASTING BRAKE

John N. Young, Fairfax, Calif., assignor to Pacific Products, Kentfield, Calif.

Continuation-in-part of Ser. No. 108,951, Oct. 16, 1987, abandoned. This application Dec. 8, 1988, Ser. No. 281,449

Int. Cl.[5] **A01K** *89/155, 89/033*

U.S. Cl. 242—288 **12 Claims**



1. A casting reel, which comprises a reel housing, a reel spool shaft rotatably mounted in said reel housing, a sensing element coupled to said rotatable shaft for producing an output signal in response to rotation of said rotatable shaft, a control circuit connected to receive the output signal from said sensing element, said control circuit including means for producing a drag signal which varies in level and in time of initiation based on the output signal from said sensing element, and a variable drag means coupled to said reel spool shaft, said variable drag means being responsive to the drag signal from said control circuit in a self regulating arrangement both as to extent of braking action and a change of delay in time of initiating braking action of said variable drag means after rotation of said rotatable shaft begins, said sensing element comprising a magnetic member rotatable with said shaft and a fixed electrical coil positioned adjacent to a path of rotation of said magnetic member, said electrical coil and said magnetic member also comprising said variable drag means, said electrical coil being connected to receive the drag signal from said control circuit, said electrical coil and said magnetic member further comprising a generator providing power for said control circuit and said variable drag means, said casting reel being free of a battery and a power supply external to said casting reel.

4,940,195

DECOY AIRCRAFT

David H. Jackson, Lower Ashtead, United Kingdom, assignor to Hoyboad Limited, London, United Kingdom

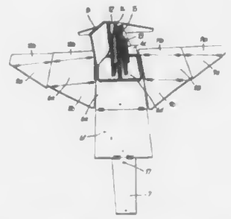
Filed Jan. 4, 1989, Ser. No. 293,230

Claims priority, application United Kingdom, May 5, 1988, 8810604

Int. Cl.[5] **B64C** *00/00*

U.S. Cl. 244—1 R **10 Claims**





1. A decoy aircraft construction able to be of compact format during transport and to form a decoy model of an aircraft on disposition on an airfield, comprising:

six primary panels joined at edges thereof to comprise an enclosure box blank, and a plurality of secondary structures selected from secondary panels and secondary panels complexes formed of a plurality of panels hinged together, the secondary structures being hinged to respective primary panels to form a unitary structure, with up to all six of the primary panels having a said secondary structure hinged thereto, each secondary structure, when folded against its associated primary panel, having overall dimensions smaller than those of the said primary panel, wherein each of said secondary structures is able to be housed in a box formed from said box blank;

secondary panel shape and location on the primary panels and, when unfolded, secondary panel complex shape and location on the primary panels being such that, on converting said box blank with secondary structures attached to respective primary panels to an opened-out format of primary panels, the secondary structures augment the primary pane format to impart to the opened-out format a three dimensional shape simulating the shape of an aircraft construction.

4,940,196

WING MOUNTING NACELLE FOR A VERY HIGH BY-PASS RATIO TURBOJET AERO-ENGINE

Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Oct. 28, 1988, Ser. No. 263,874

Claims priority, application France, Oct. 28, 1987, 87 14898

Int. Cl.[5] **B64D** *27/18*

U.S. Cl. 244—54 **10 Claims**

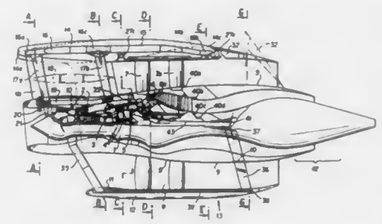
1. A nacelle for a turbojet by-pass engine unit of the rear contrafan type including a gas generator, two overlapping free contra-rotating turbines driven by said gas generator, an engine casing surrounding said gas generator and said turbines, and two ducted contra-rotating propellers rigid with said turbines downstream of said gas generator and disposed in a cold flow path of the engine unit outwardly of said engine casing, said nacelle mounting said turbojet engine unit under the wing of an aircraft and comprising:

an inner cowling of generally cylindrical shape surrounding said engine casing and forming the inner wall of said cold flow path, said inner cowling being openable to provide access to said engine,

an outer cowling which is also of generally cylindrical shape and which has an inner side defining the outer wall of said cold flow path and an outer side forming the exterior of the nacelle,

a mast for suspending said turbojet engine unit, said mast comprising two arms disposed in a vertical plane containing the longitudinal axis of said turbojet engine unit, said arms having upper and lower ends, and a fairing containing said arms,

joining means for connecting said upper ends of said arms to a box structure of said aircraft wing, and



a horizontal carrier beam disposed longitudinally between said engine casing and said inner cowling, said carrier beam being rigidly connected to said lower ends of said arms wherein said outer cowling is divided into three 120° sectors, one of said sectors being disposed uppermost and symmetrically relative to an axial vertical longitudinal plane of the turbojet engine unit and each of said sectors extend from a front portion to a rear portion of said outer cowling, and wherein two lateral sectors of said outer cowling comprise movable cowls which can be pivoted laterally about longitudinal pivot hinges fixed on said upper sector and wherein longitudinal edge portions of said lateral sectors can be connected together at a bottom portion thereof in a closed position and said outer cowling includes an annular retaining structure.

4,940,197

AIRCRAFT UNDERCARRIAGE UNIT

Peter M. H. Putnam, Herts, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Feb. 10, 1989, Ser. No. 308,712

Claims priority, application United Kingdom, Feb. 11, 1988, 8803134

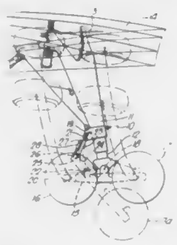
Int. Cl.[5] **B64C** *25/10*

U.S. Cl. 244—102 R **5 Claims**

1. An aircraft undercarriage unit including leg means, bogie means, torque link means, at least one ground engaging wheel means and bogie tilt means, said leg means including extendable oleopneumatic shock absorbing means and pivotal attachment means for attachment to an aircraft, said bogie means coupled to said shock absorbing means for tilting movement with respect to said leg means, said torque link means including interconnected first and second link means, said first link means pivotally attached to said leg means and said second link means pivotally attached to said bogie means, the or each ground engaging wheel means being mounted on said bogie means remote from the coupling thereof to said shock absorbing means, characterised in that said torque link means including locking means for locking said first and said second link means together to form a rigid tie bar and said bogie tilt means whereby said bogie means will tilt about the locked torque link

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means in response to extension of said shock absorbing means so that the or a ground engaging wheel may be located at an



increased distance from the aircraft attachment means when the loading on the undercarriage unit is decreased.

4,940,198

BRACKET UNIT FOR FIXING A ROOF GUTTER

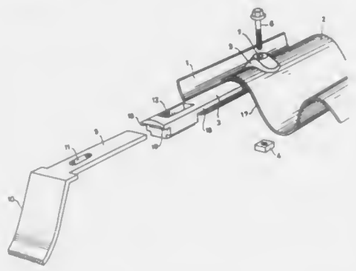
Gerrit J. de Wilde, Dedemsvaartseweg Noord 106, 7775 AK Lutten, Netherlands

Filed Nov. 14, 1988, Ser. No. 270,001

Claims priority, application Netherlands, Nov. 19, 1987, 8702770

Int. Cl.[5] E04D *13/06*

U.S. Cl. 248—48.1 12 Claims



1. A bracket unit for holding a gutter from a corrugated roof's eaves, said eaves having an underside, said bracket comprising:

an elongated supporting part having a supporting surface for engagement with the underside of said corrugated roof's eaves,

said elongated support part having a bore which runs therethrough for insertion of a bolt therein,

said bore having an axis which is perpendicular to a plane containing the supporting surface,

said bore having a cross-sectional area wherein the length of the cross-sectional area is greater than the width of the cross-sectional area, the length of the cross-sectional area running in the lengthwise direction of said elongated supporting part,

an insertion space in said supporting part,

a nut nesting space positioned in said bore, said nut nesting space holding and preventing a nut from turning when the bolt engages the nut, said nut nesting space allowing the nut limited movement in the lengthwise direction in said bore;

said nut positioned in said bore nut nesting space and engageable with said, bolt such that said bolt passes through the corrugated roof's eaves, through said bore and into said nut nesting space for engagement with said nut to hold said bracket unit to the underside of said corrugated roof's eaves; and

a bracket part having a first end for supporting a gutter and a second end for engagement with said insertion space of said supporting part such that the relative position of said supporting part and said bracket part is adjustable.

4,940,199

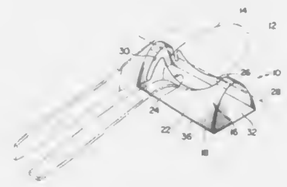
SUPPORT FOR EATING UTENSILS

Anson L. Hall, 22 Daggett Rd., Attleboro, Mass. 02703

Filed Jun. 23, 1989, Ser. No. 371,702

Int. Cl.[5] A47G *21/14*

U.S. Cl. 248—37.3 6 Claims



1. A support for eating utensils comprising an elongated support frame made from a substantially rigid sheet material and including elongated substantially parallel first and second edges and a central support portion extending upwardly from said first edge and then downwardly to said second edge, said central support portion having an aperture therein which is adapted for receiving and supporting an eating utensil, a first bottom wall hingeably attached to said support frame along said first edge and extending toward said second edge said first bottom wall and said support frame cooperating to define an open slot which extends along a portion of said first edge, a second bottom wall hingeably attached to said support frame along said second edge and extending toward said first edge, said second bottom wall being disposed beneath said first bottom wall, said support frame meeting said first bottom wall at an acute angle along said first edge and meeting said second bottom wall at an acute angle along said second edge, and tab means on said second bottom wall received in said slot for maintaining said support in an assembled position, said support frame, said first bottom wall, said second bottom wall and said tab means being integrally formed from a substantially flat rigid sheet.

4,940,200

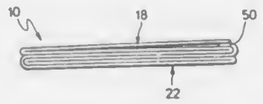
SUPPORT FOR A NON-SELF SUPPORTING CONTAINER

W. David Sawyer, and Mark W. Sawyer, both of Indianapolis, Ind., assignors to Wilmarc, Inc., Indianapolis, Ind.

Filed Jan. 13, 1989, Ser. No. 296,623

Int. Cl.[5] A63B *55/04*

U.S. Cl. 248—97 12 Claims



1. A device for supporting a container, such as as a plastic trash bag, which is generally incapable of supporting itself in an open, upright position, comprising

an endless cardboard support having a plurality of panels including a first panel, a last panel, and four intermediate panels including first, second, third, and fourth intermediate panels, each of the panels including a top edge, a bottom edge, a first side edge portion, a second side edge portion, an interior surface, and an exterior surface,

securing means for fixedly securing the first side edge portion of the first panel to the second side edge portion of the last panel, and

hinge means for hingedly connecting the four intermediate panels to each other along the side edge portions of the four intermediate panels, and for hingedly connecting the hingedly connected intermediate panels to the first panel and last panel along the side edge portions thereof.

wherein when the first panel, four intermediate panels, and the last panel are hingedly connected, the support can be moved between

a storage position wherein

(a) the interior surface of each of the first panel, four intermediate panels, and last panels are disposed in generally parallel planes,

(b) the exterior surface of the first panel and the first intermediate panel, and the exterior surfaces of the third and fourth intermediate panels are disposed in an opposed adjacent relation, and

(c) the interior surfaces of the first panel and third intermediate panel, the interior surfaces of the first intermediate panel and second intermediate panel, and the interior surfaces of the first panel and the fourth intermediate panels are disposed in an opposed adjacent relation, and

a use position wherein the panels form a generally endless tube capable of supporting itself in an upright position, and

having an interior defined by the interior surfaces of the first panel, four intermediate panels, and last panel for receiving the container.

4,940,201

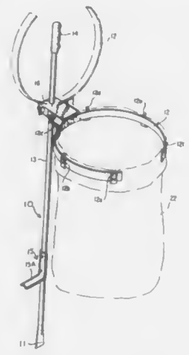
YARD PLASTIC BAG HOLDER

Orville Kurth, 271 Rangeline Rd., Mosinee, Wis. 54455

Filed May 8, 1989, Ser. No. 349,206

Int. Cl.[5] B65B *67/12*

U.S. Cl. 248—101 5 Claims



1. A yard plastic bag holder comprising a vertical bag support post, a split rectangular adjustment block slidable along said support post, a pair of bag support arms one of each of which is secured to a U-shaped bracket having a pair of parallel sides pivotally connected to said split block, pivot threaded bolt and nut connection means passing through said split adjustment block for adjusting said block along said support posts, and snap clips secured to said bag support arms and positioned thereon to engage the plastic bag and support same with its mouth open to receive trash.

4,940,202

STEPLESSLY ADJUSTABLE VERTICAL MOVEMENT DEVICE

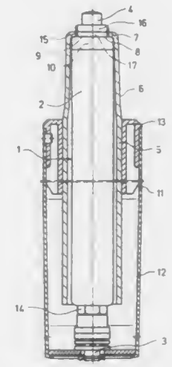
Hans-Josef Hosan, Neuwied, and Axel Knopp, Eitelborn, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Continuation of Ser. No. 312,402, Feb. 17, 1989, abandoned, which is a continuation of Ser. No. 142,243, Dec. 30, 1987, abandoned, which is a continuation of Ser. No. 29,358, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 783,771, Oct. 3, 1985, abandoned. This application Sep. 1, 1989, Ser. No. 403,915

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437097

Int. Cl.[5] F16M *11/00*

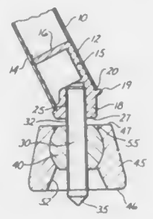
U.S. Cl. 248—162.1 28 Claims



1. A steplessly adjustable vertical movement device for chairs, tables or the like articles, which comprises a blockable gas spring (1) having a container (2) and which is secured therewith in a telescopic tube (5), while a piston rod (3) emerging downwards from the container (2) and guided in sealed manner in relation to the interior of the container (2) is detachably connected with a guide tube (11) arranged on the telescopic tube (5) for sliding by means of a guide bush (13), while the telescopic tube (5) includes a taper (6) at its upper end for connection with a part of adjustable height and the guide tube (11) is connected with a foot part, and for the securing of the gas spring (1) in the telescopic tube (5) a connection is provided which presses the gas spring (1), for the formation of an axial stop, with an upper end face against a stop face situated on the taper end, one of said gas spring and said telescopic tube (1, 5) being provided with at least one first thread element (15) which, in the fitting of the gas spring (1) in the telescopic tube (5), cooperates with at least one second thread element (16) connected with the other of said gas spring and said telescopic tube (1, 5), said first and second thread elements (15, 16) in the assembled condition of said movement device being out of thread engagement and engaging each other with axially opposed, substantially axially directed thread end faces such as to define a traction abutment system (18), said thread elements (15, 16) being threadable with respect to each other in order to release said container (2) from said telescopic tube (5).

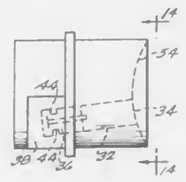
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4,940,203
LEG PAD AND SPIKE FOR TRIPOD
Junichi Hayakawa, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.
Filed Jun. 2, 1989, Ser. No. 360,998
Int. Cl.[5] F16M *11/20*
U.S. Cl. 248—188.9 10 Claims



1. An improved foot structure for a tripod for use in supporting a camera and the like comprising:
at least one leg having a longitudinal axis and a lower portion which is tubular,
means in the lower portion of said leg fixedly supporting a threaded spike oriented at an angle with respect to the axis of said leg,
a spherical ball element mounted on said threaded spike,
said ball element having an aperture therein and being threaded to mate with the threads of said threaded spike,
a pad element mounted on said ball and including an upper surface spaced from the lower portion of said leg and a lower surface adapted to engage the ground, and
means on said ball element and said pad to permit arcuate movement of said pad with respect to said ball and to effect rotation of said ball with respect to said spike as said pad is rotated.

4,940,205
DUPLEX LENS
Milo Rudd, 2119 NE. 15th Ter., Ft. Lauderdale, Fla. 33305, and Jerome Bakalar, 3660 Inverrary Blvd., Apt. MIJ, Landerhill, Fla. 33319
Continuation-in-part of Ser. No. 816,197, Jan. 6, 1986, Pat. No. 4,664,854. This application Apr. 6, 1987, Ser. No. 34,510
Int. Cl.[5] B29D *11/00*; B29C *39/12*
U.S. Cl. 249—63 3 Claims



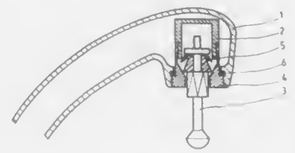
1. An apparatus for molding a bifocal lens component comprising:
a fixed frame member;
a female mold supported in said fixed frame member, said female mold defining an aperture spaced from a central axis thereof and extending longitudinally therethrough;
a segment insert disposed within said aperture of said female mold; and
means operatively coupled to said insert for adjusting the position of said insert relative to said female mold, wherein said means for adjusting include an adjustment slide slidably received in said female mold for movement in a first direction, said adjusting means being coupled to said insert so that movement of said adjustment slide in said first direction urges said insert to move in a second direction, substantially perpendicular to said first direction, and wherein said insert is rigidly coupled to an actuator element which is slidably mounted to said adjustment slide, and wherein said adjustment slide includes a longitudinal recess, said actuator being slidably received in said recess.

4,940,204
INSTRUMENT HAVING FLEXIBLE STAND
Michael D. Nelson; Heimen Wong, both of Seattle, and Roger M. Trana, Bothell, all of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Sep. 28, 1989, Ser. No. 413,959
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—688 28 Claims



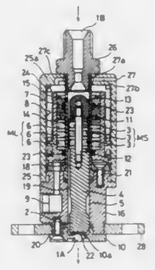
1. A stand for supporting the housing of a measurement instrument, comprising:
an elongated skeletal member extending outwardly from said housing and being formed of a material that is flexible, is non-brittle and has substantially no mechanical memory;
a thermoplastic polyester material covering at least a portion of said skeletal member; and
means for retaining one end of said stand to said housing.

4,940,206
FAUCET
Chung-Shan Sheen, 32, Ho Ping Rd., Hu Wei Town, Yun Lin Hsien, Taiwan
Filed Feb. 15, 1989, Ser. No. 310,867
Int. Cl.[5] F16K *21/16, 31/00*
U.S. Cl. 251—52 8 Claims



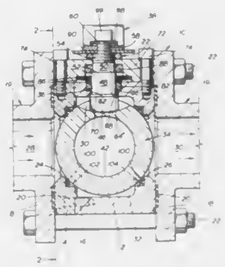
1. In combination, a water faucet housing (1) having an undersurface equipped with an open (at 11);
an upstanding casing structure (2,4) seated in said opening, so that said casing structure is oriented vertically within the faucet housing;
said casing structure comprising an annular upstanding side wall, a roof wall extending across said side wall to form a cavity (21), a water flow hole means (42) extending through said side wall faucet housing into the casing structure, and an annular valve seat (at 43) located below the plane of said flow hole means whereby water is enabled to flow downwardly from the casing structure through the valve seat;
a vertical stem (3) oriented on the axis of said casing structure, said vertical stem including an upper section located within the casing structure and a lower section located below the casing structure, the lower exposed section of the stem being adopted to be manually pushed or pulled to adjust the position of the stem relative to the casing structure;
an annular valve cock (5) carried on the upper section of said stem within the casing structure;
said valve cock comprising a lower collar (52) located below the general plane of the water flow hole means (42) for movement toward or away from the valve seat, and an upper collar (51) located above the general plane of the water flow hole means, said upper collar having a peripheral edge seatable against the inner surface of the casing structure above the flow hole means,
the inner surface of the casing structure side wall being spaced radially away from the outer edge of said upper collar in the vicinity of the flow hole means, so that when the upper collar approaches the plane of the flow hole means fluid can flow into or out of the cavity located above said upper collar;
said stem having a raised position wherein water flowing through the flow hole means exerts a buoyant effect on the lower face of the upper collar such that the lower collar is spaced above the valve seat;
said stem having a lowered position wherein water pressure exerts a downward force on the valve cock sufficient to hold the lower collar against the valve seat.

4,940,207
AUTOMATIC VALVE
Kazuo Katsuyama, Toyota, Japan, assignor to Trinity Industrial Corporation, Tokyo, Japan
Filed Feb. 2, 1989, Ser. No. 305,205
Claims priority, application Japan, Feb. 29, 1988, 63-24975[U]
Int. Cl.[5] F16K *31/08, 31/122*
U.S. Cl. 251—65 3 Claims



1. An automatic valve comprising:
a valve chamber having at least two fluid ports, including one at a top end thereof and another at a rear end thereof, and an inner circumferential wall surface between said ends thereof;
a valve shaft contained in the valve chamber for sliding in the axial direction of said valve shaft and valve chamber, said valve shaft having a top end and a back end, and an outer circumferential wall surface between said ends thereof;
said valve shaft having a valve body formed at said top end thereof for closing one of said fluid ports and having a first cylindrical multi-layered magnet attached at said rear end of said valve shaft and comprising a first plurality of axially stacked ring magnets, said first cylindrical multi-layered magnet having a radially outer circumferential surface;
a cylinder disposed outside of and coaxially with said valve chamber;
a piston disposed axially slidably within said cylinder and adapted to move in a direction for opening the valve by application of pressure of a pressurized gas thereto;
a second cylindrical multi-layered magnet comprising a second plurality of axially stacked ring magnets, which is integrally constituted as a part of said piston, said second cylindrical multi-layered magnet having a radially inner diameter which is larger than the radially outer diameter of said first cylindrical multi-layered magnet, and said second cylindrical multi-layered magnet being arranged coaxially with the first cylindrical magnet such that the respective ring mag nets in the first cylindrical magnet and the respective ring magnets in the second cylindrical magnet are radially opposed to each other with different magnetic polarity; in which:
the respective ring magnets are stacked in each of the first and the second cylindrical magnets such that identical magnetic poles are faced to each other in each axially adjacent pair of ring magnets, and
the respective ring magnets in the second cylindrical magnet are so situated that they are axially displaced slightly toward the direction of closing the valve relative to the respective radially opposed ring magnets in the first cylindrical magnet with different magnetic polarity;
said valve chamber comprising a cylindical inner wall defining therein a flow channel extending from said one fluid port formed at said top end to said other fluid port formed at said rear end of said valve chamber, and
said flow channel being formed axially linearly between said inner circumferential wall surface of said valve chamber and said outer circumferential surface of said valve shaft and said outer circumferential surface of said first cylindrical magnet.

4,940,208
BALL VALVE
Willard E. Kemp, Houston, Tex., assignor to Kemp Development Corporation, Houston, Tex.
Division of Ser. No. 295,744, Jan. 10, 1989, Pat. No. 4,899,980. This application Aug. 22, 1989, Ser. No. 397,508
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—315 8 Claims



1. In a ball valve having a body defining an enlarged diameter valve chamber with a floating ball valve member mounted therein, a stem connected to said ball valve member for rotation of said ball valve member between open and closed positions, and an outer clamping plate secured to said body for securing said stem on said valve body with said stem extending through aligned openings in said body and said plate;
improved mounting means for said stem comprising:

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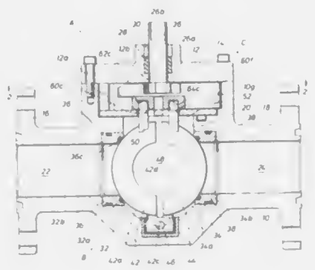
a packing mounted within said opening in said body about said stem;
a follower engaging the outer end of said packing;
a spring mounted within said aligned opening in said outer plate about the stem and biased between the outer plate and said follower for continuously exerting a compressive loading against said packing;
a thrust bearing mounted within said aligned opening in said outer plate at a location outwardly of said spring positioned between opposed facing surfaces on said stem and said plate extendingin a direction perpendicularly to the axis of rotation of said stem; and
an adjusting nut threaded onto said stem outwardly of said plate for urging said opposed facing surfaces toward each other to provide a predetermined compressive loading on said thrust bearing.

4,940,209
LEVERED FLUID DRAIN VALVE
Robert D. Fish, 330 S. Mentor #134, Pasadena, Calif. 91106
Filed Feb. 2, 1989, Ser. No. 305,070
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 **2 Claims**



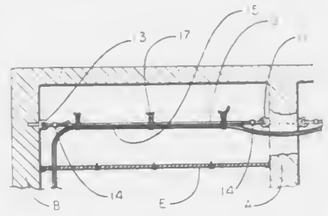
1. An apparatus for draining fluid from a fluid reservoir fitted for a drain plug, which apparatus comprises;
a normally closed drain valve;
the valve housed within a drain fitting not extending substantially farther from the fluid reservoir than would the drain plug;
the drain fitting having an axially disposed drain passageway with at least two ends, means on one end thereof for mounting the drain fitting onto the reservoir, and means on another end thereof for receiving;
a removable actuator having at least one wall, an axially disposed actuator passageway with at least two ends, and a means for inserting on one end thereof which mates with the means for receiving on the drain fitting, to fluidly couple the two passageways;
a lever having a first side, a second side and a pivot between the two sides, the lever sized, dimensioned and positioned such that the action of mating the actuator to the drain fitting causes the first side of the lever to be pushed away from the valve and the second side of the lever to be pivoted towards the valve to open the valve;
the lever further being mechanically advantaged such that upon mating of the actuator to the drain fitting, travel of the actuator upon the drain fitting is smaller than the corresponding travel of the second side of the lever.

4,940,210
BALL VALVE
Hugh L. Gilmore II, 9305 Glynn La., Beaumont, Tex. 77707
Filed Mar. 24, 1988, Ser. No. 172,478
Int. Cl.[5] F16K *5/20*
U.S. Cl. 251—160 **9 Claims**



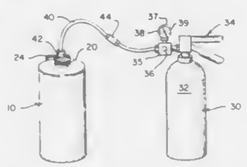
1. Valve apparatus for controlling the flow of fluid through a flow conduit comprising:
a valve body having a valve chamber and opposed flow passages communicating with said valve chamber to form a fluid flow path therethrough;
a valve closure having a central port therethrough mounted in said valve chamber for rotation between open and closed positions relative to said fluid flow path, said valve closure including a pair of opposed generally similar ball shaped hemisphere portions connected to each other adjacent one end about a pivotal connection for pivotal movement between an expanded position away from each other and a contracted position toward each other;
an annular valve seat about each flow passage at the juncture of the flow passage with the valve chamber for selective sealing engagement with an associated ball shaped portion;
an outwardly extending key member secured to each ball shaped hemisphere portion adjacent the other end thereof opposite said pivotal connection;
a non-rising stem extending from said valve body and mounted for relative rotation; and
linkage means operatively connected between said stem and the key members for rotating said ball shaped portions and moving said ball shaped portions between expanded and contracted positions during rotation of said stem, said linkage means upon rotation of the stem in one direction effecting movement of said ball shaped portions to expand position for sealing engagement with the valve seats at said closed position of the valve closure and effecting movement of said ball shaped portions to contracted position upon rotation of the stem in an opposite direction from said closed position of the valve closure;
said linkage means including a pair of guide members mounted for movement in a lateral direction extending generally perpendicularly to the axis of rotation of said stem upon rotation of said stem adjacent the closed position of said valve closure, said guide members operatively connected between said stem and said key members for effecting rotation of said associated ball shaped portions upon rotation of said stem.

4,940,211
PROCESS FOR BUILDING WIRE
Samuel R. McGuire, 11 Charlbury St., Greenville, S.C. 29607
Continuation of Ser. No. 550,924, Nov. 10, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 770,351
Int. Cl.[5] B65H *59/00*
U.S. Cl. 254—134.3 R **8 Claims**



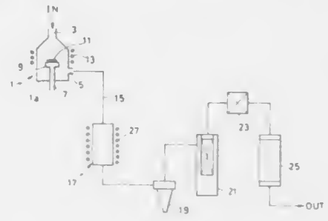
1. A process for installing low voltage wiring on the interior of a building structure without the use of metallic conduit or raceways, comprising the steps of:
Stringing messenger cables from a central floor location to diverse floor locations, said messenger cables being attached to structural building components in a space above interior wall structures between structural ceilings and interior ceilings of the building structure;
Stringing a plurality of wires having fireproof insulation thereon from said central floor location to diverse locations by attaching said wires to said messenger cable with fireproof attaching means; and
Draping said wires from said diverse locations to interior wall locations.

4,940,212
COMPACT CARBONATED BEVERAGE MAKING SYSTEM
John W. Burton, 4 Woodland Dr., Pittsburgh, Pa. 15228
Continuation-in-part of Ser. No. 296,502, Jan. 12, 1989. This application Jan. 9, 1990, Ser. No. 462,458
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—64.1 **24 Claims**



1. An apparatus for making carbonated beverages comprising:
(a) a reuseable bottle comprised of a top, a base and at least one wall attached between the top and the base which together define an enclosed space and at least one valve attached to said top having a single resealable passageway for repeated filling, pressurizing and emptying the bottle, said bottle being sized and constructed so as to be capable of retaining fluid at pressures above atmospheric pressure, said valve being capable of being opened by one of a filler probe and a discharge nozzle which engages the valve and pushes toward the enclosed space and said valve being closed when the valve is not pushed toward the enclosed space and when open said valve will permit a liquid to easily flow through said valve;
(b) a carbon dioxide source having a gas valve through which carbon dioxide may be dispensed upon actuation of the valve; and
(c) conduit connected between the valve of the carbon dioxide source and the valve of the bottle.

4,940,213
EXHAUST PROCESSING APPARATUS
Toshimitsu Ohmine, Tokyo; Takaaki Hoeda, Numazu, and Keiiti Akagawa, Yamato, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 22, 1988, Ser. No. 222,905
Claims priority, application Japan, Aug. 24, 1987, 62-209799; Aug. 24, 1987, 62-209849; Aug. 24, 1987, 62-209850; Aug. 24, 1987, 62-209851; Dec. 9, 1987, 62-309563
Int. Cl.[5] B01D *46/00*
U.S. Cl. 266—152 **36 Claims**



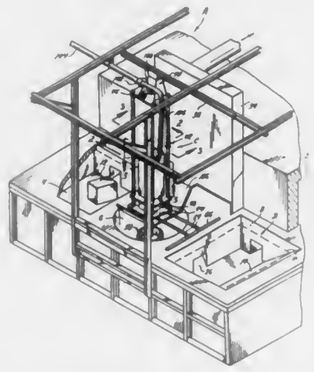
1. An exhaust processing apparatus comprising:
a cracking furnace disposed on a discharging side of a reactor for cracking and solidifying part of unreacted source gases contained in exhaust emitted from the reactor which supplies source gases to a semiconductor substrate supported inside the reactor to grow crystals on the substrate and discharges the exhaust containing reacted source gases and the unreacted source gases;
first collecting means having a first member with a plurality of holes for collecting relatively large components solidified in said cracking furnace, said first collecting means being constructed to pass relatively small components and gases and to collect the relatively large components by colliding said relatively large components with a surface of said first member; and
second collecting means having a second member with a predetermined thickness in an exhaust gas outflowing direction and disposed downstream said first collecting means to arrest relatively small solidified components passed through said first collecting means, said second collecting means being constructed to pass gases and to arrest said relatively small components in said second member.

4,940,214
APPARATUS FOR GENERATING A VORTEX IN A MELT
John R. Gillespie, Ballwin, Mo., assignor to Gillespie & Powers, Inc., St. Louis, Mo.
Division of Ser. No. 235,163, Aug. 23, 1988. This application Mar. 16, 1989, Ser. No. 324,041
Int. Cl.[5] C21D *11/00*
U.S. Cl. 266—235 **18 Claims**

1. An impeller for imparting a vortex to the molten metal of a melt, said impeller comprising a shank; a generally circular side wall located concentric to the shank and having a hollow interior which opens upwardly, the side wall having a radially outwardly presented surface provided with segments that are arranged circumferentially around the wall and deviate from a true circular configuration in that their midportions are set inwardly from it, the side wall also having apertures which open out of its at the segments and provide communication

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between the hollow interior and the exterior of the impeller; and connecting means extended between the shank and the side



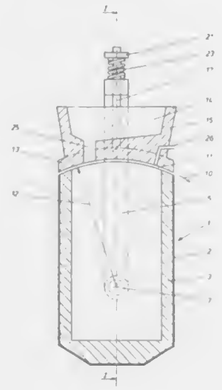
wall for joining the shank and side wall, so that the two will rotate as a unit.

4,940,215

TILTABLE LADLE WITH LID

Douglas S. White, Cap D'Antibes, France, assignor to Elkem a/s, Norway

Filed Jun. 30, 1989, Ser. No. 374,965
Claims priority, application Norway, Aug. 4, 1988, 883454
Int. Cl.[5] C21B *11/00*
U.S. Cl. 266—275 **14 Claims**



1. A cover for a tiltable ladle wherein said cover has a basin affixed to the top of said cover and at least one opening in the basin for communicating through said cover to said ladle, said cover comprising:

(a) a suspension means for suspending said cover over said ladle, said suspension means comprises a horizontal beam affixed to said suspension frame, and two rods, each of which is attached to said cover and passes through said horizontal beam and is movable with respect to said horizontal beam, each of said two rods having a washer affixed thereto and positioned above said horizontal beam;

(b) spring means for forcing said cover away from said ladle such that when the basin in said cover is empty said cover is not in contact with said ladle, said spring means attached to said suspension means, said spring means comprising two compression springs, one of said compression springs positioned around one of said two rods and between said horizontal beam and said washer and the other of said two compression springs positioned around the other of said two rods and between said horizontal beam and said washer; and

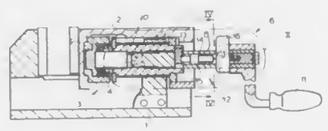
(c) the top of the ladle and the lower part of the cover have, in the tilting direction of the ladle, a curved surface with a radius equal to the distance from the tilting point of the ladle and vertically to the top of the ladle.

4,940,216

MACHINIST'S VISE

Ludwig Pflüger, Bitburg/Mötsch, Fed. Rep. of Germany, assignor to Carl U. Peddinghaus, Wuppertal-Barmen, Fed. Rep. of Germany

Filed Sep. 20, 1988, Ser. No. 247,109
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732900
Int. Cl.[5] B23Q *3/08*
U.S. Cl. 269—32 **6 Claims**



1. A vise comprising:

a stationary jaw;

a movable jaw displaceable longitudinally toward and away from the stationary jaw;

a nut fixed on the stationary jaw;

an outer hollow high-speed spindle threaded in the nut and formed with a radially open entrainment recess;

an inner low-speed spindle threaded in the outer spindle;

a piston-and-cylinder unit on the movable jaw having primary and secondary pistons respectively engaged by the outer and inner spindles;

a hand crank rotationally fixed on the inner spindle;

an entrainment pin displaceable transversely in the inner spindle between an entrainment position engaged in the recess and rotationally coupling the inner and outer spindles to each other and a freeing position clear of the recess and permitting relative rotation of the inner and outer spindles, the entrainment pin being formed with a longitudinally directed camming surface;

a switching piece displaceable on the inner spindle between a high-speed position and a low-speed position;

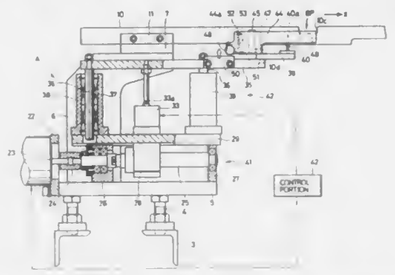
means including an operating bolt displaceable along the inner spindle and engageable with the entrainment pin and with the switching piece for pressing the operating bolt into the camming surface in the low-speed position of the switching piece and thereby pulling the entrainment pin out of the recess to decouple the spindles and for freeing the operating bolt from the camming surface and coupling the spindles to each other in the high-speed position of the switching piece.

4,940,217

LEAD FRAME CONVEYING APPARATUS

Osamu Takeshita; Takayuki Iwai, and Kenichi Terauchi, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jan. 6, 1989, Ser. No. 294,373
Claims priority, application Japan, Jan. 6, 1988, 63-839
Int. Cl.[5] B23Q *1/06*
U.S. Cl. 269—50 **24 Claims**



1. A lead frame conveying apparatus for conveying a lead frame to a bonding position, the lead frame having a positioning hole of a first dimension, the conveying apparatus comprising:

lead frame mounting means for mounting the lead frame to the conveying apparatus;

transverse conveying means disposed below said lead frame mounting means and having a projectable portion which can be inserted into the lead frame positioning hole for conveying the lead frame toward the bonding position in a transverse direction by moving said projectable portion in the transverse direction,

said projectable portion including a tapered portion at an upper end thereof, said tapered portion including a largest portion having a second dimension larger than said first dimension of said positioning hole; and

elevating means coupled to said transverse conveying means for elevating said projectable portion upward at a first position along said transverse direction and for lowering said projectable portion downward at a second position along said transverse direction in a manner which, upon insertion of said projectile portion into said lead frame positioning hole and conveying said projectable portion to and from said first and second positions, will cause at least a portion of said lead frame to be raised from said lead frame mounting means and to be lowered on said lead frame mounting means at the bonding position.

4,940,218

ORTHOPEDIC OPERATING TABLE FOR LIMBS, AND IN PARTICULAR FOR THE LOWER LIMBS

Patrick Akcelrod, Sens, France, assignor to Societe Anonyme dite: Etablissements Tasserit, Gron, France

Filed Aug. 17, 1988, Ser. No. 232,986
Claims priority, application France, Oct. 5, 1987, 87 13708
Int. Cl.[5] A61G *13/00*
U.S. Cl. 269—322 **9 Claims**

1. An orthopedic operating table for the limbs of a person, in particular the lower limbs, the table having a source of radiographic radiation and a radiographic image receiver in juxtaposition thereto and comprising:

a stand suitable for being positioned on the ground;

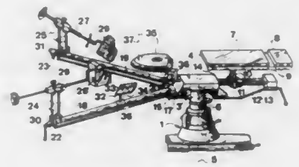
a base mounted on the top of said stand;

at least one flap for supporting the trunk of said person;

support means for attaching said flap to one side of said base so that said flap is offset relative to said base;

at least one beam comprising a central portion having a first end and a second end, said central portion being in the form of a hollow circularly cylindrical tube made of a material which is transparent to radiographic radiation emitted by a radiation source;

means for pivotally mounting said beam to said base in the proximity of the point where said limb joins the trunk of the person, to the other side of the base opposite to the side on which the support means for said flap are disposed with the distance between said beam when in a position substantially parallel to said ground on which said stand is suitable for being positioned, and said beam being greater in height than the height of one of said source of radiographic radiation and said radiographic image receiver from said ground, said means for pivotally mounting said beam to said base comprising a projecting portion fixed to said base and a ball-and socket joint having a male portion constituted by a convex spherical portion fixed to said projecting portion of the base by a connection lug, and a



female portion constituted by an end piece fixed to said first end of said beam, the inside of said end piece being shaped in the form of a complementary concave hemispherical portion forming a half-cup including an opening through which said connection lug passes; and

controllable locking means for locking said ball-and-socket joint in a determined position and constituted by a brake shoe disposed in the proximity of the convex portion and including friction material on a face thereof facing the convex portion, a transmission rod constituted by a circularly cylindrical hollow tube made of a material transparent to the radiographic radiation having a first end of said rod cooperating with said shoe and a second end emerging from the second end of the tubular portion of said beam, and means for controlling the displacement of said transmission rod relative to said tubular portion forming said beam.

4,940,219

APPARATUS FOR FORMING A STACK OF FLAT OBJECTS SUCH AS LETTERS

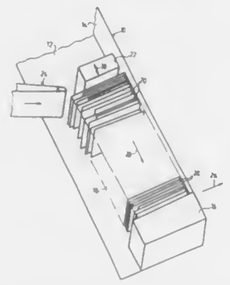
Jean-Pierre Volat, Aix-En-Provence, France, assignor to Bertin & Cie, Plaisir, France

Filed Mar. 17, 1989, Ser. No. 325,229
Claims priority, application France, Mar. 18, 1988, 88 03592
Int. Cl.[5] B65H *31/00*
U.S. Cl. 271—2 **11 Claims**

1. Apparatus for forming a stack of flat objects such as letters on a support in the form of a trough having two mutually perpendicular walls with each flat object bearing thereagainst via its leading edge and via one of its side edges with one of said walls also being a jogging wall, said apparatus including conveyor means for bringing flat objects one after another to the support at a predetermined orientation, close to the orientation the flat objects are to occupy in the stack; stacking means for stacking the flat objects on the support by sliding each flat object over the preceding flat object on the stack and moving it into abutment against a jogging wall of the support; and relative displacement means for obtaining displacement of the conveyor means and the stacking means relative to the stack and the support, the stacking means being loosely mounted relative to the stack; wherein the stacking means extends between the conveyor means and jogging wall, and includes an end close to said second jogging wall, said second end having

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an axis about which said stacking means can pivot so that said stacking means is displaceable towards and away from the end



of the stack, and return means cooperating with said stacking means for urging the stacking means continually towards the stack.

4,940,220

SUPPORTING DEVICE

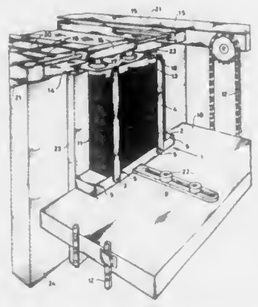
Lambertus M. Van Mechelen, Kleine Singel 39, 3572 CG Utrecht, Netherlands

Filed Mar. 1, 1989, Ser. No. 317,620

Claims priority, application Netherlands, Mar. 4, 1988, 8800550

Int. Cl.[5] B41L *47/00*

U.S. Cl. 271—2 7 Claims



1. Device for supporting a stack of sheet material on a feeder for a printer, particularly where each sheet has zones of uneven thickness, such as envelopes, said feeder being provided with:

a supporting table for the stack;

two or more vertical feed walls having vertical feed edges which are at an adjustable distance from each other and along which the table can move depending on the decrease in the stack;

a pick-up device above the table for essentially lateral removal of the top sheet of the stack each time;

a supporting plate which can be fixed on the supporting table characterized in that at the side facing away from the vertical feed wall, the supporting plate is provided with one or more bar-type supporting means which freely extend upwards along the stack, and that at its side facing the vertical feed wall, the supporting plate has a lip which fits closely and slides between the feed edges.

4,940,221

SUCTION-TYPE SHEET-SEPARATING DEVICE FOR A FEEDER OF A PRINTING PRESS

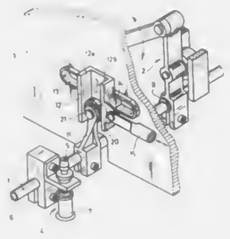
Arno Wirz, Bammental, and Detlev Krause, Hockenheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Dec. 23, 1988, Ser. No. 289,605

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743805

Int. Cl.[5] B65H *3/08*

U.S. Cl. 271—107 15 Claims



1. Suction-type sheet-separating device for a feeder of a printing press with suction-type grippers for lifting off an uppermost sheet from a pile of sheets and for transferring the lifted-off sheet to transporting means for conveying the lifted-off sheet in a sheet travel direction towards a printing unit of the printing press, the suction-type grippers being disposed above the pile of sheets in the vicinity of a trailing edge of each sheet and when having suction air applied thereto initially gripping an uppermost sheet and then executing a prestroke to a first height, comprising a lifting gear drive and a horizontal carrying shaft parallel to the trailing edge of the sheet and carrying the suction-type grippers, the suction-type grippers being aligned with respect to said carrying shaft, said lifting gear drive serving, on an upward stroke and a downward stroke in phase with the printing press, to raise and lower, respectively, said carrying shaft on a substantially straight, vertical path in a manner that, on an upward stroke, the suction-type grippers are raised to a second height located above the first height, means for holding the carrying shaft in the lifting gear drive so that it is able to swivel about its own longitudinal axis and is rotationally rigidly connected, so as to be rigid against relative rotation, to a link for a swivelling device for selective swivel positions, and means for guiding said link substantially parallel to itself in the selectable swivel positions.

4,940,222

PAPER FEED DEVICE AND PAPER CASSETTE THEREFOR

Mikihiko Maeno; Yukio Ohta; Yoshiharu Momiyama; Hisao Ono; Katsumasa Takahata; Kazuyuki Ozono; Makoto Shimizu, and Mikio Yamamoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 182,230, Apr. 15, 1988, Pat. No. 4,874,159.

This application Feb. 15, 1989, Ser. No. 311,165

Claims priority, application Japan, Apr. 16, 1987, 62-92029; Apr. 16, 1987, 62-56711; Apr. 17, 1987, 62-57534; May 14, 1987, 62-70911; May 28, 1987, 62-79873

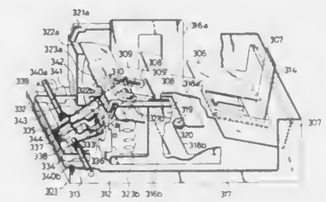
Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—127 2 Claims

1. A paper cassette which stores a number of types of media on a media load plate, one end of which is journalled in such a way that it is able to rotate and the other end of which is rotated up and down by a reset arm, and performs paper feed with the medium pushed against a hopping roller by a spring which pushes the media load plate upwards, comprising

an auxiliary resilient member which pushes the reset arm up,

a sub-arm, one end of which abuts and stops said auxiliary resilient member and which rotates together with the auxiliary resilient member, and



a means provided in the rotation range of said sub-arm for regulating the rotation of said sub-arm according to the size of the medium by being able to move in accordance with the size of medium.

4,940,223

APPARATUS FOR RECEIVING AND ORDERLY STORING INDIVIDUAL SHEETS IN A CONTAINER

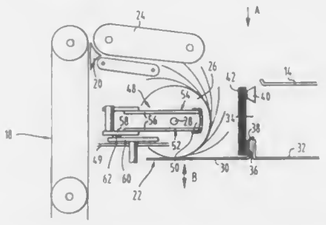
Peter Weigel, Paderborn Dorenhagen, and Guenter Holland-Letz, Paderborn-Elsen, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Feb. 24, 1989, Ser. No. 314,968

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1988, 3808624

Int. Cl.[5] B65H *29/40*

U.S. Cl. 271—181 12 Claims



1. An apparatus for receiving generally rectangular individual sheets, especially bank notes, and for storing them in ordered condition in a container, which container is arranged in a housing and has a throughout opening connected with an input opening of the housing through a transport belt for the serial transport of the individual sheets, characterized in that said throughput opening of said container at least in the direction of one edge of said sheets is smaller than the corresponding measurement of said sheets, that at the end of said transport belt and in front of said throughput opening a stacking apparatus is arranged with a stack support surface extending perpendicularly to said throughput opening for forming a stack of sheets so that said sheets of said stack stand upright on said stack support surface and parallel to said throughput opening, and that a pusher is provided which is shiftable in the direction toward said throughput opening, by means of which pusher a sheet stack formed on said stack support surface can be pushed into said container through said throughput opening with accompanying bending of said sheet stack.

4,940,224

MULTIPLE DOCUMENT DETECTOR AND SEPARATOR

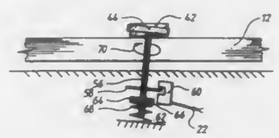
John Cooper, West Lothian, Scotland, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 14, 1988, Ser. No. 284,276

Claims priority, application United Kingdom, Mar. 23, 1988, 8806958

Int. Cl.[5] B65H *7/06*

U.S. Cl. 271—263 12 Claims



1. An apparatus for detecting simultaneous presentation of multiple documents and for separating said documents comprising:

a first document detector set including document moving means having a driven member for imparting motive force to a document; an idler member, opposed to said driven member and co-operative with said driven member to grip documents there-between; and a velocity monitor, said monitor monitoring relative peripheral velocity between said driven member and said idler member and providing a first output indicative of presentation of multiple documents when there is a difference between said relative peripheral velocities,

said driven member being operative to continue to provide said motive force after provision of said first output by said velocity monitor in order to cause separation between multiple presented documents,

said velocity monitor being operative to provide a second output indicative of completion of document separation when next said peripheral velocity of said driven member is equal to said peripheral velocity of said idler member,

further document moving means coupled to said velocity monitor for receiving said first and second output, said further document moving means receiving said document from between said driven member and said idler member and being responsive to said second output for moving said document with an increased linear velocity greater than said peripheral velocity of said driven member, said further document moving means being inhibited from removing a document from between said driven member and said idler member with said increased velocity until said velocity monitor provides said second output.

4,940,225

SHEET HANDLING APPARATUS

Shunji Sato, and Takeshi Honjo, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1987, Ser. No. 90,103

Claims priority, application Japan, Aug. 29, 1986, 61-203394; Aug. 29, 1986, 61-203395

Int. Cl.[5] B65H *7/20*

U.S. Cl. 271—296 15 Claims

1. A sheet handling apparatus comprising:

carrier means for carrying a sheet which is output from a sheet output unit;

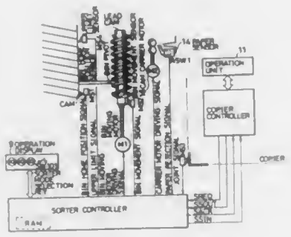
handling means for handling the sheet carried by said carrier means;

detecting means for detecting a sheet carrier speed by said carrier means; and

control means for outputting a control signal in accordance

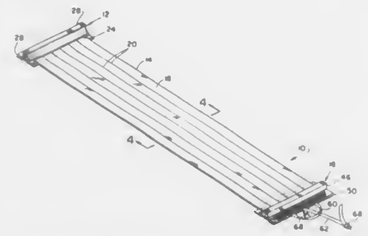
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with the sheet carrier speed which is detected by said detecting means and a sheet carrier speed data of said



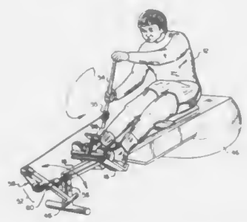
carrier means which is transmitted from said sheet output unit.

4,940,226
SIMULATED SKATING EXERCISING APPARATUS
Robert Carra, 8 Renee Rd., Syosset, N.Y. 11791
Filed Aug. 28, 1989, Ser. No. 398,929
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—70 **1 Claim**



1. For performing side-to-side alternating sliding movements in an exercise routine on an exercise device comprising an elongated rectangular body of a plastic construction material for permitting the rolling thereof into helical turns upon itself, to thereby provide a compact storage condition to said exercise device when not in use and having a low friction surface for permitting said sliding movements thereon along the long dimension of said body, a cooperating pair of first and second sliding movement stop members attached in a transverse orientation and in spaced apart relation to each other to said body so as to bound therebetween an operative sliding area for said exercise routine, said first stop member being fixedly attached to said body adjacent one end thereof and said second stop member being movable into a selected position of movement therealong incident to the attachment thereof to said body so as to establish a permissible length of the sliding movements in said operative sliding area, a cooperating pair of wedges disposed in an interposed position between said body and said stop members such that each said first and said second stop member is clamped to a cooperating wedge in the attachment of said members to said body, and said stop members having concave surfaces in facing relation to each other such that said wedges and said concave surfaces cooperate to cause an ascending movement in the terminal portions of said sliding movements to thereby contribute to terminating the directional nature thereof and causing a reversal therein, and spaced apart indentations in said body low friction surface so as to form a pattern of lines oriented lengthwise thereof so as to frictionally oppose transverse sliding movement without impeding lengthwide sliding movement, to thereby contribute to the tracking of said sliding movements between said stop members.

4,940,227
CANOE PADDLING EXERCISE MACHINE
Calvin T. Coffey, 48 E. Fifth St., Corning, N.Y. 14830
Filed Nov. 27, 1989, Ser. No. 441,285
Int. Cl.[5] A63B *69/06*
U.S. Cl. 272—72 **8 Claims**

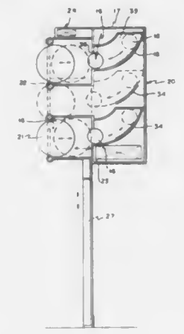


1. A canoe paddling exercise machine comprising a longitudinal frame; a flywheel mounted on said frame; a seat on said frame on which a human subject is positioned for exercise, simulating canoe paddling motion by stroking an elongated handle against resistance on one or the other side of said frame, a flexible cord that attaches to said elongated handle, a pulley arm positioned at a front end of said longitudinal frame having an outer pulley over which said cord passes to said handle, and an inner pulley over which said cord passes from the outer pulley towards said flywheel; means connected with said cord, said flywheel and said frame for rotating said flywheel in one direction when said handle is stroked aftward to provide resistance to said subject, and to retract said cord towards said flywheel when said handle is recovered forward between strokes; and an axial pivot positioned on a forward end of said frame to permit said pulley arm to swing about a fore-and aft axis so that the outer pulley follows motion of the handle from one side of the frame to the other to produce a resistance during stroking of the handle that is directed substantially parallel to the frame axis, while the inner pulley remains positioned so that the cord passing therefrom towards said flywheel remains substantially in a predetermined path regardless of the position of the swingable pulley arm.

4,940,228
BOXING TRAINING DEVICE
Kordelia Horvath, Hallerstrass 5b, D-2000 Hamburg 13, and Victor Horvath, Hallerstrass 5b, 200 Hamburg 13, both of Fed. Rep. of Germany
PCT No. PCT/EP87/00205, § 371 Date Feb. 12, 1988, § 102(e) Date Feb. 12, 1988, PCT Pub. No. WO87/06149, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 16, 1987, Ser. No. 148,217
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1986, 3612774
Int. Cl.[5] A63B *69/00*
U.S. Cl. 272—76 **10 Claims**

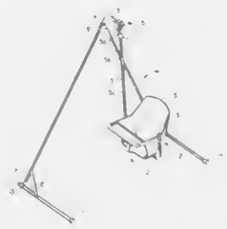
1. Boxing training device comprising a frame defining a reaction area, a measuring device for measuring punching effect, and at least two reaction bodies, the reaction bodies being freely movable within said reaction area as a means for taking up kinetic energy imposed thereon by the action of at least one boxing glove, said energy being dependent on punching force and punching direction, and for transmitting said energy to said measuring device, the measuring device being provided with sensors that are connected to indicating instruments and respectively associated with the reaction bodies, as a means for measuring and representing the punching effect

from the movement of at least one of the reaction bodies, wherein each reaction body is formed of an axially symmetrical body that is carried within a frame in a manner permitting relative, free rotational, displacement between the reaction



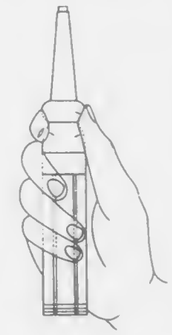
body and the frame; and wherein an axially symmetric, directly punchable, elastic body is movably arranged in front of the at least one reaction body in a manner enabling the elastic body to contact the reaction body in response to the elastic body being struck with a boxing glove.

4,940,229
TWO-LEGGED BABY SWING
Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78746
Filed Aug. 28, 1989, Ser. No. 399,015
Int. Cl.[5] A63G *9/16*
U.S. Cl. 272—86 **17 Claims**



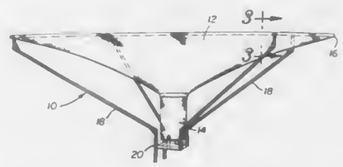
1. A self-rocking, spring-powered swing comprising a frame, the frame having leg means, a base, and a support structure, the leg means having both upper and lower portions, the base joined to the lower portion of the leg means, the support structure joined to the upper portion of the leg means for being supported by the leg means anteriorly thereof in cantilevered relationship to the leg means, the support structure having a coupling means, a swing arm hanging from the support structure from a center of rotation located anteriorly of the leg means without need for additional leg structure anteriorly of the center of rotation, the swing arm being capable of swinging movement about the center of rotation by rotating axially about the support structure, a spring motor connected to the swing arm by a single bracket anteriorly of the support structure and the swing arm for imparting rocking motion to the swing arm, the bracket having both upper and lower portions, the lower portion of the bracket being connected to an upper portion of the swing arm, the upper portion of the bracket having an opening and extending to opposite the coupling means, and the spring motor being inserted anteriorly of the bracket through the opening of the bracket into the coupling means, such that the portion of the spring motor in the bracket is a moving portion and the portion of the spring motor coupled to the support structure is a stationary portion.

4,940,230
UNIVERSAL HANDLE
Du Jian, No. 120 Xidajie Gulou Xichengqu, Beijing, China
Filed May 13, 1988, Ser. No. 193,930
Int. Cl.[5] A63B *59/04*
U.S. Cl. 273—76 **6 Claims**



1. A handle for a sports racket, the handle being elongated and comprising, along the axis of elongation of the handle, a truncated spheroid disposed at an upper portion of the handle; a truncated ellipsoid of increasing cross-sectional dimensions from top to bottom joined to the lower portion of said spheroid at a slender neck; said neck defining the bottom of a groove extending around said handle, the groove bottom lying in a plane perpendicular to said axis of elongation, and the walls of said groove comprising convex surfaces of said spheroid and said ellipsoid; a cylindroid joined to the bottom portion of said ellipsoid; and a prism; joined to the bottom of said cylindroid the axial lengths of said cylindroid and said ellipsoid being such that, in use, the user's palm can grip said prism with the user's thumb and index finger each engaging both convex walls of said groove for preventing forwards or backwards slippage of the handle in the user's hand.

4,940,231
BALL RECEPTOR FOR BASKETBALL RETURN MACHINES AND THE LIKE
David G. Ehler, 560 S. Coors Ct., Lakewood, Colo. 80228
Filed Oct. 7, 1988, Ser. No. 255,059
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 A **19 Claims**



1. A ball receptor, comprising:
a flexible net body of generally conical shape having a depending flexible ball discharge tube;
a perimetric net frame carrying said net body and having a plurality of foldable hinges at spaced intervals about the

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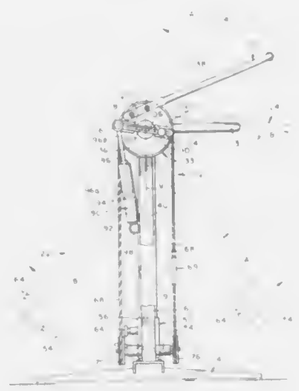
net frame, said hinges being oriented to permit folding the net frame in more than one plane; and
a plurality of support arms carrying said net frame.

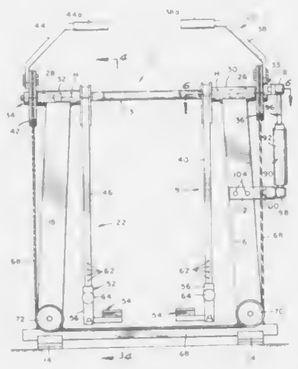
4,940,232
COMBINATION MULTIPURPOSE FRAME STRUCTURE
Darco Chen, No. 16, Chung Cheng 3rd Road, Pu Li Chen, Nan-ton Hsien, Taiwan
Filed May 11, 1989, Ser. No. 350,361
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **4 Claims**



1. A combination multipurpose frame structure adapted for use as a clothes stand, height measuring instrument and a basketball goal stand comprising:
a vertical stand including:
a lower stick;
a middle stick; and
an upper stick;
which are separably associated with each other end to end in consecutive order;
a pair of oblong boards orthogonally joined together by bolt means disposed at the bottom of the stand as a base;
four side supporting rods each inclinedly secured to said oblong boards with one end and the other end thereof fixed to the bottom of said lower stick in a symmetric manner;
said bottom of the lower stick is defined to have larger size than the lower stick itself and having a square cross section with a recess disposed on the wall thereof;
a backboard having a circular opening disposed at the center thereof so that a dartboard can be attached thereto;
a long basket net removably secured to said board and used as a basketball goal or as a disposal container for the laundry;
a basket removably attached to the rear side of said middle stick for the accommodation of small articles;
a number of hanging sticks disposed through holes placed on said upper and lower sticks so that clothes can be hanged thereon.

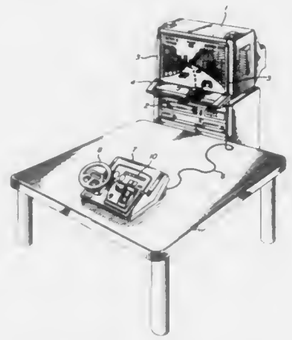
4,940,233
AEROBIC CONDITIONING APPARATUS
John Bull, 2 Viento, Irvine, Calif. 92720; Ian Fettes, 1001 W. 17th St., Costa Mesa, Calif. 92627, and Harry Purcell, 832 Alesenandro Ave., La Verne, Calif. 91570
Filed Feb. 19, 1988, Ser. No. 158,260
Int. Cl.[5] A63B *21/008*
U.S. Cl. 272—130 **3 Claims**





1. An aerobic exercising apparatus for use by a trainee in simultaneously exercising the arms and legs comprising:
(a) a base;
(b) first and second transversely spaced frames mounted on said base;
(c) first and second axles carried by said first and second frames for rotation about a substantially horizontal axis;
(d) first and second support assemblies connected to said first and second axles respectively for rotation therewith;
(e) first and second hand engaging means connected to said first and second support assemblies respectively for controlling the movement of each of the hands of the trainee to an oscillatory motion along an arcuate path;
(f) first and second foot engaging means connected to said first and second axles respectively for controlling the movement of each of the feet of the trainee to an oscillatory motion along an arcuate path extending forwardly and rearwardly of said vertical plane;
(g) synchronizing means carried by said first and second frames for causing synchronous movement of said first foot engaging means and said first hand engaging means with said second foot engaging means and said second hand engaging means; and
(h) resistance means for yieldably resisting rotation of said first and second axles, said resistance means comprising:
(i) a hydraulic cylinder having a cylinder portion containing a hydraulic fluid, a piston reciprocally movable within said cylinder portion and an elongated connecting rod having a first end connected to said piston and a second end spaced from said cylinder portion;
(ii) first means for pivotally connecting said cylinder portion to one of said first and second frames; and
(iii) second means for pivotally connecting said second end of said piston rod with one of said first and second support assemblies, said second means comprising adjusting means for pivotally connecting said second end of said piston rod with one of said first and second support assemblies at selected locations along a radius extending from said horizontal axis of rotation of said first and second axles.

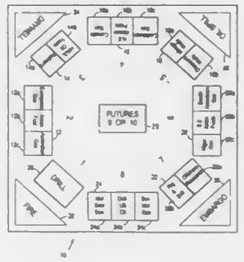
4,940,234
VIDEO GAME MACHINE
Nobuaki Ishida; Yoshifumi Ishimura, and Hiroshi Murayama, all of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan
Filed Mar. 14, 1989, Ser. No. 323,298
Claims priority, application Japan, Jun. 15, 1988, 63-79389[U]
Int. Cl.[5] A63F *9/14*
U.S. Cl. 273—1 GA **11 Claims**



1. In a video system having a monitor screen to provide images, the improvement comprising:
means for attachment adjacent the monitor screen for providing a simulated vehicle that can be moved relative to the screen;
means for compound movement of the simulated vehicle, both across the screen and also pivoting the vehicle, so that a rear portion of the vehicle can move towards and away from the screen to simulate turning movements of the simulated vehicle relative to images on the monitor screen, and
means for permitting an operator to control the simulated vehicle movement, including an operator control member having an upper portion which can be manipulated by the operator and means connected to the lower portion of the operator control member for creating a vibration movement of the operator control member in response to certain predetermined actions of the operator, whereby the operator will feel an adverse reaction in the operator control member.

4,940,235
METHOD FOR PLAYING A BOARD GAME
Linda Martin, 1926 83rd Ave., Oakland, Calif. 94612
Filed Jul. 26, 1989, Ser. No. 385,802
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—236 **2 Claims**

1. A method of playing a board game with at least one die having a number on each of its faces by a plurality of players comprising the following steps:
providing a plurality of game board pieces;
selectively apportioning the game board pieces among the players whereby each player is apportioned selective game pieces;
providing a plurality of instruction cards bearing instructions;
providing a game board having
a plurality of playing regions each having one of a plurality of preselected numbers corresponding to the numbers selected with the rolling of at least one die,
each of the playing regions further comprising a preselected number of boxes,
a card region having at least one unique number corresponding to a number selected with rolling at least one die wherein the unique number differs from the preselected plurality of numbers and the instruction cards are located in the card region,



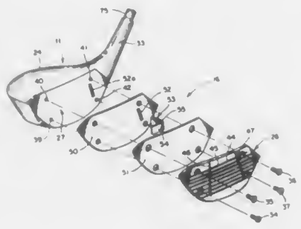
at least one penalty region, and
an enter region;
rolling the die and assessing the number rolled;
introducing a new game piece onto the board in the enter region if the number on the die is a first number;
determining a total based upon the number rolled if a single die is used or if a plurality of die are used by totaling the numbers rolled if the number rolled is other than the first number;
selecting an instruction card if the total number is the unique number and carrying out the instruction on the selected card; and
moving a game piece from the enter region to one of the boxes in the playing region having the preselected number corresponding to the total number rolled when the total is other than the unique number.

4,940,236
COMPUTER GOLF CLUB
Dillis V. Allen, 240 Lincolnshire, Schaumburg, Ill. 60007
Filed Jul. 26, 1985, Ser. No. 759,358
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—183 D **13 Claims**

9. A golf club assembly with a self-containing ball distance computing and indicating device, comprising: a head having a forward wall generally perpendicular to an estimated line of ball flight after impact by the club head, said forward wall being curved in at least one orthogonal direction, a molecularly polarized flexible piezoelectric film mounted in a forward surface of the wall and conforming to the contour of the wall to provide a signal proportional to film compression, a face plate attached to the forward surface of the head wall carrying the piezoelectric film and conforming in contour to the head forward wall, said face plate having a ball striking surface said face plate being positioned to transmit substantially all of the impact force of a ball on the plate to the film, a shaft connected to the head, and circuit means for receiving the compression signal and deriving therefrom a signal proportional to the

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velocity of the ball after impact with the head, the forward wall on the face plate being curved in both orthogonal directions producing vertical roll and horizontal bulge, said piezoelectric film conforming in contour to the forward wall and face plate, circuit means in the shaft for receiving said compression signal and deriving a signal proportional to the velocity of the ball leaving the head after impact, said circuit means deriving from said ball velocity signal a signal proportional to ball travel, and indicating means in the shaft driven by the ball travel yards signal for providing a visual indication of ball travel.

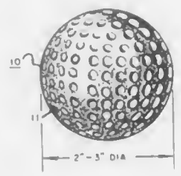


4,940,237
GOLF SWING AID APPARATUS
Steven L. Mortensen, 6138 W. Poinsettia, Glendale, Ariz. 85304
Filed Oct. 17, 1989, Ser. No. 422,747
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—189 R 5 Claims



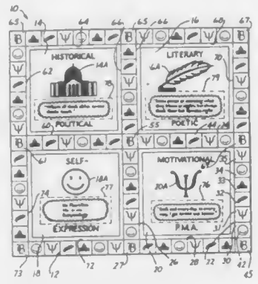
1. Golf swing training apparatus for a golfer having a torso and an upper arm, comprising, in combination:
band means securable to the golfer's upper arm; and
elastic means secured to the band means and adapted to be disposed about the golfer's torso for urging the golfer's upper arm against the torso as the golfer swings said elastic means having a generally circular cross sectional configuration to allow the elastic means to roll over the golfer's torso during the golfer's swing.

4,940,238
GOLF PUTTING PRACTICE BALL AND SYSTEM
Robert J. Bradley, 216 Mardale Dr., Somerdale, N.J. 08083
Filed Jan. 25, 1988, Ser. No. 147,456
Int. Cl.[5] A63B *69/36, 37/14*
U.S. Cl. 273—199 R 4 Claims



1. A golf putting practice ball comprising:
a spherical ball having an array of dimples thereon, a weight not greater than 1.62 ounces, and a diameter in the range of 2" to 3".

4,940,239
EDUCATIONAL BOARD GAME APPARATUS AND METHOD OF USING SAME
John O. Tuttle, P.O. Box 941547, Schaumburg, Ill. 60194
Filed Nov. 16, 1988, Ser. No. 272,111
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 12 Claims

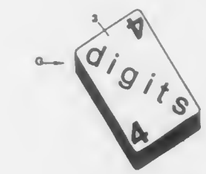


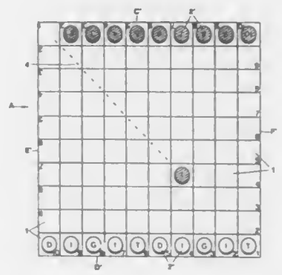
1. A game apparatus comprising:
a group of decks of playing cards having indicia means thereon configured in the shape of groups of characters forming questions and answers for game playing purposes according to game rules, said decks of cards each containing indicia means defining separate categories of question and answers;
a compact sized game board having a playing area;
said playing area having a plurality of playing card supporting areas for receiving said decks of cards for game playing purposes according to the game rules;
said playing area having path indicia means thereon, said path indicia means being configured in the shape of a plurality of path segments extending along the periphery of said playing card supporting areas and being interconnected in an endless path of travel;
said path segments being subdivided into a plurality of subdivisions;
a plurality of movable position marking player pieces distinguishable from one another and movable from one to another of said subdivisions along said path segments, said pieces being associated individually with the players of the game and being moved by their associated players;

move determining means presenting numerical values determining the move of the player pieces along said path segments;
indicia on the smaller areas of said game board indicative of where a portion of said playing cards are to be placed on the game board according to the game rules;
category indicia means on individual ones of the subdivisions of said game board for designating according to the game rules corresponding ones of the decks of playing cards;
means defining a plurality of common bi-directional starting positions, said means defining a plurality of common bi-directional starting positions being spaced in a random manner on selected individual ones of the subdivisions of said game board for designating player piece starting positions that can be occupied by any one of the player pieces according to the game rules;
means defining individual bi-directional subdivisions which can be occupied by any player piece and that can be approached from any direction according to the game rules;
said path segments including four inner segments and eight outer segments, each inner segment extending along a portion of the periphery of two of said playing card supporting areas to help define them, each outer segment extending along a portion of the periphery of one of said playing card supporting areas to help define it;
interconnecting means defining a common subdivision joining the ends of said inner segments for extending and for forming a portion of said endless path of travel therebetween;
said interconnecting means for permitting bi-directional movement of each of said player pieces between pairs of said inner segments, according to the game rules;
means defining four common subdivisions each connected between pairs of outer segments and the opposite ends of one of said four inner segments to extend and to form a portion of said endless path of travel; and
said means of defining four common subdivisions for permitting bi-directional movement of each of said player pieces between pairs of outer segments and between an inner segment and the pairs of outer segments according to the game rules.

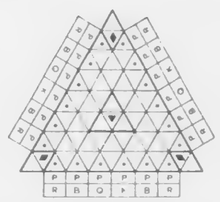
4,940,240
GAME TO PROMOTE ARITHMETIC SKILLS
Joseph M. Braley, P.O. Box 488, Moab, Utah 84532
Filed May 11, 1989, Ser. No. 350,454
Int. Cl.[5] A63F *3/02, 3/00*
U.S. Cl. 273—260 27 Claims

1. A method of play of a game of chance and strategy played by at least two players, wherein said method comprises:
providing a playing board comprising a plurality of distinct positions in a pattern of rows crossed in at least two different directions, each distinct position being defined by the intersection of at least two rows oriented in different directions;
providing a plurality of playing pieces for each player to be moved from one position to another on said board, providing for the possession of a player for each turn of play at least one number,
the movement of a respective piece during at least most of the turns of play being possible over different paths and being dependent on and selected after applying a mathematical operation using at least two numbers in the possession of the player.





4,940,241
THREE PLAYER CHESS-TYPE GAME
John A. Faraci, Jr., 2615 Shenandoah Ave., Durham, N.C. 27704
Filed Sep. 27, 1989, Ser. No. 413,338
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—261 14 Claims



1. A three player chess game, comprising:
(a) a game board including:
(i) an equilateral triangle-shaped playing surface with an array of equilateral triangle-shaped playing spaces demarcated thereon, wherein there is an equilateral triangle-shaped apex playing space located at each of the three apices of the equilateral triangle-shaped playing surface, each of said apex playing spaces having one side located within the interior of the equilateral triangle-shaped playing surface and two sides along the edge of the equilateral triangle-shaped playing surface; and
(ii) a rectangular home area playing surface at each side of the equilateral triangle-shaped playing surface, each of said home areas extending from one end of an interior side of an apex playing space to one end of an interior side of another apex playing space, to define respective

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home areas for the players' game pieces so that each of the three players has a separate home area at a specific side of the equilateral triangle-shaped playing surface, each of said home area playing surfaces having an array of spaces demarcated thereon defining home spaces for a specific player's game pieces; and

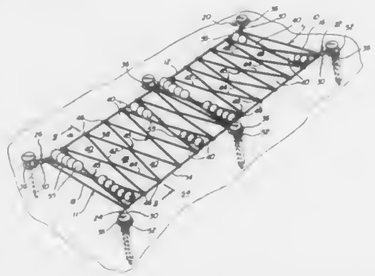
(b) a set of game pieces for each of the three players each of the sets of game pieces being differentiable from the other sets so that all game pieces of a given set are identifiable as belonging to a specific player.

4,940,242

GAME APPARATUS

Todd J. Tingley, 425 Avenue G., Redondo Beach, Calif. 90277

Filed May 22, 1989, Ser. No. 354,736
Int. Cl.[5] A63F *3/02, 3/00*
U.S. Cl. 273—287 **7 Claims**



1. A game apparatus to be secured in a playing mode on a ground surface comprising:

a flexible playing area having a substantially rectangular configuration defined by an elongated peripheral cord member;

a plurality of cord section members that are interwoven to form and define a plurality of juxtaposed play sections within said playing area;

hold-down means selectively positioned about said peripheral cord member;

wherein said cord section members are formed in pairs to define contiguous, triangularly shaped, play sections, whereby each paired cord section member is looped about the other to define a pair of oppositely disposed, triangular shaped play sections; and

means for securing said cord section members to said peripheral cord member.

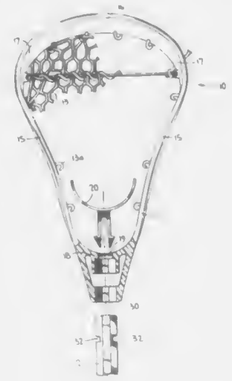
4,940,243

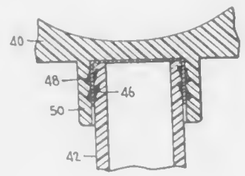
LACROSSE STICK

Richard B. C. Tucker, Baltimore; Jackie L. Davis, Aberdeen, and Fielding H. Lewis, Jr., Queenstown, all of Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed Sep. 29, 1989, Ser. No. 414,258
Int. Cl.[5] A63B *59/02*
U.S. Cl. 273—326 **16 Claims**

1. A lacrosse stick comprising a head having a generally V-shaped frame defined by two side walls, a transverse stop extending between said side walls and cooperating with a throat portion, a transverse wall joining the ends of said side walls opposite the transverse stop, and a retainer means having one or more prongs extending longitudinally from said head for attaching said head to a handle and a handle having one or more slots for receiving said prongs, whereby said prongs





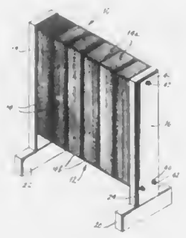
connectively engage said slots to attach said head to said handle.

4,940,244

ARCHERY TARGET

John W. Batts, III, Lincoln, Mo., assignor to Christine R. Batts, Foley, Mo., a part interest

Filed Sep. 20, 1989, Ser. No. 410,149
Int. Cl.[5] F41J *3/00*
U.S. Cl. 273—403 **12 Claims**



1. An archery target comprising a target body having an assembly of discrete, elongated modules, first and second opposed, upright supports having upper and lower ends for forming the sides of said target and framing said target body therebetween, base members for mounting said upright supports in a vertical position relative to the ground or other surface, and target body attachment means for connecting said target body

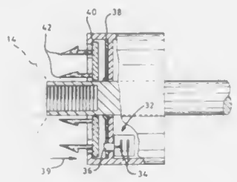
to said upright supports; each of said elongated modules comprising a plurality of mutually adhered, discrete, sheet-like elements; said target body attachment means for connecting said target body assembly modules to each of said upright supports and comprising therefore first adaptor means, for rigid securement to said first upright support, and second adaptor means for adjustable securement to said second upright support.

4,940,245

ARROW/WOUNDED ANIMAL TRACKING DEVICE

Harley E. Bittle, Jr., 1737 Campbell Station Rd., Knoxville, Tenn. 37932

Filed Oct. 4, 1988, Ser. No. 253,044
Int. Cl.[5] H04B *1/034*
U.S. Cl. 273—416 **6 Claims**



2. An arrow/wounded animal tracking device for mounting on the shaft of an arrow for use in conjunction with a receiver having directional finding capability, said device comprising:

a housing defining an opening therethrough for receiving said shaft of said arrow;

means for releasably securing said housing on said shaft of said arrow said means comprising a membrane mounted in said opening of said housing for circumscribing, and friction-fit engagement of, said shaft of said arrow; and

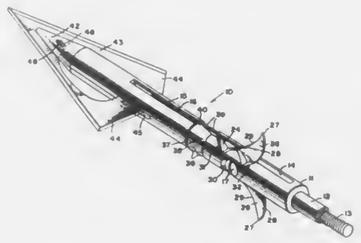
signal generating means housed within said housing for generating a signal for being received by said receiver to facilitate the tracking of said arrow/wounded animal.

4,940,246

ARROW ATTACHMENT

Jonathan B. Stagg, 4213 E. 28 Rd., Cadillac, Mich. 49601

Filed Aug. 14, 1989, Ser. No. 393,882
Int. Cl.[5] F42B *6/08*
U.S. Cl. 273—421 **7 Claims**



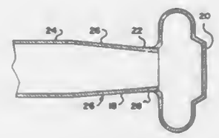
1. An arrow attachment comprising a body having an elongate slot extending therethrough; a pair of blades accommodated in said slot in side-by-side relation; each of said blades having a cutting edge; pivot means mounting said blades on said body for rocking movements about an axis between a retracted position within said slot and a projected position in which each of said blades extends laterally outwardly of said slot and on opposite sides of said body; and actuating means carried by each of said blades and extending outwardly of said slot when its associated blade is in said retracted position, each of said actuating means being so located relative to its associated blade as to be operable to rock its associated blade from said retracted position toward said projected position in response to the application of force on such actuating means in one direction, the extent of the rocking movement being such that each of said actuating means may move from a projected position at one side of said body through said slot to a projected position at the opposite side of said body.

4,940,247

BAT WITH REVERSE CONICAL GRIP

John A. Magadini, Phoenixville, Pa., assignor to Tea Pro Corporation, Phoenixville, Pa.

Filed Mar. 22, 1989, Ser. No. 327,319
Int. Cl.[5] A63B *59/06*
U.S. Cl. 273—72 A **6 Claims**



1. A hollow metallic baseball bat comprising:

a bat body having a generally cylindrical, upper, impact portion of a first, large diameter, a generally cylindrical, lower, handle portion of a second, smaller diameter and a transition zone intermediate the impact portion and the handle portion,

the impact portion terminating upwardly in a closed end and the handle portion terminating downwardly in an enlarged knob, the knob having a diameter greater than the diameter of the handle portion; and

the handle portion being subdivided into an upper area adjacent to the transition zone, the upper area having uniform diameter and a lower area adjacent to the knob, the lower area having non-uniform diameter, the lower area of non-uniform diameter having an upper, large diameter section and a lower, small diameter section, the lower, small diameter section terminating downwardly at the said knob and the upper, large diameter section of the lower area terminating upwardly at the said handle portion uniform diameter upper area.

4,940,248

SEAL FOR A MAGNETIZABLE SHAFT

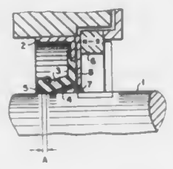
Gerhard Kilthau, Mannheim; Karl H. Spies, Birkenau; Rolf Vogt, Oftersheim; Peter Freilaender, Mannheim, and Toni Seethaler, Gorxheimertal, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Jan. 30, 1989, Ser. No. 303,821
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807893
Int. Cl.[5] F16S *15/56*
U.S. Cl. 277—80 **8 Claims**

1. In a shaft seal comprising (a) a magnetizable shaft having a central, longitudinal axis; (b) a seal housing, surrounding the shaft, having a radially displacable sealing lip of polymeric material, said sealing lip comprising a sealing surface engaged with the shaft and two conical end surfaces on opposite sides of said sealing surface, said conical end surface on the side facing away from a space to be sealed having a smaller angle with respect to said axis than the axially opposite conical end surface to effect a pumping action toward the space to be sealed,

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and (c) a preliminary seal on the side facing away from the space to be sealed; the improvement wherein the preliminary seal comprises a ring magnet means having a pole member defining a pole surface which surrounds the shaft with a gap therebetween, and wherein a ferrofluid is disposed in said gap thereby forming a ferrofluidic seal, the ferrofluid being lifted



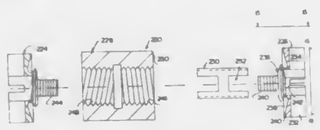
away from the surface of the shaft when the pumping action exceeds the ability of the ferrofluidic seal for a moment so that air of atmospheric pressure can flow into the space between the ferrofluidic seal and the sealing lip, thus compensating for the partial vacuum therein, before the ferrofluid again makes contact with the entire circumference of the shaft.

4,940,249

CLAMP DEVICE WITH RADIALLY SPLIT HEAD

Vladimir J. Drbal, 400 Davey Glen Rd., Belmont, Calif. 94002

Continuation-in-part of Ser. No. 116,021, Nov. 3, 1987, Pat. No. 4,804,197. This application Feb. 13, 1989, Ser. No. 310,356
Int. Cl.[5] B23B *31/20*
U.S. Cl. 279—41 R **3 Claims**



1. A device for clamping a pair of workpieces together comprising:

a pair of fastener heads, each defining an axially extending passageway, and each composed of an exterior portion having an exterior surface and defining slots extending axially from said surface, said slots forming segments in said head about said passageway, and an interior portion defining an interior surface having a camming surface such that movement of the head in an axial direction against a contact surface forces the segments in the head radially inwardly, thereby reducing the cross-section of the passageway, adjacent the exterior surface of the head, and

means mounting the two heads for axial movement toward and a way from a contact position at which the camming surface of the two heads are simultaneously brought into contact with an associated contact surface, with further movement of the two heads axially toward one another acting to force the segments in each head radially inwardly, substantially the same extent, thereby reducing the cross-section of the passageway associated with each head, and causing clamping of a workpiece received in the passageway defined by each head,

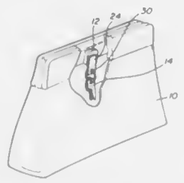
said mounting means including a shaft on which the two heads are carried, for relative movement toward or from one another, with relative rotation of the heads on the shaft, to a contact position in which the camming surface of one head is in contact with the camming surface of the other head, such that the camming surface of each head serves as the associated contact surface for the other head, where said shaft is rigidly attached to one head, and the other head is rotatably mounted on the shaft for axial movement thereon, with rotation of said other head.

4,940,250

MAGNETIC KEY HOLDER

Josephine Corrado, 16951 Heather La., Mt. Clemens, Mich. 48044

Filed Jul. 14, 1989, Ser. No. 380,104
Int. Cl.[5] A45G *11/32*
U.S. Cl. 206—37.1 **20 Claims**



1. A key holding article comprising:

A rigid body portion including means for detachably attaching said body portion to the interior of a portable apparel enclosure;

at least one key holding portion, said at least one key holding portion being magnetically attachable to said body portion;

said rigid body portion including a back interior attaching side, a front key holding face provided opposite said back side, a top key holding face provided adjacent said front face and said back side, a bottom key holding face disposed opposite said top face, a first side key holding face provided adjacent said back side and front, top and bottom faces, and a second side key holding face disposed opposite said first side key holding face;

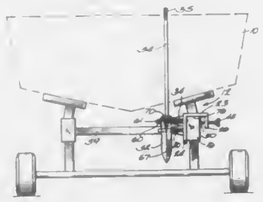
said at least one key holding portion being detachably attachable to one or more of said faces.

4,940,251

MARKER ASSEMBLY FOR A BOAT TRAILER

Vernon H. Willmsen, 2413 S. 95 St., West Allis, Wis. 53227

Filed May 6, 1988, Ser. No. 191,037
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **6 Claims**



1. A boat trailer marker assembly, comprising:

a position indicator including an elongated pole and hollow reservoir secured to said pole proximate an end thereof, said reservoir having an internal chamber;

a support bracket having means for releasably securing said bracket to a boat trailer;

an axle fixedly secured to said bracket;

mounting means for pivotally securing said marker to said axle of said marker, said mounting means positioned to cause said pole to pivot downwardly when said reservoir is empty and said marker is in a non-submerged state, and to cause said pole to pivot upwardly once the reservoir is filled with water and said reservoir is in a non-submerged state;

discharge means for allowing water within such chamber to drain therefrom when said marker pivots on said axle to a horizontal position and said reservoir is in a non-submerged state; and

inlet means for allowing water to enter and fill said chamber when said reservoir is submerged in water.

4,940,252

REMOVABLE CONTAINER CASTER ASSEMBLY WITH TOW CAPABILITY

Bill G. Seib, Friendswood, Tex., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 13, 1989, Ser. No. 340,117
Int. Cl.[5] B62D *53/06*
U.S. Cl. 280—418.1 **4 Claims**



3. A transportable ISO type container comprising:

a housing having four lower corner brackets;

four simply removable caster assemblies each connected to a respective bracket and comprising:

a baseplate and two orthogonal plates standing upwardly relative to the baseplate for receiving a corner bracket of a container;

a block fixed at its lower end to the baseplate and extending in spaced parallel relation to the orthogonal plates for engaging a corner of a container;

caster means fastened to the baseplate and extending downwardly for allowing the assembly to be rolled;

a tow bar removably attached to two adjacent assemblies for towing the container;

an L pin for removably fastening the assembly to a container corner including

(a) a first section passing through a through-bore formed in one of the orthogonal plates for receipt within a blind bore formed in a confronting surface of the block; and

(b) a second section rotatable for engagement by a slot formed in the baseplate thereby selectively securing the L pin in place.

4,940,253

SAFETY BINDING

Jean-Claude Brischoux, Seynod, France, assignor to Salomon S.A., Annecy cedex, France

Filed Feb. 17, 1988, Ser. No. 156,821
Claims priority, application France, Feb. 18, 1987, 8702596
Int. Cl.[5] A63C *9/085*
U.S. Cl. 280—629 **50 Claims**

1. A safety binding for a ski boot comprising:

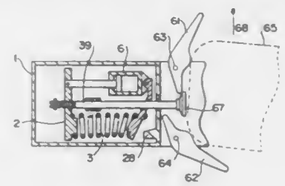
(a) a jaw for retaining a portion of said boot, and to release said portion of said boot under the effects of a force greater than an elastic return force, said jaw being movable between a stable equilibrium position and a release position in which said jaw releases said boot;

(b) an energization assembly comprising:

(i) elastic return means for exerting said elastic return force on said jaw to bias said jaw to said stable equilibrium position;

(ii) shock absorption means for absorbing shock; and

(iii) means for varying said elastic return force as a function of intensity and duration of said force on said boot, whereby under an effect of a soft force said elastic return means and said shock absorption means act in



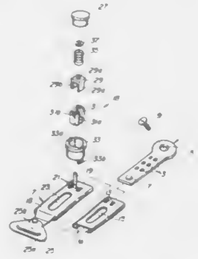
parallel to define said elastic return force and return conditions of said jaw, while under an effect of a brief high force said elastic return means exerts an elastic return force on said jaw which has a magnitude greater than that due to said soft force, said means for varying said elastic return force comprising a compensation device operably associating said elastic return means and said shock absorption means.

4,940,254

SEAT BELT HOLDER POSITION ADJUSTER

Shuichi Ueno, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 25, 1988, Ser. No. 185,408
Claims priority, application Japan, May 28, 1987, 62-129867; May 29, 1987, 62-133959
Int. Cl.[5] B60R *22/20*
U.S. Cl. 280—808 **61 Claims**



1. A seat belt holder position adjuster comprising:

a base unit including an elongate base member having two adjacent rows of latch holes formed therethrough;

an anchor unit disposed on said base unit in a manner to slide therealong;

a belt holding member connected to said anchor unit to move therewith; and

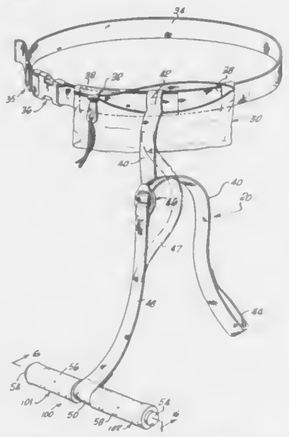
a latch pawl unit mounted on said anchor unit, said latch pawl unit including a generally U-shaped monolithic latch piece having two shank portions which are sized and arranged to be latchingly engageable with an adjacent pair of latch holes, said pair comprising a latch hole from each of said two adjacent rows of the base unit, and a biasing means for biasing said latch piece in a direction to achieve latching between said shank portions and said paired latch holes,

wherein said anchor unit includes guide holes through

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which said shank portions of said latch pawl unit are passed to be exposed to said elongate base member, an anchor member, and a guide member tightly held by said anchor member, said guide member having at its sides mutually facing guide grooves by which said base member is slidably guided.

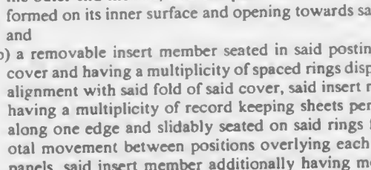
4,940,255
METHOD AND APPARATUS FOR SUPPORTING SKIS ON A SKI LIFT
Michael T. Donine, P.O. Box 6836, Oxnard, Calif. 93030
Filed Feb. 16, 1989, Ser. No. 313,167
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—809 **6 Claims**



1. Apparatus suitable to be worn upon the body of a skier, said apparatus being for the purpose of providing a support for skis while a skier is riding upon a ski lift chair comprising in cooperative relationship: adjustable belt means suitable to encompass the waist of a skier; first pouch means carried by said adjustable belt means and having an openable closure; first connecting means fastened to said belt means in such manner as to be insertable in said pouch means; second connecting means adjustably connected to said first connecting means in such manner as to be insertable with said first connecting means in said pouch; support means for two skis removably fastened to said second connecting means and in such manner as to be insertable into said pouch with said first and second connecting means.

4,940,256
TANK TRUCK-STORAGE VESSEL
John W. Jordan, III, Rte. 1, Box 326A, Fairview Rd., Fountain Inn, S.C. 29644
Continuation of Ser. No. 200,032, May 27, 1988. This application Dec. 8, 1989, Ser. No. 447,718
Int. Cl.[5] B60P *3/22*
U.S. Cl. 280—837 **16 Claims**

1. Apparatus for transporting and storing liquids such as chemicals and the like, comprising:
(a) a tank for containing a liquid disposed upon a longitudinal frame, having an opening for filling said tank with liquid;
(b) wheeled means for supporting one end of said longitudinal frame;
(c) an extended connector means attached to an end of said frame opposite said wheels and, including a fifth wheel extending from the end of said connector means adapted for connection to a prime mover;
(d) extendable support means secured to said frame adjacent said connector means for supporting said end of said longitudinal frame when said connector means is detached from said prime mover for free standing storage;
(e) self-contained pumping means in association with said tank for pumping said liquid from said tank; and

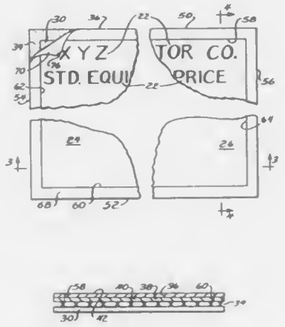


(f) a platform defined by said longitudinal frame surrounding said tank providing protection for said tank during transit and further providing an area for standing while working on said tank during free standing storage.

4,940,257
ONE-WRITE BOOK ASSEMBLY WITH REMOVABLE INSERT
Daniel A. Hincks, Burlington; William T. Hincks, Madison, and Robert W. Hincks, Farmington, all of Conn., assignors to Data Management, Inc., Farmington, Conn.
Filed Oct. 3, 1989, Ser. No. 416,534
Int. Cl.[5] B41L *3/00*
U.S. Cl. 282—29 B **11 Claims**

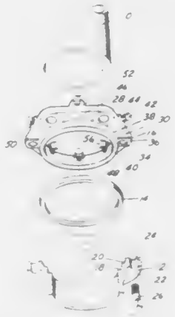
1. A one-write bookkeeping assembly comprising:
(a) a foldable posting book cover having a pair of panels hinged along an intermediate fold, one of said panels having a multiplicity of locating elements spaced along the outer end thereof, said one panel also having a pocket formed on its inner surface and opening towards said fold; and
(b) a removable insert member seated in said posting book cover and having a multiplicity of spaced rings disposed in alignment with said fold of said cover, said insert member having a multiplicity of record keeping sheets perforated along one edge and slidably seated on said rings for pivotal movement between positions overlying each of said panels, said insert member additionally having mounting panel means secured on said rings to releasably retain said insert in said book cover, said panel means including a first panel extending into said pocket, said panel means also including a second panel extending over said one panel with apertures adjacent its outer end through which said locating elements extend, at least one of said record keeping sheets being pivoted into a position overlying said second panel; and
(c) a set of shingled forms having perforations in a portion adjacent one side through which said mounting elements extend, said shingled forms overlying said one of said record keeping sheets, at least one of adjacent surfaces of said forms and said one sheet having means thereon for recording selected data on said recording keeping sheet when said data are being entered on said forms.

4,940,258
DISPLAY STICKER FOR A VEHICULAR WINDOW
Ronald R. Cuba, Jr., Wichita, Kans., and Roland Jenkins, Holly, Mich., assignors to Uarco Incorporated, Barrington, Ill.
Filed Jan. 6, 1989, Ser. No. 293,978
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **7 Claims**



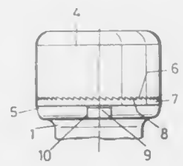
1. A business form for use as a removable sticker wherein a variable information receiving section may be adhered to a transparent object and then easily removed therefrom without carrying residual adhesive, said business form comprising:
a first sheet of label stock having one side coated with pressure sensitive adhesive;
a second sheet of release liner material having a size and shape corresponding to said first sheet, a coated surface removable adhered to said adhesive, and an opposed surface remote from said adhesive for receiving variable information to be displayed through a transparent object;
cuts in said second sheet near at least two opposed edges thereof so that parts of said second sheet between said opposed edges and said cuts may be removed from adhesion to said first sheet to expose adhesive at said two opposed edges in flanking relation to said opposed surface and variable information thereon, whereby said form may be adhered to a transparent object by said exposed adhesive and, when removed therefrom, the remainder of said second sheet may be peeled from said first sheet free of residual adhesive;
said cuts being opposed parts of a peripheral cut in said second sheets, said peripheral cut in the edges of said second sheet defining a removable, one-piece continuous peripheral frame; and,
an exposed grasping tab on one of said sheets;
there being a plurality of said business forms in end-to-end abutment delineated from one another by lines of weakening to thereby define a continuous business form.

4,940,259
SWIVEL LUG PIPE JOINT CONNECTIONS
James H. Williams, Columbus, Ga., assignor to Standard International, Inc., Columbus, Ga.
Filed Mar. 13, 1989, Ser. No. 322,520
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—3 **20 Claims**



1. A pipe joint connection for forming a coupling between a pipe section and an attachment, comprising:
(a) a web adapted to surround the pipe section in a plane substantially perpendicular to the pipe section axis, for being connected to the attachment to form the coupling;
(b) a plurality of threaded set screw openings oriented toward the pipe section formed circumferentially substantially equidistant from each other on the web; and
(c) a plurality of set screws, each disposed in a set screw opening, and each comprising:
(i) a threaded shank whose threads cooperate with the threads in the set screws openings;
(ii) a head connected to the shank for receiving a torquing means;
(iii) a substantially convex, curved shaped swivel surface connected to the shank; and
(iv) a swivel foot having a cavity to receive the swivel surface to allow the foot to swivel on the swivel surface and a grip face to allow the set screw to grip the pipe section.

4,940,260
FLUID CONDUIT COUPLING DEVICE
José I. Uriarte Odriozola, Vitoria, Spain, assignor to Terrain SDP, S.A., Vitoria, Spain
Filed Jul. 19, 1989, Ser. No. 381,956
Claims priority, application Spain, Jan. 23, 1989, 8900166
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—3 **4 Claims**



1. Fluid conduit coupling device including a conduit head provided with a coupling thread for a threaded sleeve by means of which a conduit is tightly secured to said head, said

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sleeve having an end adjacent said head, said end provided with a straight-profiled dentation, and between the said sleeve and the head there is provided a complementary ring provided, in turn, with another dentation, complementary to that of the sleeve, said ring having an axis said dentations being oriented so as to permit the sleeve to turn in a tightening direction when threaded on said conduit head and to prevent the sleeve from turning in the opposite direction, and means for fixing said complementary ring to the head against rotation in either direction.

4,940,261

PIPE COUPLINGS

John R. Somers Vine, Transvaal, South Africa, assignor to Dorbyl Light and General Engineering (Proprietary) Limited

Filed May 13, 1988, Ser. No. 193,904

Claims priority, application South Africa, May 14, 1987, 87/3470

Int. Cl.[5] **F16L** *17/04*

U.S. Cl. 285—112 **5 Claims**



1. A pipe coupling for forming a pipe joint between adjacent ends of two pipes located in co-axial end-to-end relationship, the coupling comprising a pair of discrete, substantially identical half shells each including, on one end thereof, means mechanically to secure the half shells to one another to form a coupling sleeve for complementally shaped pipe ends and each half shell including, on the other end thereof, an L-shaped hook formation which is interengageable with the hook formation of the other half shell to complete the connection of the half shells to one another, each L-shaped hook formation comprising a leg which projects radially from the outer surface of the half shell and a base which is integral with the leg of the hook formation and which extends axially, relatively to the cylindrical axis of the half shell and inwardly beyond the transverse center line of the pipe coupling, the hook formations being adapted, upon engagement of the hook formations with one another, for the legs of the L-shaped hook formations to abut one another and the base of each L-shaped formation to engage the other hook formation by hooking over the leg part thereof and abutting, in opposed relationship, the base part thereof.

4,940,262

CABLE STRAIN RELIEF

Frederick A. Baracat, Coral Springs, and Stanley A. Yaeger, Jr., Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1989, Ser. No. 361,084

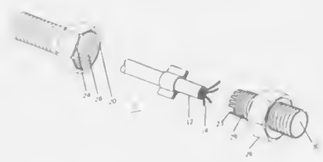
Int. Cl.[5] **F16L** *35/00*

U.S. Cl. 285—114 **4 Claims**

1. A cable strain relief device, comprising:

a cable having a band attached thereto the band being crimped to provide at least one radial crimp rib and crimped to clamp the band to the cable; and

a receptacle comprising a plurality of fingers having at least one slot formed between the fingers therein to engage said



at least one radial crimp rib and means to retain said at least one radial crimp rib in said at least one slot.

4,940,263

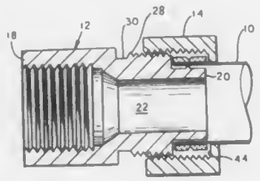
FITTING FOR TUBING

Andrew B. Mayernik, McKeesport, Pa., assignor to Dormont Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 11, 1988, Ser. No. 255,491

Int. Cl.[5] **F16L** *19/04*

U.S. Cl. 285—342 **10 Claims**



1. A fitting for connecting to an end of a thin walled tube comprising a body, a nut and a ferrule,

said body having a generally cylindrical flow passage therethrough, a first end, a reduced size cylindrical second end and an intermediate part,

said flow passage having internal threads at said first end,

said internal threads having a central axis,

said intermediate part of said body having external threads,

said reduced size cylindrical second of said body having an external cylindrical surface,

an outwardly extending shoulder having an annular surface generally planar throughout its extent extending outwardly from and intersecting said cylindrical surface of said reduced size cylindrical second end,

said ferrule comprising a hollow cylindrical ring made of a deformable material having an outside cylindrical surface, an inside cylindrical surface, a first end and a second end,

said internal cylindrical surface of said ferrule being adapted to receive an end of said tube,

said nut having hollow internal threads terminating at an inwardly directed annular flange having an annular surface generally planar throughout its extent disposed at right angles to said central axis of said internal threads,

both said angular surface on said intermediate part and said annular surface on said flange being disposed generally perpendicular to said reduced size second end,

said tube abutting said shoulder which joins said intermediate part and said cylindrical surface,

said nut being adapted to receive said ferrule and to threadably engage said external threads of said intermediate part of said body, whereby said ferrule creates a seal when it is sandwiched between said annular shoulder of said flange, and said outwardly extending shoulder extending outwardly from said cylindrical surface of said reduced size cylindrical second end, between said internal threads of said nut and the outside surface of said tube end when said nut is tightened onto said body.

4,940,264

FLANGE CONNECTION

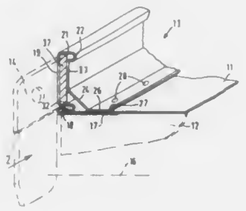
Georg Mez, Silberdistelweg 68, 7410 Reutlingen-Gonningen, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,501

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313235

Int. Cl.[5] **F16L** *23/00*

U.S. Cl. 285—405 **12 Claims**



1. In a flange connection for rectangular air conditioning ducts having four walls about a geometric longitudinal axis, said flange connection having:

(a) four substantially L-shaped hollow flange profiles made from sheet metal

(b) viewed in the longitudinal direction of the profile, said flange profiles having substantially: a first longitudinal arm arranged to be parallel with the geometric longitudinal axis of the air conditioning duct and to bear when the flange connection is assembled on the inside face of the duct wall,

a first radial arm at right-angles to the geometrical longitudinal axis of the air conditioning duct, emanating from said first longitudinal arm for location in front of the end face of the duct wall,

an outer arm emanating from said first radial arm and arranged to extend back to behind the end face of the duct wall when the flange connection is assembled,

a second radial arm emanating from said outer arm and extending at a distance from and parallel with said first radial arm,

an oblique arm extending from said second radial arm at approximately half the height of said first radial arm, and

a second longitudinal arm emerging from said oblique arm and arranged, when the flange connection is assembled, to bear on the outside face of the duct wall, opposite said first longitudinal arm,

(c) a bead extending into said hollow profile, shaped into said first radial arm, said bead being formed with a first bent portion starting from said first radial arm and a first web extending from said first bent portion approximately at a right angle to said first radial arm and situated opposite and at a distance from said outer arm,

(d) said radial arms, said outer arm, and said firt web, being arranged to receive angle pieces with a close fit,

(e) said bead being formed with a second web disposed between said first web and said first longitudinal arm, a second bent portion merging said second web at one end into said firt longitudinal arm, a first substantially semi-circular arc connecting said second web at the other end to said first web,

(f) said second bent portion being constructed as a second substantially semi-circular arc which merges directly into said first longitudinal arm from said second web, and

(g) said bead being so formed that said first arc is spaced at a distance from said first longitudinal arm which is less than the distance between opposing faces of said first and second longitudinal arms as determined by a predetermined thickness for the duct wall, whereby said bead can bear with a clamping fit on the outside face of the duct wall.

4,940,265

WIREGATE CLOSER

Albiaus A. Weigel, 1412 E. 8th St., Hays, Kans. 67601

Filed Oct. 23, 1989, Ser. No. 424,988

Int. Cl.[5] **E05C** *19/14*

U.S. Cl. 292—113 **11 Claims**



1. A wiregate closer comprising:

(a) a pivot bar;

(b) a separate handle having two ends, said handle being fixed at one of said ends to said pivot bar, said handle and said pivot bar lying in the same plane and said handle being disposed at an upward angle of from about 5 degrees to about 15 degrees relative to said pivot bar, whereby said handle is above said pivot bar; and

(c) a strap pivotably attached to said pivot bar near a first end of said strap and terminating in a hook at the other end.

4,940,266

LATCH DEVICE FOR FOLDABLE BACKREST OF AUTOMOTIVE SEAT

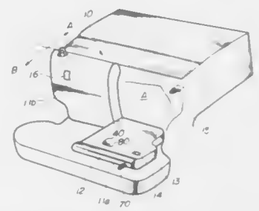
Daishiro Sakamoto; Takayuki Mouri, and Hisao Tamura, all of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Nov. 30, 1988, Ser. No. 277,955

Claims priority, application Japan, Jan. 26, 1988, 63-8693[U]

Int. Cl.[5] **E05C** *3/26;* **B60N** *1/10*

U.S. Cl. 292—227 **8 Claims**



1. In a foldable backrest of an automotive seat, a latch device which comprises:

a striker secured to a fixed member;

a base member secured to said backrest to move therewith;

a latch member pivotally supported by said base member, said latch member being latchingly engageable with said striker when said backrest assumes a given raised position;

biasing means for biasing said latch member in a direction to

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achieve a latched engagement between said latch member and said striker;

a latch cancelling mechanism operably connected to said latch member for pivoting said latch member in a direction to release said striker when moved in a given direction;

a one-way function mechanism interposed between said latch cancelling mechanism and said latch member, said one-way function mechanism permitting a latched engagement of said latch member with said striker without moving said latch cancelling mechanism in said given direction; and

a stopper mechanism including a lever moved with said latch cancelling mechanism and a stopper rod which is projectable into a position to interrupt the movement of said lever;

wherein said one-way function mechanism comprises:

a pin secured to said lever to move therewith, said pin having said latch canceling mechanism connected thereto; and

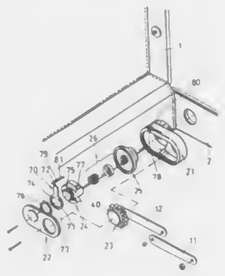
a projection formed on said latch member, said projection having a recess into which said pin is received.

4,940,267

BRACING MEDIUM FOR CASE OR THE LIKE

Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung City, Taiwan

Filed Sep. 14, 1989, Ser. No. 407,198
Int. Cl.[5] E05C *17/34*
U.S. Cl. 292—263 8 Claims



1. A bracing medium for a case having a body and a cover comprising:

an upper arm having a first end pivotally connected to said cover and a second engaging end;

a lower arm having a first end pivotally connected to said second engaging end and a second free end;

a housing held attached to said body;

a follower rotatably mounted in said housing and secured to said second free end;

a lock mounted in said housing and having a tumbler having a keyhole reachable from an outside of said case;

a pawling member engageable with said follower and limitedly rotatably mounted in said housing in a manner that when positioned in a first position, said member can pawl said follower against rotating in a first direction and when positioned in a second position, said member can pawl said follower against rotating in a second opposite direction; and

a clutch mechanism mounted between said tumbler and said pawling member which are mutually engageable to simultaneously rotate by a key to selectively position said pawling member in one of said first and second positions.

4,940,268

TAMPER-PROOF TAG

Dominique Lesquir, 1197 Rang St., Rockland Quebec, Canada, and Bernard Landry, 1256 Fontenay St., St. Foy Quebec, Canada

Filed Nov. 13, 1989, Ser. No. 434,215
Int. Cl.[5] B65D *33/34*
U.S. Cl. 292—317 6 Claims



1. A tamper-proof tag consisting of a unitary body formed of molded plastic material and comprising:

(i) a fastener defining a T-shaped body having a stem portion and a head portion; said head portion having, at each opposite end thereof, a depending flexible arm; said stem portion displaying an enlarged extremity having a cross-section greater than that of said stem portion;

(ii) a flexible strap including an elongate portion displaying, from one end thereof and for a major portion thereof, a series of aligned openings, said openings having a cross-section smaller than that of said enlarged extremity of said fastener but slightly greater than that of said stem portion thereof; said strap further including, at an opposite end thereof, a catch for receiving therethrough said one end of said elongate portion and for receiving therein said fastener; said catch defining a slot having a cross-section slightly greater than that of said elongate portion, and an entrance for receiving therein said fastener whereby said stem portion is engaged with said folded elongate portion by forcingly introducing said enlarged extremity through one of said openings; said enlarged extremity being shaped so that, once introduced in said opening, it can not be removed therefrom; and

(iii) flexible means connecting said fastener to said catch.

4,940,269

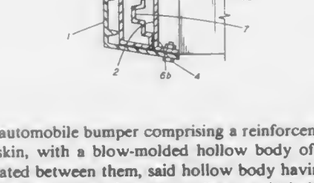
EXTENSION UNIT FOR DOOR LOCK

Won Se Kim, Seoul, Rep. of Korea, assignor to Hyundae Metal Co., Ltd., Daegu, Rep. of Korea

Filed Oct. 4, 1988, Ser. No. 253,148
Claims priority, application Rep. of Korea, Oct. 5, 1987, 87-17293[U]
Int. Cl.[5] E05B *9/00*
U.S. Cl. 292—337 4 Claims

1. An extension unit for a door lock in combination with a latch unit consisting of a latch tube secured to an auxiliary plate and a face plate, said face plate having two screwholes for attaching said door lock to an edge of a door, a latch bolt and a guard bolt resiliently installed within said latch tube, a back plate affixed to said latch tube and having a central slot and an out-turned ear projected through an upper and a lower opening of an aperture of said latch tube, and a latch bar connected to said latch bolt and passed through said aperture, as well as said central slot, characterized in that there is further included an extension unit comprising;

a single extension element consisting of at least one hook for engaging with said out-turned ear of said back plate, said hook being formed on a surface of a frame, said frame further including a channel, a protrusion and an ear for accepting a cylinder case of a latch bolt actuating unit, said extension element further including front and rear ribs formed on opposite portion of said frame wherein said rear ribs are provided on both sides of said frame;



a connector element consisting of a body which fits within said channel of said extension element frame, the body being provided with two wings, with each wing having a notch at an end portion thereof, a first opening in said connector element, said first opening having a shoulder formed on a front surface of said body for engaging with a notch of said latch bar, and a second opening being interconnected with said first opening thereof, said second opening accepting an end of said latch bar at a side surface thereof; and

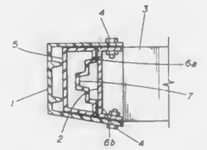
a housing element having a longitudinal slit, said housing element covering the entire length of said latch unit.

4,940,270

AUTOMOBILE BUMPER

Masayuki Yamanaki; Yutaka Takada, both of Kanagawa, and Takashi Mikami, Tokyo, all of Japan, assignors to Tonen Sekiyukagaku K.K., Tokyo, Japan

Continuation of Ser. No. 159,588, Mar. 28, 1988, abandoned. This application Feb. 27, 1989, Ser. No. 316,038
Claims priority, application Japan, Jun. 27, 1986, 61-152254
Int. Cl.[5] B60R *19/02*
U.S. Cl. 293—122 4 Claims



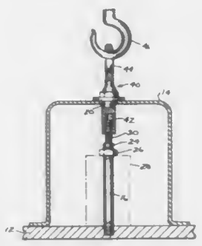
1. An automobile bumper comprising a reinforcement and a surface skin, with a blow-molded hollow body of synthetic resin located between them, said hollow body having at least one longitudinal recess formed by ribs on said hollow body, said ribs having a height of from 50 to 90 percent of the overall height of said hollow body wherein said recess has a depth perpendicular to the longitudinal direction of said recess and said heights are parallel to said depth.

4,940,271

ENGINE LIFTING METHOD AND TOOL

Thomas J. Stoffer, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 2, 1989, Ser. No. 306,739
Int. Cl.[5] B66C *1/10*
U.S. Cl. 294—1.1 5 Claims



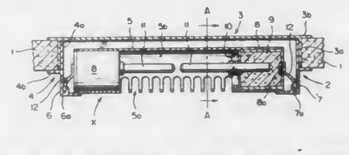
1. A method for lifting an internal combustion engine having a cylinder head, a head cover over said cylinder head, a plurality of studs extending upwardly from said cylinder head in said head cover, and a plurality of head cover bolts mating with respective apertures in the top of said head cover and threadingly engaging respective said studs to mount said head cover to said cylinder head, said method comprising removing at least one of said head cover bolts from its respective said stud and leaving the respective said stud in place in said head cover and attached to said cylinder head, providing a tool having a lower threaded portion and an upper hook portion, replacing said removed head cover bolt with said tool by threading said lower portion of said tool into engagement with said stud such that said upper hook portion of said tool extends above said head cover, engaging said upper hook portion of said tool with lifting apparatus and lifting said engine, removing said tool after said lifting by threadingly disengaging said lower portion of said tool from said stud, and replacing said removed bolt by threading same onto said stud.

4,940,272

SUN VISOR FOR MOTOR VEHICLES

Heinz H. Weick, 94, rue de la Servette, 1202, Genf, Switzerland

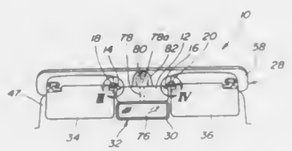
PCT No. PCT/CH88/00034, § 371 Date Oct. 4, 1988, § 102(e) Date Oct. 4, 1988, PCT Pub. No. WO88/06731, PCT Pub. Date Aug. 11, 1988
PCT Filed Feb. 2, 1988, Ser. No. 269,245
Claims priority, application Switzerland, Feb. 5, 1987, 486/87
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.5 19 Claims



1. Sun visor for motor vehicles, said sun visor comprising a thick-walled visor panel provided with mounting devices for positioning said visor panel in the interior of a vehicle above the windshield so said visor panel can be pivoted from an initial horizontal position into an inclined functional position, said visor panel being provided with a hollow space open on at least one side and means for releasably mounting a device in the hollow space of said visor panel for evaporation of active agents for influencing the interior air in the vehicle.

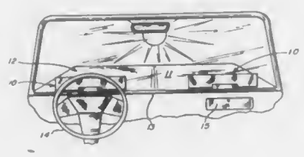
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4,940,273
AUXILIARY VISOR
Masaaki Konishi, Yokohama City, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed Mar. 30, 1989, Ser. No. 330,518
Claims priority, application Japan, Mar. 31, 1988, 63-81089
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.6 5 Claims



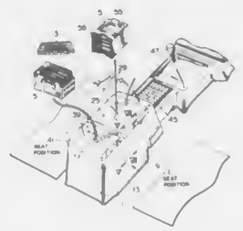
1. An auxiliary visor for a vehicle having a ceiling member, a pair of sun visors supported on the ceiling member and a rearview mirror mounted between the sun visors, said auxiliary visor comprising:
a shield disposed between said sun visors and having an upper end portion;
mounting shaft means rotatably installed on said upper end portion of said shield and having first and second mounting shaft portions projecting outwardly from opposite end portions of said shield; and
first and second mounting brackets installed on said ceiling member and supporting said first and second shaft portions, respectively;
said first mounting shaft portion being formed with a pair of diametrically opposed flat surfaces and said second mounting shaft portion being partially splined;
said first mounting bracket having a sleeve portion receiving said first mounting shaft portion in such a way that said first mounting portion is axially movable but prevented from rotation relative to said first mounting bracket;
said second mounting bracket having a clip portion splined correspondingly to said second mounting shaft portion and supporting same in such a way that said second mounting shaft portion is prevented from rotation relative to said clip portion and removable from same through movement in the direction substantially perpendicular to its axis.

4,940,274
HOOD GLARE SHIELD
Warren Ogren, Rte. 8, Ogren Rd., Hayward, Wis. 54843
Filed Jan. 25, 1989, Ser. No. 301,070
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.7 14 Claims



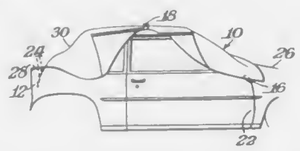
1. A hood glare shield mountable in the interior of a vehicle such as on the dashboard of a car, comprising
a panel,
a base mountable on the dashboard of such a vehicle,
a pair of jaws connected to the base, one of the jaws orienting the panel in an upright and transverse position, another of the jaws resiliently clamping the panel to the orienting jaw, the panel being removably disposed between the orienting jaw and the clamping jaw and transversely slidable therebetween so that the panel is adjustable from side to side as the position of a light source changes relative to the vehicle whereby the hood glare shield blocks glare from the light source reflecting off the hood of the vehicle.

4,940,275
APPARATUS FOR SCANNING RECORDING MEDIA WITH AN AUTOMATIC MEDIUM-CHANGE MECHANISM AND STRUCTURE FOR MOUNTING SAME ON A VEHICLE
Hiroyuki Miki, and Yasushi Kawakami, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Continuation of Ser. No. 891,322, Jul. 31, 1986, abandoned. This application Sep. 12, 1988, Ser. No. 244,636
Claims priority, application Japan, Aug. 10, 1985, 60-176142; Aug. 12, 1985, 60-175932
Int. Cl.[5] B60R *11/02;* **G11B** *15/68*
U.S. Cl. 296—37.8 8 Claims



1. A cassette tape deck mounting structure for the passenger compartment of an automotive vehicle of the type having front seats, a floor mounted shift lever and an inner roof surface, comprising:
(a) a cassette tape deck having an automatic cassette tape change mechanism for continuously playing back a plurality of cassette tapes and having an operation panel, said deck being located at an intermediate position between said front seats and rearwardly of said shift lever, and
(b) floor console means for housing said cassette tape deck, said console means having a box-shaped housing extending horizontally between said front seats and along a side of each of said front seats, said housing having an upper surface facing toward said roof surface, and said operation panel being accessible from said upper surface.

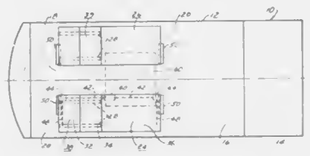
4,940,276
CAR COVER
Donald Madison, 1275 Weybridge Rd., Columbus, Ohio 43220
Filed Jan. 11, 1989, Ser. No. 299,616
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—136 3 Claims



1. A theft resistance car cover to shield the roof, windshield,

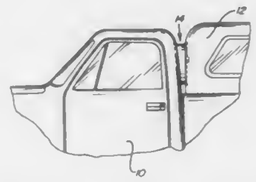
rear window and side windows from the sun, ice and snow comprising:
a cover having a size corresponding to the outer surface of the vehicle roof, windshield, back window and side windows having an outer and inner surface;
a plurality of flexible rear notch lock straps with one end free and the other end attached to the cover at the rear of the cover such that the rear notch straps can be secured in the joint between the trunk lid and the vehicle body;
a plurality of semi-rigid cores located perpendicularly within the rear notch lock straps such that the semi-rigid cores cannot pass through the joint between the trunk lid and the vehicle body;
a plurality of flexible front wedge notch straps with one end free and the other end attached to the cover located at the front corners of the cover such that the front wedge notch straps can be secured in the joint between the door and the vehicle body;
a plurality of semi-rigid wedge shaped cores located perpendicularly within the front wedge lock straps such that the front wedge lock straps can be secured in the joint between the door and the vehicle body and not allow the straps to slip within said joint;
a plurality of slits in the perpendicular direction from the side window edge of the cover located at the vehicle doors so that the doors can be opened;
a means to fasten the slits;
a handle attached to the cove on the top surface of the cover.

4,940,277
MOTORHOME
V. Donald Buell, 15930 Nisqually Rd.—4B, Victorville, Calif. 92392
Filed May 8, 1989, Ser. No. 348,890
Int. Cl.[5] B60R *1/10*
U.S. Cl. 296—164 20 Claims



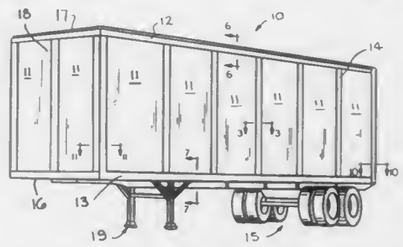
1. An improved motorhome comprising:
(a) a housing having a longitudinal housing axis and a living compartment, the housing forming a floor for the compartment;
(b) a bed structure having a longitudinal bed axis and a main, horizontally disposed cushion carried thereon;
(c) means for supporting the bed structure in the compartment with the bed axis in a first position parallel to the housing axis;
(d) means for laterally moving the bed structure from the first position to a second position;
(e) a forward cushion;
(f) a rearward cushion;
(g) means for supporting the rearward cushion in a first position horizontally oriented adjacent to the main cushion and aligned therewith along the bed axis;
(h) means for supporting the forward cushion in a first position horizontally oriented adjacent to the rearward cushion and aligned therewith along the bed axis;
(i) means for supporting at least one of the forward cushion and rearward cushion in an inclined position for forming a back-supporting cushion.

4,940,278
TRUCK CAB-BED UNIT WINDOW SEAL ASSEMBLY
Willard LePere, 1812 N. Waverly, Dearborn, Mich. 48128
Filed Mar. 17, 1989, Ser. No. 324,713
Int. Cl.[5] B60P *3/32*
U.S. Cl. 296—166 21 Claims



1. A removable seal assembly interconnecting the rear window opening of a truck cab having an interior with an adjacent front window opening of a bed unit having an interior including a camper or a truck bed cap, said assembly comprising:
a stretchably elastic seal tunnel portion having a resiliently stretchable first end and a resiliently stretchable second end;
a first frame interiorly mounted in said cab;
a second frame interiorly mounted in said bed unit;
means for stretchably and frictionally interconnecting said first end of said tunnel with said first frame; and
means for stretchably and frictionally interconnecting said second end of said tunnel with said second frame;
said first and second ends forming substantially weather tight seals with said first and second frames respectively.

4,940,279
CARGO VEHICLE WALL CONSTRUCTION
Richard A. Abott, Royal Oak; Stephen J. Ringe, Farmington, both of Mich., and Michael J. Keeler, Canton, Ohio, assignors to Fruehauf Corporation, Detroit, Mich.
Filed Mar. 16, 1989, Ser. No. 324,486
Int. Cl.[5] B62D *33/04;* **E04C** *1/00*
U.S. Cl. 296—181 8 Claims



1. In a cargo vehicle having a floor, a roof, a front wall, a pair of sidewalls, and a rear opening wherein at least one of said sidewalls comprises a multiplicity of composite panels wherein each panel includes a planar core of resinous material having a metal skin adhesively bonded to each planar surface thereof, the improvement wherein said resinous core extends to within a predetermined distance from at least one edge of said metal skins, said distance from the end of said resinous core having a rigid material affixed between said skins.

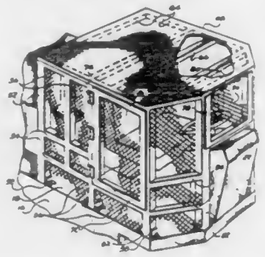
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4,940,280

PROTECTION STRUCTURE FOR HEAVY EQUIPMENT

Darrel L. Templeton, Tempe, Ariz., assignor to Hunter Contracting Company, Gilbert, Ariz.

Filed May 2, 1988, Ser. No. 189,468
Int. Cl.[5] B60R *21/11*; B62D *33/06*
U.S. Cl. 296—190 **13 Claims**



1. An apparatus for protecting the operator's compartment of a piece of heavy equipment of the type including
a floor,
an upstanding support structure raised above said floor, and
a pair of flanges fixedly coupled to said support structure for removably attaching said support structure to a standard protective structure when said equipment is being used above ground,
said apparatus for interchangeably replacing said standard protective structure when said equipment is used in excavations below ground level, said apparatus comprising:
(a) a plurality of sidewalls for surrounding said operator's compartment, said sidewalls including
(i) a first sidewall having
(1) a first vertical support,
(2) a second vertical support,
(3) a third vertical support, and
(4) at least one horizontal support;
(ii) a second sidewall having
(1) a first vertical support,
(2) a second vertical support, and
(3) at least one horizontal support;
(iii) a rear sidewall having
(1) a first vertical support,
(2) a second vertical support, and
(3) at least one horizontal support; and
(iv) a front sidewall;
(b) first and second brackets fixedly coupled to lower ends of said first and second vertical supports of one of said sidewalls for removably attaching said first and second vertical supports to said pair of flanges on said support structure;
(c) an overhead roof section coupled to and supported by the upper edges of said sidewalls; and
(d) a first door pivotally coupled in said first sidewall.

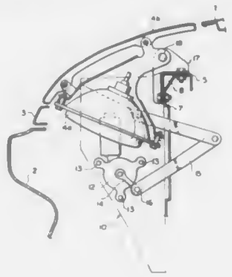
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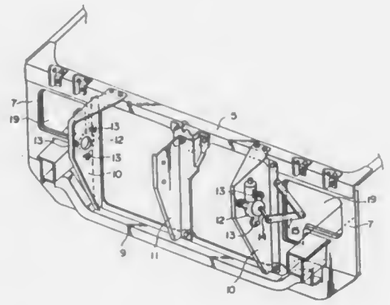
FRONT BODY STRUCTURE OF VEHICLE

Nobuhiro Komatsu, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 14, 1988, Ser. No. 270,024
Claims priority, application Japan, Nov. 18, 1987, 62-176103; Nov. 18, 1987, 62-176104
Int. Cl.[5] B60Q *1/05*; B60R *27/00*
U.S. Cl. 296—194 **10 Claims**

1. A front body structure of a vehicle comprising a pair of retractable head lamp members, a pair of drive means for driving said retractable head lamp members, a radiator shroud upper member disposed on a front side of an engine compartment and extending laterally with respect to a vehicle body, a cross member disposed below said radiator shroud upper member and extending laterally with respect to the vehicle body,





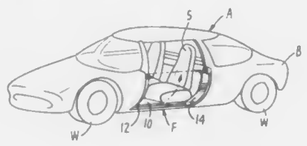
and at least two connecting means for connecting said radiator shroud upper member with said cross member, each of said drive means being mounted on one of said connecting means.

4,940,282

CHASSIS FRAME FOR A WHEELED MOTOR VEHICLE

John A. Townsend, P.O. Box 1518, Pacifica, Calif. 94044

Continuation-in-part of Ser. No. 49,001, May 7, 1987, Pat. No. 4,801,172, which is a continuation of Ser. No. 783,837, Oct. 3, 1985, abandoned. This application Jan. 27, 1989, Ser. No. 303,447
Int. Cl.[5] B60J *5/06*; B62D *23/00*
U.S. Cl. 296—204 **16 Claims**



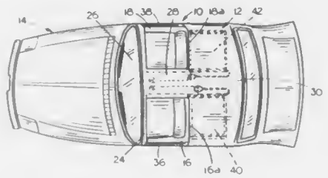
1. An improved chassis frame for a wheeled motor vehicle of a given maximum width, said frame comprising:
(a) an elongate floor section of a width substantially less than the maximum width of the vehicle, said section having a central portion comprised of at least one lower longitudinally extending element of a box-like cross-section to impart rigidity to the frame, and said floor section defining longitudinally extending distal edge portions of said frame, said distal edge portions having a depth substantially less than the depth of the longitudinally extending elements of the central portion;
(b) upstanding barrier sections fixed to and extending upwardly from said floor section in longitudinally spaced relationship to one another, said barrier sections defining therebetween door openings on either side of the frame and having outwardly convex curvilinear side portions extending laterally outwardly relative to the floor section; and
(c) a door complemental in shape to each of the curvilinear side portions of the barrier sections and proportioned for receipt in each of the door openings;
(d) means mounting said doors to the curvilinear side portions of the barrier sections for movement outwardly of the distal edge portions of the floor section between elevated positions extending across said openings and retracted positions stowed beneath the floor section of the frame;
(e) means to selectively move the doors between the elevated and retracted positions; and, said doors each comprising stress strut means to assume engagement with said barrier sections when the door is in the elevated position to impart rigidity to the frame.

4,940,283

T-TOP ROOFING SYSTEM

Gilbert G. Androy, 510 Marion Ave., Malvern, Iowa 51551

Filed Jul. 31, 1989, Ser. No. 386,775
Int. Cl.[5] B60J *7/19*
U.S. Cl. 296—216 **8 Claims**



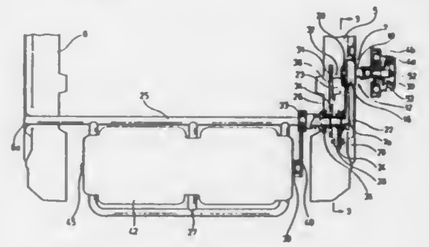
1. A T-top roofing system, comprising:
a motor vehicle having a roof spaced above a passenger compartment;
said motor vehicle having at least a driver's seat and a forward passenger's seat, a windshield, and a forward frame member surrounding and securing said windshield to said motor vehicle;
said roof having first and second openings formed therein, the first opening located generally above the driver's seat and the second opening located generally above the forward passenger's seat;
said roof having a T-bar portion extending from a rearward portion of said roof, between said openings, and forwardly to said forward frame member;
said rearward portion of said roof having first and second hollow cavities formed therein adjacent to said first and second openings, and opening into said first and second openings; and
first and second roof panels independently slidably mounted in said roof for selective, adjustable movement between closed positions, wherein said roof panels completely fill said first and second openings,and retracted positions, wherein said panels are retracted within said first and second hollow cavities.

4,940,284

SEAT FOR AUTOMOBILE

Yousetsu Nagasaka, Fujisawa, Japan, assignor to Shiroki Corporation, Fujisawa, Japan

Filed Jul. 25, 1989, Ser. No. 384,600
Claims priority, application Japan, May 8, 1989, 1-52829
Int. Cl.[5] A47C *7/46*
U.S. Cl. 297—284 **15 Claims**



1. A seat for an automobile, comprising:
a seat cushion;
a seat back connected to said seat cushion, a space being formed within a lower portion of said seat back;
a rod rotatably interposed between oppositely disposed side frames of said seat back;
a hip support secured upon an intermediate portion of said rod and disposed within said space provided within said seat back;
a support board disposed upon a support frame provided within said hip support in such a manner as to be pivotably inclined back and forth, an upper portion of said support board serving as a member for engaging a lower region of the lumbar vertebrae of a person seated within said seat during a first inclination of said support board and a forward inclination of said upper portion of said support board, and a lower portion of said support board serving as a member for engaging the sacral vertebrae of said person seated within said seat during a second inclination of said support board and a forward inclination of said lower portion of said support board;
a first operation handle for inclining said support board by means of a first brake mechanism; and
a second operation handle for rotating said rod by means of a second brake mechanism so as to move said hip support in a forward and backward mode relative to said space defined within said seat back.

4,940,285

SEAT SLIDING APPARATUS FOR VEHICLES

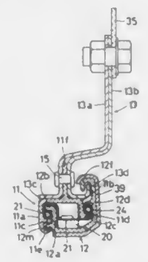
Saburo Suzuki, Tokoname; Hiroshi Nawa, Chiryu, and Sadao Ito, Toyoake, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1989, Ser. No. 330,503
Claims priority, application Japan, Mar. 31, 1988, 63-044505[U]
Int. Cl.[5] A62B *35/02*
U.S. Cl. 297—473 **7 Claims**

1. A seat sliding apparatus for attachment to a vehicle, comprising:
at least one lower rail fixedly secured to the vehicle, the at least one lower rail having upwardly extending first and second spaced sidewalls;
a corresponding upper rail, having first and second downwardly extending spaced sidewalls adjacent the respective first and second upwardly extending sidewalls, mounted on the lower rail;
a seat belt anchor means extending from the upper rail, the upper rail through the anchor means being subject to a

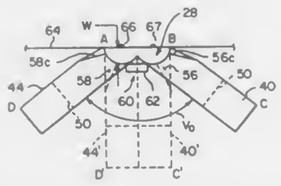
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shock force in a direction separating the upper rail and the lower rail during operation of the vehicle;
bearing means including opposing surfaces of the adjacent first and second sidewalls of the upper and lower rails for slidably supporting the upper rail on the lower rail;
first interlocking safety means, including corresponding interfitting portions of the adjacent first sidewalls of the upper and lower rails; and



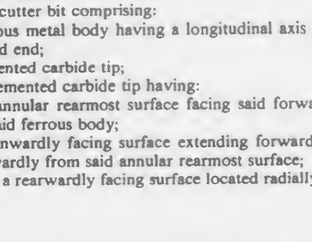
second safety interlocking means, including an interfitting portion of the second sidewall of the lower rail and the seat belt anchor means, the first and second safety interlocking means maintaining substantial contact between the upper and lower rails and the bearing means upon the occurrence of a shock force.

4,940,286
BED ATTACHMENT AND PIECE OF FURNITURE DEVICE
Tallam I. Nguti, 619 Elmwood Ter., Rochester, N.Y.
Filed Oct. 18, 1988, Ser. No. 259,263
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—429 **15 Claims**



1. A piece of furniture suitable for use generally and copulatively , the piece of furniture including:
(a) a seat member separated back-to-front into an ischium support section having a narrow sitting depth , and a legs support section comprised of separate right leg and left leg support portions, said right and left leg support portions being movable inwards and outwards between an apart position and a closed position;
(b) an access spacing defined adjacent said ischium support section by said right leg and left leg support portions in an apart position, said access spacing being at least as wide as the hip-width of a user of such piece of furniture; and
(c) means for supporting said seat member at a plurality of predetermined heights for use generally and copulatively , said plurality of heights including a first predetermined copulative height that is equal to the distance between the top of the ischium support section and that of a reference surface, when the top of the ischium support section is substantially at the same level as the crotch region of a user kneeling on such reference surface adjacent to, and facing, said ischium support section.

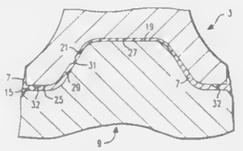
4,940,287
LOAD ENHANCER FOR DUMP TRUCKS
John P. Ritchie, Wichita, Kans., assignor to Proc Products, Inc., Wichita, Kans.
Filed Jun. 23, 1989, Ser. No. 370,841
Int. Cl.[5] B62D *61/10*
U.S. Cl. 298—23 R **20 Claims**



1. Apparatus for distributing the load borne by a dump truck having a dump bed supported for pivotal movement about a dump axis, said apparatus comprising:
a pair of gates on said dump bed spaced apart thereon and supported for hinged opening and closing movement to dump the load in the bed when the bed is raised about said dump axis and the gates are opened;
a rigid frame carrying a wheel assembly thereon and including a beam having a front end and a back end to which said wheel assembly is connected;
means for coupling said front end of the beam with the dump truck in a manner mounting the beam for movement about a substantially horizontal pivot axis between a load bearing position of the frame wherein said wheel assembly engages the ground and the frame bears part of the weight of the dump bed load and a raised position of the frame wherein said beam extends generally upwardly at a location between said gates to raise the wheel assembly above the ground;
power means for effecting movement of said frame between the load bearing position and the raised position; and
means for diverting material in the dump bed on opposite sides of said beam and out past said gates when the dump bed is raised and the gates are opened to dump the load in the dump bed.

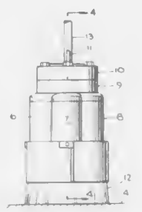
4,940,288
EARTH ENGAGING CUTTER BIT
Stephen P. Stiffler, New Enterprise, and Wayne H. Beach, Roaring Spring, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Continuation-in-part of Ser. No. 221,839, Jul. 20, 1988, Pat. No. 4,911,503. This application Jan. 27, 1989, Ser. No. 303,510
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[5] E21C *35/18*
U.S. Cl. 299—79 **28 Claims**

27. A cutter bit comprising:
a ferrous metal body having a longitudinal axis and a forward end;
a cemented carbide tip;
said cemented carbide tip having:
an annular rearmost surface facing said forward end of said ferrous body;
an inwardly facing surface extending forwardly and inwardly from said annular rearmost surface;
and a rearwardly facing surface located radially inwardly of said inwardly facing surface and forwardly of said annular rearmost surface;
a braze joint joining said rearwardly facing surface, said inwardly facing surface and said annular rearmost surface to said forward end of said ferrous body;
wherein said braze joint has an average thickness adjacent said rearwardly facing surface which is smaller than the average thickness of said braze joint adjacent said rearmost annular surface;



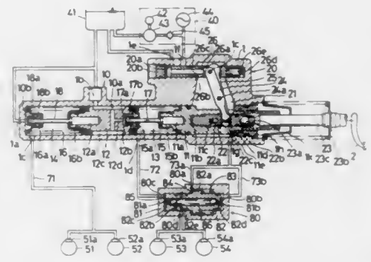
means disposed between said tip and said body and being formed on one thereof and protruding toward the other thereof for engaging the other and placing said tip in a spaced relationship relative to said body for facilitating formation therebetween of said braze joint having the predetermined desired thicknesses; and
wherein said protruding means includes a plurality of bumps formed on and protruding from said rearmost facing surface of said tip and being spaced from one another.

4,940,289
SCABBLER FOR SCABBLING FLOORS CONTAMINATED WITH HAZARDOUS MATERIALS
Stephen A. Trovato, 37 Puddingstone Dr., Boonton, N.J. 07005; Sheldon Lefkowitz, 119 Lang Dr., Coraopolis, Pa. 15108, and Robert J. Eckert, R.D. 1, Box 41, Eighty-four, Pa. 15330
Filed Jun. 1, 1988, Ser. No. 200,937
Int. Cl.[5] B25D *9/04, 17/32*
U.S. Cl. 299—37 **18 Claims**



1. Scabbling apparatus comprising:
a frame having a forward end, a rearward end and two opposed side surfaces extending divergently from said forward end toward said rearward end at an angle less than 180°;
a plurality of pneumatically operable scabbling piston and cylinder assemblies with reciprocable pistons and scabbling bits mounted on said pistons, said assemblies being carried by said frame and being mounted with said pistons reciprocable vertically and with said bits below said frame, and said assemblies being mounted with a single one thereof nearer the forward end of said frame than the remainder of said assemblies;
a handle secured to said frame and extending upwardly and rearwardly of said frame for manually moving said apparatus over a surface to be scabbled;
means for interconnecting said assemblies with a source of air supplying air at a pressure above atmospheric pressure for supplying such air to said assemblies for reciprocating said pistons; and
a tubular vacuum hose connector for receiving a vacuum hose extending from a source of vacuum, said connector extending at least to the bottom of said frame with the bottom end of said connector disposed adjacent to and intermediate said assemblies for vacuum removal of dust created by operation of said assemblies in a scabbling operation.

4,940,290
HYDRAULIC BRAKING SYSTEM
Michiharu Nishii, Toyota; Yoshihiko Tada, Oaza, and Genji Mizuno, Toyoake, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Aug. 11, 1988, Ser. No. 230,877
Claims priority, application Japan, Aug. 13, 1987, 62-202250; Aug. 13, 1987, 62-202251; Sep. 17, 1987, 62-233294
Int. Cl.[5] B60T *13/00, 11/10*
U.S. Cl. 303—6.01 **2 Claims**



1. A hydraulic braking system for automotive vehicles comprising:
a powered hydraulic pressure source for boosting a brake fluid pressure to a predetermined pressure and transmitting a powered hydraulic pressure;
a reservoir for storing brake fluid;
a master cylinder for receiving the brake fluid pressure from the reservoir to a pressure chamber and transmitting the brake fluid pressure from said pressure chamber by a reactive piston slidably positioned in the master cylinder and which is tensioned by a return spring in response to movement of a brake pedal;
a dynamic hydraulic pressure control system for adjusting and transmitting the powered hydraulic pressure from said powered hydraulic pressure source in response to one of brake pedal movement and said brake fluid pressure;
a plurality of wheel cylinders one of which is connected to each wheel and connected through a divided dual passage system to said dynamic hydraulic pressure control system and said master cylinder; and
a changeover means for changing over the connection between said wheel cylinders and said dynamic hydraulic pressure control system when the powered pressure transmitted from said dynamic hydraulic pressure control system is less then the predetermined pressure and introducing one of said brake fluid pressure and said powered pressure to said wheel cylinders through said divided dual passage systems, said changeover means includes a changeover valve for selectively changing over from a first position to connect said dynamic hydraulic pressure control system and said wheel cylinders and a second position to connect said master cylinder and said wheel cylinders, said changeover valve including a valve body and a piston slidably received therein; said valve body having two inlet ports in communication with said dy-

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namic hydraulic pressure control system, an inlet in communication with said master cylinder and an outlet in communication with said wheel cylinders; said piston having an interior bore in communication with said outlet, one of said two inlet ports and said inlet; first and second check valves disposed in said bore and urged toward first and second valve seats provided therein; first and second projections provided interiorly of said valve body whereby movement of said piston in response to said dynamic hydraulic pressure control system releases one of said first and second check valves from a respective one of said first and second value seats by engagement of said one of said first and second check valves with a respective one of said first and second projections, said dynamic hydraulic pressure control system being a hydraulic pressure booster for receiving the powered hydraulic pressure from said powered hydraulic pressure source and transmitting the powered hydraulic pressure which has been adjusted to the predetermined pressure in response to said brake pedal movement.

4,940,291

METHOD AND APPARATUS FOR CONTROLLING HYDRAULIC BRAKING PRESSURE FOR A VEHICLE

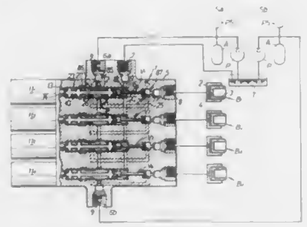
Makoto Sato, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1989, Ser. No. 293,773

Claims priority, application Japan, Jan. 7, 1988, 63-1550

Int. Cl.[5] B60T *7/00, 8/32*

U.S. Cl. 303—15 **6 Claims**



1. An apparatus for controlling a hydraulic braking pressure for a vehicle, comprising:

a housing having

a plurality of input ports leading to each other,

a plurality of input ports leading to each to a plurality of braking units,

a release port leading to an oil tank, and

a plurality of cylinder bores formed parallel to each other;

a plurality of hydraulic pressure supply sources separately connected to said input ports via check valves;

a plurality of spools each slidably fitted in each of the cylinder bores for changing over a communication state among the output ports, the input ports and the release port;

a plurality of actuators each connected to one of opposite ends of each of the spools to generate a thrust force in dependence on an amount of electricity input thereto; and

a plurality of hydraulic pressure chambers leading to said output ports and exposed to other ends of the spools so as to generate a hydraulic pressure acting against said thrust force.

4,940,292

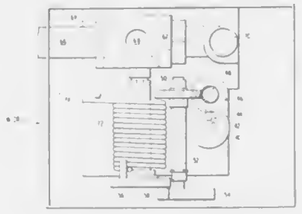
RAPID RELEASE VALVE MECHANISM

Angel P. Bezos, and Gary W. Egerton, both of Montgomery County, Md., assignors to Pulse Electronics, Inc., Rockville, Md.

Filed Apr. 19, 1989, Ser. No. 340,263

Int. Cl.[5] B60T *17/04*

U.S. Cl. 303—81 **12 Claims**



1. A rapid release valve mechanism comprising:

a ball valve including a rotating ball member and a housing;

drive means connected to said rotating ball member for rotating said ball member between closed and open positions;

an electric motor disengageably connected to drive said drive means;

torsion means connected to said ball member and prestressed by said drive means when said electric motor drives said drive means to rotate said ball member to a closed position and

actuator means for disengaging said electric motor from said drive means and allowing said torsion means to rapidly rotate said ball member to an open position.

4,940,293

DRIVE SLIP CONTROL DEVICE

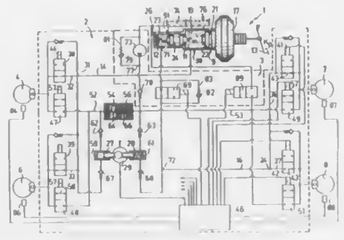
Manfred Burckhardt, Wallblingen; Andreas Faulhaber, Weinstadt, and Franz Brugger, Winnenden, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jan. 26, 1989, Ser. No. 301,960

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3802133

Int. Cl.[5] B60T *8/64*

U.S. Cl. 303—110 **20 Claims**



1. Drive slip control device for road vehicle having driven and non-driven wheels, wheel brakes and a hydraulic twin-circuit brake installation with front axle and rear axle brake circuit subdivisions and wherein one of the brake circuit subdivisions is associated with the non-driven vehicle wheels and the other is associated with the driven vehicle wheels;

said brake circuit subdivisions having static brake circuits whose brake pressure supply is achieved by a brake device having two outlet pressure spaces, one associated with each brake circuit subdivision;

an anti-lock braking system operating on the pump-back principle, comprising:

brake pressure control valve means associated individually with each of the driven and non-driven vehicle wheels;

two return pump means associated, one each, with the two brake circuit subdivisions;

said return pump means during pressure reduction phases of the anti-lock control, pumping brake fluid out of the wheel brake(s) then subjected to anti-lock control into output pressure spaces of the brake device with a pressure space being associated with a particular brake circuit subdivision;

said return pump means of the brake circuit of the driven vehicle wheels being used as a pressure source in brake pressure build-up phases of the drive slip control;

a drive slip two-way two position control valve means for connecting the return pump means to the pressure space of the brake device supplying pressure to the brake circuit subdivision of the driven vehicle wheels;

said drive slip control valve means being driven in response to a drive slip control signal from an electronic control unit means controlling the control phases of the drive slip control, from a basic position associated with the normal brake operation and anti-lock control operation into an excited functional position;

the basic position of the drive slip control valve means connects the output pressure space of the brake device associated with the brake circuit subdivision of the driven vehicle wheels to a main brake pipe of the brake circuit subdivision of the driven wheels;

the excited functional position of the drive slip control valve means shutting off this output pressure space from this main brake pipe while this main pipe continues to be connected to the pressure output of the associated return pump means;

the return pump means of the brake circuit of the driven vehicle wheels providing pressure to the brake circuit subdivision of the driven vehicle means in response to a brake pressure build-up control signal from the electronic control unit means;

a pressure limiting valve means being provided to limit the pressure connected to the brake circuit subdivision of the driven vehicle wheels during drive slip control operation wherein excess brake fluid flows out of the brake circuit subdivision of the driven vehicle wheels to a brake circuit subdivision of the driven vehicle wheels to a brake fluid reservoir of the brake installation when output pressure of the return pump means exceeds a specified threshold value;

said electronic control unit means generating first output signal for driving the drive slip control valve means into its excited position;

a second output signal for causing activation of the return pump means of the brake circuit subdivision of the driven vehicle wheels; and further output signals by means of which the brake pressure control valve means of the wheel brakes of the driven vehicle wheels are driven into their shut-off position as soon as the drive slip of at least one of the driven vehicle wheels reaches or exceeds a specified threshold value, whose magnitude is between a required slip value and a response threshold value of the drive slip control; and

wherein as soon as the return pump means of the brake circuit of the drive wheels is activated, the return pump means of the brake circuit of the drive wheels pumps brake fluid from the brake fluid reservoir into the main brake pipe of the brake circuit subdivision of the driven vehicle wheels.

4,940,294

HYDRAULIC ANTI-LOCK BRAKING SYSTEMS FOR VEHICLES

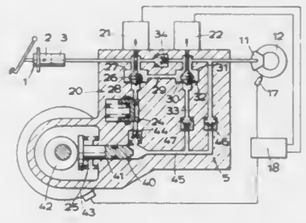
David Foster, West Midlands, England, assignor to Lucas Industries Public Limited Company, England

Filed May 12, 1989, Ser. No. 351,580

Claims priority, application United Kingdom, May 21, 1988, 8812049

Int. Cl.[5] B60T *8/40*

U.S. Cl. 303—115 **8 Claims**



1. An hydraulic anti-lock braking system for a vehicle having a brake on a wheel, said system comprising a master cylinder for applying said brake, sensing means responsive to the behaviour of said braked wheel, control valve means for modulating in an anti-lock mode the behaviour of said braked wheel in response to signals from said sensing means, an expansion chamber to which fluid from said brake is released under control of said control valve means to prevent said wheel from locking, a pump for generating the energy necessary to reapply said brake automatically by withdrawing previously dumped fluid from said expansion chamber, said control valve means comprising two separate first and second upstream and downstream valve assemblies, means for interconnecting said valve assemblies in a line in series, each said valve assembly being operable independently of, and simultaneously with, said other of said valve assemblies in accordance with the said sensed behaviour of said braked wheel, said first valve assembly being movable between a first position in which said master cylinder communicates with said second valve assembly and said second valve assembly is isolated from said expansion chamber and a second position in which said master cylinder is isolated from said second valve assembly and said second valve assembly communicates with said expansion chamber, and said second valve assembly being movable between a first position in which said first valve assembly communicates with said brake and a second position in which said first valve assembly is isolated from said brake, a line between said pump and said brake, a first one-way valve located in said line between said pump and said brake on the downstream side of said second valve assembly, a line between said pump and said second valve assembly, and a second one-way valve located in parallel with said first one-way valve in said line between said pump and said second valve assembly.

4,940,295

BRAKE PRESSURE CONTROL DEVICE

Yoshiharu Adachi; Kazutaka Kuwana, and Tsuyoshi Yoshida, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jul. 31, 1989, Ser. No. 387,663

Claims priority, application Japan, Jul. 29, 1988, 63-190900

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—117 **1 Claim**

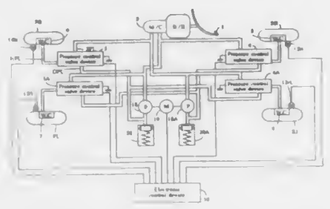
1. A brake pressure control device comprising:

a valve body having a valve spool capable of moving between a first position and second position:

a first input port which is connected to a brake pressure source and to said valve body;

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a second input port which is connected to an accumulator and to said valve body;
an output port connecting said valve body to a car wheel brake;
an output chamber in said spool for reducing the flow from said first input port to said output port and increasing the flow from said second input port to said output port in accordance with displacement of said spool from said first position to said second position in said valve body:
return driving means for imparting a driving force in a return direction from said second position to said first position in said valve spool;



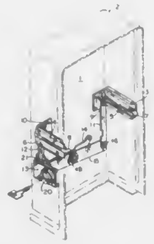
an output operational space connected to said output port for applying pressure at said output port to said valve spool to move said spool toward mid second portion;
an electric coil for providing a magnetic driving force to said spool against said driving force of said return driving means of a strength corresponding to an electric current value applied to said coil; and
electric current conducting means for conducting an electric current to said coil for moving said valve body to a point between said first position and said second position.

4,940,296

PLASTIC HOUSING FOR TELEPHONE PAYSTATION

Gerald B. McGough, 2512 Monteview Dr., Huntsville, Ala. 35803

Filed Feb. 10, 1989, Ser. No. 308,776
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—100 10 Claims



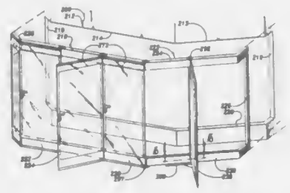
1. A housing for a telephone paystation comprising:
an upper housing assembly including a shell of plastic construction;
first and second locking rods each mounted to an opposite vertical side wall of said upper housing assembly by first and second locking rod plates, respectively;
first and second push bars each including a first end connected to a first end of said first and second locking rods, respectively;
a rocker bar pivotally mounted to said upper housing shell, including a first end of said rocker bar connected to a second end of said first push bar and a second end of said rocker bar connected to a second end of said second push bar;
at least one of said push bars further including a cam receiving slot;
a key operable cylinder lock mounted in one of said vertical side walls of said upper housing assembly shell;
said lock further including a cam located internally of said upper housing shell and adapted to engage said slot in said one of said push bars;
a lower housing assembly including a lower shell;
and a rear shell;
first and second strike plates each mounted to an opposite vertical side wall of said rear shell and each engageable by a second end of a different one of said locking rods;
whereby in response to operation of said lock by a key, said cam engages said push bar slot moving a first one of said first push bars in a first direction, and in response to said first push bar movement, said rocker bar moving a second one of said push bars in a second direction, the movement of said push bars in said first and second directions, respectively, causing said second ends of said connected locking bars to engage or in the alternative to disengage said strike plates in said rear shell to secure or in the alternative to provide access to an internal portion of said housing assembly.

4,940,297

PRODUCT DISPLAY AND MARKETING DEVICE

Arden L. Borgen, Des Moines, Iowa, assignor to Margaret Platt Borgen, Des Moines, Iowa

Continuation-in-part of Ser. No. 49,733, May 13, 1977, Pat. No. 4,818,043. This application Mar. 29, 1989, Ser. No. 330,596
The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.
Int. Cl.[5] A47F *3/00*
U.S. Cl. 312—138.1 8 Claims



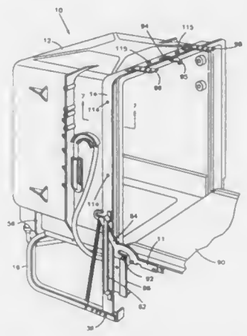
1. A door assembly for a product display compartment having compartment wall provided with a door opening having an upper margin, opposite end margins, and a bottom margin, said assembly comprising:
a continuous door frame sized and shaped to conform generally to the size and shape of said door opening perimeter, said door frame being operatively attached to said compartment wall in registration with said perimeter of said door opening;
said door frame having an upper frame member, a lower frame member, and opposite end frame members defining a frame opening, each of said upper, lower, and end frame members having a flat front surface facing outwardly away from said display compartment;
a plurality of doors positioned in covering relation over said frame opening, each of said doors comprising a top edge in covering relation over said front face of said upper frame member, a bottom edge in covering relation over said lower frame member, a hinge edge, and a latching edge, said doors being made of glass and having a front planar surface facing outwardly away from said compartment, said doors being in edge to edge relation with said hinge edge of each door being closely adjacent said latching edge of an adjacent one of said doors;
sealing means between said latching edges and said hinge edges of adjacent ones of said doors for providing a thermal seal therebetween;
hinge means connecting each of said doors to said door frame for hinged movement between open and closed positions about a vertical hinge axis adjacent said hinge edge of each of said doors;
said frame opening being free from any vertical members extending between said upper and lower frame members other than said plurality of doors.

4,940,298

PLASTIC DISHWASHER TUB AND SUPPORT STRUCTURE

James R. Jackson, and Stephen H. Friskney, both of Connersville, Ind., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 19, 1989, Ser. No. 367,730
Int. Cl.[5] A47B *77/06*
U.S. Cl. 312—228 14 Claims



1. In a dishwasher comprising a box-like tub, said tub having a bottom wall, a top wall, two side walls, a back wall and an open front; and a metal frame supporting said tub above a mounting surface, said frame having a main member supporting a front portion of the tub and a secondary member supporting a remainder of the tub, the improvement comprising said secondary member being formed from and consisting of a single piece, wherein the single piece has a length substantially greater than its width and depth and is formed in a U-shape along its length with a portion of each of the legs of the U additionally formed into arms extending out of the plane of the U.

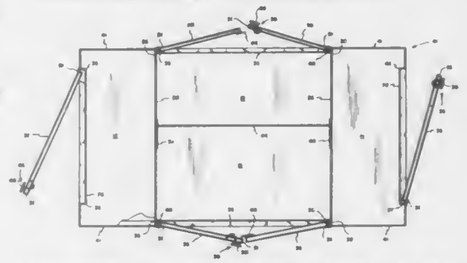
4,940,299

STORAGE CABINET

James E. Lazenby, 808 Daisy St., Monroeville, Ala. 36461

Continuation-in-part of Ser. No. 218,975, Jul. 14, 1988, abandoned. This application Jun. 2, 1989, Ser. No. 360,381
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—285 10 Claims

1. A tool and construction equipment storage cabinet for use at construction sites and plant buildings or the like, said storage cabinet comprising:
a top, a pair of substantially parallel ends, a pair of substantially parallel sides, a base comprising a plurality of channel iron members disposed in secured relation to form a substantially rectangular frame having a pair of spaced cross members, and a floor member secured to said channel members;
a first structural, continuous partition disposed between said top and said base;
a second structural, continuous partition positioned between said top and bottom in secured relation thereto, said second structural, continuous partition being in substantially parallel relation with said first structural, continuous partition;
a third structural, continuous, intermediate partition disposed in substantially normal relation to and extending in secured relation between said first and second partitions intermediate each end edge thereof, said third partition vertically extending between said floor member and said top, said partitions having a substantially H-shaped configuration and forming an internal rear wall of each of four compartments formed in said cabinet, each of said four compartments having a forward open portion;



a door assembly extending substantially across each of said four compartments, each door assembly disposed for enclosing a respective one of said four compartments at said forward portion thereof;
a first plurality of panel members, each substantially forming the ends, sides, and corners of said cabinet, each of said panel members including a pair of spaced vertical edges and an intermediate portion, said panels being bent at said intermediate portions to form a rigid corner, and each of said vertical edges of each said panel being positioned in one said end and one said side of said cabinet and being formed to provide vertical door frames for each said door; and
a second plurality of panel members secured to and extending upwardly from said base, each extending at the base of said cabinet between said pairs of vertical door frames and formed to provide a lower door stop for each door.

4,940,300

CATHODE RAY TUBE WITH AN ELECTROPHORETIC GETTER

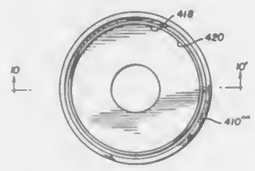
Ettore Giorgi, Milan, Italy, assignor to SAES Getters SpA, Milan, Italy

Filed Mar. 8, 1985, Ser. No. 709,650
Claims priority, application Italy, Mar. 16, 1984, 20096 A/84
Int. Cl.[5] H01J *17/24, 31/00*
U.S. Cl. 313—559 5 Claims

1. A cathode ray tube comprising:
A. a cylindrical neck;
B. a feed-through sealing element positioned at one end of the neck, said sealing element closing said end of the neck;
C. an electron gun within said neck, said electron gun being supported by the sealing element; and
D. a getter device located within the neck, said getter device comprising a getter support having an electrophoretic coating thereon of at least one member selected from the

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group consisting of Zr-Al alloys, Zr-Ni alloys, Zr-Fe alloys, Zr-Ti-Fe alloys, Zr-M_1-M_2 alloys wherein M_1 is



vanadium or niobium and M_2 is nickel or iron, Zr, Ta, Hf, Ni, Ti, Th, U and hydrides thereof.

4,940,301

METHOD AND APPARATUS FOR ENHANCING A HOLOGRAPHIC IMAGE BY CANDLELIGHT

Katalin Sallai, 4470 Ventura Canyon Ave., No. F 306, Sherman Oaks, Calif. 91423

Filed Dec. 23, 1988, Ser. No. 288,946
Int. Cl.[5] G03H *1/00*; F21V *33/00, 35/00*
U.S. Cl. 350—3.6 **16 Claims**



1. An apparatus for enhancing a holographic image, comprising:

a. a vertically aligned frame member comprising a front wall having a vertically aligned opening therein and a rear wall separated from the front wall by a gap;

b. a vertically aligned first optically transparent member;

c. a vertically aligned second optically transparent member;

d. said first optically transparent member and said second optically transparent member set within the gap of said frame such that said first optically transparent members lies adjacent said front wall with a portion of the first optically transparent member aligned with the opening in said front wall and said second optically transparent member set behind and adjacent to the first optically transparent member;

e. a photographic emulsion including a holographic picture attached to said first optically transparent member and located between said first optically transparent member and said optically transparent member and aligned with the opening in the front wall of said frame member;

f. a candle mounting means including a candle retaining portion set in front of the front wall of said frame member; and

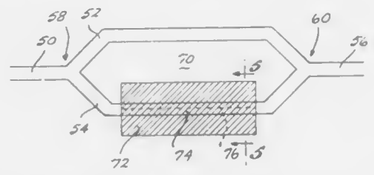
g. a candle retained within the candle retaining portion of said candle mounting means in a manner so as to enable the flame from the candle when lighted to illuminate the holographic picture from in front of the holographic picture and illuninate the holographic picture at a height equal to or above the lowermost portion of the opening in said front wall of said frame to thereby cause the holographic picture to become visible.

4,940,302

INTEGRATED OPTICS WAVEGUIDES WITH LARGE PHASE SHIFTS

Theodore L. Houk, and R. Aaron Falk, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 13, 1989, Ser. No. 322,532
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.12 **11 Claims**



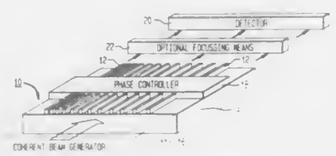
6. An interferometer formed in an electro-optic substrate comprising lithium, the interferometer comprising first and second arms along which an optical signal can pass, the first arm comprising a proton exchange region formed in the substrate, and a waveguide formed within the proton exchange region, the waveguide having associated with it a lowest guided mode that defines a spatial distribution of a field of an optical signal traveling along the waveguide, the dimensions of the waveguide and the proton exchange region being selected such that substantially all of the field of the lowest guided mode is contained within the proton exchange region.

4,940,303

OPTICAL SYSTEM COMPRISING NON-UNIFORMLY SPACED ARRAY OF PARALLEL OPTICAL WAVEGUIDE ELEMENTS

Joseph H. Abeles, Highland Park, and Robert J. Deri, Atlantic Highlands, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 28, 1988, Ser. No. 264,096
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.11 **17 Claims**



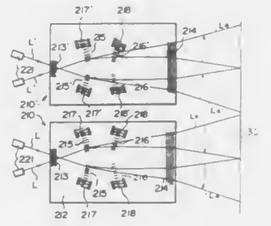
1. A far field optical scanning system comprising a coherent light source the output from which provides input light simultaneously to each element of an optical waveguide array comprising a plurality of parallel spaced waveguide elements, modulation means coupled to the waveguide elements of the array for modulating the light passing through the waveguide array, and far field optical detector means, the system characterized in that the optical waveguide array has a nonconstant spacing between adjacent parallel waveguide elements of said array.

4,940,304

OPTICAL DEFLECTING APPARATUS

Masami Hatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 201,976, Jun. 3, 1988, abandoned. This application Jul. 24, 1989, Ser. No. 384,113
Claims priority, application Japan, Jun. 3, 1987, 62-139472; Jun. 25, 1987, 62-158610; Jun. 25, 1987, 62-158611
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.13 **24 Claims**



19. An optical deflecting apparatus comprising:

(i) an optical waveguide formed of a material allowing propagation of surface acoustic waves therethrough,

(ii) a first surface acoustic wave generating means for generating a first surface acoustic wave, which advances in a direction intersecting an optical path of a first guided optical wave advancing inside of said optical waveguide and diffracts and deflects said first guided optical wave, in said optical waveguide,

(iii) a second surface acoustic wave generating means for generating a second surface acoustic wave, which advances in a direction intersecting an optical path of a second guided optical wave advancing inside of said optical waveguide and diffracts and deflects said second guided optical wave, in said optical waveguide,

(iv) a third surface acoustic wave generating means for generating a third surface acoustic wave, which advances in a direction intersecting the optical path of said first guided optical wave diffracted by said first surface acoustic wave and diffracts and deflects said first guided and diffracted optical wave in a direction that amplifies the deflection caused by said diffraction, in said optical waveguide, and

(v) a fourth surface acoustic wave generating means for generating a fourth surface acoustic wave, which advances in a direction intersecting the optical path of said second guided optical wave diffracted by said second surface acoustic wave and diffracts and deflects said second guided and diffracted optical wave in a direction that amplifies the deflection caused by said diffraction, in said optical waveguide,

wherein said first surface acoustic wave generating means and said third surface acoustic wave generating means are formed to continuously change the frequencies of said first surface acoustic wave and said third surface acoustic wave and the directions of advance thereof while satisfying the conditions of

$$k1 + K1 = k2, \text{ and}$$

$$k2 + K2 = k3,$$

wherein k1 and k2 respectively denote wave vectors of said first guided optical wave before and after being diffracted by said first surface acoustic wave, k3 denotes a wave vector of said first guided optical wave after being diffracted by said third surface acoustic wave, and K1 and K2 respectively denote wave vectors of said first surface acoustic wave and said third surface acoustic wave,

said second surface acoustic wave generating means and said fourth surface acoustic wave generating means are formed to continuously change the frequencies of said second surface acoustic wave and said fourth surface acoustic wave and the directions of advance thereof while satisfying the conditions of

$$k4 + K3 = k5, \text{ and}$$

$$k5 + K4 = k6$$

wherein k4 and k5 respectively denote wave vectors of said second guided optical wave before and after being diffracted by said second surface acoustic wave, k6 denotes a wave vector of said second guided optical wave after being diffracted by said fourth surface acoustic wave, and K3 and K4 respectively denote wave vectors of said second surface acoustic wave and said fourth surface acoustic wave, and

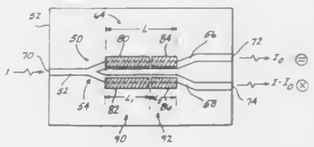
said first surface acoustic wave generating means, said second surface acoustic wave generating means, said third surface acoustic wave generating means, and said fourth surface acoustic wave generating means are disposed so that said first guided optical wave and said second guided optical wave radiated out of said optical waveguide scan without overlapping each other on a predetermined surface.

4,940,305

OPTICAL SWITCH BASED ON 1×2 DIRECTIONAL COUPLER

Suwat Thanlyavarn, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 22, 1989, Ser. No. 227,826
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.14 **9 Claims**



1. An optical switch, comprising:

an electro-optic substrate;

a pattern of optical waveguides formed in the substrate, the pattern comprising an input waveguide that branches to form first and second output waveguides, at least one output waveguide having a propagation constant that can be varied by an electric field;

the first and second output waveguides both passing through a coupling region within which the output waveguides are positioned so as to produce evanescent field coupling therebetween;

means for selectively generating an electric field in a first section of the coupling region to thereby produce in the first section a first difference $\Delta\beta_1$ between the propagation constant of the first waveguide and the propagation constant of the second waveguide:

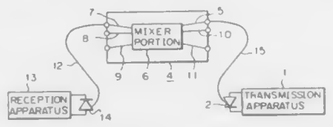
means for selectively generating an electric field in a second section of the coupling region to thereby produce in the second section a second difference $\Delta\beta_2$ between the propagation constant of the first waveguide and the propagation constant of the second waveguide, the first and second section having respective lengths that differ from one another, $\Delta\beta_1$ and $\Delta\beta_2$ having opposite polarities from one another; and

whereby an optical input signal introduced into the input

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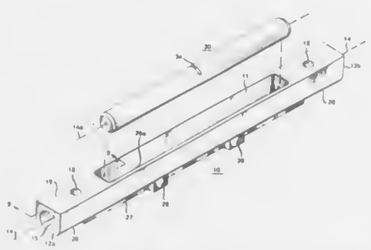
waveguide can be switched to a selected output waveguide by generating the first and second electric fields.

4,940,306
STAR NETWORK OPTICAL TRANSMISSION SYSTEM
Tadayoshi Kitayama; Kiwami Matsushita, and Kuniaki Motoshima, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 23, 1989, Ser. No. 300,786
Claims priority, application Japan, Jan. 28, 1988, 63-18083; Mar. 4, 1988, 63-51136; Nov. 26, 1988, 63-298799
Int. Cl.[5] G02B *6/28*
U.S. Cl. 350—96.16 **14 Claims**



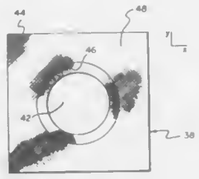
1. A star network optical transmission system having a star coupler as a center node, said star network optical transmission system comprising: a star coupler provided with an optical fiber at an input portion and an output portion, an optical transmission apparatus having a laser with a wavelength of λ as a light source; an up optical fiber exhibiting a single mode transmission characteristic at a wavelength of λ and connecting said optical transmission apparatus to said star coupler; an optical reception apparatus; and a down optical fiber exhibiting a multimode transmission characteristic at a wavelength λ and connecting said optical reception apparatus to said star coupler.

4,940,307
OPTICAL FIBER SPLICE
James A. Aberson, Atlanta; Raymond P. DeFabritis, Lilburn; David N. Ridgway, Conyers, and William A. Vicory, Duluth, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 19, 1988, Ser. No. 286,441
Int. Cl.[5] G02B *6/38*
U.S. Cl. 350—96.21 **10 Claims**



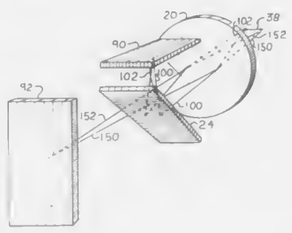
1. Apparatus for effecting an optical fiber splice, comprising:
an elongate housing comprising:
a top surface;
an open recess formed lengthwise into said top surface, said recess having a semicircularly shaped floor having a center axis and two end walls; and
an elongate, cylindrical fiber-aligning glass member having a length substantially the same as the distance between said end walls of said recess, and having an exterior radius substantially the same as the radius of said semicylindrical floor of said recess, said member comprising a circular cross-section capillary track formed along the longitudinal axis of said member, the capillary track longitudinal axis and the center axis of said housing being in predetermined relationship when said member is disposed in said recess of said housing.

4,940,308
LASER BEAM STOP
John R. Debesis, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 27, 1988, Ser. No. 211,938
Int. Cl.[5] G02B *27/46, 27/58*
U.S. Cl. 350—162.2 **13 Claims**



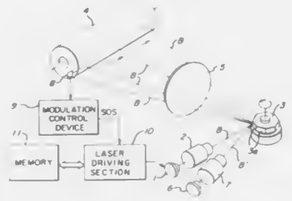
1. A soft-edge stop for a laser beam, including:
a passing zone, a blocking zone and a transition zone between said passing zone and said blocking zone;
said transition zone including a diffraction grating, the diffraction effeciency of said diffraction grating having a first value adjacent said passing zone, a second, different value adjacent said blocking zone and varying, in diffraction efficiency, between said first and second values elsewhere in the transition zone.

4,940,309
TESSELLATOR
Peter S. Baum, 9 Eustis St., #2R, Cambridge, Mass. 02140
Continuation of Ser. No. 40,243, Apr. 20, 1987, abandoned. This application Jan. 25, 1989, Ser. No. 303,956
Int. Cl.[5] G02B *27/14*
U.S. Cl. 350—171 **10 Claims**



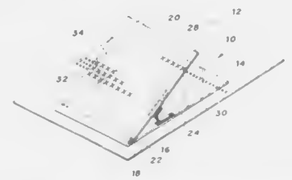
1. A tessellator comprising
(a) a focusing means used to form a set of electromagnetic waves into a clear image,
(b) a plurality of target elements, upon each of which is directed a segment of said clear image,
(c) at least one reflective means positioned along the path taken by the electromagnetic waves as they travel from said focusing means to said target elements, said reflective means positioned farther from said focusing means than a minimum tessellating distance to direct at least one section of said electromagnetic waves to at least one of said individual target elements.

4,940,310
OPTICAL SCANNING DEVICE USING PLURAL SOURCES OF DIFFERING WAVELENGTHS
Akiyoshi Hamada, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 27,750, Mar. 19, 1987, abandoned. This application May 25, 1989, Ser. No. 356,879
Claims priority, application Japan, Mar. 19, 1986, 61-62585; Mar. 19, 1986, 61-62586; Mar. 19, 1986, 61-62587; Mar. 20, 1986, 61-63753
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—236 **9 Claims**



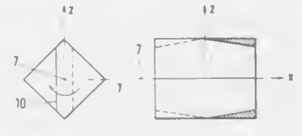
1. An optical scanning device for scanning a photosensitive member, comprising:
first optical beam generating means for generating a first beam having a wavelength range within a sensitivity range of the photosensitive member, the first beam being modulated based on an image signal and directed along a first optical path;
beam scanning means having at least one reflecting face for scanning the first beam on a photosensitive face of the photosensitive member;
second optical beam generating means for generating a second beam to be applied to the reflecting face and directed along a second optical path separate from the first optical path, a design wave length of the second beam being within a wave length range where a sensitivity of the photosensitive face is substantially lower than the wavelength of the first beam; and
a light receiving element for detecting the second beam having been reflected by the reflecting face and for outputting a signal for starting the modulation of the first beam.

4,940,311
ADJUSTABLE MAGNIFYING DEVICE
Daniel F. Buszek, and Frank J. Buszek, both of 19626 Woodmont, Harper Woods, Mich. 48225
Filed Dec. 9, 1988, Ser. No. 282,055
Int. Cl.[5] G02B *7/02*
U.S. Cl. 350—245 **3 Claims**



1. A device for magnifying indicia embodied in a tangible medium, such as a writing, drawings, photographs, pictures and the like, the device comprising:
a transparent base for placement over the tangible medium having indicia to be magnified, said transparent base having a bottom side edge;
a U-shape lip connected to said bottom side edge of said transparent base, said U-shaped lip extending upwardly from and inwardly over said bottom side edge of said base;
a magnifying sheet having a basal edge, said basal edge being foldably connected to said magnifying sheet, said basal edge being engaged by said U-shaped lip; and
an adjustable fastener extending between said magnifying sheet and said transparent base, said adjustable fastener permitting said magnifying sheet to be selectively supported in an inclined position above said transparent base so that the indicia in the tangible medium to be viewed are magnified in an amount determined by the selected angle of inclination of said magnifying sheet and said transparent base.

4,940,312
SCANNING PRISM
Otto Hofmann, Kirchstockach, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Sep. 23, 1988, Ser. No. 249,355
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1987, 3732068
Int. Cl.[5] G02B *5/04, 26/10*
U.S. Cl. 350—286 **3 Claims**



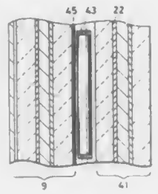
1. Optical scanning means, for use in a scanning system, for producing scanning lines of an object as the system moves past the object, said optical scanning means comprising:
a quadratic two-part scanning prism rotatable around an axis of symmetry, said prism comprising a prism body having opposite roof edges, and having a reflecting surface inclined at an angle β with respect to the axis of rotation and intersecting the middle of the axis of rotation and intersecting the roof edges of the prism body on opposite sides of the middle, said angle β being such that crossing scanning lines are produced when the prism is rotated and the system moved past the object.

4,940,313
LIQUID CRYSTAL DISPLAY HAVING A BUILT-IN PHOTOELECTRIC CONVERSION DEVICE
Toshiji Hamatani, Atsugi, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Filed Jul. 18, 1989, Ser. No. 381,427
Claims priority, application Japan, Jul. 19, 1988, 63-179468
Int. Cl.[5] G02F *1/133*
U.S. Cl. 350—342 **6 Claims**

5. A liquid crystal display comprising:
a pair of first transparent substrates;
transparent electrode arrangements provided on the inside surfaces of said transparent substrates in order to define a plurality of pixels;
a liquid crystal layer disposed between said substrates;
a transparent second substrate overlappingly juxtaposed parallel with said transparent first substrates;
a photoelectric conversion device formed on said transparent second substrate, said conversion device comprising a

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pair of transparent conductive films and photosensitive semiconductor film located therebetween; and



a light source provided between said first substrates and said second substrate.

4,940,314

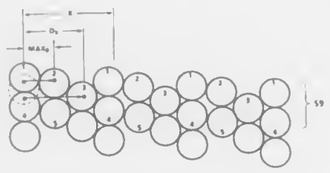
VARIABLE WAVELENGTH DISCRETE OPTICAL IMAGE BARS HAVING PASSIVELY ENHANCED SPATIAL ADDRESSING CAPACITY

David L. Hecht, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 733,356, May 13, 1985, abandoned. This application Dec. 23, 1988, Ser. No. 289,496

Int. Cl.[5] G01D *15/14*; G02F *1/01*

U.S. Cl. 350—355 **18 Claims**



15. The combination comprising

a variable wavelength discrete optical image bar for sequentially generating successive, mutually independent pixel patterns at N different wavelengths, where $N \geq 2$ and each of said pixel patterns contains a plurality of pixels, and

an optical system for superimposing said pixel patterns on an output image plane so that the pixels of each of said pixel patterns are spatially distributed generally uniformly on said image plane on respective laterally displaced centers while said image plane is advancing in an orthogonal cross-line direction with respect to said image bar;

said optical system including optical means for dispersing said pixel patterns in said cross-line direction with respect to said image plane in accordance with their respective wavelengths to substantially completely compensate on a pixel pattern-by-pixel pattern basis for the cross-line advance of said image plane.

4,940,315

PATTERNING OF INSULATOR ON ELECTROCHROMIC MATERIAL AS DETERMINANT FOR AREA OF COLORATION

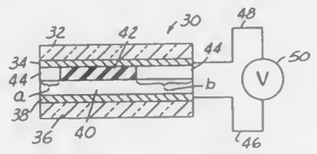
Hulya Demiryont, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1988, Ser. No. 253,655

Int. Cl.[5] G02F *1/17*

U.S. Cl. 350—357 **14 Claims**

8. An electrochromic device comprising two substrates and therebetween: one electrode layer; an electrochromic layer; an insulator material which is (i) non-ionically conductive and (ii) electronically insulating; a solid ion conductive material; and another electrode layer, said one electrode layer and said other electrode layer being transparent and each electrode layer being in contact with a respective one of said substrates, said solid ion conductive layer being adapted to communicate ions to and from said electrochromic layer upon application of a voltage across said electrode layers, wherein areas of said



electrochromic layer which are not to be colorable during operation of said device are in contact with said insulator material and not in contact with said solid ion conductive material, and said colorable areas of said electrochromic layer, which are to be colored upon application of a voltage across said electrodes, are in contact with said solid ion conductive material.

4,940,316

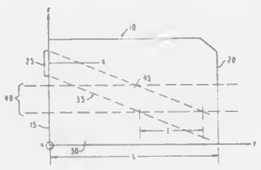
APPARATUS AND METHOD FOR INCREASING THE EFFICIENCY OF AN ACOUSTO OPTIC DIFFRACTIVE DEVICE

Gerald B. Brandt, Edgewood Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 13, 1988, Ser. No. 194,064

Int. Cl.[5] G02F *1/01*

U.S. Cl. 350—358 **6 Claims**



1. An acousto optic tunable filter system comprising:

a crystal;

acoustic means for launching acoustic energy into said crystal so as to maximize overlap of said acoustic energy within said crystal;

means for modulating the acoustic energy launched into said crystal in accordance with a reference signal;

means for illuminating said crystal with light so that the light is diffracted by said overlapping acoustic energy; means for providing said reference signal; and

means for detecting light exiting said crystal being in phase with said reference signal.

4,940,317

ELECTRIC HEATING DEVICE FOR MIRROR

Ronnie Reuben, c/o 555 Chabanel West, Suite 1009, Montreal, Quebec, Canada

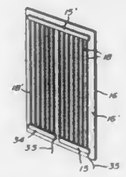
Filed Aug. 1, 1988, Ser. No. 226,995

Int. Cl.[5] G02B *5/08*; B60R *1/02*; H05B *1/00*

U.S. Cl. 350—588 **11 Claims**

1. A mirror heating device for securement to a rear thermally conductive surface of a mirror for heating a mirror to a temperature exceeding ambient temperature about said mirror when used in an area where there is water vapor in the air, said device comprising a first electrically insulated conductive strip

adhesively securable adjacent an edge of said rear coated surface of said mirror, connecting means or applying a DC voltage to said conductive strip, a second electrically insulated conductive strip located adjacent an opposed edge of said rear coated surface of said mirror, a ground connection connected to said second strip, intermediate electrically insulating resistive conductors extending between said first and second conductive strips and in thermal conductive contact therewith to heat said mirror, and electrical insulating means extending over said first and second conductive strips and said intermediate resistive conductor means for insulting a back surface of said mirror, said thermally conductive surface being a thin metal plate adhesively secured over at least a major portion of a rear surface of said mirror, said conductive strip adjacent said lower edge being connected to said connecting means which is a wire conductor secured to a positive terminal of a DC voltage source, a third electrically insulated conductive metal strip



insulatingly secured adjacent one of said edges of said metal plate, said third metal strip being axially aligned with said first metal strip, said second metal strip being an elongated strip, said first strip having a plurality of electrically insulated conductors connected thereto and a portion of said second metal strip and extending in spaced-apart parallel alignment and in adhesive contact with said thin metal plate, whereby to heat said plate by heat transfer when current flows in said conductors, and a further plurality of electrically insulated conductors connected to said third metal strip and a portion of said second metal strip and also in adhesive contact with said metal plate, said first conductive strip being connected to a positive terminal of a DC voltage source by said connecting means, said third conductive strip being grounded, said metal strips being sandwiched between opposed electrical insulating layers, at least said layer adjacent said rear coated surface of said mirror having an adhesive surface for securing said metal strip thereto.

4,940,318

GRADIENT MEMBRANE DEFORMABLE MIRROR HAVING REPLACEABLE ACTUATORS

Mark A. Ealey, Ayer, and Victor G. Salemme, Concord, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Nov. 3, 1988, Ser. No. 266,616

Int. Cl.[5] G02B *5/08*, *5/18*

U.S. Cl. 350—611 **5 Claims**

1. A deformable mirror having a continuous reflective surface, said deformable mirror being comprised of:

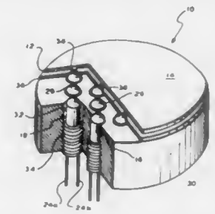
(a) a base having a plurality of apertures passing therethrough;

(b) a plurality of electrically operable actuators, each of said actuators being manufactured from an electrodistortive material which may be elongated in response to an electrical signal applied thereto, each of said actuators having a rear end portion and a forward extremity, each of said actuators being received in each of said apertures in said base;

(c) means for retaining each of said actuators in each of said apertures;

(d) a facesheet above said base, said facesheet having a reflecting surface on one side thereof for reflecting optical signals therefrom; and

(e) a retraction membrane located between said facesheet and said base and fastened to said base and to the side of said facesheet opposite said reflecting surface, each of said actuators having their forward extremities in contact with said retraction membrane, said retraction membrane being manufactured from a material which will flex when one or more of said actuators are biased against said retraction membrane by the application of an electrical signal to one or more of said actuators, and which will provide a restoring force to each of said actuators when electrical signals applied to said actuators are reduced or removed, said retraction membrane further being characterized in that



the thickness of said retraction membrane is reduced around the point at which each actuator contacts the retraction membrane to provide symmetrical reduced stress conditions around the point at which each actuator contacts said retraction membrane;

whereby said actuators may have electrical signals applied thereto selectively changed to provide for the controlled deformation of the reflecting surface of the facesheet, said retraction membrane restoring said facesheet to an undeformed state upon the reduction or removal of electrical signals from said actuators.

4,940,319

X-RAY MIRROR APPARATUS AND METHOD OF MANUFACTURING THE SAME

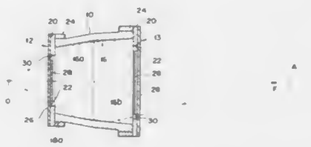
Katsunobu Ueda; Mitsuo Sumiya, and Michio Baba, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1989, Ser. No. 342,793

Claims priority, application Japan, Apr. 28, 1988, 63-104096

Int. Cl.[5] G02B *5/08*

U.S. Cl. 350—613 **12 Claims**



9. An X-ray mirror apparatus comprising:

a substantially cylindrical mirror body having opened ends and an inner surface which forms a reflecting mirror surface having a surface of revolution, said reflecting mirror surface having an X-ray focal spot located outside the mirror body and on an axis of the reflecting mirror surface;

light shielding means provided on at least one open end of the mirror body, for allowing only the passage of X-rays entering onto the reflecting mirror surface and X-rays reflected on the reflecting mirror surface, said light shielding means including a light shielding plate provided to block said one open end, a substantially annular slit allowing passage of the X-rays, and fitting means fitted to said

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one end of the mirror body, for positioning the light shielding plate with respect to the mirror body so that the slit is located coaxial with the axis of the reflecting mirror surface; and

means for visually observing the X-ray focal spot, said observing means including a through hole formed in the light shielding plate to be coaxial with the reflection mirror surface, light emitting means provided outside the mirror body, for emitting visible light, and an optical system for directing the visible light emitted from the light emitting means toward the X-ray focal spot through the through hole and the interior of the mirror body and imaging the visible light on the X-ray focal spot.

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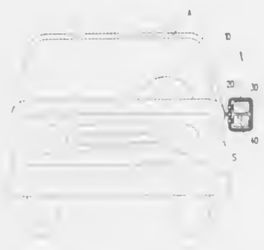
VEHICLE REAR VIEW MIRROR

Lura L. Tribble, 1513 Harvard Dr., Brunswick, Ohio 44212

Filed Jul. 10, 1989, Ser. No. 377,128

Int. Cl.[5] **G02B** *7/18;* **B60R** *1/06*

U.S. Cl. 350—616 **3 Claims**



1. A vehicle rear view mirror, comprising:

a generally rectangular open frame formed from a cylindrical member;

a first cylindrical sleeve adjustably secured on said cylindrical member;

a first transverse stem secured to said first sleeve;

a mounting plate for securement to a vehicle;

a first cylindrical socket on said mounting plate having an undercut circular groove;

an enlarged cylindrical end on said first stem received for rotation in said first cylindrical socket;

an enlarged resilient circumferential rib on said first stem received in said circular groove;

a second cylindrical sleeve adjustably secured on said cylindrical member above said first cylindrical sleeve;

a second cylindrical socket on said second sleeve having an undercut circular groove;

a second transverse stem having an enlarged cylindrical end received for rotation in said second cylindrical socket;

an enlarged resilient circumferential rib on said second stem received in said circular groove;

a first mirror mounted within said frame on said second stem;

a third cylindrical sleeve adjustably secured on said cylindrical member below said first cylindrical sleeve;

a third cylindrical socket on said third sleeve having an undercut circular groove;

a third transverse stem having an enlarged cylindrical end received for rotation in said third cylindrical socket;

an enlarged resilient circumferential rib on said third stem received in said circular groove; and

a second mirror mounted within said frame on said third stem, said first and second mirrors mounted for independent compound adjustment in vertically spaced relation within said frame.

4,940,321

DRIVE UNIT FOR ELECTRICALLY DRIVEN REMOTE-CONTROLLED MIRROR

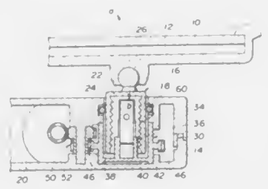
Norio Yoshida, Isehara, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Nov. 23, 1988, Ser. No. 275,713

Claims priority, application Japan, Nov. 26, 1987, 62-178891[U]; Nov. 26, 1987, 62-178893[U]; Jul. 25, 1988, 63-97409[U]

Int. Cl.[5] **B60R** *1/06;* **G02B** *7/18*

U.S. Cl. 350—633 **8 Claims**



1. A drive unit for an electric remote control mirror, comprising:

supporting means for holding within a mirror housing a mirror body having a mirror fixed thereon, said supporting means including a housing member fixed inside said mirror housing and means for pivotably supporting said mirror body;

two ball bases mounted on the back side of said mirror body, one of which lies on a lateral pivot axis while the other lies on a longitudinal pivot axis, said lateral and longitudinal axes being perpendicular to each other;

a pair of hollow cylindrical screw rods, each being internally threaded on the inner wall thereof, provided at the end portion thereof with a ball portion which fits in a corresponding one of said ball bases, and axially movable through a cylindrical hole formed in said housing member while being unrotatable with respect to said housing member;

a pair of rotation members rotatably mounted within said housing member, each composed of a shaft provided with at least two arm members having plural screw threads coupled to the screw threads of each of said screw rods and which are spaced apart from each other, a hollow cylindrical rotation body holding therein said screw rod and shaft and having a gear integrally formed therewith on the outer circumference thereof, and a plurality of radially extending connection members to provide a connection between said shaft and rotation body and being formed relatively thin so as to resiliently be deformable;

reduction gear means connected with the gear formed on the rotation body of said rotation member to transmit a driving force to each of said rotation member; and

an electric motor means for driving said rotation member through said gear means;

wherein said rotation member is arranged in a receiving recess formed on the bottom of said housing member and rotates with the whole circumference of the lower end of said cylindrical rotation body being in contact with said receiving recess and each of said connection members is integrally formed with said shaft and said rotation member spaced from the bottom wall of said receiving recess.

4,940,322

ELECTRIC REARVIEW MIRROR SYSTEM FOR MOTOR VEHICLE

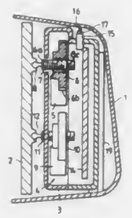
Tadanao Hamamoto; Tadashi Wakiya, and Kazunari Hayasi, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 25, 1988, Ser. No. 261,852

Claims priority, application Japan, Oct. 26, 1987, 62-163227; Nov. 18, 1987, 62-175998

Int. Cl.[5] **B60R** *1/08;* **G02B** *7/18;* **G05B** *11/00;* **G08C** *15/06*

U.S. Cl. 350—637 **8 Claims**



1. An electric rearview mirror system for a motor vehicle body, comprising:

a mirror unit having a mirror body;

means for housing said mirror unit;

means for driving said mirror body, said driving means being provided in said housing means;

switch means, provided in the vehicle body, for providing parallel command signals;

first control means, provided in the vehicle body, for converting said parallel command signals into a serial command signal;

second control means, provided in said housing means, for converting said serial command signal into parallel driving signals; and

operating means, enabled by said parallel driving signals, for operating said driving means.

4,940,323

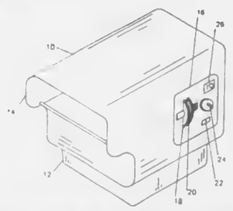
LIGHT TESTING AND STIMULATING DEVICE EMPLOYING VARIABLE FREQUENCY INTERRUPTED LIGHT SOURCE AND COLOR FILTERS

John C. Downing, 156 Bahama Reef, Novato, Calif. 94949

Continuation of Ser. No. 61,891, Jun. 15, 1987, abandoned. This application Oct. 4, 1988, Ser. No. 253,900

Int. Cl.[5] **A61B** *3/00*

U.S. Cl. 351—203 **25 Claims**



1. A device for producing a therapeutic stimulus in a subject, comprising:

a light source for shining light, at an effective level, into at least one eye of a subject,

a plurality of color filters, each of said filters being arranged to transmit light which is of a single color only and which is different from the light transmitted by all of the other filters of said plurality,

selection means for selectively interposing any one of said plurality of color filters between said light source and said eye of said subject,

interruption means, separate from and additonal to said selection means, for continuously interrupting said light source, while any selected one of said color filters is interposed between said light source and said eye of said subject, at a selectable rate which is lower than the critical flicker fusion frequency of said subject, such that said subject will see said light source as interrupted,

control means for increasing the frequency at which said interruption means interrupts said light source until said subject can see said light source change from interrupted to continuous, and

indicating means for indicating the rate at which said interruption means interrupts said light source.

4,940,324

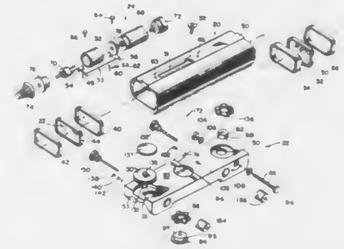
ELECTRONIC SIGHT HAVING A LARGER HORIZONTAL VIEWING FIELD THAN A VERTICAL VIEWING FIELD AND METHOD OF MAKING SAME

Joseph W. Nichols, Mehoopany, Pa., assignor to American Advantage Company, Portland, Oreg.

Filed May 25, 1988, Ser. No. 198,333

Int. Cl.[5] **G02B** *23/00, 23/10*

U.S. Cl. 356—247 **39 Claims**



1. An electronic sight for attaching to a shooting apparatus, comprising:

a base member to attach the sight to the shooting apparatus;

a longitudinally extending sight tube for viewing a target therethrough, said sight tube being pivotally coupled to said base for permitting said sight tube to pivot about two different axes independent of each other, said sight tube having a horizontal viewing field larger than a vertical viewing field;

a front lens connected to a front of said sight tube;

a back lens connected to a back of said sight tube; and

a light source positioned to be reflected from said front lens and through said back lens for viewing by a user.

4,940,325

DEVICE FOR THE INVESTIGATION OF HIGHLY RESOLVED PARTIAL SPECTRA OF AN ÉCHELLE SPECTRUM

Helmut Becker-Ross; Stefan Florek; Reinhard Tischendorf, all of Berlin; Klaus-Eberhard Engel, Frankfurt an der Oder; Wolf-Ekkehard Matzke, Fürstenwalde, and Susanne Engel, Frankfurt an der Oder, all of German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Filed Mar. 8, 1989, Ser. No. 320,674

Claims priority, application German Democratic Rep., Mar. 11, 1988, 313622

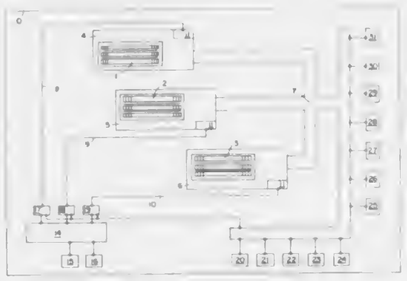
Int. Cl.[5] **G01J** *3/18, 3/36*

U.S. Cl. 356—328 **5 Claims**

1. Device for the investigation of highly resolved partial

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spectra from an échelle grating, comprising a position-resolving photoelectric detector including a plurality of photosensors arranged on an IC chip at positions of preselected spectral lines, each of said photosensors comprising (i) a CCD sensor row having sensor elements, a sensor storage device, and a transfer shift register, (ii) a logic circuit for enabling supply potentials and clock signals to be connected and output signals to be transferred to a common signal line, and (iii) an intermediate storage device disposed between said sensor storage device and said transfer shift register, a transfer gate disposed between said sensor storage device and said intermediate stor-



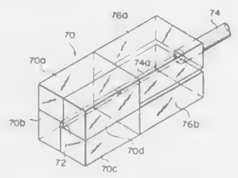
age device, and a digital logic circuit for enabling upon an external control signal the serial readout of the signals from a selectable subset of all CCD sensor rows in a selectable order of succession, wherein said transfer gates and said intermediate storage devices of each of said sensor rows are connected in parallel, the areas of the individual sensor elements of said CCD sensor rows are matched to the spectral elements of the échelle spectrum and extend successively in the direction of dispersion of the échelle grating, the total number of sensor elements in all CCD sensor rows being less than the number of spectral elements in the échelle spectrum.

4,940,326

PARTICLE SIZE MEASURING APPARATUS

Kyoichi Tatsuno, Yamato, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 168,509, Mar. 15, 1988, abandoned. This application May 22, 1989, Ser. No. 355,827
Claims priority, application Japan, Mar. 28, 1987, 62-74847
Int. Cl.[5] G01N *15/02, 21/49*
U.S. Cl. 356—336 **22 Claims**



1. An apparatus for measuring a size of a practicle flowing through a measuring volume, comprising:

light source means for emitting a light;

irradiating means, provided between said light source means and the measuring volume, for converting the light emitted from said light source means to a light having a uniform intensity distribution and for irradiating a converted light to the measuring volume, said irradiating means comprising an optical fiber for leading the light emitted from said light source means to the measuring volume, a waveguide member connected to a front end of said optical fiber for transmitting the light emitted from said optical fiber by way of total reflection from the walls thereof, and support means for fixedly supporting a front portion of the optical fiber to align the optical fiber and the waveguide member in a coaxial manner;

light-receiving means for receiving a light irradiated from said irradiating means and scattered to a predetermined angle by the particle and for producing a scattered light pulse for each particle; and

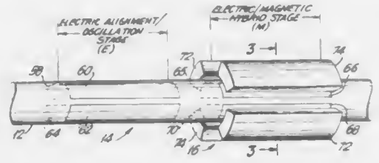
means for obtaining the size of the particle based on a scattered light pulse height.

4,940,327

METHOD AND APPARATUS FOR REAL TIME ASBESTOS AEROSOL MONITORING

Pedro Lilienfeld, Lexington, Mass., assignor to TRC Companies Inc., East Hartford, Conn.

Filed Oct. 25, 1988, Ser. No. 262,457
Int. Cl.[5] G01N *21/53*
U.S. Cl. 356—338 **34 Claims**



1. A real time asbestos aerosol monitor comprising:

sampling means for obtaining an ambient air sample and providing said sample to a sensing chamber having a sensing zone;

magnetic field means for creating a time-varying magnetic field at said sensing zone in order to cause airborne asbestos fibers in said sample to rotate;

illumination means for illuminating said fibers; and

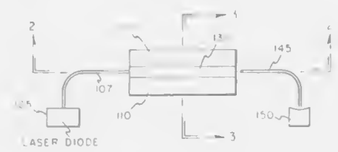
a detector for detecting light scattered by said fibers to produce a scattered light signal indicative of the presence of an asbestos fiber.

4,940,328

OPTICAL SENSING APPARATUS AND METHOD

Nile F. Hartman, Stone Mountain, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Nov. 4, 1988, Ser. No. 267,212
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **19 Claims**



1. A method for sensing a property of an environment, comprising the steps of:

providing, in said environment, an optical waveguide layer between substrate and superstrate layers, said optical waveguide layer having a higher refractive index than the refractive indices of said substrate and superstrate;

injecting a light beam into said waveguide such that at least two modes of said beam propagate in said waveguide, the effective index of refraction for said modes of said beam being affected by said property; and

generating an electrical signal representative of the interfering product of said at least two modes of said beam which have propagated through said waveguide;

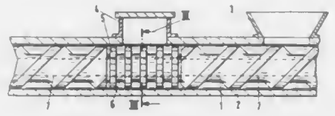
said signal being indicative of said property of the environment.

4,940,329

DEGASSING EXTRUDER

Manfred Dienst, Burgdorf, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 447,915
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841729
Int. Cl.[5] B29B *1/10*
U.S. Cl. 366—75 **7 Claims**



1. An extruder for degassing viscous thermoplastic plastics materials in the form of a melt comprising a barrel; at least one screw mounted for rotation with said barrel, shaft means mounting said at least one screw, said screw comprising core means mounted on said shaft and flight means helically disposed about the periphery of said core means, said barrel having a wall surface, said wall surface defining a first throughbore for the introduction of said plastics material into said barrel and a second throughbore downstream of said first throughbore for degassing said plastics material within said barrel, an intake and metering zone defined within said barrel between said first and said second throughbores and means for degassing said thermoplastic material communicating with the interior of said barrel through said second throughbore wherein said flight of each said screw is discontinuous in the region of said second throughbore; a plurality of disc members and spacer discs are alternately mounted on each said screw shaft in said region of said second throughbore, each said disc member and spacer disc having first and second opposed major surfaces, said first major surface being downstream of said second major surface, said first major surface of each said disc member defining profile means enhancing conveyance of said material in said downstream direction, each said disc member having a major dimension substantially equal to the overall diameter of said screw in said flighted region and each said spacer member having a major dimension substantially equal to the diameter of said screw core and wherein the thickness of each said disc member and spacer disc measured from said first major surface to said second major surface lies in the range of from 0.1 to 0.5 times said screw diameter.

4,940,330

LASER DOPPLER ANEMOMETER

Dietrich Dopheide; Michael Faber; Guenter Taux, all of Braunschweig, and Gerhard Reim, Rothemuehle, all of Fed. Rep. of Germany, assignors to Fed. Rep. of Germany, represented by the Federal Minister for Economics, who is in turn represented by the President of the Physical-Technical Federal Institute, Braunsweig, Fed. Rep. of Germany

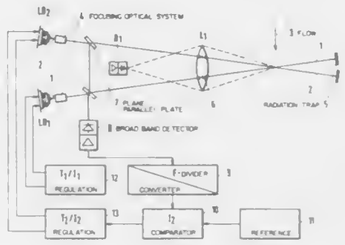
Filed Aug. 1, 1988, Ser. No. 226,925
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1987, 3725978; Oct. 30, 1987, 3736772
Int. Cl.[5] G01P *3/36*
U.S. Cl. 356—28.5 **5 Claims**

1. A laser Doppler anemometer comprising:

at least a first and second laser source, each said source including a laser diode set to a different emission wavelength, for producing first and second laser beams, respectively;

means for directing said laser beams from said sources to a specific region of a flowing fluid containing particles, so that a virtual interference fringe pattern is formed in said region;

at least one photodetector positioned for receiving light scattered by said flowing fluid;



at least one of a temperature regulation and a current regulation circuit for stabilizing the wavelength of at least one of said laser beams from at least one of said first and second sources; and

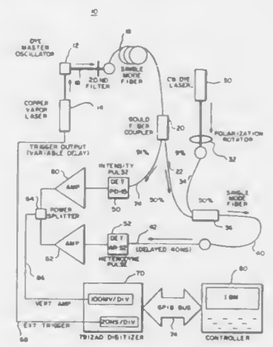
regulation circuit means for maintaining constant the difference frequency between said first and second laser sources, said difference frequency controlling said at least one of said temperature regulation or said current regulation circuit, said regulation circuit means including a measuring photodetector.

4,940,331

HETERODYNE LASER INSTANTANEOUS FREQUENCY MEASUREMENT SYSTEM

Richard W. Wyeth, Livermore; Michael A. Johnson, Pleasanton, and Michael A. Globig, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 911,023, Sep. 24, 1986, Pat. No. 4,798,467. This application Sep. 27, 1988, Ser. No. 249,816
The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—349 **7 Claims**



1. A laser beam frequency diagnostic system comprising

a first pulsed laser for generating a first short time duration pulsed laser beam having a pulse length duration of ap-

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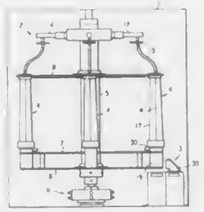
proximately 10–100 nanoseconds, the instantaneous frequency of which is to be determined,
a second reference laser for generating a second laser beam having a predetermined frequency,
means for heterodyning said first and second laser beams to form a beat signal representative of the difference between said first and second frequencies, and
means for processing said beat signal with respect to time to determine the instantaneous frequency of said first laser beam.

4,940,332

FLUORESCENT ANALYSIS APPARATUS

Harufumi Miwa, Kawasaki; Minoru Kashiwada, and Yoshimasa Yahagi, both of Kawaguchi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 5, 1988, Ser. No. 228,588
Claims priority, application Japan, Aug. 5, 1987, 62-194314
Int. Cl.[5] G01N *21/64*
U.S. Cl. 356—417 **9 Claims**



1. A fluorescent analysis apparatus comprising:
a thermostatically controlled enclosure;
a reacting board contained within said enclosure, including a reacting section and a measuring section;
a plurality of containers arranged on said reacting board for receiving samples, each container having an upper part, a lower part and a filter therebetween; and
a measuring apparatus contained within the enclosure and next to the measuring section of the reacting board;
wherein a reaction involving a sample may be made in the reaction section of the reacting board and then moved to the measuring section so that a measurement may be made by the measurement apparatus without removing the sample from the enclosure.

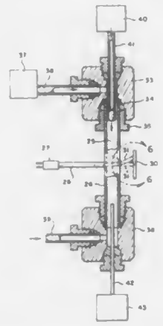
4,940,333

METHOD AND APPARATUS FOR DETECTING UNIVERSALLY AND SELECTIVELY CONCENTRATION GRADIENTS, AND FOR DEFLECTING A LIGHT BEAM IN A CONTROLLED FASHION

Janusz B. Pawliszyn, Logan, Utah, assignor to Anthony R. Torres, Salt Lake City, Utah

Division of Ser. No. 948,247, Dec. 31, 1986, Pat. No. 4,784,494.
This application Nov. 14, 1988, Ser. No. 271,034
Int. Cl.[5] G01N *21/41*
U.S. Cl. 356—432 **15 Claims**

1. A method of identifying and measuring a concentration gradient of a known compound above a surface which forms a concentration gradient extending in a concentration gradient direction thereabove, comprising the steps of passing a probe beam of light through the concentration gradient a known distance above the surface; selecting an excitation energy that will be absorbed by the known compound; supplying the excitation energy substantially uniformly in the concentration gradient direction through at least the portion of the area above the surface through which the probe beam passes so that the excitation energy will be absorbed by the known compound in the concentration gradient thereby causing the creation of a temperature gradient above the surface which is proportional to the concentration gradient of the known compound above the surface; and measuring the deflection of the



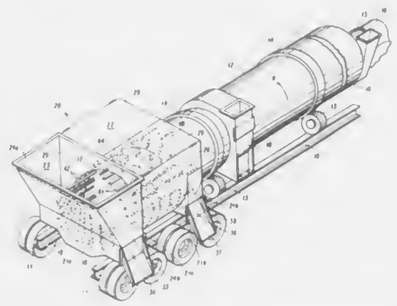
probe beam of light passing through the concentration gradient and temperature gradient above the surface caused by the presence of the concentration gradient and temperature gradient above the surface.

4,940,334

REVERSE FLOW MIXING METHOD FOR DIRECT-FIRED ASPHALTIC CONCRETE DRUM MIXERS

Joseph E. Musil, Ely, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Division of Ser. No. 089,179, Aug. 25, 1987, Pat. No. 4,813,784.
This application Dec. 19, 1988, Ser. No. 286,218
Int. Cl.[5] B28C *5/20, 5/46, 7/12, 7/16*
U.S. Cl. 366—4 **7 Claims**



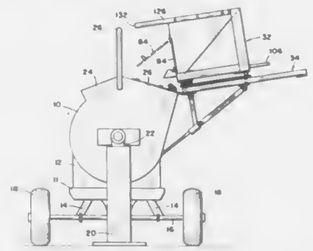
3. In a method of heating material in a mixer with a stream of air and hot gases within a drum while moving the material from an upstream end of the drum to a downstream end of the drum, including feeding the material into the drum at the upstream end thereof, combining and mixing the material with liquid asphalt, and discharging the mixed material and asphalt through a discharge chute, the improvement comprising:
selectively directing the asphalt to being combined with the material either within the drum intermediate the upstream and downstream ends in the presence of the air and hot gases, or to being combined with the material, after discharging the material from the drum at the downstream end thereof, at a first end of a passage extending externally of and adjacent the drum from adjacent the downstream end of the drum along the drum toward the upstream end of the drum with a second end of the passage disposed along the drum intermediate the upstream and downstream ends thereof;
selectively discharging the material from the mixer through a first discharge port and chute at the first end of the passage adjacent the downstream end of the drum by maintaining open the first discharge port and chute, or discharging the material at a second discharge port and chute at the second end of the passage by closing off the first discharge port and moving the material through the passage to the second discharge port and chute; and
directing the asphalt to being combined with the material after discharging the material from the drum at the downstream end thereof only in combination with discharging the material from the mixer at the second discharge port and chute at the second end of the passage.

4,940,335

METHOD AND APPARATUS FOR ADDING PREDETERMINED QUANTITY OF MATERIAL TO A REACTOR

Adler E. Gibson, P.O. Box 35587, Tulsa, Okla. 74153

Filed Nov. 21, 1988, Ser. No. 273,999
Int. Cl.[5] B28C *7/06, 7/16*
U.S. Cl. 366—8 **8 Claims**



1. A method of adding a predetermined volume of particulate material to a reactor which comprises mounting an inclined track on the reactor such that a lower end of the track terminates adjacent an opening in the reactor, mounting a slideable container on the track for sliding movement from an upper end of the track to the lower end of the track, the container having an internal volume equal to said predetermined volume, and having a forward wall which can be opened to discharge the contents of the container, filling the container with particulate material when the container is adjacent the upper end of the track, allowing the container to side downwardly along the track until the container is adjacent the opening in the reactor, opening the forward wall of the container to allow particulate material to flow into the opening of the reactor and thereafter tilting the container towards the reactor to discharge any remaining particulate material in the container into the reactor.

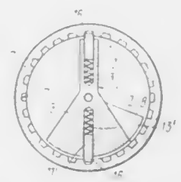
4,940,336

UNBALANCE VIBRATOR

Alexandr I. Dryga, ulitsa Marata, 6, kv. 64, and Alexandr G. Eskov, ulitsa Katerinicha, 16, kv. 42, both of Kramatorsk, U.S.S.R.

Filed May 30, 1989, Ser. No. 357,945
Int. Cl.[5] B01F *11/00*; F16H *33/00*
U.S. Cl. 366—128 **10 Claims**

1. An unbalance vibrator comprising: a rotary drive shaft;
an unbalance weight fixed stationary and another unbalance weight turnable with respect to said rotatable drive shaft;
one of said unbalance weights being made, at least in part, in the form of a cylindrical sleeve having radial holes provided on an inside cylindrical surface of the sleeve;
the other of said unbalance weights being made in the form of at least a part of a cylinder arranged within said sleeve; and
a mechanism for adjusting the mutual positions of said unbalance weights and made in the form of a rod spring-loaded in an axial direction and mounted on said turnable unbalance weight so as to move radially to engage in one of said radial holes provided in said sleeve.

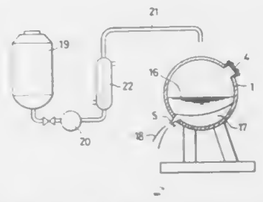


4,940,337

APPARATUS FOR SEPARATING HEAVY METALS FROM A FERRIC CHLORIDE WASTE FLUID

Nobuo Nakaji; Hideki Kojima, both of Tokyo, and Ryoichi Tachibana, Akou, all of Japan, assignors to Toppan Printing Co., Ltd.; Mitsubishi Rayon Engineering Co., Ltd. and Harima Chemial Industrial Co., Ltd., all of, Japan

Continuation of Ser. No. 64,194, Jun. 18, 1987, abandoned. This application Sep. 5, 1989, Ser. No. 403,796
Claims priority, application Japan, Jun. 23, 1986, 61-146471
Int. Cl.[5] B01F *15/06, 9/02*; B01J *8/10*
U.S. Cl. 366—148 **14 Claims**



1. Apparatus for separating heavy metals from a ferric chloride waste fluid containing said heavy metals and metallic iron masses, wherein said heavy metals include iron and a substantial portion of nickel, said nickel having a tendency to adhere to the surface of said metallic iron masses, said apparatus comprising a sealable container having a predetermined axis of rotation, said sealable container including a sealable entrance port for said ferric chloride waste fluid and said metallic iron masses and at least one exit port for withdrawing said separated heavy metals and treated ferric chloride waste fluid therefrom, feed pipe means for supplying said ferric chloride waste fluid to said entrance port of said sealable container, preliminary heating means for heating said ferric chloride waste fluid in said feed pipe means prior to supplying said ferric chloride waste fluid to said entrance port of said sealable container, rotating means for rotating said sealable container about said predetermined axis of rotation with sufficient intensity to substantially prevent said nickel from adhering to the surface of said metallic iron masses, and stopping means for stopping said rotating of said sealable container at a predetermined rotational angle.

11. A method for separating heavy metals from a ferric chloride waste fluid containing heavy metals, wherein said heavy metals include iron and a substantial portion of nickel, said method comprising heating said ferric chloride waste fluid, supplying said heated ferric chloride waste fluid to a sealable container having a predetermined axis of rotation,

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adding metallic iron masses to said sealable container, sealing said sealable container, rotating said sealable container about said predetermined axis of rotation with sufficient intensity to substantially prevent said nickel from adhering to the surface of said metallic iron masses, and stopping said sealable container at predetermined rotational angles.

4,940,338

DEVICE FOR THE MIXING OF COMPOST

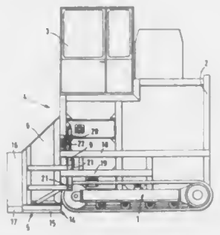
Friedrich Backhus, Wischenstrasse 23, 2905 Edewecht Jeddeloh 11, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 357,538

Claims priority, application Fed. Rep. of Germany, May 28, 1988, 3818206

Int. Cl.[5] **B01F** *15/00*

U.S. Cl. 366—345 **7 Claims**



1. A mobile device for turning over or mixing accumulations of organic waste materials maturing to compost at fixed dump sites, said device having a steerable chassis with working tracks enabling it to advance through the accumulation, and having a mechanism for mixing the waste picked up while driving through and, after being thoroughly mixed, re-depositing the waste behind the device, comprising:

a clearing mechanism disposed on the front side of the chassis and in the area in front of each working track of the chassis for clearing a track path as the chassis moves through the waste material;

said clearing mechanism comprising a mixing mechanism, a guide shield disposed in front of the intake of said mixing mechanism, and working clearing tools disposed on a guide surface within said mixing mechanism;

each clearing tool comprising a disk, and a drive element containing said disk for rotating the disks in front of the guide surface, and excavating projections being provided on said disks;

each disk projection comprising a strip extending radially from said disk and projecting out of the plane of said disk;

a hydraulic motor coupled to said drive element of each clearing tool for rotating said disks; and

a scraper strip disposed on the lower edge of each guide surface.

4,940,339

ENDLESS RECTILINEAR MOTION ROLLING GUIDE UNIT

Juichi Amano, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

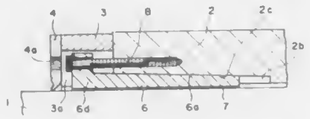
Filed Apr. 21, 1988, Ser. No. 184,384

Claims priority, application Japan, Dec. 22, 1987, 62-194729[U]

Int. Cl.[5] **F16C** *29/06*

U.S. Cl. 384—25 **2 Claims**

1. A rectilinear motion rolling guide unit comprising an elongated track rail having, on each of its sidewalls, longitudinally extending trackway means, a slide unit having a recess with an inverted U-shaped cross section in which the upper portion of said track rail is slidably inserted, on each of the inner sidewall surfaces of said recess being formed trackway means in facing relation with the above-mentioned track-rail side trackway means, and a plurality of cylindrical rollers present between the facing track-rail side and slide-unit side trackway means, which guide unit is characterized in that said slide unit includes a casing and opposing side panels fitted onto the opposing open ends of said casing with the inner sidewalls thereof being provided with the above-mentioned slide unit-side trackway means, while on the bottom surface of said casing forming a horizontal surface of said recess of the slide unit is provided a generally rectangular-shaped recess with an inwardly and gradually decreasing depth along the sliding



direction of the slide unit relative to said track rail, a slide bearing holder insert having a L-shaped cross section is inserted and secured within said generally rectangular-shaped recess of the slide unit, said insert consisting of an upright flange portion at one end and a portion having a gradually decreasing height toward the other end so as to snugly conform to the above-mentioned recess of the slide unit having an inwardly and gradually decreasing depth so that said insert may be snugly fitted and secured into said rectangular-shaped recess of slide unit in a position displaceable relation with said recess along the sliding direction of said slide unit relative to said track rail, and a slide friction member is provided on the bottom surface of said L-shaped slide bearing holder insert.

4,940,340

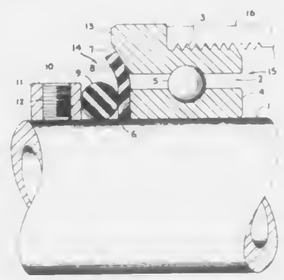
SEALED BALL BEARING MECHANISM

Roger O. Durham, 1370 Thompson Ave., Glendale, Calif. 91201

Filed Jan. 10, 1990, Ser. No. 462,762

Int. Cl.[5] **F16C** *33/78*

U.S. Cl. 384—482 **3 Claims**



1. A bearing seal device for a ball bearing mechanism, said ball bearing mechanism including; an outer race formed for engagement with a housing, said outer race having a seal-end face and a sealing surface adjoining said seal-end face, an inner race formed for engagement with a cylindrical shaft, said inner race having a seal-end face which is inset from said seal-end face of said outer race, and a plurality of balls, said bearing seal device comprising;

(a) a flexible sealing ring abutting said seal-end face of said inner race and bearing against said sealing surface of said outer race;

(b) an elastic circumferential seal formed for engagement with, and for forming a seal with, said cylindrical shaft, and forming a seal with said elastic sealing ring;

(c) bias means for engagement with said cylindrical shaft, said bias means adapted for pressing against said circumferential seal, whereby said sealing ring is deformed into a cup shape by contact with said sealing surface of said outer race.

4,940,341

OIL-METERING COVER FOR SHAFT BEARINGS

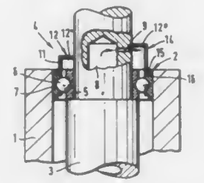
Guenter Schuetz, and Joerg Schwartz, both of Cologne, Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 11, 1989, Ser. No. 393,304

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1988, 8810291[U]

Int. Cl.[5] **F16C** *33/66, 37/00;* **F01M** *9/12*

U.S. Cl. 384—465 **6 Claims**



1. In a device having a shaft comprising a central channel for supplying a shaft bearing with oil, said channel further comprising an oil exit opening disposed adjacent said shaft bearing, wherein said device is provided with a covering surrounding said shaft and comprising the following:

a cylindrical section having an inwardly directed edge that surrounds the shaft in noncontacting fashion and covers an annular gap between a stationary bearing ring and a rotating bearing ring;

wherein said cylindrical section has an increased height over a part of its circumference; and

wherein said oil exit opening is situated between a lower part and an upper part of the inwardly directed edge of the covering.

4,940,342

COMPRESSOR WITH A RADIAL BEARING FOR SUPPORTING A DRIVE SHAFT

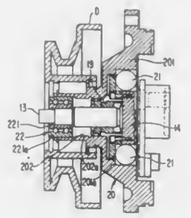
Kiyoshi Miyazawa, Annaka, and Shigemi Shimizu, Sakai, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Jun. 16, 1988, Ser. No. 207,219

Claims priority, application Japan, Jun. 16, 1987, 62-91333[U]

Int. Cl.[5] **F16C** *33/58;* **B25B** *27/06;* **F01C** *1/00;* **F04B** *1/12*

U.S. Cl. 384—510 **15 Claims**



1. In a compressor including a housing comprising a first casing for enclosing a compression mechanism and a second casing releasably attached to one end of said first casing, said second casing supporting a pair of bearings which rotatably support a drive shaft, a first one of said bearings being adjacent said first casing and the second bearing being spaced therefrom toward the driven end of said drive shaft, sealing means disposed about said drive shaft and between said bearings for sealing said housing and preventing refrigerant or lubricating oil from leaking therefrom, the improvement comprising:

said second bearing having gripping means for gripping said second bearing when removing said second bearing from said drive shaft so that said sealing means may be replaced without separating said first and second casings, wherein said gripping means is formed by a deviation in the outermost radial surface of said second bearing.

4,940,343

WIRE-DOT PRINT HEAD DRIVING APPARATUS

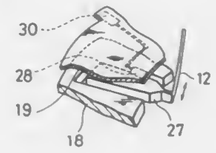
Hiroshi Kikuchi; Jiro Tanuma; Hideaki Ishimizu, and Chihiro Komori, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 235,971, Sep. 24, 1988, abandoned. This application Aug. 17, 1989, Ser. No. 395,159

Claims priority, application Japan, Aug. 26, 1987, 62-210138; Aug. 26, 1987, 62-210139; Oct. 19, 1987, 62-158792[U]

Int. Cl.[5] **B41J** *3/12*

U.S. Cl. 400—124 **13 Claims**



1. A printer having a wire-dot print head comprising:

print wires extending forward generally parallel with each other,

armatures in association with the respective print wires, a rear end of each print wire being fixed to the associated armature,

a substantially disk-shaped rear yoke,

cores mounted at their rear ends on said rear yoke in association with the respective armatures, each cores having its forward end adjacent to rear surface of the associated armature,

coils in association with the respective cores, each coil being wound on the associated core,

a cylindrical wall surrounding said armatures, said cores and said coils,

an annular permanent magnet forming part of said cylindrical wall,

resilient support members in association with the respective armatures, each resilient support member having a firs end fixed at said cylindrical wall and a second end fixed to the associated armature,

a front yoke having an annular part forming part of said cylindrical wall and protrusions extending from said annular part radially inward, each protrusion being positioned on a side of one of said armatures, and

magnetic path means for allowing a magetic flux from said permanent magnet to pass through said core, said armature and said front yoke,

wherein when each of the coils is not energized the associated armature is attracted toward the associated core to resiliently deform the associated resilient support member, and

when each of the coils is energized and associated armature is released and moved forward by the action of the associated resilient support member,

said print head further comprising a sensor card having a

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disk-shaped part positioned in front of the front yoke, and having a rear surface on which the fixed, individual electrodes are formed to face the armatures and on which a common electrode conductor is contact with the front yoke is formed, and

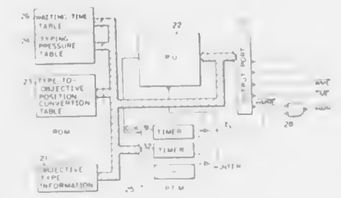
wherein each of said individual electrodes and the confronting armature form a capacitive sensor the capacitance of which varies with the motion of the associated print wire, and the armatures are connected to the common electrode conductor.

4,940,344

PRINTER HAVING A VARIABLE INTERVAL BETWEEN PRINTING AND CARRIAGE MOVEMENT

Toshibide Wada, Yokohama, and Yuichi Watanabe, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 51,177, May 18, 1987, abandoned, and a continuation of Ser. No. 754,439, Jul. 12, 1985, abandoned.
This application Jan. 31, 1989, Ser. No. 303,953
Claims priority, application Japan, Jul. 30, 1984, 59-159915; Jul. 31, 1984, 59-160334
Int. Cl.[5] B41J *1/22*
U.S. Cl. 400—144.2 **6 Claims**



1. A printer comprising:

type supporting means for supporting a plurality of types;

type selection means for making said type supporting means operative to lead the type selected from among said plurality of types to a printing position;

a striking apparatus having a hammer for striking a type on a recording paper;

a carriage for mounting said type supporting member, said type selection means and said striking apparatus;

carriage moving means for moving said carriage between the printing positions and for providing a stop state at each one of the printing positions;

driving time means for supplying a driving time signal to said striking apparatus to make said hammer strike a type on a recording paper at a stop state of said carriage;

first timer means for counting, after said carriage is in the stop state, a length of time from a supply of a drive signal for hammer striking until a completion of striking of said type by a head of said hammer, said length of time being predetermined;

second time means for starting counting simultaneously with said counting by said first timer means to count a time until said carriage is to start moving after being in the stop state; and

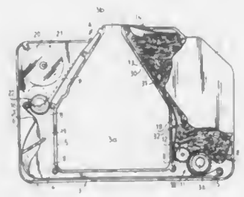
means for supplying, when a counting operation of said first timer means is completed, a carriage moving signal to said carriage moving means, the start time of the carriage moving signal being changed in accordance with an amount of a counted value of said second timer means.

4,940,345

INK CASSETTE AND INK TRANSFER ROLL THEREFOR

Hans Raar, An Cuyk, Netherlands, assignor to Merlin C.T.C. Production Division Nederland B.V., Netherlands

Filed Oct. 28, 1988, Ser. No. 263,878
Claims priority, application Netherlands, Oct. 28, 1987, 8702567
Int. Cl.[5] B41J *33/10*
U.S. Cl. 400—195 **4 Claims**



1. A long-lasting cassette for use in a printing unit, said cassette comprising:

a housing which includes outer walls and inner walls, said walls forming an internal chamber having an externally-exposed opening and, together with the outer walls, forming infeed and storage compartments on opposite sides of the internal chamber which respectively have mouths adjacent to externally exposed opening,

a rotatable ink roll located in the infeed compartment,

a rotatable intermediate roll located in the infeed compartment and mounted to be movable towards any away from the rotatable ink roll,

a first guide roll located in the infeed compartment,

a partition member located in the infeed compartment,

a pair of rotatable drive wheels located in the storage compartment, a first drive wheel of the pair of drive wheels being movable towards and away from the second drive wheel of the pair of drive wheels,

an elongated spring means which contacts the first drive wheel to urge it towards the second drive wheel and define a nip therebetween,

a second guide roll located in the storage compartment,

an endless mobius ribbon which sequentially extends out of the mouth of the storage compartment and across the externally-exposed opening, through the mouth of the infeed compartment and into the infeed compartment, around a portion of the periphery of the intermediate roll, around the first guide roll, over the partition member so as to be reversed in orientation, around the second guide roll so as to be reversed in direction, around a portion of the periphery of the second drive wheel and through the nip between the first drive wheel and the second drive wheel, and after forming an accumulation in the storage compartment, out of the mouth of the storage compartment, and

engagement means for contacting the mobius ribbon to provide tension therein when moved by the pair of drive wheels out of the mouth of the storage compartment, movement of the tensioned mobius ribbon over the intermediate roll and around the first guide roll causing the intermediate roll to contact the ink roll so that the intermediate roll can transfer ink from the ink roll to the mobius ribbon.

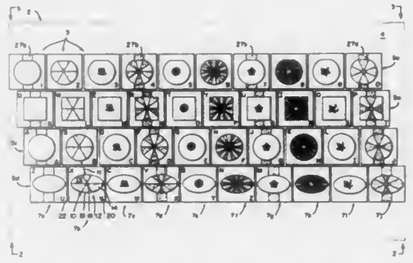
4,940,346

KEYBOARD ASSEMBLY AND TYPING METHOD

Don C. Liljenquist, 8360 Greensboro Dr., McLean, Va. 22102

Filed Apr. 1, 1987, Ser. No. 32,622
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—487 **21 Claims**

1. An improved keyboard assembly for use with a device for processing alphabetical or numerical information, cmoprising a plurality of keys arranged in a plurality of mutually adjacent rows and columns, wherein each key corresponds to a selected alphanumeric symbol, and is substantially covered by a visual pattern formed from a combination of one of a plurality of color pattern schemes and one of a plurality of shapes wherein the combination of the color scheme and shape forming the visual pattern of each key is different from the combination of color scheme and shape forming the visual pattern on each



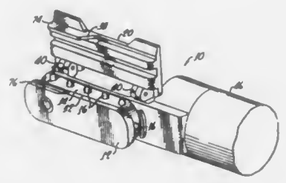
adjacent key in order to facilitate visual discrimination between said keys, and wherein the shapes of the color schemes of the visual patterns are the same for each key in any given row in the same rows, but different than keys in no row or rows adjacent to said given row in order to assist a keyboard operator with proper manual orientation with respect to the keyboard while at the same time rendering adjacent keys different in the peripheral and near-focus vision of said keyboard operator.

4,940,347

PAPER TRACTOR FEED SEPARATOR

William J. Lund, Stockton, Calif., assignor to Lund Company, Stockton, Calif.

Filed Feb. 16, 1988, Ser. No. 156,207
Int. Cl.[5] B41J *11/68*
U.S. Cl. 400—621.1 **17 Claims**



1. A paper tractor feed separator for automatically separating paper-drive edge tear strips from a paper form along perforations therein, said paper tractor feed separator comprising:

a frame;

a belt for moving drive pins along the frame, said drive pins being sized to engage punched holes in said edge tear strips;

frame shoulder means for guiding said edge tear strip to enable a body portion of the paper form to be urged out of the plane of the edge tear strip along the perforations in order to separate the body portion from the edge tear strip; and,

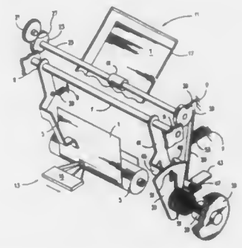
lid means for keeping the drive pins engaged with the punched holes, said lid means including lid shoulder means for urging the body portion out of the plane of the edge tear strip to separate the body portion from the edge tear strip.

4,940,348

PLATEN CONTROLLED SHEETFEED PERMITTING BACK-UP FOR ERASURE

Albert L. Akers, Nicholasville; Robert M. Carpenter, Lexington; William D. Freeman, Harrodsburg, and John E. Passafiume, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1988, Ser. No. 244,366
Int. Cl.[5] B41J *13/10*
U.S. Cl. 400—624 **3 Claims**



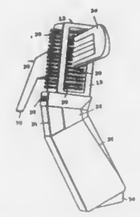
1. A printer having a printing region and means to position paper for receiving printing from said printer at said printing region, a first abutment, means for sensing the presence of paper in said printing region, means biasing said means for sensing for movement, which movement is prevented by the presence of paper being sensed, means responsive to said means for sensing to move said first abutment when paper is sensed by said means for sensing, a sheetfeed for supplying paper to said printing region, means responsive to movement of said means to position paper to initiate operation of said sheetfeed by a movement of said means to position paper to feed paper from bottom-to-top, and means to disable said sheetfeed from supplying paper, said sheetfeed comprising a spring clutch and said means to disable comprising said first abutment engaging said spring clutch to unwind said spring clutch positioned for said unwinding by said movement of said first abutment in response to said means to sensing.

4,940,349

GOLF CLUB CLEANER

Johannes C. Jansen van Rensburg, 16 Marion Pl., Glendower, Johannesburg, South Africa 1610

Continuation of Ser. No. 68,622, Jul. 1, 1987, abandoned. This application May 30, 1989, Ser. No. 358,489
Claims priority, application South Africa, Jul. 1, 1986, 86/4868
Int. Cl.[5] A46B *11/02*
U.S. Cl. 401—10 **7 Claims**



1. A portable, manually manipulatable grippable golf club blade cleaner comprising:

a member of generally rectangular section having longer end surfaces and shorter side faces, said member being formed

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into an open generally rectangular ring which has a pair of parallel longer sides respectively with inner surfaces that face another, said end surfaces constituting respectively said inner surfaces as well as outer surfaces of the ring,

internal bristles formed on at least one of said inner surfaces but not the said side faces and having free ends which terminate along a given plane for cleaning said golf club blade when inserted between said inner surfaces,

a handle which is inclined relative to said plane and which is of the same order of size as the ring for supporting the latter, and

a cleaning fluid chamber and pump means both incorporated in said handle for pumping cleaning fluid from said chamber onto said club blade,

the arrangement being such that, with the blade of the club head in the ring, relative reciprocation between the ring and the club head, the latter will be cleaned by the bristles.

4,940,350

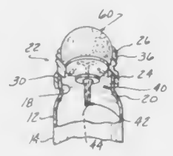
FLUID BALL APPLICATOR WITH VENT TUBE

Yong I. Kim, 3043 Wolverine Dr., Ann Arbor, Mich. 48108

Filed Dec. 30, 1988, Ser. No. 292,323

Int. Cl.[5] **B43K** *7/10;* **A45D** *34/04*

U.S. Cl. 401—209 **15 Claims**



1. A fluid applicator comprising:

a hollow container for containing a fluid, the container having an open top end;

a collar mounted on the open top end of the container, the collar having first and second ends;

a base mounted within the collar and extending across the first end of the collar;

an applicator member rotatably mounted in the collar and extending partially outward from the second end of the collar, the applicator member being formed of a porous material having open ended pores formed on the exterior surface thereof;

fluid dispensing outlets formed in the base in fluid flow communication with the interior of the container to dispense fluid from the container to the applicator member; and

a hollow air intake conduit having a first end formed in the base and disposed in fluid flow communication with the pores in the applicator member and a second end disposed within and in fluid flow communication with the interior of the container;

the diameter of the fluid outlets having a predetermined size relative to the diameter of the air intake conduit which causes the amount of fluid dispensed through the fluid outlets to be substantially equal to the amount of air drawn into the air intake conduit.

4,940,351

LIQUID APPLICATOR WITH MOVABLE SUPPLY TUBE

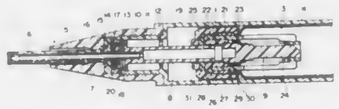
Yoshiomi Konose, Fujioka, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1989, Ser. No. 381,234

Int. Cl.[5] **A45D** *34/00;* **A46B** *11/00*

U.S. Cl. 401—278 **1 Claim**

1. In a liquid applicator comprising: an outer sleeve-like main body; a liquid-application member mounted on a front-end portion of said outer sleeve-like main body; an application-liquid reservoir cartridge axially slidably mounted in said outer sleeve-like main body, said cartridge being provided with a valve unit in its front-end opening portion, said valve unit being provided with a valve spring for resiliently pressing a valve stem against a valve seat; a means for axially pushing said cartridge forward, an application-liquid conduit for supplying an application liquid filled in said cartridge to said liquid-application member through said valve unit, said conduit being provided in front of said cartridge mounted in said outer sleeve-like main body, a rear end of which conduit abuts on said valve unit; and an application-liquid guide pipe integrally connected with said application-liquid conduit to communicate



therewith, a front-end portion of which guide pipe is inserted into said liquid-application member; whereby said cartridge is axially moved forward relative to said outer sleeve-like main body in use to open said valve unit so as to permit said application liquid to flow to said liquid-application member;

the improvement wherein:

said application-liquid conduit is axially movable by a predetermined distance together with said application-liquid guide pipe; and said liquid applicator further comprises a spring for resiliently pressing said application-liquid conduit against said valve stem of said valve unit, said spring being smaller in spring constant than said valve spring of the valve unit.

4,940,352

BINDING FOLDER

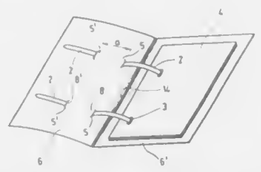
Herbert Kratzert, Pfullendorf-Denkingen, and Kurt Schrem, Pfullendorf, both of Fed. Rep. of Germany, assignors to Kratzert & Schrem GmbH, Fed. Rep. of Germany

Filed Mar. 8, 1989, Ser. No. 320,524

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 8803353[U]

Int. Cl.[5] **B42F** *13/10*

U.S. Cl. 402—13 **20 Claims**



1. A binding folder for holding paper sheets and the like having fastening strip means made of an elastically bendable material, which strip means are pulled through perforation means of the paper sheets to be held and extend in slot means of a counterholder, wherein the slot means in the counterholder include at least one pair of first and second counterholder slots closed on both sides and disposed at a predetermined distance (a) with respect to one another such that a fastening strip of the strip means is guided to be loosely movable through said first and second slots without being immovably clamped,

when the counterholder slots are formed by punched out tongues, and

wherein the free end of the tongue of the first counterholder slot faces away from the free end of the tongue of the second counterholder slot.

4,940,353

HOLDER FOR PAPER-KEEPING BAGS

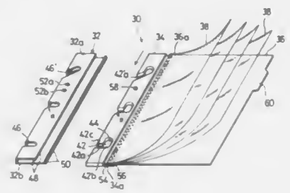
Katuo Osono, and Masaaki Maejima, both of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 223,987

Claims priority, application Japan, Dec. 28, 1987, 62-330139

Int. Cl.[5] **B42F** *13/14*

U.S. Cl. 402—79 **4 Claims**



1. A holder of paper-keeping envelopes comprising an elastic sleeve (32) with U-shaped transverse section open along its one longitudinal side, a sliding bind base (34) inserted into the elastic sleeve (32) slidably in the longitudinal direction, a board (36) bonded at one side edge adhesive portions (34*a*) of the sliding bind base (34) and a plurality of paper-keeping envelopes (38) held in layers at one side edge holder portion (36*a*) of the board (36), wherein the sliding bind base (34) is provided at a predetermined distance apart from each other along its longitudinal direction with L-shaped guide grooves (42) and binding apertures (44) connected thereto for receiving posts of a binder, while the elastic sleeve (32) is provided with engagement grooves (46) for opening or closing the binding apertures (44) in transverse portions (42*a*) of the L-shaped guide grooves (42), said transverse portions (42*a*) and said engagement grooves (46) being so constructed that the trailing ones thereof when sliding the bind base (34) for closing the binding aperture of the sliding bind base (34) are slant grooves (42*a*', 46') open to the sliding direction and the forward ones thereof are transverse grooves (42*a*, 46) disposed at a substantially greater angle to the length of said sleeve (32) and bind base (34) than are said slant grooves (42*a*', 46').

4,940,354

MOUNTING DEVICE FOR MOUNTING A SQUEEGEE OR INKING BLADE IN A PRINTING PRESS

Jürg Holderegger, Im Altmoos, CH-8450, Datwil, and Dionizy Simson, Winterthur, both of Switzerland, assignors to Jürg Holderegger, Datwil, Switzerland

Filed Jun. 15, 1988, Ser. No. 207,165

Claims priority, application Switzerland, Jul. 6, 1987, 02559/87

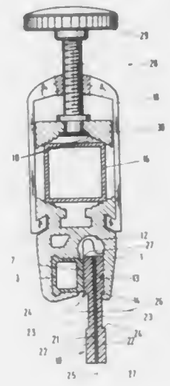
Int. Cl.[5] **F16B** *17/00;* **B41F** *15/42*

U.S. Cl. 403—5 **20 Claims**

1. A mounting device for mounting one of a squeegee and an inking blade in a printing press, said device comprising

a hollow section member having a shaped internal recess on a longitudinal axis for receiving one of a squeegee and inking blade in a direction perpendicular to said longitudinal axis, a wall laterally bounding the recess and a longitudinal groove opposite said wall and in communication with said recess; and

a pressure-tight elastic clamping tube disposed in said groove and having a pressure retaining valve therein, said tube being expandable under a pressurized medium laterally into said recess to press the received one of said squeegee and inking blade laterally against said wall.



4,940,355

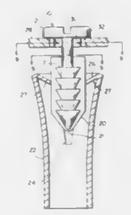
QUICK INSTALL AND RELEASE FASTENING SYSTEM

Jeffery J. Buchanan, Lexington, Ky., assignor to Square D Company, Palatine, Ill.

Filed Jul. 19, 1989, Ser. No. 384,605

Int. Cl.[5] **F16B** *21/07*

U.S. Cl. 403—24 **4 Claims**



1. In combination:

a cabinet having a plurality of integrally formed cylindrical receptacles each including a smooth bifurcated tapered entry section forming a pair of opposed spring latches;

a panel having a plurality of apertures in alignment with said receptacles;

a plurality of fastener means for securing said panel to said cabinet, each said fastener means comprising:

a drive head and a shank;

at least one radially extending frustum-shaped projection on said shank having a tapered portion and a flat portion;

a pair of ribs on opposite sides of said shank, said ribs forming two smooth surfaces extending outside the periphery of said frustum-shaped projection and terminating in a tapered end;

said tapered end and said smooth tapered entry cooperating to guide said shank into said receptacle, said tapered portion of said frustum-shaped projection readily displacing said spring latches during insertion of said fastener means and said flat portion of said frustum-shaped projection cooperating with said spring latches to secure said fastener means; and

said ribs displacing said spring latches to a position out of

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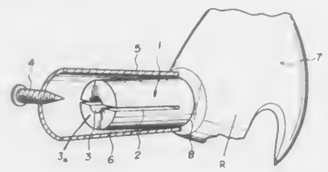
engagement with said flat portion when said shank is rotated through substantially 90° to permit removal of said fastener means from said receptacle.

4,940,356

CONSTRUCTION FOR JOINING CHAINSTAY AND SEAT PIPES TO A REAR DROPOUT IN A BICYCLE FRAME

Masaki Hashimoto, Osaka, and Noboru Yamaguchi, Settsu, both of Japan, assignors to Araya Industrial Co., Ltd., Osaka, Japan

Filed Jul. 6, 1988, Ser. No. 215,558
Claims priority, application Japan, Nov. 11, 1987, 62-171429[U]
Int. Cl.[5] B62K *19/00*
U.S. Cl. 403—266 **3 Claims**



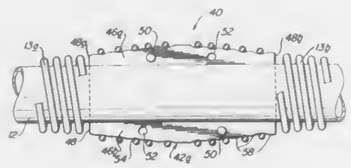
1. A construction joint of a bicycle frame comprising a rear dropout body having projecting portions cylindrical in shape, each said projecting portion defining an elongated screw hole at a free end extending along a longitudinal axis of said projecting portion, said projecting portion defining a slit extending on both sides of said screw hole; chainstay and seat stay pipes each having ends surrounding a projecting portion, said chainstay and seat stay pipes having gradually decreasing diameters towards their ends surrounding the projecting portions; a screw or wedge inserted into said screw hole to enlarge the outside circumference of said projecting portion until it frictionally contacts the interior of said chainstay and seat stay pipes, whereby the diameter of the projecting portion at said free end is greater than the diameter of the projecting portion at an end opposite said free end; and an adhesive agent spread around the projecting portions of the rear dropout body and inside said chainstay and seat stay pipes.

4,940,357

TORSION SPRING COUPLING

Albert W. Davis, 1714 S. Story Rd., Irving, Tex. 75060

Continuation-in-part of Ser. No. 99,108, Sep. 21, 1987, abandoned. This application Aug. 8, 1988, Ser. No. 229,442
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—344 **6 Claims**



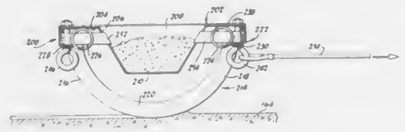
2. A torsion spring coupling member comprising: at least two mating members having mating surfaces, an alignment pin on each mating surface, each mating surface having a depression for permitting longitudinal alignment of said mating members relative to each other to form a tubular coupling member having a central passage; tapered outer circumferential surfaces adjacent terminal ends of said coupling member, said outer circumferential surfaces having external threads for engaging opposing segments of a broken torsion spring to prevent relative longitudinal movement of opposing segments of the torsion spring.

4,940,358

TEXTURING DEVICE FOR WET CONCRETE

Victor A. Maletic, 3330 Meadowbrook Rd., Antioch, Calif. 94509

Continuation-in-part of Ser. No. 128,909, Dec. 12, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 290,026
Int. Cl.[5] E01C *19/43*
U.S. Cl. 404—93 **8 Claims**



1. A device for texturing the surface of freshly poured concrete used in conjunction with a kinetic source comprising:

a. a platform having a first surface and a second surface;

b. a plurality of open loops spaced along and extending outwardly from said platform first surface, each of said open loops having first and second ends, each of said open loops bearing on said platform and having a portion intermediate said first and second ends extending from said second surface of said platform, for contacting the freshly poured concrete beneath the platform, each of said plurality of open loops comprising a member possessing flexibility transversely relative to the freshly poured concrete; and

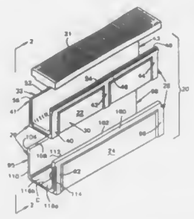
c. holding means for individually and resiliently detachably connecting each of said plurality of loops to said platform for movement therewith to permit the loops to drag across the freshly poured concrete, said holding means including a resilient member extending along said platform and each of said plurality of loops including means for engaging said resilient members at a plurality of selected positions along said resilient member.

4,940,359

CHEMICAL SAFETY CONDUIT OR TRENCH

Phillip L. Van Dayn, Akron; Jorg R. Barcawald, Chardon, and Kenneth E. Kruse, Solon, all of Ohio, assignors to ACO Polymer Products, Inc., Chagrin Falls, Ohio

Filed Feb. 17, 1989, Ser. No. 312,892
Int. Cl.[5] E01F *5/00*
U.S. Cl. 405—118 **21 Claims**



1. An elongate safety conduit for receiving liquids, comprising:

first and second precast polymer concrete conduit elements each having imperforate bottom and side wall portions,

the first conduit element located and retained within the second and constructed and arranged to allow liquid access thereto from outside the second,

the second conduit element bottom and side wall portions enveloping those of the first,

means within the second conduit element for engaging the first conduit element and positively locating the first conduit element above the bottom wall of the second conduit thereby providing a space between the outside of the bottom wall portion of the first conduit element and the inside of the bottom wall of the second suitable for collecting liquid that may leak through the enveloped wall portions, and

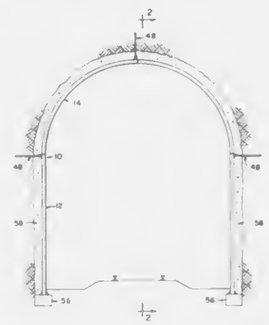
seal means along the length of the conduit between the two conduit elements at or adjacent to upper termini of interfaces between the enveloped and enveloping side wall portions of the two to adhere the two elements together and inhibit entry of liquid between said interfaces.

4,940,360

INSULATED TUNNEL LINER AND REHABILITATION SYSTEM

Raymond L. Weholt, 3119 W. Commodore Way, Seattle, Wash. 98199

Filed Jul. 27, 1987, Ser. No. 78,453
Int. Cl.[5] E21D *11/00*
U.S. Cl. 405—151 **13 Claims**



1. An insulating and rehabilitation system especially adapted to unlined rock tunnels, said system comprising:

(a) a modular system of sandwich panels with protected metal skins adhered to insulating cores, prefabricated and joined as a complete liner system to conform with tunnel dimensions and clearance requirements,

(b) a footing for said liner system arranged to provide continuous support and alignment for the system and insulate against thermal transfer to the tunnel wall, and

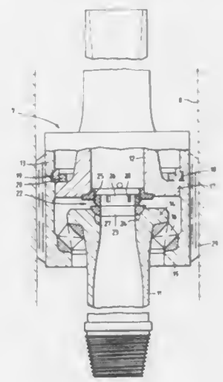
(c) a system of filling the void between said liner system and the rock face of said tunnel with a lightweight, chemically hardening structural material to maintain the present position of unstable, key rocks in said tunnel arches and walls.

4,940,361

DEVICE IN A FLEXIBLE TENSION LEG

Bjorn Paulshus, Slengasen 7, 2020 Skedsmo, Norway, and Phil Hawley, Minwear Crowthrone Farm, Crowthrone, Berkshire, United Kingdom

Filed Jun. 26, 1989, Ser. No. 371,584
Claims priority, application Norway, Jun. 24, 1988, 882804
Int. Cl.[5] B63B *21/50*; F16B *21/00*
U.S. Cl. 405—224 **7 Claims**



1. A device in a flexible tension leg member of the kind that comprises a hollow cylindrical casing, first and second coaxial tension leg elements which extend into said casing from its opposite ends. an outward projecting bearing flange at the end of the first tension leg element which sits in said casing, an inward projecting bearing flange in said casing, an elastomeric bearing member surrounding the first tension leg element and bearing against its bearing flange and on the other side bearing against inward projecting bearing flange in said casing, a rigid connection between said second tension leg and casing and a spacer between opposite tension leg elements inside said casing, said spacer comprising a spheric face facing a spheric bearing face on one tension leg element, characterized in that the spacer has an adjustable stop towards the other of opposite tension leg element ends.

4,940,362

PACKING MEANS FOR A FLEXIBLE TENSION LEG IN A TENSION LEG PLATFORM

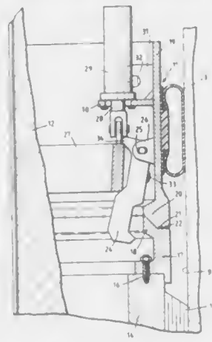
Bjorn Paulshus, Slengasen 7, 2020 Skedsmo, Norway, and Phil Hawley, Minwear Crowthrone Farm, Crowthrone, Berks, England

Filed Jun. 27, 1989, Ser. No. 372,053
Claims priority, application Norway, Jun. 27, 1988, 882846
Int. Cl.[5] E02D *5/74*
U.S. Cl. 405—224 **8 Claims**

1. In a tension leg platform having a flexible tension leg member comprising upper and lower tension leg elements and a casing within which said upper and lower tension leg elements are flexibly joined, the platform having a vertical shaft wall in which said casing is supported and bearing means between said casing and said shaft wall; the improvement

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comprising means releasably interconnecting said upper tension leg element to said casing, and packing means surrounding



said upper tension leg element and releasably sealing between said upper tension leg element and said shaft wall.

4,940,363

MINE ROOF SUPPORT ASSEMBLY

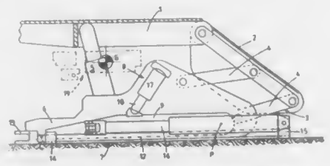
Stephen A. Brown, Cheltenham, and Neville J. H. Sleigh, Gloucestershire, both of England, assignors to Meco Mining Equipment Limited, Tewkesbury, England

Filed Nov. 17, 1989, Ser. No. 437,803

Claims priority, application United Kingdom, Sep. 21, 1989, 8921333

Int. Cl.[5] E21D *23/04, 15/44*

U.S. Cl. 405—296 **10 Claims**



1. A mine roof support assembly comprising a mine roof support having a first end in use adjacent to the mine face and a second end in use remote from the mine face, an advancing mechanism for advancing the roof support towards the mine face, and a base lifting mechanism including an arm member pivotally connected to a base section of the mine roof support at a position adjacent to the second end of the mine roof support, and a lifting ram which acts between the arm member and the roof support, the lifting ram acting on the roof support at a position which is nearer than the centre of gravity of the roof support assembly to the second end of the roof support to pivot the roof support relative to the arm member and thereby lift the first end of the roof support clear of the ground.

4,940,364

CONCRETE CONSTRUCTION UNITS AND MULTI-PLY CONCRETE COMPOSITES MADE THEREFROM

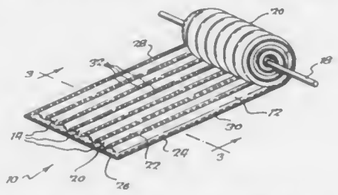
Leonard T. Dlugosz, 4 Minden Dr., Orchard Park, N.Y. 14127

Filed Oct. 14, 1988, Ser. No. 257,641

Int. Cl.[5] E02D *27/01*

U.S. Cl. 405—229 **27 Claims**

1. A concrete construction unit, which comprises a mat-like structure having enhanced load bearing properties making it useful in the construction of walls and wall panels, floors, pavements, road beds, support pads, foundations, domes, roofs, poles, pillars and bridge supports, said mat having a closed, water permeable outer shell which is substantially impermeable to concrete aggregate, said shell being subdivided into a plurality of connected, parallel tubular compartments, said compartments comprising a sufficient amount of a dry cementitious material to provide individual, longitudinally uniform,



segregated concrete bodies, said bodies being in an even plane relative to one another, the porosity of said outer shell and packing of said dry cementitious material therein being sufficient to effectuate controlled chemical hydration, said concrete construction unit characterized by formation of a substantially rigid monolithic structure upon curing.

4,940,365

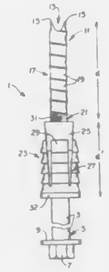
MINE ROOF SUPPORT PLATE BOLT

Richard A. Rozanc, Muse, Pa., assignor to Ground Control, Inc., Cecil, Pa.

Filed May 18, 1989, Ser. No. 353,904

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—261 **14 Claims**



1. In a mine roof support plate bolt formed from a metallic elongated rod, having a head and flange at one end thereof and a channeled section having a helical channel in said rod adjacent the other end, for securement by resin in a bore hole having a closed end, the improvement comprising:

a threaded section on said rod adjacent the channeled section thereof; and

an expansion anchor threadedly engaged on the threaded section comprising a wedge and hollow shell; with the channeled section of said rod being of such a length greater than the length of said anchor such that a major portion of said channeled section is exposed regardless of the positioning of said expansion anchor on said threaded section;

whereby the expansion anchor provides initial securement in the bore hole while the resin is mixed and pumped towards the closed end of the bore hole by said helical channel and then sets up to secure the support plate bolt in said bore hole.

4,940,366

METHOD OF TREATING BACKFILL

Toshiro Suzuki, 1160-12, Morooka-cho, Kohoku-ku, Yokohama-shi, Japan

PCT No. PCT/JP87/00425, § 371 Date Feb. 26, 1988, § 102(e) Date Feb. 26, 1988, PCT Pub. No. WO88/00260, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 25, 1987, Ser. No. 180,106

Claims priority, application Japan, Jul. 1, 1986, 61-154623

Int. Cl.[5] E02D *3/12*

U.S. Cl. 405—267 **18 Claims**

1. The method of preparing soil for back-filling an excavation and backfilling thereof comprising the steps of:

(a) removing excess water from said soil;

(b) homogeneously mixing a cementitious material with said soil;

(c) homogeneously mixing small ice particles with said soil, the temperature of which is above the freezing temperature of water;

(d) backfilling the homogeneous mixture of soil, cementitious material and small ice particles into an excavation.

4,940,367

PNEUMATIC FLOCK FEED SYSTEM FOR SUPPLYING MULTIPLE CARDS AND/OR STAPLE CARTING MACHINES

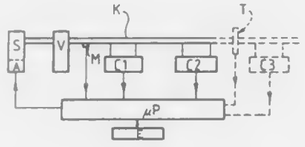
Christoph Stäbeli, Frauenfeld, and Urs Staehli, Turbenthal, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 4, 1988, Ser. No. 228,529

Claims priority, application Switzerland, Aug. 12, 1987, 03109/87

Int. Cl.[5] B65G *53/66*

U.S. Cl. 406—30 **24 Claims**



1. A fiber processing plant comprising

a pneumatic flock feed system for conveying a flow of flock, said feed system including a flock supply means for supplying flock into said system at a preselected constant rate;

a plurality of fiber processing machines connected to said system for receiving flock therefrom; and

control means connected to said flock supply means to switch said flock supply means on and off for controlling the overall amount of flocks conveyed in said system in a stop-go operation with said preselected rate, said control means being adjustable in dependence on the number of fiber processing machines in operation.

4,940,368

PROPULSION SYSTEM AND PROCESS FOR PNEUMATIC PIPELINE TRANSPORT

Mihail I. Marcu, 118 Locke St. N., Hamilton, Ontario, L8R 3A8, Canada

Filed Apr. 28, 1988, Ser. No. 187,468

Int. Cl.[5] B61D *13/10*

U.S. Cl. 406—79 **1 Claim**

1. A propulsion system for pneumatic pipeline transport of wheeled containers comprising:

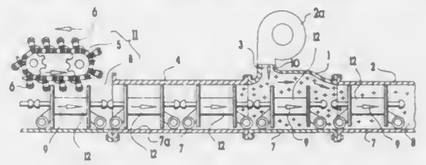
(a) a continuous tubular main pipeline section with an input end and an open output end;

(b) a secondary tubular pipeline section of smaller diameter than the main pipeline section with an open inlet end and an output end;

(c) a single generally tubular air injection manifold pipeline section of larger diameter than the main and secondary pipeline sections with an input end and an output end;

(d) a single device to inject high pressure air into the main pipeline via the manifold section;

(e) wherein the output end of the secondary pipeline is connected to the input end of the manifold section and the output end of the manifold section is connected to the



input end of the main pipeline section to form a continuous pneumatic pipeline;

(f) wheeled containers;

(g) a single forced introduction device in the form of a mechanical conveyor being located outside the pipeline to introduce the containers into the input end of the secondary pipeline section; and

(h) wherein the propulsion of the wheeled containers in the main pipeline section is solely provided by the single injection device.

4,940,369

MILLING CUTTER WITH INDEXABLE INSERTS

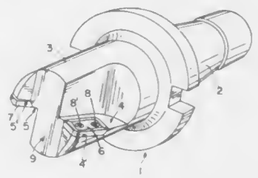
Gilbert Aebi, Trelex; Pierre Raye, Gland, both of Switzerland; Maurice J. A. David, Nantes, and Michel E. A. Marianneau, La Montagne, both of France, assignors to Stellram S.A., Nyon, Switzerland

Continuation-in-part of Ser. No. 29,155, Mar. 20, 1987. This application Jan. 13, 1989, Ser. No. 296,742

Claims priority, application Switzerland, Mar. 27, 1986, 01237/86

Int. Cl.[5] B23C *5/10*

U.S. Cl. 407—42 **9 Claims**



1. A milling cutter having indexable inserts, comprising

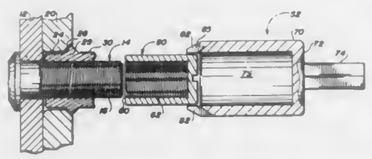
(a) a body including a front portion containing at least two indentations each defining a housing having a bottom surface which defines a positioning angle other than 0° with the longitudinal axis of said body; and

(b) a cutting insert removably connected with each housing and including a corner portion emerging from a face of said body front portion and a main cutting edge extending beyond and along an external lateral rim of the indentation, said insert having a rake face comprising a flat central depression and a sloped portion having an inclination which varies along its length relative to said flat central depression extending from said flat central depression to said main cutting edge and a clearance face of variable normal clearance along its length forming with said sloped portion a constant wedge angle, wherein the variable

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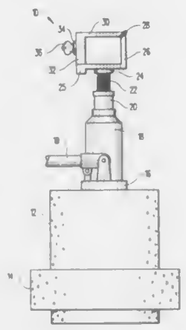
incline of the sloped portion and clearance face are selected to coact with the positioning angle to impart to the cutter a constant radial rake and clearance angle.

4,940,370
INNER LUG REMOVAL TOOL
Gregory L. Gipson, 4748 N. 28th Dr., Phoenix, Ariz. 85017
Filed Oct. 16, 1989, Ser. No. 421,850
Int. Cl.[5] B23B *49/00*
U.S. Cl. 408—72 R 8 Claims



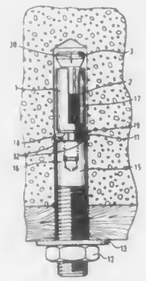
1. A tool for removing a seized or broken lug engaged on a threaded shaft comprising:
(a) a pilot member having a generally cylindrical exterior surface and defining an interior axially extending threaded bore threadably engageable with said shaft;
(b) a cutter member having a body defining a guided bore rotatively engageable about the exterior surface of said pilot member, said cutter having cutting means on said body at a location engageable with at least a portion of said nut; and
(c) means for rotating said cutter.

4,940,371
TRAILER LOCK DOWN DEVICE
George M. Cholovich, 262 Ben Putnam Rd., SW., Resaca, Ga. 30735
Filed Jul. 19, 1989, Ser. No. 381,807
Int. Cl.[5] B60D *1/00*
U.S. Cl. 410—101 1 Claim



1. A trailer lock down device, comprising:
a base;
a ground insertion anchor on said base for securing said base at an intended location;
said ground insertion anchor including an elongated rod provided with a plurality of axially spaced radially extending flanges adapted for encapsulation in a concrete block;
a hydraulic jack on said base;
a shaft mounted for selective vertical extension and retraction by said jack;
a threaded extension member telescopically received in coaxial relation in a free upper end of said shaft;
a first L-shaped member secured to a free upper end of said extension member;
a second L-shaped member secured to by a hinge to said first L-shaped member, said second L-shaped member movable to a closed position, wherein said first and second members form an open ended box; and
a key actuated locking mechanism for securing said second L-shaped member in said closed position.

4,940,372
ANCHORING PLUG
Artur Fischer, Waldachtal, Fed. Rep. of Germany, assignor to fischerwerke Artur Fischer GmbH & Co. KG, Waldachtal, Fed. Rep. of Germany
Filed Feb. 12, 1988, Ser. No. 155,318
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705654; Jun. 6, 1987, 3719034
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—32 1 Claim

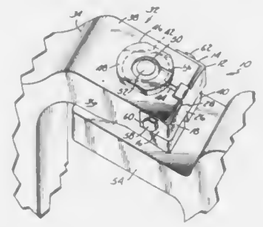


1. An anchoring plug for fastening objects to a support structure, comprising an expansible sleeve formed with a plurality of longitudinal slots at a leading end thereof, insertable into a hole drilled in the support structure, an expander body driven into said expansible sleeve to expand and clamp the latter in said hole, a screw connected to said expander body for driving said expander body into said expansible sleeve, and a bearing means against which said expansible sleeve is supported as said expander body is inserted into said expansible sleeve, said bearing means including a ring-shaped spring member and having an external diameter which is greater than an external diameter of said expansible sleeve, said bearing means being compressible in the hole of the support structure to said external diameter of said expansible sleeve to be pressed radially against a peripheral wall of the hole so as to support said expansible sleeve, and means for centering said ring-shaped spring member before and during assembly and promoting an expansion process and including a projection formed on said expansible sleeve and provided with an annular surface corresponding in shape to a cross-section of said ring shaped spring member so as to laterally press said ring-shaped spring member from inside radially outwardly against the peripheral wall of the hole during expansion of said expansible sleeve.

4,940,373
NUT AND BOLT LOCKING EMCHANISM
Gerald A. Specktor, St. Paul, Minn., assignor to Shim-A-Line, Inc., Minneapolis, Minn.
Filed Sep. 26, 1989, Ser. No. 412,677
Int. Cl.[5] F16B *39/04;* B62D *3/00*
U.S. Cl. 411—87 13 Claims

1. A nut and bolt locking mechanism comprising:
first and second locking plates;

means for holding the first and second locking plates in fixed positions with respect to one another; and
the first and second locking plates having coaxial openings,

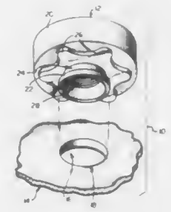


the opening through the first locking plate being shaped and sized to fit the head of a selected type of bolt and the opening through the second locking plate being shaped and sized to fit a selected type of nut.

4,940,374
LOCKING BOLTS FOR VEHICLE EXHAUST MANIFOLD PIPES
Roy L. Gallagher, 13200 E. Harney La., Lodi, Calif. 95240
Filed Oct. 24, 1988, Ser. No. 261,717
Int. Cl.[5] F16B *39/10*
U.S. Cl. 411—120 2 Claims

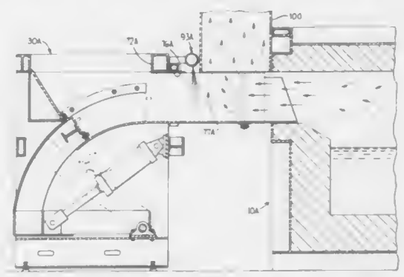
1. An anti-rotation locking assembly for releasably fastening automotive exhaust pipes and exhaust manifolds to an engine block, said assembly comprising in combination:
A. a generally cylindrical threaded shaft for engaging threaded holes in an automotive cylinder block;
B. a headed portion proximate said threaded shaft further comprising:
1. a hexagonal wrenching recess co-axial with said threaded shaft;
2. a plurality of holes trans-axial of said threaded shaft;
C. a locking plate of hyperbolic shape trans-axial of said threaded shaft and further comprising:
1. a hexagonal stud extending co-axially from the proximate center of said locking plate to engage said headed portion;
2. a plurality of holes in said stud, trans-axial of said threaded shaft receiving a cotter pin when the holes in the stud and headed shaft are aligned to securely lock the hyperbolic locking plate trans-axial to the threaded shaft and thereby prevent the threaded shaft from working loose due to vibration.

4,940,375
CLINCH TYPE FASTENER STRUCTURE AND TOOLING
Michael D. Marvell, Rockford, Ill., and John S. Milliser, Rochester, Ind., assignors to Textron Inc., Providence, R.I.
Filed May 19, 1989, Ser. No. 354,640
Int. Cl.[5] F16B *37/04;* B23P *11/00*
U.S. Cl. 411—181 9 Claims



1. A joint assembly in which a fastener of the self-clinching type is secured to an apertured sheet material, comprising: a fastener including a head and shank portion with a locking groove formed in said shank; a generally planar-surfaced, apertured sheet material; said fastener shank portion projecting through said aperture and said fastener head at least partially embedded within peripheral material surrounding said sheet material aperture, and a portion of said peripheral material is disposed within said groove to form a mechanical interlock therewith to secure said joint assembly; said shank comprising an outwardly flared end portion having an exposed surface thereof coplanar with an exposed, opposite surface of said sheet material in relation to said embedded fastener head.

4,940,376
SCRAP LOADER FOR MOLTEN METAL FURNACE
John McCarthy, Benton Harbor, Mich., assignor to MPH Industries, Inc., Riverside, Mich.
Filed Oct. 12, 1988, Ser. No. 256,730
Int. Cl.[5] F27D *3/04;* B65G *65/02*
U.S. Cl. 414—198 9 Claims



1. A scrap loader for a molten metal furnace, comprising:
a loader housing to be positioned beside a molten metal furnace, said housing including a chamber having an inlet portion for receiving metal scrap and an outlet port through which said metal scrap is to be fed into the furnace;
means for feeding metal scrap to said chamber;
a ram assembly in said housing and comprising:
(a) a leg means pivoted with respect to said housing, and pivot means fixed with respect to said housing near said furnace and spaced below said chamber, said leg means having a retracted position extending generally hori-

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zontally away from said pivot means and furnace below said chamber,

(b) a ram fixed on said leg means and pivotable therewith along a wall of said chamber past said inlet port and toward said outlet port, said ram being curved about the axis of said pivot means, said ram having a rest position extending up from said leg means remote from said furnace and curving back over a portion of said leg means, said chamber and ram defining an upper boundary and said leg means defining a lower boundary of an approximately triangle shaped space diverging upwardly and toward said furnace,

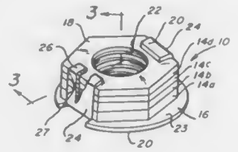
(c) means actuable for pivotally advancing and retracting said ram along said chamber wall and therewith for driving metal scrap along said wall and through said outlet port into the furnace, said ram advancing means comprising an elongate longitudinally expandable and contractible linear motor fixed pivotally with respect to said housing near said furnace on a pivot vertically spaced between said pivot means of said leg means and said chamber, said elongate linear motor extending from said pivot into and being housed within said approximately triangle shaped space below said ram and chamber and above said leg means, said linear motor having a free end portion fixed adjacent a joinder of said ram to said leg means, said elongate linear motor having a rest position approximately bisecting the angle between said ram and leg means, said elongate linear motor being contractible to pivot said leg means up and advance said ram past said inlet port and toward said outlet port of said chamber.

4,940,377

LAMINATED NUT HAVING CAGE WITH NESTED FINGERS AND METHOD OF MANUFACTURE

Richard L. Reynolds, Grosse Pointe Shores, Mich., assignor to Pac-Fasteners, a Michigan partnership, Southfield, Mich.

Filed Aug. 2, 1989, Ser. No. 388,658
Int. Cl.[5] F16B *37/08, 39/12*
U.S. Cl. 411—432 **13 Claims**



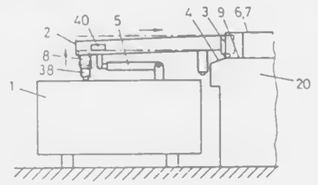
1. A laminated nut comprising a plurality of conical spring discs, a cage for receiving and holding said spring discs in a stacked, aligned relationship to define a central opening threaded to be matably received upon an associated threaded bolt, said cage including a bottom plate portion and a plurality of axially extending fingers cooperating with said plate portion to hold said spring discs in said stacked, aligned relationship, said spring discs having a plurality of circumferentially disposed flats, axially extending slots located in said flats, said fingers located in said slots.

4,940,378

POSITIONING DEVICE FOR POSITIONING A LOAD CARRYING PLATFORM RELATIVE TO A DOCKING STATION

Hans-Ueli Feldmann, Safnern, and Ueli Helz, Bern, both of Switzerland, assignors to JD-Technologie AG, Zug, Switzerland

Filed Sep. 28, 1989, Ser. No. 413,993
Claims priority, application Switzerland, Sep. 29, 1988, 3618/88
Int. Cl.[5] B65G *67/00*
U.S. Cl. 414—401 **10 Claims**



1. Positioning device for the accurate positioning of a load carrying platform of a conveyor vehicle relative to a fixed docking station, comprising a conveyor vehicle with a base portion and a load carrying platform displaceably supported on said base portion and movable relative thereto along a substantially horizontal axis of extension from a rest position into at least one extended position, said load carrying platform having at least one front end with first positioning means, lifting means located near an end opposite to said at least one front end and a levelling device for controlling said lifting means, and further comprising a fixed docking station, said docking station comprising second positioning means, which second positioning means have incline means ending on a defined level, whereby, while said conveyor vehicle is positioned adjacent to said docking station said platform is moved from said rest position into said extended position, said first positioning means will cooperate with said incline means to raise said front end of said platform to said defined level, and whereby said lifting means simultaneously are operative to lift said end opposite to said front end in order to adjust said platform to a levelled position during its movement from said rest position to said extended position.

4,940,379

TRUCK LOADING

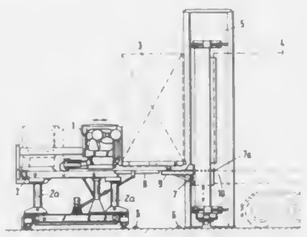
Ruediger Staege, Am Pfuhl 11-13, D-1000 Berlin 45, Fed. Rep. of Germany

Filed Mar 31, 1986, Ser. No. 846,702
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3511455
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—401 **3 Claims**

1. Loading device, for automatic rear end loading of trucks or trailers by means of a forklifting type device movably mounted on a platform that can be lowered and lifted, the improvement comprising:

a docking and loading gate defining a particular position for the rear end of a truck or trailer on one hand and of a direction of loading on the other hand, the position being established with respect to the truck or trailer when positioned in and at the loading dock; and

a loading bridge arranged in said loading gate for bridging space between said loading platform on one hand and a load bearing surface of a truck or trailer when in the loading dock on the other hand, there being means for lowering said bridge to obtain particular positions in which the bridge engages a rear portion of the load surface and exerts a particular load upon the truck or trailer in said loading gate.

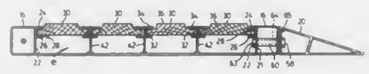


4,940,380

LOAD ELEVATOR PLATFORM FOR TRUCK OR THE LIKE

Jan Ballyns, Pickering; John C. Martin, and Paul H. Martin, Toronto, all of Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Feb. 17, 1989, Ser. No. 311,757
Int. Cl.[5] B60P *3/00*
U.S. Cl. 414—495 **8 Claims**



1. In a load elevator for raising and lowering a load with respect to the bed of a truck, the improvement of a light-weight elevator platform comprising:

(a) a plurality of light-weight floor boards, each having oppositely disposed side edges and oppositely disposed ends,

(b) a frame having oppositely disposed first frame members and oppositely disposed second frame members connected to one another to define a rectangular-shaped floor board enclosure, said frame members each having a side face which is directed inwardly of the enclosure,

(c) a plurality of support rails each having oppositely disposed side faces and oppositely disposed ends,

(d) means for releasably securing the ends of said support rails to the first frame member to releasably retain the support rails in a position extending between the first frame members in a spaced parallel relationship to the second frame members,

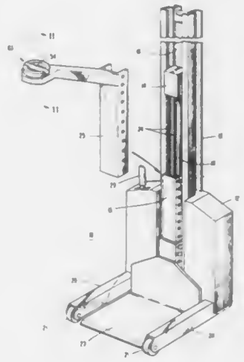
(e) a mounting channel at said side face of each second frame member and at each side face of each support rail, said mounting channels each having upper and lower walls forming seats releasably retaining a marginal side edge portion of one of the floor boards to retain one floor board along the length between each support rail and between the second frame members and an adjacent support rail, said floor boards and support rails being otherwise free of attachment to one another so as to be readily assembled and disassembled by releasing said means for releasably securing the ends of the support rails to the first frame members.

4,940,381

MOBILE HOIST

Ambrose L. Rysewyk, Elgin, Ill., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 26, 1988, Ser. No. 237,253
Int. Cl.[5] B66F *19/00*
U.S. Cl. 414—619 **10 Claims**



1. A hoist comprising:
an elongated housing;
a mast extending upwards from said housing;
a hydraulic cylinder mounted in an upward position within said mast;
a piston slidably mounted within said cylinder having one of its ends extending from the upward end of said cylinder;
an upper slide slidably mounted on said mast and attached to the portion of the piston extending from said cylinder;
a lower slide slidably mounted on said mast;
means for interconnecting said upper and lower slides;
a load lifting means attached to said lower slide;
a hydraulic system for generating a hydraulic fluid flow to or from said cylinder;
a metering valve for regulating said hydraulic fluid flow to and from said cylinder such that hydraulic fluid flow through said valve is nonlinear, said metering valve including;
a valve body having an inlet and an outlet port;
a passage connecting said ports;
a spherical ball positioned in said inlet port;
a spring for keeping said ball against the connecting passage thereby blocking said passage to prevent hydraulic fluid flow through said passage;
a cam having a camming surface of predetermined shape and dimension;
a structure for rotatably supporting said cam;
a control lever affixed to said cam for rotating said cam;
means in contact with said camming surface and with said spherical ball for moving said ball away from the passage to allow hydraulic fluid flow through the passage; and
a shuttle valve means which vents the hydraulic system to the atmosphere allowing said piston to extend from the cylinder and prevents hydraulic fluid leaks from the hydraulic system when said piston is in its lowest position within the cylinder.

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4,940,382

AUTONOMOUS MOVING BODY FOR TRANSPORTING A TOOL AT A CONSTANT SPEED

Yves Castelain, L'Isle Jourdain; Philippe Jaubert, Cologne, and René Peltier, Colomiers, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Dec. 23, 1988, Ser. No. 289,206
Claims priority, application France, Dec. 31, 1987, 87 18478
Int. Cl.[5] B25J *5/00*
U.S. Cl. 414—750 9 Claims



1. Autonomous moving body able to move a working tool at a constant speed over a surface having a random shape and orientation, characterized in that it comprises:

two attachment assemblies cooperating with one another by guidance means authorizing a relative displacement between said assemblies in a given direction, each of the attachment assemblies carrying attachment members able to adhere to the said surface and means for displacing these attachment members for moving towards and away from said surface;

a tool holder assembly supported by at least one of the attachment assemblies and cooperating with the latter through guidance means authorizing its displacement in said direction; and

control means, whose operation ensures the passage of the moving body into two successive and repetitive displacement states; a first of these states, in which the attachment members of only one of the attachment assemblies, said to be fixed, adhere to the said surface, ensuring a displacement of the tool holder assembly and the other attachment assembly, said to be mobile, in the said direction and respectively at a relatively low speed and a relatively high speed; the second state, in which the attachment members of the two attachment assemblies adhere to the said surface, ensuring a displacement of the tool holder assembly in said direction and at said relatively low speed with respect to the attachment assemblies; the fixed and mobile attachment assemblies of two successive first states separated by a second state being interchanged.

4,940,383

SYSTEM FOR ADMITTING STEAM INTO A TURBINE

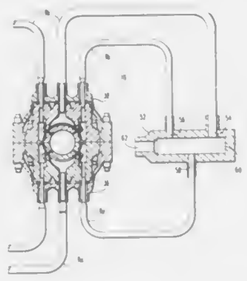
George J. Silvestri, Jr., Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jnl. 21, 1989, Ser. No. 383,391
Int. Cl.[5] F01D *17/18*
U.S. Cl. 415—44 8 Claims

1. An improved method of admitting steam into a steam turbine having an upper casing and a lower casing with a large nozzle chamber and at least one small nozzle chamber in each of the casings through which steam is admitted into the turbine, the method comprising the steps of:

controlling steam flow to each nozzle chamber with a single correspondingly-sized steam supply port and associated valve in a steam chest;

orienting adjacent ones of the steam supply ports in opposite directions within the steam chest so that steam flow destined for nozzle chambers in the upper casing is directed upwardly, and steam flow destined for nozzle chambers in the lower casing is directed downwardly; and



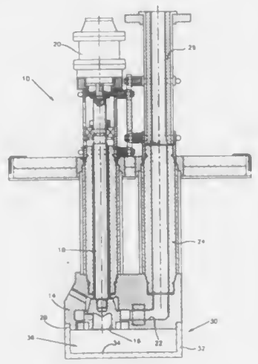
connecting each of the ports to its corresponding nozzle chamber with a single pipe means and an inlet pipe.

4,940,384

MOLTEN METAL PUMP WITH FILTER

Lutfi H. Amra, Cleveland Hts.; Thomas M. Byrne, Jr., Cleveland; Harvey Martin, Solon; George S. Mordue, Ravenna, and David V. Neff, Euclid, all of Ohio, assignors to The Carborundum Company, Niagra Falls, N.Y.

Filed Feb. 10, 1989, Ser. No. 309,613
Int. Cl.[5] F04D *29/70*
U.S. Cl. 415—121.2 19 Claims



1. A molten metal pump, comprising:

a base member, the base member having a fluid inlet; and

a filter secured to the base member and defining

a cavity therebetween, the filter completely surrounding the inlet, wherein the filter is made from bonded or sintered refractory material.

4,940,385

ROTARY DISC PUMP

Max 1. Gurth, 1781 Carob Tree La., El Cajon, Calif. 92021

Filed Apr. 25, 1989, Ser. No. 343,536
Int. Cl.[5] F01D *1/36*
U.S. Cl. 415—206 14 Claims

1. A rotary disc pump, comprising:

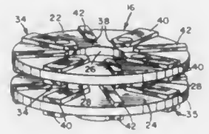
a housing having an inner cylindrical rotor chamber;

an inlet at one end of said chamber;

an outlet communicating with the outer periphery of said chamber;

an impeller shaft rotatably mounted at one end of said chamber;

at least two parallel, spaced discs disposed co-axially in said rotor chamber and connected together for rotation about



their center axis, one of said discs comprising a drive disc mounted on said impeller shaft;

the inner opposing faces of said discs being spaced a predetermined distance apart; and

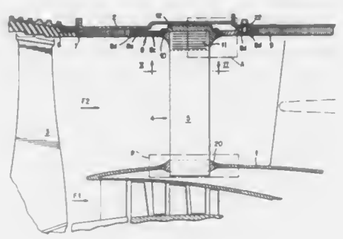
a plurality of raised vanes mounted on at least one of said opposing faces, the height of the vanes being less than the spacing between the discs.

4,940,386

MULTIPLE FLOW TURBOJET ENGINE WITH AN OUTER RING OF THE FAN OUTLET SHRUNK ONTO THE CASE

Thierry Feuvrier, Noisy-le-Roi, and Alexandre Forestier, Vaux le Penil, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Feb. 4, 1988, Ser. No. 152,337
Claims priority, application France, Feb. 5, 1987, 87 01394
Int. Cl.[5] F04D *29/54*
U.S. Cl. 415—209.2 5 Claims



1. Multiple flow turbojet engine with a fan outlet which comprises:

a stage of fixed guide vanes without platforms placed at regular intervals between an inner ring and an outer ring, wherein the outer ring comprises a single-piece, annular cartridge 8 made of composite material comprising two solid lateral strips whose outer surface is positioned within the interior of an outer case for the cold flow of the turbojet engine and whose inner surface comprises two lateral recesses for support of the edges of soundproofing panels placed upstream and downstream from said cartridge and positioned between the two lateral strips a narrowed central part that connects the two lateral strips and which has a plurality of slots for attaching guide vanes of the fan outlet and wherein a radially outer end of the blade of each guide vane of the fan outlet has a cover positioned thereon for cooperation with said slots and which is made of a molded elastomer,

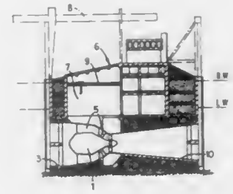
said cover having a widened outer edge having a groove and an outer and inner lip, said outer lip being hooked onto the outer face of a slot (10) of said narrowed central part of the cartridge and said inner lip being housed in a slot formed on a radially inner face of said cartridge.

4,940,387

WATER TURBINE ARRANGEMENT FOR POWER GENERATION

Colin Horne, 2 Dene Cottage, Milley Rd, Waltham St. Lawrence, Reading, England, and Edward B. Morgan, 20 Manor Close, Shrivenham, Swindon Wiltshire, United Kingdom

Filed May 4, 1989, Ser. No. 347,405
Claims priority, application United Kingdom, May 11, 1988, 8811159
Int. Cl.[5] F01D *15/10;* F04D *29/60*
U.S. Cl. 415—221 4 Claims



1. A water turbine arrangement in which at least one water turbine is located in the path of a water source for power generation, comprising a barrage structure which extends across and above the level of the water source, and in which the barrage structure is of a cross-sectional width sufficient to absorb static and dynamic loading from said water source and defines only a draught tube for the turbine, characterized in that the turbine is mounted centrally within an annular inlet casing to form a separate turbine assembly, in that the turbine assembly has a support structure extending between an exterior surface of the turbine and an interior surface of the inlet casing and is mounted on further support means comprising a foundation member whereby the turbine assembly, in use, will transmit static and dynamic loading to the bed of the water source via said support structure, in that an outlet end of the inlet casing is provided, around its opening, with an annular radiussed or coned spigot designed to be fitted against a co-operating bearing surface formed around an inlet end of the draught tube to provide an articulate, releasable connection, and in that locking means are provided for effecting said releasable connection.

4,940,388

COOLING OF TURBINE BLADES

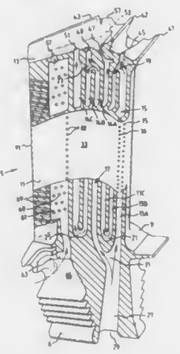
Jonathan R. Lilleker, Leeds; Harry Henshaw, and John L. Winter, both of Derby, all of England, assignors to Rolls-Royce plc, London, England

Filed Nov. 17, 1989, Ser. No. 437,900
Claims priority, application United Kingdom, Dec. 7, 1988, 8828541
Int. Cl.[5] F01D *5/08*
U.S. Cl. 416—97 R 7 Claims

1. An air cooled turbine blade for an axial flow gas turbine aeroengine has a root portion, an inner platform and an aerofoil, the aerofoil having a chordwise succession of substantially mutually parallel cooling air passages extending spanwise of the aerofoil, first and second pluralities of the passages being connected in flow series at their extremities to form respective separate first and second convoluted pathways in the leading edge and mid-chord regions of the aerofoil respectively, both said convoluted pathways being connected to a first cooling air entry port located below the inner platform, the trailing edge

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portion of the aerofoil having at least one spanwise extending cooling air passage therein connected to a second cooling air



entry port located below the inner platform, in use the first entry port receiving cooling air at a high pressure and the second entry port receiving cooling air at a lower pressure.

4,940,389

ASSEMBLY OF ROTOR BLADES IN A ROTOR DISC FOR A COMPRESSOR OR A TURBINE

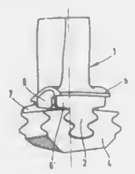
Gerd Luxenburger, Munich, Fed. Rep. of Germany, assignor to MTU Motoren- Und Turbinen-Union Munich GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1988, Ser. No. 281,201

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1987, 3743253

Int. Cl.[5] F01D *5/32*

U.S. Cl. 416—193 A **15 Claims**



1. A rotor wheel for compressors or turbines comprising a rotatable rotor disc having an axial length, and a plurality of rotor blades secured to said rotor disc and extending radially thereof in circumferentially spaced relation along said disc, said blades each including a foot engaged in a respective axial groove provided in said disc, each foot having a length equal to the axial length of said disc, and a foot plate spaced in entirety above said foot and forming a clearance space with said rotor disc with said foot engaged in said groove, said grooves in said disc defining successive circumferentially spaced teeth between adjacent grooves, and securing means integral with each rotor blade and said rotor disc to provide overlapping structural elements below the foot plate of the respective blade at said clearance space at a location for blocking axial movement of the blade relative to the rotor disc in one direction in the axial groove, said grooves in said disc having contoured axial side surfaces which form contoured side surfaces for said teeth, said feet of the blades having contoured axial surfaces for mating in said grooves, said structural elements of said securing means comprising an upstanding web on each tooth having said surfaces which are continuous with and smoothly merge with the contour of the side surfaces of said teeth, and two axially spaced depending radial wall parts on each said foot plate, said radial wall parts having side surfaces which are continuous with and smoothly merge with the contour of said feet of the rotor blade, said webs and said wall parts being developed to provide overlapping surfaces between each of said webs and a respective one of said wall parts to prevent relative axial movement of said rotor disc and said blades in one axial direction while the feet of the rotor blades occupy the entire length of the grooves in the disc.

4,940,390

TURBINE SYSTEM HAVING MORE FAILURE RESISTANT ROTORS AND REPAIR WELDING OF LOW ALLOY FERROUS TURBINE COMPONENTS BY CONTROLLED WELD BUILD-UP

Robert E. Clark, Orlando, Fla., and Dennis R. Amos, Rock Hill, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 190,324, May 5, 1988. This application May 11, 1989, Ser. No. 350,267

Int. Cl.[5] F04D *29/02*

U.S. Cl. 416—241 R **6 Claims**



1. In a steam turbine system of the type having a ferrous steam turbine component, said component having a worn surface thereon, the improvement comprising:

(a) a first layer of weld metal deposited on said worn surface, said deposition of said first layer producing a heat-affected zone in said component; and

(b) a second layer of weld metal deposited to said first layer, said deposition of said second layer tempering at least a portion of said heat-affected zone in said component, wherein said turbine component comprises about 1.05% to 1.35% by weight Cr, about 1.00% to about 1.30% by weight Mo, and about 0.21% to 0.29% by weight V.

4,940,391

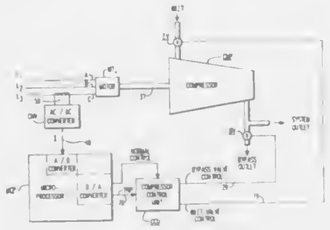
COMPRESSOR SURGE DETECTION SYSTEM

Robert T. Elms, Monroeville Boro; Clyde O. Peterson, Plum Boro, and Gary F. Saletta, Penn Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 7, 1988, Ser. No. 268,102

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—12 **4 Claims**



1. In a compressor system including a compressor driven by

an electric motor, a surge detection system comprising the following combination:

means for sensing the motor current to derive a current representative signal;

means responsive to said current representative signal for sampling over a sliding window a plurality of successive and consecutive samples thereof;

means for deriving one sample at a time as an instantaneous representation of the motor current magnitude;

means responsive to said plurality of samples for continuously deriving therefrom and through successive windows a signal representative of the average thereof;

comparator means responsive to a threshold signal and to said sample average for detecting a polarity signal representative of an excess in magnitude above and below said sample average;

means responsive to said polarity signal and to said one sample for detecting the occurrence of successive polarity changes in said polarity signal as an indication of an impeding surge; and

means for generating a surge indicative signal to be applied to the compressor system when said polarity changes have lasted during a predetermined time period.

4,940,392

JET PUMP WITH STABILIZED MIXING OF PRIMARY AND SECONDARY FLOWS

Richard C. Adkins, Buckinghamshire, England, assignor to British Aerospace PLC, London, England

Continuation of Ser. No. 131,500, Aug. 3, 1987, abandoned. This application Jan. 9, 1989, Ser. No. 294,999

Claims priority, application United Kingdom, Aug. 7, 1986, 8619277

Int. Cl.[5] F04F *3/00*

U.S. Cl. 417—151 **6 Claims**



1. A jet pump for reducing the noise generated by the flow of exhaust gas from a jet engine comprising:

a nozzle for a high speed primary flow produced by the exhaust of said jet engine;

a mixing tube into which said primary flow is directed by said nozzle;

an inlet to said mixing tube for a secondary flow, said inlet surrounding said primary flow nozzle; and

an orifice plate located in said mixing tube for changing the cross section of said mixing tube abruptly, in order to produce a rise in static pressure immediately downstream, thereby increasing mixing of the primary and secondary flows and stabilizing the mixing process.

4,940,393

SLANT PLATE TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

Yukihiko Taguchi, Maebashi, Japan, assignor to Sanden Corp., Japan

Filed Jan. 11, 1989, Ser. No. 295,733

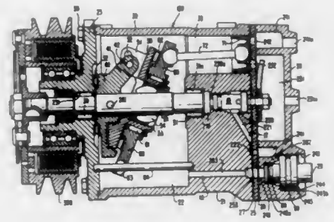
Claims priority, application Japan, Jan. 13, 1988, 63-3684

Int. Cl.[5] F04B *1/28*

U.S. Cl. 417—222 **16 Claims**

1. In a slant plate type refrigerant compressor including a compressor housing having a cylinder block, a front end plate at one end of said cylinder block and a rear end plate at the other end of said cylinder block, said cylinder block having a plurality of cylinders therein, a crank chamber enclosed within said compressor housing, a piston slidably fitted within each of said cylinders, a drive mechanism coupled to said pistons to reciprocate said pistons within said cylinders, said drive mechanism including a drive shaft rotatably supported in said housing, a rotor coupled to said drive shaft and rotatable with said drive shaft, and coupling means coupling said rotor to said pistons for converting rotary motion of said rotor into reciprocating motion of said pistons, said coupling means having a surface disposed at an inclined angle relative to a plane perpendicular to said drive shaft, said angle adjustable to vary the stroke length of said pistons and the capacity of said compressor, said rear end plate having a suction chamber and a discharge chamber, first and second passageways each linking said crank chamber to said suction chamber, and first and second valve control means for controlling the link of said crank chamber to said suction chamber through said first and said second passageways, respectively, to adjust the inclined angle in response to suction chamber pressure, the improvement comprising:

said second valve control means controlling said link of said



suction chamber to said crank chamber through said second passageway at a first and at a second control point corresponding to a first and a second value, respectively, of the suction chamber pressure, said second valve control means closing said second passageway when the suction chamber pressure is below the first control point, said second valve control means opening said second passageway when the suction chamber pressure is above the second control point, and

said first valve control means controlling the link of said suction chamber to said crank chamber through said first passageway at a third control point corresponding to a third value of the suction chamber pressure, said first valve control means opening said first passageway when the suction chamber pressure is above the third control point and closing said first passageway when the suction chamber pressure is below the third control point, the first control point being less than the third control point, the third control point being less than the second control point.

4,940,394

ADJUSTABLE WEARPLATES ROTARY PUMP

Gordon H. Gibbons, Penryn, Calif., assignor to Baker Hughes, Inc., Houston, Tex.

Filed Oct. 18, 1988, Ser. No. 259,079

Int. Cl.[5] F04B *49/00;* **F04C** *2/00*

U.S. Cl. 417—283 **5 Claims**

1. A rotary pump comprising:

a rotor casing having a pair of displaced semi-cylindrical facing cavities therein, a suction inlet port and a discharge port;

a first lobed rotor journalled within said casing and rotatable in one of said cavities;

a second lobed rotor identical to said first lobed rotor and journalled within said casing and rotatable in the other of said cavities, said lobed rotors interfitting to form pumping pockets between portions of said rotors and said cas-

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ing, said pockets being movable from adjacent said inlet port to adjacent said discharge port;

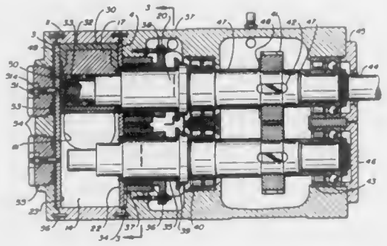
means for rotatably driving said rotors in opposite directions;

a first wearplate in close clearance and in juxtaposition with parallel faces of said rotors and sealing one end of said cavities; and

means for adjusting the clearance of said first wearplate with said rotor faces, said adjusting means being operable from the exterior of said rotor casing and comprising:

a pair of rotatably adjustable lugs extending from said rotor casing;

compression spring means positioned between an inner end



surface of said lugs and an outer surface of said first wearplate for compressively loading said first wearplate;

a pair of spaced threaded studs connected to and extending outwardly from said outer surface of said first wearplate, one of said studs extending juxtaposed to one of said lugs and the other of said studs juxtaposed to the other of said lugs; and

a stud nut on each of said threaded studs, such that said lugs are adjustable to preload said spring means to a set tension correlating to a selected pump operating pressure and wherein at said pump operating pressure tightening of said nuts adds additional compression to said spring means and pulls said first wearplate away from said rotor faces to a predetermined design clearance.

4,940,395

SCROLL TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

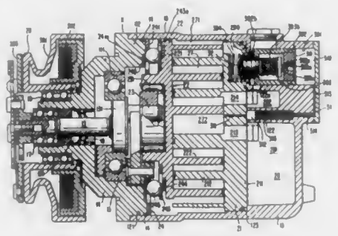
Tamaki Yamamoto, Honjo, and Atsushi Mabe, Isesaki, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 8, 1988, Ser. No. 281,342

Claims priority, application Japan, Dec. 8, 1987, 62-185949

Int. Cl.[5] **F04B** *49/02, 49/08*

U.S. Cl. 417—310 **8 Claims**



1. In a scroll type compressor including a housing having an inlet port and an outlet port, a fixed scroll disposed within said housing and having a first circular end plate from which a first spiral element extends into the interior of said housing, an orbiting scroll having a second circular end plate from which a second spiral element extends, said first and second spiral elements interfitting at an angular and radial offset forming a plurality of line contacts and defining a central fluid pocket and at least one pair of outer fluid pockets within the interior of said housing, a driving mechanism operatively connected to said orbiting scroll to effect orbital motion of said orbiting scroll, rotation preventing means for preventing the rotation of said orbiting scroll during orbital motion, said first circular end plate dividing the interior of said housing into a front chamber and a rear chamber, said front chamber communicating with said inlet port, said rear chamber further divided into a discharge chamber, an intermediate pressure chamber and a cylinder, said discharge chamber linked with said outlet port and with said central fluid pocket formed between said spiral elements, a one way valve means for providing fluid communication in one direction from said central fluid pocket to said discharge chamber, at least one pair of holes formed through said first circular end plate and forming a fluid channel between said outer fluid pockets and said intermediate pressure chamber, a communication passageway including said cylinder linking said intermediate pressure chamber with said front chamber, and control means disposed in said cylinder for controlling fluid communication between said intermediate pressure chamber and said front chamber through said cylinder, the improvement comprising:

a bypass channel linking said cylinder in fluid communication with said central fluid pocket, and

said control means comprising a piston slidably disposed within said cylinder and a control valve, said piston responsive to the fluid pressure in said central fluid pocket to slide in said cylinder to control the link between said intermediate chamber and said front chamber, said control valve controlling the link between said central fluid pocket and said front chamber through said piston.

4,940,396

HERMATIC SCROLL TYPE COMPRESSOR WITH TWO CASINGS AND CENTER BLOCKS

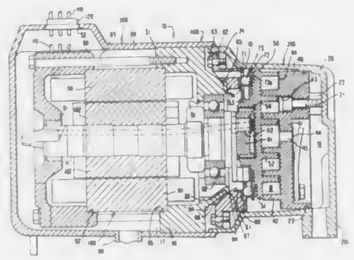
Shigemi Shimizu, Sakai; Kazuto Kikuchi, Honjo, and Kiyoshi Terauchi, Isesaki, all of Japan, assignors to Sanden Corporation, Japan

Continuation-in-part of Ser. No. 169,983, Mar. 18, 1988, Pat. No. 4,900,238. This application Jan. 13, 1989, Ser. No. 296,596

Claims priority, application Japan, Jan. 14, 1988, 63-6450

Int. Cl.[5] **F04B** *35/04;* **F04C** *18/04, 29/00*

U.S. Cl. 417—410 **16 Claims**



1. In a scroll type compressor with a hermetically sealed housing, the compressor comprising a fixed scroll fixedly disposed within said housing and having an end plate from which a first wrap extends into the interior of said housing, an orbiting scroll having an end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets, a driving mechanism including a motor supported in said housing, said driving mechanism being operatively connected to said orbiting scroll to effect the orbital motion of said orbiting scroll, rotation prevention means for preventing the rotation of said orbiting scroll during orbital motion thereof, whereby the volume of the fluid pockets changes during said orbital motion to compress the fluid in the pockets, the improvement comprising:

said housing including a first cup shaped casing and a second cup shaped casing, said first cup shaped casing housing said fixed scroll, said orbiting scroll and said rotation prevention means, said second cup shaped casing housing said driving mechanism which further includes a drive shaft, wherein said first and second cup shaped casings are joined to form said hermetically sealed housing;

a first center block being disposed within said first cup shaped casing, said first center block having a front surface and a rear surface, said rear surface being connected to a portion of said rotation preventing means;

a second center block being disposed within said second cup shaped casing and rotatably supporting one end of said drive shaft, said second center block having a front surface facing said first center block front surface; and

alignment means formed on engaging portions of said facing surfaces of said first and second center blocks for aligning said drive shaft with said orbiting scroll, said alignment means comprising an annular recess formed at an inner portion of said first center block and an annular projection formed on said second block, said alignment means further comprising a guide surface formed on said front surface at said first center block for guiding said second center block therealong and towards said annular recess, said guide surface extending radially outwardly from said annular recess.

11. In a scroll type compressor with a hermetically sealed housing, the compressor comprising a fixed scroll fixedly disposed within said housing and having an end plate from which a first wrap extends into the interior of said housing, an orbiting scroll having an end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets, a driving mechanism including a motor supported in said housing, said driving mechanism being operatively connected to said orbiting scroll to effect the orbital motion of said orbiting scroll, rotation preventing means for preventing the rotation of said orbiting scroll during orbital motion thereof, whereby the volume of the fluid pockets changes during said orbital motion to compress the fluid in the pockets, the improvement comprising:

said housing including a first cup shaped casing and second cup shaped casing, said first cup shaped casing housing said fixed scroll, said orbiting scroll and said rotation preventing means, said second cup shaped casing housing said driving mechanism which further includes a drive shaft, wherein said first and second cup shaped casings are fused together to form said hermetically sealed housing;

a first center block being disposed within said first cup shaped casing and being releasably secured thereto;

a second center block being disposed within said second cup shaped casing and rotatably supporting one end of said drive shaft; and

a rear support block being disposed within said second cup shaped casing, said rear support block supporting the other end of said drive shaft and being releasably secured to and solely supported by said second center block.

4,940,397

FUEL PUMP HAVING A PRESSURE CHAMBER VENTED VIA A BALL VALVE TO THE FUEL TANK

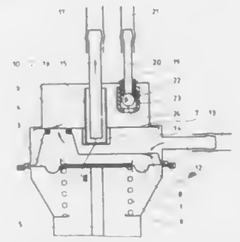
Ernst Kuhlen, Willich, Fed. Rep. of Germany, assignor to Pierburg GmbH, Neuss, Fed. Rep. of Germany

Filed Feb. 6, 1989, Ser. No. 307,420

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1988, 3820887

Int. Cl.[5] **F04B** *43/02*

U.S. Cl. 417—435 **11 Claims**



1. In a fuel pump driven by an internal combustion engine and adapted for attachment thereto, the pump being provided with a work chamber having an inlet suction valve and an outlet pressure valve, the improvement comprising a pressure chamber downstream of the work chamber and in communication therewith via the outlet pressure valve, a first connecting pipe extending in said pressure chamber for supplying fuel to a mixture-former of the engine, said pressure chamber having upper and lower regions, said first connecting pipe having an open lower end disposed in said lower region of the pressure chamber, a second connecting pipe connected to a fuel tank, and a ball valve means in the upper region of said pressure chamber for controlling communication between said pressure chamber and said second connecting pipe, said ball valve means comprising a ball suspended in said upper region of said pressure chamber to rise and fall therein depending on the density of the fluid in the pressure chamber such that when gaseous vapor is formed in said pressure chamber said ball falls and said connecting pipe is opened in said pressure chamber whereas without gaseous vapor, the liquid fuel raises the ball to close communication between the connecting pipe and the pressure chamber.

4,940,398

TWIN-SHAFT, MULTIPLE-STAGE VACUUM PUMP WITH THE SHAFTS VERTICALLY DISPOSED

Hanns-Peter Berges; Hartmut Kriehn, both of Cologne; Wolfgang Leier, Bergisch Gladbach, and Ralf Steffens, Cologne, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 13, 1988, Ser. No. 193,659

Claims priority, application European Pat. Off., May 15, 1987, 87107089.2

Int. Cl.[5] **F04C** *29/00*

U.S. Cl. 417—410 **19 Claims**

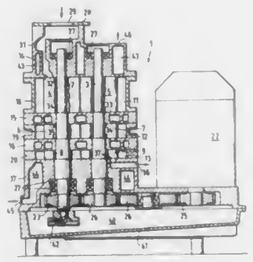
16. A twin-shaft vacuum pump having a pump inlet and a pump outlet, comprising:

housing means for defining a plurality of pump chambers disposed one above another, and a further chamber beneath the lowermost pump chamber, the pump inlet being disposed higher than the uppermost pump chamber and the pump outlet being disposed lower than the lowermost pump chamber, each pump chamber having a horizontally disposed lower floor with an outlet opening therein, the outlet opening in the lower floor of the lowermost pump chamber communicating with the pump outlet;

a pair of pump shafts;

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shaft mounting means for rotatably mounting the pump shafts so that the pump shafts are vertically disposed and extend into the pump chambers and into the further chamber;
a plurality of pairs of rotors, each pair of rotors being disposed in a respective pump chamber and being attached to the shafts;
a drive motor having a motor shaft;



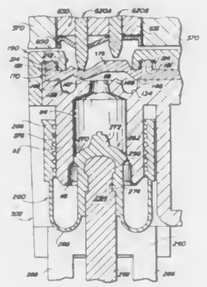
power transmission means for connecting the motor shaft to one of the pump shafts, the power transmission means being disposed below the pump chambers; and
synchronization means in the further chamber for synchronizing the rotation of the pump shafts, the synchronization means including two synchronization gears which are disposed below the pump chambers.

4,940,399

PISTON CAP AND BOOT SEAL FOR A MEDICATION INFUSION SYSTEM

Lanny A. Gorton, Sunland; John P. Pelmulder, Chatsworth; April A. Konopka, and William G. Bloom, both of Northridge, all of Calif., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Dec. 1, 1987, Ser. No. 127,350
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—415 **20 Claims**



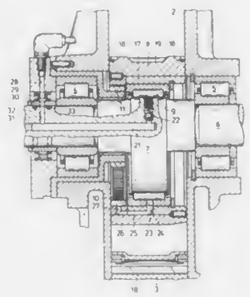
1. A medication infusion pump, comprising:
a pump cylinder having an open end;
an inlet valve for selectively allowing fluid to be admitted to the top of said pump cylinder from a fluid source;
an outlet valve for selectively allowing fluid to be discharged from the top of said pump cylinder to a fluid destination;
a piston which may be selectively driven in a reciprocating motion, one end of said piston being located within said pump cylinder, said one end of said piston located within said pump cylinder having a diameter less than the inner diameter of said pump cylinder, said piston extending from said open end of said pump cylinder;
a piston cap made of resilient material, said piston cap for placement on said one end of said piston, said piston cap being driven by said piston;
an essentially cylindrical retaining skirt for installation around the outer circumference of said pump cylinder;
flexible sealing means extending between said retaining skirt and said piston cap, said sealing means thereby sealing the portion of the interior of said pump cylinder located below said piston cap; and
a tortuous path through which gas may pass between said retaining skirt and said pump cylinder from one end of said retaining skirt to the other.

4,940,400

LUBRICATION SYSTEM FOR A ROTARY-PISTON INTERNAL COMBUSTION ENGINE

Josef Speiser, Wasserburg, and Manfred Fischer, Lindau, both of Fed. Rep. of Germany, assignors to Wankel GmbH, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 197,857, May 24, 1988, abandoned. This application Aug. 9, 1989, Ser. No. 391,455
Claims priority, application Fed. Rep. of Germany, May 26, 1987, 3717802
Int. Cl.[5] F01C *21/04*
U.S. Cl. 418—61.2 **10 Claims**



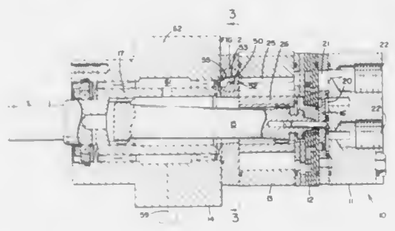
1. A rotary-piston internal combustion engine that includes a casing provided with two side parts and a middle housing part with an inner trochoidal surface, as well as an eccentric shaft that passes axially through said casing and supports an eccentric about which a multi-cornered triangular piston free of lubricant oil liquid cooling moves on roller or needle bearings of eccentric bearing means, said piston having sealing parts continually in engagement with the trochoidal surface of the middle housing part and side parts therewith, and with an internal gear of a synchromesh gear mechanism being secured to said piston as well as being provided with a gear space and a gap between the piston and the side part having an adjoining side wall, as well as including a lubrication system of the rotary-piston internal combustion engine for which lubricant oil is supplied via bores in the eccentric shaft and eccentric relative to the eccentric bearing means, the sealing parts and the synchromesh gear mechanism, the improvement therewith comprising:
means forming an axial bore that is provided in said eccentric shaft and that extends to lead only into said eccentric bearing means, said axial bore communicating with at least one first radial bore of said eccentric;
a centrifugal-force-controlled valve means provided in said bore of said eccentric leading up to said eccentric bearing means for metering and dosing of lubricant oil collectively regulated for only restricted lubrication of said eccentric bearing means and of the synchromesh gear mechanism as necessary so that only such a restricted amount of lubricant oil in a volumetric quantity up to only 100 grams per hour enters the gear space and the gap between the piston and the side part and so that an inside oil seal is eliminated along with a result that only a very small quantity of lubricant oil enters the gap between the adjoining side wall of the casing and the piston; and
a sealing ring located around said eccentric shaft at an inlet opening for the lubricant oil into the bore in the eccentric shaft, said sealing ring including seal lips that form an annular space with the radial bore aligned with an oil supply line.

4,940,401

LUBRICATION FLUID CIRCULATION USING A PISTON VALVE PUMP WITH BI-DIRECTIONAL FLOW

Hollis N. White, Jr., Hopkinsville, Ky., assignor to White Hydraulics, Inc., Hopkinsville, Ky.

Filed Feb. 14, 1989, Ser. No. 310,778
Int. Cl.[5] F04C *2/10*; F03C *2/08*
U.S. Cl. 418—61.3 **15 Claims**



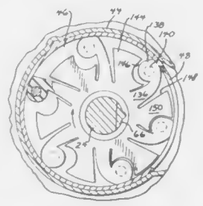
1. In a pressure device having a pressure cell subjected to a pressure varying between lower and higher pressures and a drive connection in an internal cavity, the improvement of a piston valve comprising a piston cavity, said piston cavity extending between the pressure cell and the internal cavity, a piston, said piston being movably located within said piston cavity, bypass means for a small amount of fluid to leak past said piston, and said piston moving in said piston cavity to pump fluid bi-directionally into and out of the internal cavity.

4,940,402

HIGH PRESSURE AND HIGH LIFT PUMP IMPELLER

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 8, 1988, Ser. No. 268,749
Int. Cl.[5] F04C *5/00*
U.S. Cl. 418—154 **2 Claims**



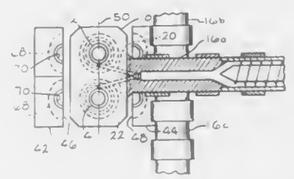
1. A pump impeller for a rotary vane positive displacement pump having a pump driveshaft extending axially through a pump housing having a circumferential sidewall defining a pumping chamber, said impeller comprising an annular hub portion driven by said driveshaft and a plurality of flexible vanes extending radially outwardly therefrom in said chamber and having outer tips engaging said sidewall, said impeller also comprising a plurality of filler blades extending radially outwardly from said hub portion between respective said vanes and occupying space therebetween and displacing volume in said chamber, said vanes moving through portions of varying flexure during rotation of said driveshaft, said filler blades being spaced radially inwardly of said sidewall and out of engagement therewith at all times and defining radial gaps therebetween, the radial width of which vary during rotary travel between a portion of largest radial ga at a portion of least flexure of the adjacent vane, and a portion of least redial gap at the portion of greatest flexure of the adjacent vane, the pumping volume of said chamber being along the inner periphery of said sidewall between said sidewall and said filler blades, the inner volume otherwise radially inward of said pumping volume being substantially displaced by said filler blades, said filler blades have an outer edge substantially adjacent said sidewall but always spaced therefrom by a gap therebetween including when the adjacent vane is at maximum flexure, said filler blades having a leading edge accommodating flexure of the respective vane during greatest flexure thereof and conforming to the profile of said outer tip of said vane and always providing a gap therebetween including when the vane is at maximum flexure.

4,940,403

DUAL PARISON EXTRUSION HEAD FOR MULTI-LAYER BLOW MOLDING

Michael Hirschberger, Sylvania, Ohio, assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 1, 1989, Ser. No. 345,566
Int. Cl.[5] B29C *47/26*
U.S. Cl. 425—133.1 **12 Claims**



1. An extrusion head for continuously producing dual parisons of plastic resin for blow molding plastic articles, comprising:
a single die body;
means within said die body for forming two parallel cylindrical resin flow passages each having an upright longitudinal axis, said cylindrical passages each having an open lower end forming an annular outlet orifice;
resin supply means within said die body for directing plastic resin into said cylindrical passages to form a longitudinally flowing resin body within each said cylindrical passage; and
said resin supply means including a resin inlet, a pair of resin feed tubes through which resin flows from said inlet toward said cylindrical passages, said pair of tubes being symmetrical with respect to one another about a vertical plane bisecting said die body between said cylindrical passages, said tubes terminating at ends opposite said inlet which are located on a vertical plane containing the longitudinal axes of said cylindrical passages and an annular chamber concentric about each of said cylindrical passages and spaced vertically downstream from said feed tubes, said chambers being in communication with the terminal ends of said feed tubes so that resin flows vertically from said feed tubes into said annular chambers and flows through said chambers in circumferentially opposite

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directions joining together diametrically opposite from said feed tube terminal ends at locations on said vertical plane containing the axes of said cylindrical passages.

4,940,404
METHOD OF MAKING A HIGH VELOCITY ARMOR PENETRATOR

Robert L. Ammon, Baldwin; Raymond W. Buckman, Jr., Pleasant Hills, and Ram Bajaj, Greensburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1989, Ser. No. 337,604
Int. Cl.[5] B22F *3/24*
U.S. Cl. 419—28 9 Claims

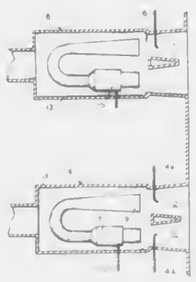


1. A method of making a high velocity armor penetrator material comprising the steps of:
blending powdered tungsten and powdered tantalum;
encapsulating the blended powder in a metal canister;
degassing the blended powder in the canister at an elevated temperature by evacuation;
sealing the evacuated canister; and
extruding the canister through dies at a higher elevated temperature to produce a metal clad bar of fully dense tungsten - tantalum.

4,940,405
PULSE COMBUSTION DRIVEN IN-FURNACE NOX AND SO2 CONTROL SYSTEM FOR FURNACES AND BOILERS

John T. Kelly, 109 Via De Tesoros, Los Gatos, Calif. 95030

Filed Feb. 23, 1989, Ser. No. 313,841
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 8 Claims



1. Apparatus for reducing the emission of NOx in a boiler or furnace system having a primary combustion chamber from which combustion products are directed upwardly along a path leading to an exhaust stack, the apparatus comprising the combination of first pulse combustor means for combusting a fuel with air in successive explosive pulses of hot combustion gases, means for entraining additional air with the pulses, means for injecting and mixing pulverized coal with the pulses and additional air, means for directing the mixture of coal, pulses and additional air into a first zone along said path for mixture with the combustion products, with fuel NOx in the combustion products being substantially reduced to molecular nitrogen by chemical reaction in the zone.

4,940,406
INCOMPLETE COMBUSTION PREVENTING GAS BURNER

Heu-Tae Kee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Aug. 4, 1989, Ser. No. 389,811
Claims priority, application Rep. of Korea, Dec. 14, 1988, 88 20625
Int. Cl.[5] F23N *5/00*
U.S. Cl. 431—22 14 Claims



1. An incomplete combustion preventing gas burner which includes a mixing room for mixing air and gas, flame holes for spouting the air-gas mixture, and a thermo-electric couple installed in the vicinity of the said flame holes in order to open/close a combustible gas supply cock in accordance with the thermal interactions between the said flame and the said thermo-electric couple,
the improvement comprising:
means forming a venturi located between said mixing room and said flame holes; and
a V-shaped guide portion extending into said venturi means and further restricting the flow of air and gas to said flame holes so that a mixture of air and gas is spouted from said flame holes at high velocity.

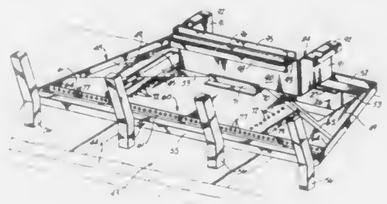
4,940,407
GAS-FIRED FIREPLACE LOG SET

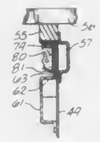
Thomas R. Rehberg, Orange, and Sam Brailoff, Whittier, both of Calif., assignors to Mobex Corporation, Fullerton, Calif.

Continuation-in-part of Ser. No. 144,411, Jan. 15, 1988, abandoned. This application Nov. 6, 1989, Ser. No. 346,779
Int. Cl.[5] F23Q *2/32*
U.S. Cl. 431—126 1 Claim

1. A gas log assembly for a fireplace, comprising:
a base;
a burner assembly supported on the base and defining a gas plenum, the plenum having a generally centrally positioned main jet, a pair of lateral jet arrays on opposite sides of the main jet to extend fore-and-aft when the gas log assembly is positioned in the fireplace, and a linear array of underlog jets extending across the front of the plenum;
the burner assembly further including a flame-spreader assembly extending above the main jet, a first flame-coloration means on the flame-spreader assembly, and a second flame-coloration means supported adjacent and extending along the underlog jets;

an artificial log supported on the flame-spreader assembly; and
means for supplying gas to the plenum;



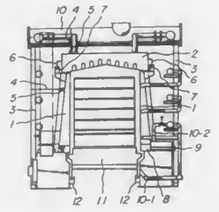


the flame-coloration means being effective to change flame coloration of ignited gas issuing from the jets from blue to yellow-orange.

4,940,408
TUNNEL KILN

Koji Ogura, Chiryu, and Kazuhiro Miyahara, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 16, 1989, Ser. No. 352,243
Claims priority, application Japan, May 30, 1988, 63-70421[U]
Int. Cl.[5] F27B *9/26*
U.S. Cl. 432—137 6 Claims

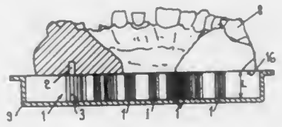


1. A tunnel kiln for firing molded ceramic green products having a gate for kiln cars, said gate comprising: steel side walls having exhaust ports passing therethrough; a steel ceiling disposed between the side walls and inclined downwardly toward the side walls; sand seals between the side walls and the kiln cars in said tunnel kiln; and receiving bases provided at a lower end of the side walls for receiving decomposed products, said receiving bases communicating with an outside of the kiln through said exhaust ports.

4,940,409
METHOD AND APPARATUS FOR MAKING DENTAL JAW MODELS

Harald E. Nordin, Villa Amphion, CH-1822 Chernex, Switzerland

Continuation of Ser. No. 30,031, Mar. 25, 1987, abandoned. This application Sep. 20, 1989, Ser. No. 410,024
Claims priority, application European Pat. Off., Mar. 27, 1986, 86810149.4
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—74 17 Claims

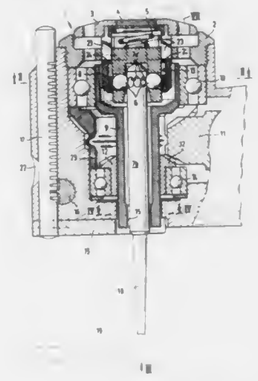


1. A pin for use in a tooth and jaw model for removably attaching a jaw replica positive severed into a plurality of sections to a base comprising;
a generally cylindrical first axial portion; and
a second axial portion of generally constant cross-sectional shape and area, containing a plurality of prongs extending the length of said second axial portion, each prong comprising a plurality of planar faces of which at least two are parallel.

4,940,410
DENTAL TOOL HOLDER

Marc F. C. Apap, Montrouge; Cedric L. M. C. Thoria, Paris, both of France; Otto Roesnstatter, Seeham, and Peter Malata, Bürmoos, both of Austria, assignors to Dentalwerk Bürmoos Gesellschaft m.b.H., Bürmoos, Austria

Filed Aug. 24, 1988, Ser. No. 235,649
Claims priority, application Austria, Aug. 24, 1987, 2108/87
Int. Cl.[5] A61C *5/02*
U.S. Cl. 433—102 10 Claims



1. A dental toolholder apparatus in combination with and for holding an endodontic filing tool having a filing end for filing tooth material, and a shaft connected to the filing end, the apparatus comprising a toolholder housing, a drive sleeve mounted for rotation to said toolholder housing, said drive sleeve having a borehole therethrough for engaging a lower end of the tool shaft for rotating and oscillating the tool, said borehole having a cross section taken transversely to the axis of the filing tool which has a constant-drive configuration for

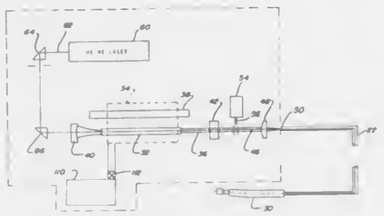
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rotating the tool while permitting swinging movement of the tool, clamping means connected to the housing for clamping an upper end of the tool shaft against axial movement to the housing while permitting swinging movement and rotation of the tool, and drive means operatively connected to said drive sleeve for rotating said drive sleeve.

4,940,411
DENTAL LASER METHOD

Arthur Vassiliadis; Joseph W. Shaffer, both of Mountain View; David J. Fullmer, Foster City; Michael H. Brewer, Felton; David R. Hennings, Newcastle, all of Calif., and Terry D. Myers, Farmington Hills, Mich., assignors to American Dental Laser, Inc., Birmingham, Mich.

Continuation-in-part of Ser. No. 236,450, Aug. 25, 1988. This application Apr. 24, 1989, Ser. No. 342,190
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 **8 Claims**

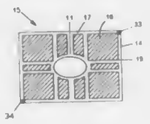


1. A method for performing a root canal procedure on a tooth, said tooth having a pulp chamber, comprising the steps of:
opening a hole in said tooth to said pulp chamber,
aiming a pulsed laser so that the output from the laser impinges upon pulp contained within the pulp chamber,
repeatedly activating the laser until the pulp in the pulp chamber is eradicated,
wherein said laser has an energy output per pulse sufficient to both eradicate pulp contained in the pulp chamber and to sterilize the pulp chamber.

4,940,412
METHOD OF MANUFACTURING ANATOMICAL MODELS

Rafael Blumenthal, Kiryat Tivon, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Dec. 2, 1988, Ser. No. 279,121
Claims priority, application Israel, Dec. 8, 1987, 84752
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—267 **8 Claims**



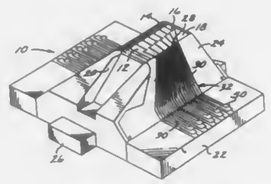


1. A method for manufacturing three-dimensional anatomical models for use in surgical planning and the like, said method comprising the steps of:
acquiring a series of tomographic hard copy images of cross section of desired portions of anatomy of a patient, said images having transparent and opaque portions,
using said hard copy images as masks in a photographic process wherein layers are produced by passing light through transparent portions of the hard copy images onto photosensitive material whereby the photosensitive material is hardened in areas where the light passes through to depict corresponding sections of the desired portions of anatomy of a patient, and
attaching said layers of light hardened photosensitive material contigiously together to form a three-dimensional model of said desired anatomical section.

4,940,413
ELECTRICAL MAKE/BREAK INTERCONNECT HAVING HIGH TRACE DENSITY

Winthrop D. Childers, San Diego, and William Sperry, Poway, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 26, 1989, Ser. No. 385,615
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **26 Claims**



1. An article in which two sets of mutually coplanar parallel conductor traces are connected together, comprising:
a first set of coplanar parallel conductor traces extending from a device toward an external connection;
a second set of coplanar parallel conductor traces extending toward the device from an external connection, and being mutually coplanar with the first set of conductor traces, at least one set of the first and second sets of conductor traces having an enlarged contact pad at the end of each trace, the width of at least some of the pads being greater than the spacing between the conductor traces, at least some of the pads being spaced at different distances from the device, and the two sets of traces having respective facing surfaces disposed in a facing relationship to each other; and
means for releasably contacting the respective facing surfaces together.

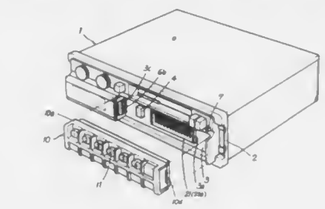
4,940,414
ANTITHEFT CAR AUDIO SET WITH REMOVABLE CONTROL BOX

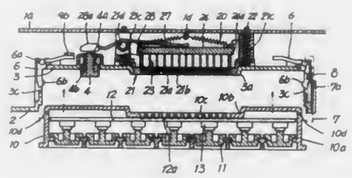
Jong D. Lee, Kyungki-Do, Rep. of Korea, assignor to Namsung Electronics Corp., Rep. of Korea

Filed Apr. 28, 1989, Ser. No. 345,094
Claims priority, application Rep. of Korea, Sep. 20, 1988, 15432/1988[U]
Int. Cl.[5] H01R *13/627, 13/44*
U.S. Cl. 439—131 **7 Claims**

1. A separating apparatus for a control box of a car audio set, comprising: a housing body, a face plate having a concave well, a main frame having a tension spring hanging on the inner wall thereof, a contact block assembly positioned between said face plate and said frame, and a control box which is separable from said face plate, said control box being receivable in and

detachable from said concave well of said face plate, said control box comprising a housing having a number of longitudinal slots on the rear face thereof, a plurality of switches and a circuit board connected to said switches, said circuit board having a number of contact members which are engageable through said longitudinal slots, said concave well of said face plate having a longitudinal slot, said contact block assembly comprising a contact block and a contact block frame, said contact block having a plurality of contact pins provided forwardly thereof, said contact block frame having a forwardly protruding portion having a number of longitudinal slots communicating with said longitudinal slots of said control box for receiving said contact pins of said contact block and two opposite bosses through which said main frame and said contact block frame are connected, said tension spring being provided between said main frame and said contact block for biasing said contact block toward the inner wall of said main frame, said contact pins when moved forward against the bias of the tension spring, contacting said contact members of said circuit board.

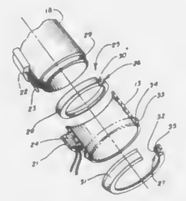




4,940,415
KEY SYSTEM FOR VACUUM CLEANER HOSE CONNECTION

George A. Westergren, Linwood Township, Anaka County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 55,371, May 29, 1987, abandoned. This application Sep. 20, 1988, Ser. No. 248,256
Int. Cl.[5] H01R *4/60*
U.S. Cl. 439—192 **13 Claims**



1. In a vacuum cleaner structure having a canister provided with a first hose connector defining a cylindrical suction inlet and a suction hose provided with a tubular end portion defining a second hose connector, said first and second hose connectors configured to be assembled into coaxial operative relationship, one within the other, by effecting relative axial movement of said first and second hose connectors, the improvement comprising;
a fisrt male electrical connector;
a first male electrical connector complementary to said first male electrical connector;
means for attaching one of said first male and female electrical connectors to one of the first and second hose connectors and the other of the first male and female electrical connectors to the other of the first and second hose connectors so that the first male electrical connector is electrically connected to the first female electrical connector as an incident of the first and second hose connectors being moved axially relative to each other into their operative relationship;
a second male electrical connector;
a second female electrical connector complementary to said second male electrical connector;
means for attaching one of said second male and female electrical connectors to one of the first and second hose connectors and the other of the second male and female electrical connectors to the other of the first and second hose connectors so that the second male electrical connector is electrically connected to the second female electrical connector as an incident of the first and second hose connectors being moved axially relative to each other into their operative relationship;
complementary first annular lock and key elements indicative of said first male and female electrical connectors for mounting one each to said first and second hose connectors with the first male and female electrical connectors attached to said first and second hose connectors and for permitting movement of the first and second hose connectors into operative relationship and concurrently electrical connection of the first male and female electrical connectors; and
complementary second annular lock and key elements, both being different than the corresponding first annular lock and key elements, indicative of said second male and female electrical connectors, for mounting one each to said first and second hose connectors with the second male and female electrical connectors attached to said first and second hose connectors and for permitting movement of the first and second hose connectors into operative relationship and concurrently electrical connection of the second male and female electrical connectors,
said first and second complementary annular lock and key elements further including cooperating means for preventing movement of the first and second hose connectors into operative relationship with (1) the first male electrical connector on one of the first and second hose connectors and the second female electrical connector on the other of the first and second hose connectors and (2) the second male connector on one of the first and second hose connectors and the first female electrical connector on the other of the first and second hose connectors and thereby inadvertent electrical connection of the first male connector to the second female connector and the second male connector to the first female connector.

4,940,416
PRESSURE COMPENSATING CONNECTOR ASSEMBLY

James P. Wagaman, and Neil B. Karlskind, both of 9450 Cozycroft Ave., Chatsworth, Calif. 91311

Filed Jun. 16, 1989, Ser. No. 367,419
Int. Cl.[5] H01R *13/523*
U.S. Cl. 439—204 **2 Claims**

1. A pressure compensation apparatus for a connector assembly with at least one coupling member comprising a hous-

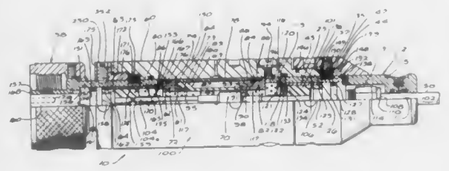
VOL 1116 ISS 2 JL 10 1990 UMI

ing with a cable receiving end having a cable receiving orifice therethrough, an interface end with an insert member therein configured to mate with another coupling member, and first means positioned in the cable receiving orifice whereby the cable, comprising at least one wire, extends through the first means, the housing defining a circumferential chamber with a circumferential surface extending between the first means and the insert member, the cable extending through the chamber to couple to the insert member, the chamber having disposed therein a substantially incompressible non-electrically conducting fluid, the pressure compensation apparatus for equalizing the pressure between the inside of the chamber and the outside environment while preventing fluid communication between the chamber and the outside environment comprising:

a cylindrical sealing sleeve positioned in the chamber against the circumferential surface of the chamber;

a first cylindrical mating sleeve positioned in the sealing sleeve and having a first surface for sealing contact against the circumferential surface of the sealing sleeve and a second surface spaced inwardly from the circumferential surface of the sealing sleeve for providing a space between the second surface and the circumferential surface of the sealing sleeve, the second surface having a first circumferential locator nib protruding radially therefrom toward the circumferential surface of the sealing sleeve;

a second cylindrical mating sleeve positioned in the sealing sleeve in spaced relationship to the first mating sleeve, the



second mating sleeve having a third surface for sealing contact against the circumferential surface of the sealing sleeve and a fourth surface spaced inwardly from the circumferential surface of the sealing sleeve for providing a space between the fourth surface and the circumferential surface of the sealing sleeve, the fourth surface having a second circumferential locator nib protruding radially therefrom toward the circumferential surface of the sealing sleeve;

an elastomeric boot having a first end sized to stretch fit over the second surface of the first mating sleeve and having a second end sized to stretch fit over the fourth surface of the second mating sleeve to thereby bifurcate the chamber into an interior region inside the boot and an exterior region radially between the boot and the surface of the sealing sleeve and longitudinally between the first surface and the third surface;

the chamber housing having a pressure equalizing orifice therethrough at a location whereby exterior region of the chamber communicates with the environment outside the connector, the incompressible fluid being confined to the interior region of the chamber;

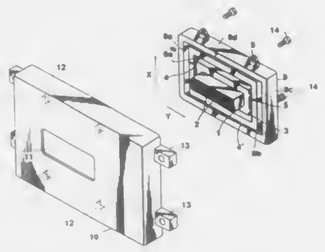
the sealing sleeve having a pressure equalizing orifice therethrough at a location whereby the exterior region of the chamber communicates with the environment outside the connector, the incompressible fluid being confined to the interior region of the chamber.

4,940,417

CONNECTOR DEVICE WITH FITTING ADJUSTMENT MECHANISM

Yukihiro Hyogo, and Akio Kurihara, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Jun. 23, 1989, Ser. No. 370,887
Claims priority, application Japan, Jun. 24, 1988, 63-83008[U]
Int. Cl.[5] H01R *13/631*
U.S. Cl. 439—248 **9 Claims**



1. A connector device with a mating adjustment mechanism, which comprises:

a connector adapted to mate with a mating connector;

a first frame which surrounds the connector;

a second frame which surrounds the first frame;

first means for enabling step-by-step displacement of the connector with respect to the first frame along an X or Y direction within a plane substantially perpendicular to the mating direction of the connectors; and

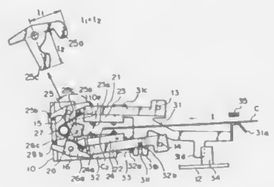
second means for enabling step-by-step displacement of the first frame with respect to the second frame along the direction perpendicular to the displaceable direction of the connector with respect to the first frame within said plane.

4,940,418

CARD READ/WRITE DEVICE

Makoto Shimizu, and Hiroshi Konishi, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1989, Ser. No. 340,933
Claims priority, application Japan, Apr. 21, 1988, 63-98765
Int. Cl.[5] H01R *13/15*
U.S. Cl. 439—260 **6 Claims**



1. A card read/write device comprising:

a frame;

a disconnection mechanism rotatably mounted on said frame, said disconnection mechanism comprising contact members opposed to each other and respectively having electrode terminals capable of contacting electrodes mounted on a card, and transfer levers having respectively at least two projections, one of said projections urging said contact members toward the side of the card for allowing the electrode terminals of said contact members to contact said electrodes of the card when a tip end of the card inserted into the frame is pushed to another of said projections, and

a first spring positioned at rear ends of said contact members and between said transfer levers for urging said contact members in a direction to move away from the card,

wherein the following expression is established:

$$L1 > L2$$

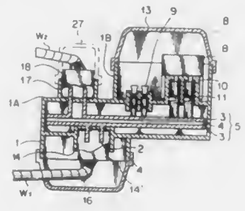
where L1 is a distance from a rotative fulcrum of said contact members to an operation point of the force for urging said contact members toward the side of the card by said transfer levers, and L2 is a distance from the rotative fulcrum of said contact members to the operating point of a resultant force for receiving the force from the card by said electrode terminals.

4,940,419

ELECTRICAL JUNCTION BOX

Kaoru Kurita, and Yukio Nishio, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 24, 1989, Ser. No. 328,390
Claims priority, application Japan, Mar. 25, 1988, 63-38427[U]
Int. Cl.[5] H01R *4/00*
U.S. Cl. 439—271 **3 Claims**



1. A waterproof electrical junction box having upper and lower surfaces that comprises:

a first connector receiving portion provided on the upper surface and adapted for receiving a waterproof connector;

a second connector receiving portion provided on the lower surface and adapted for receiving a lower connector, wherein said second connector receiving portion includes a connector cover engageably mounted to said second connector receiving portion for covering said second connector receiving portion and said lower connector when said second connector receiving portion and said lower connector are engaged; and

a waterproof connector operatively connected to a wire harness and adapted for being connected into said first connector receiving portion wherein said waterproof connector includes

an insulating housing having terminal receiving chambers defined therein, said insulating housing also having an outer peripheral groove formed on an outer periphery thereof,

a seal packing placed in said outer peripheral groove for providing a waterproof seal between said insulating housing and said first connector receiving portion when connected, and

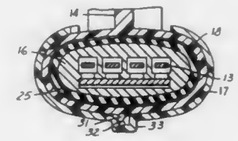
waterproof rubber plugs connected to wires with terminals from said wire harness for connecting and waterproof sealing the wires and terminals into the said terminal receiving chambers of said insulating housing.

4,940,420

ELECTRICAL CONNECTOR WITH RETAINED BOOT

Richard T. Munie, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 17, 1989, Ser. No. 394,903
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—272 **7 Claims**



1. A sealed electrical connector having a longitudinal insertion axis, comprising:

a first connector member having a front face, a plurality of first electrical contacts extending parallel to said longitudinal axis and meeting said front face, and a shroud extending from said front face annularly of said longitudinal axis, an inner wall of said shroud having a substantially oval shape as viewed in cross section perpendicular to said longitudinal axis;

a sealing boot received within said shroud, said sealing boot formed to have a substantially circular shape as viewed in cross section perpendicular to said longitudinal axis, said sealing boot having an outer cylindrical surface deformed by said shroud into a substantially oval shape conforming to said inner wall of said shroud; and

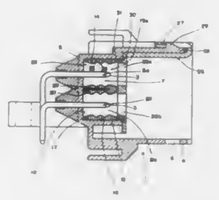
a second connector member having a plurality of second electrical contacts extending parallel to said longitudinal axis and contacting said first electrical contacts, said second connector member having a substantially oval-shaped perimeter engaging an inner cylindrical surface of said sealing boot.

4,940,421

WATER-PROOF ELECTRICAL CONNECTOR

Kouji Kano, Tokyo; Sumitaka Ogawa, Wako; Minoru Sano, Yamato, and Masahiro Sakano, Yokohama, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 19, 1989, Ser. No. 381,877
Claims priority, application Japan, Jul. 19, 1988, 63-95331[U]
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—273 **3 Claims**



1. A waterproof type of electric connector comprising a male half (2) and a female half (1), said male half (2) including a plug housing (9) having a plurality of contact pieces (10*a*, 10*b*) detachably fitted therein, said female half (1) including a socket housing (5) having a cavity (7) to detachably accept said plug housing (9), a plurality of pin terminals (6*a*, 6*b*) fixed to the bottom of said cavity in such an arrangement that the pin terminals (6*a*, 6*b*) mate with corresponding contact pieces (10*a*, 10*b*) when said male half (2) is inserted in said cavity (7) of said

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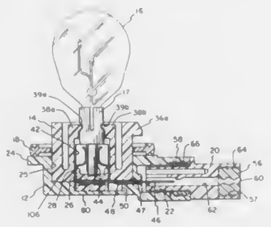
female half (1), and a seal member placed in the space which is to be formed between the outer surface of said plug housing (9) and the inside surface of said socket housing (5) when said male and female halves (2) and (1) are coupled, thereby preventing water from invading the inside of the electric connector, characterized in that said plug housing (9) has a plurality of hollow protrusions each having a cylindrical cell (13*a*, 13*b*) to permit each of said contact pieces (10*a*, 10*b*) to fit in, said seal member (14) encircling each of said protrusions, thereby sealing each pin-and-contact piece connection independently from adjacent pin-and-contact piece connection said seal member (14) being made of a unitary structure, which has a front surface (17), a rear surface (31), a circumferential side (15) connecting the front and rear surfaces, and a plurality of through holes each permitting a corresponding protrusion to enter therein, said seal member being placed with its front surface (17) on the bottom (18) of said cavity (7) and with its circumferential side (15) on the inside circumference (16) of said cavity (7), each of said through holes having hills (24) and valleys (23) alternately formed on its inside surface (22), the hills (24) of each through hole being pressed against the outer surface of a corresponding protrusion.

4,940,422

LOW PROFILE LAMP SOCKET ASSEMBLY

John A. Forisb, Fort Wayne, and John J. Rogers, Huntertown, both of Ind., assignors to Zanxx, Inc., Avilla, Ind.

Filed May 17, 1989, Ser. No. 352,965
Int. Cl.[5] H01R *33/09*
U.S. Cl. 439—356 **22 Claims**



1. A lamp socket assembly comprising:
a housing, said housing including a first cavity;
a body received in said first cavity, said body including a plurality of camming lugs for retaining said lamp socket assembly in a mounted position in an apertured panel, said body further including a through passage for receiving a lamp base therein and means for retaining said lamp base in said through passage;
a contact insert received in said first cavity, said contact insert including a groove for receiving said lamp base therein, said contact insert including means for receiving and retaining a plurality of contacts; and
a plurality of blade terminals interlocked with said contact insert, respective said contacts, and said housing.

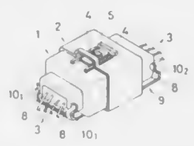
4,940,423

CONNECTOR APPARATUS

Yasuyuki Aihara; Hideki Kano; Yoshikazu Tsuchiya, and Noboru Miyazaki, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1988, Ser. No. 284,985
Claims priority, application Japan, Dec. 15, 1987, 62-189393[U]
Int. Cl.[5] H01R *13/02*
U.S. Cl. 439—369 **4 Claims**

1. A connector apparatus comprising male and female connector members and a stay for mounting the connector members in place, a pair of oblong projections formed on a terminal block portion at a rear end of each connector member as to be located at both outer sides with respect to a lead wire outlet section of said terminal block portion, each said oblong projection comprising a pin which projects outwardly from said terminal block, and a pair of first elastic hook pieces provided on said stay engageable with said pair of oblong projections of the male connector member and a pair of second elastic hook pieces provided on said stay engageable with said pair of oblong projections of the female connector member, said first



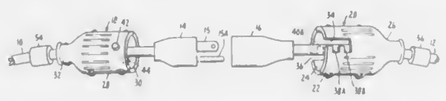
and second elastic hook pieces being arranged to face each other with a space therebetween measuring approximately equal to the distance between the respective terminal block portions of the two connector members when the connector members are completely assembled to each other; wherein each pair of said first and second elastic hook pieces are so formed and spaced that inner side edges of top-end portions thereof contact surfaces of opposite side walls of each terminal block portion; wherein each of said elastic hook pieces is so shaped as to look like a letter S when viewed from the side.

4,940,424

ELECTRICAL PLUG ACCESSORY

Larry E. Odbert, 11179 Jackson Rd., Sacramento, Calif. 95830

Filed May 5, 1989, Ser. No. 348,194
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—369 **5 Claims**



1. A device for holding together a male plug and a female plug of an electrical connector in a connected state, each of the male and female plugs having a plug body and an electrical cord extending therefrom, said device comprising:
male and female members of substantially cylindrical hollow configuration, each of the member having an open end adapted to receive one of the male and the female plugs and enclose and surround said one of the male and female plugs while presenting an open end through which the surrounded male or female plug can fully protrude and be accessed and an enclosed end shaped to engage and abut its inner surface against the body of the plug it surrounds and to provide an aperture through which the electrical cord can extend and move so as to permit the male or female plug to move relative to the member and to fully protrude from the member and be grasped for connection and disconnection;
the male hollow member having an exterior cylindrical surface which fits within the interior cylindrical surface of the female hollow member, one of the two cylindrical surfaces carrying one or more axial indentations each having one more indented notches in communication with and perpendicular to the axial indentations, the other of the two cylindrical surfaces carrying one or more protuberances, the number, size and location of the protuberances corresponding to the axial indentations on the other surface, said protuberances positioned so as to engage the

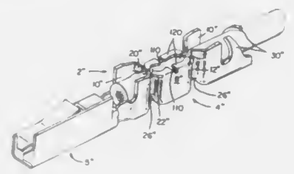
axial indentations and to meet the perpendicular notches when the inner surfaces of the male and female members abut against the bodies of the male and female plugs in a connected state so that upon rotation of the male and female members relative to one another, the protuberances enter and engage the notches thereby locking the two members in position holding together the male plug and the female plug in a connected state.

4,940,425

ELECTRICAL CONTACT MEMBER

Juergen Hass, Erzhausen, and Gheorghe Hotea, Griesheim, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1989, Ser. No. 385,609
Claims priority, application United Kingdom, Jul. 26, 1988, 8817783
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—397 **7 Claims**



1. A one-piece stamped and formed electrical contact member for making permanent electrical contact with the metal core of an insulated electrical lead, the contact member, which is of substantially U-shaped cross section, comprising a base and spaced side walls extending in the same direction, each from an opposite edge of the base to define a lead receiving channel, opposed portions of the side walls being bowed towards each other inwardly of the channel to define a core-receiving slot extending substantially normally of said base, and each bowed portion being surmounted by a pair of insulation severing surfaces converging towards each other inwardly of the channel and being inclined towards the base; characterized in that each insulation severing surface of said pair of insulation severing surfaces of each bowed portion is defined by a lead hold-down wing extending from the respective side wall and being divided from said inwardly bowed portion, the wings of said pair converging from said side wall towards the center line of the channel and being plastically deformable relative to said inwardly bowed portion to overlie the electrical lead.

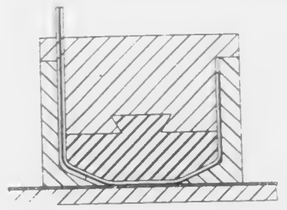
4,940,426

HIGH DENSITY WOVEN WIRE HARNESS ASSEMBLY

John P. Redmond, Mechanicsburg, and Ray N. Shaak, Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 8, 1989, Ser. No. 390,793
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—495 **11 Claims**

1. A high density electrical connector assembly comprising a woven fabric formed of a plurality of parallel, electrically conductive wires of a discrete length forming the warp wires, where said warp wires have a small, uniform centerline spacing between adjacent warp wires, and a plurality of insulative woof filaments, an encapsulating film on one major flat side of said fabric to space and retain said parallel relationship, and a comparable encapsulating film on the opposite major face thereof, except that said conductive wires are exposed at the ends along a portion of the lengths to provide connector



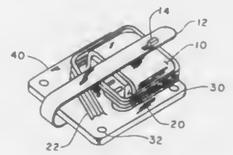
contacts, and a pair of end housings for electrically mating said exposed portions to a high density electrical circuit pattern.

4,940,427

ELECTRICAL TRAILER CONNECTOR RETAINER

Linnea H. Pearson, 249 E. Baker St., St. Paul, Minn. 55107

Filed Sep. 18, 1989, Ser. No. 408,520
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—501 **2 Claims**



1. A retainer for securing a plug and a plurality of electrical conductors operatively connected to the plug said electrical conductors being operatively associated with the electrical system of a vehicle, said retainer comprising, in combination:
a base plate;
a plug receiving means mounted on the base plate for receiving an electrical plug inserted therein, said plug receiving means being constructed and arranged for supporting the excess length of electrical conductors projecting from the plug when the conductors are wound around the plug receiving means; and
strap means affixed to the base constructed and arranged for releasable attachment to the plug receiving means for releasably retaining the electrical conductors wrapped around the plug receiving means.

4,940,428

ELECTRICAL CONNECTOR WITH RESILIENT RETAINING MEANS

Werner Heidotting, Munster; Wolfgang Scheffner, Roedermark, and Willi Duerkop, Reinheim, all of Fed. Rep. of Germany, assignors to C. A. Weidmueller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Mar. 22, 1989, Ser. No. 327,091
Claims priority, application European Pat. Off., Mar. 26, 1988, 88104898-7
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—598 **10 Claims**

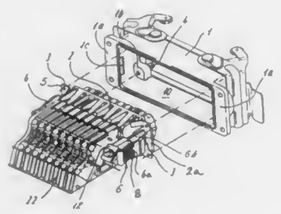
1. Electrical connector apparatus, comprising:
(a) a base member (1) having front and rear walls, said base member containing a through opening (10) extending between said front and rear walls;
(b) a connector member (2) having a forward end adapted

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for progressive insertion within said base member opening in the direction from said rear wall toward said front wall;

(c) resilient snap fastener means operable upon insertion of said connector member to a given position within said opening relative to said base member for automatically connecting said connector member with said base member; and

(d) means (4) operable from the front of said base member for rigidly connecting said connector with said base member;



(e) said resilient snap fastener means including at least two resiliently outwardly-biased hook members (6) arranged on opposite sides of said connector member for engagement with corresponding retaining shoulders (1c) on said base member adjacent opposite sides of said opening, respectively, thereby to prevent withdrawal of said connector member from said opening;

(f) said hook members including means (8) arranged rearwardly of said base member rear wall for compressing said hook members to disengage the same from said base member, thereby to permit removal of said connector member from said opening.

4,940,429

REMOVABLE FILTER ARRAY FOR MULTI-WAY CONNECTORS

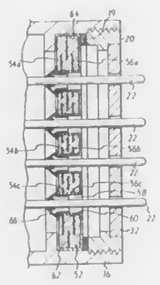
Jeffrey Chambers; Trevor Armistead, and John C. Frodsham, all of Ulverston, England, assignors to Oxley Developments Company Limited, London, England

Filed Apr. 14, 1989, Ser. No. 338,724

Claims priority, application United Kingdom, Apr. 26, 1988, 8809854

Int. Cl.[5] H01R *23/06*

U.S. Cl. 439—608 **13 Claims**



1. In a multi-way connector assembly comprising a tubular metal outer casing and a plurality of electrical lead-through terminations which extend through the outer casing, the terminations carrying respective annular discoidal filter capacitors whose outer electrodes are connected electrically to a ground plane in the form of a metal plate which is itself connected electrically to the outer metal casing, the improvement wherein the inner electrodes of the capacitors are electrically coupled to the associated lead-through terminations by respective contact clips and which are adapted to enable relative displacement of the capacitors and terminations for purposes of assembly and disassembly and wherein the metal plate forming the ground plane is held in electrical connection with the outer casing by means of a removable locking means.

4,940,430

ELECTRICAL CONNECTOR WITH OPENABLE COVER

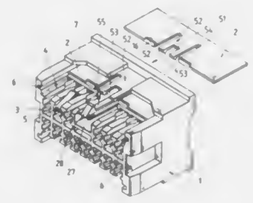
Mitsuhiro Fujitani; Hiroyuki Oka, both of Mie, and Seiji Hirano, Hiroshima, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jan. 31, 1989, Ser. No. 304,287

Claims priority, application Japan, Feb. 1, 1988, 63-12650[U]; Feb. 1, 1988, 63-12651

Int. Cl.[5] H01R *13/502*

U.S. Cl. 439—686 **2 Claims**



1. An electrical connector, comprising:

a connector housing having an upper wall with a front portion of said upper wall removed to provide an opening and a peep notch formed into the front edge of said upper wall;

tongues of terminals disposed in said housing and exposed at said opening;

a cover slidably mounted so as to be able to slide open to reveal said upper wall opening and to slide closed to hide said upper wall opening and reveal a peep gap between a rear edge of said cover and said front edge of said upper wall as a result of said peep notch; and

a cover retainer mechanism comprising,

an angular projection formed on the top of said cover with a sloped guide surface, and

a retainer projection formed on the lower side of the front edge of said upper wall whereby said retainer projection is guided by said guide surface to be engaged with said angular projection when said cover is in a fully closed position to lock said cover in a fully closed position.

4,940,431

SERIES TERMINAL FOR TWO-WIRE POWER SUPPLY TO ELECTRICAL OR ELECTRONIC COMPONENTS, ESPECIALLY INITIATORS

Lothar-Roland Hennemann, Enger, Fed. Rep. of Germany, assignor to Wago Verwaltungsgesellschaft mbH, Minden, Fed. Rep. of Germany

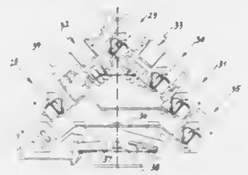
Filed Feb. 13, 1989, Ser. No. 310,639

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1988, 3805158

Int. Cl.[5] H01R *9/26*

U.S. Cl. 439—716 **2 Claims**

1. In a first series terminal of a type including a housing, first and second supply wire contacts in said housing and first and second bridge connectors in said housing electrically connected to said first and second supply wire contacts, respectively, said first series terminal being adapted to be received on an assembly rail having first and second latch base points which are symmetrically disposed about a central plane, said first and second bridge connectors being connectable with one or both of the first and second bridge connectors of a second series terminal of identical configuration through one or a pair of bridges when said second series terminal is received in an adjacent position on said assembly rail, the improvement comprising said first and second bridge connectors of said first series terminal being symmetrically disposed with respect to said central plane and said first and second supply wire contacts of said first series terminal being disposed on the same side of said central plane when said first series terminal is



received on said assembly rail, whereby depending on the orientation of said second series terminal relative to said first series terminal when said first and second series terminals are assembled on said assembly rail, said first and second bridge connectors of said first series terminal can be alternatively electrically connected to the first and second bridge connectors, respectively, of said second series terminal or to the second and first bridge connectors, respectively, of said second series terminal in order to alternatively electrically connect the first and second supply wire contacts of said first series terminal to the first and second supply wire contacts, respectively, of said second series terminal or to the second and first contacts, respectively, of said second series terminal.

4,940,432

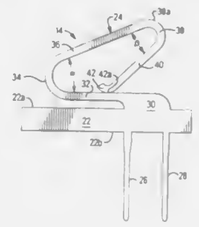
CONTACT ELEMENT FOR TEST SOCKET FOR FLAT PACK ELECTRONIC PACKAGES

John J. Consoli, and Norman E. Hoffman, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 8, 1989, Ser. No. 404,485

Int. Cl.[5] H01R *23/72*

U.S. Cl. 439—862 **8 Claims**



7. A contact element for use in electrical sockets, said element comprising:

an elongated and wide base section of thin stock providing a perimeter of narrow edges;

at least one lead extending outwardly from one said narrow edge of said base section; and

a generally looped beam section attached to another said narrow edge opposite to said one narrow edge, said beam section having first and second radiused portions separated by and attached to an elongated first leg portion, and a strap portion paralleling said base section and attached to and extending between said another narrow edge and said first radiused portion, said beam section further having a free end attached to said second radiused portion and extending towards said strap portion, said beam section being compressible whereupon an edge of said free end engages and slides along an edge of said strap portion.

4,940,433

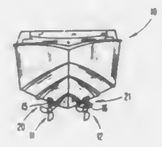
PROTECTIVE CONTROL SYSTEM FOR WATERCRAFT

David M. Raber, 11029 Tenacious Dr., Indianapolis, Ind. 46236

Continuation-in-part of Ser. No. 189,953, May 3, 1988, abandoned. This application May 30, 1989, Ser. No. 358,593

Int. Cl.[5] B63H *21/22*

U.S. Cl. 440—1 **10 Claims**



1. A watercraft comprising an engine, a propulsion means coupled to said engine and positioned to extend into the water when said watercraft is supported in the water, a switch mounted on said watercraft and having an actuating arm movably mounted on the watercraft and positioned to be in the water when said propulsion means is in the water, said propulsion means being adapted to cause the watercraft to move through the water with the water moving over the actuating arm as it also moves over the propulsion means, bias means acting on said switch to move it to an open circuit position but being overcome and moved to closed circuit position by water flowing over said actuating arm and propulsion means, said switch controlling the ignition of said engine and being opened to shut off said ignition when said actuating arm is no longer held in closed circuit position by said water moving over said actuating arm, said propulsion means including a propeller, said actuating arm being located in front of the propeller and in the path of the water as it moves into said propeller.

4,940,434

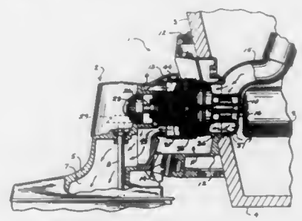
MARINE PROPULSION UNIT UNIVERSAL DRIVE ASSEMBLY WITH THROUGH-BELLOWS EXHAUST

Douglas A. Kiesling, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 17, 1989, Ser. No. 297,947

Int. Cl.[5] B63H *25/42*

U.S. Cl. 440—57 **7 Claims**

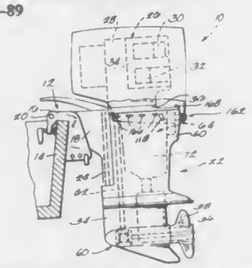


1. A universal drive assembly (11) for connecting the rotary output (10) of an inboard marine engine (9) having an exhaust discharge element (15) to a rearwardly disposed outboard mounted stern drive unit (2), comprising, in combination:

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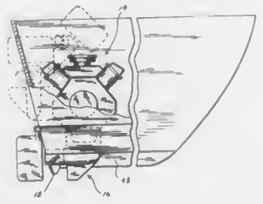
(a) a universal joint (18) rotatable about a drive axis (27) and adapted for respective connection to the engine and stern drive unit,
(b) and exhaust passage means (44) surrounding said universal joint and connected to carry exhaust from the engine exhaust discharge element to the stern drive unit.

4,940,435
MARINE PROPULSION DEVICE
Harold L. Osborn, Winthrop Harbor; Matthew H. Mondek, Wonder Lake, both of Ill.; John C. Hervat, Kenosha, Wis., and Roger B. Whipple, Grayslake, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 20, 1988, Ser. No. 183,894
Int. Cl.[5] B63H 21/32
U.S. Cl. 440—89 36 Claims



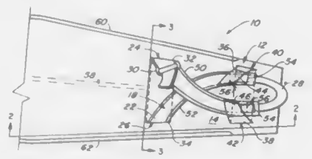
30. An internal combustion engine comprising a cylinder, and a lower face having therein an exhaust outlet port communicating with said cylinder, an idle exhaust inlet port, and an idle exhaust outlet port, and said engine also comprising an idle exhaust passage communicating between said idle exhaust inlet port and said idle exhaust outlet port.

4,940,436
MARINE DRIVE SYSTEM WITH INBOARD MOUNTED ENGINE AND DEPENDING DRIVE UNIT
Neil A. Newman, Omro, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Sep. 28, 1988, Ser. No. 251,104
Int. Cl.[5] B63H 23/36
U.S. Cl. 440—112 14 Claims



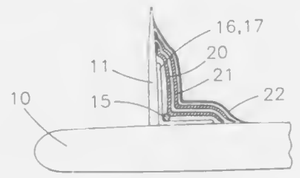
1. A marine drive for a boat, comprising:
an engine drivingly interconnected with an axially extending rotatable output shaft, said engine being located in the interior of said boat adjacent the boat transom; and
a drive unit drivingly interconnected with said output shaft and including a drive housing having a propeller rotatably mounted thereto, said drive unit including drive means for drivingly interconnecting said output shaft and said propeller, said drive housing being mounted to said boat so as to be pivotable about a pivot axis through a range of positions including a first position in which said propeller is submerged during boat operation with said drive unit extending substantially vertically relative to said engine, a second position in which said propeller is positioned out of the water and said drive unit is disposed at an angle to the vertical relative to said engine, and a third position in which said drive unit is positioned out of the water;
wherein said drive housing includes a longitudinally extending portion within which is disposed said drive means interconnected with a propeller shaft to which said propeller is mounted, and wherein said drive housing in its third position is positioned such that the longitudinal axis of the longitudinally extending portion of said drive housing is rotationally above a horizontal plane through the pivot axis of said drive housing; and
wherein said output shaft and the crankshaft of said engine extend along a common axis and extend substantially parallel to the boat transom, and wherein said output shaft defines the pivot axis about which said drive housing is pivotable.

4,940,437
SWIM FIN WITH HARNESS
John A. Piatt, 226 Getchell St., Santa Cruz, Calif. 95060
Continuation-in-part of Ser. No. 202,109, Jun. 3, 1988, Pat. No. 4,889,510. This application Jan. 25, 1989, Ser. No. 301,442
Int. Cl.[5] A63C 31/10
U.S. Cl. 441—62 11 Claims



1. A swim fin including a harness for securing the fin beneath a wearer's foot, the harness comprising
a strap passing behind the wearer's heel, along both sides of the foot and over an instep portion of the wearer's foot in an X configuration, to respective anchor points arranged on the swim fin on opposite sides of a forward portion of the wearer's foot,
means for adjusting the length of the strap to conform to the wearer's foot and to secure the swim fin in place,
the adjustable strap being formed by a single strap passing through slots at the forward anchor points and under the fin between the forward anchor points.

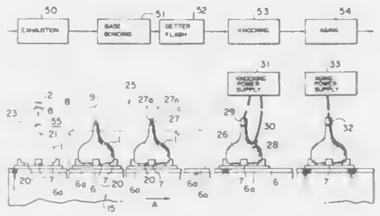
4,940,438
SURFBOARD WITH ANGULARLY RELATED FINS
S. Scott Miller, 5 W. Burlington Ave., Harvey Cedars, N.J. 08008
Filed May 12, 1989, Ser. No. 351,191
Int. Cl.[5] A63C 15/00
U.S. Cl. 441—79 9 Claims



1. A surfboard comprising a board having a longitudinal axis and forward and rearward ends and a plurality of fins extending from a surface of said board,

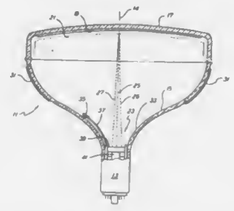
at least one of said fins being an angular fin canted at an angle to said longitudinal axis and also tilted relative to the surface of said board,
a plurality of spaced fibers of high tensile modulus at least some of which are adhered to said fin and also adhered to the adjacent portion of said board, said fibers being distributed on said fin in a predetermined pattern whereby the tip portion of said angular fin has greater bending flexibility than does the body portion of said angular fin.

4,940,439
METHOD OF AND APPARATUS FOR MANUFACTURING BRAUN TUBES
Teruo Yokosouchi, Chiba; Takumi Karasawa, Sakura, and Katuhisa Ooso, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 21, 1988, Ser. No. 287,035
Claims priority, application Japan, Dec. 25, 1987, 62-326918
Int. Cl.[5] H01S 9/32
U.S. Cl. 445—5 15 Claims



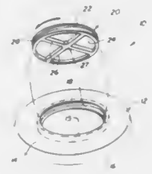
1. A method for manufacturing a Braun tube comprising: a step of attaching a base by means of an adhesive resin to a portion of a Braun tube at a rear side thereof from which electrical connection terminals are protruded; thereafter, conveying said Braun tube while supporting said Braun tube on first conveying means with a faceplate thereof facing down to a drying furnace disposed at an intermediate portion on the conveying path of said first conveyor and therein locally heating an area around said base where said adhesive resin is deposited, thereby drying and hardening said adhesive resin; and, thereafter, effecting knocking by applying a voltage across electrodes through said electrical connection terminals.

4,940,440
WEAK-BEAM SCANNING OF CATHODE RAY TUBES
Charles H. Rehkopf, Seneca Falls, N.Y.; Franklin G. Reigel, Ottawa, Ohio, and Samuel S. Chung, Liverpool, N.Y., assignors to North American Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 20,049, Feb. 27, 1987, abandoned. This application Dec. 23, 1987, Ser. No. 137,041
Int. Cl.[5] H01J 9/44
U.S. Cl. 445—5 13 Claims



1. A method of processing a color cathode ray tube comprising scanning at least the central portions of the mask and the screen of the tube with a weak, defocused electron beam from the tube's electron gun, produced by impressing a voltage of from about 15 to 22 percent of the operating voltage on the anode of the electron gun, which scanning is carried out after exhausting, baking, sealing and getter flashing of the tube.

4,940,441
AERODYNAMIC FLYING DISC WITH WEIGHTED INSERT
Steven Novinsky, 30 Hamilton Ave., Fairview, N.J. 07022
Filed Oct. 23, 1989, Ser. No. 425,245
Int. Cl.[5] A63H 27/12; A63B 65/10
U.S. Cl. 446—46 16 Claims



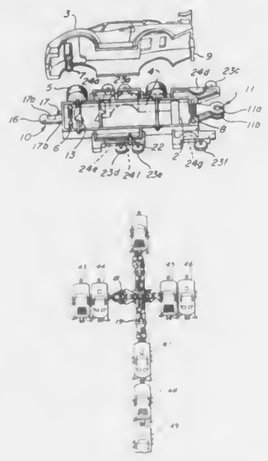
1. An aerodynamic flying disc comprising:
a thin-walled annular rim containing central and perimeter portions, wherein the perimeter portion defines a central cavity situated within the central rim portion, in which upper and lower openings are connected by a threaded circular sidewall, the perimeter portion of said annular rim curling downwardly to form a circumferential lip about the rim; and
a rotatably removable insert, threadably engaged within the central cavity, comprising upper and lower circular surfaces whose diameters are slightly smaller than the corresponding openings of the central cavity, and which are connected by a threaded circular sidewall, the height of which is substantially identical to the height of the central cavity, whereby the insert may be rotatably removed from the central cavity by rotating it about its axis thereby threadably disengaging it from said central cavity, and wherein the insert bears indicia, and wherein the circular sidewall of the insert comprises an inner surface along which runs a circumferential groove and within which is situated a removable circular plate, said plate having a chosen weight.

4,940,442
CONNECTABLE SELF-POWDERED MOBILE TOY
Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 3, 1988, Ser. No. 202,694
Claims priority, application Japan, Jun. 23, 1987, 62-96150[U]
Int. Cl.[5] A63H 17/00, 33/04
U.S. Cl. 446—90 15 Claims

1. In an improved connectable mobile toy vehicle, the improvement comprising:
a body member, and
a plurality of connecting means arranged around the periphery of the body member, including a plurality of male projections and a plurality of female receptacles capable of receiving the male projections, one of the male projections comprising a ball mounted to the toy vehicle on a

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horizontally-disposed slender neck, and one of the female receptacles comprising a pair of split annular members mounted to the toy horizontally, one over the other, with the splits located on distal ends of the annular members such that the ball of the male projection can be snapped into position in between the annular female members whereby a plurality of such toy vehicles can be interconnected in various combinations including both front-to-back, as well as side-to-side arrangements, other male projections on a side of the toy vehicle include spaced horizontally-disposed disc members, the spaces between the disc members being capable of receiving the disc members from a second toy vehicle and also functioning as female receptacles.



4,940,443

RACE TRACK HAVING LATERAL EDGES AND BRIDGES FOR RETAINING TOY VEHICLES

Kurt Hesse, Waldstrasse 36, D-8510 Fürth, Fed. Rep. of Germany

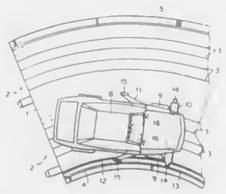
PCT No. PCT/DE86/00448, § 371 Date Sep. 17, 1987, § 102(e) Date Sep. 17, 1987, PCT Pub. No. WO87/04363, PCT Pub. Date Jul. 30, 1987

PCT Filed Nov. 5, 1986, Ser. No. 117,067

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1986, 3602341

Int. Cl.[5] A63H *18/08*

U.S. Cl. 446—445 **10 Claims**



1. An automobile race track toy set having a roadway formed by straight and curved raceway segments, with two lanes having embedded current conductors in which the raceway segments include inside and outside guiding edges, along which toy vehicles slide by means of a bridge, and the curved raceway segments include, parallel to and spaced from said inside guiding edge, an upright supporting wall lower in height than said inside guiding edge and in which said bridge, by means of a rod-shaped, downwardly directed supporting member engages a groove-shaped space formed between said inside guiding edge and said supporting wall and which can be placed on said supporting wall by means of centrifugal force, said race track toy set further comprising:

(a) a molded part which is substantially L-shaped in cross-section, and in its longitudinal direction it mates with the curvature of said inside guiding edge, arranged detachably fixed on said curved raceway segment by means of clamping elements;

(b) a first leg of said molded part spaced vertically from said upright supporting wall, so as to form an aperture into said groove-shaped space between said first leg and said upright supporting wall, and a second leg of said molded part being detachably fixed in position on said raceway segment by means of said clamping elements; and

(c) said toy vehicle including a front and a rear bridge which penetrate said aperture formed by said supporting wall and said first leg of said molded part and project into the groove-shaped space.

4,940,444

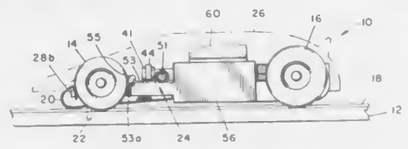
MINIATURE VEHICLE WITH MAGNETIC ENHANCEMENT OF TRACTION

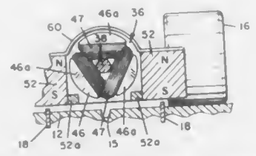
James B. Russell, 5544 Vista Del Dia, Anaheim Hills, Calif. 92807

Filed Jan. 5, 1989, Ser. No. 293,622

Int. Cl.[5] A63H *18/00, 33/26;* **A63G** *9/16*

U.S. Cl. 446—446 **16 Claims**





1. A miniature vehicle adapted to operate on a track including as a part thereof electric power conductor means made of a magnetic material comprising;

a support chassis;

a drive wheel mounted to said chassis;

an electrical pick-up shoe engageable with said power conductor means;

an electric motor mounted on said chassis;

said electric motor including a rotatably mounted drive shaft coupled to said drive wheel;

an armature means mounted on said drive shaft;

means for coupling said armature means to said pick-up shoe for providing electrical power to said electric motor;

a pair of magnets mounted to said chassis on opposite sides of said armature means and forming a stationary magnetic component of said electric motor;

each of said magnets mounted so that the North/South axis thereof is vertically disposed relative to said track with the same polarity of said pair of magnets at a upper surface thereof; and

flux bridge means connected to the upper surface of each of said magnets and overlying said armature means thereby to direct magnetic flux from said pair of magnets in a single direction whereby said pair of magnets and said flux bridge means cooperate to provide an enhanced magnetic force at said electric power conductor means to thereby attract said vehicle toward said track and increase the traction of said drive wheel on said track.

4,940,445

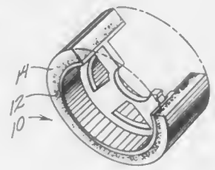
TIRE AND PROCESS FOR MAKING A TIRE

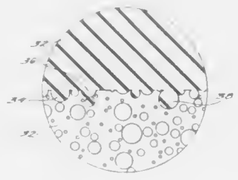
Aubrey S. DesPortes, 184 Belle Lindler Rd., Gilbert, S.C. 29054

Filed Sep. 27, 1989, Ser. No. 413,112

Int. Cl.[5] A63H *17/00;* **B32B** *31/00;* **B60C** *7/00;* **B60B** *1/06*

U.S. Cl. 446—465 **12 Claims**





1. A tire made by a process comprising the steps of:

wrapping at least one layer of a rubber material around a foam core to form an intermediate composite, said rubber material having an inner surface;

placing said intermediate composite in a mold; and

heating said mold to a temperature between 180 and 300 degrees Fahrenheit for 40 to 60 minutes to cure said composite material and to fuse said foam core to said inner surface of said rubber material.

4,940,446

COUPLING STRUCTURE FOR A ROTATING MEMBER AND A SHAFT

Masaki Inui; Mitsuhiko Okada; Seitoku Kubo; Sbozoh Okuda, and Masaki Hosono, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 28, 1987, Ser. No. 101,831

Claims priority, application Japan, Sep. 26, 1986, 61-22778; Sep. 26, 1986, 61-227789; Nov. 6, 1986, 61-264642; Nov. 10, 1986, 61-267294

Int. Cl.[5] F16H *57/04*

U.S. Cl. 474—91 **27 Claims**

1. A coupling structure for a rotating member and a shaft, comprising:

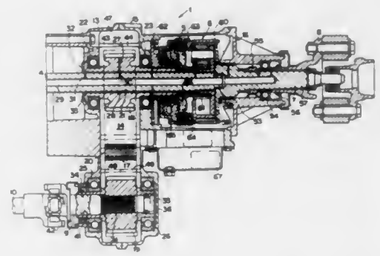
a fitting bore in said rotating member, and extending along the center axis thereof, said fitting bore opening into at least one of the axial end portions of said rotating member and having a diameter larger than an outside diameter of said shaft;

a case accommodating said rotating member, said rotating member being positioned in said case such that said fitting bore opens toward the outside of said case;

means for holding said rotating member in said case in a rotatable manner;

an air communication portion for providing communication between the inside of said fitting bore and said case; and

valve means for selectively opening and closing said air communication portion,



wherein said shaft is inserted from the outside of said case into said fitting bore, including means for coupling said shaft to rotate integrally with said rotating member.

4,940,447

AUTOTENSIONER FOR ADJUSTING THE TENSION OF A TIMING BELT

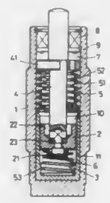
Kazuki Kawashima; Makoto Yasui; Hisashi Hayakawa, and Masayuki Imoto, all of Iwata, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Filed May 12, 1989, Ser. No. 351,129

Claims priority, application Japan, Apr. 27, 1989, 1-44715[U]

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—110 **3 Claims**



1. An autotensioner for adjusting the tension of a timing belt, comprising a cylinder case, a piston slidably mounted in said cylinder case so as to partition the interior thereof into a pressure chamber and a reservoir chamber, said piston being formed with a channel for communicating said reservoir chamber with said pressure chamber, a push rod having one end thereof secured to said piston and the other end adapted to protrude out of said cylinder case, elastic means for biassing said piston and said push rod toward said reservoir chamber, a retainer mounted under said piston at the side of said pressure chamber, and a check plate held in said retainer so as to be movable between two positions to open and close said channel.

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4,940,448

BRAKING DEVICE FOR DRIVE BELTS

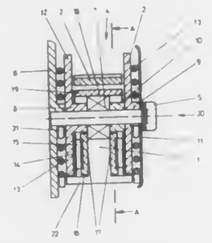
Jürgen Kober, Schwebheim, and Manfred Brandenstein, Eussenheim, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 18, 1988, Ser. No. 273,413

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1987, 3739373

Int. Cl.[5] **F16H** *7/08*

U.S. Cl. 474—111 **6 Claims**



1. A braking device for drive belts comprising a swivel arm, a rotatable idler attached to one end of the swivel arm and adjoining the drive belt, a swivel bearing attached to the other end of the swivel arm, damping elements acting in the swivel direction and spring elements acting in the swivel direction wherein the drive belt extends in a circumferential section of a ring shaped space surrounding said swivel bearing and extends tangentially a small distance to said swivel bearing and wherein said damping elements are arranged joining said circumferential section in said ring shaped space and essentially arranged diametrically opposite the drive belt relative to the swivel axis.

4,940,449

PAPER FEED TRACTOR

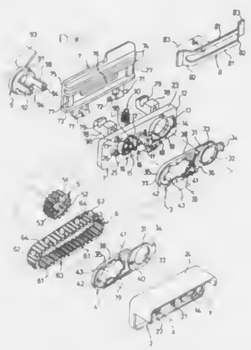
Sadao Unuma, Oobu, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Oobu, Japan

Filed Oct. 3, 1989, Ser. No. 416,477

Claims priority, application Japan, Nov. 19, 1988, 63-291100

Int. Cl.[5] **F16H** *7/18*

U.S. Cl. 474—140 **2 Claims**



1. A paper feed tractor for transporting paper having feed holes formed at equal intervals in a row along a side edge thereof, comprising

a tractor frame, a belt guide formed on said tractor frame, a sprocket wheel supported for rotation on said tractor frame, an endless belt extending between said sprocket wheel and said tractor frame and adapted to be driven by said sprocket wheel to travel along a guide path formed by said sprocket wheel and said belt guide, said endless belt having feed pins provided projectingly on an outer peripheral face thereof in a row at the same equal intervals to those of the feed holes formed along the side edge of the paper,

said belt guide having a liner guide portion thereon, a cover supported at a side edge of said tractor frame along said linear guide portion of said belt guide for selective pivotal motion between a first position in which said cover extends substantially in a parallel relationship above said linear guide portion of said belt guide and a second position in which said cover opens a location above said linear guide portion of said belt guide, and a paper holder formed in the form of an elongated planar plate and bent at the longitudinal opposite end portions thereof to support said paper holder on a face of said cover opposing to said linear guide portion of said belt guide such that a main portion of said paper holder is spaced from said face of said cover, wherein said paper holder is disposed such that, when said cover is at the first position, said main portion thereof is opposed to said linear guide portion of said belt guide in parallel to the longitudinal direction of said linear guide portion and is positioned in parallel to said outer peripheral face of said endless belt on at least one side of said feed pins of said endless belt which travels on said linear guide portion of said belt guide, and

a peripheral face portion of said outer peripheral face of said endless belt on which said feed pins are provided projectingly being formed into a non-slipping face on which concave and convex portions of a small difference in dimension are formed wherein when said cover is at the first position, the distance between said convex portions of said non-slipping face of said endless belt and a face of said main portion of said paper holder opposing to said convex portions is made smaller than the thickness of the paper.

4,940,450

POWER TRANSMISSION SYSTEM USING TOOTHED BELT OF ENGINE FOR VEHICLE

Noriyuki Miyamura; Seizo Iwasa, both of Kyoto; Hiroshi Asano, Kameoka; Isamu Nagai, Nagaokakyo; Hayato Hamada, Kyoto; Shuji Sasaki; Takeshi Kinoshita, both of Kameoka, and Masaru Sui, Uji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00563, § 371 Date Feb. 17, 1989, § 102(e) Date Feb. 17, 1989, PCT Pub. No. WO88/10384, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 13, 1988, Ser. No. 313,968

Claims priority, application Japan, Jun. 17, 1987, 62-92083[U]; Feb. 19, 1988, 63-21064[U]

Int. Cl.[5] **F16H** *55/30*

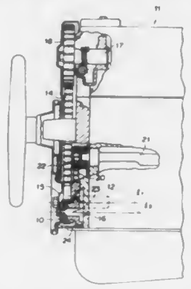
U.S. Cl. 474—152 **1 Claim**

1. A power transmission system using toothed belt of engine for vehicle comprising:

(a) a toothed drive pulley mounted on a drive shaft of an engine, having tooth tips lying in a plane in parallel with a rotational axis of said drive pulley;

(b) a toothed driven pulley mounted on a drive shaft, having tooth tips tapered so that the diameter of said driven pulley at one axial end thereof is larger than the diameter thereof at the other axial end thereof, and a guide disposed at said one axial end of said toothed driven pulley and having a diameter larger than any diameter of said toothed driven pulley, wherein cross-sectional profiles of said tapered tooth tips of said driven pulley are the same at opposite axial ends of said tooth tips as seen in a plane perpendicular to said driven shaft;

(c) a toothed belt trained around said toothed drive pulley and said toothed driven pulley, said toothed belt having teeth lying in plane parallel to the width of said belt, whereby when said toothed belt is rotated by the drive force of said drive shaft, said toothed belt sequentially meshes with said toothed driven pulley from the larger



diameter portion thereof to the smaller diameter portion thereof, thereby transmitting the drive force of said drive shaft to said toothed driven pulley.

4,940,451

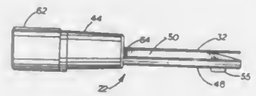
ADJUSTABLE GAME CALL DEVICE

Scott C. Leady, 101 Clinton, Grand Haven, Mich. 49417

Filed Dec. 7, 1988, Ser. No. 281,022

Int. Cl.[5] **A63H** *5/00*

U.S. Cl. 446—208 **18 Claims**



1. An adjustable game call device comprising:

wall means defining an elongated air flow resonance chamber;

a reed that is elongated along an axis, said reed positioned within said chamber and adapted to vibrate in response to air flowing through said chamber;

means defining an opening in said wall means elongated in a direction generally parallel said axis and generally overlying the position of said reed;

a tuning member extending through said opening and slidably mounted to said wall means by mounting means for mounting said tuning member to glide in the direction of elongation of said opening, said tuning member having a first end portion abutting said reed and an opposite end portion external of said chamber such that said first end portion is selectively positionable along the axis of elongation of the reed by movement of said opposite end portion in said direction of elongation; and

air closure means for providing a substantially airtight covering of said opening in a manner that accommodates the slidable movement of said tuning member in said opening such that the pitch of said reed is adapted for adjustment without disassembly of portions of the game call device.

4,940,452

MAGNETIC COUPLING

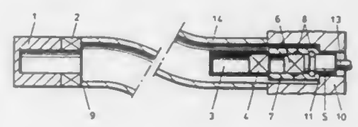
Karl-Heinz Rohe, Haan; Kurt Sauerwein, Kattendahl 7, 4006 Erkrath; Karl Weinlich, Wuppertal; Rainer Link, Kerpen-Horrem, and Norbert Kinzer, Wuppertal, all of Fed. Rep. of Germany, assignors to Kurt Sauerwein, Fed. Rep. of Germany

Filed Aug. 16, 1988, Ser. No. 232,753

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1987, 3731946

Int. Cl.[5] **A61N** *5/10*; **A61M** *37/00*

U.S. Cl. 600—7 **12 Claims**



1. A magnetic coupling between translatorily movable bodies, comprising:

a first body (1) having a coupling element (2) of permanently magnetic or magnetizable material;

a second body (3) having at least one complementary coupling element (4) of permanently magnetic or magnetizable material complementary to the coupling element of the first body, the second body being insertable into the first body and being magnetically maintainable in the first body by the coupling element of the first body and the coupling element of the second body;

a third body (5) having a coupling element (6) of permanently magnetic or magnetizable material, the coupling element of the third body being arranged so as to cooperate with the complementary coupling element of the second body so as to allow withdrawal of the second body from the first body; and

a spacer (7), arranged so as to separate the complementary coupling element of the second body and the coupling element of the third body, the spacer being selectively movable with respect to said coupling element of said third body between two different positions.

4,940,453

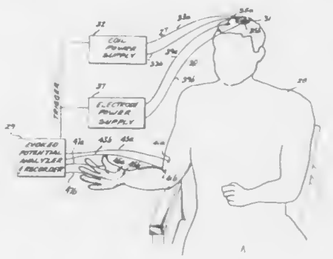
METHOD AND APPARATUS FOR MAGNETICALLY STIMULATING NEURONS

John A. Cadwell, Kennewick, Wash., assignor to Cadwell Industries, Inc., Kennewick, Wash.

Filed Jan. 28, 1987, Ser. No. 8,210

Int. Cl.[5] **A61B** *15/05*

U.S. Cl. 600—13 **21 Claims**



1. A method of stimulating the neural pathways of an organism, such as the human body, to create evoked potentials by

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depolarizing neurons forming part of the neural pathway to be stimulated, said method comprising the steps of:

placing a stimulator coil on the surface of the organism in the region where a neural pathway is to be stimulated; and,

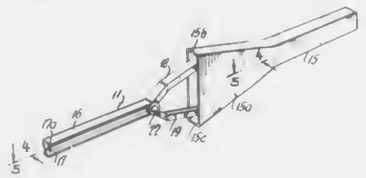
energizing the stimulator coil by applying sinusoidal voltage to the coil that causes a high sinusoidal current to flow in the coil that causes the coil to generate a magnetic field that creates an electric field in the body of said organism in the region where a neural pathway is to be stimulated, said sinusoidal current flow being in phase quadrature with and lagging the sinusoidal voltage, the magnitude of said sinusoidal voltage being inadequate to create a current flow sufficient to generate a magnetic field that creates a neuron depolarizing electric field in the body of said organism during the first quarter of the first sinusoidal cycle of said applied voltage and adequate to generate a magnetic field that creates a neuron depolarizing electric field in the body of said organism during the second and third quarters of the first sinusoidal cycle of said applied voltage.

4,940,454

HYGIENIC SWAB-TYPE DEVICE WITH EXTENDER HANDLE COVER

Angela Siragusa, 1645 Overing St., Bronx, N.Y. 10461

Filed Jan. 23, 1989, Ser. No. 299,270
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—1 **14 Claims**



1. A hand held tong-like device comprising, pivotally connected tongs, the tongs having respective clamping end portions normally in a closed position and manually operable to an open position and having operating end portions for manually operating the tongs to said open position, biasing means continuously biasing the tongs to said closed position, a cover for housing the tongs therein when not in use, the cover forming an extended handle for said device when in use and defining a pocket into which the operating ends of the tongs are insertable effectively holding the tongs in the closed position, and the cover providing an elongated extension for the tongs when the operating ends thereof are inserted into said pocket; whereby access to body areas to be cleansed with a hygienic swab held by said tongs are facilitated, particularly for those users who are overweight, have short arms or may be otherwise handicapped.

4,940,455

METHOD AND APPARATUS FOR SINGLE NEEDLE DIALYSIS

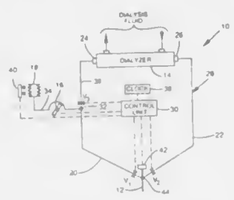
Perry W. Guinn, Idaho Falls, Id., assignor to CD Medical, Inc., Miami Lakes, Fla.

Filed Apr. 13, 1989, Ser. No. 337,948
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—5 **7 Claims**

1. In a single needle dialysis apparatus that includes a blood circuit loop including tubing and extending from a single needle through a hemodialyzer and back to the single needle, an improvement comprising:

blood accumulator means for accumulating a supply of blood; and

pump means coupling the accumulator means to the blood circuit loop and operable in first and second directions for drawing blood from the single needle into the accumulator means when operated in the first direction and for pumping blood from the accumulator means through the dialyzer and back to the single needle when operated in the second direction;



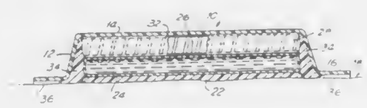
wherein said blood accumulator means and pump means form a single ended arm extending from said blood circuit loop.

4,940,456

ELECTROLYTIC TRANSDERMAL DELIVERY OF PROTEINS

Dan Sibalis, 268 Hallock Rd., Stony Brook, N.Y. 11790, and Sanford Rosen, 64 E. 86th St., New York, N.Y. 10028

Continuation of Ser. No. 12,898, Feb. 10, 1987, abandoned. This application Dec. 1, 1988, Ser. No. 279,315
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—20 **8 Claims**



1. A transdermal patch for delivering at least one protein drug to the bloodstream of the patient comprising:

a. at least one protein drug comprising at least one nonionic protein having more than 20 peptide units, water, and a water-destructuring agent with a negative Setschenow constant, contained in a drug reservoir, and

b. electrolytic means comprising a power source connected to at least one electrode in electrolytic contact with said reservoir for transdermal transport of the nonionic protein having a current density from about 0.5 microampere/cm^2 to about 10 milliampere/cm^2, impressed voltage between 1 and 40 volts, and a migratory water volume between 0.001/ml/cm^2 hr and 0.01 ml/cm^2/hr, whereby the skin of the patient is neither irritated nor erythematized.

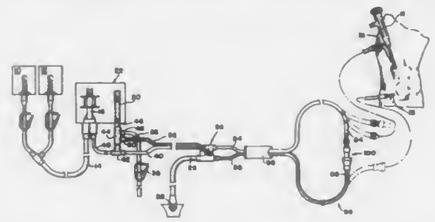
4,940,457

IRRIGATION SYSTEM FOR USE DURING ARTHROSCOPY

Daniel H. Olson, Louisville, Ohio, assignor to Snyder Laboratories, Inc., Dover, Ohio

Filed Dec. 23, 1987, Ser. No. 137,138
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **6 Claims**

1. An irrigation system for arthroscopy of a joint comprising a fluid circuit communicating with a fluid reservoir, means for pressurizing the fluid within the fluid circuit to generate fluid flow within the fluid circuit, the fluid circuit having means separable at a predetermined location to define a first end adapted for communicating the fluid circuit into the joint via a first cannula connected to the first end and extending into the joint and a second end adapted for communicating the fluid circuit into the joint via a second cannula connected to the second end and extending into the joint, the first and second cannula extending into the joint, and the fluid circuit includes a monitor check valve assembly near the predetermined location which is open during a prime mode to permit fluid communication therethrough in order to fill the fluid circuit with



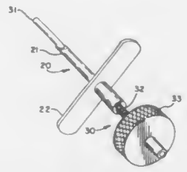
fluid before the fluid circuit is separated, the monitor check valve assembly being closed immediately following separation to trap fluid downstream thereof in the fluid circuit, and the monitor check valve assembly providing the fluid communication from the joint to the fluid circuit downstream of the second end when the fluid circuit is separated and the second end is connected to the second cannula to open the monitor check valve assembly.

4,940,458

EPIDURAL NEEDLE PLACEMENT SYSTEM

Arnold K. Cohn, 1415 Meadow La., Glenview, Ill. 60025

Filed Feb. 2, 1989, Ser. No. 305,784
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—51 **2 Claims**



1. An epidural needle placement device that comprises:

a hollow barrel having a sharp tip at its distal end and internal threads on its proximal portion;

a hollow epidural needle having a blunt tip at its distal end and external threads on its proximal portion that are adapted to engage the internal threads on said barrel;

a flat tab that engages the barrel and is adapted to prevent penetration of the barrel into the epidural space of a patient;

a knob that is affixed to the proximal end of the epidural needle that is adapted to advance the needle with respect to the barrel upon rotation of said knob; and

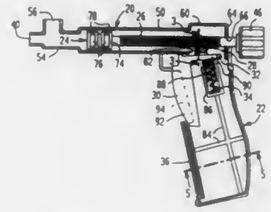
a pressure monitor that is affixed to the proximal tip of the needle to monitor changes in pressure upon entry of the needle into the epidural space of the patient.

4,940,459

INFLATION DEVICE FOR BALLOON CATHETER

Louis O. Noce, Longwood, Fla., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 12, 1988, Ser. No. 256,866
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—98 **19 Claims**



1. A device for inflating a balloon catheter, comprising:

a tubular barrel for receiving an inflation fluid and having fluid outlet means at one end for connecting the barrel to the catheter,

a plunger having a sliding piston in the barrel and a threaded shank extending from the piston out the other end of the barrel,

a pistol grip handle mounted on the barrel, said pistol grip handle extending from one side of the barrel for being gripped, on one side by a thumb and on the opposite side by the four fingers of a hand of an operator,

a trigger pivotally mounted in the handle and having a thread section for being pivoted into engagement with the threaded shank of the plunger,

means for biasing the trigger to urge the thread section thereof into engagement with the threaded shank,

a knob on the plunger shank for enabling an operator to screw the plunger into and out of the barrel to increase and decrease the pressure of the inflation fluid, and

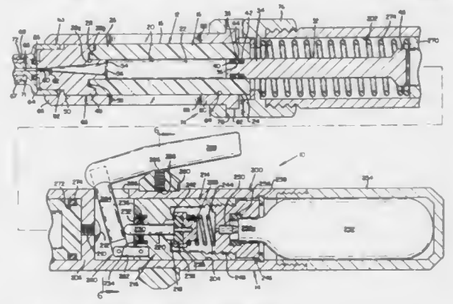
said trigger being positioned in the handle so as to be operable by a finger of the hand gripping the handle to release engagement of the thread section from the threaded shank to enable free sliding movement of the plunger in the barrel.

4,940,460

PATIENT-FILLABLE AND NON-INVASIVE HYPODERMIC INJECTION DEVICE ASSEMBLY

James P. Casey, I., Forest Grove, and J. Thomas Morrow, Portland, both of Oreg., assignors to Bioject, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 64,762, Jun. 19, 1987, Pat. No. 4,790,824. This application Dec. 12, 1988, Ser. No. 283,737
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—143 **15 Claims**



1. A hypodermic syringe comprising:

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an ampule body having a plunger end and an orifice end, said body having a generally elongate cylindrical form with an outer wall of predetermined diameter and an inner wall defining a medication retaining cavity, a flange which is a continuation of said inner wall which is located at said orifice end and extends axially outward therefrom, said flange having an outer wall which is located intermediate said body inner wall and said body outer wall;

an elongate plunger, one end thereof having a seal-carrying groove formed about the periphery thereof and being received in said medication retaining cavity with a seal received in said groove;

an orifice-bearing end cap fixed to said orifice end, said end cap having a generally cylindrical form including a medication-receiving portion extending axially into said medication retaining cavity at one end thereof, said end cap having a groove extending about said medication-receiving portion at the base thereof, said groove being conformal with said flange on said body;

a truncated hypodermic needle received in said end cap and having a channel extending therethrough, said channel communicating with the narrower end of said bore;

a filling needle having connecting means thereon; and

a removable external fill adaptor having a receptacle on one end thereof for receiving said end cap therein and a bore extending therethrough, said bore being aligned with said truncated hypodermic needle on said end cap, means on the other end of said adaptor cooperating with said connecting means for securing said filling needle to said adaptor.

4,940,461

FILTER FOR ATTACHMENT TO AN OSTOMY BAG

Peter L. Steer, Surrey, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

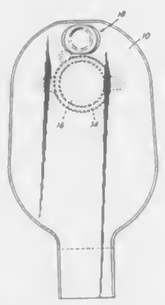
PCT No. PCT/GB88/00149, § 371 Date Oct. 24, 1988, § 102(e) Date Oct. 24, 1988, PCT Pub. No. WO88/06433, PCT Pub. Date Sep. 7, 1988

PCT Filed Mar. 1, 1988, Ser. No. 267,466

Claims priority, application United Kingdom, Mar. 2, 1987, 8704826

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—333 **3 Claims**



1. A filter for attachment to an ostomy bag and which comprises three parts, the first part including a synthetic plastics base member having a central aperture therein and one substantially flat surface whereby the filter can be attached by plastics welding or adhesive to a wall of the ostomy bag, there being two walls upstanding from the other side of the base member to define a channel and the inner wall defining with the base member a shallow recess, the second part being a pad consisting essentially of a filtering medium and having a height substantially equal to that of the recess and lateral dimensions such that it fits snugly within the recess, and the third part being a lid member of synthetic plastics material having a substantially flat top through which are provided a peripheral array of apertures to provide fluid communication directly directly between ambient atmosphere and said recess, therebeing a wall extending from the flat top and having such a height, shape and width that it is a snug push fit within the channel; whereby the lid member is readily removable to allow replacement of the said pad, said wall on the lid member and one or both of the walls on the base member having a projection or a series of projections whereby a snap fit can be achieved between the base and lid members, said peripheral array of apertures being located adjacent to and interiorly of the wall of said lid.

4,940,462

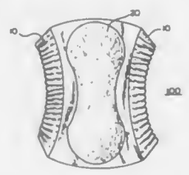
SANITARY NAPKIN WITH EXPANDABLE FLAPS

Catherine E. Salerno, Millington, N.J., assignor to McNeil-PPC, Inc., Milltown, N.J.

Filed Feb. 26, 1988, Ser. No. 160,739

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—387 **7 Claims**



1. A sanitary napkin comprising

(a) an absorbent element having longitudinally extending sides, transverse ends, a body-facing side and an undergarment facing side;

(b) stretchable, longitudinally resilient flaps extending outwardly along said longitudinally extending sides, said flaps expanding longitudinally when folded over a side of a crotch portion of an undergarment.

4,940,463

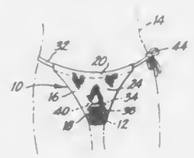
DISPOSABLE COMBINED PANTY WITH SANITARY NAPKIN

Sherman Leathers, 1104 E. 55th St., Brooklyn, N.Y. 11234, and Geronimo C. Williamson, 535 Lafayette Ave., Brooklyn, N.Y. 11205

Filed Feb. 17, 1987, Ser. No. 15,240

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—396 **10 Claims**



1. A disposable panty comprising:

a tubular body portion to provide outer and inner layers with said inner layer being disposable against a wearer thereof;

said tubular body portion having an hour-glass configuration to provide an intermediate narrow crotch portion and opposing front and rear wide waist band portions;

a sanitary napkin to absorb menstrual discharge of the wearer being disposed within said crotch portion between said outer and inner layers of said tubular body portion;

a liquid impervious sheet disposed between said sanitary napkin and said outer layer to prevent passage of the menstrual discharge to said outer layer;

said sanitary napkin including a frame member having a central opening therethrough extending from a first side to an opposing second side of said frame member, and absorbent means disposed within said central opening in a compact arrangement;

said first side of said frame member being positioned against said inner layer, and said second side of said frame member being positioned against said liquid impervious sheet;

first surfaces of said absorbent means being disposed against said inner layer, and second surfaces of said absorbent means being disposed against said liquid impervious sheet;

said absorbent means comprising a plurality of absorbent balls; and

securing means for securing said front and rear waist bans portions to the wearer to provide a bikini type panty.

4,940,464

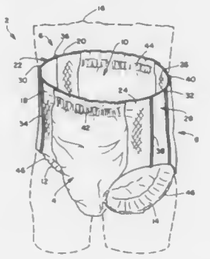
DISPOSABLE INCONTINENCE GARMENT OR TRAINING PANT

Paul T. Van Gompel, Hortonville; Jody D. Suprise, Neenah, and Robert J. Schleinz, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 133,674, Dec. 16, 1987, abandoned. This application Jul. 11, 1989, Ser. No. 379,026

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—396 **51 Claims**



1. A disposable pant-like garment for absorbing human discharge comprising:

an absorbent assembly comprising a liquid-impervious outer cover, a liquid-pervious liner, and an absorbent medium therebetween; said absorbent assembly further comprising generally opposite side edges and generally opposite end edges,

stretchable side panels and said absorbent assembly being joined together to form a waist opening and a pair of leg openings, portions of said absorbent assembly side edges being generally adjacent respective said leg openings, said absorbent assembly end edges being generally adjacent said waist opening, and

a gathering means being joined along a crotch portion of each said leg opening adjacent said absorbent assembly for gathering said crotch portion, a remaining portion of each said leg opening being relatively non-gathered, whereby said stretchable side panels provide generally inwardly directed force vectors against a wearer to maintain said garment snugly against the wearer's body and said absorbent assembly snugly in place against the crotch area both before and after a discharge, and said gathering means and said side panels provide elasticity about said leg openings to prevent leakage thereat.

4,940,465

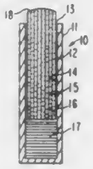
DISPENSER COMPRISING DISPLACEABLE MATRIX WITH SOLID STATE PROPERTIES

Felix Theeuwes, 1643 Fallen Leaf La., Los Altos, Calif. 94022; Patrick S.-L. Wong, 1371 Xavier Ave., Hayward, Calif. 94545; Richard Cortese, 20802 Laurel Rd., Los Gatos, Calif. 95030, and James B. Eckenhoff, 1080 Autumn La., Los Altos, Calif. 94022

Division of Ser. No. 54,714, May 27, 1987, Pat. No. 4,892,778. This application Nov. 7, 1988, Ser. No. 268,401

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—892.1 **15 Claims**



1. A dispenser for administering a beneficial agent formulation to an animal environment of use, the dispenser comprising:

(a) a wall that surrounds and defines an internal lumen, the wall comprising at least in a part a semipermeable composition that is permeable to the passage of fluid and is substantially impermeable to the passage of a beneficial agent;

(b) first means comprising a member selected from a solid and semisolid pharmaceutically acceptable carrier in the lumen for administering a beneficial agent to the animal environment of use, said means substantially maintaining its physical and chemical integrity while in the lumen of the dispenser;

(c) a beneficial agent in the first means for administering a beneficial agent;

(d) second means adjacent to the first means for occupying an increasing amount of space in the lumen for urging the first means comprising the beneficial agent from the dispenser; and

(e) an opened mouth in the dispenser comprising a cross-sectional dimension substantially equal to the cross-sectional dimension of the lumen for displacing the first means substantially intact and unchanged and comprising the beneficial agent for administering the beneficial agent to the environment of use.

4,940,466

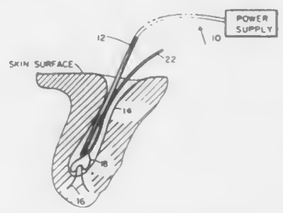
METHOD OF ELECTROLYSIS

Ana Paduano, and Jerome G. Paduano, both of P.O. Box 97, Cold Spring Harbor, N.Y. 11724

Filed Apr. 17, 1989, Ser. No. 339,254

Int. Cl.[5] A61B *17/41*

U.S. Cl. 606—36 **14 Claims**



1. A method of epilation by thermolysis comprising the steps of:

a. inserting a probe having a tip into a follicle containing a

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hair shaft, with said tip of said probe terminating adjacent the papilla of said hair shaft, said probe being connected to apparatus for delivering upon actuation to said probe a burst of high frequency energy to produce heat in the tip of said probe, said apparatus comprising means to establish the duration of said burst and means to select the intensity of said burst, the combination of the duration established and the intensity selected representing the total heat energy delivered in each burst to the tip of said probe to the follicle;

b. selecting a combination of duration and intensity for each burst so that the total heat energy of each said burst is a least about 50% but no more than about 80% of that ordinarily required to coagulate said papilla;

c. applying multiple such bursts of energy to said probe;

d. partially withdrawing said probe so that said tip is located at some intermediate point along the length of said follicle;

e. applying multiple said bursts of energy to said probe;

f. partially withdrawing further said probe so that said tip is located at some further intermediate point along the length of said follicle;

g. applying multiple said bursts of energy to said probe;

h. withdrawing said probe out of said follicle;

i. removing said hair shaft; and

j. repeating the preceding steps of applying multiple said bursts of energy at three spaced points along said follicle.

4,940,467

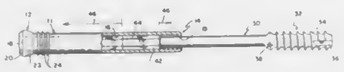
VARIABLE LENGTH FIXATION DEVICE

Raymond G. Tronzo, 255 Clarke Ave., Palm Beach, Fla. 33480

Continuation of Ser. No. 151,947, Feb. 3, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 443,924

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—66 **6 Claims**



1. A screw for fixing proximal and distal fragments in a bone fracture, comprising

(A) a first and second element that

(1) are non-separably interconnected,

(2) each have a longitudinal axis in line with the other,

(3) longitudinally telescope with each other, and

(4) have means for rotationally fixing the elements to each other;

(B) the first element having

(1) a first shank portion, and

(2) screw threads at one end of the first shank portion integral therewith for engaging the distal fragment;

(C) the second element having

(1) a second shank portion in the form of a sleeve, free of threads on its outer surface for engaging the proximal fragment that longitudinally, slidably fits over the first shank portion of the first element, and

(2) a head at an end of the second shank portion remote from the screw threads on the first shank portion for receiving means for turning the screw.

4,940,468

APPARATUS FOR MICROSURGERY

Phillip J. Petillo, 1206 Herbert Ave., Ocean, N.J. 07712

Filed Jan. 13, 1988, Ser. No. 143,652

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—170 **8 Claims**



1. A surgical apparatus for removing tissue which comprises:

a first tube having an aperture in a sidewall;

a second tube having at least one portion disposed within the first tube and having a sharp end and another end for applying a vacuum thereto;

an electromagnetic drive means for reciprocating the second tube within the first tube so that at least a portion of the sharp end of the second tube moves across the aperture to thereby cut tissue which extends through the aperture, the electromagnetic means comprising:

(a) a chamber;

(b) generating means, disposed within the chamber, for providing a magnetic field in response to the application of electrical current thereto;

(c) magnetic means, affixed to the second tube and being disposed in the chamber, the magnetic means being attracted by the magnetic, field for moving in a first direction when the magnetic field is generated;

(d) the generating means and the magnetic means being further comprised of indexing means for inhibiting rotation of the magnetic means with respect to the generating means and, thereby, for inhibiting rotation of the second tube with respect to the first tube; and

(e) the chamber being further comprised of venting means for releasing air trapped in the chamber;

adjusting means for adjusting the distance of movement of the magnetic means and, thereby, the distance of the movement of the second tube, whereby the opening of the aperture into which the tissue enters the first tube is varied;

said generating means comprises a bobbin having wires wrapped therearound and a passageway disposed therethrough; and

said magnetic means is comprised of a material which is attracted by the magnetic field and the magnetic means has a cross-section whose dimensions are smaller than the dimensions of a cross section of the passageway;

a retaining means, affixed to one end of the magnetic means, and a tension means, disposed between the bobbin and the retaining means, for driving the retaining means and, thereby, the magnetic in a second direction, and

said indexing means comprises guide means, affixed to the bobbin, having a passageway disposed therein and having a groove extending along a portion of the surface of the passageway and a extending means, affixed to the magnetic, disposed to extend into the groove.

4,940,469

LOW-FOAMING COMPOSITION FOR FINISHING SYNTHETIC FIBRES: DYE OR OPTICAL BRIGHTENER OR ULTRA-VIOLET ABSORBER AND ALKYLENE-DIAMIDE:ETHYLENE-DISTEARAMIDE

Reinhart Möckel, Schopfheim-Eichen, Fed. Rep. of Germany, and Roland Putzar, Hofstetten, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 30, 1989, Ser. No. 303,433

Claims priority, application Switzerland, Feb. 8, 1988, 439/88; Nov. 25, 1988, 4385/88

Int. Cl.[5] C09B *67/42*; D06L *3/12*; D06M *13/34*; D06P *1/64*

U.S. Cl. 8—527 **15 Claims**

1. A composition for finishing synthetic fiber which comprises, based on (a)+(b)+(c),

(a) 15 to 84% by weight of a sparingly water-soluble or water-insoluble dye, fluorescent whitening agent or UV absorber,

(b) 15.5% to 75% by weight of one or more dispersing agents, and

(c) 0.5% to 10% by weight of an aklylenediamide of formula R'—CO—NH—Q—NH—CO—R" (4) wherein R' an R" are each independently of the other an aliphatic radical of 9 to 23 carbon atoms and Q is an alkylene radical of 1 to 8 carbon atoms;

in the substantial absence of silicone and hydrocarbon oils.

4,940,470

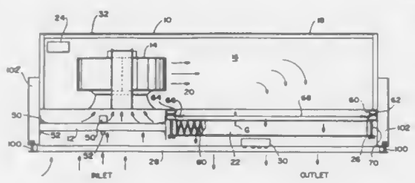
SINGLE FIELD IONIZING ELECTRICALLY STIMULATED FILTER

Raian A. Jaisinghani, Midlothian, and Neville J. Bugli, Richmond, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Filed Mar. 23, 1988, Ser. No. 172,160

Int. Cl.[5] B03C *3/00*

U.S. Cl. 55—2 **31 Claims**



1. A method for electrically stimulating a non-conductive dielectric media filter, comprising:

providing a first electrode spaced apart from an upstream face of a non-conductive dielectric pleated flat sheet glass media filter;

holding apart the pleats of said media filter by non-conductive pleat spacing means;

providing a second electrode closely proximate a downstream face of said media filter so as to be in at least loose contact with said downstream face;

drawing intake air through said media filter; and

applying first and second high voltage potentials to the first and second electrodes, respectively, for maintaining a single ionizing and charging electrical field therebetween for ionizing said indrawn air and for charging particles and polarizing the media filter with a differential charge between the upstream and downstream faces thereof.

4,940,471

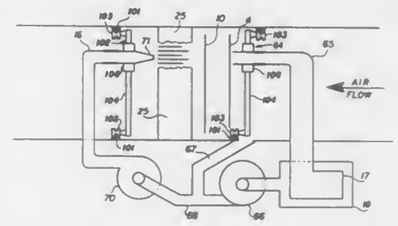
DEVICE FOR CLEANING TWO-STAGE ELECTROSTATIC PRECIPITATORS

Gaylord W. Penney, 216 Paris Rd., Pittsburgh, Pa. 15235

Continuation-in-part of Ser. No. 36,130, Apr. 3, 1987, Pat. No. 4,861,356, which is a continuation-in-part of Ser. No. 735,566, May 17, 1985, abandoned. This application Aug. 25, 1989, Ser. No. 398,483

Int. Cl.[5] B01D *3/00*

U.S. Cl. 55—120 **6 Claims**



1. A two-stage gas-cleaning precipitator comprising:

(a) an ionizing stage for charging a plurality of particles;

(b) a means for causing a gas to pass first through the ionizing stage and then through a collecting stage, the collecting stage comprising a plurality of alternating high and low voltage collecting plates;

(c) a means for energizing the high voltage plates to create an electric field for precipitating the charged particles; and

(d) a means for cleaning the collecting stage comprising a means for generating a small stream of high velocity gas, a moveable member for directing the small stream of high velocity gas between individual collecting plates to dislodge the collected particles, a means for moving the moveable member over the outlet face of the collecting stage, and a means for conveying the small stream of high velocity gas containing the dislodged particles to a particle collecting means.

4,940,472

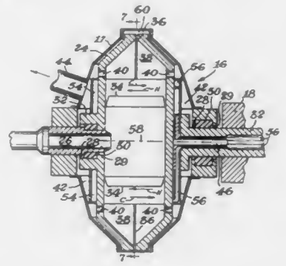
CENTRIFUGAL DEVOLATILIZER

Robert A. Hay, II, Midland, and Albert C. Dowell, Mt. Pleasant, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 17, 1989, Ser. No. 297,371

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—195 **3 Claims**



1. Apparatus for the removal of volatile constituents from the product of a polymerization process comprising:

(a) a stationary housing supporting a rotatable annular cham-

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ber, said annular chamber having an inlet located substantially along the axis of rotation of said annular chamber, a multiplicity of closely spaced apart barriers forming a multiplicity of fluid flow passages located at a first distance from the axis of rotation of said chamber, and an outlet located at a second distance from the axis of rotation of said chamber, the portion of said chamber located between said passages and said outlet forming an annular pocket;

(b) means for providing a liquid polymer to said inlet;

(c) means to rotate said annular chamber at a speed sufficient to cause said liquid polymer to flow through said passages and said outlet and form liquid seals at each of said passages and said outlet; and

(d) a vacuum source communicating with said annular pocket for removing volatile constituents from said liquid polymer.

4,940,473

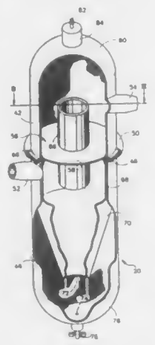
CYCLONE SOLIDS SEPARATOR AND DE-GASIFIER

Roger A. Benham, 4481 Olive Ave., La Mesa, Calif. 92041

Filed Jun. 16, 1989, Ser. No. 367,334

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—205 **16 Claims**



1. A combination solids separator and de-gasifier for a flowing liquid system comprising:

a generally cylindrical vertically oriented reservoir having a wall separating said reservoir into upper and lower chambers;

a central opening in said wall communicating between said upper and lower chambers;

an inlet into said lower chamber tangential to an outer diameter thereof;

an outlet from said upper chamber;

a gas vent at the top of said reservoir for controllably venting gas from said chamber;

a vortex inducing conical wall extending from said inlet toward the bottom of said reservoir; and

a solids removal port at the bottom of said reservoir.

4,940,474

SUCTION CLEANER

Anders E. C. Larsson, Stockholm; Joakim A. Svanberg, Johanneshov; Lars G. Kilström, Täby, and Lars G. Tuvin, Knivsta, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

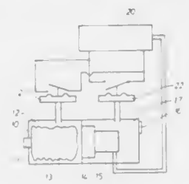
Filed May 11, 1989, Ser. No. 351,077

Claims priority, application Sweden, May 25, 1988, 8801939

Int. Cl.[5] B01D *46/00*

U.S. Cl. 55—210 **1 Claim**

1. In a suction cleaner having a housing (10) including an inlet (11) for dust-laden air, a filter chamber (12) with a filter bag (13), a suction fan (14), a motor (15), and an outlet passage (17) through which filtered air flows from said suction fan to an outlet (16), said motor (15) having a control circuit (20) including a first pressure switch (21) communicating with the filter chamber and actuated by the underpressure in the filter chamber to control the motor speed below a predetermined



level, the improvement comprising a second pressure switch (22) communicating with the outlet passage, the second pressure switch (22) being actualable by the pressure in the outlet passage (17) and being connected to the control circuit (20) to limit fan speed when said pressure in the outlet passage exceeds a predetermined level, both of said pressure switches (21, 22) being interconnected in parallel.

4,940,475

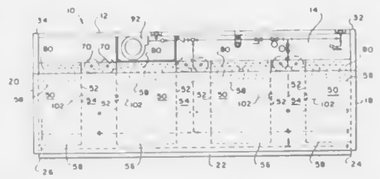
VARIABLE CAPACITY EVAPORATIVE HUMIDIFIER

Ronald J. Yaeger, 5006 Mill Creek, Dallas, Tex. 75244

Filed Sep. 26, 1989, Ser. No. 412,950

Int. Cl.[5] B01F *3/04*

U.S. Cl. 55—224 **5 Claims**



1. A humidifier for adding moisture to a flow of air comprising, in combination:

a housing having inlet, an outlet and a flow passage between said inlet and outlet;

a plurality of evaporative cores mounted adjacent one another within said housing passage, said evaporative cores including core sidewalls defining bypass gaps between said cores;

a pair of bypass damper blades mounted for pivoting movement in each of said bypass gaps between closed and open positions, said bypass damper blades substantially blocking said bypass gaps to the flow of air therethrough in said closed positions and substantially opening said bypass gaps to the flow of air therethrough in said open positions, and said bypass damper blades being selectively positionable at said closed and open positions and at positions intermediate said closed and open positions; and,

a plurality of moisture eliminator walls disposed within said housing, each moisture eliminator wall being angled in the direction of the bypass gap in closest lateral proximity thereto, whereby the flow of air exiting from each evaporative core is intermixed with the flow of air exiting from said bypass gap.

4,940,476

SOOT FILTER

Alfred Buck, Nagolder St. 32, D-7407 Rottenburg 3, Fed. Rep. of Germany, assignor to Alfred Buck, Rottenburg, Fed. Rep. of Germany

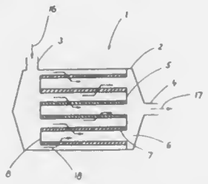
PCT No. PCT/DE88/00586, § 371 Date May 17, 1989, § 102(e) Date May 17, 1989, PCT Pub. No. WO89/02976, PCT Pub. Date Apr. 6, 1989

PCT Filed Sep. 21, 1988, Ser. No. 358,377

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1987, 3731766

Int. Cl.[5] B01D *46/00*

U.S. Cl. 55—486 **26 Claims**



1. A soot filter (1) disposed in the exhaust gas flow of an internal combustion engine, in particular an air-compressing internal combustion engine, the soot filter having a housing (2) having an inflow pipe and an outflow pipe (3, 4) for the exhaust gas flow, and filter material (11) located in the housing (2) positioned in the path of flow, the filter material (11) comprises at least one layer (14, 15), of circularly knitted fabric (12) essentially consisting of ceramic.

4,940,477

METHOD FOR SYNTHESIZING TOPAZ

Peter L. Bocko, Painted Post; David H. Crooker, Corning, and Lina M. Echeverria, Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 19, 1989, Ser. No. 381,813

Int. Cl.[5] C03C *3/118, 17/245*

U.S. Cl. 65—18.2 **9 Claims**

1. A method for preparing bodies consisting essentially of synthesized fluorine-containing, aluminosilicate crystals having a stoichiometry approximating that of topaz with a fluorine content between 3–21% by weight consisting essentially of the steps of:

(a) generating and supplying to a flame oxidation burner, vapors of a readily-oxidizable compound of silicon and of a readily-oxidizable compound of aluminum and fluorine, in which the fluorine is strongly bonded to the aluminum, said vapors being supplied in separate streams;

(b) injecting the vapors into an oxidizing combustion flame supported by said burner, the two streams of vapors being passed into said flame in separate streams with an interposing fume shield gas stream free of said silicon-containing vapor and of said aluminum-and fluorine-containing vapor being passed into said flame between said two streams;

(c) collecting amorphous fluorine-containing alumino-silicate particles produced from combustion of said two streams of vapors by said flame; and then

(d) sintering said particles into an integral body and concurrently crystallizing it in situ by firing said particles in a fluorine-containing atmosphere at a temperature of 650°–925° C.

4,940,478

METHOD OF MELTING RAW MATERIALS

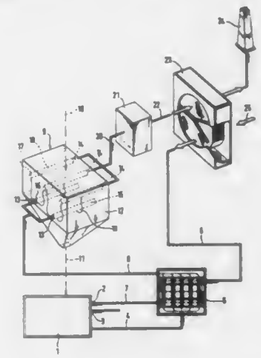
Wilfried Naber, Ladenburg; Heinz-Jürgen Ungerer, Viernheim, and Klaus Sistermann, Neustadt, all of Fed. Rep. of Germany, assignors to Grünzweig & Hartmann AG, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 17,147, Feb. 20, 1987, abandoned. This application Sep. 8, 1988, Ser. No. 243,240

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1986, 3605509

Int. Cl.[5] C03B *5/16*

U.S. Cl. 65—27 **13 Claims**



1. A process of melting raw materials, comprising the steps of:

(a) supplying heat to a melting tank by combustion of fuel;

(b) subjecting combustion air to a second heating process by heat exchange with tank exhaust gases, the combustion air being preheated only to such an extent that the tank exhaust gases are cooled to a temperature substantially equal to but not exceeding the highest permissible temperature which can be withstood by a container containing a mixture of raw materials;

(c) preheating the mixture of raw materials by flowing the tank exhaust gases into direct contact with the mixture of raw materials;

(d) removing acid gaseous aggressive media from the tank exhaust gases; and

(e) subjecting the combustion air to a first heating process by heat exchange with the tank exhaust gases after the acid gaseous aggressive media are removed from the tank exhaust gases.

4,940,479

METHOD FOR MANUFACTURING FLOAT GLASS

Yasuo Sato; Tsunehiro Saito, both of Yokohama; Toshihito Kamioka, Matsudo; Yukio Yoshikawa, Kawasaki, and Masaaki Yoshikawa, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1988, Ser. No. 234,677

Claims priority, application Japan, Aug. 24, 1987, 62-208354

Int. Cl.[5] C03B *18/04, 18/10*

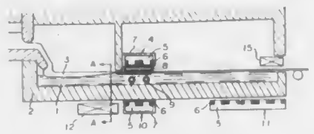
U.S. Cl. 65—99.2 **7 Claims**

1. A method for manufacturing float glass by continuously supplying molten glass on the surface of a molten metal bath to form a glass ribbon, which comprises:

moving a glass ribbon forward over a moving molten metal bath;

applying a direct current magnetic field to said molten metal bath in a direction to suppress movement of the molten metal bath;

moving said glass ribbon forwardly along the bath surface so as to give said glass ribbon a predetermined thickness; and



cooling said glass ribbon having the predetermined thickness while advancing said glass ribbon on the surface of said molten metal bath controlled by said direct current magnetic field.

4,940,480

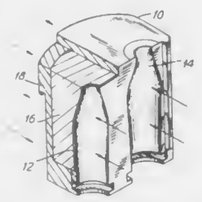
MOLDING COOLING SYSTEM FOR THE MANUFACTURE OF GLASS ARTICLES OR SIMILAR MATERIALS

Alfredo Martinez-Soto, Rincon Colonial; Jorge Loredo-Murphy, Monterrey, and Benito Becerril-Ortega, Puesta Del Sol, all of Mexico, assignors to Vitro Tec Fideicomiso, Monterrey, Mexico

Continuation-in-part of Ser. No. 110,173, Oct. 19, 1987, abandoned. This application Jan. 26, 1989, Ser. No. 302,820

Int. Cl.[5] F28D *21/00, 15/00;* **B29C** *33/02*

U.S. Cl. 65—356 **8 Claims**



1. A glassware forming mold for controlling the heat transference in a glassware forming process, comprising a three-layer construction including first and third bodies, one of which is in contact with a portion of molten glass fed thereto to form a glassware article; and a second central body between said first and third bodies, comprised of a metallic alloy which melts approximately at a temperature between about 375° C. and 550° C. corresponding approximately to a working temperature of the molten glass, providing a solid-liquid state, to control the heat transference from the molten glass to the first or third bodies and from these to the environment during the glass forming process, whereby the glass distribution within the mold is improved;

wherein the material of the second body is selected from alloys of the group consisting of eutectic zinc-base Alloys, Aluminum-base Alloys, Magnesium-base Alloys or mixtures of Ca-Al, Sb-In, Al-Pb, Cu-Mg to promote the liquid-solid phase by reason of their different melting points.

4,940,481

MICROBICIDAL AND GROWTH REGULATING COMPOSITIONS

Urs Müller, Münchenstein; Hans Tobler, Allschwil; Hermann Rempfler, Ettingen, and Alfred Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,522

Claims priority, application Switzerland, Mar. 4, 1982, 1329/82-5; Nov. 24, 1982, 6850/82-8

Int. Cl.[5] C07D *249/08;* **A01N** *43/653*

U.S. Cl. 71—76 **6 Claims**

1. 1-(4-Chlorophenoxy)-2-tert-butyl-2-hydroxy-3-methyl-3-(1H-1,2,4-triazol-1-yl)propane.

4,940,482

AMINOPYRAZINONES AND AMINOTRIAZINONES OF THE FORMULA

Beat Böhner, Binningen, and Willy Meyer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

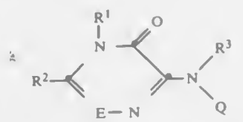
Continuation-in-part of Ser. No. 260,642, Oct. 21, 1988, abandoned, which is a division of Ser. No. 99,036, Sep. 21, 1987, Pat. No. 4,795,486. This application Aug. 15, 1989, Ser. No. 394,389

Claims priority, application Switzerland, Sep. 26, 1986, 3871/86

Int. Cl.[5] A01N *43/60, 43/08, 43/10;* **C07D** *241/18, 253/06*

U.S. Cl. 71—92 **16 Claims**

1. An aminopyrazinone of the formula I

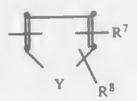


(I)

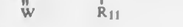
in which E is $=CR^4-$, R^1 is C_1–C_4-alkyl, R^2 is C_1–C_3-alkyl, C_1–C_3-halogenalkyl, C_1–C_3-alkoxy, C —C-halogenoalkoxy, C_1–C_3-alkylthio, C_1–C_3-alkylsulfinyl, C_1–C_2-alkoxyethoxy, C_1–C_3-alkylsulfonyl or $-NR^5R^6$, R^3 is hydrogen or C_1–C_3-alkyl and Q is a group



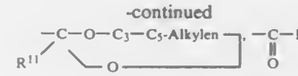
in which R^4 is hydrogen, C_1–C_3-alkyl, C_1–C_3-halogenoalkyl, C_1–C_3-alkoxy, cyclopropyl, C_1–C_3-halogenoalkoxy, C_1–C_3-alkylthio, C_2–C_4-alkoxyalkyl, C_3–C_5-dialkoxymethyl, halogen or $-NR^5R^6$, R^5 and R^6 independently of one another are hydrogen or C_1–C_3-alkyl, X is oxygen or sulfur and A is a group



in which Y is oxygen, sulfur, —CH=CH—, $-NR^9-$ or $-CR^{10}=N-$, R^7 is hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro or trifluoromethyl, R^8 is hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro, —C≡CH, or one of the groups



-continued



$-SO_2-NR^{13}R^{14}$, $-(Z)_m-R^{15}$ and $-O-SO_2R^{18}$,

R^9 and R^{10} independently of one another are hydrogen, C_1–C_3-alkyl or C_2–C_4-alkenyl, R^{11} is hydrogen, C_1–C_3-alkyl, C_1–C_3-halogenoalkyl, C_3–C_6-cycloalkyl or C_2–C_4-alkoxyalkyl, R^{12} is C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkinyloxy, C_2–C_6-halogenoalkoxy, C_1–C_4-cyanoalkoxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_3–C_6alkinylthio, C_5–C_6-cycloalkoxy, C_2–C_6-alkoxyalkoxy or $-NR^{16}R^{17}$, R^{13} is hydrogen, C_1–C_3-alkyl or C_3–C_4-alkenyl, R^{14} is hydrogen, C_1–C_3-alkyl, C_1–C_3-cyanoalkyl or C_1–C_3-alkoxy, R^{15} is C_3–C_6-alkinyl, C_2–C_6-alkenyl, C_1–C_6-alkyl, C_1–C_4-halogenoalkyl, C_2–C_4-halogenoalkenyl or C_1–C_4-alkyl, substituted by cyano, methoxy, ethoxy, nitro, C_1–C_4-alkoxycarbonyl, methylthio, ethylthio, methylsulfonyl or ethylsulfonyl; or C_3–C_4-alkenyl substituted by nitro, cyano, methoxy or ethoxy, R^{16} is hydrogen, C_1–C_3-alkyl or C_3–C_4-alkenyl, R^{17} is hydrogen, C_1–C_3-alkyl, C_1–C_3-cyanoalkyl or C_1–C_3-alkoxy, R^{18} is C_1–C_3-alkyl and C_1–C_3-halogenoalkyl, W is oxygen or sulfur, Z is oxygen, sulfur, —SO— or $-SO_2-$ and m is the number zero or one, or a salt of one of these compounds

15. 3-[3-(2-methoxycarbonylphenylsulfonyl)-ureido]-1,5,6-trimethylpyrazin-2-one.

16. 3-[3-(2-methoxycarbonylphenylsulfonyl)-ureido]-1,6-dimethylpyrazin-2-one

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4,940,483

FUNGICIDAL 2-(3-PYRIDYL)-1,3-DIOXANES

Yoshio Kurahashi; Toshio Goto; Kunihiro Isono, all of Tokyo; Yoshinori Kitagawa, Tochigi; Tetsuji Izumi; Toshihito Kondo, both of Tokyo, and Takayo Sato, Gunma, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

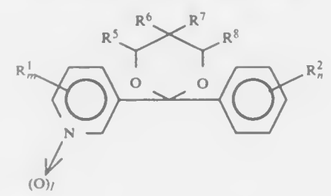
Filed Nov. 8, 1988, Ser. No. 268,913

Claims priority, application Japan, Nov. 10, 1987, 62-282211; May 30, 1988, 62-130168

Int. Cl.[5] C07D *405/06;* **A01N** *43/40*

U.S. Cl. 71—94 **13 Claims**

1. A 3-substituted pyridine of the formula



wherein

R^1 represents hydrogen, halogen, alkyl or haloalkyl having 1 to 4 carbon atoms,

R^2 represents hydrogen, halogen, alkyl or haloalkyl having 1 to 4 carbon atoms, or phenyl or phenoxy,

l is 0 or 1,

m is an integer from 1 to 4,

n is an integer from 1 to 5, and

R^5, R^6, R^7 and R^8 each represent hydrogen, or alkyl or having 1 to 4 carbon atoms.

9. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 1.

4,940,484

HERBICIDAL METHOD COMPRISING THE USE OF DIFLUFENICAN

Richard H. Hewett, Thaxted, and Brian M. Luscombe, Chelmsford, England, assignors to May and Baker Limited, Dagenham, United Kingdom

Filed Jul. 17, 1987, Ser. No. 74,872

Claims priority, application United Kingdom, Jul. 21, 1986, 8617741

Int. Cl.[5] A01N *43/40, 37/38*

U.S. Cl. 71—94 **7 Claims**

1. A method of controlling the growth of the weeds *Stellaria media* and *Galium aparine* at a cereal crop locus which comprises applying to the locus an effective amount of the combination of (a) diclofop-methyl, which is the methyl ester of (R,S)-2-[4-1(2,4-dichlorophenoxy)phenoxy]propionic acid, and (b) diflufenican which is N-(2,4-difluorophenyl)-2(3-trifluoromethylphenoxy) nicotinamide.

4,940,485

HERBICIDAL 3-METHYLPHTHALIMIDES

Beat Böhner, Binningen; Hans Moser, Magden, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

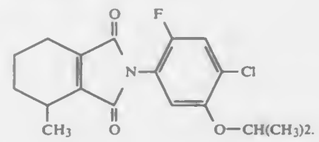
Continuation-in-part of Ser. No. 88,750, Aug. 24, 1987, abandoned. This application Nov. 28, 1988, Ser. No. 277,090

Claims priority, application Switzerland, Sep. 3, 1986, 3538/86

Int. Cl.[5] A01N *43/38;* **C07D** *209/48*

U.S. Cl. 71—96 **6 Claims**

1. The compound of the formula



4. A method for the selective pre- or post-emergence control of weeds in crops of useful plants which comprises applying to the crop area a herbicidally effective amount of the compound according to claim 1.

4,940,486

PROCESS FOR TREATING LIQUID METALS

Iain D. Sommerville, Oakville, and Francis L. Kemeny, Pickering, both of Canada, assignors to The University of Toronto Innovations Foundation, Canada

Continuation-in-part of Ser. No. 54,341, May 26, 1987. This application May 8, 1989, Ser. No. 348,857

Int. Cl.[5] C22B *4/00*

U.S. Cl. 75—10.19 **15 Claims**



1. A process for treating metal, comprising the steps of applying a positive DC potential to a slag layer disposed on the surface of a liquid metal melt to provide a plasma phase above

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the slag layer and induce a flow of electrons from the melt through the slag layer toward the plasma phase, and introducing to the plasma phase a substance capable of reacting with the species being released at the slag layer/plasma phase interface.

4,940,487

PROCESS FOR UTILIZING OF ZINC-CONTAINING METALLURGICAL DUSTS AND SLUDGES

Walter Lugscheider, Graz, and Lucian Pochmarski, Leoben, both of Austria, assignors to Voest-Alpine Stahl Donawitz Gesellschaft m.b.H., Leoben-Donawitz, Austria

Filed Apr. 5, 1989, Ser. No. 333,232
Claims priority, application Austria, Apr. 8, 1988, 925/88
Int. Cl.[5] C22B *7/02*
U.S. Cl. 75—384 **11 Claims**

1. A process for utilizing a zinc-containing by-product comprising at least one of zinc-containing metallurgical dust and zinc-containing metallurgical sludge derived from a steel-making process and containing at least 30 percent total metallic constituents by weight, essentially including iron and zinc,

said process comprising:

(a) providing a converter adapted to accept a charge of metallic material, apply heat such as to melt at least some of said charge by combustion of a fuel, and thereby produce as an output molten metal, slag and a metallurgical dust, in a melting process;

(b) charging said converter with an iron-containing metallized charge;

(c) accepting a supply of said zinc-containing by-product;

(d) analyzing the accepted zinc-containing by-product for carbon content and, if said carbon content lies outside the range of 20 to 25 percent by weight, adjusting said carbon content to lie within said range;

(e) agglomerating said zinc-containing by-product into agglomerates which are constituted by at least one of briquettes and pellets;

(f) further charging said converter with said agglomerates in an amount of 2 to 8 percent by weight of said iron-containing metallized charge; and

(g) conducting said melting process in said converter and thereby obtaining in said metallurgical dust from said converter a constant rich in metallic zinc.

4,940,488

METHOD OF SMELTING REDUCTION OF ORES CONTAINING METAL OXIDES

Takuya Maeda; Keikichi Murakami; Tsutomu Yamada, all of Kobe; Mitsuharu Kishimoto, Hyogo, and Kenichi Yajima, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Continuation-in-part of Ser. No. 278,203, Nov. 30, 1988, abandoned. This application Sep. 1, 1989, Ser. No. 403,058
Claims priority, application Japan, Dec. 7, 1987, 62-310117; Dec. 8, 1987, 62-310143
Int. Cl.[5] C21B *11/00*
U.S. Cl. 75—500 **8 Claims**

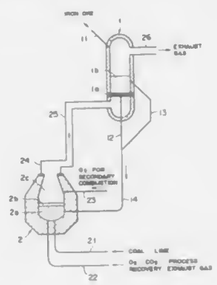
1. A method of smelting reduction of iron oxide ore, comprising the steps of:

prereducing said ore in a solid state in a prereduction furnace;

thereafter melting said ore and carrying out final reduction thereof in a smelting reduction furnace to generate a gas having a reductive capability in the smelting reduction furnace;

subjecting said gas to a secondary combustion at a combustion rate of 25% or more in the smelting reduction furnace;

introducing the gas thus subjected to the secondary combustion into said prereduction furnace; and



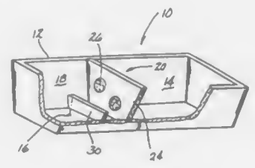
controlling the rate of prereducing said ore in said prereduction furnace to be maintained at a value smaller than 30 percent.

4,940,489

MOLTEN METAL FILTRATION SYSTEM AND PROCESS

Michael A. Cummings, Taylors, S.C., assignor to Alusuisse-Lonza Services Ltd., Zarich, Switzerland

Filed Mar. 30, 1989, Ser. No. 330,612
Int. Cl.[5] C21C *7/00*; B01D *35/02*
U.S. Cl. 75—407 **11 Claims**



1. An improved molten metal filtration system comprising:

a filter chamber having a molten metal inlet and a molten metal outlet defining a molten metal flow path therebetween;

a filter assembly disposed between said inlet and said outlet;

said filter assembly including at least one porous ceramic foam filter member seated in a solid plate-like member;

means for preventing molten metal used to initially prime said at least one filter member in said filter assembly from proceeding directly to said outlet and for collecting said priming molten metal so as to form a pool of heated molten metal downstream of said filter assembly for reducing the cooling effect caused by passage of said molten metal through said at least one filter member; and

said preventing means being positioned intermediate said filter assembly and said molten metal outlet.

4,940,490

TANTALUM POWDER

James A. Fife, Douglassville, and Mariya F. Getz, Barto, both of Pa., assignors to Cabot Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 126,706, Nov. 30, 1987, abandoned. This application Jun. 21, 1988, Ser. No. 209,746
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—229 **28 Claims**



1. A flaked tantalum powder produced from a tantalum powder prepared by a chemical reduction process comprised of flakes and having a Scott density greater than about 18 g/in^3.

4,940,491

COMPOSITION FOR THE PAINT DETACKIFICATION FOR BOTH WATERBORNE AND SOLVENT ENAMELS

Shu-Jen Huang, Naperville, and David W. Scheimann, Addison, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 312,795, Feb. 21, 1989, Pat. No. 4,888,386. This application Sep. 11, 1989, Ser. No. 405,782
The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.
Int. Cl.[5] C02F *1/56*
U.S. Cl. 134—38 **1 Claim**

1. The method for detackifying paint in a paint spray booth conprising the steps of dosing a paint spray booth collection system with at least 25 ppm of a composition consisting of a melamine-formaldehyde polymer (A), polyvinyl alcohol (B), and a styrene acrylate copolymer (C), combined in a weight ratio of A:B:C, being within the range of 2:1:1 to 4:5:1.

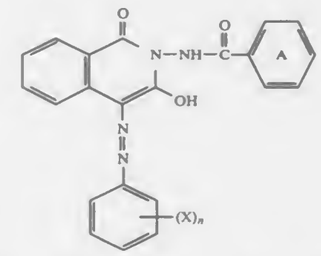
4,940,492

COLORANT MIXTURES CONTAINING ISOQUINOLINE DERIVATIVES, USE THEREOF IN PRINTING INKS, AND NOVEL ISOQUINOLINE DERIVATIVES

Heinrich Kowarsch, Oberderdingen, and Johannes P. Dix, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

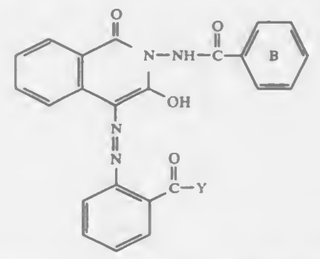
Filed Jun. 22, 1988, Ser. No. 209,586
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1987, 3721498
Int. Cl.[5] C09B *29/44, 67/20, 67/22*; C09D *11 00*
U.S. Cl. 106—494 **10 Claims**

1. A colorant mixture containing an isoquinoline-azo pigment of the formula I



(I)

wherein X is chlorine, bromine, C_1–C_4 alkoxy or nitro; n is 1,2 or 3; and an isoquinoline-azo dye of formula



(II)

wherein Y is C_6–C_{20}-alkoxy or C_6–C_{20} alkoxy which contains one or more ether linkages.

4,940,493

ALUMINUM CLEANING COMPOSITION AND PROCESS

Fred Neidiffer, P.O. Box 1650, Rancho Mirage, Calif. 92270; Charles E. Fox, and Patsy E. Fox, both of Rte. #1, Box 87, Durant, Iowa 52747

Filed Sep. 30, 1988, Ser. No. 251,299
Int. Cl.[5] C23G *1/02*
U.S. Cl. 134—3 **21 Claims**

1. A process for cleaning debris from the surface of an aluminum-containing article comprising:

contacting a debris-laden aluminum-containing article with a composition at conditions effective to do at least one of the following: (1) remove at least a portion of said debris from said aluminum-containing article and (2) condition at least a portion of said debris for removal from said aluminum-containing article, said composition comprising water, at least one tartaric component selected from the group consisting of racemic tartaric acid, salts of racemic tartaric acid and mixtures thereof in an amount effective to at least facilitate at least one of said removal of said debris and said conditioning of said debris, at least one acidic component in an amount effective to increase the solubility of said tartaric component in said composition, and at least one surface active component in an amount effective to enhance at least one of said removal of said debris and said conditioning of said debris, said contacting occurring substantially without etching said aluminum-containing article; and

recovering said aluminum-containing article having at least a portion of said debris removed therefrom.

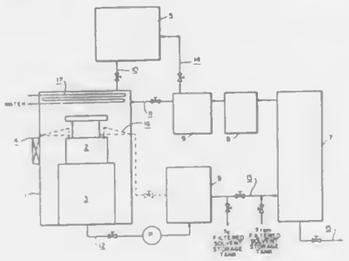
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4,940,494

PROCESS AND EQUIPMENT FOR CLEANING LARGE ELECTROMECHANICAL PARTS

Nicaise Petit, Rousset, and Jean-Claude Moisset, Faverges, both of France, assignors to Snef Electro Mecanique, Vitrolles and Techni Contact, Faverges, both of, France

PCT No. PCT/FR84/00168, § 371 Date Mar. 5, 1985, § 102(e) Date Mar. 5, 1985
PCT Filed Jul. 6, 1984, Ser. No. 708,512
Claims priority, application France, Jul. 6, 1983, 83 401390
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—1 **9 Claims**



9. A process for cleaning a soiled rotor of a dynamoelectric machine, the insulating resistance of the soiled rotor between the windings and the ground being significantly lower than its rated value, comprising the steps of:

placing the rotor on a support in a treatment tank,

introducing a fluoro containing halogenated hydrocarbon into the tank until the rotor is submerged,

heating the fluoro containing halogenated hydrocarbon to a temperature of about 30° C.,

applying a magnetostrictive ultrasonic energy having a frequency of about 20 kHz, while continuously measuring the value of the rotor insulation resistance,

stopping the application of the ultrasonic energy when the insulation resistance measured reaches a value equal or close to its rated value, and

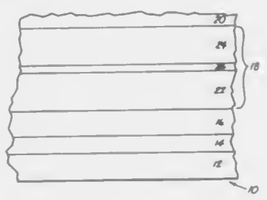
removing the rotor from the tank.

4,940,495

PHOTOVOLTAIC DEVICE HAVING LIGHT TRANSMITTING ELECTRICALLY CONDUCTIVE STACKED FILMS

Michael F. Weber; Nang T. Tran; Frank R. Jeffrey; James R. Gilbert, and Frank E. Aspen, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 7, 1988, Ser. No. 280,838
Int. Cl.[5] H01L *31/06, 23/48*
U.S. Cl. 136—256 **18 Claims**



13. A photovoltaic device comprising:

a semiconductor layer having a first side and a second side;

a first electrode in electrical contact with the second side of the semiconductor layer; and

a light transmitting top electrode contacting the first side of the semiconductor layer and including a first light transmitting electrically conductive layer in electrical contact with the first side of the semiconductor layer, the first layer having a first optical thickness, and a second light transmitting layer, having a second optical thickness different from the optical thickness of the first layer;

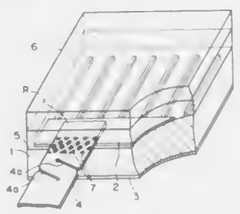
and an electrically conductive metallic layer interposed between and in electrical contact with the first and second layers.

4,940,496

SOLAR BATTERY DEVICE

Hideo Matsumoto; Katsumi Sato, and Shigeru Hokuyo, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1989, Ser. No. 296,698
Claims priority, application Japan, Feb. 3, 1988, 63-024292
Int. Cl.[5] H01L *31/05*
U.S. Cl. 136—256 **2 Claims**



1. A solar battery device comprising:

a solar battery element having a light receiving surface for receiving light and provided with an electrode on a region thereof;

an interconnector having an end portion connected to a surface of said electrode and a stress relief portion close to said end portion;

an adhesive layer provided on said light receiving surface, the surface of said electrode, and said end portion of said interconnector;

a transparent cover disposed on said adhesive layer and joined with said light receiving surface, the surface of said electrode, and said end portion of said interconnector by means of said adhesive layer; and

at least one through hole provided in a region of said interconnector intermediate said end portion and said stress relief portion for limiting outflow of said adhesive layer;

the minimum distance between an edge of said solar battery element and said stress relief portion being greater than the maximum distance between any of said at least one through hole and said edge of said solar battery element.

4,940,497

EMULSION EXPLOSIVE COMPOSITION CONTAINING EXPANDED PERLITE

Catharine L. VanOmmeren, New Tripoli, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Dec. 14, 1988, Ser. No. 284,976
Int. Cl.[5] C06B *45/00*
U.S. Cl. 149—2 **20 Claims**

1. A water-in-oil emulsion explosive composition comprising:

a continuous phase consisting of a carbonaceous fuel component and emulsifier;

a dispersed phase consisting of an aqueous solution of inorganic oxidizer salt(s); and

a void-providing agent consisting of expanded perlite having a density of less than 0.60 g/cc.

4,940,498

FLUX COMPOSITION

Wallace Rubin, Northwood, Great Britain, assignor to Multicore Solders Limited, Hertfordshire, United Kingdom

Filed Aug. 14, 1989, Ser. No. 393,647
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 **10 Claims**

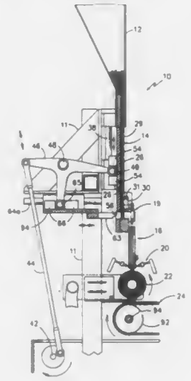
1. In the formation of soldered joints during the production of printed circuit board assemblies by the use in combination of a soft solder and a non-corrosive liquid flux, the improvement which comprises obtaining substantially no or only minimal residues from the soldering operation by utilising as the liquid flux a non-corrosive organic flux material dissolved in an organic solvent mixture comprising a major proportion by weight of a monohydric alcohol and a minor proportion by weight of a water-immiscible ether selected from polyalkylene glycol dialkyl ethers and polyalkylene glycol diaryl ethers, thereby obviating the need for a cleaning step after the soldering operation.

4,940,499

METHOD AND APPARATUS FOR SEALING CAPSULES CONTAINING MEDICAMENTS

Jean C. Lebrun; Jeffrey L. Kaltz, both of Greenwood, and Pressley A. Love, Ninety Six, all of S.C., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 23, 1989, Ser. No. 356,046
Int. Cl.[5] B65B *7/28*
U.S. Cl. 156—69 **13 Claims**



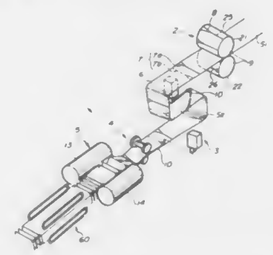
1. A method of sealing gelatin capsules, each having a generally cylindrical cap and body arranged with the side wall of the body telescopically received within the side wall of the cap to contain a medicament therein, comprising the steps of moving a plurality of capsules in longitudinal endwise abutment along a path of travel for treatment with the capsules initially positioned randomly cap-first and body-first in their direction of movement, sequentially orienting each capsule in the path to position the capsule with its longitudinal axis substantially vertical and cap down, applying a metered amount of a wetting fluid against the side wall of the body of each capsule adjacent the seam of the juncture of the side walls of its body and cap to distribute wetting fluid by capillary action and under influence of gravity into the area between the telescoped walls of the cap and body, and delivering each wetted capsule along the path for further treatment.

4,940,500

FILTER MEDIUM FORMING SYSTEM AND PROCESS

Shigeo Tadokoro, Kawagoe; Joji Morioka, Saitama, and Hideyuki Takahashi, Wako, all of Japan, assignors to Tsuchiya Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1988, Ser. No. 236,376
Claims priority, application Japan, Aug. 31, 1987, 62-215227; Aug. 31, 1987, 62-215228; May 31, 1988, 63-11669
Int. Cl.[5] B31F *1/10*
U.S. Cl. 156—204 **30 Claims**



28. A filter medium forming process for preparing a pleated filter medium having a plurality of pleats, the plurality of pleats defining adjacent pair of first and second pleats, each pleat having first and second sides which are integrally connected through a first linear depression with each other to form an upwardly-pointing pleat portion, the second side of the first pleat and the first side of the second pleat being integrally connected through a second linear depression with each other to form a downwardly-pointing pleat portion, each pleat side having oppositely located first and second edge sections which have first and second edges, respectively, which extend substantially perpendicular to each linear depression, the first edge sections of the first and second sides of each pleat being approached and bonded to each other to form a plurality of first bonded sections, the second edge section of the first pleat second side and the second edge section of the second pleat first side, of the adjacent pairs of first and second pleats, being approaches and bonded to each other to form a plurality of second bonded sections,

said filter medium forming process comprising the steps, in the sequence as set forth, of forming the first and second linear depressions, applying adhesive onto the first and second edge sections of the first and second edge sections of the first and second sides, pleating the filter medium along the first and second liner depressions, and tightly contacting the edge sections of the first and second pleat sides to bond the edge sections.

4,940,501

METHOD OF MANUFACTURING A PERFORATED ROOFING MATERIAL

Jan Hollander, Zuidhorn, Netherlands, assignor to B. V. Asphalt- en Chemische Fabrieken Smid & Hollander, Netherlands

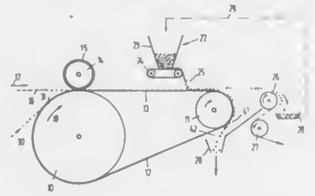
Continuation of Ser. No. 148,452, Jan. 26, 1988, abandoned, which is a division of Ser. No. 880,418, Jun. 30, 1986, abandoned. This application Aug. 17, 1989, Ser. No. 395,300
Claims priority, application Netherlands, Jul. 1, 1985, 8501890
Int. Cl.[5] B32B *31/14*
U.S. Cl. 156—252 **12 Claims**

1. A method of manufacturing a web-like roofing material of the type having perforations sized to permit a fluidized bend-

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ing agent to pass freely therethrough when bonding the roofing material to a roofing surface, comprising the following steps:

forming a non-stick surface on one side of the web material;



covering the other side of the web material with a metal foil so to cover the perforations; and

removing the metal foil covering the perforations.

4,940,502

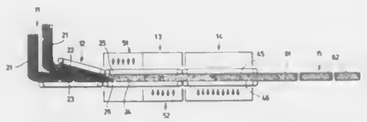
RELATING TO BONDED NON-WOVEN POLYESTER FIBER STRUCTURES

Ilan Marcus, Versoix, Switzerland, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 921,644, Oct. 21, 1986, Pat. No. 4,794,038, which is a continuation-in-part of Ser. No. 734,423, May 15, 1985, Pat. No. 4,618,531. This application Dec. 27, 1988, Ser. No. 290,385

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—272.2 **5 Claims**



1. A continuous process for making a molded block of bonded polyester fiber having a cross-section of predetermined dimensions from fiberballs consisting essentially of a blend of polyester fiber with binder fiber, characterized in that said fiberballs are formed into a shaped mass, that has a cross-section with a dimension that is larger than one of said predetermined dimensions, and that is continuously advanced through a compressing stage, in which said mass is compressed transversely, and wherein said binder fiber is activated and caused to bond the polyester fiber by first heating and then cooling the mass while said mass is maintained in compressed condition.

4,940,503

PROCESS FOR THE PRODUCTION OF AN ABRASION RESISTANT DECORATIVE THERMOSETTING LAMINATE

Kent O. Lindgren; Sven E. Danielsson; Tommy M. Johnsson, all of Perstorp, and Nils-Joel A. Nilsson, Hässleholm, all of Sweden, assignors to Prestorp AB, Perstorp, Sweden

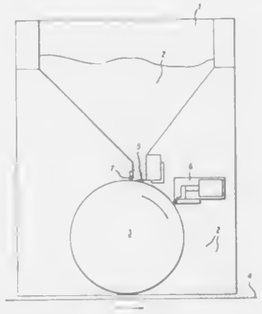
Filed Feb. 17, 1989, Ser. No. 311,955

Claims priority, application Sweden, Feb. 18, 1988, 8800550

Int. Cl.[5] B32B *31/12*

U.S. Cl. 156—279 **21 Claims**

1. Process for the production of a decorative thermosetting laminate with an abrasion-resistant surface layer, said laminate comprising paper sheets impregnated with a thermosetting resin, said process comprising impregnating a continuous paper with a thermosetting resin, and having the surface of the paper wetted with said resin coating at least one side of the continuous paper with 2–20 g/m^2 of small, dry and hard particles so that said particles are evenly distributed over the surface of resin on the continuous paper, then drying the resin with the particle coated thereon, cutting the particle coated



impregnated paper into sheets, placing at least one such paper sheet as a surface layer on a base layer and bonding the surface layer to the base layer.

4,940,504

APPARATUS FOR EXTRUSION

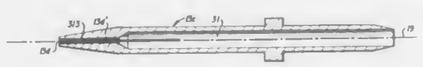
Ralph E. Starnes, Jr., Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 12,586, Feb. 9, 1987, Pat. No. 4,773,954. This application Sep. 6, 1988, Ser. No. 240,324

The portion of the term of this patent subsequent to Sep. 27, 2005, has been disclaimed.

Int. Cl.[5] B29B *47/02*

U.S. Cl. 156—500 **5 Claims**



1. Apparatus for extruding a coating of two layers of dissimilar plastic compounds having substantially different melting points onto an electrical conductor, said apparatus having:

a segmented head having first and second segments and having enlarged first and second end openings connected by a main axial bore smaller than the diameter of said end openings to provide inwardly disposed annular shoulders at the base of said openings, said bore extending through said first and second segments;

a first passageway in said first segment for applying the plastic composition which forms the inner layer of said coating of said electrical conductor;

a second passageway in said second segment for applying the plastic composition which forms the outer layer of said coating of said electrical conductor;

segmented internal tooling having first and second segments for guiding and applying the plastic compositions which form the inner and outer layers of said coating of said conductor, said tooling having a plurality of segments and having first and second end openings connected by a main axial bore, said bore extending through said plurality of segments;

a means for passing an electrical conductor through said axial bore of said internal tooling;

a means interposed between said first and second internal tooling segments for thermally isolating said first segment from said second segment;

a heatsink means interposed between said first and second internal tooling segments for removing excess heat flowing from the segment through which passes the higher melting point plastic composition and from the plastic composition flowing through said segment;

a means for monitoring the temperature in said first and said second internal tooling segments;

a guide means for maintaining the position of said electrical conductor within said main axial bore of said segmented internal tooling while said coating is applied to said conductor, said guide means having a trimming insert means and said insert having a first or entrance end and a second or exit end connected by an axial bore adopted to align with the axis of said main axial bore when adjustably positioned within the axial bore of said segmented tooling;

said guide means having a tensioning means to apply force to said insert counter to the direction of movement of said electrical conductor through said segmented head whereby said electrical conductor is held in a constant position relative to the axial bore of said segmented head and said first and second passageways and;

said guide means having a securing means to secure said trimming insert to said segmented head, THE IMPROVEMENT WHICH COMPRISES:

replaceable tip attached to the second or exit end of said trimming insert means.

4,940,505

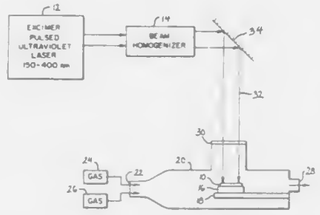
METHOD FOR GROWING SINGLE CRYSTALLINE SILICON WITH INTERMEDIATE BONDING AGENT AND COMBINED THERMAL AND PHOTOLYTIC ACTIVATION

Steven R. Schachameyer, Whitefish Bay, and Mark W. Beranek, Grafton, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 2, 1988, Ser. No. 279,566

Int. Cl.[5] H01L *21/205*

U.S. Cl. 156—612 **9 Claims**



1. A method for epitaxially growing single crystalline silicon on a silicon substrate from a silicon-bearing gas at a temperature below the pyrolytic threshold of said silicon-bearing gas, comprising:

providing a silicon substrate exposed to ambient to have an oxide layer thereon;

removing the oxide layer and substituting therefore a first intermediate bonding agent bonding with silicon atoms in the substrate in place of oxygen;

removing said first bonding agent and substituting therefore a second bonding agent bonding with silicon atoms in said substrate in place of said first bonding agent;

removing said second bonding agent in the presence of silicon-bearing gas and substituting atomic silicon from said gas for said second bonding agent to bond with silicon atoms in said substrate and epitaxially grow single crystalline silicon on said substrate;

wherein:

said step of removing said first bonding agent and substituting therefore said second bonding agent is photolytically activated comprising applying laser radiation against said substrate;

said step of removing said second bonding agent and substituting therefore atomic silicon from said silicon-bearing gas is both thermally and photolytically activated comprising in combination heating said substrate and applying laser radiation against said substrate;

and comprising:

after said step of removing said oxide layer and substituting therefore said first bonding agent, exposing said substrate to ambient such that another layer of oxide forms thereon;

removing said other oxide layer during said step of removing said first bonding agent and substituting therefore said second bonding agent by said photolytic activation;

without exposing said substrate to ambient, continuing the process by removing said second bonding agent and substituting therefore said atomic silicon from said silicon-bearing gas by said combined thermal and photolytic activation.

4,940,506

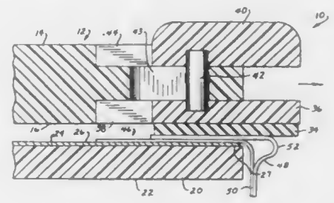
DEVICE FOR USE WITH SELF-ADHESIVE REMOVABLE LABELS

Ronald O. Krause, Appleton, Wis., assignor to MEI Services, Inc., Menasha, Wis.

Filed Feb. 13, 1989, Ser. No. 310,237

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—584 **11 Claims**



1. A device for separating a self-adhesive removable label from its support paper, said device comprising:

a first elongated member having a label gripping surface disposed at a first end,

a second elongated member having a support paper gripping surface disposed at a first end

said first and second members pivotally connected at a second end, and

operating means for moving said label gripping surface relative to said support paper gripping surface along a line substantially parallel to said gripping surfaces while said gripping surfaces are in engagement with the label and the support paper so that the label is moved relative to the support paper and the process of removing the label from the support paper is initiated.

4,940,507

LAPPING MEANS AND METHOD

Josephine Harbarger, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 5, 1989, Ser. No. 417,405

Int. Cl.[5] B44C *1/22*; H01L *21/306*; C03C *15/00, 25/06*

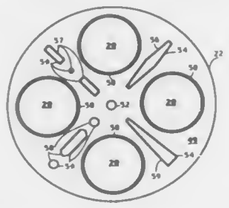
U.S. Cl. 156—635 **20 Claims**

1. A process for treating major faces of thin wafers, comprising:

providing a lapping plate of a pre-determined thickness and having multiple wafer holes extending therethrough adapted to receive the thin wafers with their major faces approximately parallel to major faces of the lapping plate, and having multiple slurry holes extending therethrough, wherein the slurry holes are located between the wafer holes and spaced apart therefrom;

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placing the lapping plate between platens of a polishing apparatus and wafers in the wafer holes; and



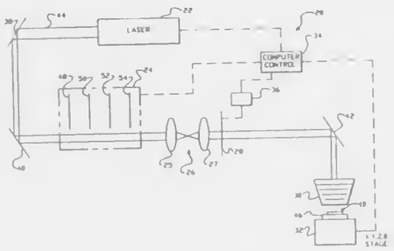
rotating the lapping plate while feeding a slurry thereto so that the slurry penetrates the slurry holes to come into contact with lower faces of the wafers.

4,940,508

APPARATUS AND METHOD FOR FORMING DIE SITES IN A HIGH DENSITY ELECTRICAL INTERCONNECTING STRUCTURE

Shamouil Shamouilian, and Paul N. Ludwig, both of Santa Clara, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 26, 1989, Ser. No. 371,211
Int. Cl.[5] B44C *1/22*; B23K *26/00*; B29C *37/00*
U.S. Cl. 156—643 **34 Claims**



22. A method for removing material from a structure, comprising:

supporting the structure on a stage moveable in at least the x and y directions;

providing an aperture means having a plurality of openings of different sizes and shapes; and

actuating an excimer laser and directing a laser beam through at least a selected one of said openings to remove material from said structure by ablative photodecomposition.

4,940,509

ISOTROPIC ETCHANT FOR CAPPED SILICIDE PROCESSES

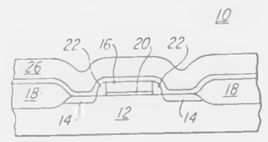
Stephen T. Tso, Dallas; David L. Bouldin, Allen; Mark R. Calley, Dallas, and Charlotte M. Tipton, Allen, all of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Mar. 25, 1988, Ser. No. 173,513
Int. Cl.[5] C03C *15/00*; C23F *1/02*; C09K *13/00*
U.S. Cl. 156—653 **5 Claims**

1. A method for removing silicon nitride from a substrate having silicon nitride and titanium silicide formed thereon comprising the steps of:

providing a substrate with titanium silicide and silicon nitride formed thereon;

exposing said substrate to phosphoric acid having a sufficient concentration and temperature for removing said silicone nitride without adversely affecting said titanium silicide so as to etch at least a portion of said silicone



nitride, said etching of said silicone nitride occuring at a faster rate than said phosphoric acid etches said titanium silicide.

4,940,510

METHOD OF ETCHING IN THE PRESENCE OF POSITIVE PHOTORESIST

Roy J. Burt, Sunnyvale, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Int. Cl.[5] C23F *1/00*; B44C *1/22*
U.S. Cl. 156—656 **10 Claims**

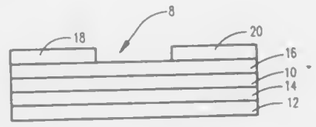
1. A method for etching chromium in the presence of positive photoresist comprising contacting a chromium film which has been patterned with positive photoresist with a solution consisting essentially of about 3 to about 9 grams potassium hydroxide per liter of water and about 15 to about 25 grams potassium permanganate per liter of water.

4,940,511

METHOD FOR MAKING A MAGNETORESISTIVE READ TRANSDUCER

Robert E. Fontana, Jr., San Jose; James K. Howard, Morgan Hill; James H. Lee, and Haralambos Lefakis, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 173,956, Mar. 28, 1988, Pat. No. 4,879,619.
This application May 22, 1989, Ser. No. 355,239
Int. Cl.[5] G11B *5/42*; B44C *1/22*
U.S. Cl. 156—656 **6 Claims**



1. The method for making a magnetoresistive read transducer comprising the steps of:

depositing a thin film of a magnetoresistive conductive layer formed of ferromagnetic material onto a substrate;

depositing a thin film spacer layer onto and in contact with said magnetoresistive layer, said thin film spacer layer comprising a material selected from the group consisting of nichrome and nichrome with chromium oxide; and

depositing a thin film of soft magnetic material onto and in contact with said thin film spacer layer so that said thin film of soft magnetic material is positioned parallel to but spaced from said magnetoresistive layer whereby a transverse bias is produced in at least a part of said magnetoresistive layer and the transverse biased part of said magnetoresistive layer is maintained in a linear response mode.

4,940,512

CROSS-DIRECTIONAL DISTRIBUTION OF ADDITIVES IN SYNTHETIC PAPERS

Gary L. Hendren, and Lee J. Hesler, both of Richmond, Va., assignors to E. I. du Pont de Nemours and Co.ny, Wilmington, Del.

Filed Aug. 18, 1988, Ser. No. 233,634
Int. Cl.[5] D21H *23/02*
U.S. Cl. 162—109 **9 Claims**

1. A process for making an elongate, nonwoven flexible sheet from synthetic fibrous stocks, said sheet having an additive distributed in a predetermined cross-directional pattern of areas of higher and lower additive quantities across the width of the sheet, said process comprising:

providing at least two synthetic fibrous stocks each containing solids capable of forming an elongated, nonwoven flexible sheet, one of said stocks containing said additive in a concentration higher than in the other stock;

supplying each of said stocks to a paper machine having a headbox for depositing said stocks on a wire to form a wet sheet of said solids, said stocks being introduced into said headbox from a plurality of cross-directional positions equally spaced-apart along said headbox with a generally equal amount of solids being introduced at each position to produce a wet sheet generally uniform in weight per unit of area across its width, said stock with the higher concentration of additive being introduced in higher quantity than the other stock at least at one of said cross-directional positions corresponding to a higher additive quantity area of said sheet so that the additive is distributed in said predetermined cross-directional pattern;

monitoring the weight per unit of area across the width of the wet sheet being produced and controlling the supplying of each of said stocks into said headbox in response to said monitoring of weight per unit of area to maintain the weight per unit of area generally uniform across its width as the sheet is produced; and

dewatering and drying said wet sheet to form said nonwoven sheet.

4,940,513

PROCESS FOR PREPARING SOFT TISSUE PAPER TREATED WITH NONCATIONIC SURFACTANT

Wolfgang U. Spendel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 5, 1988, Ser. No. 280,086
Int. Cl.[5] D21H *23/26, 25/04*
U.S. Cl. 162—112 **17 Claims**

1. A process for making soft tissue paper, said process comprising the steps of:

(a) wet-laying cellulosic fibers to form a web;

(b) applying to said web, at a fiber consistency of from about 10% to about 80%, total web weight basis, a sufficient amount of a water-soluble noncationic surfactant such that from about 0.01% to about 2.0% of said noncationic surfactant, based on the dry fiber weight of said tissue paper, is retained by said web;

(c) applying to said web, at a fiber consistency of from about 10% to about 80%, total web weight basis, a sufficient amount of a starch binder material such that from about 0.01% to about 2.0% of said starch, based on the dry fiber weight of said tissue paper, is retained by said web; and

(d) drying and creping said web;

wherein said tissue paper has a basis weight of from about 10 to about 65 g/m^2 and a density of less than about 0.60 g/cc.

4,940,514

MAKING PAPER, BOARD AND CARDBOARD OF HIGH DRY STRENGTH

Andreas Stange, Mannheim; Hans-Juergen Degen, Lorsch; Werner Auhorn, Frankenthal; Volkmar Weberndoerfer; Michael Kroener, both of Mannheim, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

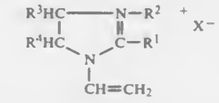
Filed Jul. 25, 1988, Ser. No. 223,334
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724646
The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.
Int. Cl.[5] D21H *17/44*
U.S. Cl. 162—168.2 **6 Claims**

1. A process for making paper, board and cardboard having high dry strength, which comprises adding an aqueous solution of a mixture of enzymatically digested starch having a viscosity of from 20 to 2,000 mPa.s (measured in 7.5% strength aqueous solution at 45° C.) and a cationic polymer which contains, as copolymerized characteristic monomers,

(a) diallyldimethylammonium chloride,

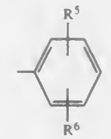
(b) N-vinylamine or

(c) an N-vinylimidazoline of the formula

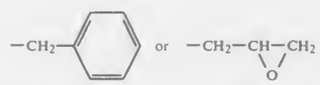


(I)

where R^1 is H, C_1–C_{18}-alkyl or



R^5 and R^6 are each H, C_1–C_4-alkyl or Cl, R^2 is H, C_1–C_{18}-alkyl,



R^3 and R^4 are each H or C_1–C_4-alkyl and X^- is an acid radical, and which has a K value of not less than 30, (determined according to H. Fikentscher in 5% strength aqueous sodium chloride solution at 25° C. and at a polymer concentration of 0.5% by weight), from 1 to 20 parts by weight of one or more cationic polymers being used per 100 parts by weight of enzymatically digested starch, as a dry strength agent to the paper stock and draining the paper stock with sheet formation.

4,940,515

IMBEDDED MESH IN SUCTION BOX COVER

David J. Krebs, East Schodack, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Jun. 28, 1989, Ser. No. 372,883
Int. Cl.[5] D21F *1/52*
U.S. Cl. 162—363 **4 Claims**

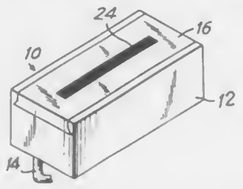
1. In a paper making machine having a press fabric for removing water from a paper sheet, a suction box comprising:

a fixed box body connected to a source of vacuum;

a solid cover secured to said box body and having a substan-

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tially flat surface for contacting said press fabric, said surface having a continuous slot with two opposed side walls and a uniform cross-section therebetween, said side walls extending substantially along the width of said press fabric, said slot being in communication with said box



body for removing water from said press fabric by suction; and

a fixed mesh imbedded in said cover and covering said slot for preventing contact between said press fabric and said side walls.

4,940,516

PROCESS FOR THE PREPARATION OF ELECTROACTIVE LANGMUIR-BLODGETT LAYER SYSTEM

Alex Wegmann, Allschwil; Bernd Tieke, Marly, and Bruno Hilti, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 5, 1989, Ser. No. 375,758

Claims priority, application Switzerland, Jul. 8, 1988, 2617/88

Int. Cl.[5] C25B *3/02*

U.S. Cl. 204—14.1 **6 Claims**

1. A process for the preparation of Langmuir-Blodgett layer systems (LB systems), comprising the steps of

(i) preparing a monomolecular layer of an electroactive compound containing a cyclic conjugated π-system which can be electrochemically oxidised or reduced, or of a mixture of said compound in conjunction with further amphiphilic compounds that are capable of stabilising monomolecular layers,

(ii) transferring said layer from a subphase which contains an electrolyte, and into which a counter electrode is dipped, to a solid substrate having an electrically conductive surface by dipping said substrate through the layer so as to effect transfer of the layer to the substrate which is connected as anode or cathode, the potential applied being so chosen that a salt forms from said electroactive compound and counterions of the subphase.

4,940,517

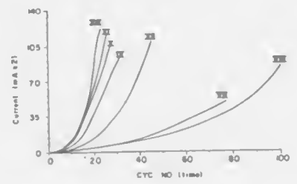
POLYMERIZATION OF ANILINE AND ITS DERIVATIVES

Yen Wei, Philadelphia, Pa., assignor to Drexel University, Philadelphia, Pa.

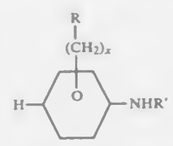
Filed Nov. 10, 1988, Ser. No. 269,857

Int. Cl.[5] C25B *3/02*

U.S. Cl. 204—78 **18 Claims**



1. A method for polymerizing compounds of Formula I:



(I)

wherein R is —H, —OH, lower alkoxy, halogen, —COOH, $—NO_2$ or $—NH_2$; x is 0 to 4, with substitutions being ortho or meta to the amine group; R′ is hydrogen or lower alkyl; comprising reacting the compound of Formula I or a water-soluble salt thereof with an initiator, in the presence of a chemical oxidant and/or an applied electrochemical potential, said initiator comprising a substituted or unsubstituted aromatic amine which has a lower oxidation potential than the compound of Formula I and which is capable of being incorporated into the polymer chain resulting from the polymerization reaction.

4,940,518

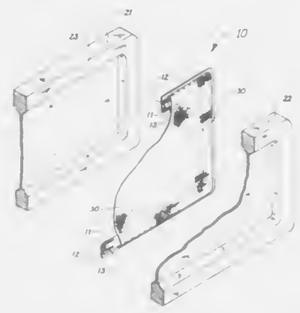
COMBINATION SEAL MEMBER AND MEMBRANE HOLDER FOR A FILTER PRESS TYPE ELECTROLYTIC CELL

Gregory J. E. Morris, Milan, Italy, assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1988, Ser. No. 249,638

Int. Cl.[5] C25B *1/24, 9/00, 13/00*

U.S. Cl. 204—128 **11 Claims**



8. A method of operating an electrolytic cell comprising:

(a) providing a seal member comprising a solid body structure in a picture frame type configuration having a groove therein forming a U-shaped member when viewed in cross-section, the bottom of the "U" of the U-shaped member forming the inside perimeter surface of the frame configuration and the "arms" of the U-shaped member forming the groove disposed toward the outside perimeter surface of the frame configuration, the groove adapted for holding the edges of a sheet-like member therein:

(b) inserting a sheet-like separator in the groove of the U-shaped seal member;

(c) interposing the seal member with separator between at least a first frame member and a second frame member, the separator spacing apart an anode and a cathode compartments defined by the first and second frame members and the separator;

(d) compressing the seal member with separator and the first and second frame members together;

(e) feeding an aqueous alkali metal halide solution to the electrolytic cell; and

(f) passing an electrical current from the anode to the cathode such that a halide is evolved at the anode.

4,940,519

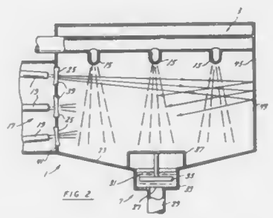
DETOXIFICATION APPARATUS AND METHOD FOR TOXIC WASTE USING LASER ENERGY AND ELECTROLYSIS

Robert G. Dames, 4444 Green Valley Dr., Arnold, Mo. 63010

Filed Jun. 27, 1988, Ser. No. 211,767

Int. Cl.[5] C02F *1/461, 1/30*

U.S. Cl. 204—130 **16 Claims**



1. A method of detoxifying liquid toxic organic waste material by a two step process, the method comprising in a desired order: a first step of subjecting the material to a laser beam by producing a laser beam within a vessel and directing the liquid waste material through the beam as particles, thereby creating sufficiently high temperatures within the material to incinerate the toxic waste, and a second step of electrolyzing said material; and thereafter a step of discharging the detoxified material from the vessel.

6. Detoxification apparatus for safely disposing of liquid toxic organic waste material by a two step process including high temperature incineration and electrolysis, the apparatus comprising: a closed reactive vessel having at least one inlet and at least one outlet; nozzle means for introducing the liquid waste material into the vessel through the inlet as a mist; laser means for producing a laser beam within the vessel, the liquid waste material mist passing through the beam with the beam energy creating sufficiently high temperatures within the waste material mist to incinerate the toxic waste; electrolysis means for electrolyzing the liquid waste material; and egress means for removing detoxified material from the vessel outlet for further processing.

4,940,520

PROCESS FOR THE PREPARATION OF 4-ACYLOXYAZETIDIN-2-ONE BY SINGLET OXYGEN OXIDATION

Joseph E. Lynch, Plainfield, N.J.; William L. Laswell, Perkasie, Pa.; Ralph P. Volante, East Windsor, and Ichiro Shinkai, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

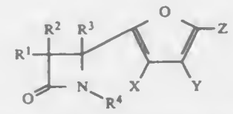
Filed Jun. 21, 1989, Ser. No. 369,155

Int. Cl.[5] B01J *19/08;* **C07D** *205/02, 205/06*

U.S. Cl. 204—157.71 **16 Claims**

1. A method for the production of 4-acyloxyazetidin-2-ones comprising the steps of:

(a) contacting with singlet oxygen to react at temperatures below about 0° C. in organic solvent a compound of the formula:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, C_{1-10} alkyl, C_{1-10} fluoroalkyl, alpha-carbon substituted C_{1-10} alkyl, alpha-carbon substituted C_{1-10} fluoroalkyl, where the alpha-carbon substituent is selected from the group consisting of hydroxyl and protected hydroxyl; R^3 is selected from the group consisting of hydrogen and C_{1-10} alkyl; R^4 is selected from the group consisting of hydrogen and a protecting group for nitrogen; and X, Y and Z are independently selected from the group consisting of hydrogen, halogen, C_{1-10} alkyl, C_6 or $_{10}$ aryl, C_{1-10} alkoxy, C_6 or $_{10}$ aryloxy; and

(b) warming the solution sufficiently to rearrange the reaction product of step (a) to the corresponding 4-acyloxy azetidin-2-one.

4,940,521

PROCESS AND APPARATUS FOR PRETREATING THE SURFACE OF A SINGLE-LAYER OR MULTILAYER MOLDED MATERIAL BY MEANS OF AN ELECTRICAL CORONA DISCHARGE

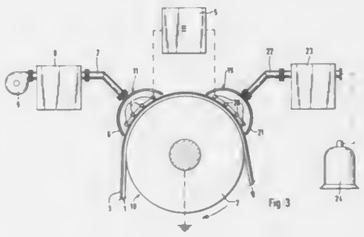
Peter Dinter, Oestrich-Winkel; Hermann Dallmann, Wiesbaden; Lothar Bothe, Mainz, and John D. Gribbin, Schlangenbad, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 8, 1989, Ser. No. 391,064

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827629

Int. Cl.[5] B05D *3/14*

U.S. Cl. 204—164 **23 Claims**



1. A process for pretreating the surface of a single-layer or multilayer molded material by means of an electrical corona

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discharge treatment taking place in the space between high voltage discharge electrodes and a grounded counter-electrode space therefrom, said space between said high voltage electrodes and said ground counter-electrode forming a corona discharge zone, where said single-layer or multilayer molded material is located, said process comprising: locating at least a portion of one surface of said molded material within said corona discharge zone; corona treating said molded material in said corona discharge zone; and at the same time introducing, by means of an air or gas stream, an aerosol into the corona discharge zone, said aerosol being formed by atomizing a liquid.

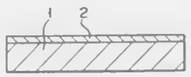
12. Apparatus for pretreating the surface of a molded material, comprising: a first electrostatic corona discharge means having first high voltage electrodes and a grounded counter-electrode having a metallic surface, said first high voltage electrodes being covered with dielectric material and arranged a distance away from said counter-electrode; a high-frequency, high voltage generator connected with said first high voltage electrodes; a first housing for shielding said first high voltage electrodes from the environment; an atomizer for atomizing liquid to yield a suspendible aerosol; a first line connected to said first housing on one end and to said atomizer on the other end; and a blower whose throughput can be regulated and which is connected to the atomizer which conveys the carrier gas for the aerosol through the atomizer into said first housing via said first line.

4,940,522

METHOD FOR MANUFACTURING PLATED STEEL SHEET FOR CANS

Hiroshi Kagechika; Tadahiko Mishima; Yoshinori Yomura; Hiroshi Ishikawa; Naoyuki Oniwa, and Yoshihiko Yasue, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 281,032, Dec. 7, 1988, Pat. No. 4,897,316.
This application Sep. 8, 1989, Ser. No. 404,841
Claims priority, application Japan, Dec. 29, 1987, 62-336859
Int. Cl.[5] C23C *14/02, 14/24, 14/34*
U.S. Cl. 204—192.1 **5 Claims**



1. A method of manufacturing a plated steel sheet for cans, comprising the steps of:

preparing a steel sheet having a bare surface which has an average central surface roughness of not more than 0.10 μm; and

performing vacuum deposition directly on the bare surface of said steel sheet to form a plating layer of metal or metal alloy and having a thickness of from 0.01 to 5 μm directly on the surface of said steel sheet, said plating layer having a high image clarity.

4,940,523

PROCESS AND APPARATUS FOR COATING FINE POWDERS

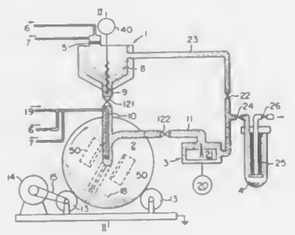
Eiki Takeshima, Chiba, Japan, assignor to Nisshin Steel Company Ltd., Tokyo, Japan

Filed May 31, 1989, Ser. No. 359,116
Claims priority, application Japan, Jan. 9, 1988, 63-140636; Mar. 27, 1989, 1-74770
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 **11 Claims**

1. A process for coating fine powder of a metal, a ceramic, a plastic or an organic pigment with a metal or a ceramic comprising:

(a) dispersing particles of said fine powder into primary particles by fluid jet mill treatment in an inert atmosphere;

(b) heating the dispersed fine powder in a heating zone of an inert atmosphere under reduced pressure;



(c) placing the heated powder in a rotary barrel sputtering chamber, forming a fluidized bed by rotating the barrel at a low speed, and coating said fluidized powder by sputtering as the barrel is being rotated.

4,940,524

ELECTROACTIVATED CATHODE MATERIALS

Jean-Maurice Perineau, Villiers Sur Marne, and Jean Bachot, Bourg La Reine, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jun. 20, 1988, Ser. No. 208,503
Claims priority, application France, Jun. 19, 1987, 87 08842
Int. Cl.[5] C25B *11/04*
U.S. Cl. 204—242 **22 Claims**

1. An electroactivated shaped article, which comprises a mass of fibrous material consolidated in a matrix of fluoropolymer binder, at least a portion of the fibers comprising said fibrous material being electrically conductive, said shaped article having a resistivity of less than 0.4 ohm cm and having at least one electrocatalytically active agent uniformly distributed therethrough, and said electrocatalytically active agent comprising at least one Raney metal, or Raney alloy depleted in fugitive metal values.

4,940,525

LOW EQUIVALENT WEIGHT SULFONIC FLUOROPOLYMERS

Bobby R. Ezzell, Lake Jackson, and William P. Carl, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 8, 1987, Ser. No. 47,814
Int. Cl.[5] C25B *13/08*
U.S. Cl. 204—252 **11 Claims**

5. A sulfonic fluoropolymer having a fluoropolymer backbone and having pendant groups attached thereto represented by the general formula:

$$ZSO_2\text{-}(CF_2)_a\text{-}(CFR_f)_b\text{-}O\text{-}$$

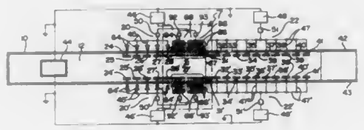
where Z is a halogen, an alkali metal, hydrogen, or OR; R is a branched or linear alkyl radical having from 1 to about 10 carbon atoms or an aryl radical; a is 0–2; b is 0–2; provided a+b is equal to 1 or 2; R_f is selected from the group consisting of —F,—Cl, perfluoroalkyl radicals having from 1 to about 10 carbon atoms and fluorochloroalkyl radicals having from 1 to about 10 carbon atoms, wherein the sulfonic fluoropolymer has an equivalent weight less than about 725.

4,940,526

ELECTROPHORETIC PAINTING APPARATUS

Stephen P. O'Neill, Drayton Plains, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1989, Ser. No. 434,738
Int. Cl.[5] C25D *13/00, 13/06, 13/12*
U.S. Cl. 204—300 EC **11 Claims**



1. An apparatus for electrophoretically depositing paint onto the surface of a substrate upon the application of a direct current thereto as said substrate is conveyed along the length of said apparatus comprising:

an elongated tank for containing a bath of said paint, said tank having an introductory region for admitting said substrate and an exit region for discharging said substrate, said tank being in part defined by two opposing longitudinal sides;

a coating region situated between said introductory and exit regions, said coating region comprising:

at least two primary electrode banks aligned in a first direction of said conveyance and operating at different electrical potentials, said banks each comprising two opposing arrays of electrodes aligned along said sides, said arrays comprising at least one electrode for immersion in said bath, each said electrode having a width extending in said first direction, a length extending in a second direction perpendicular to said first direction, and a frontal surface area equal to the product of said width and said length, wherein each higher potential array is separated from an adjacent lower potential array by a gap greater than said width and sufficient to substantially preclude flow of paint-depositing current therebetween through said bath, and

a plurality of spaced-apart auxiliary electrodes substantially filling each said gap, said auxiliary electrodes each (i) having a second surface area which is no greater than about 25 percent of said frontal surface area, and (ii) being at substantially the same potential as said lower potential bank;

a power source for establishing electrical potentials between said banks and said substrate such that the potential of each successive bank is greater than that of the substrate and the preceding bank in said direction;

electrical conducting means connecting said power source and said electrodes;

first diode means electrically interposed between each electrode of said adjacent lower potential bank and said power source, precluding direct current flow from each such electrode to any other said electrode within the same said array through said conducting means; and

second diode means electrically interposed between each of said auxiliary electrodes and said power source precluding direct current flow between auxiliary electrodes within the same said gap through said conducting means;

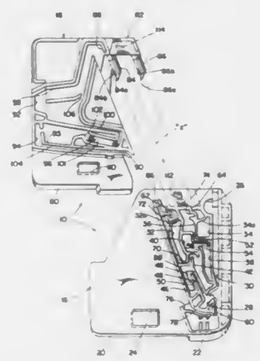
whereby said second diode means, in cooperation with said auxiliary electrodes, allow substantially continuous electrode placement within said coating region while restricting current flow from said higher potential bank to said adjacent lower potential bank to levels below which said paint will deposit on said lower potential bank.

4,940,527

TWO-PART TEST CARTRIDGE FOR CENTRIFUGE

Vidas P. Kazlauskas, Waukegan; Roger A. Janczak, Mundelein, and Benton A. Durley, III, Antioch, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 196,120, May 25, 1988, which is a continuation-in-part of Ser. No. 56,605, Jun. 1, 1987, abandoned. This application Apr. 12, 1989, Ser. No. 337,011
Int. Cl.[5] G01N *27/403*
U.S. Cl. 204—401 **12 Claims**



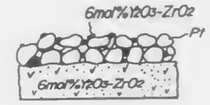
1. A two part test cartridge comprising a first disposable cartridge portion having a series of compartments and passageways including a sample entry port, an exit port, a return port leading to a chamber, and one or more calibrant chambers, and a second reusable cartridge portion interengageable with said first cartridge portion and having a series of compartments and passageways including an entry port adapted to interfit with said exit port of said first cartridge portion and an exit port adapted to interfit with said return port of said first cartridge portion to facilitate fluid flow from said disposable portion into said reusable portion and then back to said disposable portion, said reusable cartridge portion further comprising an ion selective electrode circuit.

4,940,528

OXYGEN SENSOR ELEMENTS

Shuichiro Oki, Aichi, and Fujio Ishiguro, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 6, 1989, Ser. No. 293,969
Claims priority, application Japan, Jan. 18, 1988, 63-8149
Int. Cl.[5] G01N *27/409*
U.S. Cl. 204—427 **9 Claims**



1. An oxygen sensor element for measuring oxygen partial pressure in an exhaust gas of an internal combustion engine, said oxygen sensor element comprising: an oxygen ion conductive solid electrolyte body; an electrode layer formed on outer and inner surfaces of said oxygen ion conductive solid electrolyte body; and a protective film formed on the outer electrode layer, at least the outer electrode layer having a thickness of 0.5 to 5.0 μm and consisting essentially of a platinum group metal in which a particulate refractory material is uniformly dispersed simultaneously with the formation of the outer elec-

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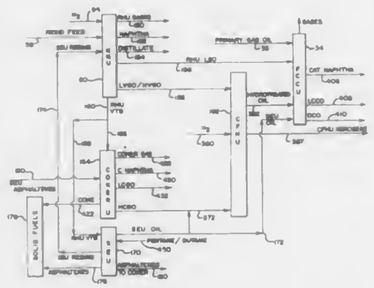
trode layer, the refractory material having a particle diameter in the range of 0.05 to 3.0 μm, wherein the diameter of said refractory material is not greater than 3.0 μm when the thickness of the outer electrode layer is not less than 3.0 μm and the diameter of said refractory material is not more than a thickness of the electrode layer when the thickness of the electrode layer is not greater than 3.0 μm.

4,940,529

CATALYTIC CRACKING WITH DEASPHALTED OIL

William I. Beaton, Wheaton; James L. Taylor, Naperville, both of Ill.; Lawrence B. Peck, Houston, Tex., and James F. Mosby, Burr Ridge, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 18, 1989, Ser. No. 381,295
Int. Cl.[5] C10G *49/00*
U.S. Cl. 208—61 **28 Claims**



1. A catalytic cracking process, comprising the steps of:
hydrotreating resid; thereafter deasphalting said hydrotreated resid to produce substantially deasphalted oil;
catalytically cracking said hydrotreated oil in a catalytic cracking unit in the presence of a cracking catalyst to produce upgraded oil leaving coked catalyst; and
regenerating said coked catalyst in the presence of a combustion-supporting gas comprising excess molecular oxygen in an amount greater than the stoichiometric amount required for substantially completely combusting the coke on said catalyst to carbon dioxide.

4,940,530

TWO-STAGE HYDROCARBON CONVERSION PROCESS

Simon G. Kukes, Naperville, Ill.; Albert L. Hensley, Jr., Munster, Ind.; Jeffrey C. Kelterborn, Hinsdale, and James L. Aderhold, Wheaton, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 21, 1989, Ser. No. 312,205
The portion of the term of this patent subsequent to Mar. 14, 2006, has been disclaimed.
Int. Cl.[5] C10G *65/12*
U.S. Cl. 208—89 **15 Claims**

1. A multiple stage process for hydroconversion of a hydrocarbon feedstock containing nitrogen- and sulfur-containing compounds which comprises:
(a) contacting said feedstock in a hydrotreating stage comprising a hydrotreating reaction zone wherein hydrogen is contacted with said hydrocarbon feedstock in the presence of a hydrotreating catalyst at hydrotreating conditions wherein a substantial portion of the nitrogen- and sulfur-containing compounds are converted to hydrogen sulfide and ammonia;
(b) passing at least a portion of the effluent from said hydrotreating reaction zone to a stripping zone wherein a substantial portion of the hydrogen sulfide and ammonia is removed from the hydrotreating reaction zone effluent to form a stripping zone effluent;
(c) contacting at least a portion of said stripping zone effluent in a hydrocracking stage wherein said stripping zone effluent is contacted with hydrogen at hydrocracking conversion conditions in the presence of a catalyst comprising a hydrogenation component comprising a nickel component and a tungsten component wherein the nickel component is present in an amount ranging from about 1 to about 10 wt. % and the tungsten component is present in an amount ranging from about 10 to about 30 wt. %, both calculated as oxides and based on the total catalyst weight and a support component consisting essentially of a crystalline molecular sieve component and an alumina component wherein the crystalline molecular sieve component is present in the support in an amount less than about 60 wt. % and greater than about 25 wt. % based on the total weight of the support component.

4,940,531

CATALYTIC CRACKING PROCESS EMPLOYING AN ACID-REACTED METAKAOLIN CATALYST

Roger J. Lussier, Ellicott City, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 171,496, Mar. 14, 1988, Pat. No. 4,843,052, which is a continuation of Ser. No. 786,711, Oct. 11, 1985, abandoned, which is a continuation of Ser. No. 552,894, Nov. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 367,648, Apr. 12, 1982, abandoned, and a continuation-in-part of Ser. No. 380,715, May 21, 1982, abandoned. This application Apr. 10, 1989, Ser. No. 335,015
Int. Cl.[5] C10G *11/02, 11/05, 11/18;* B01J *21/16*
U.S. Cl. 208—120 **7 Claims**

1. A method for cracking hydrocarbons which comprises reacting a hydrocarbon feedstock under catalytic cracking conditions with a catalyst which comprises an acid reacted metakaolin composition having a mole composition of about 0.8 to 1.0 Al_2O_3,2 SiO_2 and characterized by a surface area of above about 150 m^2/g.

4,940,532

CLEANUP OF HYDROCARBON CONVERSION SYSTEM

Roger L. Peer, LaGrange, and Michael B. Russ, Elmhurst, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 27, 1989, Ser. No. 413,143
Int. Cl.[5] C10G *35/09*
U.S. Cl. 208—138 **6 Claims**

1. In a process for the catalytic reforming of a substantially contaminant-free second hydrocarbon feed using a second reforming catalyst, in a catalytic-reforming system having equipment contaminated through contact with a contaminant-containing prior feed, the improvement comprising:
(a) contacting the first hydrocarbon feed in the catalytic-reforming system at first reforming conditions with a first reforming catalyst until contaminant removal from the conversion system is substantially completed and the system is contaminant-free; thereafter
(b) replacing the first reforming catalyst in the contaminant-free catalytic-reforming system with a second reforming catalyst; and thereafter
(c) contacting the second hydrocarbon feed in the contaminant-free catalytic-reforming system with the second reforming catalyst at second reforming conditions.

4,940,533

HYDROPROCESSING HYDROCARBON OILS

Howard D. Simpson, Irvine, and Pauline B. Borgens, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 192,379, May 10, 1988, Pat. No. 4,879,265, which is a continuation-in-part of Ser. No. 825,058, Jan. 31, 1986, Pat. No. 4,743,359, which is a division of Ser. No. 595,260, Mar. 30, 1984, Pat. No. 4,568,450, which is a division of Ser. No. 409,583, Aug. 19, 1982, Pat. No. 4,455,390. This application Sep. 29, 1989, Ser. No. 414,929
Int. Cl.[5] C10G *45/08*
U.S. Cl. 208—216 R **38 Claims**

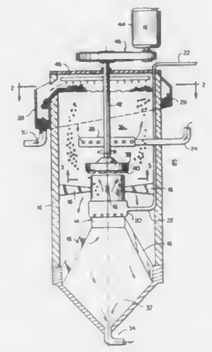
1. A catalytic hydroprocess of a hydrocarbon oil containing nitrogen or sulfur, said hydroprocess comprising contacting a catalytic composition with said hydrocarbon oil under hydroprocessing conditions so as to produce a product hydrocarbon oil containing less nitrogen or sulfur than said hydrocarbon oil, said catalytic composition prepared by the method comprising the steps of (1) impregnating porous refractory support particles with an aqueous impregnating solution comprising (a) one or more Group VIB metal components, (b) one or more phosphorus components and (c) citric acid, said citric acid in a mole ratio to said Group VIB metal components calculated as the Group VIB metal trioxide of less than 1 to 1, said solution having a pH less than 1.0 and (2) calcining the impregnated support particles to produce a catalytic composition containing a Group VIB metal component and a phosphorus component on said porous refractory oxide support.

4,940,534

FROTH FLOTATION COLUMN

John M. M. Harrison, Macon, Ga., assignor to J. M. Huber Corporation, Borger, Tex.

Filed Jul. 20, 1989, Ser. No. 382,302
Int. Cl.[5] B03D *1/16, 1/22, 1/24*
U.S. Cl. 209—169 **6 Claims**



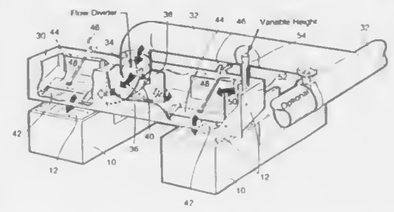
1. A flotation apparatus for separating particles by flotation out of a slurry comprising a column having an inlet for adding slurry into the column, and a froth launder at an upper end of the column for removing froth containing said fine particles, and an outlet at a lower end of the column for removing tailings from said column, a draft tube vertically oriented within the column and having upper and lower open ends, sparger means for injecting air into the slurry in the tube between the lower and upper ends of the draft tube, means for supplying air to the sparger means, and a rotary impeller immediately above the top end of the draft tube, said impeller including a rotary plate having a vertical rotational axis and means for rotating the same in said slurry to produce fine bubbles and permitting quiescent zones in the slurry above and below the position of the impeller.

4,940,535

SOLIDS FLOW DISTRIBUTION APPARATUS

William F. Fisher, Horning Norwich, England, and Grant A. Young, Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 28, 1988, Ser. No. 276,971
Int. Cl.[5] B07B *1/28;* B65G *53/40*
U.S. Cl. 209—250 **9 Claims**



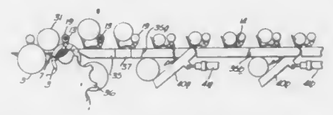
1. A feeder device for a plurality of solids separation devices, comprising:
a plenum disposed adjacent the solid separation devices, and including a flow inlet in communication with a source of flow of solids and liquid, and including lower outlets positioned adjacent inlet zones of each solid separation device;
sliding plate valve means for regulating the quantity of solids and liquids that flow from the lower outlets into the inlet zones of each solid separation device; and
variable distribution means connected within the plenum adjacent the flow inlet for regulating the proportion of solids directed towards each solids separation device.

4,940,536

APPARATUS FOR INSPECTING AND SORTING ARTICLES

Simon Cowlin, Kelsale; Leslie J. Clark, Colchester; Timothy J. Dennis, Colchester, and Charith A. Gunawardena, Colchester, all of United Kingdom, assignors to Lockwood Graders (U.K.) Limited, United Kingdom

Filed Nov. 12, 1987, Ser. No. 119,380
Claims priority, application United Kingdom, Nov. 12, 1986, 8626991; Nov. 12, 1986, 8626992; Dec. 3, 1986, 8628931
Int. Cl.[5] B07C *5/16*
U.S. Cl. 209—592 **15 Claims**



1. Apparatus for sorting articles, which apparatus comprises a first endless conveyor comprising a plurality of rollers arranged with their axes transverse to the direction of motion of the first conveyor, said first conveyor being arranged to carry articles to be sorted.
means for causing the first conveyor to move through an inspection region,
means for inspecting articles on the conveyor in the inspection region,
means for causing rotation of the rollers in the inspection region, thereby to cause rotation of the articles in the inspection region,
means for conveying said articles to a sorting zone provided

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with at least one bank of actuators for depositing respective ones of the articles,

means responsive to said inspecting means for controlling said actuators,

a second endless conveyor, having a plurality of carriers for the articles, the carriers being pivotally mounted for movement with the second conveyor, on pivot axes transverse to the direction of motion of the second conveyor, a plurality of the said carriers being provided on each said pivot axis, and the pivot axes of the carriers being spaced apart, and means for causing part of the second conveyor to move together with the first conveyor such that a coaxially pivoted plurality of said carriers are located between a respective pair of rollers of said first conveyor,

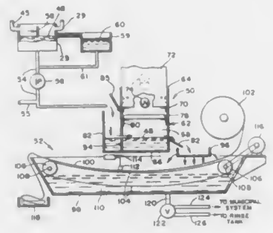
wherein the path of the first and second conveyors is such as to cause the carriers to lift the articles from between the respective pair of rollers, and for the second conveyor alone to convey the said articles to said sorting zone, and wherein actuation of said actuators moves respective ones of said carriers to deposit the articles carried therein.

4,940,537

WATER PURIFICATION SYSTEM

Charles M. Muisener, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jan. 11, 1988, Ser. No. 142,738
Int. Cl.[5] C02F *1/32, 1/52*
U.S. Cl. 210—96.1 26 Claims



1. Apparatus for purifying, in a continuous operation, rinse water containing a monomer emulsion of the anaerobic or heat cure variety plus a photoinitiator to cause the generation of radicals to initiate polymerization upon exposure to UV energy comprising:

curing means proximate to but spaced from the rinse water for exposing the rinse water containing the monomer emulsion to UV energy to cause the emulsion to polymerize;

delivery means for directing uninterrupted flow of the rinse water containing the emulsion past and proximate to said curing means at a rate sufficient to substantially complete polymerization of the emulsion in the rinse water; and

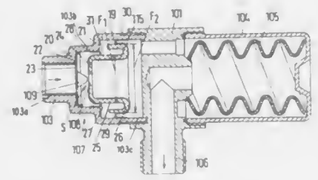
filter means positioned downstream of said curing means to receive from said curing means the irradiated rinse water containing the polymer, said filter means operable for removing the polymer from the rinse water.

4,940,538

APPARATUS FOR DECALCIFING WATER BY PRODUCING TURBULENCE

Erik Kyster, Sonderborg; Niels-Henrik G. Jakobsen; Jens J. Molbaek, both of Nordborg; Ole Stenderup, Sonderborg, and Bjarne Straede, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 21, 1989, Ser. No. 312,679
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807876
Int. Cl.[5] C02F *5/02*
U.S. Cl. 210—137 10 Claims



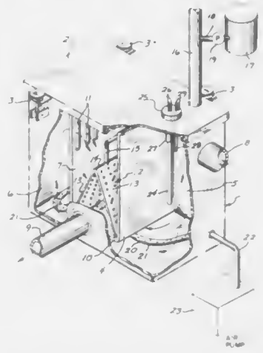
8. Apparatus for decalcifing water by producing turbulence, comprising an annular throttle point member having a water flow passage extending therethrough and has an inlet end, the throttle point member having wall means defining a first bore portion and a second bore portion downstream of the first bore portion that forms at least part of the water flow passage, the first bore portion opening to the second bore portion, and first means mounted by said member to extend within said passage to at least in part extend adjacent to the opening of the first bore portion to the second bore portion for creating turbulent flow that causes cavitation downstream thereof independent of the quantity of water flow, said first means including second means movable in an opening direction by the force of the quantity of water flow from the inlet end and subject to a counterforce for varying the effective area of the opening of the first bore portion to the second bore portion, said throttle point member and first means cooperatively forming a variable throttle point, the throttle point member having a third bore portion that opens to the second bore portion, is of a larger diameter than the second bore portion and is axially opposite the second bore portion from the first bore portion, the second means including a generally cup shaped member having a base plate axially adjacent to the first means, the base plate having an aperture extending axially therethrough and opening to the first means, a rim portion of a larger diameter than the base plate, located in the third bore portion and located downstream of the base plate from the first means and a cylindrical portion extending axially between the base plate and the rim portion, the cylindrical portion having a radial inner surface, a galvanically soluble metal coating on the radial inner surface, a first diaphragm connected to the cylindrical portion, the wall means defining the third bore portion, and a second diaphragm downstream of the first diaphragm and connected to the cup shaped member and to the wall means defining the third bore portion, the diaphragms, the wall means and the cup shaped member defining a pressure relief chamber and the first means having a closure portion that converges toward the base plate aperture for closing the aperture, the cup shaped member being movable under water pressure away from the closure portion to permit water flow from the inlet end, through the first means and through the base plate aperture into the cup shaped member, and thence downstream thereof.

4,940,539

GREASE TRAP CONSTRUCTION

Myer M. Weber, Milwaukee, Wis., assignor to Semco Laboratories, Inc., Milwaukee, Wis.

Filed May 8, 1989, Ser. No. 348,868
Int. Cl.[5] C02F *3/02;* E03F *5/16*
U.S. Cl. 210—149 15 Claims



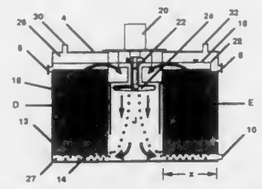
1. A grease trap construction, comprising a housing having an inlet to receive waste water containing grease and foreign material and having an outlet, a screen disposed in said housing between said inlet and said outlet in the flow path of said waste water, said screen being constructed and arranged to collect said grease and foreign material, air supply means for introducing air into the housing into contact with said waste water, heating means disposed in the housing for heating said waste water, temperature control means for operating said heating means and maintaining the temperature of the waste water within predetermined limits, an aqueous composition containing a mixture of enzymes and aerobic bacterial spores, and liquid supply means for supplying said composition into contact with said waste water in the housing.

4,940,540

SUBMERGED BIOLOGICAL WASTEWATER TREATMENT SYSTEM

Curtis S. McDowell, Allentown, Pa., assignor to Tri-Blo, Inc., Allentown, Pa.

Division of Ser. No. 70,899, Jul. 8, 1987, Pat. No. 4,818,404.
This application Jan. 23, 1989, Ser. No. 298,937
Int. Cl.[5] C02F *3/06*
U.S. Cl. 210—150 5 Claims



1. In an apparatus for treating an aqueous liquor containing biodegradable waste chemicals in a vessel having an inlet and outlet said biological digestion being accomplished by contacting the liquor with microorganisms growing in slimes on submerged surfaces of a packing material contained in said vessel through which water and gases move freely; the improvement which comprises:

a sealed vessel having at least first vertically-extending chambers within the vessel, these first chambers forming an annulus around a second centrally-located vertically-extending chamber, said first chamber(s) being in fluid communication with each other only at the top and bottom ends and said second chamber being in fluid communication with said first chamber(s) only at the top and bottom ends; and the space between the sealed vessel and top of the chambers defining a top freeboard chamber above the first and second chambers and the space above the sealed vessel and the bottom of the chambers defining a bottom freeboard chamber below the first and second chambers;

each first vertically extending chamber having a porous matrix within having a large surface area suitable for attachment of microorganisms within the confines of said first annular vertically-extending chamber(s),

pumping means placed in said second centrally located chamber for effecting downward flow in the centrally located chamber and upwardly through said first annular vertically-extending chambers and the packing material; and

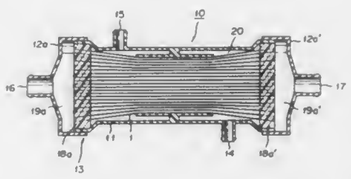
means for introducing gases to the central chamber for downward flow in said second central chamber.

4,940,541

BLOOD CLEANING HOLLOW FIBER MEMBRANE, METHOD FOR CLEANING BLOOD, AND APPARATUS THEREFOR

Juuro Aoyagi, Tokyo, Japan, assignor to Tokyo Bi-Tech Laboratories, Inc., Tokyo, Japan

Filed Nov. 1, 1988, Ser. No. 265,822
Claims priority, application Japan, Feb. 11, 1987, 62-275749; Apr. 11, 1987, 62-277486; Apr. 11, 1987, 62-277487
Int. Cl.[5] B01D *63/02, 63/04, 65/02, 69/08*
U.S. Cl. 210—321.8 6 Claims



1. A method of making a blood cleaning apparatus comprising: arranging inside a housing a multiplicity of blood cleaning hollow fiber membranes each comprising a hydrophobic porous hollow fiber membrane, causing the empty spaces inside said hollow fiber membranes to communicate with a blood inlet and a blood outlet disposed in said housing, causing the empty spaces defined by the inner surfaces of said housing and the outer surface of said porous hollow fiber membranes to communicate with a cleaning liquid inlet and a cleaning liquid outlet disposed in said housing, filling the inner empty space of the hydrophobic porous hollow fiber membranes with a hydrophilic compound, and concurrently sterilizing the apparatus and forming a hydrophilic thin layer at least on the inner surface of said hollow fiber membrane by the grafting of the hydrophilic compound through the agency of gamma rays.

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4,940,542

LIQUID PURIFYING DEVICE

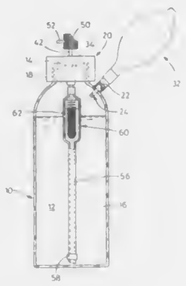
Kazuo Simizu, Nagoya; Shin Sakai, Aichi; Satoru Matsumoto, Nagoya; Osamu Yamamoto, Ichikawa, and Hisao Tanaka, Nagoya, all of Japan, assignors to Tomei Sangyo Kabushiki Kaisha, Nagoya and Mitsubishi Rayon Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 340,037, Apr. 18, 1989, abandoned. This application Oct. 27, 1989, Ser. No. 428,004

Claims priority, application Japan, Apr. 21, 1988, 63-98924; Mar. 31, 1989, 64-183003

Int. Cl.[5] E01D *61/00*

U.S. Cl. 210—321.8 16 Claims



1. A liquid purifying device for dispensing a liquid, comprising:

a container having an enclosed interior space in which a mass of said liquid is stored;

first valve means, attached to said container, for permitting a supply flow of a pressurized gas therethrough into said interior space of the container to raise a pressure within said interior space, and for inhibiting a discharge flow of said pressurized gas and said liquid therethrough out of said interior space;

a liquid delivery path having one end submerged in said mass of the liquid and extending through said container such that the other end is disposed outside said interior space, said liquid being delivered out of said interior space through said liquid delivery path, due to the pressure within said interior space which is raised by said pressurized fluid;

second valve means, disposed in said liquid delivery path, for selectively closing and opening the liquid delivery path to prevent contamination by microorganisms of liquid which has been purified but not yet delivered; and

means for filtering said liquid to remove microorganisms from the liquid delivered through said other end of said liquid delivery path consisting essentially of a micro-porous membrane disposed in a portion of said liquid delivery path which is upstream of said second valve means, as viewed in a direction in which said liquid is delivered out of said interior space, said micro-porous membrane filtering said liquid to remove microorganisms from the liquid delivered through said other end of said liquid delivery path.

4,940,543

PLASMA COLLECTION SET

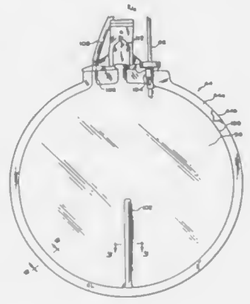
Richard I. Brown, Northbrook; David E. Ceray, Crystal Lake; John T. Foley, Wheeling, and Joseph C. West, Jr., Fox Lake, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 8,718, Jan. 30, 1987, Pat. No. 4,806,252. This application Nov. 30, 1988, Ser. No. 277,890

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—369 16 Claims



1. A fluid collection set, usable in the collection of a quantity of fluid, and positionable in part in a receiving chamber of a centrifuge for the purpose of separating, by centrifugation, a selected fluid component, the set comprising:

a flexible, disk-shaped collection container defining an interior collection volume in which a quantity of fluid can be collected with said collection container having a circular, sealed periphery, and a generally radial container wall heat seal line extending from said periphery toward a center thereof, thereby blocking circumferential fluid flow along said periphery;

a fluid flow contact with a proximal end and a distal end, said proximal end in fluid flow communication with said interior collection volume;

a separated component container in fluid flow communication with said distal end of said conduit with said disk-shaped collection container rotatable in the receiving chamber while simultaneously coupled to said component container so as to accumulate the component separated from the quantity of fluid rotated in the receiving chamber.

4,940,544

DECENTRAL WASTEWATER TREATMENT PROCESS

Peter Gode, Langenfeld; Jens P. Riebe, and Lutz Jeromin, both of Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 14, 1988, Ser. No. 219,424

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723718

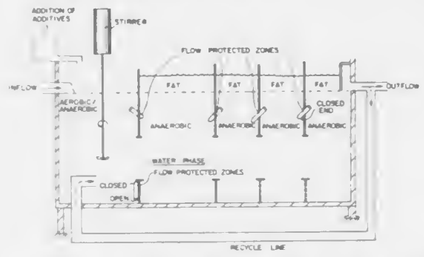
Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—603 22 Claims

1. A process for the continuous flow decentral treatment of wastewaters polluted with one or more fats, proteins, or carbohydrates comprising the steps of

A. containing the polluted wastewater in a region containing at least one flow-protected zone, which is a packed or sponge filled blind end tube which acts as a microorganism reservoir, with both aerobic and anaerobic microorganisms for a time sufficient to at least partially degrade the pollutants in the wastewater to fermentation products;

B. contacting the wastewater containing the fermentation products in a region containing at least one flow-protected zone, which is a packed or sponge filled blind end tube which acts as a microorganism reservoir, with anaerobic microorganisms for a time sufficient to convert most of the fermentation products and any remaining pollutants into digester gas and biomass; and



C. separating the digester gas and biomass from the wastewater;

wherein when conditions are such in the operation of the process that microorganisms in step A or B or both are destroyed in the non-flow-protected zones of said regions, repopulating the wastewater in step A or B or both the microorganisms present in the blind end tubes.

4,940,545

AEROBIC WASTE SLUDGE DIGESTER-THICKENER ORBITAL SYSTEM AND METHOD

David DiGregorio; Richard J. Elsmin, both of Salt Lake City, and Frederick M. Riser, Sandy, all of Utah, assignors to Baker Hughes, Inc., Houston, Tex.

Filed Mar. 29, 1989, Ser. No. 330,017

Int. Cl.[5] C02F *3/14*

U.S. Cl. 210—609 18 Claims



1. In combination, an orbital ditch comprising an orbital aerobic digestion section formed by a pair of uncovered parallel flow channels bounded by a pair of liquid-confining walls, and an upstanding elongated center partition between and spaced from said walls;

a ditch bottom; and

ditch endwalls spaced from end sections of said partition to form with said channels a closed loop liquid-solids flow path;

means in said closed loop flow path for aerating and transporting a waste activated sludge liquid-solids mixture around said closed loop flow path; and

a cylindrical thickener section within the confines of said flow path, said thickener section including:

a sidewall formed by one of said ditch endwalls;

a thickener section bottom extending to a plane below said ditch bottom; and

a rotatable thickener rake having blades positioned in said thickener section above said thickener section bottom and below said ditch bottom for transporting sludge settling in said thickener section to a sludge outlet in said thickener section bottom.

4,940,546

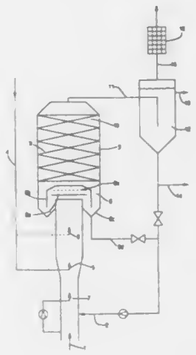
INSTALLATION FOR AEROBIC BIOLOGICAL PURIFICATION OF POLLUTANT-CONTAINING WATER

Alfons Vogelpohl, Clausthal-Zellerfeld, and Norbert Rabiger, Meiseweg, both of Fed. Rep. of Germany, assignors to TECON GmbH, Clausthal-Zellerfeld, Fed. Rep. of Germany

Filed Feb. 23, 1989, Ser. No. 313,850

Int. Cl.[5] C02F *3/06, 3/22*

U.S. Cl. 210—613 15 Claims



1. A process for aerobic biological purification of pollutant-containing water in an apparatus consisting of an axial-flow submerged reactor and a sedimentation tank connected downstream therefrom for separation of biosludge from purified water, wherein said reactor is a pipe containing a two-stage activated-sludge chamber, said pipe comprising:

(a) a first activated-sludge stage in which a driving-jet nozzle is disposed upstream from said stage for the dispersion of air and microorganisms in waste water to be purified; and

(b) a second activated-sludge stage in which internals are disposed for homogeneous dispersion of gas bubbles and microorganisms, as well as for immobilization of said microorganisms wherein said process comprises the steps of:

(i) waste water to be purified is fed through a supply line to the reactor;

(ii) microorganisms and supply air are dispersed in the waste water in the first activated-sludge stage by means of a driving-jet nozzle disposed upstream of the first stage;

(iii) the air-waste water-microorganisms mixture flows through the first activated-sludge stage and is deflected by a deflector plate into a degassing pipe, such that said mixture is degassed by means of opening into the second activated-sludge stage through which gas can pass, and said degassed mixture is passed into an intermediate sedimentation tank for separation of a sedimented mass;

(iv) the air-waste water-microorganisms mixture is subjected to a posttreatment in the second stage, such that air bubbles, microorganisms and water are homogeneously dispersed by the internals, and

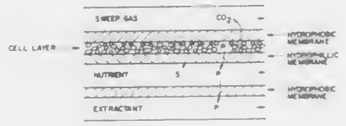
(v) the mixture flows through a connecting pipe into a sedimentation tank, wherein the separation of the microorganisms from the purified water takes place and outgassing is accomplished through an exhaust-air line.

4,940,547

USE OF INHIBITORY SOLVENTS IN MULTI-MEMBRANE BIOREACTOR

Tookyon Cho, and Michael L. Shuler, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 7, 1986, Ser. No. 882,803
Int. Cl.[5] B01D *13/00*
U.S. Cl. 210—643 5 Claims



1. A method of separating biological product from the cell layer of a membrane-moderated biological reaction using an organic solvent which is normally toxic toward the biological reaction when in contact with product producing cells in the cell layer which method comprises:

separating said product from the cell layer by means of hydrophobic immobilized liquid membrane which contains said toxic organic solvent and which is adapted to absorb said product thereby recovering said product and preventing said product from accumulating to high concentrations in the cell layer while preventing the toxic solvent from adversely affecting the rate and extent of the biological reaction,

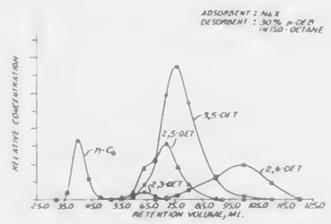
said toxic solvent-containing hydrophobic immobilized membrane having a critical aqueous phase entry pressure higher than the pressure employed in the biological reaction to feed aqueous nutrients to said cell layer, and said pressure employed to feed aqueous nutrients to the cell layer being higher than the pressure on the solvent side of the immobilized membrane.

4,940,548

CHROMATOGRAPHIC SEPARATION PROCESS FOR RECOVERING INDIVIDUAL DIETHYLTOLUENE ISOMERS

Hermann A. Zinnen, Evanston, Ill., assignor to UOP, Des Plaines, Ill.

Filed Apr. 17, 1989, Ser. No. 339,536
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—656 28 Claims



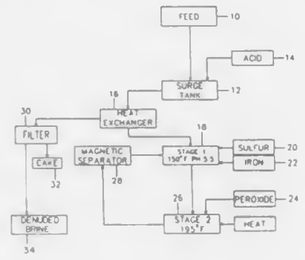
1. A process for separating isomers of diethyltoluene from a feed mixture thereof, said feed mixture comprising at least one isomer from the group 2,6-diethyltoluene and 3,5-diethyltoluene and at least one other isomer of diethyltoluene said process comprising contacting said feed mixture at adsorption conditions with an adsorbent selected from the group consisting of X type zeolites, cation exchanged with barium and potassium cations or a sodium, lithium, or copper cation or mixtures thereof and Y type zeolites cation exchanged with barium, calcium, sodium, potassium or copper cations or mixtures thereof, thereby selectively adsorbing one of said isomers, removing at least one relatively non-adsorbed isomer from contact with said adsorbent and recovering said adsorbed isomer by desorption, at desorption conditions, with a desorbent material comprising monocyclic alkyl substituted aromatics.

4,940,549

METHOD FOR REMOVING TOXIC METALS FROM AGRICULTURAL DRAIN WATER

Orrie C. Olsen, and Peter F. Santina, both of Walnut Creek, Calif., assignors to Santina Water Company, Concord, Calif.

Filed Jan. 31, 1989, Ser. No. 304,497
Int. Cl.[5] C02F *1/48, 1/70*
U.S. Cl. 210—695 18 Claims



1. A method for removing soluble selenium from a solution of agricultural tile drain water, or irrigation effluent, comprising,

adjusting the pH of the solution to a range of about 3.0 to 6.0,

adding a reducing agent to the solution, with agitation, and forming a slurry with the solution and reducing agent,

adding wettable elemental sulfur to the solution,

the amounts of the reducing agent and of the sulfur being selected in combination to permit recovery of the selenium with additional steps of:

continuing to agitate the slurry,

after a period of time within which the pH of the slurry rises and then stabilizes, oxidizing the slurry sufficiently to effect selenium recovery as a precipitate, and continuing to agitate the slurry substantially continuously, and

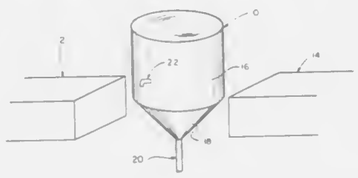
separating the recovered, precipitated selenium.

4,940,550

MULTI-STEP PROCESS FOR CONCENTRATING MAGNETIC PARTICLES IN WASTE SLUDGES

John L. Watson, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed May 2, 1989, Ser. No. 346,554
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—695 12 Claims



7. A method of increasing the solids content of a sludge which contains magnetizable suspended solids, comprising the following steps:

a. mixing a chemical flocculating agent with the sludge;

b. allowing particles in the sludge to form aggregated magnetic particles under non-turbulent conditions within a treatment tank positioned in a magnetic field;

c. subjecting the sludge to the magnetic field which will pull the aggregated magnetic particles in a selected direction, causing them to form a compacted sludge;

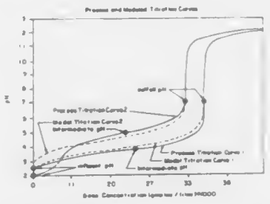
d. filtering the sludge through a filter layer placed inside the tank to convert the compacted sludge into a dewatered cake.

4,940,551

METHOD FOR PH CONTROL

James B. Riggs, 2609 24th St., Lubbock, Tex. 79410, and R. Russell Rhinehart, 3920 96th St., Lubbock, Tex. 79423

Filed May 19, 1989, Ser. No. 354,344
Int. Cl.[5] C02F *1/66*
U.S. Cl. 210—743 14 Claims



1. A process for automatically controlling the pH in a process fluid stream by flowing an acid or base reagent stream into the process stream,

a. said process stream having

i. an influent section flowing into

ii. an intermediate section flowing into

iii. an outfall section,

iv. a device to measure the process stream flow rate, and

v. wherein said process comprises the steps of measuring pH in the influent, intermediate, and outfall sections,

b. also

i. injecting a first portion of said reagent stream between said influent and intermediate sections,

ii. injecting a second portion of said reagent stream between said intermediate and outflow sections,

iii. proportioning the reagent stream between the first and second portions

iv. measuring the flow rate of the reagent stream, and

v. controlling the reagent flow rate by estimating a titration curve for the process stream that conforms to the measured pH and injected reagent portions, using said titration curve to estimate the desired reagent flow, and controlling the reagent flow to the estimated desired reagent flow.

4,940,552

PASSIVATION OF POLYAMINE DISPERSANTS TOWARD FLUOROHYDROCARBON COMPOSITIONS

John A. Cengel, Wheaton, and Peter G. Pappas, Downers Grove, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 246,008, Mar. 20, 1981, abandoned. This application Apr. 30, 1982, Ser. No. 373,683
Int. Cl.[5] C10M *1/36*
U.S. Cl. 252—51.5 A 7 Claims

1. A composition comprising the reaction product of a Mannich polyamine dispersant with maleic anhydride, said polyamine dispersant containing at least one primary or secondary amine and being effective as a dispersant additive for lubricating oils; and wherein the amount of maleic anhydride is effective to reduce the reactivity of said Mannich polyamine dispersant toward fluorohydrocarbon compositions.

4,940,553

AQUEOUS NICKEL HYDROXIDE PASTE OF HIGH FLOWABILITY

Klaus von Benda, Nurtingen; Gábor Beszcàr-Ürmössy, Stuttgart, and Gerhard Berger, Deizisau, all of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 357,273
Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817826
Int. Cl.[5] H01M *4/32*
U.S. Cl. 252—182.1 11 Claims

1. Aqueous $Ni(OH)_2$ paste of high flowability for the vibration filling of foam-structure and fiber-structure electrode plaques having a content of nickel hydroxide of about 30 to 50% by volume, a maximum particle size of about 0.04 mm, a plastic viscosity of about 0.1 to 1 Pa.s and a yield value of between about 10 and 120 Pa, and also a pH of between about 9 and 12, which, in addition, also contains a dispersant, wherein the dispersant is selected from one of the group consisting of water-soluble salts of derivatives of di- and polyphosphonic acids and the group consisting of water-soluble salts of polyphosphoric acid, wherein the polyphosphoric acid has about 3 to 20 phosphorus atoms per molecule.

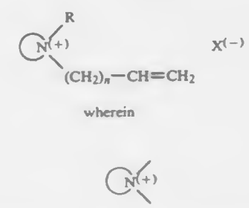
4,940,554

CONDITIONING AGENT FOR THE TREATMENT OF BASE MATERIALS

Hans-Joachim Grapentin; Hubert-Matthias Seidenspinner, and Detlef Tessmann, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 899,922, Aug. 25, 1986, Pat. No. 4,281,990. This application Feb. 5, 1988, Ser. No. 152,539
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1985, 3530617
Int. Cl.[5] C07D *293/12*
U.S. Cl. 252—357 15 Claims

1. Conditioning agent for treatment of base materials for subsequent complete and uniform metallization comprising an aqueous solution of a non-ionogenic cleaning agent an active agent selected from the group consisting of quaternary salts of N-alkenyl-substituted cyclical nitrogen compounds of formula (I):



(I)

wherein

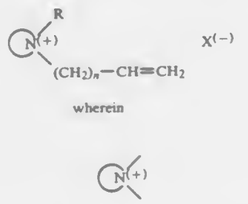
represents a cyclical nitrogen cation,

R is a member selected from the group consisting of hydrogen, alkyl radicals containing from 1 to 4 carbon atoms and hydroxy-substituted alkyl radicals containing from 1 to 4 carbon atoms,

n is a member selected from the group consisting of 0 and 1, and $X^{(-)}$ is a member selected from the group consisting of anions of inorganic acids and anions of organic acids.

15. Conditioning agent for treatment of base materials for subsequent complete and uniform metallization comprising a

nonionogenic cleaning agent; a dicarboxylic acid selected from the group consisting of oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid and maleic acid; and an aqueous solution of an active agent selected from the group consisting of quaternary salts of N-alkenyl-substituted cyclical nitrogen compounds of formula (I):



(I)

wherein

represents a cyclical nitrogen cation,

R is a member selected from the group consisting of hydrogen, alkyl radicals containing from 1 to 4 carbon atoms and hydroxy-substituted alkyl radicals containing from 1 to 4 carbon atoms,

n is a member selected from the group consisting of 0 and 1, and $X^{(-)}$ is a member selected from the group consisting of anions of inorganic acids and anions of organic acids.

4,940,555

STORAGE-STABLE ANIONIC LIQUID DETERGENT COMPOSITIONS CONTAINING AMPHOTERIC DISTYRYL DERIVATIVE FLUORESCENT WHITENERS

Claude Eckhardt, Riedisheim, France, and Heinz Hefti, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

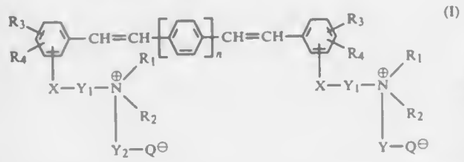
Filed Mar. 15, 1989, Ser. No. 323,707

Claims priority, application Switzerland, Mar. 25, 1988, 1144/88

Int. Cl.[5] C09K *11/06;* C11D *1/02, 3/42, 17/08*

U.S. Cl. 252—543 **7 Claims**

1. An anionic liquid detergent composition containing 1 to 60% of an anionic surfactant and 0.01 to 2% of a fluoroescent whitening agent consisting of an amphoteric distyryl compound, or a mixture of distyryl compounds, of formula I



(I)

wherein

X is oxygen, sulfur, a direct bond, $—SO_2N(R_5)$, $—CON(R_5)$ or —COO—,

Y_1 and Y_2 are each independently of the other C_1–C_4alkylene or hydroxypropylene,

R_1 and R_2 are each independently of the other C_1–C_4alkyl or $—NR_1R_2$ is a pyrrolidine, piperadine, hexamethylenimine of morpholine ring, and R_1 together with R_3 is also a piperazine ring,

R_3 and R_4 are each independently of the other hydrogen, C_1–C_4alkyl, halogen, C_1–C_4alkoxy, C_3–C_4alkenyl, —CN or, in ortho-position to each other, together are a trimethylene or tetramethylene group,

R_5 is hydrogen, C_1–$_4$alkyl, cyanoethyl or, together with R_1 is a piperazine ring,

Q is —COO or $—SO_3$, and

n is 1 or 2.

4,940,556

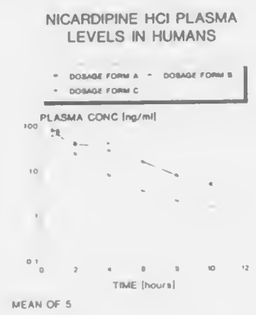
METHOD OF PREPARING LONG ACTING FORMULATION

Calum B. MacFarlane, Linlithgow; Alastair B. Selkirk, Edinburgh, and Michael J. Dey, East Calder, all of Scotland, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 823,896, Jan. 30, 1986, abandoned. This application Jul. 26, 1987, Ser. No. 57,469

Int. Cl.[5] B29B *9/12*

U.S. Cl. 264—15 **12 Claims**



1. A method of preparing spheroids which are suitable for administration to humans and which provide long-acting sustained release of a therapeutically effective amount of dihydropyridine calcium channel blocker, which method consists essentially of;

(a) forming an essentially aqueous wet mass comprising an effective amount of the calcium channel blocker in admixture with a pH-dependent binder which is less soluble at lower pH and more soluble at higher pH, wherein the binder constitutes about 5 to 50 weight percent of each spherical partical;

(b) extruding the wet mass to form rod-shaped, substantially cylindrical segments having diameters in the range of up to 1.2 millimeters;

(c) shaping the rod-shaped segments into spheroids; and

(d) drying the spheroids to obtain spheroids having area radius to circumference radius ratios in the range of 0.85 to 1.0.

4,940,557

METHOD OF MANUFACTURING MOLDING MEMBERS

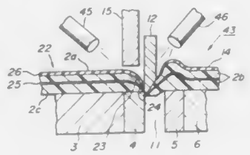
Kaoru Kimura, Yokohama City, Japan, assignor to Hashmoto Forming Industry Co., Ltd., Yokohama City, Japan

Filed Dec. 27, 1988, Ser. No. 289,831

Claims priority, application Japan, Dec. 28, 1987, 62-333344; Dec. 28, 1987, 62-333345; Jan. 29, 1988, 63-19287; Jan. 29, 1988, 63-19288

Int. Cl.[5] B29C *35/12;* B28B *11/16*

U.S. Cl. 264—26 **7 Claims**



1. A method of manufacturing molding members composed of a thermoplastic synthetic resin material, comprising the steps of forming said resin material into an elongate shaped body with a profiled cross-section corresponding to that of the molding member, and cutting the shaped body on at least one end into a predetermined length of the molding member;

wherein said shaped body is subjected to such a controlled heating that the shaped body has its interior portion heated above the softening temperature of the resin material whereby its interior portion becomes softer than its outer surface portion; and

wherein a cutter blade is advanced into the shaped body while it is subjected to said controlled heating outer surface portion inwardly, without it being cut or ruptured by the blade, to form a curved end surface of the molding member which is continuous with the remaining outer surface, and subsequently cutting away the outer surface portion;

wherein the cut surface has a minimized surface area, and the outer surface portion substantially covers the interior portion and is arranged on a substantially rear side of the shaped body so as not to be visible from outside when the molding member is mounted in place.

4,940,558

METHOD FOR MOLDING ARTIFICIAL URETHANE ROCK

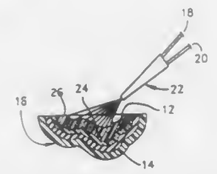
Enos D. Jarboe, University City; Rodney D. Jarboe, Creve Coeur, and Edward M. Barclay, Affton, all of Mo., assignors to Futura Coatings, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 128,029, Dec. 3, 1987, Pat. No. 4,847,026. This application Jul. 10, 1989, Ser. No. 377,713

The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.7 **16 Claims**



1. A method for molding an artificial urethane rock which comprises selecting a rock to be reproduced, creating a flexible rubber mold and supporting cradle having a mold cavity conforming to the exterior of said rock, said mold having a substantial degree of flexibility and being created by applying an uncured liquid rubber forming material to said rock, curing said uncured liquid rubber forming material to produce said rubber mold, said cradle being formed by applying by spraying a low density urethane foam forming mixture to the exterior of the rubber mold to provide a self-supporting cradle, spraying a two sided urethane composition into the mold cavity, said urethane composition comprising an isocyanate side and a polyol side and being mixed in a spray gun in a spray-in-mold process, carrying out said spraying to build up the molded artificial urethane rock to a desired thickness and stripping said cradle and mold from the molded artificial urethane rock after curing.

4,940,559

PROCESS FOR THE PRODUCTION OF UNIFORM POY FILAMENTS

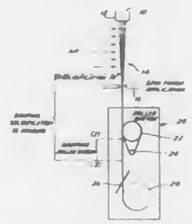
Bernd Kretschmann, Kronberg, and Dietmar Wandel, Hanau, both of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 9, 1988, Ser. No. 281,636

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1988, 3819913

Int. Cl.[5] D01D *5/12*

U.S. Cl. 264—130 **7 Claims**



1. A method for the production of pre-oriented low crystalline, synthetic filaments characterized by a high degree of uniformity and ability to be worked at high speeds in a friction-draw texturing process, comprising:

spinning the filaments from a molten polymer mass;

solidifying and applying a spin finish to said filaments;

passing said filaments along a filament path into a draw-off machine having a system of rollers and a winding unit;

said system of rollers comprising a driven roller and a freely-rotating smaller roller around which rollers the filaments are wrapped more than one time;

the mean filament tension between said rollers and said winding unit being equal to or less than one-half the yield point tension of a stress-strain curve for said filaments;

whereby

the number of wraps is selected to produce a damping ratio of the fluctuation in tension of the filament between the point of solidification and said winding unit of less than 0.10;

said damping ratio being defined as the ratio of the fluctuation range of the filament tension at the beginning and at the end of said filament path.

4,940,560

PROCESS FOR PREPARING ANTISTATIC FIBER

Tatsuhiko Shizuki; Kaoru Ban; Fumikazu Yoshida, and Masakatsu Ohguchi, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Continuation of Ser. No. 853,081, Apr. 17, 1986, abandoned, which is a division of Ser. No. 600,054, Apr. 13, 1984, Pat. No. 4,600,743. This application Apr. 25, 1988, Ser. No. 186,664

Claims priority, application Japan, Apr. 14, 1983, 58-666431; May 9, 1983, 59-81516

Int. Cl.[5] D01F *1/09, 11/04*

U.S. Cl. 264—211 **7 Claims**

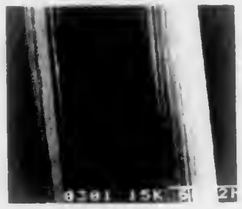
1. A process for preparing an antistatic fiber, comprising the steps of:

providing a spinneret having one or more orifices, each orifice having an opening area of not less than 0.2 mm^2; and

melt spinning a fiber forming thermoplastic polymer containing at least one of polyoxyalkylene glycol and its derivatives as an amount of not less than 0.5% by weight through the spinneret, under the conditions that the opening area (S; mm^2) of each orifice and the throughput (Q; g/mm) per orifice satisfies the following relationship:

VOL 1116 ISS 2 JL 10 1990 UMI

$S \geqq 0.02Q^2+0.2$, and such that the fibers formed have a half-life time of electric charge leakage of not more than



150 seconds before and after treatment with a weight decreasing agent.

4,940,561

METHOD FOR FORMING A POLYMERIC MOLD

Kenneth E. Fritz, 1324 Hybla Rd., Richmond, Va. 23236

Filed Feb. 6, 1989, Ser. No. 306,107

Int. Cl.[5] B29C *41/08*

U.S. Cl. 264—225 **2 Claims**



1. A method for producing a coating useful in forming casting molds comprising the steps of:

agitating a quantity of pre-promoted polyester resin in a container;

admixing into said resin, in the course of said agitation, a quantity of atomized aluminum powder to a weight ratio of 10% to 50% of said resin said atomized aluminum powder admixed in said resin including aluminum powder comprising the ratios of

$$\frac{\text{4 times 200 mesh}}{\text{1 times 400 mesh}} + \frac{\text{2 times 200 mesh}}{\text{1 times 400 mesh}}$$

storing said mixture of said resin and powder for a period of 12 to 24 hours;

introducing a catalyst into said mixture; and

spraying said catalyzed mixture onto an object defining the mold cavity of a casting mold.

4,940,562

FILTER ELEMENT AND METHOD FOR MANUFACTURE THEREOF AND MICRO-FILTRATION FILTER HAVING THE FILTER ELEMENT

Masaharu Watanabe, and Takashi Monzen, both of Tokyo, Japan, assignors to Kitz Corporation, Japan

Filed Aug. 5, 1988, Ser. No. 229,336

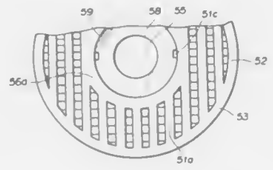
Int. Cl.[5] B01D *67/00*

U.S. Cl. 264—234 **14 Claims**

1. A method for the manufacture of a filter element comprising the steps of:

(a) providing a plurality of unit members and a plurality of spacers, each of said unit members being composed of fluorine resin or fluorine resin copolymer and comprising a supporting plate having a pair of planar porous membranes joined to the opposite surfaces thereof and having an opening for insertion of a spacer and removal of a cleaned fluid, said opening having an inner peripheral surface and a stepped part formed on the peripheral edge thereof, each of said spacers being composed of fluorine resin or fluorine resin copolymer and having an outer peripheral part and a stepped part formed on the inner peripheral part thereof,

(b) forming a first axial seal part between said stepped part of said opening of one of said unit members and said outer peripheral part of one of said spacers by means of thermal fusion in the axial direction,



(c) forming a second axial seal part between said inner peripheral surface of said opening of another one of said unit members and said stepped part of said one of said spacers by means of thermal fusion in the axial direction, and

(d) repeating the steps (b) and (c) using other ones of said unit members and spacers to thereby interconnect said unit members and spacers at said first and second axial seal parts to form a filter element.

4,940,563

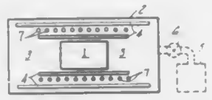
MOLDING METHOD AND APPARATUS USING A SOLID FLOWABLE, POLYMER MEDIUM

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 829,048, Feb. 13, 1986, abandoned. This application May 26, 1988, Ser. No. 201,345

Int. Cl.[5] B29C *43/02*

U.S. Cl. 264—257 **39 Claims**



1. The method of forming an article from an article precursor comprising, placing the article precursor within a pressure vessel, substantially filling the vessel with a solid, flowable, polymer medium and causing said medium to produce a substantially uniform, predetermined medium pressure on the surface of said article precursor by applying heat or pressure to the medium, wherein the temperature of the article precursor and pressure to which the article precursor is subjected are independently controlled.

4,940,564

SUPPRESSION OF DEPOSITION OF RADIOACTIVE SUBSTANCES IN BOILING WATER TYPE, NUCLEAR POWER PLANT

Motohiro Aizawa; Katsumi Ohsumi, both of Hitachi; Takashi Honda, Katsuta, and Hisao Itow, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of, Japan

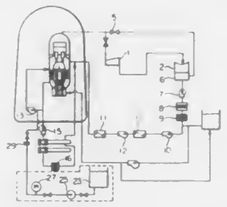
Filed Oct. 20, 1987, Ser. No. 110,454

Claims priority, application Japan, Oct. 20, 1986, 61-249168

Int. Cl.[5] G21C *19/28*

U.S. Cl. 376—306 **6 Claims**

4. A method for suppressing deposition of radioactive substances in a boiling water-type, nuclear power plant, which comprises injecting an alkaline element into reactor water to adjust the reactor water to a slightly alkaline condition in the presence of an amount of the oxygen formed by radiolysis of the reactor water and dissolved in the reactor water without hydrogen injection during the initial nuclear heatup operation period of the boiling water-type, nuclear power plant after the



construction of the boiling water-type, nuclear power plant and circulating the reactor water containing the injected alkaline element through the primary cooling water system of a nuclear reactor in the boiling water-type, nuclear power plant, thereby forming an oxide film on the surfaces of out-of-core components in the primary cooling water system of the nuclear reactor.

4,940,565

METHOD FOR MANUFACTURING FRICTIONAL LOCKING RINGS FOR STEPPED MOTOR VEHICLE TRANSMISSION SYNCHRONIZING MECHANISMS

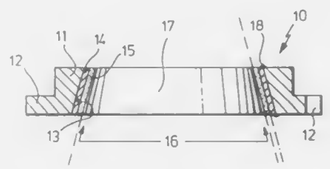
Erich R. Müller, Hohe Strasse 15, D-7110 Öhringen-Cappel, Fed. Rep. of Germany, assignor to Erich R. Mueller

Continuation of Ser. No. 116,453, Nov. 3, 1987, abandoned. This application Jul. 24, 1989, Ser. No. 384,851

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1986, 3637385

Int. Cl.[5] B22F *7/00*

U.S. Cl. 419—8 **9 Claims**



1. A method for manufacturing frictional synchronizing rings for stepped motor vehicle transmissions, comprising the steps of:

manufacturing a ring-shaped metallic base member having a rotational axis and a first conical surface thereabout;

depositing a frictional layer of a predetermined first thickness on said first conical surface, said layer being made of a sintering powder;

sintering said layer on said first conical surface;

providing a tool having a second conical surface complementary to said first conical surface;

applying said tool with said second conical surface on said first conical surface; and

pressing said tool against said base member to calibrate said sintered frictional layer to a predetermined second thickness less than said first thickness.

4,940,566

ALLOY AND METHODS OF USE THEREOF

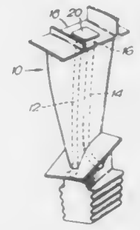
Philip S. Wood, Lancashire, and Peter J. Fell, Yorkshire, both of England, assignors to Rolls-Royce plc, London, England

Filed Jun. 9, 1989, Ser. No. 363,919

Claims priority, application United Kingdom, Jul. 14, 1988, 8816737; Aug. 9, 1988, 8818855

Int. Cl.[5] C22C *19/05*

U.S. Cl. 420—443 **4 Claims**



1. An alloy suitable for use in the repair and/or manufacture of a nickel based superalloy component consisting of by weight percentage,

Al	Co	Cr	Fe	Hf	Ta	Ti	W	B	Y	Ni
2	9	8	—	1.0	1.0	1.25	6	2.8	0.001	Balance
3	11	10	1.8	1.5	1.5	1.75	8	3.4	0.02	

4,940,567

APPARATUS FOR CATALYTICALLY REDUCING NOXIOUS SUBSTANCES IN FLUE GAS

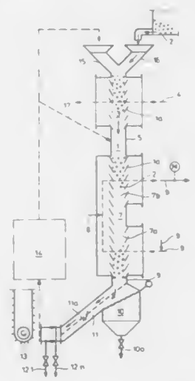
Manfred Ohlmeyer, Eggenstein-Leopoldshafen, and Martin Benzel, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Division of Ser. No. 919,708, Oct. 16, 1986, Pat. No. 4,756,891, and Ser. No. 117,309, Nov. 6, 1987, Pat. No. 4,810,476. This application May 2, 1988, Ser. No. 189,176

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1985, 3536958; Nov. 6, 1986, 3637871

Int. Cl.[5] B01D *53/36*

U.S. Cl. 422—173 **12 Claims**



1. An apparatus for continuously pre-heating combustion air

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and catalytically reducing noxious substances in flue gas, comprising

a heat-exchanger housing having a first part and a second part, and gas-permeable interior walls provided to contain and permit the flow of a plurality of separately movable heat-storage elements comprising catalyst-coated heat-storage elements, and a means providing a constrictive passage for the elements, said constrictive means operatively connected to said first part and said second part of said housing, said first part of said housing having an inlet for the elements and an inlet and an outlet for air, and said second part of said housing having an inlet and an outlet for flue gas and an outlet for the elements;

means for removal of said elements from the outlet for the elements and resupply of the elements to the inlet for the elements, the inlet and the outlet for the elements defining a first direction of flow of the elements which is transverse to a second direction of flow of air and flue gas;

means for measuring noxious substance concentrations of the flue gas exiting the top section of the heat exchanger and for causing disposing of heat storage elements having a spent catalyst coating thereon and substituting new heat storage elements therefore when the noxious substance concentrations exceed predetermined allowable noxious substance concentrations; and

discharge means for the elements provided with a means for separating the elements by size, shape or weight, said discharge means being operatively connected to said second part of said housing and to said removal and resupply means at the outlet for the elements.

4,940,568

ARRANGEMENT FOR THE CONTINUOUS MELTING OF GRANULATED SILICON FOR A BAND-DRAWING METHOD

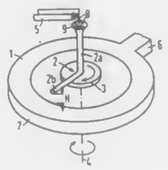
Gerhard Hoyler, Munich; Josef Grabmaier, Berg; Richard Falckenberg, Wald, and Bernhard Freienstein, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 14, 1988, Ser. No. 257,522

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1987, 3736339

Int. Cl.[5] **C30B** *35/00, 15/02;* **B65G** *31/00;* **A01C** *17/00*

U.S. Cl. 422—245 **20 Claims**



1. An arrangement for the continuous melting of silicon granulate in a melt reservoir that, based on the principle of communicating vessels, is in communication with the melt crucible for the continuous, horizontal drawing of silicon bands comprising:

a container for the melt reservoir, created as an annular covered crucible, having thermal insulation on all sides, and having an opening for granulate delivery through the cover;

a rotary plate, above the walls of the crucible, located on and perpendicular to the center axis of the annular crucible;

means for continuously varying between an upper and a lower limit value the angular speed of the rotary plate; and

a tubular collecting vessel for the silicon granulate is secured on the rotary plate the collecting vessel including an admission for the granulate in the direction of the rotational axis as well as a discharge opening in the direction of the annular melt reservoir.

4,940,569

SORBENT AND PROCESSES FOR REMOVING NITROGEN OXIDES, SULFUR OXIDES AND HYDROGEN SULFIDE FROM GAS STREAMS

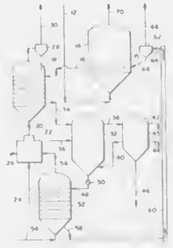
Lewis G. Neal, Danville, Calif.; John L. Haslbeck, Paducah, Ky., and Hsiaopin Tseng, Kansas City, Mo., assignors to Noxso Corporation, Library, Pa.

Division of Ser. No. 88,121, Aug. 21, 1987, Pat. No. 4,798,711, which is a division of Ser. No. 905,138, Sep. 9, 1986, Pat. No. 4,755,499, which is a continuation of Ser. No. 659,996, Oct. 12, 1984, abandoned. This application Sep. 20, 1988, Ser. No. 246,804

The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.

Int. Cl.[5] **B01D** *53/02;* **C01B** *21/00, 53/34*

U.S. Cl. 423—239 **3 Claims**



1. A process for the removal of nitrogen oxides and sulfur oxides from a sorbent containing them, comprising:

(a) removing said nitrogen oxides from a sorbent comprising:

(i) a gamma alumina substrate having a surface area between 100 m^2/g and 500 m^2/g and a pore volume between 0.4 and 0.8 cc/g, said gamma alumina substrate having a bimodal pore size disribution comprising micropores and macropores, said micropores having an average pore diameter d_1 in the range of between 30 and 400 Angstroms and said macropores having an average pore diameter d_2 in the range of between 80 and 3000 Angstroms,

(ii) an alkali metal component, said substrate impregnated with the alkali metal component and the amount of said alkali metal component being between 50 and 400 μg per m^2 of said substrate;

by contacting said nitrogen oxides and sulfur oxides containing sorbent with a stream of air heated to a temperature of above 532° C. and carrying said removed oxides away in a hot air stream; and

(b) subsequently, contacting said sulfur oxides containing sorbent with a regenerant stream of methane which reacts with the sorbed sulfur oxides to produce a stream of elemental sulfur and carrying said stream of elemental sulfur away.

4,940,570

BERYLLIUM-ALUMINUM-PHOSPHORUS-OXIDE MOLECULAR SIEVE COMPOSITIONS

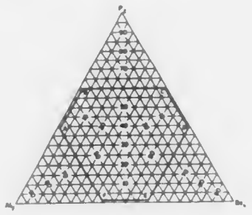
Edith M. Flanigen, White Plains; Brent M. Lok, New City; Robert L. Patton, Katonah, and Stephen T. Wilson, Shrub Oak, all of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 599,776, Apr. 13, 1984, abandoned. This application Mar. 3, 1986, Ser. No. 835,293

The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.

Int. Cl.[5] **C01B** *25/36*

U.S. Cl. 423—306 **60 Claims**



1. Crystalline molecular sieves having three-dimensional microporous framework structures of BeO_2, AlO_2 and PO_2 tetrahedral units having an empirical chemical composition on an anhydrous basis expressed by the formula:

$$mR:(Be_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the molar amount of "R" present per mole of $(Be_xAl_yP_z)O_2$ and has a value of zero to about 0.3; and "x", "y" and "z" represent the mole fractions of beryllium, aluminum and phosphorus, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the hexagonal compositional area defined by points A, B, C, D, E and F of FIG. 1, said crystalline molecular sieves having a characteristic X-ray powder diffraction pattern which contains at least the d-spacings set forth in one of the following Tables A to H and J to V:

TABLE A

	(BeAPO-5)	
2θ	d(Å)	Relative Intensity
7.3–7.65	12.1–11.56	m–vs
19.5–19.95	4.55–4.46	m–s
20.9–21.3	4.25–4.17	m–vs
22.2–22.6	4.00–3.93	w–vs
25.7–26.15	3.47–3.40	w–m

TABLE B

	(BeAPO-11)	
2θ	d(Å)	Relative Intensity
9.3–9.65	9.51–9.17	m–s
20.2–20.6	4.40–4.31	m–s
20.9–21.3	4.25–4.17	s–vs
22.0–22.5	4.04–3.95	m–s
22.5–23.0	3.95–3.87	m–s
23.1–23.4	3.85–3.80	m–vs

TABLE C

	(BeAPO-14)	
2θ	d(Å)	Relative Intensity
8.6–8.9	10.3–9.93	vs

TABLE C-continued

	(BeAPO-14)	
2θ	d(Å)	Relative Intensity
13.0	6.81	w
21.9–22.2	4.06–4.00	w
25.4	3.51	w
27.5	3.24	w
29.7	3.01	w

TABLE D

	(BeAPO-16)	
2θ	d(Å)	Relative Intensity
11.3–11.6	7.83–7.63	m–vs
18.7–18.9	4.75–4.70	w–s
21.9–22.3	4.06–3.99	m–vs
26.5–27.0	3.363–3.302	w–m
29.7–30.05	3.008–2.974	w–m

TABLE E

	(BeAPO-17)	
2θ	d(Å)	Relative Intensity
7.7–7.75	11.5–11.4	vs
13.4	6.61	s–vs
15.5–15.55	5.72–5.70	s
19.65–19.7	4.52–4.51	w–s
20.5–20.6	4.33–4.31	vs
31.8–32.00	2.812–2.797	w–s

TABLE F

	(BeAPO-18)	
2θ	d(Å)	Relative Intensity
9.6–9.65	9.21–9.16	vs
15.5–15.55	5.72–5.70	m
16.9–17.1	5.25–5.19	m
20.15–20.25	4.41–4.39	m
20.95–21.05	4.24–4.22	m
31.8–32.5	2.814–2.755	m

TABLE G

	(BeAPO-20)	
2θ	d(Å)	Relative Intensity
13.7–14.25	6.46–6.22	m–vs
19.55–20.0	4.54–4.44	w–s
24.05–24.6	3.70–3.62	m–vs
34.3–35.0	2.614–2.564	vw–w
42.5–43.1	2.127–2.098	vw–w

TABLE H

	(BeAPO-31)	
2θ	d(Å)	Relative Intensity
8.5–8.6	10.40–10.28	m–s
20.2–20.3	4.40–4.37	m
21.9–22.1	4.06–4.02	w–m
22.6–22.7	3.93–3.92	vs
31.7–31.8	2.823–2.814	w–m

TABLE J*

	(BeAPO-33)	
2θ	d(Å)	Relative Intensity
9.25–9.55	9.56–9.26	w–m
12.5–12.9	7.08–6.86	vs
16.9–17.3	5.25–5.13	w–m
20.45–20.9	4.34–4.25	w–m
23.85–24.25	3.73–3.67	w–m
26.05–26.35	3.42–3.38	w–m

TABLE J*-continued

2θ	(BeAPO-33) d(Å)	Relative Intensity
27.3–27.6	3.27–3.23	vs

*as-synthesized form

TABLE K*

2θ	(BeAPO-33) d(Å)	Relative Intensity
13.15–13.4	6.73–6.61	vs
18.05–18.35	4.91–4.83	m
18.4–18.6	4.82–4.77	m
26.55–26.7	3.36–3.34	m
32.0–32.1	2.80–2.79	m

*calcined form

TABLE L

2θ	(BeAPO-34) d(Å)	Relative Intensity
9.4–9.8	9.41–9.02	s–vs
15.9–16.5	5.57–5.37	vw–m
17.85–18.6	4.97–4.77	w–s
20.3–21.3	4.37–4.17	m–vs
24.95–25.4	3.57–3.41	vw–s
30.3–30.8	2.95–2.81	w–s

TABLE M

2θ	(BeAPO-35) d(Å)	Relative Intensity
10.8–11.1	8.19–7.97	m
17.2–17.4	5.16–5.10	s–vs
21.0–21.25	4.23–4.18	m–s
21.8–22.0	4.08–4.04	vs
31.8–32.2	2.814–2.788	m

TABLE N

2θ	(BeAPO-36) d(Å)	Relative Intensity
7.7–8.1	11.5–10.9	vs
16.2–16.7	5.47–5.3	w–m
18.9–19.3	4.70–4.60	m–s
20.6–21.1	4.31–4.2	w–s
21.8–22.0	4.08–4.04	m

TABLE O

2θ	(BeAPO-37) d(Å)	Relative Intensity
6.1–6.3	14.49–14.03	vs
15.5–15.7	5.72–5.64	w–m
18.5–18.8	4.80–4.72	w–m
23.5–23.7	3.79–3.75	w–m
26.9–27.1	3.31–3.29	w–m

TABLE P

2θ	(BeAPO-39) d(Å)	Relative Intensity
9.4–9.6	9.41–9.21	w–m
13.3–13.6	6.66–6.51	m–vs
18.0–18.4	4.93–4.82	m
21.2–21.5	4.19–4.13	m–s
22.5–23.0	3.95–3.87	s–vs
30.2–30.5	2.96–2.93	w–m

TABLE Q

2θ	(BeAPO-40) d(Å)	Relative Intensity
7.5–7.7	11.79–11.48	vw–m
8.0–8.1	11.05–10.94	s–vs
12.4–12.5	7.14–7.08	w–vs
13.6–13.8	6.51–6.42	m–s
14.0–14.1	6.33–6.28	w–m
27.8–28.0	3.209–3.187	w–m

TABLE R

2θ	(BeAPO-41) d(Å)	Relative Intensity
13.6–13.8	6.51–6.42	w–m
20.5–20.6	4.33–4.31	w–m
21.1–21.3	4.21–4.17	vs
22.1–22.3	4.02–3.99	m–s
22.8–23.0	3.90–3.86	m
23.1–23.4	3.82–3.80	w–m
25.5–25.9	3.493–3.440	w–m

TABLE S

2θ	(BeAPO-42) d(Å)	Relative Intensity
7.15–7.4	12.36–11.95	m–vs
12.5–12.7	7.08–6.97	m–s
21.75–21.9	4.09–4.06	m–s
24.1–24.25	3.69–3.67	vs
27.25–27.4	3.273–3.255	s
30.05–30.25	2.974–2.955	m–s

TABLE T

2θ	(BeAPO-44) d(Å)	Relative Intensity
9.4–9.55	9.41–9.26	vs
13.0–13.1	6.81–6.76	w–m
16.0–16.2	5.54–5.47	w–m
20.6–20.85	4.31–4.26	s–vs
24.3–24.4	3.66–3.65	w–vs
30.7–30.95	2.912–2.889	w–s

TABLE U

2θ	(BeAPO-46) d(Å)	Relative Intensity
7.2–8.1	12.3–10.9	vs
21.2–21.8	4.19–4.08	w–m
22.5–23.0	3.95–3.87	vw–m
26.6–27.2	3.351–3.278	vw–w
28.5–29.0	3.132–3.079	vw–w

TABLE V

2θ	(BeAPO-47) d(Å)	Relative Intensity
9.4	9.41	vs
15.9–16.0	5.57–5.54	w–m
20.5–20.6	4.33–4.31	s
24.5–24.7	3.63–3.60	w
25.8–25.9	3.45–3.44	w
30.4–30.5	2.940–2.931	w

4,940,571

METHOD OF MAKING LARGE PARTICLE SIZE, HIGH PURITY DENSE SILICA

Sophia R. Su, Weston; Leo F. Fitzpatrick, Sandwich, and Sheryl A. Robillard, Leominster, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 1, 1988, Ser. No. 176,582
Int. Cl.[5] C01B 33/12
U.S. Cl. 423—339 8 Claims

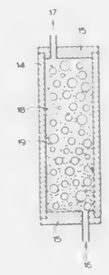
1. A method of making silica comprising the following steps:
Step 1—mixing tetraalkylorthosilicate with a solvent to form a solution having a molar ratio of said tetraalkylorthosilicate to said solvent of about 1 to about 3;
Step 2—adding the product of step 1 to an ammonium hydroxide solution containing silicic acid forming a precipitate of hydrated silica in said ammonium hydroxide solution containing silicic acid;
Step 3—digesting the product of step 2;
Step 4—filtering the product of step 3 to separate the precipitate from the filtrate;
Step 5—drying the precipitate from step 4 to form a powder;
Step 6—heating the powder from step 5 under a vacuum to remove any H_2O and said solvent absorbed thereon;
Step 7—heating the product of step 6 to form silica having a particle size from about 100 micrometers to about 420 micrometers and a surface area from about 0.2 m^2/g to about 0.3 m^2/g.

4,940,572

PROCESS FOR PREPARING AN IRON OXIDE

Roy D. Laundon; Anthony J. Wickens, both of Surrey, and John H. W. Turner, Cheshire, all of England, assignors to Cookson Laminox Limited, Peterlee, United Kingdom

Division of Ser. No. 144,336, , Pat. No. 4,865,833, which is a division of Ser. No. 845,988, Mar. 31, 1986, abandoned, which is a division of Ser. No. 582,332, Feb. 22, 1984, Pat. No. 4,624,845.
This application Jul. 5, 1989, Ser. No. 375,859
Claims priority, application United Kingdom, Feb. 24, 1983, 8305145; Feb. 24, 1983, 8305146
Int. Cl.[5] C01G 49/06, 49/10
U.S. Cl. 423—633 9 Claims



1. In the process for the preparation of micaceous iron oxide comprising combining an iron chloride with at least one salt of an alkali metal or alkaline earth metal at sufficiently elevated temperatures to form a molten phase, and subjecting the resultant molten phase to oxidation with oxygen or oxygen-containing gas, the improvement which comprises carrying out the oxidation reaction on a solid surface such that the molten phase is distributed as a melt film on the solid surface, the melt film having a minimum thickness of 150 microns and the micaceous iron oxide being formed in the melt film.

4,940,573

CATIONIC SURFACE-ACTIVE COMPOUNDS

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 102,818, Sep. 23, 1987, Pat. No. 4,820,820, which is a continuation of Ser. No. 276,817, Jun. 24, 1981, abandoned. This application Dec. 9, 1988, Ser. No. 282,321
Claims priority, application France, Jun. 25, 1980, 80 14148
Int. Cl.[5] A61L 9/04
U.S. Cl. 424—45 8 Claims

1. A composition that is suitable for use in cosmetics comprising a diluent or a suitable cosmetic vehicle and at least one cationic surface active product selected from the group consisting of cationic surface-active product having the general formula:

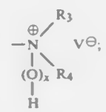


(1)

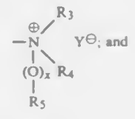
wherein R_1 denotes a linear or branched, saturated or unsaturated aliphatic radical containing from 4 to 20 carbon atoms; R_2 is selected from the group consisting of a linear or branched alkyl radical having from 4 to 20 carbon atoms, a linear or branched alkoxymthyl radical in which the alkoxy portion has from 4 to 20 carbon atoms, and a linear alkenyloxy radical in which the alkenyl portion has from 4 to 20 carbon atoms; p denotes an integral or decimal number from 1 to 2.5; n denotes an integral or decimal number from 2 to 20, and G is a substituent group selected from the group of substituents consisting of the following:



(a)



(b)



(c)



(d)

in which x denotes 0 or 1; R_3 and R_4 independently denote an alkyl or hydroxyalkyl radical having from 1 to 3 carbon atoms or, alternatively, R_3 and R_4 together with the nitrogen atom to which they are attached form a 5- or 6- membered heterocyclic ring; V denotes an anion of a mineral or organic acid; R_5 denotes an alkyl or hydroxyalkyl radical having from 1 to 3 carbon atoms; Y denotes an anion; and T denotes a methylcarboxylate or propylsulphonate anion.

4,940,574

NON-AQUEOUS HIGH SPF SUNSCREEN OILS

Carl Kaplan, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Filed Dec. 22, 1988, Ser. No. 289,335
Int. Cl.[5] A61K 7/40, 7/42, 7/44
U.S. Cl. 424—59 18 Claims

1. A non-aqueous high-SPF sunscreen oil comprising:
(a) about 20 to about 80 weight percent of at least one vola-

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tile oil selected from the group consisting of a volatile silicone oil, a volatile C_{12}–C_{16} branched-chain hydrocarbon and mixtures thereof:

(b) about 10 to about 50 weight percent of at least one emollient selected from the group consisting of an ester of a straight or branched-chain C_{10}–C_{16} alcohol and a tri(lower-alkyl) substituted benzoic acid, an ester of a straight or branched C_{10}–C_{16} alcohol and a straight or branched chain C_4—C_{20} mono- or dicarboxylic acid, an ester of a branched-chain C_5–C_{10} glycol and a straight or branched-chain C_4–C_{20} mono- or dicarboxylic acid and mixtures thereof; and

(c) about 10 to about 35 weight percent of a sunscreen mixture of at least two UV-B sunscreens and at least one UV-A sunscreen.

4,940,575

4-HYDROXYISOXAZOLE DERIVATIVES, METHOD OF PREPARING SAME, AND COSMETIC AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Alexandre Zysman, and Henri Sebag, both of Paris, France, assignors to Société Anonyme dite:L'Oreal, Paris, France

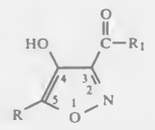
Filed Jun. 26, 1989, Ser. No. 371,058

Claims priority, application France, Jun. 27, 1988, 88 08612

Int. Cl.[5] A61K *31/19, 31/42, 31/445;* **C07D** *261/12*

U.S. Cl. 424—59 **11 Claims**

1. Derivatives of 4-hydroxyisoxazoles having the formula:



(I)

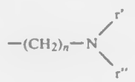
wherein:

R represents a linear or branched alkyl or hydroxyalkyl radical with 1 to 23 carbon atoms, a linear or branched alkenyl radical with 2 to 23 carbon atoms, a phenyl radical, or a benzyl radical, and

R_1 represents OR_2, —NHR_3, or —NH—NHR_4,

R_2 represents a hydrogen atom or an alkyl radical with 1 to 24 carbon atoms,

R_3 represents a hydrogen atom, an alkyl radical with 1 to 20 carbon atoms, or a



radical,

where n is 2 to 3 and r' and r'' are identical or different, representing a hydrogen atom or a lower alkyl radical or forming a morpholine, piperidine, or piperazine when taken together,

R_4 represents a hydrogen atom or a benzyl radical,

and salts of the formula (I) compounds.

4,940,576

HAIR CONDITIONING PREPARATION

Michael F. Walsh, South Wirral, United Kingdom, assignor to Conopco, Inc. d/b/a/ Chesebrough-Pond's USA Co., Greenwich, Conn.

Continuation of Ser. No. 510,117, Jul. 1, 1983, abandoned. This application Jun. 26, 1987, Ser. No. 67,434

Claims priority, application United Kingdom, Jul. 7, 1982, 8219673

Int. Cl.[5] A61K *7/06, 7/08*

U.S. Cl. 424—70 **1 Claim**

1. An aqueous clear single-phase liquid hair rinse conditioner composition comprising a water-soluble ionized polymer and an ionic surfactant of opposite charge which interact with each other to form a complex which separates out upon dilution of the composition as a lyotropic liquid crystal phase, the composition also comprising an effective amount of a clarifying agent to dissociate or dissolve the complex in order to maintain the composition in the form of a clear single-phase solution prior to dilution, the amount of the ionic surfactant being 0.9 to 2.0S moles where S Moles is the amount of the surfactant required to completely neutralize the charges on the polymer, the combined weight of the ionized polymer and the ionic surfactant being about 0.1 to about 5% by weight of the composition, said composition comprising not more than about 5% by weight of neutral surfactant, and said polymer being selected from the group consisting of poly(methacrylic acid), poly(styrene sulfonate) and copolymers of ethylene and maleic acid.

4,940,577

ESTER BASED WATER-IN-OIL COSMETIC MICROEMULSIONS

Stephen M. Greenberg, New York, and Louis A. Frischling, Lawrence, both of N.Y., assignors to Lipo Chemicals Inc., Paterson, N.J.

Filed Apr. 25, 1988, Ser. No. 185,860

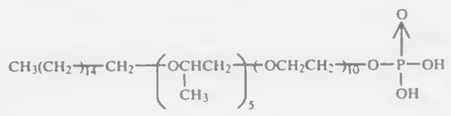
Int. Cl.[5] A61K *7/42, 7/44, 9/107*

U.S. Cl. 424—59 **18 Claims**

1. A clear, water-in-ester microemulsion composition comprising:

(a) water at about 2 to 15% by weight of the emulsion;

(b) as the sole emulsifier, a phosphate ester emulsifier having the empirical formula:



(c) at least one ester selected from the group consisting of neopentyl glycol dicaprylate/dicaprate, tridecyl stearate, tridecyl trimellitate, dipentaerythrityl hexacaprylate/hexacaprate, octyl palmitate and mixtures thereof.

4,940,578

HAIR PREPARATION

Toru Yoshihara; Jiro Kawase, both of Funabashi, and Yukihiro Fukuyama, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 3, 1988, Ser. No. 202,983

Claims priority, application Japan, Jun. 18, 1987, 62-152376; Jun. 18, 1987, 62-152377

Int. Cl.[5] A61K *7/06, 7/075*

U.S. Cl. 424—70 **11 Claims**

1. A hair preparation which comprises particles of an oil-absorptive polymer of a vinyl monomer having a solubility parameter of 7 to 10, said vinyl monomer being an ester of a higher alcohol having 8 to 24 carbon atoms, said particles having an average particle diameter of 0.005 to 30 μm and a pore volume of at least 0.1 ml/g, said polymer having a squalene absorption of at least 1 ml/g, and a carrier.

4,940,579

TOPICAL APPLICATION OF MEDICAMENT IN A BINDER

Neil A. Randen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 27, 1988, Ser. No. 290,579

Int. Cl.[5] A61K *31/74, 31/78, 13/02, 9/10*

U.S. Cl. 424—78 **25 Claims**

1. A liquid composition for topical application to the non-

mucosal, non-oral, skin and/or hair of a mammal comprising a solution, emulsion or dispersion of 0.25 to 10% by weight of an oil compatible pressure-sensitive adhesive polymer, 0.1to 50% by weight of a medicament, and 49.75 to 99.65% by weight of a carrier liquid, the ratio of said polymer to medicament being in the range of 1/5 to 1/50, said composition being incapable of forming a self-sustaining film when applied as a wet coating of 25 microns and dried.

4,940,580

SUSTAINED RELEASE LABETALOL TABLETS

Surendra Sangekar, New York, N.Y., and Winston A. Vadino, Whitehouse Station, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 926,306, Nov. 3, 1986, abandoned. This application Feb. 2, 1989, Ser. No. 306,253

Int. Cl.[5] A61K *31/79;* **A01N** *37/36*

U.S. Cl. 424—80 **12 Claims**

1. An oral sustained release dosage unit form solid tablet comprising a therapeutically effective amount of labetalol hydrochloride; 5–20% by weight of a polymeric binder comprising a combination of hydroxypropylmethylcellulose and polyvinylpyrrolidone; 20–35%, by weight, of pharmaceutically acceptable organic acid having a pk 1 of 2–4; and optionally pharmaceutically acceptable excipients.

4,940,581

PLATELET CRYOPRESERVATION

James M. Mason, and David D. Pifer, both of Memphis, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 924,964, Oct. 30, 1986, Pat. No. 4,764,463. This application Aug. 15, 1988, Ser. No. 233,999

Int. Cl.[5] A61K *35/14*

U.S. Cl. 424—532 **5 Claims**

1. In a method for the preservation of blood platelets wherein the platelets are frozen in a concentrated state in the presence of a sufficient quantity of prostacyclin for the substantially complete inhibition of platelet function and subsequently thawed in the presence of prostacyclin and at a pH below about 8, the improved step comprising the substantially continuous addition to said thawed concentrate of a sufficient quantity of a diluent to reduce the concentration of the platelets to that quantity acceptable for infusion, and thereafter incubating said diluted platelets at about 37° C. to permit said platelets to substantially recover their pre-freezing morphology.

4,940,582

ANTIBIOTIC YI-HU3

Tetsuji Iwasaki, and Toshio Uesaka, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP87/01007, § 371 Date Aug. 15, 1988, § 102(e) Date Aug. 15, 1988, PCT Pub. No. WO88/04661, PCT Pub. Date Jun. 30, 1988

PCT Filed Dec. 21, 1987, Ser. No. 243,033

Claims priority, application Japan, Dec. 23, 1986, 61-307164

Int. Cl.[5] A61K *35/74;* **C12R** *1/38;* **C07G** *11/00;* **C12P** *1/04*

U.S. Cl. 424—115 **1 Claim**

1. Antibiotic YI-HU3 having the following physicochemical characteristics:

(a) Molecular weight
469

(b) Melting point
180°–190° C.

(c) Ultraviolet absorption spectrum (in chloroform)
The maximum absorption is found in the neighborhood of 312 nm, with the second largest absorption being in the neighborhood of 300 nm.

(d) Infrared absorption spectrum (KBr Method)
FIG. 2

(e) ^1H—NMR spectrum ($CDCl_3/CD_3OH$)
FIG. 3

(f) ^{13}C—NMR spectrum ($CDCl_3/CD_3OH$)
FIG. 4

(g) Solubility to solvents
Soluble in methanol and chloroform, and not soluble in n-hexane.

(h) Color and state of the substance
Light yellow crystals.

4,940,583

ANIMAL REPELLENT COMPOSITION AND METHOD

Ian A. Thompson, New South Wales, Australia, assignor to R & C Products Pty. Limited, Chatswood, Australia

Filed Nov. 2, 1987, Ser. No. 116,049

Int. Cl.[5] H01N *33/00*

U.S. Cl. 424—195.1 **15 Claims**

1. An animal repellent composition consisting essentially of (1) a first component which consists essentially of orange oil, terpinolene, diphenyl ether, geranium oil, diethyl phthalate, cinnamaldehyde and methyl salicylate, and (2) and a second component which is a sufficient quantity of ipecacuanha to provide an alkaloid concentration as emetine of about 0.01%.

4,940,584

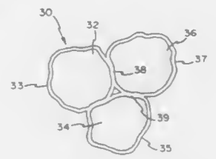
FRAGRANCE ENHANCED POWDER SAMPLER AND METHOD OF MAKING THE SAME

Christopher Tararuj, Mercerville, and Carl K. Schaab, Princton Jct., both of N.J., assignors to Webcraft Technologies, N. Brunswick, N.J.

Filed Jun. 17, 1988, Ser. No. 207,949

Int. Cl.[5] A61K *6/00*

U.S. Cl. 424—401 **9 Claims**



1. A fragrance particle sampler, comprising:

(a) a substrate having a smooth surface,

(b) a layer of readily removable dry adhesively held fragranced powder particles disposed on and lightly adherent to the smooth surface of the substrate,

(c) the particles being mixed with a large amount of fragrance oil and surface-coated with a heavy molecular weight oil/wax for sealing in the fragrance and promoting adhesion/cohesion between adjacent particles in the layer binding the particles together,

(d) the powder particles being held temporarily in fixed position with respect to each other by the set taken by the coating on the particles binding them together,

(e) the coating on the particles and the binding material taking a set within the layer as a residual dried layer after evaporation of the volatile liquid suspension medium originally mixed with the applied layer, whereby the particles lightly adhere to the substrate surface, and on application of light finger pressure are removable therefrom as discrete free-flowing separate particles, having the property of a fragranced powder.

4,940,585

METHOD FOR THE TREATMENT OF NICOTINE WITHDRAWAL SYNDROME

William E. Hapworth, and Mada S. Hapworth, both of 250 W. 57th St., New York, N.Y. 10019

Filed Feb. 17, 1989, Ser. No. 312,954
Int. Cl.[5] A61K *9/20, 9/14, 9/48, 31/135*
U.S. Cl. 424—464 20 Claims

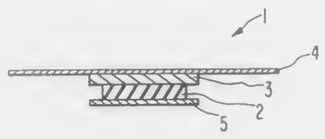
1. A therapeutic method for treatment of nicotine withdrawal syndrome symptoms of a patient in need thereof which comprises administering to said patient a composition comprising a pharmaceutically acceptable carrier and fluoxetine in an amount between about 5 and about 40 milligrams per day so as to inhibit the reuptake of serotonin in the neurohumoral pathways of the central nervous system of said patient, so that physiological relief from said withdrawal symptoms is provided.

4,940,586

SKIN PERMEATION ENHANCER COMPOSITIONS USING SUCROSE ESTERS

Yu-Ling Cheng, Cupertino; Robert M. Gale, Los Altos; Edna Sugihara, Mountain View, and Harold F. Sanders, San Jose, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 19,422, Feb. 26, 1987, Pat. No. 4,865,848.
This application Oct. 13, 1988, Ser. No. 257,487
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—464 6 Claims



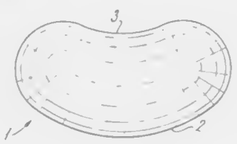
1. A composition of matter for application to skin to deliver a biologically active agent by permeation therethrough comprising, in combination: a biologically active agent and a permeation enhancing amount of a permeation enhancer consisting essentially of sucrose monolaurate mixed with sucrose esters of coconut fatty acids said composition being dispersed within a physiologically compatible matrix or carrier.

4,940,587

ORAL PHARMACEUTICAL COMPOSITION THROUGH MUCOSA

Anthony W. Jenkins; Stewart T. Leslie, both of Cambridge, United Kingdom, and Ronald B. Miller, Basel, Switzerland, assignors to Euroceltique, S.A., Luxembourg, Luxembourg

Filed Jun. 3, 1986, Ser. No. 870,027
Claims priority, application United Kingdom, Jun. 11, 1985, 8514665
Int. Cl.[5] A61K *9/36;* A61F *9/02*
U.S. Cl. 424—480 18 Claims



1. Arrangement adapted for application and adherence to the mucosa of the oral or nasal cavity for sustained release there of an orally administerable drug, said arrangement comprising a body having an orally administerable drug distributed therein and having a size and shape suitable for insertion into and retention in the oral or nasal cavity, said body being formed of granules of a higher aliphatic alcohol of 8–18 carbon atoms and a hydrated water soluble hydroxyloweralkyl cellulose having said drug distributed therethrough and being coated with a cellulose derivative which is adherent to the mucosa, whereby upon insertion into the oral or nasal cavity said body adheres to the mucosa thereof and the drug is there slowly released and absorbed.

4,940,588

CONTROLLED RELEASE POWDER AND PROCESS FOR ITS PREPARATION

Randall T. Sparks, Gainesville, Ga., and Edward J. Geoghegan, Athlone, Ireland, assignors to Elan Corporation, Athlone, Ireland

Continuation of Ser. No. 792,801, Oct. 30, 1985, abandoned.
This application Mar. 17, 1988, Ser. No. 171,131
Claims priority, application Ireland, Oct. 30, 1984, 2788/84
Int. Cl.[5] A61K *9/14, 9/16*
U.S. Cl. 424—490 7 Claims

1. A controlled release taste-masked powder containing discrete micro-particles for use in edible, pharmaceutical and other controlled release compositions, said powder comprising particles containing theophylline as an active ingredient in intimate admixture with two polymers, cellulose acetate butyrate and polyvinylpyrrolidone, in an amount effective to provide a predetermined and controlled release of said active ingredient, each of said particles being in the form of a micromatrix with the active ingredient uniformly distributed throughout the matrix, but not entirely coated by the polymers, said particles having an average size of from 0.1 to 125 μm, being unlikely to be significantly degraded or ground by any chewing action, and wherein said predetermined release of active ingredient is suitable for twice daily administration.

4,940,589

USE OF AQUEOUS THAUMATIN TO ENHANCE SWEETNESS OF CHEWING GUM

Albert H. Chapdelaine, Naperville, and Robert J. Yatka, Orland Park, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 6, 1988, Ser. No. 280,492
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 6 Claims

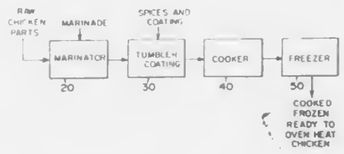
1. A method of making a chewing gum including thaumatin comprising the following steps:
providing an aqueous thaumatin solution comprising thaumatin and a water miscible preservative wherein thaumatin is present in an amount from about 1% to about 25% by weight of the aqueous thaumatin solution, and the water miscible preservative is present in an amount from about 15% to about 60% by weight of the aqueous thaumatin solution;
providing a chewing gum composition; and
mixing the aqueous thaumatin solution and chewing gum composition so that thaumatin comprises from about 25 ppm to about 600 ppm by weight of the chewing gum composition.

4,940,590

MARINATED MEAT AND POULTRY PRODUCTS HAVING A GLAZED COATING AND METHOD FOR PRODUCING SUCH PRODUCTS

Charles E. Williams, Moorefield, W. Va., and J. Leon Kusher, Creve Coeur, Mo., assignors to Hester Industries, Inc., Moorefield, W. Va.

Continuation of Ser. No. 129,941, Nov. 20, 1987, abandoned, Ser. No. 799,173, Nov. 18, 1985, abandoned, Ser. No. 798,964, Nov. 18, 1985, abandoned, and Ser. No. 804,581, Dec. 12, 1985, abandoned, said Ser. No. 129,941, is a continuation-in-part of Ser. No. 755,274, Jul. 15, 1985, abandoned, which is a division of Ser. No. 714,815, Mar. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 669,854, Nov. 9, 1984, abandoned, said Ser. No. 799,173, is a continuation-in-part of Ser. No. 714,815, , said Ser. No. 798,964, is a continuation-in-part of Ser. No. 669,854, , said Ser. No. 804,581, is a continuation-in-part of Ser. No. 669,854,. This application Aug. 18, 1988, Ser. No. 233,377
Int. Cl.[5] A23L *1/31, 1/315, 1/318*
U.S. Cl. 426—92 69 Claims



1. The method of coating and cooking raw meat and raw poultry parts comprising the steps of:
tumbling said parts in a quantity of marinade until the marinade is substantially absorbed into the parts and the outer surface of the parts carries a thin, uniformly disposed adhesive myosin muscle protein binder coating;
rubbing said parts with a dry binder coating by tumbling said parts in the presence of a dry coating mixture consisting essentially of a proportion of natural sugar solids and a proportion of natural spices, coloring agents and flavoring agents to disperse said dry coating mixture in said myosin muscle protein binder coating and to form therewith a thin, elastic, firmly adherent outer glazing coat, said dry coating mixture serving to create uniform color upon baking; and
baking the coated parts in dry heat to cook and seal the glazing coat in place to form a glazed coating and to retain the marinade.

4,940,591

MICROWAVABLE STUFFING MIX

Jatinder P. Sabhlok, Lawrenceville; William J. Horan, Mt. Holly, and Donna K. Carlton, Chester, all of N.J., assignors to Kraft General Foods, Inc., Glenview, Ill.

Filed Mar. 21, 1989, Ser. No. 326,718
Int. Cl.[5] A23B *4/10;* A21D *13/00*
U.S. Cl. 426—94 8 Claims

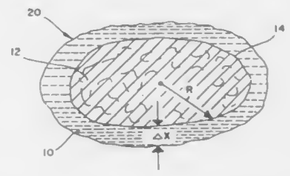
1. A dry microwavable instant stuffing mix which can be prepared by mixing with water and cooking in a microwave oven for about three minutes, comprised of an uncoated, coarse bread crumb fraction, an uncoated, fine bread crumb fraction and a medium bread crumb fraction which has been surface-coated with both a vegetable oil at a level of from about 5 to 25% by weight of the medium crumb fraction and a powdered seasoning blend at a level of from about 5 to 15% by weight of the medium crumb fraction, wherein the coarse fraction is retained on a No. 2.5 Tyler screen, the fine fraction passes through a No. 14 U.S. Standard Sieve and the medium fraction passes through a No. 2.5 Tyler screen and is retained on a No 14 U.S. Standard Sieve and wherein the weight ratio of coarse:fine:medium crumb fractions is 1:0.08–1.3:2.8–4.0.

4,940,592

PROCESS FOR MICROWAVE CHOCOLATE FLAVOR FORMATION IN AND/OR ON FOODSTUFFS AND PRODUCTS PRODUCED THEREBY

Brian Byrne, East Brunswick; Kevin P. Miller, Middletown; Chee-Teck Tan, Middletown; Lawrence L. Buckholz, Jr., Middletown, and Marion A. Sudol, Boonton, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 26, 1989, Ser. No. 371,635
Int. Cl.[5] A23L *1/227;* A21D *2/00*
U.S. Cl. 426—94 8 Claims



1. A process for providing a cooked baked goods foodstuff having an intense chocolate flavor comprising the steps of:
(a) providing an uncooked baked goods composition;
(b) providing a mixture of precursors of a chocolate flavor reaction product having a pH of from about 9 up to about 13 consisting essentially of phenyl alanine, leucine, a sugar selected from the group selected from the group consisting of rhamnose, ribose and cerelose and a solvent which is capable of raising the dielectric constant of the foodstuff to be cooked selected from the group consisting of glycerine, propylene glycol, mixtures of glycerine and propylene glycol, mixtures of glycerine and ethanol, and mixtures of propylene glycol and ethanol;
(c) either coating the mixture of (b) onto the uncooked baked composition provided in (a) or intimately admixing the mixture of (b) with the uncooked baked goods composition provided in (a); and
(d) exposing the thus treated uncooked foodstuff to microwave radiation for a period of time sufficient to cause a chocolate flavor profile to be imparted to the foodstuff.

4,940,593

MULTICOLORED R-T-E CEREAL AND METHOD OF PREPARATION

David K. Duffy, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

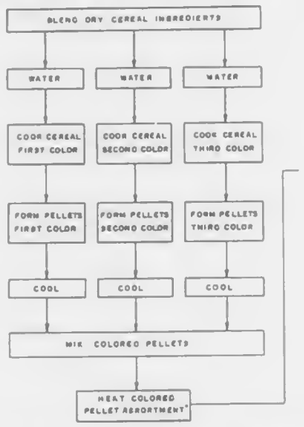
Filed Apr. 24, 1989, Ser. No. 342,155
Int. Cl.[5] A23L *1/118, 1/64*
U.S. Cl. 426—94 29 Claims

1. A method for preparing a single layer multicolored R-T-E cereal piece, comprising the steps of:
A. providing a plurality of separate segregated quantities of low moisture cooked cereal pellets, comprising a first and second quantity of cooked cereal pellets,
said first quantity of warm pellets having a first color and said second quantity of warm pellets having a second color,
wherein all the cereal pellets have a temperature ranging from about 255° to 310° F., and a moisture content ranging from about 18% to 26% by weight;
B. separately cooling the quantities of warm, low moisture pellets to a temperature ranging from about 60° to 120° F. while maintaining the moisture content to form cooled low moisture pellets;

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C. admixing the cooled, low moisture pellets while cool with low shear mixing to form a mixed assortment of cooled, low moisture pellets of first and second color;

D. heating the assortment of pellets to a temperature of about 160° to 180° F. to soften the pellets to form an assortment of warm, softened pellets having a moisture content of about 18% to 26% by weight;



E. sheeting the pellets to form a sheet comprising a plurality of regions of random shape, each region having only one color;

F. forming the sheet into pieces; and

G. forming the pieces into ready-to-eat cereal pieces.

4,940,594

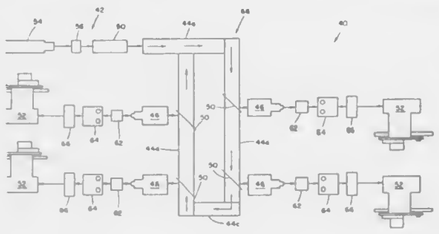
METHOD FOR PROCESSING CHEWING GUM

Terrance L. Van Alstine, Palatine Bridge, N.Y., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Division of Ser. No. 179,467, Apr. 8, 1988, Pat. No. 4,882,172. This application Aug. 15, 1989, Ser. No. 394,028

Int. Cl.[5] A23G *7/00*

U.S. Cl. 426—231 **10 Claims**



1. A method for processing a chewing gum composition comprising the steps of:

forming a mass of the gum composition;

cutting said mass into a multitude of segments;

feeding the segments onto a conveyor means;

feeding gum segments from the conveyor means into a plurality of extruders;

extruding a rope of gum from each extruder; and

cutting each rope into a multitude of pieces, and wrapping each piece.

2. A method according to claim 1, wherein the conveyor means forms a closed, endless path, and the step of feeding gum segments from the conveyor means into the extruders includes the steps of:

feeding selected gum segments from the conveyor means into the extruders; and

recirculating around the conveyor means, gum segments not fed to any of the extruders.

3. A method according to claim 2, wherein the step of feeding selected gum segments into the extruders comprises the step of:

sensing the amount of gum in each extruder; and

when the amount of gum in any one of the extruders falls below a given value, diverting gum from the conveyor means and into said one extruder.

4,940,595

CONTROLLING THE TEXTURE OF MICROWAVE BROWNIES

John J. Yasosky, Maple Grove; Patricia W. Hahn, Plymouth, and William A. Atwell, Andover, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 113,129, Oct. 27, 1987. This application Sep. 26, 1988, Ser. No. 249,017

Int. Cl.[5] A21D *13/8*

U.S. Cl. 426—243 **3 Claims**

1. A method for controlling the texture of brownies baked from a batter in a microwave oven comprising controlling the maximum internal temperature of the brownie during microwave baking wherein the maximum internal temperature of at least 70% of the total volume of the brownie is less than about 140°C.

4,940,596

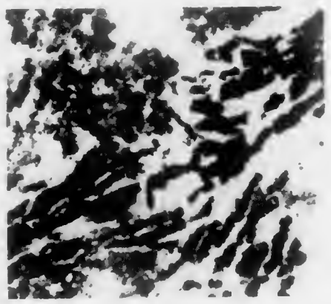
PROCESS FOR METAL FIBERS

Robin E. Wright, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 62,437, Jun. 12, 1987, abandoned. This application Nov. 16, 1988, Ser. No. 272,076

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—47 **33 Claims**



1. A process comprising the steps:

(a) preparing a mixture comprising a labile ligand stabilized zerovalent metal complex wherein said complex comprises at least one ferromagnetic metal and at least one ligand selected from the group consisting of unsaturated aliphatic compounds, aromatic compounds, and organic solvents, all of which are capable of forming labile solvated zerovalent metal complexes, and an organic liquid medium, and

(b) applying energy to said mixture in the presence of an externally applied magnetic field to decompose said complex and provide a slurry of ferromagnetic metal fibers dispersed in said organic liquid medium.

4,940,597

METHOD OF LUBRICATING THE PASSAGE OF MEAT EMULSION THROUGH THE STUFFING HORN OF A MEAT EMULSION ENCASING MACHINE

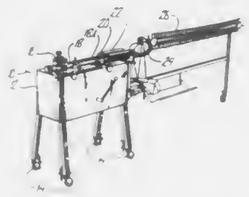
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation of Ser. No. 106,172, Oct. 6, 1987. This application Dec. 13, 1988, Ser. No. 283,834

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] A22C *11/02*

U.S. Cl. 426—413 **9 Claims**



1. A method of lubricating a meat emulsion, comprising the steps of:

introducing meat emulsion into an emulsion stuffing tube, said tube having an emulsion intake end and an emulsion discharge end,

extruding said emulsion in tubular form from said tube by subjecting the meaty emulsion to pressure to move said emulsion from the intake end to the discharge end of said tube,

introducing a film of lubricating fluid into said tube near the emulsion intake end of said tube, said film being in intimate contact with the interior of said tube and the outer surface of said meat emulsion for substantially the entire length of said tube to eliminate emulsion smear along the entire length of said tube, and

holding said tube against rotation.

4,940,598

PROCESS FOR THE RAPID REHYDRATION OF LEGUMES AND THE LIKE

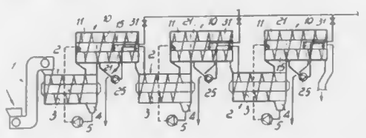
Giuseppe Zanichelli, Parma, Italy, assignor to Zanichelli Meccanica S.P.A., Parma, Italy

Filed Dec. 4, 1987, Ser. No. 129,012

Claims priority, application Italy, Aug. 20, 1987, 21683 A/87

Int. Cl.[5] A23L *1/48*

U.S. Cl. 426—507 **10 Claims**



1. A process for rapid rehydration of dried legumes, comprising the steps of subjecting the legumes to a treatment with hot fluid having a temperature substantially above 80° C. for a preset time interval, then subjecting the legumes to a treatment with cold fluid having a temperature substantially below 60° C. for another preset time interval, with said cold fluid having a temperature lower than said hot fluid of at least 30° C., and repeating said treatments with hot and cold fluid until a preset rehydration percentage is attained with a total treatment time of about 30 to 40 minutes.

4,940,599

METHOD OF PRODUCING FRESH MEAT IN WHICH SUBSTANTIAL MOISTURE LOSS DURING PRODUCTION IS REDUCED

Sid V. Engler, 255 Brimley Road, Scarborough, Ontario, Canada M1M 3J2, and George Cobb, 307 Bishop Street North, Cambridge, Ontario, Canada N3H 2K2

Filed Aug. 2, 1989, Ser. No. 388,438

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—524 **16 Claims**

1. A method of chilling a carcass in which moisture loss during chilling is substantially reduced; said method comprising the steps of:

applying liquid to the carcass;

subjecting the carcass to a supercold environment, so that a thin ice layer forms around the carcass; said carcass being subjected to said environment for a period of time short enough to substantially prevent freezing of the outermost layers of the flesh of the carcass, but long enough to allow for formation of said ice layer;

cooling the ice-layer-protected carcass for a further period of time long enough to lower the temperature of the flesh to a point where substantial deterioration of the flesh is prevented, but short enough to prevent freezing of the flesh.

4,940,600

PROCESS FOR PRODUCING DRIED CHEESE

Hitoshi Yokoyama, Seanan; Hiroyuki Sano, Kishiwada; Akiko Horimoto, and Masatoshi Kizaki, both of Seanan, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Dec. 22, 1987, Ser. No. 136,635

Claims priority, application Japan, Dec. 23, 1986, 61-314643; May 27, 1987, 62-132271

Int. Cl.[5] A23C *19/00*

U.S. Cl. 426—582 **13 Claims**

1. A process for producing dried shaped cheese which comprises stirring a water-containing raw material mixture which contains emulsified cheese obtained by heat melting the cheese at 70° to 100° C. with the aid of an emulsifying salt, said emulsified cheese being present in an amount of at least 10% by weight, based on the total amount of cheese used, at a temperature not higher than 50° C. with addition of water during stirring, placing the thus-obtained raw material in a container to shape it and freeze-drying the mixture in a shaped state.

4,940,601

SUCROSE FATTY ACID ESTER COMPOSITIONS AND SHORTENINGS AND MARGARINES MADE THEREFROM

Peter D. Orphanos, Cincinnati; Christian A. Bernhardt, Fairfield; Bryan L. Madison, Cincinnati; Paul Seiden, Cincinnati; Albert M. Ehrman, Cincinnati; John R. Baginski, Loveland, and Timothy B. Guffey, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 176,712, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,367, May 6, 1987, abandoned. This application Jul. 11, 1989, Ser. No. 378,552

Int. Cl.[5] A23D *5/00*

U.S. Cl. 426—601 **24 Claims**

16. A shortening composition comprising:

(a) from about 10% to about 80% by weight of a sucrose fatty acid ester composition comprising:

(i) from about 60% to about 97% by weight intermediate melting sucrose fatty acid esters containing at least four fatty acid ester groups, each fatty acid group has from about 8 to about 22 carbon atoms, wherein the intermediate melting sucrose fatty acid esters have an iodine value between about 25 and about 55, from about 5% to about 50% solids at body temperature, a viscosity of not less than 15 poise at 100° F. (37.8° C.) after 10 minutes

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of steady shear at 10 sec.$^{-1}$, and a liquid/solid stability of not less than 90% at 100° F. (37.8° C.);

(ii) from about 3% to about 40% by weight first hardstock material selected from the group consisting of hardstock triglycerides and hardstock polyol fatty acid esters, and mixtures thereof, wherein the hardstock has an iodine value not more than about 12, and wherein the average fatty acid chain length of the hardstock material fatty acids is not less than about the average fatty acid chain length of the intermediate melting sucrose ester fatty acids;

(b) from about 20% to about 90% by weight soft oil;

(c) from about 0% to about 50% by weight intermediate melting triglyceride;

(d) from about 0% to about 20% by weight second hardstock material selected from the group consisting of hardstock triglycerides and hardstock polyol fatty acid esters, and mixtures thereof, wherein the second hardstock material has an iodine value not more than about 12, and wherein the average fatty acid chain length of the second hardstock material fatty acids is less than the average fatty acid chain length of the intermediate melting sucrose ester fatty acids; and

(e) from about 0% to about 15% other shortening ingredients.

4,940,602

PROCESS OF PRODUCING AN ANTI-REFLECTION OPTICAL ARTICLE

Takashi Taniguchi, Yasu, and Tetsuya Seki, Kyoto, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 114,061, Oct. 29, 1987, Pat. No. 4,904,525.
This application Aug. 25, 1989, Ser. No. 398,473
Claims priority, application Japan, Feb. 13, 1987, 62-29702
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—40 5 Claims

1. A process for producing an anti-reflection optical article which comprises:

providing a transparent plastic substrate on which a hard coat film having an index of refraction of not less than 1.52 is formed;

applying a liquid coating composition comprising a fluorine-containing organic silicon compound and/or a hydrolysate thereof, on the hard coat film; and

curing the applied composition to form a fluorine-containing organopolysiloxane-based film with an index of refraction lower than that of the hard coat film by not less than 0.02.

4,940,603

THIN FILM INORGANIC SCINTILLATOR AND METHOD OF MAKING SAME

Peter K. Soltani, Olney, Md., assignor to Quantex Corporation, Rockville, Md.

Filed Jun. 30, 1988, Ser. No. 213,347
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] B05D *5/06, 5/12;* C09K *11/08*
U.S. Cl. 427—66 15 Claims

1. A process for making a luminescent article, comprising the steps of:

providing a substrate;

depositing upon said substrate using thin film deposition techniques a material comprising a base material selected from the group consisting of alkaline earth metal sulfides and alkaline earth metal selenides, a dopant selected from the group of cerium and emporium, and a flux; and heating said material to a sufficient temperature for a sufficient period of time to affect recrystallization and activation of said material such that said material becomes a non-storage luminescent material.

4,940,604

METHOD FOR PRODUCTION OF COPPER INDIUM DISELENIDE

Naoki Suyama, Osaka; Noriyuki Ueno, Nara; Kuniyoshi Omura, Osaka; Hazime Takada, Osaka; Yuutaro Kita, Osaka, and Mikio Murozono, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1988, Ser. No. 239,742
Claims priority, application Japan, Sep. 4, 1987, 62-222316
Int. Cl.[5] B05D *5/12;* H01L *31/00*
U.S. Cl. 427—76 7 Claims

1. A method of producing a copper indium diselenide film which comprises adding a liquid cooling medium to a mixture of Cu, In and Se powders, said liquid cooling medium being selected from the group consisting of water, ethylene glycol monophenyl ether, propylene glycol and perfluorobutyltetrahydrofuran, grinding the resulting mixture using a mill to give a slurry containing a ground powder including $CuInSe_2$ of low crystallinity, drying and adding a binding agent to said slurry to give a paste, wherein said binding agent is propylene glycol, coating a substrate with said paste, and sintering the paste so applied under a nitrogen atmosphere to form a polycrystalline $CuInSe_2$ film.

4,940,605

ELECTRODE FOR ELECTROCHEMICAL CELL

Frederick W. Dampier, Watertown, and Richard M. Mank, Needham, both of Mass., assignors to Whittaker Technical Products, Inc., Pawcatuck, Conn.

Filed Jun. 9, 1986, Ser. No. 872,325
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—77 17 Claims

1. The method of fabricating a flexible positive electrode for a rechargeable non-aqueous electrochemical cell comprising the steps of

mixing a quantity of a metal halide active electrode material and a quantity of a conductive carbonaceous material to provide a mixture consisting essentially of the metal halide and the conductive carbonaceous material, the metal halide being selected from the group consisting of cupric chloride, nickel, chloride, silver chloride, cobalt chloride and chromium chloride;

adding a quantity of a mechanical binder which is inert in the electrochemical cell to the mixture;

mixing to provide a uniform mixture of the ingredients;

adding a quantity of non-aqueous liquid which is a volatile halogenated organic solvent to the mixture, said metal halide having a low solubility in the liquid and being inert with respect to the liquid whereby there is no chemical reaction between the metal halide and the liquid;

mixing to provide a uniform, viscous slurry consisting essentially of the metal halide, the conductive carbonaceous material, the mechanical binder, and the non-aqueous liquid; pasting the slurry on an inert, electrically-conductive substrate;

drying the pasted slurry; and

curing the dried slurry for a time sufficient to remove substantially all of the liquid and to stabilize the mechanical binder thereby providing a positive electrode structure.

4,940,606

METHOD OF INCREASING THE LUBRICANT RETENTION OF MAGNETIC DISKS

Heinz Hilgers, Mainz; Rainer Morbitzer, Mainz-Kostheim, and Johannes Windeln, Bodenheim, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1989, Ser. No. 456,758
Claims priority, application European Pat. Off., Dec. 24, 1988, 88121667.5
Int. Cl.[5] H01F *10/02;* B05D *5/12*
U.S. Cl. 427—130 11 Claims

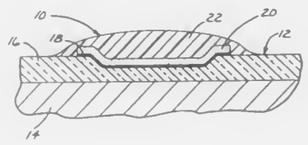
1. A method of manufacturing a magnetic record carrier of the type wherein the magnetic layer on the carrier is a coating formulation of magnetic particles dispersed in a curable organic binder system and solvents or mixtures thereof and an additive, the magnetic layer being applied to a substrate and cured, the method comprising the steps of heating said magnetic layer in an inert gas for a given time to a given temperature, and thereafter heating said layer in an inert gas to which oxygen has been added, for a given time to a given temperature.

4,940,607

METHOD OF PATCHING LINERS OF LARGE GLASS-LINED REACTORS

Scott R. Culler, and David L. Wakefield, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 6, 1988, Ser. No. 241,089
Int. Cl.[5] B32B *35/00*
U.S. Cl. 427—140 10 Claims



1. Method of patching a defect in a glass-lined reactor comprising the steps of

(a) applying to the defect a solution of substantially fully hydrolyzed organofunctional silanol and allowing it to dry to provide a thin primer that contains a silane coupling agent,

(b) applying a composite comprising silane-treated ceramic microparticles in a polymerizable resin containing functional groups that can covalently bond to silane, and

(c) then curing the resin of the composite.

4,940,608

LOCAL ELECTROLESS PLATING PROCESS FOR PLASTICS

Shigemitsu Kawagishi, Suita, and Toshiyuki Kita, Nara, both of Japan, assignors to Okuno Chemical Industry Co., Ltd., Japan

Filed Nov. 7, 1988, Ser. No. 268,051
Int. Cl.[5] B05D *5/00, 1/32, 3/10*
U.S. Cl. 427—259 18 Claims

1. A local electroless plating process for plastics comprising the steps of:

(1) coating the nonplating surface portion of a shaped plastics product with a pasty masking composition comprising a polymer and at least one compound selected from the group consisting of a sulfur compound, nitrogen compound and silicon compound;

(2) roughening the surface portion of the plastics product to be plated and applying a catalyst to the rough-surfaced portion;

(3) electrolessly plating the plastics product; and

(4) thereafter removing the polymer coating from the non-plating surface portion of the plastics product by use of absolute ethanol, absolute methanol, or a mixture of 85 to 90% ethanol or methanol and 15 to 10% of 25% ammonia water;

wherein the sulfur compound contained in the masking composition, is at least one compound selected from the group consisting of potassium xanthate, potassium dibutyldithiocarbamate, thiourea, thiourea derivatives, thioethanol, mercaptobenzothiazole, mercaptobenzodiol, thiosemicarbazide, thioglycollic acid and mercaptan;

wherein the nitrogen compound contained in the masking composition, is at least one compound selected from the group consisting of triazole, benzotriazole and benzotriazole derivatives; and

wherein the silicon compound contained in the masking composition, is at least one compound selected from the group consisting of mercaptopropyltrimethoxysilane, methyltriethoxysilane, aminosilane, trimethylchlorosilane and vinyltriethoxysilane.

4,940,609

POLYMERIC CONDITIONER FOR PRETREATING NONMETALLIC SURFACES FOR CHEMICAL METALLIZATION

Chung-Ji Tschang, Bad Durkheim; Johannes P. Dix, Neuhofen; Ekhard Winkler, Mutterstadt; Guenther Gotsmann, Frankenthal; Klaus Glaser, Mutterstadt, and Rolf Fikentscher, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 22, 1988, Ser. No. 288,622
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—304 12 Claims

1. A process for the chemical metallization of the nonmetallic surface of a molding, which comprises the following steps:

(a) cleaning said surface;

(b) activating said surface with a metal colloid dispersed in an aqueous medium;

(c) stripping excess colloid from said surface; and

(d) chemically depositing a metal on said surface, and wherein, at any time prior to process step (b), said surface is treated with a conditioner which is one or more quaternary salts of a polycondensate of an amine in aqueous solution, wherein said amine is at least one member selected from the group consisting of di-(hydroxyalkyl)-amines and tri-(hydroxyalkyl)-amines, and wherein from 10 to 99% of the nitrogen atoms of said polycondensate are quaternized with a C4–C12-alkyl group or a benzyl group.

4,940,610

METHOD FOR PREVENTING LOOSENING OF A BOLT

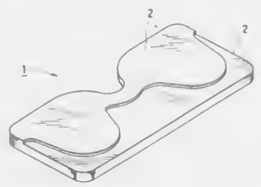
Jun Sakai, and Takeshi Natsume, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1989, Ser. No. 349,704
Claims priority, application Japan, May 10, 1988, 63-111427
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—355 7 Claims

1. A method for preventing loosening of a bolt fastened to a

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metallic member coated with an anticorrosive paint film, characterized by the step of thinning said anticorrosive paint film



by applying an urging pressure on a bolt seat surface portion of said coated metallic member by means of a press rod.

4,940,611

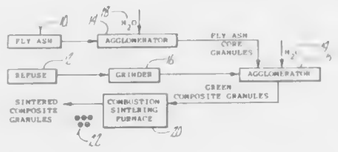
HARDENED, ENVIRONMENTALLY DISPOSABLE COMPOSITE GRANULES OF COAL CLEANING REFUSE, COAL COMBUSTION WASTE, AND OTHER WASTES, AND METHOD PREPARING THE SAME

George Burnet, Ames, Iowa, and Ashok J. Gokhale, College Station, Tex., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 20, 1988, Ser. No. 287,488

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—2 **18 Claims**



1. A method for preparing hardened, environmentally disposable composite granules of coal cleaning refuse and coal combustion waste comprising:

forming roughly spherical granules of coal combustion waste; pulverizing coal cleaning refuse; binding a layer of pulverized coal cleaning refuse to the coal combustion waste granules;

combusting and sintering the combined coal combustion waste granules with the outer layer of pulverized coal cleaning refuse to form hardened, environmentally inert and disposable composite granules of coal cleaning refuse and coal combustion waste.

4,940,612

OXYGEN IMPERMEABLE LEAK FREE CONTAINER

Charles E. Gibbons; Gerald A. Marano; James M. Kittreli; Allan A. Whillock; Robert L. Lanham, all of Mobile, and Donald Evans, South Mobile, all of Ala., assignors to International Paper Company, Tuxedo Park, N.Y.

Filed May 9, 1988, Ser. No. 191,987

The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.

Int. Cl.[5] B65D *5/56;* **B32B** *27/10*

U.S. Cl. 428—34.2 **21 Claims**

1. An oxygen barrier laminate structure for producing an oxygen impermeable leak free container comprising:

(a) a mechanically stable structural substrate having an inner and an outer surface;

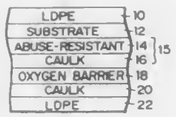
(b) an outer layer of a heat-sealable low density polyethylene polymer coated on said outer surface of said mechanically stable substrate;

(c) an inner layer of an abuse resistant polymer resin sandwiched together with a first caulking polymer resin coated on said inner surface of said mechanically stable structural substrate wherein said abuse resistant polymer contacts said substrate;

(d) an oxygen barrier layer placed onto the inner surface of said caulking polymer resin;

(e) a second layer of a caulking polymer resin coated onto the inner surface of said oxygen barrier material layer; and

(f) an inner product contact layer of low density polyethylene polymer coated on the inner surface of the second



caulking polymer resin layer, being heat-sealable, with the outer layer of low density polyethylene polymer of the laminate, on conventional extrusion equipment at temperatures ranging from 250° F. to 500° F. and wherein said first and second caulking polymer resins are selected from the group consisting of zinc salts of ethylene methacrylic acid copolymers, sodium salts of ethylene methacrylic acid copolymers, ethylene acrylic acid copolymers, ethylene methacrylic acid copolymers, ethylene vinyl acetate copolymers, and ethylene methacrylate copolymers.

4,940,613

PROTECTIVE COATINGS FOR GLASS AND CERAMIC VESSELS

Carlo M. Golino, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 27, 1989, Ser. No. 315,602

Int. Cl.[5] B32B *17/06, 17/10*

U.S. Cl. 428—34.7 **10 Claims**

1. In a vessel composed of a material demonstrating a brittle fracture selected from the group consisting of glass, glass-ceramic, and ceramic, said vessel being coated with an organic polymer to reduce breakage and to contain fragments of said material upon fracture of said vessel and any liquid present in said vessel, the improvement wherein said organic polymer is bonded to said vessel at a small selected area only through a chemical primer which reacts with both said organic polymer and the material of said vessel at said selected area, the breadth of said selective area being sufficient such that the bond developed by said chemical primer between the material of said vessel and said organic polymer at said selected area is sufficiently strong to resist delamination and prevent entrapment of liquids in the interfacial region between said organic polymer coating and the surface of said vessel, but the breadth of said selected area not being so great as to become a significant area for shard penetration, wherein said selective area has a breadth of at least about 1% of the total height of said vessel.

4,940,614

TUBULAR CASING HAVING AN ADHESIVE TAPE IN THE DIRECTION OF ITS LONGITUDINAL AXIS

Erna Kasti, Niedernhausen; Marion Mathieu, Mainz-Kastel, and Anton Goerres, Eppstein-Vockenhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt-/Main, Fed. Rep. of Germany

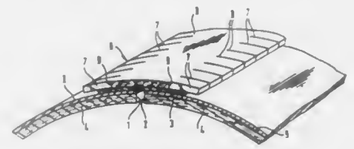
Filed Apr. 10, 1989, Ser. No. 335,769

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1988, 8804813

Int. Cl.[5] F16L *11/00;* **A22C** *13/00*

U.S. Cl. 428—348 **20 Claims**

1. A tubular food casing comprising a film bent to form a tubing and an adhesive tape extending in the longitudinal direction of said tubing, said adhesive tape joining the edges of said film which extend in the longitudinal direction of said tubing such that a glued seam is formed between said adhesive tape and said edges, wherein said adhesive tape comprises a



plurality of incisions extending transversely from at least one longitudinal edge of said tape, wherein each of said incisions terminates at a point located within said glued seam, and wherein the bond strength between said adhesive tape and said film is greater than the tear resistance of said film.

4,940,615

TUBULAR FOODSTUFF CASING MADE OF CELLULOSE HYDRATE, IN PARTICULAR SYNTHETIC SAUSAGE CASING

Klaus-Dieter Hammer, Mainz, and Hermann Winter, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1989, Ser. No. 313,037

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1988, 3807070

Int. Cl.[5] A22C *13/00*

U.S. Cl. 428—34.8 **25 Claims**

1. A tubular cellulose hydrate foodstuff casing comprising an external covering layer or an impregnation, said layer or impregnation comprising a fungicidal heterocyclic compound which comprises (a) a benzimidazole substituted in the 2-position, (b) an isothiazolone substituted at the nitrogen atom or at at least one carbon atom by an alkyl group or at least one carbon atom by a halogen, or (c) a substituted isothiazolone containing a fused aromatic ring.

4,940,616

MULTILAYERED CONTAINER AND METHOD FOR MAKING

Tadao Yatsu, and Nobuya Hinooka, both of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Tokyo, Japan

Continuation of Ser. No. 896,380, Aug. 14, 1986, abandoned, which is a division of Ser. No. 752,488, Jul. 8, 1985, Pat. No. 4,618,386, which is a continuation-in-part of Ser. No. 552,189, Nov. 15, 1983, abandoned. This application May 12, 1988, Ser. No. 195,416

Claims priority, application Japan, Nov. 15, 1982, 57-198898

Int. Cl.[5] B65D *23/00;* **B32B** *27/36*

U.S. Cl. 428—35.7 **6 Claims**

1. A three-layered container having a total thickness in the range of from 200 to 700 micrometers and an A/B/A structure comprising,

(A) two outer layers of polyethylene terephthalate each having a thickness in the range of from 100 to 600 micrometers, and

(B) an inner layer of a polyester having a thickness in the range of from 10 to 350 micrometers comprising the reaction product of a dicarboxylic acid component containing isophthalic acid in an amount exceeding 20 molar % and a glycol component containing ethylene glycol in an amount exceeding 80 molar %, said three-layered container being produced by the steps of extruding a multilayered tube from a multilayer extruding machine, bottom closing the extruded multilayered tube, and blow molding the closed tube, so that the closed tube is biaxially oriented.

4,940,617

MULTILAYER HOLLOW FIBER WOUND BODY

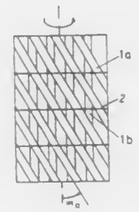
Ulrich Baurmeister, Wuppertal, Fed. Rep. of Germany, assignor to Akzo NV, Netherlands

Filed Mar. 10, 1988, Ser. No. 166,458

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1987, 3707584[U]; Feb. 8, 1988, 3803693[U]

Int. Cl.[5] B65H *81/00*

U.S. Cl. 428—36.3 **11 Claims**



1. A multilayer hollow fiber wound body, comprising at least two superposed hollow fiber mats in the form of a wound body comprising a plurality of hollow fiber plies;

said mats each comprising hollow fibers and transverse fibers, said hollow fibers being held by said transverse fibers and at least one portion of the hollow fibers being formed as helices or spirals on said wound body;

hollow fibers within each said mat being disposed at regular intervals and transverse fibers within each said mat being disposed at regular intervals, a ratio of the regular interval between adjacent transverse fibers to the regular interval between adjacent hollow fibers defining a parallelogram with said adjacent transverse fibers being in the range of 2 to 40;

hollow fibers of a ply of said wound body being disposed so as to cross hollow fibers of an adjacent successive ply of said wound body; and

none of said hollow fibers having a deflection site.

4,940,618

OPTICAL INFORMATION RECORDING MEDIUM

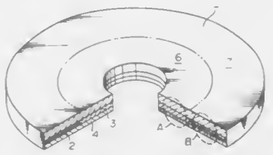
Emiko Hamada; Yuji Arai; Yuaki Shin, and Takashi Ishiguro, all of Tokyo, Japan, assignors to Taiyo Yuden Company, Ltd., Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 340,078

Claims priority, application Japan, Jul. 30, 1988, 63-191715; Jul. 30, 1988, 63-191716; Jan. 14, 1989, 1-7511

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—64 **8 Claims**



1. An optical information recording medium of the type wherein recorded data are reproduced by scanning them with a laser beam, which comprises a ROM region where optically

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readable pits are already formed and an information recordable region where optically readable pits can be formed by irradiation with a writing laser beam, wherein the information recordable region comprises a light transmitting substrate having a deformable surface, a light absorptive layer overlaying the deformable surface, to absorb the writing laser beam, and a light reflective layer overlaying the light absorptive layer, said deformable surface being deformable by energy generated upon absorption of the writing laser beam by the light absorptive layer, to form optically readable pits.

4,940,619

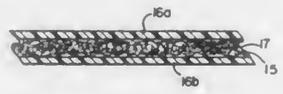
RADIATION ABSORPTION DEVICE

W. Novis Smith, Jr., 412 S. Perth St., Philadelphia, Pa. 19147, and Michael G. Carroll, P.O. Box 681, Pittston, Pa. 18640

Continuation-in-part of Ser. No. 105,311, Oct. 5, 1987, abandoned. This application Aug. 25, 1989, Ser. No. 399,343

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—74 8 Claims



1. A wrapping covering for a marine vehicle or for wrapping about the front of a land vehicle for absorbing electromagnetic radiation, for preventing interference on a radio or electronic starter and as a protective cover against abrasion consisting essentially of:

A. a pair of flexible polymeric sheet material which are joined along the periphery by heat and/or pressure;

B. a flexible matrix between said sheets, said matrix consisting of a resinous material with carbon fibers randomly incorporated therein, said carbon fibers randomly distributed in said matrix in an amount of about 1-10 oz/yd^2, and attachment means associated with said covering for removably attaching said cover to the vehicle and being transported by the vehicle.

4,940,620

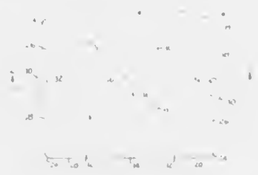
HIGHCHAIR FOOD COLLECTION

Vicki A. Silk, P.O. Box 18021, San Jose, Calif. 95158, and Regina Gray, 1245 Mountain Quail Circle, San Jose, Calif. 95120

Filed Oct. 23, 1989, Ser. No. 425,602

Int. Cl.[5] B32B *3/02, 3/10*

U.S. Cl. 428—81 4 Claims



1. A foldable mat adapted for placement on a floor underneath an infant's highchair to catch food items; said mat comprising two similarly dimensioned rectangular panels;

each panel having a flat uninterrupted upper face, a flat uninterrupted lower face, two longitudinal side edges, and two connecting lateral edges; said panels being arranged in side-by-side relation, with two of their longitudinal edges spaced a slight distance apart;

Means hingedly connecting said panels together for folding motion around an axis extending midway between said two longitudinal edges, so that the upper faces of the panels lie flat against one another in a storage mode; said hinge means comprising a continuous flexible strip of material extending the full length of the associated panels;

the upper face of each panel being a smooth non-porous surface devoid of crevices that could retain food or liquid when the surface is wiped with a damp cloth;

and similarly dimensioned handles located midway along the other two longitudinal edges of the panels; each handle being an integral extension of the associated panel; each handle having the same thickness as the associated panel, whereby the panels can be folded flat against one another without interference from the handles;

each panel being a rigid self-sustaining structure, whereby the defined mat can be placed upright on a kitchen sink with the two panels having lateral edges thereof resting on the sink surface so that the pad has a V-configuration in the top plan view, said panels being sufficiently rigid so that food and liquids can be wiped from the normally upper faces of the panels into the sink.

4,940,621

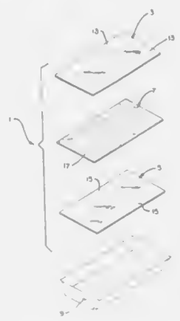
ABSORBENT PAD AND METHOD FOR CONSTRUCTING SAME

John C. Rhodes, Washington, Mo.; Ronald R. Aljoe, Lewisville, Tex., and Berne F. Ellers, Orkelljunga, Sweden, assignors to Clean-Pak, Inc., St. Louis, Mo. and Dry Forming Processes AB, Orkelljunga, Sweden

Filed Sep. 19, 1988, Ser. No. 246,155

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—137 19 Claims



1. An absorbent pad for meat and poultry products and the like including:

upper and lower plastic film layers, each having a series of through perforations of predetermined size extending throughout said layers;

a substantially uniform in thickness intermediate absorbent layer disposed between said upper and lower layers and having a plurality of juxtaposed and overlapping absorbent material fibers which are operatively secured to adjacent absorbent material fibers in structural supporting relationship and are also constructed to provide a plurality of spaced interstices extending throughout said absorbent layer;

a plurality of superabsorbent granular particles dispersed throughout the absorbent layer and being physically retained in place against movement within the absorbent layer, said particles being physically retained in place at random and spaced locations in said absorbent layer by said absorbent material fibers, said superabsorbent granular particles being capable of absorbing and suspending liquids therein while continuing to be held and physically retained in place by the absorbent material fibers of said absorbent layer even after liquid is absorbed in said superabsorbent granular particles and absorbent material fibers; and

said upper and lower perforated plastic film layers being attached to one another at partially along opposite marginal edge portions thereof to retain said absorbent layer between said upper and lower layers;

whereby said absorbent material fibers and said superabsorbent granular particles absorb and suspend substantial quantities of liquid throughout the absorbent layer without reverse migration of liquid past the through perforations in said layers so as to maintain the absorbed and suspended liquid out of contact with the meat product.

4,940,622

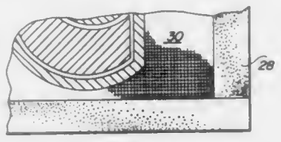
IMAGE BEARING SIGN AFFIXED TO A WINDOW

Edward J. Leavitt, Sr., 823 Fontana, Richardson, Tex. 75080, and Edward J. Leavitt, Jr., 535 E. Charleston, Phoenix, Ariz. 85022

Division of Ser. No. 854,405, Apr. 21, 1986, Pat. No. 4,883,556. This application Feb. 16, 1989, Ser. No. 301,836

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—137 1 Claim



1. An image bearing sign affixed to a vehicle window in accordance with the steps of:

(a) providing a perforated polymeric substrate of predetermined size;

(b) coating a surface of said perforated polymeric substrate with a photo coat emulsion;

(c) applying a mask to the coated polymeric substrate in selected areas to define image-bearing areas corresponding to the areas of the substrate immediately beneath said mask;

(d) exposing the polymeric substrate to light;

(e) removing the mask from the substrate;

(f) washing the polymeric substrate to remove the emulsion from the image areas;

(g) silkscreening at least predetermined portions of said image areas to impart images thereon; and

(h) adhesively securing the substrate to said window.

4,940,623

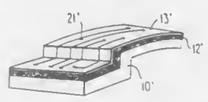
PRINTED CIRCUIT BOARD AND METHOD USING THERMAL SPRAY TECHNIQUES

Alexander A. Bosna, 135 Summit Rd., Malvern, Pa. 19355, and Louis M. Riccio, P.O. Box 81, DeVault, Pa. 19432

Filed Aug. 9, 1988, Ser. No. 230,401

Int. Cl.[5] B05B *5/00*; **B05D** *3/06*

U.S. Cl. 428—158 5 Claims



1. A method of making a printed circuit comprising the following steps:

(1) adhering one or more layers of hollow micron-sized spheres, beads or spaces to a surface of a substrate upon which said printed circuit is to be formed,

(2) rupturing at least the surfaces ones of said hollow micron-sized spheres, beads or spaces in said pattern by a laser beam under the control of a computer to produce a circuit path of nooks, crannies and undercuts formed by the remains of laser ruptured hollow micron-sized spheres, beads or spaces adhered to said surface in the pattern of said printed circuit,

(3) spraying electrically conductive metal on said ruptured hollow micron-sized spheres, beads or spaces to produce said printed circuit.

4,940,624

MASKING MEMBER

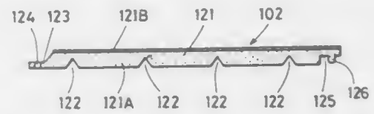
Seinosuke Horiki, and Reiji Makino, both of 213-5 Hosowari, Minamishibata-cho, Tokai-shi, Aichi, Japan

Filed Nov. 3, 1989, Ser. No. 431,563

Claims priority, application Japan, Nov. 4, 1988, 63-144545[U]

Int. Cl.[5] B32B *1/00, 3/10, 3/30*

U.S. Cl. 428—159 6 Claims



1. A masking member consisting of an elastic sheet having a groove(s) for bending in a selected position(s) on one or both sides of said sheet.

4,940,625

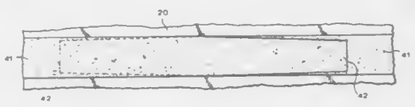
PROCESS FOR PRINTING CONTINUOUS STRIPE AND PRODUCT THEREOF

Robert S. Anderson, Adams Rd., P.O. Box 260, Summitsville, N.Y. 12781

Filed Feb. 16, 1989, Ser. No. 311,639

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—195 12 Claims



1. An axially elongate substrate having on a surface thereof an apparently continuous major stripe of constant width and straight edges and given length, said major stripe being defined by a plurality of successive slightly overlapping and generally longitudinally aligned minor stripes of substantially constant width, substantially straight edges, and shorter length, each said minor stripe having at least one inwardly tapered end overlapping the end of an adjacent minor stripe to provide the illusion of a continuous major stripe of constant width and straight edges by enhancing the apparent longitudinal alignment of said overlapping ends.

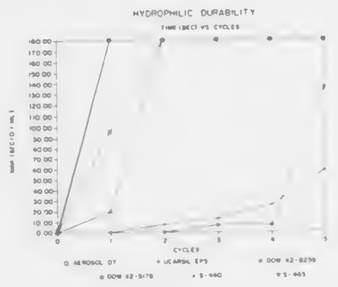
VOL 1116 ISS 2 JL 10 1990 UMI

4,940,626

MELTBLOWN WIPER INCORPORATING A SILICONE SURFACTANT

Wayne T. Rhodes, III, Piedmont, and Normand M. Savaria, Greer, both of S.C., assignors to The James River Corporation, Va.

Filed May 26, 1988, Ser. No. 199,351
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—198 13 Claims



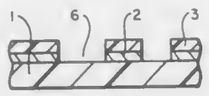
1. A wiper comprising:
a meltblown polypropylene substrate incorporating a functional organosilicone surfactant wetting agent capable of imparting durable hydrophilicity to said wiper.

4,940,627

THIN FILM ARTWORK COMPOUNDS

Wilfred C. Kittler, Jr., Thousand Oaks; Janos Czukor, Panorama City, and Darrell Stoddard, Malibu, all of Calif., assignors to Andus Corporation, Canoga Park, Calif.

Division of Ser. No. 10,873, Feb. 4, 1987, Pat. No. 4,911,745.
This application Jan. 24, 1990, Ser. No. 469,878
Int. Cl.[5] B32B 3/10; B44C 1/22; C23F 1/00
U.S. Cl. 428—203 6 Claims



1. A graphic artwork, comprising:
a substrate transparent to ultraviolet light;
a light blocking layer disposed on a surface of the substrate in a predetermined pattern, the light blocking layer comprising copper oxide and non-oxidized copper metal and being substantially opaque to ultraviolet light while remaining at least partially transparent to visible light.

2. The graphic artwork of claim 1, the light blocking layer having a thickness less than 3000 angstroms and a transmission no greater than 0.1% to light radiation having a wavelength between 300 and 400 angstroms.

4,940,628

ERASABLE SYSTEM INCLUDING MARKING SURFACE AND ERASABLE INK COMPOSITION

Nan J. Lin, Burlington, and Peter G. Hanley, Milford, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 906,868, Sep. 15, 1986, abandoned. This application Oct. 24, 1988, Ser. No. 262,036
Int. Cl.[5] B32B 3/00; C08F 8/30; C09D 5/00
U.S. Cl. 428—207 20 Claims

1. An erasable system including a marking element and an erasable marking composition for applying markings to the marking element, said marking element comprising a plurality of superposed sheets bound in the form of a book, each sheet comprising a non-porous marking surface comprising a polymeric material carried by a substrate, said marking composition consisting essentially of an aqueous dispersion of a particulate, polymeric film-forming material, a colorant, and an amount of a polymeric shear-thinning material sufficient to provide an erasable marking composition having a shear-thinning index between about 0.01 to about 0.6, said marking composition having a viscosity of about 100 cPs or lower when measured at a shear rate of 300 reciprocal seconds and providing a coalesced residue on drying which is substantially water insoluble and which can be completely erased from the marking surface with an elastomeric eraser.

4,940,629

FIBER REINFORCED THERMOPLASTIC INTEGRAL SKIN FOAMS AND MANUFACTURE THEREOF

Heinz Weber, Gruenstadt; Gerhard Bleckmann, Lampertheim; Gerhard Dembek, Bad Duerkheim; Gerd Ehrmann, Deidesheim; Gerhard Heinz, Weisenheim, and Lothar Schlemmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 24, 1989, Ser. No. 342,143
Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815723
Int. Cl.[5] B32B 7/02, 3/26
U.S. Cl. 428—213 4 Claims

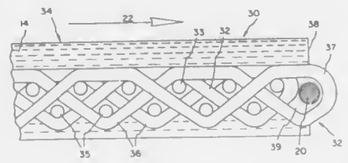
1. A fiber reinforced thermoplastic integral skin foam of density 50–500 kg/m^3 having a solid outer skin 0.05–1.5 mm in thickness, containing from 2 to 60 % by weight of reinforcing fibers in mat form having a median fiber length of not less than 50 mm.

4,940,630

BASE FABRIC STRUCTURES FOR SEAMED WET PRESS FELTS

Patrick H. Peuven, Clinton, S.C., assignor to Asten Group, Inc., Charleston, S.C.

Continuation of Ser. No. 318,727, Mar. 3, 1989, Pat. No. 4,892,781, which is a division of Ser. No. 108,491, Oct. 14, 1987, Pat. No. 4,824,525. This application Nov. 13, 1989, Ser. No. 435,609
Int. Cl.[5] B32B 5/02
U.S. Cl. 428—234 3 Claims



1. A papermaker's wet press felt which is rendered endless by intermeshing seaming loops, extending from respective ends of a base fabric of said felt, and inserting a pintle in the resulting channel formed by the loops, said felt comprising:
(a) the base fabric being flat woven in a selected repeat pattern with N layers, where N is a positive integer, of crimped warp yarns oriented lengthwise in the loom and further oriented in the felt running direction during use on the papermaking machine;
(b) said crimped warp yarns being woven at least 30 N to 60 N yarns per inch;
(c) each of said seaming loops, at the respective ends of said felt, being a portion of a selected one of said crimped warp yarns of said base fabrics which extends beyond the respective end of said woven base fabric and is retained in said base fabric by said selected repeat pattern, said seaming loops extending in the lengthwise or felt running direction when said loops are intermeshed at the seam; and
(d) at least one layer of batt material affixed to said base fabric.

4,940,631

CELLULAR CELLULOSIC WIPING MATERIAL

Claudine Colin, Rantigny, and Jean-Luc Wertz, Beauvais, both of France, assignors to Societe Anonyme: Spontex, France

Filed Jul. 28, 1988, Ser. No. 225,227
Claims priority, application France, Mar. 30, 1988, 88 04218
Int. Cl.[5] B32B 3/26, 7/04
U.S. Cl. 428—309.9 16 Claims

1. A cellular cellulosic wiping material, comprising a cellular cellulosic substrate at least one side of which is coated with an expanded latex foam obtained from an aqueous latex composition having a viscosity of 2500 to 3500 mPa.s measured at 20° C. under 65% relative humidity, and having a foam density of 250 to 400 g/l.

4,940,632

FOAM LAMINATES WHICH INCLUDE ASTM E-84 CLASS 1 RATED FOAMS

William J. Nicola, Burgettstown, Pa., and Wolfgang W. Reichmann, Leverkusen, Fed. Rep. of Germany, assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1989, Ser. No. 418,429
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—318.4 1 Claim

1. A foam laminate comprising a polyurethane foam core sandwiched between two facing material, wherein said foam core has the following properties:
(i) a flamespread as determined by ASTM E-84 of 25 or less,
(ii) a smoke density as determined by ASTM E-84 of less than 450,
(iii) a dimensional stability measured as a % volume change as determined by ASTM D-2126,after 28 days (1) at −30° C. of no more than 1, (2) at 100° C. of no more than 8, and (3) at 70° C. and 100% relative humidity of no more than 12, and
(iv) a firmness of no more than 0.6 centimeters after 5 minutes, and wherein said foam core is produced by reacting:
(a) a polymethylene poly(phenyl isocyanate), a isocyanate group containing prepolymer based on a polymethylene poly(phenyl isocyanate), or mixtures thereof,
(b) from 37 to 43% by weight of one or more aromatic polyester polyols having hydroxyl functionalities of 2.4 or more and hydroxyl numbers of 350 or more, or a mixture of aromatic polyester polyols, with said mixture having an average hydroxyl functionality of 2.4 or more and an average hydroxyl number of 350 or more,
(c) from 31 to 39% by weight of one or more polyether polyols having hydroxyl functionalities of 4 or more and hydroxyl numbers of 340 or more,
(d) from 22 to 30% by weight of one or more flame retardants, and,
(e) one or more blowing agents, one or more catalysts, and one or more surfactants, said % by weight totalling 100%, wherein the amount of component (b) is greater than component (c), and wherein the isocyanate index is from about 100 to about 115.

4,940,633

METHOD OF BONDING METALS WITH A RADIO-OPAQUE ADHESIVE/SEALANT FOR VOID DETECTION AND PRODUCT MADE

Ralph D. Hermansen, 19136 Nashville St., Northridge, Calif. 91326; Thomas H. Sutherland, 16710 Orange Ave., No. 073, Paramount, Calif. 90723, and Roamer Predmore, 13007 Renfrew Cir., Fort Washington, Md. 20744

Filed May 26, 1989, Ser. No. 357,154
Int. Cl.[5] B05D 3/00; B32B 31/24
U.S. Cl. 428—324 14 Claims

1. In a method for bonding together and/or sealing metal structures with an adhesive layer comprising a polymer compound where the possibility exists that voids in the polymer compound may occur, wherein the improvement comprises incorporating a powder filler comprising a high atomic number metal having an atomic number of between 72 and 82 or compound thereof into said polymer compound, wherein the amount of said powder filler in said polymer compound is between about 5 volume percent to 50 volume percent, to provide a radio-opaque polymer compound which is more radio-opaque than the bonded and/or sealed metal structures to thereby allow inspection for voids in the radioopaque polymer compound by non-destructive high energy radiation inspection.

4,940,634

HIGH BARRIER LOW PROFILE FORMING WEB

Walter B. Mueller, Inman, and Henry G. Schirmer, Spartanburg, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Mar. 21, 1986, Ser. No. 842,530
Int. Cl.[5] B32B 1/02, 31/12, 31/30
U.S. Cl. 428—349 17 Claims

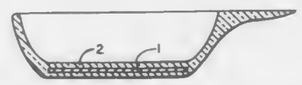
1. A thermoplastic composite film useful in thermoforming operations comprising:
(a) a first oriented polymeric film oriented to substantially the same extent in both the longitudinal and transverse directions;
(b) a second polymeric film bonded over most of a major surface to the first film, and comprising an oxygen barrier layer sufficient to protect packaged food products; and
(c) wherein the first film has been oriented to a maximum orientation ratio of about 3.5:1 and the first polymeric film has been bonded to the second polymeric film after effecting biaxial orientation of the first polymeric film.

4,940,635

PROCESS TO ENCAPSULATE GRAPHITE INTO GLASS AND GLASS CERAMIC ARTICLES, AND ARTICLES MANUFACTURED BY THIS PROCESS

Andre Andrieu, Nemours; Jean-Pierre P. Davot, Avon, and Jean-Pierre A. M. Thibieroz, Samoreau, all of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 23, 1988, Ser. No. 275,442
Claims priority, application France, Nov. 24, 1987, 87 16244
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—408 20 Claims



1. In a method for press forming a composite glass-ceramic article having a heat conducting, graphite insert fully encapsulated therewithin which comprises the steps:
(a) delivering a first charge of molten glass to a mold;
(b) pressing said first charge into an initially formed article while simultaneously pressing said heat conducting graphite insert within one surface thereof;

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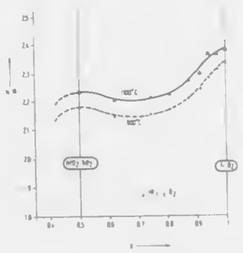
(c) depositing a second charge of molten glass upon said initially formed article;
(d) pressing said second charge of molten glass into a finished integral article incorporating said initially formed article and simultaneously fully encapsulating said insert therewithin; and then
(e) heat treating said glass article to convert it into a glass-ceramic article;
the improvement which comprises incorporating at least one gas getter metal selected from the group consisting of aluminum, chromium, niobium, tantalum, titanium, and zirconium with said insert in an amount at least sufficient to provide a coating on the entire surface of said insert having a thickness of at least 0.5 micrometers.

4,940,636

OPTICAL INTERFERENCE FILTER

Lieselotte Brock; Gunter Frank, and Bruno Vitt, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1988, Ser. No. 223,463
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1987, 3724216
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—426 **8 Claims**



1. An optical interference filter having an alternating sequence of first low-refractive index layers and second high-refractive index layers on a glass substrate, the first layers consisting essentially of amorphous SiO_2 and the second layers being crystalline layers and consisting essentially of TiO_2 and a second metal oxide, characterized in that the material of the second layers is a mixed oxide chosen from a group consisting of:
88–95 mole. % TiO_2 and 5–12 mole. % ZrO_2,
88–95 mole. % TiO_2 and 5–12 mole. % of an oxide selected from the group HfO_2, $TiO_2.ZrO_2$, $TiO_2.HfO_2$, $TiO_2.Nb_2O_5$, $TiO_2.Ta_2O_5$ and $Ta_2O_5.2TiO_2$ and mixtures or combinations of these materials, the crystal structure of the second layers corresponding to a crystal structure obtained in a heat treatment at a temperature between 700° and 1100° C.

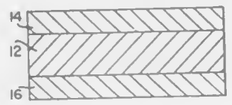
4,940,637

DENTAL FOIL AND CROWN

Itzhak Shoher, 50 Shlomo Hamelech St., Tel Aviv, and Aharon Whiteman, 13 J. L. Perez St., Petach-Tikvah, both of Israel

Continuation-in-part of Ser. No. 847,228, Apr. 2, 1986, Pat. No. 4,676,751, which is a continuation of Ser. No. 690,650, Jan. 11, 1985, abandoned. This application Dec. 31, 1986, Ser. No. 948,008
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.[5] B32B *15/04*; A61C *5/09*
U.S. Cl. 428—607 **4 Claims**

1. A metal foil for forming a dental coping in the construction of a dental restoration in which said dental coping has a veneering composition applied thereon following heat treatment of such coping, with said metal foil having one or more layers of a high fusing temperature precious metal consisting essentially of a gold and palladium based composition having a



high fusing temperature above the temperature of said heat treatment, and having a low fusing temperature layer of gold or gold alloy on each side of said high fusing temperature layer.

4,940,638

PLATED STEEL SHEET FOR A CAN

Takeshi Adaniya; Yoshinori Yomura; Naoyuki Ooniwa; Yoshihiko Yasue; Hiroshi Kagechika; Tadahiko Mishima, and Hiroshi Ishikawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Sep. 16, 1988, Ser. No. 245,754
Claims priority, application Japan, Sep. 18, 1987, 62-233975
Int. Cl.[5] B32B *15/01*
U.S. Cl. 428—648 **12 Claims**

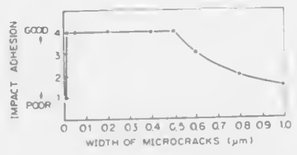
1. Plated steel sheet for a can comprising:
a steel sheet;
an Al plated film 0.005 to 5 μm thick on one surface of the steel sheet; and
a plated film of 0.005 to 5 μm thick on the other surface said steel sheet, the plated film comprising a metal selected from the group consisting of Ti, Zn, Ni, Co, Cr, Mo and Sn.

4,940,639

ZN-NI ALLOY-PLATED STEEL SHEET WITH IMPROVED IMPACT ADHESION

Kazuhide Ohshima, Wakayama, and Nobukazu Suzuki, Ibaragi, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1989, Ser. No. 376,022
Claims priority, application Japan, Jul. 7, 1988, 63-169352; Sep. 1, 1988, 63-219090
Int. Cl.[5] B32B *15/01, 15/18*
U.S. Cl. 428—659 **5 Claims**



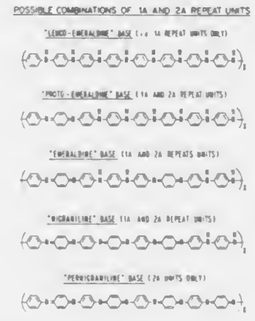
1. A Zn-Ni alloy electroplated steel sheet exhibiting improved corrosion resistance as well as improved adhesion upon impact and resistance to powdering, comprising a steel sheet; a thin Zn-Ni alloy electroplated underlayer on at least one side of the steel sheet in which microcracks having a width of 0.01–0.5 μm and covering 10–60% of the surface area of the electroplated layer are randomly oriented; and a Zn-Ni alloy electroplated toplayer.

4,940,640

HIGH CAPACITY POLYANILINE ELECTRODES

Alan G. MacDiarmid, Drexel Hill, Pa., assignor to University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 757,884, Jul. 23, 1985, abandoned. This application Sep. 6, 1988, Ser. No. 241,796
Int. Cl.[5] H01M *4/60*
U.S. Cl. 429—213 **11 Claims**



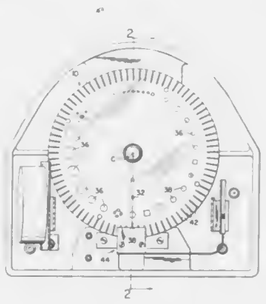
1. An electrochemical cell comprising anode active means, cathode active means and aprotic electrolyte at least one of said anode and cathode means consisting essentially of polyaniline species wherein each nitrogen of the polymer chain is associated with one, but only one, hydrogen atom.

4,940,641

APERTURE DISC AND METHOD OF MAKING THE SAME

Robert J. Pavone, South Windsor; Bruce L. Davidson, East Hartford, and Henry F. Berdat, Manchester, all of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Division of Ser. No. 157,285, Feb. 17, 1988, Pat. No. 4,841,316. This application Mar. 8, 1989, Ser. No. 320,418
Int. Cl.[5] G03F *1/00*
U.S. Cl. 430—5 **16 Claims**



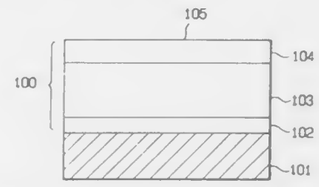
1. An aperture disc for use in a photohead having a light source exposing upon a photosensitive surface various images and having a light sensor indicating the position of said disc relative to said photohead, wherein said aperture disc comprises:
a thin flat sheet of transparent material having a generally opaque surface adjointed thereto and defining the aperture disc shape;
first marks formed on said aperture disc oriented in a first arcuate path around a center, each of said first marks of said first path selectively allowing radiant energy generated by a light source to pass through the otherwise opaque surface of said aperture disc onto a photosensitive surface;
second marks formed on said aperture disc oriented in a second arcuate path concentric with said first pattern, each of said second marks of said second pattern allowing radiant energy emitted by a light sensor to pass through the otherwise opaque surface of said aperture disc onto a detector formed with the light sensor;
each of the first marks of the first path being in radial alignment with a second mark of the second path whereby said sensor identifies the presence of one of said first marks defining said first path when the corresponding radially aligned second mark defining said second path passes across said light sensor and allows radiant energy to activate said detector.

4,940,642

ELECTROPHOTOGRAPHIC LIGHT RECEIVING MEMBER HAVING POLYCRYSTALLINE SILICON CHARGE INJECTION INHIBITION LAYER PREPARED BY CHEMICAL REACTION OF EXCITED PRECURSORS AND A-SI:C:H SURFACE LAYER

Shigeru Shirai; Keishi Saito; Takayoshi Arai; Minoru Kato, and Yasushi Fujioka, all of Shiga, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 21,342, Mar. 3, 1987, abandoned. This application Jan. 26, 1989, Ser. No. 302,114
Claims priority, application Japan, Mar. 5, 1986, 61-48018
Int. Cl.[5] G03G *5/14, 5/082*
U.S. Cl. 430—65 **35 Claims**



1. A light receiving member for use in electrophotography comprising: a substrate for electrophotography and a light receiving layer disposed on said substrate, said light receiving layer comprising a charge injection inhibition layer of 0.01 to 10 pm in thickness, a photoconductive layer of 1 to 100 μm in thickness; and a surface layer of 0.003 to 30 μm in thickness being disposed in this order from the side of said substrate; said charge injection inhibition layer comprising a polycrystalline material containing silicon atoms as the main constituent and 30 5×10^4 atomic ppm of a conductivity controlling element selected from the group consisting of Group III and Group V elements of the Periodic Table; said charge injection inhibition layer being formed by chemically reacting (i) a precursor (A) generated from a silicon- and halogen-containing substance (a) by subjecting said compound (a) to the action of an activation energy; (ii) an active species (B) generated from a substance (b) selected from the group consisting of H_2, HF, HCl, HBr and HI by subjecting said substance (b) to the action of an activation energy, and (iii) a gaseous substance (c) for imparting said conductivity controlling element in the absence of a plasma in a film deposition space while adjusting the volume ratio of said precursor (A) to said active species (B) to be in the range from 20:1 to 1:20 based on flow ratio; said photoconductive layer comprising an amorphous material containing silicon atoms as the main constituent and at least one kind of atom selected from hydrogen atoms and halogen atoms in a total amount of 1 to 40 atomic % and said surface layer having a free surface and comprising an amorphous material of the formula: A-

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$(Si_xC_{1-x})_y:H_{1-y}$, wherein x is 0.1 to 0.99999 and y is 0.6 to 0.999.

4,940,643

RECORDING SYSTEM HAVING A COATING DEVICE FOR COATING RECORDING MEDIUM OR PHOTOSENSITIVE MEDIUM WITH DEVELOPER MATERIAL REACTING WITH COLOR PRECURSOR

Jun Sakai; Shunichi Higashiyama, both of Nagoya; Koji Suzuki, Kasugai, and Mitsuru Ohta, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 159,736, Feb. 24, 1988. This application Dec. 27, 1988, Ser. No. 289,673

Claims priority, application Japan, Dec. 29, 1988, 62-332488

Int. Cl.[5] G03G *9/10*

U.S. Cl. 430—108 **11 Claims**

1. A toner for forming a developer medium which is capable of reacting with a chromogenic material to produce a visible dye image, comprising:

developer particles each including a developer material capable of reacting with said chromogenic material; and

thermoplastic resin particles having a smaller grain size than said developer particles, each of said developer particles carrying a multiplicity of said thermoplastic resin particles deposited on a surface thereof.

4,940,644

TONER FOR DEVELOPMENT OF ELECTROSTATIC IMAGES AND IMAGE FORMING METHOD BY USE THEREOF

Akitoshi Matsubara; Satoru Ikeuchi; Kunio Akimoto, and Yoshio Takizawa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 6,549, Mar. 31, 1987, abandoned. This application Dec. 22, 1988, Ser. No. 291,416

Claims priority, application Japan, Mar. 15, 1985, 60-50340; Aug. 28, 1985, 60-187348; Aug. 28, 1985, 60-187350

Int. Cl.[5] G03G *9/10*

U.S. Cl. 430—109 **19 Claims**

1. In a toner for development of electrostatic images using hot roller development of the type comprising a resin and a colorant, the improvement comprising

said resin being mainly constituted of a copolymer comprising a crystalline polymer block and an amorphous polymer block chemically bound to each other and wherein

said crystalline polymer block has a melting point of 50° to 120° C.; has a number average molecular weight of 1,000 to 20,000; has a weight average molecular weight of 2,000 to 100,000; comprises a crystalline polyalkylene polyester; and is contained in said copolymer in an amount of 5 to 50 parts by weight based on 100 parts by weight of said copolymer;

said amorphous polymer block has a glass transition point of 50° to 100° C.; has a number average molecular weight of 1,000 to 50,000; and comprises an amorphous aromatic polyester;

said copolymer has a number average molecular weight of 1,000 to 30,000; has a weight average molecular weight of 5,000 to 300,000; and has a dynamic moduli of 2×10^3 to 1×10^5 dye/cm^2 at least one point from 70° to 140° C.; and

said toner further comprising an inorganic fine powder in an amount of 0.01 to 5% by weight based on the total weight of the toner.

4,940,645

IMAGING MATERIAL EMPLOYING PHOTOSENSITIVE MICROCAPSULES CONTAINING TERTIARY AMINES AS COINITIATORS

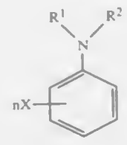
Paul D. Davis, Centerville; Gary F. Hillenbrand, Chillicothe, and Paul C. Adair, Springboro, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 755,400, Jul. 16, 1985, abandoned. This application Jan. 19, 1989, Ser. No. 300,168

Int. Cl.[5] G03C *1/68, 1/72*

U.S. Cl. 430—138 **24 Claims**

1. A photosensitive microcapsule having improved film speed comprising, as the internal phase, a photosensitive composition including a free radical addition polymerizable material, and a photoinitiator system, wherein said photoinitiator system includes an absorber, a coinitiator and an autoxidizer, said absorber, said coinitiator and said autoxidizer being different, said coinitiator being a compound which is more efficient in yielding free radicals by interacting with said absorber than said autoxidizer and said autoxidizer being more efficient in yielding free radicals by interacting with oxygen or oxygen radicals than said co-initiator, the quantum efficiency of said photosensitive composition in reacting with oxygen being substantially greater than 1, wherein said absorber is an aryl ketone, said co-initiator is an N,N-dialkylaniline represented by the formula



(I)

wherein R^1 and R^2 are the same or different and represent an alkyl group having 1 to 6 carbon atoms or a benzyl group; and x a substituent having a Hammett's constant in the range of −0.9 to 0.7 and said autoxidizer is a thiol.

4,940,646

POLYVINYL ACETAL WITH HYDROXY ALIPHATIC ACETAL GROUPS USEFUL IN PHOTOSENSITIVE NEGATIVE WORKING COMPOSITIONS

Georg Pawlowski, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 21, 1987, Ser. No. 135,316

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644162

Int. Cl.[5] G03C *1/60, 1/68*

U.S. Cl. 430—175 **9 Claims**

1. A photosensitive mixture comprising:

(A) a negative-working light-hardenable substance selected from the group consisting of:

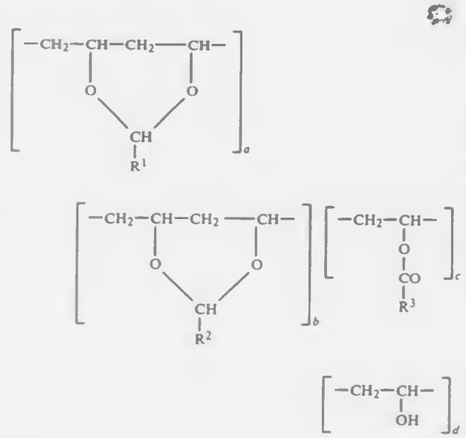
(1) a diazonium salt polycondensation product containing diazonium salt units and non-photosensitive units derived from compounds capable of condensation and selected from the group consisting of aromatic amines, phenols, phenol ethers, aromatic thioethers, aromatic hydrocarbons, aromatic heterocyclic compounds and organic acid amides, and

(2) a mixture of olefinically unsaturated, radically polymerizable compound and a photoinitiator for radical polymerization

in admixture with

(B) a polyvinyl acetal having a hydroxyl number of from 150 to 600,

wherein the light-hardenable substance and the polyvinyl acetal are present in amounts sufficient to produce an image when exposed to actinic radiation and developed wherein the polyvinyl acetal is a compound of the formula



wherein

R^1 is a radical selected from the group consisting of

R^2 is a hydrogen atom, a substituted or unsubstituted alkyl radical containing 1 to 6 carbon atoms, or a substituted or unsubstituted aryl radical,

R^3 is an alkyl radical containing 1 to 4 carbon atoms,

R^4 is a substituted or unsubstituted alkylene group containing 1 to 6 carbon atoms,

R^5 and R^6 are identical or different and denote hydrogen atoms, alkyl radicals containing 1 to 6 carbon atoms, alkoxy radicals containing 1 to 4 carbon atoms, or hydroxyalkyl radicals containing 1 to 3 carbon atoms or hydroxyl groups,

R^7 is a hydrogen atom or an alkyl radical containing 1 to 6 carbon atoms,

R^8 is a hydrogen atom, an alkyl, hydroxyalkyl or alkoxyalkyl radical containing 1 to 6 carbon atoms or a substituted or unsubstituted aryl radical containing 6 to 10 carbon atoms,

a is a number from 0.05 to 0.8,

b is a number from 0.2 to 0.6,

c is a number from 0.01 to 0.15,

d is a number from 0.04 to 0.2, **and the sum of** $a+b+c+d=1$.

4,940,647

PHOTOPOLYMERIZABLE COMPOSITIONS A LEUCO DYE AND A LEUCO DYE STABILIZER

Hans-Dieter Frommeld, Wiesbaden, and Hartmut Wiezer, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 6, 1988, Ser. No. 254,240

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 3735088

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—271 **27 Claims**

1. A photopolymerizable composition comprising:

(a) a polymeric binder,

(b) a compound having at least one terminal ethylenic double bond and a boiling point above about 100° C. at standard pressure and being capable of forming a polymer by free-radical initiated polymerization;

(c) a photoinitiator,

(d) a leuco dye, and

(e) a leuco dye stabilizer comprising a compound having at least one epoxy group.

13. A photopolymerizable recording material comprising a support and a photopolymerizable layer that comprises:

(a) a polymeric binder;

(b) a compound having at least one terminal ethylenic double bond and a boiling point above about 100° C. at standard pressure and being capable of forming a polymer by free-radical initiated polymerization;

(c) a photoinitiator,

(d) a leuco dye, and

(e) a leuco dye stabilizer comprising a compound having at least one epoxy group.

4,940,648

INCREASED SENSITIVITY PHOTOINITIATION COMPOSITIONS

Margaret W. Geiger, Neshanic Station, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 12, 1988, Ser. No. 156,354

Int. Cl.[5] G03C *1/70, 1/78, 1/94;* B01J *37/34*

U.S. Cl. 430—272 **24 Claims**

13. A photographic element which comprises a substrate and a photopolymerizable composition coated on said substrate, which photopolymerizable composition comprises a photopolymerizable monomer or oligomer containing at least two ethenically unsturated double bonds and a photopolymerization initiator composition which comprises a 9-phenyl acridine, or a phenazine compound and at least one peroxide or perester compound.

16. The photographic element of claim 13 wherein said substrate comprises a material selected from the group consisting of polyester, silicon, gallium arsenide, aluminum and its alloys.

4,940,649

PHOTOPOLYMERIZABLE RECORDING MATERIALS AND PHOTORESIST LAYERS AND LITHOGRAPHIC PRINTING PLATES BASED THEREON

Reinhard Aldag, Ludwigshafen; Peter Neumann, Wiesloch; Andreas Boettcher, Leimen; Thomas Bluemel, Erpolzheim; Friedrich Seitz, Friedelsheim, and Friedrich-Wilhelm Raulfs, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

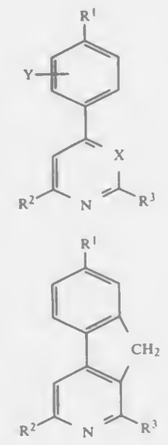
Filed May 17, 1988, Ser. No. 196,079

Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717036

Int. Cl.[5] G03C *1/70*

U.S. Cl. 430—281 **11 Claims**

1. A photopolymerizable recording material composed of one or more photopolymerizable olefinically unsaturated organic compounds, optionally a polymeric binder, one or more photopolymerization initiators, a color-forming system which on irradiation with actinic light causes an increase in the color intensity of the recording material, a sensitizer and optionally further additives or auxiliary substances, wherein the sensitizer comprises: one or more compounds of the formula (I) or (II)



wbere
X is CH or N,
Y is hydrogen, C_1- to C_{12}-alkyl, C_1- to C_{12}-alkoxy, or halogen,
R^1 is C_1- to C_{12}-alkyl, C_1- to C_{12}-alkoxy, trifluoromethyl, phenyl, or NR^4R^5 where R^4 and R^5 are identical to or different from each other and each is:
a C_1- to C_6-alkyl; an allyl, phen-alkyl having 1 to 4 carbon atoms in the alkyl group; a phenyl unsubstituted or suubstituted by a C_1- to C_6-alkyl-, a C_1 to C_6-alkoxy- or a halogen; a C_1 to C_{12} alkyl substituted by OH-, CN-, halogen-, -O-CO-alkyl having 1 to 6 carbon atoms in the alkyl group, or -CO-O-alkyl having 1 to 6 carbon atoms in the alkyl group; or an oxaalkyl having 3 to 12 carbon atoms and 1 to 5 oxygen atoms, or
R^4 and R^5 together form a heterocyclic, saturated or unsaturated ring system, and
R^2 and R^3 are identical to or different from each other and each is C_1- to C_{12}-alkyl; C_1- to C_{12}-alkoxy; hydroxyalkyl having 1 to 4 carbon atoms in the alkyl group; an oxaalkyl having 2 to 12 carbon atoms and 1 to 5 oxygen atoms; phen-alkyl having 1 to 4 carbon atoms in the alkyl group; phenyl; naphthyl; or an aryl or hetaryl that are each substituted by:
a C_1- to C_4-alkyl; C_1- to C_4-alkoxy; phenyl; trifluoromethyl; trialkylsilyl; CN; a C_1 to C_{12} alkyl substitutued by -O-CO-alkyl having 1 to 12 carbon atoms in the alkyl group, -CO-O-alkyl having 1 to 12 carbon atoms in the alkyl group, OH-, CN-, halogen, -O-CO-alkyl having 1 to 6 carbon atoms in the alkyl group, -CO-O-alkyl having 1 to 6 carbon atoms in the alkyl group; an oxaalkyl or 2 to 12 carbon atoms and 1 to 6 oxygen atoms; a halogen; or NR^6R^7, where R^6 and R^7 are identical to or different from each other and each is:
a C_1- to C_8-alkyl; an allyl; a phen-alkyl having 1 to 4 carbon atoms in the alkyl group, a phenyl unsubstituted or substituted by a C_1- to C_6-alkyl-, C_1- to C_6-alkoxy-, or halogen; a C_1 to C_{12} alkyl substituted by OH-, CN-, halogen-, -O-CO-C_1-alkyl having 1 to 6 carbon atoms in the alkyl group, or -CO-O-alkyl having 1 to 6 carbon atoms in the alkyl group; or an oxaalkyl or 3 to 12 carbon atoms and 1 to 5 oxygen atoms; or
R^6 and R^7 together are a substituted or unsubstituted heterocyclic saturated or unsaturated ring system,
with the proviso that the maximum of the long-wave absorption band of these compounds is below 420 nm.

4,940,650

(I) **PREPARATION OF RECORDING LAYERS AND THEIR USE FOR THE PRODUCTION OF FLEXOGRAPHIC PRINTING PLATES**

Karl-Rudolf Kurtz, Heidelberg; Horst Koch, Gruenstadt, and Guenther Schulz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 90,749, Aug. 28, 1987, abandoned. This application Mar. 31, 1989, Ser. No. 331,392

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1986, 3630474

Int. Cl.[5] **G03C** *1/70, 1/71*

U.S. Cl. 430—283 **7 Claims**

(II) 1. A photosensitive recording element for the production of ozone resistant flexographic printing plates comprising a dimensionally stable base and a photosensitive flexible recording layer which is prepared by applying a photosensitive mixture to a dimensionally stable base and subjecting the mixture on the dimensionally stable base to calendering and/or lamination, said photosensitive mixture consisting essentially of
(A) one or more block copolymers containing at least one thermoplastic non-elastomeric polymer block and at least one elastomeric diene polymer block,
(B) a mixture of
(B1) from 5 to 20% by weight, based on the photosensitive mixture, of one or more photopolymerizable organic compounds which are compatible with (A) and contain one or more olefinic double bonds, and
(B2) from 1 to 15% by weight, based on the photosensitive mixture, of one or more monoolefinically unsaturated photopolymerizable organic compounds which are compatible with (A) and whose homopolymers have glass transition temperatures which are below room temperature, said organic compounds being selected from the group consisting of amides of acrylic acid with an alkylamine having 4 to 16 carbon atoms in the alkyl radical and vinyl alkyl ethers having 4 to 18 carbon atoms in the alkyl radical,
(C) from 0.1 to 10% by weight, based on the photosensitive mixture, of one or more photoinitiators, and
(D) from 0 to 27% by weight, based on the photosensitive mixture, of conventional assistants and additives;
the photosensitive flexible recording layer produced therefrom being isotropic or having a very low degree of anisotropy as expressed by an anisotropy factor AF of 1.5, AF being defined as the ratio of the moduli of elasticity at 100% elongation of strips measuring 2×15 cm which have been punched from the photosensitive flexible recording layer after its production, on the one hand along the flow direction of the photosensitive mixture employed and on the other hand crosswise to the flow direction then have been exposed uniformly to actinic light.

4,940,651

METHOD FOR PATTERNING CATIONIC CURABLE PHOTORESIST

Lawrence M. Brown, Endwell, N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; Joseph P. Kuczynski, Apalachin, and William H. Lawrence, Greene, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1988, Ser. No. 292,173

Int. Cl.[5] **G03C** *5/00*

U.S. Cl. 430—325 **14 Claims**

1. A method for patterning a photoresist which comprises:
a. providing on a substrate an uncured film consisting essentially of a cationic curable photoresist and an onium slat photoinitiator;
b. imagewise exposing said photoresist to a laser beam operated at wavelengths of about 333 nanometers to about 365 nanometers in a pattern to thereby cure portions of said photoresist by cationic polymerization; and
c. developing said photoresist by contacting with a solvent to thereby remove the portions of the photoresist not exposed to said laser beam.

4,940,652

METHOD OF PROCESSING SILVER HALIDE PHOTOGRAPHIC MATERIAL WHICH PREVENTS SEPIA DETERIORATION

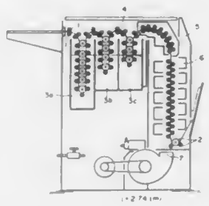
Satoru Nagasaki, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Feb. 10, 1989, Ser. No. 309,511

Claims priority, application Japan, Feb. 20, 1988, 63-3772119

Int. Cl.[5] **G03C** *5/24*

U.S. Cl. 430—403 **20 Claims**



1. A method of processing a silver halide photographic material having a total silver amount of no more than 7.0 g/m^2 on a support and containing at least one of a dye having a maximum absorption wavelength between 520–560 nm and a dye having a maximum absorption wavelength, between 570–700 nm in an amount effective to increase the transmission optical density of the unexposed area after processing by no more than 0.03,comprising the step of processing said silver halide photographic material with a roller-transport type automatic developer under the conditions that satisfy the following relationships:

$$50 \leqq l^{0.75} \times T \leqq 124$$

$$0.7 \leqq l \leqq 3.1$$

wherein l is the length in meters of the delivery path in the developer, and T is the time in seconds taken for the silver halide photographic material to pass through the path.

4,940,653

MULTILAYERED COLOR PHOTOGRAPHIC MATERIAL HAVING AN ALKALI SOLUBLE INTERLAYER

Prem Lalvani; Diethart Lademann, both of Leverkusen; Hans Buschmann, Cologne; Heinz Reif, Cologne, and Walther Cohnen, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 95,905, Sep. 14, 1987, abandoned. This application Sep. 22, 1989, Ser. No. 410,950

Int. Cl.[5] **G03C** *1/46*

U.S. Cl. 430—502 **5 Claims**

1. A silver halide color photographic element comprising a support, on the support at least one red-sensitive silver halide emulsion layer containing at least one non-diffusible cyan coupler, at least one green-sensitive silver halide emulsion layer containing at least one non-diffusible magenta coupler, at least one blue-sensitive silver halide emulsion layer containing at least one yellow coupler and
at least one interlayer which is not the layer of the photographic element furthermost from the support
said interlayer containing polymer particles soluble in alkali in a quantity of from 20 to 200 mg/m^2 of the photographic element and having an average particle diameter of from 0.5 to 3.0 μm.

4,940,654

SOLID PARTICLE DISPERSION FILTER DYES FOR PHOTOGRAPHIC COMPOSITIONS

Donald R. Diehl, and Ronda E. Factor, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 137,495, Dec. 23, 1987, abandoned. This application Jan. 30, 1989, Ser. No. 373,749

Int. Cl.[5] **G03C** *1/84*

U.S. Cl. 430—522 **10 Claims**

1. A photographic element comprising a support having thereon a radiation-sensitive silver halide emulsion layer and a hydrophilic filter dye layer comprising a hydrophilic binder and an amount effective as a photographic filter dye of a dispersion of solid particles having a mean diameter of from about 0.01 to 10 mm, said particles consisting essentially of a filter dye having the formula:

$$[D\text{-}(A)_y]\text{-}X_n$$

where
D is a chromophoric light-absorbing moiety, which, when y is 0, comprises an aromatic ring free of carboxy substituents,
A is an aromatic ring, free of carboxy substituents, bonded directly or indirectly to D,
X is a substituent, other than carboxy, having an ionizable proton, either on A or on an aromatic ring portion of D, having a pKa of about 4 to 11 in a 50/50 mixture (volume basis) of ethanol and water,
y is 0 to 4,
n is 1 to 7, and
the compound has a log partition coefficient of from about 0 to 6 when the compound is in unionized form.

4,940,655

PHOTOGRAPHIC ANTISTATIC ELEMENT HAVING A BACKING LAYER WITH IMPROVED ADHESION AND ANTISTATIC PROPERTIES

Kurt Gundlach, Webster, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1988, Ser. No. 190,545

Int. Cl.[5] **G03C** *1/76*

U.S. Cl. 430—523 **8 Claims**

1. A photosensitive film element comprising a support, at least one gelatino silver halide emulsion composition coated on one side of said support, an antistatic layer coated on the opposite side of said support, and coated over said antistatic layer an auxiliary layer consisting essentially of an aqueous dispersion of gelatin, at least one gelatin cross-linking agent, at least one dispersing agent and an adhesion promoting amount of an aqueous dispersion of a polymerized vinyl compound, with the proviso that said adhesion promoting vinyl compound is added to said auxiliary layer dispersion after the pH is adjusted to 5 to 7.

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4,940,656

PHOTOGRAPHIC SUPPORT

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 171,138, Mar. 16, 1988, Pat. No. 4,859,577, which is a continuation of Ser. No. 41,666, Apr. 20, 1987, abandoned, which is a continuation of Ser. No. 894,476, Aug. 5, 1986, abandoned, which is a continuation of Ser. No. 727,892, Apr. 26, 1985, abandoned, which is a continuation of Ser. No. 469,970, Feb. 25, 1983, abandoned. This application Jun. 19, 1989, Ser. No. 367,806

Claims priority, application Japan, Feb. 26, 1982, 57-30355

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] **G03C** *1/96*

U.S. Cl. 430—538 **1 Claim**

1. A photographic support comprising a photographic layer sensitive to light and a polyolefin-coated paper layer comprising a paper sheet which contains an alkylketene dimer mixture in an amount of 0.2-2.0% by weight of the absolutely dried pulp constituting the paper sheet and is coated with a polyolefin on both surfaces; wherein said alkylketene dimer mixture consists essentially alkyl chains having 14 carbon atoms or less than 14 carbon atoms in the chain, an alkyl chain having 16 carbon atoms in the chain, and at least one alkyl chain having 18 carbon atoms in the chain and alkyl chains of 20 carbon atoms or more than 20 carbon atoms in the chain under the condition satisfying the following equation

$$\frac{\frac{1}{3} \times [C_{16}] + [C_{18}] + 10 \times [C_{20} \text{ and more}]}{[C_{14} \text{ and less}]} \geqq 1$$

in which

[C_{14} and less] means the amount of alkyl chains having carbon atoms of 14 and less;

[C_{16}] means the amount of an alkyl chain having 16 carbon atoms;

[C_{18}] means the amount of an alkyl chain having 18 carbon atoms; and

[C_{20} and more] means the amount of alkyl chains having carbon atoms of 20 and more,

the alkyl chain amounts being represented by percent in number of the total alkyl chain amount of the alkylketene dimer composition mixture wherein [C_{18}] and [C_{20} and more] are each 0.

4,940,657

PHOTOGRAPHIC SPECTRAL SENSITIZING DYE

Akira Tanaka; Hidetoshi Miura, and Masao Koga, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

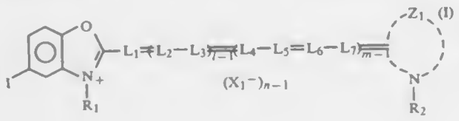
Filed Jan. 19, 1989, Ser. No. 298,975

Claims priority, application Japan, Jan. 21, 1988, 63-12360

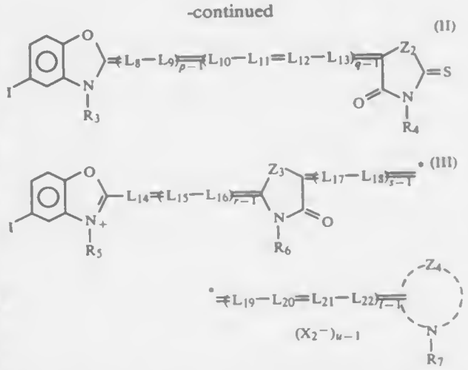
Int. Cl.[5] **G03C** *1/19, 1/20, 1/14, 1/22*

U.S. Cl. 430—578 **3 Claims**

1. A silver halide photographic emulsion which comprises a silver halide and a spectral sensitizing dye consisting essentially of at least one of the following compounds:



-continued



wherein R_1, R_2, R_3, R_5 or R_7 each represents an alkyl group, an aralkyl group or an alkenyl group, R_4 and R_6 each represents an alkyl group, aralkyl group, alkenyl group or aryl group, L_1-L_{22} each represents a methine group, Z_1-Z_4 each represents a group of atoms necessary to form a 5- or 6-membered nitrogen-containing heterocyclic ring, X_1^- and X_2^- each represents an acid anion and l, m, n, p, q, r, s, t and u each represents an integer of 1 or 2.

4,940,658

ASSAY FOR SULFHYDRYL AMINO ACIDS AND METHODS FOR DETECTING AND DISTINGUISHING COBALAMIN AND FOLIC ACID DEFICENCY

Robert H. Allen, Englewood; Sally P. Stabler, Denver, both of Colo., and John Lindenbaum, New York, N.Y., assignors to University Patents, Inc., Westport, Conn.

Filed Nov. 20, 1986, Ser. No. 933,553

Int. Cl.[5] **C12Q** *1/00;* **G01N** *24/00;* **A61K** *31/68, 31/495*

U.S. Cl. 435—4 **34 Claims**

18. A method for detecting a deficiency of cobalamin, folate, or both in warm-blooded animals and distinguishing therebetween comprising assaying body fluids for the presence of elevated levels of total homocysteine and methylmalonic acid, wherein normal levels of total homocysteine indicate no cobalamin or folic acid deficiency, elevated levels of total homocysteine and methylmalonic acid indicate cobalamin deficiency, and elevated levels of total homocysteine combined with normal levels of methylmalonic acid indicate folic acid deficiency.

4,940,659

SCREENING EXTRA-CELLULAR BODY FLUIDS FOR SUPEROXIDE DISMUTASE (SOD-1) FOR DETERMINING FETAL TRISOMY 21 DOWN SYNDROME

Richard E. Warrington; Abbas A. Khan, both of Houston, Tex., and Carl R. Merril, Rockville, Md., assignors to Monoclonetics International, Inc., Houston, Tex.

Filed Feb. 20, 1987, Ser. No. 17,152

Int. Cl.[5] **G01N** *33/53;* **C12Q** *1/44, 1/26*

U.S. Cl. 435—7 **4 Claims**

1. A method for detecting a likelihood of Trisomy 21 Down's Syndrome in a fetus comprising:

assaying to determine the concentration of cuprozinc superoxide dismutase (SOD-1) in an extra-cellular body fluid of a mother in at least the twelfth week of pregnancy;

assaying samples of control maternal extra-cellular body fluid of the same type and substantially the same gestational age as the body fluid specimen from the mother, some of said samples being known to be positive and some negative for fetal Trisomy 21 Down's syndrome, to determine a threshold minimum concentration of SOD-1, which is the concentration at which the number of false positive or false negative samples is minimized, or the number of false positive and false negative samples is minimized;

determining whether said concentration of SOD-1 in the body fluid specimen of the mother is above the threshold minimum concentration, which is indicative of a likelihood of fetal Trisomy 21 Down's syndrome.

4,940,660

COLOR DEVELOPING METHOD IN CLINICAL EXAMINATIONS

Hidematsu Hirai, Mitaka; Toshiro Hanada, Kawagoe; Kazuhiko Yamanishi, Tokyo, and Hideko Nohara, Asaka, all of Japan, assignors to Wako Pure Chemical Industries, Osaka, Japan

Filed Oct. 2, 1986, Ser. No. 914,834

Claims priority, application Japan, Nov. 25, 1985, 60-264142; Jun. 17, 1986, 61-141057

Int. Cl.[5] **G01N** *33/53;* **C12Q** *1/28, 1/26*

U.S. Cl. 435—7 **12 Claims**

1. A process for the determination of the amount of hydrogen peroxide or peroxidase activity in a clinical sample, which comprises:

adding to a clinical sample a reagent composition comprising (a) a reduced form coenzyme selected from the group consisting of NADH and NADPH, (b) a reagent selected from the group consisting of amines, phenols and naphthols, (c) a tetrazolium salt as a color producing reagent to be reduced and (d) peroxidase or an aqueous solution of hydrogen peroxide,

measuring a change in absorbance and

calculating the amount of hydrogen peroxide or peroxidase activity from the change in absorbance.

4,940,661

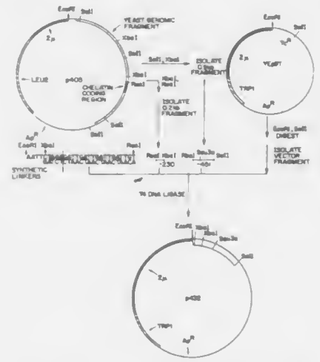
METALLOTHIONEIN TRANSCRIPTION CONTROL SEQUENCES AND USE THEREOF

Tina M. Etcheverry, Berkeley, and Ronald A. Hitzeman, Pacifica, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 611,235, May 17, 1984, abandoned. This application Sep. 29, 1987, Ser. No. 102,189

Int. Cl.[5] **C12P** *21/00, 21/02, 19/34*

U.S. Cl. 435—69.1 **14 Claims**



1. A vector comprising a selection gene, yeast origin of replication or autonomously replicating sequence and DNA encoding a eukaryotic polypeptide other than yeast chelatin, said DNA encoding a eukaryotic polypeptide that is under the control of (a) a yeast chelatin promoter, (b) a yeast chelatin transcription control sequence, or (c) a metal ion regulatory region of the yeast chelatin transcription control sequence which is free of the yeast chelatin promoter, whereby the vector is replicable in a suitable host.

4,940,662

LOW-MOLECULAR WEIGHT PEPTIDE MIXTURE AND METHOD OF PRODUCING SAME

Ken-ichi Yamazaki, Kawagoe; Shoji Takao, Higashikurume, and Koji Yamamoto, Kawasaki, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 471,793, Mar. 3, 1983, abandoned. This application Nov. 1, 1985, Ser. No. 794,322

Claims priority, application Japan, Mar. 6, 1982, 57-35485

Int. Cl.[5] **C12P** *21/00, 21/06;* **C12N** *9/48;* **C07K** *3/12*

U.S. Cl. 435—68.1 **4 Claims**

1. A method of producing a low-molecular weight peptide mixture comprising a major proportion of dipeptides and tripeptides produced from a starting natural protein to which at least two desired amino acids are incorporated, said at least two desired amino acids being the ones whose contents in the starting protein are low, whereby said dipeptides and tripeptides have a modified amino acid composition different from an amino acid composition of said starting protein, comprising the steps of

dissolving at least one alkaline protease selected from the group consisting of papain, bromelain and ficin, in a buffer solution adjusted to an optimum pH for the protease up to 10,

adding at least one starting protein in a buffer solution having an alkaline pH up to 10 and a concentration of 10 to 60% by weight of the protein material and thoroughly mixing the solution,

adding at least two ethyl esters of amino acids, said amino acids being selected from the group consisting of L-lysine, L-methionine, L-valine, L-isoleucine and L-leucine,

the pH of said buffer solution being optimum for the incorporation of said amino acid in said starting protein in the presence of said alkaline protease in a plastein reaction,

reacting said ester of at least two amino acids with said starting protein in a plastein reaction in the mixed solution having an alkaline pH whereby said at least two amino acids are covalently incorporated into said starting protein to produce a plastein reaction solution containing a modified protein,

subjecting said plastein reaction solution to concentration using a reverse osmosis membrane having an NaCl rejection of not higher than 40% to thereby purify said reaction solution by removing inorganic salts, unreacted amino acid and amino acid ester, and other low-molecular weight impurities from the reaction solution, and forming an aqueous solution containing 3 to 20% by weight of said modified protein,

hydrolyzing said modified protein in said purified aqueous solution by simultaneously or successively adding at least two acidic proteases having different specificity than said at least one alkaline protease, said acidic proteases being selected from the group consisting of pepsin, molsin and orientase, to said aqueous solution containing 3 to 20% by weight of said modified protein at an acidic pH, and maintaining a reaction temperature of 25° to 60° C. for from 8 to 72 hours to produce a low-molecular weight peptide mixture having an amino acid content which has different proportions of amino acids than does said starting protein, and

separating from the hydrolyzed solution said low-molecular weight peptide mixture which comprises a major proportion of dipeptide and tripeptides and containing not more than 15% by weight of free amino acids and not more than 20% by weight of a high-molecular weight fraction of compounds having a molecular weight of not lower than 700 and removable by gel filtration.

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4,940,663

FERMENTATION PROCESS FOR THE PRODUCTION OF XANTHANE

Bruno Eymautier, Carentan, France, assignor to SANOFI, Societe Anonyme, Paris, France

Filed Jun. 22, 1988, Ser. No. 209,932
Claims priority, application France, Jun. 22, 1987, 87 08727
Int. Cl.[5] C12P *19/06*; C12N *1/20*
U.S. Cl. 435—104 6 Claims

1. A fermentation process for the production of xanthane which comprises the step of fermenting carbohydrates with bacteria of the genus Xanthomonas in a fermentation medium containing a nitrogen source, wherein said source of nitrogen consists of a partially hydrolyzed gelatin with a molecular weight of less than 5000, whereby the resulting xanthane has elevated viscosity per unit weight.

4,940,664

STABILIZATION OF CARRIER-BOUND ENZYMES BY TREATMENT WITH A BIFUNCTIONAL CROSSLINKING AGENT AND A POLYAMINE

Ingo Mücke, Barsinghausen, Fed. Rep. of Germany, assignor to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 23, 1988, Ser. No. 197,436
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1987, 3719324
Int. Cl.[5] C12N *11/14, 11/00*
U.S. Cl. 435—176 21 Claims

1. A method for producing carrier-bound enzymes having improved stability comprising the steps of:

(a) providing a granular carrier which has functional groups capable of forming covalent bonds and which is coated with an enzyme to produce a carrier-bound enzyme, and

(b) contacting said carrier-bound enzyme in any sequence with an amount of 5 to 250 mg per 1 gram of dry carrier-bound enzyme of a bifunctional cross-linking agent contained in a 0.1 to 10% (w/v) aqueous solution of the cross-linking agent and with an amount of 3 to 240 mg per 1 gram of dry carrier-bound enzyme of a polyamine contained in a 0.1 to 20% (w/v) aqueous solution of said polyamine,

whereby a granular carrier-bound enzyme is produced.

4,940,665

METHOD FOR GRANULATION OF ENZYME

Hitoshi Iijima, and Kunio Nishimura, both of Tokyo, Japan, assignors to Showa Denko K. K., Tokyo, Japan

PCT No. PCT/JP86/00661, § 371 Date Aug. 4, 1987, § 102(e) Date Aug. 4, 1987, PCT Pub. No. WO87/04184, PCT Pub. Date Jul. 16, 1987
PCT Filed Dec. 26, 1986, Ser. No. 103,550
Claims priority, application Japan, Dec. 27, 1985, 60-293167
Int. Cl.[5] C12N *9/98*
U.S. Cl. 435—187 5 Claims

1. A method for the granulation of a raw enzyme powder, comprising the steps of:

adding to a raw enzyme powder in a substantially dry state at least one wax selected from the group consisting of (1) polyethylene glycol having a melting point in the range of 40°–100° C. and an average molecular weight in the range of 3,000–10,000 and (2) polyoxyethylene-polyoxypropylene block copolymers having a melting point within the range of 40°–100° C. and an average molecular weight in the range of 7,000–24,000, in an amount in the range of 10–35% by weight based on the amount of said raw enzyme powder to obtain a mixture;

agitating said mixture at a temperature 5°–20° C. higher than the melting point of said at least one wax to obtain a granular material;

cooling said granulated material; and

adding to said cooled granular material at least one molten binder selected from the group consisting of (i) polyethylene glycol having a melting point of not less than 35° C. and not higher than the softening point of said wax and (ii) polyoxyethylene-polyoxypropylene block copolymer having a melting point of not less than 35° C. and not higher than said softening point of said wax, while tumbling said cooled granular material, thereby overcoating the granules of said material with said at least one binder.

4,940,666

PROCESS AND DEFINED MEDIUM FOR GROWTH OF HUMAN EPIDERMAL KERATINOCYTE CELLS

Stephen T. Boyce, and Richard G. Ham, both of Boulder, Colo., assignors to University Patents, Inc., Westport, Conn.

Continuation of Ser. No. 514,178, Jul. 15, 1983, Pat. No. 4,673,649. This application Dec. 9, 1986, Ser. No. 939,579
The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.
Int. Cl.[5] C12N *5/00, 5/02*
U.S. Cl. 435—240.2 3 Claims

1. A population of human epidermal cells growing in a transferrin-free medium comprising:

complete MCDB153;

epidermal growth factor at a concentration of 1.0 ng/ml to 25.0 ng/ml; and

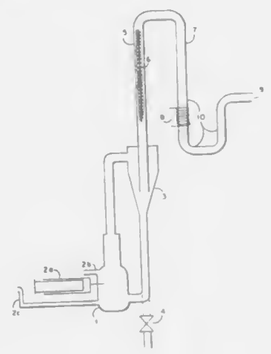
insulin at a concentration of 0.5 μg/ml to

4,940,667

APPARATUS FOR MONITORING THE QUALITY OF WATER

Arthur J. Goldstein, Weston, and Edgardo J. Parsi, Lexington, both of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Filed Dec. 28, 1987, Ser. No. 138,757
Int. Cl.[5] G01N *1/18*
U.S. Cl. 436—157 15 Claims



10. A process for monitoring volatile organic compounds in water comprising gently boiling at least part of a portion of said water into a reforming and/or oxidizing zone at substantially atomospheric pressure having a temperature in the range of from about 450° to about 1000° C., whereby reformable and/or oxidizable volatile organic compounds in said water are reformed and/or oxidized at least in part into second compounds volatile in said temperature range which second compounds are at least partially soluble in water and at least partially ionizable therein, collecting and condensing at least part of the water vapor from said reforming and/or oxidizing zone into condensed liquid water and measuring the electrical impedance of said condensed liquid water.

11. In an apparatus adapted to remove at least in part organics from water having in combination therewith an instrument for monitoring volatile organic compounds in effluent water from said apparatus, said compounds reformable and/or oxidizable at temperatures in the range of from about 450° C. to about 1000° C. in the presence of water vapor and/or air and/or oxygen at substantially atmospheric pressure, said instrument comprising a reforming and/or oxidizing zone, means for controlled, nucleated boiling of at least part of a portion of said effluent water into said zone, electric heating means for maintaining the temperature of said zone in the range of from about 450° to about 1000° C., means for collecting and condensing water vapor from said zone to condensed liquid water and means for measuring the electrical impedance of at least a portion of said condensed liquid water.

4,940,668

METHOD FOR INCREASING AGGLUTINATION OF GROUPS OF CELLS TO PRODUCE IMPROVED CELL LAYER INTERFACE IN CENTRIFUGED BLOOD SAMPLE

Stephen C. Wardlaw, Branford; Robert A. Levine, Guilford, both of Conn.; Rodolfo R. Rodriguez, Randolph, N.J., and Michael R. Loken, Los Altos, Calif., assignors to Becton Dickinson and Company, Parsippany, N.J.

Continuation of Ser. No. 794,127, Nov. 1, 1985, Pat. No. 4,695,553. This application Sep. 18, 1987, Ser. No. 98,370
The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.
Int. Cl.[5] G01N *1/00*
U.S. Cl. 436—174 1 Claim

1. A method of removing unwanted blood cell types from an assay area in a sample, said method comprising the steps of: agglutinating said unwanted blood cell types into clumps by adding an effective amount of an antibody to the sample which selectively causes increased agglutination of the unwanted blood cell types; and displacing said clumps out of said assay area of the sample.

4,940,669

SAC INCLUDING A DETECTABLE METAL MARKER AND USE THEREOF IN AN ASSAY

Daniel B. Wagner, Raleigh, and Glenn P. Vonk, Fuquay-Varina, both of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed May 15, 1987, Ser. No. 49,971
Int. Cl.[5] G01N *33/566, 33/543, 33/544, 33/532*
U.S. Cl. 436—501 17 Claims

1. A composition, comprising:

a mixture of an aqueous solution and a liposome, said liposome having encapsulated therein a solution of a detectable metal complexed with a chelating agent, said detectable metal being one which is fluorescent when complexed with an activator, said aqueous solution including a metal corresponding to the metal encapsulated within the liposome in a concentration sufficient to maintain a concentration of said metal encapsulated in the liposome of at least 5 millimolar.

4,940,670

METHOD FOR COMPOUNDING AND TESTING PATIENT SPECIFIC MONOCLONAL ANTIBODIES AND MONOCLONAL ANTIBODY FRAGMENTS FOR IN VIVO USE

Buck A. Rhodes, 1104 Stanford Dr., NE., Albuquerque, N. Mex. 87106

Continuation-in-part of Ser. No. 821,999, Jan. 24, 1986. This application Apr. 9, 1986, Ser. No. 849,741
Int. Cl.[5] A61K *39/395*; G01N *33/574, 33/577*
U.S. Cl. 436—548 14 Claims

1. A method to select, formulate and compound a variable formula patient specific monoclonal antibody-based drug for use in in vivo cancer detection or therapy for a specific patient, comprising the following steps:

(a) preselecting a panel of a plurality of monoclonal antibody components, the monoclonal antibody components comprising members selected from the group consisting of whole monoclonal antibodies and monoclonal antibody fragments, the monoclonal antibody components being predetermined to be specific to tumor associated antigens of a cancer type to be detected or treated;

(b) obtaining at least one first solid tumor specimen, from the specific patient, of the cancer type to be detected or treated;

(c) dividing the first solid tumor specimen into a number of aliquots corresponding to the number of monoclonal antibody components in the preselected panel;

(d) subjecting each monoclonal antibody component in the preselected panel to a different aliquot of the specific patient's first solid tumor specimen and allowing the preselected panel of monoclonal antibody components to bind to tumor associated antigens present in the specific patient's first solid tumor specimen;

(e) determining which, if any, of the monoclonal antibody components in the preselected panel bind to tumor associated antigens present in the specific patient's first solid tumor specimen; and

(f) choosing more than one monoclonal antibody component, if the chosen monoclonal antibody components are determined in step (e) to bind to tumor associated antigens present in the specific patient's first solid tumor specimen, for use in formulating and compounding a variable formula monoclonal antibody-based drug for use in in vito cancer detection or therapy for the specific patient.

4,940,671

HIGH VOLTAGE COMPLEMENTARY NPN/PNP PROCESS

J. Barry Small, Los Altos, and Matthew S. Buynoski, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 18, 1986, Ser. No. 853,530
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 7 Claims

1. A process for making a monolithic silicon, planar, PN-junction-isolated integrated circuit that contains high performance PNP transistors along with conventionally fabricated NPN transistors, said process including the steps combined with conventional processing comprising:

starting with a wafer of a first conductivity type and having a masking oxide thereon;

etching said oxide photolithographically to create holes in said oxide where PNP transistors are to be located;

applying a first dopant to said wafer wherein said first dopant is capable of doping said substrate to the opposite conductivity type;

diffusing said first dopant into said substrate to a first depth and simultaneously regrowing said oxide;

etching said regrown oxide photolithographically to create holes therein where said PNP transistors are to be located and where an isolation region is to be located;

applying a second dopant to said wafer wherein said second dopant is capable of overcoming said first dopant and of doping said substrate to said first conductivity type;

stripping any oxide from said wafer;

growing an epitaxial layer on said oxide-free wafer, said epitaxial layer having said opposite conductivity type and a resistivity selected to optimize said NPN transistor collectors;

forming a masking oxide on said epitaxial layer;

etching said formed masking oxide photolithographically to create holes therein where said PNP transistors and said isolation region are to be located;

applying a third dopant to said wafer wherein said third dopant is capable of doping said epitaxial layer to said first conductivity type and controlling said third dopant to optimize said PNP transistor collectors;

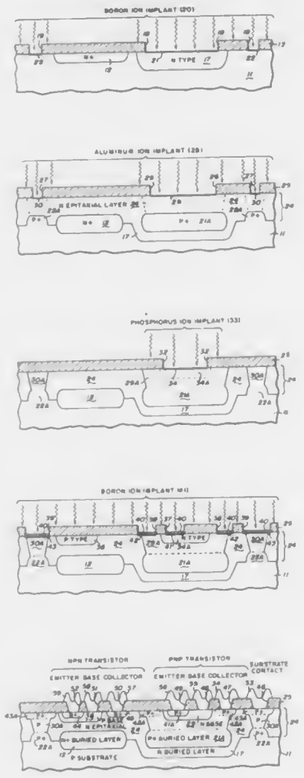
VOL 1116 ISS 2 JL 10 1990 UMI

diffusing said third dopant into said epitaxial layer to an extent where it contacts said second dopant which diffused away from said substrate and into said epitaxial layer and simultaneously regrowing said oxide;

etching said regrown oxide photolithographically to create holes therein where PNP transistor bases are to be located;

applying a fourth dopant to said wafer wherein said fourth dopant is capable of producing said opposite conductivity and is controlled to optimize said PNP transistor bases;

diffusing said fourth dopant to extend into said epitaxial layer to an extent designed to create said PNP transistor bases and simultaneously reforming said oxide;



etching said reformed oxide photolithographically to create holes therein where said PNP transistor emitters are to be located;

applying a fifth dopant to said wafer, said fifth dopant being capable of doping said epitaxial layer to said first conductivity type and controlling said fifth dopant level to optimize said PNP transistor emitters;

diffusing said fifth dopant to a desired depth that is less than that of said fourth dopant and simultaneously reforming said oxide;

etching said reformed oxide photolithographically to create holes therein where PNP transistor contacts are to be applied; and

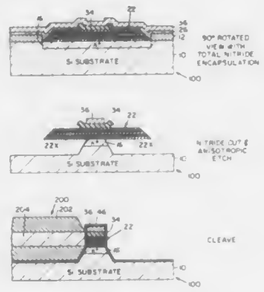
forming PNP transistor contacts inside said holes in said oxide.

4,940,672

METHOD OF MAKING MONOLITHIC INTEGRATED III-V TYPE LASER DEVICES AND SILICON DEVICES ON SILICON

Paul M. Zavracky, Norwood, Mass., assignor to Kopin Corporation, Taunton, Mass.

Filed Mar. 17, 1989, Ser. No. 325,242
Int. Cl.[5] H01L *21/20, 21/203*
U.S. Cl. 437—132 **27 Claims**



8. A method of fabricating compound semiconductor devices of III-V or II-VI material and semiconductor devices of silicon on a common substrate comprising the steps of:

(a) forming Si electronic devices on selected areas of said substrate;

(b) forming a mask layer over the Si devices and the selected regions;

(c) forming openings through said mask layer to expose said selected regions;

(d) forming layers of said compound semi-conductor over at least the exposed selected regions which layers are single crystalline and form optoelectronic compound semiconductor devices with a lasing layer;

(e) forming contact metallization on said devices;

(f) removing regions of silicon adjacent and underlying portions of the compound semiconductor devices leaving the compound semiconductor devices isolated from silicon on lateral sides with two cantilevered beam sections of compound semiconductor devices extending in opposite directions; and

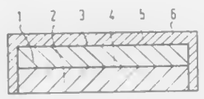
(g) separating the cantilevered sections from the compound semiconductor devices to provide end facets for the compound semiconductor devices.

4,940,673

PN JUNCTION PASSIVATION USING METHYLATED SILYLOXY GROUPS

Johannes J. Ponjee; Fredericus J. Touwslager, and Ivo G. J. Camps, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1988, Ser. No. 249,612
Claims priority, application Netherlands, Oct. 2, 1987, 8702352
Int. Cl.[5] H01L *21/00, 21/02, 21/312, 21/314*
U.S. Cl. 437—225 **9 Claims**



1. A method of minimizing leakage current on a PN junction present in a semiconductor device the surface of which is provided, at least at the location of the PN junction, with a silicon oxide layer, comprising forming methyl-substituted silyloxy groups on the surface of said layer by exposing said silicon oxide layer with a solution capable of forming such groups and in which solution an amine is present in which two alkyl groups are directly attached to the amino nitrogen.

4,940,674

HIGH STRENGTH, HAZE-FREE, TRANSPARENT GLASS-CERAMICS

George H. Beall, Big Flats; Paul S. Danielson, Corning, and Robert M. Morena, Caton, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 13, 1989, Ser. No. 434,188
Int. Cl.[5] C03C *3/22, 3/04*
U.S. Cl. 501—4 **8 Claims**

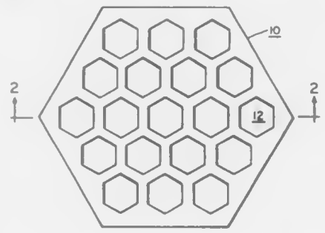
1. Transparent glass-ceramic articles which display essentially no haze, which contain about 15–30% by volume of an aluminoborosilicate glass and β-quartz solid solution as essentially the sole crystal phase, and which exhibit moduli of rupture in the vicinity of 10,000 psi consisting essentially, expressed in terms of weight percent on the oxide basis, of 3–6% Li_2O, 17–23% Al_2O_3, 1–4% B_2O_3, 60–70% SiO_2, 3–6% TiO_2 and/or ZrO_2, 25–500 ppm Cr_2O_3, and 1–5 mole percent of a glass modifying oxide selected from the group consisting of 0–3% K_2O and 0.5–2.5% SrO and/or BaO with a molar ratio $Al_2O_3:Li_2O > 1$.

4,940,675

METHOD FOR MAKING LOW-EXPANSION GLASS ARTICLE OF COMPLEX SHAPE

Julie A. Bohlayer, Horseheads; Gordon F. Foster, Campbell, and Robert D. Shoup, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jun. 17, 1988, Ser. No. 207,968
Int. Cl.[5] C03C *1/00, 3/00*
U.S. Cl. 501—12 **21 Claims**



1. A process for providing a glass article of complex shape which comprises the steps of:

casting a silicate solution into a mold;

gelling the solution in the mold to provide a self-supporting wet gelled shape having the configuration of the mold;

machining the wet gelled shape to remove gel material therefrom, thus to provide a machined gel having a shape corresponding to that of that of the glass article; and

drying and consolidating the machined gel while maintaining the shape thereof to provide the glass article.

4,940,676

CERAMIC COMPOSITIONS AND METHODS EMPLOYING SAME

James G. Evans, Boerne, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 51,055, May 15, 1987, abandoned. This application Jan. 16, 1988, Ser. No. 207,909
Int. Cl.[5] A61C *13/00;* **C03C** *8/00*
U.S. Cl. 501—16 **13 Claims**

1. A method for preparing a ceramic composition capable of being fabricated into a ceramic object by subsequent firing, the method comprising the steps of:

(a) selecting a ceramic material wherein the ceramic material is a porcelain;

(b) mixing said material with a light-curing resin in proportions that will provide a ceramic resin mixture that is capable of being molded or formed into a desired shape prior to curing the resin and firing the cured ceramic resin mixture to provide the ceramic object;

(c) molding the ceramic resin mixture to a desired shape;

(d) light curing the resin to harden the molded mixture; and

(e) heating the hardened ceramic mixture sufficiently to fuse the ceramic material.

4,940,677

ZINC-CONTAINING PHOSPHATE GLASSES

George H. Beall, Big Flats, and Candace J. Quinn, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 258,675, Oct. 17, 1988, abandoned. This application Dec. 26, 1989, Ser. No. 456,550
Int. Cl.[5] C03C *3/16, 3/17, 3/19, 3/247*
U.S. Cl. 501—45 **8 Claims**

1. A glass exhibiting a transition temperature below 450° C., a working temperature below 500° C., and excellent resistance to attack by water and mild aqueous alkaline solutions, said glass consisting essentially, expressed in terms of mole percent on the oxide basis, of at least 65% total of 23–55% ZnO, 28–40% P_2O_5, and 10–35% R_2O, wherein R_2O consists of at least two alkali metal oxides in the indicated proportions selected from the group consisting of 0–25% Li_2O, 0–25% Na_2O, and 0–25% K_2O, and up to 35% total of optional ingredients in the indicated proportions selected from the group consisting of 0–6% Al_2O_3, 0–8% B_2O_3, 0–8% $Al_2O_3+B_2O_3$, 0–15% Cu_2O, 0–5% F, 0–35% PbO, 0–35% SnO, 0–35% PbO+SnO, 0–5% ZrO_2, 0–4% SiO_2, and 0–15% MgO+CaO+SrO+BaO+MnO, consisting of 0–10% MgO, 0–10% CaO, 0–10% SrO, 0–12% BaO, and 0–10% MnO.

4,940,678

RARE EARTH OXYNITRIDE GLASSES

Bruce G. Aitken, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 27, 1989, Ser. No. 385,447
Int. Cl.[5] C03C *3/062, 3/11*
U.S. Cl. 501—73 **3 Claims**

1. A glass consisting essentially, expressed in terms of weight percent on the oxide basis, of 35.5–68.1% Ln_2O_3, wherein Ln_2O_3 consists of at least one rare earth metal oxide selected from the lanthanide series of rare earth metals, 6.3–21.8% Al_2O_3, 20.6–37.4% SiO_2, 4.3–7.2% N and 0–33.6% BaO.

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4,940,679

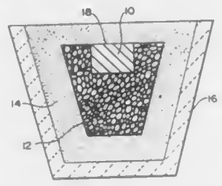
PROCESS FOR PREPARING SELF-SUPPORTING BODIES AND PRODUCTS MADE THEREBY

Terry D. Claar, Newark, Del.; Steven M. Mason, Norwood, Pa.; Kevin P. Pochopien, Newark, Del., and Danny R. White, Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 73,533, Jul. 15, 1987. This application Dec. 23, 1987, Ser. No. 137,044

Int. Cl.[5] C04B 35/58; B22F 3/26

U.S. Cl. 501—96 44 Claims



1. A method for producing a self-supporting body, comprising:

selecting a parent metal comprising at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, chromium and niobium;

heating said parent metal in a substantially inert atmosphere to a temperature above its melting point to form a body of molten parent metal;

contacting said body of molten parent metal with a permeable mass comprising boron carbide and a carbon donor material;

maintaining said temperature for a time sufficient to permit infiltration of said molten parent metal into said permeable mass and to permit reaction of said molten parent metal with both said carbon donor material and said boron carbide to form at least one parent metal carbon-containing compound and at least one parent metal boron-containing compound; and

continuing said infiltration and reaction for a time sufficient to react said boron carbide substantially completely to produce said self-supporting body comprising at least one parent metal carbon-containing compound and at least one parent metal boron-containing compound.

4,940,680

SILICON NITRIDE SINTERED MEMBERS

Tomonori Takahashi, Chita, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Sep. 21, 1988, Ser. No. 247,373

Claims priority, application Japan, Sep. 29, 1987, 62-242576

Int. Cl.[5] C04B 35/58

U.S. Cl. 501—97 6 Claims

1. A silicon nitride sintered member consisting essentially of a silicon nitride sintered body and a dense silicon nitride coating layer covering a surface of the silicon nitride sintered body, wherein an intergranular phase of the silicon nitride sintered body is substantially crystalline and said silicon nitride coating layer has a thickness of about 10 μm–1 mm.

4,940,681

FERROELECTRIC CERAMIC MATERIAL

Yoshihisa Ushida; Nobuki Hirai, and Hiroshi Mase, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 24, 1989, Ser. No. 356,135

Claims priority, application Japan, May 27, 1988, 63-129797; May 27, 1988, 63-129798

Int. Cl.[5] C04B 35/46, 35/48, 35/49

U.S. Cl. 501—134 13 Claims

1. A ferroelectric ceramic material which is a Pervoskite solid solution, which comprises a solid solution represented by the formula:

$$Pb_{1-a}M_a(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})_x\,Ti_y\,Zr_z\,O_3$$

wherein M is Ba or Sr, x+y+z is 1, a is from 0 to 0.10, x is from 0.05 to 0.70, y is from 0.25 to 0.50 and z is from 0.05 to 0.70, containing in said solution at least one oxide selected from group A noted below and at least one oxide selected from group B noted below, with the proviso that NiO or Fe_2O_3 is necessarily contained:

Group A: La_2O_3, Bi_2O_3 and Nd_2O_3;

Group B: NiO, Fe_2O_3, SnO_2 and Ta_2O_5

wherein the metal ions of the oxide selected from the group B are present in the Perovskite solid solution in such an amount so that the relation:

$$0.5 \leqq N \leqq 5.0$$

is met, in which N is defined by the equation:

$$N = \sum_{j=1}^{j} n_{Bj}\,x_{Bj} \Big/ \sum_{i=1}^{i} n_{Ai}\,x_{Ai}$$

wherein n_{Ai} and n_{Bj} are valencies of metal ions of the oxides of groups A and B which are present in the solid solution, respectively, and x_{Ai} and x_{Bj} are atom equivalents of metal ions of the oxides of groups A and B which are present in the solid solution, respectively.

4,940,682

SOLID CATALYST COMPONENT FOR OLEFIN POLYMERIZATION

Toshio Sasaki; Takeshi Ebara, both of Ichihara, and Kiyoshi Kawai, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 26, 1988, Ser. No. 262,786

Claims priority, application Japan, Oct. 28, 1987, 62-274258

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] C08F 4/64

U.S. Cl. 502—113 13 Claims

1. A solid catalyst component for olefin polymerization which comprises a catalyst component comprising a titanium trichloride catalyst or a titanium/magnesium composite catalyst containing chlorine fixed onto a porous substance of which the pore volume, at a pore radius in a range of from 200 to 2,000 Å is 0.3 cc/g or more, said pore volume is 35% or more of the pore volume at a pore radius in a range of from 35 to 75,000 Å, the average particle diameter is from 5 to 300 μm, the geometrical standard deviation of the particle size distribution is 2 or less and the solubility in toluene at 100° C. is 30 wt. % or less, the amount of the catalyst component to be fixed being from 1 to 70 wt. % as a content in the solid catalyst component.

2. A solid catalyst component for olefin polymerization according to claim 1, wherein the porous substance is porous inorganic oxides or porous organic polymers.

4. A solid catalyst component for olefin polymerization according to claim 2, wherein the porous inorganic oxide is SiO_2, Al_2O_3, MgO, TiO_2, ZrO_2, $SiO_2.Al_2O_3$, $MgO.Al_2O_3$, or $MgO.SiO_2.Al_2O_3$.

4,940,683

POLYMERIZATION PROCESS

Johannes A. Van Doorn; Eit Drent; Petrus W. N. M. Van Leeuwen; Nicolaas Meijboom; Aart B. Van Oort, and Richard L. Wife, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

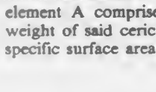
Division of Ser. No. 140,013, Dec. 31, 1987, Pat. No. 4,855,399. This application Feb. 16, 1989, Ser. No. 311,260

Claims priority, application Netherlands, Feb. 26, 1987, 8700476

Int. Cl.[5] B01J 31/04

U.S. Cl. 502—162 9 Claims

1. The catalyst composition formed from a palladium compound, a quinone and a phosphino-substituted sulfonic acid of up to 30 carbon atoms represented by the formula



wherein R_1 independently is hydrocarbyl or substituted hydrocarbyl wherein any non-hydrocarbyl substituents are polar substituents and R is a divalent hydrocarbyl bridging group of up to 10 carbon atoms having from 1 to 4 carbon atoms in the bridge between the phosphorus and the sulfur atoms.

4,940,684

METHOD FOR PREPARING A CATALYST SUPPORTED ON SILICON CARBIDE OR SILICON NITRIDE

Takeshi Okutani; Yoshinori Nakata; Masaaki Suzuki, all of Sapporo, and Takeo Akiyama, Ayase, all of Japan, assignors to President of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 27, 1988, Ser. No. 250,136

Claims priority, applicatioo Japan, Sep. 28, 1987, 62-242995

Int. Cl.[5] B01J 27/22, 27/24, 32/00

U.S. Cl. 502—178 3 Claims

1. A method for preparing a catalyst which comprises supporting a catalytic substance on a porous silicon carbide or a porous silicon nitride prepared by subjecting a silicon-accumulated biomass to heat treatment at 300° to 1200° C. under an argon or a nitrogen atmosphere, then at 1300° to 2000° C. for 0.1 to 12 hours in an argon or a nitrogen atmosphere and then at 400° to 800° C. in air.

4,940,685

CERIC OXIDE PARTICULATES HAVING A STABLE SPECIFIC SURFACE AND A PROCESS FOR THEIR PREPARATION

Guy-Noel Sauvion, Chevilly-Larue; Jack Caillod, Taverny, and Claire Courlaouen, Paris, all of France, assignors to Rhone-Poulenc Specialites Chimique, Courbevoie, France

Filed Jul. 3, 1986, Ser. No. 881,665

Claims priority, application France, Jul. 3, 1985, 85 10137

Int. Cl.[5] B01J 21/06, 23/10, 32/00

U.S. Cl. 502—263 27 Claims

1. A ceric oxide-based composition, the specific surface of which remains essentially stable at elevated temperatures, which composition includes a carrier comprising a plurality of solid, porous, finely divided ceric oxide particulates, said ceric oxide particulates of said carrier having intimately dispersed therein an effective amount of at least one oxide of a metallic element A comprising silicon, zirconium, or thorium, said ceric oxide particulates having been shaped and calcined;

wherein the amount of the at least one oxide of said metallic element A comprises from about 1 to about 20% by weight of said ceric oxide particulates and wherein the specific surface area of said composition is greater than the specific surface area of said ceric oxide particulates without said metallic element A.

4,940,686

CATALYST FOR OXIDATION OF CARBON MONOXIDE

Patricia A. Tooley, Bartlesville, and John H. Kolts, Ochelata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1989, Ser. No. 406,385

Int. Cl.[5] B01J 21/04, 23/64, 23/89

U.S. Cl. 502—327 14 Claims

1. A composition of matter comprising:

(a) at least one vanadium oxide as support material,

(b) platinum metal, and

(c) an iron component selected from the groups consisting of iron metal, iron oxides and mixtures thereof.

4,940,687

CATALYST AND PROCESS FOR HYDROGENATION OF UNSATURATED HYDROCARBONS

Xin X. Liu; Bing Y. Zhao, both of Beijing, China; Herbert Riegel, Maplewood, and Jo-Lang Chien, Cedar Grove, both of N.J., assignors to Beijing Research Institute of Chemical Industry, Beijing, China and Lummus Crest, Inc., Bloomfield, N.J.

Division of Ser. No. 858,546, Apr. 30, 1986, Pat. No. 4,762,956, which is a continuation of Ser. No. 484,626, Apr. 13, 1983, abandoned. This application Aug. 5, 1988, Ser. No. 229,211

Int. Cl.[5] B01J 21/00

U.S. Cl. 502—333 11 Claims

1. A catalyst for selectively hydrogenating an impurity selected from the group consisting of acetylenic compounds, dienes, and mixtures thereof consisting essentially of:

palladium supported on an alumina support which is substantially crystalline alpha alumina, said support having been calcined at a temperature of at least 1150° C. and no greater than 1400° C., said palladium being present on said support in an amount effective to catalyze said selective hydrogenation, said catalyst having an average pore radius of from 200 to 2000Å, with at least 80% of the pores having a pore radius within the range of from 100 to 3000Å.

4,940,688

DEVELOPER SHEET AND PROCESS FOR PRODUCING SAME

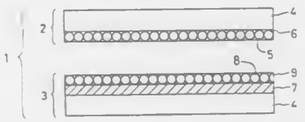
Jun Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 27, 1988, Ser. No. 289,675

Claims priority, application Japan, Dec. 28, 1987, 62-333337

Int. Cl.[5] B41M 5/22

U.S. Cl. 503—200 4 Claims



1. A developer sheet comprising a base sheet, a first layer of a nucleophilic developer coated on said base sheet, and a second layer of transparent or semitransparent particles containing an ultraviolet-ray absorbent, said second layer being formed on said first layer.

4. A process for producing a developer sheet comprising the steps of preparing a base sheet, forming a first layer of a nucleophilic developer on said base sheet, and forming a second

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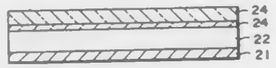
layer of transparent or semitransparent particles containing an ultraviolet-ray absorbent on said first layer.

4,940,689

DISPLAY MATERIAL

Kengo Ito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1988, Ser. No. 201,918
Claims priority, application Japan, Jun. 6, 1987, 62-141714
Int. Cl.[5] B41M *5/20*
U.S. Cl. 503—202 **8 Claims**



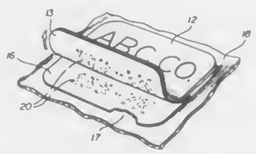
1. A display material comprising a material layer formed on a conducting substrate containing a leuco dye and an electrolyte, said material layer being capable of solid-liquid transformation upon heating and cooling of said layer, and said layer being capable of effecting coloration or discoloration by oxidation and reduction of said dye by applying current to said material layer through said conducting substrate when said material layer is in liquid state.

4,940,690

CLEAN RELEASE LAMINATE CONSTRUCTION WITH LATENT IMAGE

Hugh B. Skees, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Jul. 27, 1988, Ser. No. 224,691
Int. Cl.[5] B41M *5/16, 5/22*
U.S. Cl. 503—206 **23 Claims**



1. A laminate construction comprising a backing sheet, a face sheet covering at least a portion of said backing sheet, and a releasable adhesive securing a first surface of said face sheet to a first surface of said backing sheet such that said face sheet and backing sheet are readily separable, and a first composition located in said releasable adhesive, or on said first surface of said face sheet, or on said first surface of said backing sheet which comprises a colorless reactant and which, when combined with a second colorless reactant at a later time, reacts to form a colored composition which yields a visible image, said first composition, when subjected to an imaging force, forms a latent image.

4,940,691

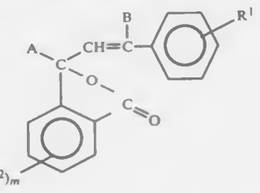
COLORING PHTHALIDE COMPOUNDS AND RECORDING MATERIALS USING THE COMPOUNDS AS COLORING COMPONENT

Kiyotaka Iiyama, Mishima, and Kunio Hayakawa, Gotemba, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 210,208, Jun. 17, 1988, abandoned, which is a continuation of Ser. No. 84,446, Aug. 12, 1987, abandoned. This application May 19, 1989, Ser. No. 355,962
Claims priority, application Japan, Aug. 14, 1986, 61-191106; Dec. 19, 1986, 61-303540; Jul. 1, 1987, 62-164844
Int. Cl.[5] B41M *5/18*
U.S. Cl. 503—220 **3 Claims**

1. A thermosensitive recording material comprising a substrate and a thermosensitive coloring layer formed on said substrate, which thermosensitive layer comprises:

a coloring phthalide compound having general formula [1],

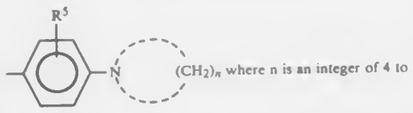


[1]

wherein A and B each represent



or



where n is an integer of 4 to 6;

R^1 represents hydrogen, an alkyl group, or halogen, m is an integer of 1 to 4, when m is 1, R^2 represents hydrogen, an amino group, an alkylamino group, a dialkylamino group, a cyclic amino group, an alkyl group, or halogen, when m is 2 to 4, R^2 represents halogen, R^3 and R^4 each represent a straight chain or branched alkyl group having 1 to 8 carbon atoms, a cyclic alkyl group, or a benzyl group, and R^5 represents hydrogen, an alkyl group or an alkoxyl group; and a color developer.

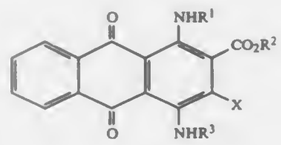
4,940,692

TRANSFER OF DYES

Volker Bach, Neustadt; Ruediger Sens, Mannheim; Karl-Heinz Etzbach, Frankenthal, and Manfred Ruske, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 3, 1989, Ser. No. 331,963
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1988, 3812053
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **7 Claims**

1. A process for transferring a dye from a substrate to an acceptor by applying heat by means of a thermal printing head to a substrate having an ink layer thereon of a binder and at least one dye of the formula (I):

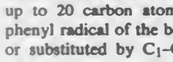


(I)

where

X is H or CN,

R^1, R^2 and R^3 independently of each other are linear or branched C_1–C_{20}-alkyl; alkylcarbonyloxyalkyl, alkoxycarbonyloxyalkyl, alkoxycarbonylalkyl, haloalkyl, hydroxyalkyl or cyanoalkyl, these substituted alkyls having up to 20 carbon atoms; benzyl or phenyl, where the phenyl radical of the benzyl and phenyl are unsubsituted or substituted by C_1–C_{20}-alkyl or C_1–C_{20}-alkoxy; or a radical of formula (II)



where

Y is linear or branched C_2–C_6-alkylene,

m is 1, 2, 3, 4, 5 or 6 and

R^4 is C_1–C_4-alkyl or phenyl,

with the proviso that if X is H, then R^1 and R^3 are each substituted or unsubstituted alkyl or substituted or unsubstituted phenyl, or if X is H and R^1 is H, then R^3 must be unsubstituted or alkyl- or alkoxy-substituted phenyl.

4,940,693

HIGH TEMPERATURE SUPERCONDUCTING THIN FILM STRUCTURE AND METHOD OF MAKING

Joel R. Shappirio; Thomas R. Ancoin, both of Monmouth, and John J. Finnegan, Atlantic Highlands, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 28, 1988, Ser. No. 225,439
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **5 Claims**

1. A high temperature superconducting thin film structure, said structure comprising a substrate and a high T_c superconducting thin film spaced from said substrate, a diffusion barrier layer in the space between said substrate and said high T_c superconducting thin film wherein the diffusion barrier layer is lattice matched both to the substrate and to the superconducting film and wherein the diffusion barrier layer has a high chemical stability, a high melting point, and a high electrical conductivity, and wherein the diffusion barrier layer is a compound selected from the group consisting of YB_2, TbB_2, VN, VC, V_2C_3, CrN, W_2N, GdB, DyB, HoB, the tetragonal tetraborides of Y, Pu, Ce, Sm, and Er, the hexaborides of Ca, Sr, Y, Th, Pu, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu, and the tetrafluoride of Zr, ZrF_4, and wherein the substrate is a single crystal selected from the group consisting of strontium titanate, $SrTiO_3$, yttria-stabilized zirconia, ZrO_2—(Y), alumina, Al_2O_3, and magnesium oxide, MgO, and wherein the superconducting thin film material is selected from the group consisting of $YBa_2Cu_3O_7$, $Tl_2Ba_2CaCu_2O_8$, $Bi_2CaSr_3Cu_2O_{7-x}$, $BiCaSrCu_2O_{7-x}$, $Bi_2Ca_2SrCu_3O_{7-x}$, and $BiCa_2Sr_3Cu_4O_{7-x}$ where x can range from zero to 1.

4,940,694

THERAPEUTIC USE OF GM1 IN SEVERE CEREBRAL ISCHEMIC STROKES PATHOLOGIES

Francesco della Valle, Padova; Aurelio Romeo, Rome, and Silvana Lorenzi, Padova, all of Italy, assignors to Fidia, S.p.A., Abano Terme, Italy

Continuation of Ser. No. 127,603, Nov. 30, 1987, abandoned, which is a continuation of Ser. No. 734,105, May 15, 1985, abandoned. This application Oct. 20, 1988, Ser. No. 338,516
Claims priority, application Italy, Feb. 18, 1985, 47698 A/85
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—25 **5 Claims**

1. A method for the treatment of cerebral stroke patients which comprises administering to said patients an effective amount of the ganglioside GM_1, or a pharmaceutically acceptable salt of said ganglioside GM_1.

4,940,695

BISMUTH-CONTAINING PHARMACEUTICAL COMPOSITIONS

Leila D. Covesey, Cincinnati, Ohio; Linda C. Jones, Aurora, Ind., and Jerry R. Maney, Mason, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 10, 1987, Ser. No. 130,760
Int. Cl.[5] A61K *31/715, 31/60, 31/29*
U.S. Cl. 514—57 **23 Claims**

1. Pharmaceutical compositions for oral administration comprising:

(a) from about 0.1% to about 50% of at least one pharmaceutically-acceptable bismuth-containing agent;

(b) from about 0.1% to about 25% of at least one pharmaceutically-acceptable non-ionic cellulose ether polymer; and

(c) from about 0.1% to about 25% of magnesium aluminum silicate;

and wherein further the ratio of bismuth to non-ionic cellulose ether polymer is greater than about 1.5:1.

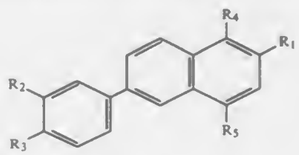
4,940,696

BENZONAPHTHALENE DERIVATIVES AND THEIR USE IN THERAPEUTIC AND COSMETIC COMPOSITIONS

Braham Shroot, Antibes; Jacques Eustache, Crasse, and Jean-Michel Bernardon, Nice, all of France, assignors to Centre International de Recherches Dermatologiques (CIRD), Valbonne, France

Division of Ser. No. 850,145, Apr. 10, 1986, Pat. No. 4,717,720. This application Nov. 16, 1987, Ser. No. 120,958
Claims priority, application Luxembourg, Apr. 11, 1985, 85849
Int. Cl.[5] A61K *31/045, 31/085, 31/16, 31/19*; C07H *19/00, 21/00, 5/04, 5/06*; C07C *69/76, 63/34, 33/36, 103/28*
U.S. Cl. 514—62 **18 Claims**

1. A benzonaphthalene compound of the formula



wherein

R_1 represents (i)



or (ii) —CH_2OH,

R_6 represents



wherein r' and r'' represent hydrogen, lower alkyl, mono or polyhydroxyalkyl, aryl or a residue of an amino sugar selected from the group consisting of glucosamine, galactosamine and mannosamine,

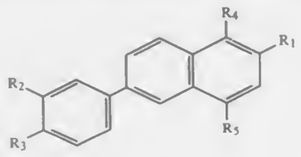
R_2 represents hydrogen, branched or straight chain alkyl having 1–15 carbon atoms, alkoxy having 1–4 carbon atoms or a cycloaliphatic radical,

R_3 represents hydrogen, hydroxy, branched or straight chain alkyl having 1–4 carbon atoms, alkoxy having 1–10 carbon atoms, a cycloaliphatic radical selected from the group consisting of 1-methyl cyclohexyl and 1-adamantyl, a thiocycloaliphatic radical, or $-O-Si(CH_3)_2-R_8$ wherein R_8 represents linear or branched lower alkyl, and

R_4 and R_5 each independently represent hydrogen, lower alkyl, hydroxy or lower acyloxy,

or a salt thereof.

13. A benzonaphthalene compound of the formula



wherein

R_1 represents



wherein R_7 represents hydrogen, alkyl having 1–20 carbon atoms, monohydroxyalkyl or polyhydroxyalkyl,

R_2 represents hydrogen, branched or straight chain alkyl having 1–15 carbon atoms or alkoxy having 1–4 carbon atoms,

R_3 represents hydrogen, hydroxy, branched or straight chain alkyl having 1–4 carbon atoms, alkoxy having 1–10 carbon atoms, or $-O-Si(CH_3)_2-R_8$ wherein R_8 represents linear or branched alkyl,

R_4 and R_5 each independently represent hydrogen, lower alkyl or lower acyloxy,

or a salt thereof.

15. A pharmaceutical composition comprising a pharmaceutically acceptable vehicle suitable for enteral, parenteral, topical or ocular administration and an effective amount of as the active principle at least one compound of claim 1 or a salt thereof.

4,940,697

INJECTION MATERIAL FOR COSMETIC TREATMENT

Atsushi Saisho, 3-9-10, Miyamaedaira, Miyamae-ku, Kawasaki-shi, Kanagawa, Japan

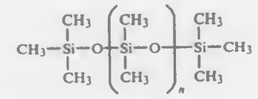
Filed Jun. 8, 1988, Ser. No. 204,188

Claims priority, application Japan, Dec. 4, 1987, 62-305812

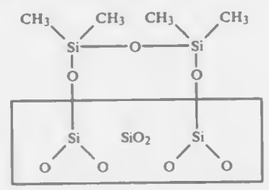
Int. Cl.[5] A61K *31/695*

U.S. Cl. 514—63 **1 Claim**

1. A hypodermically injectable composition for cosmetic plastic surgery, which consists essentially of a mixture of (1) dimethylopolysiloxane oil suitable for subcutaneous hypodermic injection into the patient's body, said oil having a viscosity of 12,500 cSt and having the following formula:



and, (2) from 20 to 30 percent by weight of hydrophobic silica filler having the following formula:



said filler having been prepared by reacting dimethyldichlorosilane with the silanol groups on the surface of silica, at about 400° C., and removing the hydrogen chloride that is formed by the reaction.

4,940,698

INSECTICIDAL THIONOPHOSPHONATES

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

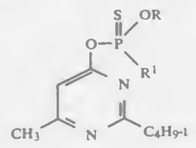
Filed Aug. 26, 1988, Ser. No. 237,241

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729263

Int. Cl.[5] A01N *57/24; C07F 9/65*

U.S. Cl. 514—86 **13 Claims**

1. An O-(6-methyl-2-alkyl-pyrimidin-4-yl) O-alkyl thionoalkanephosphonate of the formula



(I)

in which

R stands for methyl or ethyl, and

R^1 stands for methyl or ethyl.

4,940,699

THIOPHOSPHORIC ACID ESTER AS A SOIL PEST CONTROLLING AGENT

Yoshikazu Itoh, Ibaraki; Makoto Hatakoshi, Toyonaka, and Mitsuru Sasaki, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

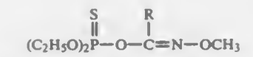
Continuation-in-part of Ser. No. 258,761, Oct. 17, 1988, abandoned. This application Apr. 28, 1989, Ser. No. 344,409

Claims priority, application Japan, Oct. 30, 1987, 62-276830

Int. Cl.[5] A01N *57/12; C07F 9/165*

U.S. Cl. 514—114 **6 Claims**

1. A soil pest controlling agent containing a compound of the formula (I),



(I)

wherein R is a methyl or ethyl group, as an active ingredient.

4,940,700

SECO-STEROL COMPOUNDS EFFECTIVE IN INDUCING CELL DIFFERENTIATION

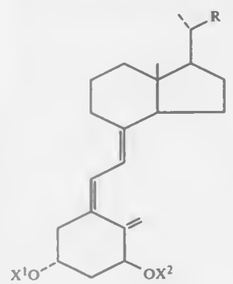
Hector F. DeLuca; Heinrich K. Schnoes, and Wan F. Lan, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 726,496, Apr. 23, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 367,126

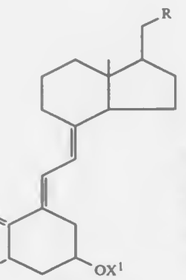
Int. Cl.[5] A61K *31/59; C07J 9/00, 1/00*

U.S. Cl. 514—167 **12 Claims**

1. A compound selected from the group consisting of



AND



wherein R is selected from the group consisting of methyl, ethyl and propyl and wherein X^1 and X^2 represent, independently, hydrogen or an acyl group.

4,940,701

TOPICAL DRUG RELEASE SYSTEM

Adrian F. Davis, Weybridge, England, assignor to Beecham Group p.l.c., England

Continuation-in-part of Ser. No. 693,770, Jan. 23, 1985, Pat. No. 4,767,751. This application Dec. 10, 1987, Ser. No. 131,015

Claims priority, application United Kingdom, Jan. 25, 1984, 8401965; Dec. 11, 1986, 8629639

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—179 **10 Claims**

1. In a pharmaceutical composition for topical application, comprising a first liquid phase and a second liquid phase different from the first phase but miscible with the first phase upon admixture therewith, at least one of said phases comprising a drug dissolved therein, the concentration of said drug in each phase in which said drug is present and the composition of the phases being such that, on admixture of the phases, the total drug concentration in the initially formed resultant mixture is greater than the saturated drug solubility in said initially formed resultant mixture, whereby said resultant mixture is supersaturated with the drug, the improvement wherein at least one of said first and second phases comprises from 0.01 to 2% by weight, based on the total weight of the composition, of an antinucleating agent.

4,940,702

CEPHEM COMPOUNDS

Stephen C. Finch, and Michael J. Pearson, both of Betchworth, United Kingdom, assignors to Beecham Group p.l.c., England

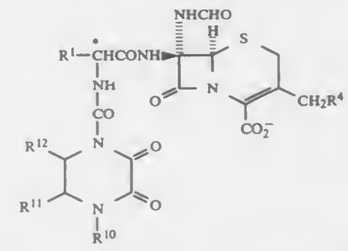
Filed Aug. 8, 1986, Ser. No. 894,926

Claims priority, application United Kingdom, Aug. 10, 1985, 8520155; Feb. 6, 1986, 8602956

Int. Cl.[5] C07D *501/57;* **A61K** *31/545*

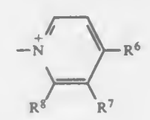
U.S. Cl. 514—201 **15 Claims**

1. A compound of the formula (II):

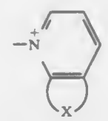


(II)

a pharmaceutically acceptable salt thereof or an in vivo hydrolyzable ester thereof wherein R^1 is phenyl unsubstituted or substituted with up to 3 moieties selected from the group consisting of acetoxy, hydroxy and chloro, or R^1 is 2-thienyl or 2-furyl; R^4 is a substituted pyridinium moiety of the formula (a) or (b):



(a)



(b)

wherein one of R^6, R^7 and R^8 is alkyl to 1 to 6 carbon atoms; or cycloalkyl of 3 to 7 carbon atoms; and the other 2 of R^6, R^7 and R^8 are hydrogen; or R^6 is 2-pyridyl and R^7 and R^8 are hydrogen; X is $-(CH_2)_n-$ wherein n is an integer having the value 2, 3 or 4; or X together with the bond in the ring to which it is joined forms a 6-membered aromatic carbocyclic ring, R^{10} is alkyl of 1 to 4 carbon atoms; and R^{11} and R^{12} are each hydrogen.

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4,940,703

SPIROCYCLIC COMPOUNDS INCORPORATING FIVE-MEMBERED RINGS WITH TWO HETEROATOMS FOR TREATING PSYCHOTIC DISORDERS, ETC.

Raymond Baker, Much Hadham; Clare O. Kneen, Little Walden; John Saunders, Bishops Stortford, and Christopher Swain, Duxford, all of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

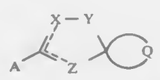
Filed Apr. 4, 1989, Ser. No. 333,076

Claims priority, application United Kingdom, Apr. 11, 1988, 8808433

Int. Cl.[5] **A61K** *31/55;* **C07D** *451/00, 453/00*

U.S. Cl. 514—210 **8 Claims**

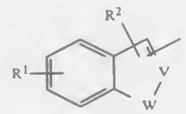
1. A compound of formula I or a salt or prodrug thereof:



(I)

wherein the dotted line represents an optional chemical bond in one of the two possible positions;

A represents a group of formula II:



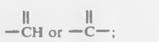
(II)

in which

R^1 is selected from the group consisting of hydrogen, hydroxy, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, benzyloxy, hydroxy(C_{1-6})alkyl, halogen, amino, cyano, nitro, $—CONR^6R^7$ and $—SO_2NR^6R^7$, in which R^6 and R^7 are independently selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl and C_{2-6} alkynyl;

R^2 is selected from the group consisting of hydrogen, halogen, C_{1-6} alkyl, C_{1-6} alkoxy and C_{1-6} alkylcarbonyl;

V represents nitrogen,



and

W represents oxygen, sulphur or



in which R^8 is selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl and C_{2-6} alkynyl;

two of X, Y and Z are the same or different and each represents oxygen, sulphur or nitrogen; and the remaining group X, Y or Z is carbon, or Y is carbonyl (C=O); and

Q is the residue of an azacyclic or azabicyclic ring system.

8. A method for the treatment of psychotic disorders; anxiety; alcohol or drug withdrawal or dependence; pain; gastric stasis; gastric dysfunction; migraine, nausea and vomiting; movement disorders; and presenile and senile dementia; which method comprises administering to a patient in need of such treatment an effective amount of a compound according to claim 1.

4,940,704

PYRIDO[3,4-B][1,4]BENZOXAZEPINES

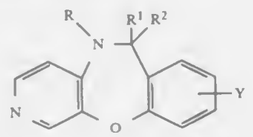
Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceutical Inc., Somerville, N.J.

Filed Aug. 16, 1989, Ser. No. 394,613

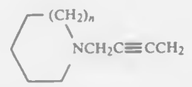
Int. Cl.[5] **C07D** *498/04;* **A61K** *31/55*

U.S. Cl. 514—211 **26 Claims**

1. A compound of the formula



wherein R is hydrogen, loweralkyl, loweralkanoyl, a group of the formula $(CH_2)_mNR^3R^4$ wherein R^3 and R^4 are loweralkyl and m is 2 or 3, a group of the formula $CH_2C{\equiv}CH$, a group of the formula



wherein n is 0 or 1; R^1 and R^2 are hydrogen; R^1 and R^2 taken together with the carbon atom to which they are attached form a group of the formula C=O; Y is hydrogen, loweralkyol, halogen, loweralkoxy, or trifluoromethy; an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

13. A method of treating depression in mammals comprising administering to a mammal requiring depression treatment, a depression treating amount of a compound of claim 1.

4,940,705

N-SUBSTITUTED DERIVATIVES OF 1-DESOXYNOJIRIMYCIN AND 1-DESOXYMANNONOJIRIMYCIN AND PHARMACEUTICAL USE

Horst Böshagen, Haan; Bodo Junge, Wuppertal; Arnold Paessens, Haan, and Matthias Schüller, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

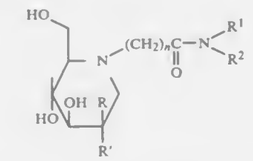
Filed Oct. 26, 1988, Ser. No. 262,902

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1987, 3736771; Apr. 29, 1988, 3814549

Int. Cl.[5] **A61K** *31/445;* **C07C** *211/46*

U.S. Cl. 514—227.8 **9 Claims**

1. A compound of the formula



in which

R or R' stands for a hydroxyl group and in which the other R' or R in each case stands for hydrogen,

n stands for a number from 1 to 6,

R^1

stands for hydrogen, or

for straight-chain or branched alkyl having up to 3 carbon atoms or for benzyl, and

R^2

stands for straight-chain or branched alkyl having up to 8 carbon atoms which is substituted by aryl having 6 to 10 carbon atoms, where the aryl is radical is unsubstituted or substituted by up to 4 identical or different substituents selected from the group consisting of fluorine; chlorine; bromine; iodine; cyano; nitro; alkyl, alkoxy, alkylthio and arylthio each having up to 6 carbon atoms; dioxymethylene; dioxyethylene; trifluoromethyl; trifluoromethoxy; difluoromethoxy; carboxyl and alkoxycarbonyl having up to 4 carbon atoms, or which can be substituted by pyridyl; thienyl; furyl; pyrimidyl; pyridazinyl; pyrazinyl or quinolyl, or

stands for cycloalkyl having 3 to 7 carbon atoms, or

stands for aryl having 6 to 10 carbon atoms, where the aryl radical is unsubstituted or monosubstituted to tetrasubstituted by fluorine, chlorine, bromine, iodine, cyano, alkyl having up to 6 carbon atoms, alkoxy having up to 12 carbon atoms, alkylsulphonyl having up to 4 carbon atoms, trifluoromethyl, difluoromethylene, trifluoromethylthio, dioxymethylene, dioxyethylene, by cycloalkyl having 3 to 7 carbon atoms, by carboxyl or alkoxycarbonyl having up to 4 carbon atoms, by aryloxy having 6 to 10 carbon atoms, where the aryl radical of the aryloxy is unsubstituted or is substituted by up to 4 identical or different substitutents selected from the group consisting of fluorine; chlorine; bromine; iodine, cyano, hydroxyl; nitro; alkyl, alkoxy, alkylthio having up to 6 carbon atoms; dioxymethylene; dioxyethylene; trifluoromethyl; trifluoromethoxy; or difluoromethoxy; or by halogenoalkoxy having up to 6 carbon atoms and up to 5 fluorine and/or 3 chlorine atoms; or by hydroxyalkoxy, hydroxyalkyl and cyanoalkyl each having up to 8 carbon atoms; and alkenyloxy having up to 6 carbon atoms; or by a group $—XR^3$, the substituents being identical or different,

where

X denotes a straight-chain or branched alkylene or alkenylene chain having up to 8 carbon atoms, and

R^3 denotes aryl having 6 to 10 carbon atoms,

where

the aryl radical is unsubstitued or substituted by up to 4 identical or different substituents selected from the group consisting of fluorine; chlorine; bromine; iodine; cyano; alkyl, alkoxy, alkylthio having up to 6 carbon atoms; nitro; dioxymethylene; dioxyethylene; trifluoromethyl; trifluoromethoxy; difluoromethoxy; and trifluoromethylthio, or R^3

denotes a 5- or 6-membered saturated or unsaturated heterocyclic ring which can be fused to benzene and which can contain oxygen, sulphur or up to 2 nitrogen atoms as hetero atoms, or

denotes hydroxyl, carboxyl, alkoxycarbonyl having up to 6 carbon atoms, alkylcarbonyloxy having up to 18 carbon atoms, or R^3

denotes a group $—OSO_3H$, $—CONH—NH_2$, $—CONH_2$, amino or alkylamino or dialkylamino each having up to 6 carbon atoms per alkyl group, or R^3

denotes hydroxyalkyl having up to 8 carbon atoms, or

R^3 denotes a saturated, bridged heterocycle or

R^1 and R^2, together with the nitrogen atom, form a 5- to 6-membered ring which can be anellated, which can be interrupted by oxygen, sulphur or the group $—NR^4$, and which can be substituted by alkyl having up to 4 carbon atoms, hydroxyl, phenyl, carboxyl or alkoxycarbonyl having up to 4 carbon atoms,

where

R^4

denotes aryl having 6 to 10 carbon atoms, where the aryl radical is unsubstituted or substituted by up to 4 identical or different substituents selected from the group consisting of fluorine; chlorine; bromine; iodine; cyano; nitro; hydroxyl; alkyl, alkoxy, alkylthio having up to 6 carbon atoms; dioxymethylene; dioxyethylene; trifluoromethyl; trifluoromethoxy and difluoromethoxy, or R^4

denotes alkoxycarbonyl having up to 6 carbon atoms, or R^4

denotes pyridyl, pyrimidyl, furyl, thienyl, pyrazinyl, pyridazinyl or quinolyl, or R^4

denotes cycloalkyl having 3 to 7 carbon atoms, or R^4

denotes alkyl or alkenyl having up to 6 carbon atoms which is unsubstituted or monosubstituted or disubstituted by phenyl which is unsubstituted or substituted by chlorine, dioxymethylene or trifluoromethyl, hydroxyl, amino, alkylamino, dialkylamino each having up to 3 carbon atoms per alkyl group, fluorine, bromine, cycloalkyl having 3 to 6 carbon atoms, by carboxyl or alkoxycarbonyl having up to 6 carbon atoms, by pyridyl, pyrimidyl, pyrazinyl, morpholinyl, thiomorpholinyl, pyrrolidinyl or pyrrolidinocarbonyl, by morpholinocarbonyl, by alkylaminocarbonyl, dialkylaminocarbonyl or phenylalkylaminocarbonyl each having up to 6 carbon atoms per alkyl group, the substituents being identical or different.

7. A method of combating viral infections comprising administering to a patient having a viral infection an antiviral effective amount of one or more compounds according to claim 1.

9. A method for the treatment and prophylaxis of diseases produced by retroviruses comprising administering to a patient in need of such treatment or prophylaxis an effective amount therefor of one or more compounds according to claim 1.

4,940,706

2,4-DISUBSTITUTED 1,3-DIOXOLANES AND PHARMACEUTICAL USE

Javier Bartroli; Manuel Anquita, and Elena Carceller, all of Barcelona, Spain, assignors to J. Uriach & Cia, S.A., Spain

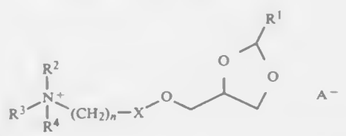
Filed Oct. 13, 1988, Ser. No. 257,092

Claims priority, application Spain, Oct. 13, 1987, 8702901

Int. Cl.[5] **A61K** *31/335;* **C07D** *317/28, 317/30*

U.S. Cl. 514—231.5 **8 Claims**

1. 2,4-Disubstituted 1,3-dioxolanes of formula I



(I)

where:

-R^1 represents a linear or branched alkyl, alkenyl or alkynyl group, of 10 to 24 carbon atoms;

-X is a simple covalent bond (i.e. it does not represent any group), or is one of the following groups: —C(=O)—, —O— C(=O)—, —NH—C(=O)—, or —NR[5]—C(=O)—, R^5 being a lower alkyl or lower acyl group;

-n is an integer 2 to 10;

-R^2, R^3, and R^4 are lower alkyl groups or $R^2R^3R^4N^+$ represents an aromatic cyclic ammonium group or $R^2R^3R^4N^+$ represents a non-aromatic cyclic group in which two of the substituents (R^2, R^3, or R^4) form a ring together with the nitrogen atom, and the remaining group is hydrogen or lower alkyl;

-A^- is a pharmaceutically acceptable anion such as halide, lower alkyl sulfonate, arylsulfonate or carboxylate.

8. A method for treating a patient suffering from a PAF-mediated illness which comprises administering to said patient an effective dose of a compound of formula I in combination with a pharmaceutically acceptable excipient.

VOL 1116 ISS 2 JL 10 1990 UMI

4,940,707

STILBENE DERIVATIVES FOR TREATMENT OF SKIN DISORDERS

Michael Klaus, Weil am Rhein, Fed. Rep. of Germany; Peter Mohr, Basel, Switzerland, and Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

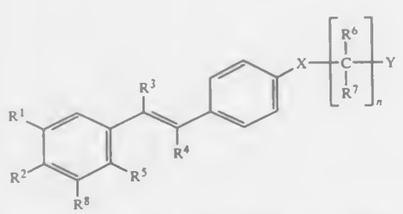
Filed Feb. 14, 1989, Ser. No. 310,442

Claims priority, application Switzerland, Feb. 24, 1988, 689/88; Dec. 14, 1988, 4622/88

Int. Cl.[5] A61K *31/38;* **C07D** *295/10, 295/08*

U.S. Cl. 514—237.8 **10 Claims**

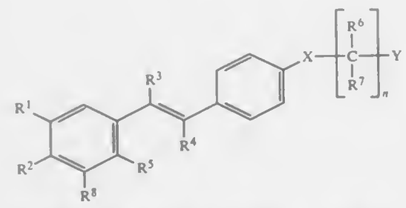
1. A compound of the formula



I

wherein R^1 and R^2 each independently is lower-alkyl; or together are alkylene with 3–5 C-atoms in a straight chain; or together are alkylene with 3–5 C-atoms in a straight chain wherein said alkylene is lower-alkyl substituted; one of the residues R^3 and R^4 is hydrogen and the other is hydrogen or lower-alkyl; R^6 and R^7 are hydrogen or lower-alkyl; R^5 and R^8 are hydrogen, lower-alkyl, lower-alkoxy or halogen; X is —O—, —S—, —SO—, —SO_2— or —NR^9; R^9 is hydrogen, lower-alkyl or acyl; Y is morpholino attached via the N-atom; and n is 2, 3 or 4.

10. A pharmaceutical composition comprising an effective amount of a compound the formula



I

wherein R^1 and R^2 each independently is lower-alkyl; or together are alkylene with 3–5 C-atoms in a straight chain; or together are alkylene with 3–5 C-atoms in a straight chain wherein said alkylene is lower-alkyl substituted; one of the residues R^3 and R^4 is hydrogen and the other is hydrogen or lower-alkyl; R^6 and R^7 are hydrogen or lower-alkyl; R^5 and R^8 are hydrogen, lower-alkyl, lower-alkoxy or halogen; X is —O—, —S—, —SO—, —SO_2— or —NR^9; R^9 is hydrogen, lower-alkyl or acyl; Y is morpholino attached via the N-atom; and n is 2, 3 or 4 and a pharmaceutically inert carrier material.

4,940,708

4-ARYLSULFONYL-3,4-DIHYDRO-2(1H)-QUINOXALINONE-1-ALKANOIC ACIDS, ESTERS, AND SALTS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

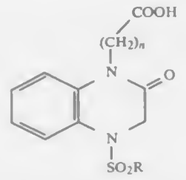
PCT No. PCT/US86/02335, § 371 Date Jun. 30, 1988, § 102(e) Date Jun. 30, 1988

PCT Filed Oct. 30, 1986, Ser. No. 424,298

Int. Cl.[5] C07D *241/50;* **A61K** *31/495*

U.S. Cl. 514—249 **18 Claims**

1. A 4-arylsulfonyl-3,4-dihydro-2(1H)-quinoxalinone-1-alkanoic acid compound of the formula:



or a C_1–C_6 alkyl ester derivative thereof, or a base salt of said acid with a pharmacologically acceptable cation, wherein R is phenyl, hydroxyphenyl, fluorophenyl, chlorophenyl, dichlorophenyl, bromophenyl, C_1–C_4 alkylphenyl or C_1–C_4 alkoxyphenyl; and n is one or two.

4,940,709

PIPERAZINE COMPOUND AS PAF-ANTAGONIST

Noribiko Shimazaki; Keiji Hemmi, both of Ibaraki; Osamu Nakaguti, Toyonaka; Yoshio Miyazaki, Itami, and Masashi Hashimoto, Ibaraki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 31,577, Mar. 30, 1987, Pat. No. 4,806,538, which is a continuation of Ser. No. 790,082, Oct. 22, 1985, abandoned. This application Nov. 20, 1987, Ser. No. 123,324

Claims priority, application United Kingdom, Nov. 2, 1984, 8427735; Apr. 23, 1986, 8609908; Dec. 31, 1986, 8631082

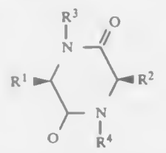
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/495;* **C07D** *241/08*

U.S. Cl. 514—253 **1 Claim**

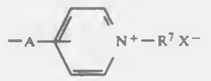
1. A method for the prevention and treatment of diseases caused by platelet activating factor, comprising:

administering to a subject a therapeutically effective amount of a piperazine compound of the formula:



I

wherein R^1 is aryl, ar(lower)alkyl which may have lower alkoxy, indolyl(lower)alkyl, benzothienyl(lower)alkyl, quinolyl(lower)alkyl, pyridyl(lower)alkyl, thiazolyl(lower)alkyl, N-loweralkylindolyl(lower)alkyl, N-loweralkyltetrahydropyridyl(lower)alkyl, N-loweralkylindolyl(lower)alkyl having a phenyl group on the indole ring, or a group of the formula:



wherein

A is lower alkylene, R^7 is lower alkyl and X is a halide;

R^2 is C_{1-22} alkyl, lower alkylthio(lower)alkyl, lower alkenylthio(lower)alkyl, hydroxy(lower)alkyl, lower alkanoyloxy or ar(lower)alkoxy protected hydroxy(lower)alkyl, amino(lower)alkyl, lower alkanoyl, aroyl, or ar(lower)alkoxycarbonyl protected amino(lower)alkyl, carboxy(lower)alkyl, lower alkoxycarbonyl or ar(lower)alkoxycarbonyl protected carboxy(lower)alkyl, arylthio(lower)alkyl, ar(lower-)alkylthio(lower)alkyl, N-loweralkylindolyl(lower)alkyl, N-loweralkylindolyl(lower)alkyl having 1 or 2 lower alkyl groups on the indole ring, N-lower alkylindolyl(lower)alkyl having halogen substitution on the indole ring, N-lower alkylindolyl(lower)alkyl having lower alkyl and halogen substitution on the indole ring, N-lower alkyl indole(lower-)alkyl having lower alkoxy substitution on the indole ring, N-loweralkylindolyl(lower)alkyl having phenyl substitution on the indole ring, N-loweralkylindolyl(lower)alkyl substituted by phenyl(lower)alkoxy on the indole ring, substituted by phenyl-disubstituted lower alkyl, or N-lower alkylindolyl- and phenyl-disubstituted lower alkyl; and

R^3 and R^4 are each hydrogen or lower alkyl; or a pharmaceutically acceptable salt thereof.

4,940,710

7-(SUBSTITUTED)PIPERAZINYL-1-ETHYL-6-FLUORO-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACIDS

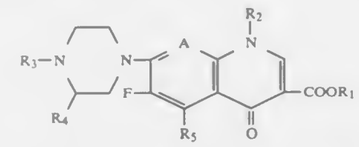
Phaik-Eng Sum, New City, N.Y.; Joseph P. Joseph, Montvale, N.J.; Carl B. Ziegler, Jr., Congers, N.Y.; Daniel B. Moran, Suffern, N.Y., and Yang-I Lin, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 940,133, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 820,279, Jan. 17, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 81,786

Int. Cl.[5] A61K *31/495;* **C07D** *401/04*

U.S. Cl. 514—254 **11 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, alkyl(C_1–C_3), dialkyl(C_1–C_3-)aminoalkyl(C_1–C_3), N-piperidinoalkyl(C_1–C_3), N-morpholinoalkyl(C_1–C_3), N-4-methylpiperidinoalkyl(C_1–C_3), 3-substituted-N-piperazinyl, N-4-alkyl(C_1–C_3)piperazinylalkyl(C_1–C_3), R_7 —CH—OR_6 where R_6 is acyl or $COOR_8$, R_8 is alkyl(C_1–C_3) and R_7 is hydrogen or alkyl(C_1–C_3), or an alkali or alkaline earth metal; R_2 is alkyl(C_1–C_4), cycloalkyl(C_3–C_6), alkoxy(C_1–C_4), alkylamino(C_1–C_3), vinyl phenyl, benzyl, —CH_2CH_2F or mono- or polysubstituted phenyl (wherein the substituent is halogen, CF_3 or OCH_2F); R_3 is hydrogen, benzyl, or alkyl(C_1–C_3); R_4 is fluoromethyl, difluoromethyl, trifluoromethyl, cyclopropyl, ethenyl, ethynyl, 5 or 6-membered ring heteroaryl or substituted heteroaryl having at least one —O—, —N—, or —S—, that is not 2-furanyl or 2-theinyl; R_5 is hydrogen or fluoro; A is =N—, =CH—, or =CF—; and when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

5. A composition of matter in dosage unit form comprising from 100 to 750 mg of a compound selected from those of claims 1 and 2 in association with a pharmaceutically acceptable carrier.

4,940,711

ANTIHYPERTENSIVE N-PIPERAZINYLALKANOYLANILIDES

Dante Nardi; Amedeo Leonardi; Alberto Catto, and Gabriele Graziani, all of Milan, Italy, assignors to Recordati, S.A., Chemical and Pharmaceutical Company, Chiasso, Switzerland

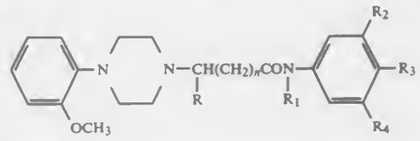
Continuation of Ser. No. 578,374, Feb. 8, 1984, abandoned. This application Jun. 30, 1989, Ser. No. 373,451

Claims priority, application United Kingdom, Feb. 12, 1983, 8303946

Int. Cl.[5] A61K *31/495;* **C07D** *295/10*

U.S. Cl. 514—255 **16 Claims**

1. An N-piperazinylalkanoylanilide having the formula I or a pharmaceutically acceptable non-toxic salt thereof:



(I)

wherein n is 0, 1 or 2; R represents a hydrogen atom or an alkyl group; R_1 represents a hydrogen atom; one of R_2 and R_3 represents a hydrogen atom and the other of R_2 and R_3 represents a hydroxyalkyl, alkylthio, alkylsulphonyl, alkylsulphonyl, alkanoyl, carbamoyl or guanidinosulphonyl group; or a group of the formula $SO_2NR_5R_6$ in which each of R_5 and R_6 independently represents a hydrogen atom or an alkyl, phenyl or alkanoyl group; or one of R_2 and R_3 represents a halogen atom and the other of R_2 and R_3 represents a sulphamoyl group; and R_4 is a hydrogen atom; said alkyl group having from 1 to 4 carbon atoms.

15. A method of promoting an antihypertensive effect in a warm-blooded animal in need thereof comprising administering thereto an antihypertensively effective amount of the N-piperazinylalkanoylanilide according to claim 1.

4,940,712

DERIVATIVES OF HYDROXYPRIMIDINES AS LEUKOTRIENE SYNTHESIS INHIBITORS

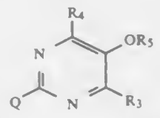
Frederick J. Walker, Preston, and Lawrence S. Melvin, Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 26, 1989, Ser. No. 358,032

Int. Cl.[5] A61K *31/505;* **C07D** *239/47, 239/56, 401/04*

U.S. Cl. 514—272 **23 Claims**

1. A compound of the formula



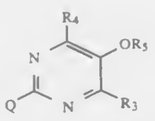
I

wherein Q is R_1R_2N—or SO_nR_{10}, wherein n is an integer from 0 to 2, R_1 is hydrogen, (C_1–C_{15})alkyl, (C_1–C_{15})alkyl -(C_3–C_8)-cycloalkyl, (C_2–C_{15})alkenyl - (C_2–C_6)cycoalkyl, (C_2–C_{15})alkynyl - (C_3–C_8)cycloalkyl, (C_3–C_{15})alkynyl, a heteroaryl containing group selected from heteroaryl - (C_1–C_{10})alkyl, heteroaryl - (C_1–C_{10})alkenyl, and heteroaryl - (C_1–C_{10})alkynyl, wherein the heteroaryl moiety is selected from the group consisting of thiophene and furane, (C_7–C_{20})phenylalkenyl, substituted (C_7–C_{20})phenylalkenyl, (C_7–C_{20})phenylalkynyl, substituted (C_7–C_{20})phenylalkynyl, (C_1–C_6 alkoxy)-(C_2–C_6)-alkyl, phenoxy - (C_2–C_6)alkyl, substituted phenoxy - (C_2–C_6)-

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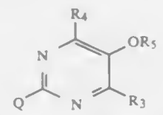
alkyl, $(C_1–C_4)$alkoxy$(C_2–C_4)$alkenyl, $(C_1–C_6)$alkoxy -$(C_2–C_6)$alkynyl, phenoxy -$(C_2–C_6)$alkenyl, substituted phenoxy- $(C_2–C_6)$alkenyl, phenoxy -$(C_2–C_6)$alkynyl, substituted phenoxy- $(C_2–C_6)$alkynyl, or $(C_7–C_{12}$- phenylalkyl-$(C_7–C_{12})$phenylalkyl; R_2 is hydrogen, $(C_1–C_{15})$alkyl, cyclopentyl, cyclohexyl, $(C_3–C_{15})$alkenyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl or $(C_3–C_8)$cycloalkyl -$(C_1–C_{15})$alkyl; or R_1 and R_2 together with the nitrogen atom to which they are attached form a pyrrolidinyl or piperidyl group which may be substituted by one $(C_1–C_6)$alkyl, phenyl or $(C_7–C_{20})$phenylalkyl; R_3 and R_4 are independently selected from the group consisting of hydrogen, $(C_1–C_6)$alkyl, phenyl, substituted phenyl, $(C_1–C_{20})$phenylalkyl, substituted (C_7C_{20})phenylalkyl, furyl, thienyl, furyl substituted by one $(C_1–C_3)$alkylo, thienyl substituted by one $(C_1–C_3)$alkyl, $(C_1–C_6)$alkyl substituted with carbonyl, chloro, fluoro, bromo, iodo, trifluoromethyl, hydroxy or alkoxy $(C_1–C_3)$, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, $(C_3–C_6)$cycloalkyl, $(C_1–C_{15})$alkyl -$(C_3–C_8)$cycloalkyl, $(C_2–C_{15})$alkenyl-$(C_3–C_8$-$)$cycloalkyl; or $(C_2–C_{15})$alkynyl-$(C_3–C_8)$cycloalkyl; R_5 is $—COR_6$, $—CH(CH_3)OCOOR_{11}$, or $—CH_2OCOOR_{11}$; R_6 is hydrogen, $(C_1–C_{10})$ alkyl, $(C_1–C_{10})$alkoxy, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl, substituted $(C_7–C_{20})$-phenylalkyl, $(C_2–C_3)$alkylcarboxy, $—NR_8R_9$, wherein R_8 and R_9 are independently selected from the group consisting of $(C_1–C_{10})$-alkyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl and substituted $(C_7–C_{20})$phenylalkyl; R_{10} is $(C_5–C_{15})$alkyl, $(C_5–C_{15})$alkenyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl, substituted $(C_7–C_{20})$-phenylalkyl- $(C_7–C_{20})$-phenylalkyl, $(C_1–C_{17})$alkyl-$(C_3–C_8)$cycloalkyl, $(C_2–C_{17})$alkenyl- $(C_3–C_8)$cycloalkyl, $(C_2–C_{17})$alkynyl- $(C_3–C_8)$cycloalkyl, $C_5–C_{15}$)- alkynyl, a heteroaryl containing group selected from heteroaryl$(C_1–C_{10})$alkyl, heteroaryl- $(C_1–C_{10})$alkenyl, and heteroaryl- $(C_1–C_{10})$alkynyl, wherein the heteroaryl moiety is selected from the group consisting of thiophene, and furane, $(C_7–C_{20})$-phenylalkenyl, substituted $(C_7–C_{20})$phenylalkenyl, $(C_7–C_{20})$-phenylalkynyl, substituted $(C_7–C_{20})$phenylalkynyl, $(C_1–C_6)$alkoxy- $(C_4–C_6)$alkyl, phenoxy- $(C_2–C_6)$alkyl, substituted phenoxy- $(C_2–C_6)$alkyl, $(C_3–C_6)$alkyl, $(C_1–C_6)$alkoxy- $(C_3–C_6$-$)$alkenyl, $(C_1–C_6)$alkenyl, $(C_1–C_6$-$)$alkoxy- $(C_3–C_6)$alkynyl, phenoxy- $(C_3–C_6)$alkenyl, substituted phenoxy- $(C_3–C_6)$alkenyl, phenoxy- $C_3–C_6$(alkynyl), or substituted phenoxy-$(C_3–C_6)$alkynyl; wherein the phenyl moieties on said substituted phenyl, said substituted phenylalkyl, said substituted phenylalkenyl, said substituted phenylalkylnyl, and said substituted phenoxy may be substituted by one or two moieties selected from the group consisting of fluoro, chloro, bromo, iodo, hydroxy, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy and CF_3; R_{11} is $(C_1–C_4)$alkyl; with the proviso that when R_1 and R_2 are both hydrogen, R_6 cannot be methyl; and with the proviso that when Q is $R_1R_2N—$ and R_1 is hydrogen or $(C_1–C_{15})$alkyl, R_2 is not hydrogen, $(C_1–C_{15})$alkyl, cyclopentyl, cyclohexyl, $(C_3–C_{15})$- alkenyl, phenyl, or $(C_7–C_{20})$phenylalkyl which may be substituted in the phenyl by one or two of fluoro, chloro, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy, or CF_3; and with the proviso that when Q is $R_1R_2N—$, R_3 and R_4 are not both hydrogen; or a pharmaceutically acceptable acid addition salt thereof, or, when R_6 is $(C_2–C_3)$alkylcarboxy, a pharmaceutically acceptable base addition salt thereof.

16. A compound of the formula



wherein Q is SO_nR_{10}, wherein n is an integer from 0 to 2; R_3 and R_4 are independently selected from the group consisting of hydrogen, $(C_1–C_6)$alkyl, phenyl, substituted phenyl, $(C_7–C_{20})$-phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl, furyl, thienyl, furyl substituted by one $(C_1–C_3)$alkyl, thienyl substituted by one $(C_1–C_3)$alkyl, $(C_1–C_6)$alkyl substituted with carbonyl, chloro, fluoro, bromo, iodo, trifluoromethyl, hydroxy or alkoxy $(C_1–C_3)$, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, $(C_3–C_6)$cycloalkyl, $(C_1–C_{15})$alkyl -$(C_3–C_8)$cycloalkyl, $(C_2–C_{15})$alkenyl -$(C_3–C_8)$-cycloalkyl, or $(C_2–C_{15})$alkynyl- $(C_3–C_8)$cycloalkyl; R_5 is $—COR_6$ $—CH(CH_3)OCOOR_{11}$, $—CH_2OCOOR_{11}$ or R_7; R_6 is hydrogen, $(C_1–C_{10})$ alkyl, $(C_1–C_{10})$alkoxy, phenyl, substituted phenyl, $(C_7–C_{20})$-phenylalkyl, substituted $(C_7–C_{20})$-phenylalkyl, $(C_2–C_3)$alkylcarboxy, $—NR_8R_9$, wherein R_8 and R_9 are independently selected from the group consisting of $(C_1–C_{10})$alkyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl and substituted $(C_7–C_{20})$phenylalkyl; R_7 is hydrogen or $(C_1–C_6)$alkyl; R_{10} is $(C_5–C_{15})$alkyl, $(C_5–C_{15})$-alkenyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl, substituted $(C_7–C_{20})$-phenylalkyl, $(C_7–C_{20})$phenylalkyl- $(C_7–C_{20})$phenylalkyl, $(C_1–C_{17})$alkyl-$(C_3–C_8)$cycloalkyl, $(C_2–C_{17})$alkenyl-$(C_3–C_8$-$)$cycloalkyl, $(C_2–C_{17})$alkynyl- $(C_3–C_8)$cycloalkyl, $C_5–C_{15})$-alkynyl, a heteroaryl containing group selected from heteroaryl-$(C_1–C_{10})$alkyl, heteroaryl- $(C_1–C_{10})$alkenyl, and heteroaryl-$C_1–C_{10}$)alkynyl, wherein the heteroaryl moiety is selected from the group consisting of thiophene, and furane, $(C_7–C_{20})$-phenylalkynyl, substituted $(C_7–C_{20})$phenylalkynyl, $(C_1–C_6)$alkoxy- $(C_4–C_6)$alkyl, phenoxy $(C_2–C_6)$alkyl, substituted phenoxy- $(C_2–C_6)$alkyl, $(C_1–C_6)$alkoxy- $(C_3–C_6)$alkenyl, $(C_1–C_6)$alkenyl, $(C_1–C_6$-$)$alkoxy- $(C_3–C_6)$alkynyl, phenoxy- $(C_3–C_6)$alkenyl, substituted phenoxy- $(C_3–C_6)$alkynyl, or substituted phenoxy- $(C_3–C_6)$alkynyl; wherein the phenyl moieties on said substituted phenyl, said substituted phenylalkyl, said substituted phenylalkenyl, said substituted phenylalkylnyl, and said substituted phenoxy may be substituted by one or two moieties selected from the group consisting of fluoro, chloro, bromo, iodo, hydroxy, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy and CF3; and R_{11} is $(C_1–C_4)$alkyl; or a pharmaceutically acceptable acid addition salt thereof.

19. A compound of the formula



wherein Q is $R_1R_2N—$ or SO_nR_{10}, wherein n is an integer from 0 to 2, R_1 is $(C_7–C_{20})$phenylalkenyl, substituted $(C_7–C_{20})$-phenylalkenyl $(C_7–C_{20})$phenylalkenyl, substituted $(C_7–C_{20})$-phenylalkynyl, $(C_1–C_6$ alkoxy) - $(C_2–C_6)$alkyl, phenoxy -$(C_2–C_6)$-alkyl, substituted phenoxy -$(C_2–C_6)$alkyl, $(C_1–C_6)$alkoxy- $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkoxy -$(C_2–C_6)$alkynyl, phenoxy -$(C_2–C_6)$alkenyl, substituted phenoxy- $(C_2–C_6)$alkenyl, phenoxy -$(C_2–C_6)$alkynyl, substituted phenoxy- $(C_2–C_6)$alkynyl, or (C_7C_{12})phenylalkyl- $(C_7–C_{12})$phenylalkyl; R_2 is hydrogen, $(C_1–C_{15})$alkyl, cyclopentyl, cyclohexyl, $(C_3–C_{15})$alkenyl, phenyl, substituted phenyl, $(C_7–C_{20})$phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl or $(C_3–C_8)$cycloalkyl -$(C_1–C_{15})$alkyl; or R_1 and R_2 together with the nitrogen atom to which they are attached form a pyrrolidinyl or piperidyl group which may be substituted by one $(C_1–C_6)$alkyl, phenyl or $(C_7–C_{20})$ phenylalkyl; R_3 and R_4 are independently selected from the group consisting of hydrogen, $(C_1–C_6)$alkyl, phenyl substituted phenyl, $(C_7–C_{20})$-phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl, furyl, thienyl, furyl substituted by one $(C_1–C_3)$ alkyl, thienyl substituted by one $(C_1–C_3)$alkyl, $(C_1–C_6)$alkyl substituted with carbonyl, chloro, fluoro, bromo, iodo, trifluoromethyl, hydroxy or alkoxy $(C_1–C_3)$, $(2–C_6)$alkenyl, $(2–C_6$-$)$(alkynyl, $(C_3–C_6)$cycloalkyl, $(C_1–C_{15}$alkyl-$(C_3–C_8$ cycloalkyl, $(C_2–C_{15})$alkenyl - $(C_3–C_8)$-cycloalkyl, or $(C_2–C_{15})$alkynyl-$(C_3–C_8)$cycloalkyl; R_5 is -COR_6 $—CH(CH_3)OCOOR_{11}$, $—CH_2OCOOR_{11}$ or R_7; R_6 is hydrogen, $(C_1–C_{10})$ alkyl, $(C_1–C_{10})$alkoxy, phenyl, substituted phenyl, $(C_7–C_{20})$-phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl, $(C_2–C_3)$-alkylcarboxy, $—NR_8R_9$, wherein R_8 and R_9 are independently selected from the group consisting of $(C_1–C_{10})$alkyl, phenyl, substituted

phenyl, $(C_7–C_{20})$phenylalkyl and substituted (C_7C_{20})phenylalkyl; R_7 is hydrogen or $(C_1–C_6)$alkyl; R_{10} is $(C_5–C_{15})$alkyl, $(C_5–C_{15})$alkenyl, phenyl, substituted phenyl, $(C_7–C_{20})$ phenylalkyl, substituted $(C_7–C_{20})$phenylalkyl, $(C_7–C_{20})$phenylalkyl-$(C_7–C_{20})$phenylalkyl, $(C_1–C_{17})$alkyl-$(C_3–C_8)$cycloalkyl, $(C_2–C_{17})$alkenyl- $(C_3–C_8)$cycloalkyl, $(C_2–C_{17})$alkynyl- (c3–C8-)cycloalkyl, $(C_5–C_{15})$alkynyl, a heteroaryl containing group selected from heteroaryl- $(C_1–C_{10})$-alkyl, heteroaryl- $(C_1–C_1$-0)alkenyl, and heteroaryl$(C_1–C_{10})$alkynyl, wherein the hetero moiety is selected from the group consisting of thiophene, and furane, $(C_7–C_{20})$-phenylalkenyl substituted $(C_7–C_{20})$phenylalkyl, $(C_7–C_{20})$phenylalkynyl, substituted $(C_7–C_{20})$phenylalkynyl, $(C_1–C_6)$alkoxy- $(C_4–C_6)$alkyl, phenoxy- $(C_2–C_6)$alkyl, substituted phenoxy- $(C_2–C_6)$alkyl, $(C_1–C_6)$alkoxy- $C_3–C_6$-$)$alkenyl, $(C_1–C_{60})$-alkoxy $(C_3–C_6)$alkynyl, phenoxy- $(C_3–C_6$-$)$alkenyl, substituted phenoxy- $(C_3–C_6)$alkenyl, phenoxy-$C_3–C_6$(alkynyl), or substituted phenoxy- $(C_3–C_6)$alkynyl; wherein the phenyl moieties on said substituted phenyl, said substituted phenylalkyl, said substituted phenylalkenyl, said substituted phenylalkynyl, and said substituted phenoxy may be substituted by one or two moieties selected from the group consisting of fluoro, chloro, bromo, iodo, hydroxy, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy, and CF_3; R_{11} is $(C_1–C_4)$alkyl; with the proviso that when Q is $R_1R_2N—$, R_7 is hydrogen and R_3 is $(C_1–C_6)$alkyl, then R_4 is not hydrogen; and with the proviso that when Q is $R_1R_2N—$, R_3 and R_4 are not both hydrogen; or a pharmaceutically acceptable acid addition salt thereof, or, when R_6 is $(C_2–C_3)$alkylcarboxy or R_7 is hydrogen, a pharmaceutically acceptable base addition salt thereof.

4,940,713

SUBSTITUTED GLUTAMIC ACIDS

James L. Kelley, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 15, 1988, Ser. No. 181,984

The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/505*; C07D *239/49, 239/36*

U.S. Cl. 514—272 **4 Claims**

1. The compound N-[4-[[4-(2,4-diamino-1,6-dihydro-6-oxo-5-pyrimidinyl)butyl]amino]benzoyl]-(L)-glutamic acid or a pharmaceutically acceptable salt thereof.

4. A pharmaceutically acceptable salt of N-[4-[[4-(2,4-diamino-1,6-dihydro-6-oxo-5-pyrimidinyl)butyl]amino]-benzoyl]-(L)-glutamic acid.

4,940,714

2-SUBSTITUTED CARBONYLIMIDAZO[4,5-C]QUINOLINES

Susumu Takada, Hyogo; Toshio Fujishita, Osaka; Takashi Sasatani, Nara; Akira Matsushita, Hyogo, and Masami Eigyo, Nara, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

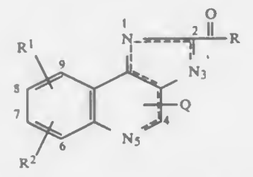
Filed Feb. 14, 1989, Ser. No. 309,868

Claims priority, application Japan, Feb. 16, 1988, 63-33270

Int. Cl.[5] C07D *471/04*; A61K *31/47*

U.S. Cl. 514—293 **8 Claims**

1. A compound of the formula:



(I)

wherein R is (1) hydrogen, (2) $C_1–C_{10}$ alkyl optionally substituted by halogen, $C_1–C_5$ alkylthio, $C_1–C_5$ alkyloxycarbonyl, or phenyl, (3) $C_3–C_5$ cycloalkyl optionally substituted by $C_1–C_5$ alkyl, (4) $C_2–C_5$ alkenyl optionally substituted by $C_1–C_5$ alkyl or di-$C_1–C_5$ alkyl (5) amino optionally substituted by $C_1–C_5$ alkyl or di $C_1–C_5$ alkyl, (6) phenyl optionally substituted by one or two members independently selected from the group consisting of halogen, trifluoromethyl, $C_1–C_5$ alkoxy, and $C_1–C_5$ alkylthio, or (7) a isoxazolyl, isothiazolyl, pyrazolyl, oxazolyl, thiazolyl, imidazolyl, oxadiazolyl, thienyl, furyl or pyridyl each optionally substituted by one or two members independently selected from the group consisting of halogen, $C_1–C_5$ alkyl, and phenyl; Q is hydrogen, $C_1–C_5$ alkyl, benzyl, benzhydryl, trityl, $C_1–C_{13}$ acyl, $C_1–C_5$ alkylsulfonyl, or $C_6–C_{12}$ arylsulfonyl, provided that Q is located at the nitrogen atom of the 1-, 3-, or 5-position; R^1 and R^2 each is a hydrogen, $C_1–C_5$ alkyl, $C_1–C_5$ alkoxy, or halogen; and the dotted lines indicate the presence of three double bonds at positions 2(3), 3a(9b), 4(5); 1(9b), 2(3), 3a(4); or 1(2), 3a(9b), 4(5); or a pharmaceutically acceptable acid addition salt thereof.

4,940,715

5H-PYRAZOLO[4,3-A] QUINOLIZIN-5-ONE COMPOUNDS EXHIBITING THERAPEUTIC ACTIVITIES

Yoshikazu Kurashina; Hiroshi Miyata, and Den-ichi Momose, all of Matsumoto, Japan, assignors to Kissei Pharmaceutical Co., Ltd., Japan

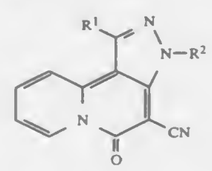
Filed May 10, 1989, Ser. No. 349,778

Claims priority, application Japan, May 17, 1988, 62-120297; May 17, 1988, 63-120298

Int. Cl.[5] C07D *471/06*

U.S. Cl. 514—293 **7 Claims**

1. 5H-pyrazolo[4,3-a]quinolizin-5-one compounds corresponding to the formula:



where R^1 is an alkyl group having 1 to 10 carbon atoms, a phenyl group, or a phenylalkyl group having 7 to 10 carbon atoms; R^2 is a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, a phenyl group, an aliphatic acyl group having 2 to 6 carbon atoms, or a benzoyl group.

4,940,716

2-AMINO-TETRAHYDRO-ISOQUINOLENE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Endre Pálosi; Dezso Korbonits, both of Budapest; Erzsébet Molnár née Bako, Szodliger; Ida Szyoboda née Kanzel, Dunakeszi; László Harsing, Budapest; Gyorgy Simon, Budapest; Vera Gergely, Budapest; Peter Kormoczi, Budapest; Katalin Mármarosi née Keliner, Biatorbagy, and Sandor Virág, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

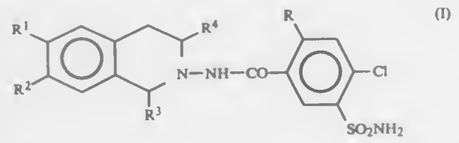
Filed Dec. 29, 1988, Ser. No. 295,920

Claims priority, application Hungary, Dec. 30, 1987, 6132/87

Int. Cl.[5] C07D *217/00*; A61K *31/47*

U.S. Cl. 514—307 **6 Claims**

1. A compound of the Formula (I)



(I)

wherein

R is hydrogen or chlorine

R^1 and R^2 are hydrogen, methoxy or ethoxy, and

R^3 and R^4 are hydrogen or methyl.

6. A diuretic and saluretic pharmaceutical composition which comprises a therapeutically effective amount of the compound of the Formula (I) as defined in claim 1 together with a pharmaceutically acceptable inert carrier.

4,940,717

FUNGICIDAL IMIDAZOLYLMETHYLOXIRANES

Rainer Seele, Fussgoenheim; Stefan Karbach, Neustadt; Bernd Janssen, Ludwigshafen; Reiner Kober, Fussgoenheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

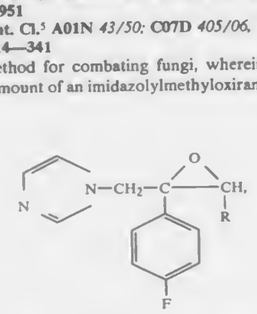
Filed Mar. 6, 1989, Ser. No. 319,318

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807951

Int. Cl.[5] **A01N** *43/50;* **C07D** *405/06, 405/14*

U.S. Cl. 514—341 **7 Claims**

7. A method for combating fungi, wherein a fungicidally effective amount of an imidazolylmethyloxirane of the formula I



I

where R is phenyl, pyridyl, tetrahydropyranyl, norbornyl, C_3–C_{12}-cycloalkyl or C_5–C_8-cycloalkenyl, these radicals being unsubstituted or substituted by halogen, nitro, phenoxy, alkyl, amino, alkoxy, haloalkoxy or haloalkyl, where alkyl is of 1 to 4 carbon atoms, or a plant-tolerated acid addition salt or metal complex thereof, is allowed to act on the fungi, or on materials, areas, plants or seed threatened by fungus attack.

4,940,718

7-SUBSTITUTED BICYCLIC PYRAZOLIDINONES, PHARMACEUTICAL COMPOSITIONS AND USE

Charles J. Barnett; Richard E. Holmes; Louis N. Jungheim, all of Indianapolis; Sandra K. Sigmund, Carmel, and Robert J. Ternansky, Noblesville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 103,488, Sep. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 862,906, May 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 729,021, Apr. 30, 1985, abandoned. This application Oct. 2, 1989, Ser. No. 418,782

Claims priority, application European Pat. Off., Apr. 28, 1986, 86303174

Int. Cl.[5] **A61K** *31/425, 31/415;* **C07D** *231/00, 413/12*

U.S. Cl. 514—370 **26 Claims**

1. A compound of the formula:



wherein:

either R_1 or R_2 is hydrogen, halo, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, nitro or cyano; a group of the formula

$$-CX_3$$

wherein X is fluoro, chloro, bromo or iodo;

a group of the formula



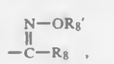
wherein Z is 0, 1 or 2 and R_7 is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, or (disubstituted)amino;

a group of the formula

$$-COR_8$$

wherein R_8 is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, trihalomethyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, amino, (monosubstituted-)amino, or (disubstituted)amino;

a group of the formula



wherein R_8 is as defined as above and R_8', is hydrogen, C_1 to C_6 alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl;

a group of the formula

$$-COOR_9$$

wherein R_9 is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, or a non-toxic, metabolically-labile, ester-forming group;

a group of the formula

$$-PO_3(R_{10})_2$$

wherein R_{10} is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl-, phenyl, or substituted phenyl;

a group of the formula

$$-OR_{11}$$

wherein R_{11} is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkykl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, phenyl, substituted phenyl, or C_1 to C_7 acyl;

or a group of the formula

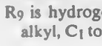
$$-NR_{12}R_{13}$$

wherein R_{12} and R_{13} are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substitutef phenyl, C_1 to C_7 acyl or a group of the formula



wherein R_q is C_1 to C_6 alkyl, C_7 to C_{12} phenylalkyl or phenyl;

or one of R_{12} and R_{13} is hydrogen and the other is a group of the formula



wherein Nu is (monosubstituted)amino, (disubstituted-)aamino, C_1 to C_6 alkylthio, C_2 to C_7 alkenylthio, C_1 to C_6 substituted alkylthio, phenylalkylthio, C_7 to C_1 phenylalkylthio, or C_7 to C_{12} substituted phenylalkylthio, C_1 to C_6 alkyl alkoxy, C_1 to C_6 substituted alkoxy, l,henoxy, substituted phenoxy, C_7 to C_{12} phenylalkoxy, or C_7 to C_{12} substituted phenylalkoxy;

and the other of R_1 or R_2 is a group, of the formula

$$-COOR_{14}$$

wherein R_{14} is hydrogen, an organic or inorganic cation, or a non-toxic, metabolically-labile ester-forming group;

R_3 and R_4 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl or a group of the formula

$$-COOR_{15}$$

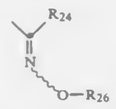
wherein R_{15} has the same definition as R_9;

R_5 is hydrogen;

R_6 is an acyl group of the formula

$$-COR_{16},$$

wherein R_{16} is a group of the formula



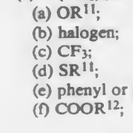
wherein R_{26} is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, C_3 to C_7 cycloalkyl, C_3 to C_7 substituted cycloalkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl or substituted phenyl; and R_{24} is 2-aminothiazol-4-yl; or a pharmaceutically-acceptable salt thereof.

21. A pharmaceutical composition useful for the control of gram-positive and gram-negative bacterial infections, comprising an antibacterially-effective amount of a compound of claim 1, wherein:

R_9 is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, or a non-toxic, metabolically-labile ester-forming group;

R_{14} is hydrogen, an organic or inorganic cation or a non-toxic, metabolically-labile ester-forming group; and

R_5 is hydrogen and R_6 is



excluding any protected hydroxy groups, protected amino groups and protected carboxy groups.

4,940,719

TETRAHYDROCARBAZOLE ESTERS, PHARMACEUTICAL COMPOSITIONS AND USE

John W. Gillard, Baie d'Urfe; Christiane Yoakim; Yvan Guindon, both of Montreal, and Yves Girard, Bizard, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

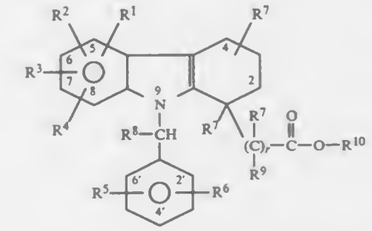
Continuation-in-part of Ser. No. 1,711, Jan. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 845,207, Mar. 27, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 101,611

The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *31/395, 31/41;* **C07D** *209/82, 403/02*

U.S. Cl. 514—381 **14 Claims**

1. A compound of the formula:



I

wherein:

R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from:

(1) hydrogen;

(2) alkyl having 1 to 6 carbons;

(3) alkenyl having 2 to 6 carbons;

(4) $-(CH_2)_nM$ wherein M is

(a) OR^{11};

(b) halogen;

(c) CF_3;

(d) SR^{11};

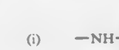
(e) phenyl or substituted phenyl;

(f) $COOR^{12}$;



(g)

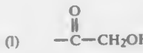
(h) tetrazole;



(i)

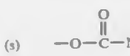
(j) $-NR^{12}R^{12}$;

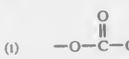
(k) $-NHSO_2R^{15}$;

(l) 

(m) $-SOR^{11}$;
(n) $-CONR^{12}R^{12}$;
(o) $-SO_2NR^{12}R^{12}$;
(p) $-SO_2R^{11}$;
(q) NO_2;

(r) 

(s) 

(t) 

(u) CN; or
(v) N_3;

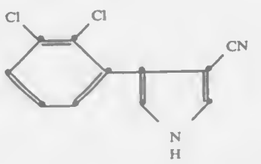
provided that when R^1, R^2, R^3 or R^4 is alkyl having 1 to 6 carbons, it is not located at position 6; provided that at least one of R^5 or R^6 is M wherein M is
(d) SR^{11};
(m) $-SOR^{11}$;
(o) $-SO_2NR^{12}R^{12}$; or
(p) $-SO_2R^{11}$;
R^7 is H or alkyl of 1 to 6 carbons;
R^8 is H or alkyl of 1 to 6 carbons;
each R^9 is independently H, OH, C_1 to C_4-O-alkyl, or alkyl of 1 to 4 carbons;
R^{10} is lower alkyl, substituted or unsubstituted 2-phenethyl, substituted or unsubstituted benzyl, or substituted or unsubstituted phenyl;
each R^{11} is independently H, C_1 to C_6 alkyl, benzyl, phenyl, or substituted phenyl;
each R^{12} is independently H, phenyl, benzyl, or C_1 to C_6 alkyl;
each R^{13} is independently H, $(CH_2)_mCOOR^{12}$, C_1 to C_6 alkyl, CF_3, phenyl, or substituted phenyl;
each R^{14} is independently C_1 to C_6 alkyl, benzyl, or phenyl;
each R^{15} is independently C_1 to C_6 alkyl, 4-methylphenyl, phenyl, or CF_3;
m is 0 to 4;
n is 0 to 3; and
r is 1 to 6;

or a pharmaceutically acceptable salt thereof.

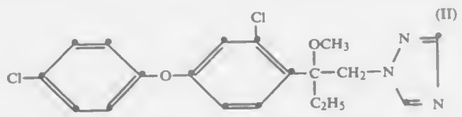
10. A pharmaceutical composition for inhibiting leukotriene synthesis and antagonizing prostaglandins in mammals comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

4,940,720
MICROBICIDAL COMPOSITIONS
David J. Nevill, Riehen, and Bernhard Steck, Munteller, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Aug. 2, 1989, Ser. No. 388,782
Int. Cl.[5] A01N *43/36, 43/64*
U.S. Cl. 514—383 4 Claims

1. A fungicidal composition for plants containing a synergistic fungicidally effective amount of the mixture of at least two active ingredient components, wherein one component (I) is 3-cyano-4-(2,3-dichlorophenyl)-pyrrole of formula I

(I) 

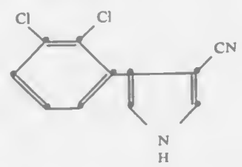
and other component (II) is 1-(1H-1,2,4-triazol-1-yl)-2-methoxy-2-[4-(4-chlorophenoxy)-2-chlorophenyl]-butane of formula II

(II) 

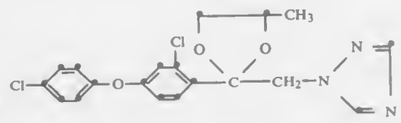
or a salt thereof, together with a carrier, wherein the weight ratio of I:II is 20:1 to 1:20.

4,940,721
MICROBICIDAL COMPOSITIONS
David J. Nevill, Riehen, and Bernhard Steck, Munteller, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jul. 31, 1989, Ser. No. 388,177
Claims priority, application Switzerland, Aug. 4, 1988, 2960/88
Int. Cl.[5] A01N *43/36, 43/64*
U.S. Cl. 514—383 4 Claims

1. A fungicidal composition for plants containing a synergistic fungicidally effective amount of the mixture of at least two active ingredient components, wherein one component (I) is 3-cyano-4-(2,3-dichlorophenyl)-pyrrole of formula I

(I) 

and the other component (II) is 1-{2-[2-chloro-4-(4-chlorophenoxy)-phenyl]-4-methyl-1,3-dioxolan-2-ylmethyl}-1H-1,2,4-triazole of formula II

(II) 

or a salt thereof, together with carrier, wherein the weight ratio of I:II is 20:1 to 1:20.

4,940,722
SEED DISINFECTANT COMPOSITION
Hirotaka Takano, Nishinomiya, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 122,858
Claims priority, application Japan, Dec. 10, 1986, 61-293771
The portion of the term of this patent subsequent to Oct. 21, 2003, has been disclaimed.
Int. Cl.[5] A01N *43/52, 43/64*
U.S. Cl. 514—383 19 Claims

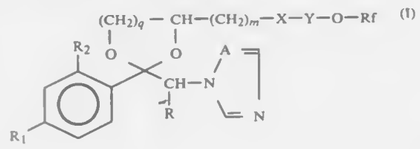
1. A seed disinfectant composition comprising fungicidally effective amounts of
(A) (E)-1-(2,4-dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-1-penten-3-ol containing not less than 66.5% by weight of (−)-(E)-1-(2,4-dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-1-penten-3-ol and
(B) at least one benzimidazole thiophanate fungicide, wherein the weight ratio of (A):(B) is 1–50:1–50.

4,940,723
USE OF BIS-(5-AMIDINO-2-BENZIMIDAZOLYL) METHANE (BABIM) TO TREAT ARTHRITIS
Richard R. Tidwell; Joachim D. Geratz; John H. Schwab; Katherine B. Pryzwansky, and Sonia K. Anderle, all of Chapel Hill, N.C., assignors to University of North Carolina, Chapel Hill, Chapel Hill, N.C.
Filed Oct. 20, 1988, Ser. No. 260,056
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—396 8 Claims

1. A method of treating arthritis which comprises administering to a patient having arthritis, an arthritis treating effective amount of bis-(5-amidino-2-benzimidazolyl)methane and a pharmaceutically acceptable carrier.

4,940,724
AZOLYL-DERIVATIVES HAVING FUNGICIDAL ACTIVITY
Roberto Colle; Giuseppina Ratti; Carlo Garavaglia, and Luigi Mirenna, all of Milan, Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy
Division of Ser. No. 74,352, Jul. 16, 1987, Pat. No. 4,810,718.
This application Feb. 14, 1989, Ser. No. 310,338
Claims priority, application Italy, Jul. 21, 1986, 21194 A/86
Int. Cl.[5] A01N *43/50;* C07D *405/06*
U.S. Cl. 514—397 3 Claims

1. A compound having the formula:

(I) 

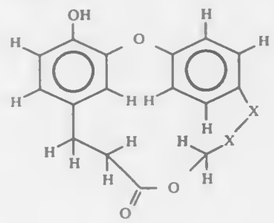
wherein:
m=1 or 2;
q=1 or 2;
y=a haloethylene or haloethenyl(ene) group;
X=is oxygen or sulphur;
A=CH;
R=is H, CH_3 or F;
R_1 is selected from the group consisting of chlorine, bromine, fluorine, CF_3, phenyl, C_1–C_2 alkoxy, C_1–C_2 haloalkoxy;
R_2 is selected from the group consisting of H, chlorine, bromine and fluorine; and
R_f is a C_1–C_5 polyfluoroalkyl or C_2–C_4 polyfluoroalkenyl radical containing at least 3 fluorine atoms.

4,940,725
OXINDOLE ALKALOIDS HAVING PROPERTIES STIMULATING THE IMMUNOLOGIC SYSTEM AND PREPARATION CONTAINING THE SAME
Klaus Keplinger, Müllerstrasse 30, A-6020 Innsbruck, Austria; Hildeber Wagner, Breitbrunn am Chiemsee, and Barbara Kreutzkamp, Munich, both of Fed. Rep. of Germany, assignors to Klaus Keplinger, Innsbruck, Austria
Continuation of Ser. No. 195,458, May 16, 1988, Pat. No. 4,844,901, which is a continuation of Ser. No. 684,154, Dec. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 463,512, Feb. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 195,051, Oct. 14, 1980, abandoned. This application Apr. 3, 1989, Ser. No. 333,846
Claims priority, application Austria, Oct. 7, 1980, 4971/80
Int. Cl.[5] A61K *31/40, 31/35*
U.S. Cl. 514—411 24 Claims

1. A pharmaceutical agent for stimulating the immunological system comprising oxindole alkaloids with the formula $C_{21}H_{24}O_4N_2$, derived from Uncaria tomentosa (WILLD.) DC. of the order of Gentianales having a yellow-brown or dark red fresh bast and substantially free from tannin substances, said oxindole alkaloids being selected from the group consisting of isopteropodine and pteropodine, wherein at least one of said oxindole alkaloids is further complexed with a catechine to form an alkaloid-catechine complex.

4,940,726
CELL GROWTH INHIBITORY MACROCYCLIC LACTONES DENOMINATED COMBRETASTATIN D-1 AND COMBRETASTATIN D-2
George R. Pettit, Paradise Valley, and Sheo B. Singh, Tempe, both of Ariz., assignors to Arizona Board of Regents, Tempe, Ariz.
Filed Apr. 26, 1989, Ser. No. 344,005
Int. Cl.[5] A61K *31/365;* C07B *321/00*
U.S. Cl. 514—450 9 Claims

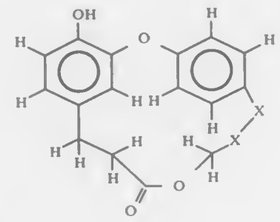
1. A cell growth inhibitory macrocyclic lactone having the structural formula:



wherein:

X,X = CH=CH X,X = HC—CH (with O)

4. The method of treating a host afflicted with a neoplastic disease characterized by uncontrolled cell growth comprising administering to said host a pharmaceutical preparation containing a pharmacologically acceptable carrier and, as its essential active cell growth inhibitory substance a therapeutically active amount of a macrocyclic lactone having the structural formula:



wherein:

X,X = CH=CH X,X = HC—CH
O

4,940,727

NOVEL HMG-COA REDUCTASE INHIBITORS

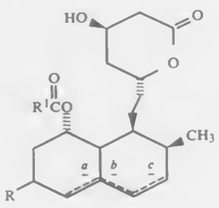
Edward S. Inamine, Rahway; Otto D. Hensens, Red Bank, both of N.J.; David R. Houck, Los Alamos, N. Mex.; Ta J. Lee; Robert L. Smith, both of Lansdale; Wasyl Halczenko, Hatfield; George D. Hartman, Lansdale, and Gerald E. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 92,353, Sep. 2, 1987, abandoned, and Ser. No. 48,136, May 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 1,933, Oct. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 877,041, Jun. 23, 1986, abandoned. This application Oct. 6, 1988, Ser. No. 254,525

Int. Cl.[5] **A61K** *31/335;* **C07D** *315/00*

U.S. Cl. 514—450 **25 Claims**

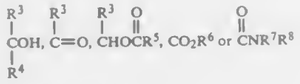
1. A compound represented by the following structural formula (I):



(I)

wherein:

R is

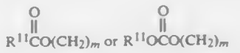


R^1 and R^5 are independently:
(1) C_{1-10} alkyl;
(2) substituted C_{1-10} alkyl in which one or more substituent(s) is:
(a) halogen,
(b) hydroxy,
(c) C_{1-10} alkoxy,
(d) C_{1-5} alkoxycarbonyl,
(e) C_{1-5} acyloxy,
(f) C_{3-8} cycloalkyl,
(g) phenyl,
(h) substituted phenyl in which the substituents are X and Y,
(i) C_{1-10} alkylS(O)$_n$ in which n is 0 to 2,
(j) C_{3-8} cycloalkylS(O)$_n$,
(k) phenylS(O)$_n$,
(l) substituted phenylS(O)$_n$ in which the substituents are X and Y, and
(m) oxo;
(3) C_{1-10} alkoxy;
(4) C_{2-10} alkenyl;
(5) C_{3-8} cycloalkyl;
(6) substituted C_{3-8} cycloalkyl in which one substituent is:
(a) C_{1-10} alkyl
(b) substituted C_{1-10} alkyl in which the substituent is selected from
(i) halogen,
(ii) hydroxy,
(iii) C_{1-10} alkoxy,
(iv) C_{1-5} alkoxycarbonyl,
(v) C_{1-5} acyloxy,
(vi) phenyl,
(vii) substituted phenyl in which the substituents are X and Y
(viii) C_{1-10} alkylS(O)$_n$,
(ix) C_{3-8} cycloalkylS(O)$_n$,
(x) phenylS(O)$_n$,
(xi) substituted phenylS(O)$_n$ in which the substituents are X and Y, and
(xii) oxo,
(c) C_{1-10} alkylS(O)$_n$,
(d) C_{3-8} cycloalkylS(O)$_n$,
(e) phenylS(O)$_n$,
(f) substituted phenylS(O)$_n$ in which the substituents are X and Y,
(g) halogen,
(h) hydroxy,
(i) C_{1-10} alkoxy,
(j) C_{1-5} alkoxycarbonyl,
(k) C_{1-5} acyloxy,
(l) phenyl, and
(m) substituted phenyl in which the substituents are X and Y;
(7) phenyl;
(8) substituted phenyl in which the substituents are X and Y;
(9) amino;
(10) C_{1-5} alkylamino;
(11) di(C_{1-5} alkyl)amino;
(12) phenylamino;
(13) substituted phenylamino in which the substituents are X and Y;
(14) phenyl C_{1-10} alkylamino;
(15) substituted phenyl C_{1-10} alkylamino in which the substituents are X and Y; and R^9S in which R^9 is selected from
(a) C_{1-10} alkyl,
(b) phenyl, and
(c) substituted phenyl in which the substituents are X and Y;

R^6 are independently:
(1) hydrogen;
(2) C_{1-5} alkyl;
(3) substituted C_{1-5} alkyl in which the substituent is:
(a) phenyl,
(b) dimethylamino, and
(c) acetylamino, and
(4) 2,3-dihydroxypropyl;

R^3 and R^4 are independently:
(1) hydrogen;
(2) C_{1-10} alkyl;
(3) substituted C_{1-10} alkyl in which one or more substituent(s) is:
(a) halogen,
(b) hydroxy,
(c) C_{1-10} alkoxy,
(d) C_{1-5} alkoxycarbonyl,
(e) C_{1-5} acyloxy,
(f) C_{3-8} cycloalkyl,
(g) phenyl,
(h) substituted phenyl in which the substituents are X and Y,
(i) C_{1-10} alkyl S(O)$_n$ in which n is 0 to 2,
(j) C_{3-8} cycloalkyl S(O)$_n$,
(k) phenyl S(O)$_n$;
(l) substituted phenyl S(O)$_n$ in which the substituents are X and Y, and
(m) oxo;
(4) C_{2-10} alkenyl;
(5) C_{3-8} cycloalkyl;
(6) aminocarbonyl;
(7) substituted aminocarbonyl in which one or more substituent(s) is:
(a) C_{1-5} alkyl,
(b) C_{3-8} cycloalkyl,
(c) phenyl,
(d) substituted phenyl in which the substituents are X and Y;
(8) phenyl;
(9) substituted phenyl in which the substituents are X and Y;
(10) C_{1-10} alkylcarbonyl;
(11) C_{3-8} cycloalkylcarbonyl;
(12) phenylcarbonyl;
(13) substituted phenylcarbonyl in which the substituents are X and Y; and

X and Y independently are hydrogen, halogen, trifluoromethyl, C_{1-3} alkyl, nitro, cyano or a group selected from:
(1) $R^{10}O(CH_2)_m$ in which m is 0 to 3 and R^{10} is hydrogen, C_{2-3}alkyl or hydroxy C_{2-3}alkyl;
(2)



in which R^{11} is hydrogen, C_{1-3}alkyl, hydroxy-C_{2-3}alkyl, phenyl, naphthyl, amino C_{1-3}alkyl, C_{1-3}alkylamino-C_{1-3}alkyl, di(C_{1-3}alkyl)amino-C_{1-3}alkyl, hydroxy C_{2-3} alkylamino-C_{1-3}alkyl or di(hydroxy C_{2-3}alkyl) amino C_{1-3}alkyl;
(3)



in which R^{12} is hydrogen, C_{1-3}alkyl, hydroxy-C_{2-3}alkyl, C_{1-3}alkoxy-C_{1-3}alkyl, phenyl or naphthyl;
(4)



in which R^{13} and R^{14} independently are hydrogen, C_{1-3} alkyl, and hydroxy-C_{2-3}alkyl;
(5) $R^{15}S(O)_n(CH_2)$m in which R^{15} is hydrogen, C_{1-3}alkyl, amino, C_{1-3}alkylamino or di(C_{1-3}alkyl)amino; and

a, b and c each represent single bonds or one of a, b and c represents a double bond or both a and c represent double bonds; or a pharmaceutically acceptable salt thereof.

VOL 1116 ISS 2 JL 10 1990 UMI

4,940,728
TREATMENT FOR SINO-NASAL CONGESTION
John E. Postley, 17 E. 89th St., New York, N.Y.
Filed May 17, 1985, Ser. No. 735,482
Int. Cl.[5] A61K *31/34*
U.S. Cl. 514—474 5 Claims

1. A method of treating sino-nasal congestion, viral nasopharyngitis, allergic rhinitis, and related conditions associated with nasal congestion comprising applying to the nasal mucosa a solution comprising ascorbic acid, a pharmaceutically acceptable salt or ester of ascorbic acid, or combinations thereof dissolved in a pharmaceutically acceptable liquid carrier in an amount effective to treat sino-nasal congestion.

4,940,729
PESTICIDAL FORMULATIONS
Michael D. Matthewson, Berkhamsted, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Continuation of Ser. No. 251,103, Apr. 6, 1981, abandoned, which is a continuation of Ser. No. 43,491, May 29, 1979, abandoned. This application Jan. 8, 1986, Ser. No. 817,786
Claims priority, application United Kingdom, May 30, 1978, 7824264; May 30, 1978, 7824265
Int. Cl.[5] A01N *53/00, 37/34*
U.S. Cl. 514—521 4 Claims

1. A pesticidal composition comprising permethrin and cypermethrin in an amount of 1 to 1 by weight.

4,940,730
ANGIOGENESIS ENHANCER
Kaori Wakamatsu, Tsukuba; Koichi Kondo, Sobraku, and Katsuichi Sodo, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Oct. 3, 1988, Ser. No. 253,060
Claims priority, application Japan, Oct. 29, 1987, 62-274461; Jul. 7, 1988, 63-169763
Int. Cl.[5] A61K *31/16, 31/20*
U.S. Cl. 514—560 4 Claims

1. [The] A composition [according to claim 10, wherein] with enhanced angiogenic activity which contains an effective amount of the compound [is] erucamide[.], together with a physiologically acceptable carrier, excipient, or diluent therefor.

4,940,731
METHOD OF TREATING PREMATURE EJACULATION USING SERTRALINE
Peter A. Bick, Hartsdale, N.Y., assignor to Pfizer Inc., New York, N.Y.
Filed Aug. 30, 1989, Ser. No. 400,417
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—657 1 Claim

1. A method of treating premature ejaculation, comprising administering to a patient in need of such treatment an amount of the compound (1S-cis)-4-(3,4-dichlorophenyl)-1,2,3,4-tetrahydro-N-methyl-1-naphthalenamine, or a pharmaceutically acceptable salt thereof, effective in delaying ejaculation.

4,940,732
DISPERSIONS AND THE PREPARATION OF FOAMED RESINS THEREFROM
Ronald L. Pastorino, Larkspur, and Lawrence A. Bock, Walnut Creek, both of Calif., assignors to Witco Corporation, New York, N.Y.
Division of Ser. No. 293,890, Jan. 5, 1989, Pat. No. 4,892,854. This application Nov. 30, 1989, Ser. No. 443,932
Int. Cl.[5] C08J *9/08*
U.S. Cl. 521—69 9 Claims

1. The method for making a foamed polyester resin by curing and crosslinking unsaturated polyester resin and expanding the resin into a cellular structure with a gas, the improvement which comprises incorporating into the resin an aqueous dispersion comprising a symmetrical or asymmetrical aromatic diacyl peroxide; an alkali metal carbonate or bicarbonate or mixtures thereof; dispersion stabilizing amounts of magnesium aluminum silicate and alkali metal carboxymethyl cellulose; glycerol; and sufficient water to form an aqueous dispersion in an amount sufficient to effect curing and forming of the resin.

4,940,733
METHOD FOR FOAMING HIGH TEMPERATURE POLYMERS USING POLY(ALKYLENE CARBONATES) AS FOAMING AGENTS
Jeffrey A. Kophal, Blandon; Lloyd M. Robeson, Macungie, and Joseph G. Santangelo, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Nov. 28, 1989, Ser. No. 442,107
Int. Cl.[5] C08J *9/08, 9/02*
U.S. Cl. 521—79 20 Claims

1. A process for producing a foamed article from a polymer capable of being foamed which comprises:
mixing a first polymer capable of being foamed is selected from the group consisting of polysulfone, poly(ether sulfone), poly(aryl sulfone), poly(aryl ether sulfone), poly(etherimide), poly(amide-imide), poly(aryl ether ketone), modified poly(phenylene ether), amorphous polyamides and poly(phenyl sulfide) and copolymers and terpolymers as well as blends of the above mentioned polymers with a second polymer comprising a homopolymer or copolymer of propylene carbonate or a blend of the propylene carbonate polymer with at least one other alkylene carbonate polymer to provide a polymer blend;
(b) heating the polymer blend to a temperature sufficient to melt the polymer to be foamed and to decompose the second polymer to form gas inclusions within the first polymer;
(c) expanding the melted first polymer containing the gas inclusions to form a foamed article; and
(d) cooling the foamed article to a temperature below the melting or softening point of the foamed article.

4,940,734
PROCESS FOR THE PREPARATION OF POROUS POLYMER BEADS
David A. Ley, New Canaan; Laura J. Hiscock, Norwalk, both of Conn., and Michael T. Cooke, New York, N.Y., assignors to American Cyanamid, Me.
Filed Nov. 23, 1988, Ser. No. 275,170
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—84.1 20 Claims

1. A process for the preparation of porous polymer beads with controllable surface porosity wherein said beads are substantially nonswellable in water and have substantially uniform pores of not substantially greater than about 5 microns in diameter, said process comprising
(i) heating and mixing an acrylonitrile homopolymer or copolymer thereof with a mixture comprising a solvent and a non-solvent for the polymer to form a homogeneous solution having a polymer solids concentration range of from 0.5 to less than 20 percent:
(ii) breaking the homogeneous solution into droplets using a high shearing technique;
(iii) cooling the droplets, optionally in the presence of an inert liquid, to bring about phase separation and solidification of the polymer in the droplets;
(iv) separating the solidified droplets from any inert liquid and removing the solvent non-solvent mixture from the solidified droplets to produce porous beads.

4,940,735
BLOWING AGENT MASTERBATCH FOR THE PREPARATION OF POLYSTYRENE FOAMS
Gerhard Kress, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Mar. 23, 1989, Ser. No. 327,928
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1988, 3810342
Int. Cl.[5] C08J *9/08*
U.S. Cl. 521—86 3 Claims

1. A blowing agent masterbatch for the preparation of polystyrene foams, comprising:
(a) from 30 to about 80 weight percent of a plasticizer-containing polystyrene having a Vicat softening temperature between 30° and 50° C.;
(b) from 20 to about 70 weight percent of a blowing agent comprising solid organic acids and alkali metal (bi) carbonates; and optionally
(c) from 10 to about 20 weight percent of a cell regulator.

4,940,736
PRODUCTION OF LOW DENSITY POLYPROPYLENE FOAM
Josef Alteepping, Ochtrup, Fed. Rep. of Germany, and Juergen P. Nebe, Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Sep. 12, 1988, Ser. No. 243,831
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—98 25 Claims

1. A method of producing a foamed product having a density less than 0.2 g/cm^3 which comprises foaming a composition comprising a major proportion of a low viscosity polypropylene component having a melt viscosity (at 190° C. and a shear rate of 1000 sec^{-1}) of less than 2×10^3 poise and a minor proportion of a high viscosity polypropylene component having a melt viscosity (at 190° C. and a shear rate of 1000 sec^{-1}) of greater than 2.5×10^3 poise.

4,940,737
CHEMICALLY MODIFIED HYDROPHILIC PREPOLYMERS AND POLYMERS
James A. Braatz, Beltsville; Aaron H. Helfetz, Columbia, both of Md.; Richard A. Wolfe, Ellisville, Mo., and Narender P. Luthra, Columbia, Md., assignors to W. R. Grace & Co.-Conn, New York, N.Y.
Filed Nov. 2, 1988, Ser. No. 266,445
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—103 32 Claims

1. A modified hydrophilic prepolymer derived from prepolymer units which are oxyethylene-based alcohols having essentially all of the hydroxyl groups capped with polyisocyanate, wherein said prepolymer units have been modified by reaction with either
(1) a modifying compound having a first functional group which is (i) a sulfhydryl group under conditions which form a thiolate anion (ii) a hydroxyl group, or (iii) an amino group contained in a monoamine compound, and having a second functional group which is substantially less isocyanate-reactive than said first functional group, such that at least a portion of the isocyanate groups of said prepolymer are modified, or
(2) a modifying compound having a first functional group which is a carboxyl group or an amino group contained in a diamine or polyamine compound, and a second functional group which is substantially less isocyanate-reactive than said first functional group, such that substantially all of the isocyanate groups of said prepolymer are modified.

4,940,738
HIGH SOLIDS CB PRINTING INK CONTAINING A PROTECTIVE COLLOID BLEND
Michael E. A. Seitz, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio
Continuation of Ser. No. 141,632, Jan. 7, 1988, Pat. No. 4,889,877. This application Aug. 11, 1989, Ser. No. 392,478
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Int. Cl.[5] C09D *5/00*
U.S. Cl. 523—161 12 Claims

1. A high solids content, aqueous, microcapsule-containing printing ink, comprising:
an aqueous solution containing water and a non-volatile diluent,
oil-containing microcapsules dispersed in said aqueous solution, and
a protective colloid blend dispersed in said aqueous solution, said protective colloid blend comprising a blend of hard, brittle, poor film-forming resin with soft, pliable, film-forming resin.

4,940,739
PROCESS FOR MAKING A HIGH SOLIDS CB PRINTING INK
Michael E. A. Seitz, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio
Division of Ser. No. 141,623, Jan. 7, 1988, Pat. No. 4,889,877. This application Dec. 27, 1988, Ser. No. 289,749
Int. Cl.[5] C09D *5/00*
U.S. Cl. 523—161 11 Claims

1. A process for making a high solids content, aqueous, microcapsule-containing printing ink, comprising:
preparing an oily solution having dissolved therein a reactant,
dispersing said oily solution into an aqueous solution in the presence of a coreactant to form an emulsion, said aqueous solution containing water and a non-volatile diluent, said non-volatile diluent being soluble in water, immiscible in said oily solution, non-reactive with said reactant and coreactant, having a low viscosity, and being present in an amount ranging from 12–25% by weight of said printing ink, and
reacting reactant and said coreactant in said emulsion to form a hard thick capsule wall around droplets of oily solution and thereby produce microcapsule,
whereby said microcapsules are dispersed in said aqueous solution to form said printing ink.

4,940,740
SINGLE PHASE TOUGHENED HEAT-CURABLE RESIN SYSTEMS EXHIBITING HIGH STRENGTH AFTER IMPACT
Thomas Folda, Neuleiningen, and Thomas Allspach, Bad Dürkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Apr. 21, 1989, Ser. No. 341,479
Int. Cl.[5] C08G *59/24*; C08J *5/24*
U.S. Cl. 523—428 18 Claims

1. A heat-curable resin system, comprising:
(a) from 10 to about 80 weight percent of an epoxy resin component;
(b) from 10 to about 50 weight percent of a prereact component; and
(c) from 0.8 to about 1.6 equivalents, based upon the epoxy groups in components (a) and (b), of an aromatic diamine curing agent;
wherein said prereact component (b) is the essentially phenolic hydroxyl-free reaction product of an epoxy resin and a diphenol; wherein the molecular weight of component (b) is such that phase separation does not result upon cure of the heat-curable resin system; and wherein all percents of (a) and (b) are

percents by weight relative to the total weight of components (a), (b), and (c).

4,940,741

PROCESS FOR THE PRODUCTION OF HARDBOARD

Dennis R. De Wacker, Belle Mead, and Leon Rosenberg, Bridgewater, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 17, 1988, Ser. No. 208,949
Int. Cl.[5] C08L 3/02, 3/10
U.S. Cl. 524—47 16 Claims

1. A one step process for simultaneously compressing and tempering a fiberboard panel, which comprises the step of applying to the panel prior to compression thereof an aqueous treating composition which consists essentially of (a) a polyvinyl acetate emulsion, characterized in that the emulsion is prepared in the presence of about 6–10% by weight of a starch stabilizer selected from the group consisting of a derivatized starch, a converted starch, and a derivatized and converted starch and 0.5–1.5% of a surfactant, the stabilizer and surfactant percentages being by weight based on the total weight of the monomers, (b) up to 40% of a hydrocarbon emulsion, and (c) up to 5% of a crosslinking agent, the percentage of (b) and (c) being by weight of the treating composition and totaling 100%.

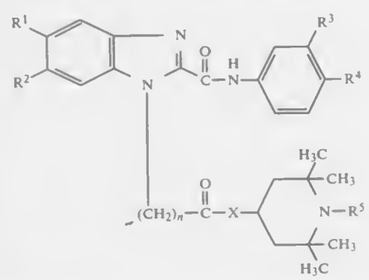
4,940,742

2,6-POLYALKYLPIPERIDINE-SUBSTITUTED BENZIMIDAZOLE-2-CARBOXANILIDES AND THEIR USE FOR STABILIZING ORGANIC MATERIAL

Alexander Aumueller, Deidesheim; Peter Spang, St. Ingbert; Peter Neumann, Mannheim, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

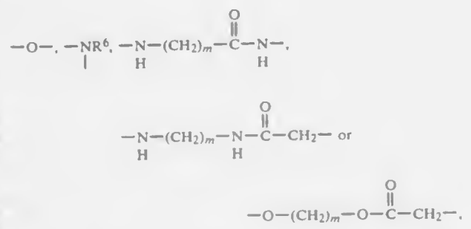
Filed Aug. 11, 1989, Ser. No. 392,598
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828536
Int. Cl.[5] C08K 5/3447
U.S. Cl. 524—93 17 Claims

1. A benzimidazolecarboxanilide of the formula (I)



(I)

where R^1 and R^2 independently of one another are each hydrogen, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenyl which is unsubstituted or substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or C_7–C_9-phenylalkyl which is substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, R^3 and R^4 independently of one another are each hydrogen, C_1–C_{18}-alkyl, C_3–C_{18}-alkyl which is interrupted by one or more oxygen atoms, C_1–C_{18}-alkoxy, C_4–C_{18}-alkoxy which is interrupted by one or more oxygen atoms, phenyl which is unsubstituted or substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or phenyl-C_1–C_8-alkoxy, C_1–C_{12}-C-acylamino, benzoylamino, C_2–C_{12}-C-acyloxy or benzoyloxy, n is 0, 1, 2, 3, 4 or 5,



R^5 is hydrogen, C_1–C_8-alkyl, C_7–C_{10}-phenylalkyl, cyanomethyl, aminoethyl, hydroxyethyl, C_7–C_{10}-C-acyl or benzoyl, R^6 is hydrogen, C_1–C_8-alkyl, C_7–C_{10}-phenylalkyl or phenyl and m is from 2 to 8, and the acid addition salts and hydrates of this compound.

17. A stabilized polymeric composition comprising a light and heat stabilizing amount of one or more benzimidazolecarboxanilides as claimed in claim 1 and a polymer.

4,940,743

SILICONE RESIN EMULSION

Wolfgang Grape, Koeln; Ottfried Schlak; Armand de Montigny, both of Leverkusen, and Hermann Kober, Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 715,148
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3412941
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[5] C09D 183/06
U.S. Cl. 524—377 6 Claims

1. A storage-stable aqueous emulsion of a low molecular weight, alkoxy-functional silicone resin by weight comprising essentially of

(a) 1–60% of a silicone resin having a viscosity of from 2 to 2000 mPa.s and of the formula

$$R^1_x Si\,(OR^2)_y(O)_{\frac{4-x-y}{2}}$$

in which

R^1 is a monovalent hydrocarbon group having 1 to 14 carbon atoms,

R^2 is a monovalent hydrocarbon group having 1 to 18 carbon atoms,

x is from 0.75 to 1.5, and

y is from 0.2 to 2,

(b) 0.1 to 10% of an emulsifying agent component, wherein the emulsifying agent component is a combination of two non-ionic emulsifiers,

(c) 30 to 98.5% by weight of water, and

(d) 0 to 3% of an emulsifying auxiliary which has a thickening effect, said emulsifying auxiliary being selected from the group consisting of the sodium salt of carboxymethyl cellulose, polyvinyl alcohols and urea,

the emulsion having an alkaline pH.

5. An emulsion according to claim 1, wherein the combination of two non-ionic emulsifying agents is POE(40)-triglyceride/POE(2)-oleyl alcohol.

4,940,744

INSOLUBILIZING SYSTEM FOR WATER BASED INKS

Frank J. Tortorici, Kingsport, and Jimmy L. Nelson, Bristol, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1988, Ser. No. 171,336
Int. Cl.[5] C08K 3/30, 3/10; C08L 75/04
U.S. Cl. 524—437 13 Claims

1. An aqueous system for treating a film or coating containing water dispersible polymeric material having water solubilizing sulfonate groups in its molecular structure, said system being effective for insolubilizing said groups and enhancing the water resistance of the film or coating and having dispersed therein per 100 grams of water, from about 0.0002 to about 0.5 gram-ion equivalents of a multivalent cation, and from about 0.1 to about 25.0 grams of nonionic water-dispersible polyurethane material.

6. The process for enhancing the water resistance of a film or coating containing water-dispersible polymeric material having water solubilizing sulfonate groups in its molecular structure, comprising contacting said film or coating with a system as defined in anyone of claims 1–5.

12. The process of claim 6 wherein the multivalent cation is Al^{+3}.

4,940,745

GLASS FIBER REINFORCED FLAMEPROOFED THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYESTERS AND GRAFT POLYMERS

Dietrich Lausberg; Peter Ittemann, both of Ludwigshafen; Graham E. McKee, Weinheim; Karl Schlichting, Bobenheim-Roxheim; Manfred Knoll, Wachenheim, and Erhard Seiler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 255,160
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733840
Int. Cl.[5] C08K 7/14
U.S. Cl. 524—504 3 Claims

1. A flameproofed thermoplastic molding composition containing as essential components

(A) from 45 to 90 % by weight of a mixture of

(a_1) from 50 to 80 % by weight of a polyester

(a_2) from 10 to 25 % by weight of a graft polymer built up from

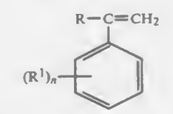
(a_{21}) from 50 to 90 % by weight of a grafting base comprising an elastomeric polymer based on

(a_{211}) from 95 to 99.9 % by weight of a C_2–C_{10}-alkyl acrylate and

(a_{212}) from 0.1 to 5 % by weight of a polyfunctional monomer having at least two olefinic, non-conjugated double bonds

(a_{22}) from 10 to 50 % by weight of a graft surface comprising

(a_{221}) from 20 to 90 % by weight of styrene or substituted styrene of the general formula I



(I)

where R is alkyl of from 1 to 8 carbon atoms, hydrogen or halogen, R^1 is alkyl of from 1 to 8 carbon atoms or halogen, and n is 0, 1, 2 or 3, or a mixture thereof, and

(a_{222}) from 10 to 80 % by weight of acrylonitrile, methacrylonitrile or a methacrylic ester or a mixture thereof and

(a_3) from 10 to 25 % by weight of a copolymer of

(a_{31}) from 50 to 90 % by weight of styrene or substituted styrene of the general formula I or of mixtures thereof and

a_{32}) from 10 to 50 % by weight of acrylonitrile or methacrylonitrile or a mixture thereof,

(B) from 4 to 30 % by weight of a flameproofing agent

(C) from 0 to 15 % by weight of a synergistic compound of a metal of the fifth main group of the periodic table

(D) from 0.01 to 3 % by weight of a fluorine-containing ethylene polymer present in homogeneous distribution in the molding composition and having a number average particle diameter of from 0.05 to 10 μm, and in addition

(E) from 0 to 20 % by weight of a polymeric component having carboxyl, carboxyl derivative, hydroxyl or epoxy groups and

(F) from 5 to 50 % by weight of glass fibers.

4,940,746

GLASS FIBER REINFORCED THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYESTERS AND GRAFT POLYMERS

Dietrich Lausberg, Ludwigshafen; Wolfgang Seydl, Bobenheim-Roxheim; Manfred Knoll, Wachenheim; Erhard Seiler, Ludwigshafen; Herbert Gutsche, Beindersheim, and Peter Kolm, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 254,802
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733857
Int. Cl.[5] C08K 7/14
U.S. Cl. 524—504 2 Claims

1. A flameproofed thermoplastic molding composition containing as essential components

(A) from 45 to 90% by weight of a mixture of

(a_1) from 50 to 80% by weight of a polyester

(a_2) from 10 to 25% by weight of a graft polymer built up from

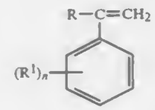
(a_{21}) from 50 to 90% by weight of a grafting base comprising an elastomeric polymer based on

(a_{211}) from 95 to 99.9% by weight of a C_2–C_{10}-alkyl acrylate and

(a_{212}) from 0.1 to 5% by weight of a polyfunctional monomer having at least two olefinic, non-conjugated double bonds

(a_{22}) from 10 to 50% by weight of a graft surface comprising

(a_{221}) from 50 to 90% by weight of styrene or substituted styrene of the general formula I



(I)

where R is alkyl of from 1 to 8 carbon atoms, hydrogen or halogen, R^1 is alkyl of from 1 to 8 carbon atoms or halogen, and n is 0, 1, 2 or 3, or a mixture thereof, and

(a_{222}) from 10 to 50% by weight of acrylonitrile or methacrylonitrile or a mixture thereof and

(a_{223}) from 0 to 10% by weight of a monomer having carboxyl, carboxyl derivative, hydroxyl or epoxy groups and

(a_3) from 10 to 25% by weight of a copolymer of

(a_{31}) from 55 to 90% by weight of styrene or substituted styrene of the general formula I or of mixtures thereof and

(a_{32}) from 10 to 45% by weight of acrylonitrile or methacrylonitrile or a mixture thereof,

(a_{33}) from 0 to 10% by weight of a monomer having carboxyl, carboxyl derivative, hydroxyl or epoxy groups and

(B) from 5 to 50% by weight of glass fibers, with the proviso that the proportion of component (a_{32}), based on the total weight of component (a_3), is lower by not less than 5% by weight than the weight proportion of component (a_{222}), based on the total weight of component (a_{22}).

4,940,747

MOULDING MATERIALS, BASED ON VINYL CHLORIDE POLYMERS, WITH IMPROVED PROCESSABILITY

Herbert Eichenauer, Dormagen; Christian Lindner, Cologne; Karl-Heinz Ott, Leverkusen, and Hans-Eberhard Braese, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 17, 1986, Ser. No. 931,247

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1985, 3542469

Int. Cl.[5] C08K *5/12*; C08L *9/00, 27/06, 55/02*

U.S. Cl. 524—504 **3 Claims**

1. Vinyl chloride polymer moulding materials which comprise polyvinyl chloride or copolymers of vinyl chloride with up to 50% by weight of copolymerizable compounds comprising vinyl esters, maleic anhydride or semi-esters of maleic acid and which contain 0.1 to 20% by weight of a thermoplastic polymer of styrene, α-methylstyrene, p-methylstyrene, vinyltoluene, (meth)acrylonitrile, methyl methacrylate or mixtures thereof having a limiting viscosity of 2 to 15 ml/g (measured in dimethylformamide at 25° C.) and a sulphur content of 1.15 to 3.95% by weight.

2. Moulding materials according to claim 1 which additionally contain, relative to 100 parts of moulding material, a polymer of

(A) a graft polymer of styrene, α-methylstyrene, methyl methacrylate, acrylonitrile, vinyl chloride or mixtures thereof on an elastomer base having a glass transition temperature (Tg) <0° C., in an amount of up to 80 parts by weight,

(B) a resinous thermoplastic copolymer or homopolymer, of styrene, α-methylstyrene, p-methylstyrene, vinyl-toluene, (meth)acrylonitrile, methyl methacrylate or mixtures thereof having a limiting viscosity >0.3 dl/g (measured in dimethylformamide at 25° C.), in an amount of up to 90 parts by weight, or

(C) a rubber from the series comprising the diene homo-or diene copolymers, olefine rubbers, or chlorinated polyolefines, in an amount of up to 50 parts by weight, and up to 70 parts by weight of a plasticizer for vinyl chloride polymers.

4,940,748

PLASTISOL MOLDING MATERIAL

Thomas Abend, St. Gallen, and Max Lauchenauer, Arbon, both of Switzerland, assignors to EMS-Togo AG, Domat/Ems, Switzerland

Filed Jun. 22, 1989, Ser. No. 370,330

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821926

Int. Cl.[5] C08L *27/06*

U.S. Cl. 524—521 **21 Claims**

1. A molding composition comprising a plastisol based upon polyvinyl chloride polymers and/or copolymers, a plasticizer and an acidic cation exchanger.

4,940,749

CARBON BLACK-GRAFT POLYMER, METHOD FOR PRODUCTION THEREOF, AND USE THEREOF

Yoshikuni Mori, Settsu; Mitsuo Kushino, Minoo; Hayato Ikeda, Settsu; Nobuaki Urashima, Takatsuki; Masuji Izubayashi, Nishinomiya; Shigeru Tanimori, Hirakata; Yoshihiro Arita, Takatsuki; Kiyoshi Kawamura, Mishima; Kenji Minami, Suita, and Yoshinori Sano, Kobe, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 134,319, Dec. 16, 1987, Pat. No. 4,880,857.

This application Jun. 29, 1989, Ser. No. 373,234

Claims priority, application Japan, Dec. 17, 1986, 61-298985; Apr. 24, 1987, 62-99648; May 21, 1987, 62-122476; May 29, 1987, 62-131272; Jul. 8, 1987, 62-168868; Aug. 25, 1987, 62-209303; Sep. 3, 1987, 62-219097; Sep. 22, 1987, 62-236212; Sep. 22, 1987, 62-236214; Sep. 25, 1987, 62-238621

Int. Cl.[5] C08F *292/00*

U.S. Cl. 524—547 **28 Claims**

1. A carbon black-graft polymer, produced by causing a polymer possessing one to two reactive groups on the average selected from the class consisting of aziridine group, oxazoline group, N-hydroxyalkylamide group, and thioepoxy group to react with carbon black, wherein said polymer possesses a number average molecular weight in the range of 2,000 to 100,000.

4,940,750

CONTINUOUS PROCESS FOR THE PRODUCTION OF POWDERED POLYISOCYANATE ADDITION PRODUCTS AND THE POWDERS PRODUCED THEREFROM

James W. Rosthauser, Imperial, Pa., and Walter Meckel, Neuss, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany and Mobay Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1989, Ser. No. 344,882

Int. Cl.[5] C08G *18/80*

U.S. Cl. 524—871 **24 Claims**

1. A continuous process for the production of powdered polyisocyanate addition products in finely divided form which comprises simultaneously

(a) mixing a polyisocyanate component, an isocyanate-reactive component and an inert organic medium containing a surfactant, wherein at least one of said components is insoluble in said inert organic medium, in a low shear stator-rotor dynamic mixer operating at speeds of about 300 to 8000 rpm, utilizing a mixing wattage of about 0.05 to 10.0 watts per cubic centimeter and having a mixing volume of at least about 0.1 liters and

(b) reacting the polyisocyanate component with the isocyanate reactive-reactive component in the inert organic medium to form solid polyisocyanate addition products which can be separated from the inert organic medium to form a powder, the average residence time of the components and the inert organic medium in the dynamic mixer being about 3 to 300 seconds and the overall flow rate through the dynamic mixer being at least about 20 kg/h.

4,940,751

WETTABLE SILICON ELASTOMER FOR THE MANUFACTURE OF CONTACT LENSES

Jean-Marc Frances, Veilleurbanne, and Georges Wajs, Ivry sur Seine, both of France, assignors to Essilor International (Compagnie Generale d'Optique), Creteil, France

Filed Oct. 24, 1988, Ser. No. 261,790

Claims priority, application France, Oct. 23, 1987, 87 14681

Int. Cl.[5] C08G *180/00*

U.S. Cl. 525—54.2 **18 Claims**

1. A wettable organic material comprising: a cross-linked silicon elastomer which comprises at least one orgtanopolysiloxane component having vinyl groups and at least one organohydrogenopolysiloxane component having SiH groups,

wherein at least one of said components has epoxy functions on the surface of said elastomer, in an amount effective to produce surface wettability.

4,940,752

STYRENIC POLYCARBONATE ALLOYS

Lawrence Y. Lo, Lexington, and Paul R. Boulier, Leominster, both of Mass., assignors to Polysar Financial Services S.A., Fribourg, Switzerland

Division of Ser. No. 286,156, Dec. 19, 1988, Pat. No. 4,866,125.

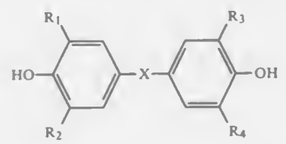
This application May 8, 1989, Ser. No. 348,517

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **5 Claims**

1. A process for preparing a polymer blend comprising blending a mixture comprising:

(A) from 20 to 90 part by weight of one or more homo-and co-polycarbonates which are based on one or more poly phenols selected from the group consisting of hydroquinone, resorcinol, and polyphenols of the formula.



wherein

R_1, R_2, R_3, R_4 are independently selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom, and a C_{1-4} alkyl radical; and

X is a bond or divalent radical selected from the group consisting of C_{1-10} alkylene radicals;

C_{2-8} alkenylene radicals, and C_{6-8} cycloalkylene radicals; and

(B) from 80 to 10 parts by weight of a graft copolymer comprising

(i) 25 to 75 parts by weight of a C_{8-10} vinyl aromatic monomer which is unsubstituted or substituted at the vinyl radical by a C_{1-2} alkyl radical and which may be substituted in the aromatic ring by up to two substituents selected from the group consisting of chlorine and bromine atoms and C_{1-4} alkyl radicals;

(ii) from 7 to 30 parts by weight of a copolymerizable C_{2-8} alkyl or hydroxy alkyl ester of a C_{3-6} ethylenically unsaturated acid provided that homopolymers of such esters have a Tg of less than 40° C.; and

(iii) from 10 to 50 parts by weight of methyl methacrylate which is grafted to from 2 to 20 parts by weight of linear and radical di and tri block copolymers having a molecular weight of not less than 75,000 and a styrene content from 20 to 50 weight % selected from the group consisting of styrene-butadiene diblock copolymers, styrene-butadiene-styrene triblock copolymers, styrene-isoprene diblock copolymers, styrene-isoprene-styrene triblock copolymers, partially hydrogenated styrene-butadiene-styrene triblock copolymers, and partially hydrogenated styrene-isoprene-styrene triblock copolymers; said blending procedure selected from the group consisting of:

(i) blending using an intensive mixer; and

(ii) solution blending.

4,940,753

POLYPHENYLENE ETHER RESIN COMPOSITION

Ken-ichi Okada, and Hideo Kasahara, both of Yokosuka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1986, Ser. No. 849,792

Claims priority, application Japan, Apr. 19, 1985, 60-82193

Int. Cl.[5] C08L *71/04*

U.S. Cl. 525—68 **17 Claims**

1. A polyphenylene ether resin composition having rubber particles dispersed therein, said composition having been formulated by blending a polyphenylene ether resin with a rubber reinforced styrenic resin, said particles having a distribution of sizes such that there are at least one maximal value at 1.5 μ or less and at least one maximal value at 2 to 3 μ in volume fraction of the sizes, with the ratio of the former maximal value to the latter maximal value being within the range of from ¼ to 4/1, and substantially no rubber particles having a size larger than 3 μ.

4,940,754

EASILY COLORED THERMOPLASTIC MOLDING COMPOSITION

Todd T. Lensmire; Robert J. Donald; Sheldon G. Turley, and Bruce J. Tallmadge, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1988, Ser. No. 194,759

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—80 **5 Claims**

1. A pigmented, opaque thermoplastic molding composition comprising:

A. 95–80 percent of a matrix phase comprising, in polymerized form, from about 75–65 percent styrene, 25–15 percent acrylonitrile and 1–18 percent of a lower alkyl methacrylate; and

B. 5 to 20 percent of a grafted rubber phase obtained by polymerizing styrene, acrylonitrile and a lower alkyl methacrylate in the presence of a rubbery polymer, said composition having a solubility parameter from 9.90 to 9.70 [cal/cm^3]½, thermal stability so as to result in a yellowness color change, Δb, measured according to ASTM E308-85 after heating in air for 8 hours at 150° C. of less than 11, and an opacity factor of 0.052 or less.

4,940,755

THERMOPLASTIC MOULDING COMPOSITIONS BASED ON POLYVINYL CHLORIDE AND A POLY-α-OLEFINE/POLYURETHANE BLOCK COPOLYMER

Lothar Meier, Sprockhoevel; Maria Gärtner, Bergisch-Gladbach; Kurt P. Meurer, Koenigswinter; Joachim Franke, and Christian Lindner, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 30, 1988, Ser. No. 292,261

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1988, 3800684

Int. Cl.[5] C08L *53/00, 75/04*

U.S. Cl. 525—90 **2 Claims**

1. Thermoplastic moulding compositions of polyvinyl chloride and a block copolymer, characterised in that the compositions comprise 30–80 weight % polyvinyl chloride and 70–20 weight % of a poly-α-olefine/polyurethane block copolymer (PAO/PU) and the block copolymer is prepared from

A. isocyanate reactive, functionalised poly(C_2–C_{10}-α-olefines) having a molecular weight M_w of from 1000 to 350,000,

B. organic di- or higher poly-isocyanates or modified polyisocyanates and isocyanate prepolymers, and optionally

C. isocyanate reactive compounds containing Zerewitinoff active hydrogen atoms with molecular weights of from 400 to 5000, and optionally

D. low molecular weight compounds in the molecular

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weight range of from 62 to 399 functioning as chain lengthening agents or difunctional and oligo functional amines in the molecular weight range of from 32 to 399 as chain lengthening agents or cross-linking agents,

the reaction mixture containing at least one of the components C and D.

4,940,756

ELASTOMERS AND TIRES CONTAINING THEM

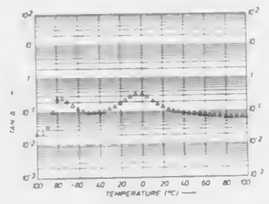
Antonius A. Broekhuis; Pieter Luijk, and Jan E. Stamhuis, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

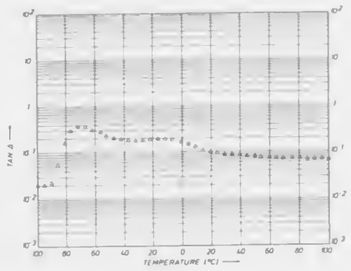
Continuation of Ser. No. 124,307, Nov. 23, 1987, abandoned. This application Jan. 20, 1989, Ser. No. 300,244

Claims priority, application United Kingdom, Dec. 2, 1986, 8628838

Int. Cl.[5] **C08F** *297/04;* **C08L** *9/00, 9/06*

U.S. Cl. 525—237 **12 Claims**





1. A vulcanized elastomeric composition, the vulcanized elastomeric composition comprising the product of vulcanizing an unvulcanized elastomeric composition suitable for use in the tread portion of a pneumatic tire, said unvulcanized elastomeric composition comprising:

(1) a copolymer (A) of a first aromatic vinyl compound and a first conjugated diene and having a content of said first aromatic vinyl compound in the range of from 52 to 90% by weight based on said copolymer (A), an apparent molecular weight of at least 25,000 and a vinyl content in the conjugated diene units therein of less than 20% by weight, and

(2) a polymer (B) which is a homopolymer of a second conjugated diene or a copolymer of a second aromatic vinyl compound and said second conjugated diene, said polymer (B) containing less than 20% by weight of said second aromatic vinyl compound and having a glass transition temperature below minus 40° C.,

(3) said copolymer (A) being present in the range from 5 to 50% by weight and correspondingly said polymer (B) being present in the range of from 95 to 50% by weight based on the combined weight of said copolymer (A) and said polymer (B),

(4) wherein said copolymer (A) and polymer (B) are present in said unvulcanized elastomeric composition as a block copolymer in which said copolymer (A) and said polymer (B) form the polymeric blocks thereof, and

(5) wherein after vulcanization of said unvulcanized elastomeric composition a first maximum is present in the range of from plus 30° C. to minus 20° C. and a second maximum is present at a temperature of not higher than minus 40° C. in a curve representing tan δ of said vulcanized elastomeric composition as a function of the temperature, measured at a frequency of 10 Hz and 0.5% strain amplitude, thereby establishing that copolymer block (A) is incompatible with polymer block (B).

12. An unvulcanized elastomer composition suitable for use in the tread portion of a pneumatic tire once said unvulcanized elastomeric composition is vulcanized, said unvulcanized elastomeric composition comprising:

(a) a polymeric composition comprising

(1) a copolymer (A) of a first aromatic vinyl compound and a first conjugated diene, said copolymer (A) having (i) a content of said first aromatic vinyl compound in the range from 52% to 90% by weight based on said copolymer (A), (ii) an apparent molecular weight of at least 25,000, and (iii) a vinyl content in the conjugated diene portion thereof of less than 20% by weight based on the conjugated diene portion of said copolymer (A), and

(2) a polymer (B) which is a homopolymer of a second conjugated diene or a copolymer of a second aromatic vinyl compound and said second conjugated diene, said polymer (B) containing less than 20% by weight of said second aromatic vinyl compound and having a glass transition temperature below minus 40° C.,

(3) said copolymer (A) being present in the range of from 5% to 50% by weight and correspondingly said polymer (B) being present in the range from 95% to 50% by weight based on the combined weight of said copolymer (A) and said polymer (B),

(4) wherein said copolymer (A) and said polymer (B) are present in said polymeric composition as a physical mixture thereof, as a block copolymer in which said copolymer (A) and said polymer (B) form the polymeric blocks of said block copolymer, and

(b) an effective vulcanizing amount of a blend of vulcanization compounding ingredients, said blend comprising a combination of

(1) a vulcanizing agent,

(2) a vulcanization accelerating agent,

(3) a vulcanization activating agent,

(4) a filler,

(5) an antioxidant, and

(6) an extender oil,

(c) wherein after vulcanization of said unvulcanized elastomeric composition a first maximum is present in the range of from plus 30° C. to minus 20° C. and a second maximum is present at a temperature of not higher than minus 40° C. in a curve representing tan δ of said unvulcanized elastomeric composition after vulcanization as a function of the temperature, measured at a frequency of 10 Hz and 0.5% strain amplitude, thereby establishing that said copolymer (A) is incompatible with said polymer (B) or that the block polymer blocks corresponding to same are incompatible with each other.

4,940,757

STAIN RESISTANT POLYMERIC COMPOSITION

Thomas H. Moss, III; Ralph R. Sargent, and Michael S. Williams, all of Rome, Ga., assignors to Peach State Labs, Inc., Rome, Ga.

Filed Apr. 20, 1989, Ser. No. 341,774

Int. Cl.[5] **C08G** *8/30, 8/18*

U.S. Cl. 525—502 **21 Claims**

1. A stain resistant composition comprising a polymeric product prepared by:

polymerizing $H_2C{=}C(R)CO_2X$, where R is a hydrocarbon, halogenated hydrocarbon, or sulfonated hydrocarbon of from C_1 to C_{15}, phenol, naphthol, sulfonated phenol, sulfonated naphthol or a halogen, and X is H or a hydroxylated, ethoxylated, sulfonated, or halogenated hydrocarbon of C_1 to C_{15}, in the presence of a sulfonated aromatic formaldehyde condensation polymer.

4,940,758

POLYALCOHOL

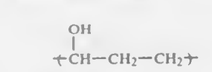
Pui K. Wong, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 138,767, Dec. 29, 1987, Pat. No. 4,868,254. This application Apr. 13, 1989, Ser. No. 337,713

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 525—539 **5 Claims**

1. The polymeric polyalcohol represented by repeating units having the formula



having a molecular purity of at least 90% as measured by Nuclear Magnetic Resonance and less than 0.5% 1,2-glycol moieties as measured by periodic acid titration.

4,940,759

PROCESS FOR MAKING FILM GRADE PVC

Yung-Chio Yang, Bay Village, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 904,428, Sep. 5, 1986. This application Mar. 20, 1989, Ser. No. 325,629

Int. Cl.[5] **C08F** *2/20*

U.S. Cl. 526—62 **13 Claims**

1. A process for producing a vinyl chloride type resin having a low gel content, comprising the steps of:

adding at least one vinyl chloride type monomer charge to a reaction vessel coated with an aromatic inhibitor polymer build-up compound, adding to said vessel an effective amount of a primary dispersant system containing a 70 to a 98 mole percent hydrolyzed dispersant and a modified cellulose ether dispersant in an amount from 0% to about 80% by weight based upon the total weight of the primary dispersant system, and adding an effective amount of a 10 to a 60 mole percent hydrolyzed secondary dispersant which contains 5% by weight or less of an organic solvent to produce a vinyl chloride resin having a low gel content upon polymerization,

polymerizing said vinyl chloride type monomer in said coated vessel to produce a low gel vinyl chloride type resin, and

repeating said process at least 12 times and producing a low gel content vinyl chloride type resin under continuous production conditions free of cleaning said reaction vessel.

4,940,760

GROUP TRANSFER POLYMERIZATION PROCESS EMPLOYING SUPPORTED INITIATORS

Fritz P. Boettcher, Newark; Ira B. Dicker; Richard C. Ebersole, both of Wilmington, all of Del., and Walter R. Hertler, Kennett Square, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 156,008, Feb. 16, 1988, abandoned. This application Oct. 6, 1989, Ser. No. 418,007

Int. Cl.[5] **C08F** *4/16, 4/02, 20/14*

U.S. Cl. 526—190 **8 Claims**

1. Group Transfer Polymerization (GTP) process for preparing a "living" polymer, the process comprising contacting under polymerizing conditions in a polymerization medium, at least one acrylic or maleimide monomer with an initiator which is a tetracoordinate organosilicon, organotin or organogermanium compound having at least one GTP inititaing site and a catalyst which is, or is a source of, an anion selected from the group consisting of bifluoride, fluoride, cyanide, axide or a selected oxyanion, or a selected Lewis acid or Lewis base, the process further characterized in that the initiator is chemically attached to a solid support that is insoluble in the polymerization medium.

4,940,761

GROUP TRANSFER POLYMERIZATION OF GLYCIDYL (METH)ACRYLATE COPOLYMERS TO FORM OXIRANE GROUP-TERMINATED BLOCK COPOLYMERS

Harry J. Spinelli, Wilmington, Del., and Gordon M. Cohen, Wynnewood, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 008,958, Jan. 30, 1987, abandoned, which is a division of Ser. No. 868,083, May 29, 1986, abandoned. This application Nov. 21, 1988, Ser. No. 274,462

Int. Cl.[5] **C08F** *24/00, 224/00*

U.S. Cl. 526—273 **5 Claims**

1. An improved process for the preparation of an ABA block copolymer having a center segment between two end segments, each end segment being an oxirane-containing acrylic or methacrylic moiety, said center segment being an acrylic or methacrylic moiety not containing oxirane groups, wherein the improvement comprises reacting the ingredients by group transfer polymerization using an initiator comprised of an activating moiety which contains an oxirane group substituent which remains at the non-living end of the polymer being formed and wherein the initiator is reacted with a monomer or monomers selected from the group consisting of acrylic and methacrylic monomers to first form polymer chains having a terminal oxirane group at one end of a chain and a living group at the other end, and then using a coupling agent to react two of said chains together at their living ends whereby an ABA copolymer is formed having an oxirane terminal group on each end.

4,940,762

OXYGEN PERMEABLE LENS WITH HYDROLYZABLE SILICON GROUP

James C. Powell, Minnetonka, Minn., assignor to Pilkington Visioncare, Inc., Menlo Park, Calif.

Division of Ser. No. 570,736, Jan. 16, 1984, Pat. No. 4,581,184, which is a continuation-in-part of Ser. No. 319,193, Nov. 9, 1981, Pat. No. 4,611,039. This application Aug. 26, 1985, Ser. No. 769,847

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[5] **C08F** *30/08*

U.S. Cl. 526—279 **14 Claims**

1. An optically clear, hard, mechanically stable, gas permeable, wettable vision correction lens which comprises a polymeric matrix having randomly polymerized in the matrix, residues derived from an ethylenically unsaturated silicone

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containing monomer having a hydrolyzable silicone group which after hydrolysis leave a silicone-free hydrophilic site, in an amount sufficient to provide gas permeability to the matrix and wettability to the lens surface when hydrated.

4,940,763

WATER SOLUBLE POLYMERS

Peter Flesher, Bingley; David Farrar, Bradford; Malcolm Hawe, Huddersfield, and John Langley, Shipley, all of England, assignors to Allied Colloids Limited, United Kingdom

Continuation-in-part of Ser. No. 766,097, Aug. 15, 1985, Pat. No. 4,702,844. This application Oct. 26, 1987, Ser. No. 113,599

Claims priority, application United Kingdom, Aug. 15, 1984, 8420693; Aug. 15, 1984, 8420694; Aug. 15, 1984, 8420695; Feb. 12, 1985, 8520218

Int. Cl.[5] **C08F** *20/60*

U.S. Cl. 526—307 **13 Claims**

1. A water soluble, substantially linear, polymer having a single point intrinsic viscosity of at least about 3 and that is a copolymer of

(a) 1 to 90% by weight ethylenically unsaturated monomer that includes a group $—B_nR$ where B is ethoxy, n is an integer of 2 to 100 and R is a hydrocarbyl group of 8 to 0 carbon atoms, and

(b) 99 to 10% by weight of at least one water soluble, ethylenically unsaturated comonomer selected from dialkylamino alkyl (meth) -acrylates an -acrylamides, including acid addition and quaternary ammonium salts thereof, and water soluble non-ionic monomers,

and in which the monomers from which the polymer is formed include 10 to 99% by weight of tertiary amine acid addition or quaternary ammonium salt monomer.

4,940,764

WATER SOLUBLE GRAFT COPOLYMERS OF LIGNIN AND METHODS OF MAKING THE SAME

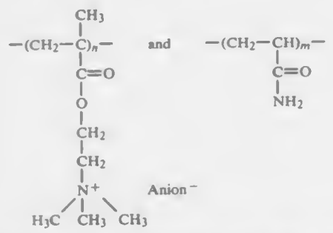
John J. Meister, 31675 Westlady Rd., Beverly Hills, Mich. 48010-5624

Filed Dec. 19, 1988, Ser. No. 286,534

Int. Cl.[5] **C08H** *5/02*

U.S. Cl. 527—400 **24 Claims**

1. A positively-charged water-soluble graft copolymer of lignin with an anion, having a central lignin network and at least one grafted side chain having randomly repeating units of the formulas:



wherein the ratio of such repeating units range from about one molar percent to about 100 molar percent, and from about zero molar percent to about 99 molar percent, respectively, such that the central lignin network has a molecular weight of about 1,000 to 150,000 and the total number of randomly repeating units in the grafted side chain or chains is in the range of 50 to 300,000 units, and such that the total graft copolymer molecular weight is in the range of 15,000 to 30,000,000.

24. The method for preparing a complex polymer of lignin which comprises:

(a) adding a hydroperoxide to a solvent consisting of a mixture of fluids of differing polarity such that the total solvent is highly effective in dissolving monomers to be attached to the lignin; and

(b) adding lignin, a chloride-containing salt, 2-propenamide and 2-methyl-N7,N7-dimethyl-7-ammonium-3-oxo-4-oxyoct-1-ene chloride or methylsulfate to said solution, thereby initiating free radical polymerization.

4,940,765

3-BENZYLIDENECAMPHOR-SUBSTITUTED DIORGANOPOLYSILOXANES

Edith Canivenc, Lyons; Serge Forestier, Claye-Souilly; Michel Gay, Lyons; Gerard Lang, Saint-Gratien, and Herve Richard, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Dec. 29, 1988, Ser. No. 291,698

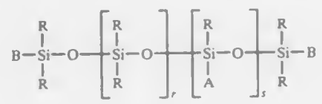
Claims priority, application France, Dec. 29, 1987, 87 18509

Int. Cl.[5] **C08G** *77/06*

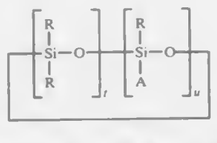
U.S. Cl. 528—15 **7 Claims**

1. A modified diorganopolysiloxane polymer having one of the structural formulae (1) or (2):

(1)

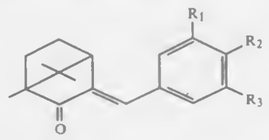


(2)



in which the symbols R, which may be identical or different, are each a C_1–C_{10} alkyl, phenyl or 3,3,3-trifluoropropyl radicals, at least 80% of the number of radicals R being methyl radicals; the symbols B, which may be identical or different, are each a radical R or a radical A; r is an integer ranging from 0 to 200, inclusive; s is an integer ranging from 0 to 50, inclusive, with the proviso that, if s is 0, at least one of the two symbols B is A; u is an integer ranging from 1 to 20, inclusive; t is an integer ranging from 0 to 20, inclusive; t+u is equal to or greater than 3; and A is a radical of the formula (3):

(3)



in which R_1 and R_2 are each a hydrogen atom, a C_1–C_6 alkyl radical, a C_1–C_6 alkoxy, hydroxy or trimethylsiloxy radical, or a divalent radical Y:

$$(O)_n—(CH_2)_p—CH—CH_2—,$$
$$\qquad\qquad R_4$$

with the proviso that one of the two radicals R_1 and R_2 is necessarily the divalent radical Y; R_4 is a hydrogen atom or a C_1–C_4 alkyl radical; D is 0 or 1; p is an integer ranging from 1 to 10, inclusive; and R_3 is a hydrogen atom or a C_1–C_6 alkyl or C_1–C_6 alkoxy radical.

4,940,766

ACRYLATE AND/OR METHACRYLATE-SUBSTITUTED ORGANOPOLYSILOXANES

Michel Gay, and Edith Canivenc, both of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Aug. 12, 1987, Ser. No. 84,181

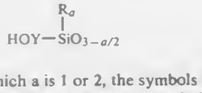
Claims priority, application France, Feb. 24, 1987, 87 02617

Int. Cl.[5] **C08G** *77/08*

U.S. Cl. 528—18 **16 Claims**

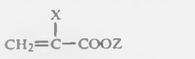
1. A process for the preparation of an organopolysiloxane comprising acrylate and/or methacrylate functional groups, which comprises at least partially transesterifying, in the presence of a catalytically effective amount of a tin-containing compound (A) having a valency of 4 selected from the group consisting of inorganic compounds of tin and organic compounds of tin selected from dialkyltin oxide, tin carboxylate, dialkytin dicarboxylate, tin chelate or the reaction product of a dialkyltin oxide with an organic ester or alkyl silicate, an organopolysiloxane (B) containing at least two siloxy, u nits per molecule, at least one of such units corresponding to the formula:

(1)



in which a is 1 or 2, the symbols R, which may be identical or different, are each a C_1–C_{12} alkyl radical, a phenyl radical or a 3,3,3-trifluoropropyl radical, at least 80 mole % of radicals R being methyl radicals, and the symbols Y, which may be identical or different, are each a C_1–C_{18} straight or branched chain alkylene linkage, with an ester (C) of the formula:

(2)



in which X is a hydrogen atom or a methyl radical and Z is a C_1–C_6 alkyl radical.

4,940,767

SILYLENE- AND DISILYLENEACETYLENE POLYMERS FROM TRICHLOROETHYLENE

Thomas J. Barton, and Sina Ijadi-Maghsoodi, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 1, 1988, Ser. No. 226,444

Int. Cl.[5] **C08G** *77/60*

U.S. Cl. 528—35 **10 Claims**

1. A method of preparing organosilicon polymers having recurring silyleneacetylene units of the formula:



wherein R and R' are organic moieties selected from the group consisting of hydrogen, C_1 to C_{20} alkyl, C_6 to C_{20} aryl, and C_7 to C_{20} alkylaryl and x is an integer from 20 to 500, comprising:

reacting trichloroethylene with normal butyllithium to prepare dilithioacetylene; and

reacting said dilithioacetylene with a dichlorosilane of the formula: $RR'SiCl_2$, wherein R and R' are as previously defined.

4,940,768

CURING AGENT FOR SYNTHETIC RESINS, CURABLE MIXTURES CONTAINING THIS CURING AGENT AND ITS USE

Michael Hönel, Mainz; Manfred Finke, Kelkheim; Gerd Walz, Wiesbaden, and Peter Ziegler, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

Filed Mar. 21, 1989, Ser. No. 326,898

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1988, 3809695

Int. Cl.[5] **C08G** *18/80*

U.S. Cl. 528—45 **24 Claims**

1. A curing agent (A) for resins (B) curable by means of isocyanates which has an amine number of 20 to 150 mg of KOH/g and an OH number of not more than 20 mg of KOH/g and contains, per molecule, at least two masked isocyanate groups which are reactive under the conditions of curing, and which is obtained by reacting

(a) an amine which contains at least one β-hydroxyalkyl group per molecule, has an OH of 100 to 1,200 mg of KOH/g and an amine number of 100 to 1,200 mg of KOH/g with

(b) a partly masked polyisocyanate.

4,940,769

NOVEL THIOETHER AMIDE DIOLS AND POLYURETHANE POLYMERS THEREFROM

Anil B. Goel, Marlboro, N.J., assignor to Ashland Oil, Inc., Russell, Ky.

Division of Ser. No. 264,650, Nov. 30, 1988, Pat. No. 4,891,416, which is a division of Ser. No. 852,588, Apr. 16, 1986, Pat. No. 4,804,781. This application Jul. 21, 1989, Ser. No. 382,926

Int. Cl.[5] **C08G** *18/32*

U.S. Cl. 528—85 **5 Claims**

1. A process for preparing a polyurethane comprising reacting a thioether diol with a polyisocyanate wherein the thioether diol is one produced by reacting a bicyclic amide acetal with hydrogen sulfide at a temperature in the range of from 20° C. to 200° C. wherein the mole ratio of bicyclic amide acetal to hydrogen sulfide is in the range of from about 1:1 to about 2:1.

4,940,770

NOVEL COMPOSITIONS FROM POLYOXYALKYLENE AMINES AND EPOXIDES

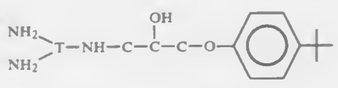
George P. Speranza, Austin, and Jiang-Jen Lin, Houston, both of Tex., assignors to Texaco Chemical Co., White Plains, N.Y.

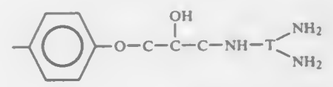
Filed Nov. 14, 1988, Ser. No. 270,897

Int. Cl.[5] **C08G** *18/32, 59/14*

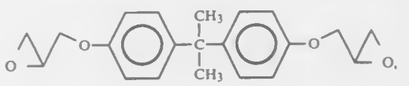
U.S. Cl. 528—111 **8 Claims**

1. A hydroxypolyamine useful as an epoxy curing agent having the formula:



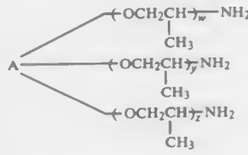


which is the reaction product of a polyoxypropylene triamine and an epoxy component of the formula:



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wherein T is derived from a polyoxypropylene triamine of the formula:



wherein A represents the nucleus of an oxyalkylation susceptible trihydric alcohol containing about 3 to about 6 carbon atoms, w, y and z are numbers and the average value of the sum of w+y+z is from about 4 to about 100.

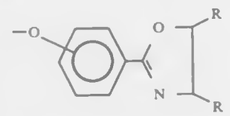
4,940,771

REACTIVE POLYCARBONATE END CAPPED WITH HYDROXY PHENYL OXAZOLINE

Louis M. Maresca, Schenectady, N.Y., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 30, 1989, Ser. No. 280,846
Int. Cl.[5] C08G *64/14*
U.S. Cl. 528—199 31 Claims

1. An aromatic polycarbonate or polyarylate resin having a polymer chain terminated with a monovalent group of the formula:



(I)

wherein each R is independently selected from the group consisting of hydrogen and lower alkyl.

4,940,772

PROCESS FOR PRODUCING FLAME RESISTANT POLYESTER

Tetsuo Matsumoto; Keizo Tsujimoto, both of Aichi; Katsuto Matsuzawa, Tokyo; Shunichiro Hamada, Aichi; Kouzi Shinogi, Aichi; Satomi Nagai, Aichi; Takayuki Imamura, Aichi, and Akiko Kuroyanagi, Aichi, all of Japan, assignors to Nippon Ester Co., Ltd., Aichi, Japan

Continuation of Ser. No. 225,441, Jul. 28, 1988, abandoned. This application Nov. 20, 1989, Ser. No. 438,129
Int. Cl.[5] C08G *63/02*
U.S. Cl. 528—272 4 Claims

1. A process for producing a flame resistant polyester which comprises: preliminary copolymerizing a polyester selected from the group consisting of polyethylene terephthalate and polybutylene terephthalate with 0.5 to 25% by mol, based on the total acid components of said polyester, of an unsaturated compound having esterifying functional group(s); and then reacting the obtained prepolymer with a phosphorous compound represented by the following formula in an amount not exceeding the equivalent of the unsaturated bond of said unsaturated compound:



(I)

wherein R_1 and R_2 may be either the same or different from each other and each represents an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms or an aryloxy group having 6 to 20 carbon atoms, or R_1 or R_2 may combine to form a ring with phosphorous atom.

4,940,773

PROCESS FOR PRODUCING MODIFIED, IMPACT-RESISTANT POLYAMIDES WITH LACTAM-BLOCKED DIISOCYANATE/MONOISOCYANATE

Sergio Tonti, Venice; Piero Furlan, Treviso, and Gianpietro Talamini, Venice, all of Italy, assignors to Montedipe S.p.A., Milan, Italy

Filed Jul. 11, 1989, Ser. No. 377,964
Claims priority, application Italy, Jul. 11, 1988, 21309 A/88
Int. Cl.[5] C08G *69/20*
U.S. Cl. 528—315 20 Claims

1. Process for preparing an impact-resistant polyamide endowed with a high polymerization rate, consisting essentially in polymerizing an ω-lactam in the presence of:

(a) a mixture of a di-isocyanate and a monoisocyanate, the isocyanate groups of both of which are blocked with an ω-lactam;

(b) a poly-oxy-alkylene-amine having an amine functionality lower than 3, and

(c) an alkaline catalyst.

4,940,774

CARBON MONOXIDE/OLEFIN POLYMERIZATION WITH DILUENT COMPRISING APROTIC SOLVENT AND WATER

Pui K. Wong, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 16, 1989, Ser. No. 394,688
Claims priority, application Netherlands, Sep. 29, 1988, 8802391
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 9 Claims

1. In the process for producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and unsaturated hydrocarbon by contacting the carbon monoxide and unsaturated hydrocarbon under polymerization conditions in the presence of a reaction diluent and a catalyst composition formed from a palladium compound, the anion of a non-hydrohalogenic acid having a pKa below 6 and a bidentate ligand of phosphorus, the improvement of employing as the reaction diluent a miscible mixture of an aprotic diluent and water.

4,940,775

POLYKETONE FROM CARBON MONOXIDE/MONOETHYLENICALLY UNSATURATED HYDROCARBON/NON-CONJUGATED ALKADIENE

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 15, 1989, Ser. No. 352,234
Claims priority, application Netherlands, Jul. 13, 1988, 8801773
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 20 Claims

1. A linear alternating terpolymer of carbon monoxide, monoethylenically unsaturated hydrocarbon and non-conjugated alkadiene having at least one carbon atom between the two carbon-carbon double bonds.

4,940,776

CATALYTIC POLYMERIZATION OF CARBON MONOXIDE/OLEFIN IN THE PRESENCE OF INSOLUBLE PARTICULATE SOLID MATTER

Jacobus A. Bakkum, and Gerrit G. Rosenbrand, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 14, 1989, Ser. No. 338,246
Claims priority, application Netherlands, Apr. 27, 1988, 8801095
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 15 Claims

1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and hydrocarbon in the presence of an inert reaction diluent and a catalyst composition formed from a palladium salt, the anion of a non-hydrohalogenic acid having a pKa below 2 and a bidentate ligand of phosphorus, the improvement which comprises adding to the reaction diluent a small concentration of insoluble particulate solid matter wherein the concentration of the particulate solid matter in the reaction diluent expressed in grams per liter, is equal to or greater than 100 (b)(c), wherein b is the average particle size of the solid matter expressed in meters and c is the bulk density of the solid matter, expressed in kilograms per cubic meter.

4,940,777

CARBON MONOXIDE/1,2-ALKADIENE COPOLYMER

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 18, 1989, Ser. No. 339,783
Claims priority, application Netherlands, May 4, 1988, 8801168
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 20 Claims

1. A linear alternating copolymer of carbon monoxide and 1,2-alkadiene having repeating units of the formula



wherein G is an unsaturated moiety of a 1,2-alkadiene of the formula $CH_2=C=CH-R$ in which R is alkyl, polymerized through carbon-carbon unsaturation.

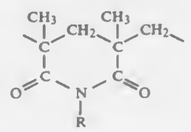
4,940,778

PROCESS FOR PREPARATION OF METHACRYLIMIDE GROUP-CONTAINING POLYMER

Hisao Anzai; Kozi Nishida, both of Ohtake; Isao Sasaki, Hiroshima; Hideaki Makino, Ohtake, and Masami Ohtani, Yamaguchi, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,617
Claims priority, application Japan, Jul. 20, 1987, 62-179169
Int. Cl.[5] C08F *6/00, 20/52*
U.S. Cl. 528—481 9 Claims

1. A process for the preparation of an improved methacrylimide group-containing polymer, which comprises obtaining as a starting material a methacrylimide group-containing polymer having imide ring structural units represented by the following structural formula (I):



(I)

wherein R represents a hydrogen atom, a substituted or unsubstituted alkyl, cycloalkyl, aryl, alkaryl, aralkyl or allyl group containing from 1 to 20 carbon atoms; and heat-treating the starting material at a temperature of from 190° to 350° C. in the presence of a tertiary amine having the following formula (II):



(II)

wherein R_1, R_2, and R_3 independently represent an alkyl, aryl, aralkyl or alkaryl group having from 1 to 20 carbon atoms, and two of R_1, R_2, and R_3 may be linked to form a ring together with the nitrogen atom.

4,940,779

METHOD FOR THE PREPARATION OF A POLYCARBONATE POWDER

Takashi Ashida, and Koji Yamamoto, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 164,533, Mar. 7, 1988, abandoned. This application Mar. 23, 1989, Ser. No. 328,720
Claims priority, application Japan, Mar. 30, 1987, 62-74250
Int. Cl.[5] C08G *17/13*
U.S. Cl. 528—495 14 Claims

1. A method for the preparation of a polycarbonate resin powder from a solution of the resin which comprises blending together a solution of polycarbonate resin in a good solvent of the resin selected from the group consisting of methylene chloride, tetrachloroethane, tricholorethane, chloroform, dioxane and tetrahydrofuran; and a poor solvent of the resin selected from the group consisting of aliphatic hydrocarbon solvents, aromatic hydrocarbon solvents, alcobols, ketones, and ethers, in a blending machine of self-cleaning type either separately or as mixed together before to form a mixture thereof and removing the solvents to recover said polycarbonate resin powder, said blending machine being of the type having paddles fixed to a pair of parallel shafts around which they rotate in a cylindrical chamber and scrape an inner wall of the chamber; and controlling the particle size distribution in the polycarbonate powder by maintaining a clearance between the paddles and the inner wall of not more than 10 mm.

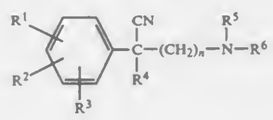
4,940,780

BASICALLY SUBSTITUTED PHENYLACETONITRILES, THEIR PREPARATION AND DRUGS CONTAINING THESE COMPOUNDS

Werner Seitz, Plankstadt; Liliane Unger, Ludwigshafen; Manfred Raschack, Weisenheim am Sand; Verena Baldinger, Heidelberg; Klaus Ruebsmen, Neustadt, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 10, 1987, Ser. No. 130,954
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642331
Int. Cl.[5] C07D *121/75*
U.S. Cl. 558—388 15 Claims

1. A basically substituted phenylacetonitrile of the formula



where

R^1, R^2 and R^3 are identical or different and are each hydrogen, halogen, trifluoromethyl, C_1–C_4-alkyl, nitro or

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C_1–C_4-alkoxy, and two of the radicals R^1, R^2 and R^3 in adjacent positions may furthermore together form a methylenedioxy, ethylenedioxy, 1,3-dioxatetramethylene, propylene or butylene group,

R^4 is a saturated or unsaturated alkyl or cycloalkyl group of not more than 8 carbon atoms or phenyl,

R^5 is hydrogen or C_1–C_4-alkyl,

R^6 is a saturated or unsaturated hydrocarbon radical of 6 to 15 carbon atoms which may contain a nonaromatic ring, and

n is 2, 3 or 4, antipodes and physiologically tolerated acid addition salts thereof.

4,940,781

PEPTIDES COMPRISING AN IMMUNOGENIC SIDE OF POLIOVIRUS AND DNAS CONTAINING NUCLEOTIDE SEQUENCES CODING FOR THESE PEPTIDES

Marc Girard, and Sylvie Van Der Werf, both of Paris, France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 84,932, Aug. 13, 1987, abandoned, which is a division of Ser. No. 634,881, Jul. 27, 1984, Pat. No. 4,694,072. This application Jul. 21, 1988, Ser. No. 222,392

Claims priority, application France, Nov. 30, 1982, 82 20115; Jun. 29, 1983, 83 10778

The portion of the term of this patent subsequent to Sep. 15, 2005, has been disclaimed.

Int. Cl.[5] **C07K** *7/08, 7/10, 13/00*

U.S. Cl. 530—350 **2 Claims**

1. A polypeptide comprising an amino acid sequence: Asp Asn Pro Ala Ser Thr Thr Asn Lys Asp Lys Leu; and further comprising one or more additional amino acids attached to said amino acid sequence in the same sequence as said additional amino acids are attached to said amino acid sequence in another polypeptide having the sequence:

Ser	Arg	Asp	Ala	Leu	Pro	Asn	Thr	Glu	Ala
Ser	Gly	Pro	Thr	His	Ser	Lys	Glu	Ile	Pro
Ala	Leu	Thr	Ala	Val	Glu	Thr	Gly	Ala	Thr
Asn	Pro	Leu	Val	Pro	Ser	Asp	Thr	Val	Gln
Thr	Arg	His	Val	Val	Gln	His	Arg	Ser	Arg
Ser	Glu	Ser	Ser	Ile	Glu	Ser	Phe	Phe	Ala
Arg	Gly	Ala	Cys	Val	Thr	Ile	Met	Thr	Val
Asp	Asn	Pro	Ala	Ser	Thr	Thr	Asn	Lys	Asp
Lys	Leu	Phe	Ala	Val	Trp	Lys	Ile	Thr	Tyr
Lys	Asp	Thr	Val	Gln	Leu	Arg	Arg	Lys	Leu
Glu	Phe	Phe	Thr	Tyr	Ser.				

4,940,782

MONOCLONAL ANTIBODIES AGAINST IGE-ASSOCIATED DETERMINANTS, HYBRID CELL LINES PRODUCING THESE ANTIBODIES, AND USE THEREFORE

Bonita J. Rup, and Larry E. Kahn, both of St. Louis, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 8, 1987, Ser. No. 59,749

Int. Cl.[5] **C12N** *5/20;* **C07K** *15/28;* **A61K** *39/00*

U.S. Cl. 530—387 **2 Claims**

1. The monoclonal antibody produced by hybridoma cell line ATCC HB 9436 which specifically binds to IgE and inhibits its binding of the IgE to a mast cell FcE receptor and which does not bind to IgE when IgE is bound to a mast cell FcE receptor, but does bind to IgE when IgE is bound to a B-cell FcE receptor.

4,940,783

DISAZO CONTAINING DIAMINOSTILBENE AS DIAZO COMPONENT AND AN ANILINE COUPLING COMPONENT BEARING A CATIONIC ALKYL AMMONIUM GROUP

Willy Stingelin, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

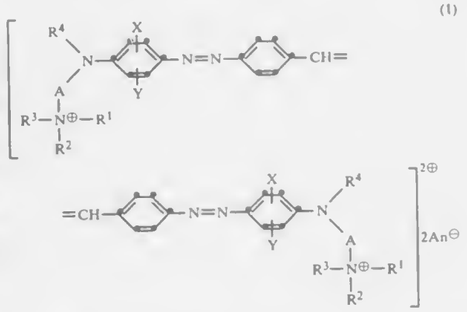
Filed Aug. 30, 1988, Ser. No. 238,637

Claims priority, application Switzerland, Sep. 3, 1987, 3374/87

Int. Cl.[5] **C09B** *44/02, 44/04, 44/08;* **D06P** *1/41*

U.S. Cl. 534—605 **9 Claims**

1. A disazo dye of the formula



(I)

in which

R^1, R^2, R^3 and R^4 independently of one another are each an unsubstituted alkyl radical, an alkyl radical which is substituted by hydroxy, cyano, phenyl or alkoxy or R_1 and R_2 together with the nitrogen atom linking them are a pyrrolidine, piperidine morpholine or piperazine radical, or R^1, R^2 and R^3 together with the nitrogen atom joining them are a pyridinium or triethylenediamine radical,

A is an alkylene radical having 2 to 6 C atoms,

X and Y independently of one another are hydrogen, halogen, C_1–C_4alkyl or C_1–C_4alkoxy which are unsubstituted or substituted by hydroxyl, halogen, cyano or C_1–C_4alkoxy and An^- is an anion.

4,940,784

METHOD FOR THE DRY CATIONIZATION OF GALACTOMANNANS (II)

Reinhard Stober, Hasselroth; Wolfgang Fischer, Kahl; Michael Huss, Eschborn, and Reimund Pieter, Wetzlar, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 2, 1988, Ser. No. 227,298

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1987, 3726984

Int. Cl.[5] **C08B** *37/00*

U.S. Cl. 536—1.1 **13 Claims**

1. A method for the dry cationization of galactomannans comprising reacting a galactomannans with an alkylene epoxide in an alkaline medium in the presence of water, at a temperature of 5° to 60° C. in the presence of a finely divided, hydrophilic silica and a member of the group consisting of alkali metal silicates, alkali metal aluminates, alkali metal or alkaline earth metal hydroxides or oxides, alkali metal carbonates, and mixture thereof.

4,940,785

METHOD OF PREPARING CELLULOSE ETHERS CONTAINING TERTIARY OR QUATERNARY NITROGEN

Reinhard Stober, Hasselroth; Dietmar Bischoff, Marktbreit, and Michael Huss, Eschborn, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 4, 1988, Ser. No. 252,933

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1987, 3733507

Int. Cl.[5] **C08B** *11/00, 11/02, 11/145, 11/193*

U.S. Cl. 536—90 **12 Claims**

1. A method of preparing cellulose ethers containing tertiary or quaternary nitrogen comprising reacting an alkylene epoxide with cellulose or derivatives of cellulose in an alkaline medium in the presence of water, wherein the reaction mixture contains 10 to 25% by wt. water in relation to its total amount, said reaction mixture appearing to be in a dry, powdery state.

4,940,786

ONE-POT PREPARATION OF BISMUTH (PHOSPH/SULF)ATED SACCHARIDES

Steven R. Duff, DeSoto, Kans., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Filed Oct. 31, 1989, Ser. No. 429,460

Int. Cl.[5] **C07H** *11/00, 13/00, 23/00, 1/00*

U.S. Cl. 536—117 **9 Claims**

1. A process for preparing a bismuth (phosph/sulf)ated saccharide comprising steps of, first, contacting a component of a metal salt of a (phosph/sulf)ated saccharide with components of a bismuth substance and a water soluble organic acid having a pKa less than the pKa of a hydrogen (phosph/sulf-)ated saccharide generally corresponding to the bismuth (phosph/sulf)ated saccharide to be prepared, wherein, in said first step, the metal salt of a (phosph/sulf)ated saccharide is contacted first with the bismuth substance component, and then the mixture which results therefrom is contacted with said water soluble acid component, and second, maintaining contact of said components in the mixture provided by said first step, under conditions such that the bismuth (phosph/sulf-)ated saccharide is prepared.

4,940,787

PROCESS FOR THE CARBONYLATION OF ACETYLENIC UNSATURATED COMPOUNDS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 25, 1987, Ser. No. 125,263

Claims priority, application Netherlands, Dec. 5, 1986, 8603100

Int. Cl.[5] **C07H** *1/00;* **C07C** *51/10, 51/14*

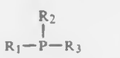
U.S. Cl. 536—124 **33 Claims**

1. A process for the preparation of an alpha,beta-olefinic unsaturated compound comprising the steps of contacting an acetylenic unsaturated compound with carbon monoxide in the presence of a hydroxyl-containing compound in liquid phase, in the presence of a catalytic system formed from:

(a) a palladium compound

(b) a protonic acid, and

(c) an organic phosphine according to the formula:



(I)

wherein R_1 is selected from the group consisting of a nitrogen-containing heterocyclic five-atom ring, a nitrogen-containing heterocyclic six-atom ring, a fused ring comprising at least one nitrogen-containing five-atom ring and a fused ring comprising at least one nitrogen-containing six-atom ring; wherein R_2 and R_3 are each R_1 or an aryl group.

4,940,788

PROCESS FOR PREPARING AZETIDINONES

Ian M. Cunningham, and David W. Heaton, both of Congleton, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

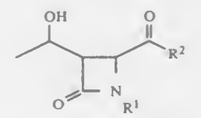
Filed Jan. 19, 1988, Ser. No. 145,818

Claims priority, application United Kingdom, Jan. 30, 1987, 8702139

Int. Cl.[5] **C07D** *303/04, 205/02*

U.S. Cl. 540—200 **5 Claims**

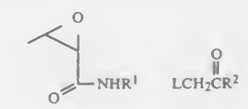
1. A process for preparing a compound of the formula (VII):



(VII)

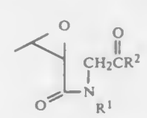
wherein R^1 is an amino-protecting group and R^2 is an alkyl or phenyl optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy, halogen or C_{2-6} alkoxycarbonyl, which process consists essentially of

reacting a compound of the formula (VIII) with a compound of the formula (IX)



(VIII) (IX)

wherein L is a halogen group under conditions such that a compound of formula (X) is formed; and



(X)

processing said compound of formula (X) under conditions such that said compound of formula (VII) is formed.

4,940,789

10,11-DIHYDRO-5-ALKYL-12-SUBSTITUTED-10,5-(IMINOMETHANO)-5H-DIBENZO[A,D]CYCLOHEPTENES AS NEUROPROTECTANT AGENTS

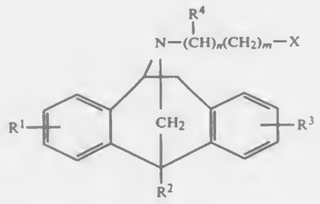
Wayne E. Childers, Jr., Yardley, and Magid A. Abou-Gharbia, Glen Mills, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 10, 1989, Ser. No. 418,591

Int. Cl.[5] **C07D** *487/08*

U.S. Cl. 540—581 **13 Claims**

1. A compound of the formula:



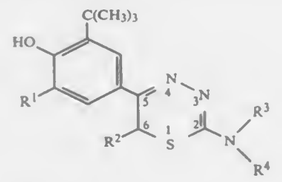
in which
R^1 and R^3 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy, cyano, nitro, halo, trifluoromethyl, amino, alkylamino of 1 to 6 carbon atoms or dialkylamino of 2 to 12 carbon atoms;
R_2 is alkyl of 1 to 6 carbon atoms;
R^4 is alkyl of 1 to 6 carbon atoms, phenyl or benzyl;
n is 0 or 1;
m is one of the integers 0, 1, 2, 3, 4, 5 or 6; and
X is alkyl of 1 to 6 carbon atoms, alkylamino of 1 to 6 carbon atoms, dialkylamino in which each alkyl group has 1 to 6 carbon atoms, alkanoyl of 2 to 6 carbon atoms or substituted or unsubstituted phenyl, pyridinyl, pyrimidinyl, pyrazinyl, quinolyl, morpholinyl, furyl, thienyl, pyrrolyl, tetrahydrofuryl, tetrahydrothienyl, pyrrolidinyl, piperidinyl, piperazinyl or perhydropyrimidinyl, in which the substituent is alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, trifluoromethyl, cyano, nitro, or hydroxy;
or a pharmaceutically acceptable salt thereof.

4,940,790
5-(3-ALKYL-5-TERT.BUTYL-4-HYDROXYPHENYL)-2-AMINO-6H-1,3,4-THIADIAZINES

Werner Thorwart, Hochheim am Main; Ulrich Gebert, Kelkheim; Rudolf Schleyerbach, Hofheim am Taunus, and Robert R. Bartlett, Darmstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 28, 1988, Ser. No. 149,601
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702756
Int. Cl.[5] C07D *285/16*
U.S. Cl. 544—8 **3 Claims**

1. A 5-(3-alkyl-5-tert.butyl-4-hydroxyphenyl)-2-amino -6H-1,3,4-thiadiazine of the formula I



(I)

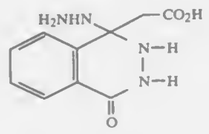
in which
R^1 is a straight-chain or branched alkyl group having 1 to 4 carbon atoms,
R^2 is a hydrogen atom or an alkyl radical having 1 to 3 carbon atoms,
R^3 and R^4, independently of one another, represent a straight-chain or branched $(C_1–C_6)$alkyl, $(C_3–C_6)$-alkenyl or $(C_3–C_6)$-alkynyl group which can be substituted by phenyl or halogen, $(C_1–C_3)$alkyl- or $(C_1–C_3)$alkoxy-substituted phenyl, hnydroxyl or $(C_1–C_4)$acyloxy and/or whose C—C sequence may be interrupted by a heteroatom in the form of oxygen or sulfur, it also being possible for one of the two radicals to denote a hydrogen atom, or
R^3 and R^4, together with the nitrogen atom to which they are bound, form a 4- to 7-membered ring which may monosubstituted or polysubstitituted by $(C_1–C_4)$alkyl and/or contains, in place of one of the ring carbon atoms, a further heteroatom in the form of oxygen, sulfur or nitrogen to form a pyrrolidine, piperidine, morpholine, thiomorpholine or piperazine ring, it also being possible for the further nitrogen heteroatom of piperazine to carry an alkyl group having 1 to 3 carbon atoms or a phneyl radical in place of hydrogen, or a physiologically acceptable acid-addition salt thereof.

4,940,791
PROCESS FOR THE PRODUCTION OF PHTHALAZINEACETIC ACID ESTER DERIVATIVES AND A NOVEL HYDRAZINE CONTAINING INTERMEDIATE

Terry G. Sinay, Jr., and Robert J. Sysko, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 161,540, Feb. 29, 1988. This application Dec. 6, 1989, Ser. No. 446,949
Int. Cl.[5] C07D *237/32, 237/34*
U.S. Cl. 544—237 **1 Claim**

1. A compound of the formula



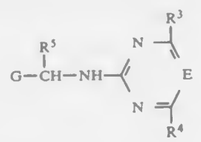
(I)

4,940,792
HERBICIDAL SULFONYLUREAS

Werner Töpfl, Dornach; Willy Meyer, Rieben, both of Switzerland, and Hans-Dieter Schneider, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 53,912, May 26, 1987, Pat. No. 4,764,203, which is a division of Ser. No. 699,388, Feb. 7, 1985, Pat. No. 4,685,961. This application Dec. 4, 1987, Ser. No. 128,761
Claims priority, application Switzerland, Feb. 14, 1984, 720/84; Apr. 12, 1984, 1841/84
Int. Cl.[5] C07D *239/42, 401/12, 403/12, 413/12*
U.S. Cl. 544—321 **10 Claims**

1. An N-pyrimidinyl-methylamine of the formula



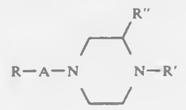
wherein
G is selected from R^6 and $R^9S(O)_m$
m is 0 or 2
E is —CH=,
R^3 is halogen, $C_1–C_4$alkyl, $C_1–C_4$alkoxy, $C_1–C_4$haloalkyl, $C_1–C_4$haloalkoxy, $C_2–C_4$alkoxyalkyl, $C_2–C_4$alkoxyalkoxy, cyclopropyl, $—NH_2$, $C_1–C_4$alkylamino or di($C_1–C_4$alkyl)amino,
R^4 has the same meaning as R^3 but independently thereof,
R^5 is hydrogen or $C_1–C_4$alkyl,
R^6 is a 5- to 7-membered heterocyclic radical which is bound through the nitrogen atom and which may be fused to a benzene ring, which is selected from among 1,2,4-triazole, benztriazole, benzimidazole, carbazole, indole, imidazole and pyrazole, which is unsubstituted or substituted by one or more members selected from the group consisting of nitro, halogen, and $C_1–C_4$alkyl,
R^9 is $C_1–C_4$alkyl which is unsubstituted or substituted by halogen, $C_2–C_4$alkoxy, carboxyl, $C_1–C_4$alkoxycarbonyl or $—CONR^{10}R^{11}$, or is a phenyl, benzyl or naphthyl radical, each of which is unsubstituted or substituted by one or more identical or different members selected from the group consisting of halogen, nitro, carboxyl, $C_1–C_4$alkyl, $C_1–C_4$haloalkyl, $C_1–C_4$alkoxy or $C_1–C_4$haloalkoxy, and R^9 can also be a radical selected from —CZ—$C_1–C_4$alkyl, —CZO—$C_1–C_4$alkyl, $—CZNR^{10}R^{11}$, —CZ-phenyl, CZ-benzyl or CZ-naphthyl, wherein the phenyl rings may be substituted as indicated above,
R^{10} and R^{11}, each independently of the other, are hydrogen, $C_1–C_4$alkyl, $C_3–C_4$alkenyl, $C_3–C_4$alkynyl, $C_1–C_4$cyanoalkyl, or one of R^{10} and R^{11} may also be $C_1–C_4$alkoxy or $C_2–C_4$alkoxyalkyl, phenyl or benzyl, and the penyl ring may be substituted by one or more identical or different members selected from the group consisting of halogen, nitro, $C_1–C_4$haloalkyl or $C_1–C_4$alkoxy; or R^{10} and R^{11}, together with the nitrogen atom to which they are attached, may also be a 5- to 7-membered saturated heterocycle selected from among pyrrolidine, piperidine, morpholine and azepine and which are unsubstituted or substituted by halogen or $C_1–C_4$alkyl and
Z is oxygen or sulfur.

4,940,793
PHARMACOLOGICALLY ACTIVE PIPERAZINO DERIVATIVES

Francesco Botrè, Rome, and Roberto Signorini, Milan, both of Italy, assignors to Ravizza S.p.a., Milan, Italy

Filed Jul. 18, 1985, Ser. No. 756,257
Claims priority, application Italy, Aug. 14, 1984, 22334 A/84
Int. Cl.[5] C07D *487/04, 295/10, 295/22*
U.S. Cl. 544—349 **1 Claim**

1. A piperazino compound of the formula



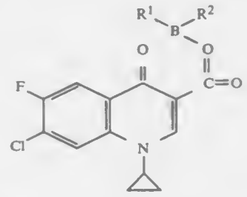
in which:
A is CO, CH_2 or SO_2;
R is 2-methoxy-5-sulphamoyl-phenyl, 2-sulphamoylimidazyl, 2-amino-1,3,4-thiadiazole or 2-acetamido-1,3,4-thiadiazole;
R' is H, linear or branched $C_1–C_6$ alkyl; linear or branched $C_2–C_6$ alkenyl; alkyl-phenyl or alkenyl-phenyl, wherein phenyl is optionally monosubstituted with halogen, trihalomethyl, $C_1–C_6$ alkyl, $C_1–C_6$ alkoxy, or sulphonamido; $C_2–C_6$ aliphatic acyl; $C_3–C_6$ alkylcarboxyalkoxy; alkylcarboxyamino in which the alkyl is $C_1–C_3$ and the amine is mono or disubstituted by linear or branched $C_1–C_6$ alkyl and;
R'' is H, or together with R' forms a 5 or 6 membered ring condensed with the piperazine;
provided that when R is a substituted phenyl group and A is CO, R' is other than H, $C_1–C_4$ alkyl or benzyl.

4,940,794
QUINOLINE CARBOXYLIC ACID BORIC ACID ANHYDRIDES

István Hermecz; Géza Keresztúri; Lelle Vasvári; Ágnes Horvath, all of Budapest; Mária Halogh, Dunakeszi; Péter Ritli, Budapest; Judit Sipos, Budapest; Anikó Pajor, Budapest, and Katalin Mármarosi, Bidatorbágy, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara/Rt., Budapest, Hungary

PCT No. PCT/HU88/00018, § 371 Date Dec. 2, 1988, § 102(e) Date Dec. 2, 1988, PCT Pub. No. WO88/07998, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 8, 1988, Ser. No. 290,167
Claims priority, application Hungary, Apr. 8, 1987, 1504/87; Jun. 24, 1987, 2857/87; Jul. 10, 1987, 3147/87
Int. Cl.[5] C07F *5/02*
U.S. Cl. 546—13 **2 Claims**

1. A compound of the Formula (I)



wherein
R^1 and R^2 are each halogen, or an aliphatic acyloxy group containing 1 to 4 carbon atoms optionally substituted by halogen, or an aromatic acyloxy group containing 7 to 11 carbon atoms.

4,940,795
HETEROCYCLIC SPIRO COMPOUNDS AND METHODS FOR PREPARING THE SAME

Shin-ichi Tsukamoto; Hitoshi Nagaoka, both of Tokyo; Shinji Usuda, Ibaragi; Masatomi Harada, and Toshinari Tamura, both of Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 254,375
Claims priority, application Japan, Oct. 5, 1987, 62-252104; Nov. 12, 1987, 62-286297; Apr. 5, 1988, 63-84327
Int. Cl.[5] C07D *405/02*
U.S. Cl. 546—16 **2 Claims**

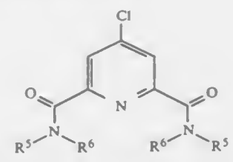
1. 2,8-Dimethyl-3-methylene-1-oxa-8-azaspiro[4,5]decane.

4,940,796
S,6-SUBSTITUTED-4-AMINOPYRIDINES AND THEIR CORRESPONDING INTERMEDIATES

Lon J. Mathias, and Gustavo Cei, both of Hattiesburg, Miss., assignors to The University of Southern Mississippi, Hattiesburg, Miss.

Filed Mar. 17, 1989, Ser. No. 324,817
Int. Cl.[5] C07D *471/08, 213/81*
U.S. Cl. 546—323 **6 Claims**

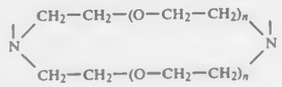
5. A compound of the formula



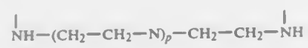
wherein R^5 and R^6 are independently C_{1-20} alkyl unsubstituted

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or substituted with C_{1-3} alcohol or phenyl, hydroxy, $-(CH_2-)_{1-3}COOH$, $-CHR^7COOH$ wherein R^7 is C_{1-5} alkyl or C_{1-5} alkyl substituted with hydroxy, amino, or carboxy, or allyl unsubstituted or substituted with a C_{1-4} alkyl or phenyl or together R^5 and R^6 with the two nitrogen atoms form a fused ring having the formula



wherein n is 1 or 2, or form a fused ring having the formula



wherein p is an integer from 0 to 3.

6. The compound of claim 5 wherein R^5 and R^6 are independently C_1–C_4 alkyl.

4,940,797

PROCESS FOR SYNTHESIS OF FK-506 C10–C18 INTERMEDIATES

Todd K. Jones, Edison; Sander G. Mills, Woodbridge, and Richard Desmond, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 23, 1989, Ser. No. 327,848

Int. Cl.[5] **C07D** *263/04; C07C 41/00, 41/12, 43/00*

U.S. Cl. 548—110 **5 Claims**

1. A process comprising the steps of:

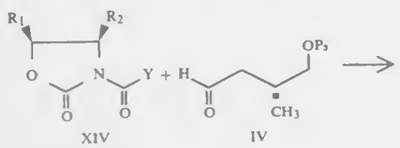
(a) contacting III with an oxidizing agent in an inert solvent and of a temperature in the range of 0 to 50° C. for a



III IV

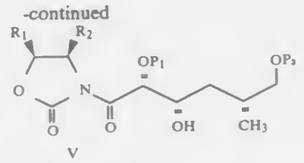
sufficient time to form the oxidation product IV, where P_3 is a hydroxy protecting group;

(b) contacting IV with a solution of a chiral N-acyloxazolidinone XIV, where Y is Protected oxymethyl, which is stable under the reaction conditions, and trialkylamine, and dialkylboron trifluoroalkylsulfonate under an inert atmosphere in an inert solvent and at a temperature in the range of −100°to 25° C. for a sufficient time to form the aldol addition product V, wherein R_1 and R_2 are independently chosen from H, C_1–C_4 linear or branched alkyl, benzyl, phenyl, which may be substituted with halo or C_1–C_4 alkoxy, with the proviso that R_2 is not H,



XIV IV

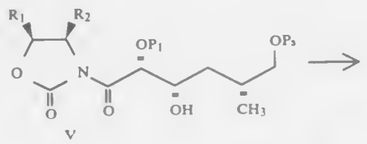
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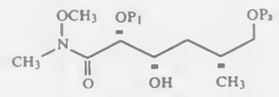
V

and where P_1 is a hydroxy protecting group which may be the same or different than P_3;

(c) contacting V with a solution of trialkylaluminum and N,O-dimethylhydroxylamine hydrochloride in an inert solvent and at a temperature in the range of −30° to 20° C. for a sufficient time to form the amide VI;

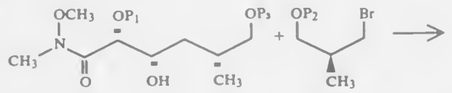


V

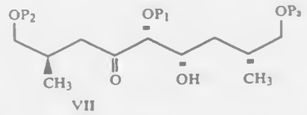


VI

(d) contacting VI with XIII in the presence of lithium in an inert solvent therefor at a temperature in the range of −100° to 25° C., followed



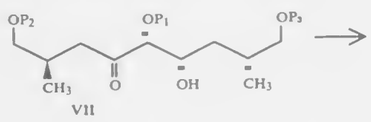
VI XIII



VII

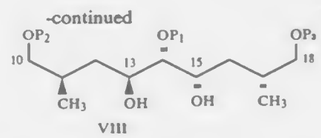
by contacting the resulting mixture with aqueous ammonium halide at a temperature in the range of −20° to 25° C. for a sufficient time to form the condensation product VII where P_2 is a hydroxy protecting group, which may be the same as P_1 but is different from P_3;

(e) contacting VII with tetraalkylammonium tri-acetoxy borohydride and a weak organic acid in an inert solvent and at a temperature of about −40° to 25° C., for a sufficient time to form the reduction product VIII;



VII

-continued



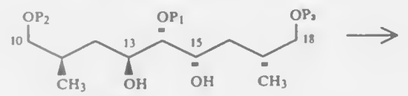
VIII

and

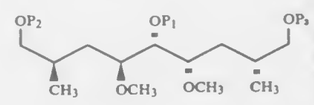
n is o or 1,

and its addition salt with an inorganic or organic acid.

(f) Contacting VIII with an alkali metal hydride and a methylating agent under anhydrous conditions in an inert atmosphere in an inert solvent and at a temperature in the range of 0° to 50° C. for a sufficient time to form the methylated product IX;



VIII



IX

4,940,798

SUBSTITUTED AZOLYLVINYL KETONES AND CARBINOLS AS FUNGICIDES AND PLANT GROWTH REGULATORS

Hans-Ludwig Elbe; Wolf Reiser; Erik Regel, all of Wuppertal; Karl H. Büchel, Burscheid; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen; Klaus Lürssen, Bergisch-Gladbach, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

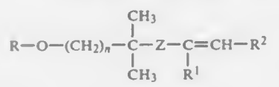
Division of Ser. No. 754,788, Jul. 12, 1985, Pat. No. 4,728,356, which is a division of Ser. No. 518,866, Aug. 1, 1983, abandoned. This application Sep. 24, 1987, Ser. No. 100,650

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229274

Int. Cl.[5] **C07D** *249/08, 233/60*

U.S. Cl. 548—268.4 **3 Claims**

1. Azolyl-pentene derivative of the formula



in which

R is C_1–C_{10}—alkyl,

R^1 is imidazol-1-yl or 1,2,4-triazol-1-yl,

R^2 is phenyl, 2-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2,4-dichlorophenyl, 3,4-dichlorophenyl or 2,4-dichlorophenyl,

Z is



or



4,940,799

PREPARATION OF THE DIASTEREOMERIC MIXTURE 2R,4S-1-[2-(2,4-DICHLOROPHENYL)-4-N-PROPYL-1,3-DIOXOLAN-2-YLMETHYL]-1H-1,2,4-TRIAZOLE

Rudolf Aebi, Basel; Adolf Hubele, Magden, and Jürg Speich, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

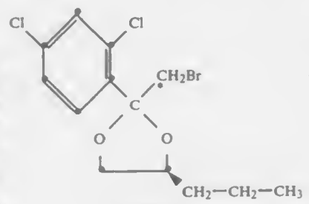
Filed Jul. 13, 1988, Ser. No. 218,189

Claims priority, application Switzerland, Jul. 20, 1987, 2746/87

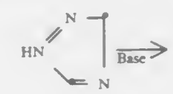
Int. Cl.[5] **C07D** *407/06*

U.S. Cl. 548—268.8 **5 Claims**

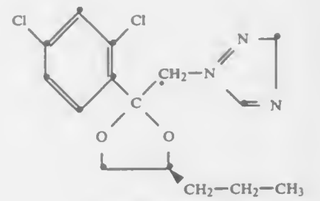
1. A process for the preparation of the 2RS,4S-diastereoisomeric mixture of formula Ia and the 2R,4S-isomer of formula I of 1-[2-(2,4-dichlorophenyl)-4-n-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole, which comprises condensing 2',4'-dichloro-2-bromoacetophenone with S-1,2-pentanediol to give the diastereoisomeric mixture 2RS,4S-2-2-(2,4-dichlorophenyl)-2-bromomethyl-4-n-propyl-1,3-dioxolane of formula III, and reacting the latter with 1,2,4-triazole of formula IV



(III) 2RS,4S



(IV)



(Ia) (2RS,4S)

in a solvent at from 10 to 160° C., in the presence of a base as acid acceptor, to give the diastereoisomeric mixture 2RS,4S-1-[2-(2,4-dichlorophenyl)-4-n-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole of formula Ia and isolating it, or, if desired, separating the 2R,4S-isomer of 1-[2-(2,4-dichlorophenyl)-4-n-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole of formula I from the 2S,4S-1-[2-(2,4-dichlorophenyl)-4-n-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole diastereoisomer and isolating it.

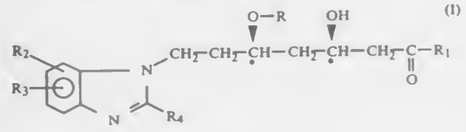
4,940,800

BEAZIMIDAZOLE COMPOUNDS ACTIVE AS INHIBITORS OF THE CHOLESTEROL BIOSYNTHESIS

Giorgio Bertolini, Sesto San Giovanni; Cesare Casagrande, Arese, and Francesco Santangelo, Milano, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Jul. 27, 1989, Ser. No. 385,369
Claims priority, application Italy, Jul. 29, 1988, 21542 A/88
Int. Cl.[5] C07D *235/18, 407/06*
U.S. Cl. 548—327 **3 Claims**

1. A compound of formula



(I)

wherein

R represents a hydrogen atom;

R_1 represents a hydroxy or an OR_5 group where R_5 represents a C_1–C_4 alkyl or benzyl;

or, R and R_1 together are a single bound between the oxygen and carbonyl;

R_2, R_3 and R_4, equal to or different from each other, represent hydrogen atoms, C_1–C_5 alkyl or alkoxy, halogen atoms, CF_3, phenoxy, benxyloxy, amino, mono or dialkylamino having 1 to 4 carbon atoms in the alkyl moiety;

the carbon atoms marked by an asterisk have contemporaneously R or S configuration; or

when R_1 is hydroxy, the salt thereof with a pharmaceutically acceptable base.

4,940,801

SPIRODILACTAM DERIVATIVES

Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 314,512, Feb. 23, 1989, Pat. No. 4,885,351. This application May 24, 1989, Ser. No. 356,158
Int. Cl.[5] C07D *487/10*
U.S. Cl. 548—410 **49 Claims**

1. A substituted 1,6-diaza 4.4]spirodilactam having an unsaturated substituent on each spiro ring nitrogen atom, which unsaturation is terminal, hydrocarbyl and is separated from the nitrogen atom to which the substituent is attached by one carbon atom or by an aromatic ring.

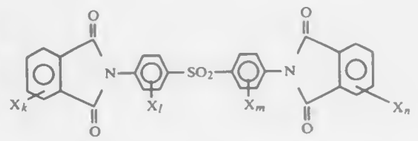
4,940,802

4,4'-BIS(PHTHALIMIDO)DIPHENYL SULFONE COMPOUNDS, PROCESSES FOR THEIR PRODUCTION AND FLAME RETARDANT POLYMER COMPOSITIONS CONTAINING THEM

Takao Matsuba, Shin-nanyo; Masashige Kubo, Tokuyama; Takumi Kagawa, Shin-nanyo; Kiyotaka Oyama, Hikari, and Koji Kawabata, Shin-nanyo, all of Japan, assignors to Tosoh Corporation, Shin-nanyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,045
Claims priority, application Japan, Dec. 8, 1987, 62-308768; Dec. 8, 1987, 62-308771; Jul. 27, 1988, 63-185387
Int. Cl.[5] C07D *209/48*
U.S. Cl. 548—462 **10 Claims**

1. A 4,4'-bis(phthalimido)diphenyl sulfone compound having the formula:



(I)

wherein X is a halogen atom, k=0 to 4, l=0 to 4, m=0 to 4 and n=0 to 4, provided k+l+m+n>1.

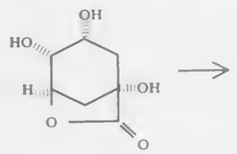
4,940,803

PROCESS FOR SYNTHESIS OF 1R,2R,5R-2-HYDROXY-6-OXO-7-OXABICYCLO[3.2.1]-OCTANE

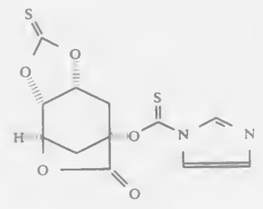
Sander G. Mills, Woodbridge; Ralph P. Volante, East Windsor, and Ichiro Shinkai, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 23, 1988, Ser. No. 197,551
Int. Cl.[5] C07D *307/77*
U.S. Cl. 549—302 **7 Claims**

1. A process comprising the steps of:

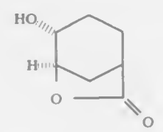


1



2

(a) contacting quinic acid lactone 1 with thiocarbonyldiimidazole at a temperature of 70° to 80° C. in an inert anhydrous organic solvent under an inert atmosphere for a sufficient time to yield dithiocarbonyl product 2;



3

(b) contacting product 2 from step (a) with a trihydrocarbyl hydride, an azobisalkylnitrile in an inert anhydrous organic solvent at a temperature of 125° to 140° C., under an inert atmosphere, for a sufficient time to form 3.

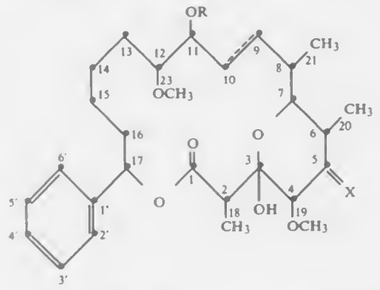
4,940,804

MICROBICIDES

Bettina Böhlendorf, Braunschweig; Norbert Bedorf, Königslutter; Gerhard Höfle; Dietmar Schummer, both of Braunschweig, all of Fed. Rep. of Germany, and Marius Sutter, Basel, Switzerland, assignors to Gesellschaft für Biotechnologische Forschung mbH and Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 8, 1989, Ser. No. 405,379
Claims priority, application Switzerland, Sep. 9, 1988, 3376/88
Int. Cl.[5] C07D *321/00*
U.S. Cl. 549—267 **9 Claims**

1. Macrocyclic compound of the formula I



(I)

in which the dotted line in the 9,10-position is a saturated bond or a double bond, alternatively, while

R is hydrogen, CH_3 or —COA, where

A is hydrogen, C_3–C_6cycloalkyl or C_1–C_6alkyl which is unsubstituted or substituted by halogen or C_1–C_3alkoxy, and

X is oxygen or one of the groups =N—OY or =N—N(R_1)(R_2), where

Y is hydrogen, C_1–C_6alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl or an acyl group —CO—Z in which

Z is phenyl, or a C_1–C_6alkyl group which is substituted by halogen or C_1–C_4alkoxy, or is hydrogen, C_1–C_6alkyl, C_2–C_6alkenyl or C_2–C_6alkynyl;

R_1 is hydrogen or C_1–C_6alkyl and

R_2 is hydrogen, C_1–C_6alkyl, phenyl, carbamoyl(=$CONH_2$), —COA or —SO_2—R_3, where

R_3 is C_1–C_6alkyl or is phenyl which is unsubstituted or substituted by C_1–C_4alkyl;

with the proviso that R is methyl if there is a double bond in the 9,10-position.

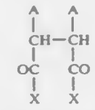
4,940,805

PREPARATION OF 1,4-BUTANEDIOL OR TETRAHYDROFURAN OR BOTH

Rolf Fischer, Heidelberg; Hans-Juërgen Gosch, Bad Durkheim; Wolfgang Harder, Weinheim; Klaus-Dieter Maisch, Schifferstadt; Manfred Eggersdorfer, Frankenthal; Lothar Franz, Ludwigshafen; Horst Zimmermann, Heidelberg; Karl Brenner, Ludwigshafen; Klaus Halbritter, Mannheim, all of Fed. Rep. of Germany; Wolfgang Sauer, Everberg, Belgium, and Hans-Juërgen Scheiper, Mutterstadt, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 8, 1988, Ser. No. 230,015
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1987, 3726509; Aug. 8, 1987, 3726510
Int. Cl.[5] C07D *307/08, 307/32;* C07C *27/04*
U.S. Cl. 549—326 **10 Claims**

1. In a process for the preparation of at least one of the compounds 1,4-butanediol, tetrahydrofuran and gamma-butyrolactone by catalytic hydrognenation of a compound of the formula



wherein each A is hydrogen or when taken together denote a single bond and each X is hydroxyl or alkoxy of from 1 to 6 carbon atoms or when taken together denote a ring oxygen atom —O—, at temperatures of from 100° C. to 350° C. and under pressures of from 50 bar to 350 bar, the improvement which comprises:

using a hydrogenation catalyst which contains cobalt and at least one of the elements copper, phosphorus and molybdenum.

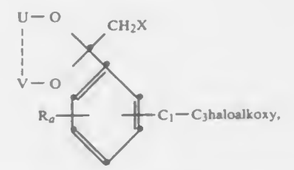
4,940,806

MICROBICIDES

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 931,289, Nov. 17, 1986, Pat. No. 4,853,399. This application Jun. 21, 1989, Ser. No. 369,563
Claims priority, application Switzerland, Nov. 22, 1985, 4985/85
Int. Cl.[5] C07D *319/06, 319/08, 317/16*
U.S. Cl. 549—365 **1 Claim**

1. A compound of formula III

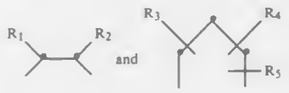


(III)

wherein one of the two phenyl substituents is in 2-position and the other is in 4-position, and wherein

R_a is halogen, methyl or C_1–C_3haloalkoxy,

U and V both taken together are an alkylene bridge selected from



R_1 and R_2 are each independently of the other hydrogen, C_1–C_6alkyl, C_1–C_6alkyl which is substituted by one or more halogen atoms, or are phenyl or phenyl which is substituted by one or more halogen atoms and/or C_1–C_2alkyl groups or are the group —CH_2—Z—R_6; or R_1 and R_2 together form a tetramethylene bridge which is unsubstituted or substituted by C_1–C_4alkyl; and

Z is an oxygen or sulfur atom,

R_6 is hydrogen, C_1–C_6alkyl or C_1–C_6alkyl which is substituted by one or more halogen atoms or C_1–C_3alkoxy groups, or is C_3–C_4alkenyl, 2-propynyl (=propargyl), 3-halo-2-propynyl, phenyl or benzyl, each unsubstituted or substituted in the aromatic ring by one or more of halogen, C_1–C_3alkyl, C_1–C_3alkoxy, nitro and CF_3;

R_3, R_4 and R_5 are each independently hydrogen or C_1–C_4alkyl, with the proviso that the total number of carbon atoms in R_3, R_4 and R_5 may not exceed 6;

VOL 1116 ISS 2 JL 10 1990 UMI

and wherein X is halogen, benzenesulfonyloxy, p-tosloxy, trifluoroacetyloxy or lower alkylsulfonyloxy.

4,940,807

SELECTIVE BROMINATION OF AROMATIC COMPOUNDS USING POTASSIUM TRIBROMIDE

Robert N. DePriest, Columbia, S.C., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 12, 1989, Ser. No. 365,209
Int. Cl.[5] C07D *317/62*; C07C *43/225*
U.S. Cl. 549—434 **12 Claims**

1. A process which comprises reacting a ring-brominatable electron-rich aromatic compound with potassium tribromide in the presence of water such that a product enriched in monobromo ring substitution is formed.

4,940,808

PROCESS FOR OZONIZATION OF UNSATURATED ORGANIC COMPOUNDS

Paul Schulz, Wuppertal, Fed. Rep. of Germany; Michael J. Virnig, Santa Rosa, Calif., and Franz J. Carduck, Haan, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 7, 1988, Ser. No. 216,067
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1987, 3722566
Int. Cl.[5] C07D *317/54*; C07C *55/14, 51/31, 61/04*
U.S. Cl. 549—436 **21 Claims**

1. A process for ozonization of an unsaturated organic compound which comprises: passing through a zone maintained under ozonization conditions a mixture containing an unsaturated organic compound, a protic solvent capable of dissolving the unsaturated organic compound and ozonization products thereof, an ozone containing material and a coolant having a boiling point in the range of from about +20° C. to about −200° C. to dissipate the heat of reaction which has a boiling point below the temperature maintained in said ozonization zone, and separating a stream containing ozonization product from said zone.

4,940,809

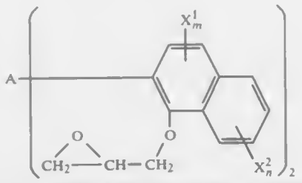
BIS-ANTHROLS AND BIS-NAPHTHOLS AND DIGLYCIDYL ETHERS THEREOF

Kenneth C. Dewhirst, and Thomas G. Stewart, Jr., both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 107,618, Oct. 9, 1987, Pat. No. 4,847,011.
This application Feb. 6, 1989, Ser. No. 306,413
Int. Cl.[5] C07D *303/08*
U.S. Cl. 549—559 **7 Claims**

1. A diglycidyl ether of a bis-naphthol of the formula IIa

IIa



wherein X^1 and X^2 each independently is an alkyl group containing from 1 to 4 carbon atoms or a halogen atom having an atomic number of from 9 to 35, inclusive; m is 0, 1 or 2, n is 0, 1, 2, 3 or 4: and A is a divalent dialkyl aromatic or dialkyl non-aromatic carbocyclic group containing from 7 to 24 carbon atoms in which each alkyl group contains from 1 to 8 carbon atoms and the carbocyclic group comprises a central non-aromatic ring containing 5 to 7 carbon atoms in a ring or a central aromatic carbocyclic ring, each central ring may be bridged or fused with a non-aromatic or aromatic carbocyclic ring.

4,940,810

PROCESS FOR PRODUCING SILICON-CONTAINING AROMATIC POLYACIDS

Howard B. Yokelson, Aurora; Walter Partenheimer, Naperville, and Robert Gipe, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 15, 1989, Ser. No. 451,412
Int. Cl.[5] C07F *7/08, 7/18*
U.S. Cl. 556—438 **6 Claims**

1. A process for preparation of silicon-containing aromatic polyacids by liquid phase oxidation of an alkyl-substituted diaryldialkylsilane wherein alkyl groups containing 1 to 20 carbon atoms in the alkyl-substituted diaryl group number from 1 to 4, and the number of carbon atoms is from 1 to 20 in the alkyl groups attached to the silicon of the silane group, which process comprises:

(a) introducing into a suitable reactor a feedstock comprising said alkyl-substituted diaryldialkylsilane in a solvent acid comprising an aliphatic C_2 to C_6 monocarboxylic acid;

(b) oxidizing said feedstock in the presence of a catalyst comprising cobalt-manganese-bromine with an oxygen-containing gas wherein the weight ratio of cobalt (calculated as elemental cobalt) to the alkyl-substituted diaryldialkylsilane is in the range of from about 0.2 to about 100 milligram atoms (mga) per gram mole of said alkyl-substituted diaryldialkylsilane, weight ratio of manganese (calculated as elemental manganese) to the cobalt of said catalyst is in the range of from about 0.2 to 100 milligram atoms (mga) per mga of cobalt, and weight ratio of bromine in said catalyst (calculated as elemental bromine) to total cobalt and manganese (calculated as elemental cobalt and manganese) is in the range of from about 0.25 to about 1.2 mga per mga of total cobalt and manganese, wherein weight ratio of said feedstock to said aliphatic C_2 to C_6 monocarboxylic acid is from about 1:5 to about 1:10, said feedstock to said acid, at a temperature within the range of from about 120° C. (250° F.) to about 260° C. (500° F.) and at a reaction pressure within the range of from about 50 psig to about 750 psig; and

(c) recovering a silicon-containing aromatic polyacid wherein said polyacid comprises a bis(mono- or polycarboxyaryl)dialkylsilane.

4,940,811

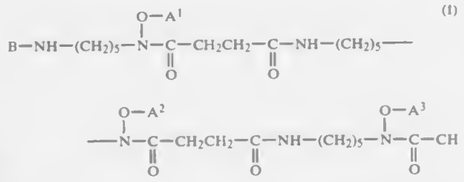
N,N-DISUBSTITUTED UREAS AND PROCESSES FOR THEIR MANUFACTURE

Heinrich Peter, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1987, Ser. No. 126,981
Claims priority, application Switzerland, Dec. 9, 1986, 4907/86; Jul. 23, 1987, 2793/87
Int. Cl.[5] C07C *175/06*
U.S. Cl. 558—262 **29 Claims**

1. A compound of the formula I

(I)



in which B represents a carbamoyl radical of the partial formula —CO—NH—Alk—CO—O—R_o^1 (II) in which R_o^1 represents C_1–C_4-alkyl or C_2–C_4-alkenyl and Alk represents

C_1–C_7-alkylene that is unsubstituted or substituted by hydroxy, C_1–C_4-alkanoyloxy, amino, C_1–C_4-alkoxycarbonyl, carbamoyl, phenyl, hydroxyphenyl, methoxyphenyl or by indolyl, and each of the symbols A^1, A^2 and A^3, independently of the others, represents hydrogen, an above-defined carbamoyl radical of the partial formula II, or an acyl radical Ac

(a) of the formula Z—C(=O)—, in which Z represents
  (aa) hydrogen,
  (ab) alkyl or alkenyl having up to 19 carbon atoms each of which is unsubstituted or substituted by carboxy, cyano, carbamoyl, (C_1–C_4)-alkoxycarbonyl, amino or halogen,
  (ac) phenyl which is unsubstituted or substituted by one or two substituents selected from halogen, nitro, C_1–C_4-alkyl, hydroxy, C_1–C_4-alkoxy, phenoxy, methylenedioxy, carboxy, cyano and C_1–C_4-alkoxycarbonyl,
  (ad) pyridyl, furyl, theinyl, imidazolyl, quinolyl, isoquinolyl, benzofuryl, benzimidazolyl,
  (ae) benzyl or styryl, or
  (af) di-lower alkylamino; or

(b) of the formula R^o—O—CO wherein R^o represents
  (ba) C_1–C_{20}-alkyl which is unsubstituted or substituted by cyano, carboxy, carbamoyl, (C_1–C_4)-alkoxycarbonyl or benzyloxycarbonyl,
  (bb) C_2–C_{20}-hydroxyalkyl in which the hydroxy group is in any position apart from the 1-position, or
  (bc) linear (mono- or di- to hexa-)-oxaalkyl having from 4 to 20 chain members, wherein one or more of the carbon atoms, from C-3 on, of a linear C_4–C_{20}-alkyl have been replaced by oxygen atoms that are separated from one another by at least 2 carbon atoms;

or a salt of such a compound having salt-forming properties.

4,940,812

5-SUBSTITUTED AMINOPHENOLS

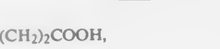
Philip T. S. Lau, Rochester, and Danny R. Thompson, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

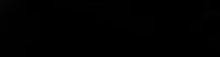
Filed Jul. 17, 1989, Ser. No. 380,347
Int. Cl.[5] C07C *147/13*
U.S. Cl. 560—12 **4 Claims**

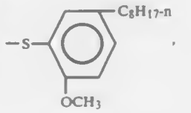
1. An aminophenol wherein the amino group and the hydroxy group are either ortho or meta to one another, and wherein the amino group has at least one hydrogen bonded to the amino nitrogen, and the third valence of said nitrogen is satisfied by bonding to hydrogen or an alkyl or aryl group having up to about 30 carbon atoms, and wherein the position para to said hydroxy group is unsubstituted or substituted with a coupling off group selected from the group consisting of —Cl, —F, —OCH_3, —OC_6H_5, —$OCH_2CONHCH_2CH_2OH$, —$OCH_2CONHCH_2CH_2OCH_3$, —$OCH_2CONHCH_2CH_2OCOCH_3$,

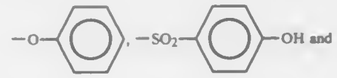


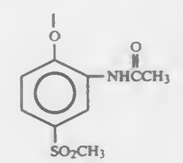












, and the position para to the amino group is bonded to a carbon atom that is in turn bonded to (i) a hydrogen atom, (ii) a substituent selected from the class consisting of alkylthio, arylthio, alkylsufonyl, and arylsulfonyl groups wherein the alkyl and aryl groups have up to about 30 carbon atoms, and (iii) a group selected from carboxy and carboxy ester represented by COOR, wherein R is an alkyl or aryl radical having up to about 30 carbon atoms.

4,940,813

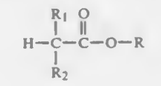
RESOLUTION OF A CARBOXYLIC ACID

Edward G. Corley, Old Bridge; Robert D. Larsen, Monmouth Junction; Edward J. J. Grabowski, Westfield, and Paul Reider, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 31, 1989, Ser. No. 331,145
Int. Cl.[5] C07C *69/612*; C07B *55/00*
U.S. Cl. 560—103 **22 Claims**

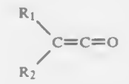
1. A process for the preparation of an optically active ester (V) or an enriched mixture therein:

(V)



wherein
R_1 and R_2 are independently selected from:
  a. $C_{1\text{-}10}$ alkyl substituted with a group X;
  b. $C_{6\text{-}10}$ aryl or $C_{7\text{-}11}$ araalkyl wherein the aryl moiety is substituted with a group X
  c. $C_{5\text{-}8}$ cycloalkyl substituted with X;
  d. $C_{2\text{-}10}$ alkenyl substituted with a group X;
  e. $C_{2\text{-}10}$ alkynyl substituted with a group X;
  f. $C_{1\text{-}5}$ alkyloxy;
  g. $C_{1\text{-}5}$ alkylthio; provided that R_1 and R_2 are not identical;
R is the organic radical of an α-hydroxy ester or α-hydroxy tertiary amide (ROH) (III);
X is H, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}5}$ alkoxy, halogen, $C_{1\text{-}5}$ acyloxy, $C_{1\text{-}5}$ acylamino, $C_{1\text{-}5}$ acyl, trialkylsiloxy;
which comprises:
  reacting a ketene of formula (II):

(II)



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with an optically active α-hydroxy ester or α-hydroxy tertiary amide (ROH) (III) in a nonpolar solvent in the presence of up to 10 moles tertiary amine (IV) per mole ketene at a temperature between −80° and 25° C. to yield an optically active ester (V).

4,940,814

REACTION OF HEXAFLUOROPROPENE OXIDE WITH FLUORINATED CARBOXYLIC ACID FLUORIDES

Werner Schwertfeger, Langgöns, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 3, 1988, Ser. No. 163,691

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707367

Int. Cl.[5] C07C *51/58*

U.S. Cl. 562—849 **15 Claims**

1. A process for the preparation of halogenated carboxylic acid fluorides by reacting a carboxylic acid fluoride with hexafluoropropene oxide in the presence of a catalyst, which comprises reacting a carboxylic acid fluoride of the formula

R—COF (III)

in which is the group CCl_3 or $X—(CF_2)_n$, X representing a hydrogen atom, a bromine atom or a fluorosulfonate radical and n denoting an integer from 1 to 6, with hexafluoropropene oxide in the presence of a catalyst system comprising an alkali metal fluoride, a carboxylic acid dinitrile and at least one ether of the formula

$CH_3O—(CH_2CH_2O)_z—CH_3$ (V)

in which z denotes an integer from 2 to 6.

4,940,815

PROCESS FOR THE PRODUCTION OF THIOCARBOHYDRAZIDE

Dennis E. Jackman, Prairie Village, Kans.; Gary W. Combs, Blue Springs, Mo., and Dietmar B. Westphal, Remscheid, Fed. Rep. of Germany, assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1989, Ser. No. 324,842

Int. Cl.[5] C07C *337/06*

U.S. Cl. 564—18 **10 Claims**

1. A process for the production of TCH comprising

(a) reacting carbon disulfide and excess hydrazine in the presence of a mercaptan and optionally a strong base or an amine other than hydrazine to form TCH,

(b) adding carbon disulfide in an amount which is at least sufficient to react with any unreacted hydrazine present and a strong base or an amine other than hydrazine to the reaction mixture of (a) if a strong base or an amine other than hydrazine was not present during (a) and

(c) heating the mixture of (b) to form TCH.

4,940,816

ACYLATED CYANAMIDE COMPOUNDS

Herbert T. Nagasawa, Richfield, Minn., and Chul-Hoon Kwon, Rochester, N.Y., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 110,790, Oct. 21, 1987, Pat. No. 4,870,056, which is a division of Ser. No. 821,604, Jan. 23, 1986, Pat. No. 4,726,941. This application Jul. 19, 1989, Ser. No. 382,554

Int. Cl.[5] C07C *125/08*

U.S. Cl. 564—103 **2 Claims**

2. 1-Adamantoylcyanamide.

4,940,817

PROCESS FOR THE PREPARATION OF N-ALKYLANILINES

Günter Klug, Monheim; Hans-Josef Buysch, Krefeld, and Lothar Puppe, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

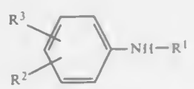
Filed Jan. 25, 1989, Ser. No. 301,672

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1988, 3803662

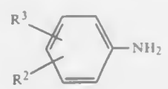
Int. Cl.[5] C07C *87/52, 88/02*

U.S. Cl. 564—305 **18 Claims**

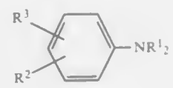
1. In a process for the preparation of N-alkylanilines of the formula



comprising reacting anilines of the formula



with N,N-dialkylanilines of the formula



wherein

R^1 denotes C_1–C_4-alkyl and

R^2 and R^3, independently of one another, stand for hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine or bormine,

in the gas or liquid phase at elevated temperatures, the improvement wherein the reaction is carried out in the presence of zeolites at temperatures of 200° to 350° C.

4,940,818

PROCESS ON THE PREPARATION OF 2,2'-OXYBIS(N,N-DIMETHYL-ETHANAMINE)

Jürgen Weber, Oberhausen; Detlef Kampmann, Bochum; Franz Thönnessen, and Claus Kniep, both of Oberhauseo, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Werk Ruhrchemie, Fed. Rep. of Germany

Filed Jun. 23, 1988, Ser. No. 210,634

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1987, 3721538

Int. Cl.[5] C07C *85/02*

U.S. Cl. 564—471 **18 Claims**

1. In a process for the preparation of 2,2'-oxybis-[N,N-dimethylethanamine] by reacting 2,2'-oxybisethanamine with an oxygen containing compound and hydrogen at an elevated temperature and pressure on a fixed-bed catalyst, the improvement comprising using as the oxygen containing compound, formaldehyde with not more than 50% by weight of water present in the reaction mixture, the formaldehyde and amine being heated to the elevated temperature before being mixed together and the fixed-bed catalyst is a hydrogenation catalyst selected from the group consisting of Ni, Co, Cu, Mn, Fe, Rh, Pd and Pt containing catalysts and a reduced amount of water.

4,940,819

PROCESS FOR THE HYDROGENATION OF α,β-UNSATURATED KETONES

Wolfgang Kiel, Odenthal, and Heinz Ziemann, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 5, 1989, Ser. No. 375,763

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824625

Int. Cl.[5] C07C *45/62*

U.S. Cl. 568—318 **17 Claims**

1. A process for the catalytic hydrogenation of α,β-unsaturated ketones of the formula

$R^1—CH=CH—CO—R^2$,

in which

R^1 and R^2 independently of one another represent straight-chain or branched C_1–C_{12}-alkyl or C_2–C_{12}-hydroxyalkyl, straight-chain or branched C_2–C_{12}-alkenyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkenyl, C_7–C_{14}-aralkyl or C_6–C_{12}-aryl, where at least one of the radicals R^1 and R^2 is monosubstituted to trisubstituted by halogen,

to give the respective saturated ketones of the formula

$R^{11}—CH_2—CH_2—CO—R^{12}$,ps

in which

R^{11} and R^{12} assume the meaning of R^1 and R^2 with the exception that alkenyl and cycloalkenyl are hydrogenated to the respective alkyl or cycloalkyl,

wherein the hydrogenation is carried out in the presence of a Ni-containing catalyst and an organic sulphur compound of the formula

$CH_3—CO—SH$

or of the formula

$R^3—S(=O)_n—R^4$

in which

R^3 and R^4 independently of one another denote straight-chain or branched C_1–C_{12}-alkyl, hydroxy-C_2–C_{12}-alkyl, or carboxy-C_1–C_{12}-alkyl or phenyl, and furthermore

R^3 and R^4 together may represent —CH=CH—CH=CH—, $—(CH_2)_4—$, $—(CH_2)_5—$, $—(CH_2)_2—S—(CH_2)_2—$ or $—(CH_2)_2—O—(CH_2)_2—$,

R^4 may additionally denote hydrogen or CO—C_1–C_{12}-alkyl and

n assumes the value 0 or 1 and wherein the Ni-containing catalyst is Ni on supports, Ni in the form of elemental nickel sponge, Ni oxide or a Raney nickel.

4,940,820

WRAPAROUND RECOVERY ARTICLE

Kenneth B. Pithouse, L'Ermieage, France; Thomas A. Kridl, Union City; James T. Triplett, Livermore, both of Calif., and Marc Wille, Baal, Belgium, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 891,420, Aug. 1, 1986, abandoned, which is a continuation of Ser. No. 567,126, Dec. 30, 1983, abandoned. This application Sep. 16, 1987, Ser. No. 97,376

Claims priority, application United Kingdom, Jan. 6, 1983, 8300223; Jul. 23, 1983, 8319855; Aug. 16, 1983, 8322004

Int. Cl.[5] D03D *3/02*

U.S. Cl. 428—34.9 **50 Claims**

25. A heat-recoverable wraparound article which comprises a recoverable fabric cover portion, the fabric having a recovery ratio of at least 20%, and edge regions (8) provided with a mechanical closure (3,7,9) for maintaining the edge regions (8) in proximate relationship during recovery, wherein the article comprises a recoverable fabric in which recoverable fibres (6) run from the first edge region (8) to the second edge region (8), and at each said edge region (8) turn back around the closure elements (7) towards the other edge region (8), thus fixedly trapping the closure elements (7); and wherein the mechanical closure is selected from the group consisting of one or more discrete clamping elements which can hold together first and second closure elements at first and second edge regions of the article or the mechanical closure comprising first and second closure elements (3,7,9) provided on first and second edge regions respectively, the elements being interengageable by virtue of cooperating surfaces thereof.

4,940,821

PREPARATION OF FLUOROPHENOLS

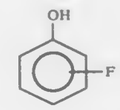
R. Garth Pews, and James A. Gall, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1989, Ser. No. 325,421

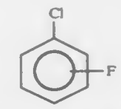
Int. Cl.[5] C07C *37/02, 39/27*

U.S. Cl. 568—775 **6 Claims**

1. A process for preparing a fluorophenol of the formula



which comprises heating a chlorofluorobenzene of the formula



with water at a temperature from about 225° to about 300° C. in the presence of a copper-containing catalyst in either the cuprous or cupric oxidation state at a pH of from about 0.3 to about 6.5.

4,940,822

SUBSTITUTED BENZENEMETHANOL COMPOUNDS, INTERMEDIATES THEREOF, AND PREPARATION THEREOF

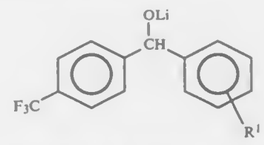
James G. Davidson, III, and Brian S. Swiereaga, both of Holland, Mich., assignors to Warner-Lambert Company, Ann Arbor, Mich.

Filed Nov. 4, 1988, Ser. No. 267,428

Int. Cl.[5] C07C *33/46*

U.S. Cl. 568—812 **34 Claims**

1. A compound of the formula:



wherein R^1 is selected from the group of hydrogen, halo substituted alkyl group, halo, nitro, alkyl group, aralkyl group, cycloalkyl group, aryl group, alkaryl group, heterocyclic group containing a member selected from the group of N, O, S, or mixtures thereof, alkoxy group, aryloxy group, thioalkoxy group, and N,N'-dialkylamino.

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4,940,823

PROCESS FOR OPTICALLY ACTIVE 3-THIOLANYL SULFONATE ESTERS

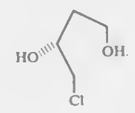
Robert A. Volkmann, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 378,888, Jul. 12, 1989, Pat. No. 4,921,972, which is a continuation-in-part of Ser. No. 353,374, May 17, 1989, abandoned, which is a division of Ser. No. 308,868, Feb. 9, 1989, Pat. No. 4,864,046. This application Jan. 19, 1990, Ser. No. 467,820

Int. Cl.[5] C07C *31/34*

U.S. Cl. 568—844 1 Claim

1. An optically active compound of the formula



4,940,824

PROCESS FOR REMOVING VINYLIDENE CHLORIDE FROM 1,1-DICHLORO-1-FLUOROETHANE

Stephen F. Yates, Arlington Hts., Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 14, 1989, Ser. No. 450,654

Int. Cl.[5] C07C *17/38*

U.S. Cl. 570—179 4 Claims

1. A process for purifying 1,1-dichloro-1-fluoroethane (CFC-141b) containing about 200 to 900 wt.ppm vinylidene chloride comprising passing said 1,1-dichloro-1-fluoroethane over a carbon molecular sieve having a mean pore size between about 4.2 to 4.5 Angstroms at a temperature of −20° C. to 60° C. and a pressure of about 100 to 500 kPa and recovering 1,1-dichloro-1-fluoroethane containing less than 200 wt.ppm of vinylidene chloride.

4,940,825

PROCESS FOR REMOVING DICHLOROACETYLENE FROM 1,1-DICHLORO-1-FLUOROETHANE AND/OR VINYLIDENE CHLORIDE

Stephen F. Yates, Arlington Hts., Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 14, 1989, Ser. No. 451,266

Int. Cl.[5] C07C *17/38*

U.S. Cl. 570—179 6 Claims

1. A process for purifying 1,1-dichloro-1-fluoroethane (CFC-141b) containing about 4–20 wt. ppm by weight of dichloroacetylene comprising passing said 1,1-dichloro-1-fluoroethane over a carbon molecular sieve having a mean pore size between about 4.2 to 4.5 Angstroms at a temperature of about −20° C. to 60° C. and a pressure of about 100 to 500 kPa and recovering 1,1-dichloro-1-fluoroethane containing less than 2 ppm by weight of dichloroacetylene.

4,940,826

PROCESS FOR THE PRODUCTION OF MONO-OLEFINS BY THE CATALYTIC OXIDATIVE DEHYDROGENATION OF GASEOUS PARAFFINIC HYDROCARBONS HAVING TWO OR MORE CARBON ATOMS

Joseph J. Font Freide, Weybridge; Mark J. Howard, Twickenham, and Trevor A. Lomas, Langley, all of England, assignors to British Petroleum Company p.l.c., London, England

Filed Feb. 6, 1989, Ser. No. 306,063

Claims priority, application United Kingdom, Mar. 8, 1988, 8805447

Int. Cl.[5] C07C *5/333, 5/373*

U.S. Cl. 585—600 9 Claims

1. A process for the production of a mono-olefin from a gaseous paraffinic hydrocarbon having at least two carbon atoms or a mixture thereof, which process comprises partially combusting a mixture of the hydrocarbon or hydrocarbons and a molecular oxygen-containing gas in contact with a combustion catalyst selected from the group consisting of a platinum/-cordierite monolith, platinum/mullite monolith and a metallic gauze containing a platinum group metal.

4,940,827

CATALYST SYSTEM FOR OLEFIN DISPROPORTIONATION

Frank J. Janssen; Coenraad H. Wilms; Donald Reinalda, and Hendrik W. Bruijn, all of Am Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 272,590, Nov. 17, 1988, Pat. No. 4,916,102. This application Nov. 16, 1989, Ser. No. 437,146

Claims priority, application United Kingdom, Nov. 18, 1987, 8726925

Int. Cl.[5] C07C *6/04*

U.S. Cl. 585—646 21 Claims

1. A process for olefin disproportionation using a catalyst system comprising molybdenum oxide supported on alumina prepared by a process which comprises:

(a) comulling a gamma alumina providing agent with a sulfur-containing compound and/or a phosphorus-containing compound to produce a homogeneous mass,

(b) extruding the mass and dividing it into small particles,

(c) drying and calcining said particles at a temperature in the range of from about 400° C. to about 800° C.

(d) subjecting said particles at least once to an additional step comprising: (1) impregnating said particles with a solution of molybdenum oxide(s), (2) drying and (3) calcining said impregnated particles at a temperature in the range of from about 400° C. to about 800° C.

4,940,828

STEAM CRACKING FEED GAS SATURATION

William C. Petterson, Missouri City; Thomas A. Wells, Houston; Peter Cherish, Kingwood, and Stephen W. Morgan, Spring, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Oct. 13, 1989, Ser. No. 420,856

Int. Cl.[5] C07C *4/02*

U.S. Cl. 585—652 3 Claims

1. A method of controlling the dilution steam for steam cracking gaseous hydrocarbons which comprises:

(a) circulating water upwardly through a tubular saturating zone and heating the water therein at a variably controlled rate by indirect heat exchange with a heating fluid;

(b) injecting a gaseous hydrocarbon feed into a lower, flooded portion of the tubular saturating zone in cocurrent flow with the circulating water;

(c) recovering a two phase, equilibrium mixture comprised of water and water-saturated hydrocarbon feed from the tubular saturation zone;

(d) introducing the two phase, equilibrium mixture to a separation zone having a static liquid pressure greater than that of the tubular saturation zone;

(e) recovering a water stream from the separation zone and recirculating the recovered water stream to the tubular saturating zone;

(f) recovering a mixed feed vapor stream of gaseous hydrocarbon fully saturated with water from the separation zone;

(g) controlling the rate of indirect heat exchange in the tubular saturation zone by selecting a controlling temperature of the mixed feed vapor stream; and

(h) introducing the mixed feed vapor stream to a steam cracking zone.

4,940,829

HYDRODEMETHYLATION OF NEOHEXANE

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 18, 1988, Ser. No. 260,840

Int. Cl.[5] C07C *4/10*

U.S. Cl. 585—752 18 Claims

13. A process for preparing neopentane comprising the step of contacting a feed comprising neohexane with free hydrogen and a catalsyt composition comprising (a) a support material consisting essentially of alumina, (b) palladium, (c) nickel and (d) cobalt, under such conditions as to convert at least a portion of neohexane to neopentane.

4,940,830

REJECTIVE SEPARATION OF PARA-XYLENE FROM XYLENE ISOMERS AND ETHYLBENZENE WITH ZEOLITES

Hermann A. Zinnen, Evanston, and Richard L. Fergin, Mount Prospect, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 26, 1988, Ser. No. 249,538

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—828 4 Claims

1. A process for separating para-xylene from a feed mixture comprising para-xylene and at least one isomer thereof and ethylbenzene, which process comprises contacting at adsorption conditions said feed with an adsorbent comprising a sodium Y zeolite or a sodium Y zeolite which has been at least partially cation exchanged with an element selected from the group consisting of nickel and copper to effect the adsorption of said isomers and ethylbenzene in preference to para-xylene and thereafter recovering para-xylene.

4,940,831

PURIFICATION OF CIS-OLEFINS

Charles A. Drake, Nowata, Jim D. Byers; Steven D. Bridges, both of Bartlesville, all of Okla. assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1989, Ser. No. 312,103

Int. Cl.[5] C07C *7/17*

U.S. Cl. 585—836 22 Claims

1. A process for the purification of a cis-olefin formed by alkylating a sulfonate ester, wherein said cis-olefin is purified from a reaction mixture formed by the alkylation of said sulfonate ester, which process comprises the steps of:

(a) mixing said reaction mixture with an acid solution selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, and acetic acid to form a first purification mixture,

(b) separating said acid solution from said first purification mixture to form a first purification product,

(c) mixing said first purification product with a C_1–C_4 alcohol to form a second purification mixture,

(d) separating said C_1–C_4 alcohol from said second purification mixture to form a final purification product, and

(e) distilling said final purification product to yield said purified cis-olefin.

4,940,832

PROCESS FOR SEPARATING 2,6-DIMETHYLNAPHTHALENE

Tsutomu Miyashi, 15-18, Hitokita 3-chome, Taihaku-ku, Sendai-shi, Miyagi; Yoshiro Yamashita, Aichi; Takanori Suzuki, Miyagi, and Hiroshi Fujii, Kanagawa, all of Japan, assignors to Tsutomu Miyashi, Miyagi and Mitsubishi Oil Co., Ltd., Tokyo, both of, Japan

Filed Jun. 13, 1989, Ser. No. 365,635

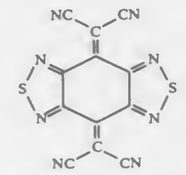
Claims priority, application Japan, Jun. 13, 1988, 63-143772

Int. Cl.[5] C07C *7/152*

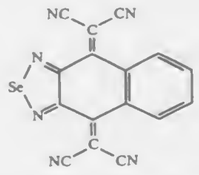
U.S. Cl. 585—863 7 Claims

1. A process for separating 2,6 -dimethylnaphthalene from a 2,6-dimethylnaphthalene containing mixture which comprises mixing said 2,6-dimethylnaphthalene-containing mixture with a complexing agent selected from the group consisting of compounds A to E to thereby form a complex of the complexing agent and 2,6-dimethylnaphthalene; separating a solid matter containing the complex of the complexing agent and 2,6-dimethylnaphthalene thus formed; and decomposing said solid matter containing said complex to thereby separate and collect an oil rich in the 2,6-dimethylnaphthalene:

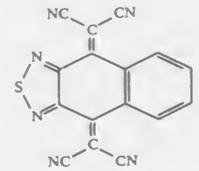
A. Bis(1,2,5)thiaziazolotetracyanoquinodimethane:



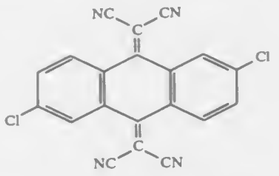
bis(1,2,5)thiazizolotetracyanoquinodimethane,



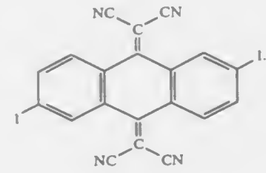
C. (1,2,5)Thiaziazolotetracyanonaphthoquinodimethane:



D. 2,6-Dichlorotetracyanoanthraquinodimethane:



E. 2,6-Diiodotetracyanoanthraquinodimethane:



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4,940,833

OLEFIN MONOMER SEPARATION PROCESS

Charles A. Drake, Nowata; William R. Parrish, and Roy C. Lee, both of Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1988, Ser. No. 277,368
Int. Cl.[5] C07C *7/05*
U.S. Cl. 585—868 25 Claims

1. A process to separate and recover olefin monomer from a substantially liquid polymerization reaction mixture comprising olefin monomer, catalyst residue, and catalyst deactivation compounds wherein said process comprises:

(a) contacting said mixture with a sufficient amount of water to form an organic phase, which comprises olefin monomer, and an aqueous phase, which comprises catalyst residue and catalyst deactivation compounds; and

(b) separating said organic phase from said aqueous phase.

4,940,834

PLANTS HAVING ENDOPHYTIO-FUNGUS-ENHANCED PERFORMANCE AND METHOD OF PRODUCING SAME

Richard H. Hurley, Flemington, and Cyril R. Funk, Jr., East Brunswick, both of N.J., assignors to Lofts, Inc., Bound Brook, N.J.

Filed Dec. 5, 1983, Ser. No. 558,338
Int. Cl.[5] A01H *5/00*
U.S. Cl. 800—200 2 Claims

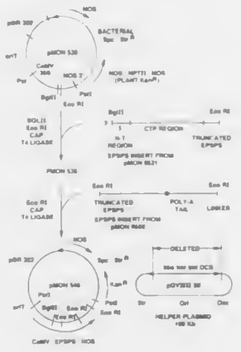
1. A perennial ryegrass designated by the varietal name Repeil, characterized by its persistent, dense, attractive, low-growing turf of a bright darkgreen color; its medium seed maturity; its medium-fine leaves; its excellent wear tolerance and very good heat, cold and drought hardiness; its resistance to large brown patch disease, winter leaf spot disease and crown rust disease; its resistance to sod webworms, billbugs, and Argentine stem weevils; and its hosting of a performance-enhancing endophytic fungus of the family Clavicipitaceae or Moniliaceae.

4,940,835

GLYPHOSATE-RESISTANT PLANTS

Dilip M. Shah, Creve Coeur; Stephen G. Rogers, Chesterfield; Robert B. Horsch, and Robert T. Fraley, both St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 792,390, Oct. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 763,482, Aug. 7, 1985, abandoned. This application Jul. 7, 1986, Ser. No. 879,814
Int. Cl.[5] A01H *1/04*; C12N *15/00, 5/00*; C07H *15/12*
U.S. Cl. 800—205 59 Claims



1. A chimeric plant gene which comprises:

(a) a promoter sequence which functions in plant cells;

(b) a coding sequence which causes the production of RNA, encoding a chloroplast transit peptide/5-enolpyruvylshikimate-3-phosphate synthase fusion polypeptide, which chloroplast transit peptide permits the fusion polypeptide to be imported into a chloroplast of a plant cell; and

(c) a 3' non-translated region which encodes a polyadenylation signal which functions in plant cells to cause the addition of polyadenylate nucleotides to the 3' end of the RNA;

the promoter being heterologous with respect to the coding sequence and adapted to cause sufficient expression of the fusion polypeptide to enhance the glyphosate resistance of a plant cell transformed with the gene.

4,940,836

SOMATIC HYBRIDS OF RUTACEAE PLANTS

Shigetaka Ishii; Toshifumi Ohgawara, both of Noda; Shozo Kobayashi, Hiroshima; Iwao Oiyama, Hiroshima, and Katsuichi Yoshinaga, Hiroshima, all of Japan, assignors to Director General of Fruit Tree Research Station Ministry of Agriculture, Forestry and Fisheries and Kikkoman Corporation, both of Japan

Filed Oct. 1, 1985, Ser. No. 782,385
Claims priority, application Japan, Feb. 20, 1985, 60-30611
Int. Cl.[5] A01H *1/04*; C12N *15/00, 5/00*
U.S. Cl. 800—220 11 Claims

1. Somatic hybrid plants of the Rutaceae family produced by fusing (A) first protoplasts of embryogenic cells resistant to fusion treatment and having a high proliferation activity, said first protoplasts being derived by the cultivation of undifferentiated cells obtained from subculture of cultivated cells originated from the nucellus of a first plant of the Rutaceae family with (B) second protoplasts derived from cultivated cells having no differentiation potency, said second protoplasts originated from tissue cells or tissues other than the ovules of a second plant of the Rutaceae family to form fused cells, and cultivating the fused cells in a medium containing sucrose in a concentration sufficient for the selective embryogenesis of the fused cells said first and second plants being selected from two different species.

4,940,837

STRAINS AND THEIR CULTIVATION

Yukita Kawano; Katsuhiko Kusakabe, both of Otsu; Hitoshi Maruyama, Shiga; Susumu Matsui, Otsu; Tsutomu Taniguchi, Kyoto, and Akira Obayashi, Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Oct. 7, 1987, Ser. No. 105,342
Claims priority, application Japan, Oct. 9, 1986, 61-239058; Nov. 13, 1986, 61-268656
Int. Cl.[5] A01G *1/04*
U.S. Cl. 800—200 7 Claims



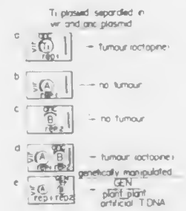
1. *Lyophyllum ulmarium* characterized by a cap which is not concave when the fruiting body has matured.

4,940,838

PROCESS FOR THE INCORPORATION OF FOREIGN DNA INTO THE GENOME OF DICOTYLEDONOUS PLANTS

Robbert A. Schilperoort, Anthonie Duyckiaan 10c, 2334, CD Leiden; Andreas Hoekema, Boerhaavelaan 114, 2334, ET Leiden, and Paul J. J. Hooykaas, Condorstraat 126, 2317, AW Leiden, all of Netherlands

Filed Feb. 23, 1984, Ser. No. 583,022
Claims priority, application Netherlands, Feb. 24, 1983, 8300698
Int. Cl.[5] C12N *15/00, 1/20, 1/00*; C12P *19/34*
U.S. Cl. 800—205 13 Claims



1. A process for the incorporation of foreign DNA into chromosomes of dicotyledonous plants, comprising infecting the plants or incubating plant protoplasts with Agrobacterium bacteria, which contain plasmids, said Agrobacterium bacteria containing at least one plasmid having the vir-region of a Ti plasmid but no T-region, and at least one other plasmid having a T-region with incorporated therein foreign DNA but no vir-region.

4,940,839

METHOD OF TOMATO PROTOPLAST FUSION AND REGENERATION OF HYBRID PLANTS THEREFROM

Janis E. Bravo, and David A. Evans, both of Palmyra, N.J., assignors to DNA Plant Technology Corporation, Cinnaminson, N.J.

Filed Oct. 1, 1986, Ser. No. 914,130
Int. Cl.[5] A01H *1/04*; C12N *15/00, 5/00, 5/02*
U.S. Cl. 800—220 14 Claims



1. A method of producing a hybrid plant of a wild species of Lycopersicon and *Lycopersicon esculentum* which comprises fusing protoplasts of the wild and cultivated species and recovering hybrid plants capable of producing viable pollen from fused protoplasts under selective regeneration conditions, wherein the wild species is incapable of plant regeneration under said conditions.

4,940,840

CHITINASE-PRODUCING BACTERIA AND PLANTS

Trevor V. Suslow, Kensington, and Jonathan D. G. Jones, Berkeley, both of Calif., assignors to DNA Plant Technology Corporation, Mt. Kisco, N.Y.

Continuation-in-part of Ser. No. 593,691, Mar. 26, 1984, Pat. No. 4,751,081. This application Jul. 18, 1986, Ser. No. 888,033
Int. Cl.[5] A01H *1/04*; C12N *15/00*
U.S. Cl. 800—205 12 Claims

1. A method of inhibiting chitinous fungal pathogens comprising introducing into a dicotyledonous plant a DNA sequence encoding for chitinase activity to create a transformed plant under conditions whereby the transformed plant expresses chitinase in active form.

4,940,841

AQUEOUS TWO-COMPONENT PAINTS FOR ONE-COATING OF HIGH-RESISTANT FINISHING SHEETING AND CONTINUOUS EDGING

Karl-Heinz Dickerhof, Dreusteinfurt, Fed. Rep. of Germany, assignor to BASF Lacke & Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP88/00117, § 371 Date Aug. 16, 1989, § 102(e) Date Aug. 16, 1989, PCT Pub. No. WO88/06176, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 18, 1988, Ser. No. 382,689
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1987, 3705255
Int. Cl.[5] C08L *61/00*
U.S. Cl. 524—510 20 Claims

1. An aqueous, two component paint for one-coat coating of finishing sheeting and continuous edging, which comprises: paint component (I) containing

(A) 40 to 85% by weight of an aqueous dispersion of a self-crosslinking polyacrylate resin which contains as groups capable of bringing about self-crosslinking, acid amide derivative groups having the general structural formula

$$—CO—N(R^1)—CH(R^2)—OR^3,$$

wherein

R^1=a hydrogen atom or a $—CH(R^2)—OR^3$ group,

R^2=a hydrogen atom or a $—COOOR^4$ group,

R^3=a hydrogen atom or a hydrocarbon radical of 1 to 10 carbon atoms and R^4=an alkyl radical of 1 to 5 carbon atoms;

(B) 5 to 50% by weight of a melamine resin dispersed or dissolved in an aqueous medium;

(C) 5 to 40% by weight of a urea resin dispersed or dissolved in an aqueous medium;

(D) 5 to 30% by weight of a polyol component; and

(E) 0.01 to 5% by weight and a

curing component (II) comprising water-dilutable acid, components (I) and (II) being mixed prior to application in a ratio of 0.05 to 3 parts by weight of the curing component (II) to 100 parts by weight of the paint component (I).

4,940,842

METHOD FOR PREPARING SUPERCONDUCTING OXIDE FILMS BY SEEDING FORMATION AND HEAT TREATMENT

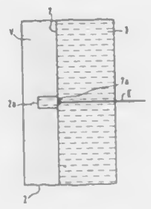
Ludwig Schultz, Bubenreuth, and Joachim Wecker, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 26, 1989, Ser. No. 302,827
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802349; Oct. 13, 1988, 3834964
Int. Cl.[5] B05D *5/12, 3/06*
U.S. Cl. 508—1 23 Claims

1. In a method for the preparation of at least one layer of a copper oxide based superconductor with a high transition temperature, comprising applying a layer on a predetermined

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substrate of a metal-oxide precursor of the components of the system with a structure still exhibiting faults with respect to a superconducting metal oxide phase to be formed and subsequently forming the desired superconducting metal-oxide phase using a heat treatment in an oxygen atmosphere, the improvement comprising forming a seed of the superconduc-



ting phase only in a locally limited region of the metal-oxide precursor at a boundary surface to the substrate by means of a solid-state reaction triggered by pulsed energy radiation, and then at least partially converting the preliminary product into the desired superconducting metal-oxide phase by heat treatment in the oxygen atmosphere at a predetermined temperature below 800° C.

4,940,843

METHOD OF PRODUCING NON-OXIDE CERAMIC SINTERED BODIES

Masakazu Adachi, Nagoya, and Kaname Fukao, Inuyama, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 20, 1989, Ser. No. 325,985
Claims priority, application Japan, Mar. 24, 1988, 63-68278
Int. Cl.[5] C04B *35/58*
U.S. Cl. 264—65 **6 Claims**

1. A method of producing a non-oxide ceramic sintered body, comprising calcining a non-oxide ceramic shaped body in an atmosphere having a partial oxygen pressure of 100 ppm~10000 ppm, machining the calcined body, and sintering the machined body.

4,940,844

POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blunt, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Continuation-in-part of Ser. No. 109,530, Oct. 19, 1987, Pat. No. 4,863,518. This application Apr. 4, 1988, Ser. No. 177,186
Int. Cl.[5] C08T *3/06;* **C08K** *3/00;* **C08L** *82/02, 3/00*
U.S. Cl. 521—116 **22 Claims**

1. The process for the production of polyol-alkali metal silicate emulsion which consist of mixing the following components:

(a) aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) a polyol, 25 to 100 parts by weight;

(c) an effective amount up to 25 parts by weight of an organic compound that will solidify the aqueous alkali metal silicate solution but not react with the alkali metal oxide and is selected from the group consisting of alcohols, polyalcohols, aldehydes, ketones, nitriles, epoxides, amines, amino compounds and mixtures thereof.

4,940,845

ESTERIFICATION PROCESS OF FATS AND OILS AND ENZYMATIC PREPARATION TO USE THEREIN

Yoshitaka Hirota; Yukitaka Tanaka, and Kuuichi Urata, all of Hasakimachi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 17, 1985, Ser. No. 735,421
Claims priority, application Japan, May 30, 1984, 59-110333; May 30, 1984, 59-110334
Int. Cl.[5] C12P *7/64;* **C12N** *9/20, 11/14*
U.S. Cl. 435—134 **11 Claims**

1. A process for the interesterification of fats or oils comprising the steps of:

(1) forming a mixture of a lipase, a carrier and a lipase activator selected from the group consisting of water, a dihydric lower alcohol and a trihydric lower alcohol;

(2) adding a fat or oil to said mixture and conducting hydrolysis of said fat or oil in order to form a hydrolysis product mixture comprising said lipase immobilized on said carrier, a decomposition product of said fat or oil and unhydrolyzed fat or oil;

(3) separating said unhydrolyzed fat or oil from said hydrolysis product mixture in order to form an enzymatic preparation;

(4) forming a second mixture comprising said enzymatic preparation, a fat or oil, a compound having a fatty acid moiety to be added to said fat or oil, and a solvent and interesterifying said fat or oil; and

(5) separating an interesterified product of said fat or oil from said second mixture.

4,940,846

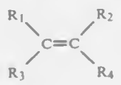
HYDROPHOBIC AND/OR ABHESIVE MATERIALS, REACTIVE DILUENTS

Rudolf Hinterwaldner, Kastanienstrasse 13, 8000 Munchen 90, Fed. Rep. of Germany

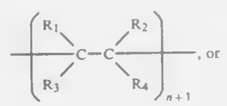
Continuation of Ser. No. 1,936, Jan. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 726,903, Apr. 18, 1985, abandoned. This application Jan. 26, 1989, Ser. No. 302,124
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329877; PCT Int'l Appl., Aug. 17, 1984, PCT/DE84/00169
Int. Cl.[5] B05D *3/02;* **C09K** *3/00*
U.S. Cl. 427—385.5 **18 Claims**

2. A method for rendering a substrate hydrophobic and abhesive comprising the steps of:

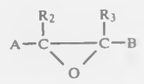
(a) applying to said substrate a curable composition comprising at least one compound of the formula



(i)



(ii)



(iii)

wherein R_1, R_2, and R_3 are each CH_3, R_4 is hydrogen, CH_3, or C_2H_5, A and B are independently hydrogen, CH_3, C_2H_5, or the formula (ii), and n is an integer between 0 to 20,000,000; and

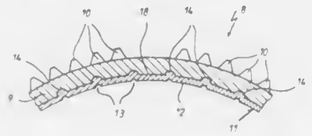
(b) curing the composition to form a coating on the substrate.

4,940,847

METHOD FOR MANUFACTURING A FRICTION RING HAVING A CONICAL OR CYLINDRICAL FRICTION SURFACE

Johann Gramberger, Wolfsegg, Austria, assignor to ZWN Zahnradwerk Neuenstein GmbH, Neuenstein, Fed. Rep. of Germany and Miba Sinter, Laakirchen, Austria

Filed Feb. 18, 1988, Ser. No. 157,646
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705660
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] B32B *18/00*
U.S. Cl. 156—89 **20 Claims**



1. A method for manufacturing a frictional ring having a circumferential frictional surface, the method comprising the steps of:

manufacturing a ring-shaped supporting member having a first circumferential supporting surface;

moulding and compressing a sintering powder to provide a ring-shaped sinter powder member having a second circumferential supporting surface complementary to said first circumferential supporting surface;

pre-sintering said sinter powder member to provide a self-supporting mechanically stable friction member;

pressing said friction member into said supporting member with said first and second circumferential supporting surfaces adjoining each other;

sintering said friction member with said second circumferential supporting surface onto said first circumferential supporting surface of said supporting member.

4,940,848

STABLE SOLUTIONS OF PREPOLYMERS OF THIODI(PHENYLCYANATE) AND LAMINATING METHOD EMPLOYING SAME

David A. Shimp, Prospect, Ky., assignor to Hi-Tek Polymers, Inc., Jeffersontown, Ky.

Continuation-in-part of Ser. No. 45,082, May 4, 1987, abandoned. This application Nov. 10, 1988, Ser. No. 269,862
Int. Cl.[5] C09J *5/02*
U.S. Cl. 156—307.4 **8 Claims**

5. In a process for preparing flame retardant laminates by the steps of:

(a) impregnating fibers with a solution of a prepolymer of a polycyanate ester;

(b) heating the impregnated fibers to remove solvent and to "B" stage the prepolymer, and;

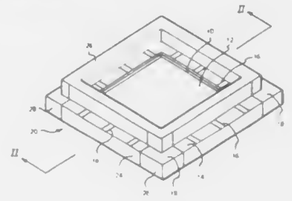
(c) heating under pressure one or more plies of the "B" staged impregnated fibers to cure the prepolymer, the improvement which comprises using a solution of a prepolymer of thiodi(phenylcyanate) in cyclopentanone solvent wherein the cyanate groups in the prepolymer are about 20 to about 65 percent trimerized and wherein about 25 to about 90 weight percent of the prepolymer is present in the total weight of the solution.

4,940,849

METALLIZING PASTE

Michael Morris, Sheffield, and John Vickers, Ulverston, both of England, assignors to Oxley Developments Company Limited, London, England

Division of Ser. No. 924,302, Oct. 23, 1986, Pat. No. 4,799,958. This application Sep. 9, 1988, Ser. No. 244,413
Claims priority, application United Kingdom, Oct. 25, 1985, 8526397
The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **7 Claims**



1. A package for a semi-conductor comprising a laminated stack of sheets of alumina on which there is screen printed, firstly, a generally rectangular attachment area for receiving a semi-conductor device and, secondly, a plurality of feed-through paths for enabling external electrical communication with said semi-conductor device from the outside of said package, said rectangular attachment area and said feed through paths being screen-printed with a metallizing paste comprising the combination of:

(a) tungsten powder;

(b) frit material consisting of alumina, cerium fluoride, bismuth oxide and silica of particle size less than 45 microns; and

(c) an organic vehicle system in an amount between 20–50% by weight of the paste.

4,940,850

COLOR SORTING APPARATUS

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1987, Ser. No. 129,712
Claims priority, application Japan, Feb. 14, 1987, 62-31858; Feb. 16, 1987, 62-33929
Int. Cl.[5] B07C *5/342*
U.S. Cl. 209—580 **12 Claims**

1. A color sorting apparatus for granular objects, comprising:

a plurality of sorting units arranged in parallel relation to each other, each of said sorting units including:

(i) a detecting position,

(ii) a hopper and feeding means for feeding the granular objects from the hopper toward said detecting position, the feeding means including an inclined chute having an upper end in communication with the hopper, a vertical cylindrical portion connected to and communicating with a lower end of the chute at a side wall of an upper part thereof and extending vertically downwardly below the lower end of the chute and downwardly terminating in a lower end, and a vibrator means for vibrating the chute and the cylindrical portion,

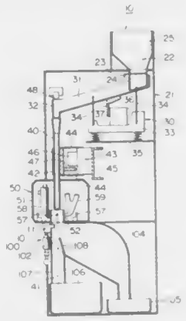
(iii) elongated tubular guide means arranged for receiving the granular objects from said lower end of the cylindrical portion of said feeding means and for guiding the granular objects therethrough, said guide means having an upper end of a diameter substantially the same as that of said lower end of the cylindrical portion and being in

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alignment therewith, and a longitudinal axis extending substantially vertically, the granular objects from the cylindrical portion being moved through and guided by said guide means so as to follow a predetermined path passing through said detecting position,

(iv) light source means for illuminating the granular objects passing through said detecting position,

(v) three detectors disposed at said detecting position at angular intervals of substantially 120 degrees around said predetermined path, each of said detectors comprising background means for providing a background and light-receiving means, positioned on the opposite side of said detecting position from said background



means, for receiving light reflected by and/or transmitted through the granular objects passing through said detecting position to generate a signal,

(vi) control circuit means, connected to said light-receiving means of the respective detectors, for generating an actuating signal responsive to the signal from at least one of said light-receiving means representing undesirable granular objects, and

(vii) deflecting means located below said detecting position and operative in response to the actuating signal from said control circuit means for deflecting the undesirable granular objects out of said predetermined path, the detecting positions of the respective sorting units being spaced from each other in a horizontal plane.

4,940,851

MEMBRANE FOR USE IN X-RAY MASK AND METHOD FOR PREPARING THE SAME

Akira Oyobe, Yokohama; Toshihiko Maeda, Tokyo; Hiroyuki Nakae, Kawasaki; Toshio Hirai, 4-91, Takamori 3-chome, Izumi-shi, Miyagi, and Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi, all of Japan, assignors to Research Development Corporation of Japan, Tokyo; Toshio Hirai, Izumi; Tsuyoshi Masumoto, Sendai and The Furukawa Electric Co., Ltd., Tokyo, all of, Japan

Filed Oct. 21, 1987, Ser. No. 111,996

Claims priority, application Japan, Oct. 31, 1986, 61-258337

Int. Cl.[5] **C03C** *03/11;* **C04B** *35/58;* **C03G** *15/08*

U.S. Cl. 501—56 **8 Claims**

8. A membrane for use in an X-ray mask, which membrane is an amorphous thin film having a thickness of from 0.5 to 10 micrometers, said film consisting of boron (B), silicon (Si) and nitrogen (N) and exhibiting B—N atomic bonding and Si—N atomic bonding, said film consisting of from 5 to 35 atomic % of B, from 15 to 35 atomic % of Si and from 50 to 60 atomic % of N, and wherein the atomic ratio

$$\frac{Si}{B + Si}$$

is from 0.2 to less than 1.0.

4,940,852

PRESSURE SENSITIVE ADHESIVE COMPOSITION

Milton Chernack, 399 June Pl., West Hempstead, N.Y. 11552, assignor to Milton P. Chernack, West Hempstead, N.Y.

Division of Ser. No. 77,007, Jul. 22, 1987, Pat. No. 4,808,639, which is a continuation of Ser. No. 886,303, Jul. 16, 1986, abandoned. This application Nov. 14, 1988, Ser. No. 270,961

Int. Cl.[5] **C08K** *9/10, 9/12*

U.S. Cl. 523—211 **6 Claims**

1. A liquid curable adhesive composition having a prolonged pot life comprising as a liquid curable resin resorcinol-formaldehyde resin; and a microencapsulated curing agent dispersed throughout said resin in an amount sufficient to cure said resin, said microcapsules being rupturable upon the application of pressure for releasing said agent and curing said adhesive composition; said resin and said curing agent being non-reactive with said microcapsules.

4,940,853

METHOD FOR GROWING TISSUE SPECIMENS IN VITRO

Herman H. Vandenburgh, 22 Chapin Rd., Barrington, R.I. 02806

Filed Jul. 22, 1988, Ser. No. 223,292

Int. Cl.[5] **C12N** *5/00;* **A01N** *1/00*

U.S. Cl. 435—240.23 **12 Claims**

1. A method of growing a tissue specimen in vitro, wherein said tissue specimen contains cells which are substantially aligned or require no alignment to simulate in vivo tissue, and said specimen is supported by an expandable support member so that it is expandable therewith comprising the steps of:

(a) maintaining said tissue specimen in a life support environment over the course of said method;

(b) providing sufficient nutrients to sustain said tissue specimen over the course of said method;

(c) maintaining the cells of said tissue specimen in an extracellular matrix sufficient to permit stretching said tissue specimen without causing damage thereto over the course of said method; and

(d) gradually and substantially continuously stretching said support member to stretch said tissue specimen by at least approximately 0.5% over the course of a 24 hr period while periodically repetitively stretching and releasing said support member to stretch and release said tissue specimen by at least approximately 0.01% for a total of at least 60 seconds during the course of said 24 hr period.

4,940,854

ORGANIC THIN FILM CONTROLLED MOLECULAR EPITAXY

Mark K. Debe, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 13, 1988, Ser. No. 219,004

Int. Cl.[5] **B32B** *9/04*

U.S. Cl. 428—411.1 **12 Claims**

1. A layered structure comprising in sequence:

(a) a substrate,

(b) coated on at least a portion of at least one surface of said substrate a first layer comprising a uniaxially oriented organic compound which is crystalline in three dimensions, and

(c) a second layer comprising a uniaxially oriented organic compound which is crystalline in three dimensions and which is epitaxial with said first layer, and

wherein the crystallographic b-axis of said layers is inclined on average at an angle in the range of 0 degrees to less than 90 degrees with respect to the surface normal direction of the substrate.

4,940,855

HERMETICALLY TIGHT GLASS-METAL HOUSING FOR SEMICONDUCTOR COMPONENTS AND METHOD FOR PRODUCING SAME

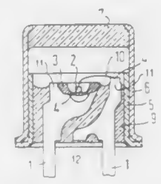
Guenther Waitl, Regensburg; Rolf Birkmann, Laaber, both of Fed. Rep. of Germany, and Ewald Schmidt, Vienna, Austria, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany and Electrovac GES.M.B.H., Vienna, Austria

Filed Sep. 20, 1988, Ser. No. 246,983

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1987, 3732075

Int. Cl.[5] **H01L** *23/02*

U.S. Cl. 174—52.5 **11 Claims**



1. Hermetically tight glass-metal housing for semiconductor components, comprising a base support for a semiconductor component in the form of a conducting strip having an upper portion and being suitable for functioning as a lead frame, a mounting pedestal disposed at said upper portion of said conducting strip, electrical contacts disposed at said upper portion of said conducting strip for electrical connections with the semiconductor component, a metal ring hermetically tightly glass sealed to but electrically isolated from said upper portion of said conducting strip, and a metal cap surrounding said metal ring, said metal ring forming a connecting element for a tight weld with said metal cap.

4,940,856

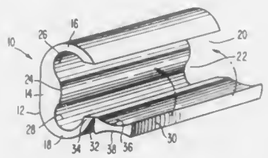
ELECTRICAL CONNECTOR

Leonard Bock, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Jun. 26, 1989, Ser. No. 371,269

Int. Cl.[5] **H01R** *4/18*

U.S. Cl. 174—94 R **12 Claims**



1. An electrical connector comprising a body member of substantially C-shaped configuration, said body member being defined by a main body portion, an upper arm, and a lower arm, said upper and lower arms each terminating in an end, an opening extending between said ends of said upper and lower arms, said opening communicating with the interior of said body member, said main body portion and said upper arm together defining an upper conductor receiving cavity, said main body portion and said lower arm together defining a lower conductor receiving cavity, each of said conductor receiving cavities being adapted to receive a conductor positioned longitudinally in said electrical connector, and at least one integral retaining member connected at one of its ends to the end of one of said ends of said arms, said retaining member being adapted to be manually rotated toward and through said opening so as to retain a conductor which is positioned in the conductor receiving cavity associated with the end of the arm to which said retaining member is secured.

11. A method of connecting a first conductor to a second conductor using an electrical connector characterized by an integral generally C-shaped body member having a main body portion and upper and lower arms, an opening extending between said upper and lower arms and communicating with the interior of said body member, said body member and said upper arm defining an upper conductor receiving cavity, said body member and said lower arm defining a lower conductor receiving cavity, a retaining member integrally and hingedly connected at one end to one of said ends of said arms, said method comprising the steps of:

(a) manually positioning a first conductor longitudinally within said conductor receiving cavity which has said end of its arm connected to said retaining member;

(b) manually rotating said retaining member toward and through said opening so that said retaining member secures said first conductor within said cavity;

(c) manually placing said connector on a second conductor so that said second conductor is longitudinally disposed with the conductor receiving cavity which does not have the end of its arm connected to the retaining member; and

(d) compressing said connector by means of a compression tool so as to bring said upper and lower arms together and closing said opening between said arms.

4,940,857

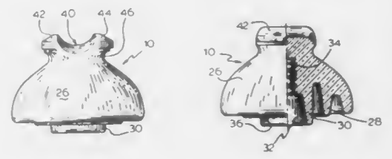
INSULATOR FOR OVERHEAD ELECTRIC WIRES

Pierre R. Giroux, 1515 Papineau Street, Trois-Rivières, Canada G8Z 4H7

Filed Aug. 15, 1989, Ser. No. 394,064

Int. Cl.[5] **H01B** *17/20*

U.S. Cl. 174—174 **5 Claims**



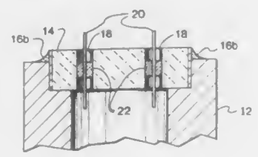
1. An electric wire insulator comprising a body made of electrically-insulating material having a top and a bottom end and forming a lower bell-shaped portion, an intermediate, annular, waist portion and a top saddle portion, said body having an axial bore opening at said bottom end for receiving an upright support pin, said top saddle portion having a transversely-curved wire-receiving groove substantially normal to said axial bore, said top saddle portion forming jutting parts on each side of said wire-receiving groove and laterally protruding from said waist portion, said jutting parts each having an external face facing away from said wire-receiving groove and provided with a partly-annular clamp-retaining groove, generally coaxial with said bore and of greater radius than the minimum radius of said waist portion, said clamp-retaining grooves adapted to positively retain the inturned flanges of a clamp having a web for overlying said wire-receiving groove and an electric wire supported therein, and downturned arms for embracing said jutting parts with said flanges extending from the lower ends of said arms.

4,940,858

IMPLANTABLE PULSE GENERATOR FEEDTHROUGH

William J. Taylor, Anoka; Douglas Weiss, Plymouth, and Joseph F. Lessar, Coon Rapids, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 18, 1989, Ser. No. 395,484
Int. Cl.[5] H01B 17/30
U.S. Cl. 174—152 GM 9 Claims



1. An improved hermetic, leak-proof, corrosion resistant electrical feedthrough, particularly adaptable to miniaturization and multi-pin construction and to IPG use, the feedthrough having substantially matched-expansion/compression joints and comprising:

at least one electrical lead wire consisting essentially of a metal or alloy selected from the group consisting of niobium, tantalum, tungsten, molybdenum and alloys thereof;

an alumina insulator positioned around a portion of the lead wire intermediate the ends thereof, the insulator including a niobium coated braze area electrically remote from the lead wire;

a ferrule consisting essentially of titanium or niobium positioned around the niobium area of the alumina insulator for receiving same in sealing relationship,

a braze consisting essentially of gold joining and sealing the ferrule to the insulator in the area of the niobium coating thereon, and

a body of fusible glass joining and sealing the lead wire to the insulator.

4,940,859

TELEPHONE CORD TAKE-UP REEL ASSEMBLY

Daniel Peterson, 152 Rivera Ct., Chula Vista, Calif. 92011

Filed Jul. 24, 1989, Ser. No. 384,162
Int. Cl.[5] H02G 11/02
U.S. Cl. 191—12.4 3 Claims



1. A telephone cord take-up reel asembly comprising:

a take-up reel housing having a base member and a cover, said base member having a vertically oriented rear wall with an aperture therein, said rear wall having an inner surface, said cover having a vertically oriented front wall, a bottom wall, laterally spaced side walls and a top wall having a cutout slot laterally spaced side walls and a top wall having a cutout slot formed therein;

a take-up reel having an inner hub with laterally spaced annular flanges extending radially outwardly therefrom;

a shaft having a first end and a second end, said shaft passing through the inner hub of said take-up reel;

the front of said cover having an inner surface having a bracket moounted thereon, said bracket having an aperture that receives the first end of said shaft;

a slip ring connector having a front end, a side wall and a rear end, said front end receives and supports the second end of said shaft, said rear end is mounted on the inner surface of the rear wall of said base member;

a metal reel spring formed in the shape of a coil having an inner end and an outer end, the inner end of said spring being connected to said shaft and the outer end of said spring being connected to the inner hub of said take-up reel;

a predetermined length of telephone cord having a first end and a second end, said telephone cord being wound on said take-up reel and having its first end threaded through the cutout slot in said cover;

a male telephone adapter mounted in the aperture in the rear wall of said base member and extending outwardly therefrom; and

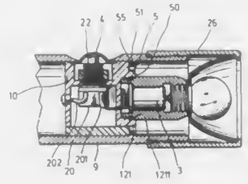
the second end of said telephone cord being connected to a female socket in the side wall of said slip ring connector.

4,940,860

WATERPROOF SWITCHING DEVICE

Shoei-Shuh Shiau, No. 10, Alley 1, Lane 551, Sec. 1, Wan-Shou Rd., Guei-Shan Hsiang, Taoyuan Hsien, Taiwan

Filed Jul. 7, 1989, Ser. No. 376,849
Int. Cl.[5] F21V 23/04; H01H 9/04
U.S. Cl. 200—60 11 Claims



1. A water resistant switching apparatus for an electric appliance having a circumferential shell defining a cavity containing electrical components to be protected from moisture, the circumferential shell having an opening allowing access to the cavity, the switching apparatus comprising:

a body having at least two parts having complementary sectioned profiles constituting sloping planes inclined longitudinally relative to an axis of the circumferential shell, the sloping planes on the two parts of the body having a conforming sloping relationship so that the two parts of the body sealingly engage each other, the body being disposed within the circumferential shell at the opening in the circumferential shell, the body including an outer peripheral wall having a circumferential dimension which is not substantially smaller than that of a space defined by an inner wall of the circumferential shell, the circumferential dimension of the outer peripheral wall of the body being adjustable by sliding one part of the body longitudinally with respect to the other part of the body, the first part of the body having a passage for allowing access to an electrical switching element;

an electrical switching element disposed in the body so that it can be actuated through the passage in the first part of the body, the electrical switching element having a movable surface for actuating the electrical switching element; and

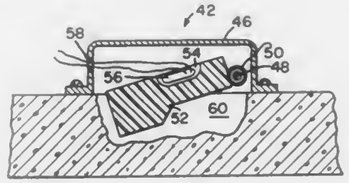
a sealing member covering the passage in the first part of the body and including an edge portion thereof which is interposed between the first part of the body and the inner wall of the circumferential shell, and covering said opening, the two parts of the body being disposed longitudinally with respect to each other so that the circumferential dimension of the outer peripheral wall of the body expands to sealingly engage the outer peripheral wall of the body with the inner wall of the circumferential shell, and to urge the first part of the body into sealing engagement with the edge portion of the sealing member, thereby compressing the sealing member between the first part of the body and the inner wall of the circumferential shell to effect a tight seal, so as to prevent an intrusion of moisture into the cavity.

4,940,861

LIQUID SHUT-OFF SYSTEM

Anthony B. Rizzuto, 10 Deerfield Dr., Florham Park, N.J. 07932

Division of Ser. No. 316,661, Feb. 28, 1989. This application Nov. 30, 1989, Ser. No. 443,340
Int. Cl.[5] H01H 35/18
U.S. Cl. 200—84 R 6 Claims



1. A liquid shut-off system, comprising:

a solenoid valve;

said valve having means for couplingly interpositioning thereof in a liquid conduit;

a source of electrical power;

power lines electrically coupling said solenoid valve with said power source; and

means interpositioned in at least one of said power lines for inhibiting and permitting a flow of electrical power between said source and said solenoid valve; wherein

said power flow inhibiting and permitting means comprises a float switch;

said switch comprises (a) a shell, (b) a pivot pin fixed in said shell and in traverse thereof, (c) a sleeve rotatably encompassing an intermediate portion of said pin, (d) a buoyant element coupled at one end thereof to said sleeve, and (e) a liquid switch carried by said element;

said power lines are coupled to said liquid switch;

said shell has an unapertured top, and a continuous wall depending from said top; and

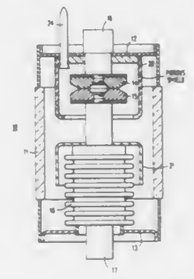
said wall has only (a) a pair of apertures in which said pin is fixed, and (b) a third aperture through which said power lines pass.

4,940,862

VACUUM INTERRUPTER WITH IMPROVED VAPOR SHIELD FOR GAS ADSORPTION

Vincent J. Santilli, Corning, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1989, Ser. No. 426,826
Int. Cl.[5] H01H 33/66
U.S. Cl. 200—144 B 11 Claims



1. A vacuum circuit interrupter including in combination:

an evacuated envelope;

a pair of separable contacts disposed within the evacuated envelope and separable to establish arcing;

a vapor condensing shield provided interiorly within said evacuated envelope to prevent the deposition of metallic particles emitted from the arcing region onto the envelope;

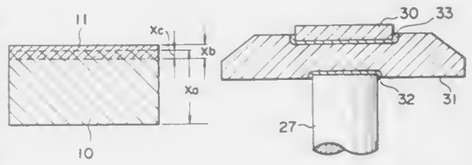
said vapor condensing shield consisting essentially of highly conductive metal in a structure having a porosity of at least about 10%.

4,940,863

VACUUM INTERRUPTER CONTACTS AND PROCESS FOR PRODUCING THE SAME

Hajime Fujita, Hachioji; Seishi Chiba, Yokohama; Tsutomu Okutomi, Yokohama; Kazuo Suzuki, Tokyo; Masami Idehara, Fuchu; Mitsutaka Honma, Tokorozawa, and Seikichi Takashima, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 25, 1989, Ser. No. 356,354
Claims priority, application Japan, May 27, 1988, 63-129640
Int. Cl.[5] H01H 33/66
U.S. Cl. 200—144 B 21 Claims



1. A vacuum breaker contact having a metal coated layer comprising at least one metal selected from the group consisting of Cu, Ag, Ni, Sn, In, Fe and alloys thereof, said metal coated layer having a thickness of 10 μm or less and being formed on at least a part of the surface of a breaker contact substrate having a predetermined shape.

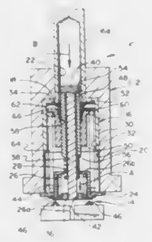
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4,940,864

FLOATING OPERATING AND RELEASE PAINT SWITCH ACTUATOR

Kenneth Aurand, Geneva, and James F. L. Blair, St. Charles, both of Ill., assignors to Saint Switch, Inc., St. Charles, Ill.

Filed Sep. 12, 1988, Ser. No. 243,506
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—342 12 Claims



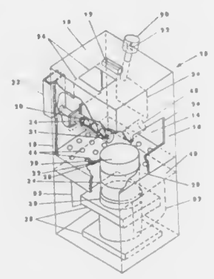
1. A switch actuator, comprising:
a base;
a plunger mounted for movement on the base;
electrical contact means mounted for movement relative to the base for establishing an electrical connection; and
actuator means mounted for movement on the base and operatively associated with the plunger for effecting movement of the electrical contact means to alter the state of the electrical connection, the actuator means including at least a pair of relatively movable members with wedge means therebetween, the wedge means being separate from the movable members and being effective to cause conjoint movement of the movable members.

4,940,865

MICROWAVE HEATING APPARATUS AND METHOD

Andrew J. Johnson, Boulder; Robert D. Petersen, Thornton, and Stephen D. Swanson, Brighton, all of Colo., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 25, 1988, Ser. No. 261,865
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 A 11 Claims



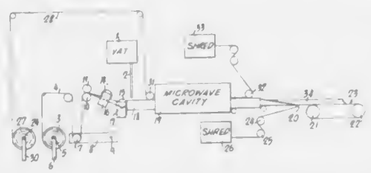
1. A microwave apparatus for heating materials, said apparatus comprising:
a microwave energy input for delivering microwave energy,
a resonant cavity for receiving microwave energy through said input, said cavity including a ceiling, walls, and a floor, said floor having a floor opening,
a microwave energy choke encompassing said floor opening of said resonant cavity,
a microwave energy reflective container for holding said materials to be heated, said container having a top portion at least as large as said floor opening of said resonant cavity, a floor portion, wall portions, and an interior, and capable of being positioned to bring said top portion level with said floor of said resonant cavity, and in substantial registration with said floor opening of said resonant cavity,
means for turning said container during exposure of said materials in said container to microwave energy, located outside of said cavity, and
means for lifting said container, located outside of said cavity,
whereby said means for turning is placed on said means for lifting, and said container is placed on said means for turning and lifted by said means for lifting to bring said top portion of said container level with said floor of said resonant cavity and in substantial registration with said floor opening of said resonant cavity, said choke encompassing said top portion of said container, and
whereby said floor portion and said wall portions of said container define a bottom floor portion and bottom wall portions of said resonant cavity and said interior of said container defines part of said resonant cavity, and
whereby said materials in said container are exposed to microwave energy, are melted, and are permitted to cool and solidify.

4,940,866

AN INSTALLATION FOR THE SHAPING OF A CONTINUOUS FOOD PRODUCT WHILE IT IS HARDENING

Francois Hauton, Villeneuve La Garenne; Frédéne Dumas, Lomme; Franck Bouttemy, Achicourt, and Christian Huc, Arras, all of France, assignors to OV'Action S.A., Lievin, France

Filed Dec. 22, 1988, Ser. No. 288,296
Claims priority, application France, Aug. 3, 1988, 8810764
Int. Cl.[5] H05B *6/78*
U.S. Cl. 219—10.55 A 11 Claims



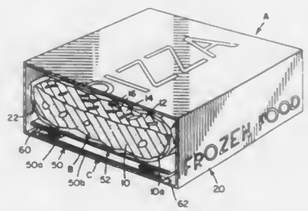
1. An installation for the shaping of a continuous food product while it is hardening as it moves from a feed zone to a demolding zone including in combination
a continuous flexible support band,
means for moving said support band,
means for guiding said moving support band along a first path portion extending in a first direction from said feed zone toward said demolding zone and along a second path portion extending in a second direction away from said demolding zone toward a discharge zone,
means for feeding the food product in the substantially liquid state to said band in said feed zone,
means for deforming the band and for keeping the band in deformed condition as it moves from the feed zone to the demolding zone,
means located between said feed zone and said demolding zone for heating said product to cause said product to harden
and means for moving hardened food product along a third path portion extending in said first direction from said demolding zone.

4,940,867

MICROWAVE COMPOSITE SHEET STOCK

Yigal Peleg, Solon, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Continuation of Ser. No. 239,600, Sep. 1, 1988, abandoned. This application Sep. 27, 1989, Ser. No. 414,647
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 5 Claims



1. A disposable receptacle for heating of a food article by microwave energy, said receptacle having at least a portion thereof formed from a sheet stock which is bent and folded into a configuration having a flat suface portion therof adapted to be in contact with said food article which rests thereon, said portion having an outer peripheral shape generally at least as large as the peripheral shape of said food article, said portion comprising;
a composite, laminated sheet stock for heating, principally by conduction, the surface of a food item in contact with said flat surface portion by microwave energy,
said sheet stock including a layer of microwave opaque metal foil adhered to a microwave susceptor sheet stock, said susceptor sheet stock having a dielectric support layer of paper board and a heater layer of microwave interactive material in the form of vacuum deposited aluminum on a plastic sheet, said heater layer having a surface resistivity of less than 16 ohms/inch and allowing passage of microwave energy as said heater layer is heated by microwave energy, said heater layer laminated between said paper board layer and said metal foil whereby said foil is heated by conduction from said susceptor sheet stock when said susceptor stock is subjected to direct microwave radiation by the energy source and reflective microwave radiation from said foil.

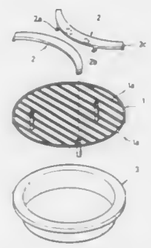
4,940,868

INSULATING FOOD ITEMS WRAPPED IN METALLIC FOIL FROM A GRID IN A MICROWAVE OVEN

Sanghoon Paik, Euiwang, and Seokwoo Hong, Suwon, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Aug. 30, 1989, Ser. No. 400,821
Claims priority, application Rep. of Korea, Dec. 30, 1988, 88-22127
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 20 Claims

1. An insulation plate for insulating a food item wrapped in a metallic foil from a grid in a microwave oven, comprising:
a pair of elongate elements having an arcuate shape, said elements being made of an electrically insulating and elastic material; and
support means adjoining said the term elongate elements for preventing said elements from moving edgewise or to center of a grid supporting said elements, and for preventing said elements from lifting upwards from the grid;
whereby said support means engages the grid and thereby prevents the insulation plate from separating from the



grid, while the insulation plate prevents the metallic foil from causing sparking within the microwave oven.

4,940,869

COMBINATION CONVECTION AND MICROWAVE OVEN HAVING IMPROVED MICROWAVE ENERGY DISTRIBUTION

Pierre Scholtes, Thionville, and Michel Hoffmann, Cattenom, both of France, assignors to Scholtes, Thionville, France

Filed Sep. 28, 1989, Ser. No. 413,906
Claims priority, application France, Sep. 29, 1988, 88 12759
Int. Cl.[5] F05B *6/72*
U.S. Cl. 219—10.55 F 13 Claims



1. A cooking oven having both conventional heating using rotating heat, and microwave heating, comprising:
a muffle having a front door, side walls, a lower sole plate and an upper vault, and a back wall;
a metallic distribution sheet adjacent the back wall defining a cavity with said back wall in which there is mounted a bladed turbine;
a shaft supporting said bladed turbine, passing through the back wall to be driven by an electrical motor on the opposite side of the cavity, said metallic sheet including orifices distributed so as to permit convection, forced by the turbine, of a stream of air drawn through the central part of the metallic sheet and expelled in the vicinity of its lateral sides; and,
at least one source of microwave frequency waves situated outside the muffle having a waveguide output which opens into the muffle through at least one exit iris, the waveguide exit iris being situated in the back wall of the muffle facing a passage provided in the metallic distribution sheet, whereby a wave flux exiting said iris is divided into a first portion which exits said facing passage and a second portion, said second portion being distributed in the cavity behind the metallic sheet, where the turbine of the fan is situated, striking the blades of said turbine, and exiting holes pierced in the metallic sheet toward the interior of the muffle.

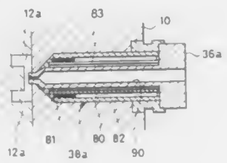
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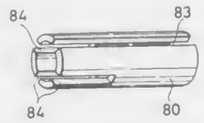
4,940,870

INDUCTION HEATING APPARATUS FOR INJECTION MOLDING MACHINE

Istuo Shibata, Hiratsuka, and Osamu Fukahori, Yokohama, both of Japan, assignors to JU-OH, Inc., Japan

Filed Feb. 22, 1989, Ser. No. 313,510
Claims priority, application Japan, Feb. 25, 1988, 63-42540
Int. Cl.[5] H05B *6/40*
U.S. Cl. 219—10.491 5 Claims





1. An induction heating apparatus for using a hot runner material in an injection molding machine, the induction heating apparatus comprising:

a substantially cylindrical body wound with a coil, the substantially cylindrical body made of a metal or alloy having low magnetic permeability, a first portion of the substantially cylindrical body being in contact with a mold, the substantially cylindrical body being provided with:

(a) at least one long slot which extends along the entire length of the substantially cylindrical body; and

(b) at least one short slot which extends from the first portion of the substantially cylindrical body toward a middle of the substantially cylindrical body.

4,940,871

METHOD OF RESTORING A WIRE ELECTRODE BROKEN DURING AN ELECTRIC DISCHARGE MACHINING OPERATION

Naoki Watanabe, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 317,705
Claims priority, application Japan, Mar. 1, 1988, 53-48117
Int. Cl.[5] B23H *7/06*
U.S. Cl. 219—69.12 7 Claims



1. A method of restoring a wire electrode broken during an electric discharge machining operation in which a workpiece and said wire electrode are moved relative to each other with a machining voltage applied therebetween to machine said workpiece along a predetermined contour, comprising the steps of:

detecting that said wire electrode is broken during the electric discharge machining operation;

moving said workpiece to an initial machining point to restore said wire electrode broken;

setting a new wire electrode to carry out further machining operation; and

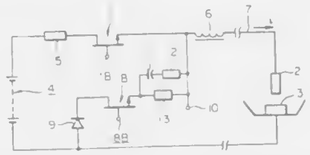
applying a machining voltage between said new wire electrode and said workpiece; moving said workpiece while electric discharges are caused between said new wire electrode and said workpiece from said initial machining point to said wire breaking point through a groove formed in said workpiece; continuing to machine the workpiece from said wire breaking point.

4,940,872

ELECTRIC DISCHARGE MACHINING CIRCUIT

Shoji Futamura, Kawasaki, Japan, assignor to Institute of Technology Precision Electrical Discharge Works, Kanagawa, Japan

Filed Jan. 13, 1988, Ser. No. 143,735
Claims priority, application Japan, Jan. 16, 1987, 62-7675
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.13 5 Claims



1. A discharge machining apparatus having a main switching means that performs an ON-OFF operation based on a control signal and carries out discharge machining by applying voltage across an electrode and a workpiece via a power feeding path in accordance with the ON-OFF operation of said main switching means, comprising an energy dissipating circuit which dissipates the energy stored in an inductor provided in said power feeding path or an inductance component of said power feeding path by causing said stored energy to flow in the form of a current is connected in parallel with a discharge gap between said electrode and said workpiece; said energy dissipating circuit having at least one transistor switched on at or prior to the time the main switching means switches off the voltage application and said at least one transistor switching off after a predetermined period of time from the time the switching means switches off the voltage application, said predetermined period of time being shorter than the off operation time period of the switching means between voltage applications; the resistance value of an equivalent resistor provided in said energy dissipating circuit for causing an energy dissipating current being set so as to increase with time within said predetermined period of time.

4,940,873

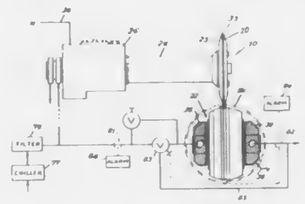
ROLLER ELECTRODES FOR ELECTRIC-RESISTANCE WELDING MACHINE

Joseph R. Davies, 220 West Haven, New Lenox, Ill. 60451

Continuation-in-part of Ser. No. 53,375, May 22, 1987, Pat. No. 4,780,589. This application Mar. 28, 1988, Ser. No. 173,764
The portion of the term of this patent subsequent to Oct. 25, 2005, has been disclaimed.
Int. Cl.[5] B23K *11/06*
U.S. Cl. 219—84 38 Claims

1. In a roller electrode adapted for use in electric resistance seam welding apparatus to weld overlapped edges of a metal

blank, the roller electrode having stator and rotor components, the rotor and stator components having annular surfaces spaced apart across thin gaps, bearing means for mounting said rotor to rotate relative to said stator with movement via said gaps, and a conductive liquid simultaneously contacting said



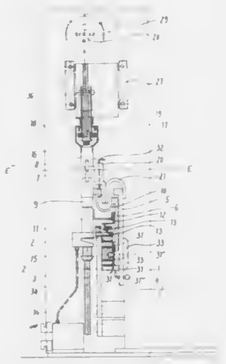
annular surfaces to electrically conduct a welding current across said gaps between the components, the improvement comprising the combination of said conductive liquid being of a composite eutectic mixture of gallium (Ga), indium (In), tin (Sn) and zinc (Zn), by weight, being substantially 61% Ga, 25% In, 13% Sn, and 1% Zn.

4,940,874

CONVERTIBLE SINGLE OR DOUBLE SPOT WELDING MACHINE

Gerhard Ritter; Klaus Ritter; Rudolf Scherr, and Kurt Jursche, all of Graz, Austria, assignors to EVG Entwicklungs-u.Verwertungs-Gesellschaft m.b.H., Graz, Austria

Filed Mar. 22, 1989, Ser. No. 326,915
Claims priority, application Austria, Mar. 31, 1988, 860/88
Int. Cl.[5] B23K *11/10*
U.S. Cl. 219—87 16 Claims



1. An electrical resistance spot welding machine for single or double spot welding, for producing grids or bar grates, comprising

means for defining a welding plane and for advancing work material in a longitudinal direction in said plane;

rows of first and second electrodes on respective ones of first and second opposite sides of said plane, said rows extending parallel to said plane in a direction transverse to said longitudinal direction;

at least one welding transformer on said first side of said plane;

first electrically conductive removable connections from a first output terminal of said welding transformer to said first row of electrodes;

second electrically conductive removable connections, passing through said plane, from a second output terminal of said welding transformer to said second row of electrodes, and

removable current bridges sized to electrically connect selective pairs of said second electrodes,

wherein for single spot welding, opposing first and second electrodes are respectively connected to said first and second terminals of said welding transformer by said first and second electrically conductive removable connectors, and

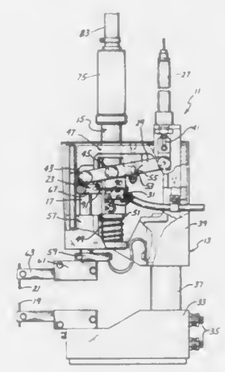
wherein for double spot welding, said selective pairs of second electrodes are electrically connected to each other by means of said current bridges, and each electrode of selective opposing pairs of said first electrodes is respectively connected to said first and second terminals of said welding transformer.

4,940,875

FORCE LIMITING WELD HEAD

William H. Hill, Pala, and Joseph E. Donner, Vista, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 22, 1989, Ser. No. 313,932
Int. Cl.[5] B23K *11/30*
U.S. Cl. 219—89 10 Claims



1. In a welding apparatus including a supporting structure, a movable member and an output member mounted for movement on the supporting structure, a first electrode mounted on the supporting structure, a movable electrode driven by the output member, coupling means for drivingly coupling the output member to the movable member to move the movable electrode toward the fixed electrode whereby a workpiece can be contacted by the electrodes and can arrest movement of the output member and for allowing the movable member to move relative to the output member to overtravel after movement of the output member is arrested by the workpiece, means for driving the movable member to thereby drive the output member and the movable electrode, and means responsive to relative movement between the movable member and the output member for energizing the electrodes, the improvement comprising:

said coupling means including means defining a variable-volume chamber, a fluid medium in said chamber and means responsive to the overtravel for varying the volume of the chamber.

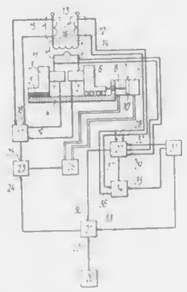
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4,940,876

METHOD OF FLASH-BUTT RESISTANCE WELDING OF A BATCH OF LIKE PARTS IN PAIRS

Sergei I. Kuchuk-Yatsenko, ulitsa P.Osipenko, 17, kv. 18.; Mikhail V. Bogorsky, ulitsa Ozernaya, 30, kv. 120.; Daniil I. Belyaev, ulitsa Cheshskaya, 4, kv. 141.; Andrei V. Bondaruk, bulvar Koltsova, 17-G, kv. 26., and Nikolai D. Goronkov, ulitsa Chelyabinskaya, 11, kv. 38., all of Kiev, U.S.S.R.

PCT No. PCT/SU87/00178, § 371 Date May 15, 1989, § 102(e) Date May 15, 1989, PCT Pub. No. WO89/02333, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 9, 1988, Ser. No. 368,306
Claims priority, application U.S.S.R., Sep. 15, 1987, 4305525
Int. Cl.[5] B23K *11/04*
U.S. Cl. 219—110 1 Claim



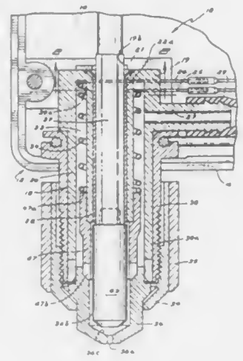
1. A method of flash-butt resistance welding of a batch of like workpieces in pairs comprising the steps of placing a pair of workpieces (1,2) into a welding machine to form a welding circuit, settig an appropriate value of short-circuit impedance of the welding circuit for a first pair of workpieces (1,2) connecting the welding circuit to a power supply, and flashing off said pair of workpieces, while continuously monitoring the resistance between welded workpieces (1,2) during flashing of the first and subsequent pairs of welded workpieces (1,2), comparing the actual resistance between welded workpieces (1,2) for the first pair of welded workpieces (1,2) with the initially set short-circuit impedance of the welding circuit, and, in order to maintain the resistance between the wielded workpieces (1,2) on a desired level, drawing together or moving apart the first pair of welded workpieces (1,2) as a function of the resultig resistance obtained through the comparison of the actual resistance between the welded workpieces (1,2) with the initially set short-circuit impedance of the welding circuit, and, finally, upsetting the workpieces (1,2) being welded together, characterized by that the method additionally comprises the steps of monitoring the welding current during upsetting process of each pair of workpieces and, when the welding current reaches a constant level, determining a more exact short-circuit impedance of the welding circuit through the use of said current and voltage measured simultaneously with said welding current, and comparing, during welding of each sunsequent pair of workpieces (1,2), the actual resistance between workpieces (1,2) with the short-circuit impedance of the welding circuit, which had been specified during the flashing off of each preceding pair of workpieces (1,2), and drawing together and moving apart said workpieces (1,2) during flashing off of each pair of such workers (1,2) as a function of the resulting resistance obtained through the comparison of the actual resistance between the workpieces (1,2) being welded and the short-circuit impedance of the welding circuit, which is specified during the weldinrg of each preceeding pair of workpieces (1,2).

4,940,877

PARTS IN PLACE TORCH STRUCTURE

Daniel M. Broberg, Edina, Minn., assignor to Century Mfg. Co., Minnesota

Filed Sep. 15, 1989, Ser. No. 407,873
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.5 9 Claims



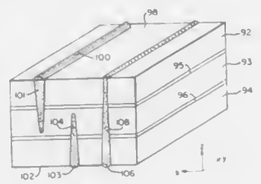
1. A plasma torch, comprising
a torch housing,
a pair of electrical contacts in said housing in different planes, said contacts being included in an operating circuit,
an electrode supported in said housing,
a nozzle in operative association with the lower portion of said electrode,
nozzle supported means forming an upward extension thereof,
resilient means, disposed between said last mentioned means and said contacts, being of such a length as to require being urged by said last mentioned means to the extent of becoming deformed to engage both of said contacts,
whereby in the absence of said nozzle supported means or said nozzle, said resilient means does not engage said contacts, thus making said torch inoperative.

4,940,878

ANISOTROPIC RESISTIVITY MATERIAL AND METHOD OF MAKING SAME

Bobby D. McKee, San Jose, and Alvin H. Nakagawa, Campbell, both of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 15, 1988, Ser. No. 284,881
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 4 Claims



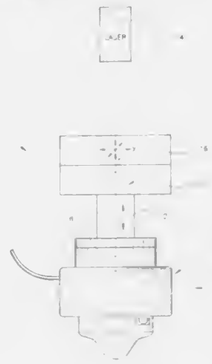
1. An anisotropic resistivity body made by the process of:
(A) providing a base member, of a first metal, and having first and second surfaces;
(B) placing a second metal on a first surface of said base member, said second metal having a different composition than said first metal;
(C) making multiple passes over said surface with a high energy beam so as to cause, on each said pass, an alloyed zone to penetrate said base member from said first toward said second surface; and
(D) removing an excess metal, including all of said second metal, on the surfaces of said base member so as to form a body having alternate zones of different resistivity.

4,940,879

CUTTING HEAD FOR USE IN A NON-CONTACT CUTTING PROCESS

Avner De-Swaan, Ramat Hasharon, Israel, assignor to F.I.A. Futurologie Industrielle Automation GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 11, 1989, Ser. No. 419,816
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 23 Claims



1. A cutting head for use in a non-contact process of cutting a work piece that is attractable by a magnetic force, said cutting head comprising:
a cutting tip;
means for sensing proximity of a work piece to said cutting tip; and
selectably operable magnetic means for attracting a slug formed from the work piece, said magnetic means being arranged within said cutting head so as not to interfere with the operation of said means for sensing.

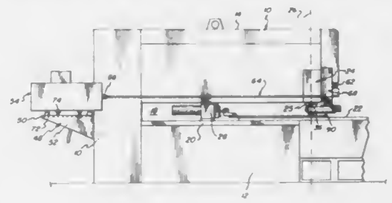
4,940,880

COMBINATION PUNCH PRESS AND LASER CUTTING MACHINE WITH LASER BEAM GENERATOR MOUNTED THEREON

Hans Klingel, Moeglingen, and Juergen Doettling, Ditzingen, both of Fed. Rep. of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Sep. 11, 1989, Ser. No. 405,476
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 33 Claims

1. A combination punch press and laser cutting machine comprising:
(a) a substantially rigid frame of generally C-shaped configuration with an elongated base, an elongated head extending in spaced relationship thereabove, and a vertically extending neck therebetween at the rearward end of the frame, said neck defining the vertical height of the open throat between the head and base, said frame having a platform extending rearwardly from said neck and providing a horizontal surface at said neck;
(b) a ram assembly in said head adjacent its forward end for reciprocation of a ram relative to said base to punch workpieces disposed on said base, the axis of reciprocation defining the workstation;
(c) a laser cutting assembly mounted on said forward end of said head including a cutting head having a nozzle at its lower end, a lens for focusing the laser beam exiting said nozzle, and a mirror spaced above said nozzle for directing the laser beam through said nozzle;
(d) a laser beam generator on said platform and having an exit aperture adjacent one side of said neck;



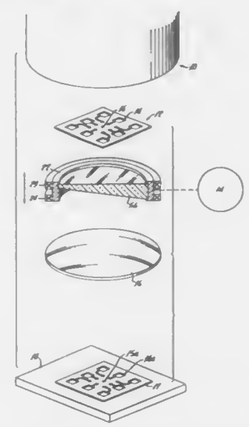
(e) vibration isolating means disposed between said platform and said laser beam generator; and
(f) a laser beam transport assembly including an elongated enclosure extending forwardly from said laser beam generator exit aperture along the side of said frame to said forward end of said head and including at the forward end thereof a beam redirection assembly having a series of mirrors effecting a redirection of the laser beam, in both vertical and horizontal directions and in two different planes, to said mirror of said cutting head.

4,940,881

METHOD AND APPARATUS FOR EFFECTING SELECTIVE ABLATION OF A COATING FROM A SUBSTRATE, AND CONTROLLING THE WALL ANGLE OF COATING EDGE PORTIONS

Ronald E. Sheets, Santa Ana, Calif., assignor to Tamarack Scientific Co., Inc., Anaheim, Calif.

Filed Sep. 28, 1989, Ser. No. 413,778
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 26 Claims



1. A method of controlling the wall angle of an edge region of a substance being ablated by pulses from an excimer laser, said method comprising:

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(a) providing an excimer laser system including an excimer laser, a mask, a projection lens, and a workpiece to be ablated, and

(b) substantially continuously displacing the beam from said laser, at a region between said mask and said workpiece, in such manner that the displaced beam strikes said workpiece and progressively ablates portions thereof corresponding to the shape of openings in said mask, and in such manner that the wall angle at the edge of an ablated region of said workpiece is determined by said displacement.

4,940,882

WELDING FLUX AND WELDING ELECTRODE

Thomas O. Bates, Huntington, W. Va., assignor to Ioco Alloys International, Inc., Huntington, W. Va.

Filed Apr. 27, 1989, Ser. No. 343,630

Int. Cl.[5] B23K *35/22*

U.S. Cl. 219—146.22 **15 Claims**

7. A welding electrode having a core wire containing about 25 to 35% nickel, up to about 1.5% iron, up to about 0.12% carbon, up to 3% manganese, up to about 1% titanium, up to about 1% silicon, up to about 0.75% aluminum, up to about 0.03% boron, up to about 1% cobalt and the balance copper and impurities, the core wire having a flux coating consisting essentially of about 5 to about 35% calcium carbonate, about 20 to about 40% cryolite, about 10 to about 30% titanium dioxide, about 1 to about 5% aluminum powder, about 2 to about 8% manganese powder, about 2 to about 8% calcium fluoride, up to about 8% lithium carbonate about 2 to about 7% bentonite, about 1 to about 5% of an arc agent containing 73–77% TiO_2, 19–21% K_2O and about 1% ZrO_2 and about 5 to about 12% nepheline syenite.

4,940,883

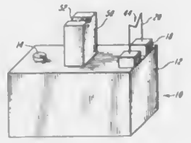
WINDOW BURNER FOR POLYMER COATED CAPILLARY COLUMNS

Barry L. Karger, Newton, and Robert J. Nelson, Boston, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Apr. 24, 1989, Ser. No. 342,989

Int. Cl.[5] H05B *3/02*

U.S. Cl. 219—200 **16 Claims**



1. A window burner for creating a window of uniform dimension in a polymer coated capillary column by selective removal of a predetermined portion of the polymer coating thereof, comprising:

circuit means for generating a predetermined, controlled current for a predetermined period of time; and

resistive wire means electrically coupled to said circuit means and configured for mounting of the polymer coated capillary column for selectively burning off the predetermined portion of the polymer coating of the mounted capillary column to create the window of uniform dimension therein, said resistive wire means having a predetermined gauge to provide the uniformity of dimension among windows created by said window burner; and wherein

said predetermined, controlled current flows through said resistive wire means of said predetermined gauge for said predetermined period of time to heat said resistive wire means to a predetermined temperature to selectively burn off the predetermined portion of the polymer coating of the mounted capillary column; and further wherein

said predetermined gauge of said wire resistive means and said predetermined, controlled current flowing for said predetermined period of time in combination define the predetermined portion of the polymer coating selectively burned off of the mounted capillary column wherein said window burner reproducibly creates windows of uniform dimension.

4,940,884

DUAL BUS BAR ARRANGEMENT FOR AN ELECTRICALLY HEATABLE TRANSPARENCY

Frank H. Gillery, Hampton Township, Allegheny County, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

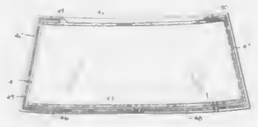
Continuation-in-part of Ser. No. 138,008, Dec. 28, 1987, Pat. No. 4,820,902. This application Dec. 19, 1988, Ser. No. 286,016

The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.

Int. Cl.[5] H05B *3/84, 3/26;* **E06B** *7/12;* **B60J** *1/20*

U.S. Cl. 219—203 **17 Claims**





1. An electrically heated transparency comprising: a transparent sheet, a transparent electroconductive coating on a major surface of the sheet, a first bus bar in contact with the coating along a first edge portion of the sheet, a second bus bar in contact with the coating along a second edge portion of the sheet opposite the first edge portion, at least two electroconductive extensions extending from the second bus bar to at least one terminal area at an edge region removed from the second edge portion, the extensions being electrically insulated from the coating.

4,940,885

HEATING APPARATUS INCLUDING ULTRA-VIOLET PORTION

Wendall R. Challenger, 1838 Princess Dr., Longmont, Colo. 80501

Continuation-in-part of Ser. No. 96,535, Sep. 15, 1987. This application Jul. 1, 1988, Ser. No. 214,661

Int. Cl.[5] H05B *1/00, 3/02;* **F24H** *7/00*

U.S. Cl. 219—365 **25 Claims**

1. A heating system using heat transfer fluid, comprising:

means for storing heat transfer fluid, when such fluid is present in such a system;

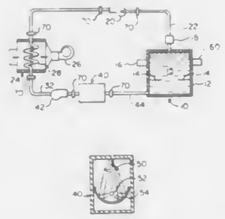
primary means for heating heat transfer fluid to a preselected temperature, said primary heating means being associated with said heat transfer fluid storing means;

means for utilizing heated heat transfer fluid;

means for transporting heated heat transfer fluid from said heat transfer fluid storing means to said heat utilizing means, whereby, heat energy from heated heat transfer fluid when such fluid is present in such system is transferred to an area external to the heating system, and, as a result of which the heat transfer fluid is cooled;

means for transporting cooled heat transfer fluid, when present, from said heat utilizing means back to said heat transfer storage means;

secondary means for heating fluid, when present, after such fluid is cooled at said heat utilizing means and prior to the return of such cooled fluid to said storage means, said



secondary heating means being located intermediate said heat utilizing means and said heat transfer storage means and in fluid series with said means for transporting cooled heat transfer fluid from said heat utilizing means back to said heat transfer storage means; whereby such fluid, when present and cooled at said heat utilizing means, is preheated before it is returned to said heat transfer fluid storing means.

4,940,886

ELECTRIC HOTPLATE

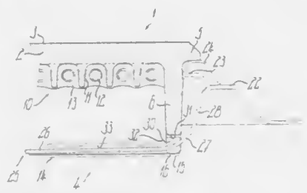
Robert Kicherer, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Mar. 29, 1989, Ser. No. 293,960

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1988, 8805230[U]

Int. Cl.[5] H05B *3/70*

U.S. Cl. 219—457 **21 Claims**



4. An electric hotplate comprising:

a hotplate body providing a cooking surface and an underside remote from said cooking surface, said underside defining different height extensions of said hotplate body, the hotplate body providing a radially outer region;

at least one engagement member for a holding element for securing the hotplate with respect to a cooker plate, wherein said hotplate body has a lower height extension in at least a part of said radially outer region than in a region radially inside of said radially outer region, said hotplate body being provided on said underside with at least one reception depression for a substantially surface-flush reception of at least part of the holding element.

4,940,887

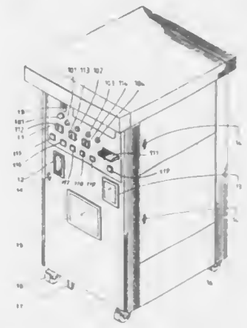
AUTOMATIC MAIL HANDLING AND POSTAGE VENDING MACHINE

Wu Sheng-Jung, 389, Sec. 5, Nanking East Rd., Taipei

Filed Oct. 20, 1986, Ser. No. 920,648

Int. Cl.[5] G06F *15/21, 15/30*

U.S. Cl. 235—381 **17 Claims**



1. An automatic mail item handling device comprising a housing and a microcomputer controller, said housing having an inlet for a mail item;

a mail item weighing means for determining the weight of the mail item located adjacent to the inlet and operatively connected to the microcomputer controller;

a first conveying means for conveying a mail item from the inlet to the weighing means, said conveying means being located adjacent to the weighing means and being operatively connected to the microcomputer;

a return means operable by a user for causing return of the mail item to the user said return means comprising a button operatively connected to the microcomputer;

a selecting means to enable a user to select a desired mail classification, said selecting means being operatively connected to said microcomputer;

a calculating means for calculating appropriate postage due for the mail item in dependence upon weight and mail classification thereof, said calculating means being contained within said microcomputer;

an indicating means for indicating to the user the weight of and postage due for the mail item, said indicating means being mounted on said housing;

a payment receiving means for receiving a payment taken from a user the payment receiving means being mounted on the housing and operatively connected to a verifying means;

the verifying means for verifying said payment token against the postage due for the mail item, said verifying means being operatively connected to said microcomputer;

a postage marking means for marking the mail item, the the postage marking means being operatively connected to said microcomputer;

a second conveying means for conveying the mail item from said weighing means to said postage marking means, said second conveying means being located adjacent to said postage marking means and being operatively connected to said microcomputer;

a sorting means for sorting mail items in accordance with said mail classification, said sorting means being connected to the postage marking means, said sorting means being operatively connected to said microcomputer;

wherein said first conveying means comprises means for automatically adjusting for mail item thickness and wherein the mail item weighing means comprises a roller mounted on a swing plate disposed above an electronic weigher, a linkage being attached to the swing plate for

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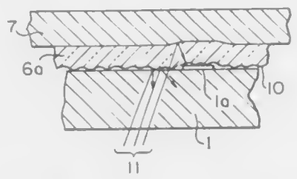
moving the swing plate from a first position to a second position, the first position for receiving a mail item, the second position for weighing a mail item, the linkage being activated by a solenoid driven by the microprocessor.

4,940,888

DIRECT-CONTACT-TYPE IMAGE SENSOR AND IMAGE SENSOR ASSEMBLY

Tatsuya Nagata, Ibaraki; Takehiko Yamada; Eiichi Hara, both of Chigasaki, and Michihiro Watanabe, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1989, Ser. No. 321,881
Claims priority, application Japan, Mar. 14, 1988, 63-58310
Int. Cl.[5] H01L *27/14*; H01J *40/14*
U.S. Cl. 250—208.1 **21 Claims**



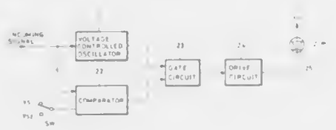
1. A direct-contact-type image sensor comprising; a plurality of sensor elements; a sensor element mounting substrate, having a surface on which the plurality of sensor elements are mounted and which is light-transmissive at least in the vicinity of portions of the sensor element mounting substrate where said sensor elements are mounted; and an electroconductive transparent film disposed on a surface of said substrate which is adjacent said sensor elements, having a surface facing the sensor elements, the film being disposed in such a manner as to cover the plurality of said sensor elements, said surface of said film facing the sensor elements being formed with fine irregularities at least over said sensor elements and at portions in the vicinity of said sensor elements.

4,940,889

METHOD AND APPARATUS FOR VISUAL INDICATION OF OPTICAL ALIGNMENT OF PHOTOELECTRIC SWITCH

Sboichi Ono, 12-8, Takashima 1-chome, Suwa-shi, Nagano-ken, and Atsuhito Kobayashi, 6-2, Honmachi 1-chome, Okaya-shi, Nagano-ken, both of Japan

Filed Aug. 15, 1989, Ser. No. 394,130
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **8 Claims**



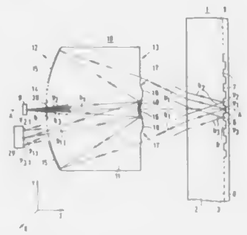
1. An alignment system for aligning an optical axis of a light beam with a light receiving element, comprising:
- means for producing a light reception signal having an amplitude related to an amount of light received by said light receiving element;
- a light;
- means for flashing said light at a frequency related to said amplitude;
- means for halting said flashing when said amplitude exceeds a reference voltage; and
- said reference voltage being a value that is exceeded by said amplitude when alignment of said optical axis with said light receiving element is substantially optimum.

4,940,890

OPTICAL SCANNING DEVICE, MIRROR OBJECTIVE SUITABLE FOR USE IN SAID DEVICE AND OPTICAL WRITE AND/OR READ APPARATUS PROVIDED WITH SAID DEVICE

Willem G. Opheij, and Josephus J. M. Braat, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 326,587, Mar. 21, 1989, abandoned. This application Dec. 5, 1989, Ser. No. 449,294
Claims priority, application Netherlands, Dec. 13, 1988, 8803055
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **15 Claims**



1. A scanning device for optically scanning an object, which device comprises a radiation source supplying a scanning beam, a mirror objective for focusing the scanning beam to a scanning spot and a radiation-sensitive detection system for receiving radiation from the object to be scanned, characterized in that the mirror objective comprises a radiation-transparent body having a first surface facing the radiation source and a second surface remote from the radiation source, said first surface having a first radiation window which is located symmetrically around the optical axis of the mirror objective and having a first reflector surrounding said window, said second surface having a second reflector which is located symmetrically around the optical axis and a second radiation window surrounding said second reflector, in that the first radiation window supports a first diffraction element for forming a scanning beam and two auxiliary beams from the radiation beam supplied by the radiation source and in that the second reflector supports a second diffraction element for diffracting a part of radiation reflected by the object to be scanned and again passing through the mirror objective towards the radiation-sensitive detection system and for deforming the diffracted scanning beam in such a way that a focus-error signal can be derived therefrom by means of the detection system.

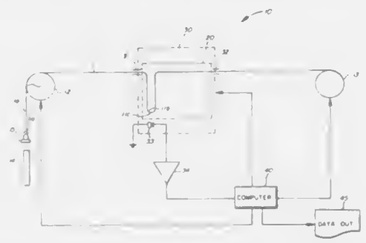
4,940,891

AUTOMATED SYSTEM FOR MEASURING THE STRENGTH OF OPTICAL FIBERS

Howard E. Rast, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1989, Ser. No. 397,074
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.15 **8 Claims**

1. An apparatus for rapidly and automatically measuring the strength distribution in an optical fiber having a core for transmitting light comprising:
- means optically coupled to said optical fiber for projecting light longitudinally into said core;
- means disposed adjacent said optical fiber for sensing light emanating from breaks in portions of said core;
- means disposed to receive said optical fiber therein for initiating said breaks in said fiber;



- means connected to said optical fiber for feeding said portions of said optical fiber through the initiating means; and
- means operatively connected to the light sensing means, the initiating means and the feeding means for actuating the automatic feeding of said portions by said feeding means and the initiating of said breaks in said optical fiber by said initiating means in response to the sensing of said light emanating from each of said breaks in said fiber.

4,940,892

OPTICAL DISCONTINUITY MONITOR SYSTEM

David W. Fisher, Schuylkill Haven, and Eric T. Frishkorn, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 5, 1989, Ser. No. 333,513
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.24 **9 Claims**



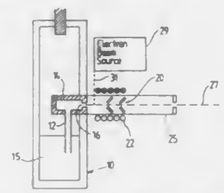
1. A system for monitoring optical power transmitted through a fiber optic connector subjected to environmental stress comprising:
- converting means for converting fluctuations in the optical power transmitted through said connector into a fluctuating electronic signal,
- comparison means for determining when said electronic signal exceeds a high voltage limit or falls below a low voltage limit and for producing output signals indicative of the time periods for which said electronic signal exceeds said high voltage limit or falls below said low voltage limit, and
- duration measuring means responsive to said output signals for determining if said electronic signal exceeds said high voltage limit or falls below said low voltage limit for a time period having a duration in excess of a predetermined duration.

4,940,893

METHOD AND APPARATUS FOR FORMING COHERENT CLUSTERS

Shui-Yin Lo, Sherman Oaks, Calif., assignor to Apricot S.A., Luxembourg, Luxembourg

Filed Mar. 18, 1988, Ser. No. 169,648
Int. Cl.[5] H05H *3/00*
U.S. Cl. 250—251 **24 Claims**



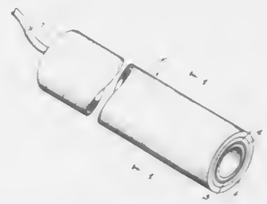
1. A method for forming coherent clusters by expansion comprising: generating clusters and causing at least some of the clusters to become coherent by manipulating temperature and pressure conditions; exposing said clusters prior to about the time of creation of said clusters by expansion, to particles which cause said clusters to become charged, said exposing being done in a manner that does not destroy said clusters nor the coherence of said clusters.

4,940,894

ELECTRODE FOR A CORONA DISCHARGE APPARATUS

Ronald W. Morters, Waukesha, Wis., assignor to Enercon Industries Corporation, Menomonee Falls, Wis.

Continuation-in-part of Ser. No. 131,118, Dec. 10, 1987, abandoned. This application Jan. 12, 1989, Ser. No. 296,457
Int. Cl.[5] H01T *14/00*
U.S. Cl. 250—324 **22 Claims**



1. In an electrode for a high frequency high voltage corona treater, the electrode having a conductive core and a dielectric covering, the improvement which comprises the core being a tube of conductive material and the dielectric covering comprising an intermediate dielectric layer and an outer dielectric layer; said intermediate dielectric layer being bonded to the core in a continuous substantially voidless manner; and said outer dielectric layer being comprised of particles of high dielectric material bound together and to the intermediate dielectric layer by a dielectric adhesive.

4,940,895

IMAGING APPARATUS

Daniel I. Mansfield, Leicester, United Kingdom, assignor to Rank Taylor Hobson, United Kingdom

Filed Aug. 15, 1988, Ser. No. 232,607
Claims priority, application United Kingdom, Aug. 26, 1987, 8720104
Int. Cl.[5] G02B *26/10*
U.S. Cl. 250—332 **17 Claims**

1. Thermal imaging apparatus comprising:
- an array of parallel thermal detectors, which detectors ex-

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hibit a range of different responsivities, which range is significantly diverse at wavelengths greater than a predetermined long wavelength;
optical means for directing thermal energy radiation to said array of parallel detectors;
inhibiting means effective to inhibit passage to said detector



array of radiation of at least a range of wavelengths greater than said predetermined long wavelength; and
electronic means operable to apply differing preset gain to each signal derived from a respective one of said parallel detectors, which preset gain differs according to the different detector responsivities thereof, and compensates at least partly for said different detector responsivities.

4,940,896

PYROELECTRIC CALORIMETER

William A. Hagins, Chevy Chase, and Shuko Yoshikami, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 2, 1989, Ser. No. 305,331
Int. Cl.[5] G01J *1/00*
U.S. Cl. 250—338.3 **8 Claims**



1. A pyroelectric detector comprising a support member having a tapered through-hole therein, a first polyester film positioned on said support member, across said through-hole, an aluminum foil member located on an opposite side of said polyester film from said support member, a pyroelectric film located on an opposite side of said aluminum foil member from said first polyester film, at least one additional polyester film located on an opposite side of said pyroelectric film from said aluminum foil member, and two pyroelectrical leads connected to opposite sides of said pyroelectric film.

4,940,897

NOVEL PYROELECTRIC DETECTOR

Martin Forster, Jona, and Claudia Illert, Stafa, both of Switzerland, assignors to Cerberus AG, Switzerland

Filed Jun. 1, 1989, Ser. No. 359,971
Claims priority, application Switzerland, Jun. 1, 1988, 2067/88
Int. Cl.[5] G01J *1/00*; B23K *31/02*
U.S. Cl. 250—338.3 **20 Claims**

1. A pyroelectric detector comprising a substrate, pyroelectric material distributed in a binder and applied to said substrate, and at least two electrically conductive electrodes, wherein the pyroelectric material comprises lithium tantalate consisting of single crystal particles, said lithium tantalate



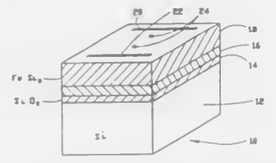
containing an amount of tantalum ranging from 25 to 75 mole % as tantalum pentoxide.

4,940,898

SEMICONDUCTING METAL SILICIDE RADIATION DETECTORS

John E. Mahan, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Continuation-in-part of Ser. No. 913,354, Sep. 30, 1986, Pat. No. 4,782,377. This application May 2, 1988, Ser. No. 189,310
The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.
Int. Cl.[5] H01L *31/02*
U.S. Cl. 250—338.4 **30 Claims**



1. A method of detecting infrared radiation equal to or less than 14 microns in wavelength comprising the steps of:
electrically connecting a conductivity detector to a body of semiconducting $ReSi_2$;
exposing said body of semiconducting $ReSi_2$ to said infrared radiation;
detecting a change in the conductivity of said body of semiconducting $ReSi_2$ in response to said infrared radiation.

4,940,899

TRANSPORT AND STORAGE FLASK

John Emmison, Warrington, and Anthony R. Cory, Knutsford, both of England, assignors to British Nuclear Fuels plc, Warrington, England

Filed Nov. 21, 1988, Ser. No. 273,565
Claims priority, application United Kingdom, Dec. 18, 1987, 8729504
Int. Cl.[5] G21F *5/00*
U.S. Cl. 250—506.1 **4 Claims**



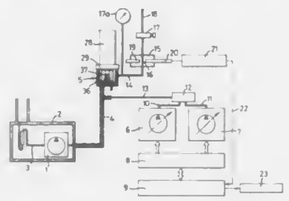
1. A flask for the transport and storage of radioactive material comprising a hollow body, lifting trunnions on the body and external neutron shielding about the body except in the regions of the trunnions, and in which further neutron shielding is provided in blind bores in the wall of the body at each end of the body, the blind bores extending beneath the trunnions to compensate for lack of external shielding at the trunnions and being of sufficient number and length only to extend beneath and slightly overlap the external shielding adjacent the region of each trunnion.

4,940,900

METHOD AND APPARATUS FOR DETERMINING THE FLOCCULATION THRESHOLD OF A PETROLEUM PRODUCT

Didier C. Lambert, Lavera, France, assignor to BP Oil International Limited, London, England

Filed Aug. 17, 1988, Ser. No. 233,196
Claims priority, application France, Aug. 18, 1987, 87 11687
Int. Cl.[5] G01N *21/59*
U.S. Cl. 250—343 **13 Claims**



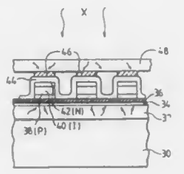
1. A method for determining the flocculation threshold of a petroleum product containing asphaltenes by measuring the near infrared radiation transmitted through a sample of the product in solution in a solvent in relation to the quantity of precipitant continuously added to the sample, characterized in that:
a blend of solvent and precipitant is continuously formed at variable concentrations;
the blend and the petroleum product are fed in constant proportions into a homogenizing chamber; and
the near infrared radiation transmitted through the homogeneous product is measured continuously downstream of the homogenizing chamber.

4,940,901

X-RAY IMAGING DEVICE

Yves Henry, Eybens, and Marc Arques, Grenoble, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 7, 1988, Ser. No. 268,262
Claims priority, application France, Nov. 10, 1987, 87 15534
Int. Cl.[5] H01L *27/12*; G01T *1/208*
U.S. Cl. 250—370.09 **8 Claims**



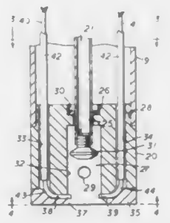
1. A device for the conversion of images into electrical signals comprising, firstly, a matrix arrangement of photosensitive elements formed on an insulating substrate and, secondly, a scintillating substance, wherein said scintillating substance is interposed between said substrate and the matrix of photosensitive elements, said matrix being formed as a non-self-supporting superposition of patterned layers deposited on the substrate and wherein an insulating planarization layer is interposed between the scintillating substance and the deposited layers of the matrix.

4,940,902

APPARATUS AND METHOD FOR CONTINUOUS MEASUREMENT OF SUSPENDED SOLIDS IN A LIQUID MEDIUM WITH WIPING MEANS

Emmanuel Mechalas, 2830 Towaway, Danville, Ill. 61832, and Laverne E. Foran, 240 S. Park Rd., La Grange, Ill. 60525

Filed Oct. 24, 1988, Ser. No. 261,754
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—573 **13 Claims**



1. A method of continuously sampling and measuring the concentration of suspended solids in a liquid medium comprising the steps of
providing a submersible sample chamber which is apertured to allow liquid to flow freely therethrough and has at least one light emitting lens in the liquid flow path connected by a fiber optic bundle to a non-submerged light source and at least one light receiving lens in the liquid flow path aligned with the emitting lens and connected by a fiber optic bundle to a non-submerged light detector with no electrical connection in the submersible portion,
submitting the apertured sample chamber in the liquid medium to be sampled and measured to allow continuous fluid communication between the interior and exterior of the sample chamber through the liquid flow path and between the light emitting and light receiving lenses therein, and
transmitting light from the non-submerged light source to the emitting lens, through the liquid between the lenses to the light receiving lens, and from the receiving lens to the non-submerged light detector for determining the concentration and/or density of suspended solids in the sample liquid,
providing a movable lens wiper in the sample chamber configured to contact the lens members sufficiently to wipe them clean of debris upon movement therebetween while allowing clearance between the sample chamber wall and in its stationary position allowing an unrestricted light and fluid flow path in the sample chamber, and
moving the lens wiper between the lens members at selective continuous or intermittent cycles.

4,940,903

MOTOR CONTROLLED SWITCH MECHANISM

Robert J. Brown, Jr., Boca Raton, Fla., and Bahattin Erturk, Rollingmeadows, Ill., assignors to Square D Company, Palatine, Ill.

Filed Jan. 23, 1989, Ser. No. 299,775
Int. Cl.[5] H01H *47/00*
U.S. Cl. 307—122 **12 Claims**

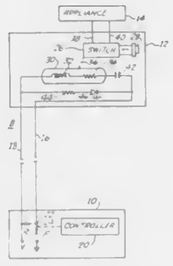
1. A motorized switch for use in a system in which a central

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controller provides signals to control the state of said switch, said switch comprising:

motor means for rotating a shaft in one of a clockwise or a counterclockwise rotational direction in response to said controoller signals;

switch means for rendering a pair of contacts in one of an open circuit condition or a short circuit condition, said switch means including a rotating pin having an offset extending therefrom, said pin, being nonaligned with said shaft and being rotated so that said offset travels along an arc between a first position when said contacts are open and a second position when said contacts are closed; and



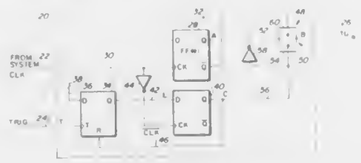
connector means having a open center into which said offset extends, one end of said connector means being affixed to said shaft, said open center having a pair of inner edges extending radially from said shaft, said motor means rotating said connector means so that said inner edges of said connector move said offset between said first position and said second position, said inner edges extending for a distance to permit relative radial movement of said offset against said inner edges of said connector during movement of one of said inner edges against said offset toe effect a change of states of said switch means.

4,940,904

OUTPUT CIRCUIT FOR PRODUCING POSITIVE AND NEGATIVE PULSES AT A SINGLE OUTPUT TERMINAL

Cheng F. Lin, Hsing Chu Hsien, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed May 23, 1988, Ser. No. 197,628
Int. Cl.[5] H03K *5/00, 5/13, 3/29, 19/00*
U.S. Cl. 307—262 **2 Claims**



1. A circuit for providing both a positive-going and a negative-going pulse output at a single output terminal in response to the receipt of a single trigger input pulse, said circuit comprising in combination:

a. a clock input terminal for receiving a synchronizing clock signal that periodically switches between a first clock logic level and a second clock logic level, said synchronizing clock signal having a predetermined frequency;

b. a divide-by-2 circuit having an input coupled to said clock input terminal for receiving said synchronizing clock signal and having an output providing a divided clock signal, the divided clock signal having a frequency of one-half that of the synchronizing clock signal, the output of said divide-by-2 circuit alternating between high and low logic levels upon each transition of the synchronizing clock signal from the second clock logic level to the first clock logic level;

c. a transmission gate having a data input coupled to the output of said divide-by-2 circuit for receiving the divided clock signal, said transmission gate having an output terminal for providing both a positive-going and a negative-going pulse output, said transmission gate including a control terminal for receiving a control signal, said transmission gate being responsive to said control signal for electrically coupling the divided clock signal to the output terminal of said transmission gate when the control signal is in a first enabled state, and being responsive to said control signal for causing the output terminal of said transmission gate to assume a high impedance state when the control signal is in a second disabled state;

d. a trigger input terminal for receiving a trigger pulse; and

e. control circuit means coupled to said trigger input terminal and to said clock input terminal for receiving the trigger pulse and the synchronizing clock signal, respectively, said control circuit means being coupled to the control terminal of said transmission gate for providing the control signal thereto, said control circuit means initially causing the control signal to assume the second disabled sate prior to receipt of a trigger pulse, said control circuit means causing the control signal to switch to its first enabled state after detecting a first transition of the synchronizing clock signal from the first clock logic level to the second clock logic level after receipt of the trigger pulse, and said control circuit means causing the control signal to again switch to its second disabled state after detecting a second transition of the synchronizing clock signal from the first clock logic level to the second clock logic level following receipt of the trigger pulse, said control circuit means including:

(i) latch means having an input coupled to said trigger input terminal for receiving the trigger pulse, having a latch output, and having a reset terminal for receiving a reset signal, said latch means causing the latch output thereof to assume a first logic state upon receipt of the trigger pulse and causing the latch output to assume a second logic state upon receiving the reset signal at the reset terminal thereof; and

(ii) flip-flop means having a data input terminal, a clock terminal, and a control output terminal, the data input terminal of said flip-flop means being coupled to the latch output, the clock terminal of said flip-flop means being responsive to the synchronizing clock signal for causing the control output terminal of said flip-flop means to assume an output state in accordance with the state of the data input terminal upon each transition of the synchronizing clock signal from the first clock logic level to the second clock logic level, the control output terminal of said flip-flop means being coupled to said reset terminal of said latch means and to the control terminal of said transmission gate for supplying the control signal thereto.

4,940,905

ECL FLIP-FLOP WITH IMPROVED X-RAY RESISTANT PROPERTIES

Tohru Kobayashi, Iruma; Masato Hamamoto, Ohme, and Toshio Yamada, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 256,863, Oct. 12, 1988, Pat. No. 4,891,531. This application Oct. 24, 1989, Ser. No. 426,047
Claims priority, application Japan, Oct. 20, 1987, 62-264541
Int. Cl.[5] H03K *3/013, 3/037, 3/287, 19/086*
U.S. Cl. 307—278 **20 Claims**

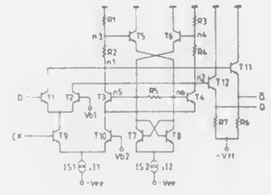
1. A semiconductor integrated circuit device including a flip-flop circuit, said flip-flop circuit comprising:

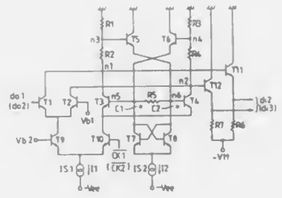
a first differential bipolar transistor;

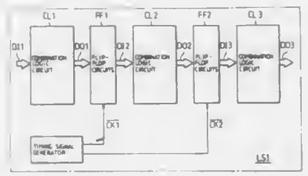
a second differential bipolar transistor coupled to said first differential bipolar transistor to form differential switching means;

input means coupled to said first differential bipolar transistor for supplying the collector of said first differential bipolar transistor with a potential in accordance with input data; and

feedback means coupled to said first and second differential bipolar transistors and including resistor means coupled in series between the respective bases of said first and second differential bipolar transistors, first bias means for supplying the base of said second differential bipolar transistor







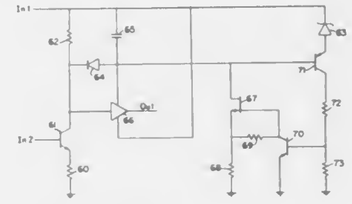
with a potential in accordance with a potential at the collector of said first differential bipolar transistor, second bias means for supplying the base of said first differential bipolar transistor with a potential in accordance with a potential at the collector of said second differential bipolar transistor, and first switching means coupled to the bases of said first and second differential bipolar transistors and to a predetermined potential point and for selectively coupling the base of either said first or second differential bipolar transistor to said predetermined potential point in accordance with a potential at the collector of each of said first and second differential bipolar transistors.

4,940,906

POWER SWITCH DRIVER

Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890

Filed Aug. 8, 1988, Ser. No. 229,914
Int. Cl.[5] H03K *3/01, 3/26*
U.S. Cl. 307—296.1 **19 Claims**



11. Driver for converting input signal into binary output signal, comprising:

an isolating means having an input and output for receiving the input signal and providing a signal in response thereto respectively, wherein an impedance between the input and output is substantially high;

a current source means for providing a current;

a capacitive means for receiving the current and storing a supply voltage, and including a means for limiting the supply voltage; and

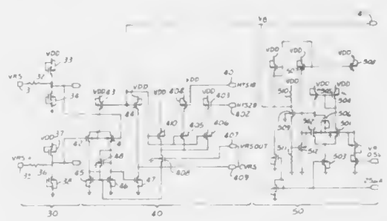
a buffer means for receiving the supply voltage and providing the binary output signal in response to the isolating means signal.

4,940,907

PRECISION CMOS COMPARATOR WITH HYSTERESIS

David P. Laude, Colorado Springs, Colo., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 19, 1989, Ser. No. 299,188
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—359 **21 Claims**



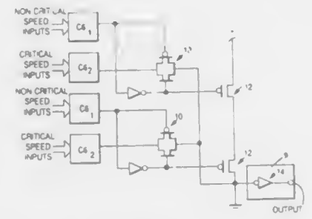
1. A differential CMOS comparator having an output, said comparator including:

a programmable hysteresis circuit having a differential pair of MOS transistors and a current mirror pair of transistors coupled to said differential pair of transistors; and

a comparator voltage reference having an output and being coupled to said programmable hysteresis circuit for providing a reference voltage which is a function of a MOSFET threshold voltage.

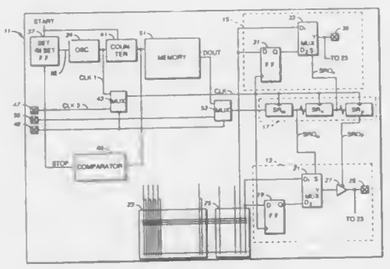
VOL 1116 ISS 2 JL 10 1990 UMI

4,940,908
METHOD AND APPARATUS FOR REDUCING CRITICAL SPEED PATH DELAYS
Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnydale, Calif.
Filed Apr. 27, 1989, Ser. No. 343,623
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—443 **6 Claims**



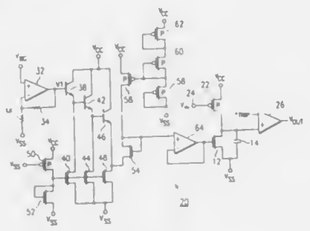
1. A logic circuit comprising a plurality of mutually exclusive non-critical speed inputs coupled to at least one first logic gate structure having a first gate output, at least one critical speed input coupled to at least one second logic gate structure having a second gate output, at least one multiplexer coupler responsive to said first gate output to selectively couple said second gate output to an output interface of said logic circuit.

4,940,909
CONFIGURATION CONTROL CIRCUIT FOR PROGRAMMABLE LOGIC DEVICES
Theodor Mulder, Pleasanton, and Cecil H. Kaplinsky, Palo Alto, both of Calif., assignors to Plus Logic, Inc., San Jose, Calif.
Filed May 12, 1989, Ser. No. 351,485
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **17 Claims**



1. In an integrated circuit device having selectable architecture configurations, a configuration control circuit comprising,
a programmable memory on the integrated circuit device having an addressable array of nonvolatile memory cells for storing configuration bits,
one or more shift registers in data communication with said programmable memory, said shift registers being loadable with said configuration bits, and
control means responsive to configuration bits loaded into said shift registers for causing said integrated circuit device to operate in a selected architecture configuration corresponding to said configuration bits.

4,940,910
TEMPERATURE COMPENSATED MONOLITHIC DELAY CIRCUIT
Ching-Lin Jiang, Dallas, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.
Continuation of Ser. No. 217,142, Jun. 30, 1988, Pat. No. 4,843,265. This application Jun. 2, 1989, Ser. No. 360,511
The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.
Int. Cl.[5] G05F *1/567*
U.S. Cl. 307—591 **21 Claims**

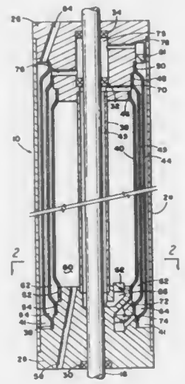


1. A timing circuit, comprising:
a capacitor;
a first field-effect transistor, comprising a gate, connected to discharge said capacitor;
an additional stage, connected to said capacitor and configured to change state when said capacitor is discharged to a predetermined voltage;
a plurality of bipolar transistors, connected to reduce a temperature-independent reference voltage by a multiple of the base-emitter voltage drop of one of said plurality of bipolar transistors, to provide a temperature-dependent reference potential;
a second field-effect transistor, having source and drain terminals con between a first current source and said temperature-dependent reference potential having a gate connected to said drain terminal thereof;
said gate of said first field-effect transistor being coupled to said gate of said second field-effect transistor so that said gate of said first field-effect transistor receives a voltage corresponding to the voltage on said gate of said second field-effect transistor.

4,940,911
SUBMERSIBLE PUMP EQUALIZER WITH MULTIPLE EXPANDING CHAMBERS
Brown L. Wilson, Tulsa, Okla., assignor to Oil Dynamics, Inc., Tulsa, Okla.
Filed Jun. 21, 1989, Ser. No. 370,238
Int. Cl.[5] H02K *5/132*; F04B *19/00*
U.S. Cl. 310—87 **3 Claims**

1. A protective device for insertion between a submersible electric motor in a well bore and a pump located above and driven by the motor, said motor filled with a fluid, said device comprising:
an upper header and a lower header;
a hollow housing extending between said upper and lower headers and fixed thereto;
a tube concentrically mounted within said hollow housing and extending between said upper and lower headers;
a first expandable bag-like membrane having a first end and a second end, said first end sealed to said upper header and said lower end sealed to said lower header, said first membrane surrounding said tube;
a second expandable bag-like membrane having a first end and a second end and surrounding said first bag member, said first end and said second end respectively sealed to said upper header and said lower header;

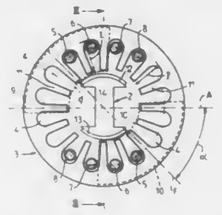
a third expandable bag-like membrane having a first end and a second end and surrounding said second bag, said first end and said second end sealed respectively to said upper header and said lower header;
there being formed a first chamber between said first bag and said hollow tube, a second chamber between said first and second bags; a third chamber between said second and third bag, a fourth chamber between said third bag and said housing and a fifth chamber within said tube;
a first passage through said lower header from the exterior to the first chamber;
a second passage through said lower header and a check valve therein, said second passage extending from said first chamber to the interior of said hollow tube;



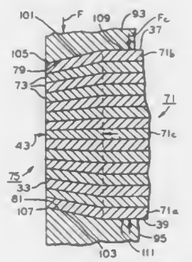
a third passage which extends through a portion of said upper header from the fifth chamber to said second bag;
a fourth passage in the lower header and a check valve therein, said passage extending from said second chamber to said third chamber;
a fifth passage through said upper header extending from said third chamber to the space between said third bag and the interior of said housing and a check valve in said fifth passage; and
a fifth passage without check valve through said upper header from said fourth chamber to the exterior of the device.

4,940,912
BRUSHLESS ELECTRIC MOTOR WITH SELF STARTING ASYMMETRY
Michel Kant, Villiers sur Coudun; Jean-Marie Biedinger, Clairy Ourscamps; Roland Quessard, Romorantin, and Jacques Galko, La Chappele sur Loire, all of France, assignors to Societe de Ventilation et d'Electricite Appliquees - Velecta, Romorantin and Gradient, Complege Cedex, both of, France
Filed Jun. 2, 1989, Ser. No. 360,976
Claims priority, application France, Jun. 3, 1988, 88 07436
Int. Cl.[5] H02K *29/10, 3/16*
U.S. Cl. 310—162 **13 Claims**

1. An electric motor with electronic commutation, including:
a rotor (2) which includes permanent magnets (12, 13) disposed in such a manner as to define a magnetic rotor axis;
and a stator (3) that surrounds the rotor and includes coils (5, 6, 7, 8) intended to be supplied with direct current, and defining a magnetic stator axis (A),
commutation means (C) being provided for reversing the direction of the flow of current in the coils, so that the electromagnetic torque exerted by the stator (3) on the rotor (2) always acts in the same direction,
means (D) sensitive to the position of the rotor being provided for controlling the commutation means (c) and for reversing the direction of flow of the current in the coils,
reluctance pads (9, 10) being further provided in the stator (3) for placing the rotor (2) upon stopping in a position in which the startup of the motor will be assured, wherein
said stator (3) includes an even number of notches (4) separated by teeth (11) spaced at regular intervals over the entire inside periphery of the stator (3),
said reluctance pads (9, 10) are asymmetrical with respect to the magnetic stator axis (A) and are formed of two diametrically opposed groups of teeth and notches, the teeth not belonging to the reluctance pads having a length (l) less than the length (L) of the teeth belonging to the reluctance pads,
said coils (5, 6, 7, 8) of the stator are accommodated in part (5, 6) in the notches of the reluctance pads (9, 10) and the remainder in the notches not belonging to the reluctance pads, such that said stator coils (5, 6, 7, 8) are placed in the vicinity of the diametral plane orthogonal to the magnetic axis (A) of the stator, so as to improve the winding coefficient, said axis of the reluctance pads being offset by 45° with respect to the magnetic axis (A) of the coils of the stator, each reluctance pad having an angular length of approximately 100°.



4,940,913
CORE FOR A DYNAMOELECTRIC MACHINE
Harold L. Fritzsche, Rapid City, S. Dak., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 220,800, Jul. 18, 1988, which is a division of Ser. No. 934,889, Nov. 25, 1986, Pat. No. 4,794,778, which is a continuation-in-part of Ser. No. 904,140, Sep. 4, 1986, Pat. No. 4,796,451, which is a division of Ser. No. 660,211, Oct. 12, 1984, Pat. No. 4,613,780. This application Mar. 17, 1989, Ser. No. 325,211
Int. Cl.[5] H02K *1/00*
U.S. Cl. 310—216 **26 Claims**



1. An edgewise wound core comprising:
a lanced strip of generally thin ferromagnetic material hav-

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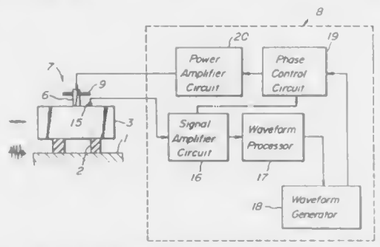
ing a pair of generally opposite edges and edgewise wound into a plurality of helical convolutions arranged in a generally annular stack thereof, respectively;
a leading helical convolution and a trailing helical convolution on said stack defining a pair of opposite end faces thereof, respectively;
an inner circumferential surface and an outer circumferential surface on said stack extending generally axially between said opposite end faces thereof and defined at least in part by said opposite edges on said helical convolutions in said stack, respectively;
a yoke on said helical convolutions and extending generally circumferentially about said stack between said opposite end faces thereof, said yoke including a tapered part on each of said helical convolutions at least generally adjacent one of said opposite edges thereof and having a thickness less than that of the helical convolutions between said tapered part and the other of said opposite edges on said helical convolutions, and said tapered part on axially adjacent ones of said helical convolutions in said stack being engaged with each other thereby to comprise said outer circumferential surface of said stack, respectively;
a generally annular beveled surface on at least one of said opposite end faces of said stack at least generally adjacent said outer circumferential surface thereof, said beveled surface comprising said tapered part on at least one of said leading and trailing helical convolutions in said stack;
a plurality of teeth on said helical convolutions extending on preselected pitch axes therefor generally radially inwardly from said yoke and arranged in a plurality of tooth rows extending generally axially between said opposite end faces of said stack, said teeth including a plurality of tips at least generally adjacent said other opposite edge on said helical convolutions and arranged in a plurality of tooth tip rows generally axially between said opposite end faces of said stack thereby to comprise said inner circumferential surface of said stack, respectively; and
a plurality of winding receiving slots in said helical convolutions between said yoke and adjacent ones of said teeth thereof and intersecting with said other opposite edge on said helical convolutions between said tooth tips, said slots being arranged in a plurality of slot rows extending generally axially of said stack and intersecting with said opposite end faces and said inner circumferential surface between said tooth tip rows, respectively.

4,940,914

VIBRATION ABSORBING APPARATUS

Keiichiro Mizuno, Tokyo, and Kazuyoshi Iida, Yokohama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 16, 1988, Ser. No. 194,371
Claims priority, application Japan, May 26, 1986, 62-129474
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—326 **6 Claims**



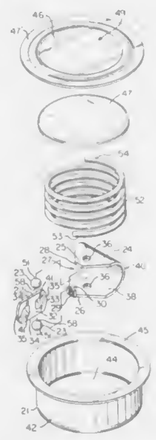
1. A vibration absorbing apparatus for absorbing vibrations of a vibration damping objective, comprising:
a support member attached to said vibration damping objective and having a plurality of notches formed therein;
a plurality of vibration members fitted in said notches of said support member, said vibration members being of different lengths;
a plurality of piezo-ceramic elements each attached to a base of a respective one of said vibration members;
detecting means for detecting movement of said vibration damping objective; and
voltage applying means, responsive to said detecting means, for applying a voltage to the piezo-ceramic elements in accordance with the vibration state of the objective so as to induce vibrations in said vibration members and reduce an amplitude of vibrations of the objective.

4,940,915

OSCILLATING CRYSTAL FORCE TRANSDUCER AND METHOD OF MAKING

Douglas R. Scott; Peggy L. Goddard, and Joseph P. Wagner, all of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 167,847, Mar. 14, 1988, Pat. No. 4,799,301.
This application Nov. 2, 1988, Ser. No. 266,405
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—338 **17 Claims**



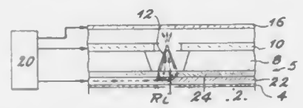
1. In an oscillating crystal force transducer comprising support means, a substantially flat plate-shaped piezo-electric crystal having opposed flat sides and a relatively narrow peripheral edge means extending between said opposed sides, and two seating members carried by said support means and respectively engaging said peripheral edge means of said crystal and arranged to apply a force to said crystal along a line extending through said crystal from one of said seating members to the other of said seating members, the improvement wherein said support means comprises a looped substantially flat ribbon-like spring member having a longitudinal axis disposed in a generally U-shape and having opposed free end means spaced from each other to define the mouth of said looped spring member and respectively carrying said seating members whereby said crystal is disposed in said mouth of said looped spring member between said seating members thereof in a manner to be substantially coplanar with said longitudinal axis of said spring member.

4,940,916

ELECTRON SOURCE WITH MICROPOINT EMISSIVE CATHODES AND DISPLAY MEANS BY CATHODOLUMINESCENCE EXCITED BY FIELD EMISSION USING SAID SOURCE

Michel Borel, Le Touvet; Jean-Francois Boronat, Grenoble; Robert Meyer, St Nazaire les Eymes, and Philippe Rambaud, Claix, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Nov. 3, 1988, Ser. No. 266,681
Claims priority, application France, Nov. 6, 1987, 8715432
Int. Cl.[5] H01J *1/30, 1/90, 29/04*
U.S. Cl. 313—306 **8 Claims**



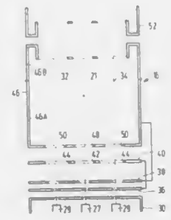
1. Electron source comprising first parallel electrodes (5) serving as cathode conductors, each cathode conductor having an electrically conductive layer (22), whereof one face carries a plurality of micropoints (12) made from an electron emitting material and second parallel electrodes (10) serving as grids and which are electrically insulated from the cathode conductors (5) and form an angle therewith, which defines intersection zones of the cathode conductors and grids, the micropoints (12) being located at least in said intersection zones, the grids (10) also being positioned facing said faces and have holes (14) respectively facing the micropoints, the apex of each micropoint being substantially level with the hole corresponding thereto, the micropoints of each intersection zone being able to emit electrons when the corresponding grid is positively polarized with respect to the corresponding cathode conductor, an electrical current then flowing in each micropoint of the zone, characterized in that each cathode conductor (5) also has means for limiting the intensity of the electrical current flowing in each micropoint of said cathode conductor, said means having a continuous resistive layer (24,25) located on the conductive layer (22) of the corresponding cathode conductor (5), between said conductive layer and the corresponding micropoints (12), said corresponding micropoints resting on the resistive layer (24,25).

4,940,917

COLOR CATHODE RAY TUBE HAVING AN IN-LINE ELECTRON GUN

Lambert J. Stil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 25, 1988, Ser. No. 224,086
Claims priority, application United Kingdom, Jul. 29, 1987, 8717984
Int. Cl.[5] H01J *29/50*
U.S. Cl. 313—414 **8 Claims**



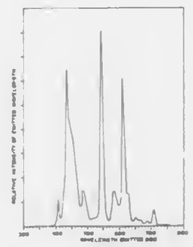
1. A color cathode ray tube including an envelope containing a luminescent screen and an electron gun for producing three in-line electron beams directed toward said screen, said electron gun comprising:
a. a triode section for forming the electron beams, said triode section including, in order:
(1) central and first and second outer cathodes disposed on respective central and first and second outer in-line axes for emitting electrons along said axes;
(2) first and second adjacent electrodes, each having central and first and second outer apertures symmetrically disposed about the respective axes, for forming the emitted electrons into the electron beams;
b. prefocusing electrode means having central and first and second outer apertures disposed about the respective axes, said first and second outer apertures being eccentrically disposed about the respective axes to effect convergence of the electron beams proximate the screen;
c. error correcting electrode means including an electrode having central and first and second outer apertures disposed about the respective axes, said first and second outer apertures being eccentrically disposed with respect to the respective axes for correcting beam focusing errors; and
d. a pair of spaced apart mirrored electrodes, each having central and first and second outer apertures disposed about the respective axes, for producing central and first and second outer main focusing field lenses for focusing the respective electron beams at the screen.

4,940,918

FLUORESCENT LAMP FOR LIQUID CRYSTAL BACKLIGHTING

Sharon B. Rutfield, North Chelmsford, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Jul. 24, 1989, Ser. No. 383,494
Int. Cl.[5] H01J *1/63*
U.S. Cl. 313—487 **10 Claims**



1. A fluorescent lamp having energy located substantially within a first wavelength band between 400 nanometers and 500 nanometers, a second wavelength band between 500 nanometers and 600 nanometers, and a third wavelength band between 600 and 700 nanometers, said lamp comprising:
a light-transmissive glass envelope having a substantially circular configuration in cross-section;
an electrode operatively positioned proximate each end of said envelope;
an ionizable medium enclosed within said envelope and including an inert starting gas and a quantity of mercury, said ionizable medium when energized generating a plasma discharge comprising ultraviolet radiation and a limited proportion of visible radiation; and
a phosphor means responsive to said ultraviolet radiation generated by the plasma discharge disposed within said envelope and comprising a mixture of different phosphors;
a first component of said phosphor mixture when energized by said ultraviolet radiation having a first energy peak with a predetermined maximum intensity located within a

first wavelength range of from about 435 nanometers to 440 nanometers;

a second component of said phosphor mixture when energized by said ultraviolet radiation having a second energy peak with a predetermined maximum intensity located within a second wavelength range of from about 545 nanometers to 550 nanometers;

a third component of said phosphor mixture when energized by said ultraviolet radiation having a third energy peak with a predetermined maximum intensity located within a third wavelength range of from about 610 nanometers to 615 nanometers;

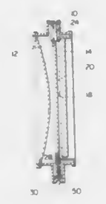
said maximum intensity of said first energy peak being within the range of from about 70% to 115% of said maximum intensity of said second energy peak, said maximum intensity of said third energy peak being within the range of from about 65% to 87% of said maximum intensity of said second energy peak, said first, second and third energy peaks having bandwidths less than or equal to about 40 nanometers as measured at an intensity which is 50% of a respective maximum intensity.

4,940,919

SUPPORT STRUCTURE FOR VACUUM TUBE COMPONENTS

Richard S. Enck, Jr.; Gregg A. Hindenes, both of San Jose, and Ian K. Glasgow, Palo Alto, all of Calif., assignors to Picker International, Inc., Cleveland, Ohio

Filed Jan. 23, 1989, Ser. No. 303,722
Int. Cl.[5] H01J *1/88, 19/42, 43/00*
U.S. Cl. 313—526 **24 Claims**



1. In a proximity type image intensifier tube having an evacuated, electrically conductive envelope, an input window, an output window, an output display screen on the output window, a high voltage photocathode carrying component mounted between the input window and output display screen, an improved structure for supporting the component within the tube envelope, said structure comprising

a. a support ring comprising a first inwardly extending edge portion forming a component support surface having an inside diameter less than the component diameter, and a second inwardly extending edge portion axially displaced from the first edge portion, said second edge portion forming a component access aperture having an inside diameter greater than the component diameter and a compression surface; and

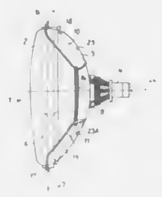
b. a retaining ring comprising a split spring ring which is contractible to a diameter smaller than the inside diameter of the component access aperture and which is expandable to a diameter larger than the inside diameter of the component access aperture and including a planar inner surface and an outer edge surface, the outer edge surface engageable with the support ring compression surface so that expansion of the retaining ring compresses the component between the retaining ring inner surface and the component support surface.

4,940,920

DEVICE TO SHIELD MASK CATHODE TUBES FROM THE EARTH'S MAGNETIC FIELD

Guiseppe Giannantonio, Anagni, and Cesare de Paolis, Valmontone, both of Italy, assignors to Videocolor, Montrouge, France

Filed Nov. 6, 1987, Ser. No. 117,511
Claims priority, application France, Nov. 7, 1986, 86 15578
Int. Cl.[5] H01J *29/06;* **H01F** *13/00;* **H04N** *9/29*
U.S. Cl. 315—8 **3 Claims**



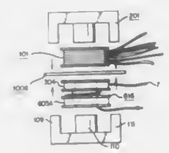
1. A device to shield mask cathode tubes with shielding screens made of low magnetic permeability material from the earth's magnetic field, said tube having two sides which are substantially horizontal and two sides which are substantially vertical in a normal operating position, said device comprising a demagnetization coil having two oblong-shaped loops with each loop having two large sides, the large sides of which are substantially horizontal, said two loops being fixed substantially on the cone of the cathode tube, and being arranged symmetrically on opposite sides with regard to a horizontal plane passing through the axis of the tube neck, said loops being further connected to a de-magnetizing current generator device, the two large sides of these loops which are furthest from each other being located on the screen side of the frit plane of the tube and the two large sides of these loops which are closest to each other are located midway between the side of the deflector nearest the screen and an anode button.

4,940,921

COMBINATION BALLAST AND COLD CATHODE SEALED LAMP AND METHOD

James C. Hetling, Newport Beach; Anders W. Beckrot, Laguna Beach, and Scott V. Murray, Huntington Beach, all of Calif., assignors to LumiTech International, L.P., New York, N.Y.

Continuation-in-part of Ser. No. 891,263, Jul. 28, 1986, Pat. No. 4,751,434. This application Dec. 11, 1987, Ser. No. 131,752
Int. Cl.[5] H05B *41/26, 41/36;* **H01F** *27/28*
U.S. Cl. 315—219 **7 Claims**



1. A high frequency, low voltage ballast for a cold cathode tube, comprising in combination:

an output transformer having a secondary winding connected to supply power to said tube;

said transformer having a center tapped primary winding for inducing voltage across said secondary winding;

a pair of feedback windings adjacent the primary winding;

an E—E section core, each section comprising first outer leg, a second outer leg and a center leg;

a dielectric bobbin carrying said primary winding and said feedback windings all on the center leg of the first E core section;

a multi-section dielectric bobbin carrying the secondary winding mounted on the center leg of the other E core section with approximately one half of the secondary winding carried in a first section of the multi-section bobbin, and approximately the other half of the secondary winding carried by a different section of the multi-section bobbin in spaced apart relation to the first section;

a pair of switching FETS connected for alternate conduction to establish alternating current in the primary winding for inducing higher voltage alternating current in the secondary winding for operating the tube;

means for receiving a low voltage ac or dc supply voltage to operate the ballast;

means for biasing the FETS from rectified supply voltage; and

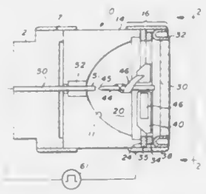
means including said feedback windings for establishing said alternate conduction.

4,940,922

INTEGRAL REFLECTOR FLASHLAMP

Felix Schuda, Cupertino, and Roy D. Roberts, Newark, both of Calif., assignors to ILC Technology, Inc., Sunnyvale, Calif.

Filed Dec. 16, 1985, Ser. No. 809,297
Int. Cl.[5] H05B *41/30*
U.S. Cl. 315—246 **4 Claims**



1. A flashlamp having a short-arc comprising:

a hollow body member;

a concave reflector fitted within the body member to define a curved reflecting wall symmetrical about a central axis of the lamp;

a window assembly including a transparent window sealingly mounted to the body member to maintain pressurized inert gas within the space encompassed by the curved reflector and to pass collimated light from the lamp;

inert gas enclosed within the space encompassed by the curved reflector and the window assembly and maintained at a pressure of less than two atmospheres;

first and second opposed electrode members, mounted to extend along said central axis with the distal ends of said electrodes being spaced apart from one another in opposed relationship to define a short-arc gap at the focal point of the concave reflector; and

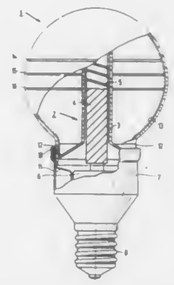
pulse-producing means connected to the respective electrodes to provide current pulses to the electrodes to practice a luminescent flow of electrons across said short-arc gap between the distal ends of the first and second electrodes, which pulses provide peak currents exceeding about two hundred amperes and which each have durations ranging from about two to ten microseconds.

4,940,923

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP

Wiggert Kroontje, and Willem J. van den Bogert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 202,769, Jun. 3, 1988, abandoned. This application Nov. 27, 1989, Ser. No. 442,494
Claims priority, application Netherlands, Jun. 5, 1987, 8701315
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—248 **16 Claims**



1. An electrodeless low-pressure discharge lamp having a lamp vessel sealed in a gas tight manner, a fill within said lamp vessel comprising metal vapor and a rare gas, said lamp vessel having an outer wall and an inner wall defining a core of said lamp, means disposed in said core for generating a high frequency electric field for exciting said gas fill and producing light, and a transparent electrically conducting layer disposed on the inner surface of said outer wall, wherein the improvement comprises:

a conductive contact member electrically connected to said transparent conducting layer along the major part of the circumference of said inside surface of said outer wall, and

a conductive lead-through extending through said lamp vessel and connected to said conductive contact member.

4,940,924

POSITIONING CONTROL APPARATUS

Shigeki Mizuno; Takaharu Ueda, and Tetsu Yamamoto, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1989, Ser. No. 389,059
Claims priority, application Japan, Aug. 22, 1988, 63-207722
Int. Cl.[5] G05D *23/275*
U.S. Cl. 318—560 **17 Claims**



1. A positioning control apparatus for controlling the position of an object having a dynamic characteristic, comprising:

a feedback compensatory system including detecting means for detecting a position of the object and a first compensator connected to the object; and

a feedforward compensatory system including a second compensator operatively connected for signal provision

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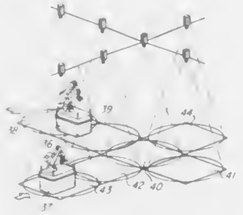
to said feedback compensatory system, a first filtering means having a dynamic characteristic which is substantially the reverse of the dynamic characteristic to that of a system which is comprised of said second compensator and said feedback compensatory system, and a second filtering means having a dynamic characteristic which is substantially equal to the dynamic characteristic of the object, wherein said second filtering means is operatively connected for signal provision to said first filtering means, and said first filtering means is operatively connected for signal provision to said second compensator.

4,940,925

CLOSED-LOOP NAVIGATION SYSTEM FOR MOBILE ROBOTS

Martin A. Wand, Plano; Anh V. Ho, Dallas, both of Tex.; Chuan-Fu Lin, Westboro, Mass.; Phen-Lan Huang, Richardson, Tex.; John P. Williston, Plano, Tex.; Haradon J. Rice, Plano, Tex., and Thomas J. Doty, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 129,914, Dec. 4, 1987, which is a division of Ser. No. 771,379, Aug. 30, 1985. This application Oct. 31, 1988, Ser. No. 265,196
Int. Cl.[5] B62D *1/00*
U.S. Cl. 318—587 **10 Claims**



1. A visual navigation system, comprising:
at least one AGV;
a plurality of nodes;
a camera associated with each node for viewing said AGV; and
a navigation system for generating the position of said AGV from an image formed by one of said cameras;
wherein said navigation system has knowledge of an AGV route map and a schedule of planned movements for said AGV, and uses such information to predict and select the camera in whose field of view said AGV can be found.

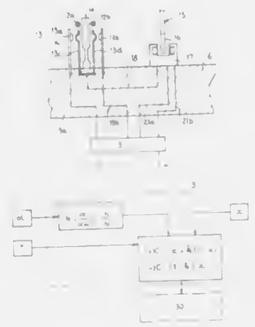
5. A method of navigating AGVs, comprising:
(a) assigning a plurality of nodes to locations along a route for an AGV such that each node is assigned to a unique location;
(b) positioning a camera near each node for viewing an AGV at or near that node;
(c) using an AGV route map and a schedule of planned movements for said AGV to predict and select the camera in whose field of view said AGV can be found;
(d) using said selected camera to form an image of an identifiable portion of said AGV; and
(e) determining the X-Y position of said AGV from said image.

4,940,926

INSTRUCTION GENERATOR FOR CONTROLLING THE POSITION OF AN ELEMENT, IN PARTICULAR A SLIDING OPENING ELEMENT OF AN AUTOMOBILE VEHICLE

Pierre Periou, Cergy Pontoise, France, assignor to Rockwell-CIM, France

Filed Dec. 12, 1988, Ser. No. 282,667
Claims priority, application France, Dec. 17, 1987, 87 17648
Int. Cl.[5] G05B *1/06, 19/37*
U.S. Cl. 318—603 **6 Claims**



1. Instruction generator for controlling the position of an element in a path through which the element is intended to travel between end-of-travel means, said generator comprising an endless adjusting means and an associated calculator provided with means for determining a proportion of said path as a function of an instruction given to the adjusting means relative to said end-of-travel means wherein the adjusting means comprises an endless rotative control knob capable of turning through a given angle and pulse generating means generating a number of pulses proportional to the angle of rotation of the knob, and means for counting said number of pulses and means for selecting the direction of rotation, the calculator being programmed for producing the instruction of which the position of the element is a direct function, from the number of pulses received by calculating the ratio between said given angle and a maximum angle available to a user, from the position of the element to be controlled and from the direction of the controlled displacement of the element.

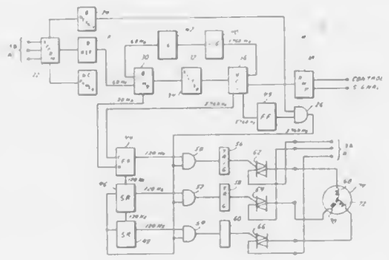
6. A method for controlling the position of a movable element in a path between end-of-travel means by means of an instruction generator including a knob, pulse generating means, switching means with electrical contacts, and calculator means, comprising the steps of:
rotating said knob for an angle to a given angle which is less than or equal to a maximum angle available;
generating a number of pulses in said pulse generating means, which is proportional to the angle of rotation;
closing respective electrical contacts which correspond to a selection of the direction of rotation; and
counting said number of pulses in said calculator means and producing an instruction of which the position of the element is a direct function from the number of pulses received by said calculator means by calculating the ratio between said given angle and said maximum angle available.

4,940,927

THREE-PHASE A-C SPEED CONTROL FOR VARIABLE TORQUE MOTOR

Marvin J. Fisher, St. Louis, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Filed Aug. 29, 1985, Ser. No. 770,719
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—809 **22 Claims**



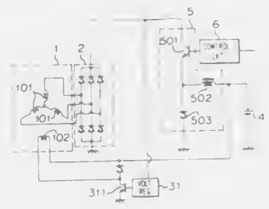
1. A speed control for a three-phase A-C motor, said motor having three windings, said control comprising means for generating a trigger signal indicative of the phase delay desired in switching on a first winding corresponding to a desired speed, delay means to reproduce said trigger signal after a pre-determined time delay to switch on the second and third windings, the trigger signal generating means comprising a constant input frequency phase locked loop, said phase locked loop including a phase comparator, a constant frequency A-C reference source connected to a first input of said phase comparator, a voltage controlled oscillator connected to a second input of said phase comparator, and means to inject a control signal into said voltage controlled oscillator, said control signal being indicative of a desired speed, said voltage controlled oscillator having means to sense said control signal and alter the trigger signal in response thereto, the output of said phase comparator being representative of the trigger signal.

4,940,928

CHARGING GENERATOR APPARATUS

Shinji Nishimura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1989, Ser. No. 387,039
Claims priority, application Japan, Aug. 29, 1988, 63-214329
Int. Cl.[5] H02J *7/14*
U.S. Cl. 322—28 **4 Claims**



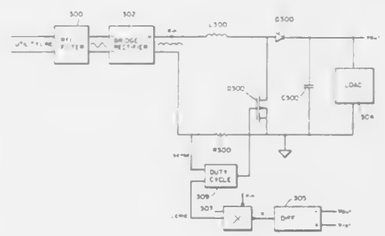
1. A charging generator apparatus which comprises a generator having armature windings and a field winding, a voltage reducing circuit for reducing the output voltage of said generator, a battery to be charged by the output voltage of said voltage reducing circuit, a voltage regulator for regulating the output of said generator by controlling a field current supplied to said field winding and a control circuit for controlling a voltage reducing ratio in said voltage reducing circuit.

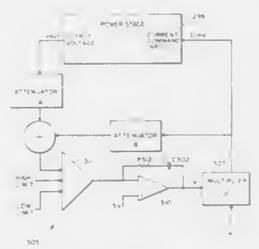
4,940,929

AC TO DC CONVERTER WITH UNITY POWER FACTOR

James B. Williams, Westford, Mass., assignor to Apollo Computer, Inc., Chelmsford, Mass.

Filed Jun. 23, 1989, Ser. No. 370,611
Int. Cl.[5] G05F *1/613*
U.S. Cl. 323—222 **19 Claims**





1. An AC to DC converter comprising a circuit which includes an inductor and a diode connected in series with a load capacitor and a shunting switch connected to shunt the diode and load capacitor, the shunting switch being controlled by a control circuit at a frequency which is high relative to the frequency of the AC input, the control circuit comprising:
a differential circuit for comparing an output voltage signal, which indicates the voltage on the load capacitor, to at least one reference to generate a multiplier, such that the product of the multiplier and a voltage input signal indicative of the voltage input to the inductor is proportional to current through the inductor required to provide a desired level of the output voltage, the differential circuit including means to eliminate response of the multiplier to expected ripple in the output signal;
a multiplying circuit for multiplying the multiplier and the voltage input signal to generate a current command signal; and
a duty cycle generator responsive to the current command signal and an inductor current signal, which indicates the current through the inductor, to control the duty cycle of the shunting switch.

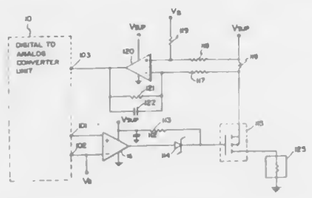
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4,940,930

DIGITALLY CONTROLLED CURRENT SOURCE

James P. Detweiler, Lansdale, Pa., assignor to Honeywell Incorporated, Minneapolis, Minn.

Filed Sep. 7, 1989, Ser. No. 404,088
Int. Cl.[5] G05F *1/56*
U.S. Cl. 323—273 **20 Claims**



12. A digitally controlled current source for controlling a current through a load impedance, said current source comprising:

a reference impedance coupled in series with said load impedance;

a first amplifier having input terminals coupled across said reference impedance;

a digital to analog converter unit having a feedback terminal coupled to said first amplifier;

a second amplifier having input terminals coupled to output terminals of said digital to analog converter unit; and

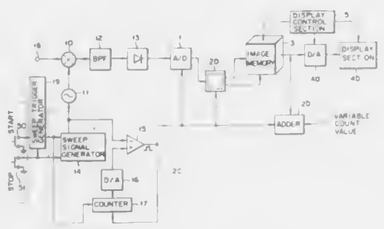
a current control device coupled in series with said load impedance, wherein said second amplifier has an output terminal coupled to a control terminal of said current control device, an output signal from said second amplifier determining a value of a current through said current control device.

4,940,931

DIGITAL WAVEFORM MEASURING APPARATUS HAVING A SHADING-TONE DISPLAY FUNCTION

Aiichi Katayama, Isehara, and Kenichi Kon, Machida, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jun. 20, 1989, Ser. No. 368,868
Claims priority, application Japan, Jun. 24, 1988, 63-157629; Jan. 10, 1989, 1-2131
Int. Cl.[5] G01R *13/20, 13/26*
U.S. Cl. 324—121 R **29 Claims**



1. A digital waveform measuring apparatus comprising;

address generating means for generating an address corresponding to a magnitude of an input signal for each of a number of sweep timing dots;

frame buffer memory means for storing data corresponding to each timing dot and to the address generated by the address generating means, the data representing the existence of a waveform to be observed;

weight computing means for, upon the occurrence of a coincidence between an address generated by the address generating means with a given sweep timing dot and an address generated by the address generating means with the next sweep timing dot, weighting the data stored in the address which is generated with the given sweep timing dot and for outputting the weighted data to the frame buffer memory;

said weight computing means further including means for outputting color data corresponding to the number of occurrences of the same address generated for each sweep timing dot; and

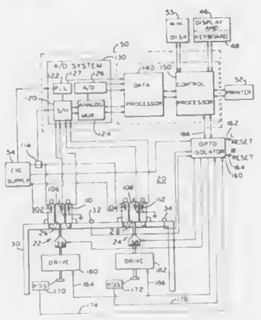
display means for receiving the weighted data from the frame buffer memory and for displaying it as a waveform.

4,940,932

METHOD AND APPARATUS FOR TESTING DYNAMOELECTRIC MACHINE ROTORS

Phillip R. Herrick; Daniel C. Ewing; Floyd H. Wright, and Kevin M. Truelove, all of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 860,240, May 6, 1986, Pat. No. 4,801,877. This application Nov. 10, 1988, Ser. No. 269,500
Int. Cl.[5] G01R *31/06*
U.S. Cl. 324—158 MG **16 Claims**



1. A method for testing dynamoelectric machine rotors, comprising the steps of:

imparting angular movement to a rotor, and magnetizing the rotor utilizing alternating current during such angular movement;

generating a voltage signal in response to magnetic flux generated by the rotor in response to the magnetization of the rotor during rotation;

sensing the magnitude of the alternating current utilized to magnetize the rotor and generating a current signal responsive thereto; and

determining at least one of the resistance and reactance of the rotor based upon the voltage signal and current signal.

4,940,933

FIBER OPTIC ARC MONITOR

Maurice A. Jenkins, Casselberry, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1989, Ser. No. 337,605
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 MG **17 Claims**

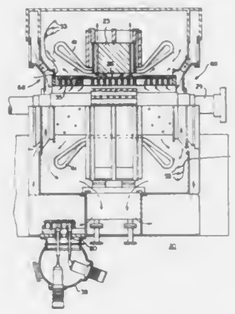
1. An apparatus for detecting arcing in an enclosed electrical device, the apparatus comprising:

a radio-frequency monitor disposed adjacent the electrical device;

a plurality of individual fiber optic cables arranged in predetermined positions within the electrical device for detecting light incident to said arcing; and

monitoring means for providing a signal external to the electrical device when radio-frequency signals are detected by the radio-frequency monitor and light is detected by said light sensing means, wherein said monitoring means is further comprised of:

means for determining the intensity of light detected by each of said fiber optic cables;



means for converting said detected light into an electrical signal equivalent to the intensity of the light received by each of said fiber optic cables;

means for comparing said equivalent electrical signals with respect to the position of each of said fiber optic cables; and

means for indicating the location within the electrical device where the arcing has occurred based upon said comparison.

4,940,934

METHOD OF ELECTRICALLY TESTING ACTIVE MATRIX SUBSTRATE

Takao Kawaguchi, Hirakata; Tatsuhiko Tamura, Neyagawa, and Etsuya Takeda, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

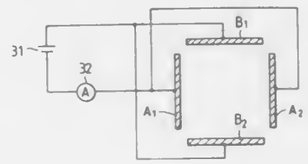
Filed Oct. 14, 1988, Ser. No. 262,340
Claims priority, application Japan, Oct. 15, 1987, 62-260305
Int. Cl.[5] G01R *31/02, 31/28*
U.S. Cl. 324—158 R **6 Claims**

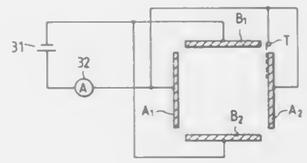
1. A method of electrically testing an active matrix substrate having a plurality of thin-film transistors each comprising first and second electrodes and a control electrode, pixel electrodes each having an open end facing said second electrode of each of said thin-film transistors so as to form a capacitor, a first group of a plurality of parallel conductors and a second group of a plurality of parallel conductors which are substantially normal to said conductors of said first group to form a matrix, each of said control electrode of said thin-film transistors being connected to one of said conductors of said first group and each of said first electrode of said thin-film transistors being connected to one of said conductors of said second group, said method comprising the steps of:

(a) short-circuiting said conductors of said first group at both ends thereof;

(b) short-circuiting said conductors of said second group at both ends thereof;

(c) applying a predetermined voltage between said first and second groups of said conductors; and





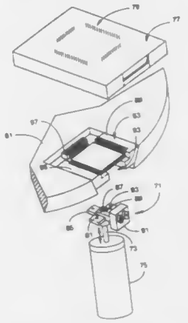
(d) measuring a current flowing from said first group of said conductors to said second group of said conductors or vice versa.

4,940,935

AUTOMATIC SMD TESTER

Bryan R. Riley, San Jose, Calif., assignor to Ried Ashman Manufacturing, Santa Clara, Calif.

Filed Aug. 28, 1989, Ser. No. 400,563
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 F **9 Claims**



1. Apparatus for automatically testing SMDs having leads with surfaces for contacting mounting pads on PCBs comprising:

nest means for carrying said SMDs, said nest means having ledges for contacting said leads such that said nest means supports said SMD by said leads alone without contacting the body of said SMD;

carrier means for supporting and translating said nest means such that said nest means may be elevated above said carrier means and replaced therein;

transfer means for picking up said SMDs from storage containers and placing said SMDs in said nest means and for

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picking up said SMDs from said nest means and replacing said SMDs in said storage containers;

test socket means positioned above said carrier means for contacting said leads of said SMDs, thereby connecting said leads to circuitry for performing electrical tests on said SMDs; and

elevation means for engaging said nest means, elevating said nest means above said carrier means and inserting said nest means into said test socket means such that said leads are connected to said circuitry, and for withdrawing said nest means from said test socket means after performance of said electrical tests and replacing said nest means in said carrier means.

4,940,936

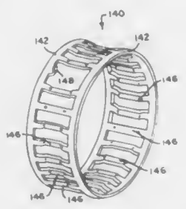
ANTIFRICTION BEARING WITH A CLIP-ON SENSOR COOPERATING WITH A SHAFT MOUNTED MAGNETIC ENCODER RETAINER RING

John M. Grillo, Torrington; James A. Hilby, Watertown; Vern V. Fleet, Wolcott; Cameron G. Gardella, Woodbury, and Gary J. Hill, Collinsville, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Feb. 24, 1989, Ser. No. 315,624

Int. Cl.[5] G01P *3/487, 3/488;* **F16C** *32/00*

U.S. Cl. 324—174 **2 Claims**



1. An encoder retainer ring for use with a magnetic encoder ring on a rotatable shaft, said retainer ring comprising two annular end rims joined by multiple crossbars which are adapted to make a press fit with said shaft, and means for connecting said retainer ring to said encoder ring comprising at least one of said crossbars being partially cut away so as to leave a partial crossbar, said partial crossbar having a portion which is bent radially outwardly, said portion engaging a groove formed in the inner surface of said magnetic encoder ring.

4,940,937

PULSE GENERATING RING FOR ELECTROMAGNETIC ROTARY POSITION DETECTION

Kenji Hattori, Wako, Isuneo Yamada, Kuwvana, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and NTN Corporation, Osaka, both of, Japan

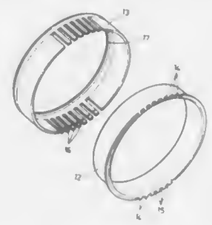
Filed Aug. 15, 1989, Ser. No. 394,029

Claims priority, application Japan, Aug. 18, 1988, 63-206528

Int. Cl.[5] G01B *7/30*

U.S. Cl. 324—207.22 **1 Claim**

1. A pulser ring comprising an inner ring made from a steel plate, and an outer ring made from a steel plate, said inner ring being formed at one end thereof with a plurality of protrusions equally angularly spaced therebetween and extending radially outwardly, said outer ring being formed with a plurality of teeth arranged with equal angular spacings so as to extend axially, said outer ring being fitted on said inner ring with said teeth on said outer ring held in grooves formed between said protrusions on said inner ring, the tips of said teeth bent inwardly against the end of said inner ring to couple said outer ring with said inner ring.



4,940,938

METHOD AND DEVICE FOR MEASURING CHARACTERISTIC MAGNETIC DISTRIBUTION OF A MAGNETIC THIN FILM USING A MAGNETIC HEAD

Seishi Naito; Shuji Tanabe, and Toru Nakashima, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo, Japan

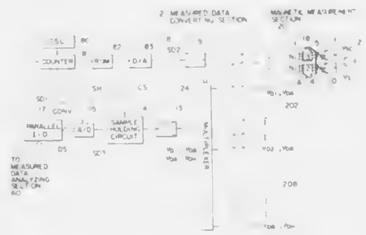
Filed Mar. 2, 1988, Ser. No. 163,104

Claims priority, application Japan, Mar. 2, 1987, 62-47176; Jun. 15, 1987, 62-148736

The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.

Int. Cl.[5] G01R *33/12*

U.S. Cl. 324—212 **18 Claims**



6. A measurement device for measuring magnetization characteristics of a magnetic thin film comprising:

a differential type magnetic head having plural magnetic cores and at least one cancellation core for simultaneously measuring plural locations on the magnetic thin film;

an excitation signal generating means for exciting the differential magnetic head with repetitive signals;

a measured data converting means for consecutively sampling plural differential output voltages from the differential type magnetic head, said differential type magnetic head being positioned on or near the magnetic thin film, and for converting the thus sampled values into digital values; and

a measured data analyzing means for consecutively storing the thus converted digital values from the measured data converting means, and for calculating magnetization characteristics of said plural locations on the magnetic thin film said measured data analyzing means including means for detecting differential output voltages V_D and V_{DI}, said differential output voltage V_D being a voltage output from the secondary coil when the magnetic film is in contact with or in proximity to the gap, said differential voltage V_{DI} being a voltage output from the secondary coil when the magnetic thin film is neither in contact with nor in proximity to the gap, and further including means for calculating a difference voltage $V_{D'}$ by subtracting the voltage V_D from the voltage V_{DI}.

4,940,939

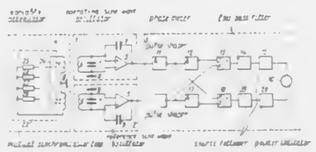
APPARATUS WITH INDUCTIVE LOOP SYNCHRONIZED OSCILLATORS FOR MEASURING THE MAGNETIC CONTENT OF NON-METALLIC SAMPLES

Alexandr L. Khait, prospekt; Kultury, 17, kv. 8; Boris A. Glagovsky, prospekt Morisa Toreza, 15, kv. 49; Larisa R. Frenkel, ulitsa Butlerova, 8, kv. 101, all of Leningrad, and Vera S. Los, ulitsa Komsomolskaya, 21, kv. 24, Sosnovy Bor, all of U.S.S.R.

Filed Mar. 9, 1989, Ser. No. 321,014

Int. Cl.[5] G01R *33/12;* **G01N** *27/72;* **H03B** *27/00*

U.S. Cl. 324—236 **2 Claims**



1. An apparatus for measuring the magnetic content of non-metallic samples, comprising:

an operating sine wave oscillator including a resonant circuit with an inductance coil adapted to receive a test sample, said operating oscillator having an output;

a reference sine wave oscillator including a resonant circuit having a tuning frequency equal to that of said resonant circuit of said operating oscillator, said reference oscillator having an output;

a phase meter connected to said outputs of said operating and reference oscillators and measuring a phase shift between oscillations of said operating and reference oscillators as the test sample is placed inside said inductance coil of said resonant circuit of said operating oscillator; and

a neutral synchronization loop for synchronizing said operating and reference oscillators, comprising a pair of inductance coils inductively coupled with said coils of the resonant circuits of said operating and reference oscillators, and a switchable resistive attenuator for varying the resistance of said mutual synchronization loop according to the magnetic content of the test sample, said switchable resistive attenuator being included between the terminals of the inductance coils not connected with a common bus, so that the phase shift between the oscillations of said operating and reference oscillators, with any amount of the magnetic material in the test sample within the specified measuring range, will not exceed 30°.

4,940,940

METHOD OF RADIO-FREQUENCY EXCITATION IN AN NMR EXPERIMENT

Patrick Leroux, Gif sur Yvette, France, assignor to General Electric CGR SA, Paris, France

PCT No. PCT/FR87/00260, § 371 Date Jan. 10, 1989, § 102(e) Date Jan. 10, 1989

PCT Filed Jul. 2, 1987, Ser. No. 309,798

Claims priority, application France, Jul. 11, 1986, 86 10179

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **3 Claims**

1. A process for electromagnetic excitation, by a radio-frequency signal, of nuclear particles of a body under examination, said process being performed in a nuclear magnetic resonance device and said nuclear particles being contained in a predetermined investigation volume of said device and subjected to said excitation wherein said device includes a means for applying said excitation to said body as well as electronic data processing means wherein flips of magnetic moments of aid nuclear particles are imposed with amplitudes and phases for a given set of resonance frequencies wherein said given set of resonance frequencies includes all frequency components involved in said investigation volume by said excitation, in response to said excitation, said process comprising the steps of:

introducing a Schrodinger equation in said data processing means relative to a probability amplitude of a wave function of spins of said particles which are resonant at a given resonance frequency, an Hamiltonian of said Schrödinger equation being constituted by a function dependent on a frequency and a shape of an excitation pulse applied to said spins;

integrating said Schrodinger equation with respect to time in said data processing means and deducing therefrom polynominal analytical expressions of said probability



amplitude at the end of said excitation pulse, as a function of a variable representing said resonance frequency wherein said variable is present in said polynominal analytical expression at a degree equal to a number of elementary periods and wherein a sum of durations of said elementary periods is equal to a duration of said pulse and said variable being weighted in said polynominal analytical expressions by coefficients representative of the actual excitation profile caused by said excitation pulse and undergone, during said periods, by said spins, said coefficients being a function of a location variable of said investigation volume;

optimizing said coefficients by said data processing means in order that said polynominal analytical expressions approach as nearly as possible a desired predetermined form;

deducing from said optimized coefficients, for each of said elementary periods, characteristics of said excitation pulse leading to said desired predetermined frequency and shape of said flips of magnetic moments; and

exciting said particles of said volume with said excitation signal.

4,940,941

METHOD OF HIGH-SPEED MAGNETIC RESONANCE IMAGING

Richard R. Rzedzian, Lexington, Mass., assignor to Advanced NMR Systems, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 109,091, Oct. 16, 1987, Pat. No. 4,818,942, which is a continuation-in-part of Ser. No. 937,529, Dec. 3, 1986, Pat. No. 4,740,748. This application Apr. 3, 1989, Ser. No. 331,806

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—312 **39 Claims**

1. A method of deriving image information at high speed from an object using nuclear magnetic resonance signals, comprising the steps of:

(a) subjecting an object to continuous static magnetic field

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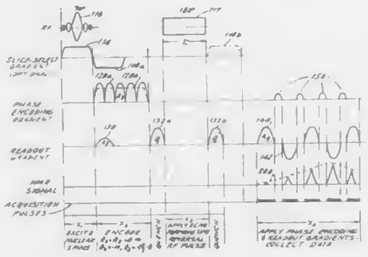
along an axis, said magnetic field having a strength between about 0.5 and 5 Tesla;

(b) exciting nuclear spins in the object by applying to the object a first radio frequency pulse, such that free induction decay signals are produced by said excited nuclear spins;

(c) applying to the object an encoding sequence comprising a magnetic field gradient in a first direction together with a magnetic field gradient in a second direction different than said first direction;

(d) applying a second radio frequency pulse to the object;

(e) applying a readout sequence comprising a series of alternate applications to the object, respectively in time, of



magnetic field gradient in said second direction defining readout gradients and magnetic field gradient in said first direction defining phase-encoding gradients, said readout sequence being completed within a period of time less than about 100 milliseconds; and

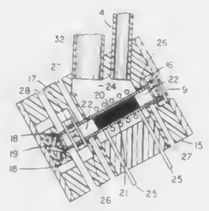
(f) acquiring data to form a magnetic resonance image by sampling nuclear magnetic resonance signals output from said object during the application of said readout gradients to form a series of data values in the time domain, formatting said time domain data into modified data estimating the spatial frequencies of the object and transforming said modified data into spatial domain data for presentation as an image of the object.

4,940,942

METHOD AND APPARATUS FOR CONDUCTING VARIABLE-TEMPERATURE SOLID STATE MAGNETIC RESONANCE SPECTROSCOPY

Victor J. Bartuska, 1600 Brentford La., and David H. Lewis, 502 N. Shields, both of Fort Collins, Colo. 80521

Filed Apr. 14, 1989, Ser. No. 339,053
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—321 **43 Claims**



1. A method of performing variable-temperature, solid state magnetic resonance spectroscopy comprising the steps of:

a. placing a solid state sample in a rotor;

b. positioning said rotor within a magnetic field;

c. spinning said rotor through operation of at least one spinning gas;

d. creating a temperature gradient among the gases surrounding said rotor to impact the temperature of said solid state sample;

e. affirmatively confining said temperature gradient to areas of the rotor away from said solid state sample; and

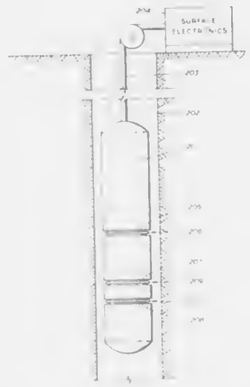
f. reading the magnetic resonant emissions of said sample.

4,940,943

METHOD AND APPARATUS FOR OPTIMIZING THE RECEPTION PATTERN OF THE ANTENNA OF A PROPAGATING ELECTROMAGNETIC WAVE LOGGING TOOL

Roger P. Bartel, and Paul F. Rodney, both of Houston, Harris County, Tex., assignors to Baroid Technology, Inc., Houston, Tex.

Filed Apr. 19, 1988, Ser. No. 183,695
Int. Cl.[5] G01V *3/30*
U.S. Cl. 324—338 **38 Claims**



1. An apparatus for measuring a formation parameter about a borehole traversing an earth formation and containing drilling fluid, comprising:

a tubular, electrically conductive housing means having a longitudinal axis therethrough and threaded at each end for threaded engagement in a drill string above the drill bit and including a passage suitable for conveying drilling fluids therethrough;

means for transmitting electromagnetic energy into the formation surrounding said housing means, said transmitting means disposed about the exterior or said housing means, said transmitting means including a first current loop antenna located in a first cutout of said conductive housing having a length in the range of one to four inches, as measured along said longitudinal axis, said first cutout being annular about the exterior of said tubular housing and being coaxial with said longitudinal axis; and

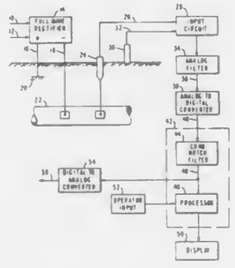
means for receiving electromagnetic energy from said formation, said receiving means including a second current loop antenna located in a second cutout of said conductive housing having a length of one to four inches, as measured along said longitudinal axis, said second cutout being annular about the exterior of said tubular housing and being coaxial with the said longitudinal axis; and a third current loop antenna located in a third cutout of said conductive housing having a length of one to four inches, as measured along said longitudinal axis, said third cutout being annular about the exterior of said tubular housing and being coaxial with said longitudinal axis.

4,940,944

CATHODIC PROTECTION ANALYZER IN WHICH THE FUNDAMENTAL AND ODD HARMONICS OF A POWER LINE FREQUENCY ARE REMOVED

David S. Steele, Wyoming; Randolph K. Armstrong, Cincinnati, and David E. Snider, Pleasant Plain, all of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1989, Ser. No. 311,506
Int. Cl.[5] G01N *27/42*
U.S. Cl. 324—425 **8 Claims**



1. A method of measuring cathodic protection voltage, said method comprising the steps of:

receiving a first signal representative of an externally applied, full wave rectified power line frequency cathodic protection potential, said first signal being subject to electrical interference;

removing a fundamental power line frequency component and odd harmonics of said power line frequency component from said first signal, thereby producing a filtered signal; and

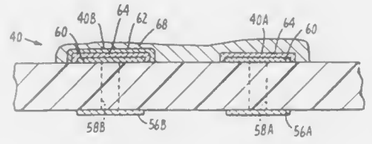
measuring the integral of the filtered signal over a period in which said filtered signal exceeds a predetermined magnitude, to produce an indication of the adequacy of the cathodic protection potential.

4,940,945

INTERFACE CIRCUIT FOR USE IN A PORTABLE BLOOD CHEMISTRY MEASURING APPARATUS

Douglas J. Littlejohn, Sunnyvale, and Richard L. Fellows, Mountain View, both of Calif., assignors to Biologix Inc., Cupertino, Calif.

Filed Nov. 2, 1987, Ser. No. 116,015
Int. Cl.[5] G01N *27/06*
U.S. Cl. 324—438 **5 Claims**



1. An apparatus for measuring a signal having a high source impedance of the type in which the signal to be measured is presented across a pair of contacts, and a measuring circuit is placed in physical contact with the pair of contacts, comprising

interface means having a plurality of contacting structures which can be placed in physical contact with and at spaced apart points on at least a first one of the pair of contacts for circulating a current through the first one of the pair of contacts by way of the plurality of contacting structures, wherein the circulating current flows out of one of the plurality of contacting structures, through the first one of the pair of contacts, and into another of the plurality of contacting structures, and further wherein the magnitude of the circulated circuit is selected to cause a low ohmic contact to be developed between the plurality of contacting structures and the first one of the pair of contacts;

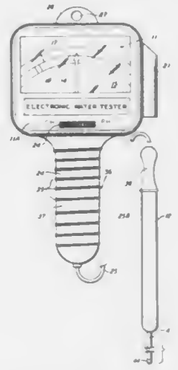
means for measuring the signal between one of the plurality of contacting structures and the other of the pair of contacts.

4,940,946

POOL WATER SENSOR WITH AN EXTENDIBLE PRONGED PROBE FOR DETERMINING PH AND CHLORINE LEVELS

Sampson Nazaryan, 17955 Arenth Ave., City of Industry, Calif. 91748

Filed Dec. 13, 1988, Ser. No. 284,012
Int. Cl.[5] G01N *27/416, 27/02*
U.S. Cl. 324—438 **6 Claims**



1. A hand-held, portable, self-contained, battery-operated electrical sensor for separately measuring levels of acidity and chlorine concentration of water in a swimming pool which comprises a sensor case, a meter including a pair of meter scales and a meter needle with said sensor case, an on-off electrical switch ganged to a movable tap of a variable control resistor electrical circuit for operating said meter needle, said on-off electrical switch and said variable control resistor being operable together from the case exterior to separately determine acidity and chorine, a sensor probe, a holster adapted to removably hold said sensor probe to said sensor case, said sensor probe including a probe head, spaced apart elongate metallic probe elements extending from said probe head, said elongate metallic probe elements including spaced tips, an extendible flexible electrical cable connecting between said sensor probe elements and said control resistor in the case interior, means for viewing said meter from said case exterior, and a battery chamber within said sensor case, said electrical sensor comprising an electrical circuit with said on-off electrical switch in an open position for separately determining pool water acidity and an electrical circuit with said on-off switch in a closed position for determining water chlorine conditions upon immersion of said sensor probe elements into said water of said swimming pool.

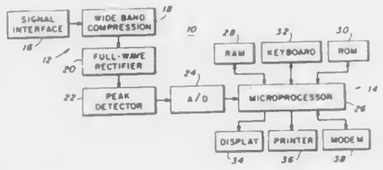
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LINE NOISE SIGNAL MEASUREMENT SYSTEM USING ANALOG SIGNAL COMPRESSION WITH DIGITAL LINEARITY CORRECTION

Andrew McCartney, Libertyville, and Thomas McCartney, Bannockburn, both of Ill., assignors to Oneac Corporation, Libertyville, Ill.

Filed Feb. 28, 1989, Ser. No. 316,798
Int. Cl.[5] G01R 29/26
U.S. Cl. 324—613 18 Claims



1. A line noise signal measurement system for measuring noise on lines being monitored, such as AC power lines, comprising:

detecting means coupled to said monitored lines for providing a sensed analog signal of said monitored lines;

compression means coupled to said detecting means for providing an amplitude compressed signal responsive to said sensed analog signal, said compression means having a stepwise substantially linear transfer function responsive to a variable magnitude of said sensed signal; and

signal processing means coupled to said compression means for sequentially generating a digital signal representative of said amplitude compressed signal; and

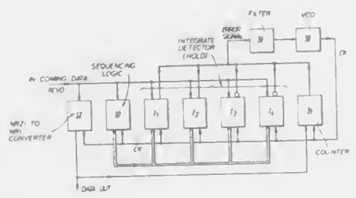
digital processing means coupled to said signal processing means for generating a measured noise signal record responsive to said digital signal, said measured signal record generating means including means for identifying the line noise signal.

4,940,948

CLOCK DRIVEN DATA SAMPLING CIRCUIT

Peter G. Laws, and Graham J. Fletcher, both of Wiltshire, United Kingdom, assignors to Plessey Overseas Limited, England

Filed Mar. 28, 1989, Ser. No. 329,718
Claims priority, application United Kingdom, Mar. 29, 1988, 8807402
Int. Cl.[5] H03D 3/00
U.S. Cl. 329—307 4 Claims



1. A circuit for recovering clock information from an incoming data signal including transitions between upper and lower voltage levels, the circuit including a controlled oscillator providing a clock signal to an integrate/hold means which receives an incoming data signal, the integrate/hold means providing an error signal to the controlled oscillator for adjusting the phase thereof to that of the incoming data signal, the integrate/hold means providing within each period of the clock signal three functions: (1) an integration of the incoming data signal in every bit period in which a voltage transition occurs, (2) a holding of the integrated value within a subsequent bit period or periods, and (3) a resetting of the integrated value following the next voltage transition in the incoming data signal, whereby the held integrated value, whose magnitude is dependent of the phase of the clock signal relative to the phase of the incoming data signal, provides said error signal, and

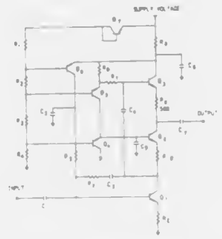
a counter for counting clock periods and being reset in response to recovered data transitions, and being operative to provide a phase error signal to said controlled oscillator upon reaching a predetermined count.

4,940,949

HIGH EFFICIENCY HIGH ISOLATION AMPLIFIER

Ernest D. Landi, Milpitas, Calif., assignor to Avantek, Inc., Milpitas, Calif.

Filed Nov. 1, 1989, Ser. No. 430,629
Int. Cl.[5] H03F 3/30
U.S. Cl. 330—262 11 Claims



1. A broadband amplifier comprising a common emitter stage, a common base stage, a common collector stage, and biasing means, wherein the common emitter stage is connected in a cascode configuration to the common base stage, and the common collector stage is connected to the cascode configuration so as to be driven by the common emitter stage in a push-pull configuration with the common base stage.

4,940,950

FREQUENCY SYNTHESIS METHOD AND APPARATUS USING APPROXIMATION TO PROVIDE CLOSELY SPACED DISCRETE FREQUENCIES OVER A WIDE RANGE WITH RAPID ACQUISITION

Albert D. Helfrick, Boonton, N.J., assignor to Tel-Instrument Electronics Corporation, Carlstadt, N.J.

Filed Aug. 12, 1988, Ser. No. 231,458
Int. Cl.[5] H03L 7/00
U.S. Cl. 331—2 27 Claims

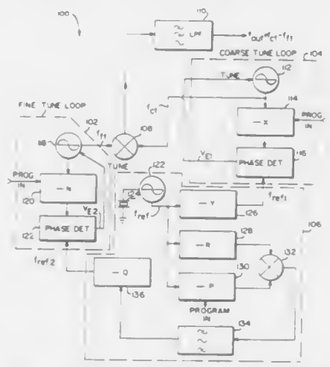
1. A programmable frequency synthesizer for producing an output signal at a frequency which closely approximates a desired frequency, said synthesizer including:

programming means for producing a control signal specifying said desired frequency to within a first frequency spacing;

phase locked loop means for generating said output signal in response to said control signal and also in response to an input reference signal having a frequency exceeding said first frequency spacing;

reference oscillator means for producing a first signal; and

reference frequency altering means operatively coupled to said reference oscillator means and to said programmable means for altering the frequency of said first signal in discrete frequency steps having said first frequency spacing in response to said control signal and for applying said altered first signal to said phase locked loop means as said input reference signal, said first signal frequency alterations introducing errors in the frequency of said output signal,



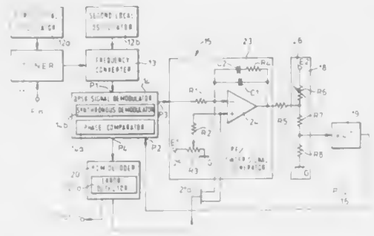
wherein said programming means including means for optimizing the output signal frequency errors introduced by said reference frequency altering means to obtain a close approximation of said desired frequency.

4,940,951

PHASE LOCK RECOVERY APPARATUS FOR PHASE LOCKED LOOP CIRCUIT

Yoshiaki Sakamoto, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 27, 1989, Ser. No. 302,714
Claims priority, application Japan, Feb. 1, 1988, 63-22312
Int. Cl.[5] H03L 7/12; H04L 27/22
U.S. Cl. 331—4 4 Claims



1. A phase lock recovery apparatus for a phase locked loop circuit, the phase locked loop circuit comprising:

a synchronous demodulator section having an output for a demodulated signal;

a phase comparator having an input for a modulated signal, an input for a phase reference signal, and an output for a phase error signal, said output including a low pass filter;

a voltage superposing circuit having a fixed DC voltage source and an input coupled to said phase comparator output;

a voltage controlled oscillator coupled to said superposing circuit, the voltage superposing circuit supplying a superposed voltage to said voltage controlled oscillator; and

the voltage controlled oscillator having an output which supplies the phase reference signal to the respective phase comparator input;

the phase lock recovery apparatus comprising:

detection means coupled to the demodulated output of the synchronous demodulator for detecting a phase unlocked state in the phase locked loop circuit; and

sweep signal generating means responsive to the detection means for sweeping the frequency of the voltage controlled oscillator to come within the lock range of the frequency of the input signal when the phase unlocked state is detected, wherein the sweep signal generating means includes:

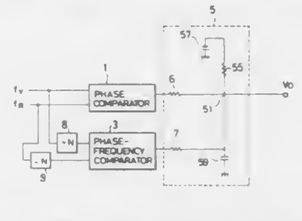
voltage generating means for supplying a prescribed sweep voltage to the phase locked loop circuit, the voltage generating means having an operational amplifier, discharging means coupled to the operational amplifier for controlling the sweep voltage, and a field effect transistor connected to the operational amplifier for controlling the discharging means.

4,940,952

PHASE AND FREQUENCY COMPARATOR CIRCUIT FOR PHASE LOCKED LOOP

Koyo Kegasa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hyogo, Japan

Filed Nov. 7, 1988, Ser. No. 267,549
Claims priority, application Japan, Nov. 9, 1987, 62-282821
Int. Cl.[5] H03D 13/00; H03L 7/087, 7/10
U.S. Cl. 331—11 37 Claims



1. A phase and frequency detector circuit, comprising:

phase comparator means for receiving a first input signal and a second reference input signal and generating a signal that varies depending on their phase difference;

frequency dividing means for frequency-dividing, by the same factor N, said first input signal and said second reference input signal;

phase-frequency comparator means for receiving the outputs of said frequency dividing means and generating a signal that varies depending on the frequency difference and phase difference of the outputs of said frequency dividing means; and

merging means for receiving the signals generated by said phase comparator means and said phase-frequency comparator means and providing a resultant output signal.

4,940,953

MILLIMETER WAVE MICROSTRIP IMPATT DIODE OSCILLATOR

John R. Lamberg, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 5, 1989, Ser. No. 402,664
Int. Cl.[5] H03B 7/14
U.S. Cl. 331—96 5 Claims

1. A millimeter wave, microstrip IMPATT diode oscillator comprising:

(a) a block of conductive material having a channel of rectangular cross-section formed therein and with a well of a predetermined diameter formed inwardly of said block from the floor of said channel;

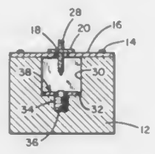
(b) a packaged IMPATT diode fitted into said well, said IMPATT diode including a metallized cap projecting out of said well and into said channel;

(c) a microstrip circuit including a dielectric substrate resting on said channel floor, said dielectric substrate includ-

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ing a hole for receiving said metallized cap therethrough and a pattern of printed circuit conductors on the surface opposite that resting on said channel floor;

(d) means connecting said metallized cap of said IMPATT diode to said pattern of printed circuit conductors;



(e) a conductive cover secured to said block and overlaying said channel; and

(f) a laterally and vertically adjustable post passing through said cover and into said channel for cooperating with said pattern of printed circuit conductors for adjusting the output of said oscillator.

4,940,954

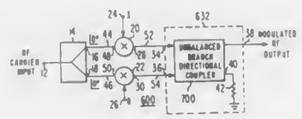
UNBALANCED QUADRATURE PSK MODULATOR-LIMITER

Donald E. Aubert, Mt. Laurel; You-Sun Wu, Princeton Junction, and Vishnu W. Nerurkar, Plainsboro, all of N.J., assignors to General Electric Company, East Windsor, N.J.

Filed Apr. 12, 1988, Ser. No. 180,497

Int. Cl.[5] H03C *3/00*

U.S. Cl. 332—103 **13 Claims**



1. An apparatus for accurately producing unbalanced quadri-phase shift keyed modulated signals, including an unbalanced quadri-phase shift keyed modulator adapted to be coupled to a source of carrier signal and to sources of first and second information signals to be modulated in unbalanced quadrature onto said carrier for producing unbalanced quadri-phase shift keyed signals, said modulator tending to produce crosstalk if said quadrature relationship is disturbed, wherein said modulator comprises:

in-phase power splitting means including an input port adapted to receive said carrier signal to be modulated, and also including first and second output ports at which equal-amplitude mutually in-phase first and second carriers are generated in response to application of said unattenuated carrier signal to said input port;

first biphase modulation means coupled to said first output port of said power splitting means for receiving said first carrier therefrom, and also including an information input port adapted to be coupled for receiving said first information signals, for biphase modulating said first carrier with said first information signals for producing first modulated carrier signals;

second biphase modulation means coupled to said second output port of said power splitting means for receiving said second carrier therefrom, and also including an information input port adapted to be coupled for receiving said second information signals, for biphase modulating said second carrier with said second information signals for producing second modulated carrier signals;

a 90°, unbalanced hybrid coupler including first and second input ports coupled to said first and second amplitude modulation means, respectively, and also including an output port, for coupling said first modulated carrier signals from said first input port of said hybrid coupler to said output port of said hybrid coupler with reference amplitude and phase, and for coupling said second modulated carrier signals from said second input port of said hybrid coupler to said output port of said hybrid coupler with an amplitude different than said reference amplitude and with a relatively quadrature phase shift, and for vectorially summing the unequal-amplitude, mutually-quadrature first and second modulated carrier signals to produce said unbalance quadri-phase shift keyed signals, said apparatus further comprising:

an amplitude limiter coupled to said modulator for limiting the amplitude of said unbalanced quadri-phase shift keyed signals for reducing said tendency to produce crosstalk.

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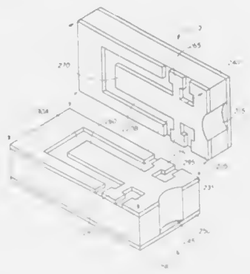
TEMPERATURE COMPENSATED STRIPLINE STRUCTURE

Robert J. Higgins, Jr., Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1989, Ser. No. 292,807

Int. Cl.[5] H01P *1/203, 7/08*

U.S. Cl. 333—204 **21 Claims**



1. A stripline structure, comprising:

a first substrate having inner and outer opposed surfaces, and having a first temperature coefficient and a first thickness;

a second substrate having inner and outer opposed surfaces, and having a second temperature coefficient and a second thickness;

said outer surfaces of first and second substrate each being covered by a conductive material constituting ground planes;

at least one resonator device comprising a first conductor having a first width, situated on the inner surface of said first substrate, and a second conductor having a second width, situated on the inner surface of said second substrate; said first and second substrates being constructed and arranged with their respective inner surfaces facing each other and said first and second temperature coefficients having opposite effect on resonant frequency;

wherein said first and said second thicknesses of said first and second substrate are selected such as to produce a net temperature coefficient of resonant frequency.

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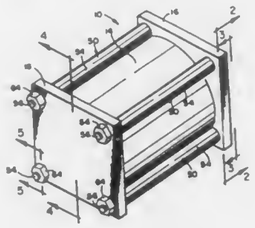
BAND-PASS FILTER AND SUPPORT STRUCTURE THEREFOR

William J. Garner, Yardley, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Filed Sep. 21, 1988, Ser. No. 247,381

Int. Cl.[5] H01P *1/207*

U.S. Cl. 333—209 **11 Claims**



1. A band pass-band reject filter comprising

at least one cylindrical housing,

a first end plate at one end of said housing and a second end plate at another end of said housing,

a plurality of bolts extending from one end plate to the other and being spaced from each other around an outer periphery of said housing,

said bolts being rigidly connected to said first end plate and to the peripheral surface of said housing, and being detachably connected to said second end plate, whereby said housing and said first end plate may be detached as a unit from said second end plate, and

a tuning rod threadedly secured in an aperture in said first end plate and axially movable within said housing along a direction parallel with said bolts.

4,940,957

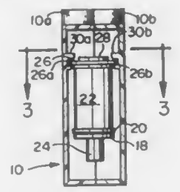
FLANGE ENGAGEMENT OF CAPTIVE TUBE IN ELECTROMAGNETIC CIRCUIT BREAKERS USING HALF SHELLS

Konrad J. Richter, Sr., Lawrenceville, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Filed Feb. 22, 1989, Ser. No. 314,172

Int. Cl.[5] H01H *9/02*

U.S. Cl. 335—202 **4 Claims**



1. An electromagnetic circuit breaker having a pair of breaker switch contacts electrically connected in series with a magnetic coil comprising an insulating breaker housing having a pair of opposed housing shell members, at least in the region of the coil, which members are opened to assemble the breaker structure and closed and clamped together to contain the operating structure, including at least an actuation linkage for opening and closing the switch contacts supported on a frame which is fixed to the housing and having actuation means to open and close the switch contacts and a movable armature attractable to a pole piece for opening the switch contacts on overload, the pole piece terminating a non-magnetic tube containing and guiding a magnetic core, the non-magnetic tube being located within the magnetic coil and having a radially extending tube flange at an end terminated in the pole piece, the actuating linkage and a coil supporting bobbin being supported on the frame, the tube flange being engaged by shoulders on the respective opposed sidewalls of the interior of the housing so that pressure is applied to urge the tube flange against its supporting surface and clamp in place the flange and all structure between the flange and the frame.

4,940,958

POLARIZED ELECTROMAGNETIC APPARATUS

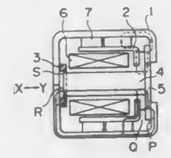
Shigeharu Ootsuka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1989, Ser. No. 413,002

Claims priority, application Japan, Sep. 29, 1988, 63-245000

Int. Cl.[5] H01F *7/08*

U.S. Cl. 335—230 **3 Claims**



1. A polarized electromagnetic apparatus having a movable core assembly, said core assembly being driven by a combined attractive force of a permanent magnet and an electromagnetic coil against a reset spring force when the electromagnetic coil is energized and said movable core assembly being driven by the reset spring force when the electromagnetic coil is de-energized, comprising:

at least one stationary core (1) having a substantially U-shaped cross section, said U-shaped cross section having a first leg and a second leg opposing each other and an inner surface;

a permanent magnet (7) having a first pole and a second pole, said first pole being in contact with said inner surface of said stationary core (1);

a pole plate (2) in contact with said second pole and forming a first clearance (P,Q) between said second leg;

an electromagnetic coil (6) disposed between said first and second legs;

a bar-shaped movable core (4) disposed between said first and second legs and movably extending through said electromagnetic coil (6), said bar-shaped movable core (4) having a first end and a second end, said bar-shaped movable core (4) having a movable core plate (5) which is secured at said first end of said bar-shaped movable core and extends into said first clearance (P,Q), said bar-shaped movable core (4) displaces in a longitudinal direction thereof to a first position where said movable core plane (5) is attracted by and contacts with said second leg when said electromagnetic coil (6) is de-energized and to a second position where said second end of said bar-shaped movable core (4) is attracted by and contacts with said first leg when said electromagnetic coil (6) is energized;

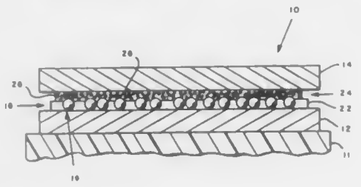
a pole piece (3) secured to said first leg and having a hole (20) therein through which said bar-shaped movable core (4) displaces to said second position.

4,940,959

REVERSIBLE RESISTANT DEVICE

Claude Zeller, Monroe; Henry A. Mayeski, Norwalk, and Charles F. Murphy, III, Fairfield, all of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 71,237, Jul. 9, 1987, abandoned. This application Aug. 3, 1989, Ser. No. 388,742
Int. Cl.[5] H01C 7/00
U.S. Cl. 338—13 5 Claims



1. A reversible resistant device comprising:
a first conductive layer,
a second conductive layer opposed relative to said first conductive layer,
a normally non-conductive film disposed intermediate said first and second conductive layers,
said normally non-conductive film comprising metal particles having a non-conductive coating thereover disposed within a first binder, and
a conductive film located intermediate said normally non-conductive film and said second layer, said conductive film comprising metal particles dispersed within a second binder,
said metal particles protruding from said first binder up to 25% of their diameter,
whereby upon being exposed to an electrical force said non-conductive coating breaks down to render said normally non-conductive film conductive.

4,940,960

HIGHLY DENSIFIED VOLTAGE NON-LINEAR RESISTOR AND METHOD OF MANUFACTURING THE SAME

Hiroshi Nemoto, Nagoya; Koichi Umemoto, Toyota, and Shinji Kawasaki, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 16, 1988, Ser. No. 285,528
Claims priority, application Japan, Dec. 22, 1987, 62-322992; Nov. 24, 1988, 63-294501
Int. Cl.[5] H01C 7/00, 7/10
U.S. Cl. 338—13 11 Claims

1. A voltage non-linear resistor comprising:
a sintered body comprising zinc oxide as a primary constituent; and
at least one additive which exhibits voltage non-linearity in the sintered body;
wherein said sintered body has a relative density of at least 97%.

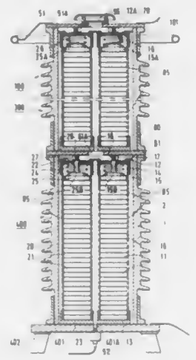
4,940,961

BRAKING RESISTOR FOR A HIGH TENSION ELECTRICAL NETWORK

Edmond Thuries; Van Doan Pham, both of Meyzieu, and Roger Ledru, Pont De Cheruy, all of France, assignors to Societe Anonyme dite : Alsthom, Paris, France

Filed Dec. 30, 1988, Ser. No. 292,162
Claims priority, application France, Dec. 30, 1987, 87 18412
Int. Cl.[5] H01C 7/10
U.S. Cl. 338—21 9 Claims

1. A braking resistor comprising:
at least one basic element comprising a ceramic envelope receiving at least one stack of conducting solid disks made of a carbon-based ceramic and having resistivity lying in the range 100 Ω.cm to 1000 Ω.cm;
means for maintaining said stack;
means for exerting pressure on the stack of disks; and
means for providing electrical contact between the ends of each stack and respective conducting plates located at the ends of the envelope, the improvement wherein said envelope is filled with nitrogen at a pressure of 1 to 2 bars, said means for holding or maintaining stack is a tube of epoxy



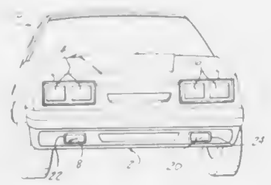
glass with the disks being placed inside the tube, and said tube including a plurality of orifices through a tube wall for enhancing nitrogen flow about said stack of conducting solid disks whereby heat is dissipated and internal electrical insulation is enhanced by the pressure of low pressure nitrogen extending over the length of the resistor tube thereby providing a voltage gradient no greater than 500 V/cm with energy absorption by the braking resistor in one second on the order of 370 joules/cm, and wherein the braking resistor has a very low self-inductance.

4,940,962

FRONT MOUNTED VEHICLE BRAKING INDICATOR

Jerry L. Sarokin, 33632 Old Timber, Farmington Hills, Mich. 48018

Filed Feb. 22, 1988, Ser. No. 158,878
Int. Cl.[5] B60Q 1/44
U.S. Cl. 340—479 4 Claims



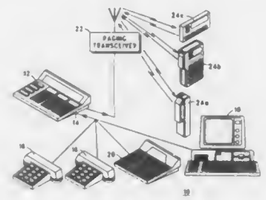
1. An indicator apparatus for use on a vehicle having a depressible brake pedal comprising:
a first light and a second light spacedly mounted a predetermined distance apart on opposite sides of the front of the vehicle and separately viewable from the front of the vehicle as two separate lights;
first means for sensing the initial depression of the brake pedal;
second means for sensing further depression of the brake pedal; and
means, responsive to the first and second sensing means, for actuating the first light at the initial depression of the brake pedal and the second light in combination with the initially actuated first light during further depression of the brake pedal.

4,940,963

PAGING SYSTEM WITH IMPROVED ACKNOWLEDGE-BACK CAPABILITIES

Jose Gutman, Boynton Beach, and Steven C. Shapiro, Lake Worth, both of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 10, 1989, Ser. No. 322,159
Int. Cl.[5] H04Q 7/00
U.S. Cl. 340—313 22 Claims



1. In a paging system with a central base station and a plurality of remote pager units, an arrangement for indicating the status of a particular paging call, comprising in combination:
indicator means on the pager unit;
means for receiving a paging signal by the pager, activating said indicator means for a set interval, and sending back an automatic response thereto to indicate a received address;
means for receiving an associated message by the pager; and
means for manually responding or not responding during said set interval,
by manually responding during said interval, an affirmative response is sent back to the base station as an indication that said message has been received and which is so indicated to the initiating caller,
by not manually responding within said interval, a negative response is sent back to the base station which is likewise indicated to the initiating caller.

4,940,964

VEHICLE CONTROL AND THEFT DETERRENT WITH REMOTE TRANSMITTER

Victor Dao, 1401 N. Fawn St., Santa Ana, Calif. 92703

Filed Dec. 4, 1989, Ser. No. 444,988
Int. Cl.[5] B60Q 1/00
U.S. Cl. 340—438 12 Claims



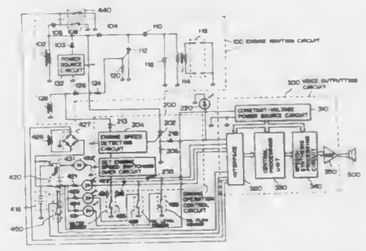
1. A theft deterrent system and remote control for a plurality of vehicle functional operations, in which the vehicle has an electrical system including an ignition system, an electrical engine starter and a heating or cooling system which comprises
a. a vehicle control system mounted in the vehicle, in circuit to the battery of said vehicle, and including:
(1) a vehicle receiver and antenna to receive a selected band of radio frequency broadcast control signals;
(2) a decoder in circuit to said receiver to process a received signal and to recognize a preselected coded signal;
(3) a plurality of controller circuits, one each for each of the automotive functional operations to enable operation of one of the ignition system, engine starter, and heating or cooling systems of said vehicle, each responsive to a preselected signal code and each having an output control operative to actuate its respective functional operation under control;
(4) a conditions scanning circuit having a plurality of sensors, one each for each of the automotive functional operations of ignition system, engine starter, and heating or cooling systems and responsive thereto to generate a return signal;
(5) an audible signal generator responsive to said conditions scanning circuit to generate an audible tone of a preselected frequency;
(6) a vehicle transmitter in circuit to said tone generator and operative to transmit a second selected band of radio frequency signal in response thereto;
b. a hand-held remote control unit, having a self containing electrical power source, and including:
(1) a keypad comprising a plurality of key switches;
(2) an encoder in circuit to said key switches and responsive thereto to generate a coded signal;
(3) a remote transmitter in circuit to said encoder and responsive thereto to generate and transmit a radio frequency signal of said first frequency containing said coded signal;
(4) a remote receiver and receiving antenna to receive said return signal; and
(5) a tone decoder and audio speaker in circuit to said receiver and responsive thereto to generate an audible tone.

4,940,965

VOCAL ALARM FOR OUTBOARD ENGINE

Kazuhiro Umehara, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 21, 1988, Ser. No. 222,183
Claims priority, application Japan, Jul. 31, 1987, 62-193237
Int. Cl.[5] B60Q 1/00
U.S. Cl. 340—460 2 Claims



1. A vocal alarm apparatus for an engine, comprising: a plurality of sensors for said engine which each produce a signal upon detecting a respective operational abnormality; and voice synthesizing means coupled to said sensors for producing in response to each said signal a respective synthesized vocal statement; wherein said voice synthesizing means includes prioritization means for checking said sensors in a predetermined sequence for the presence of a signal therefrom, for responding to detection of the presence of a signal from a first

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of said sensors by causing said voice synthesizing means to produce the vocal statement corresponding to said first sensor and for then resuming said checking of said sensors according to said predetermined sequence, for responding to detection of the presence of a signal from a second of said sensors by causing said voice synthesizing means to produce the vocal statement corresponding to said second sensor and for then resuming said checking of said sensors according to said predetermined sequence, and for responding to detection of the presence of a signal from a third of said sensors by causing said voice synthesizing means to repeatedly successively produce the vocal statement corresponding to said third sensor until said signal from said third sensor terminates and for thereafter resuming said checking of said sensors according to said predetermined sequence; wherein said prioritization means responds to detection of the presence of a signal from a fourth of said sensors by causing said voice synthesizing means to produce the vocal statement corresponding to said fourth sensor and by then resuming said checking of said sensors according to said predetermined sequence; wherein said predetermined sequence of checking said sensors includes a check for the presence of a signal from said third sensor immediately after the production by said voice synthesizing means of the vocal statement corresponding to each said sensor other than said third sensor; wherein said first sensor produces a signal in response to detection of a condition in which an oil level in the engine is below a predetermined level; wherein said third sensor produces a signal in response to detection of a condition in which the engine speed is being forcibly limited; wherein said fourth sensor produces a signal in response to detection of a condition in which a flow rate of the oil in the engine is below a predetermined rate; and wherein said predetermined sequence includes: a first subsequence in which, in the absence of a signal from any said sensor, said prioritization means successively cyclically checks in order said first sensor, said second sensor, said fourth sensor and said third sensor; a second subsequence in which, following detection of the presence of a signal from said first sensor and the production of the corresponding vocal statement, said prioritization means successively checks in order said third sensor, said second sensor and said fourth sensor, and then resumes said first subsequence with said check therein of said first sensor; a third subsequence in which, following detection by said prioritization means of a signal from said second of said sensors and the production of the corresponding vocal statement, said prioritization means successively checks in order said third sensor, said fourth sensor and said first sensor, and then resumes said first subsequence with said check therein of said second sensor; and a fourth subsequence in which, following detection by said prioritization means of a signal from said fourth sensor and the production of the corresponding vocal statement, said prioritization means successively checks in order said third sensor, said second sensor and said first sensor, and then resumes said first subsequence with said check therein of said fourth sensor.

4,940,966

ARTICLE DETECTION AND/OR RECOGNITION USING MAGNETIC DEVICES

Robert M. Pettigrew; Stephen H. Chambers; Dafydd G. Davies, all of Cambridge, and Michael D. Crossfield, Brackley, all of England, assignors to Scientific Generics Limited, Cambridge, United Kingdom

PCT No. PCT/GB88/00447, § 371 Date Apr. 10, 1989, § 102(e) Date Apr. 10, 1989, PCT Pub. No. WO88/09979, PCT Pub. Date Dec. 15, 1988

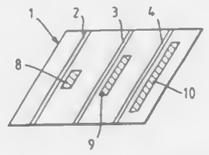
PCT Filed Jun. 8, 1988, Ser. No. 317,455

Claims priority, application United Kingdom, Jun. 8, 1987, 8713353

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—551 **6 Claims**

1. A method of recognising and/or detecting an article at a given point in the course of its movement from a first location to a second location, which comprises securing to said article while it is at said first location a magnetic device which comprises a plurality of magnetic elements in a predetermined association (e.g. with predetermine numbers of magnetic elements and with predetermined spacings between said elements), at least one of said magnetic elements being a soft magnetic material with low coercivity, high intrinsic permeability and low or zero magnetostriction, and at least one other of said magnetic elements being a semi-hard magnetic material; subjecting the article carrying said magnetic device to a predetermined interrogating magnetic field at said given point and observing the interaction between the interrogating field and the magnetic device carried by the article; deducing from said observed interaction the nature of the article; and allowing the article to travel from said given point to said second location; said first location being a point of access to an underground pipe system and said given point being a site where said pipe system itself is accessible but where the contents of said pipe system are inaccessible.



4,940,967

BALANCED DIGITAL INFRARED DETECTOR CIRCUIT

Edgar M. Smith, Millersville, Pa., assignor to Burle Technologies, Inc., Wilmington, Del.

Filed Aug. 31, 1989, Ser. No. 401,043

Int. Cl.[5] G08B *13/18*

U.S. Cl. 340—567 **2 Claims**



1. A digital control circuit which initiates an output signal which is synchronized with a clock pulse when infrared radiation to which a sensor is exposed varies from a prescribed level, comprising:

an infrared sensor with first and second terminals, the effective resistance of which changes with radiation to which it is exposed, the second terminal being interconnected with a circuit return;

a first resistor one terminal of which is connected to the first terminal of the infrared sensor;

a capacitor one terminal of which is connected to a second terminal of the first resistor with the second terminal of the capacitor connected to a DC power supply;

a second resistor, one terminal of which is connected to the junction of the capacitor and the first resistor:

a third resistor one terminal of which is connected to the second terminal of the second resistor, the second terminal of the third resistor being interconnected with a circuit return, the ratio of the resistance values of the second resistor to the third resistor, being the same ratio as the resistance value of the first resistor to the effective resistance value of the infrared sensor when the infrared sensor is exposed to said prescribed level of infrared radiation;

a first voltage-sensitive switch and inverter, the input of which is connected to the junction of the infrared sensor and the first resistor;

a first digital logic circuit, the reset terminal of which is connected to the output of the first voltage sensitive switch and inverter and with its data terminal connected to the DC power supply;

a first diode with its positive terminal connected to the Q bar output of the first digital logic circuit and its negative terminal connected to the junction of the capacitor and the first resistor;

a second voltage sensitive switch and inverter, the input of which is connected to the junction of the second resistor and the third resistor;

a second digital logic circuit, the reset terminal of which is connected to the output of the second voltage sensitive switch and inverter and with its data terminal connected to the DC power supply;

a second diode with its positive terminal connected to the Q bar output of the second digital logic circuit and its negative terminal connected to the junction of the capacitor and the first resistor;

a clock generator, the output of which is connected to the clock input terminals of the first and second digital logic circuits;

an exclusive OR gate the first input of which is connected to the Q bar output of the first digital logic circuit and the second input of which is connected to the Q bar output of the second digital logic circuit;

a time delay the input of which is connected to the clock generator output; and

a third digital logic circuit, the data input of which is connected to the output of the exclusive OR gate, the clock input of which is connected to the output of the time delay, and the output of which thereby changes its status when the radiation level to which the infrared sensor is exposed varies from the prescribed level.

4,940,968

ANTI-THEFT TAG WITH CONICAL COIL

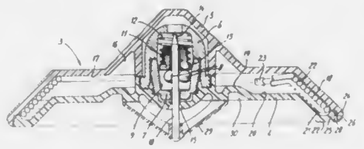
Cornelis S. A. De Nood, Harderwijk, Netherlands, assignor to ID Systems International B.V., Zwolle, Netherlands

Filed Feb. 14, 1989, Ser. No. 311,123

Claims priority, application Netherlands, Feb. 15, 1988, 8800367

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—572 **6 Claims**



1. Anti-theft tag, comprising dishes which are fixed to each other, and one of which is provided with a feed-through hole for feeding through a pin with a head, said dishes having faces bounding an internal space in which an unlockable lock for locking the fed-through pin and a circuit made up of a coil and a capacitor is accommodated, in which the coil of the circuit is conical and the base of the cone runs substantially parallel to the faces of the dishes.

4,940,969

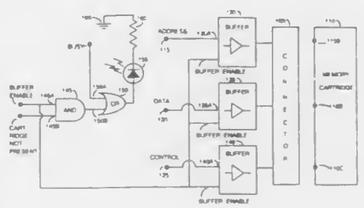
APPARATUS AND METHOD FOR INDICATING WHEN IT IS SAFE AND UNSAFE TO INSERT A MEMORY CARTRIDGE INTO OR REMOVE A MEMORY CARTRIDGE FROM A MEMORY CARTRIDGE RECEIVING DEVICE

Danny R. Taylor, Groton, N.Y., assignor to Databook, Inc., Ithaca, N.Y.

Filed May 22, 1989, Ser. No. 354,473

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—653 **14 Claims**



8. A method of indicating to a user when it is unsafe to insert a memory cartridge into or remove a memory cartridge from a memory cartridge receiving device, said receiving device being adapted for use in conjunction with at least one buffer which buffers information signals to be supplied to said memory cartridge, said method comprising the steps of:

providing an indicator perceivable by said user;

causing said indicator to assume a first state to indicate to said user that it is unsafe to insert said cartridge into or remove said cartridge from said receiving device when at either of the two following conditions occurs:

(1) an attempt is being made to access said memory cartridge,

(2) said at least one buffer is enabled at the same time said memory cartridge is not present in said receiving device.

4,940,970

CRT DISPLAY DEVICE WITH A PICTURE-SHIFTING CIRCUIT

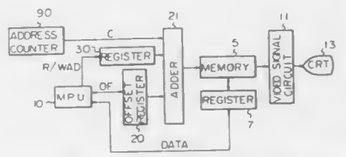
Kiminori Fujisaku, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 220,437, Jul. 13, 1988, abandoned, which is a continuation of Ser. No. 20,199, Feb. 27, 1987, abandoned, which is a continuation of Ser. No. 393,532, Jun. 30, 1982, abandoned. This application May 2, 1989, Ser. No. 346,308

Claims priority, application Japan, Jun. 30, 1981, 56-100508

Int. Cl.[5] G09G *1/16*

U.S. Cl. 340—726 **6 Claims**



1. A CRT display device with a picture shifting circuit, comprising:

a memory, having memory addresses, for storing data therein;

a CRT display panel, operatively connected to said memory, for displaying pictures corresponding to data stored in said memory;

a processor unit, operatively connected to said memory, for generating writing addresses to write data from said pro-

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cessor unit into said memory and for generating reading addresses to read data from said memory to said processor unit;

storing means operatively connected to said processor unit for storing an offset address;

an address counter, for generating count values specifying a part of the address space of said memory, cyclically and sequentially; and

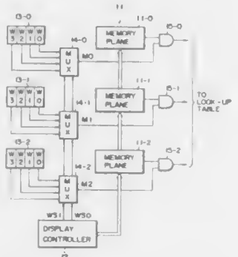
a calculating circuit, operatively connected to said processor unit, said storing means, said address counter, and said memory, for receiving the writing and reading addresses from said processor unit, the offset address from said storing means, and the count values from said address counter and responsive to said writing and reading addresses generated by said processor unit, said offset address stored in said storing means and said count values generated by said address counter and performing a logical operation with respect to the offset address and one of the writing and reading addresses, for supplying real addresses obtained through said logical operation during a display operation for accessing said memory in accordance with the count values and said offset address, and for supplying real addresses obtained through said logical operation for accessing said memory during one of a read and write operation in accordance with said one of said writing addresses and reading addresses from said processor unit and said offset address.

4,940,971

BIT MAP DISPLAY APPARATUS FOR PERFORMING AN INTERRUPTION DISPLAY AMONG PLANES AT HIGH SPEED

Kouki Hasebe, Fuchu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1988, Ser. No. 238,222
Claims priority, application Japan, Aug. 31, 1987, 62-216658
Int. Cl.[5] G09G *5/14*
U.S. Cl. 340—721 **11 Claims**



1. A bit map display apparatus comprising:

a bit map memory having a plurality of memory planes storing image data;

display control means for setting at least one hardware window, and for outputting a window number indicating a display window in accordance with a display scan;

window control data memory means, corresponding to each of the memory planes, for storing data for designating a display enable/disable state for each hardware window;

selection means, corresponding to each of the memory planes, for selecting window display control data output from a corresponding one of the window control data memory means as mask data in accordance with the window number; and

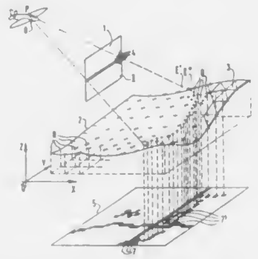
control means, coupled to each of the memory planes, for controlling outputting of data read out from a corresponding one of the memory planes in accordance with the mask data selected by said corresponding selection means.

4,940,972

METHOD OF REPRESENTING A PERSPECTIVE IMAGE OF A TERRAIN AND A SYSTEM FOR IMPLEMENTING SAME

Carine Mouchot, Conflans Ste Honorine, and Gérard Frappier, Paris, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique (S A G E M), Paris Cedex, France

Filed Feb. 10, 1988, Ser. No. 154,576
Claims priority, application France, Feb. 10, 1987, 87 01607
Int. Cl.[5] G09G *1/14*
U.S. Cl. 340—747 **11 Claims**



1. A method of representing, on a display device screen (1) and in perspective from a given point (P) of observation, the image of a terrain (2) and a sky, said terrain being known by the coordinates of the nodes (N) of a given mesh network, in which a surface (3) passing through these nodes (N) is determined by interpolation, an assembly of points (Q) on this surface is determined and the pixels (4) of the image to be represented, which are associated with this assembly of points (Q), are illuminated so as to display the image on the display device screen (1), characterized in that a planimetric map (5) or photograph of the terrain (2) is defined with color informations, the map or photograph is digitized so as to obtain map pixels (7,7') of given colors, the points (Q) of said assembly of points being defined so that each point (Q) is associated with a respective pixel (4) of the image, and furthermore, with each of these points (Q), and with each of the corresponding image pixels (4), a map pixel (7') is associated and each image pixel (4) is illuminated in the color of the associated map pixel (7').

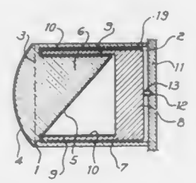
4,940,973

METHOD AND APPARATUS FOR DISPLAYING GRAPHIC AND ALPHANUMERIC DATA

Beatriz E. Katz, Buenos Aires, Argentina, assignor to Alternative Energy Research Center Inc., Panama

Filed Mar. 23, 1988, Ser. No. 172,282
Claims priority, application European Pat. Off., Apr. 1, 1987, 87104786.6
Int. Cl.[5] G09G *3/34*
U.S. Cl. 340—764 **24 Claims**

1. A method for displaying data utilizing a matrix panel of pixels and an outside light source, comprising: drawing light from the outside through a transparent surface on said pixels; deflecting said light by a radiation deflector to hit a reflecting surface corresponding to one of at least two coloured areas belonging to a movable element; deflecting said light reflected from said reflecting surface to the outside back through said transparent surface; said movable element being shiftable such



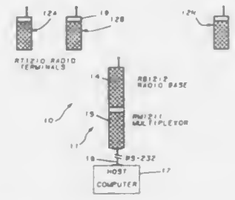
that said light deflected by said radiation deflector strikes a selected one of said coloured areas.

4,940,974

MULTITERMINAL COMMUNICATION SYSTEM AND METHOD

Marvin L. Sojka, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Nov. 1, 1988, Ser. No. 265,842
Int. Cl.[5] H04Q *9/00*
U.S. Cl. 340—825.080 **9 Claims**



1. A method of effecting communication between a primary transceiver means and a group of mobile secondary transceiver means having respective distinctive identification means, with communication link means for affording communication therebetween, said method comprising:

(a) operating said primary transceiver means to transmit a group polling message via said communication link means, specifying a series of response time slots in which the secondary transceiver means may respond,

(b) operating the secondary transceiver means which receive said group polling message and which have a coded data message to transmit to said primary transceiver means

(b1) to randomly select one of the series of response time slots and

(b2) in the respective randomly selected response time slots, to send respective response messages which contain the respective identification means such that the primary transceiver means may identify respective secondary transceiver means of the group which have responded to the group polling message,

(c) operating the primary transceiver means to time the expiration of the series of response time slots defining a response time interval and after expiration of such response time interval, to initiate communication via said communication link means with a particular one of said secondary transceiver means which has responded to said group polling message for receiving a coded data message therefrom,

(d) performing steps (a) a multiplicity of times, and operating said primary transceiver means to change the number of response time slots which are specified in a group polling message according to step (a) in accordance with the number of times a collision occurs wherein plural secondary transceiver means send respective response messages according to step (b2) in the same response time slot, and

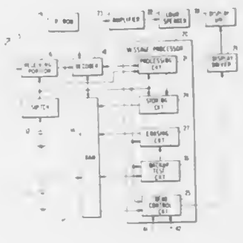
(e) operating said primary transceiver means subsequent to the issuance of a group polling message according to step (a) specifying a changed number of response time slots to observe a different response time interval corresponding to the expiration of the changed number of response time slots before initiating further communications according to step (c) via said communication link means.

4,940,975

RADIO PAGER RECEIVER CAPABLE OF READILY CHECKING WHETHER OR NOT MEMORY BACKUP IS CORRECT

Motoki Ide, and Toshifumi Sato, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 29, 1988, Ser. No. 161,815
Claims priority, application Japan, Feb. 27, 1987, 62-45741
Int. Cl.[5] G08B *5/22*
U.S. Cl. 340—825.44 **5 Claims**



1. In a radio pager receiver for receiving message signals carrying messages and destined to said pager receiver, said pager receiver comprising a memory activated by main electric power, backed up by backup electric power, and having a message area and an administration data area, and a message processor including processing means activated by said main electric power for processing said message signals into the respective messages and a plurality of administration data for use in administrating said messages and storing means activated by said main electric power for storing said messages in said message area and said plurality of administration data in said administration data area in correspondence to the respective messages, the improvement wherein:

said processing means is for processing said message signals so that a logical relationship is established between said plurality of administration data;

said message processor comprising,

judging means coupled to said administration data area and activated by said main electric power for judging whether or not said logical relationship is correctly kept in said administration data area when said memory, said processing means, and said storing means are activated after once deactivated, said judging means thereby producing a result signal representative of a result of judgment.

4,940,976

AUTOMATED REMOTE WATER METER READOUT SYSTEM

Constantine S. Gastouniotis; Nuno Bandeira, and Kitchener C. Wilson, all of Santa Barbara, Calif., assignors to Utilicom Inc., Santa Barbara, Calif.

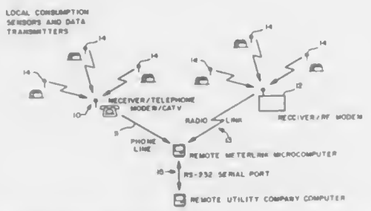
Filed Feb. 5, 1988, Ser. No. 152,960
Int. Cl.[5] G01R *11/00*; G01F *1/075*
U.S. Cl. 340—870.02 **33 Claims**

1. In a meter measuring consumption of an item and having

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a case with a rotating magnet therein producing a magnetic field moving at a rate proportional to the consumption of the item, the improvement for remotely reading data from outside of the meter without physically invading or modifying the meter comprising:

(a) sensor means disposed outside of the case for sensing a portion of the magnetic field passing through the case and for providing an electrical signal proportional to the rate of movement of the magnetic field;



(b) consumption calculation means connected to receive said electrical signal for producing a binary count of the consumption of the item;

(c) transmitter means for wirelessly transmitting said binary count; and,

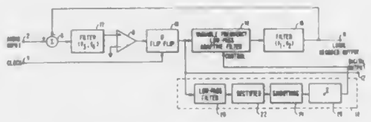
(d) receiver means for receiving said wirelessly transmitted binary count and for transmitting said received binary count to a central site which uses the data.

4,940,977

ADAPTIVE-FILTER SINGLE-BIT DIGITAL ENCODER AND DECODER AND ADAPTATION CONTROL CIRCUIT RESPONSIVE TO BIT-STREAM LOADING

Douglas E. Mandell, Menlo Park, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Division of Ser. No. 101,369, Sep. 25, 1987, Pat. No. 4,829,299.
This application Apr. 8, 1988, Ser. No. 179,955
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 **5 Claims**



1. A control signal generator responsive to an encoded digital bit stream for generating an adaptation control signal for use in an adaptive single-bit digital encoder or decoder, comprising:

means for removing the clock sampling signal component from said digital bit stream to provide an analog signal continuously representative of the amount of information carried by in said digital bit stream,

means for rectifying said analog signal derived from the digital bit stream,

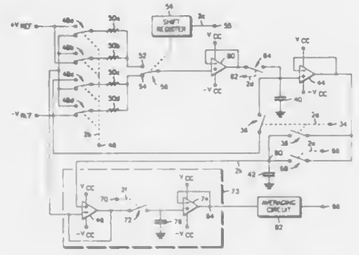
means for smoothing said rectified signal.

4,940,978

STEPWISE ADJUSTED DIGITAL TO ANALOG CONVERTER HAVING SELF CORRECTION

Victor G. Mycynek, Des Plaines, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 23, 1988, Ser. No. 197,737
Int. Cl.[5] H03K *13/02*
U.S. Cl. 341—150 **11 Claims**



1. A digital to analog converter comprising:

means for receiving an input signal made up of digital words in serial form, the least significant bit of each word being received first;

switching means controlled by said input signal;

first supply means for supplying a first reference voltage;

a terminal point;

a first resistor network having a first end coupled to said first supply means, the second end coupled to said terminal point and having the midpoint thereof coupled to a first input of said switching means, the halves of said first netword consisting of essentially equal-valued resistance;

second supply means for supplying a second reference voltage;

a second resistor network having a first end coupled to said second supply means, the second end coupled to said terminal point and having the midpoint thereof coupled to a second input of said switching means, the halves of said second netword consisting of essentially equal-valued resistances; and

storage means coupled to said terminal point and coupled to the output of said switching means for receiving, in response to each received bit, a voltage which is one-half the difference between the respective reference voltage and the voltage on said terminal point.

4,940,979

COMBINED RATE/WIDTH MODULATION ARRANGEMENT

Thomas K. Bohley; Grosvenor H. Garnett, both of Colorado Springs; Christopher Koerner, Longmont, and Charles E. Moore, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

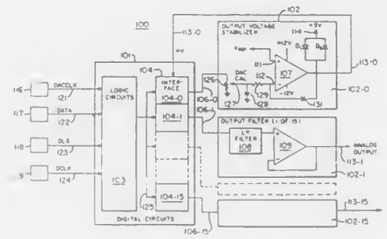
Filed Apr. 26, 1988, Ser. No. 186,430
Int. Cl.[5] H03M *1/82*
U.S. Cl. 341—152 **35 Claims**

1. Apparatus for generating a rate/width modulated pulse signal on an output in response to the reception of n data bits on an input, said apparatus comprising;

means responsive to the receipt by said input of m bits of said n data bits, where m and n are integers and where m is less than n, for generating a rate modulated output signal having a number of pulses determined by the binary value of said m bits,

means responsive to the receipt by said input of the additional ones of said n bits beyond said m bits for generating a width modulated output pulse signal, and

means for combining said rate modulated output signal and said width modulated output pulse signal to produce said



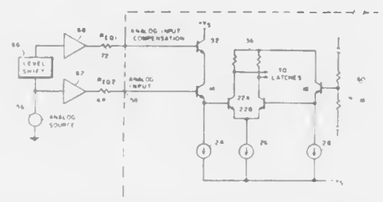
rate/width modulated output signal having a variable number of pulses which increase in width under control of the binary value of said additional bits.

4,940,980

INPUT STAGE FOR FLASH A/D CONVERTER

Thomas E. Tice, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 5, 1989, Ser. No. 348,050
Int. Cl.[5] H03M *1/36, 1/06*
U.S. Cl. 341—159 **5 Claims**



4. A flash analog-to-digital converter comprising:

a. a plurality of input stages connected in parallel to an input node for receiving an analog input voltage;

b. means for supplying the analog input voltage, including an analog signal source, a first buffer amplifier connected to receive the output of the analog signal source, and a first resistance connected between the output of the buffer amplifier and the input node;

c. a like plurality of comparator stages, each input stage driving a corresponding one of the comparator stages;

d. each input stage comprising an emitter-follower transistor having a base electrode connected to the input node and an emitter electrode connected to drive the corresponding comparator stage;

e. offset means connected to the analog source to supply a voltage offset from the output of the analog source by a constant value; and

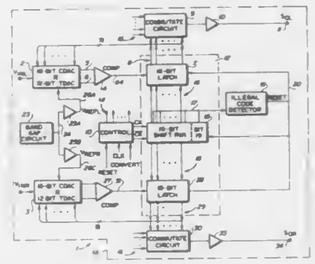
f. said offset means being connected operatively to drive the collector electrodes of said emitter-follower transistors.

4,940,981

DUAL ANALOG-TO-DIGITAL CONVERTER WITH SINGLE SUCCESSIVE APPROXIMATION REGISTER

Jimmy R. Naylor; Rodney T. Burt, and Tony D. Miller, all of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Feb. 8, 1989, Ser. No. 308,150
Int. Cl.[5] H03M *1/44*
U.S. Cl. 341—161 **13 Claims**



1. A dual channel successive approximation analog-to-digital converter chip for converting first and second analog input signals to first and second digital numbers, respectively, comprising in combination:

(a) a semiconductor chip;

(b) a first N bit CDAC on the chip including N digital input conductors, a first analog output conductor, and means for combining the first analog input signal with an analog output signal produced by the first N bit CDAC to produce a first combined signal on the first analog output conductor;

(c) a second N bit CDAC on the chip including N digital input conductors, a second analog output conductor, and means for combining the second analog input signal with an analog output signal produced by the second bit CDAC to produce a second combined analog signal on the second analog output conductor;

(d) a first comparator on the chip having a first input conductor coupled to the first analog output conductor, and a second input conductor receiving a first reference voltage;

(e) a second comparator on the chip having a first input conductor coupled to the second analog output conductor, and a second input conductor receiving a second reference voltage;

(f) a successive approximation register on the chip including:

i. a shift register including N bits each having an output conductor,

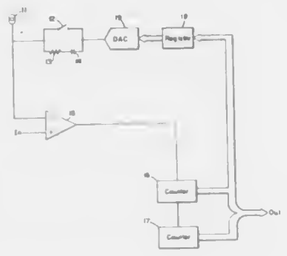
ii. first means coupled to an output conductor of the first comparator and the output conductors of the N bits of the shift register for generating a first sequence of successive N bit approximation numbers and sequentially applying them to the N digital input conductors of the first N bit CDAC in response to shifting of a logical state through the shift register from an MSB position to an LSB position thereof and in response to a plurality of compare signals produced by the first comparator, respectively,

iii. second means coupled to an output conductor of the second comparator and the output conductor of the N bits of the shift register for generating a second sequence of N successive N bit approximation numbers and sequentially applying them to the N digital input conductors of the second N bit CDAC in response to the shifting of the logical state through the shift register from the MSB position to the LSB position and in response to a plurality of compare signals produced by the second comparator, respectively, the first N bit

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CDAC, the shift register, the first means, and the first comparator forming a part of a first analog-to-digital converter, and the second N bit CDAC, the shift register, the second means, and the second comparator forming a part of a second analog-to-digital converter.

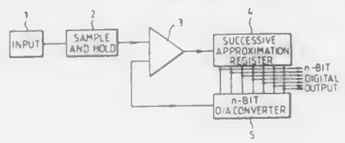
4,940,982
HIGH SPEED INTEGRATING ANALOG-TO-DIGITAL CONVERTER
Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890
Continuation-in-part of Ser. No. 20,783, Mar. 2, 1987, abandoned. This application Jul. 30, 1988, Ser. No. 251,171
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1986, 3606893
Int. Cl.[5] H03M *1/46, 1/56*
U.S. Cl. 341—169 18 Claims

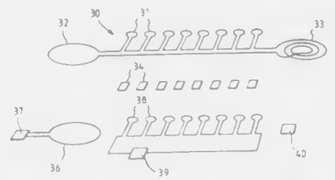


1. Analog-to-digital converter for converting input signal into output code, comprising:
a comparator means for comparing the input signal against a ramp signal;
a plurality of counter means responsive to the comparator means for providing the output code, each counter means having a weight and counting subsequently to the counting of the counter means having a higher weight;
a digital-to-analog converter means for converting the output code into a reference signal;
an integrator means for providing the ramp signal in reference to the reference signal and at a rate corresponding to the weight of the counter means currently counting; and
a switch means for zeroing the integrator means.

4,940,983
A/D CONVERTERS
Roger E. Jones, Cambridge; John A. Phillips, Harlow, and Bruce Dunnett, Cupar, all of Great Britain, assignors to Stc PLC. London. England
Filed Oct. 21, 1988, Ser. No. 261,242
Claims priority, application United Kingdom, Dec. 5, 1987, 8728497; Sep. 22, 1988, 8822360
Int. Cl.[5] H03M *1/38*
U.S. Cl. 341—171 10 Claims

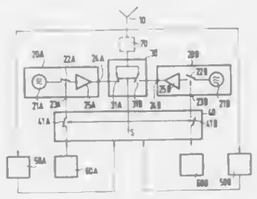
1. A successive approximation n-bit analogue to digital converter including an addition/subtraction superconducting loop having a sensing lobe, a magnetic flux concentrating lobe and n further lobes; a non-superconducting drive loop to which an analogue signal to be converted is applied; superconducting loops for storing n flux quanta which are used as reference levels; control circuits for selectively coupling each flux quanta reference level with a respective one of the n further lobes; means for coupling magnetic flux at the drive loop to the sensing lobe whereby the analogue signal in the drive loop is in use sampled and a corresponding magnetic flux linked to the





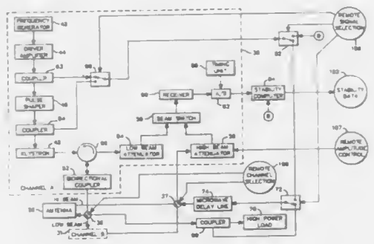
addition/subtraction superconducting loop; and a magnetometer for detecting the magnetic flux at the concentrating lobe.

4,940,984
TRANSMITTING STATION FOR A NAVIGATION SYSTEM COMPRISING A MAIN TRANSMITTER AND A STAND-BY TRANSMITTER, PARTICULARLY TRANSMITTING STATION FOR THE MLS MICROWAVE LANDING SYSTEM
Herbert Kleiber, Ludwigsburg, Fed. Rep. of Germany, assignor to 501 Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany
Filed Mar. 21, 1989, Ser. No. 326,621
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1988, 3810628
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—173 3 Claims



1. Transmitting station for a navigation system said transmitting station comprising
a first transmitter having a first power output terminal and a first control input terminal via which power at the first power output terminal can be switched off,
a second transmitter in parallel to and functionally interchangeable with the first transmitter, said second transmitter having a second power output terminal and a second control input terminal via which power at the second power output terminal can be switched off,
a common antenna system having an antenna input terminal coupled to both the first power output terminal and the second power output terminal for transmitting a navigation signal,
a monitoring device which monitors the navigation signal output from the common antenna system and delivers an error message in the event of an error,
controller means coupled to said first and second control inputs and responsive to the error message from the monitoring device for, in the absence of said error message, causing at times when neither of the transmitters is delivering any such output power the first and second transmitters to alternate with each other in delivering power to the antenna input terminal and, in response to said error message, causing only the transmitter not transmitting at the time the error occurred to constantly deliver power to said antenna input terminal, and
a changeover switch interposed between the antenna system input terminal and said first and second power output terminals, said changeover switch being controlled by the controller means and disconnecting a respective inactive one of the first and second transmitters from the common antenna system,
whereby the particular transmitter not connected to the common antenna system is not delivering any output power, thereby eliminating any need for a second antenna system and/or a dummy load to be connected to said particular transmitter.

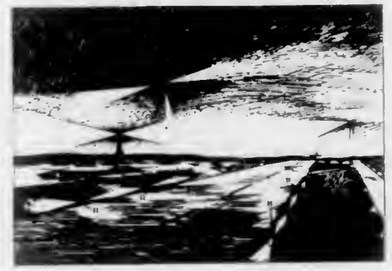
4,940,985
RADAR STABILITY MEASUREMENT SYSTEM
John W. Taylor, Jr., Baltimore, and Perry A. Sorrell, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 2, 1988, Ser. No. 266,194
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—174 20 Claims



1. A method for measuring stability of a radar system, said method comprising the steps of:
(a) sampling a portion of a pulse to detect input and output power of a Doppler filter in the radar system;
(b) repeating step (a) for a first predetermined number of pulses;
(c) calculating a portion stability indication for the portion of the pulse repeatedly sampled in step (a), said calculating performed to determine clutter residue power at the output of the Doppler filter and the input power of the Doppler filter, detected for the first predetermined number of pulses; and
(d) repeatedly changing the portion of the pulse sampled in step (a) and repeating steps (a)–(c) for each change, to produce a second number of stability indications over an effective pulse width of pulses sampled in step (a).

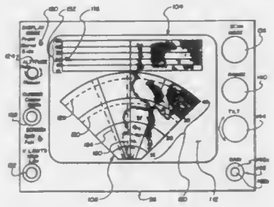
4,940,986
MILLIMETER WAVE LOCATING
George R. Huguenin, South Deerfield, Mass., assignor to Millitech Corporation, Mass.
Filed Jun. 16, 1986, Ser. No. 874,461
Int. Cl.[5] G01S *1/16, 13/00*
U.S. Cl. 342—410 8 Claims

1. Area locating apparatus comprising,
millimeter wave source means at an area to be located for radiating millimeter wave energy that penetrates fog and blowing snow,
and millimeter wave camera means remote from said area responsive to said millimeter wave energy for providing a



location signal representative of the location of said millimeter wave source means.

4,940,987
AUTOMATIC HORIZONTAL AND VERTICAL SCANNING RADAR
Philip R. Frederick, 632 17th Ave., Salt Lake City, Utah 84103-3709
Filed Jan. 30, 1989, Ser. No. 303,638
Int. Cl.[5] G01S *9/66*
U.S. Cl. 342—26 20 Claims



1. An automatic horizontal and vertical scanning weather radar system for a transmitting and receiving station comprising
antenna means mounted in the station for receiving reflected radar signals and responsive to a transmit signal for producing and directing outwardly therefrom a radar beam, and responsive both to horizontal drive signals for sweeping the radar beam back and forth horizontally, and to vertical drive signals for moving the radar beam up and down vertically,
means for periodically supplying transmit signals to the antenna means,
receiver means coupled to the antenna means for digitizing reflected radar signals received by the antenna means,
means for storing the digitized signals,
display means responsive to the digitized signals for displaying both a plan view image of weather over a preselected horizontal range represented by reflected radar signals received by the antenna means sweeping back and forth horizontally, and a vertical view image of weather for a preselected height range represented by reflected radar signals received by the antenna means moving up and down vertically, and
control means for supplying horizontal drive signals and vertical drive signals to the antenna means, and for retrieving digitized signals from the storing means and supplying them to the display means.

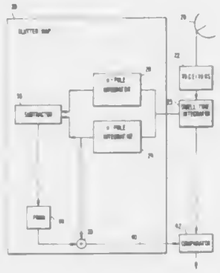
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4,940,988

TWO PARAMETER CLUTTER MAP

John W. Taylor, Jr., Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 2, 1988, Ser. No. 266,192
Int. Cl.[5] G01S *13/86*
U.S. Cl. 342—93 **23 Claims**



1. A clutter map system, comprising:
antenna means for scanning a target;
receiver means for receiving echoes from said antenna means;
dwell time integration means, for receiving multiple echoes during the time said antenna means scans a given spatial location, accumulating and integrating the echoes and outputting data;
means, including n-pole integration means, n being an integer greater than or equal to one, for receiving the data and simultaneously calculating two variables having different parameters; and
means for storing a predetermined boost factor for computing a detection threshold.

4,940,989

APPARATUS AND METHOD FOR MATCHING RADIATOR AND FEEDLINE IMPEDANCES AND FOR ISOLATING THE RADIATOR FROM THE FEEDLINE

Richard A. Austin, Powder House Rd., R.D. #1, Sandown, N.H. 03873

Continuation-in-part of Ser. No. 856,236, Apr. 28, 1986. This application Dec. 12, 1988, Ser. No. 282,677
Int. Cl.[5] H01Q *9/40*
U.S. Cl. 343—749 **12 Claims**



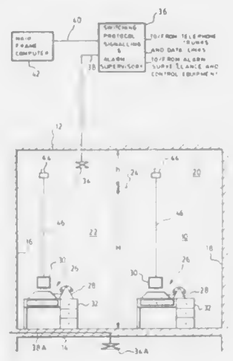
1. A mechanism for matching the impedance of an antenna radiator to the impedance of its feed line and for isolating the radiator from the feed line comprising:
a transmission feed line having inner and outer conductors,
a radiator feedpoint located at the upper terminus of the outer conductor,
the inner conductor having an extension extending beyond the feedpoint and defining a complete ½ wavelength radiator,
a cavity choke having an opened end and a closed end and circumscribing and in spaced relation to the feed line,
the closed end being electrically connected to the outer conductor of the feed line,
the opened end surrounding the feedpoint,
a dielectric means positionable between the choke and outer conductor for tuning by resonating the cavity of the choke and forming a high impedance at the cavity's opened end while simultaneously attaining feedpoint impedance matching.

4,940,990

INTRABUILDING WIRELESS COMMUNICATION SYSTEM

Mostafa Z. Kharadly, Vancouver, and Fredrick W. C. Siu, Burnaby, both of Canada, assignors to University of British Columbia

Filed Jan. 19, 1989, Ser. No. 298,753
Int. Cl.[5] H01Q *21/00, 13/00*
U.S. Cl. 343—773 **8 Claims**



1. An intrabuilding wireless multi-access communication system for use within a work space, comprising an omni-directional antenna system transmitting coded signals and supplying radiation substantially only within a first zone occupying only a portion of said work space, a second zone substantially free of radiation and occupying substantially the remainder of said work space, said first zone being positioned adjacent to an upper boundary of said work space, work stations within said second zone, each of said work stations having a subscriber antenna system connected thereto, each said subscriber antenna system having a subscriber antenna positioned within said first zone and oriented relative to said omni-directional antenna to receive signals from said omni-directional antenna and transmit signals to said omni-directional antenna.

4,940,991

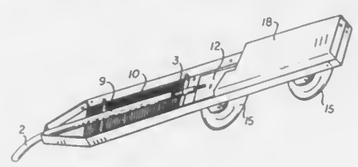
DISCONTINUOUS MOBILE ANTENNA

Jack W. Sheriff, 2167 Calle Guaymas, La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 179,788, Apr. 11, 1988, abandoned, and a continuation-in-part of Ser. No. 211,893, Jun. 27, 1988. This application Jan. 9, 1989, Ser. No. 294,186
Int. Cl.[5] H01Q *9/28*
U.S. Cl. 343—795 **11 Claims**

1. An antenna connectable to a radio communication device which consists of:
a first conductive panel-shaped, generally oblong element;
a second conductive panel-shaped, generally oblong element having a different geometry;

said elements being aligned in a same plane along their largest axes and defining a gap between two respective adjacent edges of said elements;
a coaxial cable, connectable at a distal end to the communication device and having a proximal end section running parallel to said largest axes along said first element and terminating within said gap;
a first conductor in the center of said cable being connected at said proximal end to the edge of the second element adjacent to the first element;



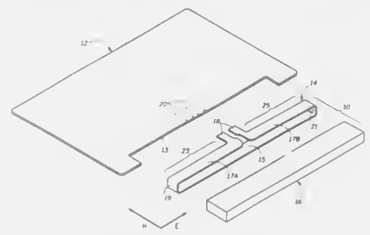
a second conductor of said cable forming a sleeve around said first conductor and being connected at said proximal end to the edge of the first element adjacent to the second element;
said first element having a discontinuous construction;
an oblong container completely enclosing said conductive elements and said end section of the cable, said container being made of a dielectric material having a dielectric strength greater than air.

4,940,992

BALANCED LOW PROFILE HYBRID ANTENNA

Tuan K. Nguyen, 22699 SW 53rd Ave., Boca Raton, Fla. 33433, and Quirino Balzano, 1120 NW 77th Ave., Plantation, Fla. 33322

Continuation of Ser. No. 179,707, Apr. 11, 1988, abandoned. This application Aug. 18, 1989, Ser. No. 395,174
Int. Cl.[5] H01Q *9/26*
U.S. Cl. 343—803 **11 Claims**



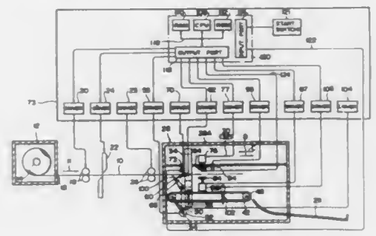
1. An antenna for a thin portable communications receiver, comprising:
a conductor formed into single turn rectangular loop having a first set of two parallel opposed sides up to one-quarter wavelength in length at the operating frequency and a second set of two parallel opposed sides shorter than said first set of sides, said loop terminating in connection tabs, located symmetrically about the midpoint of one of said first set of sides, for connection to the receiver; and
a dielectric core interposed within said loop and substantially filling said loop, with said dielectric core further forming a half-wave electric dipole symmetrical about said connection tabs at the operating frequency.

4,940,993

IMAGE RECORDING APPARATUS

Yoshimitsu Sato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1989, Ser. No. 339,839
Claims priority, application Japan, Apr. 19, 1988, 63-96135; Apr. 19, 1988, 63-96136; Apr. 19, 1988, 63-96137
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 PH **19 Claims**



1. An image recording apparatus for recording an image on a heat-sensitive recording material composed of a transparent carrier and transparent heat-sensitive coupler layers formed on the opposite surfaces of said transparent carrier, respectively, and capable of producing colors each having a different hue, a plurality of transparent heat-sensitive coupler layers being deposited on at least one of said opposite surfaces, comprising:
feeding means for feeding said heat-sensitive recording material rectilinearlily;
a recording head means for developing by heating, the colors of said respective transparent heat-sensitive coupler layers of said heat-sensitive recording material fed by said feeding means;
light fixing means for fixing, by irradiation with light rays, the outermost transparent heat-sensitive coupler layer that produced its color from among said plurality of transparent heat-sensitive coupler layers; and
light fixing means for fixing, by irradiation with light rays, the outermost transparent heat-sensitive coupler layer that produced its color from among said plurality of transparent heat-sensitive coupler layers; and
controller means for coordinating the operation of said feeding means, reading head means and light fixing means in order to permit recording of multi-color images on said material.

4,940,994

THERMAL PRINTER

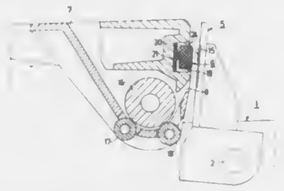
Gerhard Habelt, and Franz Mucha, both of Vienna, Austria, assignors to U.S. Philips Corporation

Filed May 1, 1989, Ser. No. 345,393
Claims priority, application Austria, May 3, 1988, 1147/88
Int. Cl.[5] G01D *15/10*; B41J *11/08*
U.S. Cl. 346—76 PH **3 Claims**

1. A thermal printer comprising a thermal print head displaceable in the line direction of the printer and a print bar which serves as an abutment for the print head, the print bar extending in the line direction and being located opposite to the print head, said print bar being arranged so that it can be pivoted about an axis parallel to the line direction and comprising a supporting part and a ruler-shaped mounting part, one of the major surfaces of said supporting part constituting said abutment, said supporting part consisting of an elastic material;

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characterized in that said supporting part of the print bar is connected to said ruler-shaped mounting part thereof by means



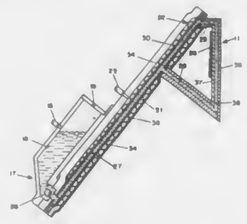
of at least one resilient elongated hinge part, said hinge part projecting centrally from the supporting and mounting parts.

4,940,995

REMOVAL OF DISSOLVED GAS FROM INK IN AN INK JET SYSTEM

Nathan P. Hine, East Thetford, Vt., and Robert L. Wells, Jr., Hanover, N.H., assignors to Spectra, Inc., Hanover, N.H.

Filed Nov. 18, 1988, Ser. No. 273,883
Int. Cl.[5] G01D *15/14;* B01D *19/00*
U.S. Cl. 346—140 R 10 Claims



1. A device for removing dissolved gas from ink containing dissolved gas and low-molecular-weight components in an ink jet system while preventing formation of scum comprising a gas-permeable, ink-impermeable fluorine-containing membrane which is permeable to dissolved gas in adjacent ink layer but impermeable to low-molecular-weight components of the ink which tend to form scum on the membrane, means for applying ink containing dissolved gas and low-molecular weight components to one side of the fluorine-containing membrane, and means for applying a reduced gas pressure to the other side of the membrane to cause gas to dissolved in ink to be extracted from the ink through the fluorine-containing membrane while preventing passage of low-molecular-weight ink components.

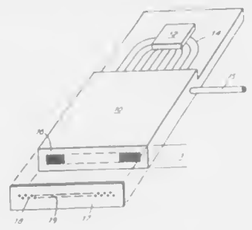
4,940,996

DROP-ON-DEMAND PRINTHEAD

Anthony D. Paton, The Thatched Cottage, 51 Mills Lane, Longstanton St. Michael, Cambridge; Stephen Temple, 66 Girton Road, Cambridge, CB3 OIN, and Mark R. Shepherd, 116 King James Way, Royston, Hertfordshire, SG8 7EF, all of England

Filed Apr. 28, 1989, Ser. No. 345,600
Claims priority, application United Kingdom, Apr. 29, 1988, 8810241
Int. Cl.[5] G01D *15/18;* B41J *2/04, 2/145*
U.S. Cl. 346—140 R 23 Claims

1. A drop-on-demand ink drop printhead for selectively printing drops of ink in a print line comprising: a plurality of print modules arranged to form a given number of module layers, said layers being laterally offset from each other by an equal amount, each of said modules comprising at least one group of uniformly laterally spaced ink ejectors, the ejector groups in each of said layers being laterally space from each other by the same amount and arranged with respect to the ejector groups of the other layers such that each segment of



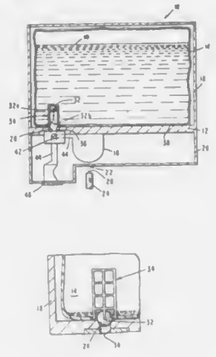
the print line is formed by interleaving drops from vertically overlapping portions of at least two of said ejector groups with a density equal to the product of the drop deposition density of each of said groups and the number of said groups having vertically overlapping portions contributing to the formation of each respective print line segment.

4,940,997

OUT-OF-INK SENSING METHOD

Mindy A. Hamlin, Oceanside, and George Kaplinsky, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 8, 1989, Ser. No. 390,807
Int. Cl.[5] G01D *15/18;* G01F *23/00*
U.S. Cl. 346—140 R 14 Claims



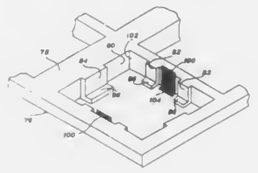
1. In an ink-jet printer having an ink bag, a bladder, a printhead, and a three-way valve which can selectively provide ink from the bag to the bladder, or from the bladder to the printhead, or cut off flow of ink in any direction, the improvement consisting of using a ball check-valve to terminate ink flow from the ink bag to the bladder when ink in the ink bag falls below a predetermined level.

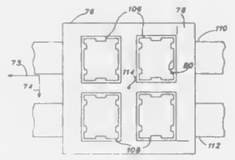
4,940,998

CARRIAGE FOR INK JET PRINTER

Stuart D. Asakawa, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 4, 1989, Ser. No. 333,364
Int. Cl.[5] B41V *2/05, 2/21*
U.S. Cl. 346—140 R 5 Claims





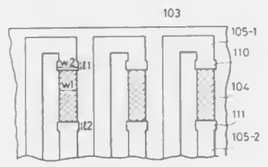
1. A printing unit for an ink jet printer, comprising:
means for supporting four print heads in a rectangular array, wherein the means for supporting includes a support plate having four pockets therein disposed in a rectangular array, each pocket being adapted to receive a removable print head, and wherein each of the four pockets includes at least three stops, two for preventing movement of the received print head in a direction lying in the plane of the rectangular array and the third for preventing movement of the received print head in a direction perpendicular to the plane of the rectangular array.

4,940,999

LIQUID JET RECORDING HEAD

Masami Ikeda, Machida; Makoto Shibata, Hiratsuka; Hiroto Matsuda, Ebina, and Hiroto Takahashi, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 873,295, Jun. 9, 1986, abandoned, which is a continuation of Ser. No. 598,975, Apr. 11, 1984, abandoned. This application Jun. 27, 1989, Ser. No. 372,167
Claims priority, application Japan, Apr. 20, 1983, 58-69587
Int. Cl.[5] G01D *15/18*
U.S. Cl. 346—140 R 11 Claims



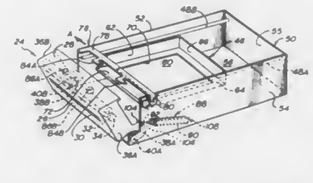
1. A liquid jet recording head comprising:
a liquid discharging portion having an orifice for discharging liquid as a flying liquid droplet and a liquid area communicating with said orifice; and
a electrode-thermal converting element including a heat-generating resistive layer and an electrode electrically connected to said resistive layer to form in said resistive layer a heat generating area in contact with said electrode for generating thermal energy and transferring said thermal energy to liquid in said liquid area to discharge liquid as the flying liquid droplet, wherein said electrode has portions in contact with both ends of said heat generating area and the width of said electrode is increased only in said portions so that the width of said portions of said electrode is greater than the width of said heat-generating area at the portions thereof in contact with said electrode and said electrodes is in electrical contact with a single said heat-generating area and wherein a plurality of said liquid areas are provided and each has a corresponding said heat generating area associated therewith.

4,941,000

DOWN LOADING FILM ACCESS DOOR ASSEMBLY FOR ELECTRONIC IMAGING APPARATUS

Nicholas Cardoos, Jr., Bedford; Stephen Decker, Sudbury; Philip R. Norris, North Reading, and Lawrence Plummer, Needham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

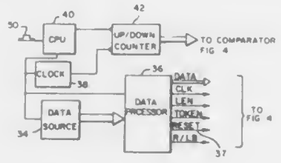
Filed Oct. 13, 1989, Ser. No. 421,082
Int. Cl.[5] G01D *15/00;* G11B *33/02*
U.S. Cl. 346—145 9 Claims



5. In an electronic image recording apparatus of the type comprising a housing and a film cassette receiving carriage disposed for controlled reciprocal sliding translation within said housing, said carriage being open at one end thereof to accommodate sliding receipt therein and/or withdrawal therefrom of a film cassette in substantially the same direction that said carriage translates, the improvement comprising:
a film loading access door assembly;
means for pivotally connecting the lower portion of the film loading access door assembly for movement from an upright closed position blocking receipt and/or withdrawal of the film cassette with respect to said carriage to an extended open position accommodating receipt and/or withdrawal of the film cassette with respect to said carriage;
manually actuable means for latching said film loading access door in said upright closed position;
latching means displaceably mounted for movement between a first position in latching engagement with said carriage so as to inhibit said sliding translation of said carriage and a second position out of latching engagement with said carriage so as not to inhibit said sliding translation of said carriage, said latching means also including means operatively controlled by said film loading access door assembly to move said latching means to its said first position when said film loading access door is moved to its said extended open position and to move said latching means to its said second position when said film loading access door is moved to its said upright closed position.

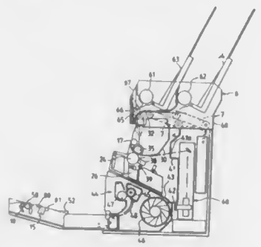
VOL 1116 ISS 2 JL 10 1990 UMI

4,941,001
NON-IMPACT DOT PRINT HEAD WITH RESET
Martin Potucek, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 26, 1989, Ser. No. 385,121
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—154 **12 Claims**



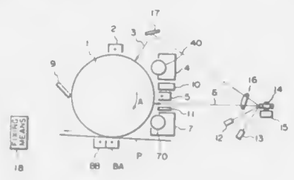
1. A dot printer comprising:
a print head with a plurality of recording elements;
a power supply for driving the recording elements;
a source of logic supply voltage;
a source of data signals;
means for supplying a first reset signal to the print head to place the recording elements in a safe state in the absence of data signals; and
means on the print head for supplying a second reset signal to the print head to place the recording elements in a safe state in the absence of data signals if the logic supply voltage goes below a predetermined value.

4,941,002
PAGE PRINTER
Mitsuaki Maruyama; Hiroshi Niki; Shigeru Sawada; Seiji Mochizuki, and Yasuhiro Gyoutoku, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Aug. 24, 1989, Ser. No. 397,903
Claims priority, application Japan, Aug. 31, 1988, 63-218038; Aug. 31, 1988, 63-218039; Aug. 31, 1988, 63-218040
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—160 **8 Claims**



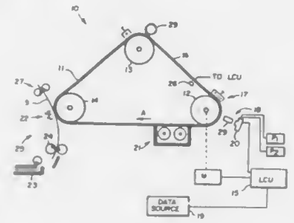
1. A page printer comprising:
a housing including a housing body having an open upper end, an open front side, and a cover pivotally coupled to said housing body;
a gate roller, a developing unit, a photo-sensitive drum unit, a fixing unit, and a sheet discharging roller mounted along the open front side of said housing body;
an optical writing unit mounted in a rear portion of said housing body;
a transferring unit and a sheet guide member mounted on said cover so that said transferring unit and sheet guide member are in confronting relation to said photo-sensitive drum unit when said cover is closed; and
a cut sheet feeder mounted vertically above the open upper end of said housing body so as to be movable relative thereto.

4,941,003
IMAGE FORMING APPARATUS
Atsushi Takeda; Masahiro Itoh, and Hiroaki Tsuchiya, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 20, 1988, Ser. No. 260,311
Claims priority, application Japan, Oct. 22, 1987, 62-267524
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—160 **21 Claims**



1. An image forming apparatus, comprising:
a movable image bearing member;
first charging means for charging said image bearing member;
first latent image forming means for forming a first latent image in accordance with first image information on said image bearing member charged by said first charging means;
first developing means for developing the first latent image;
potential attenuating means for attenuating a potential of said image bearing member after at least said first latent image is developed;
second charging means for charging said image bearing member after at least the first latent image is developed;
second latent image forming means for forming a second latent image in accordance with second image information on an image bearing member charged by said second charging means;
second developing means for developing the second latent image;
image transfer means for transferring the first and second developed images from said image bearing member onto an image receiving material, wherein the first and second developed images are simultaneously transferred onto the same image receiving material;
potential detecting means for detecting a surface potential of said image bearing member; and
control means responsive to an output of said potential detecting means to control at least one of said potential attenuating means and said second charging means to converge to a target level a potential difference between a potential, after being charged by said second charging means, of a portion developed by said first developing means and a potential, after being charged by said second charging means, of a background portion.

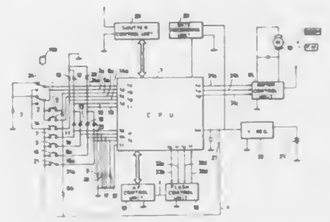
4,941,004
PRINTER APPARATUS
Hieu T. Pham, Webster; Yee S. Ng, Fairport; Kenneth D. Kieffer; Pin S. Tschang, both of Rochester, and Eric K. Zeise, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 199,981, May 27, 1988, Pat. No. 4,831,395, which is a continuation of Ser. No. 132,638, Dec. 9, 1987, abandoned, which is a continuation of Ser. No. 33,550, Apr. 1, 1987, abandoned. This application Mar. 8, 1989, Ser. No. 320,733
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—160 **12 Claims**



1. In a printing apparatus for exposing a light sensitive recording medium; a print head including a series of point-like radiation sources arranged in a row for exposing the medium; means for moving the medium relative to the print head; means providing data signals representing data to be printed; logic means responsive to the data signals for determining which of the point-like radiation sources are to be selected for energization; current driver means responsive to the logic means for providing electrical current to the radiation sources selected for energization; the improvement which comprises:
wherein the current driver means includes a current mirror having a master circuit for generating a reference current and a plurality of slave circuits for providing respective driver currents to the radiation sources selected for energization; the master circuit being characterized by a resistor means of the type that at least prior to final adjustment permits for adjustment of driver currents through change of resistance values and wherein the master circuit further includes a variable voltage source for also permitting adjustment of the levels of driver currents.

4,941,005
PHOTOGRAPHIC CAMERA
Nobuyuki Kameyama, Tokyo; Takao Umetsu, Saitama; Tuyoshi Masaoka, Saitama; Haruo Onozuka, Saitama; Muneyoshi Sato, Saitama, and Yukio Okazaki, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 14, 1989, Ser. No. 366,182
Claims priority, application Japan, Jun. 14, 1988, 63-146088; Jun. 14, 1988, 63-146398; Oct. 11, 1988, 63-255364
Int. Cl.[5] G03B *3/10, 17/04*
U.S. Cl. 354—195.1 **2 Claims**

1. A photographic camera having a zoom lens as a taking lens which is moved back and forth by means of an electric motor so as to change the focal length of said zoom lens and a lens barrier which covers and protects said zoom lens when said camera is not used, said camera comprising:
a switch adapted to open and close upon opening and closing said barrier; and
means for reading conditions of said switch upon loading a battery into said camera so as to actuate said electric motor in order to retract said zoom lens inside a housing of said camera upon reading a condition of said switch indicating that said lens barrier is closed or to extend said zoom lens to a photographic position upon reading a condition of said switch indicating that said lens barrier is open.



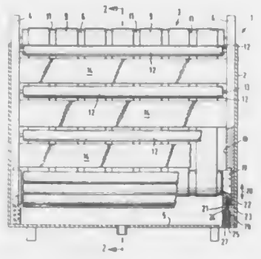
4,941,006
AUTOMATIC PROCESSOR
Masayuki Kurematsu; Shigeharu Koboshi; Nobutaka Goto, all of Hino; Masayuki Naoi, and Yasuhiro Fujisawa, both of Yokohama, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Feb. 15, 1989, Ser. No. 311,520
Claims priority, application Japan, Feb. 19, 1988, 63-36798
Int. Cl.[5] G03D *3/06, 3/08*
U.S. Cl. 354—299 **7 Claims**

1. An automatic developing apparatus for processing disk film housed in a light-shielded cartridge which comprises a pair of plastic sides, said apparatus comprising
(1) means for opening said cartridge and dropping said disk film therefrom by peeling off a lower end of said cartridge while it is vertically supported;
(2) a plurality of processing baths comprising at least two of a color developing bath, a bleach bath, a fixing bath, and a stabilizing bath, and optionally a drying unit, each bath containing a processing solution;
(3) means for supporting horizontally disposed first spindles, each of said first spindles adapted to engage said disk film substantially at the center thereof and being arranged in a closed path passing over said processing baths, whereby said disk film is only partially submerged in said processing solution;
(4) means for moving said first spindles means from bath to bath at a predetermined interval and timing;
(5) means for rotating said disk film around the axis of said first spindles at a predetermined rotation speed during processing;
(6) means for detaching said disk film from said first spindles after the completion of said processing;

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(7) means for automatically supplying said processing solutions to said processing baths in predetermined amounts or to predetermined levels in said baths and thereafter automatically starting operation of a heating means, after a main switch of the apparatus is turned on; and
(8) means for draining said processing solutions.

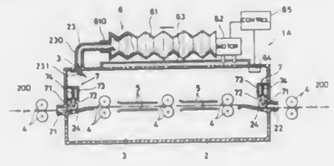
4,941,007
APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL TO BE DEVELOPED
Siegfried Nissler, and Miroslav Radomirevic, both of Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Autopan Heimerdinger & Stäbler GmbH & Co., Leinfelden-Echterdingen, Fed. Rep. of Germany
Filed Apr. 24, 1989, Ser. No. 342,955
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1988, 3813771; Dec. 31, 1988, 8816224[U]
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—320 11 Claims



1. An apparatus for processing photographic material to be developed, comprising:
at least one container provided so as to receive a processing liquid;
conveyor means located in said container for conveying the material to be developed through the processing liquid, said conveyor means including two reversing rollers and at least one conveyor belt endlessly revolving around said two reversing rollers;
means for retaining the material to be developed at an outer surface of said at least one conveyor belt, at least one of said two reversing rollers being displaceable in a conveying direction of said at least one conveyor belt; and
at least one spring arranged so that said reversing roller is displaceable and immobilizable against the action of said spring.

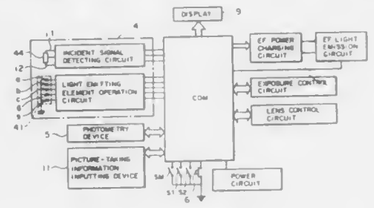
4,941,008
PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS
Takashi Nakamura, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 16, 1989, Ser. No. 367,088
Claims priority, application Japan, Jun. 17, 1988, 63-150883; Jul. 22, 1988, 63-183777
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—320 2 Claims

1. A photosensitive material processing apparatus comprising
a processing tank of the closed type having an inlet slit and an outlet slit for photosensitive material, the tank being filled with processing solution and having no open space present above the surface of the processing solution,
seal means disposed adjacent said inlet slit and/or said outlet slit for providing a fluid-tight seal to the slit, but allowing passage of the photosensitive material,
transfer means for carrying the photosensitive material into the tank through the inlet, along a predetermined path in the tank, and then out of the tank through the outlet, and
supply means for supplying processing solution to the tank wherein said supply means supplies a controlled amount of processing solution to the tank to maintain the solution in the tank at a predetermined pressure,



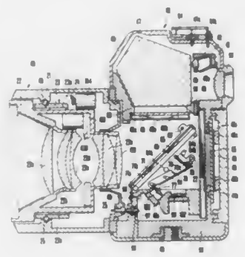
wherein each of said inlet and said outlet is in the form of a slit having such a small opening that the processing solution may not leak through the slit due to its surface tension.

4,941,009
METHOD FOR SLOW SYNCHRO-FLASH PHOTOGRAPHY
Makoto Yoshida, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Jun. 26, 1989, Ser. No. 371,093
Claims priority, application Japan, Jul. 7, 1988, 63-167742; Sep. 9, 1988, 63-224455
Int. Cl.[5] G03B *13/36, 15/02*
U.S. Cl. 354—402 8 Claims



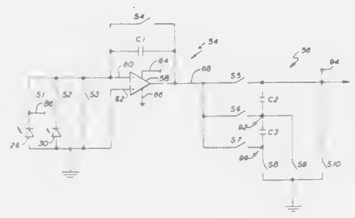
1. A method for taking a photograph with a camera, the camera having a flash light exposure mode with a predetermined light efficiency, a natural light exposure mode, and an automatic selection mode where the camera can automatically select the flash light or natural exposure mode depending upon photographic conditions, the method comprising the steps of:
determining a plurality of distances between the camera and a plurality of objects occupying a picture area, by wide area distance measurement means;
classifying the objects in the picture area into a plurality of background objects which are at a distance beyond the flash light efficiency of the flash light exposure mode, and at least one foreground object being within the range of the flash light efficiency of the flash light exposure mode;
detecting a plurality of luminances of the background and foreground objects with the use of a photometry device; and
activating the camera to photograph the at least one foreground object in the flash light exposure mode and the background objects in the natural light exposure mode to correctly expose all of the objects in the picture area.

4,941,010
CAMERA
Yoshihiko Aihara, and Masayuki Suzuki, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1989, Ser. No. 415,067
Claims priority, application Japan, Oct. 4, 1988, 63-251460
Int. Cl.[5] G03B *3/00*
U.S. Cl. 354—407 21 Claims



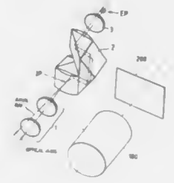
13. A camera having focus detecting means, comprising:
(a) an optical element for splitting an object light beam at a predetermined ratio to a finder optical system and a photographic system;
(b) a second optical element for focus detection movable between a first state in which it lies within a photographic optical path in said photographic system and a second state in which it retracts from said photographic optical path, said second optical element conducting part of a photographing light beam to a focus detecting optical system; and
(c) drive means, responsive to termination of an operation of said focus detecting means, for driving said second optical element from said first state to said second state regardless of whether or not a photographing operation is started.

4,941,011
SINGLE INTEGRATOR SYSTEM WITH DUAL PHOTOCELLS
David L. Farrington, Boxborough, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jun. 2, 1989, Ser. No. 360,790
Int. Cl.[5] G03B *7/087, 7/099*
U.S. Cl. 354—430 7 Claims



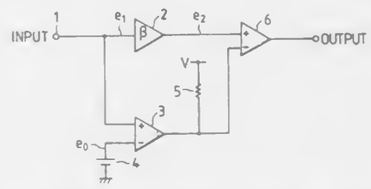
1. An exposure control circuit for a photographic apparatus, comprising:
a pair of photodetectors for respectively sensing visible and non-visible electromagnetic frequencies reflected from a photographic scene and for generating a signal representative thereof;
a common integrator for alternately integrating each said photodetector signal;
a plurality of capacitors at least equal to the number of integrations to be preformed by said integrator during an operational cycle of said photographic apparatus; and
means for interconnecting said capacitors and said common integrator such that each photodetector integration by said common integrator is stored in a different one of said capacitors and such that said stored integrated signals collectively form a signal representative of the total amount of sensed visible and invisible frequencies reflected from the photographic scene.

4,941,012
FINDER OPTICAL SYSTEM FOR CAMERAS
Tatsuo Inabata, Kunitachi, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 13, 1989, Ser. No. 309,295
Claims priority, application Japan, Feb. 17, 1988, 63-32868
Int. Cl.[5] G03B *7/097*
U.S. Cl. 354—478 22 Claims



1. A finder optical system for cameras comprising:
an objective lens,
a Porro prism having a plurality of reflecting surfaces to erect an image of an object formed by the objective lens,
an eyepiece for observing the object image,
one of the reflecting surfaces of said Porro prism having properties of transmitting a part of light incident on said one of the reflecting surfaces and reflecting the remainder and
a light receiving element for photometry provided at a position where the light transmitted through said one of the reflecting surfaces can be received.

4,941,013
EXPOSURE DEVICE USING CRT AS EXPOSURE LIGHT SOURCE
Yoshimasa Hara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Apr. 14, 1989, Ser. No. 338,119
Claims priority, application Japan, Apr. 14, 1988, 63-49404[U]
Int. Cl.[5] G03B *27/72, 27/80*
U.S. Cl. 355—20 7 Claims



1. An exposure device for an image exposure onto a photosensitive recording medium to record thereon an image corresponding in density to an image on an original, the photosensi-

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tive recording medium having a non-linear characteristic in a relation between the density of the image recorded thereon and an optical radiant energy applied thereto, said device comprising:

a cathode ray tube for supplying said optical radiant energy onto said photosensitive recording medium;

a driver circuit receiving an input voltage indicative of said density of said image on said original and developing an output voltage applied to said cathode ray tube, wherein said cathode ray tube supplies said optical radiant energy in consistence with said non-linear characteristic in response to said output voltage;

said driver circuit comprising means for applying a first output voltage to said cathode ray tube when said input voltage is above a predetermined value, said first output voltage causing said cathode ray tube to supply a first optical radiant energy corresponding to said first output voltage, said photosensitive recording medium being recorded with an image of substantially 0% in density when exposed to light of said first optical radiant energy.

4,941,014

IMAGE FORMING APPARATUS

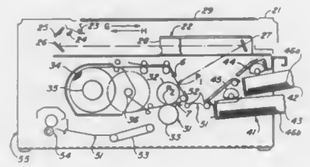
Mitsuru Ogura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1988, Ser. No. 252,685

Claims priority, application Japan, Oct. 23, 1987, 62-268795

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 **4 Claims**



1. An image forming apparatus comprising

a pair of pressure rollers which are pressed against each other while a sheet is passed therebetween,

detecting means for detecting an abnormal condition in the transportation of a sheet being passed between said pressure rollers, and

releasing means for releasing pressure between said pressure rollers when said detecting means detect an abnormal condition.

4,941,015

DEVICE FOR SCREENING A PHOTOCONDUCTIVE ELEMENT UNIT FROM EXTERNAL LIGHT

Hiroshi Komai, and Hideo Aoki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

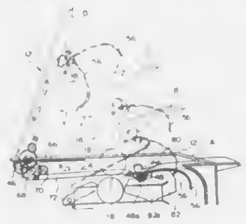
Filed Dec. 23, 1988, Ser. No. 289,240

Claims priority, application Japan, Dec. 24, 1987, 62-194780 [U]; Jul. 28, 1988, 63-99065[U]

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **5 Claims**

1. In a device for use in an electrophotographic image recorder having upper and a lower unit openably hinged to each other and each being loated with a different group of structural parts and elements inclusive of a photoconductive element unit having a photoconductive drum, for screening said photoconductive element unit against external light, said device being provided with screening means, wherein said screening means is movable in interlocked relation to opening and closing motions of said upper unit such that said drum is covered by said screening means when said upper unit is open and is uncovered when said upper unit is closed, and wherein said photoconductive element unit comprises an opening provided above said drum, a belt member located to close said opening of said photoconductive element unit and formed with slit means for passing imagewise light to said drum therethrough, said belt



member being moved, when said upper unit is opened, for changing a position of said slit means until said opening of said photoconductive element has been closed by said belt member.

4,941,016

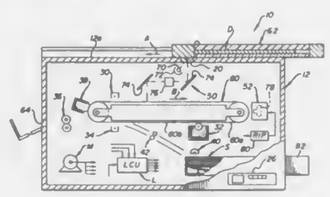
PHOTOCONDUCTIVE IMAGE RECEIVING MEMBER WITH OPTIMIZED LIGHT RESPONSE CHARACTERISTICS

Kevin M. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,673

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—202 **7 Claims**



1. For use in an electrostatographic reproduction apparatus having means for producing a direct light image of a document for optical copying of such document, means producing an electronically generated light image of information for nonimpact printing of such information, a photoconductive image receiving member upon which visible light and electronically generated light images are exposed to produce corresponding latent image charge patterns, said photoconductive image receiving member comprising:

a first portion having light responsive characteristics optimized in the range of light produced by said direct light image producing means; and

a second portion, in an adjacent area along the length of said image receiving member, having light responsive characteristics optimized in the range of light produced by said electronically generated light image producing means.

4,941,017

COPYING APPARATUS HAVING A BINDING MARGIN FORMING FUNCTION

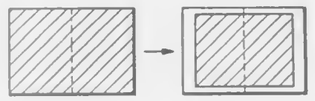
Nobuhiro Mishima, and Kazuhiro Araki, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

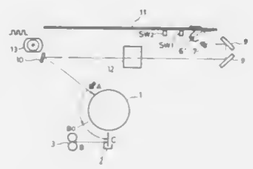
Filed Aug. 31, 1988, Ser. No. 238,843

Claims priority, application Japan, Aug. 31, 1987, 62-218492

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—218 **8 Claims**





1. A copying apparatus having a blank margin forming function, comprising:

a rotatable photoconductor,

image forming means for forming an image of an original on said photoconductor with an arbitrary magnitude based on a copying magnification,

paper feed means for feeding paper for copy to a predetermined transfer position with specified timing,

transfer means for transferring the image on said photoconductor, formed by said image forming means onto the copy paper at said transfer position, fed by said paper feed means,

detection means for detecting a size of the copy paper fed by said paper feed means,

mode designation means for designating a blank margin forming mode for ensuring a first blank margin of a predetermined width on a leading edge of the copy paper and a second blank margin of said predetermined width on a rear edge of the copy paper,

determination means for determining said copying magnification and said specified timing in response to a designation output from said mode designation means, the determined copying magnification being a ratio of the magnitude of the image of the original formed in an image area defined by subtraction of said first and second blank margins from the size of the copy paper to a size of the original, and the determined specified timing being timing for enabling a leading edge of said image area to coincide with a leading edge of the image on said photoconductor, and

control means responsive to the output from said mode designation means, for controlling said image forming means and said paper feed means based on the copying magnification and the specified timing determined by said determination means, whereby the image of the original is copied on the copy paper with forming the first blank margin on the leading edge of the copy paper and the second blank margin on the rear edge of the copy paper, the width of said first and second blank margins being equal to each other.

4,941,018

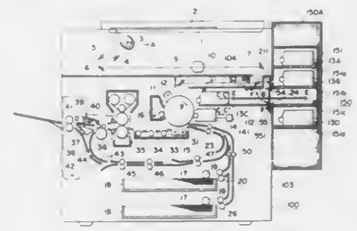
DEVELOPING DEVICE ACCOMMODATING APPARATUS AND IMAGE FORMING APPARATUS AND DEVELOPING DEVICE

Toshirou Kasamura, Yokohama; Masashi Ohashi; Toshihiko Kusumoto, both of Tokyo; Naoki Okuda, Kawasaki; Nobukazu Sasaki, Yokohama; Yasunori Maeda, Inagi; Akiyoshi Kimura, Kawasaki; Katsumi Musenaka, Tokyo; Yoshikuni Toyama, Yokohama; Minoru Nada; Ken Tanabe, both of Kawasaki; Masamichi Ikeda; Yasuhide Hishikawa, both of Yokohama, and Takashi Ozawa, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 217,078, Jul. 8, 1988, abandoned, which is a continuation of Ser. No. 111,761, Oct. 23, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 289,521

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—245 **37 Claims**



1. An apparatus for accommodating a plurality of developing devices, comprising:

an accommodating case movable substantially vertically, including plural partition stages arranged vertically for movably accommodating the plural developing devices and a drive receiving member for fixedly supporting said partition stages and for receiving driving force in a substantially vertical direction;

a moving mechanism for engaging with a selected one of the developing devices on the partition stages to move the selected developing device relative to the partition stage in a horizontal plane;

means for mounting said accommodating apparatus to an image forming apparatus with which said accommodating apparatus is used; and

means for detecting colors of the developers contained in the developing devices.

5. An apparatus for accommodating a plurality of developing devices, comprising:

an accommodating case movable substantially vertically, including plural partition stages arranged vertically for movably accommodating the plural developing devices and a drive receiving member for fixedly supporting said partition stages and for receiving driving force in a substantially vertical direction;

a moving mechanism for engaging with a selected one of the developing devices on the partition stages to move the selected developing device relative to the partition stage in a horizontal plane;

means for mounting said accommodating apparatus to an image forming apparatus with which said accommodating apparatus is used;

means for feeding a sheet to said image forming apparatus, said feeding means being disposed below a lowermost one of the partition stages; and

a driving source for driving said feeding means and said accommodating case and switching means for switching transmission of the driving force between said feeding means and said accommodating means.

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4,941,019

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

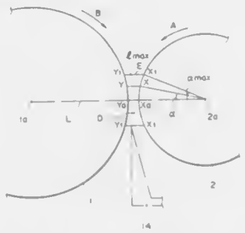
Takao Honda, Kawasaki, and Yoshiaki Kobayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1989, Ser. No. 337,655

Claims priority, application Japan, Apr. 15, 1988, 63-091266; Jun. 24, 1988, 63-154954

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—251 13 Claims



1. A developing apparatus for developing an electrostatic latent image formed on an image bearing member, comprising:

a rotatable developer carrying member faced to the image bearing member in a developing zone, for carrying a developer having a magnetic property and for carrying it to the developing zone;

a developer regulating member for regulating a layer of the developer on said developer carrying member to a thickness smaller than a minimum clearance between the image bearing member and the developer carrying member in the developing zone;

a magnet stationarily disposed in said developer carrying member, said magnet having a magnetic pole for erecting a brush of the developer on said developer carrying member in the developing zone, wherein a position where an absolute value of a change rate of a perpendicular component of a magnetic field on a surface of said developer carrying member with respect to a rotational direction of said developer carrying member takes a local maximum is adjacent an outlet end of the developing zone, and wherein the local maximum is not less than 30 Gausses per degree.

4,941,020

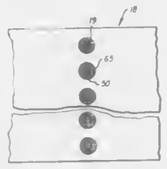
TRANSFER APPARATUS HAVING VACUUM HOLES FOR HOLDING A RECEIVING SHEET

Richard C. Baughman, Geneseo; William Y. Fowlkes, Brockport; Bruce J. Rubin, Rochester, and William B. Vreeland, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 3, 1989, Ser. No. 375,165

Int. Cl.[5] G03G *15/16*

U.S. Cl. 355—275 9 Claims



1. Apparatus for transferring a toner image from an image-bearing member to a receiving sheet, which apparatus includes:

a transfer drum having a conductive surface and having vacuum holes to said surface,

means for applying a vacuum to said vacuum holes to hold a receiving sheet on the surface of the transfer drum,

means for creating an electric field urging a toner image toward said transfer drum, and

a screen positioned across the top of each of said vacuum holes which screen is sufficiently conductive to improve the continuity of the electric field in the vicinity of the vacuum hole, said screen having fibers which run in a direction generally parallel to the axis of the drum which are sufficiently conductive to improve the continuity of the transfer field and fibers running around the surface of the drum which are sufficiently insulative to reduce the tendency for ionization in a transfer nip created by the drum and the image-bearing member.

4,941,021

IMAGE FORMING APPARATUS WITH RECORDING MATERIAL LOOP FORMING AND CONTROL MEANS

Takashi Uchida, Kawasaki; Osamu Hoshino, and Yasushi Murayama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

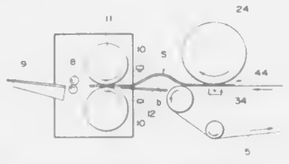
Filed Feb. 28, 1989, Ser. No. 318,464

Continuation of Ser. No. 1,176, Jan. 7, 1987, abandoned.

Claims priority, application Japan, Jan. 10, 1986, 61-3185; Jan. 10, 1986, 61-3186

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 13 Claims



1. An image forming apparatus comprising:

image forming means for forming an unfixed toner image on recording material;

fixing means having a pair of rotatable members for conveying the recording material therebetween and fixing said unfixed toner image on the recording material, a distance along a conveyance path of the recording material between a position at which the unfixed toner image is formed on the recording material by said image forming means and a nip position of said pair of rotatable members being shorter than the length of the recording material used with respect to a direction of conveyance of the recording material;

conveying means for conveying the recording material having said unfixed toner image formed thereon to said fixing means;

drive means for rotatably driving said pair of rotatable members selectively at a first peripheral speed lower than a speed at which said conveying means conveys the recording material and a second peripheral speed higher than the speed at which said conveying means conveys the recording material; and

control means for controlling said drive means, said control means controlling said drive means so as to rotate said pair of rotatable members at said first peripheral speed to thereby convey the recording material and to form a loop of the recording material having said unfixed toner image formed thereon between the nip position of said pair of rotatable members and the position at which the unfixed toner image is formed on the recording material by said image forming means, and thereafter to change said first peripheral speed to said second peripheral speed, thereby suppressing growth of the loop of said recording material greater than a predetermined amount.

4,941,022

TONER RECOVERY DEVICE

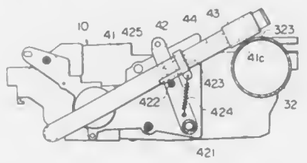
Atsuo Ohmura; Jun-ichi Koiso; Koiji Ishii, and Mitsugu Nemoto, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 6, 1989, Ser. No. 432,000

Claims priority, application Japan, Nov. 11, 1988, 63-284971; Dec. 13, 1988, 63-314254; Dec. 28, 1988, 63-334544

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—298 6 Claims



1. A toner recovery device for collecting toner from a cleaning device to a recovery toner container, comprising

a toner conveyance means for conveying toner from said cleaning device to said recovery toner container, said toner conveyance means having a conveyance pipe whose base end portion is rotatably connected to said cleaning device and tip end portion with an outlet opening is detachably coupled to an inlet opening of said recovery toner container so that said tip end portion is pivotted around said base end portion so as to take the coupled position and the detached position;

an operating lever means linked to said conveying pipe for pivotting said tip end portion between the coupled position and the detached position;

a shutter means adapted to move on said conveying pipe interlockingly with the movement of said operating lever means so that said shutter means closes the outlet opening of said conveying pipe on the detached position and opens the outlet opening on the coupled position.

4,941,023

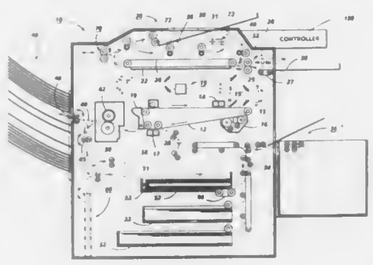
HYBRID SEQUENCED DOCUMENT COPYING SYSTEM

Maurice F. Holmes, Rochester; George J. Roller, Penfield, and Steven R. Moore, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1988, Ser. No. 274,517

Int. Cl.[5] G03G *15/00;* B65H *5/22*

U.S. Cl. 355—319 26 Claims



1. In a copier for making plural collated sets of duplex copies from a stacked set of simplex or duplex document sheets, with a document feeder for sequentially feeding the document sheets from said stack to the input side of a copying station of the copier to be copied on one side, and then ejecting the document sheets after they are copied from the output side of the copying station, and wherein there is also provided in the copier a copy sheet trayless duplexing buffer loop path means of a preset limited path length extending from and back to a copy sheet image transfer station, for copying document images onto both the first and second sides of copy sheets to make said duplex copies without any intermediate copy sheet stacking between first and second side copying by continuously circulating and inverting copy sheets in said trayless duplexing buffer loop between their first and second side copying, the improvement wherein:

said document feeder has a document platen bypass loop path means for intermittently taking selected document sheets already copied once at said copying station and ejected from said output side of said copying station and for returning said selected document sheets from said output side back to said input side of said copying station without returning to said stack, for subsequently copying said selected document sheets again after at least one other document sheet fed from said stack is copied at said copying station but prior to the copying of the other said document sheet from said stack, said selected document sheets being intermittently fed, bypassing said stack, by said document platen bypass loop path means to said input side of said copying station interleaved between other document sheets being fed directly from said stack to said copying station in a selection order coordinated with said trayless duplexing buffer loop path means for efficient utilization thereof for said making of said duplex copies.

4,941,024

SEMICONDUCTOR APPARATUS

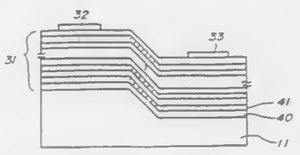
Toshiro Hayakawa, Nara; Takahiro Suyama, Tenri, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 757,977, Jul. 23, 1985, abandoned. This application Oct. 11, 1988, Ser. No. 256,097

Claims priority, application Japan, Jul. 31, 1984, 59-163213

Int. Cl.[5] H01L *27/12*

U.S. Cl. 357—4 5 Claims



1. A semiconductor apparatus comprising:

a step-shaped substrate;

a multiple-layered step-shaped crystal structure formed on said step-shaped substrate, said multiple-layered crystal structure being of a superlatticed layer which is composed of a plurality of alternate thin layers consisting of first and second semiconductor material of a uniform thickness throughout each layer, each layer being grown by molecular beam epitaxy in accordance with angular portions of said step-shaped substrate without formation of a twin; and

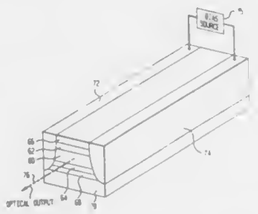
electrodes formed on an upper portion and a lower portion of said multiple-layered step-shaped crystal structure.

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4,941,025
QUANTUM WELL SEMICONDUCTOR STRUCTURES FOR INFRARED AND SUBMILLIMETER LIGHT SOURCES

Nader Tabatabaie, Red Bank, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 139,380, Dec. 30, 1987. This application Nov. 28, 1988, Ser. No. 276,954
Int. Cl.[5] G06F *11/10*; H03M *13/12*; H01L *29/161, 33/00*
U.S. Cl. 357—16 **6 Claims**

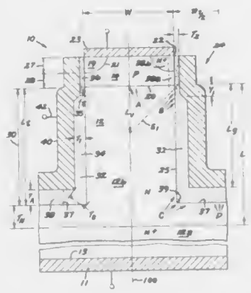


1. A quantum well structure comprising
a layered semiconductor definitive of a quantum well profile containing at least two subbands both within either the conduction band or the valence band, said subbands being characterized by an enhanced carrier conductivity difference between the subbands, the doping of said layered semiconductor establishing carrier population only within the lower-energy subband,
and means for establishing a dynamic population inversion between said subbands in the quantum well profile,
wherein said means for establishing a dynamic population inversion includes means for applying an electric field parallel to the layers of said structure.

4,941,026
SEMICONDUCTOR DEVICES EXHIBITING MINIMUM ON-RESISTANCE

Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 938,692, Dec. 5, 1986, abandoned. This application Aug. 26, 1988, Ser. No. 239,014
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.4 **63 Claims**

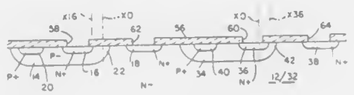


1. A semiconductor device comprising:
a body of semiconductor material having first and second opposed major surfaces and including:
a drift layer of semiconductor material exhibiting a concentration X of dopant impurities therein;
a second layer of semiconductor material between said drift layer and said first major surface;
a trench extending into said body from said first major surface through said second layer and extending a distance L_t into said drift layer to define a pedestal portion of said body having a width W and including portions of said drift and second layers, said drift layer portion of said pedestal having an aspect ratio L_t/W which is greater than or equal to 0.5, an area charge density of WX greater than or equal to $\epsilon E_{AV}/2q$, wherein ϵ is the permittivity of the semiconductor material, E_{AV} is the electric field strength at avalanche breakdown and q is the electron charge;
means associated with said drift layer portion of said pedestal for diverting electric field lines originating with said dopant impurities of said drift layer portion of said pedestal to thereby increase the voltage supporting potential of said drift layer portion of said pedestal and said device; and
a first main electrode disposed on said first major surface in ohmic contact therewith; and
a second main electrode disposed on said second major surface in ohmic contact therewith;
the main ON-state surrent path through said device extending between said first and second main electrodes and, when said device is in said ON-state, said pedestal portion of said drift layer is free of inversion layers.

4,941,027
HIGH VOLTAGE MOS STRUCTURE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 620,834, Jun. 15, 1984, abandoned. This application Feb. 27, 1989, Ser. No. 302,386
Int. Cl.[5] H01L *11/00*
U.S. Cl. 357—23.12 **17 Claims**

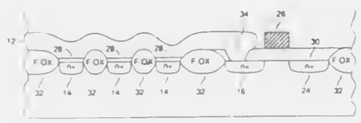


1. An integrated circuit comprising:
a first insulated gate field effect transistor having a first threshold voltage including a first body region of a first conductivity type in a substrate of a second conductivity type, said substrate forming a first drain region, said body having a constant impurity concentration region and a decreasing impurity concentration region, a first source region of said second conductivity type in said constant impurity region of said first body region and separated from said first drain by said decreasing impurity region, which forms a first channel region, and a first gate over said first channel region and separated therefrom by an insulative layer; and
a second insulated gate field effect transistor having a second threshold voltage lower than said first threshold voltage including a second body region of said first conducting type in said substrate, said substrate forming a second drain region, said body having a constant impurity concentration region and a decreasing impurity concentration region, and second source region of said second conductivity type in said decreasing impurity region and separated from said second drain by said decreasing impurity region which forms a second channel region and a second gate over said second channel region and separated therefrom by an insulative layer, said second threshold being set by the location of the edge of said second source region in said decreasing impurity region.

4,941,028
STRUCTURE FOR PROTECTING THIN DIELECTRICS DURING PROCESSING

Shih-Ou Chen, Fremont; John L. McCollum, and Steve S. Chiang, both of Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Aug. 10, 1988, Ser. No. 230,463
Int. Cl.[5] H01L *21/76*
U.S. Cl. 357—23.13 **5 Claims**

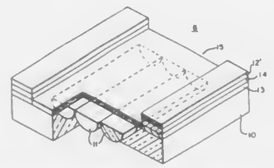


5. In an integrated circuit having a dielectric located between a first diffusion region of a first conductivity type in a substrate of a second conductivity type and an upper conductor, a structure for protecting said dielectric from damage due to static charge buildup during processing and storage of said circuit, including:
a second diffusion region of said first conductivity type in said substrate connected to said upper conductor by a buried contact,
a well of said first conductivity type in said substrate,
a diffusion of said second conductivity type in said well connected to said upper conductor by a buried contact.

4,941,029
HIGH RESISTANCE OPTICAL SHIELD FOR VISIBLE SENSORS

Nathan Bluzer, Silver Spring, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1985, Ser. No. 706,436
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 357—30 **4 Claims**

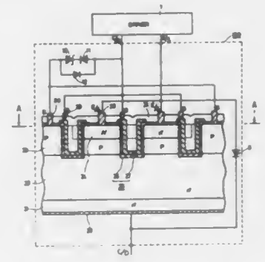


1. In combination with a solid state imaging device comprising silicon chip means incorporating photodetectors and photo signal processing circuitry sensitive to light and a light shield means disposed as a layer upon said photo signal processing circuitry and any other elements sensitive to light which are required to be shielded from light for proper device operation, the improved light shield means comprising:
a high electrical resistance semiconductor means conformed as said light shield layer, said semiconductor means having a lower band gap than the band gap of silicon which comprises said chip means; and
said semiconductor means layer having a predetermined thickness sufficient to provide incident light shielding.

4,941,030
SEMICONDUCTOR DEVICE

Gourab Majumdar, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1986, Ser. No. 825,868
Claims priority, application Japan, Feb. 5, 1985, 60-20474
Int. Cl.[5] H01L *27/02, 29/78, 29/06*
U.S. Cl. 357—43 **8 Claims**



1. A semiconductor device comprising a MOSFET and a bipolar transistor, including:
a semiconductor substrate (21, 22) of a first conductivity type having a first surface, said substrate forming a collector of said bipolar transistor and a drain of said MOSFET;
a first semiconductor layer (23) of a second conductivity type formed on an opposing surface of said semiconductor substrate (21, 22) opposing said first surface and forming a base of said bipolar transistor;
a second semiconductor layer (24) of said first conductivity type provided as an island extending from an exposed surface of said first semiconductor layer (23) toward said first surface and smaller in thickness than said first semiconductor layer (23), said second layer forming both an emitter of said bipolar transistor and a source of said MOSFET; and
at least one groove (25) formed in a region of said second semiconductor layer (24), said groove (25) being formed to reach at least an interface between said semiconductor substrate (22) and said first semiconductor layer (23), a gate electrode of said MOSFET comprising a conductive material (27) on a surface of the groove and separated from said surface of said groove by a dielectric film (26)
wherein a conductive film (20) is formed on said first surface of said semiconductor substrate (21, 22), and a region adjacent said groove (25) comprises a gate region thereby to form, together with said drain and said source, said metal-oxide-semiconductor field-effect transistor (MOSFET);
wherein said first semiconductor layer (23) and said conductive material (27) of said groove region (25) are connected through a series element including a first diode (11) connected in an electrically forward direction with respect to said conductive material (27) of said groove region (25), said first diode connected in series with a constant-voltage diode (10) in an electrically reverse direction thereto, said series element including a second diode (12) connected in parallel with said first diode and said constant voltage diode in an electrically reverse direction relative to said conductive material (27) of said groove region (25), and further including an additional diode (5) connected between said second semiconductor layer (24) and said semiconductor substrate (21, 22) in an electrically forward direction relative to said second semiconductor layer (24) thereby to form a high-voltage/high-current switching device capable of high-speed operation.

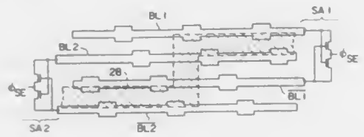
VOL 1116 ISS 2 JL 10 1990 UMI

4,941,031

DYNAMIC MEMORY DEVICE WITH IMPROVED WIRING LAYER LAYOUT

Jumpei Kumagai, Yokohama, and Syuso Fujii, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 3, 1989, Ser. No. 416,604
Claims priority, application Japan, Nov. 16, 1988, 63-289259
Int. Cl.[5] H01L 27/10, 23/48, 27/02, 29/78
U.S. Cl. 357—45 20 Claims



1. A dynamic memory device comprising:
a plurality of memory cells each including one transistor and one capacitor;
first and second bit lines each coupled with a plurality of memory cells and being arrayed in parallel with separation of a first predetermined distance;
first sense amplifier coupled with said first and second bit lines;
third and forth bit lines each coupled with a plurality of memory cells and being arrayed in parallel with separation of said first predetermined distance, said third bit line being located between said first bit line and said second bit line, and separated from said first bit line by a second predetermined distance, and said fourth bit line being separated from said second bit line by said second predetermined distance;
second sense amplifier coupled with said third and fourth bit lines; and
a conductive layer extending in the bit line direction, said conductive layer extending between and along said first and third bit lines, being bent at a predetermined position, and being bent again and extending between and along said second and fourth bit lines, and a length of said conductive layer which extends between and along said first and third bit lines being equal to that of said conductive layer which extends between and along said second and fourth bit lines.

4,941,032

SEMICONDUCTOR DEVICE

Kenji Kobayashi; Masataka Kondo; Kazunori Tsuge, and Yoshihisa Tawada, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 21,039, Mar. 2, 1987, abandoned. This application Jan. 13, 1989, Ser. No. 298,279
Claims priority, application Japan, Mar. 3, 1986, 61-47122
Int. Cl.[5] H01L 23/54, 21/44
U.S. Cl. 357—67 17 Claims

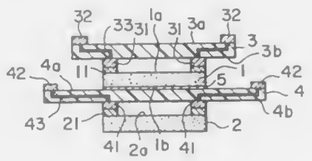
1. A semiconductor device comprising an amorphous semiconductor which might contain microcrystals therein, and a metal electrode directly in contact with said amorphous semiconductor, wherein said metal electrode consists essentially of Al as a first component, and at least one additional component selected from the group consisting of (i) Ag, (ii) Au, (iii) Ca, Mg, Mn, W, Cr or Cu, (iv) Zn or Ge, and (v) Fe, Mo, Ni, Pd, Pt, Ti, V or Zr.

4,941,033

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Satoru Kishida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 24, 1989, Ser. No. 328,539
Claims priority, application Japan, Dec. 27, 1988, 63-327609
Int. Cl.[5] H01L 23/12, 23/14, 23/04
U.S. Cl. 357—75 17 Claims



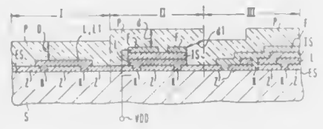
1. A semiconductor integrated circuit device comprising:
first and second semiconductor chips, each chip having opposed front and rear surfaces and a plurality of electrodes disposed on the front surface; and
first and second wiring films, each wiring film having opposed front and rear sides, including a plurality of first and second terminals disposed on the front and rear sides, respectively, and wiring within each wiring film interconnecting respective first and second terminals, the second terminals of the first and second wiring films being disposed in correspondence with and attached to the electrodes of the first and second chips, respectively, wherein the first and second chips and the first and second wiring films are all disposed opposite each other, in a stack, one of (i) the first and second wiring films and (ii) the first wiring film and second chip being attached to each other.

4,941,034

INTEGRATED SEMICONDUCTOR CIRCUIT

Hartmut Schrenk, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 921,756, Oct. 22, 1986. This application Jul. 5, 1988, Ser. No. 218,493
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1986, 3537590
Int. Cl.[5] H01L 23/48, 29/46, 29/54
U.S. Cl. 357—71 7 Claims



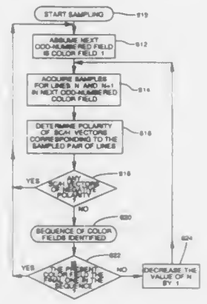
1. Integrated semiconductor circuit, comprising a substrate, a layer of electrical structures disposed in said substrate; conductor runs connected to said electrical structures; at least one electrically conducting surface element covering only a part of said conductor runs; an insulating layer electrically insulating said at least one surface element from said part of said conductor runs being covered by said surface element; a passivating layer covering said substrate, said electrical structures, said conductor runs and said at least one surface element; said at least one surface element having at least the same thickness and the same chemical properties as said conductor runs; and said passivating layer being at least as thick above said at least one surface element covering said part of the conductor runs as above the remaining conductor runs; wherein said at least one surface element is in the form of a plurality of surface elements and at least one of said surface elements is electrically insulated.

4,941,035

METHOD OF SAMPLING COLOR VIDEO SIGNAL HAVING ALTERNATING PHASE CHARACTERISTICS

John L. Judge, Hillsboro, Oreg., assignor to Magni Systems, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 17,314, Feb. 20, 1987, Pat. No. 4,792,845. This application Dec. 16, 1988, Ser. No. 285,775
Int. Cl.[5] H04N 9/44
U.S. Cl. 358—10 8 Claims



1. In a system for measuring the phase characteristics of a color video signal arranged in a sequence of plural color frames of which each includes plural video image scan lines, the color video signal including for each video image scan line a phase characteristic that has one of first and second polarities, a method of sampling the color video signal, comprising:
sampling the color video signal during first and second video image scan lines within a first one of the plural color frames in the sequence, each of the first and second video image scan lines being characterized as having one of the first and second polarities;
determining whether the polarities of the sampled first and second video image scan lines match the polarities of the color video signal during corresponding first and second video image scan lines in a preselected color frame in the sequence of color frames, thereby to identify the preselected color frame; and
whenever the preselected color frame is identified, sampling the color video signal during third and fourth video image scan lines that are within a second one of the plural color frames and that have the polarities of the first and second video image scan lines.

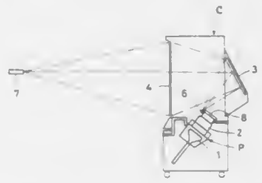
4,941,036

COMMAND SENSOR IN PROJECTION DISPLAY APPARATUS

Masateru Itoh, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 267,563
Claims priority, application Japan, Nov. 12, 1987, 62-287978
Int. Cl.[5] H04N 5/74, 9/31
U.S. Cl. 358—60 10 Claims

1. A back-projection picture display apparatus comprising:
a back-projection screen including a Fresnel lens plate;
a video projector unit; and
a remote control system including a remote controller for generating an infrared beam of a particular characteristic descriptive of a particular command with which the apparatus is operated and a command sensor operable in response to the infrared beam to operate the apparatus to accomplish a mode of operation assigned by such particular command, said command sensor being arranged at a location where the infrared beams passing through the Fresnel lens plate are converged.

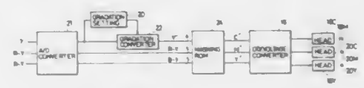


4,941,037

COLOR IMAGE PROCESSING METHOD AND APPARATUS IN WHICH A GRADATION-CONVERTED LUMINANCE SIGNAL AND TWO NON-LINEARLY QUANTIZED COLOR-DIFFERENCE SIGNALS HAVING FEWER BITS THAN THE LUMINANCE SIGNAL ARE USED TO ADDRESS A COLOR MASKING ROM

Takashi Sasaki, and Yoshiro Udagawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 838,784, Mar. 12, 1986, abandoned. This application May 2, 1988, Ser. No. 188,644
Claims priority, application Japan, Mar. 21, 1985, 60-56632
Int. Cl.[5] G03F 3/08; H04N 1/40, 1/46
U.S. Cl. 358—80 19 Claims



1. A color image processing method comprising the steps of:
obtaining a luminance signal and two color difference signals based on primary colors;
gradation converting said luminance signal in accordance with a characteristic thereof to provide a converted luminance signal having a number of bits;
non-linearly quantizing said two color difference signals to provide two quantized color difference signals each having a number of bits, wherein the number of bits of each of said quantized color difference signals is smaller than the number of bits of said converted luminance signal;
performing a masking process using masking process means that includes a storage circuit for storing a plurality of complementary color signal levels at addresses of said storage circuit and for accepting as an input address said converted luminance signal and said two quantized color difference signals to provide as an output at least one of said complementary color signal levels stored in said storage circuit; and
providing said output complementary color signal levels to a color printing device.

14. A color image processing apparatus comprising:
supplying means for supplying a luminance signal and two color difference signals based on primary colors;
processing means for processing said luminance signal and said two color difference signals supplied by said supplying means, wherein said processing means performs processing for said luminance signal and said two color difference signals, the processing for said luminance signal and the processing for said two color difference signals being different from each other; and
output means for accepting said luminance signal and said two color difference signals and outputting a masking-

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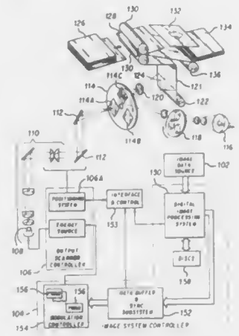
processed complementary color signal, wherein said output means includes a memory circuit for storing levels of said complementary color signal accessed using as an input address a value according to said luminance signal and said two color difference signals processed by said processing means.

4,941,038

METHOD FOR COLOR IMAGE PROCESSING

Eric Walowit, Springboro, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 48,156, May 11, 1987. This application Jan. 13, 1989, Ser. No. 297,223
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—80 **25 Claims**



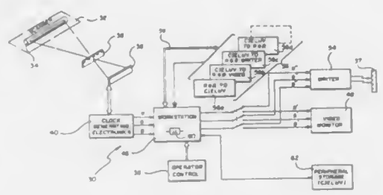
1. A method of converting input color data to output color data comprising the steps of:
- calibrating in a first calibration an input device to an intermediate color space;
- calibrating in a second calibration an output device to said intermediate color space;
- collecting said input color data from said input device;
- converting said input color data to intermediate color space data in accordance with said first calibration;
- outputting said color data to said output device;
- wherein said converting of said intermediate color space data to said output color data includes processing said intermediate color space data for matching an input gamut to an output gamut for said output device, and wherein said intermediate color space is a uniform color space;
- said processing includes identifying at least one unprintable device independent color output value which, when converted to a device dependent color output value, cannot be represented by said output device, and determining an adjusted device dependent color output value for representing said device independent color output value which is within said output gamut;
- said adjusted device dependent color output value being determined within said intermediate color space;
- said adjusted device dependent color value being determined as the shortest vector distance within said intermediate color space between said unprintable color output value and a color output value which is printable by said output device.

4,941,039

COLOR IMAGE REPRODUCTION APPARATUS HAVING A LEAST SQUARES LOOK-UP TABLE AUGMENTED BY SMOOTHING

John R. E'Errico, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1989, Ser. No. 332,824
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—80 **4 Claims**



1. In imaging apparatus including an input device adapted to produce a multivariate signal representing an input image, a look-up table characterized by a series of discrete multivariate input signal values that are functionally related in a non-linear manner to a corresponding series of discrete reproduction signal values representative of useable output image information, and electronic computer means coupling said input device and said look-up table, for linearly interpolating between neighboring multivariate signal values in said look-up table in accordance with an actual multivariate signal provided by said input device, to compute a reproduction signal relating to an output image actually to be used, wherein the improvement comprises:
- the discrete reproduction signal values, b_i, in said look-up table are computed by means of a least squares algorithm applied to the combination of (1) a first array of data, S, relating a series of values, Y, of a dependent variable of an input data set to the series of reproduction signal values to be computed for said look-up table, and (2) a second array of data, ρ, relating a series of values of the second derivative of the non-linear function represented by the input data set, evaluated at selected input signal values, x_i, of said look-up table, to the series of reproduction signal values for said look-up table.

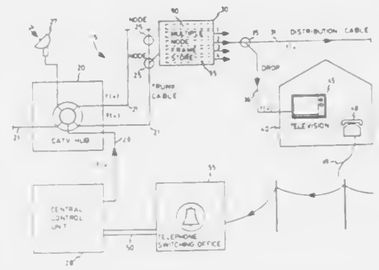
4,941,040

CABLE TELEVISION SYSTEM SELECTIVELY DISTRIBUTING PRE-RECORDED VIDEO AND AUDIO MESSAGES

Terrence H. Pocock, Mount Brydges; Peter J. M. Coumans; Richard M. McNorgan, both of London, and George M. Hart, Newmarket, all of Canada, assignors to Cableshare, Inc., London, Canada

Division of Ser. No. 730,822, May 6, 1985, Pat. No. 4,734,764. This application Feb. 10, 1988, Ser. No. 154,386
Claims priority, application Canada, Apr. 29, 1985, 480334
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[5] H04N *7/10*
U.S. Cl. 358—86 **12 Claims**

1. In a television system of the type in which video information is transmitted on a primary communication link to a node, and disseminated to subscribers via secondary paths from the node to subscribers' receivers, apparatus for providing different individual video presentations to different respective subscribers, comprising:
- a plurality of video storage devices for storing various video presentations;
- means responsive to subscriber-initiated request for selecting individual presentations stored in the storage devices and encoding each selected presentation with an address associated with a subscriber;
- means for assembling the presentations selected by different subscribers into a video signal and transmitting the video signal on said primary link;
- means at said node for receiving the video signal transmitted over said primary link and storing selected presentations encoded with predetermined addresses; and



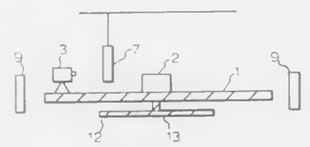
- means at said node for repetitively transmitting the stored presentations at a standard video signal rate via a single television channel but over different respective secondary paths so that all subscribers connected to said node can each view their respective presentations by tuning television receivers to said television channel.

4,941,041

PULFRICH ILLUSION TURNTABLE

Keith E. Kenyon, 14434 Hamlin St., Ste. 4, Van Nuys, Calif. 91401

Filed Apr. 11, 1989, Ser. No. 336,052
Int. Cl.[5] H04N *13/02*
U.S. Cl. 358—89 **16 Claims**



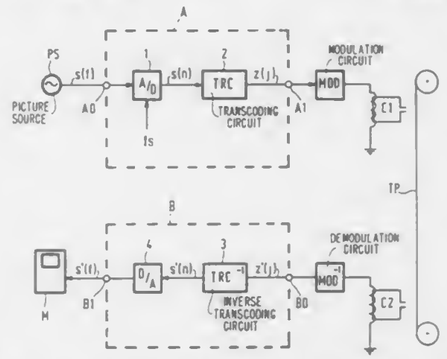
1. The method of obtaining deep in-depth perception or 3-dimensional effects from 2-dimensional images which comprises the steps of producing proper lighting, color, and special angles for moving-picture-shooting devices, such as television cameras, videotaping cameras, and film cameras engaged in shooting such 3-D images by taking advantage of the Pulfrich illusion which is created by precise camera motion, obtained by mounting one or more cameras on top of and near the edge of a turntable, while the subect or subjects being televized or videotaped are placed at or near its center and enabling the turntable to rotate during shooting and in which a darkened lens shading one eye of the viewer at a time may be employed to enhance the 3-D effect.

4,941,042

TELEVISION TRANSMISSION SYSTEM INCLUDING A HYBRID ENCODING CIRCUIT

Jean B. O. S. Martens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1989, Ser. No. 339,550
Claims priority, application Netherlands, May 3, 1988, 8801155
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 358—133 **4 Claims**



1. A television transmission system for transmitting pictures comprising $E_1 \times E_2$ pixels from an encoding station to a decoding station, characterized in that the encoding station comprises:
- means for performing a number of forward picture transforms on the picture to be transmitted for generating the same number of matrixes of coefficients of a mutually different order;
- means for coverting each one of a number of selected matrixes of coefficients into a matrix of prediction coefficients of a first higher order;
- means for each time subtracting a matrix of prediction coefficients and a matrix of coefficients of the same order for generating matrixes of difference coefficients;
- means for selecting difference coefficient matrixes for transmitting their difference coefficients to the decoding station; and in that the decoding station comprises:
- means for converting each of the transmitted difference coefficient matrixes into a matrix of auxiliary coefficients comprising $E_1 \times E_2$ auxiliary coefficients; and
- means for adding all auxiliary coefficient matrixes of a picture.

4,941,043

METHOD FOR REDUCING BLOCKING ARTIFACTS IN VIDEO SCENE CODING WITH DISCRETE COSINE TRANSFORMATION (DCT) AT A LOW DATA RATE

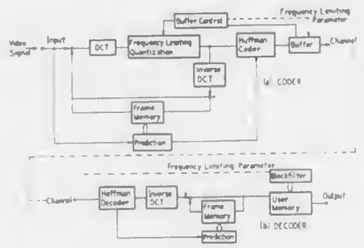
Wieland Jass, Baldham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 7, 1989, Ser. No. 362,700
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1988, 3820266
Int. Cl.[5] H04N *7/133*
U.S. Cl. 358—133 **6 Claims**

1. A method for reducing blocking artifacts in a video scene coding with discrete cosine transformation (DCT) at a low data rate, characterized by the steps of
- in a video signal transmission system (FIG. 1*a*, FIG. 1*b*) having a transmission-side video signal input to which a video signal to be transmitted is supplied, transmitting, via a transmit-side coder, the frequency limitation parameters allocated to the individual blocks of the video signal to be

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divided into a plurality of blocks, transmitting these to a receive-side decoder via a transmission channel together with a block-associated video sub-signal that is coded by the coder; and



employing the frequency limitation parameters at the receiver-side for the purpose of controlling a block filter function at the output of the decoder that outputs a decoded video signal, for postprocessing of the decoded video signal for the purpose of reducing the blocking artifacts.

4,941,044

PROCESSING SUB-SAMPLED SIGNALS

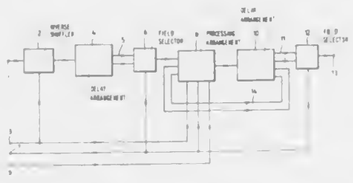
Timothy I. P. Trew, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1989, Ser. No. 353,360

Claims priority, application United Kingdom, Jun. 1, 1988, 8812961

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—138 **30 Claims**



1. A method of processing a signal representing a sequence of two-dimensional images conveyed in sub-sampled form by way of a transmission channel or record carrier and subjected, prior to said conveyance, to different sampling structures on a segmented basis depending on the degree of movement and/or the character of spatial information, said method including the step of receiving the sub-sampled signal from said transmission channel or record carrier sequentially on a field by field basis, said method being characterized by the further steps of:

i. forming from said received sub-sampled signal a further sub-smapled signal containing the same information but in which the order of the fields is changed compared with that in said received signal;

ii. subjecting said further sub-sampled signal to inter-field and/or intra-field processing; and

iii. forming from the resulting processed signal an output signal in which the order of the fields is restored to the sequence present in said received signal.

4,941,045

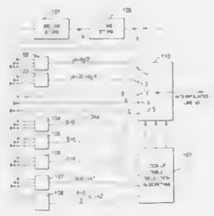
METHOD AND APPARATUS FOR IMPROVING VERTICAL DEFINITION OF A TELEVISION SIGNAL BY SCAN CONVERSION

Christopher H. Birch, Toronto, Canada, assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Oct. 11, 1988, Ser. No. 255,328

Int. Cl.[5] H04N *7/01, 7/12, 7/18*

U.S. Cl. 358—140 **17 Claims**



1. A scan conversion method at or near the location of a television signal receiver for improving vertical resolution by interpolation in the event of a moving image comprising the steps of:

(i) storing data values for adjacent picture elements separated by one vertical line from picture elements of a current field,

(ii) storing at least a data value for one picture element for the previous field proximate in vertical location to the adjacent picture elements of step (i),

(iii) rank ordering in amplitude level the data values stored in steps (i) and (ii),

(iv) determining whether the difference of the data values for adjacent picture elements of step (i) exceeds a first predetermined value,

(v) determining the event of a moving image by calculating whether the difference in data values between fields exceeds a second predetermined value,

(vi) mathematically calculating an average value from at least two of the picture element data values of steps (i) or (ii), and

(vii) selecting one of the data values of steps (i) or (ii) or the average value calculated in step (vi) as an interpolated value for display.

4,941,046

SIGNAL PROCESSING CIRCUIT FOR A MOVING DETECTION CIRCUIT WHICH INCLUDES COEFFICIENT GENERATOR WHEREIN A NUMBER OF DELAY DEVICES ARE CONNECTED IN SERIES WITH THE FIRST ONE RECEIVING THE OUTPUT OF A MOVING DETECTION CIRCUIT AND INCLUDING A TIME BASE FILTER

Hisafumi Motoe; Hiroyuki Kawashima, both of Tokyo, and Masaharu Tokuhara, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 13, 1989, Ser. No. 379,055

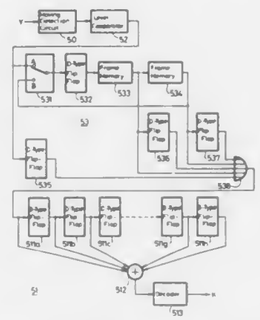
Claims priority, application Japan, Jul. 22, 1988, 63-183205; Jul. 25, 1988, 63-185169; Jul. 25, 1988, 63-185268; Jul. 27, 1988, 63-187295

Int. Cl.[5] H04N *5/217*

U.S. Cl. 358—167 **11 Claims**

1. A signal processing circuit for a moving detection circuit comprising, a coefficient generator connected to an output of a moving detection circuit, characterized by said coefficient generator comprising: (a) a plurality of one bit delay devices connected in series with a first one receiving the output of said moving detection circuit, said plurality of one bit delay devices having a plurality of output terminals; (b) an adder connected

to said plurality of output terminals so as to add the output signals from said plurality of one bit delay devices, and further comprising a time base filter, said time base filter formed with a first one sampling time delay memory, first and second frame



memories connected in series to said output of said first one sampling time delay memory, and switching means connected to said moving detection circuit and to an output of said second frame memory so as to selectively supply signals to the input of said one sampling time delay memory.

4,941,047

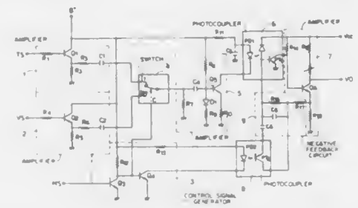
VIDEO SIGNAL COMPENSATING CIRCUIT OF A TV/VCR

Jin H. Yoon, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 20, 1988, Ser. No. 221,751

Int. Cl.[5] H04N *5/268, 5/205, 5/91*

U.S. Cl. 358—181 **10 Claims**



1. A video signal compensating circuit for a TV/VCR comprising a first amplifier means for amplifying a TV video signal, a second amplifier means for amplifying a VCR video signal, a control signal generator means for generating a control signal in accordance with a TV/VCR mode selection signal, a switching element for selecting and outputting one of the output signals of said first and second amplifier means in dependence upon the control signal of said control signal generator means, a third amplifier means for amplifying the output signal of said switching element, a first photocoupler for outputting a signal proportional to the output signal of said third amplifier means, an output amplifier means for amplifying the output signal of said first photocoupler, a second photocoupler connected to be turned on and off in response to the control signal of said control signal generator means, and a negative feedback element connected to vary an emitter output signal of a transistor of said output amplifier means in response to "ON" or "OFF" states of said second photocoupler and to then feedback negatively to a base of a light receiving transistor of said first photocoupler.

4,941,048

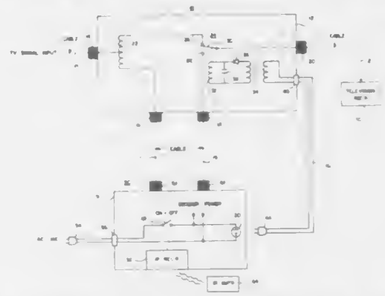
DECODER-OPERATED TELEVISION SIGNAL SWITCH

Ted E. Hartson, Scottsdale, Ariz., and Gordon E. Kelly, Algonquin, Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 14, 1988, Ser. No. 284,036

Int. Cl.[5] H04B *11/16*

U.S. Cl. 358—181 **8 Claims**



4. In combination with a television signal decoder which comprises a power supply input, a power supply output, power switching means connected between the power supply input and power supply output, a decoder signal input, and a decoder signal output;

signal switching means comprising an input connected to a source of television signals, an input connected to said decoder signal output, an output, and an actuation signal input; and

circuit means, connected between said power supply output and said actuation signal input, for providing an actuation signal to operate said signal switching means.

4,941,049

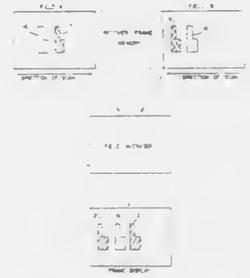
TELEVISION SYSTEM USING REVERSING SCAN WHICH MINIMIZES GHOST VISIBILITY

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jan. 17, 1989, Ser. No. 298,394

Int. Cl.[5] H04N *7/00*

U.S. Cl. 358—187 **11 Claims**



1. A method of operating a television system for minimizing the visibility of ghost images comprising the steps of:

formatting groups of picture elements of a video scene such that during transmission successive ones of said groups are in reverse order by writing data corresponding to said groups of picture elements in a memory and reading said data from said memory to reverse the order of said successive ones of said groups of picture elements;

transmitting said groups of picture elements to a receiver; and

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generating a video display at said receiver having said groups of picture elements in correct order.

10. A method of operating a television transmission system for minimizing the visibility of ghost images comprising the steps of:

developing a video signal by alternately scanning fields of a scene in opposite directions at a field rate;

transmitting said video signal to a receiver; and

receiving and generating a video display from said video signal, successive pairs of said fields being averaged for minimizing flicker of said ghost images.

4,941,050

AN AFC ARRANGEMENT FOR TUNING A TELEVISION RECEIVING APPARATUS TO A SELECT TRANSMISSION HAVING AN ACTUAL CARRIER FREQUENCY WHICH DIFFERS FROM A NOMINAL CARRIER FREQUENCY

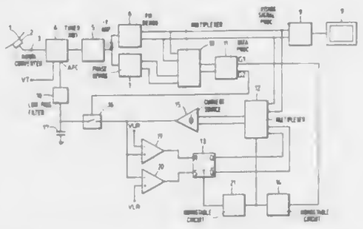
Philip H. Bird, Sidcup, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 338,927

Claims priority, application United Kingdom, Apr. 27, 1988, 8809921

Int. Cl.[5] H04N *5/50*

U.S. Cl. 358—195.1 **13 Claims**



1. Receiving apparatus for a television signal where substantially all the line periods of a frame contain a first portion comprising at least synchronizing information and a second portion comprising vision information, said apparatus comprising a tuner unit for tuning said apparatus to a selected transmission, an automatic frequency control (a.f.c.) arrangement for ensuring the correct tuning of said tuner unit, a demodulator for demodulating the signal of the selected transmission when received, means for applying a preset tuning voltage to said tuner unit for setting the tuning of said tuner unit to the nominal carrier frequency for said selected transmission, and means for applying an a.f.c. voltage from said a.f.c. arrangement to said tuner unit for correctly tuning said tuner unit to the actual carrier frequency of said selected transmission, characterized in that said a.f.c. arrangement comprises first means for causing said arrangement to operate, in the event that said tuner unit is incorrectly tuned to said selected transmission, in a first mode in which the a.f.c. voltage is such that the tuning frequency of said tuner unit is swept about said nominal frequency over a range which is greater than the expected error between the actual and the nominal carrier frequency, said frequency sweep continuing until said tuner unit is tuned sufficiently close to said actual carrier frequency that the selected transmission can be correctly decoded, whereafter second means are provided for causing said a.f.c. arrangement to operate in a second mode in which the a.f.c. voltage is derived from the output of said demodulator from said selected transmission during the first portion of the line periods, wherein said a.f.c. voltage is produced across an a.f.c. capacitor, and wherein the first means of said a.f.c. arrangement comprises a current source whose output is continuously connected, in said first mode, to said a.f.c. capacitor, a bistable circuit coupled to said current source which, in a first state, causes said source to generate a current in a first direction and, in a second state, causes said source to generate current in a second opposite direction, and sensing means connected to the output of said current source for changing the state of said bistable circuit when the current generated by said source reaches a first limit value in said first direction, and a second limit value in said second opposite direction.

4,941,051

SIGNAL PROCESSING CIRCUIT AND METHOD

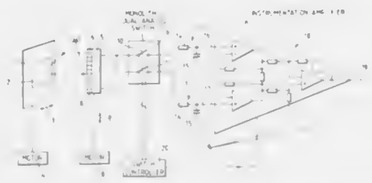
Michael E. Hicks, Hertfordshire, England, assignor to Crossfield Electronics Limited, London, England

Filed Jan. 30, 1989, Ser. No. 302,873

Claims priority, application United Kingdom, Feb. 3, 1988, 8802381

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—213.16 **11 Claims**



1. A method of processing output signals from a radiation sensing assembly which generates, for each of a succession of sampling periods, output signals representing respectively a reference level and a radiation level related to the radiation incident on a sensor of said assembly during each respective sampling period, the method comprising performing in real time the steps of filtering a plurality of successive reference level signals and the corresponding plurality of successive radiation signals associated with said plurality of reference level signals to minimise high frequency noise effects on the signals so as to generate filtered and averaged reference level and radiation level signals; and generating a signal related to the difference between said filtered reference level and filtered radiation level signals.

4,941,052

IMAGE SIGNAL PROCESSOR WITH NOISE ELIMINATION CIRCUIT

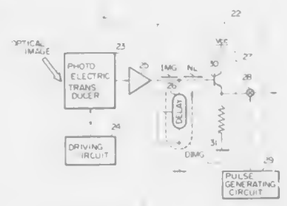
Masahiro Obbo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 15, 1989, Ser. No. 310,620

Claims priority, application Japan, Feb. 16, 1988, 63-34518

Int. Cl.[5] H04N *3/14, 5/14*

U.S. Cl. 358—213.15 **6 Claims**



1. An image signal processor for an optical image capable of being divided into a plurality of small parts, comprising:

(a) a charge coupled device operative to produce a series of electric image signals each occupying a time frame and divided into a resetting section for discharging electric charges accumulated in the previous time frame, a feed through section for newly accumulating electric charges and a data section indicative of the intensity of each small part of said optical image, said feed through section having a voltage level approximately equal to a basic level; and

(b) a noise eliminating circuit having

(b-1) a delay line coupled at the input node thereof to an output node of said charge coupled device and at the output node thereof to a constant voltage node and operative to produce a series of delayed electric image signals inverted in waveform with respect to said basic level, a time interval between each electric image signal and each delayed electric image signal being selected in such a manner that the data section of each electric signal is merged into the feed through section of each delayed electric image signal for producing a noise eliminated electric image signal,

(b-2) a single input amplifier circuit coupled between a source of voltage level and said constant voltage node and having an input node coupled to the input node of said delay line for amplifying said noise eliminated electric image signal,

(b-3) a pulse generating circuit operative to produce a periodical transfer signal, and

(b-4) gate means responsive to the periodical transfer signal and shifted between an on state and an off state for transferring a part of the data section of each noise eliminated electric image signal.

4,941,053

PREDICTIVE ENCODER FOR STILL PICTURES

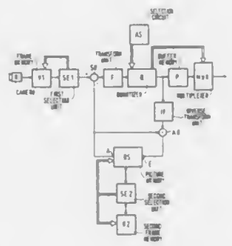
Klaus Hieberwadel, and Gerald Weth, both of Nuremberg, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Apr. 5, 1989, Ser. No. 333,484

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811536

Int. Cl.[5] H04N *1/417*

U.S. Cl. 358—261.2 **3 Claims**



1. A predictive encoder for still pictures, comprising: a quantizer whose characteristic curve is variable, an output buffer from which the encoded picture date are read and transmitted at a constant bit rate, and a subtractor and a picture memory for obtaining prediction values, characterized by;

a first frame memory in which the data of all pixels of the still picture to be transmitted are stored,

a selection circuit adjusting the characteristic curve after the quantizer performs the quantizing operation,

at least an initial encoding and transmission of all data stored in the first frame memory occurring, and for each further encoding and transmission the selection circuit selecting a characteristic curve corresponding to a more refined quantizing operation.

4,941,054

COLOR-DIFFERENCE LINE-SEQUENTIAL SIGNAL PROCESSING APPARATUS

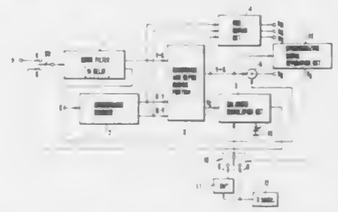
Tomotaka Muramoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 111,456, Oct. 21, 1987, abandoned. This application Aug. 10, 1989, Ser. No. 392,091

Claims priority, application Japan, Oct. 27, 1986, 61-253698

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—310 **17 Claims**



10. A composite color video signal processing apparatus for processing a color video signal composed of a frequency-multiplexed luminance signal and chrominance signal comprising:

(A) separating means for receiving said composite color video signal, separating the luminance signal and the chrominance signal from the received composite video signal and outputting these signals, said separating means including a delay circuit for applying a delay of one horizontal scanning period to the received signal;

(B) signal processing means for receiving the chrominance signal separated by said separating means, converting the received chrominance signal into a color-difference line-sequential signal, and then processing and outputting same;

(C) supply means for supplying the color-difference line-sequential signal outputted and processed by said signal processing means to the delay circuit included in said separating means.

4,941,055

RECORDING APPARATUS WITH IMPROVED S/N RATIO

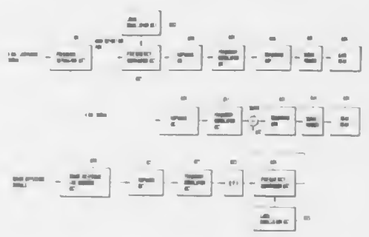
Ryo Fujimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 129,991

Claims priority, application Japan, Dec. 9, 1986, 61-291495; Dec. 9, 1986, 61-291496; Dec. 9, 1986, 61-291497

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—340 **14 Claims**



1. An information signal recording apparatus for recording an information signal having a predetermined frequency band on a magnetic recording medium, comprising:

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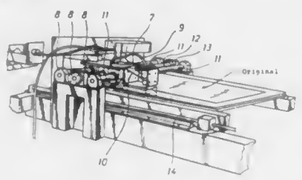
(a) signal separating means for receiving said information signal and for separating the received information signal into a first signal having a first frequency band and a second signal having a second frequency band which is higher than said first frequency band and outputting said first and second signals;
(b) first recording means having a first magnetic head to record the first signal outputted from said signal separating means onto a first area of said magnetic recording medium by said first magnetic head; and
(c) second recording means having a second magnetic head, which is different in its azimuth angle of gap from said first magnetic head, to record the second signal outputted from said signal separating means onto a second area of said magnetic recording medium, which is different from said first area.

4,941,056

A METHOD FOR OBTAINING DATA FROM AN ORIGINAL DOCUMENT USING A CAMERA SUPPORTED OR AN AIR CUSHION

Hans Hemmingsen, Birkerod; Lars S. Christensen, Helsinge, and Kristian B. Monnike, Allerod, all of Denmark, assignors to Eskofot A/S, Ballerup, Denmark

Filed Nov. 21, 1988, Ser. No. 273,985
Claims priority, application Denmark, Nov. 24, 1987, 6177/87
Int. Cl.[5] H04N *1/10*
U.S. Cl. 358—497 **8 Claims**



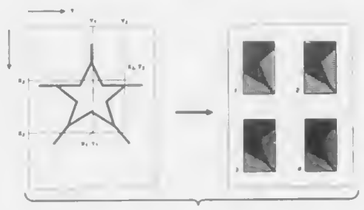
1. A method for obtaining digital data from an original, comprising:
(a) providing an original supported on a bed so as to have a substantially horizontal, upwardly presenting surface from which data may be read;
(b) providing a semiconductor camera comprising a plurality of semiconductor elements arranged in a series which is less broad and less long than said original;
(c) providing a portal device movably supported on said bed for movement longitudinally of the original, the portal device being comparable in breadth to the original;
(d) mounting the camera to the portal device for movement transversally of the portal device and for vertical movement relative to the portal device towards and away from the original;
(e) while supporting said camera on a cushion of pressurized air issuing from adjacent the camera towards said surface, so that the camera floats above said surface by an amount which is dependent upon the pressure of said pressurized air in said cushion, moving said camera transversally of said original along said portal device while operating said camera to examine a respective strip of said original, and thereby acquire data therefrom; and
(f) moving said portal device longitudinally of the document to vertical juxtaposition with a respective longitudinally successive strip of said original and repeating step (e).

4,941,057

DIGITAL IMAGE PROOFING

Donald R. Lehmbeck; Roger L. Triplett, both of Penfield, and Kevin E. Marks, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1988, Ser. No. 261,959
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—443 **14 Claims**



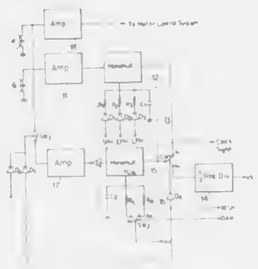
11. An image processing arrangement for producing a proof image demonstrating the effect of each of a plurality of filter functions on a single page of output, said arrangement comprising:
means for supplying image data;
means for selectively defining an area of interest within said image data;
means for forming proof image data from said image data, composed of repetitions of said selected area of interest;
a filter device for applying a filter function to image data;
a filter memory for storing a filter function for use in the filter device;
a filter storage storing a plurality of filter functions for said filter memory; and
a controller for selectively storing selected filter functions of said plurality of filter functions to said filter memory to apply at said filter device each of said selected plurality of filters to each repetition of said area of interest in said proof image data.

4,941,058

DATA SIGNAL RECORDING/REPRODUCTION APPARATUS OF A VCR

Dong Kil Jeong, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 31, 1988, Ser. No. 238,858
Claims priority, application Rep. of Korea, Aug. 31, 1987, 14809/1987
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—67 **1 Claim**



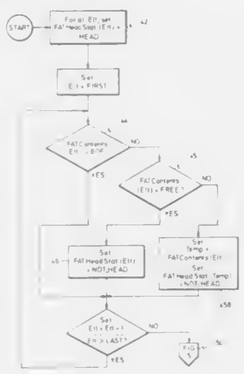
1. A data signal recording/reproduction apparatus for a video cassette recorder, comprising:
first amplifier means for amplifying a control signal reproduced by a control signal recording/reproduction head and for outputting the amplified signal to a motor control system;
auxiliary reproduction head means for tracing a control track of a video tape prior to said control signal recording-/reproduction head;
second amplifier means for amplifying the control signal reproduced by said auxiliary reproduction head;
first monostable multivibrator means for converting an output signal of said second amplifier means into a pulse signal;
first time constant circuit means for applying various trigger signals having various time constants which are different from each other according to respective SP, EP and LP modes to said first monostable multivibrator means;
first electronic switch means for selecting either an output signal of said first monostable multivibrator means or a vertical signal divided into a half frequency by a half frequency divider according to a recording control signal;
second monostable multivibrator means for converting the selected signal of said first electronic switch means into a pulse signal;
second time constant circuit for applying trigger signals having different time constants according to a data signal to said second monostable multivibrator means;
third amplifier means for amplifying a signal outputted from said second monostable multivibrator means and inverted by an inverter; and
second electronic switch means for selecting either an output signal of said third amplifier according to said recording control signal or a data recording control signal and for applying the selected output signal to said control signal record/reproduction head and third amplifier means.

4,941,059

METHOD FOR RESTORING COMPUTER FILES, INCLUDING IMPROVED STEPS FOR LOCATION OF HEAD CLUSTERS OF FILES

David L. Grant, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 13, 1988, Ser. No. 243,784
Int. Cl.[5] G06F *1/00*
U.S. Cl. 360—72.2 **1 Claim**



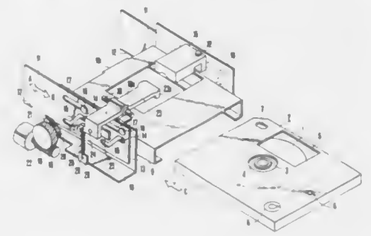
1. A method for determining which ones of a plurality of disk clusters comprise the respective head clusters of one or more not necessarily contiguous file sequence of said disk clusters,
each said file sequence being mapped in a File Allocation Table (FAT) having a plurality of elements each corresponding to one of said disk clusters, wherein the respective value of each said element in said FAT is (i) FREE, or (ii) EOF, or (iii) a pointer to a next element corresponding to a next cluster in a one of said file sequences,
said method comprising the steps of:
(a) initializing a Head Status array, said Head Status array having the same number of elements as said FAT, to indicate that each element of said FAT corresponds to a head cluster;
(b) for each element of said FAT that is FREE, indicating in said Head Status array that the disk cluster corresponding to said element is not a head cluster; and
(c) for each element of said FAT that is a said pointer to a said next element, indicating in said Head Status array that the disk cluster corresponding to said next element is not a head cluster.

4,941,060

RECORDING AND/OR REPRODUCING APPARATUS UTILIZING RECORD BEARING MEDIA OF THE DISC TYPE

Tsukasa Uehara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 201,251, May 25, 1988, abandoned, which is a continuation of Ser. No. 67,402, Jun. 24, 1987, abandoned, which is a continuation of Ser. No. 648,701, Sep. 7, 1984, abandoned. This application Dec. 5, 1988, Ser. No. 282,873
Claims priority, application Japan, Sep. 9, 1983, 58-165228
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.05 **35 Claims**



1. An apparatus using a disc-shaped medium, comprising:
(A) holder means for receiving the medium and movable for placing the received medium at a predetermined position for signal recording and/or reproduction;
(B) slidable means engaged with said holder means and being slidable for moving the holding means;
(C) rotating means for rotating the medium to be mounted on said rotating means;
(D) pressing means for pressing a portion of the medium to mount the medium on said rotating means; and
(E) control means for causing said pressing means to press said portion of said medium and release said pressing in response to sliding of said slidable means; wherein said slidable means moves said holder means between a first position for receiving the medium and a second position for placing the medium at said predetermined position according to the sliding thereof; and said control means controls to cause said pressing means to press said portion of the medium and thereafter release said pressing according to the sliding operation of said slidable means to move said holder means from said first position to said second position without said holder means going beyond said second position.

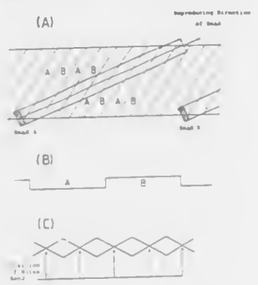
VOL 1116 ISS 2 JL 10 1990 UMI

4,941,061

NOISE-FREE SKIP SEARCH APPARATUS UTILIZING A PIEZO-ELECTRIC ELEMENT

Sun K. Sung, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 31, 1986, Ser. No. 948,158
Claims priority, application Rep. of Korea, Dec. 31, 1985, 18422/1985
Int. Cl.[5] A04N *5/783;* G11B *21/10*
U.S. Cl. 360—10.2 5 Claims



1. A noise-free skip search apparatus utilizing a piezo-electric element attached to and controlling the position of a rotating head relative to a recording track formed on the tape of a video tape recorder and where the tape is driven at different speeds by a capstan during a plurality of reproducing speeds comprising:

a pulse counter being reset by a signal generated in response to rotation of the capstan and being further responsive to a pulse signal generated from a clock pulse generator to provide a first pulse output signal;

a latch circuit coupled to the pulse output signal of said counter and being further responsive to said signal generated in response to rotation of the capstan for generating a latched pulse signal;

a signal subtractor circuit having a first or comparison input terminal, a second or reference input terminal, a difference output terminal, and sign bit output terminal;

a preset pulse counter operative in response to a reproducing speed mode select signal to generate a second pulse output signal having a constant count output;

said latched pulse signal and said second pulse output signal being respectively coupled to said first and second input terminals of said subtractor which in turn generates a pulse difference output signal at said difference output terminal and a signal at said sign bit output terminal of a first and second binary signal level for first and second reproducing speeds;

circuit means coupled to said subtractor for generating a first analog output signal corresponding to said pulse difference output signal;

a driver circuit for said piezo-electric element generating a position control signal coupled to said piezo-electric element from an output terminal and having a pair of input terminals, an enabling signal input terminal, a reset input terminal, a forward/reverse direction input terminal;

circuit means coupled to said preset pulse counter for generating a second analog output signal corresponding to said second pulse output;

circuit means coupled to said second analog output signal for generating an analog reference signal;

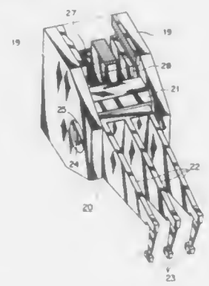
said analog reference signal being coupled to one of said pair of input terminals of said driver circuit and said first analog output signal being coupled to the other of said pair of input terminals, said driver circuit comparing said analog signals and generating said position control signal in response thereto when a reset signal is applied to said reset input terminal following an enabling signal being applied to said enabling signal input terminal and a directional input signal being applied to said forward/reverse direction input terminal.

4,941,062

MAGNETIC HEAD POSITIONING MECHANISM FOR MAGNETIC DISK DEVICE

Koichi Yoshioka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1988, Ser. No. 263,909
Claims priority, application Japan, Nov. 17, 1987, 62-291324
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 11 Claims



1. A magnetic head positioning mechanism for a magnetic disk device having a pivot mechanism which comprises a pivot shaft supported within a housing, a carriage swingably supported by said pivot shaft, head-arms fixed to said carriage at base ends thereof and having attached magnetic heads at tip ends thereof, and a driving portion provided on the opposite end of said carriage with the pivot shaft support being located between the tip ends and the driving portion;

wherein the portion of said carriage positioned at the rotational center of said pivot mechanism and including the entire pivot shaft support area of said carriage is made of materials having higher specific gravity than said head-arms.

4,941,063

TELEPHONE LINES OVERVOLTAGE PROTECTION APPARATUS

Thomas McCartney, Bannockburn, and Melvin A. Lace, Prospect Heights, both of Ill., assignors to Oneac Corporation, Libertyville, Ill.

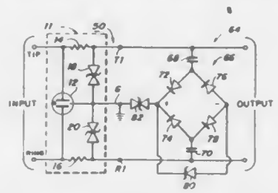
Continuation-in-part of Ser. No. 164,244, Mar. 4, 1988, abandoned. This application Apr. 20, 1989, Ser. No. 341,771
The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—119 13 Claims

1. An overvoltage protection circuit used with a pair of telephone lines comprising:

first voltage clamping means for clamping voltage signals on said lines at a first predetermined voltage potential,

second voltage clamping means for clamping voltage signals on said lines at a second predetermined voltage potential, said second voltage clamping means including filter means for filtering noise and transient signals from said voltage signals only when said voltage signals exceed said second predetermined voltage potential,

said second voltage clamping means including a diode bridge coupled to said lines, a pair of transient voltage suppressor devices, said transient voltage suppressor devices being coupled between a first and second center connection of said diode bridge and ground, and said filter means including resistance means connected in series



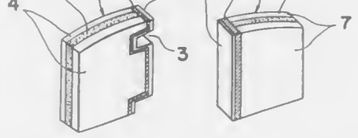
between said lines and said diode bridge and capacitance means connected between said transient voltage suppressor devices and said diode bridge center connection.

4,941,064

MAGNETIC HEAD HAVING A PAIR OF CORES IN WHICH THE OPPOSING SURFACES THEREOF ARE COATED WITH A NON-MAGNETIC LAYER AND A LOW MELTING POINT GLASS LAYER

Takeshi Tottori, Toride; Hideo Fujiwara, and Osamu Inagoya, both of Ibaragi, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 841,787, Mar. 20, 1986, abandoned. This application May 26, 1988, Ser. No. 201,397
Claims priority, application Japan, Mar. 20, 1985, 60-54119
Int. Cl.[5] G11B *5/235, 5/265, 5/31*
U.S. Cl. 360—120 5 Claims



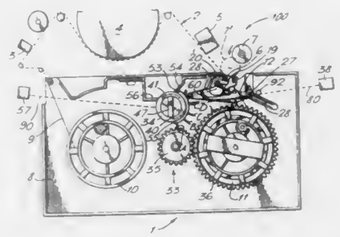
1. A magnetic head comprising a first core half and a second core half, wherein each of said core halves comprises two core bases having an amorphous metallic magnetic thin layer sandwiched therebetween, said amorphous metallic magnetic thin layer having a high saturation magnetic flux density, at least one non-magnetic thin layer comprising SiO_2 formed on facing surfaces of each respective core half and a thin layer of a low melting point glass composition comprising PbO as the main component formed on said respective non-magnetic thin layer of each of said core halves, said first core half and said second core half being bonded together at said facing surfaces so as to define a magnetic gap of less than 0.5 μm at said facing surfaces of said magnetic head, said amorphous metallic thin layer being disposed so as to form a magnetic circuit of said magnetic head, said non-magnetic thin layer being substantially chemically non-reactive with said amorphous metallic magnetic thin layer component of the respective core half and said low melting point glass thin layer, and said low melting point glass thin layer glass composition has a melting point temperature which is lower than the crystallization temperature of said amorphous metallic magnetic thin layer, the thickness of said low melting point glass thin layer ranging from 3/5 to 1/6 the thickness of said non-magnetic thin layer.

4,941,065

APPARATUS FOR CLEANING A VIDEO PLAYER/RECORDER

Joseph F. Fritsch, Dublin, Ireland, assignor to Ryan Plastics Ireland Limited, Waterford, Ireland

Filed Mar. 7, 1985, Ser. No. 709,049
Claims priority, application Ireland, Mar. 9, 1984, 599/84
The portion of the term of this patent subsequent to May 10, 2005, has been disclaimed.
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 23 Claims



1. A cleaning apparatus for cleaning operating components of a video player/recorder (100) characterized in that said cleaning apparatus includes a cassette housing (8), a cleaning ribbon (9) mounted in the cassette housing (8), a capstan and pinch roller cleaning device (12) mounted in the cassette housing (8) and having a cleaning pad means including a pair of cleaning surfaces (19,20) adapted to, in use, engage with a pinch roller (7) and capstan (6) of the video player/recorder (100) in cleaning engagement therewith and arranged such that the cleaning ribbon (9) is engaged by the capstan (6) and pinch roller (8) in its path along a lengthwise axis (2) of the cleaning ribbon (9) and the capstan 6 is located between the cleaning ribbon (9) and one of the cleaning surfaces (20).

13. A cleaning apparatus for cleaning operating components of a video player/recorder characterized in that said cleaning apparatus includes a cassette housing (8), a cleaning ribbon (9) mounted in the cassette housing (8), a capstan and pinch roller cleaning device (12) mounted in the cassette housing (8) and having a cleaning pad means including a pair of cleaning members (19, 20) adapted to, in use, engage with a pinch roller (7) and capstan (6) of the video player/recorder (100) in cleaning engagement therewith and arranged such that the cleaning ribbon (9) mounted in said cassette housing is engaged by the capstan (6) and pinch roller (7) in its path along a lengthwise axis (2) of the cleaning ribbon (9) and the cleaning ribbon (9) is positioned between the cleaning members (19, 20).

4,941,066

INJECTION MOLDED CENTER CORE FOR A RECORDING DISC AND RELATED METHOD OF MANUFACTURE

Stephen G. Swinburne, Scarborough; Anthony L. Gelardi, Cape Porpoise, both of Me., and William Stiles, Renton, Wash., assignors to Shape Inc., Biddeford, Mass.

Filed May 11, 1988, Ser. No. 192,772
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 7 Claims

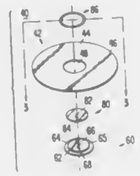
1. A recording disc, comprising:

(a) a flexible recording media having first, lower and second, upper opposing planar surfaces and a central opening formed therein;

(b) a plastic center core having a first, upper planar surface and a second, lower opposing planar surface, the first and second surfaces being separated by a hub having a first diameter, being positioned in the central opening and abutting the first, lower surface of the media;

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(c) a planar metal insert having a second, smaller diameter and being located on the first, upper planar surface of the center core; and



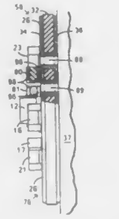
(d) a plastic ring abutting the second, upper surface of the media and being connected to the hub of the center core.

4,941,067

THERMAL SHUNT FOR ELECTRONIC CIRCUITS

Scott Craft, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 7, 1989, Ser. No. 334,409
Int. Cl.[5] H05H *7/20*
U.S. Cl. 361—386 **17 Claims**



1. An electronic assembly comprising:
an insulating substrate having first and second metal layers on first and second opposed surfaces, respectively, wherein the first metal layer comprises multiple spaced-apart portions;
a power dissipating component having a first region attached to a first portion of the first layer and a second region coupled to a second portion of the first layer; and
an electrically insulating thermally conductive heat shunt component extending from the first portion of the first layer to a third portion of the first layer in thermal contact with the second layer.

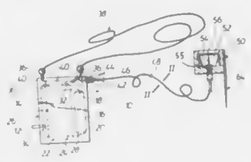
4,941,068

PORTABLE ION GENERATOR

Manfred Hofmann, Bayreuth, Fed. Rep. of Germany, assignor to Hofmann & Voelkel GmbH, Bayreuth, Fed. Rep. of Germany

Filed Aug. 1, 1988, Ser. No. 226,750
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807940
Int. Cl.[5] H01T *23/00;* **A61N** *1/44*
U.S. Cl. 361—231 **28 Claims**

1. A portable ion generator comprising:
a housing, a high tension source disposed in the housing and having first and second connections;
a carrier member separated in space from said housing, said carrier member being in the form of a decorative or ornamental member being essentially comprised of a fixing element for fastening the carrier member on an article of clothing of the person using the ion generator, a high tension needle electrode carried by said carrier member and a counterelectrode carried by said carrier member and arranged in spaced apart relationship from said high tension needle electrode;
first and second electrical conductor elements respectively connecting said needle electrode and said counterelectrode to said first and second connections of said high tension source; and
a contact element of electrically conductive material electrically conductively connected to said counterelectrode and mechanically connected with the housing.

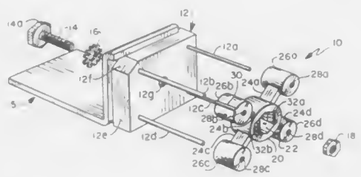


4,941,069

RECTIFIER SPACER/MOUNTING ASSEMBLY

Bernard Danenberg, Skokie, and Luigi Flori, Mundelein, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 7, 1988, Ser. No. 216,121
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—419 **14 Claims**



1. A spacer/mounting assembly mounting to a PC board a rectifier having a housing and four conductive leads extending therefrom, said spacer/mounting assembly comprising:
a unitary body positioned on the PC board and including a first center aperture and a plurality of second outer apertures extending through said body, wherein said first center aperture has a first narrow portion and a second enlarged portion and each of said second apertures receives a respective lead of the rectifier;
first and second threaded attaching means in mutual engagement and securely mounting the rectifier to a first surface of said unitary body, wherein at least one of said first and second attaching means is disposed within said first center aperture of said body and wherein the first narrow portion of said first center aperture is disposed adjacent to the first surface of said unitary body; and
retaining means disposed within the second enlarged portion of said first aperture in said body engaging either said first or said second attaching means which is disposed within the body's first center aperture, said retaining means including a pair of locking tabs for preventing the rotation and removal of said attaching means from said body.

4,941,070

FLASH DEVICE FOR A CAMERA

Yukio Ogawa; Kazuo Ikawa, both of Kanagawa; Toru Shoji, Tokyo; Hideo Tamamura, Kanagawa; Hiroki Nakayama, Kanagawa, and Takashi Matsushita, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1989, Ser. No. 331,013
Claims priority, application Japan, Aug. 13, 1986, 61-190037; Aug. 18, 1986, 61-192584; Aug. 18, 1986, 61-192585; Oct. 3, 1986, 61-236843; Oct. 9, 1986, 61-240719; Oct. 9, 1986, 61-240720; Oct. 9, 1986, 61-240721; Oct. 9, 1986, 61-240722; Oct. 14, 1986, 61-157478; Dec. 16, 1986, 61-194285; Dec. 17, 1986, 61-194082; Feb. 23, 1987, 62-040652; Apr. 10, 1987, 62-088101; Apr. 16, 1987, 62-094889; May 2, 1987, 62-109175; Jun. 1, 1987, 62-138801
Int. Cl.[5] G03B *15/02;* **F21V** *7/00*
U.S. Cl. 362—3 **25 Claims**



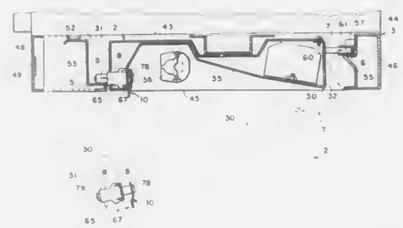
1. A flash device for a camera comprising:
(a) a light transmissive sealed body having an opening at one end thereof;
(b) sealing means for sealing the opening of said light transmissive sealed body;
(c) cathode and anode electrodes provided on said sealing means and adapted to generate a light producing arc discharged therebetween over an arc discharge route;
(d) partitioning means for expanding the art discharge route by dividing the inside of said sealed body into a plurality of chambers, and for causing light generated by said flash device to be substantially free of shadow; and
(e) means for forming a trigger electrode and for securing said trigger electrode to said light transmissive sealed body wherein said means for forming and retaining comprises a trigger leaf spring.

4,941,071

QUICK MOUNTING ARRANGEMENT FOR LIGHT FIXTURES IN OVERHEAD CABINETS AND THE LIKE

Marvin C. Knauf, Conklin, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Filed Feb. 7, 1989, Ser. No. 307,683
Int. Cl.[5] A47B *23/06*
U.S. Cl. 362—133 **18 Claims**



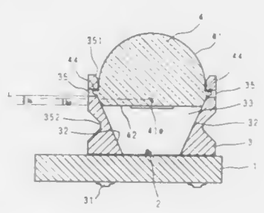
1. In combination, a furniture article of the type having an overhead storage unit, a light fixture, and a mounting arrangement detachably mounting said light fixture in said furniture unit under said overhead storage unit, said mounting arrangement comprising:
a front mounting ledge positioned in a lower portion of said overhead storage unit, and facing generally rearwardly;
a rear mounting ledge positioned in the lower portion of said overhead storage unit, and facing generally forwardly;
at least two mounting pins fastened to said light fixture, and protruding generally outward from a first side thereof; said mounting pins being shaped for abutting support on one of said front and rear mounting ledges;
at least one spring loaded latch mounted in said light fixture, and including a longitudinally shiftable slide pin selectively protruding from a second side thereof; said slide pin having a spring connected therewith to resiliently retain the same in a fully extended position for abutting support on the other of said front and rear mounting ledges, and a tab connected therewith to manually shift said slide pin from the fully extended position to a fully retracted position to clear the other of said front and rear mounting ledges, whereby said light fixture is mounted in said overhead cabinet by positioning said mounting pins on said one of said front and rear mounting ledges, grasping said tab and manually shifting said slide pin to the fully retracted position, pivoting the second side of said light fixture upwardly into the lower portion of said overhead storage unit, and releasing said slide pin, such that said spring extends said slide pin into the fully extended position to engage said other of said front and rear mounting ledges, and thereby securely mount said light fixture in said overhead storage unit without requiring any tools.

4,941,072

LINEAR LIGHT SOURCE

Masami Yasumoto; Tatsuya Motoike, and Toshiyuki Sawasa, all of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Apr. 7, 1989, Ser. No. 335,188
Claims priority, application Japan, Apr. 8, 1988, 63-87911; Jul. 27, 1988, 63-187731
Int. Cl.[5] F21V *21/00, 5/04*
U.S. Cl. 362—249 **19 Claims**

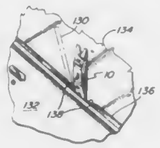


1. A linear light source, comprising:
a substrate,
a plurality of light emitting diodes placed on said substrate in line,
a frame member provided with side walls along said line of a plurality of light emitting diodes and mounted on said substrate, said side walls having top portions which face away from said substrate and which are further from said substrate than are other portions of said side walls that are between said top portions and said substrate, and
a rod lens made of resin having a crest line parallel to said line of said plurality of light emitting diodes, said rod lens being mounted on said frame member so as to be positioned opposite to said light emitting diodes, said rod lens and said side walls having a plurality of interengaging members which are interengaged with each other, said

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rod lens also having a plurality of wing members in contact with the top portions of the side walls of said frame member, said rod lens having a surface facing said substrate, said wing members including a pair of wing members extending outward in opposite directions from each other and away from said surface so that said top portions are between said wing members and said substrate and free of being between said surface and said substrate.

4,941,073
WEDGE SHAPED FLASHLIGHT
Ronald R. Bolton, 2526 Jacaranda, Orange, Calif. 92667
Filed Oct. 24, 1989, Ser. No. 426,013
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—80.1 **15 Claims**



1. A combination wedge and flashlight apparatus for the illumination of the inside of a vehicle door, said combination wedge and flashlight apparatus comprising:

a. An apparatus body formed having at least one wedge-shaped end region with a knife-edge, said wedge-shaped region having a recess formed into said body from said knife-edge, said body being shaped for enabling the insertion of said wedge-shaped region downwardly between lower, outside regions of a closed window of a vehicle door and an exterior rain seal thereof so as to create a gap between the window and the rain seal through which the interior of the door can be seen; and

b. Flashlight means disposed in said body, said flashlight means including a flashlight bulb and means enabling said bulb to extend into an aperture in said body in said recessed region, thereby enabling a beam of light from said flashlight bulb to be directed generally toward said knife-edge when said flashlight means are energized and thereby into the inside of a vehicle door into which the body is inserted for the illumination thereof.

4,941,074
LIGHT BOXES
Gary A. DeCosse, St. Paul, and William B. Wulff, Inver Grove Heights, both of Minn., assignors to Road Rescue, Inc., Minn.
Filed Dec. 29, 1988, Ser. No. 291,625
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—61 **14 Claims**

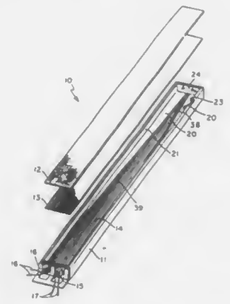
1. An ambulance for transporting patients comprising:

a motor vehicle;

an ambulance body mounted on said motor vehicle to transport a patient, said ambulance body having an interior with a ceiling and a patient cot area;

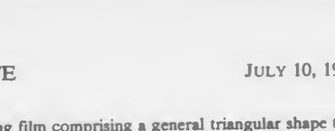
a plurality of light boxes, each having a first end and a second end, each of said light boxes including an interior region having interior surfaces, a white reflective surface extending over said interior surfaces, each of said light boxes having a source of light, said plurality of light boxes mounted on said ceiling to thereby provide light to the patient cot area in the interior of said ambulance body, each of said light boxes extending substantially across said ambulance body, each of said light boxes having a high light reflecting film extending along a portion of said white reflective surface, said high light reflecting film extending away from said source of light, said high light reflecting film comprising a general triangular shape that converges from said first end to said second end to thereby provide greater light reflection in the area proximate said source of light; and

each of said plurality of light boxes having a panel extending along said light boxes, said panels extending over said



interior region of each of said light boxes, said panel permitting light to leak from said interior region through said panel to thereby provide light to the patient cot area on the interior of said ambulance body whereby said light illumination from said plurality of light boxes is at least 35 to 40 foot candles over at least 90% of said patient cot area.

4,941,075
TIMING CORRECTION FOR SQUARE WAVE INVERTER POWER POLES
David A. Fox, and Ralph D. Jessee, both of Shawnee Township, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 24, 1989, Ser. No. 301,203
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—41 **6 Claims**



5. A circuit for controlling the operation of solid state switching devices in an output stage of an electronic inverter, said circuit comprising:

means for producing a first switching command signal;

a first counter for counting a plurality of clock pulses, said counter beginning to count said pulses in response to a transition point in said first switching command signal;

means for producing a first switch drive signal having transition points occurring when said first counter reaches a predetermined count;

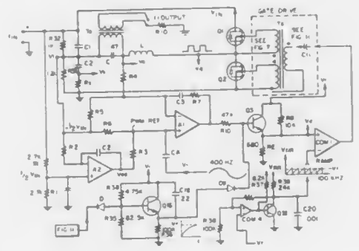
a first solid state switching device, said first solid state switching device changing conduction state in response to the transition points in said first switch drive signal;

means for producing a first switch operation signal having transition points occurring in response to a change in the conduction state of said first solid state switching device;

means for producing a modified first switch operation signal by time shifting the transition points of said first switch operation signal by an amount corresponding to the level of DC voltage produced by said inverter; and

wherein said first counter stops in response to one of said transition points in said modified first switch operation signal.

4,941,076
START-UP CIRCUIT FOR A HIGH VOLTAGE DC TO AC CONVERTER
Bonifacio Diaz, El Paso, Tex., assignor to Zenith Electronics Corporation, Glenview, Ill.
Division of Ser. No. 256,872, Oct. 12, 1988, Pat. No. 4,872,100. This application Jun. 30, 1989, Ser. No. 374,689
Int. Cl.[5] H02M *7/5375*
U.S. Cl. 363—49 **17 Claims**



1. A high voltage converter, comprising:

(a) switching means, adapted to be disposed across a power supply, for switching current to and from a common node;

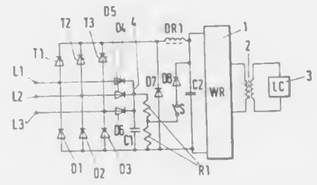
(b) two capacitors in series with each other at a junction and across said power supply;

(c) series capacitor and inductor means for joining the common junction between said two capacitors to said common node and for producing a high voltage sinusoidal waveform output;

(d) control means, comparing the voltage at said junction to a half-voltage derived across said power supply, for providing an output for operating said switching means to produce a predetermined voltage across said series capacitor; and

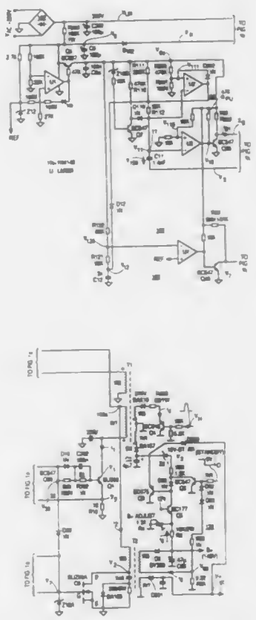
(e) starting means for slowly starting said control means such that the initial duty cycle will be approximately fifty percent and then increase or decrease according to the voltage at said junction.

4,941,077
CONFIGURATION FOR STARTING AN INVERTER
Jan Fabianowski, Dortmund, and Robert Ibach, Schwerte, both of Fed. Rep. of Germany, assignors to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany
Filed Oct. 17, 1989, Ser. No. 422,645
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835869
Int. Cl.[5] H02M *5/48*
U.S. Cl. 363—49 **3 Claims**



1. Configuration for starting an inverter, comprising a half-controlled 3-phase bridge including thyristors and diodes, an overvoltage protector connected to said half-controlled 3-phase bridge including additional diodes and a capacitor with a divided discharging resistor having a division point, an intermediate circuit including a reactor and a capacitor with positive and negative terminals, a load formed of a series-resonant circuit in the load circuit of the inverter, a transformer through which said load is fed by said intermediate circuit, a switch connected to said division point, and a diode operating in the forward direction being connected between said switch and the positive terminal of said capacitor of said intermediate-circuit.

4,941,078
SYNCHRONIZED SWITCH-MODE POWER SUPPLY
Giovanni M. Leonardi, Giornico, Switzerland, assignor to RCA Licensing Corporation, Princeton, N.J.
Filed Oct. 19, 1989, Ser. No. 424,353
Claims priority, application United Kingdom, Mar. 7, 1989, 8905172; Mar. 7, 1989, 8905173
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—97 **24 Claims**



1. A synchronized switch mode power supply, comprising:

a transformer having first and second windings;

first switching means coupled to said first winding for generating a first switching current in said first winding to periodically energize said second winding;

a source of a synchronizing input signal at a frequency that is related to a deflection frequency;

second switching means responsive to said input signal and coupled to said second winding for periodically applying a low impedance across said energized second winding that by transformer action produces a substantial increase in said first switching current;

means for generating a periodic first control signal;

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means responsive to said first switching current and coupled to said first control signal generating means for sensing said increase in said first switching current to synchronize said first control signal to said input signal;

a source of an input supply voltage; and

means responsive to said first control signal and coupled to said input supply voltage for generating from said input supply voltage an output supply voltage in accordance with said first control signal.

4,941,079

PULSE WIDTH MODULATION POWER TRANSMISSION SYSTEM

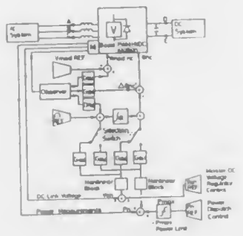
Boon Teck Ooi, Montreal, Canada, assignor to The Royal Institution for the Advancement of Learning, Quebec, Canada

Filed Feb. 13, 1989, Ser. No. 309,154

Claims priority, application Canada, Oct. 7, 1988, 579675

Int. Cl.[5] H02M *7/5387*

U.S. Cl. 363—132 **49 Claims**



1. A converter for interconnecting a first electric network and a second electric network to transmit electric power from one network to the other, each of said networks being coupled to a respective active power source, said first network including DC link terminals for coupling said first network to said converter, there being a DC voltage having a certain amplitude across the DC link terminals, said second network including AC link terminals for coupling said second network to said converter, there being an alternating voltage at a given substantially fixed frequency across said AC link terminals, said alternating voltage having an amplitude which is always lower than the amplitude of said DC voltage, said converter comprising:

a bridge of valves each associated with an antiparallel diode, each valve of said bridge being capable of assuming two different states, namely an ON staten and an OFF state, in said ON state the valve allowing current to pass therethrough, in said OFF state the valve blocking the passage of current, each diode being normally reverse-biased between said DC and alternating voltage, and said bridge being capable of operating either as an inverter to enable transmission of electric power from the first network to the second one, or as a rectifier to enable transmission of electric power from the second network to the first one;

inductor means interposed between said bridge and said AC link terminals for producing a boost voltage across said inductor means, said boost voltage forward-biasing said diodes to allow the same to conduct electric current to thereby enable operation of said bridge as an inverter and rectifier;

capacitor means across said DC link terminals, said bridge being interposed between the inductor and capacitor means;

valve control means coupled to said bridge for commanding the valves thereof to switch state to operate said bridge as an inverter or rectifier, said valve control means including:

signal generating means for outputting a control signal representative of a desired valve state switching sequence to obtain a bridge voltage waveform having a fundamental Fourier component at a frequency corresponding substantially to the frequency of said alternating voltage; and

frequency control means coupled to said signal generating means to adjust said control signal in accordance with adrift of the frequency of said alternating voltage to cause the frequency of said fundamental Fourier component to track the frequency of said alternating voltage.

4,941,080

FULL WAVE RECTIFIER CIRCUIT

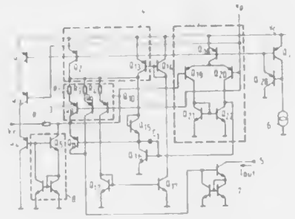
Günther H. K. O. Sieborger, Schenefeld, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1989, Ser. No. 407,375

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1988, 3831454

Int. Cl.[5] G01R *19/22*; G08C *13/00*

U.S. Cl. 363—127 **12 Claims**



1. A fullwave rectifier circuit comprising; a signal input for receiving an input signal current to be rectified, means coupling said signal input to a signal output via a rectifier stage, said rectifier stage comprising a semiconductor junction for conduction of the input signal current during one half-cycle of the current and a first current mirror for mirroring the input signal current during the other half-cycle of the current to the signal output, a differential amplifier having an input coupled to the input of the rectifier stage and having its output negatively fed back via a driver stage to the input of the rectifier stage, and a current source for supplying the supply current of the driver stage and the first current mirror, characterized in that the current source is controllable in response to the output current of the first current mirror for supplying a current which deviates from a constant value by an amount equal to the current needed by the first current mirror.

4,941,081

INTERRUPT ZONE IN RUNG OF LADDER PROGRAM IN PROGRAMMABLE CONTROLLER

Shalabh Kumar, Kildeer, and Duane S. Edgar, Schaumburg, both of Ill., assignors to Microfast Controls Corp., Carol Stream, Ill.

Continuation-in-part of Ser. No. 46,229, May 4, 1987, Pat. No. 4,839,789. This application Dec. 31, 1987, Ser. No. 140,069

Int. Cl.[5] G06F *15/46*; G05B *19/00*

U.S. Cl. 364—140 **10 Claims**

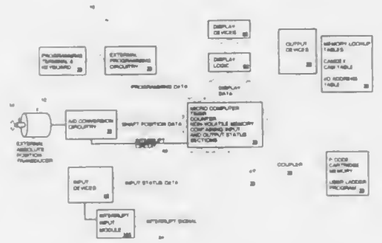
1. A programmable control device for controlling the outputs to a plurality of output devices relative to inputs and for synchronizing selected outputs with the occurrence of an external event, said control device comprising:

data processing means including memory means;

a user ladder program in said memory means;

said user ladder program having at least one interrupt zone which has a program therein that is not executed during

normal ladder program executed and which is responsive to an interrupt signal generated by the happening of an



external event to provide high speed response to the happening of such external event.

4,941,082

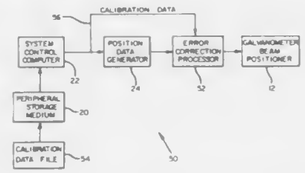
LIGHT BEAM POSITIONING SYSTEM

Robert M. Pailthorp, Portland; Howard V. Goetz, Sherwood; Mark A. Bortnem, Newberg, and Bruce E. Edson, Beaverton, all of Oreg., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed Apr. 25, 1988, Ser. No. 185,414

Int. Cl.[5] G06F *15/46*; G01C *25/00*

U.S. Cl. 364—167.01 **15 Claims**



1. A light beam position error correction system employing plural optical components for directing the propagation path of the light beam in response to beam position command data, comprising:

light source means to produce a beam of light propagating along a beam path;

beam positioning means receiving the beam to direct its path of propagation toward a position on a target surface;

position data generating means receiving beam position command data to generate position coordinate signals corresponding to a preselected position on the target surface; and

error correction processing means receiving the position coordinate signals to develop compensated position coordinate signals for delivery to the beam positioning means, the compensated position coordinate signals modifying the position coordinate signals to correct for light beam positioning errors introduced by the system optical components so that the beam positioning means directs the light beam to the preselected position on the target surface, the position coordinate signals having an X signal and a Y signal that indicate the instantaneous commanded position of the light beam, and the compensated position coordinate signals include an X_c signal and a Y_c signal, the X_c signal being a function of polynomial

$$B_1X+C_1X^2+D_1X^3+E_1Y+F_1Y^2+G_1XY+H_1XY^2$$

and the Y_c position signal being a function of the polynomial

$$B_2Y+C_2Y^2+D_2Y^3+E_2X+F_2X^2+G_2XY+H_2YX^2,$$

where B_1, C_1, D_1, E_1, F_1, G_1, H_1, B_2, C_2, D_2, E_2, F_2, G_2, and H_2 represent field correction coefficients of constant values that correspond to the light directing optical properties of the system components.

4,941,083

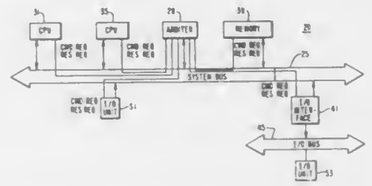
METHOD AND APPARATUS FOR INITIATING INTERLOCK READ TRANSACTIONS ON A MULTIPROCESSOR COMPUTER SYSTEM

Richard B. Gillett, Jr., Westford, and Douglas D. Williams, Pepperell, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 1, 1987, Ser. No. 44,486

Int. Cl.[5] G06F *13/42*

U.S. Cl. 364—200 **12 Claims**



1. Commander node apparatus for initiating exclusive read-modify-write operations on a computer system including a responder node and a synchronous pended bus, said operations having a set of distinct transactions on said synchronous pended bus including an interlock read transaction to retrieve information stored at a specified location in said responder node and restrict access to said stored information by subsequent interlock read transactions, and an unlock write transaction to store information in said specified location and restore access to said stored information; said interlock read transaction including a command transfer comprising an interlock read command arbitration initiated by a commander node to reserve bus cycles on said synchronous pended bus, an interlock read command message including an interlock read command transmitted to said responder node during bus cycles reserved by said command arbitration, and a command confirmation transmitted over said synchronous pended bus from said responder node during bus cycles reserved by said command arbitration; said interlock read transaction further including a response transfer, said response transfer comprising a response arbitration initiated by said responder node to reserve bus cycles on said synchronous pended bus, a response message transmitted from said responder node over said synchronous pended bus during bus cycles reserved by said response arbitration, and a response confirmation which is transmitted over said synchronous pended bus to said responder node during bus cycles reserved by said response arbitration, said apparatus comprising:

means for initiating, over said synchronous pended bus to said responder node containing said specified location, an interlock read command message to retrieve information from said specified location and an unlock write command message to write modified information in said specified location;

means for receiving, over said synchronous pended bus from said responder node at a predetermined time subsequent to initiation of said interlock read command message, a command confirmation corresponding to said interlock read command message; and

means for receiving from said responder node, at an unspecified time subsequent to initiation of said interlock read command, a lock status response message indicating

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whether said interlock read command was executed by said responder node;

whereby said synchronous pended bus is made accessible to nodes other than said commander node apparatus and said responder node at time periods between said command transfer and said response transfer.

4,941,084

SYSTEM FOR LOCATING RESOURCES RESIDED IN A DISTRIBUTING PROCESSING SYSTEM BY SEQUENTIALLY TRANSMITTING RESOURCE INQUIRIES THROUGH A LOOPED TRANSMISSION LINE

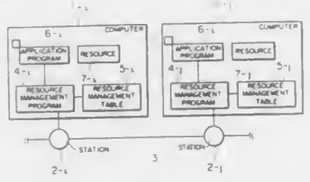
Matsuaki Terada, Machida; Hiroshi Wataya, Hitachi; Satoru Takagi, Kawasaki, and Masao Sueki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 766,196, Aug. 16, 1985, abandoned. This application May 27, 1988, Ser. No. 201,290

Claims priority, application Japan, Sep. 14, 1984, 59-191555

Int. Cl.[5] G06F *15/16, 13/38*

U.S. Cl. 364—200 **5 Claims**



1. A resource management system in a distributed processing system, said management system comprising:

a plurality of arithmetic processing means;

at least one resource belonging to each arithmetic processing means;

a unidirectional looped transmission line interconnecting said plurality of arithmetic processing means for exchanging information therebetween; and

storage means provided in each of said plurality of arithmetic processing means, for storing a resource management table which registers an identification code and attribute information of a resource belonging to said arithmetic processing means, said attribute information including information for specifying a location of said resource; and

a first one of said plurality of arithmetic processing means including means for effecting an inquiry through said transmission line, to all other arithmetic processing means to determine whether any one of said other arithmetic processing means contains a resource represented by an identification code desired by said first arithmetic processing means;

wherein, said inquiry being performed by sending an inquiry request from said first one of said arithmetic processing means to a second arithmetic proceeding means of said other arithmetic processing means, determining by said second arithmetic processing means whether a resource requested by said inquiry request is contained therein, and if said requested resource is not contained in said second arithmetic processing means sequentially passing said inquiry request to each of said other arithmetic processing means until said requested resource is found; and

wherein each of said other arithmetic processing means includes means for making reference to the resource management table contained therein to examine whether it contains the desired resource and means for effecting a response processing to transmit, through said transmission line, an identification code and attribute information of said desired resource to said first arithmetic processing means when said reference means detects said desired resource so that said first arithmetic processing means can access said desired resource by using said attribute information.

4,941,085

DATA PROCESSING SYSTEM HAVING APPARATUS FOR INCREASING THE EXECUTION SPEED OF BIT FIELD INSTRUCTIONS

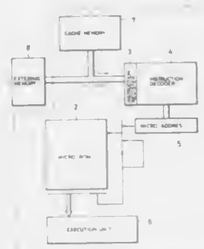
Ken Sakamura, No. 105, 12-30 Shiroganedai 3-chome, Minato-ku, Kodaira-shi, Tokyo; Takuichiro Nakazawa, Kodaira; Atsushi Hasegawa; Ikuya Kawasaki, both of Koganei, and Kazuhiko Iwasaki, Hachiohji, all of Japan, assignors to Ken Sakamura; Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., all of Tokyo, Japan

Filed Aug. 20, 1987, Ser. No. 87,308

Claims priority, application Japan, Aug. 27, 1986, 61-198870

Int. Cl.[5] G06F *9/30, 9/308, 9/355, 12/04*

U.S. Cl. 364—200 **6 Claims**



1. A data processing system, comprising:

execution means for executing instructions, said instructions including an instruction for processing a field which contains two or more words within a memory and an instruction for processing a field which is contained within one word of said memory; and

said execution means including means for calculating a bit width of each field to be processed by said instruction to determine the number of bits in each field;

wherein said execution means, when executing an instruction, determines whether said instruction is an instruction for processing a field which is contained within one word and if said instruction is an instruction for processing a field which is contained within one word, a calculation of a bit width of said field of said instruction is omitted;

wherein said field of said instruction for processing a field contained within one word is designated by operands of a base address indicating an address as a reference, an offset value indicating a number of bits from the base address to a starting end of said field, and a field width indicating a number of bits in said field, said operands being included within said instruction for processing a field contained within one word;

wherein said instruction for processing a field contained within one word is supplied with an offset value as an immediate value by said execution means in response to an operand of said instruction;

wherein said instruction for processing a field contained within one word is supplied with a field width as an immediate value by said execution means in response to an operand of said instruction; and

wherein said instructions are each composed of three half-words.

4,941,086

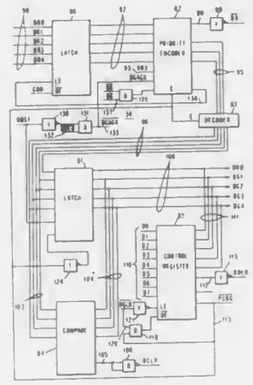
PROGRAM CONTROLLED BUS ARBITRATION FOR A DISTRIBUTED ARRAY PROCESSING SYSTEM

Thomas A. Kriz, Sandy Hook, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1984, Ser. No. 576,303

Int. Cl.[5] G06F *13/364*

U.S. Cl. 364—200 **5 Claims**



1. A data processing system comprising:

a bus;

a processor connected to said bus and exerting master control over the use of said bus;

a plurality of requesting devices connected to said bus, each device being operative to send a bus request signal over said bus and to receive a bus grant signal from said bus; and

hardware controlled bus arbiter means including a plurality of input lines connected to said bus for receiving bus request signals from said requesting devices, a plurality of output lines respectively connected to said bus for sending bus grant signals over said bus, and arbiting means for generating first bus grant signals, said arbiting means being responsive to a single bus request signal on one of said input lines for sending a first bus grant signal over said bus to the one of said requesting devices from which said single bus request signal was sent,

said arbiting means being further operative in response to a plurality of simultaneous bus request signals on plural ones of said input lines for sending a single first bus grant signal on said bus to grant use of said bus to one of the requesting devices, from which such simultaneous bus request signals were sent, in accordance with a predetermined priority, the improvement comprising:

storage means connected to said bus for storing a program controlling use of said bus which program includes predefined signals; and

control means connected to said bus and being responsive to said predefined signals for generating second bus grant signals on a mutually exclusive basis relative to said first bus grant signals, said second bus grant signals being transmitted over said bus to said requesting devices;

said processor being operative in response to execution of said program to transfer at least one of said predefined signals from said storage means over said bus to said control means to generate a single second bus grant signal granting use of said bus to a requesting device predetermined by such single second bus grant signal.

4,941,087

SYSTEM FOR BUMPLESS CHANGEOVER BETWEEN ACTIVE UNITS AND BACKUP UNITS BY ESTABLISHING ROLLBACK POINTS AND LOGGING WRITE AND READ OPERATIONS

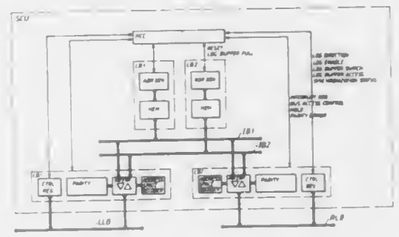
Mladen Kap, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 18, 1987, Ser. No. 97,784

Claims priority, application Sweden, Sep. 19, 1986, 8603945

Int. Cl.[5] G06F *11/20, 11/30*

U.S. Cl. 364—200 **13 Claims**



9. In a computer equipment having a central unit wherein bumpless changeover of function from active units to backup units take place, the central unit having at least one active processor for handling interrupts with the aid of interrupt routines of which at least some are hardware initiated and have an entry point in which the execution of the routine is started and an interrupt acknowledgement point, the central unit further including at least one active memory, at least one redundant unit as a backup unit for at least one of said active units, and members for effecting changeover of the function from an active unit to a backup unit, the central unit effecting write and read operations against peripheral units included in the computer equipment, wherein the computer equipment further comprises:

(a) members for establishing successive rollback points for the active processor during program execution by storing, in at least all hardware initiated interrupt routines between the entry point and the interrupt acknowledgement point, status of the active processor and at least contents of those parts of the active memory which have been modified by the active processor;

(b) members for logging said write and read operations against the peripheral units after each rollback point;

(c) members, connected to said storing members, for returning the program execution to the last established rollback point, after changeover of the function from the active unit to the backup unit, by restoring the contents of the active memory and the status of active processor to the respective contents and status established by a corresponding unit previously active at said rollback point, and thereafter for resuming the program execution without carrying out any write and read operations against the peripheral units; and

(d) members, connected to said logging members, for fetching, during the following program execution, results of read operations already performed against the peripheral units from the log until all logged operations have been repeated, and thereafter to continue the program execution while carrying out operations against the peripheral units.

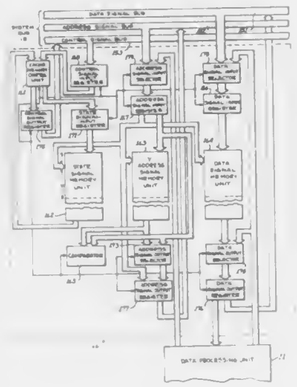
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4,941,088

SPLIT BUS MULTIPROCESSING SYSTEM WITH DATA TRANSFER BETWEEN MAIN MEMORY AND CACHES USING INTERLEAVING OF SUB-OPERATIONS ON SUB-BUSSES

Stephen J. Shaffer, Harvard, Mass.; Richard A. Warren, Austin, Tex.; Thomas W. Eggers, Littleton, and William D. Strecker, Harvard, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 5, 1985, Ser. No. 698,399
Int. Cl.[5] G06F *13/16, 13/38, 12/00*
U.S. Cl. 364—200 **8 Claims**



4. A data processing system comprising:

a system bus for distributing groups of logic signals throughout said data processing system, said system bus including a plurality of sub-bus units, each of said sub-bus units carrying groups of logic signals related to a preselected sub-operation implementing said distributing groups of logic signals, wherein each access to said system bus occurs during a sequence of intervals having a preselected duration, each sub-operation occurring during a one of said intervals, said sub-operation intervals of each distributing of logic signal groups occurring during system bus intervals having a preestablished relationship, wherein two distributing of logic signal operations can have interleaved sub-operations;

a main memory unit coupled to said system bus for storing a plurality of groups of logic signals, each group of logic signal identified by an address signal group, wherein said system bus includes a first sub-bus unit for transferring groups of logic signals received from said main memory unit, said main memory unit including apparatus for combining data signal groups from a second sub-bus unit and said main memory unit and applying a modified data signal group to said first sub-bus means unit in response to selected control signals, said sub-operation preestablished relationship selected to permit said combining data between a memory write sub-operation and a memory read sub-operation;

a plurality of cache memory units coupled to said system bus for storing a subset of said main memory unit groups of logic signals, said plurality of sub-bus units including an address sub-bus unit for applying address signal groups to and receiving address signal groups from said cache memory units; and

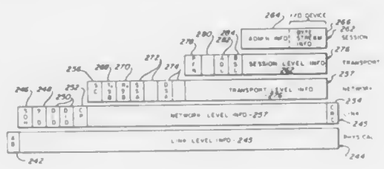
a data processing unit coupled to each of said cache memory units, said data processing unit processing groups of logic stored in said main memory unit.

4,941,089

INPUT/OUTPUT NETWORK FOR COMPUTER SYSTEM

Michael A. Fischer, San Antonio, Tex., assignor to Datapoint Corporation, San Antonio, Tex.

Filed Dec. 12, 1986, Ser. No. 941,084
Int. Cl.[5] G06F *13/38*
U.S. Cl. 364—200 **30 Claims**



1. In a local area network (LAN) comprising a communication medium commonly connecting a plurality of Nodes, LAN interface means at each Node for controlling access to the medium and communicating LAN packets between predetermined selected source and destination Nodes, each LAN data packet including a LAN data field and a LAN header field containing characters which control the interface means to achieve Node to Node communications in accordance with a predetermined LAN communication protocol; and in combination therewith,

a character I/O channel for communicating byte stream data and control administrative information in single IONET network level data packet messages from source to destination Devices connected at the Nodes, each Device including a device interface which connects to a device which is separate from the Device, the device being one of either an I/O device which conducts I/O data transfers or a computer device including a memory and a processor means and a program code for operating the computer device, said character I/O channel comprising:

point of use (POU) means included in the Device and connected to the LAN interface means at each Node, the POU means connected to each I/O device including a microcomputer means including a memory and a program code for operating the microcomputer means;

the program codes for the processor means and the microcomputer means defining a predetermined IONET communication protocol for communicating with Devices and their connected device interfaces and devices, the IONET communication protocol being separate from the LAN communication protocol;

the POU means inserting characters in the data field of LAN data packets to form the IONET network level data packet messages which have an IONET header field and an administrative field and byte stream data field, the IONET header characters including a function code specifying one of a plurality of control functions, the administrative field characters including an administrative information code for use in accomplishing the specified control function to be performed by one of the Device or its device interface, the byte stream data characters originating from a device at the source Node; and

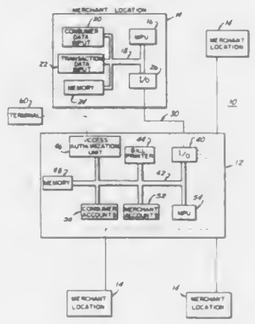
the POU means of the destination Node directly interpreting the function code and the administrative information code characters (a) to establish a session between the source and destination Devices for communicating IONET data packet messages therebetween without acceptance of and interference from other IONET data packet messages for the duration of the session, and (b) to perform a corresponding control function on one of the destination Device or its device interface during the session, while (c) simultaneously transferring the byte stream data characters in unmodified form directly to the device connected to the device interface of the destination Device.

4,941,090

CENTRALIZED CONSUMER CASH VALUE ACCUMULATION SYSTEM FOR MULTIPLE MERCHANTS

Patrick D. McCarthy, 3943 Gilman Ave., Louisville, Ky. 40207

Filed Jan. 27, 1989, Ser. No. 303,319
Int. Cl.[5] G07G *1/00*
U.S. Cl. 364—405 **15 Claims**



9. A centralized consumer cash value system for transactions between consumers and multiple merchants comprising:

at each merchant location at least:

consumer data input means at the point-of-sale for inputting an account number unique to the customer and the consumer's birthdate;

transaction data input means for inputting the dollar amount of the point of-sale transaction;

memory means for storing a credit rate selected by the merchant;

processor means for determining a credit value based upon the dollar amount of the point-of-sale transaction and the selected credit rate; and

first communication means for transmitting to the central system the consumer's account number and birthdate, and the credit value related to each transaction; and

at a central location, a central system having at least:

second communication means for receiving the consumer's account number and birthdate, and the credit value related to each transaction;

consumer account memory means for storing cash values for a plurality of consumer accounts, each consumer account being associated with a respective, unique account number and one of a plurality of birthdates;

processor means for incrementing the cash value in a consumer account associated with a received consumer account number and birthdate by an amount corresponding to the received credit value; and

unit means for providing to each consumer having a selected birthdate access to funds in an amount based upon the cash value in the consumer account associated with that consumer.

4,941,091

MAIL MANAGEMENT SYSTEM TRANSACTION DATA CUSTOMIZING AND SCREENING

Michelle S. Breault, Fairfield, and John H. Steinmetz, Bridgeport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

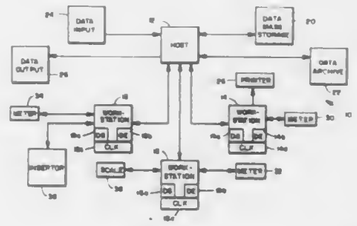
Filed Jun. 30, 1987, Ser. No. 67,916
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—406 **22 Claims**

1. A method for centrally managing a mailing system comprising the steps of:

(a) providing a plurality of computer-controlled workstations each of which is operable to originate a mailing transaction, each of said workstations having means for entering data expressive of a mailing transaction, each of said workstations further being operable for storing data fields expressive of an entered mailing transaction, said data fields including at least the following fields:
(i) account ID,
(ii) date,
(iii) workstation ID,
(iv) dispensed postage amount,
(v) charged postage amount,

(b) coupling each of a plurality of said workstations to a postage dispensing device such that each workstation is enabled to activate the device to dispense postage and also to receive data from the device related to the dispensing of postage;

(c) coupling each of the workstations to a host data processing system such that each workstation is enabled to bidirectionally communicate data with the host system, and storing at the host system the different account IDs which



may be charged for mailing transactions made at the respective workstations;

(d) said host system specifying predetermined ones of data fields as fixed data fields which are to be included within a mailing transaction, said fixed data fields including at least items (i), (iv) and (v) in step (a);

(e) originating mailing transactions at each of said workstations and storing at each workstation, for each mailing transaction thereof, data expressive of the mailing transaction thereof including at least the data fields specified by the host system in step (d);

(f) transmitting the mail transaction data from each workstation to the host system;

(g) storing at the host system the transmitted mailing transactions data of step (f); and

(h) based on the stored transactions data of step (g) from the various workstations, allocating the cost of mailing transactions originating at said workstations among the different account I.D.'s stored at the host system.

4,941,092

SIGNAL PROCESSING METHOD FOR DETERMINING BASE SEQUENCE OF NUCLEIC ACID

Makoto Hara; Masakazu Hashine, both of Kaisei, and Kazuyoshi Tanaka, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 23, 1986, Ser. No. 866,355
Claims priority, application Japan, May 23, 1985, 60-111185; May 23, 1985, 60-111186
The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.
Int. Cl.[5] G01N *33/58;* **C12Q** *1/68*
U.S. Cl. 364—413.15 **31 Claims**

1. A signal processing method for determining base sequence of nucleic acids by subjecting digital signals to signal processing, said digital signals corresponding to an autoradiograph of plural resolved rows which are formed by resolving a mixture of base-specific DNA fragments or base-specific RNA frag-

VOL 1116 ISS 2 JL 10 1990 UMI

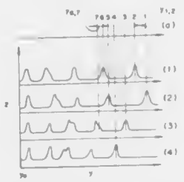
ments labeled with a radioactive element in a one-dimensional resolving direction on a support medium,

which comprises steps of:

(1) detecting at least two bands continuously in the lower part of each resolved row and numbering the bands consecutively in order from the lower end;

(2) obtaining correlation of a distance between the detected bands in the resolving direction with the band's number and predicting positions of undetected bands in the resolving direction from the correlation;





(3) detecting at least one band on the resolved rows on the basis of the predicted positions and numbering the band consecutively;

(4) obtaining the correlation of the distance between the bands with the band's number for the already detected bands including the band newly detected in the step (3), and predicting positions of undetected bands from the correlation; and

(5) repeating in order the steps (3) and (4) to thereby detect all bands on the resolved rows.

4,941,093

SURFACE EROSION USING LASERS

John Marshall, Farnborough; Anthony L. Raven, Royston; Walter T. Welford, London, and Karen M. M. Ness, Royston, all of Great Britain, assignors to Summit Technology, Inc., Mass.

Continuation-in-part of Ser. No. 869,335, Jun. 2, 1986, abandoned. This application Sep. 9, 1986, Ser. No. 905,156

Claims priority, application United Kingdom, Sep. 12, 1985, 8522630; Feb. 21, 1986, 8604405

Int. Cl.[5] A61B *17/00*

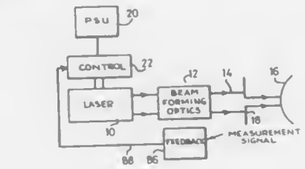
U.S. Cl. 364—413.01 **44 Claims**

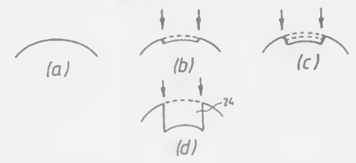
1. A laser system for eroding a surface, said laser system comprising:

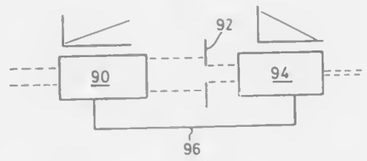
laser means for generating pulses of laser light along a beam path at an energy level, such that the pulses can be absorbed at a surface to induce photoablation;

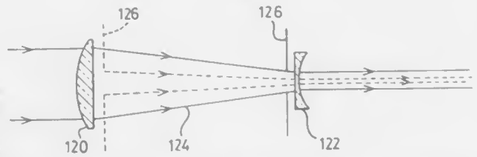
support means for aligning a surface relative to the laser means; and

beam dimension control means disposed along said laser beam path, including optical means for optically varying an area on the surface to which the pulses of laser energy









are delivered while maintaining a substantially constant energy per unit area during each pulse.

4,941,094

IMAGE RECONSTRUCTION DATA PROCESSING UNIT

Yusuke Satta, and Yasuro Takiura, both of Tokyo, Japan, assignors to Yokogawa Medical Systems, Ltd., Tokyo, Japan

PCT No. PCT/JP88/00169, § 371 Date Oct. 12, 1988, § 102(e) Date Oct. 12, 1988, PCT Pub. No. WO88/06321, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 19, 1988, Ser. No. 274,997

Claims priority, application Japan, Feb. 19, 1987, 62-36600; Feb. 27, 1987, 62-44327

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—413.21 **4 Claims**

1. An image reconstruction data processing unit comprising

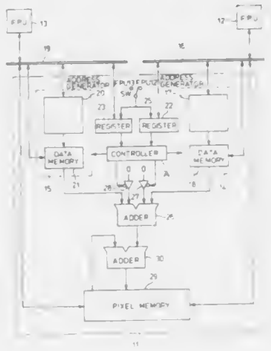
a plurality of fast processing units for providing respective sets of projection data or different views;

a plurality of parts corresponding to said plurality of last processing units back projection execution for extracting from said sets of projection data a desired set of projection data and for generating a first output projection data on a common pixel of interest relative to the extracted desired set of projection data;

a first adder for obtaining a total sum of signals related to said first output projection data and signals related to said sets of projection data, and for generating a second output signal indicative of said total sum;

a pixel memory having addresses corresponding to pixels of a reconstruction image; and

a second adder for adding data read out from an address in said pixel memory corresponding to said common pixel of interest to said second output signal so that image reconstruction is performed by parallel operation of said plurality of fast processing units.



4,941,095

INTEGRATED FOUR-WHEEL STEER AND DIFFERENTIAL SLIP CONTROL SYSTEM

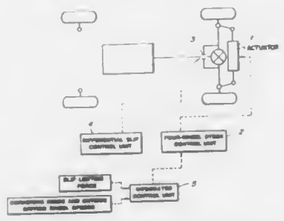
Takashi Imaseki, and Yuji Kobari, both of Zushi, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 21, 1988, Ser. No. 247,464

Claims priority, application Japan, Sep. 29, 1987, 62-245684

Int. Cl.[5] B62D *6/02*

U.S. Cl. 364—424.05 **9 Claims**



1. A method of controlling a four-wheel steer and a differential slip for a wheeled vehicle, the vehicle having a set of steerable rear driving wheels, a differential interposed between the rear wheels, clutch means for supplying a slip limiting force to the differential to limit a differential action thereof and actuator means for actuating the rear wheels, the method comprising:

detecting a vehicle cornering condition and determining a slip limiting force based on a detected vehicle cornering condition;

judging whether the slip limiting force is equal to or larger than a predetermined value during cornering of the vehicle;

obtaining a cornering outside driving wheel speed and a cornering inside driving wheel speed based on the detected vehicle cornering condition;

judging whether the cornering outside driving wheel speed is faster than the cornering inside driving wheel speed; and

correctively steering the rear driving wheels in the direction opposite to that of the front wheels when the slip limiting force is equal to or larger than the predetermined value and the cornering outside driving wheel speed is faster than the cornering inside driving wheel speed.

4,941,096

ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION

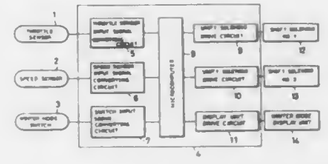
Yasunobu Ito, and Kenji Sezaki, both of Anjo, Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Filed Dec. 9, 1987, Ser. No. 130,776

Claims priority, application Japan, Dec. 10, 1986, 61-294415

Int. Cl.[5] B60K *41/18*; **G05D** *17/02*

U.S. Cl. 364—424.1 **4 Claims**



3. An electrically controlled automatic transmission for an automotive vehicle having shift solenoids for controlling gear selection of said transmission, comprising:

an electronic control unit for driving said shift solenoids in an ordinary shifting mode by responding to signals from a throttle opening sensor and vehicle velocity sensor including engaging a low gear for initial movement of said vehicle;

switch means for manually engaging one of said ordinary shifting mode and a high gear start-up;

said electronic control unit having decision means for determining whether an instant state of vehicle velocity is within an acceptable region for said low gear, when said high gear start-up has been engaged;

high gear start-up output means driving said solenoids to engage a higher gear than said low gear for initial movement of said vehicle, when said high gear start-up has been engaged and said instant state of vehicle velocity is within said acceptable region for said low gear; and

high gear start-up dismissal means for switching from said high gear start-up to said ordinary shifting mode, when said high gear start-up has been engaged and said instant state of vehicle velocity is outside of said acceptable region for said low gear.

4,941,097

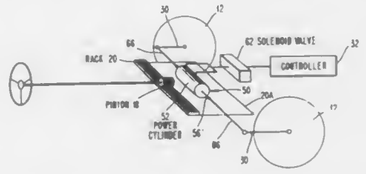
STEERING CONTROL METHODS AND APPARATUS

Dean C. Karnopp, and Yoshiyuki Yasui, both of Davis, Calif., assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 13, 1988, Ser. No. 243,822

Int. Cl.[5] B62D *5/22*

U.S. Cl. 364—424.05 **10 Claims**



1. Apparatus for maintaining steering stability of a moving vehicle comprising:

steerable wheels and steering arm means connected to said steerable wheels, and

steering means for steering said steerable wheels, including a movable rack, a main steering mechanism, including a

steering wheel and pinion, connected to said movable rack for moving said movable rack,

motor means operably interconnecting said movable rack and said steering arm means for transmitting steering forces from said main steering mechanism to said steerable wheels, said motor means comprising relatively movable first and second parts, said first part connected to said movable rack and said second part connected to said steering arm means,

measuring means for measuring an actual yaw rate of said vehicle, and

control means for determining a desired yaw rate for said vehicle, and for generating an output signal in response to a comparison of said desired and actual yaw rates,

said control means being operably connected to said motor means whereby said motor means is actuated in response to said output signal to steer said steerable wheels independently of movement of said movable rack.

4,941,098

SPEED CONTROL UNIT FOR AN AUTOMOBILE

Takeshi Yasukawa, and Masayoshi Onishi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

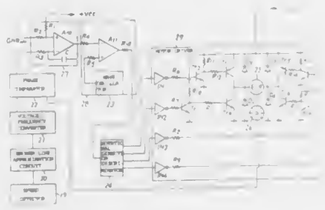
PCT No. PCT/JP87/00597, § 371 Date Jun. 2, 1988, § 102(e) Date Jun. 2, 1988, PCT Pub. No. WO88/01240, PCT Pub. Date Feb. 25, 1988

PCT Filed Aug. 10, 1987, Ser. No. 184,556

Claims priority, application Japan, Aug. 19, 1986, 61-194265; Aug. 19, 1986, 61-194266

Int. Cl.[5] B60K *31/04*

U.S. Cl. 364—426.04 **2 Claims**



1. A speed control unit for an automobile in which a throttle valve is operated by an electric actuator driven by a motor, and a driving speed of said automobile is adjusted by controlling a throttle opening, said control unit comprising:

a broken line approximation circuit to which a speed signal proportional to a speed of the automobile is inputted to obtain an analog output signal corresponding to a specified gain characteristic of the driving speed of the automobile with respect to a throttle valve opening speed of said throttle valve;

a voltage/frequency converter which obtains a reference pulse signal corresponding to said analog output signal of the broken line approximation circuit;

an encoder for outputting a motor speed pulse signal;

a phase comparator which compares said motor speed pulse signal of said motor with said reference pulse signal, and generates an output pulse having a pulse width proportional to a phase difference therebetween;

integration means for obtaining an integration value of the output pulse; and

drive control means which carries out pulse width modulation of said integration value of the output pulse of said phase comparator by a triangular wave or a sawtooth wave, and controls said motor in such a manner that the throttle valve opening speed is variably controlled corresponding to the driving speed of the automobile.

4,941,099

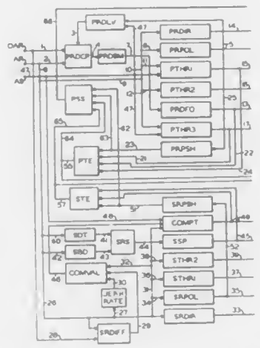
ELECTRONIC ADHESION ADAPTIVE WHEEL SLIDE PROTECTION ARRANGEMENT FUNCTION

James A. Wood, Spartanburg, and Richard J. Mazar, Greer, both of S.C., assignors to American Standard Inc., Spartanburg, S.C.

Filed May 16, 1988, Ser. No. 194,249

Int. Cl.[5] B60T *8/72, 8/80, 8/86*

U.S. Cl. 364—426.02 **36 Claims**



1. An electronic slip control system for a multiple-truck railway vehicle comprising, a standard slip control logic means responsive to axle speed and rate signals to produce a multi-bit binary number word, a primary slip control word formation means for converting the multi-bit binary number word to a hexidecimal number word which is conveyed to a primary slip control table means, said primary slip control table means conveys the hexidecimal number word to a table output selection means, a synchronous slip control logic means responsive to the axle speed and rate signals to produce a multi-bit binary word, a synchronous slip control word formation means for converting the multi-bit binary number word to a hexidecimal number word which is conveyed to a synchronous slip control table means, said synchronous slip control table means conveys the hexidecimal number word to said table output selection means which is connected to intermediate circuit means, and said intermediate circuit means causes an appropriate control signal to be conveyed to a brake valve for preventing wheel slip.

4,941,100

AUTOMATIC EDGER SAW

Arthur M. G. McFarlane, 1873 Redman Rd., Hamlin, N.Y. 14464, and Stuart R. McFarlane, 1 Craig Hill Dr., Brockport, N.Y. 14420

Filed Nov. 30, 1988, Ser. No. 278,279

Int. Cl.[5] G06F *15/46;* B27B *7/02*

U.S. Cl. 364—474.09 **26 Claims**

1. A controller for a head rig edger for edging a board as it is cut from a log characterized by an irregular surface contour by a head saw comprising:

inspection means for determining the surface contour of the log to be sawed in the plane of the headsaw;

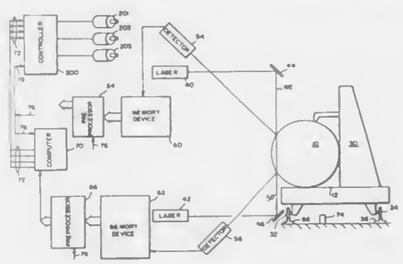
calculating means responsive to said inspection means for selecting an edger line through said log to produce a board satisfying predetermined criteria; and

control means connected to said calculating means for providing control signals to said edger for causing said edger to cut said board along said line.

14. A controller for a head rig edger for edging boards as they are cut from a log having an irregular surface by a head saw in a plurality of passes comprising:

inspection means for determining during a pass of the log ever the head saw, the surface contour of a board to be sawed from the log during a subsequent pass of the log past the headsaw;

calculating means responsive to said inspection means for



selecting an edger line through said log to produce a board satisfying predetermined criteria; and

control means connected to said calculating means for providing control signals to said edger for causing said edger to cut said board along said line during said subsequent pass of said log past the headsaw.

4,941,101

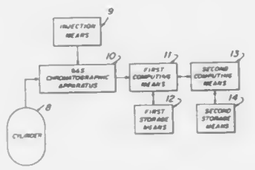
METHOD FOR ANALYZING CHROMATOGRAMS

Paul B. Crilly, Coatesville, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 1, 1987, Ser. No. 91,637

Int. Cl.[5] G01N *31/08*

U.S. Cl. 364—497 **21 Claims**



1. Method of resolving fused peaks present in a chromatogram provided by a chromatographic apparatus, wherein the fused peaks are representative of at least two components of a sample that has been injected into the chromatographic apparatus, comprising the steps of:

(a) providing a first data set indicative of the chromatogram to the processing means;

(b) applying, via the processing means, a selected number of iterations of a peak resolution function of the type employing Jansson's iterative deconvolution method to at least a selected portion of the first data set for resolving the fused peaks; and

wherein the peak resolution function is applied to the first data set according to:

$$x^{(k+1)}(t) = x^{(k)}(t) + r\,[x^{(k)}(t)](g(t) - h(t)*x^{(k)}(t))$$

where:

$x^{(k)}(t)$ is the k'th estimate of x(t);

$r[x^{(k)}(t)]$ is the relaxation function;

g(t) is the first data set;

h(t) is an impulse response function of the chromatographic apparatus; and,

(c) providing a second data set representative of the result of the iterations of the peak resolution function; and,

(d) determining an appropriate retention time for the sample;

(e) selecting a pure compound having a retention time approximating the retention time of the sample;

(f) injecting the pure compound into the chromatographic apparatus;

(g) producing a chromatogram indicative of the impulse response function for the chromatographic apparatus; and

(h) providing an impulse response function data set indicative of the impulse response function chromatogram to the processing means.

4,941,102

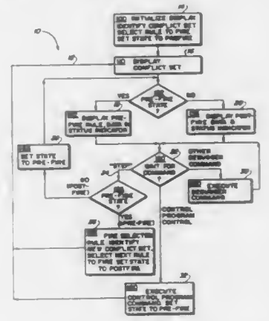
TWO-STEP DEBUGGER FOR EXPERT SYSTEMS

Michael J. Darnell, Aptos; Joseph M. Hary, Los Gatos, and Robert J. Quinn, Fremont, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1988, Ser. No. 245,475

Int. Cl.[5] G06F *15/24*

U.S. Cl. 364—513 **26 Claims**



1. In an expert system including storage means for storing data and rules, and execution means for identifying one or more eligible rules (instantiations) based on the data, selecting one of those rules and firing rule to modify the data, the improvement characterized by a debugger comprising:

(a) means for displaying at least one of the eligible rules;

(b) means for displaying at least part of the data; and

(c) means responsive to the user for alternating between at least

(i) a prefire state before firing of the selected rule, in which at least one of the eligible rules and at least part of the data are automatically displayed, and

(ii) a postfire state after firing of the selected rule, in which at least one of the newly-identified eligible rules and at least part of the modified data are automatically displayed.

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4,941,103

RUNNING TYPE ROBOT CONTROL SYSTEM

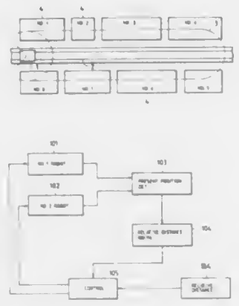
Hisao Kato, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1988, Ser. No. 242,577

Claims priority, application Japan, Sep. 11, 1987, 62-226571; Sep. 30, 1987, 62-247214

Int. Cl.[5] **B62D** *1/24*

U.S. Cl. 364—513 **8 Claims**



1. A running type robot control system, comprising:

at least two running type robots running along a common running path, running ranges of said robots overlapping with each other;

present position detecting means for detecting respective present positions of said robots;

arithmetic calculating means for arithmetically calculating a relative distance between adjacent ones of said robots, based on outputs from said detecting means, the outputs representing the respective present positions of said robots; and

controlling means, coupled to said arithmetic calculating means, for controlling at least one of said robots which is adjacent to another of said robots so that the relative distance therebetween is maintained not smaller than a minimum predetermined standard distance.

4,941,104

NUMERICAL CONTROL APPARATUS FOR CONTROLLING A THREADING OPERATION

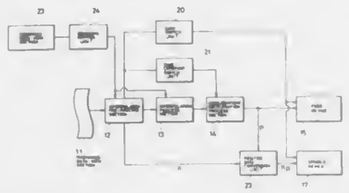
Takeo Teshima, and Makoto Konno, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1988, Ser. No. 186,858

Claims priority, application Japan, Apr. 27, 1987, 62-101748; Feb. 15, 1988, 63-30980

Int. Cl.[5] **G05B** *19/24;* **B23G** *1/04*

U.S. Cl. 364—474.3 **3 Claims**



1. A numerical control apparatus for controlling a control shaft and a spindle of a machine device according to machining data comprising:

time constant switching means for switching an acceleration or deceleration time constant of said control shaft in response to an instruction;

gain switching means for switching a position loop gain of said control shaft according to an instruction;

position data conversion means for multiplying position data by a predetermined coefficient, said position data being subjected to arithmetic operation with a time constant selected by said time constant switching means; and

a spindle device having a position loop control function,

the position of said control shaft being controlled with the time constant selected by said time constant switching means and at the same time an output of said position data conversion means being applied to said spindle device to control said device.

4,941,105

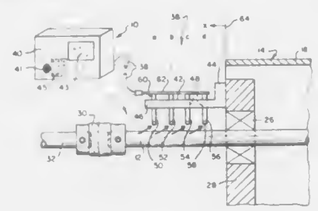
METHOD AND APPARATUS FOR MEASURING DYNAMIC BEARING FORCE

Roy D. Marangoni, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Sep. 29, 1988, Ser. No. 251,690

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 364—506 **10 Claims**



1. Apparatus for measuring at least one of the dynamic force and dynamic moment exerted by a rotated shaft on a bearing comprising,

a support member adapted to extend outwardly from the bearing in overlying relation with the shaft,

a plurality of sensors for detecting displacement of the shaft relative to the sensor and generating a electrical signal proportional to the displacement

said sensors located adjacent one another on said support member, each sensor positioned a preselected distance from the bearing and spaced from the shaft

control means electrically connected to each of said sensors for receiving from each sensor an electric signal proportional to the shaft dynamic displacement at the location of each sensor from the bearing, and

said control means upon actuation operable to receive a displacement signal from each sensor and combine the displacement signals to generate a readout of at least one of the dynamic force and the dynamic moment applied by the shaft to the bearing.

4,941,106

APPARATUS FOR RECOGNIZING AND APPROACHING A THREE-DIMENSIONAL TARGET

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed Dec. 5, 1988, Ser. No. 280,398

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1987, 3741632

Int. Cl.[5] **B25J** *9/00*

U.S. Cl. 364—513 **11 Claims**

1. An apparatus for recognizing and approaching a target in a space with an industrial robot of a type which has a camera on an end of a boom of said industrial robot, said camera being used to observe an environment of said space including said target and to send images thereof to a monitor at a remote control station, said apparatus comprising:

said industrial robot having a plurality of axes having degrees of freedom;

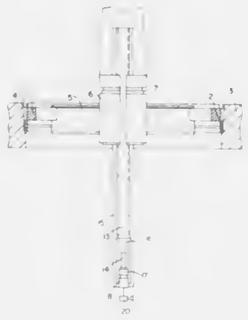
said camera having a lens with an optical axis;

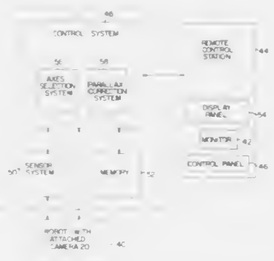
means for selectively rotating said camera and said optical axis thereof by 360 degrees around a first axis of said plurality of axes;

means for selectively pivoting said camera and said optical axis thereof by 180 degrees around a second axis of said plurality of axes which is perpendicular to said first axis;

said means for selectively rotating and said means for selectively pivoting being used to move said camera and said optical axis thereof until said target can be seen in said monitor and located at a target position therein;

said camera having a camera position relative to said optical axis thereof and said optical axis having a target direction when said target is at said target position in said monitor;





means for moving said industrial robot through said degrees of freedom for each of said axes of said plurality of axes:

said means for moving said industrial robot including said means for selectively rotating and said means for selectively pivoting:

control means for controlling said means of moving;

said control means including means for sensing said camera position and said target direction of said optical axis;

said control means maintaining said camera position and said target direction during controlled movement of said end of said boom along said target direction to said target: and

said controlled movement by said control means being produced by said means for moving of a first group of said axes of said plurality of axes while said axes of a second group of said plurality of axes are limited to synchronous movement in direct response to said controlled movement of said axes of said first group.

4,941,107

IMAGE DATA PROCESSING APPARATUS

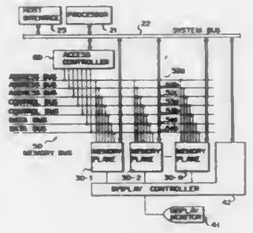
Kouki Hasebe, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 17, 1987, Ser. No. 121,884

Claims priority, application Japan, Nov. 17, 1986, 61-273655; Nov. 17, 1986, 61-273656

Int. Cl.[5] **G06F** *3/153, 9/00*

U.S. Cl. 364—518 **20 Claims**



1. An image data processing apparatus for processing image data in a pipe line fashion, comprising:

first and second address buses;

a control bus;

a first data bus;

means for providing an input processing command;

main control means for generating an access control instruction and a memory plane control instruction in response to said input processing command;

access control means connected to said first and second address buses, said control bus, and said first data bus and operating in synchronism with machine cycles and in response to said access control instruction from said main control means, for selectively generating and respectively outputting onto said first and second address buses first and second addresses, and for generating and outputting onto said control bus read-modified-write control data;

a first memory plane connected to said first address bus, said control bus, and said first data bus, and operating in synchronism with said machine cycles and in response to said memory plane control instruction from said main control means and said read-modified-write control data from said access control means, comprising:

first memory plane memory means for outputting first image data stored at said first address over said first address bus at a first half of each machine cycle, and

first memory plane data output means for outputting said first image data as first transfer data onto said first data bus at said first half of cycle, and

a second memory plane connected to said second address bus, said control bus, and said first data bus, and operating in synchronism with said machine cycles and in response to said memory plane control instruction from said main control means and said read-modified-write control data from said access control means, comprising:

second memory plane processing means for receiving said first transfer data from said first data bus as first operation data at a second half of each machine cycle and performing a first operation designated by said memory plane control instruction, on said first operation data to obtain second image data, and

second memory plane memory means for storing said second image data at said second address at said second half of each machine cycle.

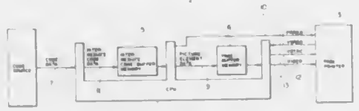
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4,941,108

INTERFACE FOR SENDING PRINTER REQUEST SIGNALS TO A PRINTER

Yuuji Aoyagi, Hitachi, and Seiji Kageyama, Fuchu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1988, Ser. No. 184,789
Claims priority, application Japan, May 2, 1987, 62-109447
Int. Cl.[5] G06F *3/12*; G06K *15/00*
U.S. Cl. 364—519 **6 Claims**



1. In a printer interface system or sending a printer request signal to printer means wherein code data transmitted from a data source is converted to intermediate code data, said intermediate code data being stored in an intermediate code buffer memory member, and said intermediate code data being converted to picture element data, said picture element data being stored in a page buffer memory member, and said picture element data being transmitted from said page buffer memory member to an printer means in company with a printing process preparation signal, an improvement comprising:

wherein after said code data transmitted from said data source is converted to said intermediate code data and stored in said intermediate code buffer memory member,

wherein a format of said code data is judged to determine whether a conversion processing of said corresponding intermediate code data to said picture element data requires a processing time which extends beyond a predetermined time limit,

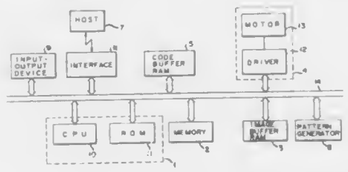
wherein a control code data, supplied by said data source and indicating one page part finishing is converted to intermediate code data and stored in said intermediate code buffer memory member, and said printing process preparation signal is outputted to said printer means in company with a processing in which said intermediate code data is converted to said picture element data.

4,941,109

METHOD OF EFFECTIVELY PERFORMING A FEED OPERATION AND PRINTING APPARATUS FOR REALIZING THE METHOD

Shingo Kikukawa, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 23, 1986, Ser. No. 855,102
Claims priority, application Japan, Apr. 24, 1985, 60-86469
Int. Cl.[5] G06F *3/12*
U.S. Cl. 364—519 **19 Claims**



1. A printing apparatus which performs a feed operation for a continuous paper, comprising:

memory means for storing total feed data indicating a total number of lines to be totally fed from a current printing line and a direction to be fed;

feed means responsive to a feed execution instruction for feeding the continuous paper from said current printing line to a line expected in accordance with the total feed data received by said feed means, said line expected being a line number indicating the number of lines from the first line of the continuous paper to the line number after feeding in accordance with said total feed data; and

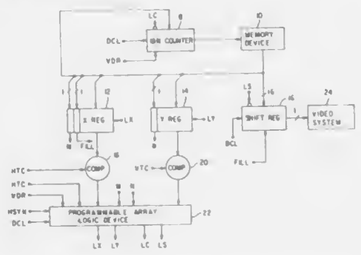
feed control means coupled to said memory means and said feed means, for updating said total feed data by feed data in accordance with a feed instruction received by said feed control means, said feed data being designated by said feed instruction and indicating the number of lines to be fed and a direction to be fed, for reading out the total feed data from said memory means, for supplying said feed execution instruction together with the total feed data to said feed means in response to a printing instruction input to said feed control means and for resetting the total feed data in the memory means after said feed execution instruction is supplied to said feed means.

4,941,110

MEMORY SAVING ARRANGEMENT FOR DISPLAYING RASTER TEST PATTERNS

Robert G. Bassman, Little Ferry, N.J., assignor to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Nov. 2, 1988, Ser. No. 266,042
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—521 **6 Claims**



1. A memory saving arrangement for displaying raster test patterns, comprising:

memory means storing a list of video words to be displayed, in order from the top to the bottom of a display screen, and from left to right on each display scan line;

means for addressing the memory means whereby said memory means provides a first digital word representing the Y value, i.e. scan line numbers on which the first video word appears on the top of the screen, a second digital word representing the X value on that scan line, and then provides pixel data;

the X value digital word having a bit which signifies whether there is more data following for the same scan line and whether the X value is the last data for that scan line, and the Y value digital word having a bit which signifies whether the pixel data is displayed on a single scan line and whether said data is to be repeated on a plurality of scan lines;

first counter means for generating a horizontal timing count signal;

second counter means for generating a vertical timing count signal;

means for comparing the X value word to the horizontal timing count signal and generating a first comparison signal;

means for comparing the Y value word to the vertical timing count signal and generating a second comparison signal;

means responsive to the first and second comparison signals for rendering the arrangement in a "wait" mode when a correct scan line is reached and for maintaining the arrangement in the "wait" mode until the correct X value on that scan line is reached;

means for receiving the pixel data at the end of the "wait" mode and for generating corresponding output; and

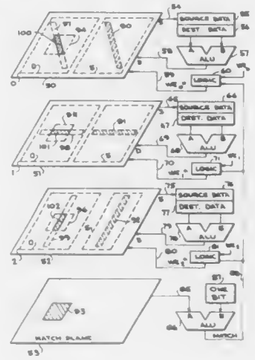
means connected to the receiving means and responsive to the output therefrom for displaying an analog composite video signal.

4,941,111

VIDEO PICKING AND CLIPPING METHOD AND APPARATUS

Adrian Sfarti, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 18, 1986, Ser. No. 853,492
Int. Cl.[5] G06F *15/72*
U.S. Cl. 364—521 **20 Claims**



15. An apparatus for clipping a data object appearing on a video display in a video system when said data object is moved from a source area S on said display to a destination area D on said display, comprising:

a bit map comprising a data plane for storing a data object and a match plane for storing a clipping object, said data plane and said match plane comprising spatially corresponding pixels and said clipping object comprising pixels having a predetermined logical binary value;

a one-bit register for storing a bit having a predetermined logical binary value;

means for moving said data object in said data plane from an area corresponding to said source area S on said display to an area corresponding to said destination area D on said display;

means for scanning the pixels in said data plane as said data object is being moved;

means for scanning the pixels in said match plane as said data object is being moved;

means for comparing said pixels in said match plane and the contents of said one-bit register as said pixels in said match plane are being scanned; and

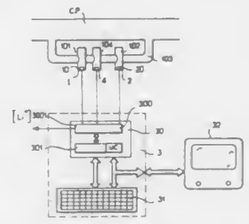
means for enabling said data plane to store in said data plane in said area corresponding to said destination area D on said display each pixel scanned in said data plane which corresponds spatially with a pixel in said match plane when said pixel in said match plane has a predetermined correspondence with the contents of said one-bit register.

4,941,112

METHOD AND DEVICE TO MEASURE THE LITHIUM CONCENTRATION IN THE PRIMARY COOLING CIRCUIT OF A NUCLEAR REACTOR

Christian Nepveu de Villemarceau, Dammarie Les Lys; Jean-Luc Pereira, Chauny; Jean-Pierre Blin, Dammarie Les Lys; Anne-Marie Arzel, Le Mee Sur Seine, and Didier Livigni, Chatillon sur Loire, all of France, assignors to Electricite de France (National Service), Paris, France

Filed May 31, 1988, Ser. No. 201,045
Claims priority, application France, Jun. 2, 1987, 87 07690
Int. Cl.[5] G06F *15/20*; G05D *21/02*
U.S. Cl. 364—527 **14 Claims**



1. A method for measuring and controlling the lithium concentration in the primary cooling circuit of the pressurized-water reactor of a nuclear power station, wherein said method comprises:

measuring the electrical conductivity λ of the cooling water, or a sample thereof, of said primary circuit,

measuring the temperature of the cooling water to define a given temperature (t);

converting said measured values obtained for said electrical conductivity λ and said given temperature (t) into signals and inputting the signals into a computer;

utilizing said computer to determine from the conductivity and temperature signals a value $[Li^+]$ for the lithium concentration by linear correlation between said electrical conductivity λ of the cooling water and this concentration;

said lithium concentration being determined from a linear combination of the electrical conductivity having the form:

$$[Li^+]=\alpha\cdot\lambda+\beta$$

a relationship wherein:

$[Li^+]$: represents the concentration in lithium ions, expressed in parts per million,

α: represents a ratio coefficient;

β: represents a corrective term for the presence of impurities, if any, in the primary circuit cooling water, the term β being determined by the periodic ancillary measurement of the lithium concentration by atomic absorption spectrometry;

said electrical conductivity λ of the cooling water being a linear function of the temperature;

the electrical conductivity λ(t) measured at a given temperature t, having the relationship:

$$\lambda(25)=\lambda(t)+a\cdot[25-t]$$

a relationship in which,

λ(25): represents the conductivity of the cooling water at 25° C.,

a: represents a coefficient that varies as a function of the lithium concentration; and

utilizing the computed lithium concentration $[Li^+]$ value to

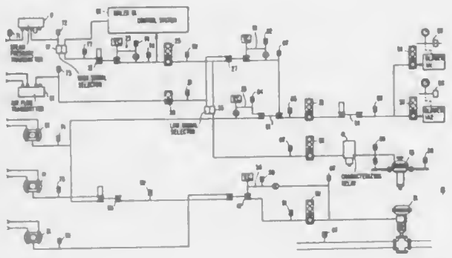
regulate the lithium concentration and pH value of the cooling water of the primary circuit of a nuclear power station reactor.

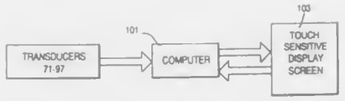
4,941,113

COMPUTER MONITORING AND TESTING OF AUTOMATIC CONTROL SYSTEM

Marton J. Dundics, 2448 Holly Ave., Suite 200, Annapolis, Md. 21401, and Robert S. Bradlee, 2551 Eltham Ave., Suite L, Norfolk, Va. 23513

Filed Jun. 15, 1988, Ser. No. 206,495
Int. Cl.[5] G06F *15/46, 9/00*
U.S. Cl. 364—551.01 **7 Claims**





1. A system for monitoring an analog automatic control system, wherein said analog automatic control system controls a controlled system and includes means responsive to a plurality of parameters of said controlled system to control a plurality of devices in said controlled system, which devices affect the values of said parameters, said system for monitoring comprising:

a multiplicity of transducers sensing different analog signal values in said analog control system and to convert said analog signal values to digital signal values, a computer connected to receive said digital signal values, a display connected to said computer, said computer comprising means selectively operable to display different sequences of instructions to an operator, each sequence directing the operator to perform a series of manual steps to vary the operation of said automatic control system, said computer further comprising means to receive digital signals from said transducers in response to the operator performing any one of the series of manual steps, to compare the digital signals with standard values, and to indicate the results of such comparison to the operator.

4,941,114

TRIANGULAR MESH GENERATION METHOD

Naoyuki Shigyo, and Koichi Sato, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

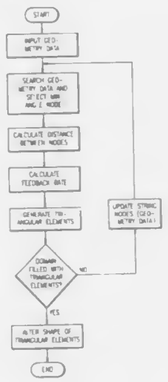
Filed Mar. 17, 1988, Ser. No. 169,480
Claims priority, application Japan, Mar. 26, 1987, 62-72120
Int. Cl.[5] G06F *15/60, 15/328, 7/64*
U.S. Cl. 364—578 **13 Claims**

1. A method for generating a triangular mesh formed of triangular elements within a domain of interest to be analyzed, the domain being surrounded by topography string nodes with the triangular mesh discretizing an equation defined in the domain, comprising:

a first step of inputting geometry data denoting coordinates of said topography string nodes;

a second step of selecting a node having a minimum internal boundary angle among the topography string nodes by searching said geometry data;

a third step of calculating the distances between the selected node and two nodes adjacent to the selected node and the distance between pairs of adjacent nodes for all of said topographic nodes;



a fourth step of calculating a feedback rate which is defined by a ratio of a mean value of the distances between the selected node and two nodes adjacent to the selected node to a mean value of the distance between pairs of adjacent nodes for all said topography nodes;

a fifth step of generating by way of a computer a triangular element in accordance with the minimum internal boundary angle by using the feedback rate; and

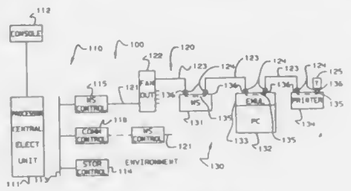
a sixth step of updating the topography string nodes by a computer, by eliminating the generated triangular elements.

4,941,115

HAND-HELD TESTER FOR COMMUNICATIONS PORTS OF A DATA PROCESSOR

James D. Nihart, and Samuel M. Prabhakar, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1988, Ser. No. 209,232
Int. Cl.[5] H04M *1/56;* H04B *3/50*
U.S. Cl. 364—580 **12 Claims**



1. A hand-held port tester for testing input/output ports of a data-processing system, said ports having cables for attaching said system to input/output devices, said cables carrying a first signal being propagated at a first rate for communicating with said devices, wherein said first signal comprises at least one multi-bit code, said port tester comprising:

(a) housing means having a size and shape adapted to be carried in one hand;

(b) connector means, including cable coupling means, attached to said housing means;

(c) receiver means, coupled to said connector means, for converting said first signal to a second signal;

(d) clock means for producing a clock signal that is synchronized with the rate of said first signal;

(e) decoder means, located within said housing and outside the system under test, coupled to said clock means and to said receiver means, for utilizing said second signal to detect the presence and integrity of said at least one multi-bit code;

(f) indicator means, mounted on said housing and responsive to said decoder means, for signalling a fault unless both the presence and integrity of said at least one multi-bit code is detected by said decoder means, and for otherwise signalling a successful test; and

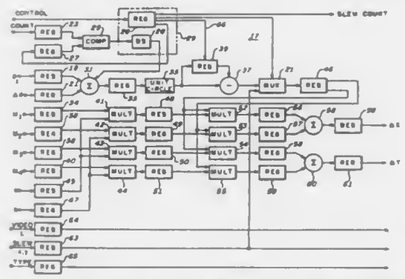
(g) power means mounted in said housing for providing power to all the above means.

4,941,116

ELLIPTICAL ARC GENERATOR FOR DISPLAY SYSTEMS

William R. Hancock, Cedar Crest; Paul J. Short, and Thomas A. Weingartner, both of Albuquerque, all of N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 15, 1988, Ser. No. 220,052
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—718 **23 Claims**



1. An elliptical arc segment generator for display system comprising:

means coupled to receive initial angle values and incremental angle values for incrementing said initial angle value by said incremental angle value to obtain cumulative angles and for providing cosine and sine differences for first and second cumulative angles to obtain sine and cosine difference values;

coordinate value means coupled to receive said cosine and sine difference values, major and minor axis scale factor values representative of major and minor axes of a preselected ellipse, and axis rotation values representative of axis rotations from respective reference axes for providing rotated incremental coordinate values;

means coupled to said product means for accumulating said rotated incremented coordinate values to establish a point on a display format; and

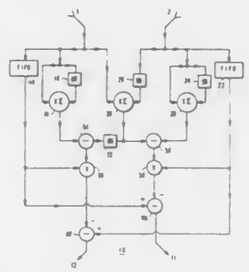
means for providing luminance levels for display at said point.

4,941,117

MULTIPLE CHANNEL ADAPTIVE CORRELATION/DECORRELATION PROCESSOR

Stanley M. Yuen, Marlton, N.J., assignor to General Electric Company, Moorestown, N.J.

Filed Sep. 7, 1988, Ser. No. 240,873
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.07 **2 Claims**



1. A decorrelation processor for processing blocks of concurrent signals in first and second channels, said processor comprising:

first and second processor input ports coupled to said first and second channels, respectively, for receiving said blocks of signals from said first and second channels, respectively;

first subtracting means including an output port coupled to said first processor output port, and also including first and second input ports, for subtracting words applied to said first input port from words applied to said second input port;

second subtracting means including an output port coupled to said second processor output port, and also including first and second input ports, for subtracting words applied to said first input port from words applied to said second input port;

first multiplying means including first and second input ports, and also including an output port coupled to said first input port of said first subtracting means for multiplying together words applied to said first and second input ports of said first multiplying means to produce a first product, and for applying said first product to said first input port of said first subtracting means;

first FIFO delay means coupled to said second processor input port, to said first input port of said first multiplying means, and to said second input port of said second subtracting means, for delaying said signals applied to said second processor input port until an entire one of said blocks of signals has been received at said second processor input port, and for thereafter coupling said signals on a first in, first out basis to said first input port of said first multiplying means and to said second input port of said second subtracting means;

second multiplying means including first and second input ports, and also including an output port coupled to said first input port of said second subtracting means, for multiplying words applied to said first and second input ports of said second multiplying means to produce a second product, and for applying said second product to said first input port of said second subtracting means;

second FIFO delay means coupled to said first processor input port, to said first input port of said second multiplying means, and to said second input port of said first subtracting means, for delaying said signals applied to said first processor input port until an entire one of said blocks of signals has been received at said first processor input

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port, and for thereafter coupling said signals on a first in, first out basis to said first input port of said second multiplying means and to said second input port of said first subtracting means;

first complex conjugate processing means coupled to said second processor input port, for generating the complex conjugate of each of said signals of each of said block of signals received at said second processor input port;

first summing multiplier means including first and second input ports and an output port, said first input port of said first summing multiplier means being coupled to said second processor input port, and said second input port of said summing multiplier means being coupled to said first complex conjugate processing means, for sequentially receiving said signals of said blocks of signals applied to said second processor input port, for multiplying each of said signals by its complex conjugate to produce third products, which third products are summed over the entirety of each of said blocks of signal to produce first summed products at said output port of said first summing multiplier means;

second summing multiplier means including first and second input ports and an output port, said first input port of said second summing multiplier means being coupled to said first processor input port for sequentially receiving said signals of said blocks of signals applied to said first processor input port, for multiplying each of said signals by a signal applied to said second input port of said second summing multiplier means to produce fourth products, which fourth products are summed over the entirety of one of said blocks of signal to produce second summed product at said output port of said second summing multiplier means;

second complex conjugate means coupled to said second input port of said second summing multiplier means, for coupling to said second input port of said second summing multiplier means signals corresponding to said complex conjugate of each of said signals of each of said blocks of signals received at said second processor input port, whereby said second summing multiplier means sums the product of each of said signals applied to said first processor input port multiplier by the complex conjugate of the corresponding one of said signals applied to said second processor input port;

first dividing means including a first input port coupled to said output port of said first summing multiplier means, a second input port coupled to said output port of said second summing multiplier means, and an output port coupled to said second input port of said first multiplying means, for dividing said second summed product by said first summed product to produce a first quotient, and for applying said first quotient to said second input port of said first multiplying means;

third complex conjugate processing means coupled to said first processor input port, for generating the complex conjugate of each of said signals of each of said blocks of signals received at said first processor input port;

third summing multiplier means including a first input port coupled to said first processor input port and a second input port coupled to said third complex conjugate processing means, and also including an output port, for sequentially receiving said signals of said blocks of signals applied to said first processor input port and for multiplying each of said signals by its complex conjugate to produce fifth products, which fifth products are summed over the entirety of each of said blocks of signal to produce third summed products at said output port of said third summing multiplier means;

fourth complex conjugate processing means coupled to said output port of said second summing multiplier means for producing the complex conjugate of said second summed products; and

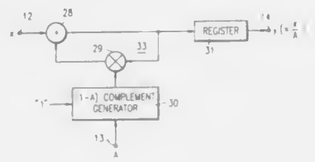
second dividing means including a first input port coupled to said output port of said third summing multiplier means, a second input port coupled to said fourth complex conjugate processing means, and an output port coupled to said second input port of said second multiplying means, for dividing said complex conjugate of said second summed products by said third summed products to produce a second quotient, and for applying said second quotient to said second input port of said second multiplying means.

4,941,118

DIVISION CIRCUIT HAVING AN OPERATION LOOP INCLUDING AN ADDER AND MULTIPLIER

Mitsuo Yamazaki, and Kazuo Konishi, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1988, Ser. No. 248,974
Claims priority, application Japan, Sep. 26, 1987, 62-241351
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—761 **6 Claims**



1. A division circuit for calculating a division between a dividend and a divisor comprising:

a first input means for receiving the dividend;

a second input means for receiving the divisor;

an adder means connected at its first input terminal to a first input means for receiving the dividend and having a second input terminal;

a multiplier means connected at its first input terminal to the output terminal of the adder means and at its output terminal to the second input terminal of the adder means so that the adder means and the multiplier means constitute an operation loop, said multiplier means having a second input terminal;

a complement generator connected between said second input means and the second input of said multiplier means for generating a complement of the divisor equal to one minus the divisor; and

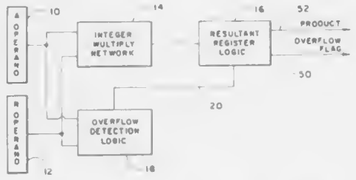
a registor means coupled to the output of said adder means for outputting a quotient obtained in the operation loop.

4,941,119

METHOD AND APPARATUS FOR PREDICTING AN OVERFLOW IN AN INTEGER MULTIPLY

Timothy W. Moline, Coon Rapids, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 30, 1988, Ser. No. 278,294
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—745 **14 Claims**



1. Apparatus for predicting an overflow condition in a resultant register means for storing the resultant of an integer multiplication operation of first and second binary-coded integer operands, said resultant register means having an established number of bit positions, said apparatus comprising:

first determining means for establishing a first number representative of the position in said first integer operand of the most significant bit having a predetermined value;

second determining means for establishing a second number representative of the position in said second integer operand of the most significant bit having said predetermined value;

adder means for summing said first and second numbers to determine a total number; and

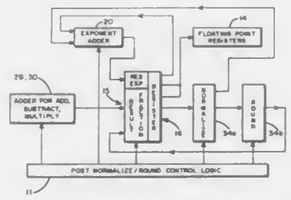
overflow indicator means for indicating an overflow condition whenever said total number exceeds the number of bit positions in said resultant register means.

4,941,120

FLOATING POINT NORMALIZATION AND ROUNDING PREDICTION CIRCUIT

Jeffrey D. Brown; Donald L. Freerksen; Scott A. Hilker, and Daniel L. Stasiak, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1989, Ser. No. 339,347
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **4 Claims**



1. A circuit for normalizing floating point arithmetic results of certain predetermined types, and for predicting whether rounding is necessary by examination of predetermined bits in the arithmetic result, comprising

(a) means for detecting arithmetic operations of the multiply type, and addition of operands of same sign, and subtraction of operands of different signs, and activating a transfer sequence in response thereto;

(b) said transfer sequence including means for examining the two most significant bits of the result fraction and completing a transfer of the fraction and exponent result into a register according to the following procedure:

(i) if a multiply type and the two most significant fraction bits are of the form 1.X, transfer the results directly into said register, and increase the exponent by one;

(ii) if a multiply type and the two most significant fraction bits are of the form 0.1, transfer the fractional result into said register with a 1-bit left shift, and transfer the exponent directly, unchanged, into said register;

(iii) if an addition or subtraction type and the two most significant fraction bits are of the form 1.X, transfer the results directly into said register; and

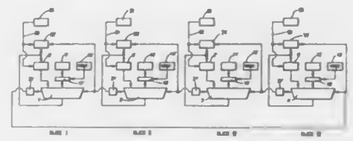
(iv) if an addition or subtraction type and the two most significant fraction bits are of the form 1X., transfer the fractional results directly into said register; with a 1-bit right shift, and transfer the exponent, increased by one, into said register.

4,941,121

APPARATUS FOR HIGH PERFORMANCE MULTIPLICATION

John H. Zurawski, Stow, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 1, 1988, Ser. No. 176,735
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—757 **8 Claims**



1. A bit-sliced multiplier circuit, said multiplier circuit comprising a plurality of multiplier slices for independently performing multiplication of a multiplicand with a multiplier on an iterative basis, each of said multiplier slices comprising:

a. multiplier circuit means for forming the product of two numbers on an iterative basis, said multiplier circuit means including a means for changing a personality of a slice on an iterative basis;

b. accumulator circuit means, connected to said multiplier circuit means, for adding and storing the results from said multiplier circuit means on an iterative basis; and

c. carry-out register, connected to said accumulator circuit means, for storing carry-out data;

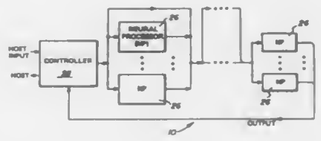
such that each slice of said bit-sliced multiplier circuit is connected to an adjacent slice only through interconnections of a non-critical nature.

4,941,122

NEURAL NETWORK IMAGE PROCESSING SYSTEM

William E. Weideman, Arlington, Tex., assignor to Recognition Equipment Incorp., Irving, Tex.

Filed Jan. 12, 1989, Ser. No. 296,520
Int. Cl.[5] G06F *15/18*; G06K *9/62*
U.S. Cl. 364—807 **6 Claims**



1. a neural-simulating system for processing an input stimulus, comprising:

a plurality of layers, each layer receiving layer input signals and generating layer output signals, said layer input signals including signals from the input stimulus and ones of said layer output signals from only previous layers within said plurality of layers;

each of said plurality of layers including a plurality of neurons operating in parallel on said layer input signals applied to said plurality of layers;

each of said neurons deriving neuron output signals from a continuously differentiable transfer function for each of said neurons based upon a combination of sets of weights associated within said neurons and said layer input signals;

said plurality of neurons with a layer being arranged in

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groups of neurons operating in parallel on said layer input signals; and

weight constraining means associated with each of said group of neurons for causing each of said groups of neurons to extract a different feature from said layer input signals and for further causing each neuron with a group of neurons to operate on a different portion of said layer input signals.

4,941,123

DATA COMMUNICATIONS SYSTEM WITH AUTOMATIC COMMUNICATIONS MODE

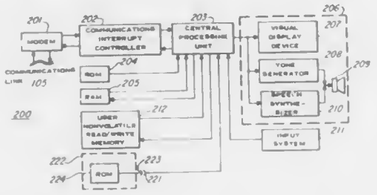
E. Earle Thompson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 264,882, May 18, 1981, Pat. No. 4,519,029. This application Dec. 17, 1984, Ser. No. 682,502

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

Int. Cl.[5] **G06F** *3/00*

U.S. Cl. 364—200 **12 Claims**



1. A data communication system comprising:

a host data processing system for performing predetermined data processing functions and for generating output signals comprising the results of said predetermined data processing functions in response to receiving data processing request signals, said preformed data processing functions corresponding to said received data processing request signals;

data transmission means connected to said host data processing system for transmitting signals generated by said host data processing system and for transmitting signals to said host data processing system; and

a remote data processing system connected to said data transmission means having means for receiving output signals from said host data processing system transmitted by said data transmission means, memory means storing a plurality of sets of data processing request signals each in a predetermined order, operator selection means for generating an operator initiation signal to provide for operator selection of one of said sets of data processing request signals, memory access means operably coupled to said memory means and said operator selection means for recalling said selected set of data processing request signals from said memory means in said predetermined order in response to an operator initiation signal as generated by said operator selection means, and output means connected to said memory access means for applying said recalled data processing request signals to said data transmission means for transmission to said host data processing system.

4,941,124

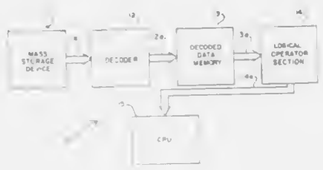
TEXT COMPARATOR WITH COUNTER SHIFT REGISTER

James T. Skinner, Jr., 780 Yale Rd., Boulder, Colo. 80303

Division of Ser. No. 456,989, Jan. 12, 1983, Pat. No. 4,625,295, which is a continuation-in-part of Ser. No. 342,620, Jan. 25, 1982, Pat. No. 4,531,201. This application Jun. 11, 1986, Ser. No. 851,643

Int. Cl.[5] **G06F** *15/40, 7/02*

U.S. Cl. 364—900 **9 Claims**



1. A textual comparison system for locating within textual material the occurrence of a first desired character string within a selected number of K (where K is a positive integer) words of a second desired character string comprising:

first means for locating within textual material the presence of said first desired character string, said first means for locating providing a first signal indicating whether said first desired character string has been located;

second means for locating within textual material the presence of said second desired character string, said second means for locating providing a second signal indicating whether said second desired character has been located;

a first shift register which receives as an input signal said second signal;

a second shift register which receives as an input signal said second signal;

means for clocking said first shift and second shift registers at the end of each work within said textual material;

a first logical gate having a plurality of K input leads connected to the K least significant output leads of said first shift register, and wherein said first logical gate provides a first output signal indicating whether said first desired character string is located within the previous K words;

a second logical gate having a plurality of K input leads connected to the K least significant output leads of said second. shift register, and wherein said second logical gate provides a second output signal indicating whether said second desired character string is located within the previous K words; and

a third logical gate receiving as input signals said first and said second output signals, thereby providing a third output signal indicating whether said first desired character string is located within K words of said second desired character string.

4,941,125

INFORMATION STORAGE AND RETRIEVAL SYSTEM

Walter J. Boyne, Alexandria, Va., assignor to Smithsonian Institution, Washington, D.C.

Filed Aug. 1, 1984, Ser. No. 636,758

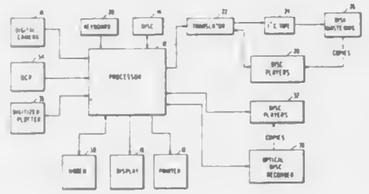
Int. Cl.[5] **G06F** *3/00, 15/62*

U.S. Cl. 364—900 **9 Claims**

1. An archival document image storage and retrieval system for storing image information representing the content of a plurality of archival documents, maintaining an index of descriptive terms and documents, and retrieving stored image information corresponding to a particular document in accordance with said index upon identification of a corresponding descriptive term, said system comprising:

a camera for generating electronic digital output signal representing the image of a document;

data processing means for providing a processor output representing both said image and index information corresponding to said document, said data processing means including means for receiving and storing said digital output signals from said camera representing a plurality of



document images, means for retrieving said stored images from said means for storing after said digital signals representing said plurality of document images have been stored, means for recognizing the content of the images retrieved from said means for storing and producing recognition results, and means for generating said index information in accordance with said recognition results to thereby obtain said processor output; and

digital optical storage means for optically recording said processor output.

4,941,126

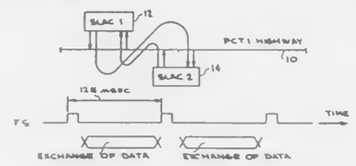
WEAK/STRONG BUS DRIVER

Pierre F. Hauboursin, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 24, 1987, Ser. No. 77,349

Int. Cl.[5] **H03K** *19/094*

U.S. Cl. 364—900 **5 Claims**



1. A bus driver circuit for transmitting a series of output bits having two logic levels onto a bus comprising:

a first input terminal for receiving a series of input bits including a first bit, each of said series of input bits having two logic levels;

strong bus driver means **(62)** coupled to said bus **(70)**;

weak bus driver means **(64)** coupled to said bus **(70)**;

one of said strong bus driver means and said weak bus driver means being selectably enabled and the other one of said strong bus driver means and said weak bus driver means being selectably disabled for each bit of said series of input bits for generating the series of output bits onto said bus;

detection means **(68)** responsive to timing signals and an enable signal for generating a signal indicative of the reception of said first bit of said series of input bits to be transmitted;

sensing means **(66)** for generating a sense signal which is at a first predetermined level when said strong bus driver means **(62)** is to be enabled and said weak bus driver means **(68)** is to be disabled and which is at a second predetermined level when said weak bus driver means **(64)** is to be enabled and said strong bus driver means **(62)** is to be disabled;

first logic means **(72)** responsive to said sense signal for selectively enabling and disenabling said strong bus driver means **(62)** so as to transmit said series of input bits;

second logic means **(74)** responsive to said sense signal for selectively enabling and disenabling said weak bus driver means **(64)** so as to transmit said series of input bits;

said first logic means **(72)** being responsive to said first bit reception signal for initially enabling said strong bus driver means **(62)** to transmit said first bit of said series of input bits as a first signal of said series of output bits onto said bus;

said second logic means **(74)** being responsive to said first bit reception signal for initially disabling said weak bus driver means **(64)**;

said sensing means **(66)** enabling said weak bus driver means **(64)** and disabling said strong bus driver means **(62)** when said first signal reaches a selected voltage level defining a current logic level;

said sensing means **(66)** subsequently comparing the logic level of each subsequent bit in said series of input bits to be transmitted with the corresponding current logic level of the bus and for generating the sense signal of the first predetermined level when the logic level of said each subsequent bit is different from the corresponding current logic level of the bus; and

said sensing means **(66)** generating said sense signal of the second predetermined level when the logic level of said each subsequent bit is the same as the corresponding current logic level of the bus.

4,941,127

METHOD FOR OPERATING SEMICONDUCTOR MEMORY SYSTEM IN THE STORAGE AND READOUT OF VIDEO SIGNAL DATA

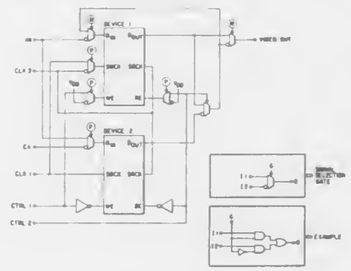
Masashi Hashimoto, Garland, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Feb. 19, 1988, Ser. No. 158,173

Claims priority, application Japan, Feb. 20, 1987, 62-38630; Aug. 19, 1987, 62-205385

Int. Cl.[5] **G11C** *11/26*

U.S. Cl. 365—189.01 **2 Claims**



1. A method for operating a video signal memory system in conjunction with a video image display device for producing a substantially flicker-free video image on the display device, said method comprising:

writing first field data into a first memory device having first in—first out data processing capability;

writing second field data into a second memory device having first in—first out data processing capability;

reading out the first line of said first field data from said first memory device while simultaneously writing third field data into said first memory device, wherein the readout

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clock rate of said first field data from said first memory device is at a speed twice that of the writing of said third field data into said first memory device;

reading out the first line of said second field data from said second memory device subsequent to the readout of said first line of said first field data from said first memory device but simultaneously with respect to the continued writing of said third field data into said first memory device and at a readout clock rate having a speed twice that of the writing of said third field data into said first memory device; and

continuing the readout of respective lines of said first field data from said first memory device and said second field data from said second memory device in an alternating manner and simultaneous to the continued writing of said third field data into said first memory device at a readout clock rate having a speed twice that of the writing of said third field data into said first memory device until a complete frame of field data is produced as a video image for display on the display device.

4,941,128

SEMICONDUCTOR MEMORY DEVICE HAVING MEANS FOR PROVIDING A PRECHARGE VOLTAGE EQUIVALENT TO A PRESCRIBED SELECTION VOLTAGE

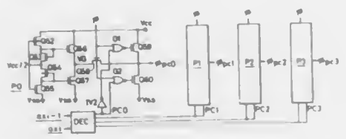
Shouji Wada, Ohme; Nobuo Komatsu, Akishima; Mitsuhiro Takano, Ohme; Sinichi Miyatake, Ohme; Kazuo Mihashi, Akishima, and Hiromi Tsukada, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Apr. 25, 1988, Ser. No. 185,497

Claims priority, application Japan, Apr. 24, 1987, 62-99861; Oct. 28, 1987, 62-272683

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—203 **9 Claims**



6. A semiconductor memory comprising:

a plurality of first complementary data line pairs;

a first word line;

a first memory mat including a plurality of first memory cells respectively coupled at input/output nodes thereof with one complementary data line among said first complementary data line pairs and coupled at selective nodes thereof with said first word line;

first amplifier circuits coupled with said first complementary data line pairs for applying signals having a predetermined high level and a predetermined low level to said first complementary data line pairs on the basis of storage information of the first memory cells using an intermediate voltage between said predetermined high level and said predetermined low level precharged to said first complementary data line pairs as a reference voltage;

a plurality of first precharge MOSFETs coupled at source-drain paths thereof between said first complementary data lines, respectively,

wherein said first memory mat includes a first signal line coupled with a gate of said first precharge MOSFETs;

a plurality of second complementary data line pairs;

a second word line;

a second memory mat including a plurality of second memory cells respectively coupled at input/output nodes thereof with one complementary data line among said second complementary data line pairs and coupled at selective nodes thereof with said second word line;

second amplifier circuits coupled with said second complementary data line pairs for discriminating information of the second memory cells using a precharge voltage precharged to the complementary data lines as a reference voltage;

a plurality of second precharge MOSFETs coupled at source-drain paths thereof between said second complementary data lines, respectively,

wherein said second memory mat includes a second signal line coupled with a gate of said second precharge MOSFETs;

selecting means coupled with said first and second word lines for selecting one of the first and second word lines; and

control means coupled with said first and second signal lines for respectively applying a voltage substantially equal to the precharge voltage to said first and second signal lines during a predetermined time in response to selection of said semiconductor memory, and for respectively applying a prescribed voltage to render said first or second precharge MOSFETs non-conductive to the signal line in the memory mat having the word line to be selected during the operation of said first or second amplifier circuits.

4,941,129

SEMICONDUCTOR MEMORY DEVICE

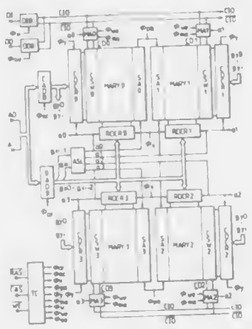
Kazuyoshi Oshima; Takashi Yamazaki, both of Ohme; Yasuhiro Kasama, Tokyo; Tetsu Udagawa, Tokorozawa, and Hiroaki Kotani, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1988, Ser. No. 237,051

Claims priority, application Japan, Aug. 28, 1987, 62-212722

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.03 **12 Claims**



1. A semiconductor memory device comprising:

a plurality of memory arrays;

array selection means for receiving a predetermined address signal and for selectively generating an array selection signal to select a predetermined one of said memory arrays;

row and column address decoders disposed in such a manner as to respectively correspond to said memory arrays;

a plurality of amplifiers disposed in such a manner as to respectively correspond to said memory arrays; and

selecting means for generating a signal to selectively operate, in accordance with said array selection signal, a predetermined one of said row address decoders corresponding to said selected memory array, a predetermined one of said column address decoders corresponding to said selected memory array, and a predetermined one of said amplifiers corresponding to said selected memory array.

4,941,130

MULTI-SPINDLE KNEADING MIXER WITH FIXED KNEADING COUNTERELEMENTS

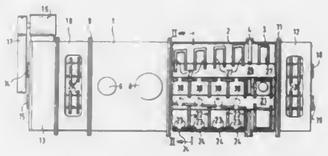
Heinz List, deceased, late of Pratteln (by Jorg List, executor); Walther Schwenk, Kaiseraugst, and Alfred Kunz, Witterswill, all of Switzerland, assignors to List AG, Pratteln, Switzerland

Filed Feb. 15, 1989, Ser. No. 311,110

Claims priority, application Switzerland, Feb. 16, 1988, 00550/88

Int. Cl.[5] B01F *7/04*

U.S. Cl. 366—99 **5 Claims**



1. A multi-spindle kneading mixer for performing mechanical, chemical and thermal processes, which comprises: a housing; at least two axis-parallel, rotating shafts within the housing; radial disk elements on one shaft having an outside diameter; axially aligned kneading bars fastened on the outside diameter of said disk elements, so that gaps exist therebetween; kneading frames on the second shaft and operative to clean the axially aligned kneading bars; kneading counterelements in the housing projecting into said gaps to clean said gaps, wherein the kneading counterelements are kneading hooks which clean the disk elements, increase the kneading effect, and roll the product between the disk elements; wherein intensive full kneading takes place simultaneously with cleaning.

4,941,131

FLUSH FOR FLUID MIXING AND DISPENSING SYSTEM

Robert E. Daly, Davidson; Clifford E. Sloan, Matthews, both of N.C., and Armisticio Z. Sanidad, Cherry Hill, N.J., assignors to Picker International, Inc., Cleveland, Ohio

Filed Jun. 7, 1989, Ser. No. 362,886

Int. Cl.[5] B01F *15/02*

U.S. Cl. 366—167 **12 Claims**

1. A system for mixing first and second fluids, said system comprising:

(a) a reservoir;

(b) a container containing a quantity of said first fluid, said container defining an opening and having a piercable septum sealing said opening;

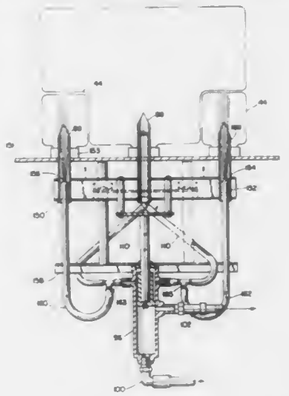
(c) means for supporting said container in an orientation wherein said first fluid is in contact with the inner side of said septum;

(d) a movable tubular piercer mounted for piercing said septum in response to movement of said piercer;

(e) means for causing piercer movement to pierce said septum and to thereby release said first fluid for drainage from said container;

(f) means for directing said first fluid draining from said container into said reservoir;

(g) means for delivering a second fluid to said reservoir;



(h) means for directing some of said second fluid through said tubular piercer and into said container for flushing of said container and of surfaces of said piercer.

4,941,132

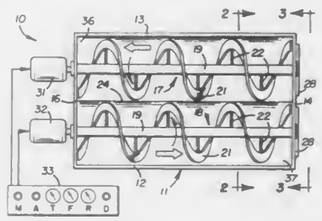
REVERSING BLENDER AGITATORS

Darrell C. Horn, Lafayette, and John M. Leanox, III, Sebastopol, both of Calif., assignors to Blentech Corporation, Calif.

Filed May 4, 1989, Ser. No. 347,443

Int. Cl.[5] B01F *11/00, 7/08*

U.S. Cl. 366—278 **21 Claims**



1. A method of blending particulated products in a blender tub having first and second opposed ends, said tub having at least one elongated agitator mounted therein for rotation about a horizontal axis, said agitator extending between said opposed ends of said tub and having means for urging products in contact therewith to move towards said first end of said tub in response to rotation of said agitator in a first direction and for urging products in contact therewith to move towards said second end of said tub in response to rotation of said agitator in a second and opposite direction, said method comprising:

(a) putting particulated products in said tub and to a level to be engaged by said agitator,

(b) rotating said agitator in its first direction for a pre-determined length of time,

(c) stopping said agitator,

(d) rotating said agitator in its second direction for a predetermined length of time,

(e) stopping said agitator,

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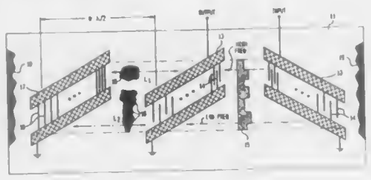
(f) continuously repeating steps (b)–(e) until said particulated products are blended to a desired degree.

4,941,133

SAW SLANTED ARRAY CORRELATOR (SAC) WITH SEPARATE AMPLITUDE COMPENSATION CHANNEL

Elio A. Mariani, Hamilton Square, and William J. Skudera, Jr., Oceanport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 26, 1989, Ser. No. 373,537
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 5 Claims



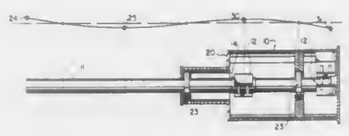
1. A surface acoustice wave device comprising:
a piezoelectric substrate for prolongating surface acoustic waves;
an input and an output interdigital transducer aligned at predetermined equal and opposite angles to each other; each transducer having a plurality of interdigital electrodes, the periodicity of which varies in a predetermined manner along the length of each transducer, the periodicity variation being the same for corresponding portions of the two transducers;
a reflective array aligned with said interdigital transducers and positioned on said substrate a distance from said output transducer on the side thereof opposite that of said input transducer;
a reflective array aligned with said interdigital transducers and positioned on said substrate a distance from said output transducer on the side thereof opposite that of said input transducer;
said reflective array being disposed on said substrate at an angle the same as that of said output transducer, the distance between the electrodes of said reflective array and the electrodes of said output transducer being equal to $N\lambda/2$, where N is an integer and λ is acoustic wavelength corresponding to the frequency of operation; and
an acoustic absorbing film aligned on said substrate intermediate between said output transducer and said reflective array;
said acoustic absorbing film having a non-uniform width.

4,941,134

SONIC GENERATOR

Christopher A. Nyberg, North Vancouver; James G. Jackson, Burnaby, and Jan Brdicko, West Vancouver, all of Canada, assignors to Arc Sonics Inc., British Columbia, Canada

Filed Apr. 1, 1988, Ser. No. 176,716
Int. Cl.[5] H04R *1/02*
U.S. Cl. 367—142 7 Claims



1. A sonic generator comprising a resonant member having a plurality of nodes and anti-nodes, means located between a housing and said resonant member at at least two nodal locations of said resonant member for substantially isolating the vibration of said member from said housing, said resonant member including a resonant bar and electromagnetic drive means mounted to said resonant bar with drive mounting means, said drive mounting means comprising an outer sleeve surrounding said resonant bar and a resilient elastomeric material between said outer sleeve and said resonant bar, said resilient material having a free surface area and a constrained surface area, said free surface area of said elastomeric material being small relative to said constrained surface area so as to allow said resonant member to freely flex in the characteristic mode shape of said resonant member, said electromagnetic drive means being operable to transmit vibration to said resonant member at a frequency close to or substantially identical with a resonant frequency of said member.

4,941,135

ULTRASONIC FIELD GENERATING DEVICE

Cornelius J. Schram, Pavenham, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 153,832, Jan. 27, 1988, abandoned. This application May 8, 1989, Ser. No. 348,189
Claims priority, application United Kingdom, May 27, 1986, 8612760
Int. Cl.[5] B03B *1/00;* H04R *17/00*
U.S. Cl. 367—150 12 Claims



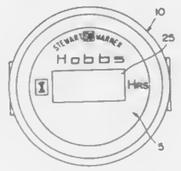
1. A method of generating an ultrasonic energy field in an enclosed space filled with a fluid medium, comprising the steps of:
disposing an ultrasonic energy source at a spacing from said enclosed space;
directing a converging ultrasonic energy beam from said source along an axis of propagation extending through said enclosed space; and
converging said beam from the source through the fluid medium at an angle sufficiently great such that the beam has a cross-sectional area throughout the enclosed space to at least substantially compensate for attenuation of ultrasonic energy in the fluid medium through at least substantially the whole of said enclosed space such that a substantially uniform energy density is created in the said enclosed space.

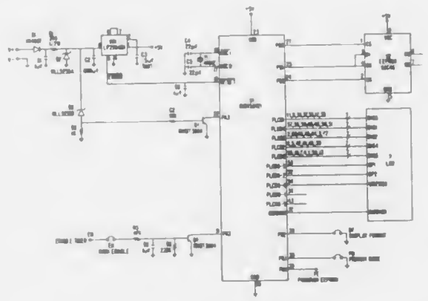
4,941,136

PROGRAMMABLE HOUR METER FOR RECORDING ELAPSED OPERATION TIME

Edward J. Breitung, II, Springfield, Ill., assignor to Stewart Warner Corporation, Chicago, Ill.

Filed Sep. 13, 1988, Ser. No. 243,919
Int. Cl.[5] G04F *8/00*
U.S. Cl. 368—8 12 Claims





1. A programmable elapsed time meter comprising:
an electronic circuit including means for calculating elapsed time, E^2PROM memory means having a plurality of registers for storing the calculated elapsed time, and means for continually updating the the stored calculated elapsed time in said plurality of registers such that no register is updated more than a preselected number of times until all the registers have been updated said preselected number of times;
input terminals for enabling said electronic circuit;
a liquid crystal display connected to said electronic circuit, capable of displaying the elapsed time stored in said electronic circuit; and
a capacitor connected to said electronic circuit for supplying power to said electronic circuit to enable the electronic circuit to update the E^2PROM memory means at power shutdown.

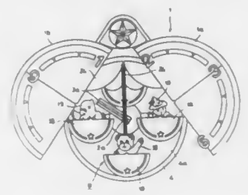
4,941,137

TIMEPIECE WITH MOBILE DECORATIONS

Koji Kikuchi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Dec. 11, 1989, Ser. No. 449,582
Claims priority, application Japan, Dec. 9, 1988, 63-311614
Int. Cl.[5] G04B *19/00*
U.S. Cl. 368—223 2 Claims

1. A timepiece with mobile decorations, comprising:
a casing incorporating a timepiece movement;
a drive motor encased in said casing and functioning at arbitrarily set hours;
a dial disposed in front of said casing and bilaterally openable and closable about a fixed shaft;
a dial opening/closing mechanism encased in said casing and driven by said drive motor for opening and closing said dial; and



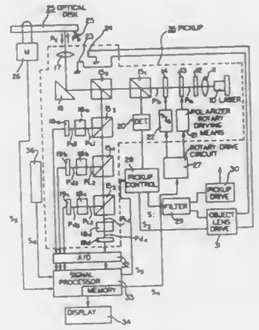
mobile decorations interposed between said dial and a front face of said casing and functioning while said dial is opened so as to be visually recognizable from outside.

4,941,138

METHOD AND AN APPARATUS FOR MEASURING OPTICAL CHARACTERISTICS OF AN OPTICAL DISK

Naomichi Chida, Iruma, and Akiyoshi Watanabe, Kodaira, both of Japan, assignors to Nakamichi Corporation, Kodaira, Japan

Continuation of Ser. No. 109,774, Oct. 16, 1987, abandoned. This application Jun. 2, 1989, Ser. No. 360,388
Claims priority, application Japan, Oct. 21, 1986, 61-250331; Oct. 21, 1986, 61-250332; Oct. 21, 1986, 61-250333; Nov. 25, 1986, 61-280525; Nov. 25, 1986, 61-280526
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.41 6 Claims



1. A method of measuring optical characteristics of a substrate for an optical disk comprising the steps of;
converting a laser light into at least one predetermined polarized light ray selectively;
collecting said polarized light ray into an irradiation light ray to be irradiated onto said optical disk;
controlling a tracking and a focussing of an irradiation point on said optical disk of said irradiation light ray based on a reflection light ray from said optical disk;
dividing said reflection light ray into at least three polarized components;
detecting the light quantity of each of said polarized components;
and measuring polarization characteristics of a substrate for said optical disk based on said light quantity.

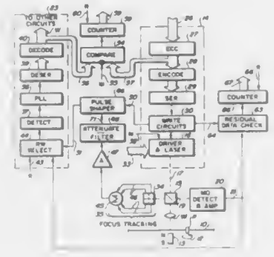
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4,941,139

CHECKING MEDIA OPERATIONS AND RECORDING DURING OPTICAL RECORDING

John E. Kulakowski; Rodney J. Means; David M. Oldham, and Morovat Tayefeh, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1988, Ser. No. 239,863
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—54 **6 Claims**



1. In an optical recording apparatus having laser means for supplying a modulated light beam for recording information-bearing signals onto a record member which is relatively moveable with respect to the beam at least along a record track to receive and store said information-bearing signals, optical means optically interposed between said laser means and said record member for directing reflected light from said record member away from said laser means to a first detector, said record member being capable of storing said information-bearing signals as optically-sensible parameter changes of the record member that do not substantially alter the intensity of the reflected light, said record member being responsive to a relatively high-intensity laser beam to record the information-bearing signals;

the improvement, including in combination:

said first detector including means responsive to intensity changes of light reflected from said record member to supply signals indicative of any such intensity changes;

data supply means supplying signals indicative of the information-bearing signals to be recorded, said information-bearing signals being in a predetermined format;

write circuit means coupled to said data supply means and to said laser means for responding to the supplied signals to actuate the laser means to modulate the intensity of its emitted beam directed to the record member via said optical means;

read circuit including light responsive means coupled to said optical means for receiving record medium reflected light for converting signals read from the record member to said predetermined data format;

pulse-shaping means for coupling said first detector to said read circuit means for transferring the intensity-modulated indicating signals to said read circuit means for converting said intensity modulated reflected signals into said predetermined data format and coupled to said write circuit means for shaping and timing said converted intensity modulated indicating signals; and

data comparison means connected to said data supply means and to said read circuit means for comparing the converted signals with the supplied signals and generating a predetermined error indication when the comparison indicates a predetermined difference between the converted and the supplied signals.

4,941,140

OPTICAL DISC PLAYER

Takuro Ono; Noboru Aoyama, and Kaoru Morinaga, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 89,337, Aug. 25, 1987, Pat. No. 4,914,647. This application Feb. 7, 1989, Ser. No. 306,900
Claims priority, application Japan, Aug. 25, 1986, 61-198426; Aug. 25, 1986, 61-129071
Int. Cl.[5] G11B 17/04, 1/00
U.S. Cl. 369—264 **3 Claims**



1. A turntable elevation apparatus for an optical disc player, said optical disc player including a disc compartment in a main chassis for accommodating an optical disc case, the optical disc case including an optical disc rotatably disposed therein, the apparatus comprising:

disc holding means for holding the optical disc accommodated in the disc compartment, said disc holding means including turntable means for removably supporting and rotating an optical disc and clamper means for holding the optical disc to said turntable means, said turntable means having a hold position when the optical disc is held between said clamper means and said turntable means and a release position when the optical disc is released by said clamper means and said turntable means;

disc rotation drive means for rotating said turntable means, said disc rotation drive means including a turntable shaft fixed to said turntable means and a motor capable of rotating said turntable shaft, said turntable shaft being translatable along the axis of said turntable shaft to move said turntable means between said hold position and said release position; and

elevator means for controllably elevating said turntable means from said release position to said hold position including a cam member rotatably supported on the main chassis including a gear and a rotary cam, a motor capable of engaging said gear for imparting a rotational movement to said cam member, and an elevation member rotatably supported by said main chassis at a rotation point, said elevation member having a first end in sliding engagement with said rotary cam and a second end in rotatable engagement with said turntable shaft, said elevation member rotating about said rotation point as said cam member rotates thus translating said turntable shaft along the axis of said turntable shaft to move said turntable means between said hold position and said release position.

4,941,141

TIME DIVISION SWITCHING FOR MULTI-CHANNEL CALLS USING TWO TIME SWITCH MEMORIES ACTING AS A FRAME ALIGNER

Shin-ichiro Hayano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 29, 1988, Ser. No. 291,673
Claims priority, application Japan, Dec. 29, 1987, 62-336027; Dec. 29, 1987, 62-336028
Int. Cl.[5] H04J 3/02, 3/06
U.S. Cl. 370—58.1 **9 Claims**

1. A time division switching system for multi-channel calls, comprising:

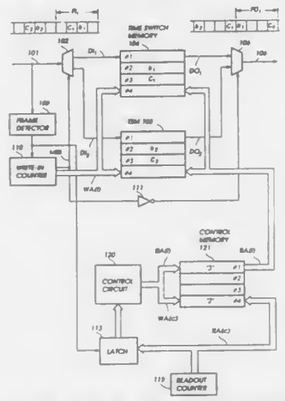
an incoming highway for supporting an incoming frame having time slots in which signals of said multi-channel calls are carried;

an outgoing highway for supporting an outgoing frame having time slots in which corresponding signals of said multi-channels calls are carried;

first and second time switch memories each having memory locations corresponding to the time slots of each of said incoming and outgoing frames;

phase detector means for detecting a phase difference between said incoming and outgoing frames; and

control means for writing signals on said incoming highway into one of said first and second time switch memories and



reading signals from the other time switch memory into specified time slots of said outgoing highway in accordance with said phase difference and control data specifying addresses of said first and second time switch memories so that the beginning of said outgoing frame coincides with the one of said time slots of said incoming frame which is displaced from the beginning of said incoming frame by an amount equal to said detected phase difference.

4,941,142

FRAME ERASING METHOD FOR TOKEN RING NETWORKS WITHOUT LAST FRAME INDICATION WITHIN THE FRAME FORMAT

Yasushi Kida, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

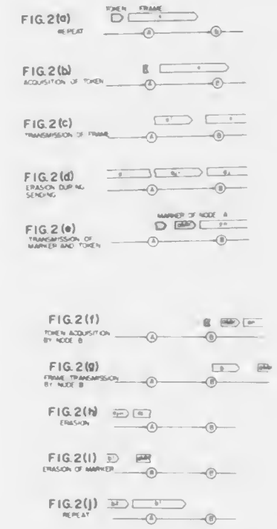
Filed Jan. 31, 1989, Ser. No. 304,243
Claims priority, application Japan, Feb. 8, 1988, 63-27254
Int. Cl.[5] H04J 3/14
U.S. Cl. 370—85.5 **3 Claims**

1. In a token ring transmission method wherein a plurality of nodes are interconnected in a ring form by a transmission path through which information are sent as information frames in one direction, a right-to-send in said transmission path is obtained by a sender node of said nodes, which sender node holds a token to be sent to said transmission path, and the format of said frames does not have any field to indicate the last frame sent in each capture of said token, the improvement comprising the steps of:

additionally sending an identification frame specific to said sender node from said sender node to the downstream node after information frames were sent from said sender node to said downstream node;

sending said token from said sender node to said downstream node after said identification frame specific to said sender node was sent;

at said sender node, erasing said frames that have traveled round said transmission path and returned to said sender node, irrespective of source address of said frames and without relaying said frames to said downstream node; and



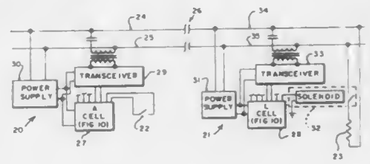
when said sender node detected said specific identification frame, stopping said erasing step.

4,941,143

PROTOCOL FOR NETWORK HAVING A PLURALITY OF INTELLIGENT CELLS

William B. Twitty, Santa Cruz, and Wendell B. Sander, Los Gatos, both of Calif., assignors to Echelon Systems Corp., Los Gatos, Calif.

Division of Ser. No. 119,382, Nov. 10, 1987, abandoned. This application Nov. 8, 1988, Ser. No. 268,482
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—85.2 **2 Claims**



1. In a network for sensing, communicating and controlling having a plurality of cells a method for infering a collision has occurred between packets transmitted by said cells comprising the steps of:

transmitting a first packet by a first of said cells, said first packet requesting a reply from at least a second cell and a third cell;

waiting a predetermined period of time for a reply from said second cell and said third cell;

infering that a collision has occurred if a reply is not received from either said second cell or said third cell.

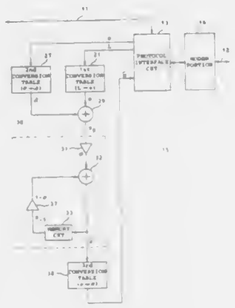
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4,941,144

DATA TRANSMISSION DEVICE CAPABLE OF ADAPTIVELY VARYING A PACKET SIZE WITHOUT AN INCREASE IN HARDWARE

Toshihiko Mizukami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1988, Ser. No. 202,291
Claims priority, application Japan, Jun. 5, 1987, 62-140103
Int. Cl.[5] G08C *25/02*
U.S. Cl. 371—5.5 **4 Claims**



1. A data transmission device for use in transmitting a transmission data packet in response to an input data signal in accordance with a predetermined protocol such that said transmission data packet can be automatically repeated on nonreception of said transmission data packet at another end coupled to said data transmission device through a transmission line and is variable in a packet size with reference to a bit error rate on said transmission line, said transmission data packet carrying said input data signal having a data size shorter than said packet size, said data transmission device comprising:

protocol interface means response to said input data signal and a size control signal and controllably operable in accordance with said predetermined protocol for producing a repetition number signal representative of a repetition number of said transmission data packet and a size signal representative of a selected one of said data size and said packet size;

a first conversion table coupled to said protocol interface means and responsive to said repetition number signal converting said repetition number signal into a first factor signal related to said bit error rate;

a second conversion table coupled to said protocol interface means and responsive to said size signal converting said size signal into a second factor signal representative of a correction factor dependent on a selected size;

processing means coupled to said first and said second conversion tables for processing said first and said second factor signals to produce a third factor signal representative of an estimation value determined in relation to said bit error rate and said correction factor;

a third conversion table coupled to said processing means converting said third factor signal into a fourth factor signal related to a selected one of said packet size and said data size; and

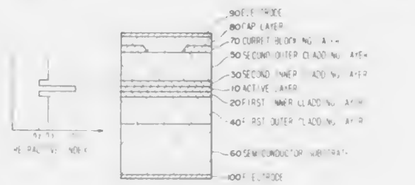
means for supplying said fourth factor signal to said protocol interface means as said size control signal.

4,941,146

SEMICONDUCTOR LASER DEVICE

Kenichi Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,593
Claims priority, application Japan, Jun. 29, 1988, 63-164034
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **2 Claims**



1. A semiconductor laser device, comprising:

a double heterostructure including an active layer and first and second inner cladding layers provided on both sides of said active layer, said double heterostructure being provided on a semiconductor substrate and a bandgap energy of said first and second inner cladding layers being greater than that of said active layer;

first and second outer cladding layers provided on both sides of said double heterostructure; and

first and second electrodes for applying a predetermined voltage across said double heterostructure;

wherein a refractive index of said active layer is greater than a refractive index of said first and second outer cladding layers, and said refractive index of said first and second outer cladding layers is greater than a refractive index of said first and second inner cladding layers

4,941,147

RING RESONATORS WITH INTRACAVITY GRAZING INCIDENCE TELESCOPES

Anup Bhowmik, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 28, 1989, Ser. No. 413,796
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 **19 Claims**



1. An unstable ring resonator with grazing incidence telescopes consisting of.

a laser beam having a diameter,

a grazing incidence beam reduction telescope which reduces the laser beam diameter and redirects the laser beam through a wiggler,

a grazing incidence beam expansion telescope which enlarges the diameter of the laser beam exiting the wiggler,

a means of outcoupling a portion of the expanded laser beam from the beam expansion telescope in an unstable ring resonator,

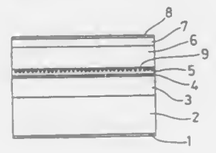
a means of directing the laser beam exiting the grazing incidence beam expansion telescope so that it enters the grazing incidence beam reduction telescope.

4,941,148

SEMICONDUCTOR LASER ELEMENT WITH A SINGLE LONGITUDINAL OSCILLATION MODE

Toshihiko Yoshida, Tenri; Haruhisa Takiguchi; Shinji Kaneiwa, both of Nara, and Hiroaki Kudo, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 12, 1987, Ser. No. 119,780
Claims priority, application Japan, Nov. 12, 1986, 61-270571
Int. Cl.[5] H01S *3/08, 3/19*
U.S. Cl. 372—96 **38 Claims**



1. A distributed feedback semiconductor laser device comprising:

a substrate;

a first clad layer formed on a top surface of said substrate;

an active layer formed on said first clad layer;

a second clad layer formed on said active layer;

a plurality of high resistance regions formed in said second clad layer, each said plurality of high resistance regions being separated by a predetermined lateral distance and extending into said second clad layer a predetermined vertical depth;

a third clad layer formed over said second clad layer and said plurality of high resistance regions;

a contact layer formed on said third clad layer;

a first electrode formed on a bottom surface of said substrate;

a second electrode formed on said contact layer; and

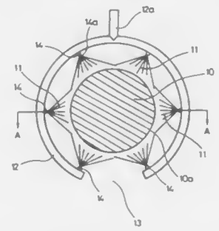
current injection means for injecting current into the distributed feedback semiconductor laser device so that the distributed feedback semiconductor laser device oscillates in a single longitudinal mode.

4,941,149

METHOD OF MELTING AND/OR REFINING METALS AND COOLING DEVICE FOR THE GRAPHITE ELECTRODE USED FOR THE SAME

Yukka Nakamoto, Tokyo, and Toshihiko Mori, Toyama, both of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00415, § 371 Date Aug. 15, 1988, § 102(e) Date Aug. 15, 1988, PCT Pub. No. WO88/07315, PCT Pub. Date Sep. 22, 1988
PCT Filed Jun. 24, 1987, Ser. No. 231,819
Claims priority, application Japan, Mar. 17, 1987, 62-063304
Int. Cl.[5] H05B *7/12*
U.S. Cl. 373—96 **10 Claims**



1. A method of melting and/or refining metal by using an electric arc furnace having a vessel for melting and/or refining said metal, a furnace cover covering an upper open portion of said vessel, a vertical succession of graphite electrodes extending into said vessel through said furnace cover and an electrode holder for holding an upper end portion of an upper electrode of said vertical succession of graphite electrodes, said method comprising:

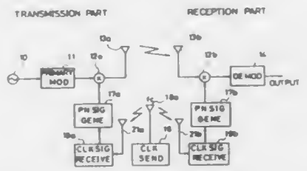
jetting a liquid coolant against an outer peripheral portion of said upper electrode extending between said furnace cover and said electrode holder while directing the jetted liquid coolant in a downwardly inclined direction at an angle of 10°–35° with respect to the horizontal.

4,941,150

SPREAD SPECTRUM COMMUNICATION SYSTEM

Yoshiki Iwasaki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed May 5, 1988, Ser. No. 190,525
Claims priority, application Japan, May 6, 1987, 62-110135
Int. Cl.[5] H04K *1/10*
U.S. Cl. 375—1 **28 Claims**



10. A spread spectrum communication system comprising a pair of a transmission part and a reception part; the transmission part of the pair comprising;

first means for extracting a plurality of first carrier signals from predetermined broadcast waves of existing broadcast systems;

second means for combining said plurality of the first carrier signals into each other;

third means for producing a first clock signal of a predetermined frequency from the combined first carrier signals using the combined first carrier signals as frequency references;

fourth means for generating a first psuedo-noise signal responsive to said first clock signal; and

fifth means for modulating an information signal and broadening a frequency range of the modulated information signal responsive to the first pseudo-noise signal supplied from the fourth means; and

the reception part of the pair comprising;

sixth means for extracting a plurality of second carrier signals from said predetermined broadcast waves, frequencies of the plurality of the second carrier signals being respectively identical to the plurality of the first carrier signals;

seventh means for combining said plurality of the second carrier signals with each other;

eighth means for producing a second clock signal of said predetermined frequency from the combined second carrier signals using the combined second carrier signals as frequency references;

ninth means for generating a second pseudo-noise signal from said second clock signal supplied from the eighth means, a pattern of the second pseudo-noise signal being identical to that of the first pseudo-noise signal; and

tenth means for subjecting the received information signal from the transmission part to despread and demodulating the despread information signal by using the second pseudo-noise signal to reproduce the information signal in an original form.

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4,941,151

PREDICTIVE CLOCK RECOVERY CIRCUIT

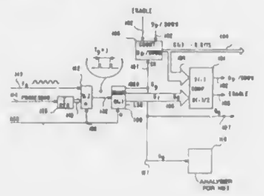
Jean-Claude Abbiate, LaGaude; Alain Blanc, Vence; Patrick Jeanniot, and Eric Lallemand, both of LaGaude, all of France, assignors to International Business Corporation, Armonk, N.Y.

Filed Oct. 3, 1988, Ser. No. 252,303

Claims priority, application European Pat. Off., Oct. 19, 1987, 87480014

Int. Cl.[5] H04L *7/033*

U.S. Cl. 375—20 **13 Claims**



1. A circuit arrangement for extracting a clock signal from a multi-level digital signal comprising:

a first means for monitoring the multi-level digital signal and for detecting transitions within said multi-level digital signal;

a second means responsive to a first and second consecutive detected transitions, for generating a first count N(i) representative of a time duration between said first and said second consecutive detected transitions;

a third means coupled to the second means, said third means receiving the count N(i) and generating a second count (N(i)/n, with n being an integer;

a fourth means coupled to the second means; said fourth means being operable for generating a third count K(i) representative of one-half time durtion between a third and a fourth consecutive detected transitions;

a fifth means having a first set of inputs for receiving the count N(i)/n and a second set of inputs for receiving the count K(i); said fifth means being operable for analyzing N(i)/n and K(i) and outputting control signals which are received in the fourth means to selectively adjust K(i); and

a sixth means coupled to the fourth means; said sixth means having a set of inputs for receiving output signals representative of a count from said fourth means and generating a SPL pulse when said count is decremented to a predetermined value thereby indicating that the SPL pulse is positioned at the center of the eye intervals of the multi-level digital signal.

4,941,152

SIGNAL CODING PROCESS AND SYSTEM FOR IMPLEMENTING SAID PROCESS

Yoav Medan, Haifa, Israel, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 22, 1986, Ser. No. 899,261

Claims priority, application Israel, Sep. 3, 1985, 76283

Int. Cl.[5] H04B *14/06*

U.S. Cl. 375—27 **13 Claims**

1. A process for coding a time-varying signal the spectrum of which extends over a given frequency band comprising the steps:

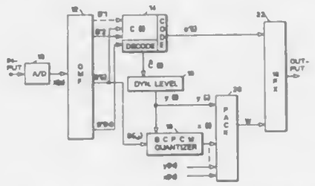
periodically sampling and digitizing the time-varying signal; dividing the digitized samples into fixed length blocks of contiguous samples;

filtering each said block of digitized samples to split at least a portion of the frequency band included in the said block into a number, N, of frequency subbands;

measuring the signal energy Ei, where i=1,2 . . . , N, contained within each of the N individual subbands within the blocks of digitized samples;

measuring the total signal energy within the blocks of digitized samples;

determining the number of quantizing levels q(i), where



i=1,2, . . . ,N, to be dynamically assigned for quantizing each subband of a block of samples based on the signal energy E(i) of each subband verses the total signal energy in the block of samples; and

quantizing the each subband (i) using a number of quantizing levels equal to q(i).

4,941,153

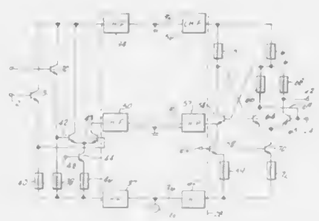
HIGH-SPEED DIGITAL DATA COMMUNICATION SYSTEM

Edwin A. Kelley, and Wade J. Stone, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 25, 1987, Ser. No. 89,281

Int. Cl.[5] H04B *3/50*

U.S. Cl. 375—36 **7 Claims**



1. A high speed digital data communication system comprising:

a source of a digital signal representative of data to be transmitted;

a current mode driver switch for generating a current reponse to the source signal representative of the data;

a transmission line having an input terminal and an output terminal;

means for connecting the switch to the input terminal of the transmission line;

a receiving circuit responding to the current amplitudes and having an input terminal wherein said receiving circuit comprises an approximately constant voltage source and a transistor connected in a common base configuration, the emitter of the transistor being connected to the output terminal of the transmission line and the base of the transistor being connected to the constant voltage source, whereby the transistor input impedance functions as the termination to the transmission line;

means for terminating said transmission line; and

means for connecting the output terminal of the transmission line to the input terminal of the receiving circuit.

4,941,154

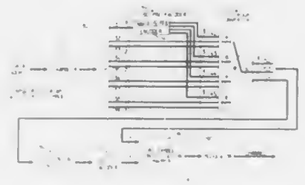
TRELLIS CODING METHOD AND ARRANGEMENT FOR FRACTIONAL BIT RATES

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 30, 1989, Ser. No. 358,221

Int. Cl.[5] H04R *14/02*

U.S. Cl. 375—39 **36 Claims**



9. A method for encoding, into 2N-dimensional symbols, N being an integer, a stream of input bits occurring at a fractional bit rate of r bits per 2N-dimensional symbol relative to a predetermined symbol rate, said 2N-dimensional symbols being selected from a 2N-dimensional constellation comprised of a concatenation of N/M 2M-dimensional constellations each of which is partitioned into a plurality of 2M-dimensional subsets of signal points, the method comprising the steps of

encoding first ones of the input bits to identify a sequence of 2M-dimensional subsets, and

identifying signal points from successive ones of the identified 2M-dimensional subsets jointly in response to at least a particular group of the others of the input bits, said particular bit group being associated with at least L 2N-dimensional symbol intervals, L being an integer greater than unity.

4,941,155

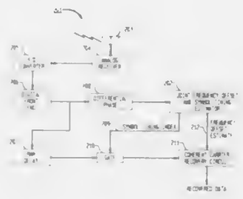
METHOD AND CIRCUITRY FOR SYMBOL TIMING AND FREQUENCY OFFSET ESTIMATION IN TIME DIVISION MULTIPLE ACCESS RADIO SYSTEMS

Justin C. Chuang, Eatontown, and Nelson R. Sollenberger, Tinton Falls, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Nov. 16, 1989, Ser. No. 437,758

Int. Cl.[5] H03D *3/22*

U.S. Cl. 375—84 **30 Claims**



1. A method of determining symbol timing in the processing of a digital phase modulated radio signal transmission consisting of sequential bursts of symbols, comprising the steps of:

converting an intermediate frequency (IF) radio signal from a modulated sinusoid into phase values after sampling said IF radio signal at a plurality of sampling times per symbol at a sampling rate which is a multiple of the symbol rate by at least a factor of four;

obtaining differential phase values at each sampling time from said phase values by introducing at least a one symbol delay and taking differences between delayed phase values and corresponding present phase values;

collapsing said differential phase values into one quadrant in the phase plane;

expanding said collapsed differential phase values into a full 360 degree polar phase plane; and

obtaining symbol timing by selecting from amongst the set of sampling times the particular sampling time at which the vector sum of the collapsed and expanded differential phase values, substantially over an entire burst, has the largest magnitude.

4,941,156

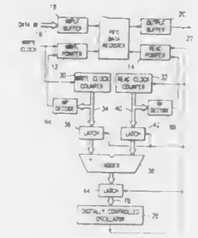
LINEAR JITTER ATTENUATOR

Kenneth J. Stern, and John A. Beck, both of Austin, Tex., assignors to Crystal Semiconductor, Austin, Tex.

Continuation-in-part of Ser. No. 51,985, May 19, 1987, Pat. No. 4,805,198. This application Mar. 22, 1989, Ser. No. 327,027

Int. Cl.[5] H04L *7/02*

U.S. Cl. 375—118 **21 Claims**



1. A jitter attenuator for attenuating jitter on a received clock and associated data, comprising:

an elastic store device for receiving the data for storage therein at the clock rate of the received clock, which received clock comprises a Write clock, and outputting data at a rate determined by a Read clock;

difference means for determining the phase difference between said Write clock and said Read clock;

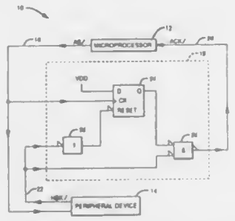
clock generating means for generating said Read clock, said Read clock variable in discrete substantially equal steps in response to a digital input signal; and

digital lock means for generating the digital input signal for controlling the frequency of said Read clock in said discrete steps to maintain said phase difference at a static phase difference, each of said discrete steps corresponding to a finite amount of said phase difference, the magnitude of the variation in frequency of said Read clock being a function of the amount that the magnitude of said phase difference, as determined by said difference means, varies from said static difference, said lock means operable to attenuate phase variations of said Read clock relative to phase variations in said Write clock;

said lock means substantially linearizing the variations of said clock generating means with respect to said phase difference, such that a change in said phase difference results in a corresponding and substantially linear variation in the frequency of said clock generating means over the range of said clock generating means.

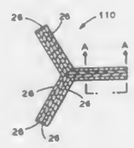
VOL 1116 ISS 2 JL 10 1990 UMI

4,941,157
SLOW PERIPHERAL HANDSHAKE INTERFACE CIRCUIT
Billy K. Taylor, Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio
Filed Apr. 14, 1989, Ser. No. 338,832
Int. Cl.[5] H04B *17/00*
U.S. Cl. 375—121 **21 Claims**



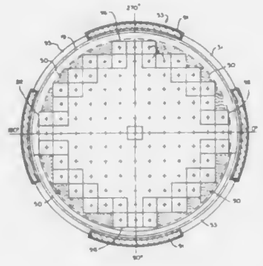
14. An interface circuit between a requesting device and a responding device comprising:
means for receiving a request signal from said request device and a handshake signal from said responding device and generating a control signal in response thereto, wherein removal of said request signal sets said control signal to a first value and removal of said handshake signal resets said control signal to a second value; and
a gate for generating an acknowledge signal, said gate having a first input connected to receive said control signal and a second input for receiving said handshake signal, said gate being disabled when said control signal is set to said first value and being enabled when said control signal is reset to said second value.

4,941,158
NUCLEAR REACTIVITY CONTROL CONFIGURATION
Billy E. Bingham, and Richard V. DeMars, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Mar. 30, 1989, Ser. No. 330,410
Int. Cl.[5] G21C *7/10*
U.S. Cl. 376—332 **1 Claim**



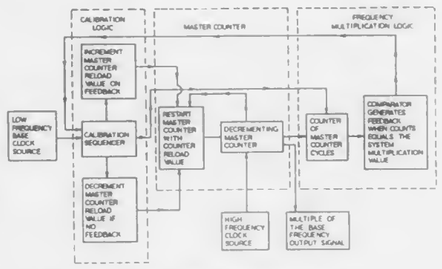
1. A neutron flux control component assembly for use in a nuclear reactor, comprising:
a. at least three V-shaped close fitting carrier sheets nested together to provide a Y-shaped cross section and which are movable relative to each other along their longitudinal axis;
b. at least three substantially identical neutron poison segments, one on each of said carrier sheets, movable between overlapped and exposed positions in response to movement of said carrier sheets; and
c. each of said poison segments having a width greater than three times the effective thickness of the assembly of overlapping poison segments and capable of absorbing at least eighty percent of the neutrons that strike its surface.

4,941,159
LOW NEUTRON FLUENCE NUCLEAR REACTOR INTERNALS
Richard E. Schwirian, Pleasant Hills, and Vincent A. Perone, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 14, 1988, Ser. No. 257,917
Int. Cl.[5] G21C *15/10, 11/06*
U.S. Cl. 376—458 **16 Claims**



1. In a nuclear reactor pressure vessel having a core made of generally rectangular components surrounded by a generally cylindrical core barrel to thereby define an irregular area therebetween such that some regions of the core are closer to the core barrel than others, an assembly for reducing the fast neutron flux encountered by the reactor vessel, said fast neutron flux reducer comprising:
i. a neutron reflector comprised of a plurality of stacked plates situated in the irregular area between the core and the core barrel for reflecting fast neutrons back into the core, the neutron reflector located in the irregular area wherein said regions of the core are closer to the core barrel is made of material selected from the group consisting of tungsten and zirconium oxide, and the reflector located in the remainder of the irregular area is made of stainless steel; and
ii. a neutron energy reducer disposed around the periphery of the core barrel for reducing the energy of any fast neutrons which pass through said neutron reflector.

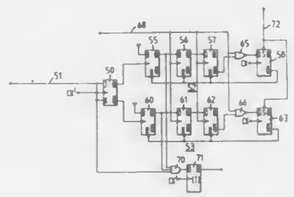
4,941,160
FREQUENCY MULTIPLIER CIRCUITRY AND METHOD
Thomas J. Sheahan, Cary, Ill., assignor to Digital Appliance Controls, Inc., Hoffman Estates, Ill.
Filed Mar. 31, 1989, Ser. No. 331,733
Int. Cl.[5] H03K *21/40*
U.S. Cl. 377—28 **6 Claims**



1. A frequency multiplying circuit comprising:
a first signal source having a first frequency;
a second signal source having a second frequency;

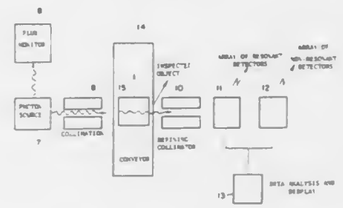
first counter means arranged to count cycles of said second frequency source, said counter operating to count from a loaded value and then to reset at the end of said count;
means to generate an output signal each time said first counter resets, the frequency of said output signal being a multiple of said frequency of said first signal; and
correction means arranged to monitor said frequency of said output and to change said loaded value in response thereto, wherein said correction means includes second counter means arranged to count cycles of said first counter means and further includes means to change said loaded value in response to the timing of said counted cycles.

4,941,161
DETECTION OF DIGITAL SIGNAL ERROR RATES
Thomas Cook, Corstorphine, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 101,051, Sep. 25, 1987, abandoned. This application Dec. 6, 1989, Ser. No. 449,368
Claims priority, application European Pat. Off., Apr. 14, 1987, 87303258
Int. Cl.[5] H03K *21/40*; G06F *11/00*
U.S. Cl. 377—28 **9 Claims**



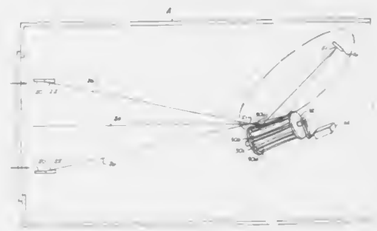
1. Apparatus for detecting X characteristic bits occurring within any N-bit window in a digital stream of bits, wherein X and N are predetermined, comprising:
a plurality (X−1) of counting means each for counting at least N bits in the digital stream when active, including means for resetting each counting means to an inactive state after counting N bits;
activation means for activating one of the (X−1) counting means upon the occurrence of a characteristic bit within the digital stream, and for successively activating next ones of the (X−1) counting means upon the occurrence of each next characteristic bit in modulo fashion, whereby, after a last one of the (X−1) counting means has been activated, a first one of the (X−1) counting means is activated; and,
test means operatively coupled to the counting means and coupled to receive each characteristic bit for indicating when a characteristic bit occurs while all counting means are active.

4,941,162
METHOD AND SYSTEM FOR DETECTION OF NITROGENOUS EXPLOSIVES BY USING NUCLEAR RESONANCE ABSORPTION
David Vartsky, Rehovot; Mark Goldberg, Rehovot; Amos Breskin, Rehovot; Gideon Engler, Rehovot; Aharon Goldschmidt, Nes Ziona; Ephraim Izak, Rishon Le-Zion, and Ovadia Even, Givataim, all of Israel, assignors to The State of Israel, Atomic Energy Commission, Soreq Nuclear Research Center, Yavne, Israel
Filed Jun. 22, 1989, Ser. No. 369,230
Claims priority, application Israel, Jun. 22, 1988, 86826
Int. Cl.[5] G01N *23/04*
U.S. Cl. 378—3 **8 Claims**



1. A method for the detection of a nitrogenous explosive material in an object, comprising:
(i) placing on one side of the object a source for 9.17 MeV γ-rays adapted to produce a desired photon flux (emitted photon flux);
(ii) placing on the opposite side of the object a γ-ray detector or array of detectors with a nitrogen rich detection medium;
(iii) scanning the object with a γ-ray beam from said source;
(iv) reading from said γ-ray detector or array of detectors the total and the non-resonant attenuations of the incident photon flux; and
(v) deriving from said attenuations the net resonant attenuation and the spatial distribution thereof.

4,941,163
MULTISPECTRAL GLANCING INCIDENCE X-RAY TELESCOPE
Richard B. Hoover, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 15, 1985, Ser. No. 765,979
Int. Cl.[5] G21K *7/00*
U.S. Cl. 378—43 **11 Claims**



7. A method of imaging X-ray and extreme ultraviolet radiation sources over a broadband of wavelengths generally below 30 angstroms with a high-resolution which comprises the steps of:

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providing a glancing incidence primary mirror system for reflecting a radiation beam of said radiation source toward a primary focus of the primary optical system located on an optical axis of said optical system;

arranging an ellipsoidal mirror along said optical axis behind said primary focus at an inclination to said optical axis so that a first focus of said ellipsoidal mirror is coincident with said primary focus of said optical system and a second focus of said ellipsoidal mirror is coincident with said primary focus of said ellipsoidal mirror lies off said optical axis;

arranging an X-ray detector at said second focus of said ellipsoidal mirror;

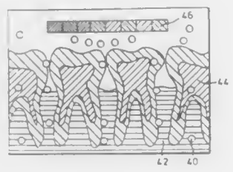
providing said ellipsoidal mirror in the form of a mirror element having a concave surface with a layered synthetic microstructure coating on said concave surface to reflect a desired wavelength within said broadband of low wavelengths.

4,941,164

METHOD AND APPARATUS FOR IMPROVING THE ALIGNMENT OF RADIOGRAPHIC IMAGES

Paul D. Schuller, Edmonton, Canada; David C. Hatcher, Sacramento, Calif.; Terrance M. Caelli, Edmonton, Canada; Frank M. Eggert, Edmonton, Canada, and Jerome Yuzyk, Edmonton, Canada, assignors to The Governors of the University of Alberta, Edmonton, Canada

Filed Jan. 29, 1988, Ser. No. 150,242
Claims priority, application Canada, Oct. 29, 1987, 550585
Int. Cl.[5] A61B *6/08*
U.S. Cl. 378—205 **13 Claims**



5. For a diagnostic process in which two radiographic images are made on radiographic film of the same human tissues within or close to the teeth at the beginning and the end of a time interval during which tissue change may occur, a bite block for permitting a computing device which electronically stores the images to perform operations on the images as reproduced in the form of pixels on a monitor screen, each pixel having a specific grey level, the bite block registering repeatedly with the same teeth of a given person and incorporating a specific, 3-dimensional spatial pattern of spherical marker elements so that when the bite block is held between the given person's teeth the elements will have a specific and repeatable juxtaposition with respect to the dental structure and the shadows of the elements will arise on the respective radiographic films.

4,941,165

HOT CUT PROCEDURE FOR TELECOMMUNICATIONS NETWORK

Kevin A. Rademacher, Lakeville; Dennis R. Dean, Eden Prairie; Jerry L. Dixon, Sr., Burnsville, and Robert J. Szklarz, Richfield, all of Minn., assignors to ADC Telecommunications Inc., Minneapolis, Minn.

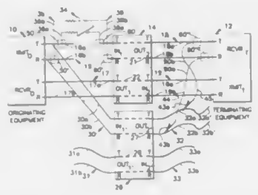
Filed Jun. 29, 1989, Ser. No. 374,076
Int. Cl.[5] H04B *3/50*
U.S. Cl. 379—1 **12 Claims**

1. In a telecommunications network having at least first and second original equipment connected by at least a first original conductor, a method for adding an additional equipment to said network with said additional equipment connected to said first original equipment by at least a first replacement conductor and said additional equipment connected to said second original equipment by at least a second replacement conductor, said method carried out using a temporary circuit having at least first and second temporary conductors, said method comprising the steps:

electrically connecting said first and second replacement conductors to said additional equipment;

electrically connecting said first temporary conductor to said original conductor at a first point of connection;

electrically connecting said second temporary conductor to said original conductor at a second point of connection, said second point of connection disposed between said



second original equipment and said first point of connection, said first and second temporary conductors and at least a portion of said first original conductor cooperating to define a temporary signal pathway between said first and second original equipment with said temporary signal pathway including said temporary circuit;

severing said original conductor at a point of severance disposed between said first and second points of connection;

electrically connecting said first replacement conductor to said first original equipment;

electrically connecting said second replacement conductor to said second original equipment; and

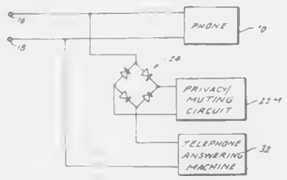
severing said temporary signal pathway.

4,941,166

MUTING CIRCUIT FOR TELEPHONE ANSWERING MACHINE

Herbert H. Waldman, 1739 52nd St., and Kalman Drebin, 1683 54th St., both of Brooklyn, N.Y. 11204

Continuation-in-part of Ser. No. 596,357, Apr. 3, 1984, Pat. No. 4,726,048. This application Jan. 4, 1988, Ser. No. 140,386
Int. Cl.[5] H04M *1/65*
U.S. Cl. 379—67 **28 Claims**



1. Apparatus, comprising:

an answering machine which plays out a greeting message over a telephone line to which it is coupled in response to an incoming call; and

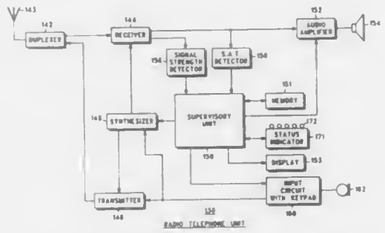
a voltage breakdown circuit coupled in series between a subcircuit of said answering machine and said telephone line, said voltage breakdown circuit becoming conductive only when the voltage across said telephone line exceeds a predetermined threshold level.

4,941,167

TELEPHONE SYSTEM WITH CUSTOMIZED CENTRAL MESSAGE CENTER

Gary A. Cannalte, Hoffman Estates; Todd Smith, Long Grove; William F. Zancho, Hawthorn Woods, and Robert J. Crawford, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1988, Ser. No. 267,484
Int. Cl.[5] H04M *1/57, 1/64, 11/08*
U.S. Cl. 379—67 **5 Claims**



1. A telephone communications system, comprising:

switch control means for intercoupling a plurality of telephone devices and for activating at least one prerecorded message of a plurality of prerecorded messages in response to initiated telephone calls, including:

means for providing at least one prerecorded message, wherein one of the prerecorded messages is a help message for access by a first telephone device;

means for providing telephone call transfers from the first telephone device to a second telephone device; and

means for communicating data to the second telephone device;

the first telephone device having means for designating a prerecorded message at the means for providing prerecorded messages; and

the second telephone device having means for indicating, in response to a telephone call transfer from the first telephone device and in response to data from the means for communicating data, a prerecorded message designated by the means for designating a prerecorded message.

4,941,168

SYSTEM FOR THE RECOGNITION OF AUTOMATED TELEPHONE ANSWERING DEVICES AND DELIVERY OF PRERECORDED MESSAGES TO SUCH DEVICES

Joseph J. Kelly, Jr., Joplin, Mo., assignor to U.S. Telecom International Inc., Joplin, Mo.

Filed Sep. 21, 1988, Ser. No. 247,200
Int. Cl.[5] H04M *3/46*
U.S. Cl. 379—69 **23 Claims**

1. An improved automated telephone dialing and message delivery system, comprising:

means for automatically dialing a telephone number over a communication channel so as to establish a communications channel with a called telephone;

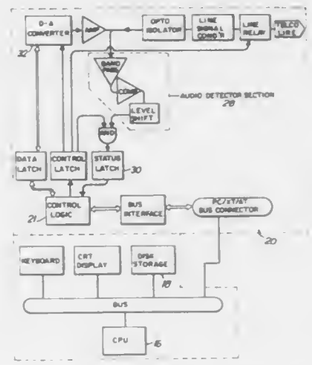
means for detecting a presence or absence of an audio signal over the communications channel emanating from the called telephone;

means for providing audio instructions to the called telephone after the presence of an audio signal is detected emanating from the called telephone;

means for determining if the audio instructions are acknowledged by a party at the called telephone;

means for providing audio messages to a live party when audio instructions are acknowledged;

means for delivery of messages to a telephone answering device when audio instructions are not acknowledged,



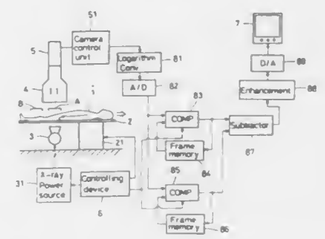
including means for detecting the absence of any audio signal emanating from the called telephone and means for providing audio messages to the telephone answering device when no audio signal is emanating from the called telephone.

4,941,169

X-RAY PHOTOGRAPHIC EQUIPMENT

Masami Kawai, and Hiroshi Sawada, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 20, 1988, Ser. No. 286,825
Claims priority, application Japan, Jul. 31, 1987, 62-193248
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—99 **11 Claims**



1. In an X-ray photographic equipment having image producing means for producing an image signal representing an image of a body of a subject from X-rays passing through the body, said equipment having moving means for producing relative movement between the image producing means and the body of the subject in the direction of flow of a contrast medium through the body, the improvement comprising:

control means for stopping said moving means at one of a plurality of positions and, while said moving means is stopped at said one position, repeatedly energizing said image producing means whereby a plurality of image signals each representing an image of said body, are produced;

means responsive to said image producing means for digitizing said image signals to produce frames of digitized

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image signals representing levels of pixels in said images ranging from black to white;

first frame memory means initially storing a frame image wherein the pixels are all of the black level;

second frame memory means initially storing a frame image wherein the pixels are all of the white level;

means responsive to said control means for comparing, pixel-by-pixel a frame image in said first frame memory means with a frame of digitized image signals and returning to said first frame memory means the pixels which comparison shows to be the whitest, to thereby develop a maximum value holding image;

means responsive to said control means for comparing, pixel-by-pixel, a frame image in said second frame memory means with a frame of digitized image signals and returning to said second frame memory means the pixels which the comparison shows to be the blackest, to thereby develop a minimum value holding image; and,

difference means for determining the difference between said minimum value holding image and said maximum value holding image.

4,941,170

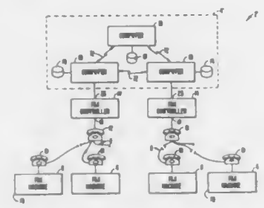
FACSIMILE TRANSMISSIONS SYSTEM

Noel M. Herbst, Menlo Park, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 122,569, Nov. 16, 1987, abandoned, which is a continuation of Ser. No. 825,001, Jan. 30, 1986, abandoned. This application Mar. 20, 1989, Ser. No. 326,407

Int. Cl.[5] H04M *11/00;* **H04N** *1/21, 1/32*

U.S. Cl. 379—100 **31 Claims**



1. An apparatus for transmitting document facsimile data through a conventional text electronic mail system using conventional facsimile machines coupled to one another through a communication network, the electronic mail system being of the type wherein text messages including a first destination address for a first I/O device are input to the electronic mail system at a second I/O device and communicated to the first destination address as packages of binary encoded text characters by the electronic mail system, the apparatus comprising:

receiving means for receiving the document facsimile data from a transmitting facsimile machine, the document facsimile data including:

a first document sheet having coding thereon identifying the first document sheet as containing document facsimile data for the first destination address; and

a second document sheet containing facsimile data to be transmitted to the first destination address;

first blocking means, responsive to the receiving means, for converting the coding in the first document sheet into a first block having bytes identifying the first destination address;

second blocking means, responsive to the receiving means, for converting the second document sheet into a second block comprising binary encoded facsimile data, the second block including a plurality of binary encoded fields forming a record which identifies the second block; and

wherein the electronic mail system includes:

grouping means, responsive to the first blocking means and to the second blocking means, for logically grouping the first and second blocks together as a package.

4,941,171

ELECTRONIC PRIVATE BRANCH EXCHANGE

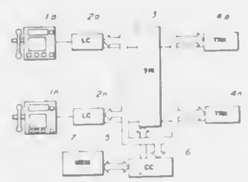
Iwao Hasegawa, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1988, Ser. No. 288,194

Claims priority, application Japan, Jan. 6, 1988, 63-827

Int. Cl.[5] H04M *3/02*

U.S. Cl. 379—233 **10 Claims**



9. An electronic private branch exchange comprising:

a plurality of main wire trunks corresponding to a plurality of main wires respectively;

a plurality of line circuits corresponding to a plurality of extension telephone sets respectively, each said extension telephone set having a time period zone during which each said telephone set responds to an incoming call from the main wire;

incoming signal control means for putting particular ones of the plurality of extension telephone sets in corresponding relationships to each of the main wire trunks and for causing an incoming signal from that main wire trunk to be responded to at the particular extension telephone sets;

means for setting a final time period zone in which an incoming signal tone is to be produced at particular ones of the extension telephone sets by a comparison between a predetermined time period zone and a modification time period zone from certain ones of the extension telephone sets; and

means for sending a signal to the particular extension telephone sets to produce an incoming signal tone at those extension telephone sets in the final time period zone set by the setting means.

4,941,172

PREPROGRAMMED AUTODIALER AND RELATED PROCESS

Jacob J. Winebaum, Washington, D.C.; Alan J. Rider, and Lester R. Querry, both of Reston, Va., assignors to U.S. News, Washington, D.C.

Continuation-in-part of Ser. No. 124,579, Nov. 24, 1987, Pat. No. 4,817,135. This application Feb. 9, 1989, Ser. No. 307,941

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] H04M *1/26*

U.S. Cl. 379—355 **45 Claims**

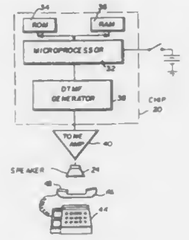
1. A thin, pocket size automatic dialer comprising:

a portable housing having a bottom wall, peripheral sidewall and top wall;

an automatic dialing device mounted within said housing including means for dialing only a single preprogrammed telephone number associated with a source of goods or services, said means including a speaker adjacent one end of said housing for acoustically coupling said dialing device to a telephone microphone, and wherein speaker holes are provided in said bottom wall adjacent said speaker;

a power source for supplying power to said dialing device, and

a single switch mounted in said housing adjacent the other end of said housing and accessible through an aperture in



said top wall of said housing for actuating said dialing device.

4,941,173

DEVICE AND METHOD TO RENDER SECURE THE TRANSFER OF DATA BETWEEN A VIDEOTEX TERMINAL AND A SERVER

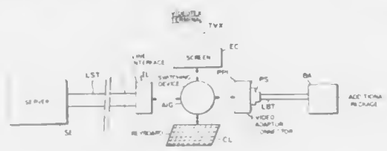
Jean-Pierre Boule, 12 rue de la Résistance, 14540 Soliers, France; Dominique Hamel, 37 rue Lanfranc, 14000 Caen, France; and Martial Meuconi, Résidence Olympia, 14000 Caen, France

Filed Nov. 10, 1988, Ser. No. 269,592

Claims priority, application France, Nov. 13, 1987, 87 15718

Int. Cl.[5] H04R *1/00*

U.S. Cl. 380—25 **15 Claims**



1. Exchanging data device comprising:

(a) a videotex terminal having a switching control device, a line interface, a keyboard, a screen, a downstream video adapter connector and a power supply,

(b) a package connected to said video adapter connector of said videotex terminal, said package comprising first encryption/decryption means and first dialogue means constituted by:

(i) a central processing unit acting as a microcontroller and having a transmission terminal and a receiving terminal connected to said switching control device of said videotex terminal,

(ii) first storage means storing at least one encryption/decryption algorithm, at least one part of a basic key, a confidential code, and an authentication package code,

(iii) voltage supplying means connected to said power supply of said videotex terminal,

(c) a server comprising second encryption/decryption means and second dialogue means, constituted by second storage means storing said at least one encryption/decryption algorithm, at least one part of said basic key, and a server authentication code.

(d) a telematic line connecting said videotex terminal and said server through said line interface of said videotex terminal,

(e) said first and second encryption/decryption means of said package and said server and said first and second dialogue means of said package and said server operative in a first presession mode and in a second session mode subsequent to said presession mode,

(f) wherein said presession mode includes:

(i) carrying out a predetermined sequence of operations including inputting of said confidential code by a user via said keyboard of said videotex terminal, checking said confidential code in said package for validity, carrying out mutual authentication validity checks between said package and said server using said package and server authentication codes,

(ii) sending from said server to said package a session key ciphered according to said basic key, said session key being then stored in said first storage means of said package, said central processing unit of said package acting on said switching control device of said videotex terminal to inhibit a linking between said keyboard and said line interface of said videotex terminal and monitoring any action on said switching control device having an origin external to said package, any such action leading to the presession mode being aborted,

(g) said session mode including exchanging messages ciphered/deciphered according to said session key.

4,941,174

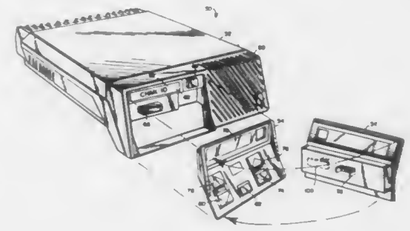
DIGITAL RADIO WITH SECURITY SYSTEM FOR SELECTIVELY ENABLING SOFTWARE CONTROLLED OPTIONS

Scott W. Ingham, Forrest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Apr. 19, 1988, Ser. No. 183,212

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—52 **11 Claims**



1. An escutcheon plate module adapted for connection to a digital radio transceiver of the type which generates clock synchronization signals and applies said clock synchronization signals to an electrical connector, said module comprising:

connection means for separable engaging with said digital radio transceiver connector;

user control means connected to said connection means for applying control signals to said connection means in response to user manipulation thereof; and

security circuit means connected to receive said clock synchronization signals via said connection means for applying a predictable sequence of serial output signals to said connection means in timed relation with the occurrence of said clock synchronization signals.

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4,941,175
TAMPER-RESISTANT METHOD FOR AUTHORIZING ACCESS TO DATA BETWEEN A HOST AND A PREDETERMINED NUMBER OF ATTACHED WORKSTATIONS

Michael A. Enescu, Sunnyvale, and James Lum, Redwood City, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1989, Ser. No. 315,071
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **7 Claims**



ACCESS CONTROL PROGRAM (ACP)

1. A method for authorizing access to application software resident in a CPU host from among N < M workstations or users communicatively attaching said CPU host, said CPU manifesting indicia of identity, comprising the steps of:

(a) forming a list of authorized users and encrypting thereon a depth parameter N, said encryption using a function of the CPU identity and an offset as a key;

(b) responsive to each application software access request from among the workstations or users, accessing the list and decrypting the depth parameter N with the key; and

(c) scanning the list within the depth N and returning an access authorization to the requester only upon an identity

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4,941,176
SECURE MANAGEMENT OF KEYS USING CONTROL VECTORS

Stephen M. Matyas, Manassas, Va.; Dennis G. Abraham, Concord, N.C.; Donald B. Johnson, Manassas, Va.; Ramesh K. Karne, Herndon, Va.; An V. Le, Arlington, Va.; Rostislaw Prymak, Dumfries, Va.; Julian Thomas, Lagrange, N.Y.; John D. Wilkins, Somerville, Va., and Phil C. Yeh, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

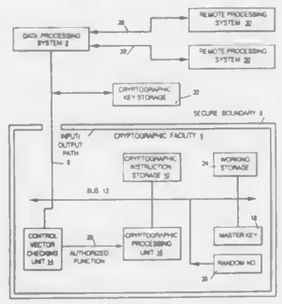
Filed Aug. 11, 1988, Ser. No. 231,114
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—21 **67 Claims**

1. In a data processing system which processes cryptographic service requests for the management of cryptographic keys which are associated with control vectors defining the functions which each key is allowed by its originator to perform, an apparatus for validating that key management functions requested for a crytographic key have been authorized by the originator of the key, comprising:

a crytographic facility characterized by a secure boundary through which passes an input path for receiving said cryptographic service requests, cryptographic keys and their associated control vectors, and an output path for providing responses thereto, there being included within said boundary a cryptographic control means coupled to said input path, a control vector checking means and a cryptographic processing means coupled to said control means, and a master key storage coupled to said processing means, for providing a secure location for executing key management functions in response to said received service requests;

said cryptographic control means receiving over said input path a cryptographic service request for performing a key management function with a cryptographic key;

said control vector checking means having an input coupled to said input path for receiving a control vector associated with said cryptographic key and an input coupled to said cryptographic, control means for receiving control signals



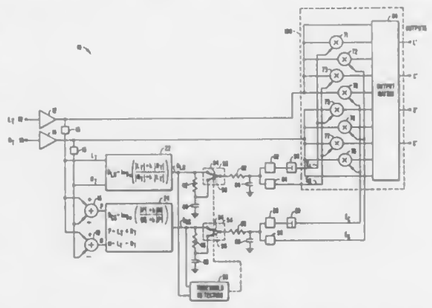
to initiate checking that said control vector authorizes the key management function which is requested by said cryptographic service request;

said control vector checking means having an authorization output coupled to an input of said cryptographic processing means, for signalling that said key management function is authorized, the receipt of which by said cryptographic processing means initiates the performance of the requested key management function with said cryptographic key.

4,941,177
VARIABLE MATRIX DECODER

Douglas E. Mandell, Menlo Park; Craig C. Todd, Mill Valley; Ioan R. Allen, San Francisco, and Mark F. Davis, Pacifica, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation of Ser. No. 833,120, Feb. 26, 1986, Pat. No. 4,799,260, which is a continuation-in-part of Ser. No. 708,982, Mar. 7, 1985, abandoned. This application Jul. 22, 1988, Ser. No. 222,847
The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.
Int. Cl.[5] H04S *3/00*
U.S. Cl. 381—22 **38 Claims**



1. A decoder for decoding two or more channel signals in a directional information system wherein at least four input signals containing directional information are encoded into the two or more channel signals, said decoder comprising:

first means for generating at least a first dominance signal indicative of the ratio of the amplitudes of a pair of the channel signals;

second means for generating at least a second dominance signal indicative of the ratio of the amplitudes of the sum of and the difference between said pair of the channel signals; and

matrix means responsive to said two or more channel signals and to said at least two dominance signals for generating a plurality of output signals for which directional effects of the output signals are enhanced, wherein the first dominance signal D_{LR} and the second dominance signal D_{CS} are given by:

$$D_{LR} = \log_a \frac{|L_T| + k|R_T|}{|R_T| + k|L_T|}$$

$$D_{CS} = \log_a \frac{|P| + k|M|}{|M| + k|P|}$$

where L_T, R_T are two channel signals

$P = L_T + R_T$, $M = L_T - R_T$,

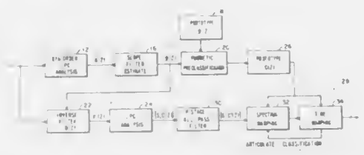
and a, k are constants;

wherein said matrix means includes means for deriving three directional control signals E_L, E_R and E_C.

4,941,178
SPEECH RECOGNITION USING PRECLASSIFICATION AND SPECTRAL NORMALIZATION

Chiu-Kuang Chuang, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 846,939, Apr. 1, 1986, abandoned. This application May 9, 1989, Ser. No. 349,877
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—41 **51 Claims**



1. A speech recognition system for recognizing units of speech input comprising:

means for generating first speech vectors characteristic of units of a speech input;

means for comparing the first speech vectors with first reference vectors corresponding to a set of reference speech units and for selecting a limited subset of the reference speech units for which the first reference vectors have the closest correspondence with the first speech vectors;

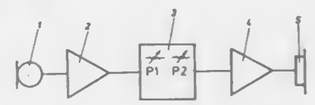
means for generating second speech vectors characteristic of units of speech input normalized with respect to the first speech vectors; and

means, responsive to the means for comparing the first speech vectors and to the means for generating the second speech vectors, for comparing the second speech vectors to second reference vectors corresponding to the selected subset of speech units and for selecting a speech unit of the subset for which the second reference vectors have the closest correspondence with the second speech vectors.

4,941,179
METHOD FOR THE REGULATION OF A HEARING AID, A HEARING AID AND THE USE THEREOF

Hans Bergenstoff, and Torsten Otto, both of Hilleroed, Denmark, assignors to GN Davavox A/S, Copenhagen SV, Denmark

Continuation-in-part of Ser. No. 804,054, Dec. 3, 1985, abandoned. This application Apr. 27, 1988, Ser. No. 186,930
Int. Cl.[5] H04R *25/00*; H03G *5/02, 5/14*
U.S. Cl. 381—68.4 **2 Claims**



1. A hearing aid comprising:

a sound inlet with sound detector;

an adjustable electronic analog amplification circuit including a pre-amplifier and an output amplifier;

a sound reproducer;

a regulation part including first regulation means for adjusting the frequency response of the amplification circuit, the regulation part arranged for finger operation at any time thereby allowing the user to directly gradually adjust the amplifier's frequency response slope for frequencies above a transition frequency and for frequencies in an amplitude range above a frequency independent amplitude setting so that the variable treble boost is obtained according to the user's individual needs and acceptance;

where said transition frequency is between 500 Hz–2 Khz;

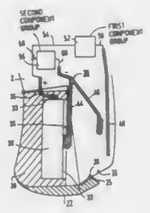
wherein said regulation part includes second regulation means arranged to regulate the basic amplification of the amplifier circuit in a substantially frequency independent manner and

wherein said regulation part further includes a third-order filter, the third-order filter comprising a resistor-capacitor network and an amplification circuit with a feedback path which contains an additional amplifier, wherein the third-order filter determines the frequency response and thus determines the degree of variable treble boost.

4,941,180
HEARING AID WITH A CONTACT SPRING CONFIGURATION

Gerhard Buettner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 15, 1987, Ser. No. 73,537
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1986, 3624568; Jul. 21, 1986, 3624588; Jul. 21, 1986, 3624619
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—69.2 **20 Claims**



1. A miniature hearing aid comprising:

(a) a hearing aid housing;

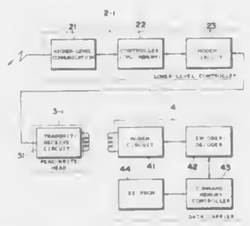
(b) electrical components disposed in said hearing aid housing;
(c) a compartment for retaining a battery, said compartment being hinged to said hearing aid housing;
(d) a latching means for said battery compartment, said latching means comprising
(d1) a latch-notch mechanism disposed on said hearing aid housing and
(d2) a clasp which is disposed on said battery compartment and which juts over a base of said hearing aid housing
whereby said latching means enables said hearing aid to assume a plurality of switching positions in different latching positions of said latching means; and
(e) a contact spring means disposed in said battery compartment, which contact spring means presses against said battery retained in said battery compartment with differing resiliencies dependent on varying switching positions of said battery compartment assumed in different latching positions of said latching means, wherein a single variable contact within said contact spring means can be selectively disposed in one of three switching positions, whereby all of said electrical components are electrically connected to said battery in the first switching position, only a part of said electrical components are electrically connected to said battery in the second switching position, and all of said electrical components are electrically disconnected from said battery in the third switching position.

4,941,181

DATA PROCESSING METHOD IN RECOGNITION SYSTEM

Kimio Igarashi, Gozen; Yasuo Uchida, Takatsuki, and Kenji Matsui, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 2, 1989, Ser. No. 346,659
Claims priority, application Japan, May 9, 1988, 63-111859
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—1 **3 Claims**



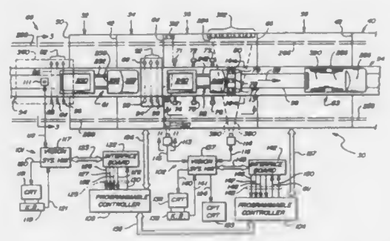
1. A data processing method in a recognition system including a data carrier having a memory integrated therewith to store identification data therein, said data carrier being mounted on a moving article, a higher-level controller, a plurality of lower-level controllers connected to the higher-level controller each for receiving a command from the higher-level controller so as to control data access to the memory of the data carrier, and at least a read/write head connected to each said lower-level controller for effecting data communication with the data carrier approaching the read/write head characterized in that:
the higher-level controller specifies the lower-level controllers in a predetermined order so as to sequentially send thereto an auto read/write command and thereafter specifies the lower-level controllers in a predetermined order so as to sequentially send a sub-command thereto;
that each said lower-level controller receiving the auto read/write command with a specification thereto repeatedly sends a command to confirm an approach of the data carrier until the approach of the data carrier is confirmed such that when the approach of the data carrier is confirmed, said lower-level controller sends the auto read/write command;
that the data carrier effects an access to a memory in response to the auto read/write command thus received so as to transmit an auto response related to the access to the memory to the lower-level controller; and
that the lower-level controller keeps the content of the auto response such that when the sub-command with a specification thereof from the higher-level controller is received, the lower-level controller sends the auto response including the content thus kept to the higher-level controller.

4,941,182

VISION SYSTEM AND METHOD FOR AUTOMATED PAINTING EQUIPMENT

Parashar Patel, Mount Clemens, Mich., assignor to Phoenix Software Development Co., Sterling Heights, Mich.

Filed Jul. 29, 1987, Ser. No. 79,304
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—1 **47 Claims**



1. Vision apparatus for automated painting equipment, comprising:
(a) at least one camera means for acquiring successive images of a first scene from a first portion of the painting equipment including at least a first movable object to be identified via selected pictorial attributes thereof; and
(b) an image analysis system for digitally processing successive images received from said camera means, said system including (1) means for recognizing selected pictorial attributes of the first object when such attributes are present in at least one of the successive images (2) means for comparing the recognized attributes of the first object with corresponding reference data from a first set of information previously stored in the system, and (3) means for identifying the first object as being present in the first scene when a match within a predetermined first tolerance exists between at least one of the recognized pictorial attributes and corresponding reference data from the first set of information.

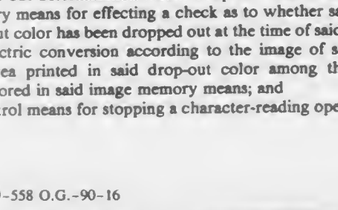
4,941,183

METHOD AND APPARATUS FOR OPTIMIZING THE CUTTING OF MATERIAL

Wolfgang Bruder, Bielefeld, and Klaus Biervert, Spenge, both of Fed. Rep. of Germany, assignors to Durkopp System Technik GmbH, Fed. Rep. of Germany

Filed Jul. 8, 1987, Ser. No. 70,902
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3627110
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—8 **19 Claims**

1. A method of optimizing the cutting out of pieces of material having predetermined shapes from a workpiece such as leather, patterned fabric or the like, comprising the steps of:
(a) preparing reduced-scale templates corresponding to the shapes of the pieces to be cut out;
(b) placing the templates on a projection device and projecting images of the templates onto the material to be cut, such that images of the templates appear on the workpiece and have the full size of the pieces to be cut out;
(c) then, manually positioning the templates on the projection device while observing their images projected onto the workpiece, to optimize the positioning of the templates, giving due consideration to the imperfections and structural features of the particular workpiece to be cut, and selecting a final position of the templates;



(d) generating digital template data representative of the shape of each individual template and its position on the projection device;
(e) calculating the total area of the cut pieces on the basis of the digital template data;
(f) comparing the total area of the cut pieces with the total area of the workpiece and thereby determining a degree of utilization of the workpiece material;
(g) if said degree of utilization is substantially optimal, generating a start command for causing a cutting device to carry out the cutting according to the template images on the workpiece;
(h) if said degree of utilization is not substantially optimal, repeating steps (b)–(g).

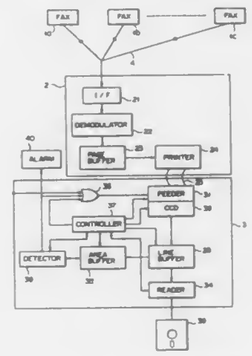
4,941,184

IMAGE-PROCESSING SYSTEM WITH CHARACTER READER AND AN IMAGE-PROCESSING METHOD

Toyoshi Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1988, Ser. No. 226,471
Claims priority, application Japan, Aug. 13, 1987, 62-202382
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—17 **14 Claims**

1. A character reader comprising:
receiving means for receiving an image of a slip obtained through photoelectric conversion from an apparatus connected through communication lines, said slip having a print area printed in a predetermined drop-out color and a predetermined format, characters being entered in said slip in conformity to said format;
image memory means coupled to said receiving means for storing an image received by said receiving means and represented by a plurality of dots;
character reader means coupled to said image memory means for reading out characters contained in the image stored in said image memory means;
drop-out determination means coupled to said image memory means for effecting a check as to whether said drop-out color has been dropped out at the time of said photoelectric conversion according to the image of said print area printed in said drop-out color among the image stored in said image memory means; and
control means for stopping a character-reading operation of said character reader means with respect to a slip when said drop-out determination means determines that failure



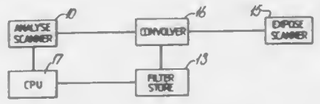
drop-out of said drop-out color according to the result of determination of said drop-out determination means.

4,941,185

IMAGE PROCESSING

Alastair Reed, Bedfordshire, England, assignor to Crosfield Electronics, London, England

Continuation of Ser. No. 6,841,090, Mar. 13, 1986, abandoned. This application Oct. 6, 1988, Ser. No. 253,913
Claims priority, application United Kingdom, Mar. 18, 1985, 8506931
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—41 **19 Claims**



1. Apparatus for processing a first image represented by digital data and which is a convolution of a second image and a periodic function, to produce said second image, the apparatus comprising means for determining a two-dimensional frequency filter characteristic which suppresses the frequency or frequencies of said periodic function and higher order harmonics of said frequency or frequencies; a store for storing digital data defining said two-dimensional frequency filter characteristic; and control means for applying said two-dimensional frequency filter characteristic to said digital data representing said first image to generate digital data representing said second image.

4,941,186

METHOD AND APPARATUS FOR CONCEALING ERRORS WHICH EXTEND OVER SEVERAL PIXELS IN A DIGITAL VIDEO SIGNAL

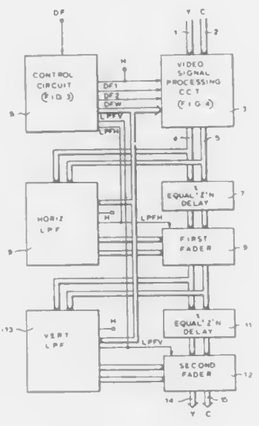
Volker Maszmann, and Dieter Poetsch, both of Ober-Ramstadt, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 111,625, Oct. 21, 1987, abandoned. This application Aug. 15, 1989, Ser. No. 395,132

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1986, 3636077

Int. Cl.[5] G06K *9/40*

U.S. Cl. 382—54 **11 Claims**



1. Method of concealing errors in a digital video signal by replacing disturbed pixel values with values derived from neighboring undisturbed pixel values, comprising the steps of:

detecting disturbed pixel values in a manner indicating pixel disturbance width (DFW) of a disturbance affecting values of a plurality of adjoining pixels in the same horizontal line as well as indicating pixel disturbance location (DF, DF1, DF2) of said pixels of affected value and

time-expanding the video signal of said same horizontal line outside of and adjacent to said plurality of adjoining pixels of said same line having disturbed values, by inserting in said video signal, between successive pixels of undisturbed value in said same line, interpolated pixel values derived from values of said successive pixels of said same line between which said derived pixel values are inserted, whereby said interpolated pixel values are horizontally interlaced with pixels of undisturbed values, and performing said time-expansion of said video signal in such a measure that a portion of the time-expanded video signal of said same line replaces all successive pixels of disturbed value of a disturbance in said same line for which pixel disturbance with and pixel disturbance location has been detected.

4,941,187

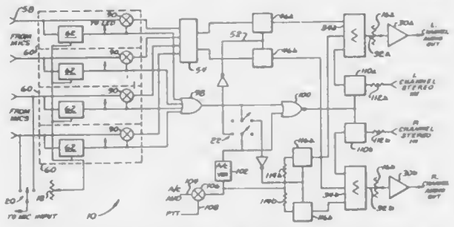
INTERCOM APPARATUS FOR INTEGRATING DISPARATE AUDIO SOURCES FOR USE IN LIGHT AIRCRAFT OR SIMILAR HIGH NOISE ENVIRONMENTS

Robert W. Slater, 48 W. 938 Chandelle Dr., Hampshire, Ill. 60140

Continuation of Ser. No. 134,611, Dec. 15, 1987, abandoned, which is a continuation of Ser. No. 885,331, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 576,624, Feb. 3, 1984, abandoned. This application Jan. 19, 1989, Ser. No. 300,166

Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—86 **16 Claims**



1. Apparatus for integrating disparate audio sources for use in light aircraft or in other high noise environments comprising unitary driver means for generating a composite output signal representative of a driver input signal, audio output means associated with the output of the driver means for connection of a plurality of remote headsets whereby a substantially identical composite output signal will be present at all of the headsets without regard to the source of audio comprising said composite output signal; audio signal summation means operatively connected to the driver input having a plurality of audio inputs for connection of remote microphones, each remote microphone being associated with and proximate to a headset whereby an occupant of the aircraft may speak into a microphone and listen to the composite output signal, including the voice audio of said occupant, through the associated headset, said audio summation means funtioning to combine the respective audio inputs to form a single composite signal; each summation means audio input including an associated audio switch means, audio detector means, and audio input means for connection of an audio input signal thereto; each audio switch means connected in series between the associated summation means audio input and the audio input means, and each audio switch means having a gate means whereby the switch means may be selectively controlled to a first closed-circuit condition whereby an audio input signal at the associated audio input means is substantially connected to the summation means audio input and a second open-circuit condition whereby an audio input signal at the associated audio input means is substantially removed from said audio input; each audio signal detector means being operatively connected to the gate means of the associated switch means and to the associated audio input means, each detector means being unresponsive to audio input signals on other than the associated audio input means, whereby the detector means controls the associated switch means into the first closed-circuit condition whenever an audio input signal of predetermined amplitude is present at the associated audio input means without regard to the input signal condition on any other audio input means and into the second open-circuit condition following a predetermined interval in which an audio input signal at the associated audio input means has not exceeded the predetermined amplitude whereby only audio input signals having a predetermined amplitude contribute to the driver means output signal thereby improving the audio quality by eliminating noise present on unused audio signal inputs.

4,941,188

IMAGE SIGNAL PROCESSING APPARATUS

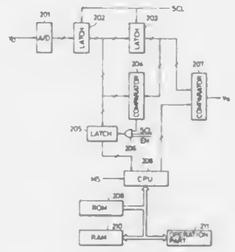
Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 597,735, Apr. 6, 1984, abandoned. This application Dec. 27, 1988, Ser. No. 289,520

Claims priority, application Japan, Dec. 4, 1983, 58-63013; Dec. 4, 1983, 58-63859

Int. Cl.[5] G06K *9/38*

U.S. Cl. 382—50 **10 Claims**



1. An image signal processing apparatus comprising:

reading means for reading an original image in units of lines;

detecting means for detecting the peak density level of each line read by said reading means and for outputting peak density level data;

storage means for storing plural lines of peak density level data detected by said detecting means; and

processing means for performing an arithmetic operation on the plural lines of peak density level data stored in said storage means, and for performing density correction processing of a target line in accordance with an arithmetic operation result of the arithmetic operation, said processing means performing the density correction processing of the target line, and detection of the plural lines of peak density level data prior to the target line, during a one time reading operation of the original image by said reading means.

4,941,189

OPTICAL CHARACTER READER WITH SKEW RECOGNITION

Ronald H. Britt, Leicester, England, assignor to Lundy Electronics & Systems, Inc., Charlotte, N.C.

Division of Ser. No. 18,585, Feb. 25, 1987, Pat. No. 4,876,730. This application Feb. 13, 1989, Ser. No. 310,532

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—46 **7 Claims**

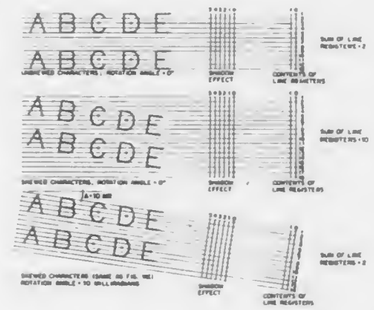
1. An optical character recognition device, for detecting the amount of skew of characters arranged in lines and columns on a document, comprising:

character recognizing means for scanning a document having a plurality of characters arranged in lines and columns on said document, for establishing a single reference point on the document, and for producing, for each recognized character, information indicative of the identity of the recognized characters and the original coordinate positions of each of the recognized characters relative to the said signal reference point on the document;

means for calculating coordinate data of each of said recognized characters by rotating the coordinate position of each of said recognized characters through each of a plurality of rotation angles about the said single reference point;

shadow effect calculation means for calculating the shadowing effect that the coordinate position of each character creates along at least one margin of the document for said plurality of rotation angles including the rotation angle of zero; and

shadow effect detection means for detecting the rotation



angle creating the narrowest shadow effect along said margin of the document, and taking this rotation angle as the angle at which the lines of characters are skewed on the document.

4,941,190

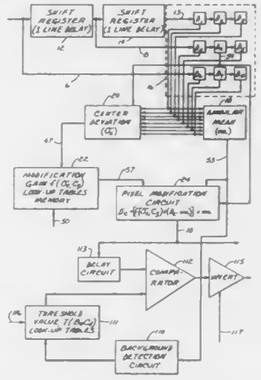
METHOD AND SYSTEM FOR ENHANCEMENT OF A DIGITIZED IMAGE

Terrence H. Joyce, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 15, 1988, Ser. No. 219,377

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—54 **31 Claims**



1. A system for modifying pixels supplied to the system that are multiple level signals for a digitized image including:

means providing a moving pixel window from pixels supplied to the system, said pixel window having a center pixel, D_c and at least 2^N pixels surrounding said center pixel, where N is an integer of 1 or more;

means receiving 2^N pixels of said pixels surrounding said center pixel for providing the annular mean, m_a, of said received 2^N pixels;

means receiving said center pixel and selected for providing an output based on the center deviation σ_c, for said center pixel; and

means connected to said output for obtaining a modification gain, $f(\sigma_c, C_g)$; and

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means receiving said center pixel, D_c, said annular means, m_a, and said modification gain, $f(\sigma_c,C_g)$ for providing a modified center pixel, D_c', in accordance with the following equation:

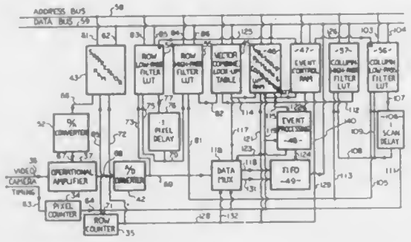
$$D_c'=[f(\sigma_c\ C_g)\times(D_c-m_a)]+m_a.$$

4,941,191

IMAGE ANALYSIS SYSTEM EMPLOYING FILTER LOOK-UP TABLES

John W. V. Miller, Toledo, and Peter S. Miller, Perrysburg, both of Ohio, assignors to O-I Neg TV Products, Inc. Formerly known as Owens-Illinois Television Products, Inc.), Toledo, Ohio

Filed Jan. 4, 1988, Ser. No. 140,459
Int. Cl.[5] G06K *9/52*
U.S. Cl. 382—54 **30 Claims**



8. An image analysis system comprising a camera having a linear array of pixels each providing a signal representing the magnitude of light received from a corresponding discrete area along a band of discrete areas on an object producing said image, means to scan said linear array of pixels for successive adjacent bands of discrete areas on said object producing said image to produce serially a plurality of rows of pixels for said bands in which pixels are arranged in columns in adjacent bands; means to assign a column number to pixels in the same column; high pass row filter means to filter pixel-to-pixel signal intensities in rows; high pass column filter means to filter pixel-to-pixel intensities in columns; and means to vector combine signals as a function of said signals from said row filter means and from said column filter means in a memory having a value for every possible combination of the signals from said row and column filter means.

4,941,192

METHOD AND APPARATUS FOR RECOGNIZING PATTERN OF GRAY LEVEL IMAGE

Tadaaki Mishima, Hitachi; Morio Kanasaki; Masao Takatoo, both of Katsuta, and Hideo Ota, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 19, 1988, Ser. No. 183,689
Claims priority, application Japan, Apr. 20, 1987, 62-97134
Int. Cl.[5] G06K *9/39*
U.S. Cl. 382—54 **11 Claims**

1. A method of recognizing a pattern of a gray level image comprising the steps of:

normalizing a gray level image to be processed;

extracting local feature parameters of said normalized gray level image at predetermined sampling points; and



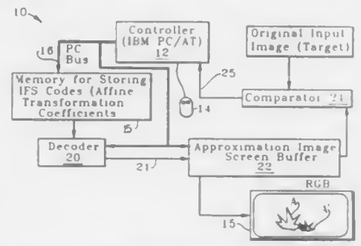
identifying a pattern by using said extracted feature parameters in accordance with a predetermined recognition procedure.

4,941,193

METHODS AND APPARATUS FOR IMAGE COMPRESSION BY ITERATED FUNCTION SYSTEM

Michael F. Barnsley, and Alan D. Sloan, both of Atlanta, Ga., assignors to Iterated Systems, Inc., Norcross, Ga.

Filed Oct. 2, 1987, Ser. No. 104,412
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **69 Claims**



1. A method for compressing images, comprising the steps of:

providing an input image having at least two dimensions;

storing the image in a memory;

displaying the image stored in the memory on a display;

selecting a geometric first region of the image displayed on the display with selecting means;

generating and displaying a contractive copy of the first region in the memory;

storing a set of transformation coefficients corresponding to the transformation creating the contractive copy;

on the display, collaging the transformed contractive copy with respect to the first region to align geometric features of the transformed contractive copy with corresponding geometric features of the first region;

repeating the steps of generating and displaying a contractive copy, storing the transformation coefficients, and collaging the transformed contractive copy until substantially all of the first region is covered by a collage of transformed contractive copies, thereby providing a set of a plurality of transformation coefficients; and

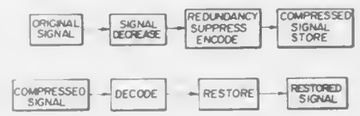
providing as an output a set of iterated function system compression codes corresponding to the set of a plurality of transformation coefficients.

4,941,194

METHOD OF COMPRESSING RADIATION IMAGE SIGNAL

Kazuo Shimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 12,716, Feb. 5, 1987, abandoned. This application Aug. 24, 1988, Ser. No. 235,767
Claims priority, application Japan, Feb. 5, 1986, 61-23475
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **6 Claims**



1. A method of compressing radiation image signals representing the picture elements of a radiation image, comprising the steps of:

pre-processing said radiation image signals based on the spatial frequency characteristics of said radiation image to produce representative radiation image signals less in number than said image signals representing said radiation image; and

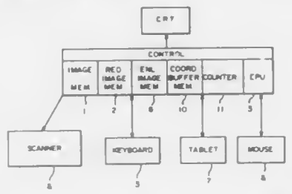
subjecting only said representative image signals to a redundancy suppressing encoding process such that said representative image signals which have undergone said redundancy suppressing encoding process completely define said radiation image.

4,941,195

OPTICAL CHARACTER READER

Hideaki Tanaka, Osaka; Toshiaki Morita, Nara, and Minehiro Konya, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 107,041, Oct. 9, 1987, abandoned. This application Mar. 31, 1989, Ser. No. 333,730
Claims priority, application Japan, Oct. 27, 1986, 61-256074
Int. Cl.[5] G06K *9/20*
U.S. Cl. 382—61 **1 Claim**



1. In an optical character reader adapted to read a document and thereby input image data by a scanner and to recognize said image data within a specified area, the improvement wherein said optical character reader is provided with input means which include

an image memory for storing said image data inputted by said scanner,

inputting means for inputting an enlarged display command and positions of two area setting points,

control means for creating reduced image data by thinning said inputted image data and, if an enlarged display command is inputted, enlarged display data with reference to a cursor position in said image data,

a reduced image memory for storing said reduced image data,

an enlarged display memory for storing said enlarged display data,

display means having a display area for displaying display data which include said reduced image data and said enlarged display data,

cursor moving means for moving a cursor displayed on said display area, and

area setting means for receiving positional data on two specified points inputted through said inputting means and setting on said display area a rectangular target area with a hypotenuse having said two specified two points as the end points thereof,

said control means being capable of

displaying in said display means an entire layout of said inputted image data by using said reduced image data in said reduced image memory,

responding to said enlarged display command inputted from said inputting means by displaying on said display means said enlarged display data in said enlarged display memory,

a first cursor, and

a second cursor, said first and second cursors being displayed at mutually corresponding positions respectively in said enlarged and reduced display data,

moving said second cursor, if said first cursor is moved by said cursor moving means, according to the movement of said first cursor,

scrolling said enlarged display data on said display means if it is attempted to move said first cursor beyond said display area, and

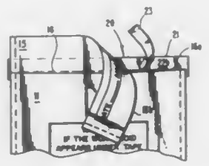
recognizing only those of said image data in said target area specified through said input means.

4,941,196

TAMPER EVIDENT BAG

Paul F. Edelman, Indianapolis, and Cynthia M. Nulliner, Fairland, both of Ind., assignors to Kcl Corporation, Shelbyville, Ind.

Filed Nov. 1, 1988, Ser. No. 265,583
Int. Cl.[5] B65D *27/30*
U.S. Cl. 383—5 **7 Claims**



1. A security bag comprising:

a pair of wall panels, each having a bottom, sides and a top, said wall panels being joined together at said bottoms and said sides and defining an opening at said tops;

one of said wall panels having an extension strip removably connected thereto at said top along a perforation line, said extension strip being removable therefrom by tearing along said perforation line;

a closure flap for closing said opening, said closure flap including;

a strip of tape having adhesive on one side of said strip of tape, said strip of tape being connected at a lower portion of said strip of tape by the adhesive to said one of said wall panels below said perforation line; and

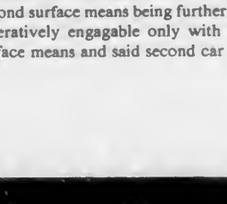
a release liner covering the adhesive on an upper portion of said strip of tape and readily removable therefrom, said release liner positioned between said extension strip and the adhesive and said release liner further positioned between said perforation line and the adhesive on said strip of tape to prevent said strip of tape from attaching to said extension strip;

whereby, when said extension strip is removed at said perforation line and when said release liner is removed from said upper portion of said strip of tape, said upper portion can be folded over said opening and attached by the adhesive to the other of said pair of wall panels to close said opening.

4,941,197
ROLLER BEARING DEVICE AND APPARATUS USING SAME

John O. Roeser, Barrington, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Feb. 27, 1989, Ser. No. 315,908
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—44 **54 Claims**

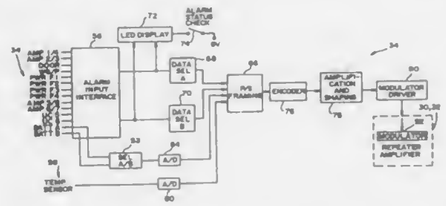


1. A slide roller bearing apparatus comprising:
(a) a rail track means having a length for receiving roller means for relative moving engagement there along, said rail track means having a first rail track surface means and a second rail track surface means, each of said first and second rail track surface means having a length and a width,
(b) a car means operatively associated with said rail track means for movement relative to the length thereof, said car means having a first car surface means and a second car surface means,
(c) roller means having a length and a diameter disposedly associated with the said rail track means and the said car means to permit rolling movement of said car means relative to the length of said rail means, said roller means having a roller first surface means and a roller second surface means,
(d) attachment means operatively associated with said car means and said rail means whereby said movement of the car means relative to said rail track means may be usefully employed,
(e) wherein said roller first surface means is characterized as having a diameter dimension and said roller second surface means is angularly disposed relative to said roller first surface means and said roller second surface means is characterized as having a length dimension of relative size to said diameter dimension when measured on an axis generally transverse to said roller first surface means, said roller first surface means being further characterized as being operatively associated only with said first rail track surface means and with said first car surface means, said roller second surface means being further characterized as being operatively engagable only with said second rail track surface means and said second car surface means.

4,941,198
COMMUNICATIONS REPEATER MONITORING SYSTEM

Edward R. Johnson; Ladan A. Parandoosh, both of Sunnyvale, and Joseph F. Lutz, San Jose, all of Calif., assignors to Peninsula Engineering Group, Inc., San Carlos, Calif.

Filed Nov. 12, 1987, Ser. No. 120,529
Int. Cl.[5] H04B *1/60, 17/02*
U.S. Cl. 455—9 **11 Claims**

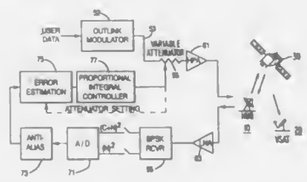


1. In a communication system having a repeater unit for receiving and retransmitting a communication signal having a predetermined carrier frequency, a monitoring system for monitoring a desired characteristic at the repeater unit comprising:
means for generating a signal representative of the desired characteristic;
means responsive to the generated signal for producing a monitor modulating signal representative of the generated signal and having a frequency substantially not equal to the communication signal carrier frequency; and
means for modulating the amplitude of the communication signal with the monitor modulating signal, whereby the retransmitted communication signal is representative of the desired characteristic, said modulating means comprising amplifier means having a net gain which varies with the temperature of said amplifier means, for amplifying the communication signal, means for varying the net gain of said amplifier means in response to said monitor modulating signal, means for varying the net gain of said amplifier means in a manner compensating for the change in net gain due to temperature change, and means for varying the level of the monitor modulating signal in response to temperature changes in said amplifier means for maintaining the ratio of the signal level of the monitor modulating signal to the signal level of the communication signal substantially at a predetermined value.

4,941,199
UPLINK POWER CONTROL MECHANISM FOR MAINTAINING CONSTANT OUTPUT POWER FROM SATELLITE TRANSPONDER

Thomas J. Saam, Melbourne, Fla., assignor to Scientific Atlanta, Atlanta, Ga.

Filed Apr. 6, 1989, Ser. No. 334,146
Int. Cl.[5] H04B *1/60*
U.S. Cl. 455—10 **20 Claims**

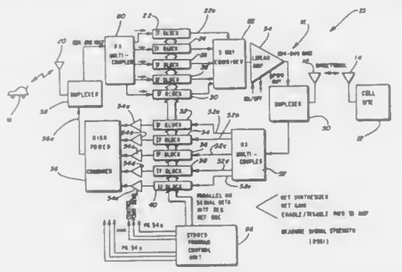


1. For use in a satellite communications network wherein signals transmitted over an uplink communications channel from a transmitting terminal to a satellite amplifier device are amplified by said satellite amplifier device and conveyed therefrom over an outlink channel to a receiver terminal, a method of controlling the output of said transmitting terminal so as to maintain the strength of signals output by said satellite amplifier device effectively constant irrespective of variations in atmospheric conditions in the uplink signal transmission path between the transmitting terminal and the satellite comprising the steps of:
(a) transmitting first signals over said uplink communications channel to said satellite to be amplified by said satellite amplifier device and conveyed therefrom over said outlink channel to said receiver terminal and over a downlink channel to a receiver device located at said transmitter terminal, and generating second signals representative of the strength of the transmitted first signals;
(b) monitoring, at said transmitter terminal, first signals that have been amplified by said satellite amplifier device and conveyed therefrom over said downlink channel, and producing therefrom third signals representative of the signal-to-noise ratio in the monitored signals;
(c) in response to said second and third signals, generating fourth signals representative of the attenuation of said first signals resulting from variations in conditions in the uplink signal transmission path to said satellite; and
(d) adjusting the strength of said first signals as transmitted by said transmitter terminal in accordance with said fourth signals, so as to compensate for the attenuation thereof resulting from conditions in said uplink signal transmission path and thereby maintain the strength of signals output by said satellite amplifier device effectively constant.

4,941,200
BOOSTER

Samuel A. Leslie, Forest, and Robert T. Gordon, Lynchburg, both of Va., assignors to Orion Industries, Inc., Solon, Ohio

Filed Aug. 3, 1987, Ser. No. 81,120
Int. Cl.[5] H04B *7/14*; H04Q *7/00*
U.S. Cl. 455—17 **36 Claims**

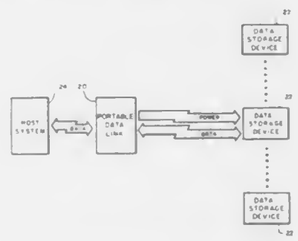


9. A method of receiving a plurality of electro-magnetic signals and for retransmitting selected ones thereof comprising:
sensing a plurality of electro-magnetic signals;
determining, based on a preset criterion, which of the sensed signals should be compared with a threshold and comparing a first indicium of each of those signals to a predetermined threshold;
recording a second indicium for each sensed signal that exceeds the threshold;
selecting one or more signals to be retransmitted among the recorded second indicia; and
retransmitting only the selected one or more signals.

4,941,201
ELECTRONIC DATA STORAGE AND RETRIEVAL APPARATUS AND METHOD

Charles L. Davis, Flower Mound, Tex., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 818,469, Jan. 13, 1985, abandoned. This application Apr. 4, 1989, Ser. No. 333,859
Int. Cl.[5] H04B *5/00*
U.S. Cl. 455—41 **45 Claims**

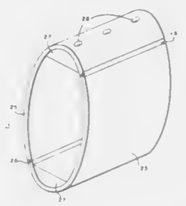


18. An electronic data apparatus comprising:
means for receiving a combination signal having power and data components;
means for deriving operating power and first data signals from said combination signal; and
means for modulating said combination signal with a value corresponding to second data signals in said apparatus to transmit said second data signals while simultaneously continuing to receive said combination signal.

4,941,202
MULTIPLE SEGMENT FLEXTENSIONAL TRANSDUCER SHELL

Ralph G. Upton, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 13, 1982, Ser. No. 416,793
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—165 **49 Claims**



1. A flextensional transducer having a hollow shell with two open ends that are covered with a material and at least one driving element interposed between the inner walls of said shell, said transducer shell comprises:
(a) a first J-shaped metal member;
(b) a second J-shaped metal member, said first and second members are welded together, to form said smooth hollow shell, at or near two nodal points on the surface of said shell; and
(c) a boot that is placed over said members and said material so that the interior of said shell will be watertight.

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4,941,203

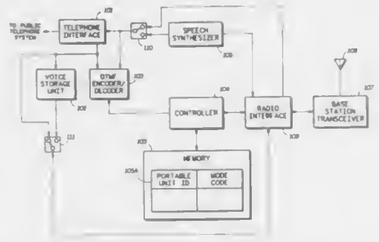
TWO-WAY RADIO COMMUNICATION SYSTEM HAVING SELECTABLE OPERATING MODES

Stelios J. Patsiokas, Plantation; Morris A. Moore, West Palm Beach, and Brian K. A. Johnson, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 242,838, Sep. 12, 1988, abandoned. This application Nov. 13, 1989, Ser. No. 434,633

Int. Cl.[5] H04B 1/00

U.S. Cl. 455—53 23 Claims



10. A radio base station, for use with a remote radio transceiver unit that includes means for transmitting a code indicative of a selected operating mode, said base station comprising in combination:

base station transceiver means for transmitting radio signals to and receiving radio signals from said remote unit;

code storing means for storing the code transmitted by said remote unit and received by said base station transceiver means;

message for communicating with a call originator;

message storage means, coupled to said communication means, for storing a message form said call originator when the code stored in said code storing means is indicative of a message storage mode; and

communication means, coupled to said communicating means and said base station transceiver means, for establishing communications between said call originator and said remote unit when the code stored in said code storing means is indicative of a communication mode.

4,941,204

GENERATING A STOP SIGNAL OF AN AUTOMATIC SEARCH PROCEDURE FOR A BROADCASTING STATION USING AN AVAILABLE AFC SIGNAL

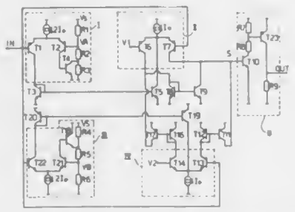
Maurizio Zaffada, Milan, and Fabrizio Sacchi, Gambarana, both of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Italy

Filed Jan. 27, 1989, Ser. No. 302,280

Claims priority, application Italy, Jan. 28, 1988, 83601 A/88

Int. Cl.[5] H04B 1/26

U.S. Cl. 455—164 3 Claims



1. A circuit for detecting in an AFC signal, generated by an automatic frequency control circuit of a receiver during a search scan for a broadcasting station, the presence of a carrier comprising:

a first switched threshold comparator with two threshold levels VA', VA", commuting when said AFC signal which is applied to an input terminal of the first comparator rises to a level higher than the two threshold levels of said first switched threshold comparator wherein commuting of the first comparator is in accordance with the following relation:

$$VA' < AFC > VA'';$$

a second comparator having a fixed threshold level v1 and which is enabled when said first comparator commutes in accordance with said relation, commuting when said AFC signal which is applied to an input terminal of said second comparator drops to a level lower than said threshold V1;

a third switched threshold comparator with two threshold levels VB', VB", which commutes when said AFC signal which is applied to an input terminal thereof drops to a level lower than the two threshold levels of said third switched threshold comparator wherein the third comparator commutes in accordance with the following second relation:

$$VB' > AFC < VB_2'';$$

a fourth comparator having a fixed threshold level V2 and which is enabled when said third comparator commutes in accordance with said second relation, commuting when said AFC signal which is applied to an input terminal thereof rises to a level higher than said threshold V2;

an output buffer, driven by said second or by said fourth comparator, and capable of generating an output signal when any of said second and fourth comparators commutes, thus detecting the presence of the carrier;

and wherein:

the relationships among said threshold levels of said comparators are as follows:

$$VA' > V1 > V_a'' > V/x > VB'' > V2 > VB,$$

where V /x is a fraction of the supply voltage powering the circuit and corresponds to the AFC signal level when the receiver is out of tune.

4,941,205

BIDIRECTIONAL OPTICAL DATA COMMUNICATIONS SYSTEM

William R. Horst, and William J. Hale, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 618,001, Jul. 6, 1984, abandoned. This application Jul. 11, 1988, Ser. No. 217,509

Int. Cl.[5] H04B 10/10

U.S. Cl. 455—605 4 Claims

1. A data communications system which operates in first and second modes of operation; said data communications system comprising:

first and second data units; and

a coupling means for coupling said first and second data units less than an inch apart;

said first data unit being a host terminal comprising:

a first data means for handling data;

first and second light sources;

a first modulating means for modulating said first light source in accordance with a first stream of data supplied by said first data means to generate a first beam of modulated light when said system is operated in said first mode of operation; and

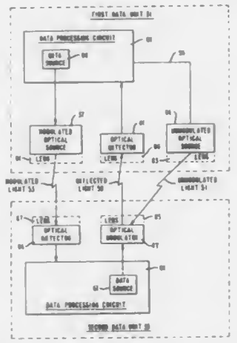
a first optical detector for detecting a second beam of modulated light and also for generating a second stream of data by demodulating said second beam of modulated light when said system is operated in said second mode of operation; said second stream of data being passed on to said first data means from said first optical detector;

said second data unit being a portable terminal positioned in face to face relation with said host terminal comprising:

a second data means for handling data;

a second modulating means including a liquid crystal device for modulating the light of said second light source in accordance with a third stream of data supplied by said second data means to generate said second beam of modulated light to be detected by said first optical detector when said system is operated in said second mode of operation; and

a second optical detector for detecting said first beam of



modulated light and also for generating a fourth stream of data by demodulating said first beam of modulated light when said system is operated in said first mode of operation; said fourth stream of data being passed on to said second data means from said second optical detector; and

said coupling means having means for positioning said first light source and said first modulating means in face to face opposed relation with said second optical detector, said second light source in substantially face to face opposed relation with said second modulating means, and said second modulating means being in opposed relation with said first optical detector.

4,941,206

LOOP-TYPE OPTICAL FIBER TRANSMISSION SYSTEM HAVING MASTER AND SLAVE APPARATUS

Tsutomu Sakurai, Ikoma; Yoshifumi Hara, Hirakata, and Yasumasa Dougakiuchi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 28, 1988, Ser. No. 276,514

Claims priority, application Japan, Nov. 27, 1987, 62-300766

Int. Cl.[5] H04B 9/00

U.S. Cl. 455—607 16 Claims

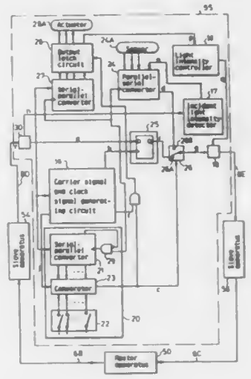
13. A loop-type optical fiber transmission system comprising a master apparatus and a plurality of slave apparatus connected in series by optical fibers, each slave apparatus comprising:

means for receiving a first light signal and converting the first light signal to an electric signal;

means for determining whether the electric signal specifies said slave apparatus;

means for detecting an intensity of the first light signal and outputting a malfunction signal;

means for selecting one of the electric signal and the electric signal including the malfunction signal;



means for converting a selected signal from said selecting means to a second light signal and transmitting the second light signal; and

means for adjusting an intensity of the second light signal.

4,941,207

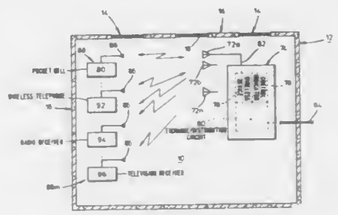
STRUCTURE FOR WIRELESS COMMUNICATION IN AN ELECTROMAGNETICALLY SHIELDED BUILDING

Takamasa Maeda, and Hisashi Ishikawa, both of Mitaka, Japan, assignors to Nihon Musen Kabushiki Kaisha, Mitaka, Japan

Continuation-in-part of Ser. No. 605,924, May 1, 1984, abandoned. This application Mar. 6, 1987, Ser. No. 22,646

Int. Cl.[5] H04B 9/00

U.S. Cl. 455—617 15 Claims



1. A structure for wireless communication in an electromagnetically shielded building, comprising an outer wall made of an electromagnetic shielding material, a ceiling member incorporating an antenna, and a window comprised of a glass pane including an electromagnetic shielding member, wherein said outer wall and said window jointly define an electromagnetically shielded space, said outer wall comprising an electrically conductive material and being connected to ground, said outer wall and said window being electrically connected to each other, wireless transmission/reception means disposed in said electromagnetically shielded space, and said electromagnetically shielded space including therein an electromagnetically shielded subspace on each floor or each room on a floor of the building, the arrangement being such that wireless communication can be effected with radio waves in a selected frequency range within said space between the wireless transmission/-reception means and said antenna.

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4,941,208

HIGH PERFORMANCE SUBCARRIER MULTIPLEXED OPTICAL COMMUNICATION SYSTEM WITH MODULATION INDEX EXCEEDING UNITY

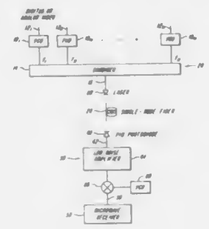
Robert Olshansky, Wayland, and Vincent Lanzisera, Northboro, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 8, 1988, Ser. No. 241,975
Int. Cl.[5] H04B 9/00
U.S. Cl. 455—618 **15 Claims**

1. Apparatus for transmitting an optical signal, comprising:

means for generating a light beam; and

means for intensity modulating the light beam with a composite modulation signal comprising a plurality of modulated microwave carriers, each of said microwave carriers intensity modulating said light beam with a modulation index m_i to provide an optical signal for transmission, wherein the total modulation index M, defined by



$$M=\Sigma m_i,$$

of the optical signal is greater than one.

DESIGN PATENTS

GRANTED JUL. 10, 1990

ERRATA

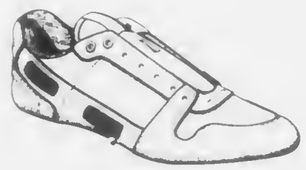
For CLASS	See PATENT NO.
D09-375	309,080

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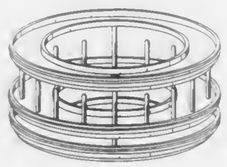
DESIGNS

JULY 10, 1990

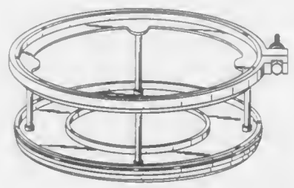
309,055
SPORT SHOE UPPER
Ian H. Whatley, Nashville, Tenn., assignor to Genesco Inc., Nashville, Tenn.
Filed Feb. 11, 1988, Ser. No. 155,020
Term of patent 14 years
U.S. Cl. D2—314



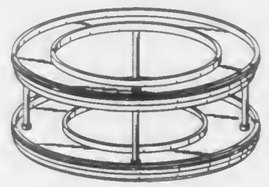
309,056
EMBROIDERY WORK STATION
Gerald A. Peters, Box 1020, Carnegie, Okla. 73015
Filed Mar. 18, 1987, Ser. No. 27,494
Term of patent 14 years
U.S. Cl. D3—25



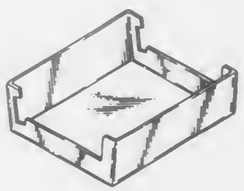
309,057
EMBROIDERY WORK STATION
Gerald A. Peters, Box 1020, Carnegie, Okla. 73015
Filed Mar. 18, 1987, Ser. No. 27,497
Term of patent 14 years
U.S. Cl. D3—26



309,058
EMBROIDERY WORK STATION
Gerald A. Peters, Box 1020, Carnegie, Okla. 73015
Filed Mar. 18, 1987, Ser. No. 27,495
Term of patent 14 years
U.S. Cl. D3—26



309,059
AUTOMOBILE SEAT TRAY
M. Michael Bledsoe, 6013 Dusty Rd., Watauga, Tex. 76148-3650
Filed Feb. 26, 1987, Ser. No. 19,291
Term of patent 14 years
U.S. Cl. D3—40



309,060
KEY RETAINER
Charles A. Paraschinni, 708 Clearview La., Atlantic Beach, Fla. 32233
Filed Nov. 23, 1987, Ser. No. 124,755
Term of patent 14 years
U.S. Cl. D3—61



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309,061
FASHION POCKET INSERT
Jeri D. Leach, 3013 Owen Ave., Marina, Calif. 93933
Filed Aug. 19, 1986, Ser. No. 898,266
Term of patent 14 years
U.S. Cl. D3—106



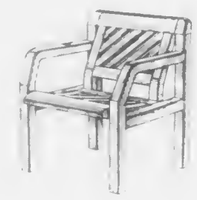
309,062
BRUSH HEAD FOR MOUNTING IN A DENTAL INSTRUMENT
Hans Olsen, Copenhagen, Denmark, assignor to Professional Dental Technologies, Inc., Batesville, Ark.
Continuation of Ser. No. 654,189, Sep. 24, 1984. This application May 10, 1988, Ser. No. 192,495
Claims priority, application Denmark, Mar. 29, 1984, 296/84
The portion of the term of this patent subsequent to Feb. 27, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



309,063
BENCH
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jan. 10, 1989, Ser. No. 295,474
Term of patent 14 years
U.S. Cl. D6—349



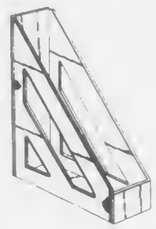
309,064
ARM CHAIR
Manfeld Hubert, La Tronche, France, assignor to Allibert S.A., Grenoble, France
Filed Feb. 6, 1987, Ser. No. 12,065
Term of patent 14 years
U.S. Cl. D6—375



309,065
ADJUSTABLE TABLE FOR ATTACHMENT TO AN AUTOMOBILE TAILGATE
Atwood J. Huff, 3425 Frontier Rd., NW., Roanoke, Va. 24012
Filed Jun. 3, 1987, Ser. No. 56,979
Term of patent 14 years
U.S. Cl. D6—429



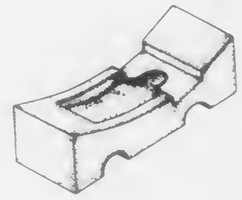
309,066
MAGAZINE HOLDER
Kenneth C. Foran, Wooster, and Thomas J. David, Worthington, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 7, 1986, Ser. No. 894,243
Term of patent 14 years
U.S. Cl. D6—466

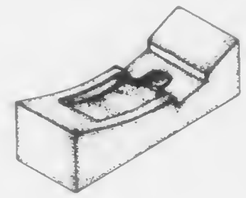


309,067
AUTOMATIC TAMPON DISPENSER
Frank Arrias, 5698 Starwood Ct., Westlake Village, Calif. 91362
Filed Jan. 19, 1988, Ser. No. 145,255
Term of patent 14 years
U.S. Cl. D6—515

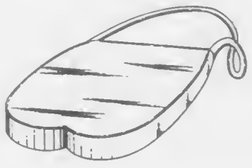


309,068
BABY SUPPORT PILLOW
Cindy Jordan, and Alan Jordan, both of 19760 NE. 10th Ave., North Miami Beach, Fla. 33179
Filed Jul. 1, 1987, Ser. No. 68,314
Term of patent 14 years
U.S. Cl. D6—601



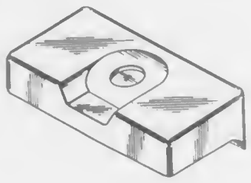


309,069
STADIUM CUSHION OR THE LIKE
Brenda K. DeRosa, 12444 Victory Blvd. #104, Los Angeles, Calif. 91606
Filed Nov. 9, 1987, Ser. No. 118,636
Term of patent 14 years
U.S. Cl. D6—601

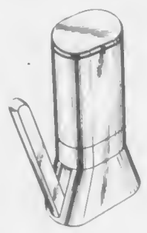


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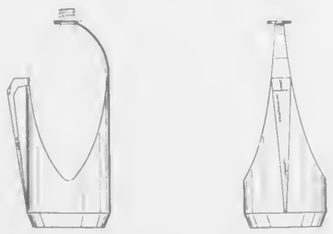
309,070
INFLATABLE ORTHOPEDIC PILLOW
William H. Burns, Sr., 3715 Bryce St., Cocoa, Fla. 92326
Filed Jan. 30, 1987, Ser. No. 9,130
Term of patent 14 years
U.S. Cl. D6—604



309,071
CONDIMENT DISPENSER
Peter Haythornthwaite, Auckland, New Zealand, assignor to Frederick Daniel van Urk and Fredrikus Hermannus van Urk, both of Auckland, New Zealand
Filed Oct. 8, 1986, Ser. No. 916,849
Claims priority, application New Zealand, Apr. 8, 1986, 20409
Term of patent 14 years
U.S. Cl. D7—600



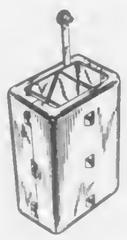
309,072
BEVERAGE CONTAINER HOLDER
Homayun Golkar, 9041 Pacific, #4, Anaheim, Calif. 92804
Filed Mar. 25, 1988, Ser. No. 172,863
Term of patent 14 years
U.S. Cl. D7—622



309,073
DRINKING CAN HOLDER
Lloyd A. Robinson, 14799 Caminito Orense E., San Diego, Calif. 92129
Filed Jun. 30, 1988, Ser. No. 214,136
Term of patent 14 years
U.S. Cl. D7—608



309,074
SQUEEZE RESISTANT CARTON HOLDER
Henry J. Kelston, 23 Clinton Ave., Nyack, N.Y. 10960
Filed Mar. 2, 1988, Ser. No. 163,046
Term of patent 14 years
U.S. Cl. D7—602



309,075
TOOTHPICK CASE
Ambrogio Rossari, Milan, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Oct. 16, 1987, Ser. No. 109,250
Claims priority, application Italy, Apr. 27, 1987, 21464/87[U]
Term of patent 14 years
U.S. Cl. D7—641

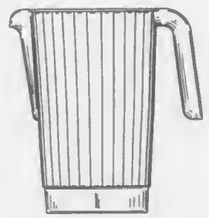


309,076
THERMAL BEVERAGE SERVER
Ulf Hanses, Borlange, Sweden, assignor to Boda Nova International AB, Stockholm, Sweden
Filed Apr. 9, 1987, Ser. No. 36,525
Claims priority, application Sweden, Oct. 10, 1986, 86-2347
Term of patent 14 years
U.S. Cl. D7—316

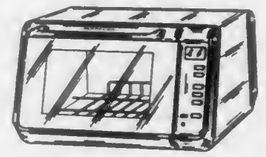




309,077
PITCHER
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Jun. 8, 1987, Ser. No. 59,396
Term of patent 14 years
U.S. Cl. D7—318

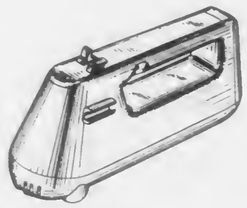


309,078
MICROWAVE OVEN
Mami Kokubo, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 9, 1987, Ser. No. 130,731
Claims priority, application Japan, Jun. 12, 1987, 62-24267[U]
The portion of the term of this patent subsequent to Apr. 18, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—351





309,079
HAND MIXER
Aidan Petrie, and Stephen Lane, both of Boston, Mass., assignors to International Consumer Brands, Inc., Trumbull, Conn.
Filed Feb. 10, 1988, Ser. No. 154,407
Term of patent 14 years
U.S. Cl. D7—379



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309,080
BOTTLE OR THE LIKE
John F. Buchholz, Boston, Mass., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.
Filed Aug. 28, 1987, Ser. No. 90,040
Term of patent 14 years
U.S. Cl. D9—375

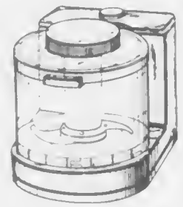




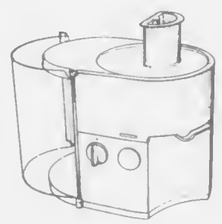
309,081
PORTABLE ELECTRIC FOOD MIXER
Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Downers Grove, Ill.
Filed Jan. 15, 1988, Ser. No. 144,450
Term of patent 14 years
U.S. Cl. D7—379



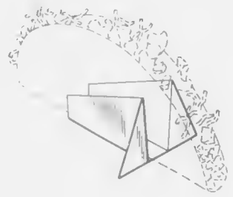
309,082
FOOD PROCESSOR
Sally A. Hattle, Oxford, and Paul Rawson, Easton, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jun. 30, 1987, Ser. No. 67,781
Term of patent 14 years
U.S. Cl. D7—384



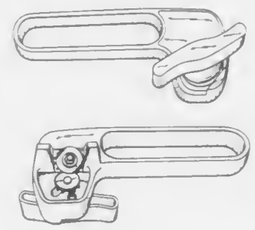
309,083
JUICE EXTRACTOR
Hartwig Kahlcke, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Feb. 18, 1987, Ser. No. 16,146
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1986, 73 MR 9512
Term of patent 14 years
U.S. Cl. D7—665



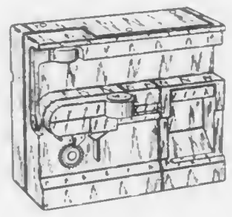
309,084
TACO SHELL HOLDER
Richard E. Alsup, 761 N. Virgil Ave., Los Angeles, Calif. 90029
Filed May 9, 1988, Ser. No. 191,497
Term of patent 14 years
U.S. Cl. D7—504



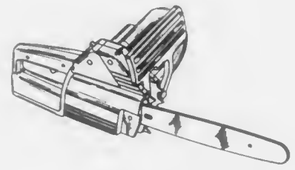
309,085
CAN OPENER
Georg H. Usbeck, Frauenbergstrasse 33, D-3550 Marburg/Lahn 1, Fed. Rep. of Germany
Filed Aug. 12, 1987, Ser. No. 84,113
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1987, 16 MR 348
Term of patent 14 years
U.S. Cl. D8—33



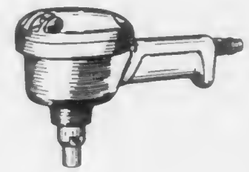
309,086
CAN-OPENER
Jan F. Van Asten, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 17, 1988, Ser. No. 194,782
Claims priority, application United Kingdom, Nov. 23, 1987, 1.046.548
Term of patent 14 years
U.S. Cl. D8—36



309,087
ELECTRIC CHAIN SAW
Etsushi Yamamoto, Hiroshima, and Toshiaki Saito, Tokyo, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Oct. 2, 1987, Ser. No. 103,974
Claims priority, application Japan, Apr. 17, 1987, 62-15226
Term of patent 14 years
U.S. Cl. D8—65



309,088
PORTABLE AIR NAILER
Yasunori Ogawa, and Kunio Yamamoto, both of Iberagi, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed May 27, 1987, Ser. No. 54,901
Term of patent 14 years
U.S. Cl. D8—68

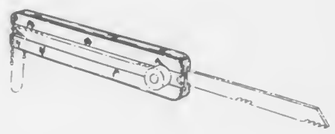


309,089
SCREWDRIVER
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan
Filed Jul. 7, 1987, Ser. No. 70,515
Term of patent 14 years
U.S. Cl. D8—82





309,090
HANDLE FOR POCKET BLADE
John M. Schmidt, 19653 Landcaster, Harper Woods, Mich. 48225, and Richard J. Osemlak, 16236 State Fair, Detroit, Mich. 48205
Filed Jul. 6, 1987, Ser. No. 70,502
Term of patent 14 years
U.S. Cl. D8—99





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309,091
TOILET SEAT HANDLE
Lester Shepard, 1321 E. 52nd St., Chicago, Ill. 60615
Filed Dec. 21, 1987, Ser. No. 135,632
Term of patent 14 years
U.S. Cl. D8—305

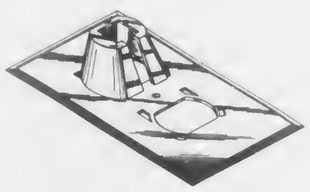


309,092
CARGO BOX DOOR SAFETY CHAIN
Howard C. Dege, and Paul R. Gilmore, both of Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 13, 1988, Ser. No. 193,866
Term of patent 14 years
U.S. Cl. D8—331





309,093
COMBINED WALL PLATE AND ELECTRICAL PLUG SAFETY CAP
Eric K. Reinholt, 511 Tish Cir., #1908, Arlington, Tex. 76006
Filed Oct. 22, 1987, Ser. No. 111,566
Term of patent 14 years
U.S. Cl. D8—353



309,094
SHAFT ALIGNMENT COLLAR
Raymond N. Donis, Souderton, and Stephen B. Wilcher, Harleysville, both of Pa., assignors to FMC Corporation, Chicago, Ill.
Filed Mar. 7, 1988, Ser. No. 165,206
Term of patent 14 years
U.S. Cl. D8—354





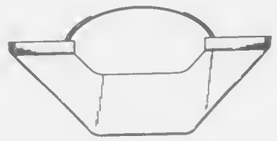


309,095
GROUND ANCHOR FOR A SOAKER HOSE
Edwin S. Holley, Waldport, Oreg., assignor to Code 10 Corporation, Jacksonville, Oreg.
Continuation of Ser. No. 863,784, May 16, 1986, abandoned.
This application Aug. 31, 1987, Ser. No. 91,314
Term of patent 14 years
U.S. Cl. D8—356





309,096
COMBINED AUTOMOTIVE PARTS AND FLUID CONTAINER
Jerry L. Dodge, Eugene, Oreg., assignor to Dodge & Associates, Ltd., Eugene, Oreg.
Filed Nov. 24, 1986, Ser. No. 934,357
Term of patent 14 years
U.S. Cl. D9—337





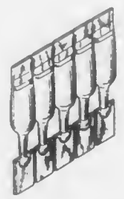
309,098
BOTTLE OR SIMILAR ARTICLE
Michel A. Moret, Geneva, Switzerland, assignor to Les Produits Associes LPA-Broxo S.A., Switzerland
Filed Dec. 3, 1986, Ser. No. 937,665
Term of patent 14 years
U.S. Cl. D9—371



309,099
FLEXIBLE CONTAINER
Michel Cazes, Vittel, France, assignor to Societe Generale des Eaux Minerales de Vittel, Vittel, France
Filed Nov. 12, 1986, Ser. No. 930,371
Claims priority, application France, May 15, 1986, 143
Term of patent 14 years
U.S. Cl. D9—373



309,097
PACKAGE OF CONTAINERS
Philip T. Price, Isleworth, England, assignor to Glaxo Group Limited, London, United Kingdom
Filed Sep. 4, 1987, Ser. No. 92,932
Claims priority, application United Kingdom, Mar. 5, 1987, 1040494
Term of patent 14 years
U.S. Cl. D9—341



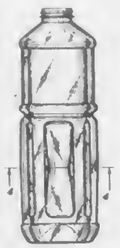
309,100
CONTAINER BODY FOR LIQUIDS AND THE LIKE
Ted L. Beaver, Roselle, Ill., assignor to Quaker State Corporation, Stamford, Conn.
Filed Jan. 9, 1986, Ser. No. 817,484
The portion of the term of this patent subsequent to Sep. 26, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—375



309,101
DECANTER
Colette M. Gardere, Pauillac, France, assignor to Societe Civile due Vignoble de Chateau Latour, France
Filed Oct. 27, 1986, Ser. No. 923,701
Claims priority, application France, Jul. 8, 1986, 86 3659
Term of patent 14 years
U.S. Cl. D9—385



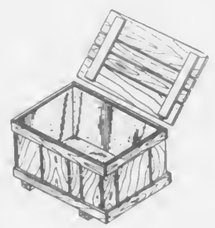
309,102
BOTTLE
Hans-Peter Wild, Heidelberg, Fed. Rep. of Germany, assignor to Rudolf Wild GmbH & Co. International KG, Fed. Rep. of Germany
Filed Sep. 1, 1988, Ser. No. 239,413
Term of patent 14 years
U.S. Cl. D9—401



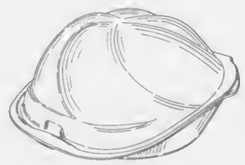
309,103
BOTTLE
William S. Maginnis, Jr., Fullerton, Calif., assignor to Beatrice/Hunt-Wesson, Inc., Fullerton, Calif.
Filed Jun. 15, 1987, Ser. No. 62,825
Term of patent 14 years
U.S. Cl. D9—404



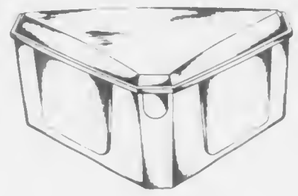
309,104
WOOD CRATE
Roger Solomon, Watchung, N.J., assignor to Test-Rite Products Corp., Clifton, N.J.
Filed Jul. 1, 1987, Ser. No. 68,319
Term of patent 14 years
U.S. Cl. D9—420



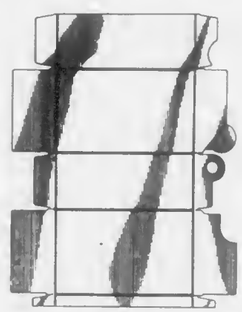
309,105
SANDWICH PACKAGE
Robert E. C. Fisher, 6989 Celtic Ct., Dublin, Ohio 43017; Joseph A. Pantelleria, 8028 Saddle Run, Powell, Ohio 43065, and Timothy K. Sheehan, 2215 Folsom St., Eau Claire, Wis. 54703
Filed Mar. 26, 1987, Ser. No. 30,545
Term of patent 14 years
U.S. Cl. D9—425



309,106
DOCK STORAGE BOX
Richard L. Willson, South Bend, Ind., assignor to Spin-Cast Plastics, Inc., S. Bend, Ind.
Filed Mar. 28, 1988, Ser. No. 174,538
Term of patent 14 years
U.S. Cl. D9—430



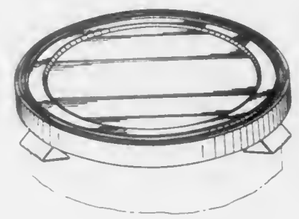
309,107
BLANK FOR PACKAGE OR THE LIKE
Stig Winterling, Yrsagrind 4, S-126 57 Hägersten, Sweden
Filed Dec. 3, 1986, Ser. No. 937,513
Claims priority, application Sweden, Jun. 6, 1986, 86-1386
The portion of the term of this patent subsequent to Jun. 5, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—433



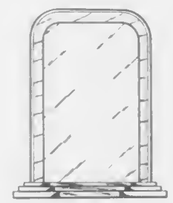
309,108
LIQUID APPLICATOR
Salvatore Tomasello, 9021 Melrose Ave., Los Angeles, Calif. 90069
Filed Aug. 27, 1987, Ser. No. 90,201
Term of patent 14 years
U.S. Cl. D9—434



309,109
COMBINED LID AND SEAL FOR CONTAINERS
David O. Allen, Wilmington, Ohio, assignor to Allen Tool Company, Inc., Wilmington, Ohio
Filed Nov. 3, 1986, Ser. No. 926,783
Term of patent 14 years
U.S. Cl. D9—436



309,110
ANNIVERSARY CLOCK CASE
Günter Neininger, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Kieninger & Obergfell GmbH & Co., St. Georgen, Fed. Rep. of Germany
Filed Oct. 29, 1986, Ser. No. 925,140
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1986, MR 1282
Term of patent 14 years
U.S. Cl. D10—1

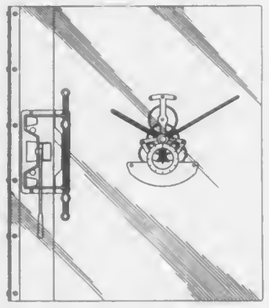


309,111
ALARM SENSOR FOR THE UNDERCARRIAGE OF AUTOMOBILES
David E. Joseffy, 1326 S. Carson Way, Aurora, Colo. 80012
Filed Oct. 5, 1987, Ser. No. 104,662
Term of patent 14 years
U.S. Cl. D10—117



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309,112
CLOCK
Rolf Ziegler, Walchwil, Switzerland, assignor to Bluwat AG, Zug, Switzerland
Filed Dec. 15, 1986, Ser. No. 942,006
Claims priority, application Hague, Jun. 24, 1986, DMA/000512
Term of patent 14 years
U.S. Cl. D10—6



309,113
COMBINED WATCH CASE AND WRISTBAND THEREFOR
Eddy Schoepfer, La Chaux-du-Milieu, Switzerland, assignor to Tag-Heuer S.A., Bienne, Switzerland
Filed Oct. 10, 1986, Ser. No. 918,093
Claims priority, application World Int. Prop. O., Apr. 15, 1986, DMA/000489
Term of patent 14 years
U.S. Cl. D10—32



309,114
WRISTWATCH
Emile M. F. Benoit-Pequignet, Fournets-Luisans, and Jean-Pierre L. Vienaet, Morteau, both of France, assignors to Montres Emile Pequignet, Morteau, France
Filed Nov. 25, 1986, Ser. No. 936,651
Claims priority, application France, May 30, 1986, 863-345
Term of patent 14 years
U.S. Cl. D10—33



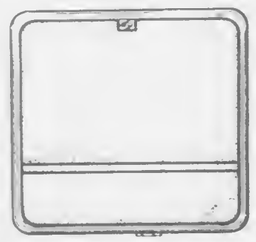
309,115
HUMIDITY SENSOR
Robert E. Yockey, Barling, and John F. Yockey, Russellville, both of Ark., assignors to Bay Ridge Distributing, Inc., Russellville, Ark.
Filed Oct. 28, 1986, Ser. No. 924,586
Term of patent 14 years
U.S. Cl. D10—56



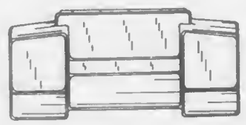
309,116
COMBINED COLLAPSIBLE CUP, COMPASS AND ALTIMETER
Ernest H. Marshall, 30 Saulters Rd., Manchester, Conn. 06040
Filed Oct. 30, 1987, Ser. No. 114,374
Term of patent 14 years
U.S. Cl. D10—62



309,117
SCALE BASE
Francesco L. Carnevale, Waynesboro, Miss., assignor to Sunbeam Corporation, Downers Grove, Ill.
Filed Nov. 14, 1986, Ser. No. 931,455
Term of patent 14 years
U.S. Cl. D10—94



309,118
FLOW METER
Robert E. Hall, Wichita, Kans., assignor to Great Plains Industries, Inc., Wichita, Kans.
Filed Apr. 27, 1987, Ser. No. 43,235
Term of patent 14 years
U.S. Cl. D10—96



309,119
RECEIVER FOR TRACKING DEER HUNTING ARROWS
Mark L. Kremitzki, 206 S. State, Springfield, Ill. 62704
Filed Sep. 24, 1987, Ser. No. 100,707
Term of patent 14 years
U.S. Cl. D10—104

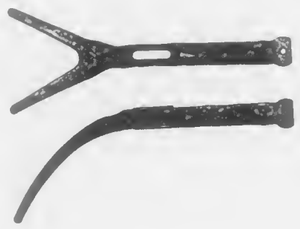


309,120
SOUND-PRODUCING RATTLING ANTLER FOR ATTRACTING DEER AND ELK
Johnny E. Stewart, Waco, Tex., assignor to Johnny Stewart Game Calls, Inc., Waco, Tex.
Filed Apr. 2, 1987, Ser. No. 33,548
Term of patent 14 years
U.S. Cl. D10—116



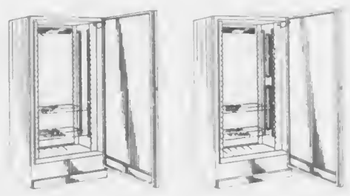
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309,121
SOUND-PRODUCING RATTLING ANTLER FOR ATTRACTING DEER AND ELK
Johnny E. Stewart, Waco, Tex., assignor to Johnny Stewart Game Calls, Inc., Waco, Tex.
Filed Apr. 2, 1987, Ser. No. 33,546
Term of patent 14 years
U.S. Cl. D10—116



309,122
ENVIRONMENTAL CHAMBER FOR CONTROLLED PLANT GROWTH
Harry P. Biemolt, Ambler, Pa., assignor to Hotpack Corporation, Philadelphia, Pa.
Filed Dec. 21, 1987, Ser. No. 135,634
Term of patent 14 years
U.S. Cl. D11—145

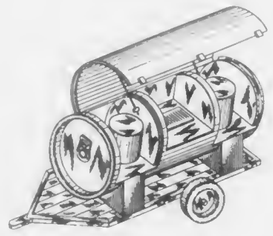




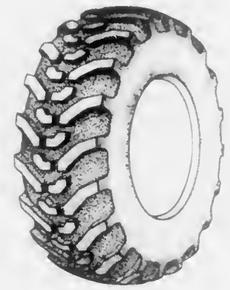
309,123
SNOW SLED
Richard E. Brooks, 822 W. Hyde Park, St. Joseph, Mo. 64504
Filed Nov. 6, 1987, Ser. No. 117,320
Term of patent 14 years
U.S. Cl. D12—11



309,124
BEVERAGE DISPENSING TRAILER
David R. Young, 8704 Easy St., Massillon, Ohio 44646
Filed Feb. 25, 1987, Ser. No. 18,988
Term of patent 14 years
U.S. Cl. D12—102



309,125
TIRE
Mark L. Bonko, Hartville, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 30, 1987, Ser. No. 9,395
The portion of the term of this patent subsequent to Oct. 31, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—151

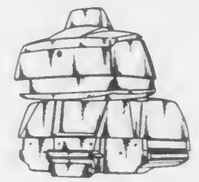


309,126
BRACKET FOR SUPPORTING MOUNTING BAR ON VEHICLE
Jeff A. Carr, 10433 Samoline Ave., Downey, Calif. 90241
Filed Apr. 20, 1987, Ser. No. 40,143
Term of patent 14 years
U.S. Cl. D12—157

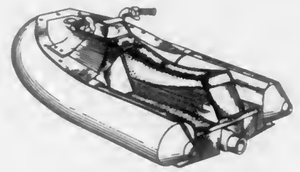




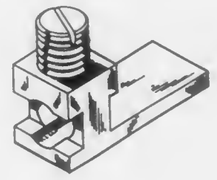
309,127
MOTORCYCLE REAR CARRIER UNIT
Toshiyuki Yamada, Saitama; Makoto Kitagawa, Tokyo, and Toshio Kurihara, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 21, 1987, Ser. No. 99,054
Term of patent 14 years
U.S. Cl. D12—158



309,128
WATER CRAFT
Lloyd Walker, Newport; Masakazu Matsuzawa, San Pedro, and Martin Manchester, Long Beach, all of Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1987, Ser. No. 121,775
Term of patent 14 years
U.S. Cl. D12—316



309,129
L-SHAPED ELECTRICAL CONNECTOR
David M. Ottmann, Mississauga, Canada, assignor to Connector Manufacturing Company, Cincinnati, Ohio
Filed Apr. 24, 1986, Ser. No. 857,608
Term of patent 14 years
U.S. Cl. D13—149

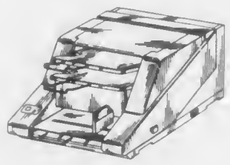


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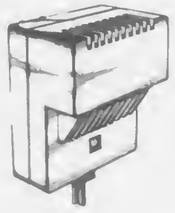
309,130
CENTRAL PROCESSOR FOR AN ELECTRONIC COMPUTER
Atsuo Yoshida, Kokubunji; Koushirou Adachi, Tokorozawa; Tousaku Hattori, Tokyo; Hiroshi Watanabe, Hitachi, and Yoshiaki Takahashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 24, 1988, Ser. No. 160,077
Claims priority, application Japan, Sep. 4, 1987, 62-35952
Term of patent 14 years
U.S. Cl. D14—102



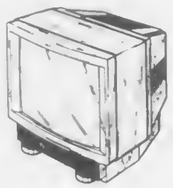
309,131
OPTICAL CHARACTER READER FOR ELECTRONIC COMPUTERS
Hideyuki Horie, Kamagaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 15, 1987, Ser. No. 108,724
Claims priority, application Japan, Apr. 20, 1987, 62-15154
Term of patent 14 years
U.S. Cl. D14—107



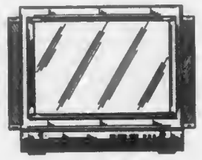
309,132
MODEM OR SIMILAR ARTICLE
Peter H. Muller, Los Gatos; Peter E. Lowe, Palo Alto, and Peter R. Edwards, San Lorenzo, all of Calif., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.
Filed Feb. 22, 1988, Ser. No. 159,000
Term of patent 14 years
U.S. Cl. D14—107

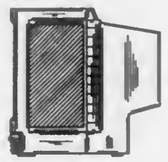


309,133
TELEVISION RECEIVER
Jae S. Jo, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 8, 1988, Ser. No. 281,511
Claims priority, application Rep. of Korea, Jun. 29, 1988, 8981/1988
Term of patent 14 years
U.S. Cl. D14—126



309,134
TELEVISION SET
Shigeru Kurozumi; Yoshito Fujii, and Harumi Sakamoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 9, 1987, Ser. No. 94,543
Term of patent 14 years
U.S. Cl. D14—126





309,135
COMBINED VIDEO TAPE RECORDER AND TELEVISION RECEIVER
Takeshi Iwama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 10, 1987, Ser. No. 119,412
Claims priority, application Japan, May 22, 1987, 62-20095
Term of patent 14 years
U.S. Cl. D14—129



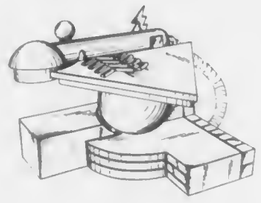
309,136
PORTABLE TWO-WAY RADIO OR SIMILAR ARTICLE
Craig F. Siddoway, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 2, 1987, Ser. No. 116,742
Term of patent 14 years
U.S. Cl. D14—137

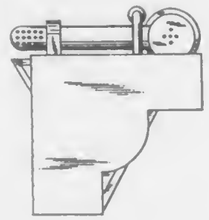




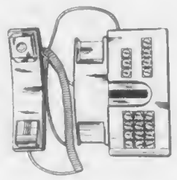
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309,137
TELEPHONE SET OR SIMILAR ARTICLE
Marshall Glaser, Far Rockaway, N.Y., assignor to New York Design Studio, Incorporated, Far Rockaway, N.Y.
Filed Apr. 17, 1989, Ser. No. 339,370
Term of patent 14 years
U.S. Cl. D14—151



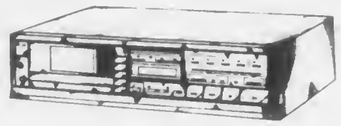


309,138
TELEPHONE SET WITH HANDSET TELEPHONE AND STAND THEREFOR HAVING KEYBOARD AND SPEAKERPHONE
Juan M. Azpeitia Ortiz de Arri, San Sebastian, Spain, assignor to Solac Telecom, S.A., Vitoria Alava, Spain
Filed Mar. 14, 1989, Ser. No. 323,634
Claims priority, application Spain, Sep. 15, 1988, 116861
Term of patent 14 years
U.S. Cl. D14—151





309,139
DIGITAL AUDIO COMPACT DISK PLAYER
Hiromi Okamoto, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Oct. 21, 1986, Ser. No. 922,118
Claims priority, application Japan, Apr. 24, 1986, 61-15428
Term of patent 14 years
U.S. Cl. D14—156

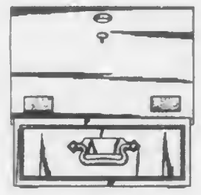


309,140
TAPE PLAYER
Youji Honda, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 30, 1987, Ser. No. 68,641
Claims priority, application Japan, Jan. 14, 1987, 62-991
Term of patent 14 years
U.S. Cl. D14—165

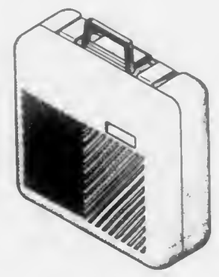
309,141
COMMUNICATIONS ANTENNA
Gershon N. Cooper, Los Angeles, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Oct. 7, 1988, Ser. No. 254,668
Term of patent 14 years
U.S. Cl. D14—230

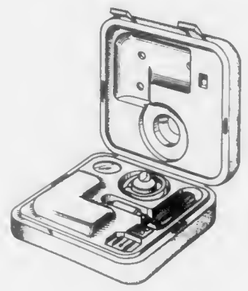


309,142
SUPPORT STAND FOR A DESK TELEPHONE
David A. Swinburne, P.O. Box 5710, Bethesda, Md. 20814
Filed Jan. 12, 1989, Ser. No. 296,425
Term of patent 14 years
U.S. Cl. D14—251

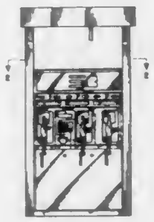


309,143
PACKAGED AIR COMPRESSOR SET
Muh-Chuan Yang, No.8, Lane 312, Sec. 3, Chungking S. Road, Taipei, Taiwan, assignor to Muh-Chuan Yang, Taipei, Taiwan
Filed Jul. 29, 1987, Ser. No. 79,491
Term of patent 14 years
U.S. Cl. D15—9

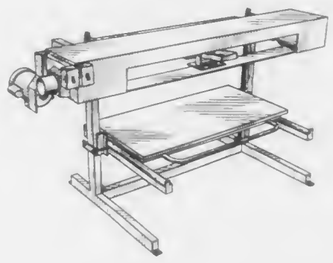




309,144
GASOLINE DISPENSING UNIT OR SIMILAR ARTICLE
Donald P. Austin, Jamestown; Albert L. Lawrence, Thomasville; Arthur C. Prewitt, Julian, all of N.C., and James E. Secherman, Palo Alto, Calif., assignors to Gilbarco Inc., Greensboro, N.C.
Filed Sep. 15, 1988, Ser. No. 245,056
Term of patent 14 years
U.S. Cl. D15—9.2

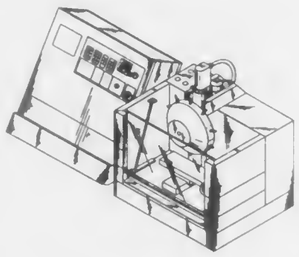


309,145
STROKE SANDER
John E. Miller, Jr., Kansas City, Mo., assignor to Woodmaster Tools, Inc., Kansas City, Mo.
Filed Apr. 5, 1988, Ser. No. 178,072
Term of patent 14 years
U.S. Cl. D15—124

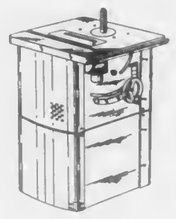


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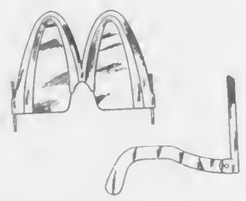
309,146
VERTICAL MILLING CENTER
Winfried Nemetz, Oberalm, Austria, assignor to Maier & Co. Fabrik Fuer Spezialmaschinen, Hallein, Austria
Filed May 5, 1988, Ser. No. 190,514
Claims priority, application Austria, Jan. 15, 1988, 18907
Term of patent 14 years
U.S. Cl. D15—131



309,147
STAND FOR A WOODWORKING MACHINE
Peter Krouthaler, Gries, Austria, assignor to Maier & Co. Fabrik Fuer Spezialmaschinen, Hallein, Austria
Filed Apr. 26, 1988, Ser. No. 186,154
Term of patent 14 years
U.S. Cl. D15—133



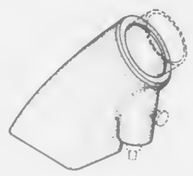
309,148
EYEWEAR
David A. Greufe, 2145 N. 31st St., Springfield, Oreg. 97477
Filed Jan. 25, 1988, Ser. No. 148,228
Term of patent 14 years
U.S. Cl. D16—102



309,149
EYEGLASS FRAME
Roger Pouilloux, Paris, France, assignor to Sporoptic Pouilloux S.A., Paris, France
Filed Aug. 17, 1987, Ser. No. 86,660
Claims priority, application France, Mar. 23, 1987, 87 1669
Term of patent 14 years
U.S. Cl. D16—102



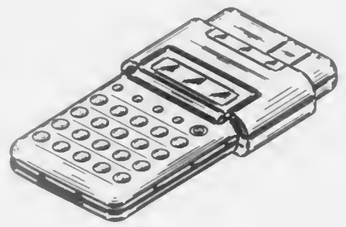
309,150
MICROSCOPE HOUSING
John B. Wentz, 8619 Skyline Blvd., Oakland, Calif. 94611
Continuation-in-part of Ser. No. 58,422, Jun. 5, 1987, abandoned. This application Apr. 26, 1988, Ser. No. 186,980
Term of patent 14 years
U.S. Cl. D16—131



309,151
GUITAR
Jay T. Beard, 1630 S. Delaware St., San Mateo, Calif. 94401
Filed Dec. 18, 1987, Ser. No. 134,916
Term of patent 14 years
U.S. Cl. D17—18



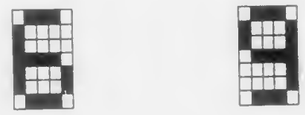
309,152
ELECTRONIC CALCULATOR WITH PRINTER
Hiroshi Sakaguchi, and Yoko Ikuzawa, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Apr. 30, 1987, Ser. No. 44,492
Claims priority, application Japan, Nov. 5, 1986, 61-43758
Term of patent 14 years
U.S. Cl. D18—7



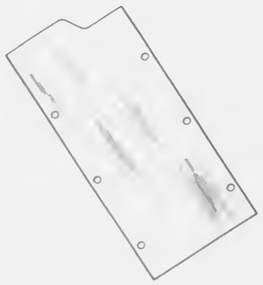
309,153
ELECTRONIC CALCULATOR
Masaji Sawada, and Toshiya Takahashi, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 9, 1987, Ser. No. 94,922
Claims priority, application Japan, Apr. 8, 1987, 62-13677
Term of patent 14 years
U.S. Cl. D18—7



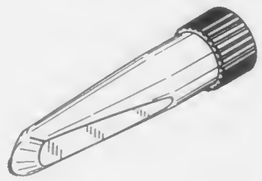
309,154
FONT OF TYPE
Kenneth D. Collister, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.
Filed Dec. 5, 1988, Ser. No. 280,296
Term of patent 14 years
U.S. Cl. D18—27



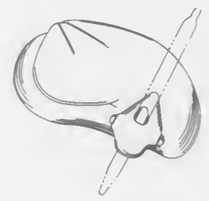
309,155
INDEX CARD
Ally O. Hing, 1251 W. Main St., Superior, Ariz. 85273
Filed Mar. 1, 1988, Ser. No. 162,434
Term of patent 14 years
U.S. Cl. D19—1



309,156
CHALK MARKER
Junichi Kuwabara, Osaka, Japan, assignor to Clover Manufacturing Co., Ltd., Osaka, Japan
Filed Mar. 2, 1987, Ser. No. 20,674
Term of patent 14 years
U.S. Cl. D19—41

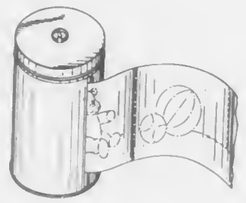


309,157
COMBINED WRITING INSTRUMENT HOLDER AND HAND SUPPORT
Paula Ertz, Newport Beach, Calif., assignor to Smith & Nephew Rolyan, Inc., Menomonee Falls, Wis.
Filed Jul. 1, 1987, Ser. No. 68,322
Term of patent 14 years
U.S. Cl. D19—55



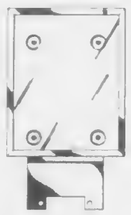
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309,158
COMBINED CRAYON CONTAINER AND COLORING STRIP
Herbert B. Shattan, New York, N.Y., assignor to Bob Shattan Associates, Inc., New York, N.Y.
Filed Dec. 8, 1986, Ser. No. 939,474
Term of patent 14 years
U.S. Cl. D19—89

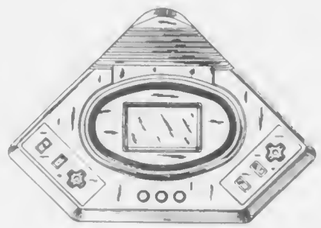


309,159
PLANT TAG
Robert C. Hickmott, Lansing, Mich., assignor to The John Henry Company, Lansing, Mich.
Continuation-in-part of Ser. No. 12,633, Feb. 9, 1987. This application Sep. 23, 1987, Ser. No. 100,079
Term of patent 14 years
U.S. Cl. D20—26

309,160
ADVERTISING FRAME FOR PAY TELEPHONE
Eddie L. Holland, Cumming, Ga., assignor to Phillips & Brooks, Inc., Cumming, Ga.
Filed Oct. 16, 1986, Ser. No. 919,645
Term of patent 14 years
U.S. Cl. D20—41

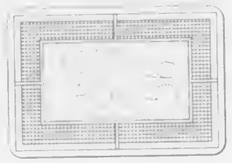


309,161
ELECTRONIC GAME HOUSING
Donny Leung, Tai Koo Shing, Hong Kong, assignor to Video Technology Industries, Inc., Wheeling, Ill.
Filed Oct. 14, 1987, Ser. No. 108,045
Term of patent 14 years
U.S. Cl. D21—13

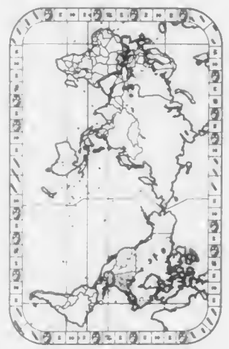


309,162
LOTTO PICK CARDS
Larry Swalwell, Box 30, Madroua & Craig, R.R. #1, Nauoose Bay, B.C., V0R 2R0, Canada
Filed Jun. 22, 1987, Ser. No. 64,797
Term of patent 14 years
U.S. Cl. D21—37

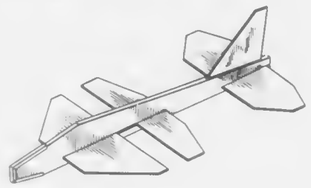




309,163
GAME BOARD
Howard E. Jones, Box 20, P.O. North Beach, Western Australia, Australia 6020
Filed Jun. 30, 1987, Ser. No. 1,505
Term of patent 14 years
U.S. Cl. D21—31



309,164
MODEL AIRPLANE
Daniel M. Antonucci, 12 Earlswood Dr., Pittsburgh, Pa. 15228, assignor to Daniel M. Antonucci and David A. Celko, Pittsburgh, Pa.
Filed Feb. 29, 1988, Ser. No. 164,986
Term of patent 14 years
U.S. Cl. D21—89

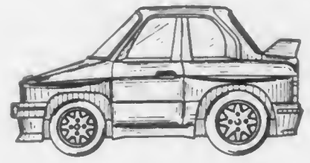


309,165
CHILDREN'S TOY
Andrew J. Kaplan, Portsmouth, and Charles E. Spinale, Barrington, both of N.H., assignors to Kinderworks Corporation, Portsmouth, N.H.
Filed Oct. 31, 1986, Ser. No. 926,234
Term of patent 14 years
U.S. Cl. D21—106



309,166
TOY MOTOR CAR
Kazuo Ishida, Tokyo, Japan, assignor to Marusan Co., Ltd., Tokyo, Japan
Filed Aug. 2, 1988, Ser. No. 227,325
Claims priority, application Japan, Feb. 3, 1988, 63-4003
Term of patent 14 years
U.S. Cl. D21—136





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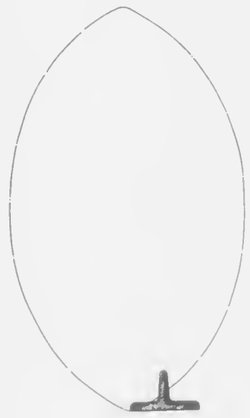
309,167
EXERCISE CYCLE
John Griffin, Salt Lake City, Utah, assignor to Weslo, Inc., Logan, Utah
Filed Apr. 18, 1988, Ser. No. 182,572
Term of patent 14 years
U.S. Cl. D21—194



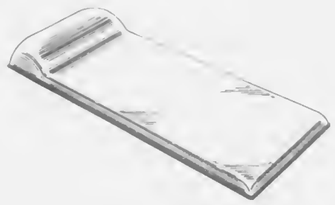


309,168
PLACE KICKING TEE
John W. Smith, 4398 Cedar Ridge Trail, Stone Mountain, Ga. 30083
Filed Nov. 23, 1987, Ser. No. 123,986
Term of patent 14 years
U.S. Cl. D21—209





309,169
SWIMMING POOL FLOAT
Robert S. Scheurer, P.O. Box 539, Wichita Falls, Tex. 76307
Filed Dec. 10, 1987, Ser. No. 130,969
The portion of the term of this patent subsequent to Mar. 6, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—237



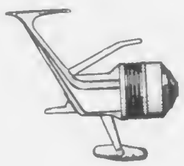
309,170
SPORTS GOAL
Jeff Bisch, 535 East Montecito St., Santa Barbara, Calif. 93103
Filed Oct. 15, 1987, Ser. No. 109,243
Term of patent 14 years
U.S. Cl. D21—201



309,171
FISHING REEL
Etsuo Hiraishi, and Teruhisa Numata, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Aug. 20, 1987, Ser. No. 87,712
Claims priority, application Japan, Feb. 25, 1987, 62-7267
Term of patent 14 years
U.S. Cl. D22—141



309,172
FISHING REEL
Etsuo Hiraishi, and Teruhisa Numata, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Jan. 7, 1988, Ser. No. 141,658
Claims priority, application Japan, Jul. 21, 1987, 62-29654
Term of patent 14 years
U.S. Cl. D22—141



309,173
VACUUM BREAKER
Roger E. Stipe, Greensburg, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Dec. 29, 1986, Ser. No. 947,533
Term of patent 14 years
U.S. Cl. D23—233

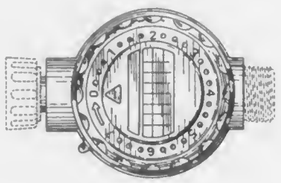


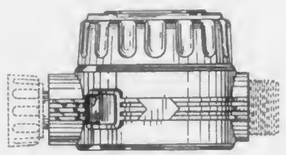
309,174
AIR PUMP
Masahiro Furusawa, 12-3, Ryouke 1-chome, Urawashi, Saitama-ken, Japan
Filed Feb. 11, 1988, Ser. No. 156,200
Claims priority, application Japan, Aug. 18, 1987, 62-33301; Aug. 18, 1987, 62-33308; Aug. 18, 1987, 62-33310; Aug. 18, 1987, 62-33311
Term of patent 14 years
U.S. Cl. D23—231



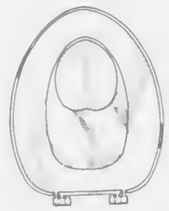
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309,175
WATER CONTROL VALVE
Malcolm Hastings, Coventry, and John Lang, Bicester, both of England, assignors to Hozelock-ASL Limited, Haddenham, England
Filed Sep. 18, 1986, Ser. No. 909,083
Claims priority, application United Kingdom, Jun. 10, 1986, 1034683
Term of patent 14 years
U.S. Cl. D23—245





309,176
COMBINATION ADULT AND CHILD TOILET SEAT AND COVER
James R. Sessions, 127 Thayer Way, Vallejo, Calif. 94589
Filed Jun. 19, 1986, Ser. No. 876,355
Term of patent 14 years
U.S. Cl. D23—296

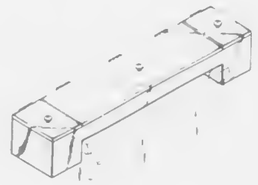




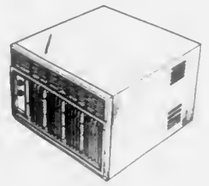
309,177
CHILD'S TOILET SEAT
Susan C. Weitzman, 516 W. Lafayette St., Easton, Pa. 18042
Filed Apr. 18, 1988, Ser. No. 182,578
Term of patent 14 years
U.S. Cl. D23—311



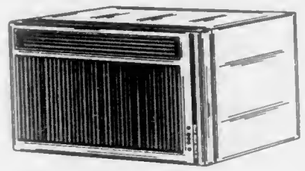
309,178
STORAGE CONTAINER FOR PLACEMENT ATOP A TOILET TANK
Charles A. Lowder, Sr., 705 S. Redwood Rd. #70, Salt Lake City, County of Salt Lake, Utah 84104
Filed Apr. 11, 1988, Ser. No. 184,031
Term of patent 14 years
U.S. Cl. D23—313



309,179
AIR CONDITIONER
Suk J. Choi, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 4, 1988, Ser. No. 164,120
Term of patent 14 years
U.S. Cl. D23—353



309,180
AIR CONDITIONER
Hiroshi Moritani, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 25, 1987, Ser. No. 125,053
Claims priority, application Japan, Jun. 4, 1987, 62-23043
Term of patent 14 years
U.S. Cl. D23—353

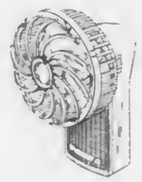


309,181
RADON EXHAUST VENT CAP
Ronald F. Simon, R.D. 2, Box 481, Barto, Pa. 19504
Filed Oct. 25, 1988, Ser. No. 262,005
Term of patent 14 years
U.S. Cl. D23—371

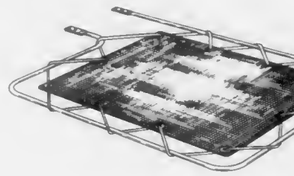




309,182
POCKET FAN OR SIMILAR ARTICLE
Chin-Tien Hsu, No. 7, Lane 120, Hu-Lin St., Taipei, Taiwan
Filed Jun. 24, 1988, Ser. No. 211,716
Term of patent 14 years
U.S. Cl. D23—382

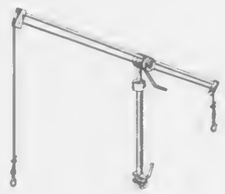


309,183
CEILING FAN BLADE
William N. Taylor, III, 2914 Shady Lake Cir., Carrollton, Tex. 75006
Filed Mar. 29, 1988, Ser. No. 174,639
Term of patent 14 years
U.S. Cl. D23—413



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309,184
SURGICAL SUPPORT STAND FOR USE IN ARTHROSCOPIC SURGERY OF THE SHOULDER OR THE LIKE
Ronald A. Sanderson, Calabasas; John L. Wilson, Granada Hills, and Nolan Maples, Burbank, all of Calif., assignors to Cal-Surgical, Inc., Bishop, Calif.
Filed Jun. 18, 1987, Ser. No. 63,517
Term of patent 14 years
U.S. Cl. D24—1.1

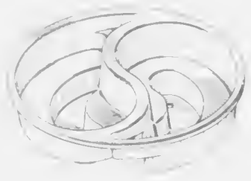


309,185
COMBINED CEMENTING TOOL AND VIBRATORY ROD FOR DENTAL APPLICATIONS
Stephen J. Lockawich, Concord, N.H., assignor to Herbert L. Stiles and Lawrence J. Joyce, both of Penacook, N.H.
Filed May 20, 1988, Ser. No. 197,083
Term of patent 14 years
U.S. Cl. D24—10

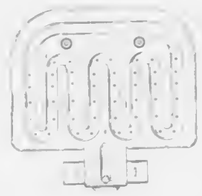


309,186
DUAL-CHAMBERED HYDRO TUB SPA
John W. Hargrove, Houston, Tex., assignor to Nancy A. Brown, Houston, Tex.
Filed May 4, 1987, Ser. No. 46,861
Term of patent 14 years
U.S. Cl. D24—38



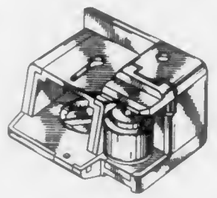


309,187
BUBBLING BATH BACK PAD
Francois Geneve, and Luc Heiligenstein, both of Chicago, Ill., assignors to Associated Mills Inc., Chicago, Ill.
Filed Jun. 30, 1988, Ser. No. 214,108
Term of patent 14 years
U.S. Cl. D24—38





309,188
MEDICATION INFUSION CASSETTE
Lanny A. Gorton, Sunland, Calif., assignor to Pacesetter Infusion, Ltd., Sylmar, Calif.
Filed Dec. 1, 1987, Ser. No. 128,532
Term of patent 14 years
U.S. Cl. D24—51



309,189
BLOCK FOR SUPPORTING THE HEAD OF AN INJURED INDIVIDUAL
Colleen M. Bowlin, San Antonio, Tex., assignor to ErgoMed, Inc., San Antonio, Tex.
Filed Apr. 11, 1989, Ser. No. 336,300
Term of patent 14 years
U.S. Cl. D24—64



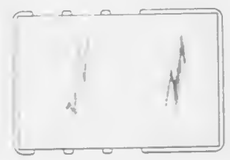
309,190
SERVICE BUILDING AND THE LIKE
Alan E. Goldberg, New Caanan, Conn., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 22, 1987, Ser. No. 111,462
Term of patent 14 years
U.S. Cl. D25—34





309,191
SERVICE BUILDING AND THE LIKE
Alan E. Goldberg, New Caanan, Conn., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 22, 1987, Ser. No. 111,461
Term of patent 14 years
U.S. Cl. D25—34



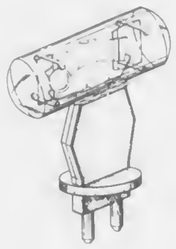


309,192
TILE
Luigi Colani, Bern, Switzerland, assignor to Agrob AG, Fed. Rep. of Germany
Filed Jun. 29, 1987, Ser. No. 67,809
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1986, 17013
Term of patent 14 years
U.S. Cl. D25—138



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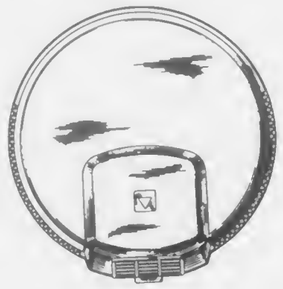
309,193
LAMP
Kirti B. Chakrabarti, Danvers, Mass.; Donald F. Garrity, Jr., Chester, N.H., and James L. Cashman, III, Salem, Mass., assignors to GTE Products Corporation, Danvers, Mass.
Filed Dec. 16, 1986, Ser. No. 942,641
Term of patent 14 years
U.S. Cl. D26—2

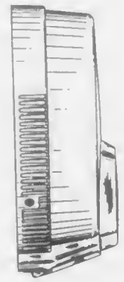


309,194
LIGHT DIFFUSER
Alan A. Archambault, Smithfield; Nicholas R. Palumbo, Cumberland, and Lyn C. Fletcher, East Providence, all of R.I., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 24, 1986, Ser. No. 934,085
Term of patent 14 years
U.S. Cl. D26—125

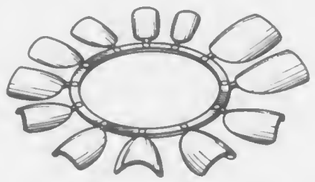


309,195
HAND DRYER
Joseph J. Pilolla, Elmhurst; John R. Wilson, Naperville; Steven C. Meier, and James Kendall, both of Chicago, all of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed Sep. 21, 1987, Ser. No. 99,052
Term of patent 14 years
U.S. Cl. D28—54.1





309,196
ARTIFICIAL NAIL SIZING RING
Aldran H. LaJoie, Mission Viejo, Calif., assignor to Cosmar Corporation, Huntington Beach, Calif.
Filed Mar. 10, 1988, Ser. No. 166,173
Term of patent 14 years
U.S. Cl. D28—56



309,197
HAIRSTYLING PROJECTION SCREEN
Joseph K. Williams, Jr., 3001 Orleans Ave., New Orleans, La. 70119
Filed Feb. 18, 1986, Ser. No. 834,046
Term of patent 14 years
U.S. Cl. D28—99



309,198
HANDLE FOR FIRE EXTINGUISHER
Esmat Macramalla, Beaconsfield, Canada, assignor to Incendex Inc., Quebec, Canada
Filed Mar. 4, 1988, Ser. No. 165,882
Term of patent 14 years
U.S. Cl. D29—5

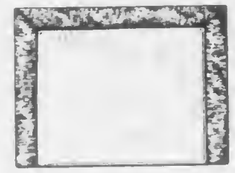


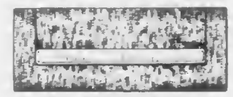


309,199
BED FOR PETS
Franklin McMahon, New York, N.Y., assignor to Univier International Corporation, Dallas, Tex.
Filed Mar. 9, 1988, Ser. No. 165,900
Term of patent 14 years
U.S. Cl. D30—118

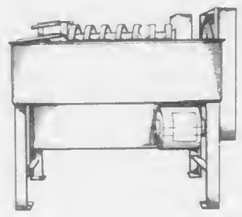


309,200
BED FOR PETS
Franklin McMahon, New York, N.Y., assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 9, 1988, Ser. No. 165,560
The portion of the term of this patent subsequent to May 24, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—118





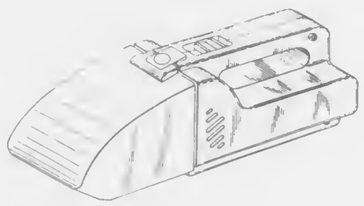
309,201
GOLF BALL WASHING MACHINE
Derone W. Thrasher, 26661 S. MacArthur, Tracy, Calif. 95376
Filed Nov. 2, 1987, Ser. No. 115,097
Term of patent 14 years
U.S. Cl. D32—1



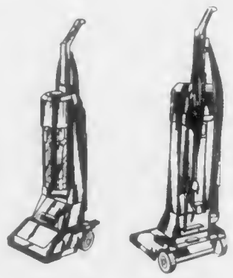
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309,202
RECHARGEABLE VACUUM CLEANER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 6, 1987, Ser. No. 22,986
Claims priority, application United Kingdom, Oct. 17, 1986, 1037474
The portion of the term of this patent subsequent to Nov. 28, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—18





309,203
VACUUM CLEANER
Gordon W. Goodrich, Grand Rapids, Mich., assignor to Amway Corporation, Ada, Mich.
Filed Sep. 4, 1987, Ser. No. 93,394
Term of patent 14 years
U.S. Cl. D32—22

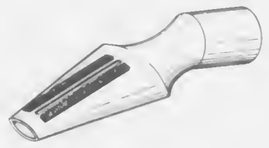


309,204
VACUUM CLEANER
John F. Sovis, Twinsburg; James J. Kopco, Richmond Heights; Jeffrey M. Kalman, Cleveland Heights, and Craig M. Saunders, Sagamore Hills, all of Ohio, assignors to Royal Appliance Manufacturing Co., Cleveland, Ohio
Filed Sep. 22, 1987, Ser. No. 99,510
Term of patent 14 years
U.S. Cl. D32—22

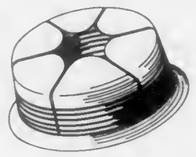


309,205
VACUUM CLEANER NOZZLE
Wilhelm Schuster, Heidelberg, Fed. Rep. of Germany, assignor to Allstar Verbrauchsguter GmbH, Fed. Rep. of Germany
Filed Mar. 24, 1987, Ser. No. 29,822
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, DM/007521
Term of patent 14 years
U.S. Cl. D32—32





309,206
SCRAPER FOR REMOVING FROST FROM WINDSHIELDS OR THE LIKE
Jeremy J. Kelley, P.O. Box 611, Cordova, Ak. 99574
Filed Dec. 11, 1987, Ser. No. 131,523
Term of patent 14 years
U.S. Cl. D32—46



309,207
CLOTHESPIN
James S. Sporer, 204 Lambertoo St., Franklin, Pa. 16323
Filed Aug. 6, 1987, Ser. No. 82,370
Term of patent 14 years
U.S. Cl. D32—61



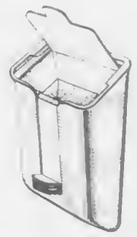




309,208
TRASH CONTAINER
Ralph Cajigas, 3540 W. First Ave., Hialeah, Fla. 33012
Filed Sep. 2, 1988, Ser. No. 239,837
Term of patent 14 years
U.S. Cl. D34—4



309,209
LITTER BIN FOR USE IN CARS
Arie G. Oliemans, Houten, and Johan H. Visser, Bilthoven, both of Netherlands, assignors to Deanco Investment Company, Ltd., Clarons, Switzerland
Filed Jan. 11, 1988, Ser. No. 142,771
Claims priority, application Hague, Jul. 10, 1987, DM/008935
Term of patent 14 years
U.S. Cl. D34—9



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LIST OF PATENTEES

TO WHOM

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NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Hiltunen, Matti; Lundqvist, Ragnar; and Sarkki, Juha, 4,940,007, Cl. 110-347.000.

Abbiate, Jean-Claude; Blanc, Alain; Jeanniot, Patrick; and Lallemand, Eric, to Internationl Business Corporation. Predictive clock recovery circuit. 4,941,151, Cl. 375-20.000.

Abbott Laboratories: *See*—
Davis, Charles L., 4,941,201, Cl. 455-41.000.
Kazlauskas, Vidas P.; Janczak, Roger A.; and Durley, Benton A., III, 4,940,527, Cl. 204-401.000.

Abe, Yasunao: *See*—
Ishida, Takashi; and Abe, Yasunao, 4,939,974, Cl. 84-609.000.

Abeles, Joseph H.; and Deri, Robert J., to Bell Communications Research, Inc. Optical system comprising non-uniformly spaced array of parallel optical waveguide elements. 4,940,303, Cl. 350-96.110.

Abend, Thomas; and Lauchenauer, Max, to EMS-Togo AG. Plastisol molding material. 4,940,748, Cl. 524-521.000.

Aberson, James A.; DeFabritis, Raymond P.; Ridgway, David N.; and Vicory, William A., to AT&T Bell Laboratories. Optical fiber splice. 4,940,307, Cl. 350-96.210.

Abott, Richard A.; Ringe, Stephen J.; and Keeler, Michael J., to Fruehauf Corporation. Cargo vehicle wall construction. 4,940,279, Cl. 296-181.000.

Abou-Gharbia, Magid A.: *See*—
Childers, Wayne E., Jr.; and Abou-Gharbia, Magid A., 4,940,789, Cl. 540-581.000.

Abraham, Dennis G.: *See*—
Matyas, Stephen M.; Abraham, Dennis G.; Johnson, Donald B.; Karne, Ramesh K.; Le, An V.; Prymak, Rostislaw; Thomas, Julian; Wilkins, John D.; and Yeh, Phil C., 4,941,176, Cl. 380-21.000.

Achenbach Buschhutten GmbH: *See*—
Stahl, Werner; and Barten, Axel, 4,939,920, Cl. 72-237.000.

Ackeret, Peter, to Licinvest AG. Cyclic rearrangement device for stacked rectangular sheets. 4,939,860, Cl. 40-513.000.

ACO Polymer Products, Inc.: *See*—
Van Duyn, Phillip L.; Barenwald, Jorg R.; and Kruse, Kenneth E., 4,940,359, Cl. 405-118.000.

Actel Corporation: *See*—
Chen, Shih-Ou; McCollum, John L.; and Chiang, Steve S., 4,941,028, Cl. 357-23.130.

Adachi, Masakazu; and Fukao, Kaname, to NGK Insulators, Ltd. Method of producing non-oxide ceramic sintered bodies. 4,940,843, Cl. 264-65.000.

Adachi, Yoshiharu; Kuwana, Kazutaka; and Yoshida, Tsuyoshi, to Aisin Seiki Kabushiki Kaisha. Brake pressure control device. 4,940,295, Cl. 303-117.000.

Adair, Paul C.: *See*—
Davis, Paul D.; Hillenbrand, Gary F.; and Adair, Paul C., 4,940,645, Cl. 430-438.000.

Adaniya, Takeshi; Yomura, Yoshinori; Ooniwa, Naoyuki; Yasue, Yoshihiko; Kagechika, Hiroshi; Mishima, Tadahiko; and Ishikawa, Hiroshi, to NKK Corporation. Plated steel sheet for a can. 4,940,638, Cl. 428-648.000.

ADC Telecommunications, Inc.: *See*—
Rademacher, Kevin A.; Dean, Dennis R.; Dixon, Jerry L., Sr.; and Szklarz, Robert J., 4,941,165, Cl. 379-1.000.

Aderhold, James L.: *See*—
Kukes, Simon G.; Hensley, Albert L., Jr.; Kelterborn, Jeffrey C.; and Aderhold, James L., 4,940,530, Cl. 208-89.000.

Adkins, Richard C., to British Aerospace PLC. Jet pump with stabilized mixing of primary and secondary flows. 4,940,392, Cl. 417-151.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Hampton, Hilary J.; Gaiser, John W.; Taylor, Charles S.; and Machold, Timothy R., 4,940,062, Cl. 128-772.000.

Advanced Micro Devices, Inc.: *See*—
Haubursin, Pierre F., 4,941,126, Cl. 364-900.000.
Sfarti, Adrian, 4,941,111, Cl. 364-521.000.
Tran, Thang M., 4,940,908, Cl. 307-443.000.

Advanced NMR Systems, Inc.: *See*—
Rzedzian, Richard R., 4,940,941, Cl. 324-312.000.

AE PLC: *See*—
Fletcher-Jones, David F., 4,939,984, Cl. 92-176.000.

Aebi, Gilbert; Raye, Pierre; David, Maurice J. A.; and Marianneau, Michel E. A., to Stellram S.A. Milling cutter with indexable inserts. 4,940,369, Cl. 407-42.000.

Aebi, Rudolf; Hubele, Adolf; and Speich, Jurg, to Ciba-Geigy Corporation. Preparation of the diastereomeric mixture 2R,4S-1-[2-(2,4-dichlorophenyl)-4-n-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole. 4,940,799, Cl. 548-268.800.

AECI Limited: *See*—
Curutchet, Jean L.; du Plessis, Michael P.; and Crane, Andre P., 4,939,993, Cl. 102-202.140.

Aerospatiale Societe Nationale Industrielle: *See*—
Castelain, Yves; Jaubert, Philippe; and Peltier, Rene , 4,940,382, Cl. 414-750.000.

Agency of Industrial Science and Technology, President of: *See*—
Okutani, Takeshi; Nakata, Yoshinori; Suzuki, Masaaki; and Akiyama, Takeo, 4,940,684, Cl. 502-178.000.

Agency of Industrial Science & Technology, Ministry of Industrial Trade & Industry: *See*—
Kamei, Hirotake, 4,940,057, Cl. 128-653.00A.

Agfa-Gevaert Aktiengesellschaft: *See*—
Lalvani, Prem; Lademann, Diethart; Buschmann, Hans; Reif, Heinz; and Cohnen, Walther, 4,940,653, Cl. 430-502.000.

Aihara, Yasuyuki; Kano, Hideki; Tsuchiya, Yoshikazu; and Miyazaki, Noboru, to Honda Giken Kogyo Kabushiki Kaisha. Connector apparatus. 4,940,423, Cl. 439-369.000.

Aihara, Yoshihiko; and Suzuki, Masayuki, to Canon Kabushiki Kaisha. Camera. 4,941,010, Cl. 354-407.000.

Air Products and Chemicals, Inc.: *See*—
Kuphal, Jeffrey A.; Robeson, Lloyd M.; and Santangelo, Joseph G., 4,940,733, Cl. 521-79.000.
Pellman, Mark A.; Kilhefner, Paul T., III; and Hahn, Terrence S., 4,940,072, Cl. 164-35.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Adachi, Yoshiharu; Kuwana, Kazutaka; and Yoshida, Tsuyoshi, 4,940,295, Cl. 303-117.000.
Karnopp, Dean C.; and Yasui, Yoshiyuki, 4,941,097, Cl. 364-424.050.
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Nishii, Michiharu; Tada, Yoshihiko; and Mizuno, Genji, 4,940,290, Cl. 303-6.010.
Suzuki, Saburo; Nawa, Hiroshi; and Ito, Sadao, 4,940,285, Cl. 297-473.000.

Aisin-Warner Kabushiki Kaisha: *See*—
Ito, Yasunobu; and Suzuki, Kenji, 4,941,096, Cl. 364-424.100.

Aitken, Bruce G., to Corning Incorporated. Rare earth oxynitride glasses. 4,940,678, Cl. 501-73.000.

Aizawa, Motohiro; Ohsumi, Katsumi; Honda, Takashi; and Itow, Hisao, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Suppression of deposition of radioactive substances in boiling water type, nuclear power plant. 4,940,564, Cl. 376-306.000.

Ajinomoto Co., Inc.: *See*—
Miwa, Harufumi; Kashiwada, Minoru; and Yahagi, Yoshimasa, 4,940,332, Cl. 356-417.000.

Akademie der Wissenschaften der DDR: *See*—
Becker-Ross, Helmut; Florek, Stefan; Tischendorf, Reinhard; Engel, Klaus-Eberhard; Matzke, Wolf-Ekkehard; and Engel, Susanne, 4,940,325, Cl. 356-328.000.

Akagawa, Keiiti: *See*—
Ohmine, Toshimitsu; Honda, Takaaki; and Akagawa, Keiiti, 4,940,213, Cl. 266-152.000.

Akcelrod, Patrick, to Societe Anonyme dite: Etablissements Tasserit. Orthopedic operating table for limbs, and in particular for the lower limbs. 4,940,218, Cl. 269-322.000.

Akers, Albert L.; Carpenter, Robert M.; Freeman, William D.; and Passafiume, John E., to International Business Machines Corporation. Platen controlled sheetfeed permitting back-up for erasure. 4,940,348, Cl. 400-624.000.

Akimoto, Kunio: *See*—
Matsubara, Akitoshi; Ikeuchi, Satoru; Akimoto, Kunio; and Takizawa, Yoshio, 4,940,644, Cl. 430-109.000.

Akiyama, Takeo: *See*—
Okutani, Takeshi; Nakata, Yoshinori; Suzuki, Masaaki; and Akiyama, Takeo, 4,940,684, Cl. 502-178.000.

Aktiebolaget Electrolux: *See*—
Larsson, Anders E. C.; Svanberg, Joakim A.; Kilstrom, Lars G.; and Tuvin, Lars G., 4,940,474, Cl. 55-210.000.

Akzo NV: *See*—
Baurmeister, Ulrich, 4,940,617, Cl. 428-36.300.

Albany International Corp.: *See*—
Krebs, David J., 4,940,515, Cl. 162-363.000.

Albrecht, Kenneth D. Engine prelubricating system. 4,940,114, Cl. 184-6.300.

Aldag, Reinhard, Neumann, Peter; Boettcher, Andreas; Bluemel, Thomas; Seitz, Friedrich; and Raulfs, Friedrich-Wilhelm, to BASF Aktiengesellschaft. Photopolymerizable recording materials and photoresist layers and lithographic printing plates based thereon. 4,940,649, Cl. 430-281.000.

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Alfred Kunz GmbH & Co.: *See*—
Schuhbauer, Alfred, 4,939,878, Cl. 52-169.140.
Alfred Teves GmbH: *See*—
Saalbach, Kurt; and Bergelin, Kurt, 4,939,901, Cl. 60-562.000.
Schmidt, Bodo; and Krause Helmut, 4,940,120, Cl. 188-73.360.
Aljoe, Ronald R.: *See*—
Rhodes, John C.; Aljoe, Ronald R.; and Ellers, Berne F., 4,940,621, Cl. 428-137.000.
Allen, Dillis V. Computer golf club. 4,940,236, Cl. 273-183.00D.
Allen, Ioan R.: *See*—
Mandell, Douglas E.; Todd, Craig C.; Allen, Ioan R.; and Davis, Mark F., 4,941,177, Cl. 381-22.000.
Allen, Robert H.; Stabler, Sally P.; and Lindenbaum, John, to University Patents, Inc. Assay for sulfhydryl amino acids and methods for detecting and distinguishing cobalsmin and folic acid deficency. 4,940,658, Cl. 435-4.000.
Allied Colloids Limited: *See*—
Flesher, Peter; Farrar, David; Hawe, Malcolm; and Langley, John, 4,940,763, Cl. 526-307.000.
Allied-Signal, Inc.: *See*—
Bassman, Robert G., 4,941,110, Cl. 364-521.000.
Yates, Stephen F., 4,940,824, Cl. 570-179.000.
Yates, Stephen F., 4,940,825, Cl. 570-179.000.
Allspach, Thomas: *See*—
Folda, Thomas; and Allspach, Thomas, 4,940,740, Cl. 523-428.000.
Alperson, Joel H. Retail display wire cube. 4,940,148, Cl. 211-181.000.
Alteepping, Josef; and Nebe, Juergen P., to Amoco Corporation. Production of low density polypropylene foam. 4,940,736, Cl. 521-98.000.
Alternative Energy Research Center Inc.: *See*—
Katz, Beatriz E., 4,940,973, Cl. 340-764.000.
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Amand, Yvon, to Societe d'Applications Generales d'Electricite et de Mecanique. Pendular non-servoed tuning beam accelerometer. 4,939,935, Cl. 73-517.0AV.
Amano Corporation: *See*—
Matunaga, Akira; Inoue, Hideo; Ikezawa, Ken; and Arai, Tetu, 4,939,811, Cl. 15-385.000.
Amano, Juichi, to Nippon Thompson Co., Ltd. Endless rectilinear motion rolling guide unit. 4,940,339, Cl. 384-25.000.
Amcor Limited: *See*—
Groves, Maurice C., 4,940,190, Cl. 229-122.000.
American Advantage Company: *See*—
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Ley, David A.; Hiscock, Laura J.; and Cooke, Michael T., 4,940,734, Cl. 521-84.100.
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Sum, Phaik-Eng; Joseph, Joseph P.; Ziegler, Carl B., Jr.; Moran, Daniel B.; and Lin, Yang-I, 4,940,710, Cl. 514-254.000.
American Dental Laser, Inc.: *See*—
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American Filtrona Corporation: *See*—
Jaisinghani, Raian A.; and Bugli, Neville J., 4,940,470, Cl. 55-2.000.
American Home Products Corporation: *See*—
Childers, Wayne E., Jr.; and Abou-Gharbia, Magid A., 4,940,789, Cl. 540-581.000.
American Nationsl Can Company: *See*—
Farrell, Christopher J.; Hlobil, Thomas; and Nahill, George F., 4,940,158, Cl. 220-258.000.
American Standard Inc.: *See*—
Wood, James A.; and Mazur, Richard J., 4,941,099, Cl. 364-426.020.
American Telephone and Telegraph Company: *See*—
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Ammermann, Eberhard: *See*—
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Ammon, Robert L.; Buckman, Raymond W., Jr.; and Bajaj, Ram, to Westinghouse Electric Corp. Method of making a high velocity armor penetrator. 4,940,404, Cl. 419-28.000.
Amoco Corporation: *See*—
Alteepping, Josef; and Nebe, Juergen P., 4,940,736, Cl. 521-98.000.
Beaton, William I.; Taylor, James L.; Peck, Lawrence B.; and Mosby, James F., 4,940,529, Cl. 208-61.000.
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AMP Incorporated: *See*—
Consoli, John J.; and Hoffman, Norman E., 4,940,432, Cl. 439-862.000.
Fisher, David W.; and Frishkorn, Eric T., 4,940,892, Cl. 250-227.240.
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Amra, Lutfi H.; Byrne, Thomas M., Jr.; Martin, Harvey; Mordue, George S.; and Neff, David V., to Carborundum Company, The. Molten metal pump with filter. 4,940,384, Cl. 415-121.200.
Amso Co., Ltd.: *See*—
Harada, Hiroyuki; Kurahashi, Kazuyoshi; Yamamura, Kengo; Higuchi, Youji; Fukatsu, Yasuhiro; and Torii, Katsuhiko, 4,939,867, Cl. 49-349.000.
Analog Devices, Inc.: *See*—
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Anderle, Sonia K.: *See*—
Tidwell, Richard R.; Geratz, Joachim D.; Schwab, John H.; Pryzwansky, Katherine B.; and Anderle, Sonia K., 4,940,723, Cl. 514-396.000.
Anderson, Robert S. Process for printing continuous stripe and product thereof. 4,940,625, Cl. 428-195.000.
Andrieu, Andre; Davot, Jean-Pierre P.; and Thibieroz, Jean-Pierre A. M., to Corning Incorporated. Process to encapsulate graphite into glass and glass ceramic articles, and articles manufactured by this process. 4,940,635, Cl. 428-408.000.
Androy, Gilbert G. T-top roofing system. 4,940,283, Cl. 296-216.000.
Andus Corporation: *See*—
Kittler, Wilfred C., Jr.; Ozukor, Janos; and Stoddard, Darrell, 4,940,627, Cl. 428-203.000.
Anetsberger Brothers, Inc.: *See*—
Smith, Mark J., 4,939,987, Cl. 99-468.000.
Anquita, Manuel: *See*—
Bartroli, Javier; Anquita, Manuel; and Carceller, Elena, 4,940,706, Cl. 514-231.500.
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Aoki, Hideo: *See*—
Komai, Hiroshi; and Aoki, Hideo, 4,941,015, Cl. 355-200.000.
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Mandell, Gerald D. Vehicular kennel for pets. 4,939,911, Cl. 62-239.000.

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Tadokoro, Shigeo; Morioka, Joji; and Takahashi, Hideyuki, to Tsuchiya Mfg. Co., Ltd. Filter medium forming system and process. 4,940,500, Cl. 156-204.000.
Taff, Barry E.; and Stoller, Kenneth P. Cryogenic remote sensing physiograph. 4,940,058, Cl. 128-653.00R.
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Wong, Pui K., to Shell Oil Company. Carbon monoxide/olefin polymerization with diluent comprising aprotic solvent and water. 4,940,774, Cl. 528-392.000.

Wood, James A.; and Mazur, Richard J., to American Standard Inc. Electronic adhesion adaptive wheel slide protection arrangement function. 4,941,099, Cl. 364-426.020.

Wood, Philip S.; and Fell, Peter J., to Rolls-Royce plc. Alloy and methods of use thereof. 4,940,566, Cl. 420-443.000.

Woodland, Dennis: *See—*
Reeves, Richard L.; and Woodland, Dennis, 4,940,080, Cl. 165-9.000.

Wright, Floyd H.: *See—*
Herrick, Phillip R.; Ewing, Daniel C.; Wright, Floyd H.; and Truelove, Kevin M., 4,940,932, Cl. 324-158.0MG.

Wright, Robin E., to Minnesota Mining and Manufacturing Company. Process for metal fibers. 4,940,596, Cl. 427-47.000.

Wu, Dumin: *See—*
Gu, Hansen; and Wu, Dumin, 4,940,060, Cl. 128-735.000.

Wu, You-Sun: *See—*
Aubert, Donald E.; Wu, You-Sun; and Nerurkar, Vishnu W., 4,940,954, Cl. 332-103.000.

Wulff, William B.: *See—*
DeCosse, Gary A.; and Wulff, William B., 4,941,074, Cl. 362-61.000.

Wyatt, W. Gerald; and Bleke, Jim, to VE Holding Corp. Anti-coring grain treatment system. 4,939,988, Cl. 99-516.000.

Wyeth, Richard W.; Johnson, Michael A.; and Globig, Michael A., to United States of America, Energy. Heterodyne laser instantaneous frequency measurement system. 4,940,331, Cl. 356-349.000.

Xerox Corporation: *See—*
Hecht, David L., 4,940,314, Cl. 350-355.000.
Holmes, Maurice F.; Roller, George J.; and Moore, Steven R., 4,941,023, Cl. 355-319.000.
Lehmbeck, Donald R.; Triplett, Roger L.; and Marks, Kevin E., 4,941,057, Cl. 358-443.000.

Yaeger, Ronald J. Variable capacity evaporative humidifier. 4,940,475, Cl. 55-224.000.

Yaeger, Stanley A., Jr.: *See—*
Baracat, Frederick A.; and Yaeger, Stanley A., Jr., 4,940,262, Cl. 285-114.000.

Yahagi, Yoshimasa: *See—*
Miwa, Harufumi; Kashiwada, Minoru; and Yahagi, Yoshimasa, 4,940,332, Cl. 356-417.000.

Yajima, Kenichi: *See—*
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Yamada, Masanori, to Canon Kabushiki Kaisha. Image signal processing apparatus. 4,941,188, Cl. 382-50.000.

Yamada, Takehiko: *See—*
Nagata, Tatsuya; Yamada, Takehiko; Hara, Eiichi; and Watanabe, Michihiro, 4,940,888, Cl. 250-208.100.

Yamada, Toshio: *See—*
Kobayashi, Tohru; Hamamoto, Masato; and Yamada, Toshio, 4,940,905, Cl. 307-278.000.

Yamada, Tsutomu: *See—*
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Yamaguchi, Noboru: *See—*
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Yamaha Corporation: *See—*
Ishida, Takashi; and Abe, Yasunao, 4,939,974, Cl. 84-609.000.

Yamamoto, Koji: *See—*
Ashida, Takashi; and Yamamoto, Koji, 4,940,779, Cl. 528-495.000.
Yamazaki, Ken-ichi; Takao, Shoji; and Yamamoto, Koji, 4,940,662, Cl. 435-68.100.

Yamamoto, Mikio: *See—*
Maeno, Mikihiko; Ohta, Yukio; Momiyama, Yoshiharu; Ono, Hisao; Takahata, Katsumasa; Ozono, Kazuyuki; Shimizu, Makoto; and Yamamoto, Mikio, 4,940,222, Cl. 271-127.000.

Yamamoto, Noboru: *See—*
Furumoto, Mitsumasa; Kawahara, Eiichiro; Ikejiri, Kenichi; and Yamamoto, Noboru, 4,939,900, Cl. 60-456.000.

Yamamoto, Osamu: *See—*
Simizu, Kazuo; Sakai, Shin; Matsumoto, Satoru; Yamamoto, Osamu; and Tanaka, Hisao, 4,940,542, Cl. 210-321.800.

Yamamoto, Saburo: *See—*
Hayakawa, Toshiro; Suyama, Takahiro; and Yamamoto, Saburo, 4,941,024, Cl. 357-4.000.

Yamamoto, Tamaki; and Mabe, Atsushi, to Sanden Corporation. Scroll type compressor with variable displacement mechanism. 4,940,395, Cl. 417-310.000.

Yamamoto, Tetsu: *See—*
Mizuno, Shigeki; Ueda, Takaharu; and Yamamoto, Tetsu, 4,940,924, Cl. 318-560.000.

Yamamura, Kengo: *See—*
Harada, Hiroyuki; Kurahashi, Kazuyoshi; Yamamura, Kengo; Higuchi, Youji; Fukatsu, Yasuhiro; and Torii, Katsuhiko, 4,939,867, Cl. 49-349.000.

Yamanishi, Kazuhiko: *See—*
Hirai, Hidematsu; Hanada, Toshiro; Yamanishi, Kazuhiko; and Nohara, Hideko, 4,940,660, Cl. 435-7.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Tsukamoto, Shin-ichi; Nagaoka, Hitoshi; Usuda, Shinji; Harada, Masatomi; and Tamura, Toshinari, 4,940,795, Cl. 546-16.000.

Yamashita, Yoshiro: *See—*
Miyashi, Tautomu; Yamashita, Yoshiro; Suzuki, Takanori; and Fujii, Hiroshi, 4,940,832, Cl. 585-863.000.

Yamazaki, Ken-ichi; Takao, Shoji; and Yamamoto, Koji, to Terumo Kabushiki Kaisha. Low-molecular weight peptide mixture and method of producing same. 4,940,662, Cl. 435-68.100.

Yamazaki, Masayuki; Takado, Yutaka; and Mikami, Takashi, to Tonen Sekiyukagaku K.K. Automobile bumper. 4,940,270, Cl. 293-122.000.

Yamazaki, Mituo; and Konisi, Kazuo, to Kabushiki Kaisha Toshiba. Division circuit having an operation loop including an adder and multiplier. 4,941,118, Cl. 364-761.000.

Yamazaki, Takashi: *See—*
Oshima, Kazuyoshi; Yamazaki, Takashi; Kasama, Yasuhiro; Udagawa, Tetsu; and Kotani, Hiroaki, 4,941,129, Cl. 365-230.030.

Yang, Yung-Chin, to B.F. Goodrich Company, The. Process for making film grade PVC. 4,940,759, Cl. 526-62.000.

Yasosky, John J.; Hahn, Patricia W.; and Atwell, William A., to Pillsbury Company, The. Controlling the texture of microwave brownies. 4,940,595, Cl. 426-243.000.

Yasue, Yoshihiko: *See—*
Adaniya, Takeshi; Yomura, Yoshinori; Ooniwa, Naoyuki; Yasue, Yoshihiko; Kagechika, Hiroshi; Mishima, Tadahiko; and Ishikawa, Hiroshi, 4,940,638, Cl. 428-648.000.
Kagechika, Hiroshi; Mishima, Tadahiko; Yomura, Yoshinori; Ishikawa, Hiroshi; Oniwa, Naoyuki; and Yasue, Yoshihiko, 4,940,522, Cl. 204-192.100.

Yasui, Makoto: *See—*
Kawashima, Kazuki; Yasui, Makoto; Hayakawa, Hisashi; and Imoto, Masayuki, 4,940,447, Cl. 474-110.000.

Yasui, Yasuyoshi, to Toyota Jidosha Kabushiki Kaisha. Limited slip differential. 4,939,953, Cl. 475-233.000.

Yasui, Yoshiyuki: *See—*
Karnopp, Dean C.; and Yasui, Yoshiyuki, 4,941,097, Cl. 364-424.050.

Yasukawa, Takeshi; and Onishi, Masayoshi, to Mitsubishi Denki Kabushiki Kaisha. Speed control unit for an automobile. 4,941,098, Cl. 364-426.040.

Yasumoto, Masami; Motoike, Tatsuya; and Sawasa, Toshiyuki, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Linear light source. 4,941,072, Cl. 362-249.000.

Yates, Stephen F., to Allied-Signal Inc. Process for removing vinylidene chloride from 1,1-dichloro-1-fluoroethane. 4,940,824, Cl. 570-179.000.

Yates, Stephen F., to Allied-Signal Inc. Process for removing dichloroacetylene from 1,1-dichloro-1-fluoroethane and/or vinylidene chloride. 4,940,825, Cl. 570-179.000.

Yatka, Robert J.: *See—*
Chapdelaine, Albert H.; and Yatka, Robert J., 4,940,589, Cl. 426-3.000.

Yatsu, Tadao; and Hinooka, Nobuya, to Mitsui Petrochemical Industries. Multilayered container and method for making. 4,940,616, Cl. 428-35.700.

Yazaki Corporation: *See—*
Hyogo, Yukihiro; and Kurihara, Akio, 4,940,417, Cl. 439-248.000.
Kurita, Kaoru; and Nishio, Yukio, 4,940,419, Cl. 439-271.000.

Yeh, Phil C.: *See—*
Matyas, Stephen M.; Abraham, Dennis G.; Johnson, Donald B.; Karne, Ramesh K.; Le, An V.; Prymak, Rostislaw; Thomas, Julian; Wilkins, John D.; and Yeh, Phil C., 4,941,176, Cl. 380-21.000.

Yoakim, Christiane: *See—*
Gillard, John W.; Yoakim, Christiane; Guindon, Yvan; and Girard, Yves, 4,940,719, Cl. 514-381.000.

Yokelson, Howard B.; Partenheimer, Walter; and Gipe, Robert, to Amoco Corporation. Process for producing silicon-containing aromatic polyacids. 4,940,810, Cl. 556-438.000.

Yokogawa Medical Systems, Ltd.: *See—*
Satta, Yusuke; and Takiura, Yasuro, 4,941,094, Cl. 364-413.210.

Yokosouchi, Teruo; Karasawa, Takumi; and Oono, Katuhisa, to Hitachi, Ltd. Method of and apparatus for manufacturing Braun tubes. 4,940,439, Cl. 445-5.000.

Yokoyama, Hitoshi; Sano, Hiroyuki; Horimoto, Akiko; and Kizaki, Masatoshi, to Fuji Oil Company, Limited. Process for producing dried cheese. 4,940,600, Cl. 426-582.000.

Yomura, Yoshinori: *See—*
Adaniya, Takeshi; Yomura, Yoshinori; Ooniwa, Naoyuki; Yasue, Yoshihiko; Kagechika, Hiroshi; Mishima, Tadahiko; and Ishikawa, Hiroshi, 4,940,638, Cl. 428-648.000.
Kagechika, Hiroshi; Mishima, Tadahiko; Yomura, Yoshinori; Ishikawa, Hiroshi; Oniwa, Naoyuki; and Yasue, Yoshihiko, 4,940,522, Cl. 204-192.100.

Yoneda, Hirokazu: *See—*
Toyoshima, Hiromitsu; Yoneda, Hirokazu; Ueno, Hiroshi; and Hatabu, Shoji, 4,939,947, Cl. 74-422.000.

Yoon, Jin H., to Goldstar Co., Ltd. Video signal compensating circuit of a TV/VCR. 4,941,047, Cl. 358-181.000.

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Yoshida, fumikazu: *See—*
Shizuki, Tatsuhiko; Ban, Kaoru; Yoshida, fumikazu; and Ohguchi, Masakatsu, 4,940,560, Cl. 264-211.000.
Yoshida, Makoto, to Konica Corporation. Method for slow synchro-flash photography. 4,941,009, Cl. 354-402.000.
Yoshida, Norio, to Ichikoh Industries, Ltd. Drive unit for electrically driven remote-controlled mirror. 4,940,321, Cl. 350-633.000.
Yoshida, Toshihiko; Takiguchi, Haruhisa; Kaneiwa, Shinji; and Kudo, Hiroaki, to Sharp Kabushiki Kaisha. Semiconductor laser element with a single longitudinal oscillation mode. 4,941,148, Cl. 372-96.000.
Yoshida, Tsuyoshi: *See—*
Adachi, Yoshiharu; Kuwana, Kazutaka; and Yoshida, Tsuyoshi, 4,940,295, Cl. 303-117.000.
Yoshihara, Toru; Kawase, Jiro; and Fukuyama, Yukihiro, to Kao Corporation. Hair preparation. 4,940,578, Cl. 424-70.000.
Yoshikami, Shuko: *See—*
Hagins, William A.; and Yoshikami, Shuko, 4,940,896, Cl. 250-338.300.
Yoshikawa, Masaaki: *See—*
Sato, Yasuo; Saito, Tsunehiro; Kamioka, Toshihito; Yoskikawa, Yukio; and Yoshikawa, Masaaki, 4,940,479, Cl. 65-99.200.
Yoshinaga, Katsuichi: *See—*
Ishii, Shigetaka; Ohgawara, Toshifumi; Kobayashi, Shozo; Oiyama, Iwao; and Yoshinaga, Katsuichi, 4,940,836, Cl. 800-220.000.
Yoshioka, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic head positioning mechanism for magnetic disk device. 4,941,062, Cl. 360-106.000.
Yoskikawa, Yukio: *See—*
Sato, Yasuo; Saito, Tsunehiro; Kamioka, Toshihito; Yoskikawa, Yukio; and Yoshikawa, Masaaki, 4,940,479, Cl. 65-99.200.
Young, Grant A.: *See—*
Fisher, William F.; and Young, Grant A., 4,940,535, Cl. 209-250.000.
Young, John N., to Pacific Products. Electronic casting brake. 4,940,194, Cl. 242-288.000.
Yu, Sypyng B.: *See—*
Thome, John R.; and Yu, Sypyng B., 4,939,942, Cl. 73-865.900.
Yuen, Stanley M., to General Electric Company. Multiple channel adaptive correlation/decorrelation processor. 4,941,117, Cl. 364-724.070.
Yuzyk, Jerome: *See—*
Schuller, Paul D.; Hatcher, David C.; Caelli, Terrance M.; Eggert, Frank M.; and Yuzyk, Jerome, 4,941,164, Cl. 378-205.000.
Zacharias, Donald. Tree limb folding and tying apparatus. 4,939,989, Cl. 100-13.000.
Zambon Group S.p.A.: *See—*
Bertolini, Giorgio; Casagrande, Cesare; and Santangelo, Francesco, 4,940,800, Cl. 548-327.000.
Zancho, William F.: *See—*
Cannalte, Gary A.; Smith, Todd; Zancho, William F.; and Crawford, Robert J., 4,941,167, Cl. 379-67.000.
Zanichelli, Giuseppe, to Zanichelli Meccanica S.P.A. Process for the rapid rehydration of legumes and the like. 4,940,598, Cl. 426-507.000.
Zanichelli Meccanica S.P.A.: *See—*
Zanichelli, Giuseppe, 4,940,598, Cl. 426-507.000.
Zanxx, Inc.: *See—*
Forish, John A.; and Rogers, John J., 4,940,422, Cl. 439-356.000.
Zavracky, Paul M., to Kopin Corporation. Method of making monolithic integrated III-V type laser devices and silicon devices on silicon. 4,940,672, Cl. 437-132.000.
Zech, Hendrik: *See—*
Forssmann, Bernd; Hepp, Wolfgang; Heine, Geroid; Sell, Gustav; and Zech, Hendrik, 4,940,050, Cl. 128-24.00A.
Zeise, Eric K.: *See—*
Pham, Hieu T.; Ng, Yee S.; Kieffer, Kenneth D.; Tschang, Pin S.; and Zeise, Eric K., 4,941,004, Cl. 346-160.000.
Zeller, Claude; Mayeski, Henry A.; and Murphy, Charles F., III, to Pitney Bowes, Inc. Reversible resistant device. 4,940,959, Cl. 338-13.000.
Zenith Electronics Corporation: *See—*
Citta, Richard W., 4,941,049, Cl. 358-187.000.
Danenberg, Bernard; and Flori, Luigi, 4,941,069, Cl. 361-419.000.
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Mycynek, Victor G., 4,940,978, Cl. 341-150.000.
Zhao, Bing Y.: *See—*
Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, 4,940,687, Cl. 502-333.000.
Ziegler, Carl B., Jr.: *See—*
Sum, Phaik-Eng; Joseph, Joseph P.; Ziegler, Carl B., Jr.; Moran, Daniel B.; and Lin, Yang-I, 4,940,710, Cl. 514-254.000.
Ziegler, Peter: *See—*
Honel, Michael; Finke, Manfred; Walz, Gerd; and Ziegler, Peter, 4,940,768, Cl. 528-45.000.
Zielinski, Erich, to Rheinmetall GmbH. Tank turret magazine system with a primary magazine and an additional magazine. 4,939,980, Cl. 89-46.000.
Ziemann, Heinz: *See—*
Kiel, Wolfgang; and Ziemann, Heinz, 4,940,819, Cl. 568-318.000.
Zimmer, Johannes. Apparatus for coating fabric webs. 4,940,013, Cl. 118-62.000.
Zimmerman, Richard J.; Barnett, Phillip R.; and Suter, Larry, to Nordson Corporation. Mold coating apparatus with air flow control numbers. 4,940,012, Cl. 118-301.000.
Zimmermann, Horst: *See—*
Fischer, Rolf; Gosch, Hans-Juergen; Harder, Wolfgang; Malsch, Klaus-Dieter; Eggersdorfer, Manfred; Franz, Lothar; Zimmermann, Horst; Brenner, Karl; Halbritter, Klaus; Sauer, Wolfgang; and Scheiper, Hans-Juergen, 4,940,805, Cl. 549-326.000.
Zimmermann, Rudolf: *See—*
Behrens, Dietmar; Hoog, Waldemar; and Zimmermann, Rudolf, 4,940,142, Cl. 206-444.000.
Zinnen, Hermann A., to UOP. Chromatographic separation process for recovering individual diethyltoluene isomers. 4,940,548, Cl. 210-656.000.
Zinnen, Hermann A.; and Fergin, Richard L., to UOP. Rejective separation of para-xylene from xylene isomers and ethylbenzene with zeolites. 4,940,830, Cl. 585-828.000.
Zinser Textilmaschinen GmbH: *See—*
Wolf, Horst, 4,939,894, Cl. 57-115.000.
Zuffada, Maurizio; and Sacchi, Fabrizio, to SGS-Thomson Microelectronics s.r.l. Generating a stop signal of an automatic search procedure for a broadcasting station using an available AFC signal. 4,941,204, Cl. 455-164.000.
Zurawski, John H., to Digital Equipment Corporation. Apparatus for high performance multiplication. 4,941,121, Cl. 364-757.000.
ZWN Zahnradwerk Neuenstein GmbH: *See—*
Gramberger, Johann, 4,940,847, Cl. 156-89.000.
Zysman, Alexandre; and Sebag, Henri, to Societe Anonyme dite:L'Oreal. 4-hydroxyisoxazole derivatives, method of preparing same, and cosmetic and pharmaceutical compositions containing them. 4,940,575, Cl. 424-59.000.
501 Standard Elektrik Lorenz AG: *See—*
Kleiber, Herbert, 4,940,984, Cl. 342-173.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JULY, 1990

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Airhart, Tom P., to Atlantic Richfield Company. Mounting and control means for full waveform seismic source. Re. 33,257, Cl. 181-113.000.
Arakawa, Mitsuaki: *See—*
Crooks, Lawrence E.; Hoenninger, John C., III; Arakawa, Mitsuaki; and Singer, Jerome R., Re. 33,259, Cl. 324-309.000.
Atlantic Richfield Company: *See—*
Airhart, Tom P., Re. 33,257, Cl. 181-113.000.
Baglee, David A.; and Parker, Ronald, to Texas Instruments, Incorporated. Trench capacitor for high density dynamic RAM. Re. 33,261, Cl. 357-23.600.
Brandstetter, Robert W. Bridge type coordinate measuring machine. Re. 33,254, Cl. 33-503.000.
Busby, Robert B., to Pawling Corporation. Mesh-covered core strip for high frequency RFI/EMI radiation shielding. Re. 33,256, Cl. 174-35.0GC.
Crooks, Lawrence E.; Hoenninger, John C., III; Arakawa, Mitsuaki; and Singer, Jerome R., to University of California, The Regents of the. Method and apparatus for rapid NMR imaging of nuclear parameters with an object. Re. 33,259, Cl. 324-309.000.
Eastman Kodak Company: *See—*
Stephenson, Stanley W., Re. 33,260, Cl. 346-76.0PH.
Ginsburg, Leonard: *See—*
Onik, Gary; and Ginsburg, Leonard, Re. 33,258, Cl. 604-22.000.
Haukaas, Duane C. Rod weeder attachment for an agricultural implement. Re. 33,255, Cl. 172-44.000.
Hoenninger, John C., III: *See—*
Crooks, Lawrence E.; Hoenninger, John C., III; Arakawa, Mitsuaki; and Singer, Jerome R., Re. 33,259, Cl. 324-309.000.
Onik, Gary; and Ginsburg, Leonard, to Surgical Dynamics Inc. Irrigating, cutting and aspirating system for percutaneous surgery. Re. 33,258, Cl. 604-22.000.
Parker, Ronald: *See—*
Baglee, David A.; and Parker, Ronald, Re. 33,261, Cl. 357-23.600.
Pawling Corporation: *See—*
Busby, Robert B., Re. 33,256, Cl. 174-35.0GC.
Singer, Jerome R.: *See—*
Crooks, Lawrence E.; Hoenninger, John C., III; Arakawa, Mitsuaki; and Singer, Jerome R., Re. 33,259, Cl. 324-309.000.
Stephenson, Stanley W., to Eastman Kodak Company. Thermal printer color dye frame identification using red and yellow light sources. Re. 33,260, Cl. 346-76.0PH.
Surgical Dynamics Inc.: *See—*
Onik, Gary; and Ginsburg, Leonard, Re. 33,258, Cl. 604-22.000.
Texas Instruments, Incorporated: *See—*
Baglee, David A.; and Parker, Ronald, Re. 33,261, Cl. 357-23.600.
University of California, The Regents of the: *See—*
Crooks, Lawrence E.; Hoenninger, John C., III; Arakawa, Mitsuaki; and Singer, Jerome R., Re. 33,259, Cl. 324-309.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baer, Thomas M.; and Keirstead, Mark S., to Spectra-Physics Inc. Laser diode pumped solid state laser. B1 4,701,929, 7-10-90, Cl. 372-71.000.
Keirstead, Mark S.: *See—*
Baer, Thomas M.; and Keirstead, Mark S., B1 4,701,929, Cl. 372-71.000.
Spectra-Physics Inc: *See—*
Baer, Thomas M.; and Keirstead, Mark S., B1 4,701,929, Cl. 372-71.000.

LIST OF DESIGN PATENTEES

Adachi, Koushirou: *See—*
Yoshida, Atsuo; Adachi, Koushirou; Hattori, Tousaku; Watanabe, Hiroshi; and Takahashi, Yoshiaki, 309,130, Cl. D14-102.000.
Agrob AG: *See—*
Colani, Luigi, 309,192, Cl. D25-138.000.
Allen, David O., to Allen Tool Company, Inc. Combined lid and seal for containers. 309,109, 7-10-90, Cl. D9-436.000.
Allen Tool Company, Inc.: *See—*
Allen, David O., 309,109, Cl. D9-436.000.
Alliance Research Corporation: *See—*
Cooper, Gershon N., 309,141, Cl. D14-230.000.
Allibert S.A.: *See—*
Hubert, Manfeld, 309,064, Cl. D6-375.000.
Allstar Verbrauchsguter GmbH: *See—*
Schuster, Wilhelm, 309,205, Cl. D32-32.000.
Alsup, Richard E. Taco shell holder. 309,084, 7-10-90, Cl. D7-504.000.
Amway Corporation: *See—*
Goodrich, Gordon W., 309,203, Cl. D32-22.000.
Antonucci, Daniel M., to Antonucci, Daniel M.; and Celko, David A. Model airplane. 309,164, 7-10-90, Cl. D21-89.000.
Archambault, Alan A.; Palumbo, Nicholas R.; and Fletcher, Lyn C., to General Electric Company. Light diffuser. 309,194, 7-10-90, Cl. D26-125.000.
Arrias, Frank. Automatic tampon dispenser. 309,067, 7-10-90, Cl. D6-515.000.
Associated Mills Inc.: *See—*
Geneve, Francois; and Heiligenstein, Luc, 309,187, Cl. D24-38.000.
Austin, Donald P.; Lawrence, Albert L.; Prewitt, Arthur C.; and Sacherman, James E., to Gilbarco Inc. Gasoline dispensing unit or similar article. 309,144, 7-10-90, Cl. D15-9.200.
Azpeitia Ortiz de Arri, Juan M., to Solac Telecom, S.A. Telephone set with handset telephone and stand therefor having keyboard and speakerphone. 309,138, 7-10-90, Cl. D14-151.000.
Bay Ridge Distributing, Inc.: *See—*
Yockey, Robert E.; and Yockey, John F., 309,115, Cl. D10-56.000.
Beard, Jay T. Guitar. 309,151, 7-10-90, Cl. D17-18.000.
Beatrice/Hunt-Wesson, Inc.: *See—*
Maginnis, William S., Jr., 309,103, Cl. D9-404.000.
Beaver, Ted L., to Quaker State Corporation. Container body for liquids and the like. 309,100, 7-10-90, Cl. D9-375.000.
Benoit-Pequignet, Emile M. F.; and Viennet, Jean-Pierre L., to Montres Emile Pequignet. Wristwatch. 309,114, 7-10-90, Cl. D10-33.000.
Biemolt, Harry P., to Hotpack Corporation. Environmental chamber for controlled plant growth. 309,122, 7-10-90, Cl. D11-145.000.
Bisch, Jeff. Sports goal. 309,170, 7-10-90, Cl. D21-201.000.
Black & Decker Inc.: *See—*
Hattle, Sally A.; and Rawson, Paul, 309,082, Cl. D7-384.000.
Bledsoe, M. Michael. Automobile seat tray. 309,059, 7-10-90, Cl. D3-40.000.
Bluwat AG: *See—*
Ziegler, Rolf, 309,112, Cl. D10-6.000.

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Bob Shattan Associates, Inc.: *See—*
Shattan, Herbert B., 309,158, Cl. D19-89.000.
Boda Nova International AB: *See—*
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4,940,542
369 4,940,543
603 4,940,544
609 4,940,545
613 4,940,546
643 4,940,547
656 4,940,548
695 4,940,549
4,940,550
743 4,940,551

CLASS 211

13 4,940,146
40 4,940,147
181 4,940,148
186 4,940,149
188 4,940,150

CLASS 215

11.1 4,940,151
11.5 4,940,152
12.2 4,940,153
249 4,940,154

CLASS 219

10.491 4,940,870
10.55 A 4,940,865
4,940,866
10.55 E 4,940,867
4,940,868
10.55 F 4,940,869
69.12 4,940,871
69.13 4,940,872
84 4,940,873
87 4,940,874
89 4,940,875
110 4,940,876
121.5 4,940,877
121.64 4,940,878
121.67 4,940,879
4,940,880
121.69 4,940,881
146.22 4,940,882
200 4,940,883
203 4,940,884
365 4,940,885
457 4,940,886

CLASS 220

6 4,940,155
22.3 4,940,156
254 4,940,157
258 4,940,158
404 4,940,159

CLASS 221

34 4,940,160
67 4,940,161
129 4,940,162
193 4,940,163

CLASS 222

66 4,940,164
129.1 4,940,165
136 4,940,166
153 4,940,167
4,940,168
399 4,940,169
402.1 4,940,170
402.18 4,940,171
505 4,940,172

CLASS 224

151 4,940,173
257 4,940,174
324 4,940,175

CLASS 225

96.5 4,940,176

CLASS 227

7 4,940,177

CLASS 228

55 4,940,178
56.3 4,940,179
122 4,940,180
180.2 4,940,181

CLASS 229

1.5 B 4,940,189
122 4,940,190
125 4,940,191

CLASS 235

381 4,940,887

CLASS 237

12.3 B 4,940,182

CLASS 238

310 4,940,183

CLASS 239

71 4,940,184
126 4,940,185
337 4,940,186

CLASS 241

79.1 4,940,187
275 4,940,188

CLASS 242

35.5 A 4,940,192
107.3 4,940,193
288 4,940,194

CLASS 244

1 R 4,940,195
54 4,940,196
102 R 4,940,197

CLASS 248

37.3 4,940,199
48.1 4,940,198
97 4,940,200
101 4,940,201
162.1 4,940,202
188.9 4,940,203
688 4,940,204

CLASS 249

63 4,940,205

CLASS 250

208.1 4,940,888
214 R 4,940,889
216 4,940,890
227.15 4,940,891
227.24 4,940,892
236 4,940,310
251 4,940,893
324 4,940,894
332 4,940,895
338.3 4,940,896
4,940,897
338.4 4,940,898
343 4,940,900
370.09 4,940,901
506.1 4,940,899
573 4,940,902

CLASS 251

52 4,940,206
65 4,940,207
144 4,940,209
160 4,940,210
315 4,940,208

CLASS 252

51.5 A 4,940,552
182.1 4,940,553
357 4,940,554
543 4,940,555

CLASS 254

134.3 R 4,940,211

CLASS 261

64.1 4,940,212

CLASS 264

15 4,940,556
26 4,940,557
46.7 4,940,558
65 4,940,843
130 4,940,559
211 4,940,560
225 4,940,561
234 4,940,562
257 4,940,563

CLASS 266

152 4,940,213
235 4,940,214
275 4,940,215

CLASS 269

32 4,940,216
50 4,940,217
322 4,940,218

CLASS 271

2 4,940,219
4,940,220
107 4,940,221
127 4,940,222
181 4,940,223
263 4,940,224
296 4,940,225

CLASS 272

70 4,940,226
72 4,940,227
76 4,940,228
86 4,940,229
130 4,940,233

CLASS 273

1 GA 4,940,234
1.5 A 4,940,231
1.5 R 4,940,232
72 A 4,940,247
76 4,940,230
183 D 4,940,236
189 R 4,940,237
199 R 4,940,238
236 4,940,235
243 4,940,239
260 4,940,240
261 4,940,241
287 4,940,242
326 4,940,243
403 4,940,244
416 4,940,245
421 4,940,246

CLASS 277

80 4,940,248

CLASS 279

41 R 4,940,249

CLASS 280

414.1 4,940,251
418.1 4,940,252
629 4,940,253
808 4,940,254
809 4,940,255
837 4,940,256

CLASS 282

29 B 4,940,257

CLASS 283

81 4,940,258

CLASS 285

3 4,940,259
4,940,260
4,940,261
112 4,940,262
114 4,940,263
342 4,940,263
405 4,940,264

CLASS 292

113 4,940,265
227 4,940,266
263 4,940,267
317 4,940,268
337 4,940,269

CLASS 293

122 4,940,270

CLASS 294

1.1 4,940,271

CLASS 296

37.8 4,940,275
97.5 4,940,272
97.6 4,940,273
97.7 4,940,274
136 4,940,276
164 4,940,277
166 4,940,278
181 4,940,279
190 4,940,280
194 4,940,281
204 4,940,282
216 4,940,283

CLASS 297

284 4,940,284
429 4,940,286
473 4,940,285

CLASS 298

23 R 4,940,287

CLASS 299

37 4,940,289
79 4,940,288

CLASS 303

6.01 4,940,290
15 4,940,291
81 4,940,292
110 4,940,293
115 4,940,294
117 4,940,295

CLASS 307

122 4,940,903
262 4,940,904
278 4,940,905
296.1 4,940,906
359 4,940,907
443 4,940,908
465 4,940,909
591 4,940,910

CLASS 310

87 4,940,911
162 4,940,912
216 4,940,913
326 4,940,914
338 4,940,915

CLASS 312

100 4,940,296
138.1 4,940,297
228 4,940,298
285 4,940,299

CLASS 313

306 4,940,916
414 4,940,917
487 4,940,918
526 4,940,919
559 4,940,300

CLASS 315

8 4,940,920
219 4,940,921
246 4,940,922
248 4,940,923

CLASS 318

560 4,940,924
587 4,940,925
603 4,940,926
809 4,940,927

CLASS 322

28 4,940,928

CLASS 323

222 4,940,929
273 4,940,930

CLASS 324

121 R 4,940,931
158 F 4,940,935
158 MG 4,940,932
4,940,933
158 R 4,940,934
174 4,940,936
207.22 4,940,937
212 4,940,938
236 4,940,939
309 Re.33,259
312 4,940,940
321 4,940,941
338 4,940,942
425 4,940,943
438 4,940,944
4,940,945
4,940,946
613 4,940,947

CLASS 329

307 4,940,948

CLASS 330

262 4,940,949

CLASS 331

2 4,940,950
4 4,940,951
11 4,940,952
96 4,940,953

CLASS 332

103 4,940,954

CLASS 333

204 4,940,955
209 4,940,956

CLASS 335

202 4,940,957
230 4,940,958

CLASS 338

13 4,940,959
4,940,960
21 4,940,961

CLASS 340

313 4,940,963
438 4,940,964
460 4,940,965
479 4,940,962
551 4,940,966
567 4,940,967
572 4,940,968
653 4,940,969
721 4,940,971
726 4,940,970
747 4,940,972
764 4,940,973
825.080 4,940,974
825.44 4,940,975
870.02 4,940,976

CLASS 341

143 4,940,977
150 4,940,978
152 4,940,979
159 4,940,980
161 4,940,981
169 4,940,982
171 4,940,983

CLASS 342

26 4,940,987
93 4,940,988
173 4,940,984
174 4,940,985
410 4,940,986

CLASS 343

749 4,940,989
773 4,940,990
795 4,940,991
803 4,940,992

CLASS 346

76 PH Re.33,260
4,940,993
4,940,994
140 R 4,940,995
4,940,996
4,940,997
4,940,998
4,940,999
145 4,941,000
154 4,941,001
160 4,941,002
4,941,003
4,941,004

CLASS 350

3.6 4,940,301
96.11 4,940,303
96.12 4,940,302
96.13 4,940,304
96.14 4,940,305
96.16 4,940,306
96.21 4,940,307
162.2 4,940,308
171 4,940,309
245 4,940,311
286 4,940,312
342 4,940,313
355 4,940,314
357 4,940,315
358 4,940,316
588 4,940,317
611 4,940,318
613 4,940,319
616 4,940,320
633 4,940,321
637 4,940,322

CLASS 351

203 4,940,323

CLASS 354

195.1 4,941,005
299 4,941,006
320 4,941,007
4,941,008
402 4,941,009
407 4,941,010
430 4,941,011
478 4,941,012

CLASS 355

20 4,941,013
27 4,941,014
200 4,941,015
202 4,941,016
218 4,941,017
245 4,941,018
251 4,941,019
275 4,941,020
285 4,941,021
298 4,941,022
319 4,941,023

CLASS 356

28.5 4,940,330
247 4,940,324
328 4,940,325
336 4,940,326
338 4,940,327
345 4,940,328
349 4,940,331
417 4,940,332
432 4,940,333

CLASS 357

4 4,941,024
16 4,941,025
23.12 4,941,027
23.13 4,941,028
23.4 4,941,026
23.6 Re.33,261
30 4,941,029
43 4,941,030
45 4,941,031
67 4,941,032
71 4,941,034
75 4,941,033

CLASS 358

10 4,941,035
60 4,941,036
80 4,941,037
4,941,038
4,941,039
86 4,941,040
89 4,941,041
133 4,941,042
4,941,043
138 4,941,044
140 4,941,045
167 4,941,046
181 4,941,047
4,941,048
187 4,941,049
195.1 4,941,050
213.15 4,941,052
213.16 4,941,051
261.2 4,941,053
310 4,941,054
340 4,941,055
443 4,941,057
497 4,941,056

CLASS 360

10.2 4,941,061
67 4,941,058
72.2 4,941,059
99.05 4,941,060
106 4,941,062
120 4,941,064
128 4,941,065
133 4,941,066

CLASS 361

119 4,941,063
231 4,941,068
386 4,941,067
419 4,941,069

CLASS 362

3 4,941,070
61 4,941,074
80.1 4,941,073
133 4,941,071
249 4,941,072

CLASS 363

41 4,941,075

49 4,941,076
4,941,077
97 4,941,078
127 4,941,080
132 4,941,079

CLASS 364

140 4,941,081
167.01 4,941,082
200 4,941,083
4,941,084
4,941,085
4,941,086
4,941,087
4,941,088
4,941,089
4,941,123
405 4,941,090
406 4,941,091
413.01 4,941,093
413.15 4,941,092
413.21 4,941,094
424.05 4,941,095
4,941,097
424.1 4,941,096
426.02 4,941,099
426.04 4,941,098
474.09 4,941,100
474.3 4,941,104
497 4,941,101
506 4,941,105
513 4,941,102
4,941,103
4,941,106
518 4,941,107
519 4,941,108
4,941,109
521 4,941,110
4,941,111
527 4,941,112
551.01 4,941,113
578 4,941,114
580 4,941,115
718 4,941,116
724.07 4,941,117
745 4,941,119
748 4,941,120
757 4,941,121
761 4,941,118
807 4,941,122
900 4,941,124
4,941,125
4,941,126

CLASS 365

189.01 4,941,127
203 4,941,128
230.03 4,941,129

CLASS 366

4 4,940,334
8 4,940,335
75 4,940,329
99 4,941,130
128 4,940,336
148 4,940,337
167 4,941,131
278 4,941,132
345 4,940,338

CLASS 367

140 4,941,133
142 4,941,134
150 4,941,135
165 4,941,202

CLASS 368

8 4,941,136
223 4,941,137

CLASS 369

44.41 4,941,138
54 4,941,139
264 4,941,140

CLASS 370

58.1 4,941,141
85.2 4,941,143
85.5 4,941,142

CLASS 371

5.5 4,941,144

CLASS 372

45 4,941,146
71 B1 4,701,929
94 4,941,147
96 4,941,148

CLASS 373

4,941,149

CLASS 375

1 4,941,150
20 4,941,151
27 4,941,152
36 4,941,153
39 4,941,154
84 4,941,155
118 4,941,156
121 4,941,157

CLASS 376

306 4,940,564
332 4,941,158
458 4,941,159

CLASS 377

28 4,941,160
4,941,161

CLASS 378

3 4,941,162
43 4,941,163
99 4,941,169
205 4,941,164

CLASS 379

1 4,941,165
67 4,941,166
4,941,167
69 4,941,168
100 4,941,170
233 4,941,171
355 4,941,172

CLASS 380

4 4,941,175
21 4,941,176
25 4,941,173
52 4,941,174

CLASS 381

22 4,941,177
41 4,941,178
68.4 4,941,179
69.2 4,941,180
86 4,941,127

CLASS 382

1 4,941,181
4,941,182
8 4,941,183
17 4,941,184
41 4,941,185
46 4,941,189
50 4,941,188
54 4,941,186
4,941,190
4,941,191
4,941,192
56 4,941,193
4,941,194
61 4,941,195

CLASS 383

5 4,941,196

CLASS 384

25 4,940,339
44 4,941,197
465 4,940,341
482 4,940,340
510 4,940,342

CLASS 400

124 4,940,343
144.2 4,940,344
195 4,940,345
487 4,940,346
621.1 4,940,347
624 4,940,348

CLASS 401

10 4,940,349
209 4,940,350
278 4,940,351

CLASS 402

13 4,940,352
79 4,940,353

CLASS 403

5 4,940,354
24 4,940,355
266 4,940,356
344 4,940,357

CLASS 404

93 4,940,358

CLASS 405

118 4,940,359
151 4,940,360
224 4,940,361
4,940,362
229 4,940,364
261 4,940,365
267 4,940,366
296 4,940,363

CLASS 406

30 4,940,367
79 4,940,368

CLASS 407

42 4,940,369

CLASS 408

72 R 4,940,370

CLASS 410

101 4,940,371

CLASS 411

32 4,940,372
87 4,940,373
120 4,940,374
181 4,940,375
432 4,940,377

CLASS 414

198 4,940,376
401 4,940,378
4,940,379
495 4,940,380
619 4,940,381
750 4,940,382

CLASS 415

44 4,940,383
121.2 4,940,384
206 4,940,385
209.2 4,940,386
221 4,940,387

CLASS 416

97 R 4,940,388
193 A 4,940,389
241 R 4,940,390

CLASS 417

12 4,940,391
151 4,940,392
222 4,940,393
283 4,940,394
310 4,940,395
410 4,940,396
4,940,398
415 4,940,399
435 4,940,397

CLASS 418

61.2 4,940,400
61.3 4,940,401
154 4,940,402

CLASS 419

8 4,940,565
28 4,940,404

CLASS 420

443 4,940,566

CLASS 422

173 4,940,567
245 4,940,568

CLASS 423

239 4,940,569
306 4,940,570
339 4,940,571
633 4,940,572

CLASS 424

45 4,940,573
59 4,940,574
4,940,575
4,940,577
70 4,940,576
4,940,578
78 4,940,579
80 4,940,580
115 4,940,582
195.1 4,940,583
401 4,940,584
464 4,940,585
4,940,586
480 4,940,587
490 4,940,588
532 4,940,581

CLASS 425

133.1 4,940,403

CLASS 426

3 4,940,589
92 4,940,590
94 4,940,591
4,940,592
4,940,593
231 4,940,594
243 4,940,595
413 4,940,597
507 4,940,598
524 4,940,599
582 4,940,600
601 4,940,601

CLASS 427

40 4,940,602
47 4,940,596
66 4,940,603
76 4,940,604
77 4,940,605
130 4,940,606
140 4,940,607
259 4,940,608
304 4,940,609
355 4,940,610
385.5 4,940,846

CLASS 428

2 4,940,611
34.2 4,940,612
34.7 4,940,613
34.8 4,940,615
34.9 4,940,820
35.7 4,940,616
36.3 4,940,617
64 4,940,618
74 4,940,619
81 4,940,620
137 4,940,621
4,940,622
158 4,940,623
159 4,940,624
195 4,940,625
198 4,940,626
203 4,940,627
207 4,940,628
209 4,940,849
213 4,940,629
234 4,940,630
309.9 4,940,631
318.4 4,940,632
324 4,940,633
348 4,940,614
349 4,940,634
408 4,940,635
411.1 4,940,854
426 4,940,636
607 4,940,637
648 4,940,638
659 4,940,639

CLASS 429

213 4,940,640

CLASS 430

5 4,940,641
65 4,940,642
108 4,940,643
109 4,940,644
175 4,940,646
271 4,940,647
272 4,940,648
281 4,940,649
283 4,940,650
325 4,940,651
403 4,940,652
438 4,940,645
502 4,940,653
522 4,940,654
523 4,940,655
538 4,940,656
578 4,940,657

CLASS 431

1 4,940,405
22 4,940,406
126 4,940,407

CLASS 432

137 4,940,408

CLASS 433

74 4,940,409
102 4,940,410
215 4,940,411

CLASS 434

267 4,940,412

CLASS 435

4 4,940,658
7 4,940,659
4,940,660
68.1 4,940,662
69.1 4,940,661
104 4,940,663
134 4,940,845
176 4,940,664
187 4,940,665
240.2 4,940,666
240.23 4,940,853

CLASS 436

157 4,940,667
174 4,940,668
501 4,940,669
548 4,940,670

CLASS 437

31 4,940,671
132 4,940,672
225 4,940,673

CLASS 439

67 4,940,413
131 4,940,414
192 4,940,415
204 4,940,416
248 4,940,417
260 4,940,418
271 4,940,419
272 4,940,420
273 4,940,421
356 4,940,422
369 4,940,423
4,940,424
397 4,940,425
495 4,940,426
501 4,940,427
598 4,940,428
608 4,940,429
686 4,940,430
716 4,940,431
862 4,940,432

CLASS 440

1 4,940,433
57 4,940,434
89 4,940,435
112 4,940,436

CLASS 441

62 4,940,437
79 4,940,438

CLASS 445

5 4,940,439
4,940,440

CLASS 446

46 4,940,441
90 4,940,442
208 4,940,451
445 4,940,443
446 4,940,444
465 4,940,445

CLASS 455

9 4,941,198
10 4,941,199
17 4,941,200
41 4,941,201
53 4,941,203
164 4,941,204
605 4,941,205
607 4,941,206
617 4,941,207
618 4,941,208

CLASS 474

91 4,940,446
110 4,940,447
111 4,940,448
140 4,940,449
152 4,940,450

CLASS 475

2 4,939,949
233 4,939,953
278 4,939,955

CLASS 501

4 4,940,674
12 4,940,675
16 4,940,676
45 4,940,677
56 4,940,851
73 4,940,678
96 4,940,679
97 4,940,680
134 4,940,681

CLASS 502

113 4,940,682
162 4,940,683
178 4,940,684
263 4,940,685
327 4,940,686
333 4,940,687

CLASS 503

200 4,940,688
202 4,940,689
206 4,940,690
220 4,940,691
227 4,940,692

CLASS 505

1 4,940,693

CLASS 508

4,940,842

CLASS 514

25 4,940,694
57 4,940,695
62 4,940,696
63 4,940,697
86 4,940,698
114 4,940,699
167 4,940,700
179 4,940,701
201 4,940,702
210 4,940,703
211 4,940,704
227.8 4,940,705
231.5 4,940,706
237.8 4,940,707
249 4,940,708
253 4,940,709
254 4,940,710
255 4,940,711
272 4,940,712
4,940,713
293 4,940,714
4,940,715
307 4,940,716
341 4,940,717
370 4,940,718
381 4,940,719
383 4,940,720
4,940,721
4,940,722
396 4,940,723
397 4,940,724
411 4,940,725
450 4,940,726
4,940,727
474 4,940,728
521 4,940,729
560 4,940,730
657 4,940,731

CLASS 521

69 4,940,732
79 4,940,733
84.1 4,940,734
86 4,940,735
98 4,940,736
103 4,940,737
116 4,940,844

CLASS 523

161 4,940,738
4,940,739
211 4,940,852
428 4,940,740

CLASS 524

47 4,940,741
93 4,940,742
377 4,940,743
437 4,940,744
504 4,940,745
4,940,746
4,940,747
510 4,940,841
521 4,940,748
547 4,940,749
871 4,940,750

CLASS 525

54.2 4,940,751
67 4,940,752
68 4,940,753
80 4,940,754
90 4,940,755
237 4,940,756
502 4,940,757
539 4,940,758

CLASS 526

62 4,940,759
190 4,940,760
273 4,940,761
279 4,940,762
307 4,940,763

CLASS 527

400 4,940,764

CLASS 528

15 4,940,765
18 4,940,766
35 4,940,767
45 4,940,768
85 4,940,769
111 4,940,770
199 4,940,771
272 4,940,772
315 4,940,773
392 4,940,774
4,940,775
4,940,776
4,940,777
481 4,940,778
495 4,940,779

CLASS 530

350 4,940,781
387 4,940,782

CLASS 534

605 4,940,783

CLASS 536

1.1 4,940,784
90 4,940,785
117 4,940,786
124 4,940,787

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	CLASS 540		268.4	4,940,798		CLASS 558		CLASS 568		863	4,940,832	396	4,940,463
200		4,940,788	268.8	4,940,799	262		4,940,811	318	4,940,819	868	4,940,833		4,940,464
581		4,940,789	327	4,940,800	388		4,940,780	775	4,940,821		CLASS 600	892.1	4,940,465
	CLASS 544		410	4,940,801		CLASS 560		812	4,940,822	7	4,940,452		CLASS 606
8		4,940,790	462	4,940,802	12		4,940,812	844	4,940,823	13	4,940,453	36	4,940,466
237		4,940,791		CLASS 549	103		4,940,813		CLASS 570		CLASS 604	66	4,940,467
321		4,940,792	267	4,940,804		CLASS 562		179	4,940,824	1	4,940,454	170	4,940,468
349		4,940,793	302	4,940,803	849		4,940,814		4,940,825	5	4,940,455		CLASS 800
	CLASS 546		326	4,940,805		CLASS 564			CLASS 585	20	4,940,456	200	4,940,834
13		4,940,794	365	4,940,806	18		4,940,815	600	4,940,826	22	Re.33,258		4,940,837
16		4,940,795	434	4,940,807	103		4,940,816	646	4,940,827	30	4,940,457	205	4,940,835
323		4,940,796	436	4,940,808	305		4,940,817	652	4,940,828	51	4,940,458		4,940,838
	CLASS 548		559	4,940,809	471		4,940,818	752	4,940,829	98	4,940,459		4,940,840
110		4,940,797		CLASS 556				828	4,940,830	143	4,940,460	220	4,940,836
			438	4,940,810				836	4,940,831	333	4,940,461		4,940,839
										387	4,940,462		

CLASSIFICATION OF DESIGNS

D2—	314	309,055		622	309,072		433	309,107		126	309,133	D20—	26	309,159		10	309,185
D3—	25	309,056		641	309,075		434	309,108			309,134		41	309,160		38	309,186
	26	309,057		665	309,083		436	309,109		129	309,135	D21—	13	309,161			309,187
		309,058	D8—	33	309,085	D10—	1	309,110		137	309,136		31	309,163		51	309,188
	40	309,059		36	309,086		6	309,112		151	309,137		37	309,162		64	309,189
	61	309,060		65	309,087		32	309,113			309,138		89	309,164	D25—	34	309,190
	106	309,061		68	309,088		33	309,114		156	309,139		106	309,165			309,191
D4—	104	309,062		82	309,089		56	309,115		165	309,140		136	309,166		138	309,192
D6—	349	309,063		99	309,090		62	309,116		230	309,141		194	309,167	D26—	2	309,193
	375	309,064		305	309,091		94	309,117		251	309,142		201	309,170		125	309,194
	429	309,065		331	309,092		96	309,118	D15—	9	309,143		209	309,168	D28—	54.1	309,195
	466	309,066		353	309,093		104	309,119		9.2	309,144		237	309,169		56	309,196
	515	309,067		354	309,094		116	309,120		124	309,145	D22—	141	309,171		99	309,197
	601	309,068		356	309,095			309,121		131	309,146			309,172	D29—	5	309,198
		309,069	D9—	337	309,096		117	309,111		133	309,147	D23—	231	309,174	D30—	118	309,199
	604	309,070		341	309,097	D11—	145	309,122	D16—	102	309,148		233	309,173			309,200
D7—	316	309,076		371	309,098	D12—	11	309,123			309,149		245	309,175	D32—	1	309,201
	318	309,077		373	309,099		102	309,124		131	309,150		296	309,176		18	309,202
	351	309,078		375	309,080		151	309,125	D17—	18	309,151		311	309,177		22	309,203
	379	309,079			309,100		157	309,126	D18—	7	309,152		313	309,178			309,204
		309,081		385	309,101		158	309,127			309,153		353	309,179		32	309,205
	384	309,082		401	309,102		316	309,128		27	309,154			309,180		46	309,206
	504	309,084		404	309,103	D13—	149	309,129	D19—	1	309,155		371	309,181		61	309,207
	600	309,071		420	309,104	D14—	102	309,130		41	309,156		382	309,182	D34—	4	309,208
	602	309,074		425	309,105		107	309,131		55	309,157		413	309,183		9	309,209
	608	309,073		430	309,106			309,132		89	309,158	D24—	11	309,184			

CLASSIFICATION OF PLANTS

P.—	15	7,264		47	7,265		7,266		7,267		7,268	82	7,269

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,939,945	4,940,079	4,940,732	09 :	4,939,856		4,941,193		4,940,433
	4,939,986	4,940,080	4,940,840		4,939,992	16 :	4,940,160		4,940,718
	4,940,001	4,940,137	4,940,844		4,940,074		4,940,455		4,940,932
	4,940,135	4,940,161	4,940,859		4,940,112	17 :	4,939,821		4,941,196
	4,940,296	4,940,164	4,940,875		4,940,191		4,939,887	19 :	4,939,885
	4,940,299	4,940,165	4,940,878		4,940,257		4,939,977		4,939,924
	4,940,612	4,940,177	4,940,881		4,940,537		4,940,002		4,939,937
	4,941,163	4,940,179	4,940,891		4,940,641		4,940,115		4,940,283
02	4,939,814	4,940,188	4,940,893		4,940,668		4,940,124		4,940,297
04	4,939,797	4,940,194	4,940,909		4,940,708		4,940,158		4,940,334
	4,939,799	4,940,209	4,940,919		4,940,712		4,940,184		4,940,597
	4,939,808	4,940,233	4,940,921		4,940,734		4,940,193		4,940,611
	4,940,046	4,940,235	4,940,922		4,940,791		4,940,236		4,940,767
	4,940,082	4,940,242	4,940,935		4,940,823		4,940,239		4,940,974
	4,940,098	4,940,249	4,940,945		4,940,856		4,940,375	20 :	4,940,258
	4,940,237	4,940,255	4,940,946		4,940,936		4,940,381		4,940,265
	4,940,280	4,940,277	4,940,949		4,940,959		4,940,435		4,940,287
	4,940,370	4,940,282	4,940,964		4,941,086		4,940,458		4,940,786
	4,940,507	4,940,301	4,940,976		4,941,091		4,940,491		4,940,815
	4,940,726	4,940,314	4,940,977	10 :	4,940,679		4,940,527	21 :	4,940,348
	4,940,981	4,940,323	4,940,991		4,940,760		4,940,529		4,940,355
	4,941,048	4,940,331	4,940,997		4,940,761		4,940,530		4,940,401
	4,941,067	4,940,340	4,940,998	11 :	4,941,172		4,940,532		4,940,848
	4,941,139	4,940,347	4,941,028	12 :	4,940,026		4,940,543		4,941,090
05	4,939,859	4,940,358	4,941,041		4,940,067		4,940,548	22 :	4,940,028
	4,939,863	4,940,374	4,941,073		4,940,116		4,940,552	23 :	4,941,066
06	Re.33,258	4,940,385	4,941,097		4,940,159		4,940,589	24 :	4,939,809
	Re.33,259	4,940,394	4,941,102		4,940,181		4,940,810		4,939,926
	4,939,798	4,940,399	4,941,111		4,940,205		4,940,824		4,939,995
	4,939,800	4,940,405	4,941,132		4,940,262		4,940,825		4,940,009
	4,939,801	4,940,407	4,941,143		4,940,383		4,940,830		4,940,144
	4,939,818	4,940,411	4,941,147		4,940,390		4,940,864		4,940,243
	4,939,830	4,940,413	4,941,153		4,940,459		4,940,873		4,940,292
	4,939,837	4,940,416	4,941,170		4,940,467		4,940,902		4,940,531
	4,939,841	4,940,424	4,941,175		4,940,903		4,940,947		4,940,603
	4,939,843	4,940,437	4,941,177		4,940,933		4,940,978		4,940,737
	4,939,869	4,940,444	4,941,198		4,940,955		4,941,049		4,940,896
	4,939,907	4,940,465	4,701,929		4,940,963		4,941,063		4,940,985
	4,939,940	4,940,473	08 : 4,939,854		4,940,992		4,941,069		4,940,988
	4,939,941	4,940,493	4,939,874		4,941,027		4,941,081		4,941,029
	4,939,960	4,940,508	4,939,972		4,941,199		4,941,136		4,941,113
	4,939,976	4,940,510	4,939,996		4,941,203		4,941,160	25 :	4,939,826
	4,940,003	4,940,511	4,940,016	13 :	4,939,963		4,941,167		4,939,851
	4,940,018	4,940,533	4,940,231		4,940,045		4,941,187		4,939,912
	4,940,042	4,940,549	4,940,658		4,940,143		4,941,197		4,939,950
	4,940,044	4,940,563	4,940,666		4,940,259	18 :	4,939,824		4,940,033
	4,940,052	4,940,569	4,940,865		4,940,307		4,940,059		4,940,038
	4,940,053	4,940,586	4,940,885		4,940,328		4,940,078		4,940,199
	4,940,058	4,940,620	4,940,898		4,940,371		4,940,126		4,940,309
	4,940,061	4,940,627	4,940,907		4,940,504		4,940,162		4,940,318
	4,940,062	4,940,633	4,940,942		4,940,534		4,940,200		4,940,327
	4,940,064	4,940,661	4,940,979		4,940,588		4,940,298		4,940,571
	4,940,065	4,940,671	4,941,124		4,940,757		4,940,422		4,940,605

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4,940,628 4,939,999 4,939,879 4,939,923 4,940,540 4,940,770
4,940,667 4,940,108 4,940,020 4,940,040 4,940,619 4,940,774
4,940,672 4,940,136 4,940,068 4,940,048 4,940,623 4,940,801
4,940,752 4,940,214 4,940,147 4,940,066 4,940,632 4,940,809
4,940,883 4,940,244 4,940,153 4,940,073 4,940,640 4,940,828
4,940,906 4,940,519 4,940,174 4,940,150 4,940,733 4,940,908
4,940,918 4,940,550 4,940,189 4,940,167 4,940,750 4,940,910
4,940,929 4,940,558 4,940,226 4,940,276 4,940,789 4,940,925
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4,940,986 4,940,835 4,940,308 4,940,384 4,940,930 4,941,076
4,941,000 4,940,927 4,940,364 4,940,403 4,940,956 4,941,089
4,941,011 4,941,168 4,940,440 4,940,457 4,940,967 4,941,122
4,941,083 31 4,940,148 4,940,454 4,940,513 4,941,101 4,941,123
4,941,088 32 4,939,979 4,940,456 4,940,601 4,941,105 4,941,126
4,941,121 33 4,939,805 4,940,463 4,940,645 4,941,159 4,941,127
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4,941,208 4,940,171 4,940,477 4,940,695 4,939,913 4,941,201
26 4,939,928 4,940,989 4,940,515 4,940,738 4,940,008 49 4,940,063
4,939,932 4,941,202 4,940,547 4,940,739 4,940,043 4,940,240
4,939,933 34 4,939,883 4,940,570 4,940,759 4,940,166 4,940,333
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4,940,107 4,940,010 4,940,594 4,941,075 4,940,256 4,940,995
4,940,109 4,940,090 4,940,613 4,941,191 4,940,445 51 4,940,011
4,940,155 4,940,091 4,940,625 4,941,205 4,940,489 4,940,055
4,940,246 4,940,130 4,940,651 40 4,939,865 4,940,499 4,940,056
4,940,250 4,940,138 4,940,654 4,940,070 4,940,626 4,940,133
4,940,278 4,940,146 4,940,655 4,940,093 4,940,630 4,940,346
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4,940,350 4,940,438 4,940,678 4,940,831 4,941,157 4,941,125
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4,940,377 4,940,462 4,940,728 4,940,911 47 4,939,931 4,941,174
4,940,420 4,940,468 4,940,731 41 4,939,858 4,940,245 4,941,176
4,940,451 4,940,520 4,940,771 4,939,884 4,940,574 4,941,200
4,940,472 4,940,584 4,940,812 4,939,911 4,940,581 53 4,939,968
4,940,526 4,940,591 4,940,852 4,940,019 4,940,744 4,940,004
4,940,754 4,940,592 4,940,862 4,940,132 4,940,915 4,940,021
4,940,764 4,940,648 4,940,969 4,940,145 48 Re.33,257 4,940,128
4,940,821 4,940,693 4,941,001 4,940,460 4,939,804 4,940,204
4,940,822 4,940,704 4,941,004 4,941,035 4,939,833 4,940,302
4,940,962 4,940,727 4,941,016 4,941,082 4,939,848 4,940,305
4,941,071 4,940,741 4,941,020 42 4,939,819 4,939,850 4,940,360
4,941,182 4,940,769 4,941,023 4,939,847 4,939,862 4,940,453
27 4,939,820 4,940,797 4,941,026 4,939,902 4,939,877 54 4,940,590
4,939,849 4,940,803 4,941,039 4,939,917 4,939,904 4,940,882
4,939,876 4,940,813 4,941,057 4,939,989 4,939,908 55 4,939,796
4,940,373 4,940,834 4,941,100 4,940,025 4,939,942 4,939,866
4,940,415 4,940,839 4,941,166 4,940,072 4,939,988 4,939,916
4,940,427 4,940,861 37 4,939,803 4,940,081 4,940,085 4,939,964
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4,940,579 4,940,954 4,939,987 4,940,139 4,940,092 4,940,049
4,940,593 4,940,957 4,940,077 4,940,149 4,940,095 4,940,086
4,940,595 4,941,025 4,940,241 4,940,156 4,940,097 4,940,087
4,940,596 4,941,110 4,940,669 4,940,212 4,940,099 4,940,182
4,940,607 4,941,117 4,940,713 4,940,247 4,940,118 4,940,201
4,940,762 4,941,133 4,940,723 4,940,263 4,940,151 4,940,251
4,940,816 4,941,154 4,940,980 4,940,288 4,940,208 4,940,271
4,940,854 4,941,155 4,941,131 4,940,316 4,940,210 4,940,274
4,940,858 35 Re.33,261 38 4,939,807 4,940,324 4,940,229 4,940,402
4,940,877 4,940,670 4,940,096 4,940,365 4,940,252 4,940,434
4,940,953 4,941,116 39 Re.33,254 4,940,391 4,940,357 4,940,436
4,941,074 36 Re.33,256 4,939,795 4,940,404 4,940,475 4,940,464
4,941,115 Re.33,260 4,939,838 4,940,426 4,940,509 4,940,505
4,941,119 4,939,794 4,939,864 4,940,432 4,940,525 4,940,506
4,941,120 4,939,823 4,939,873 4,940,471 4,940,551 4,940,539
4,941,165 4,939,825 4,939,890 4,940,490 4,940,622 4,940,700
4,941,190 4,939,831 4,939,905 4,940,497 4,940,659 4,940,894
28 4,940,796 4,939,840 4,939,918 4,940,517 4,940,676 56 4,939,855
29 4,939,845 4,939,853 4,939,921

DESIGN PATENTS

02 309,206 309,157 309,208 309,193 37 309,144 309,177
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309,073 08 309,111 309,119 309,145 40 309,056 309,120
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309,128 10 309,092 20 309,118 309,137 309,148 309,189
309,132 12 309,060 22 309,197 309,158 42 309,094 49 309,167
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309,150 309,070 25 309,079 309,200 309,164 51 309,065
309,151 309,136 309,080

PLANT PATENTS

06 7,264 13 7,265 7,266 7,267 7,268 27 7,269

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

July 17, 1990 Volume 1116 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1109 O.G. 3 on Dec. 5, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of March 1, 1990, and was announced in the *Official Gazette* at 1111 O.G. 24 on Feb. 20, 1990.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1242.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Apr. 30, 1990 HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U. S. Patent and Trademark Office that, due to changes in the exchange rate of the U. S. dollar with regard to the Swiss Franc, the dollar amount of the international fees for international applications filed in the United States Receiving Office will increase, effective September 1, 1990.

Effective September 1, 1990 the amount of the international fees for internationl applications filed in the United States Receiving Office will be:

Basic fee (first 30 pages)	$502.00
Basic Supplemental fee (for each page over 30)	$ 10.00
Designation fee (per country or region up to 10)	$122.00
Handling fee	$154.00

June 20, 1990 HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Information

The European Patent Office as an International Preliminary Examining Authority for International Applications filed with the United States Patent and Trademark Office as a Receiving Office

Pursuant to a recent communication from the President of the European Patent Office (EPO) to the Commissioner of Patents and Trademarks, the EPO has confirmed that beginning July 1, 1990, it will continue to act as an International Preliminary Examining Authority (IPEA) for international applications filed with the United States Patent and Trademark Office as the Receiving Office. Furthermore, effective July 1, 1990, there will be no limit on the number of international applications originating in the United States which will be examined by the EPO as the IPEA, provided that the EPO acted as the International Searching Authority for these applications.

June 18, 1990 HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on July 14, 1987 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,679,253 through 4,680,811
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 12, 1983 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,392,257 through 4,393,518
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$245.00
By other than a small entity.....$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$495.00
By other than a small enttity.....$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 6, 1990
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,327,517	06/216,596	5/04/82
4,327,614	06/226,475	5/04/82
4,327,673	06/253,791	5/04/82
4,327,750	06/271,115	5/04/82
4,327,795	06/224,143	5/04/82
4,327,880	06/247,666	5/04/82
4,327,977	06/226,275	5/04/82
4,327,983	06/266,349	5/04/82
4,328,002	06/273,912	5/04/82
4,328,073	06/221,122	5/04/82
4,328,084	06/223,357	5/04/82
4,328,188	06/240,585	5/04/82
4,328,191	06/233,401	5/04/82
4,328,206	06/238,750	5/04/82
4,328,208	06/265,559	5/04/82
4,328,242	06/222,748	5/04/82
4,328,273	06/238,653	5/04/82
4,328,354	06/248,982	5/04/82
4,328,369	06/224,998	5/04/82
4,328,391	06/226,334	5/04/82

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Patent Number	Serial Number	Issue Date
4,328,476	06/217,184	5/04/82
4,328,537	06/242,978	5/04/82
4,586,200	06/593,550	5/06/86
4,586,201	06/609,770	5/06/86
4,586,209	06/405,443	5/06/86
4,586,210	06/710,124	5/06/86
4,586,213	06/688,578	5/06/86
4,586,217	06/694,252	5/06/86
4,586,221	06/675,749	5/06/86
4,586,227	06/607,974	5/06/86
4,586,230	06/630,826	5/06/86
4,586,235	06/711,986	5/06/86
4,586,236	06/571,564	5/06/86
4,586,243	06/672,994	5/06/86
4,586,248	06/652,514	5/06/86
4,586,252	06/702,222	5/06/86
4,586,261	06/565,694	5/06/86
4,586,262	06/644,791	5/06/86
4,586,263	06/712,381	5/06/86
4,586,267	06/638,490	5/06/86
4,586,275	06/732,943	5/06/86
4,586,278	06/698,806	5/06/86
4,586,279	06/666,103	5/06/86
4,586,285	06/679,749	5/06/86
4,586,296	06/627,437	5/06/86
4,586,297	06/604,013	5/06/86
4,586,302	06/539,836	5/06/86
4,586,305	06/596,029	5/06/86
4,586,310	06/638,477	5/06/86
4,586,311	06/498,132	5/06/86
4,586,318	06/564,253	5/06/86
4,586,319	06/620,836	5/06/86
4,586,323	06/679,284	5/06/86
4,586,328	06/377,128	5/06/86
4,586,332	06/672,723	5/06/86
4,586,333	06/663,877	5/06/86
4,586,345	06/695,369	5/06/86
4,586,354	06/574,409	5/06/86
4,586,358	06/578,968	5/06/86
4,586,365	06/669,047	5/06/86
4,586,386	06/665,934	5/06/86
4,586,393	06/690,397	5/06/86
4,586,394	06/403,849	5/06/86
4,586,396	06/627,629	5/06/86
4,586,400	06/502,709	5/06/86
4,586,404	06/642,172	5/06/86
4,586,408	06/701,342	5/06/86
4,586,409	06/595,949	5/06/86
4,586,411	06/636,262	5/06/86
4,586,412	06/639,025	5/06/86
4,586,413	06/698,605	5/06/86
4,586,414	06/651,607	5/06/86
4,586,420	06/541,072	5/06/86
4,586,427	06/601,125	5/06/86
4,586,431	06/621,096	5/06/86
4,586,436	06/650,032	5/06/86
4,586,438	06/652,268	5/06/86
4,586,447	06/582,313	5/06/86
4,586,451	06/629,501	5/06/86
4,586,452	06/614,113	5/06/86
4,586,454	06/634,815	5/06/86
4,586,456	06/616,179	5/06/86
4,586,465	06/689,983	5/06/86
4,586,466	06/472,500	5/06/86
4,586,467	06/545,893	5/06/86
4,586,482	06/648,083	5/06/86
4,586,492	06/521,440	5/06/86
4,586,494	06/552,370	5/06/86
4,586,497	06/546,968	5/06/86
4,586,500	06/504,160	5/06/86
4,586,501	06/543,272	5/06/86
4,586,505	06/606,762	5/06/86
4,586,506	06/656,185	5/06/86
4,586,514	06/521,957	5/06/86
4,586,516	06/659,663	5/06/86
4,586,526	06/778,280	5/06/86
4,586,527	06/605,132	5/06/86
4,586,529	06/630,248	5/06/86
4,586,531	06/653,060	5/06/86
4,586,532	06/760,966	5/06/86
4,586,538	06/608,571	5/06/86
4,586,549	06/618,404	5/06/86
4,586,552	06/573,672	5/06/86
4,586,556	06/629,816	5/06/86
4,586,564	06/677,190	5/06/86
4,586,570	06/426,291	5/06/86
4,586,572	06/608,962	5/06/86
4,586,580	06/462,775	5/06/86
4,586,584	06/720,873	5/06/86
4,586,590	06/697,770	5/06/86
4,586,593	06/386,014	5/06/86
4,586,597	06/692,526	5/06/86
4,586,599	06/543,774	5/06/86
4,586,603	06/605,280	5/06/86
4,586,618	06/594,228	5/06/86
4,586,628	06/548,007	5/06/86
4,586,637	06/623,316	5/06/86
4,586,645	06/574,292	5/06/86
4,586,659	06/678,099	5/06/86
4,586,665	06/675,211	5/06/86
4,586,666	06/585,991	5/06/86
4,586,677	06/539,555	5/06/86
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4,586,686	06/670,989	5/06/86
4,586,691	06/733,667	5/06/86
4,586,697	06/671,818	5/06/86
4,586,706	06/711,142	5/06/86
4,586,713	06/687,167	5/06/86
4,586,723	06/353,611	5/06/86
4,586,724	06/597,998	5/06/86
4,586,725	06/701,625	5/06/86
4,586,729	06/604,724	5/06/86
4,586,730	06/615,316	5/06/86
4,586,737	06/643,170	5/06/86
4,586,740	06/641,547	5/06/86
4,586,741	06/632,643	5/06/86
4,586,745	06/254,886	5/06/86
4,586,761	06/543,553	5/06/86
4,586,768	06/609,904	5/06/86
4,586,798	06/661,114	5/06/86
4,586,804	06/661,964	5/06/86
4,586,816	06/564,826	5/06/86
4,586,817	06/583,973	5/06/86
4,586,818	06/545,501	5/06/86
4,586,819	06/510,912	5/06/86
4,586,824	06/653,476	5/06/86
4,586,826	06/686,897	5/06/86
4,586,836	06/577,846	5/06/86
4,586,854	06/744,115	5/06/86
4,586,865	06/710,933	5/06/86
4,586,866	06/624,840	5/06/86
4,586,869	06/491,199	5/06/86
4,586,872	06/558,838	5/06/86
4,586,884	06/718,197	5/06/86
4,586,889	06/528,418	5/06/86
4,586,890	06/726,840	5/06/86
4,586,896	06/692,771	5/06/86
4,586,897	06/743,641	5/06/86

Patent Number	Serial Number	Issue Date
4,586,900	06/710,848	5/06/86
4,586,901	06/659,243	5/06/86
4,586,904	06/717,727	5/06/86
4,586,905	06/712,399	5/06/86
4,586,909	06/612,624	5/06/86
4,586,912	06/734,035	5/06/86
4,586,914	06/710,684	5/06/86
4,586,919	06/597,706	5/06/86
4,586,921	06/523,929	5/06/86
4,586,933	06/644,674	5/06/86
4,586,952	06/669,024	5/06/86
4,586,975	06/655,982	5/06/86
4,586,977	06/596,359	5/06/86
4,586,985	06/583,583	5/06/86
4,586,990	06/579,481	5/06/86
4,586,991	06/653,888	5/06/86
4,586,994	06/558,661	5/06/86
4,587,002	06/736,587	5/06/86
4,587,006	06/754,937	5/06/86
4,587,009	06/751,026	5/06/86
4,587,019	06/690,538	5/06/86
4,587,027	06/648,009	5/06/86
4,587,032	06/668,917	5/06/86
4,587,036	06/673,736	5/06/86
4,587,042	06/583,676	5/06/86
4,587,048	06/601,747	5/06/86
4,587,049	06/549,681	5/06/86
4,587,052	06/578,032	5/06/86
4,587,055	06/618,634	5/06/86
4,587,059	06/596,753	5/06/86
4,587,061	06/741,931	5/06/86
4,587,081	06/605,090	5/06/86
4,587,083	06/521,815	5/06/86
4,587,092	06/735,720	5/06/86
4,587,106	06/452,708	5/06/86
4,587,108	06/538,703	5/06/86
4,587,112	06/746,810	5/06/86
4,586,128	06/645,701	5/06/86
4,587,135	06/669,310	5/06/86
4,587,141	06/561,904	5/06/86
4,587,158	06/769,371	5/06/86
4,586,191	06/568,498	5/06/86
4,587,207	06/654,446	5/06/86
4,587,210	06/595,195	5/06/86
4,587,212	06/495,601	5/06/86
4,587,213	06/214,637	5/06/86
4,587,233	06/549,961	5/06/86
4,587,250	06/465,025	5/06/86
4,587,251	06/625,071	5/06/86
4,587,259	06/626,556	5/06/86
4,587,265	06/464,702	5/06/86
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4,587,328	06/714,610	5/06/86
4,587,334	06/695,265	5/06/86
4,587,338	06/650,357	5/06/86
4,587,34/	06/628,175	5/06/86
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4,587,367	06/727,177	5/06/86
4,587,381	06/556,343	5/06/86
4,587,385	06/632,610	5/06/86
4,587,401	06/713,573	5/06/86
4,587,410	06/598,472	5/06/86
4,587,412	06/584,097	5/06/86
4,587,414	06/502,706	5/06/86
4,587,419	06/468,504	5/06/86
4,587,425	06/595,569	5/06/86
4,587,428	06/539,124	5/06/86
4,587,440	06/510,169	5/06/86
4,587,451	06/624,742	5/06/86
4,587,468	06/692,832	5/06/86
4,587,481	06/504,742	5/06/86
4,587,484	06/541,046	5/06/86
4,587,509	06/625,559	5/06/86
4,587,515	06/491,850	5/06/86
4,587,516	06/692,676	5/06/86
4,587,544	06/650,728	5/06/86
4,587,560	06/616,931	5/06/86
4,587,572	06/484,854	5/06/86
4,587,594	06/504,321	5/06/86
4,587,606	06/659,432	5/06/86
4,587,617	06/543,038	5/06/86
4,587,619	06/330,384	5/06/86
4,587,662	06/573,785	5/06/86

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,659,884, Re. S. N. 07/531,916, Filed May 29, 1990, Cl. 200/50R, SAFETY INTERLOCK SWITCHING DEVICE FOR PROTECTING EQUIPMENT, Jacob Wollenhaupt, Owner of Record: *Helmut Letzel, Cologne, West Germany*, Attorney or Agent: Karl Horman, Ex. Gp.: 214

4,674,647, Re. S. N. 07/370,506, Filed June 22, 1990, Cl. 220/006, COLLAPSIBLE STORAGE BIN, Andrew A. Hoopes, et al., Owner of Record: *Xytec Plastics, Inc., Seattle, Wash.*, Attorney or Agent: Sheri M. Novack, Ex. Gp.: 241

4,696,489, Re. S. N. 07/487,024, Filed Feb. 28, 1990, Cl. 280/707, AUTOMATIC SUSPENSION SYSTEM WITH VARIABLE DAMPING CHARACTERISTICS, Takeshi Fujishiro, et al., Owner of Record: *Nissan Motor Co., Ltd., Ohama-Shi, Japan*, Attorney or Agent: John J. Feldhaus, Ex. Gp.: 316

4,733,375, Re. S. N. 07/500,613, Filed Mar. 22, 1990, Cl. 365/206, NON-VOLATILE MEMORY CIRCUIT, Yoshiyuki Terashima, Owner of Record: *Seiko Epson Kabushiki Keisha, Tokyo, Japan*, Attorney or Agent: Harold I. Kaplan, Ex. Gp.: 233

4,741,670, Re. S. N. 07/517,615, Filed May 2, 1990, Cl. 416/129, PROPELLER COMBINATION FOR A BOAT PROPELLER UNIT, Lennart H. Brandt, Owner of Record: *AB Volvo Penta, Goteborg, Sweden*, Attorney or Agent: John C. Altmiller, Ex. Gp.: 341

4,748,521, Re. S. N. 07/531,084, Filed May 31, 1990, Cl. 360/85, MAGNETIC RECORDING/REPRODUCING APPARATUS FOR RECORDING ONTO OR REPRODUCING FROM A MAGNETIC TAPE, Atsuo Osawa, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Stanley A. Wal, Ex. Gp.: 233

4,796,944, Re. S. N. 07/458,190, Filed Dec. 28, 1989, Cl. 296/97, SPRING-LOADED HINGE ASSEMBLY FOR VEHICLE ACCESSORIES, Mark Lobanoff, et al., Owner of Record: *Irvin Industries, Inc., Rochester Hills, Mich.*, Attorney or Agent: Ronald W. Wangerow, Ex. Gp.: 312

4,829,936, Re. S. N. 07/520,674, Filed May 7, 1990, Cl. 119/82, LIVESTOCK WORKING SYSTEM, Jon D. Mollhagen,

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Owner of Record: *Inventor*, Attorney or Agent: Mark Brown, Ex. Gp.: 333

4,857,814, Re. S. N. 07/526,711, Filed May 17, 1990, Cl. 318/281, ELECTRONIC MOTOR CONTROLS, LAUNDRY MACHINES INCLUDING SUCH CONTROLS AND/OR METHODS OF OPERATING SUCH CONTROLS, Gerald D. Duncan, Owner of Record: *Fisher & Paykel Ltd., Aukland, New Zealand*, Attorney or Agent: D. Bruce Prout, Ex. Gp.: 217

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,002,746, Reexam. No. 90/002,043, Requested June 4, 1990, Cl. 514/178, SYNTHESIS OF GON-4-ENES, Gordon A. Hughes, et al., Owner of Record: *Herchel Smith, West Chester, Pa.*, Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 120, Requester: American Home Products, Inc., New York, N. Y.

4,076,645, Reexam. No. 90/002,047, Requested May 29, 1990, Cl. 252/700, CHEMICAL LIGHTING PROCESS AND COMPOSITION, Mary-Louise Vega, Owner of Record: *American Cyanmid Co., Wayne, N. J.*, Attorney or Agent: Pennie & Edmonds, Ex. Gp.: 220, Requester: Owner

4,193,889, Reexam. No. 90/002,044, Requested June 6, 1990, Cl. 252/316, MICROENCAPSULATION WITH MODIFIED ALIPHATIC POLYSOCYANATES, Gunther Baatz, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Sprung, Horn, Kramer & Woods, Ex. Gp.: 220, Requester: Owner

4,361,137, Reexam. No. 90/002,045, Requested June 11, 1990, Cl. 128/1, INCUBATOR HAVING WARM AIR CURTAIN ACROSS ACCESS OPENING, James R. Grosholz, Owner of Record: *Air-Shields, Inc., Hatboro, Pa.*, Attorney or Agent: Unknown, Ex. Gp.: 330, Requester: Owner

4,715,541, Reexam. No. 90/002,042, Requested June 4, 1990, Cl. 239/533, FUEL INJECTION NOZZLE FOR COMBUSTION ENGINES, Otto Freudenschuss, et al., Owner of Record: *Steyer-Daimler Puch, Vienna, Austria*, Attorney or Agent: Marorek, Guttman & Rubenstein, Ex. Gp.: 310, Requester: Owner

4,835,182, Reexam. No. 90/002,048, Requested June 8, 1990, Cl. 514/538, ENHANCING DRUG DELIVERY TO THE BRAIN, Nigel H. Grieg, et al., Owner of Record: *The Government of the USA, The Dept. of Health, Bethesda, Md.*, Attorney or Agent: Birch, Stewart, Kolasch & Birch, Ex. Gp.: 120, Requester: Owner

4,858,001, Reexam. No. 90/002,046, Requested June 8 1990, Cl. 358/98, MODULAR ENDOSCOPIC APPARATUS WITH IMAGE ROTATION, Miles C. Milbank, et al., Owner of Record: *High-Tech Medical Instrumentation, Inc., Dublin, Calif.*, Attorney or Agent: Unknown, Ex. Gp.: 260, Requester: Welch Allyn, Inc., Skaneateles Falls, N. Y.

Errata

"All reference to Patent No. 4,897,271 to Petros S. Taoukis et al of Minneapolis, Minn. for `INHIBITION OF ENZYMATIC BROWING' appearing in the Official Gazette of January 30, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,915,372 to Atsushi Kano et al of Amagasaki, Japan for `PAPER FEEDING DEVICE' appearing in the Official Gazette of April 10, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,916,686 to Jack H. Bailey of Villa Park, Calif. for `SYSTEM FOR RECORDING DIGITAL INFORMATION IN A PULSE-LENGTH MODULATION FORMAT' appearing in the Official Gazette of April 10, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,919,052 to Yousuke Yoneda et al of Tokyo, Japan for `TRACK APPARATUS FOR A TOY RACING CAR' appearing in the Official Gazette of April 24, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,924,155 to Gunnar Hedlund et al of Sweden of `ENERGIZING SYSTEM FOR A VARIABLE RELUCTANCE MOTOR' appearing in the Official Gazette of May 8, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,930,908 to Hiroyuki Uchida et al of Japan for `SEALED ROLLING BEARING' appearing in the Official Gazette of June 5, 1990 should be deleted since no patent was granted."

"All reference to Patent No. 4,932,751 to Robert L. Byer et al of California for `CLADDINGS FOR SINGLE CRYSTAL OPTICAL FIBERS AND DEVICES AND METHODS AND APPARATUS FOR MAKING SUCH CLADDINGS' appearing in the Official Gazette of June 12, 1990 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Block Walnut Processing Corporation, Nashville, Tenn, Reg. No. 951,084, for the mark "SUPER GRIT", Canc. No. 18,438.

JEAN BROWN
Administrator of the
Trademark Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

PATENT NOTICES

Certificates of Correction For Week of July 17, 1990

D. 304,511	4,826,680	4,846,560	4,855,959
PP. 6,981	4,827,103	4,846,822	4,856,186
Re. 32,986	4,828,182	4,847,852	4,856,285
Re. 33,026	4,828,208	4,848,184	4,856,562
4,398,248	4,829,040	4,848,217	4,856,670
4,513,251	4,829,299	4,849,259	4,856,815
4,568,772	4,831,032	4,849,875	4,856,991
4,625,851	4,831,140	4,849,898	4,857,008
4,670,837	4,831,141	4,849,998	4,857,115
4,694,072	4,831,479	4,850,354	4,857,502
4,704,393	4,831,780	4,850,377	4,857,704
4,725,480	4,831,935	4,850,392	4,857,867
4,738,913	4,832,092	4,851,061	4,857,928
4,749,658	4,833,489	4,851,266	4,858,212
4,751,177	4,833,502	4,851,335	4,858,733
4,760,075	4,834,973	4,851,467	4,858,946
4,773,988	4,835,018	4,851,565	4,860,038
4,782,446	4,835,179	4,851,628	4,860,363
4,788,275	4,836,576	4,851,824	4,860,756
4,789,366	4,837,073	4,851,826	4,860,944
4,792,828	4,837,216	4,851,957	4,861,248
4,793,274	4,837,525	4,852,028	4,861,308
4,797,598	4,837,712	4,852,054	4,861,497
4,807,107	4,837,902	4,852,169	4,861,658
4,808,289	4,839,214	4,852,406	4,861,689
4,808,346	4,839,403	4,852,724	4,861,794
4,809,398	4,839,622	4,852,980	4,862,138
4,810,493	4,840,440	4,853,146	4,862,631
4,815,891	4,841,073	4,853,524	4,862,926
4,816,388	4,842,307	4,853,955	4,863,403
4,816,538	4,842,607	4,854,826	4,863,640
4,817,222	4,842,688	4,854,955	4,864,584
4,818,064	4,842,852	4,855,286	4,865,558
4,818,189	4,843,035	4,855,295	4,865,845
4,820,918	4,843,174	4,855,346	4,866,132
4,821,507	4,843,358	4,855,654	4,868,210
4,822,787	4,843,420	4,855,788	4,878,117
4,823,092	4,843,591	4,855,818	4,889,605
4,823,387	4,843,856	4,855,895	4,906,522
4,824,962	4,845,415	4,855,931	

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Box Pat. Ext.	Applications for patent term extension.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent application *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
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These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(201) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 473-4636
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 744-7086
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF May 19, 1990

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-7-87
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	10-18-88
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	5-12-88
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-5-88
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-28-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—ROBERT E. GARRETT, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	3-8-88
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-9-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	3-23-88
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP— 260 STEWART LEVY, Acting Director	3-31-88
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-24-89
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	6-23-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	10-25-88
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	5-5-89

Expiration of patents: The patents within the range of numbers indicated below expire during May 1990 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,729,744 to 3,736,594 inclusive
Plant Patents ..... 3,321 to 3,349 inclusive

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REEXAMINATIONS

JULY 17, 1990

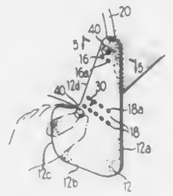
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,264,083 (1324th)

SPLASH GUARD

Kenneth S. Matthew, Northbrook, and Harry J. Dickey, Bellwood, both of Ill., assignors to Custom Accessories, Inc.

Reexamination Request No. 90/001,798, Jun. 22, 1989.
Reexamination Certificate for Patent No. 4,264,083, issued Apr. 28, 1981, Ser. No. 68,729, Aug. 22, 1979.
Reexamination Certificate B1 4,264,083, issued Mar. 22, 1983.
Int. Cl.[5] B62B *9/16*
U.S. Cl. 280—851



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

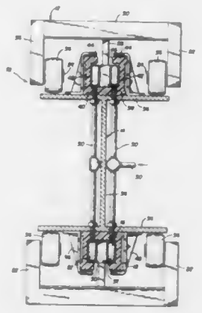
1. A splash guard or mud flap assembly for attachment to the fender of a motor vehicle, comprising: a flexible, splash-intercepting body portion; resilient, self-sustaining anchoring means for supporting the body portion and being adapted to be snugly engaged along the fender of a motor vehicle for securing the body portion in a splash-intercepting position thereon, said anchoring means including a front wall and a back wall resiliently integrally joined along one side in substantial overlying relation to one another and converging in the direction of the free ends thereof, the free ends of said walls being resiliently separable a distance to enable the anchoring means to be snugly frictionally engaged on a motor vehicle fender, the resiliency of the anchoring means being such that the front wall and the back wall thereof provide substantially the total gripping force for maintaining the anchoring means on a motor vehicle fender while providing a rigid support base for the splash-intercepting body portion of the splash guard,and an outwardly extending pin-like member carried on the front wall of the resilient anchoring means in spaced, inward relation to the free ends of said walls of the anchoring means for engaging and retaining said body portion on the anchoring means, said pin-like member being provided with locking means for securing and maintaining the splash-intercepting body portion on the anchoring means, said locking means being characterized in that it overlies and is in contact with a sufficient area of the splash-intercepting body portion to resist any forces tending to dislodge said body portion from the pin-like member.

B1 4,438,842 (1325th)

SLIDE CONVEYOR WITH SIDE STABILIZERS

Robert L. Alldredge, 130 Pearl St., Apt. 1108, Denver, Colo. 80203, and Robert J. Deltour, 16227 E. Arkansas Dr., Aurora, Colo. 80012

Reexamination Request No. 90/001,847, Sep. 25, 1989.
Reexamination Certificate for Patent No. 4,438,842, issued Mar. 27, 1984, Ser. No. 401,916, Jul. 26, 1982.
Continuation of Ser. No. 74,345, Sep. 11, 1979, abandoned.
Int. Cl.[5] B65G *15/60*
U.S. Cl. 198—838



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **11** are determined to be patentable as amended.

Claims **2–10** and **12**, dependent on an amended claim, are determined to be patentable.

1. An improved conveyor of the type having a convoluted longitudinally extending belt adapted to follow a laterally and vertically curved path and a conveyor chain capable of both lateral and vertical bending with the path of the belt, wherein the improvement comprises:

(a) a longitudinally extending conveyor track assembly carrying a longitudinally oriented chain slide surface defining substantially the full length of the operational conveyor path and having a bottom and opposite side walls thereon, and carrying on each lateral side of the slide surface a stabilizer operating surface;

(b) a belt carriage connected to the conveyor belt and extending transversely thereto, having a central connecting means for joining the carriage to a single conveyor chain substantially at the transverse center of the belt and having a pair of laterally [speced] *spaced* stabilizer means flanking said central connecting means and overlying the stabilizer operating surfaces when the chain overlies said slide surface bottom wall, the stabilizer means being oriented with respect to the central connecting means and chain such that at substantially any point along the length of the chain slide surface when the carriage is laterally evenly weighted the chain is in force bearing contact with said slide surface and the stabilizer means are without force bearing contact with said stabilizer operating surfaces; and

(c) wherein the chain is of the type formed from pin links and intermediate block links, the central connecting

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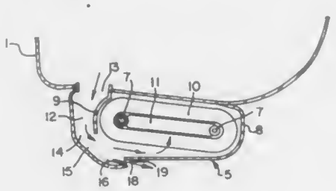
means being joined only to the block links, the block links being of the type having a transverse hole at each end thereof for receiving the pin of a pin link and the hole being sufficiently larger in diameter than the pin that the block link is capable of a predetermined degree of lateral tilting before the block link applies twisting torque to the pin, and wherein the stabilizer means are oriented with respect to the central connecting means such that a stabilizer means will contact an operating surface in force bearing relationship when the carriage is laterally unevenly [wieghted] *weighted* prior to the time that a block link applies substantial twisting torque to a pin.

B1 4,537,160 (1326th)

AIR CLEANER FOR AN AIR-COOLED ENGINE

Tetsuaki Shirai, Kobe, Japan, assignor to Kawasaki Heavy Industries Ltd, Kobe, Japan

Reexamination Request No. 90/001,885, Nov. 6, 1989.
Reexamination Certificate for Patent No. 4,537,160, issued Aug. 27, 1985, Ser. No. 638,736, Aug. 8, 1984.
Claims priority, application Japan, Aug. 12, 1983, 58-125955
Int. Cl.[5] **F01P** *5/06*
U.S. Cl. 123—41.58



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5**, and **7** are cancelled.

Claims **2**, **4** and **6** are determined to be patentable as amended.

Claim **3**, dependent on an amended claim, is determined to be patentable.

New claims **8** and **9** are added and determined to be patentable.

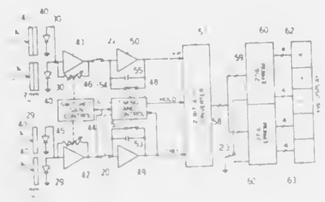
[**1**. An air cleaner for an air-cooled engine, the engine further including a cooling fan within a fan housing and the fan housing having an air outlet formed therein, said cleaner comprising a casing adapted to be attached to said fan housing, said casing having a side wall, an air inlet opening in said casing which is adapted to communicate with said air outlet of the fan housing and air flowing from said fan, through said air outlet and said air inlet opening and into said casing, an air passage formed within said casing and extending from said inlet opening along said side wall and air from said fan flowing through said passage, an air filter in said air passage, said passage including a curved portion between said air inlet opening and said air filter, and a slit opening formed in said side wall adjacent said curved portion.]

B1 4,697,280 (1327th)

METHOD AND APPARATUS FOR THE MEASUREMENT OF X-RAY SOURCES

William C. Zarastorff, and Frank N. Ranallo, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Reexamination Request No. 90/001,711, Feb. 7, 1989.
Reexamination Certificate for Patent No. 4,697,280, issued Sep. 29, 1987, Ser. No. 648,020, Sep. 6, 1984.
Int. Cl.[5] **G01D** *18/00*
U.S. Cl. 378—207



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10**, **12**, **14–17**, **19–26** is confirmed.

Claims **11**, **13**, **18** are cancelled.

New claims **27–30** are added and determined to be patentable.

1. Apparatus for the measurement of the characteristics of an X-ray beam from an X-ray machine comprising:

(a) first detector unit means for providing an output signal related to the intensity of the X-ray radiation incident on it which passes through an X-ray filter of a first attenuation characteristic;

(b) second detector unit means, adjacent to the first detector unit means, for providing an output signal related to intensity of the X-ray radiation incident on it which passes through an X-ray filter of a second attenuation characteristic different than that of the X-ray filter for the first detector unit means;

(c) first integrator means for integrating the signal from the first detector means and providing an output signal indicative thereof;

(d) second integrator means for integrating the signal from the second detector means and providing an output signal indicative thereof;

(e) conversion means for determining the ratio of the integrated first detector signal and the integrated second detector signal and providing a multi-bit digital output signal on parallel lines;

(f) memory means, having address input lines connected to the parallel output lines from the conversion means, for providing an output of data stored at an address location corresponding to the multi-bit input signal on the address lines such that the output data from the memory means is indicative of a selected characteristic of the X-ray beam received by the first and second detector unit means;

(g) display means for receiving the output data signal from the memory means and for providing a display to an operator which corresponds to the data from the memory means; and

(h) timing and control means for determining when the magnitude of the output signal of the first integrator means exceeds a predetermined level and thereafter holding the output signal levels of the first and second integrator means constant to allow such levels to be readily compared by the conversion means to determine a ratio output signal which remains substantially constant.

B1 4,767,628 (1328th)

CONTINUOUS RELEASE PHARMACEUTICAL COMPOSITIONS

Francis G. Hutchinson, Lymm, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Reexamination Request No. 90/001,713, Feb. 8, 1989.
Reexamination Certificate for Patent No. 4,767,628, issued Aug. 30, 1988, Ser. No. 68,760, Jun. 29, 1987.
Continuation of Ser. No. 640,855, Aug. 15, 1984, abandoned, which is a continuation of Ser. No. 344,722, Feb. 1, 1982, abandoned.
Claims priority, application United Kingdom, Feb. 16, 1981, 8104734
Int. Cl.[5] **A61K** *9/26, 9/32*
U.S. Cl. 424—426

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–17, dependent on an amended claim, are determined to be patentable.

1. A pharmaceutical composition [comprising] *for essentially monophasic continuous release of a polypeptide in the form of an implant or suspension for injection consisting essentially of* (a) from 50% to 99.999% of a polylactide which is a polymer of lactic acid alone, a copolymer of lactic acid and glycolic acid wherein the ratio of glycolide to lactide units is from 0 up to 3:1, a mixture of such polymers, a mixture of such copolymers, or a mixture of such polymers and copolymers, the lactic acid being either in racemic or in optically active form, and such polylactide being either soluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml. in chloroform) to 0.5 (1 g. per 100 ml. in benzene), or insoluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml in chloroform) to 4 (1 g. per 100 ml in chloroform or dioxan), and (b) from 0.001% to 50% of a pharmacologically active polypeptide which has a molecular weight *of* at least about the same as the molecular weight of tetragastrin, which is not significantly hydrolyzed under the conditions encountered within the composition during the period of use envisioned, and which contains four or more amino acid residues, said polypeptide being uniformly dispersed in said polylactide *so that some of the said polypeptide is present at the external surface of the composition*, which composition, when placed in an aqueous physiological-type environment absorbs water and exhibits two successive phases of release of polypeptide, the first phase being release by initial diffusion through aqueous polypeptide domains communicating with the exterior surface of the composition, and the second phase being release consequent upon degradation of the polylactide, characterized in that the diffusion phase and the degradation-induced phase overlap in time, said composition being further characterized by the fact that, when placed in an aqueous physiological type environment, water diffuses into the matrix and is partitioned between polypeptide and polylactide to form aqueous polypeptide domains, the said domains increasing with increasing absorption of water until the continuity of the said domains reaches a sufficient level to communicate with the exterior surface of the composition, whereupon polypeptide starts to be released from said composition by diffusion through aqueous polypeptide channels formed from said domains, which second phase continues until substantially all of the remaining polypeptide is released *over at least a week*.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,262

AUTOMATED TURRET LATHE

Helmut F. Link, Aichwald, and Walter Groesmann, Baltmannsweiler, both of Fed. Rep. of Germany, assignors to Index Werke Komm.-Ges Hahn & Tessky, Esslingen, Fed. Rep. of Germany

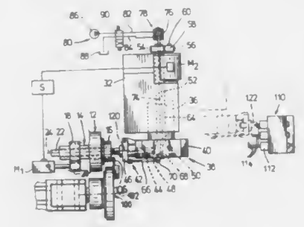
Original No. 4,589,311, dated May 20, 1986, Ser. No. 549,346, Nov. 4, 1983. Application for reissue Apr. 13, 1988, Ser. No. 181,212

Claims priority, application Fed. Rep. of Germany, May 4, 1983, 3316288

Int. Cl.[5] B23B *29/32, 13/04*

U.S. Cl. 82—120

14 Claims



5. An automatic turret lathe comprising a main rotatable spindle; means for rotatably mounting said spindle for rotation about a main spindle axis; drive means associated with said main spindle for rotatably driving the same about said main axis; a first workpiece chuck means associated with said main spindle and rotatable therewith; a first tool carrier comprising a tool turret rotatably mounted about an indexing axis; a second workpiece chuck means mounted on the first tool carrier turret for rotation about an auxiliary spindle axis; a second tool carrier for machining a workpiece held by said first chuck means located adjacent the latter for movement relative to a workpiece held by the first chuck means; a stationary third tool carrier disposed on the side of said first tool carrier facing away from said first chuck means; said third tool carrier carrying at least one tool holder; and cross slide means on which said first tool carrier is rotatably mounted for movement of said turret along axes normal and parallel to said main spindle axis so that by appropriate adjustment of said slide means and appropriate indexing of said tool turret said auxiliary spindle axis can be brought into axial alignment with said main spindle axis and a workpiece held by said second chuck means may approach each tool holder of the third tool carrier.

Re. 33,263

TAMPERPROOF CABINET

Steve F. Goodman, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Original No. 4,722,285, dated Feb. 2, 1988, Ser. No. 30,677, Mar. 26, 1987. Continuation of Ser. No. 810,035, Dec. 17, 1985, abandoned. Application for reissue Jun. 26, 1989, Ser. No. 371,600

Int. Cl.[5] E05G *1/04;* A47C *43/00*

U.S. Cl. 109—50

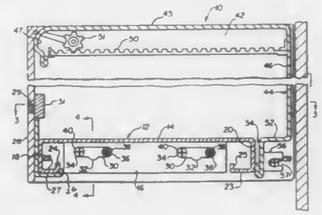
12 Claims

1. A storage cabinet adapted for mounting on a wall and including side panels, a top panel, a bottom panel, a back panel, and a door for closing an opening between said top panel, bottom panel, and side panels, all of said panels and door being joined together to define an enclosed space, said bottom panel is removably joined to said side panels through exposed fasteners outside said enclosed space and extending through said bottom panel and side panels, the improvement which comprises:

a slot in one of said bottom panel and side panels for retaining said exposed fasteners when said bottom panel is in a forward position with respect to said side panels;

one of said exposed fasteners mounted in an end portion of said slot to prevent forward movement of said bottom panel with respect to said side panel, said one fastener being secured to the other of said bottom panel and side panels in a non-removable fashion by which said one exposed fastener cannot ordinarily be removed without evident damage to said other of said bottom panel and side panels;

means including said back wall to prevent movement of said bottom panel from said forward position to said rearward position when said cabinet is assembled;



whereby said bottom panel can be removed from said side panels in the absence of said back panel by sliding said bottom panel rearwardly with respect to said side panels when all said fasteners except said one non-removable fasteners are removed; and

means to secure said back panel to said side panels, said securing means being inaccessible when said cabinet is mounted to said wall and being accessible for removing said back wall from said side panels when said cabinet is removed from said wall;

whereby said bottom panel cannot be removed from said side panels while said cabinet is mounted to said wall without evident damage to the other of said bottom panel and side panels, thus preventing disassembly of said cabinet when said door is locked in said opening without evidence of tampering.

Re. 33,264

BAG PACK

William H. Baxley; Marion H. Weatherford; Harry B. Wilfong, Jr., and Floyd B. Williams, all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Original No. 4,676,378, dated Jun. 30, 1987, Ser. No. 853,589, Apr. 18, 1986. Application for reissue Jun. 21, 1989, Ser. No. 369,459

Int. Cl.[5] B65D *1/34*

U.S. Cl. 206—554

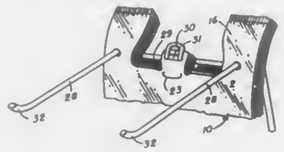
23 Claims

21. A system for mounting a pack of thermoplastic grocery bags of the T-shirt type on a rack, for supporting consecutive bags from said pack on said rack in an open loading position and for facilitating easy removal of the consecutive loaded bags from said rack; said system comprising;

a bag pack comprising a plurality of stacked T-shirt type bags secured together, each of said bags comprising

front and rear wall portions integrally connected at sides thereof

and secured together at the bottom thereof and defining an open top mouth portion,
laterally spaced handles integral with said wall portions and extending upwardly from opposed sides of said mouth portion,
a support rod receiving aperture formed through an intermediate portion of each of said handles,
a detachable mounting tab extending upwardly from each of said front and rear wall portions at a central area of said mouth portion,
a mounting aperture in each of said detachable mounting tabs, and
means bonding said tabs together for maintaining said bags together in said pack; and
a rack comprising
a generally horizontal base,
generally vertical frame members mounted on and extending from one side of said base,



two laterally spaced generally horizontal support rod means having free outer ends and carried by and extending outwardly from the upper portion of said vertical frame members (1) for slidably receiving said apertures in said bag handles of said pack, (2) for supporting consecutive ones of said bags in an open loading position as said bags are consecutively removed from said pack and slid along said support rods and (3) for facilitating removal of loaded bags by sliding said handles off said support rods at said free outer ends, and
retaining means carried by the upper portion of said vertical frame members between said support rod means and extending outwardly therefrom a distance less than the extension of said support rod means (1) for receiving said apertures in said detachable mounting tabs, (2) for cooperating with said support rod means to mount said bag pack on said rack and (3) for allowing consecutive detachment of said front and rear wall portions of said bags from said mounting tabs as said bags are slid outwardly along said support rod means into the open loading position by retaining said mounting tabs on said retaining means.

Re. 33,265
TAMPER-INDICATING CLOSURE, CONTAINER AND COMBINATION THEREOF

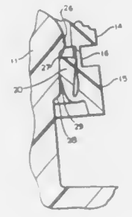
James L. Gregory, Toledo, and Steven R. Wolfe, Maumee, both of Ohio, assignors to Owens-Illinois Closure Inc., Toledo, Ohio

Original No. 4,613,052, dated Sep. 23, 1986, Ser. No. 728,377, Apr. 29, 1985. Application for reissue Apr. 25, 1988, Ser. No. 185,717

Int. Cl.[5] B65D *41/34*

U.S. Cl. 215—252 **7 Claims**

8. A screw cap for closing the open upper finish of a container comprising a generally disc-shaped top with an integral, cylindrical, depending skirt, a generally cylindrical flexible, indicating band attached to the annular bottom of said skirt by a plurality of circumferentially spaced, frangible bridging members, a full annular stop ring formed integrally with the indicating band and attached to the interior thereof, said stop ring being positioned inwardly and upwardly with respect to the interior of said indicator band, an integral downwardly curved ring portion extending radially inwardly and axially downwardly from the inside portion of said band to said stop ring, the upper edge of said stop ring being thicker than the lower end which is connected to said curved hinge portion, said hinge portion being constructed and arranged such that the lower end of said stop ring is spaced from the inside surface of said band and said upper edge of said stop ring is capable of flexing into contact with the inner surface of said band



during application of said closure to said container, and said stop ring adapted to engage beneath an element of the container and prevent the ring from passing the container element after assembly of the closure on a container.

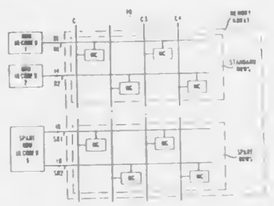
Re. 33,266
FOLDED BIT LINE MEMORY WITH ONE DECODER PER PAIR OF SPARE ROWS

Austin C. Dumbri, Palmer Township, Northampton County, Pa., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,494,220, dated Jan. 15, 1985, Ser. No. 444,239, Nov. 24, 1982. Application for reissue Jan. 15, 1987, Ser. No. 4,393

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—200 **12 Claims**



7. A semiconductor memory comprising:
an array of standard memory cells arranged in a folded bit line configuration of even and odd rows and columns and an array of spare memory cells arranged in a folded bit line configuration of rows;
a row decoder circuit being coupled to each row of standard memory cells, each decoder circuit including means for decoupling same from the associated row of standard memory cells;
a single separate spare row decoder circuit being coupled to one even and to one odd row of spare memory cells, each spare decoder circuit including first means for decoupling same from one or both of the associated rows of spare memory cells; and
each spare row decoder circuit includes second means for providing same with the address of a row decoder circuit which has been decoupled from the associated row such that the spare row is effectively substituted for the standard row.

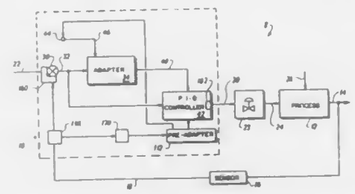
Re. 33,267
PATTERN-RECOGNIZING SELF-TUNING CONTROLLER

Thomas W. Kraus, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Original No. 4,602,326, dated Jul. 22, 1986, Ser. No. 560,617, Dec. 12, 1983. Application for reissue Jul. 21, 1988, Ser. No. 226,245

Int. Cl.[5] G05B *13/02, 13/00*

U.S. Cl. 364—158 **66 Claims**



2. [The apparatus of claim 1 wherein said pattern characteristic includes] *A pattern-recognizing self-tuning controller apparatus for use in a control system, wherein said controller apparatus includes a controller which is coupled to a process in a closed loop of said control system for controlling a process controlled variable having set point and measured values, said controller having a control action which is determined by at least one operating parameter so that the controller is responsive to a difference between said set point and measured values; said controller apparatus comprising:*
first comparator means responsive to differences between said set point and measured values for generating a closed-loop behavior signal;
detector means responsive to the closed-loop behavior signal of said process control variable for measuring a pattern characteristic thereof and producing a measured value of said pattern characteristic, the latter including a first characteristic being a peak amplitude of a local extremum of said behavior signal and a second characteristic being an amplitude of said behavior signal at a point subsequent to said local extremum;
second comparator means being coupled to said detector means and operating to compare said pattern characteristic measured value with a predetermined desired value for the pattern characteristic; and
adjusting means coupled to said second comparator means for responding to a difference between said measured and desired values of the pattern characteristic so that the measured value substantially matches the set point value, said adjusting means not operating to alter said operating parameter of the controller when the difference between said measured and desired values is less than a prescribed difference; and [said controller apparatus further includes:]
means coupled to said detector means for combining said first and second characteristics to produce a measured value of said performance criterion.

Re. 33,268
CHIP CARRIER SOCKET HAVING IMPROVED CONTACT TERMINALS

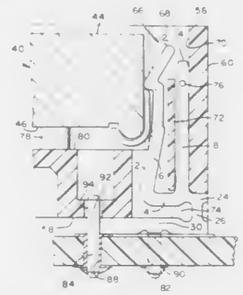
Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Original No. 4,645,279, dated Feb. 24, 1987, Ser. No. 827,133, Feb. 6, 1986. Continuation-in-part of Ser. No. 584,274, Feb. 27, 1984, abandoned. Application for reissue Feb. 21, 1989, Ser. No. 313,229

Int. Cl.[5] H01R *23/72*

U.S. Cl. 439—70 **34 Claims**

18. A contact terminal of the type having a contact arm and a mounting portion, the contact arm having a contact portion for disengageably contacting a contact surface on an electrical device such as a chip carrier, the mounting portion intended for mounting on a substrate and being engageable with a conductor on the substrate, the contact terminal being characterized in that:
the terminal has oppositely facing parallel major surfaces and edge surfaces extending between the major surfaces;
the terminal comprises a web portion having first and second arms extending therefrom in spaced apart, side-by-side relationship, the arms having free ends which are spaced from the web portion;



the first arm being a contact arm, the contact portion being adjacent to the free end thereof, the second arm having a bearing portion;
the contact portion and the bearing portion being edge surface portions of the first and second arms respectively which face in opposite lateral directions;
the mounting portion being spaced from the web portion and being connected to the web portion by a pivot arm connecting neck.

Re. 33,269
PROCESS FOR THE TREATMENT OF LINEAR LOW DENSITY POLYETHYLENE BY ORGANIC PEROXIDES WHICH GENERATE FREE RADICALS

Jean-Paul Thierssult, Saint Mitre les Remparts; Alain Senez, Callas-Cabries, and Jean L. Vidal, Martigues, all of France, assignors to The British Petroleum Company p.l.c., London, United Kingdom

Original No. 4,460,750, dated Jul. 17, 1984, Ser. No. 392,021, Jun. 25, 1982. Application for reissue Nov. 4, 1988, Ser. No. 267,548

Claims priority, application France, Jun. 22, 1981, 81 12184

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—333.8 **7 Claims**

1. A process for treating co-polymers of linear low density polyethylene having a density of less than 0.935, a fluidity index at 190° C. under 2.16 kg as per NFT 51016 standard, Method A, of between 0.3 and 50, and a branching index greater than 0.95, in which the co-polymer is obtained by *a gaseous phase* copolymerization under a pressure less than 4 MP_a, of a mixture of ethylene and *4 to 20 percent by weight of* a higher C_{3-8} alpha-olefin [containing 4 to 20 percent by weight of the higher alpha-olefin], *in the presence of a catalyst containing a compound of a transition metal of sub-groups IVa, Va and VIa of the Periodic Table of Elements, the said catalyst being activated by an organometallic compound, this process* comprising treating the co-polymer thermomechanically in the molten state at a temperature less than 220° C., in the presence of an organic peroxide which produces free radicals, in which the organic peroxide is employed in an amount within the range of 0.005% to 1% by weight of the co-polymer, such that the treated co-polymer has a branching index within the range of 0.8 to 0.95 and its gelling rate, as measured by extraction with boiling xylene, is zero.

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PLANT PATENTS

GRANTED JULY 17, 1990

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,270

FUCHSIA×HYBRIDA CV. ISLAND SUNSET

Geoff Schwyn, Delta, Canada, assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Aug. 30, 1988, Ser. No. 238,280
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct selection of Fuchsia×hybrida as substantially shown and described herein, that is characterized particularly as a novelty by the unique combination of multi-colored foliage, red and purple flowers and cold hardiness.

7,271

VARIETY OF GERANIUM NAMED SIMONE

Jacques Guillou; Bernard Guillou, and Maurice Guillou, all of Saint-Malo, France, assignors to Etablissement Guillou Freres Jacques, Bernard et Maurice, France

Filed Jun. 1, 1989, Ser. No. 360,014
Claims priority, application France, Aug. 29, 1988, 7944
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct ivy geranium plant as shown and described herein, and characterized in heat tolerance both indoors and out, vegetative growth is not as affected by high temperatures and the bloom burns less than is typical of this dark red color, the plant body is strong and full in habit, the cuttings are more readily available and root much faster than the current varieties, and the deep, rich red color of the semi-double bloom appear velvet-like atop medium green foliage creating a full yet attractive hanging basket.

7,272

LILIUM "ROYAL DUTCH"

Gerardus C. Van der Salm, Rte. 4, Box 422, Woodland, Wash. 98674

Filed May 9, 1989, Ser. No. 350,019
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its large size and thickness of its melon orange flowers with their slightly undulating tepal margins and spotting on basal third of each tepal.

7,273

VARIETY OF GERANIUM NAMED GIGI

Jacques Guillou; Bernard Guillou, and Maurice Guillou, all of Saint-Malo, France, assignors to Etablissement Guillou Freres Jacques, Bernard et Maurice, France

Filed Jun. 1, 1989, Ser. No. 360,013
Claims priority, application France, Apr. 11, 1989, 8530
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of ivy geranium plant as shown and described herein, and characterized by a full plant habit resulting in higher cutting production, a more compact plant form than the current market varieties, a fuller plant, the single salmon-coral florets accent the medium green foliage and much more heat tolerant and self-cleaning than those ivies currently sold.

7,274

LILIUM ANTARCTICA

Gerardus C. Van der Salm, Rte. 4, Box 422, Woodland, Wash. 98674

Filed May 10, 1989, Ser. No. 350,123
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its truly white upfacing flowers with a slight flush of green extending from the nectaries and narrow ring of deep magenta spots in the center of the flower.

7,275

POINSETTIA PLANT '268'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Oct. 27, 1988, Ser. No. 263,155
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its large, bright red, flower bracts which tend to remain erect, and its self-branching traits.

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ERRATA

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600-028	4,941,453
606-059	4,941,481
227-019	4,941,623
229-117	4,941,624
220-001	4,941,653
271-209	4,941,654
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271-293	4,941,657
293-155	4,941,701
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364-578	4,492,615

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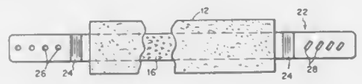
GENERAL AND MECHANICAL

4,941,209
UNITARY GARMENT
Rosemary J. George, 9008 Beverly Hill, Houston, Tex. 77063
Filed Dec. 30, 1988, Ser. No. 292,320
Int. Cl.[5] A41D *13/02*
U.S. Cl. 2—79 **20 Claims**



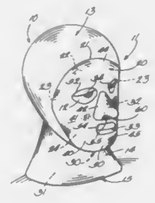
19. A unitary garment comprising:
a. an upper portion having a front panel and a back panel adapted to enclose the upper portion of a human torso;
b. a lower portion having a front panel and a back panel and adapted to enclose the lower portion of a human torso and at least the upper portion of the legs, the front panel of said upper portion being integral with the front panel of said lower portion;
c. a separate side pocket along each side of the front panel of said lower portion proximate the upper portion;
d. a drop-seat panel having a bottom edge permanently joined to the back panel of said lower portion, a top edge, and two side edges, each side edge configured to be in a position proximate the side pocket on its respective side of the garment when the drop-seat panel is in its closed position;
e. a separate fastener associated with each side pocket adapted to fasten the side edge of the drop-seat panel, proximate its respective side pocket to the front panel of said lower portion of the garment wherein closure occurs along the front of said garment in the area of the side pocket and such that the resulting fastened side edge is effectively concealed by its position relative to its respective side pocket;
f. a tuck panel attached to the back panel of the upper portion which continues below the upper portion and defines a brief including a separable center seam, said brief being detachably secured proximate the crotch area in the front panel of the lower portion.

▲ 4,941,210
QUICK-CHANGE SWEAT BAND
George J. Konucik, P.O. Box 9482, Richmond, Va. 23228
Filed Dec. 2, 1988, Ser. No. 278,761
Int. Cl.[5] A42C *5/02*
U.S. Cl. 2—171 **1 Claim**



1. A quick change sweat band comprising:
(a) a central head band portion consisting of a long, narrow continuous width belt of flexible material having an inside surface, an outside surface, a top edge, a bottom edge, and first and second ends;
(b) a first narrow, flexible end portion having a width equal to the width of said belt and having a plurality of equally spaced openings centrally located along the length of said first end portion and extending from the first end of said belt;
(c) a second narrow, flexible end portion having a width equal to the width of said belt and having a plurality of equally spaced projecting knobs centrally located along the length of said second end portion and extending from the second end of said belt, the spacing of said projecting knobs being the same as the spacing of said openings;
(d) first and second pieces of flexible, stretchable material of the same width as said belt and extending a short distance along the length of said belt connected respectively between said first and second end portions and the first and second ends of said belt;
(e) a first fastener material of the hook and loop pile type secured to the inside surface of said belt;
(f) an absorbent pad having a front side and rear side and having a width slightly larger than the width of said belt, said pad having attached on the rear side thereof a second fastener material of the hook and pile type of the opposite type from said first fastener material, the second fastener material of said absorbent pad being adapted to removably engage the first fastener material secured to said belt whereby said pad extends a short distance beyond the top and bottom edges of said belt; and
(g) the first and second end portions of said sweat bend being removably engagable whereby at least one of said projecting knobs is secured within one of said openings to form the sweat band into an adjustable loop of variable circumference adapted to maintain the front side of the absorbent pad against the wearer's head to absorb perspiration, said absorbent pad being removable and replaceable.

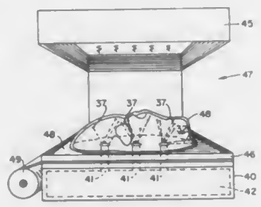
4,941,211
COLD WEATHER HOOD
Morton Bluttstein, Milwaukee, Wis., assignor to Reliable Knitting Works, Milwaukee, Wis.
Filed Apr. 14, 1989, Ser. No. 337,959
Int. Cl.[5] A42B *1/04, 3/18*
U.S. Cl. 2—202 **5 Claims**



1. A cold weather hood which is worn on an individuals head comprising:
a hood member adapted to cover the wearer's head, the hood member having an opening for the face of the wearer; and
a face mask manufactured from double-sided, brushed polyester fiber, the face mask being secured in the opening of the hood member and for covering the face of the wearer.

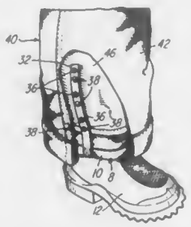
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4,941,212
METHOD OF MAKING A FACE MASK AND APPLYING THE FACE MASK TO THE HEAD
Lawrence J. Liff, 6502 N. Central, Phoenix, Ariz. 85012
Continuation-in-part of Ser. No. 143,861, Apr. 25, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,286
Int. Cl.[5] A41G 7/02
U.S. Cl. 2—206 13 Claims



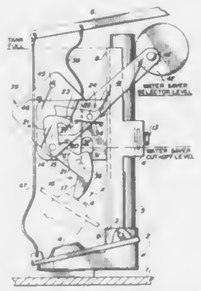
7. The method of making up a human face including the steps of selecting an integral one-piece shell of synthetic resinous material which has been shaped to a configuration to closely conform to the face of a human, said synthetic resinous material of said shell consisting essentially of a closed-cell, cross-linked polyethylene foam and being of a thickness of between 1/64 and ¼ inch and having a density of between 1k and 9 pounds per cubic foot, providing said shell with the desired appearance for said facial configuration, separating said shell to form said facial configuration into a plurality of component parts, fitting each component part to the appropriate portion of a human face, applying an adhesive to the back of the component parts, and affixing the component parts to the appropriate portion of the human face.

4,941,213
FIREFIGHTER'S BOOT AND TROUSER ATTACHMENT
William L. Grilliot, and Mary I. Grilliot, both of 1986 Home Ave., Dayton, Ohio 45417
Continuation of Ser. No. 215,300, Jul. 15, 1988, Pat. No. 4,879,769. This application Sep. 21, 1989, Ser. No. 410,729
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.[5] A41F 17/04
U.S. Cl. 2—312 11 Claims



1. Attachment structure for use by a firefighter who wears a pair of firefighter's boots and a pair of firefighter's trousers comprising first connection means, the first connection means being secured to the firefighter's trousers and carried thereby, second connection means, the second connection means being releasably attached to the first connection means, third connection means, the third connection means being in supporting relationship to the second connection means, the third connection means extending from the trousers to the boots and encompassing a portion of the firefighter's boots and attached thereto, whereby the firefighter's trousers are attached to the firefighter's boots.

4,941,214
FLUSH TANK WATER SAVER
John L. Harris, 470 Palm Island, NE., Clearwater, Fla. 34630
Filed Jan. 4, 1989, Ser. No. 293,454
Int. Cl.[5] E03D 1/14
U.S. Cl. 4—325 17 Claims

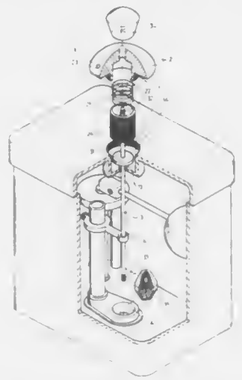


1. A water saver control for a toilet flush tank having an outlet, an overflow pipe means, a flapper-float type valve for the outlet mounted on pivots on the overflow pipe means and an externally operated flush lever connected to the flapper valve for opening same on upward movement of said lever, said flapper valve being of the type that holds itself open due to its buoyancy until the tank is empty, the combination of, operator pivot means supported in the tank, a flapper valve operator mounted on said operator pivot means, said pivot means being located above the flapper valve and the operator being arranged to extend downwardly from its pivot means to a contact area with the back of the flapper valve when open to push the valve toward closed position against its buoyancy on rocking of the operator in one direction, the pivot means being located relative to said contact area and flapper valve pivots to cause the areas of contact on the flapper valve and operator to travel in general directions similar enough to avoid substantial rubbing to provide for low friction loss in pushing the valve by the operator, operating means including a float constructed and arranged to rock the operator in said one direction to close the valve in response to falling water to a water saving level, a latch pivot spaced from the pivot means, a latch on said latch pivot having a supporting surface arranged to hold the operator in inactive position allowing the flapper valve to remain open, the operator being biased to close the valve, and means operated by the float on reaching the water saver level in the tank for releasing said latch.

4,941,215
AUTOMATIC FLUSHING DEVICE FOR A FLUSH TOILET
Su-Haw Liu, 41-2, Lane 24, Shin Kang Rd., Lin-Ya Dist., Kaosiung, Taiwan
Filed Jan. 19, 1989, Ser. No. 299,037
Int. Cl.[5] E03D 5/10
U.S. Cl. 4—406 2 Claims

1. An automatic flushing device for a flush toilet having a tank filled with water, the flush toilet being provided with a valve seat and sealing ball to allow draining of the tank to flush the toilet, said flushing device comprising:
a tank lid for a top of the tank, said tank lid including a recess therein;
a rod which is mounted for vertical movement in the tank, said rod being attached at one end to the sealing ball and extending upwards therefrom and through said recess;

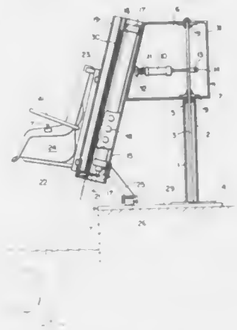
a horizontal disc attached to said rod and located in said recess;
a coil located in said recess about said disc;
a cap which covers said recess;
a coil spring located between said cap and said disc which urges said disc toward the valve seat;
a nut provided on top of said cap which is secured to the other end of said rod; and



a control means, including an infrared sensor located above and adjacent said tank lid, for sensing the use of the toilet by a user and for causing energization of said coil after the user leaves for a predetermined period of time, the energizing of said coil causing said disc to be raised and hence said rod to pull said ball from the valve seat so that the toilet is flushed and such that after the predetermined period of time the coil is deenergized so that said coil spring urges said disc and hence said rod downwardly whereby the ball is returned to the valve seat.

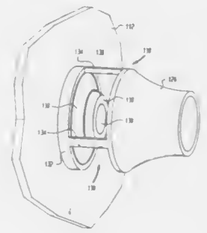
4,941,216
LIFT FOR GIVING ACCESS TO THE WATER IN A SWIMMING BATH OR A RE-EDUCATION POOL
David Boublil, 9, rue de Brément, F-93130 Noisy-le-Sec, France
PCT No. PCT/FR87/00296, § 371 Date Apr. 1, 1988, § 102(e) Date Apr. 1, 1988, PCT Pub. No. WO88/00820, PCT Pub. Date Feb. 11, 1988
PCT Filed Jul. 28, 1987, Ser. No. 187,059
Claims priority, application France, Aug. 1, 1986, 86 11170
Int. Cl.[5] A61G 7/10
U.S. Cl. 4—496 8 Claims

1. A device for giving access to water to persons with reduced mobility, comprising:
a top plate;
a bottom plate;
a baseplate secured to the ground;
a fixed support post mounted on said baseplate and comprising a steel tube welded to said top plate and a stainless steel tubular shaft centered in said steel tube, said tubular shaft having a bottom end welded to said bottom plate and a top end welded to said top plate;
a rotation block rotatably mounted on said tubular shaft, said rotation block comprising a parallelepipedal frame having front, upper, and lower surfaces, said front surface being sloping and said upper and lower surfaces having a rear and being provided at said rear with completely concentric bearings, said bearings pivoting exactly around said tubular shaft, a bearing plate positioned inside said frame, a rod mounted on and secured to said tubular shaft, pin means and clamping means for securing said rod to said tubular shaft, a horizontal jack having a rear end and a nose, said rear end of said horizontal jack being secured inside said frame on said bearing plate, rear joint means for securing said rear end of said horizontal jack to said bearing plate, and strap means screwed to said nose of said jack and connected to said rod for pivotally mounting said rotation block on said tubular shaft;
a guide plate comprising a fixed upright secured to said front surface of said rotation block, said fixed upright having a top, a bottom, first and second sides, a rear surface, and upper and lower brackets mounted to said top and bottom, respectively;
a moving upright having a top, a bottom, first and second



sides, and a gusset mounted at said bottom, said moving upright sliding in said fixed upright;
slide means for mounting said moving upright to said fixed upright for up-and-down sliding motion;
a vertical jack secured inside said fixed upright by said upper and lower brackets, said vertical jack having a nose and an upper end, said nose being secured to said bottom of said moving upright by said gusset, said vertical jack moving said moving upright with respect to said fixed upright over a distance corresponding to the length of the stroke of said vertical jack; and
a seat secured to said moving upright.

4,941,217
FLOW ENHANCING JET FITTING
Samuel Tobias, Edison; William E. Treene, Upper Montclair, and George E. Williams, Boonton, all of N.J., assignors to Hayward Industries, Inc., Elizabeth, N.J.
Division of Ser. No. 222,209, Jul. 21, 1988. This application Mar. 13, 1989, Ser. No. 322,653
Int. Cl.[5] A47K 4/00
U.S. Cl. 4—542 12 Claims



1. In combination, a hydrotherapeutic receptacle, said hydrotherapeutic receptacle having a wall and a body of water contained therein, and a jet fitting mounted in said wall of said

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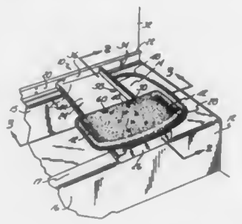
hydrotherapeutic receptacle, said jet fitting comprising a mixing chamber located within and below said water contained in said hydrotherapeutic receptacle, said mixing chamber being substantially open along its top, bottom and sides; first inlet means for providing communication between said mixing chamber and said water contained in said hydrotherapeutic receptacle, said first inlet means substantially surrounding said mixing chamber so as to permit said water contained in said hydrotherapeutic receptacle to enter said mixing chamber through said top, bottom and sides thereof; second inlet means mounted in said wall of said hydrotherapeutic receptacle at a location below said water contained therein for providing communication between said mixing chamber and a source of pressurized water, said second inlet means including accelerating means for increasing the velocity of water being discharged into said mixing chamber from said second inlet means to thereby create a low pressure condition within said mixing chamber which is sufficient to suck said water contained in said hydrotherapeutic receptacle into said mixing chamber through said first inlet means and said top, bottom and sides of said mixing chamber, whereby said mixing chamber also functions as a suction chamber; discharging means located within and below said water contained in said hydrotherapeutic receptacle for discharging water into said hydrotherapeutic receptacle from said mixing chamber; and mounting means for mounting said discharging means from said second inlet means such that said mixing chamber is positioned therebetween, said mounting means having a flexibility sufficient to permit said discharging means to be deflectable in response to physical contact by a user inside the hydrotherapeutic receptacle.

4,941,218

SEAT STRUCTURE FOR EASY ACCESS TO BATHTUBS

Clyde B. McCartney, Box 64, Big Stone City, S. Dak. 57216

Filed Feb. 3, 1989, Ser. No. 305,438
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—579 **5 Claims**



5. The combination of an elongate bathtub having mutually parallel, spaced-apart, horizontal top surfaces lying in the same horizontal plane and an easy access seat structure; said easy access seat structure including:

a. an elongate, horizontally extending, retainer bracket fixedly mounted in parallel adjacent relation to and above the top surface of a first of said tub top surfaces, said bracket having a platform-retaining portion which extends at least a substantial distance along the first tub to surfaces;

b. a seat platform adapted to have first and second side edge portions capable of resting on and being supported by the top surfaces of both of the tub top surfaces at the same time;

c. a seat pivotally mounted on a fixed vertical axis with respect to the platform to be movable with respect to the platform only through an arc of about ninety degrees between first and second seat positions, the seat when in first seat position being situated to be accessible for sitting by a person outside of the tub adjacent to a second of said tub top surfaces and facing away from the tub, and when in second seat position being situated to support a seated person substantially centered over the tub with that person's feet in the tub;

d. the configuration of the seat and platform being such that the seat is solidly supported with respect to the platform in a horizontal plane during the entire movement of the seat between its first and its second position; and

e. wherein the platform is provided with a boss forming a pair of at least one of the platform side edge portions, the configuration of the platform boss and the bracket being shaped such that the platform boss can be inserted into, and removed from, any convenient position along the platform-retaining portion of the retainer bracket as the platform is moved to angles acute to the horizontal, and the platform-retaining portion of the bracket prevents any motion of the boss and its platform from a direction normal to the bracket and top surfaces of the tub when the boss is in the bracket platform-retaining portion and the platform is in its horizontal position supported by the tub top surfaces, while permitting sliding movement of the platform along the bracket when the platform is not unduly loaded.

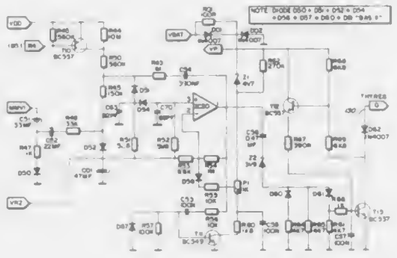
4,941,219

BODY HEAT RESPONSIVE VALVE CONTROL APPARATUS

Karel C. Van Marcke, Kruishoutem, Belgium, assignor to International Sanitary Ware Manufacturing Cy, S.A., Kruishoutem, Belgium

Filed Oct. 10, 1989, Ser. No. 419,315
Int. Cl.[5] E03C *1/05, 1/00*
U.S. Cl. 4—623 **20 Claims**





1. A passive apparatus for controlling the operation of a fluid flow control valve in response to the presence of a human body part, said apparatus comprising in combination:

(a) a sensor for detecting heat irradiating from a human body part within a predetermined detection field and for producing an output signal in response to such detection;

(b) means for amplifying the output signal;

(c) means for opening the valve to permit fluid flow therethrough in response to the amplified signal;

(d) means for closing the valve after a predetermined time period;

(e) a low voltage power source for energizing said apparatus;

(f) means for determining the voltage of said power source while the valve is open;

(g) means for comparing the determined voltage with a predetermined voltage and for generating a control signal if the determined voltage is below the predetermined voltage; and

(h) means for closing the valve in response to generation of the control signal.

15. A passive method for controlling the operation of a fluid flow control valve in response to the presence of a human body part, said method comprising the steps of:

(a) detecting heat irradiating from a human body part placed within a predetermined detection field and producing an output signal in response to said step of detecting;

(b) amplifying the output signal;

(c) opening the valve to permit fluid flow therethrough in response to the amplified signal;

(d) closing the valve after a predetermined time period;

(e) energizing the control and operation of the valve with a low voltage power source;

(f) determining the voltage of the power source while the valve is open;

(g) comparing the voltage determined during said step of determining with a predetermined voltage and generating a control signal if the determined voltage is below the predetermined voltage; and

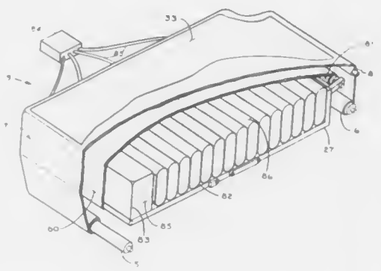
(h) closing the valve in response to generation of the control signal.

4,941,220

PATIENT CARE AND TRANSFER ARRANGEMENT

Paul DiMatteo, Dix Hills; Charles F. Chubb, Brookville, and Robert Segnini, Stony Brook, all of N.Y., assignors to Nova Technologies, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 731,533, May 7, 1985, Pat. No. 4,776,047. This application Aug. 15, 1988, Ser. No. 232,030
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—81 R **16 Claims**



1. A patient care and transfer arrangement comprising:

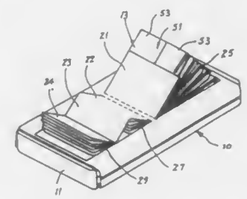
a bed having a foot end, a head end and a plurality of inflatable air sacs comprising a mattress on which a patient may lie; a bed frame supporting said mattress; an air pump for inflating said air sacs; pressure adjustment means for regulating the pressures in said air sacs; a wheelchair removably positioned at the foot end of said bed; said wheelchair having wheels, a chair frame, a back rest and a seat; said back rest being removably insertable on said chair frame behind said person; said leg rest being movably connected to said chair frame; said leg rest being movable between a seating position sloping down from said seat and a substantially level transfer position over said seat; said mattress extending to the vicinity of and at substantially the height of the leg rest transfer position; a transport sheet extending across said mattress; roller means for moving said transport sheet and transporting a reclining person across the mattress and partly onto said leg rest; drive means for moving said leg rest from said transfer position to said seating position and thereby moving said reclining person partly onto the seat; lift means for raising said reclining person to a sitting position on the seat; a control system for regulating the operation; a mattress cover sheet extending over said inflatable air sacs and under said transport sheet for supporting said transport sheet; and tensioning means for tightening and slackening said cover sheet.

4,941,221

BODY SUPPORTING APPARATUS

Graham L. B. Kanzler, 18 Ardeana Crescent, Albany, Australia, assignor to Ian Donald Butcher, Mandurah and Graham Leslie Bernard Kanzler, Albany, both of, Australia

PCT No. PCT/AU87/00264, § 371 Date Feb. 14, 1989, § 102(e) Date Feb. 14, 1989, PCT Pub. No. WO88/01158, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 14, 1987, Ser. No. 327,912
Claims priority, application Australia, Aug. 15, 1987, PHO7453
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—60 **14 Claims**



1. A body supporting apparatus comprising a supporting surface defined by a flexible covering having a longitudinal axis, the supporting surface including a central longitudinal section and two marginal longitudinal sections and a longitudinal inflatable chamber positioned beneath each marginal longitudinal section whereby inflation of each longitudinal inflatable chamber causes the respective marginal section to articulate upwardly relative to the central section, the support surface further including a first transverse section extending transversely of the longitudinal axis, said first transverse section being arranged for articulatory movement whereby the supporting surface can assume a first attitude for supporting the body of a person in a generally supine position and a second attitude for supporting the body of a person in a reclining position with said first transverse section supporting the back of the body, and means for effecting articulatory movement of said first transverse section including a first transverse inflatable chamber positioned between said first transverse section and the longitudinal inflatable chambers.

4,941,222

PORTABLE LOUNGE

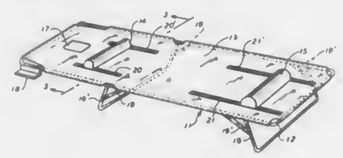
Howard A. Prager, 28 Mandon Dr., Wayne, N.J. 07470

Filed Oct. 21, 1987, Ser. No. 111,782
Int. Cl.[5] A47C *20/00*
U.S. Cl. 5—111 **5 Claims**

1. In a portable lounge having a body support portion with an upper surface for supporting a body of a user, and having a frame with generally parallel sides joined to a head portion and

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lower portion, said sides having portions being adjustable relative to each other and said sides being provided with legs to maintain the stability of the lounge in various configurations, the improvement which comprises incorporating in the body support portion a first cylindrical supine cervical or neck support and a second cylindrical prone abdominal/lumbar support, each said first and second support being disposed at a right angle to the parallel sides, adjusting means for each support comprising two parallel channel-shaped tracks formed by



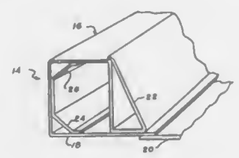
strips of fabric affixed to an upper side of the upper support portion surface with each track receiving a T-shaped runner flange affixed to a bottom end of each support with the upper bar of the T being in the channel for allowing these two supports to be moved in a horizontal direction along the surface of the lounge by an exertion of a substantial force on the runners and to retain the position selected without movement and an aperture means near an upper end of the body support portion which is adapted to receive the face of the user and permits a frontal support of the head of the user.

4,941,223

WATERBED MATTRESS MARGINAL PERIMETER AIR SUPPORT AND METHOD OF MANUFACTURE THEREOF

Philip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625

Filed Feb. 19, 1988, Ser. No. 158,640
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—452 **9 Claims**



1. An air perimeter support for supporting the marginal perimeter of a waterbed mattress, said air perimeter support comprising:

a first elongated sheet of flexible, substantially dimensionally stable material folded back on itself and joined together at a location spaced from the longitudinal marginal side edges thereof to form an elongated chamber, of substantially rectangular cross-section, intermediate said longitudinal marginal side edges, one longitudinal marginal side edge being again folded back and joined to said chamber at the wall opposite the wall formed by the material adjacent to the other longitudinal marginal side edge; and

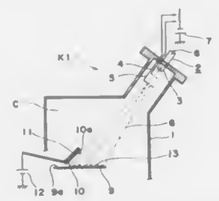
a second sheet of flexible, substantially dimensionally stable material, said second sheet being located in the interior of said elongated chamber and joined to at least three adjacent walls of said chamber starting with the said wall to which said one longitudinal marginal side edge is joined, and going around said chamber opposite to the fold of said one longitudinal marginal side edge.

4,941,224

ELECTROSTATIC DUST COLLECTOR FOR USE IN VACUUM SYSTEM

Hiroshi Saeki, Tsukuba; Junji Ikeda, Ikoma, and Hajime Ishimaru, Tsukuba, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Hajima Ishimaru, Tsukuba, both of, Japan

Filed Jul. 19, 1989, Ser. No. 383,150
Claims priority, application Japan, Aug. 1, 1988, 63-192535
Int. Cl.[5] B08B *6/00*
U.S. Cl. 15—1.5 R **2 Claims**



1. An electrostatic dust collector comprising:

a wall enclosing a vacuum chamber in which a target face to be subjected to dust removal is provided;

an electron beam emitting means for emitting electron beams to dust on said target face so as to charge the dust negatively;

a dielectric member which is provided in the vacuum chamber and has a collecting face confronting said target face; and

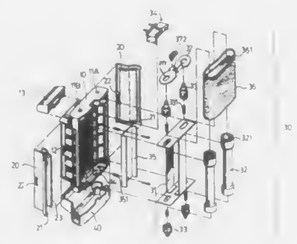
means for imparting positive potential to said collecting face such that the dust charged negatively is attracted to said collecting face.

4,941,225

AUTOMATIC CHALK-POWDER COLLECTING DEVICE FOR BLACKBOARD ERASER

Su-Land Liao, No.13, Lane 200 Shihtung Load, Shihlin District, Taipei, Taiwan

Filed Nov. 13, 1989, Ser. No. 436,009
Int. Cl.[5] A47L *13/38*; B43L *21/00*
U.S. Cl. 15—98 **2 Claims**



1. An automatic chalk-powder collecting device for blackboard eraser mainly comprising a body portion, two symmetrical side covers, a powder-collecting assembly, and a detachable powder box;

said body portion being substantially a hollow case, and the top and bottom of said body portion being provided with two opposite shaft holes for mounting two rollers respectively; and the bottom of said body portion being furnished with several through holes to facilitate chalk powder to fall into a powder box under said body portion;

said two symmetrical side covers being mounted on both sides of said body portion, and each of said side covers being mounted with a wet cotton pad for collecting any chalk powder flying inside said body portion;

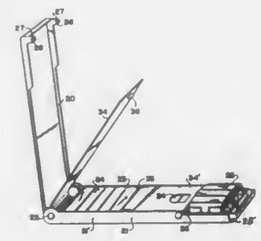
said powder-collecting assembly including a fixing frame, a pair of rollers, two pairs of terminal shafts being mounted on both ends of said rollers, a one-way brake switch having two hook detents, and a scraper for scraping chalk powder; and the outside of said rollers being mounted with a rubbing cloth; and both ends of said rollers being mounted with terminal shafts and compression springs respectively; and the top end of said fixing frame being mounted with a horizontal plate, of which the middle part is provided with a pressing plate for pushing downwards said horizontal plate and said terminal shafts so as to have said rollers disassembled easily; and each top end of said rollers being furnished with a ratchet wheel to be engaged with the two hook detents of said one-way brake switch; and said one-way brake switch being coupled with a control handle so as to control said brake switch to move leftwards or rightwards and to let said rollers rotate one way; and when said rollers being engaged with said hook detents, said rollers being unable to rotate, the friction force between a blackboard and said rubbing cloth being increased so as to rub off the chalk powder thereon; and when said rollers rotating in one direction, most of the chalk powder can be scraped off by said scraper.

4,941,226

FOLDABLE LOTION APPLICATOR

Alicia W. Kemper, Tallahassee, Fla., assignor to Innovec, Inc., Tallahassee, Fla.

Filed Dec. 5, 1988, Ser. No. 279,979
Int. Cl.[5] B05C *17/10*
U.S. Cl. 15—185 **20 Claims**



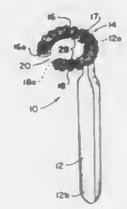
1. An applicator device for applying lotion to the body comprising an elongated structure having a longitudinal axis and having a first and a second elongated section each having opposite end portions, pivot means joining one said end portion of each said section together for movement of said sections between an open outstretched operative position substantially at least doubling said structure along its length and a closed nonoperative position in which said sections fold upon each other to substantially form a closed housing, said first section having an applicator head on its other said end portion, means attached to said head for reasonably carrying a pad of soft absorbent material thereon, and a compartment carried by one of said elongated sections between said sections for the storage of a supply of absorbent pads.

4,941,227

DEVICE FOR CLEANING DENTAL IMPLANT POSTS

Harold I. Sussman, 64 Popham Rd., Scarsdale, N.Y. 10583

Filed Jan. 25, 1989, Ser. No. 302,025
Int. Cl.[5] D46B *9/04*
U.S. Cl. 15—167.1 **20 Claims**



1. A device for cleaning dental implant posts, said cleaning device comprising:

(a) handle means for manually grasping said device; and

(b) brushing means secured to one end of said handle means, said brushing means including:

(i) a first flexible, resilient wire member portion secured to said one end of said handle means and having a convex configuration, said first wire member portion having a first inturned free end;

(ii) a second flexible, resilient wire member portion secured to said one end of said handle means and having a convex configuration, said convex configurations of said first and second wire member portions facing each other, and said second wire member portion having a second inturned free end in opposing and at least partially facing relation to said first inturned free end so as to define a gap between said first and second inturned free ends which is smaller than the distance between proximal and distal sides and an implant post to be cleaned; and

(iii) a plurality of inwardly directed bristles secured to each said wire member portion; and wherein

(c) said first and second wire member portions and said bristles secured to each wire member portion are dimensioned so as to be received between adjacent teeth at least at the gingival area, and said bristles being arranged to brush a dental implant post supporting a tooth at the lingual surface, at the buccal surface and at the gingival margin adjacent the post, said wire portions and said bristles together engaging around a post over an arc greater than 180° and less than 360°; and

said wire member portions are made of spring wire so that when said wire member portions are deflected or spread apart when passing over a post, the wire member portions resiliently return toward their original positions to extend around a major portion of the circumference of said post.

4,941,228

FASTENING MECHANISM FOR SQUEEGEE HOLDER

Daniel J. Belanger, and Frank A. Petracek, both of 537 Moorpark #128, Moorpark, Calif. 93021

Filed Dec. 9, 1988, Ser. No. 282,027
Int. Cl.[5] A47L *13/11*
U.S. Cl. 15—245 **4 Claims**

1. A squeegee particularly suited for cleaning window panes and floors comprising:

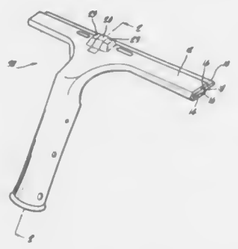
a. a replaceable cleaning element;

b. a holder adapted to secure a replaceable cleaning element, said holder having a top surface and a bottom surface between which the replaceable cleaning element is removably placed;

c. a fastening means that is pivotally mounted on the top surface, the fastening means being capable of being piv-

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oted from a first locking position to a second open position, the fastening means exerting a force upon the replaceable cleaning element when in the first locking position;



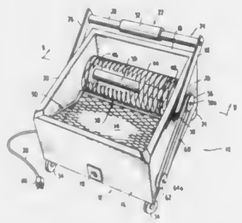
d. an aperture on the top surface so that the fastening means can directly contact the cleaning element placed between the top surface and the bottom surface.

4,941,229

PORTABLE, MOTOR-DRIVEN PAINT ROLLER LOADER

Roger La Pierre, 71 Elmwood Ave., Apt. 16, Burlington, Vt. 05401

Filed Sep. 11, 1989, Ser. No. 405,164
Int. Cl.[5] B44D *3/12*
U.S. Cl. 15—257.06 **7 Claims**



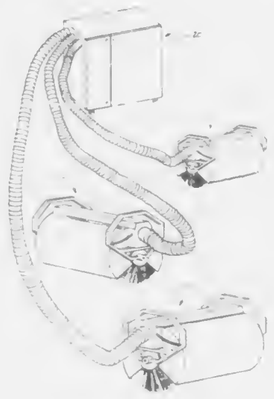
1. A portable, motor-driven paint roller loader comprising:
an upwardly open, rectangular, box-like casing including a horizontal bottom wall, four vertically upright walls integrally joined to the bottom wall about respective edges thereof and forming laterally opposed front and rear walls, and longitudinally opposed end walls sealed at confronting edges, a hollow, perforated cylindrical roller assembly mounted interiorly of the casing for rotation about its axis, and extending horizontally between longitudinally opposed end walls, a drive motor mounted to said casing, means operatively coupling said motor to said hollow perforated cylindrical roller assembly, said hollow perforated cylindrical roller assembly being positioned above the bottom wall whereby, rotation of the hollow perforated cylindrical roller assembly causes, when partially immersed within paint carried by said casing, a thin coating of paint to adhere to the outer periphery of the hollow perforated cylindrical roller assembly during drive motor rotation thereof for ready transfer to a soft, absorbent material cylinder of a paint roller, manually held and parallel to and in peripheral contact with the loader hollow perforated cylindrical roller assembly, above the level of paint accumulated within said casing.

4,941,230

PORTABLE TACKING SYSTEM

Patrick H. Lamore, 2577 Belle View Dr., Rochester, Mich. 48064

Continuation of Ser. No. 66,972, Jun. 29, 1987, Pat. No. 4,827,561. This application Feb. 6, 1989, Ser. No. 306,563
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—314 **16 Claims**



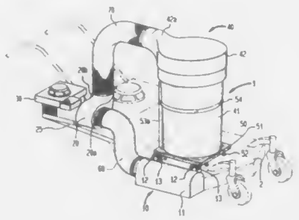
1. A portable tacking unit comprising:
a tacking head including a cylindrical brush, a housing adapted to rotatably support the brush such that a major portion of the circumference of the brush is exposed and a minor portion thereof is surrounded by the housing, said housing further including an exhaust port disposed proximate the minor portion of the brush and adapted to withdraw ambient air therefrom, said tacking head being relatively lightweight and of a size configured for hand-held operation by a single worker;
a central suction unit adapted to provide a flow of air at pressures less than atmospheric; and
a flexible conduit operatively connecting said exhaust port to the suction unit such that a low pressure flow of air is established from said exhaust port to said central suction unit.

4,941,231

LAWN MOWER ATTACHMENT

Robert D. Jarosak, 61 Birch Brook, Smithtown, N.Y. 11787

Filed Jul. 31, 1989, Ser. No. 386,721
Int. Cl.[5] A47L *9/10*
U.S. Cl. 15—328 **8 Claims**



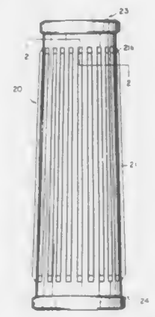
1. A debris collection device for attachment to a lawn mower providing means to collect spent debris, comprising in combination
a debris chute removably attachable to said lawn mower having one side thereof disposed adjacently to the debris outlet of said lawn mower;
a mechanical blower;
driving means for said blower;
a debris collector;
debris collector support means disposed upon the upper surface of the deck of said lawn mower providing means for bearing support of said debris collector;
a first section of flexible tubing which provides means for communication of said debris chute and said blower; and
a second section of flexible tubing which provides means for communication of said blower and said debris collector.

4,941,232

SLIP RESISTANT, CUSHIONING COVER FOR HANDLES

Richard B. Decker, Vermilion, and Joseph Hummel, Amherst, both of Ohio, assignors to Bettcher Industries, Inc., Birmingham, Ohio

Filed Oct. 7, 1987, Ser. No. 106,247
Int. Cl.[5] B25G *1/10*
U.S. Cl. 16—111 R **5 Claims**



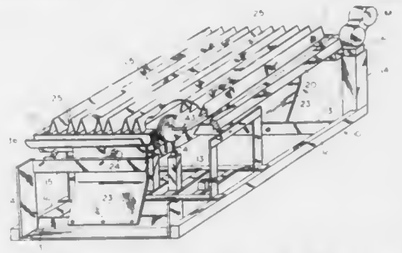
4. A thin elastomeric cover for a handle constructed to be applied by the user and readily removable for cleaning and replacement, said cover characterized in that it comprises a laminated sheet suitable for wrapping about the handle and having a base layer of closed cell foam; an outer layer of open cell foam; pressure sensitive adhesive on one side of the base layer; and a strippable cover sheet on the adhesive; and further characterized by: a non-slip surface to facilitate hand gripping under moist or oleaginous conditions;
resilience sufficient to provide cushioning against mechanical shock being transmitted from the handle to the hand during use;
reversible adherence to the handle to provide for non-twisting of the cover during use of the handle and further to provide for removal or replacement of the cover after use;
elasticity sufficient to provide for dimensional modification of the cover so that it contacts substantially the entire surface of the handle over which it lies;
non-permeability to prevent fluid substances from passing through the cover to the handle; and
low thermal conductivity to provide insulation against heat being conducted away from the hand to the handle during use; and further characterized in that the base layer is of non-absorbent cross-linked polyethylene closed cell foam having a density of about 2 pounds per cubic foot, has a compressive strength of 12–16 pounds per square inch at a deflection of about 50%, a tear resistance of 7–12 pounds per inch, and a water absorption of about 0.04 pounds per square foot of cut surface, said base layer being about 1/16 inch thick; and the outer layer is of washable polyether random and open cell foam bonded to one side of the base layer, said polyether foam having a density of about 1.2 pounds, and compressive strength of about 22–27 pounds per square inch at about 25% deflection, said outer layer being about 5½ to 6 cells thick.

4,941,233

METHOD AND APPARATUS FOR PROCESSING SHRIMP

Reid P. Allain, Marietta, Ga., assignor to Robert B. Kennedy, Atlanta, Ga.

Filed Dec. 22, 1988, Ser. No. 288,425
Int. Cl.[5] A22C *29/00*
U.S. Cl. 17—71 **27 Claims**



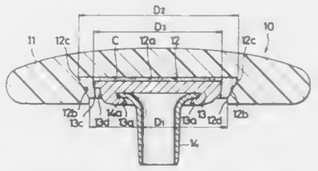
1. Apparatus for conveying shrimp in single file formation for processing and which comprising elongated support means for slidably supporting shrimp in generally upright orientations with the shrimp heads slidably supported above the shrimp tails and which comprises a pair of rails rigidly mounted together side by side spaced apart a distance to support shrimp generally uprightly in an elongated gap therebetween, means for revolving at least a portion of said elongated support means in a generally vertical plane, and means for deheading shrimp at a deheading station located along said rails that comprises a pinch block rigidly mounted between said rails and a pinch finger mounted for rotary movement along a path of travel that passes closely adjacent to said pinch block about an axis located to one side of said pinch block.

4,941,234

BUTTON COLLET

Hirokazu Watanabe, Kurobe, and Yoshihiro Kanzaka, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 20, 1989, Ser. No. 409,938
Claims priority, application Japan, Sep. 22, 1988, 63-124122[U]
Int. Cl.[5] A44B *1/00*
U.S. Cl. 24—113 MP **12 Claims**



1. A button collet which comprises a cap having a cavity concentric therewith, an insert member adhesively bonded by an adhesive compound in place in said cavity and having a plurality of clamping lugs extending radially inward from its lower peripheral edge and a shank member having a peripheral flange fixedly secured to said clamping lugs, said insert member including a plurality of peripheral notches alternating with said clamping lugs.

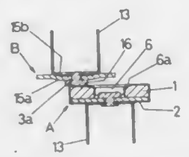
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4,941,235

MAGNETIC LOCK CLOSURE DEVICE

Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan

Filed May 2, 1989, Ser. No. 346,158
Claims priority, application Japan, Oct. 14, 1988, 63-258913
Int. Cl.[5] E05C *17/56*
U.S. Cl. 24—303 1 Claim



1. A magnetic lock closure device which comprises:

a magnetically attracting first part and a magnetically attracted second part,

said first part including an annular permanent magnet having opposite poles on opposite sides thereof and a center bore therethrough between said opposite sides, a first ferromagnetic member in the shape of a disk plate attached to one side of said permanent magnet and a nonmagnetic outer cover having a center opening and enclosing said permanent magnet and said first ferromagnetic member with said center opening aligned with said center bore of said permanent magnet,

said second part including a second ferromagnetic member in the shape of a disk plate and adapted to be removably engaged with said outer cover where said outer cover extends over the other side of said permanent magnet,

said first and second ferromagnetic members having respective ferromagnetic rods at the center thereof and extending therefrom toward each other through the center bore and meeting each other when said first and second parts are coupled together,

said permanent magnet having a funnel-shaped portion having an opening extending from said center bore and diverging outwardly to said other side of said permanent magnet, the remainder of said other side being a peripheral flat portion extending radially outwardly from the outer periphery of said outwrdly diverging opening to the peripheral edge of said magnet, said outer cover conforming to and lying immediately over said funnel-shaped portion and said peripheral flat portion, the end of said ferromagnetic rod on said second ferromagnetic member having a size and shape for, when it engages said outer cover over said peripheral flat portion when said parts are being brought into engagement, being attracted to said peripheral flat portion, and when it is moved relative to said outer cover over said peripheral flat portion, being attracted toward said center opening and downwardly along said outer cover over said funnel-shaped portion to bring said ferromagnetic rod on said second ferromagnetic member into said center bore and into contact with said ferromagnetic rod on said first ferromagnetic member and with said second ferromagnetic member against said peripheral flat portion.

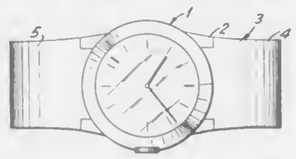
4,941,236

MAGNETIC CLASP FOR WRISTWATCH STRAP

Norman Sherman, Woodbury, and Victor Shiff, Waterbury, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Jul. 6, 1989, Ser. No. 375,990
Int. Cl.[5] A44B *21/00*; A44C *5/18*
U.S. Cl. 24—303 10 Claims

1. An improved strap and clasp assembly comprising a strap having a pair of separable flexible strap ends adapted to curve around the wrist of a wearer and to overlap one another to provide an overlapped section, at least one of said strap ends including at least one ply of flexible thermoplastic material having embedded particles of permanently magnetizable material, said particles being magnetized to provide a first plurality of rows of alternating magnetic poles, the other of said strap ends including embedded particles of magnetizable material, said strap ends having surfaces contacting one another within



said overlapped section, said contacting surfaces defining mutually nesting, uniformly spaced, protuberances and indentations, whereby said magnetized particles provide a holding force resisting separation of the strap ends, while said nesting protuberances and identations prevent sliding movement between strap ends.

4,941,237

CLOTHING SECURING DEVICE

William K. Hovis, 1295 Dresden Dr., NE., Atlanta, Ga. 30319

Filed Feb. 28, 1989, Ser. No. 316,514
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—304 3 Claims



1. A fastening device assembly comprising:

(a) a belt and a garment for covering the lower portion of a human body which are normally arranged in an overlapping relationship and which, with movement of the wearer's body, will be moved with respect to each other;

(b) a first fastening member including a flexible first substrate having opposed surfaces, adhesive, disposed along one surface of said first substrate for adhering said first substrate to a surface of [one of] either said belt or said garment [portions of said wearing apparel], and a first clinging element secured to the other surface of said first substrate;

(c) a second fastening member including a second flexible substrate having opposite surfaces and a second clinging element secured to one surface of said second substrate;

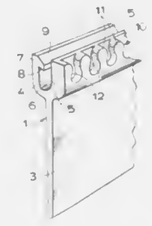
(d) mounting means connecting said second substrate to the other of said [portions of wearing apparel] belt or said garment in a position to be adjacent to said first fastening member when said [portions] said belt and garment are in their overlapping relationship and said first clinging means and said second clinging means are in their overlapping relationship and said first clinging means and said second clinging means are in interlocking relationship; said first clinging means and said second clinging means being sufficiently yieldable that when said belt and said garment [portions of wearing apparel] are withdrawn from each other said first fastening member and said second fastening member will be released from each other, and wherein said mounting means includes a pair of spaced pins protruding from said second substrate and passing through said other of said belt or garment; and cap means removably received on end portions of said pins for arresting outward movement of said pins back through the other of said belt or garment.

4,941,238

SLIDE FASTENERS AND THE LIKE

David F. Clark, Broseley, England, assignor to Allison E. Anderson, Great Britain

Filed Feb. 11, 1988, Ser. No. 154,988
Claims priority, application United Kingdom, Feb. 13, 1987, 8703439
Int. Cl.[5] A44B *19/32*
U.S. Cl. 24—437 5 Claims



1. A fastener comprising a first component and a second component which can be releasably engaged with the first component, the first component comprising a first longitudinally extensive engagement formation made of a flexible and resilient material and a first substantially planar, longitudinally extensive attachment portion extending from said first engagement formation, said first engagement formation comprising a pair of mutually spaced body portions extending away from said first attachment portion in a direction parallel with said first attachment portion and defining between inner faces thereof a groove with a longitudinally extensive mouth spaced away from said first attachment portion, first abutment means presenting first abutment face means transverse to said first attachment portion and facing in a direction towards rather than away from said first attachment portion, and a plurality of first longitudinally spaced mating formations, and the second component comprising a second longitudinally extensive engagement formation made of flexible and resilient material and a second substantially planar, longitudinally extensive attachment portion extending from said second engagement formation, said second engagement formation comprising a longitudinally extensive rib extending away from said second attachment portion in a direction parallel with said second attachment portion and of a size to fit into said groove, second abutment means presenting second abutment face means transverse to said second attachment portion and facing in a direction towards rather than away from said second attachment portion, and a plurality of second longitudinally spaced mating formations, each of said first and second components being of the same shape and form as the other and the arrangement being such that the components can be engaged by relative movement towards each other in a direction parallel with the first and second attachment portions and with temporary flexure of the engagement formations so that the rib enters the groove, the first and second abutment faces of the first and second abutment means abut one another to resist separation of the components and the first and second mating formations engage one another to preclude relative longitudinal movement between the components.

4,941,239

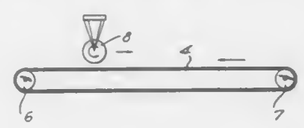
METHOD TO REDUCE FORMING FABRIC EDGE CURL

Thomas A. Fliss, Montgomery, Ala., assignor to Albany International Corporation, Menands, N.Y.

Filed Feb. 14, 1987, Ser. No. 310,738
Int. Cl.[5] D21G *9/00*
U.S. Cl. 26—28 16 Claims

1. A method for reducing forming fabric edge curl comprising:

maintaining a forming fabric in a substantially flat condition, said forming fabric woven from machine direction and cross-machine direction yarns in a pattern producing a surface on said fabric formed substantially by said cross-machine direction yarns, said surface being a long-shute knuckle side of said fabric; and



removing mass from the long-shute knuckle side of the substantially flat forming fabric so that the ratio of the shrink forces acting on the two sides of the forming fabric will be reduced, said mass being removed from said long-shute knuckle side in a band inwardly from an edge of said forming fabric for the length of said forming fabric.

4,941,240

BEAM WARPING MACHINE WITH A DEVICE FOR THE MAINTENANCE OF REQUIRED YARN TENSION

Karl Denzler, Naila; Alfred Böhm, Naila-Hölle, and Alfred Wirth, Schwarzenbach/Wald, all of Fed. Rep. of Germany, assignors to Liba Maschinenfabrik GmbH, Naila, Fed. Rep. of Germany

Filed Apr. 22, 1987, Ser. No. 44,250
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529932
Int. Cl.[5] D02H *13/04, 13/26*; B65H *63/036*
U.S. Cl. 28—187 10 Claims



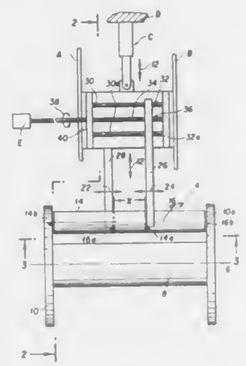
1. In a beam warping machine having a device for the maintenance of required yarn tension in a group of yarns being wound onto a beam which includes a plurality of rolls about which the group of yarns passes in a tortuous path and with said rolls being driven without slippage in an operative position, and having means to move one of said rolls out of the operative position upon actuation of brake means for stoppage of the machine to a location where yarns in said yarn group may pass across said rolls with slippage, the improvement comprising adjustment means associated with said one movable roll for determining the amount of movement of said roll from its operative position so that when said brake means is actuated, said one roll is moved away from its operative position to a location where a straighter yarn path is presented through said tension device and a predetermined amount of slippage exists between said yarns and said rolls while maintaining contact with said yarn.

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4,941,241
WARP MACHINE

Hans Affüpper, Wuppertal, Fed. Rep. of Germany, assignor to Hans Affüpper Textilmaschinenbau GmbH, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 255,025
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733918
Int. Cl.[5] D02H *13/00, 3/00*
U.S. Cl. 28—196 **20 Claims**

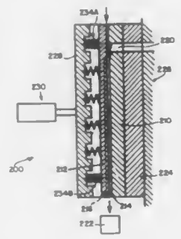


1. A warp machine for warping and spooling warp threads, particularly elastic warp threads, comprising:
(a) a sled having a linear movement axis;
(b) a warp beam including:
(i) a spool element rotatable about an axis; and
(ii) first and second lateral, flange-like warp beam end discs; and
(c) means disposed between said first and second warp beam end discs for compressing warp threads against said spool element, said means for compressing comprising first and second rotatable compression rollers, each compression roller having a rotary mounting end, a free end, a respective axis, and an axial length dimension, said compression rollers axially overlap each other at a central area of the warp beam by an axial length x, wherein x is equal to or greater than zero, and at least one of said compression rollers is adjustable in an axial direction independent of said other compression roller; and
(d) first and second elongated support arms, each joining a respective one of said compression rollers to said sled, each of said support arms having a first end rotatably affixed to a respective compression roller at the mounting end thereof and a second end guided on the sled whereby at least one of the support arms is movable independent of the other in a direction that is perpendicular to their longitudinal extension, wherein the sled is linearly movable in the direction lying essentially radial to the warp beam.

4,941,242
THREAD TREATING NOZZLES

Werner Nabulon, Schneehalde 116, 8455 Rudlingen, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation of Ser. No. 904,360, Sep. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 677,591, Dec. 3, 1984, abandoned. This application Feb. 2, 1989, Ser. No. 306,250
Int. Cl.[5] D02G *1/16, 1/12*
U.S. Cl. 28—255 **22 Claims**

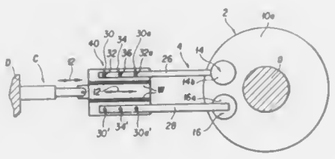


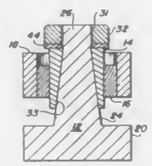
9. The thread-treating nozzle as defined in claim 8, further including:
a housing for housing said first nozzle part and said second nozzle part; and
said housing comprising a material having good thermal conductive properties relative to those of said corrosion-resistant metal.

4,941,243
METHOD FOR ASSEMBLING AN ANNULAR SHEAR ACCELEROMETER

Lester G. Cleveland, San Juan Capistrano, Calif., assignor to Allied-Signal Inc., Morris Township, N.J.

Filed Jul. 28, 1989, Ser. No. 387,330
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **5 Claims**



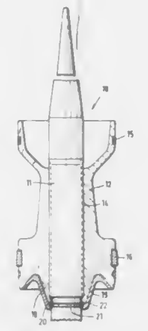


1. In the assembly of an annular shear accelerometer, a method comprising the steps of:
nesting at least an axially extending portion of an annular crystal in an annular mass element so that a radially outer surface of the crystal abuts a radially inner surface of the mass element;
nesting at least an axially extending portion of a radially expandable force ring in the crystal so that a radially outer surface of the ring abuts a radially inner surface of the crystal;
nesting at least an axially extending portion of a generally conical mounting post in the force ring so that a radially outer, generally conical surface of the post abuts a radially inner surface of the force ring: and
exerting force that tends to produce relative motion between the radially inner surface of the force ring and the radially outer surface of the post in a direction such that the ring is urged toward a lower base of the post, in response whereby the ring is urged to expand in radially outward directions, thereby radially compressing the crystal between the ring and the mass element.

4,941,244
METHOD OF PRODUCING DISCARDING SABOT PROJECTILES

Helmut Ortmann, Duisburg, and Rolf Scharnhorst, Dusseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 6, 1988, Ser. No. 240,589
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1987, 3730370
Int. Cl.[5] B21K *21/06*
U.S. Cl. 29—1.2 **7 Claims**

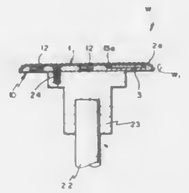


1. In a method of producing a discarding propelling cage sabot projectile of a type including a projectile body having a cylindrical portion, means disposed on and extending along a region of an outer surface of said cylindrical portion for providing a form locking connection, and a propelling cage sabot formed of a plurality of adjacent longitudinally extending segments which surround at least said region of said outer surface of said cylindrical portion, which engage said means for providing a form locking connection, and which are fastened in place by holding means, and with said propelling cage sabot having a rear surface which acts as a gas pressure receiving surface during launching of the projectile, and wherein said method includes the steps of fastening the plurality of segments to the projectile body to form the propelling cage sabot which is positioned at an intended rearmost position along the projectile body and held in place by the form locking connection, sealing the gas pressure receiving surface and an interior annulus formed between the sabot and the outer surface of the projectile body at the rear gas pressure receiving surface by spraying a thin coating of rubber, under pressure, onto the rear gas pressure receiving surface of the sabot, and vulcanizing the rubber of said coating; the improvement comprising the following step:
subsequent to said step of fastening and prior to said step of sealing, applying a sealing means to the outer surface of the projectile body adjacent said rear gas pressure receiving surface to seal a rear end of said interior annulus between the sabot and the projectile body.

4,941,245
ROTARY FILE, SUPPORT MEMBER AND ABRASIVE DEVICE

Teruaki Yamashita, and Hirokazu Naka, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 19, 1989, Ser. No. 340,516
Claims priority, application Japan, Apr. 28, 1988, 63-106763
Int. Cl.[5] B23D *67/06, 71/02;* B24D *7/00*
U.S. Cl. 29—78 **7 Claims**



1. An abrasive rotary disc assembly arranged to be rotated about a central rotational axis and comprising:
a ferromagnetic abrasive disc having an outer surface including cutting elements thereon, said outer surface being centrally planar and having a convexly curved radially outer periphery, said periphery including at least a portion of said cutting elements thereon, and an inner surface extending substantially parallel to said outer surface at least at said periphery, said inner surface including circumferentially spaced, axially projecting disc stop elements disposed between the center of the disc and said curved periphery;
a support member for said disc having an outer surface corresponding geometrically to said inner surface, including a convexly curved radially outer periphery corresponding in shape to said disc inner surface at the disc periphery, said support member including curcumferentially spaced stop engaging means for cooperating with said disc stop elements to prevent relative rotation between said disc and said support member, and magnetic elements arranged to attract said inner surface of said ferromagnetic disc to the outer surface of the support member;
said disc inner surface engaging said support member outer surface in contiguous relationship with said disc inner surface at the disc periphery contiguous with the convexly curved periphery of the support member, with said disc stop elements engaging said support stop means and said magnetic elements solely retaining said disc axially against said support member;
said disc stop elements and said support stop means comprising cooperating radially extending grooves and projections, with at least the radially outer ends of the grooves and projections disposed closer to the disc periphery than the disc center.

4,941,246
RASPING DEVICE

Danny E. Finnegan, 6840 Hickory Ave., Orangevale, Calif. 95662

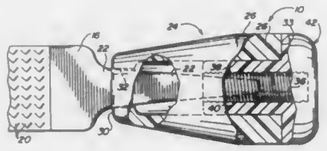
Filed Sep. 19, 1989, Ser. No. 409,084
Int. Cl.[5] B23D *71/04, 71/06*
U.S. Cl. 29—78 **6 Claims**

1. An improved rasping device, said device comprising, in combination:
(a) an elongated blade having a front end and an opposite rear end joined by a middle portion bearing a plurality of rasping protrusions, said rear end bearing a narrow tang

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projecting rearwardly thereof along the longitudinal midline thereof; and,

(b) an improved handle, said handle comprising, in combination, a front hollow shell having a closed front end and an open rear end defining a central cavity, said tang projecting through a slit in said closed front end into said cavity and being sealed thereto, a separate, generally cylindrical pinch tube in said cavity and bearing external threading and a transverse slot in the front end thereof into which



the rear end of said tang wedgingly seats in said shell, and a rear cap having a flared rear peripheral portion connected to a forwardly projecting central tubular portion, the latter having a central passageway bearing internal threading, said tubular portion being screwed forward over and in contact with said pinch tube in said cavity to wedge it tightly around said rear end of said tang and cause said flared portion of said cap to abut the rear end of said shell, whereby said handle is held tightly on said blade.

4,941,247

SEALING ARRANGEMENT FOR A ROLL

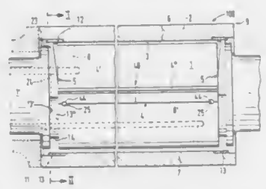
Klaus Kubik, Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Fed. Rep. of Germany

Filed Apr. 11, 1989, Ser. No. 336,223

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1988, 3813596

Int. Cl.[5] B21B *13/02, 31/32*

U.S. Cl. 29—116.2 **14 Claims**



1. A roll and sealing arrangement comprising:

(a) a rotatable hollow roll having a longitudinal axis and an outer working roll circumference;

(b) a stationary crosshead extending through the hollow roll, said crosshead having ends protruding from the hollow roll to which external forces can be applied for supporting the roll;

(c) an annular clearance space formed between an outer circumference of the crosshead and an inner circumference of the hollow roll;

(d) circumferentially spaced longitudinal seals attached to the crosshead, said longitudinal seals abutting the inner circumference of the hollow roll;

(e) axially spaced transverse end seals having a generally semi-annular configuration engaged in respective, circumferential slots formed in the crosshead between axially spaced shoulders and a bottom surface of its respective slot, each transverse end seal being secured in one of said circumferential slots against rotation and being displaceable in a plane perpendicular to the longitudinal axis of the roll;

(f) at least one longitudinal chamber formed in the annular clearance space between the longitudinal seals and the transverse end seals for supporting the hollow roll with pressure liquid contained therein;

(g) a hydraulic relief chamber, in fluid communication with said at least one longitudinal chamber, formed at each of the transverse end seals, each hydraulic relief chamber being bounded by a recess in a side of one of said transverse end seals facing away from said at least one longitudinal chamber and one of the axially spaced shoulders that contacts said side to define a contact region therebetween, said relief chamber extending over substantially the entire contact region; and

(h) a substantially closed pressure chamber, in fluid communication with said at least one longitudinal chamber, formed at each transverse end seal between the bottom surface of one of said circumferential slots and a bottom side of the transverse end seal engaged in said one circumferential slot, whereby said pressure chamber remains substantially closed, even after displacement of the transverse end seal in said one circumferential slot, for exerting a radially outward-directed force on the transverse end seal.

4,941,248

MECHANISM FOR PROCESSING AND OFFERING TAPEPAKS FOR AUTOMATIC EQUIPPING UNITS

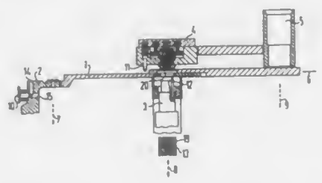
Werner Seidel, Munich, and Walter Kandler, Percha B Starnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 10, 1988, Ser. No. 269,427

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1987, 3738164

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—564.6 **7 Claims**



1. A mechanism for processing an operating tapepaks for automatic equipping units, said mechanism comprising a punch and a cut-out tool at a processing position, said cut-out tool being composed of at least one blanking die receiving one bending insert and an ejector, said cut-out tool cooperating with the punch, a slide having a bend-transfer insert and a tapepak holder spaced apart by a given distance, said slide being movable between two initial positions with the first initial position having the tapepak holder being positioned at the processing position and a second initial position with the bend-transfer insert being disposed at said processing position, and means for insuring reproducible positioning of the bend-transfer insert at a transfer position and at the processing position so that the bend-transfer insert is displaceable with the slide between the transfer position and the processing position.

4,941,249

METHOD OF MAKING AN INJECTION MOLDING NOZZLE HAVING NOSE PORTION WITH HEATING ELEMENT ENCIRCLING THE BORE

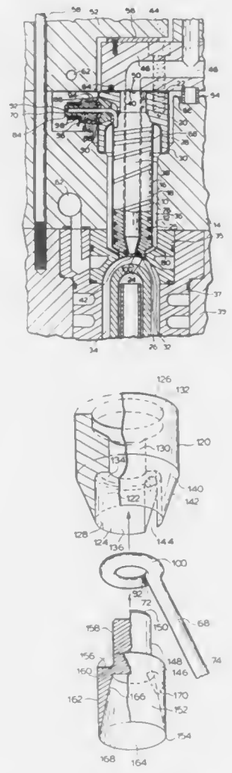
Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada (L7G 2X1)

Division of Ser. No. 260,920, Oct. 21, 1988, Pat. No. 4,911,636. This application Dec. 5, 1989, Ser. No. 446,183

Claims priority, application Canada, Sep. 30, 1988, 578973

Int. Cl.[5] H05B *3/00*

U.S. Cl. 29—611 **6 Claims**



1. In a method of making an integral elongated heated injection molding nozzle with a forward end, a rear end, and a melt bore extending centrally therethrough from an inlet at the rear end to a gate at the forward end, the nozzle having a central portion with a generally cylindrical outer surface extending from a steel collar portion adjacent the rear end to a nose portion adjacent the forward end, and an electrically insulated heating element with a forward end and a rear end including forming a steel main body portion with a forward end, a rear end and a melt bore extending centrally therethrough, forming the steel collar portion and mounting it on the rear end of the main body portion after winding a portion of the heating element in a spiral channel extending around the cylindrical outer surface of the main body portion with the rear end of the heating element extending outwardly from the collar portion to an electrical terminal, applying brazing material to at least the cylindrical outer surface of the main body portion, and heating the assembly in a vacuum furnace for a period of time and to a temperature sufficient to integrally braze the nozzle together, the improvement including;

(a) providing the forward end of the main body portion with a tapered opening which is in alignment with the melt bore and a diagonal heating element bore, the opening having an inner surface which extends outwardly forward to the forward end of the body portion, the heating element bore extending diagonally from the inner surface to join the spiral channel in the cylindrical outer surface of the main body portion,

(b) forming a steel funnel member having a central bore extending therethrough from a rear end to a forward end, the bore having a larger diameter portion with an inner surface extending from the rear end to join a smaller diameter portion extending from a mouth at the forward end at a radially extending shoulder, the funnel member having a rear portion with an outer surface which tapers outwardly forward from the rear end of the funnel member to match the tapered inner surface of the opening at the forward end of the main body portion, the rear portion having a heating element slot extending diagonally therethrough,

(c) forming a steel hub member with a rear end and a forward end having a smaller diameter head portion which extends centrally from a larger diameter rear portion at a radially extending shoulder, the head portion fitting in the smaller diameter portion of the central bore of the funnel member, the rear portion having an outer surface which fits inside the inner surface of the larger diameter portion of the bore through the funnel member, the rear portion having a central opening thereon with an inner surface which tapers inwardly forward from a mouth at the rear end which is substantially equal in diameter to the melt bore through the main body portion, the rear portion having a heating element slot extending diagonally therethrough,

(d) winding a forward end portion of the heating element to extend around the head portion of the hub member, press fitting the hub member into the funnel member to a position wherein the head portion of the hub member is received in the smaller diameter portion of the bore through the funnel member and the rear portion of the hub member is received in the larger diameter portion of the bore through the funnel member, the forward end portion of the heating element encircles the head portion of the hub member in a circumferential space between the radially extending shoulders of the hub member and the funnel member, and the diagonally extending heating element slots of the hub member and the funnel member are aligned to receive the heating element therethrough, and tack welding the hub member and the funnel member together in this position,

(e) inserting the rear end of the heating element through the diagonal heating element bore in the forward end of the main body portion, seating the assembled hub member and funnel member in the tapered opening in the forward end of the main body portion in a position wherein the tapered outer surface of the funnel member abuts against the matching tapered inner surface of the opening, and the slots of the hub member and the funnel member are aligned with the diagonal heating element bore in the forward end of the main body portion, and tack welding them together in this position,

(f) loading a predetermined amount of brazing material into the mouth of the smaller diameter portion of the bore of the funnel member after winding the portion of the heating element in the spiral channel extending around the cylindrical outer surface of the main body portion with the rear end of the heating element extending outwardly from the collar portion to an electrical terminal and applying the brazing material to the cylindrical outer surface of the main body portion, whereby when the assembly is heated in the vacuum furnace the hub member, funnel member and forward end portion of the heating element are also integrally brazed in place, and

(g) machining through the head portion of the hub member

and machining the funnel member to provide the nozzle with a nose portion of a desired configuration having a gate extending therethrough from the melt bore which is substantially encircled by the integral forward end portion of the heating element.

4,941,250

ROLLER FOR PRESSURE TREATMENT OF A CONTINUOUS WEB OF MATERIAL

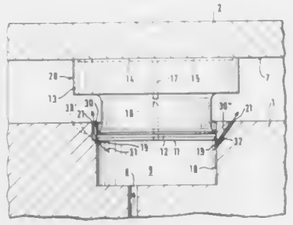
Karl-Heinz Küsters, Hermann-Schuhmacher Strasse 49, D-4150 Krefeld-Forstwald, Fed. Rep. of Germany

Filed Feb. 17, 1989, Ser. No. 312,115

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1988, 3805323

Int. Cl.[5] B21B *13/02*

U.S. Cl. 29—116.1 **5 Claims**



1. A roller for the pressure treatment of a continuous web of material comprising:

a cylinder having an outer surface that forms a working roller circumference;

a stationary cross-head extending through the cylinder to form a clearance space therewith between the cross-head and the inner circumference of the cylinder,

a hydraulic support mechanism acting against the inner circumference of the cylinder to support the cylinder on the cross-head, said hydraulic support mechanism including piston-like supporting plungers displaceable in respective cylindrical recesses radially disposed in the cross-head to abut against the inner circumference of the cylinder, said recesses provided with respective supply lines through which pressure fluid is conducted; and

a device limiting the displacement of the cylinder relative to the cross-head including at least one of said supporting plungers and at least one conduit having an inlet connected to one of said cylindrical recesses and an outlet connected to said clearance space outside of the cross-head wherein said inlet is sealed by said at least one supporting plunger until it uncovers the inlet to permit flow through said at least one conduit.

4,941,251

ROLLERS FOR ROLLING MILLS

Masahisa Sobue, Mito; Sensuke Okada; Kimihiko Akahori, both of Katsuta; Keiichi Kuniya, Hitachi; Toshimi Sasaki, Mito; Toshiyuki Kajiwara, Hitachi; Tomoaki Kimura, Hitachi, and Mitsuo Nihei, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 48,907, May 12, 1987, Pat. No. 4,839,949, which is a continuation of Ser. No. 601,358, Apr. 18, 1984, abandoned. This application Jun. 2, 1989, Ser. No. 360,219

Claims priority, application Japan, Apr. 22, 1983, 58-69918

The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.

Int. Cl.[5] B21B *27/00*

U.S. Cl. 29—132 **35 Claims**

1. A roll for strip sheet rolling mills, the roll being mounted as a work roll in a rolling mill and being a composite roll having an axial length larger than a diameter thereof, said composite roll including a core and a sleeve on said core, said sleeve being a sintered body comprising sialon as a principal constituent and having a density of at least 96% of the sintered body theoretical density.

4,941,252

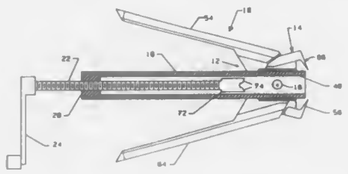
TOOL FOR EXTRACTING ANCHOR BOLT FROM WALL

Bernhard M. Haisch, 519 Cringle Dr., Redwood City, Calif. 94065, and Marilyn E. Bruner, 44 Roosevelt Cir., Palo Alto, Calif. 94306

Filed Sep. 1, 1988, Ser. No. 239,474

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—261 **20 Claims**



1. A tool for removing an anchor bolt from attachment to a wall with the anchor bolt having a flange at one end thereof, an internally threaded sleeve at the opposite end, and an attachment screw threaded into the sleeve and located adjacent to a pair of bendable legs between the flange and the sleeve, the tool comprising:

a support;

means pivotally mounted on the support near one end thereof for coupling the support with the flange of the anchor bolt, said support having means for allowing movement of the attachment screw relative to said coupling means when the support is coupled to said flange; and

means carried by the support and engagable with the attachment screw of the anchor bolt for moving the attachment screw longitudinally of the anchor bolt and relative to the coupling means when the attachment screw is threaded into the sleeve, whereby the legs of the anchor bolt will be caused to become straightened until the transverse dimension of the anchor bolt is sufficient to allow it to be removed from the wall.

4,941,253

VEHICLE WHEEL-TO-HUB STUD ALIGNMENT AND MOUNTING TOOL

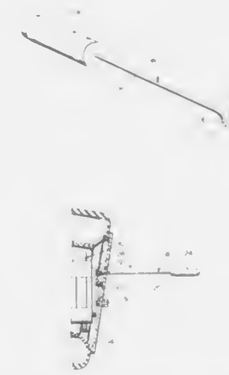
Thomas F. Meagher, 9 Lookout Ter., Lynn, Mass. 01902

Filed Nov. 20, 1989, Ser. No. 438,066

Int. Cl.[5] B25B *27/14*

U.S. Cl. 29—273 **9 Claims**

1. A vehicle wheel-to-hub stud and alignment tool including an elongated shank member having a first handle end and a second wheel stud engaging end and an intermediate shank member section extending between said ends, said second wheel stud engaging end including a first portion integral with and forming an extension of the adjacent portion of said intermediate shank member section directed laterally outwardly from the shank member and terminating outwardly in an open convolution free end portion loosely telescopingly engagable over the free end of a vehicle hub wheel mounting stud, said open convolution free end portion being threadable through a vehicle wheel mounting stud receiving opening.



4,941,254

METHOD FOR PRODUCING A MOTION TRANSMITTING AND AMPLIFYING DEVICE

Allen V. C. Davis, 21111 Plummer St., Chatsworth, Calif. 91311

Division of Ser. No. 284,947, Dec. 14, 1988, Pat. No. 4,891,479. This application Dec. 20, 1989, Ser. No. 443,907

Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 **3 Claims**



1. A method of fabricating a motion transmitting and amplifying device including the steps of

fabricating a strip of spring metal configured to resemble the letter W which comprises a pair of driver portions having parallel legs with an output portion loop; one leg of each of said driver portions being connected to a different leg of said output portion,

providing means connecting the ends of said driver loops opposite their connections with the output loop for constraining said ends against outward movement with respect to each other; and then stressing the legs of the output portion to tend to reduce the spacing between the output legs as the legs approach the driver portions.

4,941,255

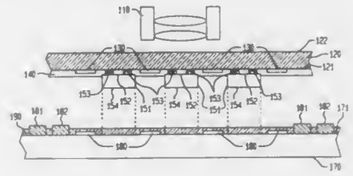
METHOD FOR PRECISION MULTICHIP ASSEMBLY

David N. Bull, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1989, Ser. No. 437,145

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—833 **17 Claims**



1. A method for positioning an article on a first support member having first indica marks thereon comprising the steps of:

viewing from one surface of a transparent second support member and through the second support member the article which is separated from a second surface of the second support member;

aligning the article with respect to second indica marks on the second support member and coupling the article by a first surface thereof to the second surface of the second support member;

viewing from the one surface of the second support member, which now has the article coupled thereto, the first indica marks on the first support member;

aligning the second support member to the first indica marks and coupling the article by a second surface thereof to the first support member; and

decoupling the second support member from the article.

4,941,256

AUTOMATIC VISUAL MEASUREMENT OF SURFACE MOUNT DEVICE PLACEMENT

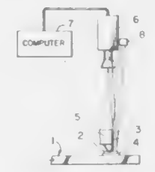
David W. Capson, Hamilton, Canada, and Randy Tsang, Kowloon, Hong Kong, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jul. 19, 1989, Ser. No. 381,790

Claims priority, application Canada, Aug. 19, 1988, 575895

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—833 **20 Claims**



1. A method of determining the position and orientation of a surface mount component on a printed circuit board comprising:

(a) placing said component on said board at a required location,

(b) illuminating said board with a radiation source so that radiation from the source is reflected by leads of said component and corresponding solder pads on the board to an image sensor,

(c) obtaining an image from the reflected radiation in a single exposure by the image sensor,

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(d) processing the image by a computer to provide a processed image with objects in this processed image corresponding to the positions of the leads and pads on the board, and

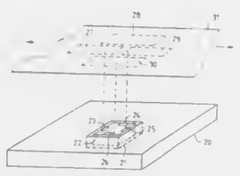
(e) determining the actual position and orientation of the component's leads with respect to the position and orientation of the pads on the board from the processed image with the computer which then determines if the position of the leads compared to the positions of the pads are within predetermined limits.

4,941,257

METHOD FOR FIXING AN ELECTRONIC COMPONENT AND ITS CONTACTS TO A SUPPORT

Jean-Pierre Gloton, Aix en Provence, France, assignor to SGS-Thomson Microelectronics SA, Gentilly, France

Filed Dec. 12, 1988, Ser. No. 283,305
Claims priority, application France, Dec. 22, 1987, 87 17900
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **2 Claims**



1. A method to fix an electronic component and its external contacts on a support, said support comprising a cavity to house said component, said method comprising the following operations:

(a) positioning the electronic component (22) in the cavity (21), so that output terminals (23–26) of the component are accessible through the opening of the cavity;

(b) positioning the external electrical contacts (27–30) on a supporting film (31), according to a pattern appropriate to the geometry of the output terminals of the electronic component;

(c) positioning the electrical contacts on the support (20) by means of the supporting film (31);

(d) simultaneously electrically connecting said electrical contacts (27–30) to the output terminals (23–26) of the electronic component (22);

wherein prior to the first positioning step (a), the electronic component is coated with resin which allows the output terminals (23–26) to extend through said protective resin coating whereby the surface of the component is protected.

4,941,258

METHOD OF ELECTRICALLY INTERCONNECTING DOOR COMPONENTS TO MAIN POWER SUPPLY IN VEHICLE

James A. Wright, Dearborn Heights, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

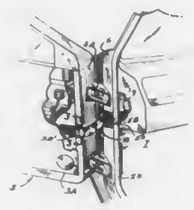
Division of Ser. No. 191,089, May 6, 1988, Pat. No. 4,862,011. This application Jul. 6, 1989, Ser. No. 376,099
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—858 **8 Claims**

1. A method of electrically interconnecting several electrical components in a movable, hinged door having a hinge axis on a vehicle body to a main electrical power supply system in the body, in which a door side edge area and a body opening are provided for interconnecting electrical wiring between the door and the body, comprising the following steps:

(a) utilizing a relatively flat and substantially laterally extended, electrical, planar cable, which has included within it a series of juxtaposed, substantially parallel, extended electrical wires in a substantially side-by-side array defining a laterally extended plane, there being of the order of at least about four wires in at least general side-by-side array with less than about four wires in its thickness dimension, in said electrical cable;

(b) extending said relatively flat, planar cable from said door through said door side edge area at least adjacent to said body opening, and using it to at least indirectly electrically interconnect the electrical components in said door into the main power supply system in the vehicle body; and

(c) aligning, extending and positioning said planar cable in its extent from said door adjacent to said body opening with the laterally extended plane of said planar cable at least generally lying in a substantially vertical plane, with the



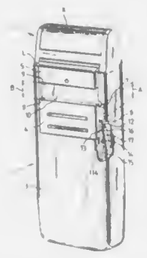
planar cable being folded back onto itself with a fold-line substantially parallel to the hinge axis of the door when the door is closed, with the plane of said planar cable array being substantially vertically aligned as it travels from the door side edge area over adjacent to the body opening, with a length of said planar cable between said door side edge area and said body opening being substantially equal to a separation distance between said door side edge area and said body opening when the door is in its maximum, open position, without any additional significant slack in the electrical cable between the door and the body opening when the door is completely open, with said planar cable extending directly across from said door side edge area to said body opening in at least a generally horizontal path.

4,941,259

DRY SHAVING APPARATUS WITH A SHORT-HAIR CUTTER AND A SLIDABLE LONGHAIR TRIMMER

Jürgen Wolf, Kriftel, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Aug. 17, 1988, Ser. No. 233,339
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729257
Int. Cl.[5] B26B *19/10*
U.S. Cl. 30—34.1 **21 Claims**



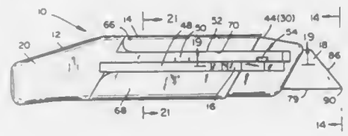
1. A dry shaving apparatus comprising a housing, a short-hair cutter, a long-hair trimmer, a manually operated first switch slide slidably arranged on said housing for turning the dry shaving apparatus on and off, a second switch slide operatively associated with said first switch slide and carrying said long-hair trimmer which is movable by means of said second switch slide from a position of rest into an operating position lying in the area of said short-hair cutter and which in the operating position is coupled to the drive of the dry shaving apparatus, and first and second gear arrangements, one of said gear arrangements being provided for the travel of said first switch slide and another of said gear arrangements being provided for the travel of said second switch slide, said gear arrangements being interengageable in the course of the travel of said first switch slide.

4,941,260

UTILITY KNIFE

James Castelluzzo, 188 Avenue of the Americas, New York, N.Y. 10013

Continuation of Ser. No. 894,676, Aug. 8, 1986, Pat. No. 4,813,132. This application Dec. 15, 1988, Ser. No. 284,991
The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.
Int. Cl.[5] B26B *29/02*
U.S. Cl. 30—162 **24 Claims**



1. A knife comprising

(a) a first body portion, including blade retaining means for retaining a stack of knife blades therein;

(b) a second body portion matable with said first body portion to provide a knife housing including a blade opening, said second body portion including an inner surface having a plurality of locking wells disposed parallel to a predetermined direction within said knife housing; and

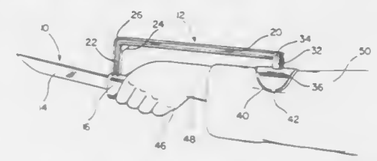
(c) a unitary slide member slidably disposed for motion in said predetermined direction within said knife housing, said unitary slide member including blade control means for controlling the removal of a single blade located in a predetermined plane from said stack of blades, blade engagement means for engaging said single blade in a fixed position with respect to said unitary slide member whereby said single blade may be slidably moved within said predetermined plane between at least one operative position projecting through said blade opening and a retracted position within said knife housing, and locking means for locking said unitary slide member in a plurality of fixed positions, including said at least one operative position, said locking means comprising control peg means projecting from said blade engagement means, said blade engagement means being movable between a first blade engaging position in which said control peg means is disposed in one of said plurality of locking wells, and a second blade engaging position in which said control peg means is displaced from said plurality of locking wells, whereby said unitary slide member may be slidably moved to a position in which said control peg means is located at a position corresponding to one of said locking wells, without disengaging said blade engagement means from said blade.

4,941,261

KNIFE WITH WRIST BRACE

Robert A. Glenn, Rte. 6, Box 33, Cookeville, Tenn. 38501

Filed Jun. 17, 1988, Ser. No. 208,135
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—296.1 **6 Claims**



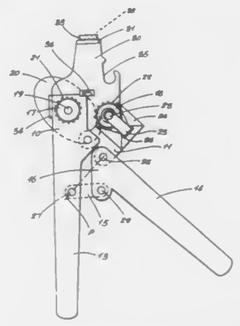
1. A knife having a handle and blade oriented in axial alignment with the handle adapted to be gripped by a user, a wrist brace for connection with the handle and extending above the wrist joint and forearm of the user of the knife, said wrist brace including an elongated substantially rigid brace member disposed above the wrist joint and forearm and including a laterally extending end portion rigidly connected with the knife handle, the other end of the elongated brace member including a laterally extending saddle engaged with but not rigidly associated with the forearm of the user to reinforce and brace the wrist joint to maintain the wrist joint in underlying relation with the elongated brace member during use of the knife and resisting deflection of the wrist joint when applying vertical pressure on the knife handle, said saddle being an inverted, downwardly opening semi-cylindrical member having curved side edges engaging the upper surface of the forearm, said saddle being connected to the end of the elongated brace member remote from the knife handle by a bracket structure that spaces the saddle laterally from the elongated brace member, said elongated brace member being substantially straight, said bracket being pivotally connected to the end of the brace member remote from the knife handle by a transverse fastening structure to enable pivotal movement of the saddle about an axis transverse to the longitudinal axis of the elongated brace member and transverse to the forearm.

4,941,262

CAN OPENER

Tony Y. M. Law, Kowloon, Hong Kong, assignor to Emmarco Industries Co., Ltd., Kowloon, Hong Kong

Filed Oct. 30, 1989, Ser. No. 428,615
Int. Cl.[5] B26B *17/02*
U.S. Cl. 30—419 **6 Claims**



1. A can opener comprising first and second support members, a rotatable drive wheel on one of the support members for advancing the opener around a can, a cutting blade on the other support member, the first and second support members

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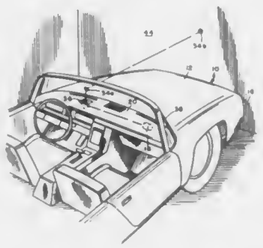
being pivotable relative to one another between a closed configuration in which the cutting blade co-operates with the drive wheel to cut the can and an open configuration in which the cutting blade and drive wheel are separated to facilitate attachment of the opener to and detachment of the opener from the can, a first toggle link pivotably connected to the first support member about a first pivot axis, a second toggle link pivotably connected to the second support member about a second pivot axis and to the first toggle link about a third pivot axis, a first handle secured to or integral with the first support member and a second handle secured to or integral with one of the toggle links, the arrangement being such that movement of the second handle towards the first handle will move the support members to said closed configuration and movement of the second handle away from the first handle will move the support members to said open configuration and being such that when the support members are in said closed configuration and a force is applied between the cutting blade and the drive wheel in a sense to move the blade and wheel apart the support members will remain in said closed configuration.

4,941,263

SYSTEM FOR AIDING A DRIVER'S DEPTH PERCEPTION

Gerald P. Hirshberg, Del Mar, Calif., assignor to Nissan Design International, Inc., San Diego, Calif.

Continuation of Ser. No. 715,343, Mar. 25, 1985, abandoned.
This application Sep. 29, 1986, Ser. No. 912,532
Int. Cl.[5] G01B *11/14*
U.S. Cl. 33—264 **2 Claims**



1. A system for aiding a driver of a vehicle in positioning the vehicle so that its front bumper will be closely adjacent to a wall or other stationary object in front of the vehicle, comprising:

a transparent windshield having a predetermined curvature mounted in the vehicle to permit a forward field of view of a driver seated in an interior of the vehicle on a driver's side thereof;

a dashboard extending across a width of the interior of the vehicle adjacent the windshield, the dashboard having an upwardly facing opening on the driver's side of the interior which communicates with an unobstructed focal path which extends beneath the dashboard from the driver's side of the interior to a passenger side of the interior;

means mounted beneath the dashboard on the passenger side of the interior at a first end of the focal path for generating an illuminated colored target of fixed dimensions, including a fixed reticile, a lamp mounted behind the reticile, and a source of electric power connectable to the lamp;

a fixed mirror mounted beneath the dashboard on the driver's side of the interior at a second end of the focal path a fixed distance F1 from the means for generating the target for reflecting light therefrom upwardly through the opening in the dashboard onto an interior surface of the windshield to thereby create a readily discernible virtual image of the colored target which appears to the driver to emanate from a location a fixed distance F2 from the driver's eyes, the location of the virtual image being above and slightly forward of the front bumper; and

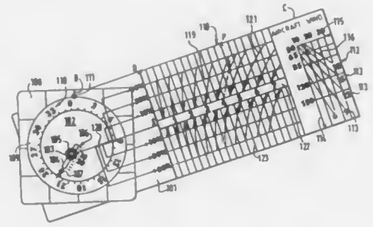
the distance F1 between the means for generating the target and the mirror being selected relative to the distance F2 between the virtual image of the colored target and the driver's eyes to compensate for the curvature of the windshield and so that the driver may gradually advance the vehicle until the virtual image of the colored target appears to be juxtaposed with the object at which time a fixed distance F3 between the object and the front bumper will be approximately eight inches or less.

4,941,264

DEVICE FOR READING DIRECTLY FROM A CHART THE HEADING TO BE FOLLOWED BY AN AIR OR SEA-GOING VEHICLE

Alain Polrier, 16, boulevard Flandrin, 75116 Paris, France

Filed Feb. 28, 1989, Ser. No. 316,840
Claims priority, application France, Mar. 1, 1988, 88 02527
Int. Cl.[5] G01C *21/20*; B43L *7/06*
U.S. Cl. 33—457 **12 Claims**



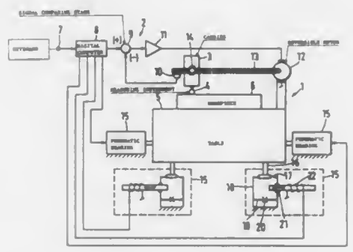
1. A device for directly reading from a chart the heading to be followed by an air or sea-going vehicle, comprising a disk having at its periphery a rotatable circular coaxial graduation of the "compass card" type rotatable with respect to the disk so as to be able to be oriented with respect to the North, this disk being itself mounted for rotation about a fixed shaft integral with a support, through a rotary fitting with offset adjustable in modulus as a function of a value representative of the wind or current speed/proper speed of the vehicle ratio and in orientation along the direction of the wind or of the current, said disk further comprising at least one scale for determining the modulus of the offset, as well as a first reference mark for indicating the orientation of this offset on the circular graduation, said scale being graduated in successive values representative of said wind or current speed/proper speed of the vehicle ratio, the heading to be followed being indicated on the circular graduation by a straight line oriented along the geographical heading or course and passing through said axis, wherein said support comprises a rectilinear edge adapted for alignment with a geographical heading plotted on the chart, an axis (VS) parallel to said edge and passing through said fixed shaft, and means for reading the flight or navigation time as a function of a distance between two points on the chart, the proper speed of the vehicle, the scale of the chart and a correction ratio of the flight or navigation time, said axis forming with an edge of said disk an intersection point having a position which determines said correction ratio.

4,941,265

APPARATUS FOR PREVENTING CHANGES OF THE POSITIONS OF MACHINES

Klaus-Peter Helland, Raunheim, Fed. Rep. of Germany, assignor to Barry Controls GmbH, Raunheim, Fed. Rep. of Germany

Filed Jul. 13, 1988, Ser. No. 218,650
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1987, 3723466
Int. Cl.[5] G01B *5/03, 21/00*
U.S. Cl. 33—504 **9 Claims**



1. Apparatus for preventing changes of the position of a machine wherein a first part supports a mobile second part and the first part is subject to the action of variable forces tending to change the position of the first part in response to movement of the second part, the movement of said second part including a plurality of stages, comprising adjustable bearings for the first part, said bearings being arranged to offer a variable resistance to changes of the position of the first part; and means for adjusting said bearings so as to vary said resistance in time to enable the bearings to counteract and neutralize said variable forces during each stage of movement of the mobile part relative to the first part of the machine, said adjusting means including a memory for storing signals denoting the desired position of the mobile part relative to the first part during each of said stages, and means for transmitting from said memory to said bearings adjustment signals in dependency on signals in said memory, said adjustment signals pertaining to various stages of movement of the mobile part before the mobile part reaches the respective stages so as to enable said bearings to offer appropriate resistance to changes in the position of the first part when the mobile part reaches the respective stages of its movement relative to the first part.

4,941,266

FEELER DEVICE FOR FORMING A MEASUREMENT VALUE WHEN SENSING A WORKPIECE

Marcel Bissegger, Safnern, and Alain Stegmann, Biel, both of Switzerland, assignors to Saphirwerk Industrieprodukte AG, Biel, Switzerland

Filed Feb. 23, 1989, Ser. No. 314,098
Claims priority, application Switzerland, Mar. 11, 1988, 923/88
Int. Cl.[5] G01B *11/24*
U.S. Cl. 33—556 **11 Claims**

1. A feeler device for forming a measurement value when sensing a workpiece, said feeler device comprising:

a housing;

means at one end of said housing for securing said housing to an actuating mechanism;

a measuring element mounted inside said housing;

annular mounting means fixed adjacent the opposite end of said housing for supporting a ball element within said housing for swivelling movement relatively thereto;

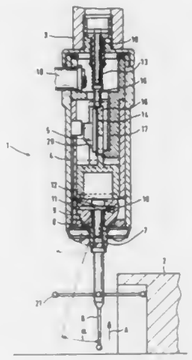
a carrying member axially fixed to said ball element;

at least one feeler pin fixed to said carrying member and projecting outside said housing;

means for yieldingly pressing said ball element against said mounting means;

means for activating said measuring element according to movement of said ball element from a neutral position thereof;

a guide element fixed to and extending along said housing in the vicinity of said ball element; and



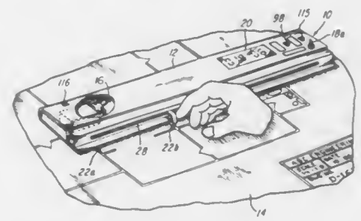
a securing element extending out of said ball element to engage said guide element to prevent said feeler pin from turning said ball element at least in said neutral position thereof, said securing element comprising a cylindrical pin whose axis extends at a right angle to an axis of said carrying member through a center point of said ball element.

4,941,267

ELECTRONIC MEASURING DEVICE AND METHOD FOR OBTAINING AN ACTUAL MEASUREMENT BETWEEN POINTS SHOWN ON A SCALED DRAWING

Ronald J. Miller, Jr., 3461 Swigart Rd., Bellbrook, Ohio 45305

Filed Jul. 31, 1989, Ser. No. 387,586
Int. Cl.[5] B43L *5/00*
U.S. Cl. 33—700 **31 Claims**



1. An electronic measuring device for determining the actual distance in feet and inches between a first point and a second point which are illustrated on a scaled drawing, said electronic measuring device comprising:

a master controller for controlling the electronic measuring device, said master controller including reset signal means capable of generating a reset signal;

calibrating means for adjustably selecting a scale of measurement;

indicia means coupled to said calibrating means for indicating the location of said first and second points on the scaled drawing;

generating means coupled to said calibrating means for

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generating a first signal corresponding to the actual measurement of the distance between the first and second points which are illustrated on the scaled drawing and as located on the drawing by the indicia means;

converting means coupled to said generating means for converting said first signal to a second signal;

first binary counter means coupled to said converting means for receiving said second signal and for generating a first binary count in response thereto;

second binary counter means for generating a second binary count;

first logic gate means operatively coupling said first binary counter means and said second binary counter means and said converting means and said master controller, whereby said second binary count is incremented when said first binary count reaches a predetermined count; and

output means coupled to said first and second binary counter means for receiving said first and second binary counts and also for outputting said actual measurement which corresponds to said first and secondary binary counts;

said output means including latch means operatively coupling said master controller and said output means, and said first and second counter means for latching said first and second binary count until said latch means receives said reset signal from said reset signal means of said master controller.

4,941,268

OIL LEVEL GAUGE

Edward F. Tausk, Downers Grove, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Feb. 2, 1989, Ser. No. 305,586
Int. Cl.[5] G01F *23/04*
U.S. Cl. 33—729 8 Claims



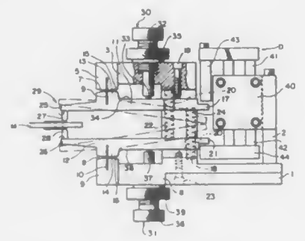
1. An oil level measuring device comprising an ullage rod including a handle attached thereto for controlling said ullage rod, a plurality of axially aligned cylindrical segments having axially aligned openings therethrough including an end segment and a base segment, said segments being unattached to each other, said base segment engaging said handle, a tension cable extending from said handle through said base segment to said end segment through said openings, and a spring for tensioning said cable, said spring and cable being disposed to bias said segments into abutting relationship, at least one of said segments defining an oil reading surface for indicating the oil level.

4,941,269

THICKNESS MEASURING APPARATUS

Sanae Mori, Nagoya; Takayosi Sasaki, Tajimi, and Takehiro Ozika, Nagoya, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Filed Aug. 3, 1989, Ser. No. 389,201
Int. Cl.[5] G01B *7/12*
U.S. Cl. 33—783 3 Claims



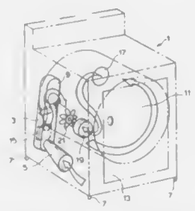
1. An apparatus for measuring a thickness of an article, comprising pivot means provided on tip ends of upper and lower arms of a generally C-shaped block; lever members pivotally mounted on said pivot means by spring elements; thickness measuring means provided on the outer ends of said lever members and having opposite measuring elements adapted to contact with said article for measurement of the thickness thereof; upper and lower spring members adapted to bias said lever members in a direction, in which said measuring elements come into contact with each other, and to act on said lever members such that a biasing force on said upper lever member is made larger than a biasing force on said lower lever member; thickness measuring devices provided on said arms and adapted to cooperate with said lever members to measure the thickness of said article; and means adapted to engage with the inner ends of said lever members to swing said lever members in a direction, in which said thickness measuring means is opened.

4,941,270

OZONE DRYER

G. E. Bud Hoffman, Brampton, Canada, assignor to 501 Geonate Holdings Inc., Brampton, Canada

Continuation-in-part of Ser. No. 98,924, Sep. 21, 1987, abandoned. This application Feb. 8, 1989, Ser. No. 307,504
Int. Cl.[5] F26B *11/04*
U.S. Cl. 34—60 3 Claims



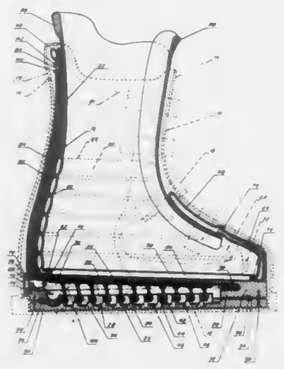
1. A domestic clothes dryer having a rearwardly exposed air intake providing a flow path for air to be circulated interiorly of said dryer, said air intake having an access region fitted with an ozone producing corona grid member positioned in said flow path so that the air is ozone charged prior to being circulated within said dryer, said corona grid member having a modular construction and being removably secured in said air intake for servicing thereof, said modular construction comprising a frame portion with an electrical grid secured in said frame portion, said electrical grid presenting a fixed position electrical contact extending out of said frame portion, said access region of said air intake comprising a door openable at said air intake, said door being provided with guide means for receiving said frame portion and said air intake including a contact closure positioned to receive said electrical contact of said electrical grid upon closing of said door with said frame portion fitted in said guide means.

4,941,271

BOOT WITH FRICTIONAL HEAT GENERATOR AND FORCED AIR CIRCULATION

Nikola Lakic, 45-191 Elm St., Indio, Calif. 92201

Filed Aug. 11, 1988, Ser. No. 230,908
Int. Cl.[5] A43B *7/02, 5/04;* **A41D** *1/00;* **A61F** *7/00*
U.S. Cl. 36—2.6 25 Claims



1. A boot having an internal, sealed air system with forced air circulation which comprises:

a. a sole formed of an outer sole and an inner sole pivotally attached together at the toe of the boot for hinged movement in response to the movements of a wearer's foot;

b. a first compartment between said outer and inner soles;

c. a flexible diaphragm extending between said inner and outer soles, enclosing and sealing said first compartment;

d. at least a second compartment located within said boot and above the inner sole thereof;

e. an air passageway means open to said first and second compartments and extending therebetween to permit free air flow between said compartments; and

f. a frictional heat generator mounted in said first compartment for movement in response to said hinged movement of said inner and outer soles, thereby providing a frictional heat generator located within said first compartment.

4,941,272

ORTHOPEDIC FOOTBRACE

Don T. Allen, 4406 Oxford Way, Norman, Okla. 73072, assignor to Don T. Allen, Norman, Okla.

Filed Jun. 30, 1989, Ser. No. 342,332
Int. Cl.[5] A43B *7/19*
U.S. Cl. 36—91 1 Claim

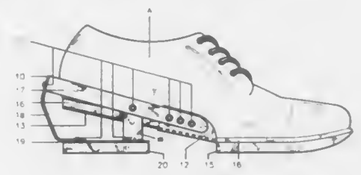
I. A foot brace (10) comprising:

an oxford-type shoe (A) having a sole (16) connected to the bottom thereof and a shoe heel portion,

an arch lift plate (12) connected to the bottom of the sole (16) at the region of the shoe arch,

A steel spring (13) connected between the sole (16) and the arch lift plate (12) to allow the shoe heel portin to flex downwardly,

an arch plate brace (17) connected to the arch lift plate (12) and extending rearwardly therefrom,



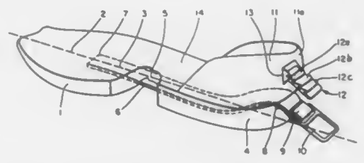
a plurality of heel plate braces (18) extending down from the arch plate brace (17) and connected to a heel plate (19) and a heel (20) connected to the heel plate (19) whereby the arch lift plate (12) is connected to the heel (20) which is disconnected from the shoe heel portion and is supported soley by the arch lift plate (12).

4,941,273

SHOE WITH AN ARTIFICIAL TENDON SYSTEM

Theodore S. Gross, Stony Brook, N.Y., assignor to Converse Inc., North Reading, Mass.

Filed Nov. 29, 1988, Ser. No. 277,680
Int. Cl.[5] A43B *5/00, 7/32*
U.S. Cl. 36—114 4 Claims



1. A shoe including an artifical tendon system, the system comprising:

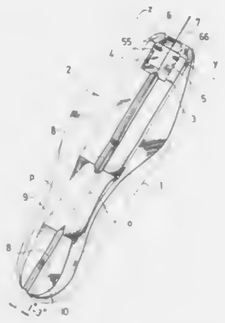
a midsole having a longitudinal axis, a heel area and a forefoot area, the midsole further including a passageway therethrough along the longitudinal axis of the midsole;

a band of elastic material, the band having one end thereof anchored proximate to the forefoot area of the midsole and extending through the passageway in the midsole, the band further including a second end; and

retaining means, disposed proximate to the heel area of the midsole, for securing the second end of the band so that the band may be secured under tension when the shoe is secured on the foot of a wearer, whereby extension of the elastic material during heel strike and early propulsion creates tension in the band which tension is released during toe off.

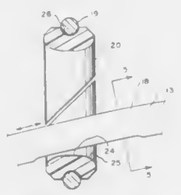
VOL 1116 ISS 3 JL 17 1990 UMI

4,941,274
CROSS COUNTRY SKIING BOOT
Frantisek Janos; Josef Storek, both of Skutec, and Ladislav Krepelka, Gottwaldov, all of Czechoslovakia, assignors to Obuvnicky prumyal SVIT statni podnik, Gottwaldov, Czechoslovakia
Filed Apr. 14, 1989, Ser. No. 339,056
Claims priority, application Czechoslovakia, Apr. 14, 1988, 2537-88
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 11 Claims



1. A ski boot, comprising:
an upper and a sole, the sole having an upper side facing the upper and a bottom side, the sole further having a longitudinal axis associated therewith, a toe region, a heel region, an inside region on one side of the longitudinal axis, and an outside region on the other side of the longitudinal axis;
ski boot binding means for pivotally binding the ski boot to a ski, the ski boot binding means located at the toe region on the sole; and
a substantially straight groove having a center extending along the deepest point in the groove, the groove formed in the bottom side of the sole and extending generally in the direction of the longitudinal axis but at a predetermined angle thereto, the center of the groove lying in the outside region of the sole and intersecting t he longitudinal axis at the toe region of the sole, in a manner which is effective to cause the heels of a skier to point toward one another when standing flat on a pair of parallel oriented standard skis.

4,941,275
SNOW GROOMER VEHICLE HYDRAULIC HOSE GUIDE
Michael G. Beeley, Logan; James D. Gittins, Smithfield, and William B. Sinykin, Logan, all of Utah, assignors to Logan Manufacturing Company, Logan, Utah
Filed Oct. 13, 1988, Ser. No. 257,279
Int. Cl.[5] E01H *4/00, 5/04*
U.S. Cl. 37—219 3 Claims



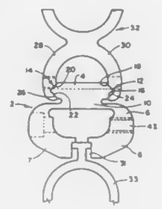
1. A device for use upon snow grooming equipment for guiding at least one hydraulic hose said hose having a longitudinal center line and a rubber-like outermost sheath, said device comprising:
a member having a surface disposed for guiding the hose by contact with a side thereof, said surface being smooth, free of geometric discontinuities, and shaped to distribute hose guiding forces over a substantial portion of the outermost sheath, to prevent highly concentrated bearing forces between the member and the sheath, said guiding member being of plastic material of substantially greater hardness than that of the sheath;
said guiding member comprising a toroidal ring with an inside surface having a diameter substantially greater than the outside diameter of the hose, the hose contact surface of said member being said inside surface thereof, said inside surface being curved transversely to the ring at opposed sides thereof so as to form curved surfaces, so as to be free of hose contacting discontinuities; wherein the hose contacting surface comprises an intermediate cylindrical portion tangentially joined with said curved surfaces at each side of the ring; the guiding member further comprising an external steel ring into which the toroidal ring is inserted and secured, said toroidal ring having an external outwardly facing circumferential groove thereabout for accepting said steel ring aid steel ring having means for its connection to the equipment; the plastic guiding member being split to facilitate its insertion into the steel ring and its removal therefrom.

4,941,276
MARKETING DISPLAY DEVICE
Donald R. Kanner, 2324 N. Greenview St., Chicago, Ill. 60614
Filed Mar. 20, 1989, Ser. No. 325,856
Int. Cl.[5] G09F *1/08*
U.S. Cl. 40—538 1 Claim



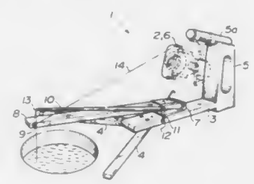
1. A three dimensional display device for facilitating the selection of sliced food according to its thickness comprising;
a display panel having a front face and a rear face,
a series of semi-circularly shaped discs projecting outwardly from the front face of the display panel,
each said disc in the series of discs being of progressively increasing thickness, and
tactually discernible indicia printed on the front face of the display panel adjacent each said disc designating numerically the relative thickness thereof,
whereby the purchace of sliced food can be easily determined beforehand by visual and tactile examination of the display.

4,941,277
MOUNT FOR FIREARM SIGHT
Joseph A. Lawlor, Rte. 1, Box 149C, Emon Valley, Pa. 16120
Filed Nov. 15, 1988, Ser. No. 271,529
Int. Cl.[5] F41G *1/387*
U.S. Cl. 42—100 26 Claims



1. A device used to carry a mount for a firearm sight, said device comprising:
an upper portion having surfaces constructed and arranged to receive mounting structure of a firearm sight;
a lower portion comprising jaw members adapted to grasp a firearm;
a central portion joining said upper portion and said lower portion, said upper, central and lower portions forming a one-piece construction; and
fastening means adapted to urge said jaw members toward one another and into a firearm grasping position,
wherein said upper portion has dimensions sufficient to give said upper portion strength to resist substantial deformation during fastening by said fastening means,
said central portion has dimensions to give said central portion sufficient strength and ductility to assure a predetermined flexibility so as not to disturb said resistance to substantial deformation of said upper portion and to allow said jaw members to self-adjust to a plurality of fastening positions during fastening by said fastening means, and
said lower portion has dimensions so as to resist substantial deformation during fastening by said fastening means.

4,941,278
VERTICAL FISHING TRIP-UP
Steve Verkuil, 32 Birch Road, Fort McMurray, Alberta, Canada (T9H 1J7)
Filed Dec. 6, 1989, Ser. No. 446,725
Int. Cl.[5] A01K *91/06*
U.S. Cl. 43—15 4 Claims



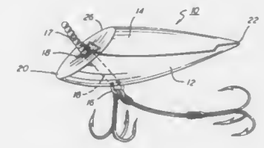
1. A device for hooking a fish which comprises:
a base member;
a fishing rod;
a generally V-shaped leaf spring, said spring having one leg thereof mounted on said base member and the other leg thereof being secured to the inner end of said rod;
a reel support means, said means being associated with said base member;
a reel having a fishing line associated therewith, said reel being mountable on said reel support means;
trigger means adapted to maintain said spring in a compressed position until a fish actuates the trigger means whereupon said spring is released and said fishing rod moves upwardly; and
a stop member associated with said fishing rod to limit the upward movement thereof.

4,941,279
FISHING LURE
Sandra G. Swanson, R.D. Box 89, Randolph, N.Y. 14772
Filed May 22, 1989, Ser. No. 354,788
Int. Cl.[5] A01K *91/02*
U.S. Cl. 43—42.22 6 Claims



1. A fishing lure, comprising
(a) an elongated body member formed of buoyant material for floating on the surface of a body of water;
(b) a weight connected with the bottom of said body member toward one end thereof, said weight serving to orient said body member in an upright position on the surface;
(c) a bait support arm connected with the other end of said body member and extending from the top thereof upwardly and rearwardly and including means at the remote end thereof adapted for connection with a fish book and the like, said support arm being formed of a rigid, bendable material, whereby the distance of said arm remote end from the surface of the body of water may be varied in accordance with the configuration of said arm; and
(d) means connected with the top of said body member adjacent said one end for attaching the lure to a fishing line, whereby when the lure is cast into the body of water, the lure will assume an upright position and suspend a fish hook, fly, or piece of bait above the water at the rear of the lure.

4,941,280
TWO-PIECE BODY FISHING LURE
George M. Rinaldi, 6 Green St., Camillus, N.Y. 13031, assignor to George Matthew Rinaldi, Camillus, N.Y.
Filed Sep. 7, 1989, Ser. No. 404,420
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—42.36 7 Claims



1. A body type fishing lure which comprises a lower body part and an upper body part that is slidably attached to said lower body part so that said upper body part is interchangeable with similar upper body parts to change the appearance of the lure, said lower body part having longitudinally oriented key-

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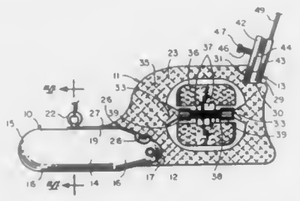
way on an upper surface thereof, and said upper body part having engaging means longitudinally oriented on a lower surface thereof slidably mating with said keyway so that said upper body part is slidably removable from said lower body part.

4,941,281

DOWNRIGGER WITH LEVERAGE LINE CLAMP AND FISH ATTRACTING MEANS

Roger H. Vitale, 3324 N. Government Way, Coeur d'Alene, Id. 83814, and Ronald F. Howard, S. 109 Neyland #3, Liberty Lake, Wash. 99019

Filed Aug. 21, 1989, Ser. No. 396,108
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.12 **15 Claims**



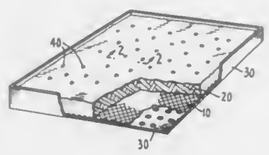
1. A troll fishing downrigger, having fish attracting means and a leveraged line clamp that releasably attaches a fishing line, comprising in combination:
an elongate body having a streamlined shaped for low drag motion in water, and means for attachment of a downrigger line in its upper portion;
a vertical stabilizing fin carried by the body and defining a medial propeller void and propeller connecting means;
a propeller having means to rotatably interconnect with the propeller connecting means of the stabilizing fin to mount the propeller for rotary motion in the propeller void; and
a line clamp, carried by the upper portion of the stabilizing fin, having
forward and rearward spaced clamp arms extending a spaced distance upwardly from the stabilizing fin with other to form clamping surfaces in their upper portions,
means to adjustably bias the clamp arms toward each other, and
an elongate line arm extending a spaced distance upwardly from the rearward clamp arm with means for releasably fastening a fishing line in the upper end portion of the line arm.

4,941,282

WILDFLOWER SOD MAT AND METHOD OF PROPAGATION

Gene Milstein, 2152 E. Montane, Golden, Colo. 80401

Filed Dec. 29, 1987, Ser. No. 139,195
Int. Cl.[5] A01C *1/04*
U.S. Cl. 47—58 **8 Claims**



1. A new and improved method of propagating wild flowers in sod mats outdoors on the ground comprising the following steps:
providing a sheet of perforated polyethylene;
positioning a sheet of polyester fabric atop said perforated polyethylene;
depositing a layer of planting medium on said perforated polyethylene polyester fabric combination;
spreading viable wild flower seed over said medium;
moistening said medium and seeds; germinating seeds in said medium, such that the roots of said seedlings mesh with the resulting perforated polyethylene sheet and polyester fabric combination forming a sod mat;
removing said mat from said perforated polyethylene polyester fabric combination;
and cutting said sod mat into sections for packaging, storage and installation.

4,941,283

SUPPORT STRUCTURE FOR MULTIPLE PLANTS

Edward Armstrong, P.O. Box 651-613, Louisa, Va. 23093

Filed Nov. 10, 1987, Ser. No. 118,896
Int. Cl.[5] A47G *7/04;* **F16M** *11/32*
U.S. Cl. 47—67 **4 Claims**



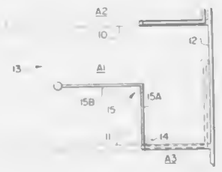
1. A method of supporting multiple plants from a plant support structure which comprises:
three legs forming a tripod, said three legs being joined at their top;
a platform attached to the top of said tripod;
a rod extending downward from the area below said platform with a suspension means attached to the free end of said rod; and
at least one set of three crossbars attached to and extending between said legs of said tripod without said crossbars extending through the central area between said legs;
wherein at least one plant is seated on said platform and at least one plant is suspended from said suspension means at the free end of said rod.

4,941,284

PARKING SPACE BARRIER

David Stoller, 904 Winnington Avenue, Ottawa, Ontario, Canada (K2B 5C7)

Filed Dec. 15, 1989, Ser. No. 451,186
Int. Cl.[5] E05F *13/00*
U.S. Cl. 49—49 **14 Claims**



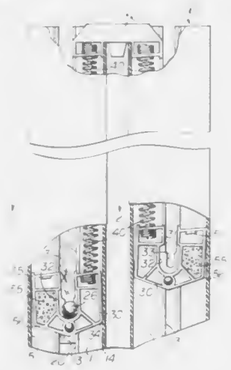
1. In a parking area having defined parking spaces, apparatus preventing unauthorized entry into selected individual ones of such spaces, said apparatus at each selected space comprising a vertical post disposed adjacent a marginal edge of the parking space, a generally L-shaped arm lying substantially in a horizontal plane, means mounting said arm adjacent one end thereof, on said post, means permitting arcuate movement of said arm about the vertical axis of said post from one to the other of two positions where in one position the legs of the L-shaped arm are aligned with two adjoining marginal edges of the parking space allowing use of the space for parking a vehicle and in the other position project into the area between the marginal edges of the parking space forming a barrier preventing a vehicle from parking in such space and means, controlled from a position remote from said apparatus selectively to cause arcuate movement of the arm from said one position to the other.

4,941,285

LIFT-OFF SHOE SYSTEM FOR TILT WINDOW

Norman R. Westfall, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Oct. 17, 1989, Ser. No. 422,669
Int. Cl.[5] E05D *15/22*
U.S. Cl. 49—176 **30 Claims**



1. A shoe system for a tilt window having a sash that moves vertically between a pair of jamb liners, tilts from the plane of said jamb liners, and has a pair of sash pins that extend into a pair of spring counterbalanced, nonlocking shoes that move vertically within said jamb liners, said shoe system comprising:
a. said shoes having top opening slots that receive said sash pins;
b. said pins having heads that interlock with said slots and prevent lateral withdrawal of said pins from said shoes; and
c. said pins being removable from said shoes only by lifting said pins upward out of said top opening slots into a region above uppermost positions of said shoes.

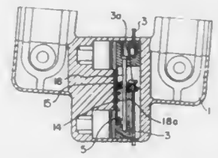
4,941,286

TENSIONING DEVICE FOR CABLE WINDOW LIFTER

Klaus Marscholl, Ehringshausen, and Thomas Medebach, Wetzlar, both of Fed. Rep. of Germany, assignors to Kuster & Co. GmbH, Ehringshausen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 400,546
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 3829680
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 **1 Claim**

1. A cable actuated window lifter, comprising:
an actuating drum mounted in the body of a vehicle,
a window drive bracket mounted for vertical adjustment in said vehicle body,
a cable actuated by said drum with a first end solidly joined to said drive and having a second end,
a tensioning device defined by a directional lock mounted on said drive bracket and connected to said second end, and said directional lock comprising:
a cogged rack,
a part displaceable relative to said rack having cog means for engaging said rack and articulated on said second end,
a compression spring surrounding said cable and located between said bracket and said displaceable part for compensation of cable elongation, said first compression



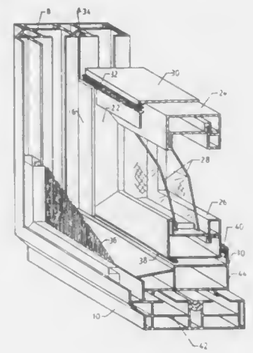
spring always stressing said displaceable part with said second cable end articulating on it in the direction of cable tautening relative to said drive bracket, and
said displaceable part comprising a small plate and said cogged rack comprising a pin with cogs, said small plate by means of an aperture slipping on said pin and engaging by means of said aperture edge said cogs of said cogged rack, and said second cable end linked in articulating manner to said small plate and acting on said compression spring which initially tips said small plate on said pin during cable elongation in the direction of cable tautening and, upon further cable elongation, forces said small plate out of a first cog and into a second cog.

4,941,287

WINDOW HAVING PIVOTAL STEP

Volker Gaelck, 114 Columbia Street West, Waterloo, Ontario, Canada (N2L 3K8)

Continuation-in-part of Ser. No. 184,592, Apr. 21, 1988, abandoned. This application Feb. 13, 1989, Ser. No. 309,134
Int. Cl.[5] E05D *15/00*
U.S. Cl. 49—455 **19 Claims**



1. A window comprising an inner sash and an outer sash slidably mounted relative to one another in a frame, each sash having releasable locking means so that each sash can be tilted relative to said frame or removed completely from said frame

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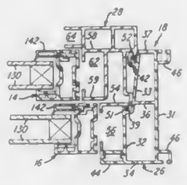
as desired for cleaning or other purposes, the inner sash having a pivotal step extending along one length of an outer surface thereof, said step having a cane-shaped cross-section with a curved portion of said cross-section seated in an arcuate channel in said frame, said step being pivotal through substantially ninety degrees so that when said outer sash has been tilted relative to said frame, said step can be rotated from a position parallel to said inner sash to a position perpendicular to said inner sash so that it will not interfere with said outer sash when it is tilted, said step being held in position parallel to said sashes when they are slidably mounted relative to one another within said frame.

4,941,288

WINDOW ASSEMBLY OF RIGID PLASTICS MATERIAL

Philip G. Morton, Germantown, Ohio, assignor to Daytoo Extruded Plastics, Inc., Springboro, Ohio

Continuation of Ser. No. 115,895, Nov. 2, 1987, Pat. No. 4,831,781. This application May 19, 1989, Ser. No. 354,497
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] E06B *1/30*
U.S. Cl. 49—504 18 Claims



1. A window assembly adapted for use in a vertical wall of a building, comprising a generally rectangular frame supporting a generally rectangular light transmitting window unit, said frame including a pair of elongated vertical jamb members connected by a horizontal head member and a horizontal sill member, each of said members being formed from an extrusion of rigid plastics material, each of said jamb members including an extruded outer section and an extruded inner section, each of said inner sections defining an inwardly facing recess for receiving said window unit, said sill member having an inclined wall portion sloping downwardly and outwardly from siad window unit, said outer sections of said jamb members each including a corresponding inclined wall portion and having a cross-sectional profile generally the same as the cross-sectional profile of said sill member, said inner sections of said jamb members disposed between said window unit and the corresponding said inclined wall portions of said outer sections, means connecting each of said inner sections to the corresponding said outer section, and said outer sections of said jamb members having mitered corner joints with said sill member and said head member.

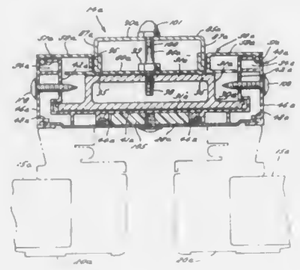
4,941,289

REFRIGERATOR DOOR FRAME WITH INSULATED MULLION

Matthew Rolek, Chicago, Ill., assignor to Ardco, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 131,182, Dec. 10, 1987, Pat. No. 4,852,303. This application Mar. 24, 1989, Ser. No. 328,472
Int. Cl.[5] E06B *1/32*
U.S. Cl. 49—504 35 Claims

1. A refrigerator door assembly mountable within the opening in the wall of a refrigerated cabinet comprising
a door mounting frame having an outer peripheral portion mountable within said cabinet opening,
a plurality of insulated doors mounted for pivotal movement on said frame,
said frame including at least one mullion extending between top and bottom sides thereof and against which said doors close,
said mullion including a first metallic structural frame member,
a plastic insulating plate positioned rearwardly of said first metallic frame member.
said mullion including a first metallic structural frame member,



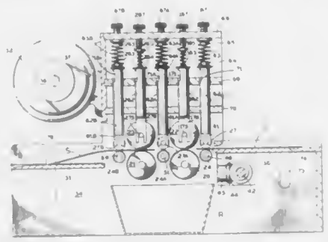
a plastic insulating plate positioned rearwardly of said first metallic frame member,
a metallic channel shaped frame member having forwardly directed legs engageable with said insulating plate, and
means extending through said plastic insulating plate positively interconnecting said first and channel shaped frame members with said plastic insulating plate interposed therebetween.

4,941,290

APPARATUS FOR REMOVING PHOTOGRAPHIC IMAGES FROM A FILM MEMBER

Robert H. Holyoke, 4001 N. Ocean Blvd., Apt. 301B, Boca Raton, Fla. 33431

Filed Jan. 23, 1989, Ser. No. 299,796
Int. Cl.[5] B24B *7/00*
U.S. Cl. 51—74 R 20 Claims



1. A photographic image removal apparatus for use with a photographic film member having photographic images on one face thereof, said apparatus comprising:
abrading roller means mounted for rotation;
means for advacing the film member tangentially past said abrading roller means at a predetermined speed along a predetermined path;
pressure roller means resiliently engaging the oppositive face of said film member and biasing said film member against said abrading roller means for scraping engagement of said abrading roller means against said one face of the film member;
and means for rotating said abrading roller means at a surface velocity several times said predetermined speed of said film member;

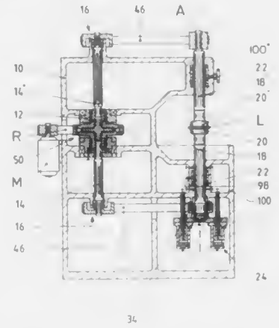
said abrading roller means comprising first and second abrading rollers spaced apart along said path of said film member and each having surface discontinuities thereon for scraping photographic images from said film member;
and said pressure roller means comprising a first set of pressure rollers located directly opposite said first abrading roller and a second set of pressure rollers located directly opposite said second abrading roller;
the pressure rollers of said first set being spaced apart axially along said first abrading roller to hold corresponding segments of the film member resiliently against said first abrading roller;
the pressure rollers of said set being spaced apart axially along said second abrading roller at remaining segments of the film member to hold said remaining segments of the film member resiliently against said second abrading roller.

4,941,291

DEVICE FOR CENTERING OF OPTIC LENSES IN A MECHANICAL MOUNTING, IN PARTICULAR DURING EDGE CUTTING AND BEVELLING

Erhard Brueck, Heuchelheim, Fed. Rep. of Germany, assignor to Wilhelm Loh Wetzlar Optikmaschinen GmbH & Co. KG, Wetzlar, Fed. Rep. of Germany

Filed Dec. 23, 1988, Ser. No. 289,903
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744116
Int. Cl.[5] B24B *5/04, 9/14;* B23B *19/02, 23/04*
U.S. Cl. 51—105 L G 10 Claims



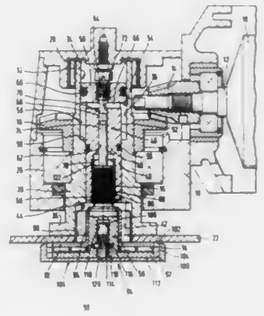
1. A device for centering optic lenses in a mechanical mounting for edge cutting and bevelling, comprising:
a housing, and means for defining at least one air bearing in said housing;
a pair of coaxially aligned guide sleeves supported in said housing, at least one said guide sleeve being radially adjustably supported in said housing by said air bearing, and support bearings provided in said guide sleeves;
a pair of coaxially aligned centering spindles rotatably and axially slidably supported on said support bearings in respective said guide sleeves, each said centering spindle having a pair of axial ends, one said end of one said centering spindle being adjacent one said end of the other said centering spindle, said adjacent ends carrying clamping cups thereon for clamping a lens therebetween;
a drive mechanism for rotating said centering spindles; and
clamping means for moving one said centering spindle and the associated said clamping cup axially toward the other said centering spindle and associated said clamping cup.

4,941,292

DEVICE FOR CLAMPING A DISC-SHAPED TOOL

Boris Rudolf, Stuttgart, and Josef Gentischer, Weinstadt, both of Fed. Rep. of Germany, assignors to C. & E. Fein GmbH & Co., Stuttgart, Fed. Rep. of Germany

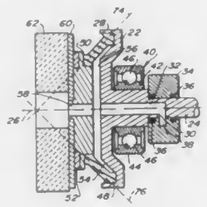
Continuation of Ser. No. 293,299, Jan. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 72,171, Jul. 10, 1987, Pat. No. 4,779,382. This application Jan. 22, 1990, Ser. No. 465,639
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800437
Int. Cl.[5] B24B *23/02*
U.S. Cl. 51—168 35 Claims



22. Device for clamping a disc-shaped tool on a motor-driven tool spindle of a portable machine tool, comprising:
a grinding disc on an angle grinder;
a clamping anchor arranged in said tool spindle which has an axial recess, said clamping anchor being axially displaceable relative to said tool spindle and rotationally fixedly connected to said tool spindle;
a clamping flange releasably attachable to the free end of said clamping anchor;
an abutment arranged at the tool end of the tool spindle;
means actuatable by a manual actuating mechanism for releasably pressing said clamping flange against said abutment, thereby clamping said tool between these, said means for releasably pressing comprising;
a first pressure cylinder including a first cavity (**56**) between said clamping anchor (**46**) and said tool spindle (**20**);
a second pressure cylinder including a second cavity (**70**) arranged in said clamping anchor (**46**) or said tool spindle (**20**); and
a connecting channel (**66**) between said two cavities (**56, 70**);
said second pressure cylinder including a piston (**68**) delimiting said second cavity (**70**), and in order to releasably clamp said tool (**22**), said piston (**68**) being adjustable and fixable in its position in which it clamps said tool (**22**) by said manual actuating mechanism from a tool end of said tool spindle (**20**);
said first cavity (**56**) defined by delimiting surfaces (**38, 54**) of said tool spindle (**20**) and said clamping anchor (**46**), with said delimiting surfaces facing one another and being arranged in axially spaced relation to one another;
said manual actuating mechanism being operable via a retaining device (**84**) for securing said clamping flange (**82**) on said clamping anchor (**46**); and
said retaining device being releasably attachable to said clamping anchor (**46**).

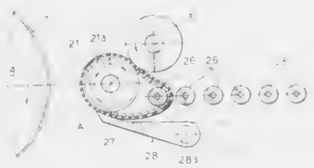
VOL 1116 ISS 3 JL 17 1990 UMI

4,941,293
FLEXIBLE ROCKING MOUNT WITH FORWARD PIVOT FOR POLISHING PAD
Donald L. Ekhoff, 2600 Day Rd., Gilroy, Calif. 95020
Filed Feb. 7, 1989, Ser. No. 307,693
Int. Cl.[5] B24B *41/00*
U.S. Cl. 51—168 10 Claims



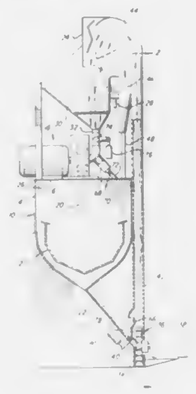
1. A mounting apparatus for a finishing member of the type frictionally contacting a planar surface to be finished, comprising,
a rotatable carrier having a face and having an axis of rotation substantially perpendicular to a planar surface to be finished, and
an annular elastomeric sleeve coaxial with said axis of rotation and coupled to said face of the carrier for supporting a finishing member on a forward side of said annular sleeve opposite to the face of the carrier, said annular member defining a rocking center on said axis of rotation for rocking of said finishing member, said rocking center being beyond the axial extent of said annular sleeve at said forward side.

4,941,294
GRINDING MACHINE FOR BELT MATERIALS
Toshio Nakagaki, Kobe, Japan, assignor to Bando Kagaku Kabushiki Kaisha, Kobe, Japan
Filed Jul. 31, 1989, Ser. No. 386,973
Claims priority, application Japan, Sep. 16, 1988, 63-233356
Int. Cl.[5] B24B *1/00, 7/06*
U.S. Cl. 51—328 5 Claims



1. A grinding machine for belt materials comprising a rotary support means for supporting a belt material to be ground, said support means having a rotatable work roll with a large diameter, a driving unit for rotating said work roll in a direction of rotation, and at least one rotatable idler shaft being provided at a predetermined distance away from the work roll, said support means being arranged to support the belt material between said work roll and said idler shaft, and said support means being arranged to face a grinding belt over a contact wheel of a belt grinder and including movement means whereby said support means and said grinding belt may be brought towards and away from each other at a point of contact, and a squeezing roll and conforming means mounted adjacent said support means and arranged to face each other on opposite sides of said point of contact between the belt material to be ground over said work roll and the grinding belt on said contact wheel, said squeezing roll being past said point of contact in said direction of rotation of the work roll, said conforming means being prior to said point of contact in said direction of rotation of the work roll, each being provided with an actuating means so that they may be forced into contact under pressure with said belt material to be ground.

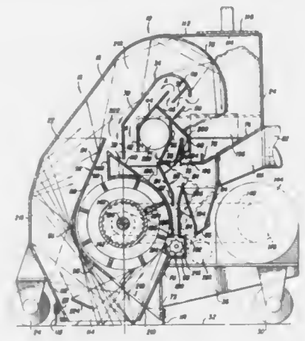
4,941,295
ABRASIVE ELEVATING APPARATUS FOR BLAST MACHINES AND METHOD OF USING
James H. Carpenter, Hagerstown, Md., assignor to Pangborn Corporation, Hagerstown, Md.
Filed Apr. 12, 1989, Ser. No. 337,158
Int. Cl.[5] B24C *9/00*
U.S. Cl. 51—425 14 Claims



1. In a blast means where used abrasive particles are collected and recirculated, an abrasive particle return system, said system comprising supply means for supplying said blast means, receiving means for receiving returning abrasive particles, a rotating abrasive particle throwing wheel in the form of an impeller having vanes radiating from a center of the wheel, the center of the wheel being located below the receiving means, delivery means between said receiving means and said throwing wheel for delivering used abrasive particles to said throwing wheel, and an elevating casing directly connected to a discharge of said throwing wheel for directly receiving abrasive particles from said throwing wheel and delivering abrasive particles to said supply means.

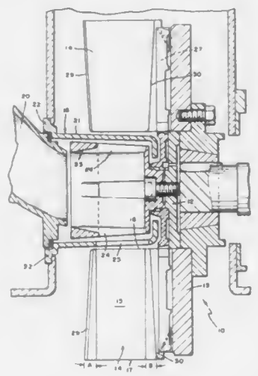
4,941,296
SURFACE CLEANER
James H. Carpenter, Hagerstown, Md., assignor to Pangborn Corporation, Hagerstown, Md.
Filed May 12, 1987, Ser. No. 48,940
Int. Cl.[5] B24C *5/06, 9/00*
U.S. Cl. 51—433 17 Claims

1. In combination with a rotating abrasive particle primary batting wheel having batting vanes with outer ends, a gravity abrasive particle supply passage for providing downwardly flowing abrasive particles, and a second batting wheel for intercepting flowing abrasive particles and batting such abrasive particles radially into said primary batting wheel between



said batting vane outer ends and into the path of each batting vane at an accelerated speed.

4,941,297
FLARED VANE FOR ABRASIVE BLASTING WHEEL
James H. Carpenter, Hagerstown, Md., assignor to Pangborn Corporation, Hagerstown, Md.
Continuation of Ser. No. 509,656, Jun. 30, 1983. This application Aug. 13, 1985, Ser. No. 765,363
Int. Cl.[5] B24C *5/06*
U.S. Cl. 51—434 11 Claims



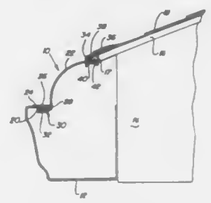
1. An abrasive blasting wheel assembly comprising a rotor, a runnerhead concentrically mounted on said rotor for rotation at a predetermined operating RPM, a plurality of spaced radially arranged abrasive particle throwing vanes, means detachably securing said vanes to the face of said runnerhead, impeller means carried by said rotor for feeding particulate abrasive material to said vanes, each of said vanes being provided with an abrasive throwing face having a radially extending centerline, said face being disposed perpendicular to the face of said runnerhead and having spaced side portions flaring away from an abrasive receiving heel end portion of said vane to a discharge end of said vane at a continuous uninterrupted flare angle in the range of 2° to 7° as measured relative to the centerline of said face from said heel end to said discharge end.

4,941,298
REAR RESERVOIR MICRO SANDBLASTER
Mark Fernwood, 1341 Camino Tassajara, and Thomas S. Blake, 881 Danville Blvd., both of Danville, Calif. 94526
Filed Sep. 28, 1988, Ser. No. 250,775
Int. Cl.[5] B24C *7/00, 5/02*
U.S. Cl. 51—438 7 Claims



1. A lightweight, hand held apparatus for abrading, polishing, cleaning, or etching the surface of an object with a stream of fluid containing a mixture of pulverulent material and a gaseous medium, comprising a hollow elongated tube constituting a handle and a nozzle having at least one orifice to discharge the afor stream of fluid against the surface, a vortex mixing chamber for mixing the gaseous medium and pulverulent material, a means of receiving a compressed gas flow and urging the gaseous flow into the vortex mixing chamber, an air and pulverulent material receiving member disposed at one end of the tube for receiving an air supply line and a pulverulent supply line, a pulverulent supply reservoir, and a means to control the flow of the pulverulent material and gaseous medium mixture, wherein the means to control the flow of the pulverulent material and gaseous medium mixture comprises a pinch lever disposed inside the hollow elongated tube, wherein the pinch lever comprises a first portion, substantially parallel to the hollow elongated tube, connected to a pinch lever button at one end and to a second portion at the other end; the second portion is disposed at an angle relative to the first portion and the connection between the first and second portions form a pivot point against the inner wall of the hollow elongated tube; the second portion is connected to a third portion wherein the third portion is disposed at an angle relative to the second portion; the third portion consists of a rounded end portion to pinch the air supply line when the pinch lever button is depressed and a passageway to allow the pulverulent supply line to pass through the third portion to prevent the pulverulent supply line from being pinched.

4,941,299
GUARD SCREEN FOR A RAIN GUTTER
Ronald L. Sweers, 6165 E. Atherton Rd., Burton, Mich. 48519
Filed Mar. 17, 1989, Ser. No. 324,801
Int. Cl.[5] E04F *13/06*
U.S. Cl. 52—12 15 Claims

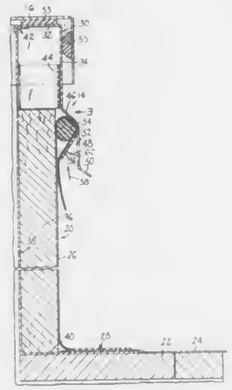


1. In combination with roof boards of a roof having shingles laid thereover and a longitudinally extending rain gutter having a front lip, a guard screen interconnecting said boards and said gutter, said screen comprising:
an elongated screen body;
an elongated channel interconnected with said screen body extending longitudinally of said screen body;

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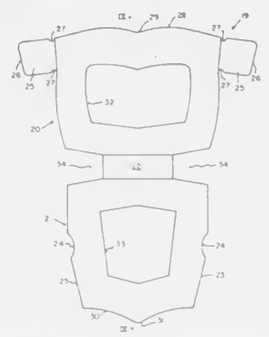
an elongated flanged member interconnected with said screen body and extending longitudinally of said screen body, said flanged member including a flange;
said channel being interconnectable with said lip of said gutter;
said flange being disposable between said shingles and said roof boards;
said roof boards including a roof edge;
said flanged member including a roof board edge abutment rib;
said roof board edge abutment rib being abuttable against said front edge of said roof boards;
said screen body being composed of sufficiently resilient material whereby tension produced from the interconnection of said channel with said lip and said abutment rib with said front edge of said roof boards causes said body to resiliently arch.

4,941,300
ROOFING MEMBRANE TO ROOF OPENING SEALING SYSTEM AND HATCHWAY EMPLOYING SAME
George Lyons, Jr., P.O. Box 892, 20 W. Middle Beach Rd., Madison, Conn. 06443
Filed Apr. 5, 1989, Ser. No. 334,192
Int. Cl.[5] E04D *13/14*
U.S. Cl. 52—58 14 Claims



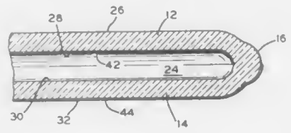
1. A sealing system for sealing between a roofing membrane and a curb around a roof opening comprising:
a cap flashing for the curb;
a top flange connected to the cap flashing and extending outwardly therefrom;
a wall flange connected to the top flange and extending downwardly therefrom whereby a filler channel is defined by the top flange, the wall flange and the curb;
a longitudinal resilient filler material sized to fit closely within the filler channel and to hold the roofing membrane; and
a plurality of spaced-apart tabs integral with the wall flange, the tabs being inwardly bendable towards the curb whereby the filler and roofing membrane may be securely retained within the filler channel.

4,941,301
ELEMENTS WITH OPENING
Rolf Schelwiller, Buolterlistrass 9, CH-6052 Hergiswil, Switzerland
Continuation of Ser. No. 120,628, Nov. 13, 1987, abandoned. This application Sep. 25, 1989, Ser. No. 412,546
Int. Cl.[5] E02D *27/00*
U.S. Cl. 52—102 12 Claims



1. A substantially sector-shaped lawn element comprising:
an upper part having an interior opening, a bottom portion and a longitudinal axis,
a lower part smaller than said upper part, said lower part having an interior opening, a top portion, lateral sides and a longitudinal axis coinciding with the longitudinal axis of said upper part, the lateral sides lying along planes forming a sector, and
a traverse connecting the bottom portion of said upper part with the top portion of said lower part,
said lawn element adapted to be joined with paving stones of corresponding shape and dimension in a seamless transition.

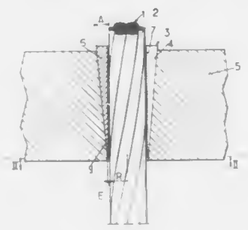
4,941,302
INSULATING DOUBLE GLAZED WINDOW ASSEMBLY
Christopher J. Barry, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio
Filed Jun. 9, 1989, Ser. No. 364,785
Int. Cl.[5] E04B *3/24*
U.S. Cl. 52—171 10 Claims



1. An insulating window assembly, said window assembly comprising:
(a) at least first and second sheets of glass spaced from one another at a width of 0.125 inch to 0.375 inch in face-to-face parallel relation, said first and second sheets of glass having opposed inwardly facing surfaces and outwardly facing surfaces;
(b) fused marginal edges wherein said first and second glass sheets are attached to one another.,
(c) at least one sealed air space, said air space disposed between said first and second glass sheets and filled with a gas; and
(d) a coating with low emissivity and high visible light transmittance applied to at least one inwardly facing surface of one of said glass sheets and applied to the outwardly facing surface of the other of said glass sheets

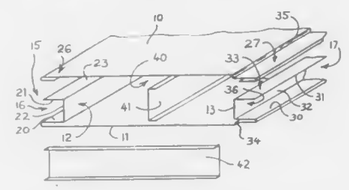
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4,941,303
ANCHORING DEVICES FOR TENSILE BRACES
Pierre Jartoux, Epernon, France, assignor to Freyssinet International (STUP), Colgnieres, France
Continuation of Ser. No. 76,403, Jul. 22, 1987, abandoned. This application Nov. 8, 1988, Ser. No. 270,432
Claims priority, application France, Jul. 31, 1986, 86 11140
Int. Cl.[5] E04C *3/10*
U.S. Cl. 52—223 L 11 Claims



1. A longitudinally split jaw for use in an anchoring device for a tensioned cable, which anchoring device has a housing with a frustoconic shaped passage formed therein, said jaw having a rough inner cylindrical surface along the entire length thereof and having an outer lateral surface of frustoconic shape such that said jaw has a tapered end and a half-angle at an apex of the outer lateral surface of the tapered end which is less than 10° and a radial thickness of an annular terminal section of said tapered end which is less than or equal to 1/10 of an inner radius of said tapered end; wherein when said jaw is positioned within the frustoconic shaped passage in the housing, the housing contiguously surrounds the totality of the tapered end of the jaw.

4,941,304
INSULATION BODY
Richard L. Lewellin, 6 Grimwade Crescent, Frankston, Victoria, 3199, Australia
Filed Aug. 17, 1989, Ser. No. 394,973
Int. Cl.[5] E04C *1/10*
U.S. Cl. 52—580 11 Claims



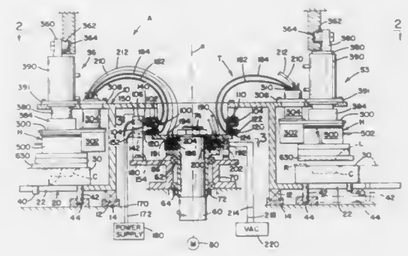
1. An insulation panel having a back face and a front face, the back and front faces being spaced apart and being generally parallel to each other, the panel including a female edge having a recessed region along its length, the panel further including a male edge located at the opposite side of the panel to the female edge and which has a male shape which is complementary to the recessed region of the female edge so as to closely fit within the female edge of an adjacent similar insulation panel, the front face having two integral webs located at and extending respectively along the female and male edges of the panel, each web extending across substantially the entire distance separating the back and front faces so as to define a cavity within the panel, the cavity having a base wall defined by the front face and two opposed side walls defined by the webs at the female and male edges of the panel so that the cavity can receive and retain an insulating material filling for the panel, the web at the female edge of the panel being shaped so as to define the recessed region, the web at the male edge of the panel being shaped so as to define the male shape, each web having an edge portion remote from the front face and which turns out of the general plane of the web, the edge portions of the webs being secured to the back face of the panel.

4,941,305
REPAIR OF EDGE DEFECTS IN BOARDS OF LUMBER OR THE LIKE
Thomas F. Cortese, 3333 Guido St., Oakland, Calif. 94602
Continuation-in-part of Ser. No. 383,448, Jul. 24, 1989, Pat. No. 4,894,971. This application Nov. 2, 1989, Ser. No. 430,378
Int. Cl.[5] E02D *37/00*; E04G *23/00*; B27G *1/00*
U.S. Cl. 52—514 17 Claims



1. A repaired board of lumber or similar material having opposite parallel major surfaces and an edge surface which extends therebetween, said board having an opening in the original material of the board that extends to said edge surface and at which a defect in the edge region of the board has been removed in the course of cutting the opening in the board, said board further having a conforming plug of filler material filling said opening, and wherein a first region of said opening extends along said board for a greater distance than a second region of the opening that is situated closer to said edge surface of said board than said first region.

4,941,306
APPARATUS AND METHOD FOR SEALING A LID ONTO A CONTAINER
George D. Pfaffmann, Farmington Hills; Norbert R. Balzer, Warren, both of Mich.; Charles S. Kubis, Palso Heights; John Walter, Evergreen Park, both of Ill.; John P. Currie, and Graham R. Adams, both of Boaz, Ala., assignors to Coatinental Can Company, Inc., Norwalk, Conn.
Filed Oct. 7, 1988, Ser. No. 254,837
Int. Cl.[5] B65B *51/22, 51/14, 7/28*
U.S. Cl. 53—306 34 Claims



1. In a device for sealing a flat lid with a lower layer of heat bondable material onto the upper, generally flat surface of a

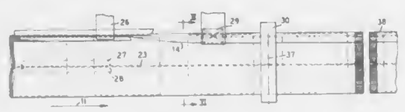
generally flat flange extending around the periphery of an access opening in a container for hermetically storing a substance susceptible to deterioration when exposed to atmosphere for a prolonged time, said device comprising: a turret having a given number of circumferentially spaced stations; means for rotating said turret about a veertical axis whereby said stations move along a generally circular path; means for loading a container filled with said substance onto a station of said turret at a first position on said path; means for locating a lid over said container at a second position on said path; and, means for heating said heat bondable material while said lid is forced against said flange at a third position on said path whereby said lid is sealed onto said flange of said container wherein said heating means including a heating unit at each of said stations and each including a downwardly facing heating ring adapted to force said lid against said flange and electrical means for causing said ring to heat said lid in a pattern defined by said ring and extending around said flange periphery whereby said heat bondable material is heated to a lid sealing temperature along said pattern at said third position of said path; said electrical means comprising an high frequency power supply fixedly mounted with respect to said rotable turret, a switch plate having a given number of circumferentially spaced contacts rotatable with said switch plate as it is rotated in unison with said turret about said axis, bus means on said turret for fixedly connecting each ring of each of said heating units at a given station to a selected contact of said switch plate and brush means connected to said high frequency power supply and including brush contacts riding on said switch plate, said given number of contacts on said switch plate being spaced to correspond with said given number of stations whereby each of said heating units is energized by said power supply for an heating cycle while said energized heating unit is in a preselected arc of said third position of said path.

4,941,307

ZIPPER GUIDE SYSTEM FOR FORM TOOLING

John Wojcik, Des Plaines, Ill., assignor to Zip-Pak Incorporated, Northbrokk, Ill.

Filed Apr. 24, 1989, Ser. No. 342,354
Int. Cl.[5] B65B *9/06, 61/18;* **B65D** *33/16*
U.S. Cl. 53—412 **12 Claims**



1. The method of enclosing a product in a package having a reclosable zipper thereon, comprising the steps:

providing a continuous sheet of plastic film with reclosable rib and groove fastener profiles extending therealong parallel to the formation axis of the film with the profiles interlocked to form a flattened closure;

feeding the sheet forwardly along the formation axis and guidingly wrapping the sheet around an object to be wrapped;

simultaneously guiding the interlocked flattened closure to an upright position relative to the object;

thereafter flattening the flattened closure against the outer surface of a wall of the object;

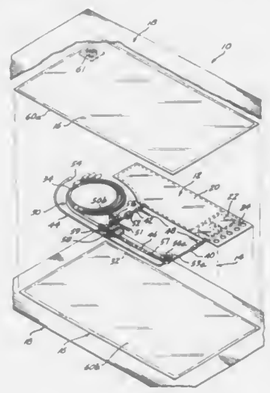
and cross-sealing the film at the ends of the object locking the flattened profile to the package end.

4,941,308

METHOD OF PACKAGING FOR A STERILIZABLE CAIJ3PATABLE MEDICAL DEVICE

Richard W. Grabenkort, Bearrington, Ill.; Scott P. Huntley, Concord, Calif., and Sheldon M. Wecker, Libertyville, Ill., rasignors to Abbott ' aboratories, Abbott Park, Jll.

Division of Ser. No. 224,425, Jul. 25, 1988, Pat. No. 4,863,016.
This application Mar. 16, 1989, Ser. No. 324,181
Int. Cl.[5] B65B *55/10, 55/22, 11/58*
U.S. Cl. 53—425 **15 Claims**



1. A method of packaging a medical device comprising a hydratable sensor component, the method comprising the steps of:

disposing the sensor component within plumbing means adapted to reversibly establish fluid communication between a first reservoir, the sensor component, and a second reservoir, said first reservoir being substantially filled with a hydration solution suitable for hydrating the sensor component and said second reservoir being substantially evacuated, or between the sensor component and the ambient environment of said plumbing means; and,

sealing said medical device, said plumbing means, and said reservoirs within a wrap comprising a gas-permeable surface providing gaseous communication between the ambient environment of said wrap and the ambient environment of said plumbing means.

4,941,309

PANEL PACKAGING SYSTEM

Stewart L. Fluent, Cedar Falls; Colin Hart, Waterloo, both of Iowa; Charles D. McCree, King of Prussia, and Charles F. Lotsch, Audubon, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.

Filed Mar. 2, 1989, Ser. No. 317,744
Int. Cl.[5] B65B *35/50*
U.S. Cl. 53—544 **12 Claims**

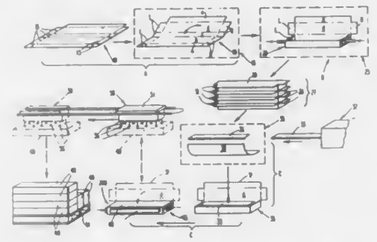
1. A panel packaging system wherein pre-determined corrugated paper blanks having score lines therein are formed into six-sided containers of pre-specified dimensions with a lid part still open and stacked adjacent a panel packing machine to be sequentially moved from a transfer area and filled by said machine with a predetermined number of extruded panels, closed completely and securely, and stacked on a pallet for shipment, comprising:

a. first folding means next to a plurality of corrugated paper blanks to fold substantially each of said blanks at predetermined score lines between individual sections thereof to preform a panel container;

b. second means to fold end sections of the preformed container, adjacent said first means, and having first glueing means and first securing means therein to securely and sealingly close the end sections and form a six-sided container having an opened lid section;

c. first moving means to move a plurality of lid-open, empty, containers to a first, pre-determined position, adjacent receiving means to receive a plurality of panels;

d. means adjacent said first moving means to receive at least one lid-open container and position said container in a pre-determined position, and further, to sequentially receive a pre-determined number of panels consecutively in a first orientation, re-orient a panel and combine said panel



with a second panel and pack said combined panels into one of said at least one container to fill said container;

e. second moving means adjacent said receiving means to move said filled container to a second, predetermined position where second glueing means and second securing means force the container lid section into conformance with the container body;

f. palletizing means suspended from above said second glueing and securing means to move said closed container from the second, predetermined position to a predetermined location on a pallet;

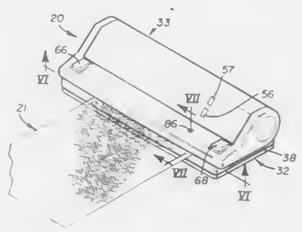
g. computer control means connected to said receiving means, said second moving means and said palletizing means to provide timing control thereto.

4,941,310

APPARATUS FOR VACUUM SEALING PLASTIC BAGS

Hanns J. Kristen, San Anselmo, Calif., assignor to Tillia Aktiengesellschaft, Vaduz, Fed. Rep. of Germany

Filed Mar. 31, 1989, Ser. No. 332,504
Int. Cl.[5] B65B *31/02*
U.S. Cl. 53—512 **38 Claims**



1. An apparatus for vacuum sealing a plastic bag having overlying first and second panels defining an evacuative chamber and overlying heat sealable panel portions terminating at an open end of said bag communicating with said evacuative chamber, said apparatus comprising

a base defining an upper support surface adapted to receive the open end and sealable panel portions of said bag thereon,

a hood mounted on said base and movable to a closed position to position a frontal side thereof over the open end and sealable panel portions of said bag, said hood and base defining a vacuum chamber means therebetween having a width extending from a frontal side of said apparatus that is sized to only receive the open end of said bag in exposed relationship therein and to position remaining portions of said bag exteriorly of said apparatus,

static seal means circumventing said vacuum chamber means and disposed between said base and said hood for directly engaging outer surfaces of the sealable panel portions of said bag in response to movement of said hood to its closed position to form a static seal isolating only the open end of said bag and said vacuum chamber means from ambient and to maintain the open end of said bag in communication with the evacuative chamber thereof,

evacuation means communicating with said vacuum chamber means for selectively evacuating said vacuum chamber means and the evacuative chamber of said bag, and

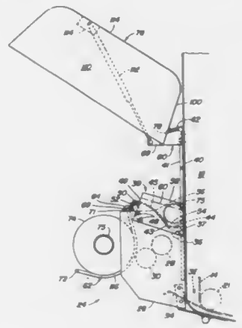
heat sealing means, including a heating element mounted forwardly on one of said base and said hood, for selectively forming an air-tight heat seal across the sealable panel portions of said bag to maintain said vacuum within the evacuative chamber of said bag.

4,941,311

WRAP MATERIAL ROLL HOUSING COVER HAVING SEALED HINGE JOINT AND GAS SPRING BIASING MEANS

William A. Ardueser, Ottumwa; George W. Rumph, Bloomfield, and Henry D. Anstey, Ottumwa, all of Iowa, assignors to Deere & Company, Moline, Ill.

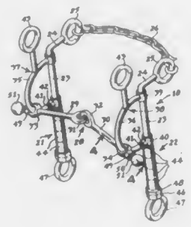
Filed Jun. 23, 1989, Ser. No. 370,555
Int. Cl.[5] B65B *11/04*
U.S. Cl. 53—587 **5 Claims**



1. In a large round baler including support structure adjacent a bale-forming chamber, a bale wrapping mechanism mounted to the support structure and including a wrap material supply roll housing adapted for holding a supply roll from which wrap material is pulled during wrapping a bale located in the chamber, the improvement comprising: said housing including a generally upright first wall extending transversely across the bale-forming chamber and including an upper end portion defined by a flange extending away from said chamber; an upwardly facing wrap material roll support wall disposed below the flange and arranged for supporting a roll of bale surface wrap material in a zone adjacent the first wall and below said flange; a cover defined by top, bottom, opposite side and an upright second wall joined together to define an open face and for enclosing a roll of wrap material located in

said zone when the cover is in a closed position, the face then being closed by said first upright wall; and hinge means pivotally connecting said cover to said support structure for pivotal movement about a horizontal transverse axis between said closed position, wherein said top wall has an upper surface portion sealingly engaged with an under surface portion of the flange of the upright first wall and an open position wherein said open face is directed away from said first upright wall.

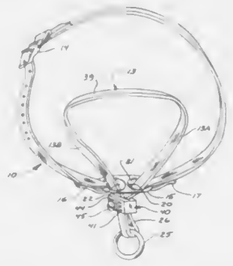
4,941,312
BRIDLE BIT
Ralph N. Old, Sr., Rte. 3, Box 311, Smithville, Tenn. 37166
Filed Jan. 17, 1989, Ser. No. 296,949
Int. Cl.[5] B68B *1/06*
U.S. Cl. 54—8 **12 Claims**



1. A bit for a bridle having a cheek piece and reins, comprising:
(a) a pair of opposed rein lever members and a mouthpiece interconnecting said rein lever members,
(b) each of said rein lever members comprising an elongated shaft having an upper end portion and a lower end portion,
(c) means for connecting said lower end portions to the corresponding reins of a bridle,
(d) said mouthpiece comprising a broken snaffle bit member having outer end portions,
(e) said mouthpiece further comprising a connector member for each shaft having an elongated shank portion and journal means connecting each said connector member to a corresponding said shaft for swiveling movement of said shank portion about the longitudinal axis of said corresponding shaft,
(f) coupling means connecting each outer end portion of said bit member to a corresponding shank portion for pivotal and axial movement of said bit member relative to said shank portions, and
(g) means for connecting said mouthpiece to the cheek piece of said bridle.

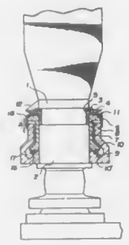
4,941,313
HUMANE TRAINING AID WITH ADJUSTABLE MUZZLE LOOP HAVING AN ADJUSTABLE LOCKING DEVICE
Robert K. Anderson, Roseville; Ruth E. Foster, Minneapolis, and Bertyl W. Carlson, Richfield, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Continuation-in-part of Ser. No. 169,294, Mar. 17, 1988, which is a division of Ser. No. 922,157, Oct. 23, 1986, Pat. No. 4,741,288, which is a continuation-in-part of Ser. No. 719,692, Oct. 4, 1985, Pat. No. 4,621,591. This application Jul. 22, 1988, Ser. No. 223,157
The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.
Int. Cl.[5] B68B *1/02*
U.S. Cl. 54—24 **6 Claims**

1. A combination collar and muzzle humane training aid for a dog having a neck, head, eyes, a lower jaw and a muzzle extending forwardly from the eyes, said humane training aid comprising:
an adjustable collar adapted to fit closely around the neck of a dog on which the humane training aid is placed, and to fit close to the head;
a ring carried by such said collar, said ring being mounted at a position underneath the neck of a dog on which the adjustable collar of the training aid is mounted immediately to the rear of the lower jaw;
a muzzle loop freely slidably passing through said ring and of size to form a loop over a muzzle and immediately adjacent and forward of, eyes of a dog on which the humane training aid is placed, said muzzle loop having a



portion extending below the ring, comprising a pair of lower strap portions; and
an adjustable lock means on the lower strap portions of the muzzle loop below the ring, said lock means including a housing receiving both of said lower strap portions, and means for affixing the strap portions to each other and for securing the lock means at a fixed location thereon, said lock means being prevented from passing through the ring, to thereby fix the size of the muzzle loop portions passing over a muzzle relative to the ring without restraining free movement of the muzzle loop as the lock means is moved away from the ring to apply pressure to a muzzle of a dog wearing the humane training aid.

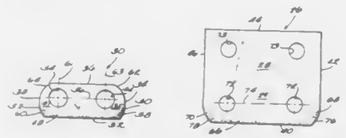
4,941,314
APPARATUS FOR TREATING TAIL YARN IN TEXTILE SPINDLE ASSEMBLY
Kunimitsu Odawara, Hiroshima, Japan, assignor to Odaware Industry Co., Ltd., Hiroshima, Japan
Filed Aug. 16, 1989, Ser. No. 394,577
Claims priority, application Japan, Aug. 31, 1988, 63-113492
Int. Cl.[5] D01H *1/38*
U.S. Cl. 57—299 **4 Claims**



1 An apparatus for treating a tail yarn in a textile spindle assembly having a spindle with a base portion, said apparatus comprising:

an upper slit ring fixedly mounted on the base portion of the spindle,
a cylindrical member having a lower slit ring at an upper end thereof and a lower portion outwardly expandable by centrifugal force, and
a guiding surface fixed on a lower part of said base portion of the spindle,
said cylindrical member being axially slidably mounted on said base portion of the spindle beneath said upper slit ring such that a lower end of the expandable lower portion thereof is in contact with said guiding surface,
said upper slit ring and said lower slit ring being pressed together to form a tail yarn gripping means,
said lower portion of said cylindrical member being expandable in the presence of a centrifugal force to cause said cylindrical member to slide axially downward to release a pressed state between said upper slit ring and said lower slit ring,
spring means for positively restoring said lower portion of said cylindrical member from an expanded state to an initial state upon standstill of the spindle, and
said lower portion of said cylindrical member being split by a plurality of slits.

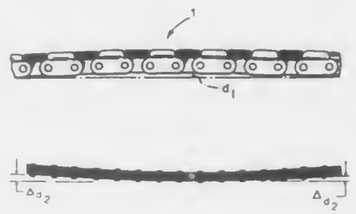
4,941,315
WEAR RESISTANT CHAIN FOR TRENCHERS
John H. Thuerman, West Allis, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.
Filed Feb. 13, 1989, Ser. No. 310,240
Int. Cl.[5] F16G *13/08*
U.S. Cl. 59—78 **47 Claims**



1. A chain comprising a plurality of chain links joined together by chain pins, at least one of the chain links including a sidebar having a first edge adapted to be supported in sliding contact with a supporting surface, said first edge being generally linear and extending in the direction of movement of the chain with respect to the support surface, and the sidebar including an opposite edge spaced from and generally parallel to said first edge, a trailing end having a first pitch hole therethrough and a leading end having a second pitch hole therethrough, the pitch holes housing said chain pins, and at least one of the leading end and the trailing end of the sidebar including an induction hardened portion adjacent the first edge.

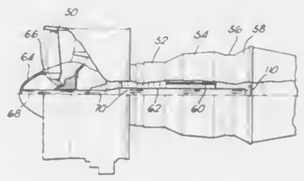
4,941,316
CHAIN ASSEMBLY
Stephen K. Bechtold, 306 Ocean Ave., Northport, N.Y. 11768
Division of Ser. No. 96,947, Sep. 15, 1987, Pat. No. 4,878,345. This application Apr. 3, 1989, Ser. No. 332,468
Int. Cl.[5] F16G *13/20*
U.S. Cl. 59—78 **5 Claims**

1. A chain for opening a window or the like, comprising:
a plurality of interconnected links, each of said links including a plate portion and a flange portion extending at an angle with respect to said plate portion, each of said links being formed from a non-corrosive material which is not amenable to overbending;
a pair of openings extending through said plate portions of each of said links, said openings each having a diameter, the diameter of said openings being formed with tolerances not exceeding 0.00025 inch;
a plurality of rivets extending, respectively, through each of said openings and connecting said links, each of said rivets including first and second heads connected by a substantially straight, cylindrical shank, said rivets being formed from cylindrical blanks, the diameters of said blanks being within tolerances of 0.00025 inch;
said links being constructed and interconnected so as to provide longitudinal rigidity so that said interconnected



so links can be used to push a window or the like, to provide lateral flexibility to conform to an arcuate path traversed by a swinging window or the like, and to provide longitudinal flexibility to allow each of said interconnected links to freely rotate about said respective rivets between a first position providing said longitudinal rigidity and a second position wherein said interconnected links assume a curved configuration.

4,941,317
NOSE BULLET ANTI-ICING FOR GAS TURBINE ENGINES
Paul C. Ivey, West Chester, Ohio, and John M. Owen, Brighton, England, assignors to Rolls-Royce plc and Ruston Gas Turbines Limited, both of, England
Filed Apr. 13, 1989, Ser. No. 337,468
Claims priority, application United Kingdom, Apr. 14, 1988, 8806785
Int. Cl.[5] F02C *7/047*
U.S. Cl. 60—39.093 **7 Claims**



1. In a gas turbine engine which has a rotating nose bullet assembly, a rotating hollow tube which is effectively blanked off at the front end by the nose bullet assembly and is open at the rear end, an anti-icing system in which hot gas is caused to flow along the axis of the tube towards the nose bullet assembly to heat the nose bullet assembly and is cooled thereby, and the cooled air is caused to flow back along the tube towards the open end as a radially outer flow, and means for supplying hot gas to the open end of the tube, the improvement comprising flow inducing means located adjacent the open end of the tube, the flow inducing means having an inlet for receiving swirling inflowing hot gas, and flow directing means for redirecting the inflowing hot gas along the axis of the tube, the flow directing means comprising a plurality of stationary vanes which have a portion extending radially and a portion extending an axial direction towards the open end of the tube.

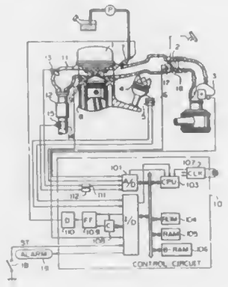
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4,941,318

AIR-FUEL RATIO FEEDBACK CONTROL SYSTEM HAVING SHORT-CIRCUIT DETECTION FOR AIR-FUEL RATIO SENSOR

Hiroki Matsuoka, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 27, 1989, Ser. No. 316,031
Claims priority, application Japan, Mar. 1, 1988, 63-45910
Int. Cl.[5] F02D *41/22, 41/14*
U.S. Cl. 60—274 34 Claims



1. A method for controlling an air-fuel ratio in an internal combustion engine having a catalyst converter for removing pollutants in the exhaust gas thereof, upstream-side and downstream-side air-fuel ratio sensors disposed upstream and downstream, respectively, of said catalyst converter, for detecting a concentration of a specific component in the exhaust gas, and a pull-up type input circuit for supplying a differential current to said downstream-side air-fuel ratio sensor and receiving an output of said downstream side air-fuel ratio sensor, comprising the steps of:

determining whether or not the output of said pull-up type input circuit is lower than a predetermined activation level;

determining that said downstream-side air-fuel ratio sensor is in an activated state after the output of said pull-up type input circuit is lower than said predetermined active level;

adjusting an actual air-fuel ratio in accordance with the outputs of said upstream-side and downstream-side air-fuel ratio sensors when said downstream-side air-fuel ratio sensor is in an activation state;

determining whether or not said downstream-side air-fuel ratio sensor is short-circuited; and

prohibiting the adjustment of said actual air-fuel ratio by the output of said downstream-side air-fuel ratio sensor when said downstream-side air-fuel ratio sensor is short-circuited.

4,941,319

ENGINE CONTROL DEVICE

Hitoshi Yamamoto; Takumi Tottori, and Masayuki Toriyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

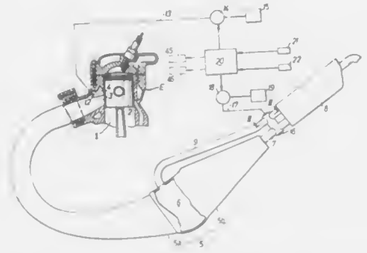
Filed Sep. 29, 1988, Ser. No. 251,593
Claims priority, application Japan, Sep. 30, 1987, 62-247678; Oct. 5, 1987, 62-251107
Int. Cl.[5] F02B *27/02*
U.S. Cl. 60—314 16 Claims

1. An engine control apparatus for controlling a two-cycle internal combustion engine having at least one cylinder with an exhaust port connected to an exhaust pipe comprising:

a pivotally mounted exhaust control valve disposed adjacent to the exhaust port, said exhaust valve reversably pivotable partially into the exhaust port to control engine exhaust timing;

a first servo motor mechanically linked to said exhaust valve for selectively pivoting said exhaust valve into a desired position in said exhaust port;

means for timing pressure pulses in the exhaust pipe comprising a frustro-conical reflector disposed within said exhaust pipe, said reflector having a larger end facing oncoming exhaust gas flow, and said reflector axially displaceable within the exhaust pipe;



a second servo motor mechanically linked to said reflector for selectively positioning said reflector within the exhaust pipe to adjust timing of exhaust pressure pulses; and

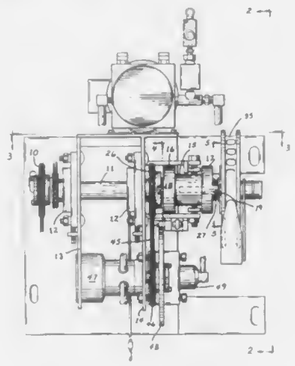
a controller connected to said first and second servo motors, said controller receiving at least engine speed and throttle opening information and controlling said first and second servo motors to position said exhaust valve and said reflector, respectively, to desired positions based at least in part on the engine speed and throttle opening information.

4,941,320

INDUSTRIAL HYDRAULIC DOOR OPERATOR

Otto E. Kersten, Milwaukee; Jack E. Moll, New Berlin, both of Wis., and George C. Balbach, Lake Forest, Ill., assignors to ASI Technologies, Inc., Milwaukee, Wis.

Filed Jun. 17, 1988, Ser. No. 208,938
Int. Cl.[5] E06B *9/204, 9/209*; F16D *1/02*
U.S. Cl. 60—437 5 Claims



1. A door operator for opening and closing a door, comprising:

a drive shaft connectable to the door to move the door between open and closed positions;

a bi-directional hydraulic motor driven by a pump and connectable by a power train to the drive shaft;

an hydraulic brake connectable with the power train;

control means for controlling the direction and duration of operation of the hydraulic motor and for engaging the brake whenever the motor is not provided with fluid under pressure from the pump;

a shiftable quill for connecting the power train to the drive shaft;

a manually operable wheel alternatively connectable to the drive shaft by the shiftable quill;

shift means for manually moving the shiftable quill between a position in which the power train is connected to the drive shaft and an alternate position in which the wheel is connected to the drive shaft, the shift means comprising a shifting fork that is engageable with the quill upon pulling of a cable connected to the fork, said fork being spring biased to a normal position out of engagement with the quill; and

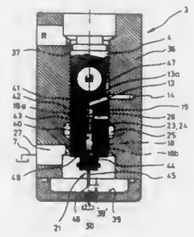
a switch actuated by the cable to disable the control means whenever the cable is pulled.

4,941,321

DIRECTIONAL CONTROL WITH LOAD-SENSING PASSAGE CONTROLLED BY THROTTLING NON-RETURN VALVE HAVING ADJUSTABLE BIASING SPRING

Rudolf Brunner, Baldham b. Munich, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein Fabrik Fur Oelhydraulik GmbH & Co.K, Fed. Rep. of Germany

Filed Mar. 6, 1989, Ser. No. 320,076
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 3807583
Int. Cl.[5] F15B *13/02*
U.S. Cl. 60—468 8 Claims



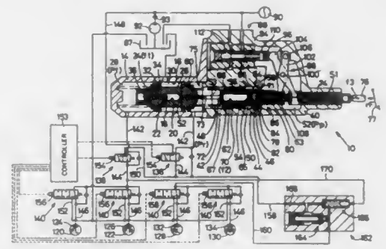
1. A hydraulic control apparatus (1) comprising at least one directional control valve (3, 3*a*) which is arranged in front of a consumer (2, 2*a*) and whose control member (4, 4*a*) shuts off at least one consumer line (5, 5*a*, 5*b*) in a neutral position (0) and alternately connects same in two control position (a, b) to a pump line (6) fed from a source of pressure (P) or to a return line (7), a pressure compensation valve (8) which is connected to said pump line and which, for the purpose of returning the pressure medium that is not required by said consumer, includes a slide (10) which is spring-loaded towards the shut-off position, a control line circuit (S) which is connected to said pump line and which includes a first control line (12) leading from said pump line to a relief connection (11) connected in said neutral position to said return line, a second control line (14) connected to said first control line (12) for connecting the spring side of said slide (10) of said pressure compensation valve (8) to at least one load-pressure sensing connection (13) of said directional control valve (3, 3*a*) and a third control line (15) at another side of said slide (10) of said pressure compensation valve (8), said load-pressure sensing connection (13) being connected to said consumer line in at least one control position (a), a first throttle point (16) in said first control line (12) whose input pressure acts via said third control line (15) on said slide (10) against the spring load, and a second throttle point (17, 17*a*) provided between said load-pressure sensing connection and the connection point (12*a*) of said first and second control lines, whose input pressure can be raised during adjustment of said control member (4, 4*a*) from said neutral position (0) and transmitted to the spring side of said slide (10), said second throttle point (17) controlling the flow from said second control line (14) through said load-pressure sensing connection (13) to said consumer line (5) and there being at least one nonreturn valve (19) which includes a spring (18) operative in the closing direction and which opens in the direction of flow towards said consumer line (5), characterized in that said spring (18) is biased in proportion to a lift movement of said control member and in an infinitely variable manner at least over a portion of the lift path of said control member (4) from said neutral position (0) into the position connecting said pump line and said consumer line.

4,941,322

TANDEM MASTER CYLINDER WITH VALVED HYDRAULIC POWER BOOSTER FLUID PASSAGE IN PISTON

Yoshihisa Nomura, and Noboru Noguchi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 20, 1988, Ser. No. 208,585
Claims priority, application Japan, Jun. 25, 1987, 62-158157
Int. Cl.[5] B60T *13/14, 13/58, 8/44*
U.S. Cl. 60—547.1 21 Claims



1. A hydraulically operated braking system wherein a presser piston, and an input piston operated by a brake operating mechanism are fluid tightly and slidably fitted in a housing such that said presser and input pistons cooperate with said housing to define a pressure chamber in front of said presser piston, and a power chamber between said presser and input pistons, said power chamber being supplied with a brake fluid which is delivered from an external hydraulic power source, through a control valve which is operated based on a relative movement between said presser and input pistons, whereby a power pressure in said power chamber is controlled, said pressure chamber being connected to at least one brake cylinder of a first braking arrangement, while said power chamber is connected to at least one brake cylinder of a second braking arrangement, wherein the improvement comprises:

an auxiliary piston fluid tightly and slidably fitted in said housing such that said power chamber is divided into a first chamber between said presser and auxiliary pistons, and a second chamber between said auxiliary and input pistons;

a connecting mechanism connecting said auxiliary and presser pistons such that said connecting mechanism permits said auxiliary piston to approach said presser piston, and such that said auxiliary and presser pistons are normally spaced apart from each other by a predetermined maximum distance;

said auxiliary piston having a communication passage formed therethrough for fluid communication between said first and second chambers;

a shut-off valve provided in said communication passage, and having a closed position in which said communication passage is closed in a first state of said auxiliary and input

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pistons in which said auxiliary and input pistons are advanced as a unit in abutting contact with each other, and an open position in which said communication passage is open in a second state of said auxiliary and input pistons other than said first state;

check means disposed in parallel to said shut-off valve, and permitting a flow of the brake fluid in a first direction from said second chamber to said first chamber while inhibiting a flow of the brake fluid in a second direction opposite to said first direction;

said at least one brake cylinder of said second braking arrangement being connected to said first chamber, wherein said at least one brake cylinder of said first braking arrangement and said at least one brake cylinder of said second braking arrangement are activated by an operating force acting on said brake operating mechanism, which is imparted to said auxiliary piston through said input piston, when said power pressure is not obtained in said power chamber.

4,941,323

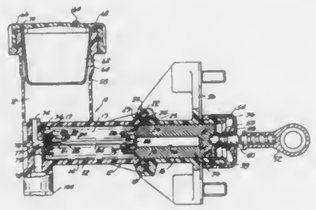
HYDRAULIC CYLINDER PROVIDED WITH A SEAL-LESS PISTON

Keith V. Leigh-Monstevens, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

Continuation of Ser. No. 112,047, Oct. 2, 1987, abandoned, which is a continuation of Ser. No. 830,272, Feb. 18, 1986, abandoned. This application Apr. 19, 1989, Ser. No. 339,966

Int. Cl.[5] B60T *11/236*

U.S. Cl. 60—589 6 Claims



1. A hydraulic cylinder comprising:

(A) a rear elongated housing member formed as a molded plastic member and defining an elongated smooth cylindrical rear bore of a predetermined diameter and open at its front end;

(B) a front elongated housing member formed as a molded plastic member and closed at its front end by a front end wall and defining an elongated smooth front cylindrical bore of said predetermined diameter and open at its rear end;

(C) a piston having an elongated cylindrical main body portion defining a smooth uninterrupted cylindrical surface devoid of seal grooves and having substantially said predetermined diameter;

(D) coacting means operative to couple the rear end of said front housing member to the front end of said rear housing member with said bores coaxially aligned, the front of said rear bore juxtaposed to the rear of said front bore to define a smooth, continuous piston bore of said predetermined diameter slidably receiving said piston, and an annular groove defined between the rear end of said front bore and the front end of said rear bore and opening into said piston bore;

(E) an annular seal positioned in said groove with its inner periphery in sliding and sealing engagement with said smooth cylindrical surface of said piston main body portion;

(F) means defining an extreme rearwardly retracted position of said piston within said piston bore in which the front end of said piston cylindrical surface extends forwardly at least as far as said groove so that said seal maintains constant sealing engagement with said piston cylindrical surface irrespective of the reciprocal position of said piston in said piston bore;

(G) a pressure chamber in said piston bore forwardly of the front end of said piston;

(H) a rod extending through the rear end of said housing member for attachment to the rear end of said piston;

(I) a reservoir of fluid;

(J) a reservoir port in said front end wall of said front housing member opening in said pressure chamber;

(K) a fluid passageway interconnecting said reservoir and said reservoir port;

(L) a valving rod;

(M) means connecting said valving rod to the front end of said piston with said rod extending forwardly from said piston centrally within said pressure chamber;

(N) a valve head on the front end of said valving rod for valving coaction with said reservoir port; and

(O) a discharge port in said front housing proximate said front end of said front housing and opening in said pressure chamber independently of, and at a location spaced from, said reservoir port.

4,941,324

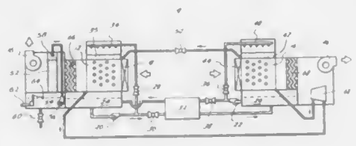
HYBRID VAPOR-COMPRESSION/LIQUID DESICCANT AIR CONDITIONER

John L. Peterson, 1203 W. Creek Loop, Round Rock, Tex. 78681, and John R. Howell, 3200 Kerby La., Austin, Tex. 78703

Filed Sep. 12, 1989, Ser. No. 405,624

Int. Cl.[5] F25B *17/00*

U.S. Cl. 62—94 13 Claims



10. A hybrid air conditioning system comprising:

a refrigerant;

a liquid desiccant;

an evaporator for receiving liquid desiccant, refrigerant, and warm moist air, and for expelling liquid desiccant, refrigerant, and cool dry air;

an evaporator housing having a first and second opening defining a horizontal evaporator air flow path through said evaporator;

a first fan mechanism placed within said evaporator air flow path near said second opening for horizontally drawing warm moist air into the evaporator at said first opening and for horizontally drawing cool dry air from the evaporator at said second opening;

a first entrainment separator configured within said evaporator air flow path near said second opening, said first entrainment separator having means for separating liquid desiccant from air within said evaporator air flow path;

a humidifier configured within said evaporator air flow path between said first entrainment separator and said first fan mechanism, said humidifier having means for adding moisture to air within the horizontal evaporator air flow path;

a condenser for receiving liquid desiccant, refrigerant, and dry air, and for expelling liquid desiccant, refrigerant, and hot moist air;

a condenser housing having a first and second opening defining a horizontal condenser air flow path through said condenser;

a second fan mechanism placed within said condenser air flow path near said second opening for horizontally drawing dry air into the condenser at said first opening and for horizontally drawing hot moist air from the condenser at said second opening;

a second entrainment separator configured within said condenser air flow path near said condenser, said second entrainment separator having means for separating liquid desiccant from air within said condenser air flow path;

each of said evaporator and condenser having a heat and mass exchanger comprising:

(I) a plurality of horizontally extending refrigerant tubes extending the length of said condenser or evaporator through which refrigerant is circulated;

(II) a plurality of substantially planar fins extending the height of said condenser or evaporator, the planar surface of each fin being perpendicularly traversed by said plurality of refrigerant tubes;

(III) a horizontal air flow path extending perpendicular to said horizontally extending refrigerant tubes and along the planar surface of each said planar fin;

(IV) a distribution media configured above said refrigerant tubes and said fins for distributing said liquid desiccant vertically down and across the surface of said fins;

(V) a sump configured below said refrigerant tubes and said fins for receiving downward flowing liquid desiccant;

means for circulating said refrigerant within the horizontally extending refrigerant tubes and between said condenser and evaporator; and

means for pumping said liquid desiccant within said evaporator and within said condenser and between the sump of said evaporator and the sump of said condenser.

4,941,325

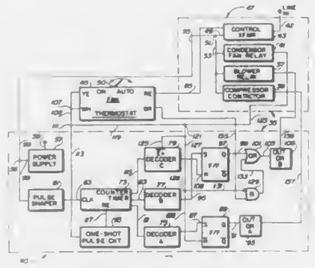
ENERGY EFFICIENT ELECTRONIC CONTROL SYSTEM FOR AIR-CONDITIONING AND HEAT PUMP SYSTEMS

Douglas J. Nuding, 1320 E. Crescent Cir., Mesa, Ariz. 85204

Filed Sep. 6, 1989, Ser. No. 402,850

Int. Cl.[5] F25D *17/00*

U.S. Cl. 62—158 20 Claims



1. In conventional air-conditioning and heat pump systems normally including a compressor means, a compressor motor for operating said compressor means, a compressor contactor for turning said compressor motor on and off, an evaporator means, a conditioned air delivery blower fan, a blower fan motor for driving said blower fan, a blower relay for turning said blower fan motor on and off, a condenser means, a condenser fan, a condenser fan motor for driving said condenser fan, a condenser fan relay for turning said condenser fan motor on and off, a control transformer for converting sixty-cycle AC line voltage to control voltage AC power, an air duct system for delivering conditioned air and returning spent air from an area to be conditioned or controlled, a thermostat for automatic temperature control, and an improved energy efficient control system comprising:

first circuit means responsive to said thermostat indicating a need for conditioned air for initially energizing said condenser fan relay to turn on said condenser fan motor and drive said condenser fan for pre-cooling said condenser means and for preventing a high pressure or high stress compressor start-up;

second circuit means responsive to the elapse of a first predetermined period of time after the initiation of said pre-cooling of said condenser for energizing said compressor contactor to start said compressor motor for pre-cooling said evaporator, and a portion of the air in said duct system, for preventing a reverse temperature gain, for shortening the air production or "on" cycle time, and for providing protection for the compressor and the compressor motor;

third circuit means responsive to the elapse of second predetermined period of time after said first predetermined period of time for energizing said blower fan relay for driving said blower fan and supplying conditioned air to the area to be conditioned via said air duct system so as to initially deliver a built-up volume of conditioned air while providing additional protection for the blower fan and blower motor; and

fourth circuit means responsive to a third predetermined period of time after said first and second predetermined periods of time and after said condenser motor and said compressor motor cycles off in response to a signal from said thermostat indicating that the user-selected temperature has been attained, for maintaining said blower fan on until substantially all conditioned air remaining in said ductwork system and said evaporator has been delivered and for turning said blower fan motor off at the expiration of said third predetermined period of time.

4,941,326

AIR CONDITIONER HAVING OUTDOOR AIR INTRODUCING MECHANISM

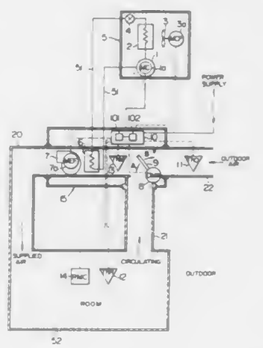
Toyo Sumi; Motoshi Miyanaka, both of Shimizu; Keiji Sato, Shizuoka, and Yoshiki Hayata, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1988, Ser. No. 260,773

Claims priority, application Japan, Nov. 2, 1987, 62-275756

Int. Cl.[5] F25D *17/00*

U.S. Cl. 62—180 2 Claims



1. An air conditioner comprising:

an outdoor unit having a compressor a condenser and an expansion valve;

an indoor unit having an evaporator, piping connected to deliver air to a room and to receive exhausted room air

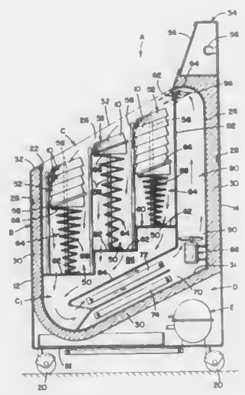
and to receive outside air, and an indoor fan to control air delivery into a room;
duct means for receiving both outside air and exhausted room air thereby to provide mixed air;
a damper disposed in an air flow path to said indoor fan;
control apparatus having an input circuit connected to receive signals related to room air temperature, outside air temperature and mixed air temperature;
a memory circuit for storing a room temperature set point, a mixed air temperature initial set point, an outdoor-air-cooling-changeover outdoor air temperature set point, and a damper minimum opening set point; and
an arithmetic processing section and a control circuit for controlling the operation of opening or closing said damper by comparing the room temperature with a room temperature set point, the outdoor air temperature with an outdoor-air-cooling-changeover outdoor air temperature set point, and the mixed air temperature with a mixed air temperature initial set point, by using an altered mixed air temperature set point higher than the mixed air temperature set point if a state in which the room temperature is lower than the room temperature set point has continued for a certain period of time, and by using another altered set point obtained by reducing the mixed air temperature set point if a state in which the room temperature is higher than the room temperature set point has continued for a certain period of time.

4,941,327

COMPACT FOOD PACKAGE DISPLAY REFRIGERATOR

Milton C. Miles, Aurora, Ohio, assignor to FreshNes Foods Corporation, Solon, Ohio

Filed Jul. 24, 1989, Ser. No. 383,704
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—246 17 Claims



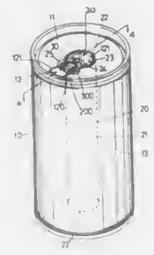
1. A compact retail display refrigerator for displaying refrigerated, like form, food packages maintained at super chilled temperatures, said refrigerator comprising a small size cabinet having an open top, front and back walls, a pair of side walls, and a bottom wall, said cabinet being provided with an upper inner refrigeration compartment containing a plurality of vertically extending guideways arranged in an orthogonal row array for supporting a plurality of stacks of the food packages in spaced apart orthogonal relation therein for progressive upward step-by-step movement in the guideways, said guideways each comprised of a plurality of vertically extending spaced guide pins upstanding from a perforated base support plate spaced above the said bottom wall of the cabinet to define a lower refrigerated compartment portion therein including a bottom cooling chamber portion, self-acting spring loaded lift devices mounted within the respective said guideways for supporting the said stacks of food packages therein in rested position on said lift devices and continuously urging them upwardly in their respective said guideways to locate the existing topmost package in each stack at an exposed predetermined selection level at the open top of the cabinet, refrigerating mechanism including cooling coil means located within said bottom cooling chamber portion for providing chilled air at the said super chilled temperatures, and chilled air flow creating means including a vertical air duct located at the back of said cabinet and provided with a closed top end and an air circulating electric fan located within said cooling chamber adjacent the open bottom end of said air duct for forcing the said chilled air from said cooling chamber portion upwardly through said air duct to the top of the cabinet and directing a horizontally flattened stream of the chilled air forwardly across the tops of the said row array of package stacks and downwardly therebetween to maintain the individual packages at the said super chilled temperatures.

4,941,328

METAL CAN ENDS WITH METAL PULL TABS BONDED THERETO

Lai-Fa Sheu, No. 8, Alley 8, Lane 26, Sec. 3, Tay-Ho Rd., Changhua City, Taiwan

Filed Jul. 7, 1989, Ser. No. 376,677
Int. Cl.[5] F25D *3/10*
U.S. Cl. 62—294 3 Claims



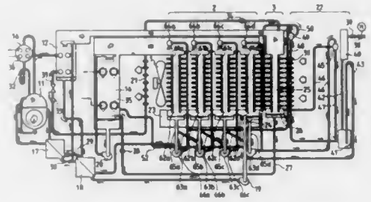
1. A metal can with two closed ends having a metal tube installed therein which contains a compressed cooling medium, said metal tube having a closed end and an open end sealed to one of said closed ends of the can, said one of said closed ends of said can being provided with a first score line defining a first area thereof which is to be detached from said can by tearing along said first score line to provide a common access, including a first access to an interior of said metal can and a second access to an interior of said metal tube, and a metal pull tab attached to an upper side of said first area, characterized in that said one of said closed ends of said can has a C-shaped score line formed within said first area thereof defining a second area which has a nondetachable portion bendably connected to said first area, said second area being adapted to be detached from said can by tearing along said C-shaped score line in a first direction from said first access to said second access so as to form an aperture above said open end of said metal tube, said pull tab being attached to an upper side of said second area away from said nondetachable portion, and a second score line formed on said metal tube defining an arcuate area adjacent said open end of said metal tube having a nondetachable portion perpendicularly connected to a lower side of said first area, said arcuate area of said metal tube being adapted to be torn away from said metal tube by tearing along said second score line with said nondetachable portion thereof attaching to said lower side of said first area so as to facilitate a detachment from said can of said first area in a second direction opposed to said first direction after said second area is pulled up.

4,941,329

DOUBLE EFFECT AIR-COOLED ABSORPTION REFRIGERATING MACHINE

Kouji Imura, Shimoinayoshi; Tomihisa Ohuchi, Tsukuba; Kyoji Kohno; Tamio Shimizu, both of Shimoinayoshi, and Michihiko Aizawa, Ushiku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1989, Ser. No. 316,941
Claims priority, application Japan, Mar. 4, 1988, 63-49522
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 9 Claims



1. A double effect air-cooled absorption refrigerating machine utilizing a vacuum pressure as an operational pressure and having components comprising at least an evaporator, a vertical pipe type air-cooled absorber, a vertical pipe-type air-cooled condenser, a high-temperature regenerator, a low-temperature regenerator, a solution heat exchanger, pipings for connecting operatively these components and a plurality of fans for supplying cooling air to said air-cooled condenser, wherein

said plurality of fans are disposed on an upper wall face which, together with a lower wall face and side wall faces, constitute a hexahedron shaped outside frame of a machine body, said air-cooled absorber having an air-cooled heat exchanger which is disposed on two adjacent side wall faces, said air-cooled condenser having an air-cooled heat exchanger which is disposed on one side wall face of remaining side wall faces, and said evaporator, said high-temperature regenerator, said low-temperature regenerator, said solution heat exchanger and said pipings for connecting operatively these components are disposed respectively on an inner portion of the machine body so as to be surrounded by said air-cooled absorber and said air-cooled condenser.

4,941,330

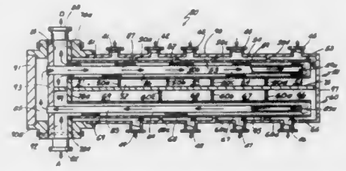
MULTI-STAGE FLASH EVAPORATOR

William R. Williamson, 8310 Pilgrim Rd., Pensacola, Fla. 32504

Division of Ser. No. 732,861, May 10, 1985, Pat. No. 4,731,164, which is a continuation-in-part of Ser. No. 617,760, Jun. 6, 1984, Pat. No. 4,548,257, which is a continuation of Ser. No. 350,804, Feb. 22, 1982, abandoned. This application Dec. 17, 1987, Ser. No. 134,318
Int. Cl.[5] F25B *39/02*
U.S. Cl. 62—515 4 Claims

1. A FREON heat pump having a FREON condenser, said condenser including:

a. a substantially horizontal outer shell having an elongated center section, and having a first tube sheet closure a closed distal end;
b. at least one externally finned tubular sheath member having a closed end adjacent but spaced from said closed distal end of said shell and an open end facing said first tube sheet closure of said shell;
c. means for forming a first fluid flow zone between the outer surfaces of said finned sheath and said shell wherein said first fluid is condensed;
d. an insulating plastic bayonet tube concentrically positioned in at least one of said sheaths, said bayonet tube piercing said first tube sheet closure, and having an outer portion extending at least through said first tube sheet closure and an inner portion terminating in an open end space from said closed end of said sheath;



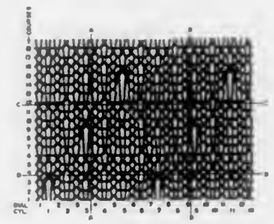
e. means for forming a second fluid flow zone wherein said second fluid is heated in turbulent flow, said second fluid flow zone including the annulus formed between said bayonet tube and the inner surface of said sheath;
f. means for directing said second fluid into said bayonet tube in the direction of said open end of said bayonet tube; and
g. means for removing said heated second fluid from said second fluid flow zone.

4,941,331

METHOD OF PRODUCING DOUBLE KNIT FABRIC WITH HOLES THERETHROUGH AND KNITTED COLOR BANDS

Andre Cournoyer, Ste Rosalie; Serge Berard, and Denis Cote, both of St-Hyacinthe, all of Canada, assignors to Sport Maska Inc., St-Hyacinthe, Canada

Continuation of Ser. No. 937,084, Dec. 2, 1986, abandoned. This application Feb. 17, 1989, Ser. No. 312,307
Claims priority, application Canada, Nov. 27, 1986, 523976
Int. Cl.[5] D04B *9/06*
U.S. Cl. 66—25 3 Claims



1. The method of producing a double-knit fabric for use in a sports garment to allow control of body heat with respect to perspiration of the player wearing same, the fabric incorporating holes therethrough on a knitting machine equipped with dial and cylinder needles, comprising the steps of:

knitting a pattern in at least four consecutive courses in alternance one cylinder and one dial wave in a pattern of four wales of each,
a sequence of steps in a first cylinder wale comprises knitting a welt stitch in the first course, two consecutive tuck stitches in the second and third course to form a hole, and a knit stitch in the fourth course, concurrently knitting in an adjacent second cylinder wale, a knit stitch in the first course, and a welt stitch in the second, third, and fourth courses, concurrently knitting in an adjacent third cylinder wale, a welt stitch in the first, second, and third

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courses, and a knit stitch in the fourth course, and concurrently knitting in an adjacent fourth cylinder wale, a knit stitch in the first course and a welt stitch in the second, third, and fourth courses,

concurrently knitting in a first dial wale a sequence of a welt stitch in the first course and a knit stitch in the second, third, and fourth courses, concurrently knitting in an adjacent second dial wale, a welt stitch in the first course, and a knit stitch in the second, third, and fourth courses, concurrently knitting in an adjacent third dial wale, a welt stitch in the first course and a knit stitch in the second, third, and fourth courses, and concurrently knitting in an adjacent fourth dial wale, a welt stitch in the first course, and a knit stitch in the second, third, and fourth courses, and

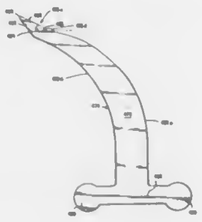
repeating said pattern to form a series of holes throughout the fabric in diagonal linear arrangement through the fabric.

4,941,332

CIRCULAR WEFT KNITTING MACHINE SINKER

E. C. Tibbals, Jr., Rt. 2, Box 386, High Point, N.C. 27260

Division of Ser. No. 810,361, Mar. 24, 1986, Pat. No. 4,811,572, which is a division of Ser. No. 398,303, Jul. 14, 1982, Pat. No. 4,608,839. This application Aug. 5, 1988, Ser. No. 228,956
Int. Cl.[5] D04B *15/06*
U.S. Cl. 66—104 **4 Claims**



1. A sinker element for two dimensional displacement in a circular knitting machine comprising,

a curved planar body portion having a convex and a concave contoured defining marginal edge and terminating in a selectively shaped multilanded point means at one terminal end thereof and in a transversely disposed cross arm at the other terminal end thereof,

a cam butt disposed at each extending end of said cross arm,

said selectively shaped multilanded point means being formed by a first essentially straight marginal edge segment serving as a first land disposed above and at an obtuse angle relative to the end portion of the convex contoured marginal edge of said body portion which serves as a second land,

one end portion of said first land being disposed in overhanging spaced relation with at least a portion of said second land with an arcuate recess disposed intermediate said first and second lands.

4,941,333

CENTRIFUGALLY DRAINING SINGLE DRUM WASHING MACHINE

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Jan. 31, 1989, Ser. No. 304,968
Int. Cl.[5] D06F *23/02, 25/00, 37/06, 39/08*
U.S. Cl. 68—19.2 **26 Claims**

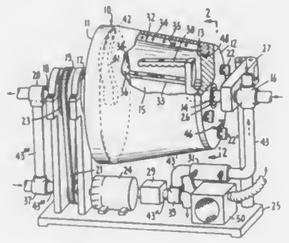
1. A washing machine comprising:

a drum including a frustum shaped, substantially liquid impermeable interior wall, a back end, and a front end opposite the back end, a perforated panel mounted inside the drum such that the perforated panel is substantially parallel to and spaced away from the back end, and a fluid tight door mounted in the drum for providing access to the interior of the drum;

means for supporting and rotating the drum about a horizontal axis of rotation passing substantially through the center of the back end and the center of the front end of the drum;

an outlet passing through the back end of the drum, the outlet being substantially aligned with the horizontal axis;

an inlet passing through the front end of the drum, the inlet being substantially aligned with the horizontal axis of rotation;



a liquid removing means attached to the outlet and located between the back end and the perforated panel; and

a plurality of ribs mounted inside the drum and axially extending substantially from the perforate panel to the front end, the washing machine having a wash cycle and a spin cycle, wherein the drum rotating means rotates the drum in one direction during the wash cycle such that when the drum contains water and garments the first side of the ribs will agitate the water and garments, and wherein the drum rotating means rotates the drum in an opposite direction during the spin cycle such that the garments and water will contact the second side of the ribs.

4,941,334

DOOR LOCKING ARRANGEMENT

Aaron M. Fish, Hampstead, and Hariharan Somasundaram, Ville St. Laurent, both of Canada, assignors to Ilco Unican Inc., Montreal, Canada

Filed Jan. 31, 1989, Ser. No. 304,247
Int. Cl.[5] E05B *43/00*
U.S. Cl. 70—214 **5 Claims**



1. A door locking arrangement including a permutation lock having a control shaft extending therefrom, and an actuating means for effecting retraction of a latch member, and comprising:

a clutch system having a drive member, a latch actuating member and a permutation lock reset member, said latch actuating member and said permutation lock reset member being disposed on either side of said drive member;

said drive member being operatively connected to said actuating means to rotate therewith;

wherein, said drive member drives said latch actuating member, to retract said latch member, when a correct combination has been inserted in said permutation lock; and

said drive member drives said permutation lock reset member to reset said permutation lock, when either an incorrect combination, or no combination at all, has been inserted in said permutation lock;

link means operatively connecting both said latch actuating member and said permutation lock reset member to said control shaft;

whereby, said link means operatively connects said actuating means to said control shaft either through said drive member and said latch actuating member when the correct combination has been inserted into said permutation lock, or through said drive member and said permutation lock resetting member when an incorrect combination has been inserted in said permutation lock;

said link means being symmetrically disposed;

said link means comprising:

a first drive link pivotally connected, at one end thereof, to said permutation lock reset member;

a second drive link pivotally connected, at one end thereof, to said latch actuating member;

a first transfer link pivotally connected, at one end thereof, to the other end of said first drive link;

a second transfer link pivotally connected, at one end thereof, to the other end of said second drive link;

the other end of said first transfer link being pivotally connected to the other end of said second transfer link;

a dummy link pivotally connected, at one end thereof, to both said first drive link, at the other end thereof, and said first transfer link, at the one end thereof, the other end of said dummy link being pivotally mounted on said control shaft for pivoting thereabout;

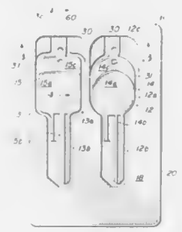
a control shaft link pivotally connected, at one end thereof, to said second drive link at the other end thereof, and said second transfer link, at the one end thereof, the other end of said control shaft link being fixedly coupled to said control shaft such that said control shaft link will pivot with rotation of said control shaft.

4,941,335

COMBINATION KEY AND KEY HOLDER

Bobby H. Allen, Louisville, Ky., assignor to Mitsubishi Corporation, Tokyo, Japan

Filed May 3, 1988, Ser. No. 189,954
Int. Cl.[5] A47G *29/10*
U.S. Cl. 70—458 **13 Claims**



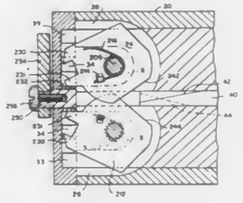
1. A molded plastic key and carrier combination comprising a card-like molded plastic carrier having top and bottom spaced apart surfaces, said carrier having a generally key-shaped recess therein, a molded plastic key blank adapted to be received in said recess, said recess having a portion thereof formed with a planar top surface substantially parallel to the carrier top surface opposed to a planar surface portion of said key and said planar surface portions provided with complementary snap connector means allowing said key to be snapped to said card and to be removed therefrom at least one of the connector means projecting outwardly from one of said planar surface portions.

4,941,336

LOCK MECHANISM

Edward T. Steckler, 124 Hershey Mill Rd., Apt. A-1, Mountville, Pa. 17554

Filed Mar. 9, 1988, Ser. No. 166,008
Int. Cl.[5] E05B *29/02*
U.S. Cl. 70—365 **9 Claims**



1. A lock mechanism comprising

a. a hollow cylindrical housing having an outer surface, an inner surface and at least one longitudinal groove cut into its inner surface,

b. a face plate having a key hole therein and attached to one end of the housing,

c. a cylinder having a longitudinal keyway and inserted into the housing, so that the keyway is aligned with the key hole,

d. an endpiece having a face and attached at its face to the housing opposite the face plate and having at least one circumferential groove and at least one radial groove cut in its face,

e. four tumblers

(i) pivotably mounted at approximately 90° intervals to the cylinder on an axis transverse the cylinder,

(ii) having a locking edge sized and positioned so as to extend into the longitudinal groove in the housing when the tumbler is in a locked position, and to be within the cylinder when the tumbler is in an unlocked position,

(iii) having at least one tab sized and positioned so as to fit within a radial groove of the endpiece when the tumbler is in a locked position and to align with and be capable of traveling through a circumferential groove in the endpiece when the tumbler is in an unlocked position, and

(iv) having a keying edge which has a given slope relative to a center line through the keyway and which extends into the keyway, said tumblers being sized and positioned to be able to pivot from a locked position to an unlocked position; and

f. a resilient means attached to the tumbler to bias the tumbler toward a locked position.

4,941,337

METHOD OF MAKING THREADED FASTENERS

Ralph S. Emery, Bridgnorth, Great Britain, assignor to Austin Rover Group Limited, United Kingdom

Filed Jun. 30, 1989, Ser. No. 375,145

Claims priority, application United Kingdom, Jul. 11, 1988, 8816444

Int. Cl.[5] **B21H** *3/02*; **B21K** *1/46, 1/56*

U.S. Cl. 72—88 **7 Claims**



1. A method of making a threaded fastener including the steps of:

drawing from a material of suitable material properties a wire of appropriate diameter;

testing at least a length of the so formed wire to determine the tensile strength thereof;

cutting the wire into blanks of appropriate length according to the desired length of threaded fastener being made;

forming an appropriate external thread form on a portion of each of said blanks; and

forming at least one substantially circumferential groove in a shank portion of each of the blanks the depth of which groove is dependent upon the tensile strength of the length of wire tested and is such that the effective stress area thereby produced is lens than the minimum effective stress area of the external thread form and is such that the yield of the threaded fastener occurs in use in the region of the or each groove at a predetermined applied load.

4,941,338

DEVICE FOR COLD FORMING OF FERROUS AND NON-FERROUS METAL SECTIONS

Walter Späth, Radolfzell, Fed. Rep. of Germany, assignor to Spath GmbH & Co. KG, Steisslingen, Fed. Rep. of Germany

PCT No. PCT/EP87/00284, § 371 Date Mar. 18, 1988, § 102(e) Date Mar. 18, 1988, PCT Pub. No. WO87/07537, PCT Pub. Date Dec. 17, 1987

PCT Filed Jan. 2, 1987, Ser. No. 180,865

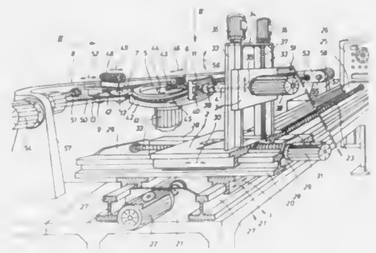
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1986, 3618701

Int. Cl.[5] **B21D** *7/04*

U.S. Cl. 72—151 **13 Claims**

1. In a device for cold forming a metal section having a bend line from an initially essentially straight metal section having a first end, a region to be formed, and a second end, by first pretensioning the metal section and then bending the thus pretensioned metal section, the improvement comprising:

a machine frame; a first clamp attached to the machine frame, adapted to clamp the first end of the metal section; a table; a form block mounted to the table, where the form block has an external perimeter which basically matches the bend line of the formed metal section; a second clamp attached to the table and adapted to clamp the second end of the metal section; means for mounting and controlling movement of said form block and said table along three spatially related axis (X, Y, and Z); at least one back-lash free die roller adjustably mounted, in the region to be formed, opposite the form block for controlled radial



movement relative to the table for pressing the region to be formed against the form block; and means for controlling the radial movement of the die roller in controlled synchronization with the controlled three dimensional movement of said form block.

4,941,339

TOOL BITS AND METHOD OF SHAPING

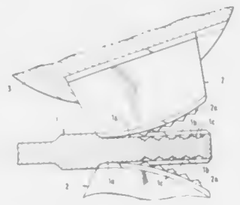
Dieter Soehnlein, Kaufering; Dieter Wirths; Anton Knoller, both of Landsberg am Lech, and Peter Kunert, Kaufering, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed May 23, 1989, Ser. No. 355,566

Claims priority, application Fed. Rep. of Germany, May 25, 1988, 3817680

Int. Cl.[5] **B21K** *5/10*

U.S. Cl. 72—189 **6 Claims**



1. A method of shaping grooves in an axially extending insertion end of a tool having an outside surface, such as a drill bit or a chisel bit, the insertion end to be inserted into a drive unit and having a free end surface, comprising the steps of forming the grooves inwardly of the outside surface by moving a grooving tool, relative to the insertion end, in contact with and in the axial direction of the insertion end with the groove having a base spaced inwardly of the outside surface, rolling a plurality of spaced grooves simultaneously, and in the step of forming the grooves, shaping the base of the grooves and forming stop faces extending transversely of the axial direction of the insertion end and being effective as stop faces in the axial direction of the insertion end with adjoining stop faces extending angularly relative to one another and to the axis of the insertion end.

4,941,340

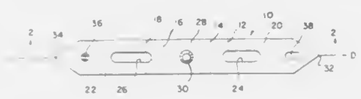
METHOD OF FABRICATING WALL FASTENERS

Thomas E. Nowak, Elk Grove Village; Edward J. Smith, Arlington Heights, both of Ill., and Eustathios Vassiliou, 12 S. Townview La., Newark, Del. 19711, assignors to E. Vassiliou, Newark, Del.

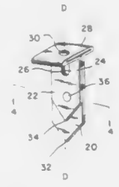
Continuation of Ser. No. 281,445, Dec. 8, 1988, abandoned, which is a division of Ser. No. 85,154, Aug. 14, 1987, Pat. No. 4,874,277, which is a continuation-in-part of Ser. No. 1,756, Jan. 9, 1987, Pat. No. 4,765,788. This application Jan. 4, 1990, Ser. No. 436,137

Int. Cl.[5] **B21G** *3/26*

U.S. Cl. 72—379.2 **3 Claims**







1. A method for producing a wall fastener of the type comprising a thin, sheet metal anchor having a substantially flat head head portion and a hole therethrough, said hole having an axis extending through and contained in the plane of a substantially flat neck adjacent the head, the neck including an elongated opening therethrough extending in the plane of the neck the full length along the axis, first and second thin, flat sheet metal spreadable anchoring blades extending from the neck in the direction of the axis, co-planar with the neck, each having an inner and an outer surface, the inner surface of the first blade adjacent to the inner surface of the second blade, at least one of said blades terminating in a point, the method comprising the steps of:

shaping, cutting, folding and heat treating to harden a thin malleable sheet of metal, the improvement wherein comprises

forming distinct complementary, disengageable engaging means on each of said first and second blades, the engaging means comprising complementary engaging surfaces on each of said engaging means in a plane substantially perpendicular to the plane of the blade, and, to present separation of the blades during the heat treating step,

engaging said complementary engaging means prior to the heat treating step with a force sufficient to hold said blades with their inner surfaces adjacent to each other during the heat treatment and hardening steps, but insufficient to prevent the spreading of the blades upon insertion of a fastener thereinbetween.

4,941,341

PROCESS AND APPARATUS FOR COLD PRESSING A CONICAL EXTERNAL THREAD

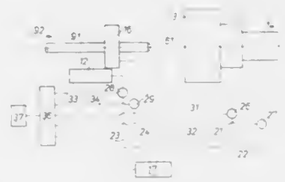
Urs Kellner, Hüttenackerstrasse 10, CH-8712 Stäfa, Switzerland

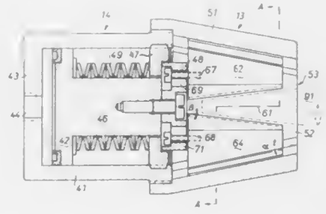
Filed Jan. 23, 1989, Ser. No. 300,489

Claims priority, application Canada, Aug. 26, 1988, 3190/88

Int. Cl.[5] **B21K** *1/56*

U.S. Cl. 72—402 **16 Claims**





5. Apparatus for cold pressing a conical external thread on the end of a cylindrical workpiece through multiple pressing steps comprising:

(a) a press tool having a guide sleeve defining a conical inner space having a longitudinal axis,

(b) a plurality of dies, having radially inner surfaces with lateral edges, displaceably mounted along generating lines of said inner space,

(c) a pressure plate fastened to said dies and movable in the longitudinal direction of the inner space, said dies fastened to said pressure plate in a manner allowing radial movement of said dies and said radial movement bounded by said guide sleeve and said dies lateral edges;

(d) holding means for holding a workpiece in said longitudinal axis of said conical inner space of said guide sleeve;

(e) feed means, for displacing said holding means and the press tool relative to one another along said longitudinal axis of said conical inner space through at least one presettable distance;

(f) rotating means for rotating said press tool about said longitudinal axis of said conical inner space through a presettable angle, and

(g) control means for causing said feed means to move said workpiece into said conical inner space while said dies are radially displaced, causing said dies to move radially inward until said lateral edges meet whereby said workpiece is pressed, causing said dies to be retracted from said workpiece, causing said rotating means to rotate said press tool through said presettable angle and causing said dies to again press said workpiece whereby any burr resulting from the previous pressing is pressed.

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4,941,342

MULTI-RAM FORGING ASSEMBLY

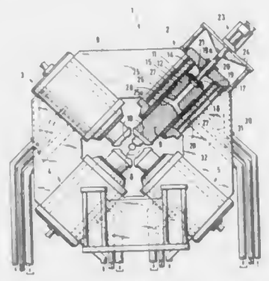
Otto Herndl, Leverkusen, and Werner Schiller, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Eumuco Aktiengesellschaft fur Maschinenbau, Fed. Rep. of Germany

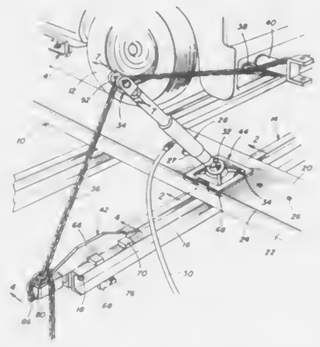
Filed Jan. 31, 1989, Ser. No. 304,276

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1988, 3803632

Int. Cl.[5] B21J *9/12*

U.S. Cl. 72—402 **11 Claims**





1. In a multi-ram forging assembly having a piston-cylinder unit for driving each ram carrying a forging tool wherein at least two diametrically opposed forging tools simultaneously act on a workpiece, each piston-cylinder unit comprising:

(a) a pressurized inlet chamber for containing a hydraulic pressure fluid at a predetermined pressure behind piston means movably disposed in a cylinder, said piston means including a front-end ram means for carrying a forging tool,

(b) valve means disposed on the piston means at a rear side opposite to the front-end ram means,

(c) said valve means including valve seat means and valve cone means having a closed position and an open position,

(d) actuator means connected to move the valve cone means between said closed and open positions,

(e) the piston means including a passage bore extending from the valve seat means to a pressure fluid discharge means located in the cylinder,

(f) pressure fluid inlet means for maintaining the predetermined pressure in the pressure fluid medium within the inlet chamber in advance of the valve seat means,

(g) means for connecting said pressure fluid discharge means to a hydraulic pressure fluid reservoir container providing a pressureless discharge of the pressure fluid, and

(h) a piston return pressure chamber within the cylinder to cause the return of the piston means under the action of a pressure fluid having a selected predetermined pressure maintained within said piston return pressure chamber.

4,941,343

METHOD AND APPARATUS FOR STRAIGHTENING VEHICLE BODIES AND FRAMES

Joe L. Stancato, 2051 Wales Ave., N.W., Massillon, Ohio 44646

Filed Apr. 30, 1984, Ser. No. 605,217

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—447 **16 Claims**

1. In a vehicle frame straightening apparatus utilizing a hydraulic ram and a flexible chain connected to a vehicle component to be straightened, that improvement comprising a base plate having means on the upper surface thereof for connection with the lower end of a hydraulic ram in order to support the ram in upwardly extending position, said base plate including a substantially planar lower surface adapted to be supported on a horizontally disposed supporting surface and transfer the reaction force from the ram to the supporting surface and means spaced from the means connecting the ram and base plate for precluding upward movement of the base plate in relation to the supporting surface by engagement with a downwardly facing surface on the supporting surface thereby securely retaining the base plate on the supporting surface while enabling adjustment of the base plate in relation to the supporting surface and orientation of the base plate in different positions in relation to the supporting surface, said means retaining the base plate on the supporting surface including a downwardly and inwardly extending reversely curved edge on one edge portion of the base plate to provide a hook-shaped structure to engage over an edge of a supporting runway to enable assembly and disassembly of the base plate and adjustment of the base plate along the edge of the supporting runway with lateral movement being precluded by the reversely curved edge.

4,941,344

DIE SETS

Brian J. Beech, West Midlands, and Edwin T. Beech, Tamworth, both of England, assignors to Sildean Limited, Birmingham, England

Filed Nov. 7, 1988, Ser. No. 268,152

Claims priority, application United Kingdom, Nov. 7, 1987, 8726155

Int. Cl.[5] B21D *37/10*

U.S. Cl. 72—456 **8 Claims**

1. In a die set, having a first plate and a second plate, a pillar and bush device comprising:

(a) a bush releasably secured in said first plate by first connector means,

(b) a pillar releasably secured in said second plate by second connector means and co-axial with and slidable in said bush,

(c) said bush including a first collar clamped to said first plate by said first connector means,

(d) said pillar including a second collar clamped to said second plate by said second connector means,

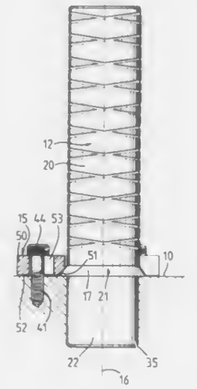
(e) at least one of said collars provides an abutment surface,

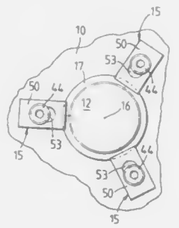
(f) said first connector means is releasably clamped to said first plate by first fastener means and said second connector means is releasably clamped to said second plate by second fastener means, and

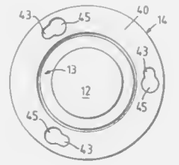
(g) at least one of said connector means including a clamping surface which is engaged in cam engagement with said abutment surface at an angle inclined to said axis to transmit part of an axially directed force applied to said abutment surface during separation of said plates as a force acting radially outwards upon said clamping surface,

(h) a second one of said connector means including a plurality of threaded fasteners and an annular collar around the pillar or bush,

(i) said collar having keyhole shaped sockets therein dimensioned so that the heads of the fasteners can pass through the larger diameter parts of the sockets but not through the narrower parts of the sockets, so that, when the fasteners are engaged in a plate of the die set, the collar may be moved arcuately between a position in which it is removable from the plate and a position in which it is constrained by the heads.







4,941,345

METHOD AND APPARATUS FOR THE MEASUREMENT OF GAS PROPERTIES

Detlef Altemark, Dorsten; Robert Hess, Essen, and Karl H. Hillinghaus, Bottrop, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

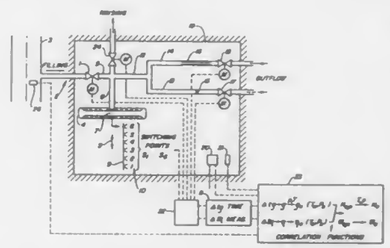
PCT No. PCT/EP87/00377, § 371 Date Mar. 14, 1988, § 102(e) Date Mar. 14, 1988, PCT Pub. No. WO88/00693, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 13, 1987, Ser. No. 188,395

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1986, 3623664

Int. Cl.[5] G01N *9/32*

U.S. Cl. 73—23.2 **14 Claims**



1. A method for measuring a gas property, the method comprising the steps of:

providing a gas holding chamber having a volume that varies in response to pressure differences between the interior of the chamber and the ambient atmosphere;

determining the correspondence between variations in the volume of the gas holding chamber and pressure differences between the interior of the chamber and the ambient atmosphere;

supplying gas to the chamber, whereby the pressure difference between the interior of the chamber and the ambient atmosphere is increased and the volume of the chamber is increased;

interrupting the gas supply to the chamber;

permitting the gas in the chamber to discharge across at least one flow restrictor, whereby the pressure difference between the interior of the chamber and the ambient atmosphere is decreased and the volume of the chamber is decreased;

measuring the period of time taken for the volume of the chamber to decrease from a first predetermined volume representative of a first pressure difference to a second predetermined volume representative of a second pressure difference; and

determining a resulting volume rate of flow and a gas property from the measured time period and from the decrease in volume.

4,941,346

VIBRATION-TYPE RHEOMETER APPARATUS

Osamu Suzuki; Syousuke Ishiwata; Mitsuroh Hayashi, and Hideaki Oshima, all of Saitama, Japan, assignors to Chichibu Cement Kabushiki Kaisha, Japan

Filed Nov. 18, 1988, Ser. No. 273,273

Claims priority, application Japan, Nov. 18, 1987, 62-289521

Int. Cl.[5] G01N *11/10*

U.S. Cl. 73—54 **17 Claims**

1. A vibration-type rheometer apparatus for measuring the behavior of a fluid sample with respect to an external force which changes with time, the apparatus comprising:

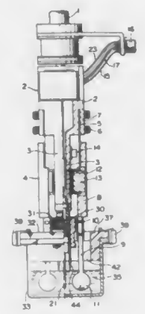
a support block firmly secured to a base frame, said support block having a support column at the lower part thereof;

tuning fork vibrator means including a pair of vibrator subas-

semblies secured to said secured block, extending downwardly from said support block and being arranged on opposite sides of said support column, said vibrator subassemblies each having at a free end thereof a thin and flat sensor plate to be placed into a fluid sample to be measured, both said sensor plates being distributed in the same imaginary vertical plane;

driving means for vibrationally driving said pair of vibrator subassemblies in opposite phase relation to each other and at the same driving frequency;

detecting means for detecting the amplitude of vibration of



at least one of said vibrator subassemblies which changes by the viscous resistance received by said sensor plates placed in the fluid sample and for outputting an electric signal representative of the amplitude of vibration;

control means for supplying a driving current having a magnitude which changes with respect to time to said driving means to thereby change a vibration-applying force applied to said pair of vibrator subassemblies; and

recording means for plotting, with respect to the change in magnitude of said driving current, the electric signal output from said detecting means which changes in response to changes in the driving current.

4,941,347

TURNTABLE-USING TESTING APPARATUS

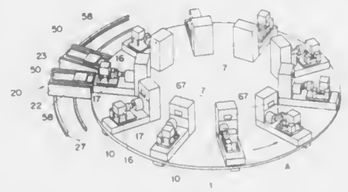
Takashi Iijima, Iruma; Takeshi Matsui, Fujimi; Shigeru Kaneto, Osaka; Kenji Horio, Sakai, and Toshihiko Kato, Hawata, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Daifuku Co., Ltd., both of, Japan

Filed Jul. 18, 1989, Ser. No. 381,752

Claims priority, application Japan, Aug. 25, 1988, 63-212274; Aug. 25, 1988, 63-212275

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **8 Claims**



1. A turntable-using testing apparatus comprising:

a turntable,

testing units disposed at a plurality of circumferential locations on the turntable and individually having computers, table-side connectors disposed at a plurality of locations in a peripheral edge portion of the turntable and individually connected to said computers,

a transfer device provided outside the turntable for transferring an object to be tested onto one of the testing units and removing the object from the testing unit,

a host computer spaced apart from the turntable, and

a ground-side connector connectable to and disconnectable from the table-side connectors and connected to the host computer.

4,941,348

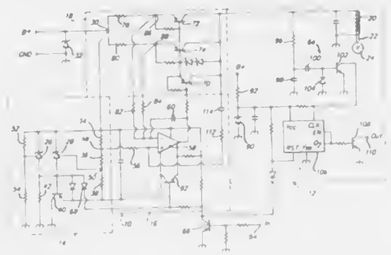
ELECTROMOTIVE SENSOR

Darryl A. Hock, Harper Woods, Mich., assignor to Jabil Circuit Company, Madison Heights, Mich.

Filed Mar. 28, 1989, Ser. No. 329,772

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—119 A **2 Claims**



1. A circuit for sensing abrupt change in movement of an electromotively-driven part in an electrically-powered device, comprising:

a constant current source for supplying a substantially constant current to said device;

a means for monitoring a property indicative of the voltage across said device and for providing a corresponding voltage signal;

differentiator means receptive of said voltage signal for determining the time rate of change of said voltage signal;

detector means coupled to said differentiator for detecting change in the algebric sign of said time rate of change of said voltage signal, said algebraic sign being indicative of abrupt change in movement of said electromotively-driven part.

4,941,349

COAXIAL COILED-TUBING CABLE HEAD

Arnold M. Walkow, Houston, Tex.; William S. Kennedy, Groveland, and Kenneth J. Wolfe, Sunnyvale, both of Calif., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Jun. 20, 1989, Ser. No. 368,766

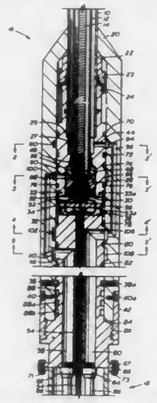
Int. Cl.[5] E21B *47/00*

U.S. Cl. 73—151 **6 Claims**

1. A cable head connector for coupling a plurality of nested coaxial fluid -conducting tubes to a downhole geophysical tool, each said tube being adapted to conduct a different fluid, comprising:

a plurality of means for separately gripping in turn, each one of the plurality of nested fluid-conducting tubes;

means, in fluid communication with the respective nested tubes, for fluidly bypassing, internally, a first means for gripping and for fluidly bypassing, externally, a second means for gripping; and



means, in fluid communication with the fluid bypass means, for distributing separately, each of the respectively different fluids to the downhole geophysical tool.

4,941,350

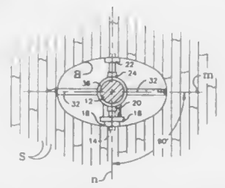
METHOD AND APPARATUS FOR FORMATION TESTING

George F. Schneider, 237 Willow Valley Dr., Lancaster, Pa. 17602

Filed Apr. 10, 1989, Ser. No. 335,548

Int. Cl.[5] F21B *49/08*

U.S. Cl. 73—155 **18 Claims**



17. A method for engaging a probe against a side of an oblong hole at the intersection with the short axis thereof, the borehole having relatively slippery sides, comprising the serial steps of:

inserting an elongate cylinder in the hole;

radially extending arms from the cylinder against the opposite sides of the hole causing the cylinder to rotate slidably within the hole until the arms closely align with the long axis of the hole; and

radially extending the probe from the cylinder in a plane at 90° from the arms against the sides of the hole.

4,941,351

TRANSPORTER FOR A ROTOR OF A GAS FRICTION MANOMETER

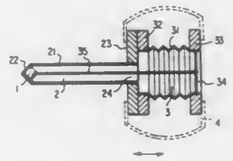
Wolfgang Jitschin, Borgholzhausen, and Peter Röhl, Berlin, both of Fed. Rep. of Germany, assignors to Physikalisch-Technische Bundesanstalt, Braunschweig, Fed. Rep. of Germany

Filed May 11, 1988, Ser. No. 192,710

Claims priority, application Fed. Rep. of Germany, May 11, 1987, 3716016

Int. Cl.[5] G01D *11/24;* **G01L** *7/00*

U.S. Cl. 73—431 **18 Claims**



18. A transporter for a rotor of a gas friction vacuum pressure meter comprising:

(a) a housing accommodating the rotor; said housing having a wall portion;

(b) an ambient surrounding the metallic rotor within the housing during transport; the ambient being non-reactive with the rotor;

(c) means, including said wall portion, for protecting the metallic rotor within the housing from physical and mechanical damage during transport; and

(d) retaining means for retaining the rotor in the wall portion; said retaining means comprising:

(1) a first flange including a rear wall of said retaining means;

(2) a second flange being connected gastight to the housing flange and being spaced from said first flange;

(3) a flexible bellows connecting the first and second flanges gastight; and

(4) a rod fastened to the rear wall and projecting from the rear wall between the first and second flanges, the housing flange and the bellows, into the housing and pressing against the rotor to retain the rotor against the wall portion.

4,941,352

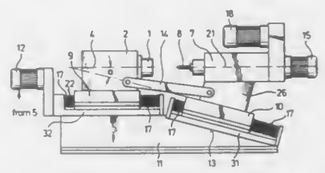
METHOD AND APPARATUS FOR MASS CENTERING OF A ROTOR

Günter Fletzke, Forest, Va., assignor to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik, Pfungstadt, Fed. Rep. of Germany

Filed May 5, 1989, Ser. No. 347,565

Int. Cl.[5] G01M *1/26*

U.S. Cl. 73—461 **20 Claims**



1. Apparatus for mass centering of a rotor including: an unbalance measuring means for measuring the unbalance of the rotor, comprising a rotary spindle for carrying the rotor and means for rotating the spindle about an axis of rotation in the

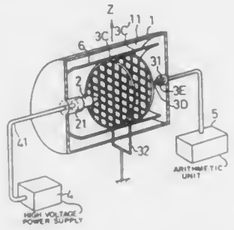
unbalance measuring operation; an evaluation means operatively connected to the unbalance measuring means for ascertaining from the result of the unbalance measuring operation and the weight of the rotor the position of the axis of inertia thereof which extends through the center of mass of the rotor, with respect to said axis of rotation; a marking means comprising a marking tool for marking the position of the axis of inertia of the rotor on an end face thereof; and an adjusting mean for producing a relative displacement between the rotor and the marking tool in a radial direction with respect to the axis of rotation and parallel to the axis of rotation, the adjusting means including guide means for guiding one of said rotor and said marking means in said relative displacement, being disposed at an inclined angle with respect to the axis of rotation, whereby said relative displacement determines on said end face of the rotor a linear region of action of the marking tool which extends through said axis of rotation, such that the point on the end face of the rotor at which the measured axis of inertia passes therethrough can he turned into said region of action of said marking tool.

4,941,353

GAS RATE GYRO

Yoshiaki Fukatsu, Nagoya; Etsuji Nomura, Ichinomiya, and Kazuma Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 12, 1989, Ser. No. 296,191
Claims priority, application Japan, Mar. 1, 1988, 63-48445
Int. Cl.[5] G01P *9/00*
U.S. Cl. 73—505 **8 Claims**



1. A gas rate gyro mounted on a mobile object to detect the rotatory motion of the mobile object through the measurement of the deflection of a gas flow varying as a function of the rotatory motion of the mobile object comprising:

a hermetic casing carried on the mobile object and hermetically containing a gas substantially of neutral molecules;

a first electrode comprising a needle electrode and disposed at one end of the hermetic casing;

a second electrode comprising a pair of grid electrodes disposed adjacently and electrically connected so the grid electrodes are at the same potential, and disposed within the casing at a predetermined distance from an opposite to the first electrode;

a high-voltage power supply which applies voltage across the first and second electrodes to produce a corona discharge around the first electrode so that an ionic wind composed of a mixture of the neutral molecules of the gas and ions produced by ionizing the neutral molecules flows from the first electrode toward the second electrode;

a detecting electrode comprising a pair of split electrodes for giving electrons to the ions contained in the ionic wind, disposed at a position within the casing at a predetermined distance from the first electrode where the ions produced by a corona discharge are not annihilated; and

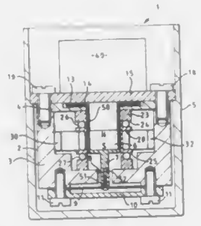
a detecting circuit, connected to said pair of split electrodes, which detects the intensity of difference between the ionic currents flowing respectively through the split electrodes to detect a rotatory motion of the mobile object through the measurement of the deflection of the ionic wind resulting from the rotatory motion of the mobile object.

4,941,354

TRI-AXIAL ACCELEROMETERS

Michael K. Russell, Lynworth House, 54 High Street, Prestbury, Cheltenham, England, and Anthony W. Russell, Drachlaw, Turriff, Aberdeenshire, Scotland

Filed Dec. 5, 1988, Ser. No. 279,936
Claims priority, application United Kingdom, Dec. 4, 1987, 8728442
Int. Cl.[5] G01P *15/13*
U.S. Cl. 73—517 B **7 Claims**



1. A tri-axial moving magnet accelerometer comprising a housing, a magnet mounted within the housing so as to be displaceable with respect to three mutually transverse measurement axes in response to an applied force, said magnet being mounted on a support member which is coupled to the housing by a planar diaphragm so as to allow for pivoting of said support member in the directions of two of said measurement axes by flexing of said diaphragm and so as to permit linear displacement of said support member in the direction of the third of said measurement axes by deformation of said diaphragm perpendicularly to the plane of said diaphragm, and sensing means for sensing displacement of said magnet and for providing a respective output signal proportional to the component of the applied force along each of said three measurement axes.

4,941,355

METHOD AND APPARATUS FOR THE MEASUREMENT OF ACCELERATIONS

Hans Richert, Wilhelm-Dresing-Strasse 37, 4600 Dortmund 50, Fed. Rep. of Germany

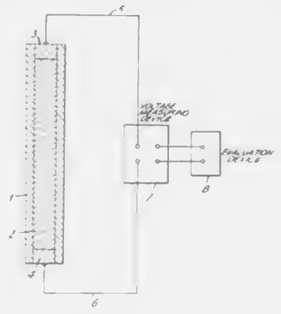
Continuation-in-part of Ser. No. 88,976, Aug. 21, 1987, abandoned, which is a continuation of Ser. No. 893,187, Aug. 5, 1986, abandoned, which is a continuation of Ser. No. 683,569, , abandoned. This application Jul. 21, 1988, Ser. No. 222,274
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R **6 Claims**

1. An apparatus for measuring accelerations, comprising:

a solid ion conductor to which an acceleration is applied along a longitudinal axis thereof, wherein a length of said ion conductor is at least a multiple of a cross-sectional extent thereof;

electrodes in contact with said ion conductor at opposite ends thereof;

a device connected to said electrodes for measuring and evaluating a voltage generated in said ion conductor; and



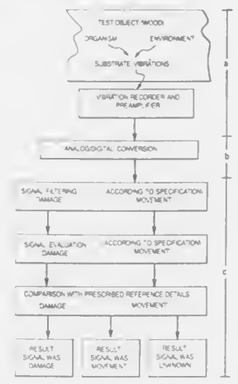
a mechanically tough frame for physically supporting the ion conductor.

4,941,356

PROCESS FOR DETECTING INSECTS

Michael Pallaske, Kempen, Fed. Rep. of Germany, assignor to DESOWAG Materialschutz GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 28, 1988, Ser. No. 263,763
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1987, 3736515
Int. Cl.[5] G01N *29/04*
U.S. Cl. 73—587 **7 Claims**



1. A process for the detection of insects in a solid substrate, comprising the steps of:

(a) measuring the substrate for vibration or noise caused by damage or movement of the insects in the substrate, the measurement being made free from interfering signals;

(b) obtaining specific signal properties for each vibration or noise behavioral reference pattern of the insects by digital signal computer processing;

(c) applying the reference pattern data to a microcomputer;

(d) obtaining data of on-going insect damage by recording substrate vibrations or noises, or both, and converting these vibrations or noises to digital form;

(e) comparing the movement and damage data to reference data; and

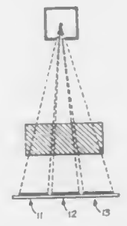
(f) developing from the comparison of step (e) an indication of either damage or movement, or the absence of either.

4,941,357

METHOD FOR ESTIMATING THE STRENGTH OF WOOD

Gary S. Schajer, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 23, 1988, Ser. No. 288,534
Int. Cl.[5] G01M *3/24*
U.S. Cl. 73—600 **11 Claims**



1. A method for estimating the strength or stiffness of a piece of wood comprising:

measuring the longitudinal density profile of the piece of wood by detecting density at a plurality of longitudinally spaced local areas in the wood,

identifying and quantifying the features in the wood density profile indicative of the inherent wood strength and the wood structural effects spaced along the length of the wood, and

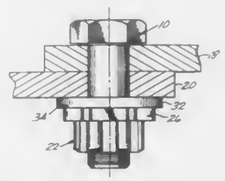
using the information derived from the measured wood density profile to estimate the wood strength or stiffness.

4,941,358

PROCESS FOR PROOFING A THREADED JOINT

George S. Wing, 531 Esplanade, Apt. 515, Redondo Beach, Calif. 90277

Filed Feb. 24, 1989, Ser. No. 315,472
Int. Cl.[5] F16B *31/02*
U.S. Cl. 73—761 **6 Claims**



1. A process for proofing a threaded joint of work, an externally threaded fastener bearing on one side of the work, and an internally threaded fastener threaded onto the externally threaded fastener and bearing on the other side of the work, the two fasteners applying a clamp-up load to the work, the process comprising:

(a) engaging the externally threaded fastener and the work, with the external thread of the fastener extending from the work after such engagement;

(b) placing a wrenching washer over the externally threaded fastener in the path of the clamp-up load;

(c) engaging the thread of the internally threaded fastener with the external thread;

(d) tightening the internally threaded fastener on the exter-

nal thread to attempt to apply a desired value of the clamp-up load on the work through the washer and form a joint; and

(e) applying a proofing torque through the wrenching surface of the wrenching washer to determine whether it resists the application of a predetermined proofing torque before turning,

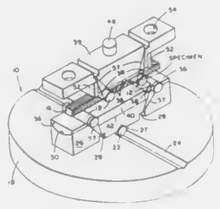
whereby, the joint is proofed and has the desired value of clamp-up load if the wrenching washer resists the predetermined proofing torque without turning.

4,941,359

ARTICULATING FLEXURE TEST FIXTURE

George D. Quinn, Watertown, and Raymond L. Goulet, Norwood, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1989, Ser. No. 306,005
Int. Cl.[5] G01N *3/20*
U.S. Cl. 73—851 **5 Claims**



1. An articulating fixture for the three-point flexure testing of ceramics, comprising:

lower means for supporting the bottom of a specimen to be tested and arranged to provide line contact near the two ends of the specimen;

upper means for placing a load onto the top surface of a specimen, said upper means including one line of pressure and said bottom means including two lines of pressure so that there are three loading points in the fixture; and

each of said means including at least one articulated cooperating assembly which allows rotation in the direction of the contacting surface of the specimen whereby when the specimen is twisted, said fixture will adapt to the twist and still properly apply the load to the specimen;

the assembly for said lower means including a lower support cradle having an arcuate groove extending in the same direction as the specimen, and a swivel bearing support having a convex arcuate surface which mates with the surface of the groove so that the cradle and swivel bearing support are slidable with the swivel bearing support rotating within the groove to accommodate twisted specimens.

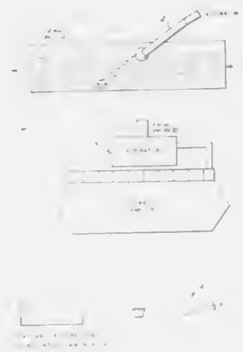
4,941,360

CONTINUOUS (FLEXIBLE) SEWAGE MONITORING MACHINE FOR SAMPLING BUILDING EFFLUENT TO MEASURE FOR CERTAIN CONTROLLED SUBSTANCES

Oliver B. McClellan, 1101 Post Oak Blvd. #300-318, Houston, Tex. 77056, and Samuel J. Castorani, 4545 Post Oak Pl., #310, Houston, Tex. 77027

Filed Jun. 14, 1989, Ser. No. 366,646
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.34 **1 Claim**

1. A sampling system to obtain samples from the sewage effluent system of a structure or building for the purpose of collectively analyzing the urine and/or feces from the occupants of the structure or building for determination of the presence of controlled substances in a non-intrusive manner, said sampling system comprising a hollow, flexible, elongated probe extending in a non-horizontal direction through a sample tap of a effluent pipeline associated with the structure or building, the probe including a plurality of openings positioned along its elongated wall portion, and collectively in a direction parallel to the longitudinal axis of the probe, to permit sample to flow into the probe, and a closed first end; a fluidic line having two ends, the first end of the fluidic line being coupled to a second open end of the elongated probe that is positioned outside of the pipeline; an aspirator fluidly coupled to the second end of the fluidic line to draw sample from the pipeline



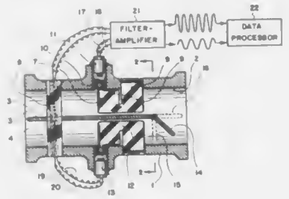
through the plurality of openings, probe and fluidic line, and subsequently deposit the sample into a sample holder, the sample holder being only one of a plurality of sample holders that are sequentially filled in an automatic manner with an equal number of samples over a predetermined period of time, whereby the samples in the holders are subsequently analyzed for controlled substances, whereby the occupants of the structure or building are collectively tested for use of controlled substances in a nonintrusive manner.

4,941,361

THREE-IN-ONE FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jun. 20, 1988, Ser. No. 208,739
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.24 **14 Claims**



1. A multifunction flow measuring apparatus comprising in combination:

(a) a first flow passage including a first means for measuring rate of fluid flow;

(b) a second flow passage including a second means for measuring rate of fluid flow;

(c) a variable position fluid dynamic target obstructing fluid flow through said second flow passage wherein degree of blockage of said second flow passage decreases as the rate of fluid flow through said apparatus increases;

(d) means for determining volume flow rate of fluid moving through said apparatus from a combination of outputs from said first and second means for measuring rate of fluid flow; and

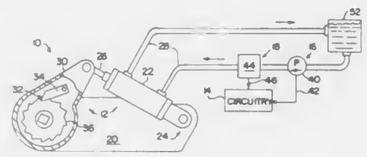
(e) means for determining mass flow rate of fluid moving through said apparatus from a combination of the volume flow rate and the outputs from said first and second means for measuring rate of fluid flow.

4,941,362

TORQUE AND ANGULAR DISPLACEMENT SENSING IN CONTROLLED WRENCHES

Angelo Tambini, County Wicklow, Ireland, assignor to SPS Technologies, Inc., Newtown, Pa.

Continuation-in-part of Ser. No. 67,896, Jun. 29, 1987, Pat. No. 4,823,616. This application Jan. 3, 1989, Ser. No. 292,688
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] B23P *19/06*; B25B *12/143*
U.S. Cl. 73—862.23 **13 Claims**



10. A controlled wrench apparatus, comprising:

a power wrench mechanism driven by a pressurized fluid to turn a wrench head for tightening a threaded fastener;

transducer means for sensing a signal in proportion to the torque applied by said wrench head;

transducer means for sensing the flow of said fluid to said wrench mechanism to derive a signal in proportion with the angular displacement of said wrench head;

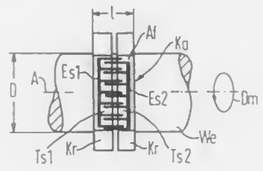
circuit means for processing said torque and said angular displacement signals to indicate when a predetermined threshold is reached.

4,941,363

SENSOR FOR MEASUREMENT OF THE TORQUE ACTING ON A ROTATING SHAFT

Guenter Doemens, Holzkirchen, and Markus Gilch, Hoergertshausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 26, 1989, Ser. No. 385,815
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1988, 3827301; May 24, 1989, 3916959
Int. Cl.[5] G01L *3/10*
U.S. Cl. 73—862.33 **36 Claims**



1. An arrangement for measuring the torque acting on a rotating shaft comprising:

a capacitor arrangement formed by first and second electrode structures, each electrode structure having a plurality of parallel, spaced electrodes;

first and second means adapted for respectively mechanically coupling said first and second electrode structures to respective points axially spaced a first distance from each other on a shaft whose torque is to be measured, said first distance between said points changing due to torsion of said shaft in an amount proportional to the torque acting on said shaft and said first and second means for coupling being moveable relative to each other due to said torsion;

means for asymmetrically mounting said first and second electrode structures on said first and second means for coupling insulated from each other in a common plane with said electrodes of said first and second electrode structures forming electrode pairs parallel to each other, with the electrodes of each electrode pair being spaced a second distance from each other approximating the change in said first distance between said measuring points due to torsion of said shaft and the spacing between the electrodes in each electrode pair changing in an amount corresponding to said relative movement of said first and second means for coupling due to said torsion, each electrode pair forming a capacitor having a capacitance which changes as the spacing between the electrodes of the pair changes, and with neighboring electrodes on either side of each electrode pair being spaced a third distance from said electrode pair which is large in comparison to said change in said first distance due to torsion of said shaft; and

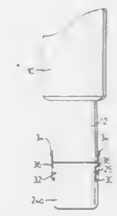
means for electrically connecting said capacitors formed by said electrode pairs in parallel to obtain a total capacitance change which is the sum of the capacitance change of each of said electrode pairs and which is a measure of the torque acting on said shaft.

4,941,364

HOLDER FOR MOLTEN METAL SAMPLING DEVICE

Gary H. Haughton, Burlington, Canada, assignor to Evacuo Enterprises Limited, Hamilton, Canada

Continuation-in-part of Ser. No. 240,506, Sep. 6, 1988. This application Sep. 13, 1989, Ser. No. 406,529
Claims priority, application United Kingdom, Sep. 9, 1987, 8721185; May 5, 1989, 8910406
Int. Cl.[5] G01N *1/12*
U.S. Cl. 73—864.53 **8 Claims**



1. A holder for a molten metal sampling device, comprising:

a pipe which is elongated in a given direction, the pipe having an upper portion and a lower portion, the lower portion defining an internal guidance chamber and having an opening lying in a plane making an angle with respect to said given direction, the opening communicating with the guidance chamber, the upper portion being adapted to receive and retain the molten metal sampling device in such a way that molten metal in the guidance chamber can be sampled by the sampling device,

a closure element for said opening, the closure element having a density such that it will seek to float upwardly in molten metal outside the pipe,

and a protective cover enclosing said closure element and a lower part of said pipe, the protective cover having at least two separate parts,

and retaining means for holding the separate parts of the

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protective cover together around the closure element and the lower part of the pipe, the retaining means being adapted to fail upon contact with the molten metal.

4,941,365

DEVICE FOR DETERMINING THE MASS OF A MOTOR VEHICLE

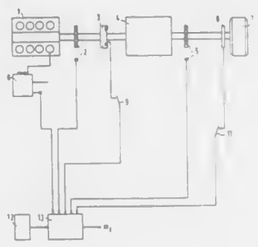
Klaus Reiner, Fellbach-Schmiden; Heinz Rieker, Waldenbuch, and Josef Stoll, Remseck, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 14, 1989, Ser. No. 436,028

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843818

Int. Cl.[5] G01D *21/00*; G01G *19/08*

U.S. Cl. 73—865 **20 Claims**



1. Device for determining the mass of a motor vehicle utilizing signal transmitters for vehicle engine torque, signal transmitters for vehicle speed and acceleration, signal transmitters for indicating engagement states of a clutch between the vehicle engine and vehicle drive train and a computer evaluating the signals from these signal transmitters;

wherein, during a first operating vehicle phase and with the clutch disengaged, the computer determines a coefficient for the running resistance of the vehicle in accordance with the equation

$$f_E = b_a / g,$$

in which

f_E = a coefficient dependent on the running resistance

b_a = the acceleration value of the vehicle with the clutch disengaged

g = gravitational acceleration;

wherein during a second operating vehicle phase with the clutch engaged, the computer repeatedly determines values for the acceleration of the vehicle;

wherein the computer then repeatedly determines a value correlated with the mass of the vehicle by forming a quotient of engine torque, determined repeatedly during the second operating phase, and a quantity dependent on the difference between a vehicle acceleration value and the vehicle coefficient of running resistance;

wherein a signal transmitter device reproduces the particular ratio of the transmission; and

wherein the computer calculates a value m_{Ei} correlated with the vehicle mass according to

$$m_{Ei} = \frac{\eta \cdot i_G / r}{b_{ei} - b_a} M_{Mi} - \frac{b_{ei} \cdot i_G^2 / r^2}{b_{ei} - b_a} J_M$$

in which

b_{ei} = acceleration values of the vehicle with the clutch engaged

η = the efficiency of the drive train

i_G = ratio of the transmission

r = dynamic rolling radius of the drive wheels

J_M = moment of inertia of the engine

M_{Mi} = values of the drive torques and engine torques

4,941,366

COAXIAL TYPE STARTER DEVICE

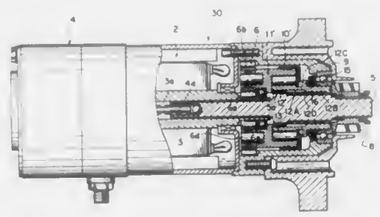
Shuzoo Isozumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1989, Ser. No. 337,789

Claims priority, application Japan, Apr. 13, 1988, 63-50276[U]; Apr. 26, 1988, 63-104707

Int. Cl.[5] F02N *15/02*; F16D *43/00*

U.S. Cl. 74—6 **3 Claims**



1. A coaxial type starter device, comprising:

(a) an armature rotational shaft (3) of an electric motor (2);

(b) an output rotational shaft (5) slidably supported on one and the same axis as said armature rotational shaft and having a pinion (8) on a front end thereof;

(c) an overrunning clutch device (10) provided between said armature shaft and said output shaft, wherein rotation of said armature shaft is transmitted to said output shaft through said overrunning clutch device, and

(d) means for absorbing high external loads applied to said output shaft through said pinion, said absorbing means including a deformable elastic member (16) disposed in abutment with an inner race (12; 12') of said overrunning clutch device.

4,941,367

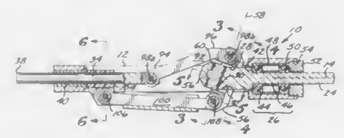
ROTARY TO LINEAR MOTION CONVERTER

Richard L. Konves, 1500 E. Warren #33, Santa Ana, Calif. 92705

Filed Nov. 25, 1988, Ser. No. 276,244

Int. Cl.[5] F16H *25/12, 23/08*

U.S. Cl. 74—53 **18 Claims**



1. A rotary-to-linear motion converter comprising:

support means determining a roll axis, and a pitch axis passing through a first common point, the axes being mutually orthogonal;

an input shaft having an interior end, said input shaft rotating on said roll axis and having an offset drive cam formed on a said input shaft interior end, said offset drive cam being positioned at said first common point;

rocker means operatively supported by said support means and having a rocker means pitch axis and a rocker means yaw axis, said rocker means pitch axis and said rocker means yaw axis being mutually orthogonal and passing through a second common reference point;

pitch bearing means for pivotally coupling said rocker means to said support means so that said rocker means pitch axis is pivotally rotatable about said support means pitch axis, whereby said second common point is coincident with said first common point;

rocker cam means for rotating on said rocker means yaw axis and for translating rotary motion from said offset drive cam into oscillatory pitch motion for said rocker means along said rocker means pitch axis;

output shaft means slidably coupled to said support means; and

pivot arm means for translating said oscillatory pitch motion of said rocker means into reciprocating linear motion for said output shaft means.

4,941,368

STOP SCREW WITH DROP-IN BALL

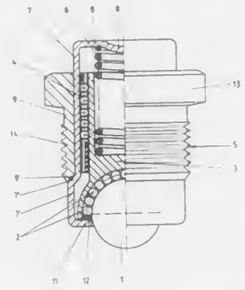
Johannes De Boer, Madenhausen, and Manfred Tröster, Bad Kissingen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jan. 23, 1989, Ser. No. 300,471

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808375

Int. Cl.[5] G05B *5/06*

U.S. Cl. 74—527 **5 Claims**



1. A stop screw with a drop-in ball comprising:

a screw supporting housing comprising a cup like inner part with a bottom end and an opposite first top end at which the drop-in ball is supported; the bottom end of the inner part includes receiving means for receiving a spring thereon; the inner part having a widened region of wider cross-section in the axial region thereof toward and at the drop-in ball; the widened region having a rear end where the widened region widens to the wider cross-section of the widened region;

a ball supporting body disposed inside the cup like inner part, the body including a second top end toward the first top end of the inner part for receiving the drop-in ball;

a linear ball bearing between the ball supporting body and the inner part for enabling relative axial shifting;

a hollow screw housing attached to and extending around the inner part, the screw housing having an external screw thread for being screwed into means for receiving the thread in an object which holds the stop screw the screw housing further having an external profile region for being engaged by a screw tightening means, such that the profile region is engaged for moving the screw housing which tightens the external thread into the means for receiving the thread;

the screw housing having a front end which rests axially against the widened region of the inner part for being tightened thereagainst upon tightening of the external thread into the means for receiving the thread;

a coil spring between the ball supporting body and the receiving means at the bottom end of the inner part; the receiving means comprises an arched central projection shaped for the coil spring to fit therearound; the coil spring extending to the ball support body and the ball support body including means thereon for receiving the coil spring.

4,941,369

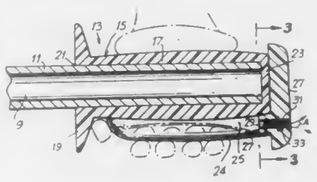
BICYCLE HANDLE GRIP ASSEMBLY

Brian Specht, Northport, and Robert Ippolito, Massapequa, both of N.Y., assignors to Cycle Products Company, Commack, N.Y.

Filed Apr. 6, 1989, Ser. No. 334,617

Int. Cl.[5] B62K *21/26*

U.S. Cl. 74—551.9 **4 Claims**



1. A handle grip assembly for a handle of a bicycle of comprising:

a grip member having an inner surface defining opening for receiving the end of a handle of a bicycle, an outside surface, and an outside end member;

a flexible housing disposed along at least a portion of said outside surface and defining a cavity located between said a least a portion of said outside surface and said housing;

a cap member mounted on said end member of said grip member;

a pathway being unobstructed to enable the air to flow from the inside cavity to the outside, located in said cap member and leading from inside of said cavity of said flexible housing to the outside;

means for producing a sound response to air leaving said cavity and passing through said pathway;

wherein said housing may be compressed from the outside thereof to cause air to leave said cavity to the outside through said pathway.

4,941,370

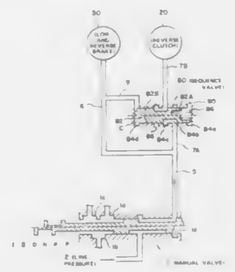
SELECT SHOCK ATTENUATION ARRANGEMENT FOR AUTOMATIC AUTOMOTIVE TRANSMISSION

Yoshihiko Ishii, Fuji, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 23, 1988, Ser. No. 216,569

Int. Cl.[5] B60K *41/10*

U.S. Cl. 475—128 **6 Claims**



1. In a transmission

a first hydraulically operated friction element;

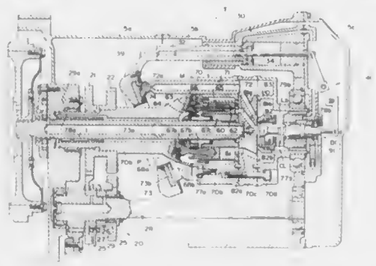
a second hydraulically operated friction element;
a source of hydraulic pressure;
a first valve interposed between said first and second friction elements and said source, said first valve being selectively conditionable to supply hydraulic pressure from said source to said first and second friction elements; and
a sequence valve interposed between said second friction element and said first valve, said sequence valve being responsive to the level of pressure which is supplied to said first friction element in a manner wherein, until the pressure supplied to said first friction element reaches a predetermined level, said sequence valve assumes a condition wherein hydraulic pressure is cut-off from said second friction element and said second friction element is connected with a drain port formed in said sequence valve.

4,941,371

HYDRAULIC CONTINUOUSLY VARIABLE SPEED TRANSMISSION WITH DIRECT CLUTCH VALVE

Hideo Koyama; Koji Sasajima, both of Tokyo; Kazuya Maki, Aichi; Kouji Yamaguchi, and Yoshikazu Ishikawa, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1988, Ser. No. 259,962
Claims priority, application Japan, Oct. 20, 1987, 62-264844; Oct. 20, 1987, 62-264842; Oct. 27, 1987, 62-271198
Int. Cl.[5] B60K *41/16*
U.S. Cl. 74—865 **13 Claims**



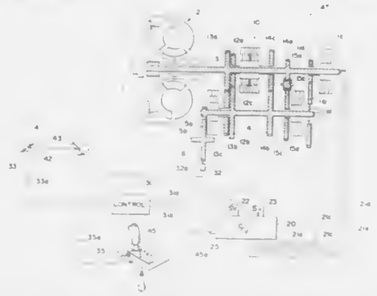
1. A hydraulic continuously variable speed transmission with a direct clutch valve comprising:
a hydraulic pump connected to an engine in a vehicle;
a hydraulic motor connected to an output shaft;
a hydraulic closed circuit for hydraulically connecting said hydraulic pump and said hydraulic motor;
a direct clutch valve placed in said closed circuit to block said closed circuit;
a speed reduction ratio control actuator for varying displacements of at least one of said hydraulic pump and said hydraulic motor to control speed reduction ratio; and
a direct clutch valve controlling device for controlling operations of said direct clutch valve to block the closed circuit when the speed reduction ratio becomes substantially "1" in accordance with the actuation of said speed reduction ratio control actuator;
wherein, said direct clutch valve controlling device maintains direct connecting state in which said closed circuit is being blocked by said direct clutch valve when an actual engine speed is higher than a direct clutch disconnecting reference engine speed set in accordance with a parameter indicating driver's intention of acceleration,
and then said direct clutch valve control device releases the blocking of the closed circuit by said direct clutch valve when a drop of the actual engine speed from the direct clutch disconnecting reference engine speed exceeds a predetermined amount corresponding to a vehicle speed of said vehicle.

4,941,372

APPARATUS FOR SHIFT CONTROL IN AN AUTOMATIC TRANSMISSION

Takashi Aoki, Saitama; Satoshi Terayama, Tokyo, and Junichi Miyake, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1989, Ser. No. 309,437
Claims priority, application Japan, Feb. 10, 1988, 63-029608
Int. Cl.[5] B60K *41/00*
U.S. Cl. 74—878 **6 Claims**



1. An apparatus for shift control in an automatic transmission on a motor vehicle, said automatic transmission having a transmission mechanism including first, second, third and fourth speed ranges and a manually operable shift lever movable selectively into a plurality of different shift range positions, so that the speed ranges will automatically be shifted in a selected one of the shift ranges dependent on running conditions of the motor vehicle, comprising:
a maximum speed range cut-off switch which is manually turned on and off selectively, the arrangement being such that the setting of a maximum speed range in each of the shift ranges is prohibited by turning on said maximum speed range cut-off switch, and the setting of the fourth speed range is prohibited when said maximum speed range cut-off switch is being turned on, and wherein the shift ranges include a shift range D at which the automatic shift control is carried out within the 1st through the fourth speed ranges and a shift range S at which the automatic control is carried out within the 1st through the third speed ranges, the setting of the fourth speed range is prohibited by turning on said maximum speed range cut-off switch when said shift range D is selected, and the setting of the third speed range is prohibited by turning on said maximum speed range cut-off switch when said shift range S is selected.

4,941,373

ROTARY OPENER AND CLOSER FOR SCREWS, SCREW CLOSURES ON BOTTLES, JARS AND THE LIKE

Wolfgang Jobmann, Gudrunstrasse 73, D-2000 Hamburg 56, Fed. Rep. of Germany

Filed Jul. 27, 1989, Ser. No. 385,410
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1988, 3830684
Int. Cl.[5] B67B *7/18*
U.S. Cl. 81—3.4 **11 Claims**

1. Rotary opener and closer for screw closures, comprising:
two converging side walls, which project vertically downwards from a rotary plane in the use position and which are interconnected at ends where they have their greatest spacing by an approximately semicircular side wall; and

a rough surface for engaging an edge of the closure being provided on at least one of the side walls,



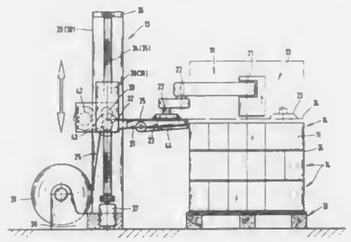
wherein the rough surface is formed on a spring steel strip, which internally engages on at least one of the side walls and is only fixed to one side wall at one fixing point.

4,941,374

PROCESS AND APPARATUS FOR THE LOADING OF PALLETS IN LAYERS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed May 20, 1988, Ser. No. 196,577
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1987, 3720933
Int. Cl.[5] B65G *57/04*
U.S. Cl. 83—13 **10 Claims**



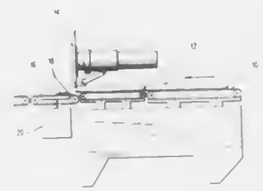
1. Process for the loading of pallets or the like in layers with stackable articles, especially packaging cartons, with a palletiser having a raisable, lowerable and pivotable cantilever arm which is equipped with at least one joint and the free end of which has a holding member, in the form of a suction holder, for grasping individual articles, whereby intermediate layers consisting of paper are introduced between layers of the articles, characterised by: only after each layer of individual articles, respectively, has been completed, laying an intermediate layer (24) onto the completed layer of articles in the correct position by causing the suction holder of the cantilever arm (19) also to grasp, by suction, the intermediate layer; and by producing the intermediate layers from a web of paper material (25) by causing the cantilever arm (19) to draw the web, in portions corresponding to the size of the intermediate layers, onto the top of the carton layer (14) to be covered, and then severing the web.

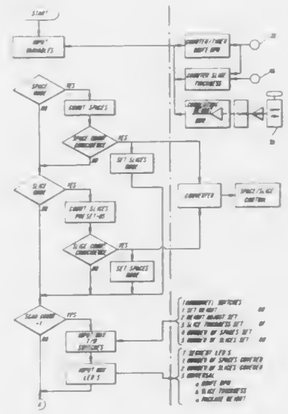
4,941,375

SLICE THICKNESS CONTROL FOR AN AUTOMATIC SLICING MACHINE

Frank S. Kasper, Orland Park, Ill., assignor to AMCA International Corporation, Hanover, N.H.

Filed Mar. 26, 1985, Ser. No. 716,089
Int. Cl.[5] B26D *5/26*
U.S. Cl. 83—23 **8 Claims**

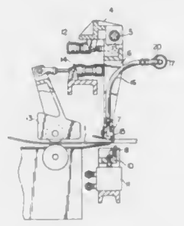




1. A method for controlling the slicing of a food product to produce a draft of slices having a predetermined weight, comprising the steps of:
cutting the food product to produce a slice thereof;
determining the thickness of said slice;
weighing said slice;
determining the cross-sectional density of said slice from its thickness; and
controlling the thickness of a subsequently cut slice in accordance with the determined cross-sectional density, the desired weight and a number of slices remaining to be cut in the draft to produce a final draft having said predetermined weight.

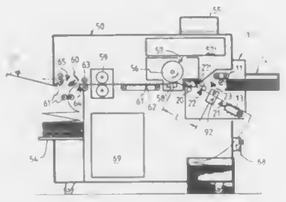
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4,941,376
APPARATUS FOR CUTTING WEB FOR BEVERAGE CONTAINERS
Yuzo Otsuka, Tokyo, Japan, assignor to AB Tetra Pak, Lund, Sweden
Filed May 8, 1989, Ser. No. 348,992
Claims priority, application Japan, May 10, 1988, 63-062037[U]
Int. Cl.[5] B26D *1/62, 7/06;* B23D *25/06*
U.S. Cl. 83—100 **8 Claims**



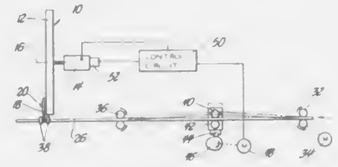
2. An apparatus according to claim 1, wherein at least a part of said suction ports is disposed at a position directly facing an inner area in the cut-off tubular body, said inner area being formed by the resiliency of the cut-off tubular body.

4,941,377
APPARATUS FOR FEEDING A CONTINUOUS FORM AND CUTFORMS
Takeyuki Ishihara, Tokohama, and Tetsuo Kanno, Fujisawa, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 23, 1988, Ser. No. 248,682
Claims priority, application Japan, Oct. 9, 1987, 62-253926
Int. Cl.[5] B26D *5/28;* B41J *11/00*
U.S. Cl. 83—211 **4 Claims**



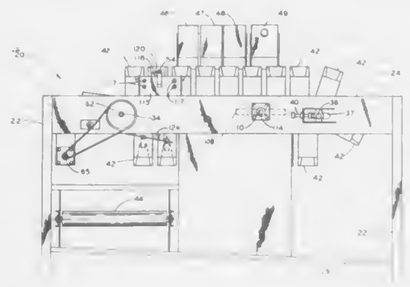
1. An apparatus for feeding a continuous form and cutforms which is unitized and is able to be mounted on and removed from the main body of a business machine, comprising:
- a single form feeding passage to the main body of said business machine,
- a cutform feeding passage for feeding cutforms to said single form feeding passage and a cutform feeding means located upstream thereof,
- a continuous-form feeding passage for feeding a continuous form to said single form feeding passage and a tractor for feeding a continuous form located upstream thereof, and
- a continuous-form cutting means provided in said continuous-form feeding passage, which operates in response to a signal for causing the continuous form to be cut so that cutforms can be fed after cutting and ejecting the continuous form if the cutforms are to be fed between uses of the continuous form.

4,941,378
METHOD AND APPARATUS FOR RAPID REPETITIVE CUTTING
George K. Snyder, Lockport, N.Y., assignor to General Motors Corpooration, Detroit, Mich.
Filed Oct. 24, 1988, Ser. No. 261,307
Int. Cl.[5] B23D *21/04;* B26D *1/28*
U.S. Cl. 83—350 **7 Claims**



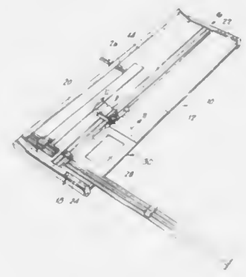
1. The method of cutting an element at a cutting site comprising the steps of;
- continuously rotating a knife through complete revolutions about a knife rotation axis,
- periodically moving the knife to the cutting site for one knife rotation for cutting the tube, and
- moving the knife away from the cutting site for a plurality of continuous complete knife rotations by traversing the axis through a path at a rate requiring a plurality of continuous complete knife rotations for each traverse of the path.

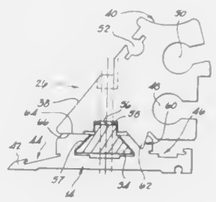
4,941,379
APPARATUS FOR PRODUCING SIZED CONTROLLED PORTIONS OF MEAT
Geno N. Gasbarro, 1401-B Lakesbore Dr., Columbus, Ohio 43204
Filed Jun. 12, 1989, Ser. No. 364,232
Int. Cl.[5] B26D *7/06;* B26F *3/00;* A72C *71/00*
U.S. Cl. 83—409.2 **15 Claims**



1. An automatic meat processing apparatus for producing a plurality of meat portions having a selected size and weight comprising, in combination; (1) a support frame; (2) a plurality of mandrels mounted on said frame and aligned in adjacent relationship to one another for continuous travel along said frame in a predetermined path, each of said mandrels including a vertically extending rear wall, a pair of spaced outwardly extending side walls carried by said rear wall, and a front wall yieldably mounted in a spaced relationship to said rear wall and spring biased away from said rear wall, said walls defining a sizing chamber having a predetermined configuration, volume and top opening for receiving a selected meat portion; (3) a loading station along said predetermined path of travel of said mandrels defined at a position along said frame wherein said opening of said sizing chamber is facing generally upwardly; (4) an unloading station along said predetermined path of travel of said mandrels defined at a selected position wherein said first opening of said mandrels is inverted relative to its position at said loading station; and (5) knife means mounted on said frame and disposed at a selected position along the path of travel of said mandrels to engage and separate any excess meat extending above said first opening of said sizing chamber.

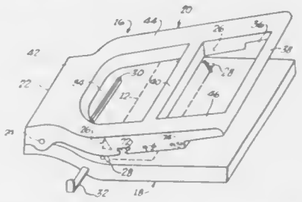
4,941,380
MACHINES FOR CUTTING CARDBOARDS AND LIKE MATERIALS
Robin C. Lockwood, East Norton, England, assignor to Keencut Limited, Corby, England
Filed Mar. 15, 1989, Ser. No. 324,410
Claims priority, application United Kingdom, Mar. 17, 1988, 8806385
Int. Cl.[5] B26D *3/02*
U.S. Cl. 83—455 **10 Claims**





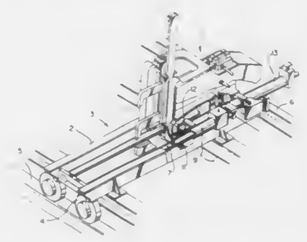
1. A cutting machine, comprising:
(a) a base board to support a workpiece such as a cupboard to be cut;
(b) a clamp bar extending across the base board to clamp materials to be cut;
(c) a cutter head adjustably captively slidably mounted on the clamp bar for lost motion inhibiting lengthwide sliding movement with respect thereto to cut said materials;
(d) co-operating guide means on the clamp bar and the cutter head comprising a guideway on one of the clamp bar and the cutter head, and a guide member on the other one of the clamp bar and cutter head, said guideway being a recessed V-shaped slot having opposite sides and said guide member being a complementary outwardly tapering protrusion having opposite sides and correspondingly contoured to be slidingly received in said slot, said protrusion having sliding contact on both sides of said V-shape; and
(e) additional interengaging sliding support surfaces rigidly disposed on said cutter head and said clamp bar, said additional surfaces being spaced from said guideway and guide member.

4,941,381
PORTABLE BUSINESS CARD SLIT CUTTER
Darryl M. Garner, Boca Raton, Fla., assignor to Sandra Brown Garner, Tampa, Fla.
Filed Jun. 10, 1988, Ser. No. 204,894
Int. Cl.[5] B26F *1/18*
U.S. Cl. 83—468.94 **8 Claims**



1. A portable slit cutter for cutting slits in a sheet for the purpose of holding a business card, said slit cutter comprising:
- a base member having a plurality of pairs of angled slit openings, each pair of openings being spaced from the remaining pairs of openings and each opening of each pair of openings being spaced from the other opening of that pair of openings;
- a cutting member rotatably affixed to said base member, said cutting member having a plurality of pairs of blade receivers each aligned with one of said openings when said cutting member is rotated towards said base; and
- a pair of pointed blades inserted into one of said plurality of pairs of said blade receivers;
- said slit openings and blades being positioned to cut said slits on said sheet, when said sheet is inserted between said base member and said cutting member, at a separation to permit opposite diagonal corners of said business card to be inserted therein, the particular one of said pairs of blade receivers having said blades positioned therein determining the position of said slits on said sheet.

4,941,382
SAWMILL CARRIAGE
Thomas G. Smith, and Edward C. Smith, both of Reaboro, Canada, assignors to T.S. Manufacturing, Lindsay, Canada
Continuation of Ser. No. 36,555, Apr. 9, 1987, abandoned. This application Mar. 29, 1989, Ser. No. 331,020
Claims priority, application Canada, Dec. 22, 1986, 525958
Int. Cl.[5] B27B *29/08*
U.S. Cl. 83—713 **3 Claims**



1. In a sawmill carriage capable of reciprocating on rails towards and away from a saw, and provided with more than one bunk having an upper surface capable of supporting a log, and a knee mounted on each said bunk, capable of gripping a log and moving across said bunk in a direction normal to the

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direction of reciprocation of said carriage, the improvement comprising cylindrical slides securely attached to said bunk beneath said upper surface, parallel to the direction of travel of said knee for supporting said knee; and complimentary bushings securely attached to said knee and cooperating with said slides.

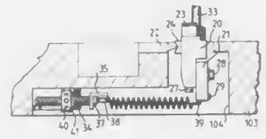
4,941,383
METHOD FOR TUNING VIOLINS
John Hogue, 436 S. Saginaw St., Flint, Mich. 48502
Filed Oct. 31, 1988, Ser. No. 264,352
Int. Cl.[5] G10D *1/02*
U.S. Cl. 84—275 **14 Claims**



1. A method of manufacturing and tuning a plate for a wooden violin comprising the steps of:
a. forming the plate to a predetermined plan configuration and curvature, having a relatively thinner outer periphery and a relatively thicker central axis portion, with an overall thickness slightly greater than the desired thickness of the tuned plate;
b. holding the plate in a manner to avoid completely dampening the vibrational action of the plate;
c. tapping the surface of the plate at a selected location remote from the holding location, starting at the relatively thinner sections near the outer periphery of the plate, to produce an audible sound;
d. controllably removing material in proximity to the tapping location where the audible sound is higher than the desired audible sound, thereby lowering the audible sound;
e. working inward from the outer periphery of the plate as the desired audible sound is produced, staring with the thinnest sections of the plate and gradually working towards the central axis portion of the plate where the thicker sections of the plate are located, to manufacture and tune a wooden violin plate to the desired audible sound.

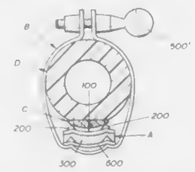
4,941,384
GUITAR
Harald Jäger, Gesslerstrasse 5, D-1000 Berlin 62, Fed. Rep. of Germany
Filed Mar. 8, 1989, Ser. No. 320,640
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1988, 3832127
Int. Cl.[5] G10D *3/12*
U.S. Cl. 84—313 **16 Claims**

1. A guitar comprising a releasable device for clamping the strings to the nut, the ball ends being secured to a base part movable around a knife edge and disposed in a recess in the body and comprising adjustable string riders and tension springs engaging the base part, characterised in that
(a) the clamping device comprises clamping jacks (2), an adjustable end pressure plate (3) with a set screw (7) and an eccentric pressure plate (4) movable by an eccentric lever (8) and between which the strings are clamped;
(b) the base part (20) has string riders (23), spacer plates (26), through bores (31) for the strings and an adjustable spring-retaining block (21) at which tension springs (39) engage, the ball ends being disposed between the through bores



and the spring-retaining block, and a prim is provided and is adjustable in position;
(c) the other spring ends are secured to a spring-holding bracket (35) connected to a tightening nut (40) by a tension-adjusting screw (37) with interposition of a tension casing (34).

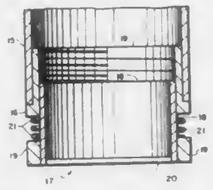
4,941,385
TONE PLATE AND CLAMPING DEVICE FOR A MUSICAL INSTRUMENT MOUTHPIECE
Conrad O. Johnson, 2414 Rosewood, Houston, Tex. 77004
Filed May 22, 1989, Ser. No. 355,664
Int. Cl.[5] G10D *9/02*
U.S. Cl. 84—383 R **8 Claims**



1. An improved tone plate for positioning a reed on a mouthpiece of a musical instrument, comprising:
a support plate for insertion into a reed clamping device;
a pair of longitudinal rails each of which is generally triangular in cross-section disposed on an upper surface of said support plate substantially parallel to the axis of the mouthpiece against which a reed can rest for positioning the reed against the mouthpiece;
an upper relatively sharp edge on the apex of each of said rails for contacting the reed and supporting the reed away from contact with any other part of the tone plate; and
a resilient mount disposed on a lower surface of said tone plate.

4,941,386
RESONATOR TUNING ADJUSTMENT FOR KEYBOARD PERCUSSION INSTRUMENTS
Leigh H. Stevens, Asbury Park, N.J., assignor to The Selmer Company, Elkhart, Ind.
Continuation of Ser. No. 114,484, Oct. 28, 1987, abandoned.
This application May 22, 1989, Ser. No. 355,784
Int. Cl.[5] G10D *13/08*
U.S. Cl. 84—410 **14 Claims**

1. Tuning adjustment means for a resonator tube of a keyboard percussion instrument comprising a cap having a tubular portion threadedly received within the lower end of said resonator tube whereby rotation of said cap in one direction advances said cap into said resonator tube to shorten the air column thereof and rotation of said cap in the opposite direction moves said cap outwardly of said resonator tube to lengthen the air column thereof, sealing means for providing a pneumatic seal between the mating threaded portions of said

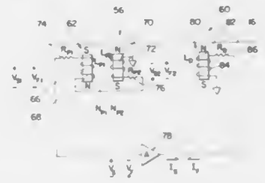


resonator tube and said cap, and holding means for holding said cap in rotational position with respect to said resonator tube, said sealing means comprising mating threads on said cap and said resonator tube and a viscous material interposed therebetween.

4,941,387
METHOD AND APPARATUS FOR INTELLIGENT CHORD ACCOMPANIMENT
Anthony G. Williams, and David T. Starkey, both of San Diego, Calif., assignors to Gulbransen, Incorporated, San Diego, Calif.
Filed Jan. 19, 1988, Ser. No. 145,093
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—609 **3 Claims**

1. A method for providing a musical performance by an electronic musical instrument comprising the steps of:
a. transposing a song having a plurality of sequences, each of the sequences having a plurality of notes, into the key of C-major and pre-recording the song with its plurality of sequences;
b. organizing the pre-recorded plurality of transposed sequences into a song data structure for playback by the electronic musical instrument;
c. organizing data within the song data structure into a sequence of portions including a header portion, an introductory sequence portion, a normal musical sequence portion, and an ending sequence portion;
d. reading from the song data structure status information stored in the header portion of the data structure;
e. proceeding to a next sequential portion of the sequence of portions;
f. getting a current time command from the header portion;
g. determining if the time to execute a current command has arrived yet;
h. continuing to step i. if the time has arrived, otherwise jumping back to step g.;
i. fetching a current event;
j. determining if a track of the current event is active;
k. continuing to step l. if the track of the current event is active, otherwise jumping back to step g.;
l. determining if a current track resolver of the current event is active;
m. continuing if the current track resolver is active to step n.;
n. selecting a resolver;
o. resolving the current event note into wavetable data; and synthesizing the wavetable data into a musical note.

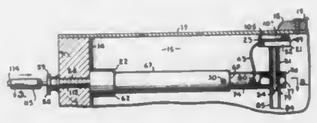
4,941,388
STRING VIBRATION SUSTAINING DEVICE
Alan A. Hoover, 4220 E. 11th St., Indianapolis, Ind. 46201, and Gary T. Osborne, 6052 N. Guilford Ave., Indianapolis, Ind. 46220
Filed May 12, 1989, Ser. No. 350,338
Int. Cl.[5] G10H *3/18, 3/24*
U.S. Cl. 84—726 **32 Claims**



1. A sustaining device for prolonging the vibration of a string of a stringed musical instrument having magnetic pickup means responsive to a change in the magnetic field caused by vibration of the string, the sustaining device comprising
a magnetic string driver means in magnetic proximity to the pickup means,
an amplifier means coupled between the pickup means and the driver means for amplifying current from the pickup means to the driver means to impart sufficient magnetic drive energy to the driver means to produce sustained vibration of the string, and
unbalancing means for creating a magnetic imbalance between the pickup means and the driver means to minimize direct magnetic feedback between the pickup means and the driver means.

4,941,389
ELECTRONIC PICKUP WITH MOUNTING ASSEMBLY FOR A HOLLOW BODIED MUSICAL INSTRUMENT
David C. Wendler, 1302 E. 19th, Lawrence, Kans. 66044
Filed Aug. 22, 1988, Ser. No. 234,487
Int. Cl.[5] G10H *3/14, 3/00, 3/18*
U.S. Cl. 84—727 **16 Claims**





1. A pickup for a stringed musical instrument having a hol-

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low body with an interior at least partially enclosed by a soundboard panel mounting the musical instrument strings, which comprises:

(a) a coil including:

(1) a bobbin including a concentric center post;

(2) an inner winding wound concentrically in a first direction on said bobbin;

(3) an outer winding wound concentrically on said bobbin around said inner winding;

(4) said windings being of substantially equal length and each having first and second ends;

(5) said first and second ends of said inner and outer windings connected at first and second winding terminals;

(b) a coil mounting assembly including:

(1) a male threaded tube extending through an opening in said instrument body and threadably mounting a nut on the exterior of said instrument body;

(2) an end plug having a female-threaded bore threadably receiving said threaded tube;

(3) an outer, tubular guide member having a bore communicating with said end plug bore and having proximate and distal ends, said guide member proximate end mounting said end plug;

(4) an inner, reciprocative tube telescopically received in said outer guide tube bore and having proximate and distal ends, said proximate end being received within said outer guide tube bore and said distal end having an end receiver extending transversely through said inner tube in proximity to said inner tube distal end, said inner tube having a coaxial bore intersecting said end receiver and a side opening;

(5) a column sleeve having proximate and distal ends and a bore extending therebetween, said sleeve being slidably received in said inner tube end receiver;

(6) a resilient, elastomeric, fluted column insulator received in said sleeve bore, said column insulator having an insulator bore coaxial with said sleeve bore and receiving said bobbin post;

(7) a nonferromagnetic coil housing mounted on said bobbin post and enclosing said coil;

(8) an inner tube set screw threadably received in said outer tube in proximity to said outer tube distal end, said inner tube set screw being adapted to impinge upon said inner tube within said outer tube bore; and

(9) a sleeve set screw threadably received in said inner tube and adapted to impinge upon said sleeve within said inner tube bore;

(c) a magnet having first and second poles;

(d) a ferromagnetic flux lens having an inner side with a concavity and an outer side, said lens terminating at a peripheral rim at said lens inner side, said rim being positioned in proximity to said second coil;

(e) said lens outer side being secured to an interior surface of said soundboard in axial alignment with said coil;

(f) said magnet being mounted at least partly within said concavity with said magnet first pole in closely-spaced proximity to said coil and said magnet second pole being attached to said lens inner side; and

(g) an electrical lead comprising first and second insulated wires connected to said coil first and second terminals respectively and conductive shielding connected to said coil housing, said lead extending through said inner tube side opening, through a portion of said inner tube, through said outer tube bore and terminating at female connection jack means at said threaded tube.

4,941,390

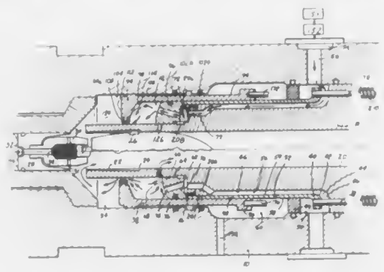
LIQUID PROPELLANT GUN

Melvin J. Bulman, Shelburne, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Aug. 7, 1980, Ser. No. 178,254

Int. Cl.[5] F41F *1/04*

U.S. Cl. 89—7 **8 Claims**



5. A liquid propellant gun comprising:

a housing,

a gun barrel,

a differential annular valve,

a differential annular piston,

said housing, barrel, valve and piston defining a fill chamber, a pumping chamber and a combustion chamber, and

valve means when under relatively low pressure for precluding the flow of liquid propellant from said pumping chamber into said combustion chamber and when under relatively higher pressure for permitting the flow of liquid propellant from said pumping chamber into said combustion chamber.

4,941,391

DRIVING PISTON BRAKING MEANS FOR EXPLOSIVE POWDER ACTUATED SETTING DEVICE

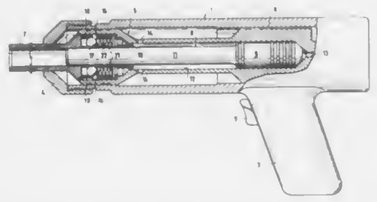
Gerhard Ehmig, Rankweil; Peter Jochum, Meiniagen, both of Austria, and Erich Maurer, Mauren, Liechtenstein, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Jun. 12, 1989, Ser. No. 365,222

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1988, 3819813

Int. Cl.[5] B25C *1/14*

U.S. Cl. 89—1.14 **7 Claims**



1. Explosive powder actuated setting device comprising an axially extending piston guide (5) having a leading end and a trailing end and forming a barrel (12), an axially extending driving piston (8) axially displaceably mounted in said barrel (12), said piston guide (5) having a recess therein opening radially outwardly from said barrel (12), a braking ball (17) located in said recess (16) and in contact with said piston (8), and spring means within said recess for contact with said braking ball, wherein the improvement comprises that said driving piston (8) has a ready-to-fire position and a fired position, said recess (16) has a dimension in the axial direction of said piston guide (5) greater than the diameter of said braking ball, said spring means arranged to bias said braking ball against said piston in the fired position of said piston, said recess has a first end surface extending transversely of the axial direction of said piston and located closer to the leading end of said piston guide and said braking ball contacts said first end surface in the fired position.

4,941,392

SCATTER AMMUNITION CONTAINER

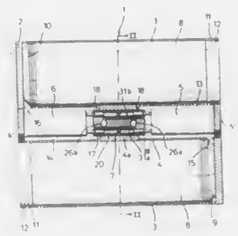
Horst Huetter, Tegernsee, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Muenchen, Fed. Rep. of Germany

Filed Dec. 22, 1989, Ser. No. 455,972

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843164

Int. Cl.[5] F41F *3/06, 5/02*

U.S. Cl. 89—1.51 **8 Claims**



1. A scatter ammunition container system having a longitudinal axis, comprising a plurality of container tube means for ejecting ammunition bodies contained in said tube means, gas generator means for generating pressurized gas, valving means for connecting said gas generator means to said tube means for supplying pressurized gas to said tube means for said ejecting, central tubular means arranged concentrically to said longitudinal axis and surrounded by said container tube means, said gas generator means comprising two gas generators (5, 6) arranged in axial alignment with each other in said central tubular means to form ring chambers (13, 14) around said gas generators, said valving means (7) comprising a slide member (7) arranged in said central tubular means intermediate said two gas generators, said slide member comprising through flow channels (21) each leading at one end into a respective one of said ring chambers, said valving means further comprising a non-return valve (22) located in each of said through flow channels (21) for closing each through flow channel in one direction of gas flow while permitting gas flow in the opposite direction, said slide member further having ports leading into said through flow channels, said ports being closed when said slide member is in a centered rest position in said central tubular means, said slide members (7) retaining said centered rest position when both gas generators are fired simultaneously for a substantially symmetrical scattering of said ammunition bodies, said slide member (7) being axially displaced in one direction out of said centered rest position in response to a firing of one gas generator and in response to a sequential firing of both gas generators for opening one of said through flow channels for a non-symmetrical scattering of said ammunition bodies, and means for arresting said slide member (7) in an axially displaced position for said non-symmetrical scattering.

4,941,393

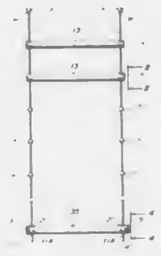
LOADING APPARATUS FOR AMMUNITION

Richard E. Dodd, Santa Ana, and William C. Baldwin, Costa Mesa, both of Calif., assignors to North American Dynamics, Tustin, Calif.

Filed Sep. 11, 1989, Ser. No. 405,338

Int. Cl.[5] F42B *39/08*

U.S. Cl. 89—35.01 **12 Claims**



1. Ammunition transport apparatus comprising:

first and second parallel wire ropes of equal length;

a plurality of first interconnection means attached to each said wire rope, each first interconnection means on said first wire rope being disposed opposite a first interconnection means on said second wire rope;

a plurality of tubes;

attachment means located at opposite ends of each said tube for receiving one of said first interconnection means and attaching each of said plurality of tubes to said first and second wire ropes;

each said attachment means comprising:

a central opening means for receiving a said first interconnection means;

a first slot means opening into said central opening means;

a second slot means opening into said central opening means; and

said first and second slot means cooperating to pass said wire rope on either side of a said first interconnection means received in said central opening means;

second interconnection means located at each end of each said first and second wire ropes such that a second interconnection means at one end of said first wire rope lies opposite a second interconnection means at one end of said second wire rope and such that a second interconnection means at an opposite end of said first wire rope lies opposite a second interconnection means on an opposite end of said second wire rope; and

connector tube means for joining the oppositely disposed second interconnection means at the respective ends of said first wire rope and at the respective ends of said second wire rope.

4,941,394

HAND-HELD AUTOMATIC FIREARM

Ulrich Zedrosser, and Walter Schwarz, both of Steyr, Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Sep. 7, 1989, Ser. No. 404,114

Claims priority, application Austria, Sep. 28, 1988, 2390/88

Int. Cl.[5] F41A *19/02*

U.S. Cl. 89—129.02 **6 Claims**

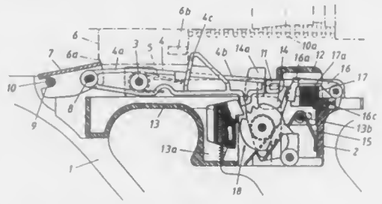
1. A hand-held automatic firearm comprising

a receiver, which defines a slider path extending in a longitudinal direction,

a firing mechanism, which is mounted in said receiver and is operable to discharge a round and comprises a slider, that comprises a catching lug and is mounted in said receiver

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to be movable along said slider path forwardly from a rear position and rearwardly to said rear position,
a slider spring, which biases said slider forwardly along said path, and
a trigger mechanism including a catch lever, which is pivoted in said receiver on an axis which is transverse to said longitudinal direction, which catch lever is pivotally movable to and from a catching position and has a forward end portion, and a catch pawl, which is pivoted to said forward end portion of said catch lever and engages said catching lug to arrest said slider as it moves forwardly



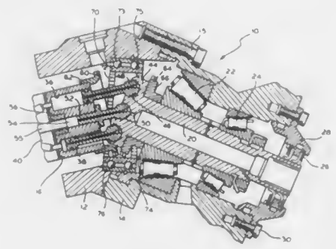
from said rear position when said catch lever is in said catching position,
a catch lever spring, which urges said catch lever away from said catching position,
catch lever locking means for locking said catch lever in said catching position against the force of said lever spring,
an abutment fixed to said receiver, and
said catch pawl having a first end portion, which is pivoted to said catch lever for a lost motion generally in said longitudinal direction, and a second end portion, which is pivotally supported on said abutment.

4,941,395

BENT-AXIS HYDRAULIC APPARATUS

Richard W. Reynolds, and Mark S. Stroze, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 8, 1988, Ser. No. 241,701
Int. Cl.[5] F01B *13/04*
U.S. Cl. 92—57 **8 Claims**



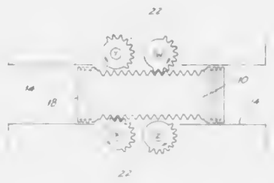
1. A spline drive for a hydraulic unit having a case, a rotatable cylinder block with a plurality of reciprocal pistons and a rotatable shaft having a total drive angle therebetween, the axes of rotation of said cylinder block and rotatable shaft being at equal angles which together provide the total drive angle and an end of said pistons being movably connected to the drive shaft whereby there is rotation of the cylinder block and rotatable shaft with simultaneous reciprocation of the pistons, said spline drive comprising: two annular series of external teeth with a series on each of the cylinder block and the rotatable shaft; a ring gear having two spaced-apart sets of internal teeth; and means rotatably mounting the ring gear within the case and at a location bisecting the total drive angle to have two non-diametrically opposed tooth meshes between a set of ring gear internal teeth and the series of teeth on the cylinder block and between the other set of ring gear internal teeth and the series of teeth on the rotatable shaft.

4,941,396

RECIPROCATING DOUBLE-ENDED PISTON

Peter J. McCabe, 12 Riverside Road, Lansvale, New South Wales 2166, Australia

Filed Nov. 28, 1988, Ser. No. 276,679
Claims priority, application Australia, Nov. 27, 1987, PI5641
Int. Cl.[5] F01B *9/00*
U.S. Cl. 92—136 **8 Claims**



1. A double ended piston for use in a reciprocating internal combustion engine, said double-ended piston having heads at both end portions, and a center portion having at least one pair of rack means substantially along the longitudinal axis of said piston, and wherein said pair of rack means are located on a pair of parallel flat surfaces along the length of said central portion, and wherein there are two crankless shafts for each rack, each having a gear sprocket per crankless shaft, wherein the gear's teeth extend around approximately one half the circumference of each gear sprocket and the crankless shafts are intermeshed to provide co-ordinated rotational force.

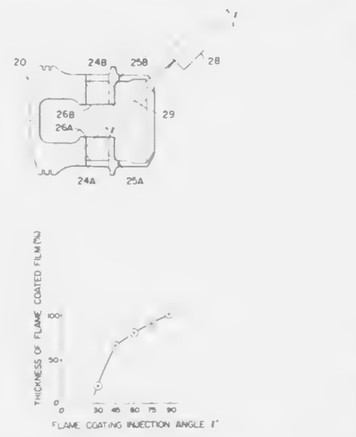
4,941,397

PISTON ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Makoto Kawai; Kazuhito Nakamura, and Minoru Kageyama, all of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan

Filed May 18, 1989, Ser. No. 283,211
Claims priority, application Japan, Dec. 11, 1987, 62-312109
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—223 **11 Claims**

6. A piston for an internal combustion engine comprising: a piston body having a head portion and a skirt portion extending axially rearwardly relative to the head portion; means defining a pair of transversely extending bosses in the piston body, the bosses having respective inner faces in spaced-apart opposed relation to each other and having respective bores in axial alignment with each other, the bosses being suitably spaced apart to receive therebetween one end of a connecting rod which undergoes swinging slidable movement relative to the boss inner faces during use of the piston; and a flame-coated film flame-coated on the opposed inner faces of the bosses, the flame-coated film being composed of a material having lubricating and hardness properties effective to reduce abrasion and



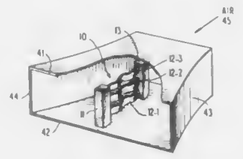
wear of the boss inner faces due to swinging slidable movement of the connecting rod during use of the piston.

4,941,398

OSCILLATING REED AND METHOD

Joseph W. Morris, Columbia, and Thomas A. Melbourne, Laurel, both of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Jun. 3, 1981, Ser. No. 270,041
Int. Cl.[5] B60H *1/34*; F24F *13/10*
U.S. Cl. 98—2 **23 Claims**



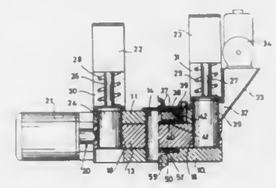
1. In an air flow system having a source of air pressure flowing through a channel to an outlet means to issue as a sweeping air stream pattern, a resilient reed oscillator element having an upstream end and a downstream end, means securing said downstream end to said outlet means in fixed relation relative to said upstream end so that said upstream end is freely oscillatable, solely by air flow, between a pair of extreme positions, said extreme positions being spaced from the wall surfaces defining said outlet means and said channel and a weight member on said upstream end, the improvement wherein said resilient reed oscillator element is at least one thin strip member consisting of a single layer of elongated fibers bound in a resin matrix to improve the fatigue strength of said resilient reed oscillator element as compared to spring steel, all of said enlongated fibers being parallel to one another.

4,941,399

AUTOMATIC APPARATUS FOR THE PREPARATION OF EXPRESSO COFFEE

Elia Zucchetti, Borgarello, Italy, assignor to Brasilia Srl, Italy

Filed Jan. 26, 1989, Ser. No. 301,922
Claims priority, application Italy, Jan. 26, 1988, 19204 A/88
Int. Cl.[5] A47J *31/34*
U.S. Cl. 99—289 P **12 Claims**



1. In an automatic apparatus for preparation of one of more servings of expresso coffee, such apparatus including a rotatable board provided with at least one cylindrical through hole with a size suited for holding a predetermined amount of fresh coffee grounds, said board being driven into rotation by motor means so that said at least one cylindrical through hole assumes, consecutively, three pre-set positions for the charging and pressing of the fresh coffee grounds, for the infusion with hot water under pressure into the coffee grounds and for the discharge of used coffee grounds, respectively, said board being rotatingly housed between two fixed plates, of which the top plate supports means for the charging of desired amounts of fresh coffee grounds in said at least one cylindrical through hole, means for the pressing of the ground coffee disposed is said at least one cylindrical through hole, and ejection means for discharging the coffee grounds, said charging and pressing means and said ejection means being mounted in diametrically opposed positions with respect to said rotatable board, the improvement wherein the said top plate is fitted with a support for an infusion shower of hot water under pressure at the infusion position, said support having a cylindrical cavity in which is slidingly disposed a piston, said cavity being connected, through flow interception valve means, to a supply of hot water under pressure, said shower being mounted under said piston and being connected with said cavity above said piston both through first non return valve means openable under a pre-set pressure and through second relief valve means, said lower plate being provided, at said infusion position, with a filter seating cavity in communication with a delivery spout for the prepared expresso coffee, said first non return valve means being set to open when the hot water feeding pressure is higher than a pre-set value, and said second relief valve means being pre-set to vent residual pressure under said shower and piston.

4,941,400

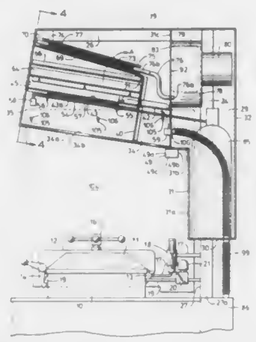
VENTLESS HOOD FOR A DEEP FAT FRYER

David O. Moore, Eaton, Ohio, assignor to Henny Penny Corporation, Eaton, Ohio

Filed Sep. 28, 1989, Ser. No. 413,913
Int. Cl.[5] A47J *37/12*; F24C *15/20*; B01D *47/02*
U.S. Cl. 99—403 **16 Claims**

1. A ventless hood assembly for a commercial deep fat frying pressure cooker having a cooking pot with a lockable cover in which cooking is performed by a heated bath of cooking oil and steam under pressure derived from the moisture in the food being cooked, said hood assembly comprising an inverted L-shaped structure having a vertical rearward portion extending upwardly from the rear of said cooker and a forward open-bottom portion spaced from and overlying said pot, filter means supported above said pot by and within said forward hood portion, a fan mounted in said rearward hood portion and positioned to draw ambient air and cooking gasses through

said filter means, a water tank containing a water bath mounted on the rear of said cooker, a heat exchanging radiator mounted within said forward hood portion above said filter means and ahead of said fan, pump means to recirculate water from said tank through said radiator and back to said tank to cool said water bath, means to introduce excess steam and vaporized cooking oil into said water bath to maintain a predetermined



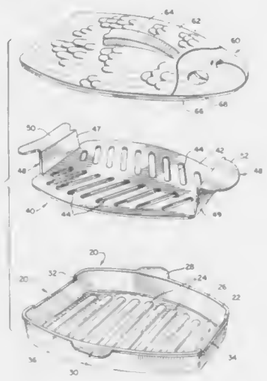
pressure within said cooking pot, means at the end of the cooking cycle to introduce substantially all of the steam and vaporized cooking oil in said cooking pot into said water bath prior to opening said cooking pot cover, and means to vent non-condensables, uncondensed steam and vaporized cooking oil and unabsorbed odors directly from said water tank to said open bottom of said hood forward portion.

4,941,401

MICROWAVEABLE FISH POACHER

Norton Sarnoff, Northbrook, and Carl R. Fletcher, Arlington Heights, both of Ill., assignors to Ensar Corporation, Wheeling, Ill.

Filed Jan. 9, 1990, Ser. No. 462,612
Int. Cl.[5] A47J *27/00*; H05B *6/80*
U.S. Cl. 99—446 **6 Claims**



1. An elongated microwaveable fish poacher comprising a non-metallic, plastic base, rack and cover, and defining a fish poacher interior,

said base being dish-shaped and comprising a floor and an upstanding peripheral sidewall and a pair of handles which extend outwardly beyond said cover so as to enable said base, rack and cover to be carried together by said handles,

said rack comprising a perforated fish supporting base and a pair of handles which extend outwardly beyond said base so as to enable said rack and cover to be carried together by said rack handles,

said cover comprising a cover portion for overlying said base and said rack and defining a depending lip confronting said upstanding peripheral sidewall, and a handle which enables said cover to be removed from said base and rack,

means on one of said rack base and said floor for elevating said rack base above said floor,

notch means defined by at least one of said upstanding peripheral wall and said depending lip, and

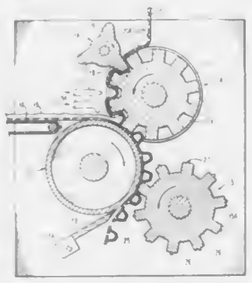
said rack handles being disposed in and extending outwardly through said notch means.

4,941,402

APPARATUS FOR ENCAPSULATING FILLER WITH DOUGH

Joseph C. D'Alterio, 64 Sugar Maple La., Glen Cove, N.Y. 11542

Filed May 24, 1989, Ser. No. 356,221
Int. Cl.[5] A21C *9/00, 9/06*
U.S. Cl. 99—450.6 **9 Claims**



1. An apparatus for continuously encapsulating a filler with fresh dough in the form of a multiplicity of dough capsules containing said filler, which comprises;

a cylindrical feed roller,

a pocket-forming roller with axially and circumferentially equispaced cavities in its cylindrical surface and with a circumferential thin ridge projecting from said surface between each pair of said axially spaced cavities, said pocket-forming roller being positioned parallel to, and in contact with, an upper quadrant of said feed roller,

a cutting roller with circumferentially equispaced flutes extending lengthwise in said cutting roller and with a lengthwise thin ridge projecting from said cutting roller between each pair of said spaced flutes, said cutting roller being positioned parallel to, and in contact with, the lower quadrant of said feed roller below said upper quadrant, and

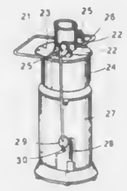
synchronous drive means to rotate said feed roller in one direction and to rotate said pocket-forming roller and said cutting roller in the opposite direction so that a sheet of said dough with said filler thereon and a second sheet of said dough supplied to the bite of said feed roller and said pocket-forming roller are first formed and cut into longitudinal strips of linked capsules containing said filler and then said strips are cut transversely in the bite of said feed roller and said cutting roller to yield said multiplicity of said dough capsules.

4,941,403

JUICE EXTRACTOR MACHINES FOR FRUIT AND VEGETABLES

Antonio Cimenti, Via Baron 15, S. Dona' di Piave (VE), Italy (30027)

Filed Jul. 1, 1988, Ser. No. 214,434
Int. Cl.[5] A23N *1/00*
U.S. Cl. 99—492 **9 Claims**



1. A juice extracting machine comprising:

a substantially cylindrical body having two axially-oriented slots which are substantially diametrically opposed to each other;

a substantially cylindrical extraction chamber attached to an upper portion of the body;

a cover attached to an upper portion of the extraction chamber, said cover having an opening to receive a pestle to press material from which juice is to be extracted into the extraction chamber;

two upper support means attached to or integral with an upper surface of the cover;

a first substantially U-shaped lever having a closed end and two free ends, wherein each of the two free ends includes engagement means and is connected in an oscillatory manner to one of the upper support means;

a second substantially U-shaped lever having a closed end and two free ends, wherein each of the two free ends includes lower support means positioned in one of the two slots of the body and is connected in an oscillatory manner to the body, said second lever being positioned such that the closed end is able to cooperate with said engagement means;

and switching means within the body to allow for actuation of a motor within the body;

wherein oscillation of the first lever when the closed end of the second lever is engaged with the engagement means allows the engagement means to displace the second lever in an axial direction with respect to the body, thus clamping the cover while simultaneously actuating the switching means.

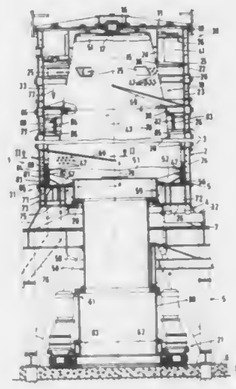
4,941,404

SCREW PRESS

Kurt Tegtmeyer, Salzgitter, Fed. Rep. of Germany, assignor to Salzgitter Maschinenbau GmbH, Salzgitter, Fed. Rep. of Germany

PCT No. PCT/EP87/00671, § 371 Date Aug. 11, 1988, § 102(e) Date Aug. 11, 1988, PCT Pub. No. WO88/04989, PCT Pub. Date Jul. 14, 1988
PCT Filed Nov. 4, 1987, Ser. No. 272,895
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1987, 3700016
Int. Cl.[5] B30B *3/02*
U.S. Cl. 100—117 **13 Claims**

13. A screw press, comprising a housing having a spray casing and a screen casing arranged within said spray casing and forming an annular space therebetween; at least one press spindle located within said screen casing and forming a pressing space therebetween, said at least one press spindle having a plurality of wing members and at least one axial zone free of said wing members; and at least one dewatering member which is supported by said housing and located in said at least one axial zone in said pressing space between said spindle body and said screen casing, said at least one dewatering member being hollow and provided with a plurality of perforations and also having an outlet which opens into said annular space between said screen casing and said spray casing, said at least one dewatering member being arranged at a radial distance from said



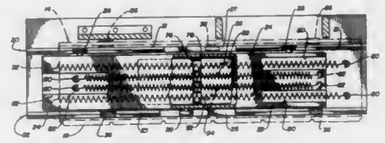
spindle and said screen casing; and at least one carrier holding said at least one dewatering member; means for rinsing said at least one dewatering member and including at least one rinsing line introduced into said dewatering member, said rinsing means also including a rinsing fluid source and a connection line extending through said housing and connecting said rinsing fluid source with said rinsing line, said connection line being formed as said carrier.

4,941,405

DRIVING MECHANISM FOR RECIPROCATING PRINT SHUTTLE

Cliff Helms, Temecula, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Dec. 16, 1987, Ser. No. 133,556
Int. Cl.[5] B41J *3/10*
U.S. Cl. 101—93.04 **39 Claims**



1. An apparatus comprising:

a base;

a carriage mounted for reciprocating movement on said base;

means for movably supporting the carriage on the base with minimal resistance to linear oscillation of the carriage relative to the base;

at least one printhead mounted on the carriage;

a counterbalancing mass mounted on the base for reciprocating movement with respect to the carriage;

at least one spring interconnecting the carriage and the counterbalance mass a permit oscillatory movement of the carriage and the counterbalancing mass as a natural reso-

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nant frequency defined by the masses of the carriage and counterbalancing mass and the spring constant of the spring, wherein said at least one spring remains in expanded tension throughout the oscillation of the carriage and the counterbalancing mass; and

drive means supported by the base and coupled to the carriage for imparting a variable force sufficient to maintain oscillation of the carriage and counterbalancing mass at substantially said natural resonant frequency.

4,941,406

MAGNETIC AND AERODYNAMIC LEVITATION VEHICLE

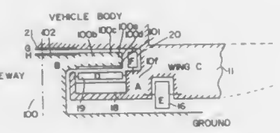
Joachim E. Lay, 5371 Wild Oak Dr., East Lansing, Mich. 48823

Filed Jun. 9, 1988, Ser. No. 204,542

Int. Cl.[5] B61B *13/08*; B64F *3/00*

U.S. Cl. 104—23.1 **4 Claims**





1. A vehicle for travel along a rail which comprises:

(a) an enclosed fuselage having a longitude axis, a front end, a rear end opposite the front end and opposed sides between the ends and having a cross-sectionally T-shaped slot along and parallel to the axis of the fuselage adapted for mounting the fuselage on a cross-sectionally T-shaped rail the rail having a cross-member including spaced apart arms projecting horizontally under the fuselage wherein the T-shaped slot is around an underside of the arms of the cross-member of the T-shaped rail;

(b) at least four wheels mounted on the fuselage for contacting a surface which supports the fusclage on the wheels when at rest;

(c) wings mounted on the sides of the fuselage to which provide lift when the vehicle is in motion;

(d) magnetic attraction means mounted on the underside of the cross member of the T-shaped rail and on a top side of the arms of the fuselage such that the arms and cross member are spaced apart when the wheels are on the ground;

(e) first roller means mounted on the arms between the magnetic attraction means and the cross-member such that the first roller means rides on the underside of the cross-member when the vehicle is in motion, wherein the first roller means has an axis of rotation which is horizontal and perpendicular to the axis of the fuselage;

(f) second roller means mounted adjacent the arms and spaced from opposed ends of the cross member of the T-shaped rail and having a vertical axis of rotation perpendicular to the axis of the fuelage and the first roller means; and

(g) propulsion means mounted at the rear of the fuselage for propelling the vehicle along the T-shaped rail such that when the vehicle is propelled the combination of lift from the wings and lift from the magnetic attraction means raises the wheels from the surface, and wherein the first and second roller means guide the vehicle along the rail.

4,941,407

AUTOMATED GUIDED VEHICLE SYSTEM

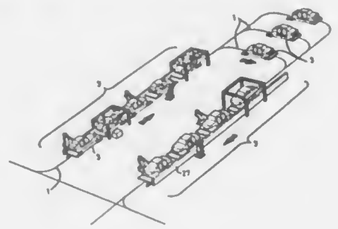
Norman B. Pigott, Bishop's Stortford, England, assignor to Litton U. K. Limited, United Kingdom

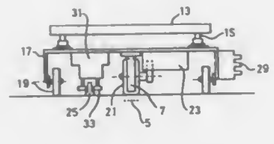
Filed Mar. 30, 1988, Ser. No. 175,109

Claims priority, application United Kingdom, Apr. 1, 1987, 8707790

Int. Cl.[5] B60L *11/12*

U.S. Cl. 104—289 **5 Claims**





1. A vehicle assembly line having an automated unmanned vehicle guidance system, said system comprising, in combination with the unmanned vehicle;

a plurality of discrete physically constraining track portions for guiding a vehicle having the ends thereof spaced apart,

at least one path for vehicle movement which does not have any physically constraining track and which extends between at least one of said physically constraining track portions and at least one end of another of said physically constraining track portions,

means whereby said vehicle receives driving power from an external power source at the location of said track portions to move said vehicle at a first selected speed along the physically constraining track portions,

a power source on-board the vehicle to provide driving power for moving the vehicle at a second selected speed slower than the first selected speed along the path which does not have any physically constraining track between said track portions, and

means whereby the vehicle receives direction guidance signals during movement along the at least one path not having any physically constraining track whereby to cause said vehicle to be moved by said on-board power source between said physically constraining track portions.

4,941,408

ADJUSTABLE FRAME FOR RAIL WHEELS ON MOTOR VEHICLES ADAPTABLE TO RIDE ON RAILROAD TRACKS

Estel L. Lovitt, Jr., 5102 Brenden Way, Sylvania, Ohio 43560

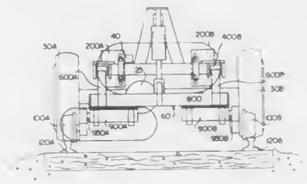
Filed Dec. 15, 1988, Ser. No. 284,592

Int. Cl.[5] B61D *15/00*

U.S. Cl. 105—72.2 **1 Claim**

1. An apparatus for adjustment of auxiliary rail wheels that are rotatably mounted on a land based motor vehicle with a frame that is affixed with such auxiliary rail wheels for maneuvering such vehicle on rails, said apparatus comprising:

(a) an upper support member having two ends affixed to the underside of the motor vehicle frame, said upper support member being a parallelopiped-shaped member with a rectangular cross-sectional configuration and having a hollow interior, said upper support member being disposed transversely to longitudinally extending front to rear central axis of said motor vehicle, said upper support member having a pair of rotatable arms wherein each rotatable arm has an upper end and a lower end, with the upper ends rotatably affixed on each end of said support member adapted to be moved up or down in an arc of



ninety degrees from a horizontal position to a vertical position;

(b) a lower transverse beam connected to the lower ends of each of said rotatable arms, said lower transverse beam having rail wheel axles connected to a pair of slidable adjustment members on each end on said lower transverse beam adapted to slide back and forth along the ends of said lower transverse beam, with rail wheels rotatably affixed on each slidable adjustment member, to move the rail wheels in or out relative to one another.

4,941,409

WHEEL SET GUIDANCE FOR TRUCKS OF RAIL VEHICLES, ESPECIALLY COMMUTER TRAFFIC VEHICLES

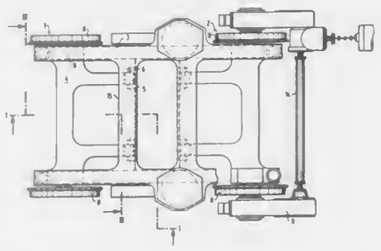
Wolfgang-Dieter Richter, Winkelhaid; Engelbert Weeger, Nuremberg; Lutz Uebel, Heroldsberg, and Erhard Foerster, Lilienthal, all of Fed. Rep. of Germany, assignors to MAN Gutehoffnungshütte AG, Oberhausen and Bremer Strassenbahn AG, Bremen, both of, Fed. Rep. of Germany

Filed Mar. 15, 1989, Ser. No. 323,635

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1988, 3808593

Int. Cl.[5] B61F *3/08, 5/30*

U.S. Cl. 105—157.1 **3 Claims**



1. In a wheel set guidance for trucks of rail vehicles, especially commuter traffic vehicles, which includes a first wheel set and a second wheel set, with the wheels of a given one of said wheel sets being pivotably connected with a cross-member of a truck frame via a respective frame structure about an axis of rotation that is disposed horizontally and transverse to the direction of travel, and with primary springs being provided between said frame structures and longitudinal members of said truck frame, whereby a car body is also spring-suspended relative to said longitudinal members of said truck frame via secondary springs, the improvement therewith wherein:

said truck is provided with four wheels, which are embodied as free wheels in which each of said wheels is independently connected to said frame structure by a separate short axle, with two of said free wheels forming said first wheel set, and two other of said free wheels forming said second wheel set;

each of said free wheels is connected to said frame structure by a secure-against-tilt and tip-resistant means via a pedestal bearing;

each of said frame structures has a U-shaped and twist-resistant torsionally-stiff box girder section and is connected, in the vicinity of said longitudinal members and within the same, via two mountings to a respective one of said cross-members of said truck frame in such a way as to be pivotable in a vertical direction; and

said free wheels of said second wheel set are interconnected by means to preclude any independent rotating thereof including a torsionally-stiff arrangement via gear means and also adapted to be driven by a drive motor.

4,941,410

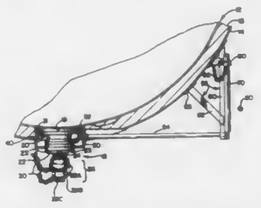
OUTLET VALVE ASSEMBLY WITH AN EXTENDED HANDLE FOR A RAILWAY TANK CAR

Thomas H. Dalrymple, Crown Point, and Richard L. Zagrocki, Griffith, both of Ind., assignors to Union Tank Car Company, East Chicago, Ind.

Filed Oct. 13, 1988, Ser. No. 257,423

Int. Cl.[5] B61D *5/00*; F16K *51/00, 31/00*

U.S. Cl. 105—358 **5 Claims**



1. In a railway tank car having a generally cylindrical tank supported at its oppositely disposed ends on trucks disposed to ride on railway tracks, an outlet valve assembly comprising:

a valve mounted at the bottom of said cylindrical tank for discharging downwardly between the railway tracks and operable between a closed position to occlude flow through said valve and an open position to permit flow through said valve, a shaft operably connected to and extending from said valve on a horizontal axis perpendicular to the longitudinal axis to operate said valve between said closed and open positions;

a support means mounted to said tank for supporting said shaft at a region spaced from said valve, said support means includes a bracket assembly comprising a generally vertically oriented channel for receiving a distal end of said shaft, said bracket assembly further includes an upwardly angled strut connecting said channel to said tank; and

a handle connected to said shaft at a predetermined distance from said valve for rotation of said shaft, said handle extending generally radially outwardly from said shaft, said handle extending generally radially outwardly from said shaft and connected to said shaft such that swinging of said handle through an arc in a plane parallel to the longitudinal axis of said cylindrical tank is operative to move said valve between said closed and open positions as said handle is swung from an initial orientation to a final orientation, the length of said handle and said predeter-

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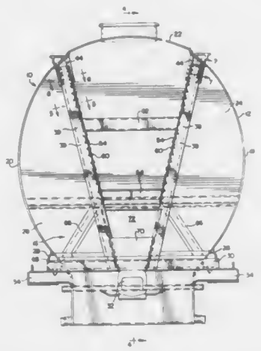
mined distance between said valve and said handle connection to said shaft being such as to permit a person to swing said handle between its initial orientation and its final orientation while standing outside of the railway tracks.

4,941,411

STEEL END STRUCTURE FOR ALUMINUM RAILCAR

Stephen D. Wong, Oakville, Canada, assignor to Procor Ltd., Canada

Filed Mar. 1, 1989, Ser. No. 317,442
Int. Cl.[5] B61D *17/00*
U.S. Cl. 105—421 17 Claims



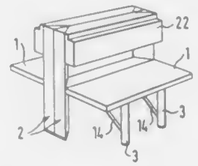
1. In a railcar having an aluminum body portion comprising aluminum side sheets and aluminum end sheets, and a side sill secured to a lower marginal portion of each of said side sheets and extending lengthwise of the car; an improved steel end structure assembly connected to said aluminum body portion, comprising: a steel center stub sill assembly located generally on the longitudinal centerline of the body portion, steel body bolsters extending transversely of said body portion intermediate an outer end of said center stub sill assembly and the ends of said side sills; a steel shear plate supported on and attached to said body bolsters and said center stub sill; a pair of spaced-apart steel end stiffener members extending between and secured to the upper surface of said shear plate and to said end sheet and said side sheets; said end stiffener members having a depth that increases from the top toward the bottom thereof; said end stiffener members extending downwardly and inwardly from an upper portion of said side sheets towards a portion of said shear plate above said center stub sill assembly; said end stiffener members being secured at a top portion thereof to a first aluminum connector plate that is secured to said end sheet and said side sheet; said end stiffener members being secured at an intermediate portion thereof to an aluminum bracket member secured to said end sheet; and said bracket member being an elongated angle bracket member having a first leg portion in contact with and secured to said end sheet and a second leg portion in contact with and secured to said intermediate portion of said stiffener member.

4,941,412

MODULAR WORKING TABLE

Hartmut S. Engel, Freiberg am Neckar, Fed. Rep. of Germany, assignor to Ernst Fischer GmbH & Co., Freudenstadt, Fed. Rep. of Germany

Filed Aug. 12, 1988, Ser. No. 231,754
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727193
Int. Cl.[5] A47B *3/06*
U.S. Cl. 108—156 15 Claims



1. Working table comprising:
working surface;
first and second front support elements and first and second rear support elements for supporting said working surface;
each of said rear support elements comprising a hollow section having a tubular central part with an outer periphery, coupling channels formed on said tubular central part and distributed around said outer periphery, and with at least two coupling flanges which extend along at least a part of said hollow section, said coupling flanges subtending an angle to one another;
coupling elements secured to said working surface at a position corresponding to said first and second rear support elements and being complementary in shape to said coupling flanges;
means for connecting said coupling elements to said coupling flanges in form and force-locked manner;
said coupling channels being orientated in two planes which extend perpendicular to one another and provided with respective projections; and
first, second and third cover sections comprising a first planar cover section plate fixable between said coupling flanges, and first and second angled cover sections being fixable in each case between a said coupling flange and a said projection of a said coupling channel, said cover sections together with said hollow section forming a closed hollow section having a cross-section in the form of a right triangle.

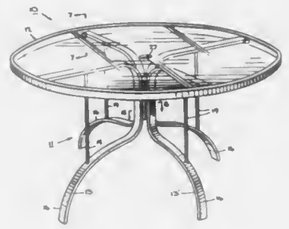
4,941,413

TABLE WITH REINFORCED LEG STRUCTURE

Robert D. Vanderminden, Granville, N.Y., assignor to Telescope Casual Furniture Co., Granville, N.Y.

Continuation of Ser. No. 611,635, May 18, 1984. This application Aug. 25, 1989, Ser. No. 398,637
Int. Cl.[5] A47B *3/06*
U.S. Cl. 108—157 17 Claims

1. A table comprising
a base having a plurality of depending legs, a plurality of outwardly directed supports disposed in a common horizontal plane, a plurality of intermediate sections connecting said legs and supports and a plurality of vertical struts, each said strut extending between a respective leg and a respective support to stiffen said support; and
a tabletop mounted on said base, said tabletop including a peripheral rim defining a depending lip about said supports and means on said lip for releasably engaging with said supports to releasably lock said tabletop to said base, said means including a plurality of L-shaped brackets secured to said lip, each said bracket having a horizontal leg engaging under a respective support and a vertical wall abutting said respective support with each support



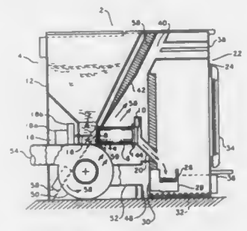
being movable away from said vertical wall during release of said support from said tabletop.

4,941,414

STOVE HAVING A ROTATING FEED CYLINDER FOR PARTICULATE FUEL

Timothy R. Carlson, 20149-44th Ave. NE., Seattle, Wash. 98155

Filed Mar. 17, 1989, Ser. No. 325,266
Int. Cl.[5] F23K *3/10, 3/16*
U.S. Cl. 110—108 22 Claims



1. In a stove having a combustion chamber, a solid particulate fuel feed system cooperating with said combustion chamber, said fuel feed system comprising:
a fuel hopper for holding solid particulate fuel;
a hollow feed cylinder disposed with its longitudinal axis lying generally horizontal and mounted for rotation about said axis, said hollow feed cylinder having an open entry end in communication with said fuel hopper and a discharge end; and
a drive means for rotating said cylinder such that solid particulate fuel in said hopper feeds into said hollow cylinder so as to form a bank of fuel sloping downwardly from said entry end to said discharge end, the solid particulate fuel traveling in said bank in said hollow cylinder and being uniformly discharged into said combustion chamber of the stove due to rotational motion of said hollow cylinder.

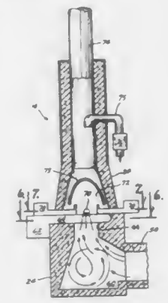
4,941,415

MUNICIPAL WASTE THERMAL OXIDATION SYSTEM

G. Michael Pope, Ottumwa, and Donald F. Kerr, Burlington, both of Iowa, assignors to Entech Corporation, Ottumwa, Iowa

Filed Nov. 2, 1989, Ser. No. 430,371
Int. Cl.[5] B09B *3/00;* F23G *7/00*
U.S. Cl. 110—235 10 Claims

1. A municipal waste incinerator, comprising:
a primary combustion chamber for receiving waste materials to be burned to yield combustion gases;
means for transporting said combustion gases to a secondary combustion unit for re-igniting the combustion gases;
said secondary combustion unit including a chamber having a bottom feed opening for receiving the combustion gases, a top exhaust opening, and an intermediate choke and air mixing section;
an air mixing means disposed in said air mixing section for supplying outside air from a plurality of points around the periphery of the air mixing section, and being directed toward the center thereof;



means for forming a flue gas cone having an upwardly directed apex, said cone forming means including said intermediate choke and said air-mixing means; and
a plurality of re-ignition burners disposed around the periphery of said air mixing section and being disposed immediately above said air mixing means at the apex of the flue gas cone, each of said burners being disposed such that a flame extending therefrom is directed about 30° degrees off of center of the air mixing section, whereby the flames extending from the burners form a vortex to assist in the mixing and complete burning of the combustion gases before they exit the top exhaust opening.

4,941,416

ACTUATING MECHANISM FOR A GROUND-ENGAGING TOOL

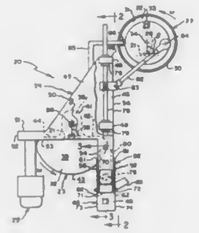
Frank W. Faulring, 4841 Genesee Rd., North Collins, N.Y. 14111

Filed Dec. 1, 1988, Ser. No. 278,673
Int. Cl.[5] A01C *11/02;* A01B *49/04*
U.S. Cl. 111—102 21 Claims

1. An actuating mechanism for controlling the movement of a tool which is adapted to selectively engage the ground while being translated therealong, comprising:
a frame adapted to be translated along the ground at a ground speed;
a cam mounted on said frame for rotational movement about a first axis, said cam having a cam surface configured as a surface of revolution generated about a second axis positioned eccentrically with respect to said first axis;
a link having a first marginal end portion mounted on said frame for rotational movement about a third axis and having a second marginal end portion;
a member mounted on said link second marginal end portion for rotational movement about a fourth axis, said member having a follower arranged to engage said cam surface, said cam and link means being so oriented and arranged with respect to one another that a line between said first and second axes will be substantially equal in length and parallel to a line between said third and fourth axes so as to maintain the spatial orientation of said member as said cam and link rotate about their respective rotational axes with said frame, said member having a horizontal velocity component which is sinusoidal and having a vertical ve-

locity component which is also sinusoidal but which is substantially 90 degrees out-of-phase with respect to said horizontal component, said member also carrying a tool; and

motor means for rotating at least one of said cam and link means about its rotational axis with said frame in an angular direction and at an angular speed such that, when said



member is in the vicinity of its bottom dead center position, the horizontal velocity component of said member will be of such magnitude and direction as to substantially cancel the ground speed of said frame;

whereby said tool may be selectively lowered to engage the ground at a substantially-zero net horizontal speed relative thereto.

4,941,417

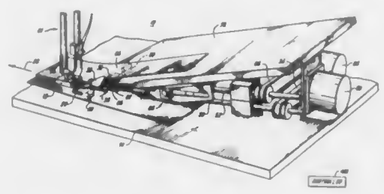
FULL FELLED SEAM FOLD ASSEMBLY

Mitchell L. Hansberry, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 3, 1989, Ser. No. 319,120

Int. Cl.[5] D05B *35/02*

U.S. Cl. 112—142 **11 Claims**



1. Seam forming apparatus for forming a full felled seam at one lateral edge of each of two limp material segments, comprising:

a fold assembly extending along a reference axis from an input end of said assembly to an output end of said assembly, and including:

A. a rigid central member extending along said reference axis and having a substantially Z-shaped cross-section at said output end and having a substantially I-shaped cross-section at said input end, said Z-shaped cross-section being substantially symmetrically disposed about said reference axis, and said central member having a substantially continuously decreasing Z-shaped cross-section between said output end and said input end,

B. a rigid upper guide member having an inner surface with a substantially V-shaped cross-section,

C. means for positioning said rigid upper guide member adjacent to the upper surface of said central member, whereby said inner surface of said upper guide member is disposed near said output end of said central member and opposed to and offset from the upper vertex of said Z-shaped portion of said central member, thereby forming a segment guide channel,

D. a rigid lower guide member having an inner surface with a substantially V-shaped cross-section, and

E. means for positioning said rigid lower guide member adjacent to the lower surface of said central member, whereby said inner surface of said lower guide member is disposed near said output end of said central member and opposed to and offset from the lower vertex of said Z-shaped portion of said central member, thereby forming a segment guide channel.

4,941,418

SEWING INSTALLATION FOR FABRIC ARTICLES

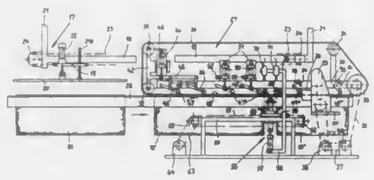
Siegfried Henze, Saal/Saale; Hans Ziegler, Grossbardorf, and Martin Schnaus, Bad Königshofen, all of Fed. Rep. of Germany, assignors to Texpa Arbter Maschinenbau GmbH, Fed. Rep. of Germany

Filed Nov. 4, 1988, Ser. No. 267,331

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1987, 3737369

Int. Cl.[5] D05B *27/12*

U.S. Cl. 112—304 **8 Claims**



1. Sewing installation for fabric articles, comprising a first material handling means for the fabric articles drawn from a stockpile, which transfers the fabric articles to a second material handling means having endless conveyor belts with bottom drums, a lifting means for raising the conveyor belts for an introduction of the fabric articles over a portion of their length and for lowering the conveyor belts for a pick-up and further conveyance of the fabric articles to at least one sewing machine, the lifting device having movable lifting elements which have means to engage from below in turn on the bottom drums of the conveyor belts, the improvement wherein:

(a) the lifting elements (56) have means to be driven back and forth substantially parallel to the conveyor belts (30) of the second material handling means (27), and can be driven in a direction of conveyance in a raised state and in an opposite direction in a lowered state,

(b) the raising and lowering movement of the conveyor belts (30) of the second material handling means (27) as well as the raising and lowering movement and the back and forth movement of the lifting elements (56) are controlled by means of following scanning elements (70, 71), which detect ends and beginnings of fabric articles (10) which are in series one following another, and

(c) the conveyor belts (30) of the second material handling means (27) have means to circulate continuously in the raised and lowered state.

4,941,419

CATAMARAN BOAT STRUCTURE

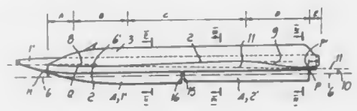
Dario Corti, Corso Venezia, 12, 20122 Milano, Italy

Filed Apr. 25, 1989, Ser. No. 342,754

Claims priority, application Italy, Apr. 29, 1988, 20370 A/88

Int. Cl.[5] B63B *1/00*

U.S. Cl. 114—61 **7 Claims**



1. A motorboat of the cataraman type comprising two tubular elements of substantially cylindrical shape, tapering at respective end portions thereof, made of an elastomeric material and arranged with a parallel and symmetrical relationship with respect to a longitudinal axis of the motorboat and coupled and spaced by a deck forming a bottom of a top dead structure, at a bottom portion of each tubular element there being coupled a rigid elongated hull extending substantially along said tubular element and consisting of at least a portion of a hollow section member having a closed loop cross section, the deck delimiting a top portion of a tunnel formed by the motorboat with the surface of the water being longitudinally shaped so that the height of the tunnel, having a gradually varying height from the boat bow to the boat stern, assumes a minimum value at the rear ends of the hulls, wherein said deck comprises, starting from the motorboat bow, a first positive slope portion which forms with a parallel line to the floating line passing through the front end of the deck an angle from about 0° to 5° for a length equal to about 10 to 15% of the overall length of said motorboat, meeting with a central region with a first portion of substantially zero slope followed by a portion having a slope from 0° to −5°, and a penultimate portion of greater positive slope from about 5° to 45° to arrive at the lowermost point of the deck bottom therefrom the slope becomes negative again, from 0° to 5°, at the terminal end portion, an optimum angle between the line coupling the lowermost point of the deck to the end point of the first portion and the floating line varying from 1° to 6°.

4,941,420

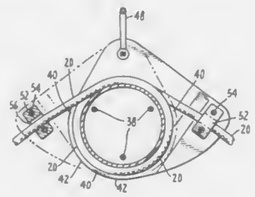
SAILBOAT ROOM CONTROL DEVICE

Harold L. Heintz, 8422 New York Dr., Stockton, Calif.

Filed Feb. 16, 1989, Ser. No. 310,948

Int. Cl.[5] B63H *9/04*

U.S. Cl. 114—102 **1 Claim**



1. A device for controlling the swinging movement of the main boom on a sailboat, said device comprising,

(a) a clindrical hollow drum having a smooth outer surface to receive a coil of rope,

(b) a pair of spaced, substantially parallel plates secured to the ends of the drum and overlapping the outer surface of the drum to form end walls for confining a coil of rope on the outer surface of the drum,

(c) each of said plates being substantially triangular in shape and having a curved edge portion concentric to the outer surface of the drum,

(d) each of said plates also having first and second extensions with end portions spaced closely adjacent to, but beyond, the circumference of the drum when wrapped with a coil of rope,

(e) said first extensions on the plates disposed opposite each other and provided with means for pivotally attaching the device to the main boom for the sailboat,

(f) said second extensions on the plates being disposed in oposite directions to each other and each terminating in an offset segment, and

(g) rope guides mounted on said offset segments positioned tangentially to the cylindrical outer surface of the drum whereby a coil of rope can pass freely therethrough so as to be laid in a neat wrap on the outer surface of the drum.

4,941,421

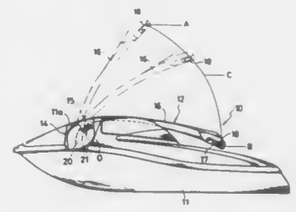
STEERING MECHANISM FOR AQUATIC VEHICLE

Ron L. Anderson, Irvine, Calif., assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 23, 1988, Ser. No. 248,369

Int. Cl.[5] B63H *25/02*

U.S. Cl. 114—144 R **11 Claims**



1. A steering mechanism for an aquatic vehicle having a hull comprising:

a stationary housing secured to the hull on a deckside thereof;

a movable housing movable relative to said stationary housing;

a steering pole having one end as a base end secured to said movable housing and the other end as a free end to which a handle member is secured;

guide means disposed on said surfaces of either one of said stationary housing and said movable housing; and

a movable mechanism disposed on the other one of said stationary housing and said movable housing and engageable with said guide means and movable therealong, said movable mechanism comprising a plurality of rollers in rolling engagement with said guide means and rollable therealong.

4,941,422

HATCH VENTILATOR AWNING FOR BOATS

Marshall K. Muller, 969 Mayo Rd., Edgewater, Md. 21037

Filed May 25, 1989, Ser. No. 356,769

Int. Cl.[5] B63B *19/28*

U.S. Cl. 114—203 **8 Claims**

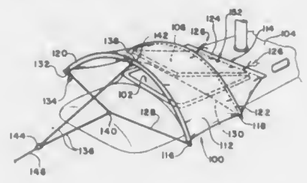
1. Hatch ventilator awning for a boat, comprising:

(a) sheet of water-proof material, which can be positioned over a hatch opening of said boat;

(b) first attachment means comprising one end of said sheet (a), said attachment means being adapted to be attached to said boat so as to position said sheet (a) over said boat hatch opening;

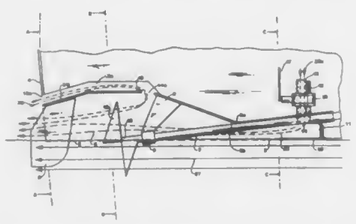
(c) flexible means comprising the other end of sheet (a), said flexible means being capable of being forced into a flexed

position whereby at least the portion of said sheet (a) located by said other end of sheet (a) is formed into a curve facing towards said boat hatch;
(d) connection means whereby said flexible means (c) can be forced into said flexed position;



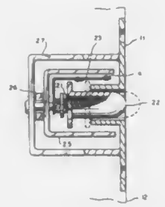
(e) second attachment means which is attached to said connection means (d) and to said flexible means (c); and
(f) third attachment means which is attached to said second attachment means (e) and which is adapted to be attached to said boat at a position away from said hatch.

4,941,423
MARINE PROPULSION SYSTEM
Gary W. Van Tassel, Lasby, Md., assignor to Ocean Tech Marine, Inc., North Bergen, N.J.
Continuation-in-part of Ser. No. 874,568, Jun. 16, 1986, abandoned. This application Oct. 13, 1987, Ser. No. 108,582
Int. Cl.[5] B63H *5/16*
U.S. Cl. 114—289 **80 Claims**



1. An improved propulsion system for a powerboat of the type having a tunnel located on the exterior of the hull of the powerboat and a surface-piercing propeller within the tunnel, means for drawing air from the exterior of the powerboat by means other than the tunnel and conveying it to the tunnel, and means for admitting said air to the tunnel forward of the propeller, the improvement wherein:
the tunnel is of semi-circular cross-section in the vicinity of the propeller;
the radius of the tunnel in the vicinity of the propeller provides running clearance for the propeller;
the said semi-circular cross-sectional area of the tunnel in the vicinity of the propeller blends smoothly into the area of the tunnel located forwards and rearwards of the vicinity of the propeller;
the area of the tunnel located rearwards of the vicinity of the propeller is semi-circular in cross-section with a flattened top;
the area of the tunnel located rearwards of the vicinity of the propeller is fitted with a rudder;
the height of the tunnel rearwards of the vicinity of the propeller is constant for about one-half of the distance from the mid-point of the propeller to the transom;
the height of the tunnel in the rearward one-half of the area of the tunnel rearwards of the vicinity of the propeller gradually diminishes in a rearward direction;
the area of the tunnel forward of the vicinity of the propeller is semi-circular in cross-section, gradually changing to a rectangular cross-section at the forward end of the tunnel;
the height of the tunnel in the vicinity of the propeller is constant;
the height of the tunnel from a point forward of the vicinity of the propeller diminishes to the vicinity of the point at which the propeller shaft enters the tunnel;
the height of the tunnel forward of the point at which the propeller shaft enters the tunnel is constant;
the forward bottom underside of the tunnel consists of a flow separation plate; and
air is admitted into the tunnel by an air outlet located on the roof of the tunnel forward of the propeller.

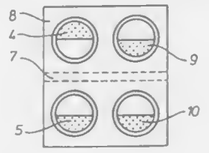
4,941,424
DOOR ALARM
Herbert Hanft, 3609 Cameron Mills Rd., Alexandria, Va. 22305
Filed Oct. 17, 1988, Ser. No. 258,638
Int. Cl.[5] G08B *13/08*
U.S. Cl. 116—85 **5 Claims**



1. A sonic alarm device for signalling the opening of a closed door comprising:
a door hingedly mounted adjacent the edge of a door frame for swinging movement about an upright hinge axis into and out of a closed position;
said door having an exterior and an interior;
a door alarm mounted in the interior of said door;
said door alarm comprising a housing for said alarm in which said alarm is contained;
an isolator inside of said housing, said isolator supporting a sonically activated device and separating said sonically activated device from said housing;
a spring holder mounted within said isolator;
a spring mounted on said spring holder in position horizontal to the door, said spring being pushed back into the interior of said housing when the door is in a closed position, and released when the door is opened;
a plunger which is moved forward when said spring is released;
a hammer actuator which is contacted by said plunger when said door is opened;
a hammer which contacts said sonically activated device to cause said device to produce an audible sound.

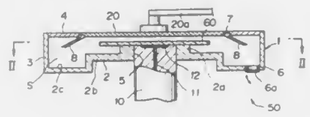
4,941,425
METHOD AND DEVICE FOR TEMPERATURE INDICATION OF FROZEN PRODUCTS
Walter Holzer, Drosteineg 19, Meersburg, Fed. Rep. of Germany
Filed Oct. 6, 1988, Ser. No. 254,506
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1987, 3734054; Oct. 23, 1987, 3735890
Int. Cl.[5] G01K *11/06*
U.S. Cl. 116—217 **14 Claims**

6. A frozen product temperature indicator comprising:
at least two transparent sealed chambers, each sealed chamber encapsulating an indicator fluid that freezes at a certain temperature, said indicator fluid partly filling said sealed chamber and being permanently constrained within said sealed chamber wherein the indicator fluids of said sealed chambers are frozen in mutually opposing first positions in the respective chambers; and
means for placing the at least two sealed chambers in contact with the frozen product, wherein in any desired orientation of the frozen product, (i) the indicator fluid in at least one sealed chamber upon having been frozen in said first position in the chamber, during melting flows under the



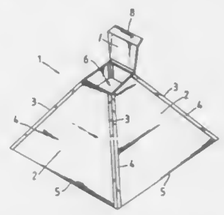
influence of gravity into a second position within said at least one sealed chamber and (ii) upon melting, the relative positions of said fluids in said sealed chambers being different from said mutually opposing first positions for all orientations of said frozen product irrespective of any subsequent refreezing and rethawing of said said fluids while contact between said sealed chamber and said frozen product is maintained thereby indicating that the temperature of said frozen product has risen above the melting temperature of said indicator fluid.

4,941,426
THIN-FILM COATING APPARATUS
Hiroyoshi Sago; Hideyuki Mizuki; Katsuhiko Kodo, all of Kanagawa, and Muneo Nakayama, Tokyo, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan
Filed Sep. 16, 1988, Ser. No. 245,464
Claims priority, application Japan, Sep. 18, 1987, 62-142731[U]
Int. Cl.[5] B05C *13/02*
U.S. Cl. 118—52 **4 Claims**



1. An apparatus for coating a member with a thin film, comprising:
a rotatable spinner for securely supporting a plate-like member onto which a coating solution is to be dropped;
a casing surrounding said spinner to surround the member, said casing being firmly attached to said spinner and having an opening for allowing the member to be taken into and out of said casing;
a lid for closing said opening of said casing to define a closed processing chamber in said casing when the member and said casing rotate in unison with each other for spreading the coating solution which has been dropped on the member over the member;
said casing comprising a bottom member firmly attached to said spinner, a sidewall joined to an outer periphery of said bottom member, and an upper wall coupled to an upper peripheral edge of said sidewall, said opening being defined in said upper wall, said bottom member and said sidewall jointly defining an annular channel in said processing chamber and said annular channel having a drain port;
a guide plate attached to and extending fully along a lower edge of said upper wall defining said opening, said guide plate projecting downwardly and radially outwardly, and said guide plate being positioned so as to be located laterally of the plate-like member and having a lower edge vertically aligned with said annular channel;
said lid having a seal attached to a lower surface thereof and extending fully along a peripheral edge of said lid for hermetically contacting the entire periphery of said opening; and
an arm, said lid being rotatably supported on said arm for rotation in unison with said casing.

4,941,427
SPRAY BOOTH
Vazgen J. Houssian, Union City, N.J., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Sep. 20, 1988, Ser. No. 246,990
Claims priority, application United Kingdom, Sep. 24, 1987, 8722517
Int. Cl.[5] B05B *15/12*
U.S. Cl. 118—326 **9 Claims**



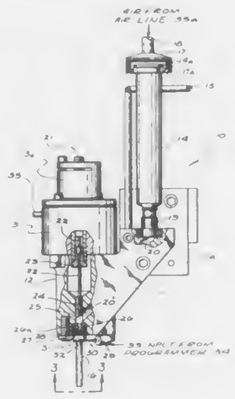
1. A spray booth, comprising a collapsible hollow pyramid having a plurality of faces, a base, and a truncated vertex defining an opening, closure means for closing said opening, means for collapsing said pyramid into a substantially flat form, said collapsing means including flexible joints between said faces, said truncated vertex having sides which define said opening, said sides defining a plane which is inclined relative to a plane of the base of the pyramid.

4,941,428
COMPUTER CONTROLLED VISCOUS MATERIAL DEPOSITION APPARATUS
Harold J. Engel, 18932 Olympia St., Northridge, Calif. 91326
Continuation of Ser. No. 75,571, Jul. 20, 1987, abandoned. This application Jan. 30, 1989, Ser. No. 303,077
Int. Cl.[5] B05C *5/02*
U.S. Cl. 118—680 **10 Claims**

1. Apparatus for successive deposition of viscous fluid quantities on a planar surface at each of a corresponding succession of X Y coordinate locations on said surface, said apparatus comprising:
a positionable carriage and a plurality of hollow needle elements mounted on said carriage, each of said needle elements having an orifice directed to deposit said viscous fluid onto said surface from corresponding points of optimum Z axis clearance with respect to said surface, said plural hollow needle elements extending substantially mutually parallel and normal to said surface, said needle elements further being mounted to be rotatable in a plane parallel to said planar surface;
first means for successively positioning said carriage and therefore said needle elements for a corresponding dwell time in a succession of X,Y,Z positions with respect to said

VOL 1116 ISS 3 JL 17 1990 UMI

surface, said first means also including means for rotating said needle elements for discretely determining the pattern



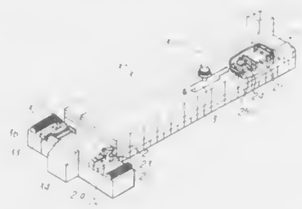
of the corresponding plural depositions of said fluid on said surface during each of said dwell times.

4,941,429

SEMICONDUCTOR WAFER CARRIER GUIDE TRACKS

Thomas F. Wilkinson, Kaoru Ishii, both of Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1988, Ser. No. 287,106
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **17 Claims**



1. A semiconductor carrier and track system for transporting semiconductor wafers through a reactor system comprising the combination of:

a plurality of interconnected reaction chambers;

a semiconductor wafer carrier having grooves along two sides of the carrier; and

a pair of guide tracks extending through said reaction chambers, spaced to accept said grooves along two sides of said semiconductor wafer carrier;

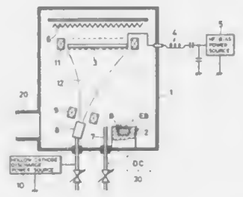
wherein, said guide tracks are removably mounted in said reaction chambers and said semiconductor wafer carrier is movable through said reaction chambers along said guide tracks.

4,941,430

APPARATUS FOR FORMING REACTIVE DEPOSITION FILM

Kazuhiro Watanabe; Kazuya Saito; Yoshiyuki Yuchi, and Konosuke Inagawa, all of Ibaragi, Japan, assignors to Nihon Sinku Gijutsu Kabusiki Kaisha, Chigasaki, Japan

Filed Apr. 25, 1988, Ser. No. 185,863
Claims priority, application Japan, May 1, 1987, 62-106427
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 **16 Claims**



2. An apparatus for forming a reactive deposition film comprising:

(A) means for supporting a body to be coated in a vacuum chamber;

(B) an evaporation source of element or elements constituting said reactive deposition film;

(C) means for introducing a reaction gas into said vacuum chamber;

(D) a firsst bias means for applying a high frequency or radio frequency (rf) bias voltage to said body;

(E) a second bias means for applying a DC (direct current) bias voltage or AC (alternate current) bias voltage to said gas introducing means for activating said reaction gas;

(F) an electron beam generator for supplying electron beams towards said body; and

(G) a magnetic field generator which generates such a magnetic field that distributes said electron beams supplied from said electron beam generator uniformly to the whole region adjacent to the surface of said body and traps electrons from said electron beams in said region, whereby plasma of high density can be formed uniformly in the whole region adjacent to the surface of said body.

4,941,431

SYSTEM FOR HANDLING LABORATORY ANIMALS

Francis G. Anderson, deceased, late of Moyock, and by Dorothy S. Anderson, executor, Rte. 2, Box No. 93M, Baxter Estates, Moyock, both of N.C. 27958

Filed Dec. 14, 1988, Ser. No. 284,095
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—1 **18 Claims**

1. A method of handling laboratory animals used for performing tests comprising the steps of:

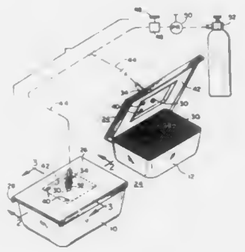
providing at least one animal compartment dimensioned to accommodate at least one laboratory animal therein, said compartment having a bottom panel which is imperforate within a given perimeter, and upstanding side panels around the perimeter of said imperforate bottom panel to define an enclosure for the animal, said enclosure having an upper opening;

depositing a living animal having a respiratory system in said enclosure;

providing life support to said animal through said upper opening and performing laboratory tests by treating said animal while in said enclosure so as to obtain test results;

thereafter providing a closure for said upper opening and introducing CO_2 into enclosure through said closure and mixing the CO_2 with the air in the enclosure to provide first a concentration of CO_2 sufficient to anesthetize the animal;

maintaining the flow of said CO_2 for a time period to produce a selected volume of CO_2 sufficient to fill the bottom of said enclosure with a second concentration of CO_2 to a level higher than the height of the animal's respiratory system; and



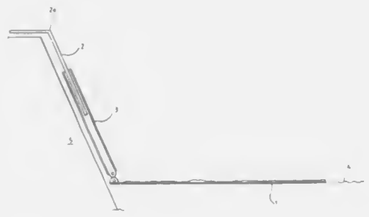
restricting the exhaust of any gaseous medium from the enclosure, thereby maintaining the level of said concentration of CO_2 in said enclosure for a time period to subject said animal to the asphyxiating effect of said CO_2 concentration.

4,941,432

FISH PROTECTION SYSTEM

Patrick F. Ferrari, 25 Hazel Rd., Dartford, Kent, England

Filed Jul. 3, 1989, Ser. No. 374,950
Claims priority, application United Kingdom, Jul. 18, 1988, 8817028
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—3 **15 Claims**



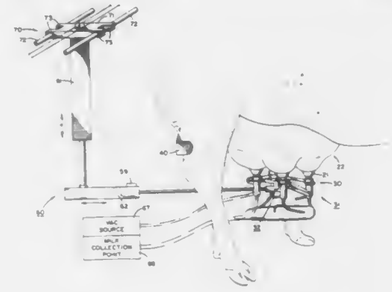
1. A fish protection system comprising a plurality of guard plates, and support means for supporting the guard plates on the surround of a fish pond so as to position the guard plates around the perimeter of the pond at the water level, wherein the support means is such that any given guard plate will tilt downwardly if subjected to a downwards force of a predetermined magnitude.

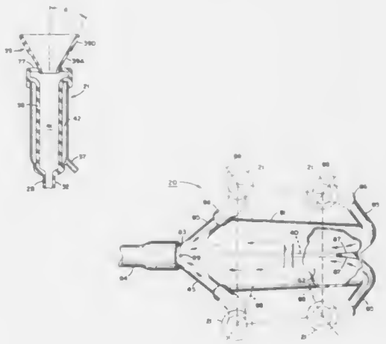
4,941,433

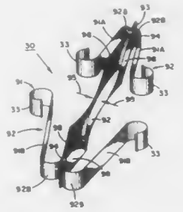
MILKING METHOD AND RELATED APPARATUS

George E. Hanauer, Brookfield, Conn., assignor to Agri-Automation Company, Ltd., Brookfield, Conn.

Filed May 23, 1988, Ser. No. 197,951
Int. Cl.[5] A01J *5/00*
U.S. Cl. 119—14.02 **45 Claims**







I. An automatic milking unit positioning device mounted on a base at the udder end of a dairy cow milking station, comprising:

A. an attacher presented toward the udder of a cow to be milked,

B. manipulator actuation means movably mounted on said base for moving the attacher between a milking position under a cow's udder and a retracted position,

C. resilient cup support means incorporated in said attacher,

D. four teat cups adjustably mounted in a trapezoidal pattern in the resilient support means, each having a rigid shell enclosing a flexible internal teat-receiving inflation tube pulsingly expandable and contractable by external pressure or partial vacuum, surmounted by an upwardly open thin-walled flexible conical entrance portal facing a teat,

E. a milk receiving claw manifold having an outlet port and

four inlet nipples each connected by flexible conduit means to the lower end of the inflation tube of one of said teat cups,

F. delivery conduit means connected to said outlet port for receiving and delivering milk from the outlet port of the claw manifold to a collection point,

G. a controllable vacuum source for connection to the delivery conduit means, reducing pressure inside the claw manifold and the lower end of the inflation tube for delivering milk to the collection point, and for intermittent pulsing connection to the region inside the shell surrounding the inflation tube, producing pulsing milking expansion and contraction of the inflation tube,

H. sensing means responsive to the positions of the teat cups and the cow's udder,

I. and control circuitry means operatively connected to the sensing means, actuating the vacuum source for automatic engagement of the teat cups on the cow's udder, automatic pulsing milking action of the inflation tubes, and automatic collection of the milk delivered therefrom via the claw manifold, and automatic disengagement when the milking operation is completed.

18. An automatic milking unit positioning device for attaching milking machines to dairy cows in a plurality of adjacent milking stations, comprising:

A. track means joining a plurality of milking stations each adjacent to one of a corresponding plurality of stalls accommodating cows to be milked,

B. a travelling robotic manipulator movably mounted on said track means for movement between said milking stations, and having an attacher presented toward the udder of cow to be milked, and actuation means for moving the attacher between a milking position under a cow's udder and a retracted position,

C. resilient support means incorporated in said attacher,

D. four teat cups adjustably mounted in a trapezoidal pattern in the resilient support means, each having a rigid shell enclosing a flexible internal teat-receiving inflation tube pulsingly expandable and contractable by external pressure or partial vacuum, surmounted by an upwardly open thin-walled flexible conical entrance portal facing a teat,

E. a milk receiving claw manifold having an outlet port and four inlet nipples each connected by flexible conduit means to the lower end of the inflation tube of one of said teat cups,

F. delivery conduit means connected to said outlet port for receiving and delivering milk from the outlet port of the claw manifold to a collection point.

G. a controllable vacuum source for connection to the delivery conduit means, reducing pressure inside the claw manifold and the lower end of the inflation tube for delivering milk to the collection point, and for intermittent pulsing connection to the region inside the shell surrounding the inflation tube, producing pulsing milking expansion and contraction of the inflation tube,

H. sensing means responsive to the positions of the manipulator and the teat cup cluster and the cow's udder,

I. and control circuitry means operatively connected to the sensing means and to the manipulator, actuating the manipulator and the vacuum source for automatic engagement of the teat cups on the cow's udder, automatic pulsing milking action of the inflation tubes, and automatic collection of the milk delivered therefrom via the claw manifold, and automatic disengagement when the milking operation is completed.

29. A teat cup attaching means adapted for deployment under the udder of a cow to be milked, and capable of presenting four upright teat cups for engagement on the cow's udder, comprising:

A. a central longitudinal support bar extending forward and rearward beyond both ends of the normal trapezoidal array of teats on the cow's udder,

B. a pair of forward support members extending from the forward end of the support bar diagonally rearward and laterally outward, each terminating in a teat cup retaining means,

C. a pair of rear support members extending from the rear end of the support bar diagonally forward and laterally outward, each terminating in a teat cup retaining means,

D. the support members being relatively rigid vertically to resist downward deflection while simultaneously being relatively flexible laterally to permit lateral deflection,

whereby the four teat cups are retained in a cluster at the apices of a generally horizontal trapezoid

38. A claw manifold for incorporation in a milking machine for collecting milk received by four teat cups via hoses and delivering it through an outlet port via a delivery conduit to a collection point, comprising:

A. a hollow claw housing enclosing a manifold chamber drained through said outlet port at one end of said chamber,

B. a first pair of nipples, each connected by one said hose to a teat cup, opening into said chamber near said outlet port and oriented to deliver arriving milk streams along angularly converging streamlines toward said outlet port,

C a second pair of nipples, each connected by one said hose to a teat cup, opening into said chamber at its opposite end and oriented to deliver arriving milk streams along streamlines angularly converging toward said opposite end,

D. and milk stream deflecting surface means formed in said opposite chamber end receiving the converging milk streams and re-directing them toward said outlet port,

whereby all four arriving milk streams converge at the outlet port in substantially streamline non-turbulent flow, minimizing foaming and turbulence in the milk collected by the claw manifold.

44. A method for simultaneously attaching a plurality of milking machine teat cups having upstanding conical entrance portals to the udder of a dairy cow restrained at a milking station, comprising the steps of:

A. positioning the teat cups in a trapezoidal configuration free for lateral and longitudinal movement in a substantially horizontal plane while resisting displacement in vertical directions,

B. connecting the teat cups to a vacuum source and to a milk collection point,

C. raising the plurality of teat cups simultaneously to bring the teat cups into engagement with the cow's teats,

D. while simultaneously actuating the vacuum source to draw the teat cups into engagement on respective teats, guided by the conical entrance portals slidingly co-acting with the teats and horizontally deflecting the teat cups,

whereby individual manual attachment of each teat cup is avoided by simultaneous elevating self-guided movement of all teat cups into attached position ready for automatic milking to begin.

4,941,434

QUICK CONNECT RETAINING LEASH

Phillip Ellwanger, 910 Spring St., Petoskey, Mich. 49770

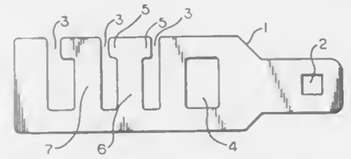
Filed Aug. 11, 1988, Ser. No. 230,865

Int. Cl.[5] A01K *27/00*

U.S. Cl. 119—109 **7 Claims**

1. A locking plate leash holder comprising essentially of an elongated

flat member of essentially rectangular shape and having at least one planar surface, having on one end, a configuration detachedly lockable into an automotive seat safety belt keeper member, and on the opposite end, a series of open sided slots through theat least one planar surface and perpendicular to the long axis of the elongated single flat member and, intermediate the open slots and the lockable configuration, a perforation through the at least one pla-



nar surface of the elongated single flat member to accomodate the insertion therethrough of a leash.

4,941,435

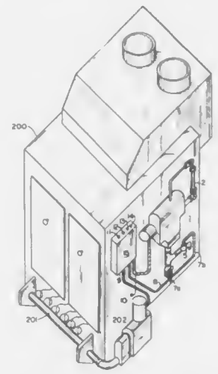
METHOD AND APPAPARATUS FOR PREVENTING LOW-WATER FAILURE IN BOILERS

Thomas C. Person, 3205 Natural Bridge, St. Louis, Mo. 63107

Filed Jun. 23, 1989, Ser. No. 370,984

Int. Cl.[5] F22B *37/54*

U.S. Cl. 122—382 **2 Claims**



1. An improved method for preventing low-water failure in boilers comprising:

(a.) periodic blow down of feed water from the bottom of a low-water cut-off control valve during the water feed cycle for from one second to the entire period of the feed cycle;

(b.) shutting off the blow down after an effective period of time;

(c.) monitoring the temperature of the boiler jacket by an external temperature sensor; and

(d.) automatically shutting off the burners of the boiler when the sensor senses any temperature above a predetermined danger point.

4,941,436

COOLING SYSTEM FOR I.C.E. VALVE SEAT INSERTS

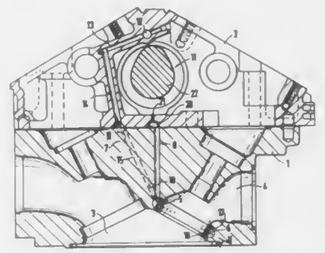
Michael Beer, Wimsheim; Philipp Schimko, Gesigheim; August Hofbauer, Pforzheim, and Matthias Kröner, Denkendorf, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,681

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1988, 3829339

Int. Cl.[5] F01P *3/14*

U.S. Cl. 123—41.77 **14 Claims**



1. A cooling system for valve seat inserts arranged in a cylinder head of an air-cooled internal-combustion engine, comprising:

one ring duct respectively for the flowing-through of lubricating oil and surrounding the valve seat inserts,

another oil duct which supplies bearing points of a camshaft with lubricating oil and which extends in parallel to the camshaft in a camshaft housing arranged above a cylinder head,

one feed pipe which leads from the oil duct to the ring duct, and

a discharge pipe which leads from the ring duct into the camshaft housing,

wherein the one feed and the discharge pipe lead into each ring duct in closely adjacent openings,

wherein an outlet opening of the discharge pipe in the camshaft housing is arranged in direct proximity of cams, and

wherein the ring duct has a projection between the two openings which narrows it down considerably to direct flow of oil around the valve seat insert.

4,941,437

AUTOMOTIVE RADIATOR COOLING SYSTEM

Yasushi Suzuki, Chiryu; Yasuo Takahara, Anjo; Atusi Masui, Kariya; Toshihiro Ohshima; Fumihiro Takeuchi, both of Nagoya; Toshiki Sugiyama, Obu, and Tadashi Setoguchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Jun. 21, 1988, Ser. No. 209,636

Claims priority, application Japan, Jul. 1, 1987, 62-164166; Jul. 10, 1987, 62-173468

Int. Cl.[5] F01P *7/02*

U.S. Cl. 123—41.12 **3 Claims**

1. An automotive radiator cooling system comprising:

a cooling fan operative to direct cooling air to an automotive radiator;

a hydraulic circuit;

a hydraulic pump disposed in said circuit and driven by an external power to circulate a pressurized hydraulic fluid through said circuit;

a hydraulic motor drivingly connected to said cooling fan and disposed in said circuit so that said motor is hydraulically driven to rotate said cooling fan;

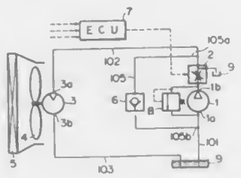
a reservoir connected to said circuit downstream of said hydraulic motor to receive the hydraulic fluid flowing out of said hydraulic motor;

a bypass line extending in bypassing relationship to said hydraulic motor and communicated at one end with a part of said circuit adjacent to an inlet of said hydraulic motor and at the other end with said reservoir; and

a check valve means operative to permit a flow of the hydraulic fluid from said reservoir through said bypass line back into said part of said circuit only when the pressure in said part of said circuit is lowered beyond a predetermined level, thereby preventing the occurrence of cavitation when the hydraulic pump is stopped while the fan is rotating at high speed;

wherein said hydraulic motor includes a housing, a shaft having an end drivingly connected to said cooling fan and rotatably mounted in said housing, and a shaft sealing means associated with said shaft to cooperate therewith and with said housing to define an oil chamber, and

wherein said bypass line is formed in said housing of the hydraulic motor and includes said oil chamber.



4,941,438

HYDRAULIC VALVE-LASH ADJUSTER

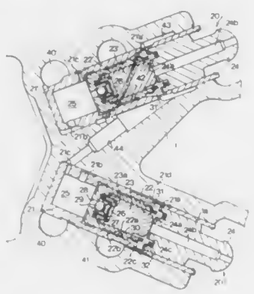
Naoto Muto, Kawasaki, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,802

Claims priority, application Japan, Oct. 29, 1988, 63-142186[U]

Int. Cl.[5] F01L *1/24*

U.S. Cl. 123—90.46 **3 Claims**



1. A hydraulic valve-lash adjuster for an engine with a valve mechanism having at least one valve and one rocker arm, comprising;

a cylindrical reservoir case provided in a cylinder head of the engine;

a cylindrical body secured in the reservoir case to form a reservoir chamber between a bottom of the reservoir case and an outside of a bottom of the cylindrical body;

a plunger slidably mounted in the cylindrical body to form a high pressure chamber between an inside of a bottom of the cylindrical body and a bottom of the plunger;

a spring provided in the high pressure chamber so as to push the plunger;

a check valve provided in the high pressure chamber so as to keep pressure of oil in the high pressure chamber;

a pivot slidably mounted in the reservoir case so as to engage with the rocker arm;

a helper spring provided between the plunger and the pivot; and

first passage means for supplying oil to the reservoir chamber and the high pressure chamber.

4,941,439

COMBUSTION CHAMBER SURFACES OF AN INTERNAL COMBUSTION ENGINE

Jan Wlcén, Almunge, Sweden, assignor to Oktan AB, Stockholm, Sweden

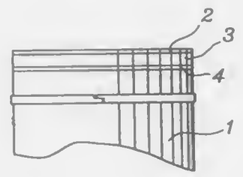
PCT No. PCT/SE88/00235, § 371 Date Oct. 23, 1989, § 102(e) Date Oct. 23, 1989, PCT Pub. No. WO88/08926, PCT Pub. Date Nov. 17, 1988

PCT Filed May 5, 1988, Ser. No. 424,277

Claims priority, application Sweden, May 8, 1987, 8701913

Int. Cl.[5] F02B *77/02*

U.S. Cl. 123—193 P **12 Claims**



1. An arrangement in combustion chamber surfaces of an internal combustion engine, comprising:

a thin surface layer provided at least partially on the combustion chamber surfaces of the engine, and which will influence the octane/cetane rating requirement of the engine in a manner to limit the knocking tendency of the engine;

said thin surface layer (2) comprising a material of low reflectivity and high absorptivity in respect of electromagnetic waves having a wavelength of up to at least 7 μm, and high emissivity at wavelengths longer than 7 μm; and

a further layer (3) located beneath said thin surface layer (2) for accumulating heat given off by said thin surface layer (2) during a process of fuel combustion in the engine so as to counteract a rise in temperature of said thin surface layer (2) and to heat said thin surface layer (2) during a part of the combustion cycle in which the temperature in the combustion chamber is lower that the temperature of said thin surface layer (2).

4,941,440

ENGINE INCLUDING A PISTON MEMBER HAVING A HIGH TOP RING GROOVE

Robert L. Weber, Lacon; Kenneth R. Kamman, Edelstein; Benny Ballheimer, and Stephen G. Shoup, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 261,664, Oct. 21, 1988, abandoned. This application Aug. 7, 1989, Ser. No. 391,647

Int. Cl.[5] F02F *3/00*

U.S. Cl. 123—193 P **10 Claims**

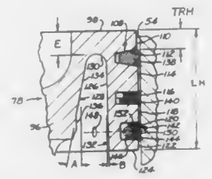
1. An engine of the type having a block defining an upper bore, a cylinder liner located in the block bore and defining a piston bore, a cylinder head connected to the block, and a piston assembly including a steel piston member disposed for reciprocation in the piston bore, wherein the improvement comprises:

the steel piston member having an upper portion of substantially cylindrical shape and a preselected diameter D, a peripheral top surface, a recessed crown surface, a tubular wall depending from the top surface and defining an outwardly facing top land, a top ring groove disposed a preselected minimal elevational distance TRH from the top surface and wherein the ratio TRH/D is less than 0.06, a lower end surface, and an annular inwardly facing wall surface extending upwardly from the lower end surface;

the upper portion further including an annular outwardly facing wall surface and a downwardly facing transition portion blendingly associated with the inwardly and outwardly facing wall surfaces to collectively define an annular downwardly facing cooling recess located in a juxtaposed elevational relationship with the top ring groove;

the piston member also having a lower portion including a pair of depending pin bosses blendingly associated with the cooling recess and individually defining a bore and with the bores being aligned on a common axis; and

the engine including an annular recess defined between the cylinder liner and the block that is adapted in use to receive a liquid coolant, the annular recess being located in an elevationally aligned relationship with the top ring groove when the piston is at top dead center in order to dissipate heat away from the piston member thereat.



4,941,441

ENGINE BRAKE SYSTEM OF A TWO-CYCLE ENGINE FOR A MOTOR VEHICLE

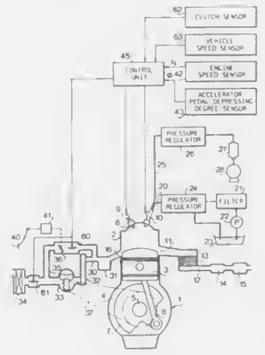
Hideo Watanabe, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1989, Ser. No. 395,955

Claims priority, application Japan, Aug. 30, 1988, 63-216092

Int. Cl.[5] F02D *9/00*

U.S. Cl. 123—325 **3 Claims**



1. An engine brake system of a two-cycle engine for a motor vehicle, the engine having at least one cylinder, a scavenge port, an intake passage communicated with said scavenge port, a fuel injector provided for injecting fuel in the cylinder, a scavenge pump provided in said intake passage for supplying intake air to the cylinder and a bypass provided around the scavenge pump, the system comprising:

detector means for detecting deceleration of the vehicle and for producing deceleration signal;

a valve provided in the bypass so as to close the bypass;

means responsive to the deceleration signal for closing the valve and for stopping fuel injection from the fuel injector.

4,941,442

APPARATUS FOR CONTROLLING FUEL DELIVERY TO ENGINE

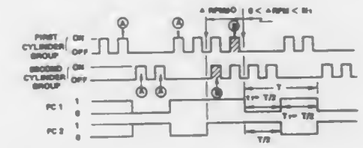
Yasutoshi Nanyoshi, and Tatsuo Morita, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed May 18, 1988, Ser. No. 195,300

Claims priority, application Japan, May 20, 1987, 62-124714

Int. Cl.[5] F02D *17/02, 41/22*

U.S. Cl. 123—333 **6 Claims**



1. An apparatus for controlling a multi-cylinder type internal combustion engine including first and second cylinder groups each including at least one cylinder, comprising:

sensor means for generating electrical signals indicative of engine operating conditions including engine speed;

a control circuit coupled to said sensor means for calculating an appropriate value repetitively at uniform intervals, the calculation being made according to engine operating conditions;

fuel supply means coupled to said control circuit for supplying fuel to said first and second cylinder groups in an amount corresponding to the calculated value;

said control circuit including means responsive to an overspeed condition for operating said fuel supply means in a fuelcut mode to alternatively terminate fuel delivery to said first cylinder group and fuel delivery to said second cylinder group, means for calculating a difference of a predetermined fuelcut speed value from an existing engine speed, and means for determining the overspeed condition when the calculated difference is greater than zero, said control circuit including means for setting a value of a first interval during which said fuel supply means operates in the fuelcut mode according to the calculated difference.

4,941,443

GOVERNOR DEVICE FOR AN ENGINE

Fumihiro Yamaguchi; Yoshiaki Sayama, and Takao Nishida, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 304,064

Claims priority, application Japan, Jan. 26, 1988, 63-015627; Jan. 26, 1988, 63-015626; Jul. 22, 1988, 63-183223; Jul. 22, 1988, 63-183224; Jul. 22, 1988, 63-183225

Int. Cl.[5] F02D *9/10*

U.S. Cl. 123—376 **12 Claims**

1. A governor device for an engine characterized in that it comprises:

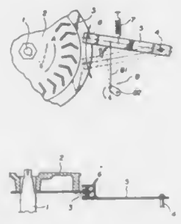
a non-magnetic and electrically conductive disk which is rotated in synchronism with the engine;

a swing member pivotally mounted for effecting a free-swing action thereof;

a magnet mounted on said swing member and providing a

magnetic field onto said disk for inducing an electromagnetic force to effect said swing action of the swing member in responsive to the rotation of said disk;

a spring member for suppressing said swing action of said swing member in one direction; and



a drive mechanism for operating a throttle valve of the engine in opening or closing direction in responsive to the swing action of said swing member.

4,941,444

ENGINE CONTROL APPARATUS

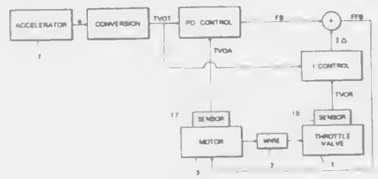
Nagahisa Fujita, Hiroshima, Japan, assignor to Mazda Motor Company, Hiroshima, Japan

Filed Feb. 21, 1989, Ser. No. 313,179

Claims priority, application Japan, Feb. 26, 1988, 63-45475; Feb. 26, 1988, 63-45476

Int. Cl.[5] F02D *11/10*

U.S. Cl. 123—399 **13 Claims**



1. An engine control apparatus comprising:

(a) an output adjusting member for adjusting an engine output, said output adjusting member being fixed so as to vibrate in accordance with an engine vibration;

(b) an actuator for driving said output adjusting member, said actuator being fixed independently and separately from the engine vibration;

(c) a linkage wire for mechanically connecting said output adjusting member and actuator;

(d) signal detection means for detecting a signal associated with a present drive position of said output adjusting member;

(e) conversion means for converting an accelerator operation amount into a signal associated with a target position of said output adjusting member;

(f) vibration detecting means for detecting the vibration of said present driving position, said vibration being caused by the engine vibration propagated to said output adjusting member through said linkage wire; and

(g) feedback control means, connected to said conversion means, signal detection means and vibration detection means, for receiving the signal associated with the present drive position and the signal associated with the target portion, calculating a feedback control signal on the basis of the signals so that said control signal may suppress the vibration of said output adjusting member, and outputting the control signal to said actuator so as to move said output adjusting member to the target position.

4,941,445

ELECTRONIC POSITION SENSOR ASSEMBLY AND ENGINE CONTROL SYSTEM

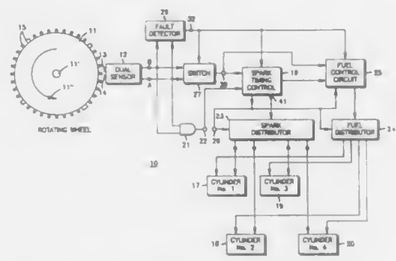
Robert W. Deutsch, Sugar Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 194,237, May 16, 1988, abandoned.

This application Nov. 2, 1989, Ser. No. 431,721

Int. Cl.[5] F02D *41/22*; F02P *5/15, 11/00*

U.S. Cl. 123—414 **61 Claims**



1. An electronic position sensor assembly comprising:

a wheel rotatably driven about an axis, said wheel having thereon a plurality of predetermined portions of at least three different angular widths a, b and c, angular width a being less than angular width b which is less than angular width c;

a sensor means positioned fixed with respect to and adjacent said wheel, said sensor means having at least first and second sensing elements each independently sensing the passage of each of said predetermined portions by the sensing element and producing in response thereto a signal pulse having a duration corresponding to the angular width of said sensed predetermined portion;

said first and second sensing elements spaced apart by a dimension d corresponding to an angular width which is less than angular width c but more than angular width a and more than angular width b;

coincidence means for providing a first reference signal in response to said first and second sensing elements simultaneously producing predetermined logic state conditions of said sensor signal pulses; and

means for providing a second reference signal, different from said first reference signal, in response to one of sensing elements producing a signal pulse having a predetermined longer duration than the preceding signal pulse produced by that sensing element, whereby information as to the angular position of said wheel is obtained by at least said first and second reference signals.

4,941,446

IGNITION AND FUEL INJECTION BACK-UP SYSTEM FOR EMERGENCY RUNNING OF INTERNAL COMBUSTION ENGINES

Helmut Denz, Stuttgart; Rudolf Moz, Möglingen, and Winfried Uttenweiler, Tübingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

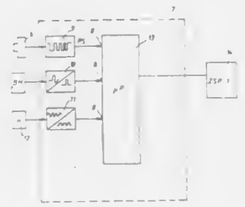
PCT No. PCT/DE87/00398, § 371 Date Apr. 5, 1989, § 102(e) Date Apr. 5, 1989, PCT Pub. No. WO88/02817, PCT Pub. Date Apr. 21, 1988

PCT Filed Sep. 2, 1987, Ser. No. 347,943

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1986, 3634587

Int. Cl.[5] F02P *7/00*

U.S. Cl. 123—414 **9 Claims**



1. Ignition back-up system for emergency running or starting internal combustion engines including at least one ignition coil, comprising a computer for controlling the ignition time of the coil, a sensor cooperating with a sensor drum driven synchronously with a cam shaft of the engine, the sensor drum having cut out portions for every cylinder of the engine to generate by means of the sensor cylinder-related timing pulses which are delivered to the computer, the trailing edge of the respective timing pulses occurring at a uniform rotational angle of the crankshaft of the engine before the top dead center of the corresponding cylinders, one of the cut out portions being wider than the others to generate a wider timing pulse relative to the rest of the timing pulses, means for generating and delivering to the computer a reference pulse once per revolution of the crankshaft, the reference pulse coinciding with the wider timing pulse but being spaced apart from the rest of the timing pulses, and once per revolution of the cam shaft the computer detecting the beginning of an ignition cycle when the reference pulse occurs during the wider timing pulse or, in the absence of the reference pulse, during the wider timing pulse.

4,941,447

METERING VALVE

Werner G. Mannhardt, Detroit, Mich., assignor to Colt Industries Inc., New York, N.Y.

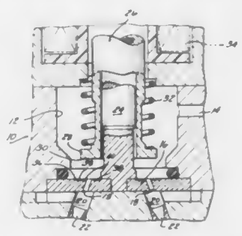
Filed Feb. 21, 1989, Ser. No. 312,460

Int. Cl.[5] F02M *39/00*; F16K *31/06*

U.S. Cl. 123—455 **9 Claims**

1. In a fuel metering valve assembly comprising housing means defining a chamber adapted to contain fuel under pressure, valve seat means on one wall of said chamber defining a valve seat surface and a plurality of outlet passage bores extending through said seat means symmetrically disposed about a central axis, valve poppet means having a poppet surface mounted in said chamber for reciprocatory movement along said axis between a valve-open position wherein said head surface is spaced from said seat surface to accommodate flow from said chamber into said bores and a valve-closed position wherein said valve poppet surface is engaged with said valve seat surface in overlying relationship with said valve seat bores to block flow from said chamber into said bores, and means for cyclically driving said valve poppet means between said open and closed positions;

the improvement wherein said valve poppet surface and said valve seat surface include opposed accurately flat planar surfaces lying in parallel planes, the planar surface of said valve seat surface having a plurality of recesses therein and a plurality of annular sealing portions constituting a portion of the planar surface of said seat surface and respectively extending around each of said valve seat bores to isolate said valve seat bores from fluid communication with said recesses and said chamber when the planar surfaces of said valve poppet means and a valve seat means are engaged with each other.



4,941,448

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE WITH IMPROVED RESPONSE CHARACTERISTICS TO VARIATION OF INDUCTION AIR PRESSURE

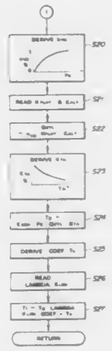
Shinpei Nakaniwa, and Naoki Tomisawa, both of Gunma, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isczaki, Japan

Filed Sep. 21, 1988, Ser. No. 247,470

Claims priority, application Japan, Sep. 22, 1987, 62-236299

Int. Cl.[5] F02D *41/32*

U.S. Cl. 123—488 **14 Claims**



1. A fuel supply control system for an internal combustion engine, comprising:

means for supplying a controlled amount of fuel to an induction system of said internal combustion engine;

means for monitoring an engine driving condition including an engine speed and an intake air pressure;

means for deriving a basic volumetric efficiency on the basis of one of said engine speed and said intake air pressure;

means for deriving a correction value for said basic volumetric efficiency on the basis of said engine speed and said intake air pressure and modifying said basic volumetric

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efficiency with said correction value to derive a modified volumetric efficiency;
means for deriving a fuel supply amount on the basis of fuel supply control parameters monitored by said monitoring means and including said intake air pressure and said modified volumetric efficiency; and
means for controlling said supplying means for adjusting amount of fuel to be supplied to said induction system to the derived value.

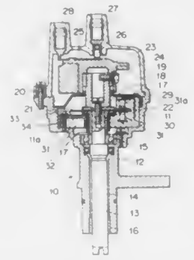
4,941,449
FUEL INJECTION PROCESS
Wolfgang Höptner, Uhingen; Egbert Perenthaler, Stuttgart, and Helmut Schwarz, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE87/00281, § 371 Date Jan. 5, 1989, § 102(e) Date Jan. 5, 1989, PCT Pub. No. WO88/00287, PCT Pub. Date Jan. 14, 1988
PCT Filed Jun. 23, 1987, Ser. No. 301,752
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1986, 3623042
Int. Cl.[5] F02D *41/36, 41/06*
U.S. Cl. 123—490 **7 Claims**



1. Process for fuel injection in a multiple-cylinder internal combustion engine, wherein opening signals for the respective injection vales of the individual cylinders are produced as a function of the reference signals which are synchronous with the crankshaft, and all injection valves are first opened simultaneously once after the ignition is switched on and then sequential opening signals for the sequential fuel injection are produced after the synchronization has been recognized, characterized in that during starting or after a disruption of the synchronization, additional simultaneous opening signals are fed to the injection valves in a phase (a) until the synchronization is recognized, and in that the additional simultaneous opening signals are fed, after the synchronization has been recognized in a phase (b), to the injection valves of the cylinders which are not yet opened during sequential operation.

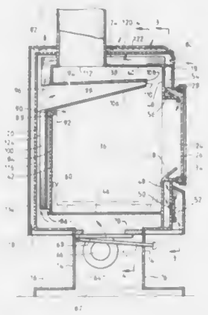
4,941,450
IGNITION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE
Masami Matsumura; Masayuki Ikeuchi, and Shinichi Nobuto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 11, 1988, Ser. No. 167,092
Claims priority, application Japan, Mar. 13, 1987, 62-37714[U]
Int. Cl.[5] F02P *7/03*
U.S. Cl. 123—633 **6 Claims**

1. An ignition distributor for an internal combustion engine, comprising:
a cylindrical distributor rotor comprising a synthetic resin that is mounted on a bushing rotated synchronously with the revolution of the engine;
a rotor electrode radially and outwardly extending from the central portion on an upper surface of the distributor rotor;
a plurality of circumferentially disposed electrodes in the rotating locus of said distributor rotor and separated from said rotor electrode by a discharge gap;
a contact electrode contacting said rotor electrode;
a rotation angle sensor; and
a signal processing unit for processing said output signal from the rotation angle sensor, the signal processing unit being arranged coaxially with and below the distributor rotor, characterized in that the signal processing unit is



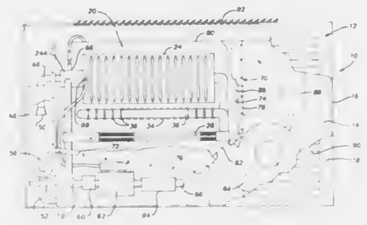
mounted directly to the distributor housing and is provided with a grounded electrically conductive shield cover mounted to the signal processing unit.

4,941,451
SOLID FUEL BURNING HEATER
Richard J. Gilham, 13 Swansea Road, Montrose, Victoria 3765, Australia
Filed Sep. 8, 1989, Ser. No. 404,677
Claims priority, application Australia, Sep. 19, 1988, PJ0502
Int. Cl.[5] F24C *1/14*
U.S. Cl. 126—77 **9 Claims**



1. A heater comprising:
a fire box, said fire box being formed by a front wall having a door, a rear wall having a plurality of openings, two parallel side walls connecting the front walla nd the rear wall, a base, and a top having an exhaust outlet, said fire box having a primary air inlet above said door, said primary air inlet directing air downwardly past said door;
a manifold connected to the plurality of openings in said rear wall to enable secondary air to be drawn into the fire box;
a skin over said fire box positioned to form a gap between the skin and the fire box to enable air to pass between the fire box and the skin, said skin having an opening below said door of said fire box to enable primary air to be drawn into the gap, said skin having an inlet opening beneath said base to enable secondary air to be drawn into said gap; and
a baffle assembly extending inwardly from said rear wall above said plurality of openings and mounted between the side walls and intermediate between the top and the base, said baffle assembly formed from an upper baffle plate and a lower baffle plate defining a hollow interior, said baffle assembly being open at a rear end and side ends in communication with the gap between the fire box and the skin, said baffle assembly having a plurality of holes in communication with said fire box to allow tertiary air to pass from the gap through the baffle assembly into the fire box to enable tertiary air to mix with any unburnt gases in the fire box to cause final or tertiary combustion.

4,941,452
PULSE COMBUSTION SPACE HEATER
William H Thrasher, North Royalton; Charles M. Pavlik, Cleveland, both of Ohio, and Larry Moon, Russellville, Ala., assignors to Gas Research Institute, Chicago, Ill.
Continuation of Ser. No. 320,419, Mar. 8, 1989, abandoned. This application Aug. 18, 1989, Ser. No. 396,741
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R **10 Claims**



1. A pulse combustion space heater for heating air in a space to be temperature conditioned including a cabinet having exterior walls providing a cabinet volume for enclosing and supporting the heater, interior housing means located within said cabinet volume including walls providing a substantially closed heat transfer chamber having inlet and outlet openings through which air to be heated is circulated and a chamber volume substantially smaller than said cabinet volume, pulse combustion burner means including an assembly of closely spaced elongate burner elements operably connected in a fluid-tight manner for pulse combustion of a combustible gaseous mixture and discharge of combustion products to the atmosphere, said burner elements having exterior heat transfer surfaces located within said heat transfer chamber for transfer of combustion heat to air contacting the heat transfer surfaces, and blower means for circulating air from said space through said heat transfer chamber for heating by contact with said burner element assembly and then back into said space said burner element assembly having a bulk volume equal to at least about 40% of the volume of said heat transfer chamber and said blower means pressurizing said heat transfer chamber to a pressure in the range of from about 0.1 to about 0.3" W.C. to substantially eliminate localized sites of significantly different temperature in the heat transfer chamber and to reduce the tendency of said interior housing means walls to vibrate.

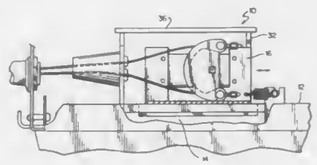
4,941,453
INFANT TRANSITIONAL SENSORY SYSTEM
Pauline V. Shakas, 1620 Lasuen Rd., Santa Barbara, Calif. 93103, and John S. Woodward, 9295 W. 73rd Pl., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 614,717, May 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 371,990, Apr. 26, 1982, abandoned. This application Jan. 28, 1986, Ser. No. 822,960
Int. Cl.[5] A61B *19/00*
U.S. Cl. 600—28 **6 Claims**

1. In an infant crib or the like having a top railing surrounding the walls of a sleeping area for an infant, the improvement to provide a transitional sensory system for the infant comprising:
(a) a hammock-formable sheet of material;
(b) attachment means disposed at spaced peripheral locations about said sheet of material for attaching said sheet of material to the top railing in at least two configurations wherein one of said configurations places said sheet in a generally extended horizontal position to form a hammock-like surface upon which an infant can be placed and the other of said positions places said sheet in a position with the ends folded back upon one another to form a hanging pouch wherein an infant can be placed;
(c) heart sound simulation means for producing vibrations approximating the thump-thump characteristic heart sounds of a human heart; and,
(d) bolding means attached to said sheet of material for holding said heart sound simulation means and for transmitting the vibrations produced thereby into said sheet of



material and from thence into an infant disposed on said sheet to be sensed by the infant; wherein said heart sound simulation means comprises:
a hollow case;
a solenoid coil disposed within said case;
a battery disposed within said case;
a weighted spring arm disposed within said case and attractable by a magnetic field produced by said solenoid coil, said arm being connected to said case and adapted to move from a central position to which it is biased towards said coil when attracted thereto and to a position stiking said case when no longer attracted towards said coil; and,
driver circuit means disposed within said case interruptably connected between said battery and said coil for producing periodic pairs of close-spaced pulses of current through said coil whereby said spring arm is caused to periodically strike said case twice in close-spaced succession thus producing in said case a thump-thump vibration sequence simulating characteristic human heart sounds.

4,941,454
SERVO ACTUATED STEERING MECHANISM FOR BORESCOPE OR ENDOSCOPE
Robert J. Wood; Earl H. Slee, both of Syracuse; Gregory E. Pasik, Auburn, and Michael J. Pileski, Warners, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Oct. 5, 1989, Ser. No. 417,554
Int. Cl.[5] A61B *1/00; G02B 7/00*
U.S. Cl. 128—4 **11 Claims**



1. In a steerable endoscope/borescope of the type having an elongated insertion tube with a viewing head at the distal end,

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a cable bendable articulation section proximally of the viewing head, and at least one pair of steering cables operatively connected to said articulation section, articulation control means comprising:

a servo motor connected to each said pair of cables,

steering control means connected to said servo motor,

actuator means connected to said steering control means including at least one variable voltage means operatively connected to increase or decrease in value as said actuator is moved in one direction of motion,

said steering control means including a pulse generating network and a pulse width modulator circuit for varying the width of generated pulses in accordance with changes in said variable voltage means;

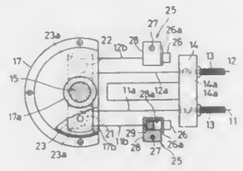
said variations and pulse width causing said servo motor to rotate a predetermined number of degrees corresponding to the position of said actuator means, so that the bendable section of the insertion tube is actuated the desired amount.

4,941,455

ENDOSCOPE HAVING BENDING MEANS

Yoshio Watanabe, Kawaguchi, and Toshio Chikama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,314
Claims priority, application Japan, Jul. 5, 1989, 1-17[illegible]1968
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



1. An endoscope comprising:

(a) a body;

(b) a hollow insertion portion extending from said body;

(c) a hollow elongated bendable portion extending from a forward end of said insertion portion remote from said body; and

(d) means for bending said bendable portion, said bending means comprising:

(i) a pair of operating wires having their proximal ends disposed within said body, said two operating wires extending through said insertion portion into said bendable portion and fixedly connected at their distal ends to a distal end of said bendable portion remote from said insertion portion, said fixed distal ends of said two operating wires being spaced from each other generally peripherally of said bendable portion;

(ii) an operating shaft mounted on said body for angular movement about an axis thereof;

(iii) an manipulating member for angularly moving said operating shaft;

(iv) a pair of engaging members provided at said body, said pair of operating wires being extended respectively around said pair of engaging members to be turned back toward said bendable portion;

(v) retainer means retaining the proximal ends of said pair of operating wires; and

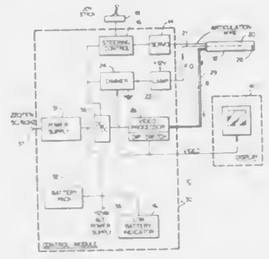
(vi) connecting means operatively connecting said operating shaft to said pair of engaging members so that when said operating shaft is angularly moved in one direction, one of said pair of engaging members can be moved away from said bendable portion, with the other engaging member being moved toward said bendable portion, so as to pull said operating wire, associated with said one engaging member, away from said bendable portion, thereby bending said bendable portion in one direction; when said operating shaft is angularly moved in the other direction, said other engaging member being moved away from said bendable portion through said connecting means, with said one engaging member being moved toward said bendable portion, so as to pull said operating wire, associated with said other engaging member, away from said bendable portion, thereby bending said bendable portion in another direction.

4,941,456

PORTABLE COLOR IMAGER BORESCOPE

Robert J. Wood; Earl H. Slee, both of Syracuse; Gregory E. Pasik, Auburn, and Michael J. Pileski, Warners, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Oct. 5, 1989, Ser. No. 417,553
Int. Cl.[5] A61B *1/06*; G02B *7/00*
U.S. Cl. 128—6 **16 Claims**



1. A portable steerable borescope or endoscope of the type having, a viewing head, an insertion tube with a cable bendable steering section proximally of the viewing head, at least one pair of steering cables, a fiber optic object illumination channel connected to said viewing head, and an object image channel connected to said viewing head, which comprises;

an image sensor in said viewing head;

servo motor operatively connected to each pair of steering cables in said bendable steering section;

servo control means connected to said servo motor for operating said servo motor,

remote actuator means operatively connected to said servo control means to permit an operator to manipulate said steering section by controlling the rotation of said servo motors;

lamp means positioned to illuminate the object through said fiber optic illumination channel;

video processor means for transforming the object image from said image channel into NTSC format for display;

lamp dimmer means connected to said lamp means and said video processor means for controlling the light output of said lamp means in accordance with the video signal from said image sensor to provide optimum video image brightness;

video display means connected to the output of said video processor, via an extended flexible cable for locating said display means remotely from said servo, lamp and video processor means, and

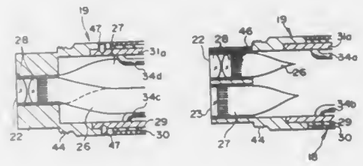
power supply means including a battery pack and means for selectively converting commercial alternating current power to direct current power for charging the battery pack and operating the borescope/endoscope.

4,941,457

ENDOSCOPE USING AN OPTICAL GUIDE TWISTED ON THE TIP SIDE TO HAVE THE VISUAL FIELD DIRECTION AND CURVATURE AXIS COINCIDE WITH EACH OTHER

Hiroshi Hasegawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 394,895
Int. Cl.[5] A61B *1/06*; G01N *21/01*
U.S. Cl. 128—6 **13 Claims**



5. An electronic endoscope comprising:

an insetable part consisting of a rigid tip part, a curvable tube part adjacent to said tip part and rotatably connecting a plurality of articulated frames through at least a pair of opposed pivoting parts and a long flexible tube part adjacent to said curvable tube part and consisting of a long flexible tube part;

at least a pair of curving wires secured respectively in one end part near the front end of said curvable tube part, inserted along said respective pivoting parts in the lengthwise direction of said curvable tube part and connected at the respective other ends to a curving mechanism provided in said operating part;

an objective optical system secured within said tip part;

a solid state imaging device arranged in the focal plane of said objective optical system and provided with a photoelectrically converting function;

a flexible signal cable connected in one end part to said solid state imaging device and inserted through said insertable part;

a flexible light guide inserted through said insertable part, transmitting an illuminating light fed to one end surface and emitting the illuminating light from the other end surface fixed to said tip part; and

a fixing means for fixing said objective optical system and light guide to said tip part so that the line connecting the center of said objective optical system and the center of said other end surface of said light guide and the line connecting said pair of pivoting parts may be parallel/vertical to each other,

wherein said signal cable and light guide in the part adjacent to the end part fixed by said fixing means are rotatably displaced around the center axis of said tip part and are inserted through said curvable tube part as displaced from said pivoting parts.

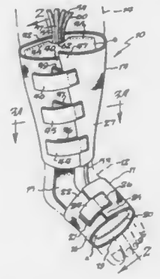
4,941,458

METHOD FOR AIDING CARDIOCEPITAL VENOUS FLOW FROM THE FOOT AND LEG OF AN AMBULATORY PATIENT

Syde A. Taheri, 268 Dan Troy, Williamsville, N.Y. 14221

Division of Ser. No. 692,579, Jan. 18, 1985, Pat. No. 4,624,244, which is a continuation-in-part of Ser. No. 660,802, Oct. 15, 1984, abandoned. This application Oct. 3, 1986, Ser. No. 914,784
Int. Cl.[5] A61H *9/00*
U.S. Cl. 128—64 **9 Claims**

1. A method for aiding cardiocepital venous flow from the limb of an ambulatory patient comprising the steps of applying pressure successively to only a single group of a plurality of adjacent areas of the soft tissue of said limb of said ambulatory patient in a cardiocepital direction, maintaining the pressure on a preceding less cardiocepital area of said single group of said limb of said ambulatory patient for a portion of the time that the pressure is applied to an adjacent succeeding cardiocepital area, relieving the pressure on each of said preceding areas of said single group after pressure has been applied to each succeeding area of said single group, said plurality of adjacent areas of said single group including a least cardiocepital area and a most cardiocepital area on said limb of said ambulatory patient and at least one area therebetween, maintaining said pressure on said most cardiocepital area of said single group on said limb of said ambulatory patient while applying pressure to



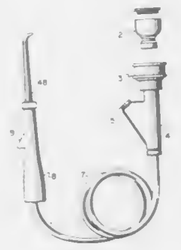
said least cardiocepital area of said single group on said limb of said ambulatory patient, and relieving said pressure from said most cardiocepital area of said single group on said limb of said ambulatory patient only after pressure has been applied to said least cardiocepital area of said single group to thereby prevent reverse venous blood flow in an anti-cardiocepital direction beyond said least cardiocepital area of said single group from said areas of said single group to which said pressure has been applied previously and said relieving of said pressure from said most cardiocepital area of said single group permitting unrestricted blood flow beyond said most cardiocepital area in a cardiocepital direction.

4,941,459

DENTAL HYGIENE DEVICE

Sandip K. Mathur, 13 Sherka Crescent, Kanata, Ontario, Canada K2K 2L4

Filed Jun. 7, 1989, Ser. No. 375,908
Int. Cl.[5] A61G *17/02*
U.S. Cl. 128—66 **12 Claims**



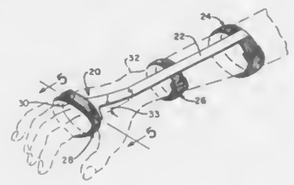
1. A hygiene device comprising:

(a) a handle having a nozzle applicator at one end thereof;

(b) a flexible hose connected at one end thereof to said nozzle applicator and having a faucet nozzle coupling means at the other opposite end thereof;

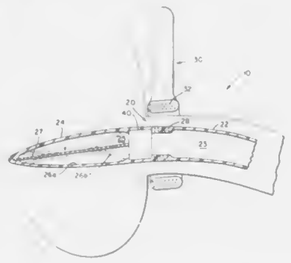
(c) means for introducing air into a stream of water flowing through said device;
(d) a chamber communicating with said stream of water flowing through said device, said chamber having a removal cap through which a cartridge containing a mouth treatment fluid can be introduced and including cartridge puncturing means in said chamber; and
(e) means for introducing a mouth treatment fluid into said stream of water from said chamber.

4,941,460
CARPAL BRACE
Loren Working, P.O. Box 147, Barberton, Ohio 44203
Continuation of Ser. No. 208,773, Jun. 20, 1988, abandoned. This application Nov. 3, 1989, Ser. No. 431,687
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—77 **8 Claims**



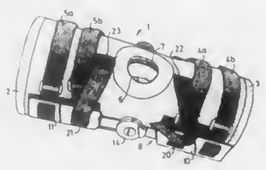
1. A brace for preventing or treating trauma of the carpal tunnel of an arm of a Homo sapiens, said brace comprising:
a rigid spine element, having distal and proximal ends and a middle therebetween, the length of said spine element selected so as to span the distance between the back of the Homo sapiens' hand to the proximal end of the Homo sapiens' forearm, when positioned on the dorsal surface thereof, the width of said spine element being narrow with respect to the width of said Homo sapiens' forearm;
a cross-piece element, having ulnar and radial ends and a middle therebetween, the length of said cross-piece element selected so as to at least span the back of the Homo sapiens' hand from the ulnar to the radial side thereof, said cross-piece element being affixed to or integral with the distal end of the spine element such that the cross-piece element is essentially perpendicular to the spine element and such that the point of connection of the spine element to the cross-piece element is closer to the radial end than the ulnar end thereof; and
at least three cincture means for securing the brace to the arm, the first said cincture means located lengthwise on the cross-piece element so as to pass across the palm and secure the hand contiguously to the brace, the second cincture means near or at the proximal end of the spine element so as to pass around the upper forearm and secure it contiguously to the brace, and the third and any additional cincture means located at least 2½ inches proximal to the proximal end of the carpal bones of the Homo sapiens' hand to secure such additional portion of the forearm contiguously to the brace;
said spine element further being inclined upwardly at its distal end to an angle sufficient to conform to the natural dorsi-lift of the Homo sapiens;
said brace essentially positioned on the dorsal side of the Homo sapiens' arm to prevent ulnar deviation, flexion or hyperextension of the Homo sapiens' wrist while still allowing full mobility of the fingers, thumb and elbow.

4,941,461
ELECTRICALLY ACTUATED INFLATABLE PENILE ERECTION DEVICE
Robert E. Fischell, 14600 Viburnum Dr., Dayton, Md. 21036
Filed Sep. 5, 1989, Ser. No. 403,086
Int. Cl.[5] A61F *2/26*
U.S. Cl. 128—79 **28 Claims**



1. An apparatus for achieving a penile erection in a human male, comprising:
at least one elastomer cylinder having a root chamber and a pendulous chamber, said elastomer cylinder adapted to be placed in the corpus carvenosum of the penis;
an external magnetic field generator which can be placed over some section of the penis which generates an alternating magnetic field;
an induction coil contained within said elastomer cylinder which produces an alternating electric current when in the proximity of said alternating magnetic filed which is produced by said external magnetic field generator; and
a fluid pumping means located within said elastomer cylinder, said pumping means being operated by the electrical power generated in said induction coil to pump fluid from said root chamber to said pendulous chamber in order to stiffen said elastomer cylinder for causing the erect state of the penis.

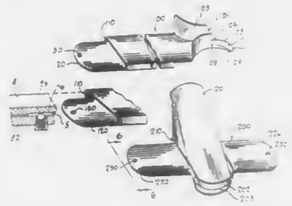
4,941,462
ORTHOSIS
Ulf Lindberg, Lövhagens Gard, S-170 17 Färentuna, Sweden
Filed May 3, 1988, Ser. No. 189,667
Claims priority, application Sweden, May 4, 1987, 8701842
Int. Cl.[5] A61F *500*
U.S. Cl. 128—80 C **6 Claims**



1. An orthosis for stabilizing a joint comprising:
a sleeve of a flexible and stabilizing material having a first portion to be secured on one side of the joint and a second portion to be secured on the other side of the joint;
at least one stabilizer for increasing a lateral bending stability of the sleeve, the stabilizer comprising at least one laterally arranged, two-armed stabilizing splint in which the arms of the splint are connected via a pivot joint, the sleeve being provided in the region where the joint flexes, with a section which is entirely without material;

a patella bracing pad designed to abut the kneecap, the patella bracing pad being adjustably positionable relative to the stabilizer and the patella bracing pad being provided with tapes and the tapes being securable to the stabilizer, the patella pad being adapted to be placed on the inner side of the sleeve to abut the kneecap; and
through-openings in the sleeve, the tapes of the patella bracing pad passing through the through-openings and the free ends thereof being securable to the stabilizer.

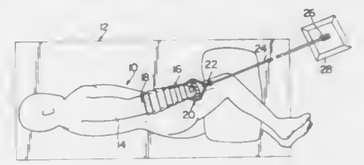
4,941,463
ORTHOPEDIC CASTING APPARATUS
Patrick T. Hergenroeder, 48 W. Orange St., Chagrin Falls, Ohio 44022
Continuation of Ser. No. 146,969, Jan. 22, 1988, abandoned, which is a division of Ser. No. 54,064, May 19, 1987, Pat. No. 4,726,363, which is a continuation of Ser. No. 791,945, Oct. 28, 1985, abandoned. This application May 5, 1989, Ser. No. 349,893
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—83 **9 Claims**



1. A limb-positioning attachment for maintaining an extremity in optimal joint alignment during the application of a cast and adapted for use with a casting stand having a plate-like limb-support assembly, said limb-positioning attachment comprising:
structure defining a passage of fixed dimension greater in length and width than height, constructed and arranged to slide lengthwise over, engage, and be supported from within by, a plate-like support and be located in a predetermined orientation with respect thereto by the cross-sectional shape of the passage, which is one of non-revolution;
releasable attachment means engageable with the limb-support assembly to inhibit sliding of the attachment on the support, said means including a tongue extending lengthwise from and beyond one end of the passage and said releasable attachment means being in or on said tongue; and
a limb-engaging surface integral with the structure defining the passage to hold a limb extremity resting on the surface in a desired position.

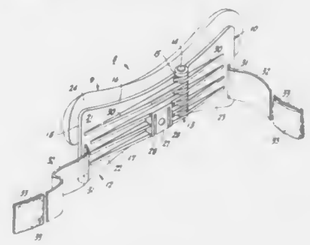
4,941,464
SHOULDER ARTHROSCOPY ABDUCTION APPARATUS
James W. Scott, P.O. Box 7630, Tifton, Ga. 31794
Filed Jul. 10, 1989, Ser. No. 377,153
Int. Cl.[5] A61G *13/00*
U.S. Cl. 128—84 R **15 Claims**

1. A shoulder arthroscopy abduction apparatus for use during a diagnostic and/or surgical procedure comprising:
a generally rectangular, forearm sleeve member having,
a long axis operable to lie along a patient's arm and flexibly yet securely embrace a patient's forearm, and
at least one releasable retaining means for securing said generally rectangular forearm sleeve member in a generally cylindrical wrap about a patient's forearm;
a generally U-shaped gripping and support member having,
a transverse gripping member operable to receive a patient's hand for grasping support, and
a pair of support arms operable to extend along opposing lateral portions of a patient's forearm; and



means connected between an inside surface of said pair of support arms of said generally U-shaped gripping and support member and an external surface of said generally rectangular forearm sleeve member for releasably attaching said generally U-shaped gripping and support member to said generally rectangular forearm sleeve member.

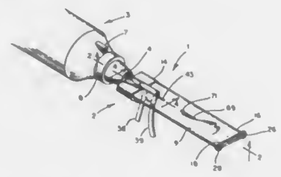
4,941,465
ISCHIAL PERINEAL CUSHION FOR EMERGENCY TRACTION SPLINT
Anthony G. Borschneck, 770 Flower Ash La., Redding, Calif. 96003
Filed Feb. 21, 1989, Ser. No. 313,214
Int. Cl.[5] A61F *5/04, 5/28, 5/02*
U.S. Cl. 128—87 R **8 Claims**



1. Ischial perineal cushion for emergency traction splint used to maintain alignment of fractured leg bone comprising:
a. an elongated body extending longitudinally between opposite ends and transversely between opposite sides and between an upper surface and a lower surface, said body being compliant and being laterally bendable to a permanent predetermined non-linear configuration in which said upper surface bears only against the pelvis in countertractive position, said body being a modified hour glass shape in plan with two enlarged end lobe portions and an intermediate constricted portion, and in which said upper surface of said body is saddle-shaped in side elevation;
b. means for connecting said body to the emergency traction splint; and,
c. a bridle closable at opposite ends by an adjustable fastener, said bridle being dimensioned to secure said cushion in fitted position with said cushion in countractive position only against the pelvis.

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4,941,466
CURVED BORE DRILLING METHOD AND APPARATUS
Jack W. Romano, 412 NE. 165th, Apt. #13, Seattle, Wash. 98155
Continuation-in-part of Ser. No. 37,697, Apr. 13, 1987, abandoned. This application May 20, 1988, Ser. No. 196,319
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—80 36 Claims



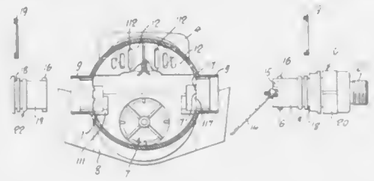
1. An apparatus for drilling a curved bore within a material comprising:
(a) rotary drive means;
(b) drill shaft means having one end adapted for connection to said rotary drive means, said drill shaft means having a distal flexible end section;
(c) cutting means secured to said flexible end section;
(d) mounting means for directing said drill shaft means along a rectilinear path substantially normal to a surface of said material;
(e) guide means carried by said mounting means to guide said flexible end section and said cutting means from said rectilinear path along a curved path to form said curved bore within said material, said rectilinear path having an angle of approach with respect to a surface of said material; and
(f) means for pivotally moving said guide means along said curved path without requiring an alteration of said angle of approach.

4,941,467
HUMIDIFICATION FACE MASK
Danzaburo Takata, 21-B803, Kashikiriyama, Suita-shi, Osaka, Japan
Filed Mar. 16, 1989, Ser. No. 324,111
Claims priority, application Japan, Apr. 19, 1988, 63-96343
Int. Cl.[5] A61M *15/00*; A62B *7/00, 18/02*
U.S. Cl. 128—203.12 7 Claims



1. A humidification face mask comprising: an inner mask member and an outer mask member each shaped into a curved configuration for fitting over the nose and mouth of a wearer, said inner and outer mask members provided respectively with a number of breathing perforations permitting the breathing of the wearer therethrough and being bonded together in a sealed manner along side and lower edges of said inner and outer mask members so as to leave therebetween a top opening;
an air permeable and water absorbent moisturizing pad having a first portion and a second portion inserted through said top opening and held between the inner and outer mask members, said moisturizing pad carrying a volume of water which moisturizes the air inhaled through said breathing perforations by the wearer, said inner and outer mask members forming a shallow concavity and a deep concavity therebetween, said first portion and said second portion of said moisturizing pad being accommodated within said shallow concavity and said deep concavity, respectively, and said second portion supports a large volume of water for supplying water to said first portion by capillary action; and
means for supporting the face mask on the head of the wearer.

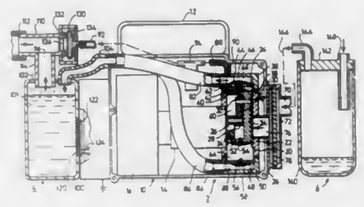
4,941,468
REGULATOR FOR BREATHING APPARATUS
Garofalo Giovanni, Rapallo, Italy, assignor to AMF MARES S.p.A., Italy
Filed May 16, 1989, Ser. No. 352,247
Claims priority, application Italy, Jun. 8, 1988, 12498 A/88
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.26 10 Claims



1. In a breathing apparatus for use with a source of compressed air and provided with a first air-pressure reducing stage, the combination of a regulator provided with a second reducing stage and comprising a first chamber having walls communicating with a mouthpiece and a second chamber communicating with the surroundings, said first and second chamber being separated by a membrane which controls the opening and the closure of a dispensing valve within a connector member between said first and said second air-pressure reducing stages, and in which the said first chamber communicating with the said mouthpiece is provided both on the right-hand and left-hand sides with a mating seat for said connector member between the said two air-pressure reducing stages, the said connector member being provided with two symmetrically formed air-dispensing holes, and in which a closing and/or throttling means is provided at each mating seat for cooperation with whichever one of the said two dispensing holes is disposed away from the mouthpiece said connector member being locked in a pre-established position in its seat by means of a bayonet joint, centering and safety means to prevent accidental disconnection of said member.

4,941,469
PORTABLE VENTILATOR APPARATUS
Carmeli Adahan, 1316/02 Ramot 03, Jerusalem 97 725, Israel
Continuation-in-part of Ser. No. 119,880, Nov. 12, 1987, Pat. No. 4,807,616, which is a continuation-in-part of Ser. No. 71,327, Jul. 9, 1987, Pat. No. 4,823,787. This application May 23, 1988, Ser. No. 197,198
Int. Cl.[5] A61M *16/16, 16/10*
U.S. Cl. 128—205.18 20 Claims

11. Ventilator apparatus comprising: a reciprocating pump including a negative-pressure chamber having an inlet for drawing air into the chamber, and a positive-pressure chamber having an outlet for outletting pressurized air; delivery means for delivering pressurized air to a patient; an exhalation valve assembly producing breathing cycles in which the delivery means is first connected to the patient to effect inhalation, and then is vented to the atmosphere to permit exhalation; control means for operating said pump at a speed to effect at least two cycles of operation for each breathing cycle of the exhalation



valve; and a control valve operated by said pump for controlling the breathing cycles of the exhalation valve; said pump including an expansible bellows in the flow path of the air from the positive-pressure chamber to the delivery means to damp oscillations in pressure produced by the reciprocating pump.

4,941,470
FACE MASK WITH EAR LOOPS AND METHOD FOR FORMING
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to Tecnol, Inc., Fort Worth, Tex.
Continuation-in-part of Ser. No. 815,753, Dec. 31, 1985, Pat. No. 4,802,473, which is a continuation of Ser. No. 549,392, Nov. 7, 1983, abandoned. This application Jan. 11, 1988, Ser. No. 142,743
Int. Cl.[5] A62B *7/10*
U.S. Cl. 128—206.13 1 Claim



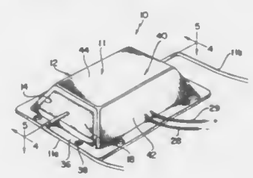
1. A method for fabricating a sanitary face mask, comprising;
fabricating a layer of meltblown polypropylene fabric having a horizontal and vertical axis;
forming at least one pleat in the meltblown layer along the horizontal axis thereof such that the pleated meltblown layer is dimensioned to fit over the mouth and nostrils of a wearer;
heat sealing the sides of the pleated meltblown layer along the vertical axis thereof to allow the pleats to expand in the center portion only;
disposing a semi-rigid member along one edge of the pleated meltblown layer parallel to the horizontal axis thereof and folding a portion of the edge over the semi-rigid member, the folded-over portion being heat sealed about the perimeter of the semi-rigid member to completely enclose the semi-rigid member;
forming first and second ear loops from narrow strips of a combination of textured polyester and lycra spandex, said combination comprising 90.33 percent textured polyester and 9.67 percent lycra spandex so that the edges of each of said ear loops curl over to form a rounded cross section therefor; and
attaching the free ends of each of the ear loops on opposite ends of one of the lateral sides of the pleated beltblown material on a vertical edge thereof by heat bonding.

4,941,471
RATE STABILIZATION PACEMAKER
Rahul Mehra, Stillwater, Minn., assignor to Medtronic, Inc., Minn.
Filed Sep. 7, 1988, Ser. No. 241,285
Int. Cl.[5] A61N *1/36*
U.S. Cl. 128—419 PG 7 Claims



1. An improved cardiac pacemaker of the type comprising:
sensing means for sensing contractions of a chamber of the heart, including premature contractions of said chamber of the heart;
pulse generating means for delivering stimulation pulses to said chamber of said heart; and
timing means responsive to said sensing means and coupled to said pulse generating means, said timing means defining escape intervals following sensed contractions of said chamber, including premature contractions or following stimulation pulses applied to said chamber, and triggering said pulse generating means after the expiration of said escape intervals;
wherein the improvement comprises:
control means responsive to said pulse generating means and responsive to said sensing means for adjusting the escape interval determined by said timing means after either each sensed natural contraction of said chamber, including premature contractions or in response to the triggering of each stimulation pulse, said control means adjusting the escape interval defined by said timing means to be equal to the length of the cardiac cycle immediately preceding said sensed natural contraction or said stimulation pulse, plus a predetermined increment of time determined by said control means.

4,941,472
ELECTRICAL ACCESS PORT ASSEMBLY
James R. Moden, Bristol; Michael D. Caldwell, East Greenwich, and Robert D. Moden, Warren, all of R.I., assignors to Surgical Engineering Associates, Inc., Bristol, R.I.
Filed Apr. 13, 1989, Ser. No. 338,232
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 PS 6 Claims



1. An electrical access port assembly for supplying electrical energy to a predetermined location in the body of a patient comprising a surgically implantable body portion having first and second enclosed, electrically insulated interior cavities therein, said body portion including first and second penetrable septa which are self-sealingly penetrable to gain access to said first and second cavities, respectively, first and second electrical contact means in said first and second cavities, respectively, first and second insulated electrical conductor means electrically communicating with said first and second electrical contact means, respectively, said conductor means being surgically implantable in the body of said patient so that they extend to said predetermined location therein, and first and second

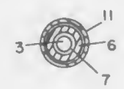
electrically conductive needle means, each including an elongated electrically insulated shank portion and an electrically exposed tip portion, said first and second septa being self-sealingly penetrable by said first and second needle means, respectively, for electrically connecting the tip portions of said first and second needle means to said first and second contact means, respectively, without otherwise electrically connecting said first and second needle means to the body of said patient when said access port is surgically implanted in said patient.

4,941,473

GUIDE FOR MECHANICAL GUIDING OF A CATHETER IN CONNECTION WITH CARDIO AND VASCULAR EXAMINATION

Lars Tenerz, Upsala; Bertil Höök, Västerås, and Thomas Engström, Upsala, all of Sweden, assignors to Radisensor AB, Upsala, Sweden

PCT No. PCT/SE87/00347, § 371 Date Jan. 11, 1989, § 102(e) Date Jan. 11, 1989, PCT Pub. No. WO88/00810, PCT Pub. Date Feb. 11, 1988
PCT Filed Jul. 31, 1987, Ser. No. 297,256
Claims priority, application Sweden, Aug. 4, 1986, 8603304
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—637 **26 Claims**



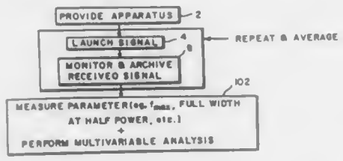
1. A guide wire having a distal end and proximal end for mechanically guiding a medical probe, comprising:
(a) a miniaturized pressure sensor disposed at the distal end of the guide wire;
(b) an air ventilation passage connecting the pressure sensor to a source of reference pressure;
(c) a sheath formed of at least a first part adjacent the proximal end and a second part adjacent the pressure sensor, the sheath determining the torsional stiffness of the guide wire;
(d) the first part being substantially inflexible and the second part being more flexible.

4,941,474

MULTIVARIABLE ANALYSIS OF BONE CONDITION

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 1, 1988, Ser. No. 214,184
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 **21 Claims**



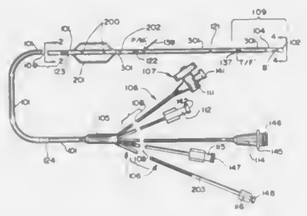
1. A method of assessing the condition, in a subject patient, of a bony member which may be surrounded by soft tissue, such method comprising the steps of:
a. launching into the patient proximate the surface of the bony member an ultrasound pulse signal having components in a range from at least about 100 kHz to about 600 kHz;
b. receiving from the bony member ultrasound energy in said range and generating electrical signal (termed "received signals") corresponding to said received ultrasound energy;
c. extracting from the received signals a plurality of parameter values characterizing the received signals; and
d. performing a multivariable analysis on said parameter values, such analysis comparing the parameter values against the statistical distributions for such parameters in patients of known bone condition, and providing a probability that the condition of the bony member of the subject patient matches the known bone condition.

4,941,475

THERMODILUTION BY HEAT EXCHANGE

Wilbur R. Williams; Gene A. Borazin, both of Camarillo, and John S. Thompson, Oxnard, all of Calif., assignors to Spectramed, Inc., Oxnard, Calif.

Continuation of Ser. No. 239,128, Aug. 30, 1988, abandoned.
This application Aug. 7, 1989, Ser. No. 394,252
Int. Cl.[5] A61B *5/028*
U.S. Cl. 128—692 **13 Claims**



1. A process for determining flow rate of blood along a flow path in a living body, comprising the steps of:
a. removing heat from such blood flowing through such body, by heat exchange at a position along such flow path, without liquid injection into such blood;
b. monitoring temperature;
c. determining flow rate from the monitored temperature and known parameters related to the amount of heat removed;
d. periodic repetition of steps a–c;
e. between each pair of successive periodic repetitions, adding heat to such flow of blood; whereby a balance of heat flow to and from such body is at least roughly preserved and temperature modulation of such blood flow is increased.

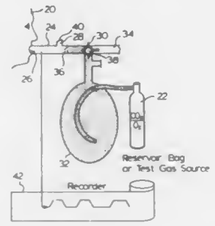
4,941,476

NON-INVASIVE METHOD AND APPARATUS FOR MEASURING MIXED VENOUS BLOOD CARBON DIOXIDE PRESSURE (PVC02) AND OTHER PHYSIOLOGICAL VARIABLES

Joseph Fisher, 113 Franhore Cir. Thornhill, Canada L4J3B9, assignor to Joseph Fisher, Thornhill, Canada

Division of Ser. No. 912,969, Sep. 29, 1986. This application Aug. 27, 1987, Ser. No. 89,877
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—719 **9 Claims**

1. A method of determining the functional residual capacity of a patient, the method comprising the steps of:
(a) measuring the Partial Pressure of an inert insoluble gas (hereinafter referred to as P_{IG}) of the gases inhaled and exhaled by the patient under controlled conditions without rebreathing
(b) causing the patient to inhale a test gas containing an inert gas of a partial pressure P_{IIG} where P_{IIG} is a partial pressure other than the control partial pressure of sub paragraph (a) and continuing to measure the P_{IG} of the inhaled and exhaled gases, the patient taking at least one breath without rebreathing
(c) causing the patient to return to breathing under control conditions
(d) determining the partial pressure of the inhaled inert gas P_{IIG} and the end tidal partial pressure of the same inert gas P_{EIG}



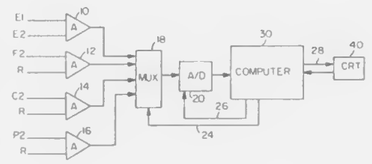
(e) determining the difference between the P_{EIG} and P_{IIG} under control and test conditions and relating it to the P_{IIG} of the control and test conditions
(f) determining the tidal volume
(g) determining mathematically the slope S of the relation P_{EIG} minus P_{IIG} Versus P_{IIG}
(h) determining FRC (Functional Residual Capacity) in accordance with the formula $FRC=1+S/VT-VT$ where S is the slope and VT is the tidal volume.

4,941,477

METHOD AND APPARATUS FOR DETECTION OF DECEPTION

Lawrence A. Farwell, Urbana, Ill., assignor to University Patents, Inc., Westport, Conn.

Continuation of Ser. No. 94,956, Sep. 9, 1987, abandoned. This application Dec. 2, 1988, Ser. No. 279,585
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—731 **16 Claims**



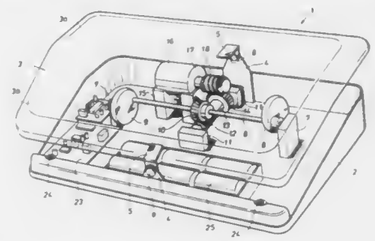
1. A method for determining if a subject is concealing information concerning an event which comprises:
exposing the subject to both relevant and irrelevant multiple information stimuli concerning an event;
monitoring the subject's EEF outputs in response to said stimuli;
segregating the subject's EEF outputs generated in response to said relevant and irrelevant stimuli; and
determining any difference between the segregated EEF outputs.

4,941,478

PILLOW FOR CONTROLLING SNORING

Shobei Takeuchi; Kuniaki Miyazawa, both of Tokyo, and Takesosuke Ikematsu, Noda, all of Japan, assignors to Shobei Takeuchi, Tokyo, Japan

Filed Jun. 24, 1988, Ser. No. 211,303
Claims priority, application Japan, Feb. 19, 1986, 61-34827
Int. Cl.[5] A61F *5/56*
U.S. Cl. 128—848 **15 Claims**



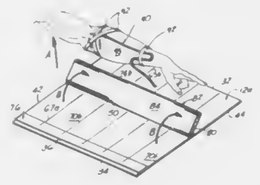
1. A pillow for controlling snoring of a sleeping person, comprising:
a stationary base;
a cover placed above the stationary base for placing a head of a person thereon, the cover being disposed in a freely rotatable manner relative to the base about a substantially horizontal central line of rotation;
power drive means mounted on said stationary base for causing a reciprocating rotational motion of the cover about the central line of rotation;
snoring noise detecting means for detecting an occurrence of snoring noise; and
control means operatively connected to both the power drive means and the snoring noise detecting means for activating the power drive means for a predetermined time interval upon detection of snoring by said snoring noise detecting means whereby said cover is rotated into a different angular position.

4,941,479

SURGICAL WRAP WITH ARM SPLINT

John P. Russell, Centerpoint; Sam Miller, Birmingham, and Terry Carroll, Dora, all of Ala., assignors to Infection Control Products, Inc., Gardendale, Ala.

Filed Sep. 5, 1989, Ser. No. 402,914
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—877 **21 Claims**



1. A protecting and restraining apparatus for use in applying an intravenous or catheter system to an extremity of the body for substantially immobilizing the extremity while permitting continuous intravenous catheter system operation comprising:
(a) an elongated flexible sheet member being adapted to be

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wrapped about and encompass an extremity of the body, said sheet member further comprising:

i. a main base portion; and,

ii. a plurality of strap members integrally formed with and transversely depending from said main base portion at a marginal longitudinal edge of said main base portion, each of said strap members being severably connected to its adjacent strap members at selected points along confronting marginal transverse edges of said adjacent strap members;

(b) an elongated flexible sleeve member pivotally attached to said sheet member along one marginal longitudinal edge of said sleeve member so as to allow pivoting of said sleeve member toward and away from a first surface of said sheet member, said sheet member being adapted to accept and retain a stiffening member therein; and,

(c) means for securing said sheet member and said sleeve member in engagement with a corresponding confronting portion of said extremity when said sheet member is wrapped about said extremity.

4,941,480

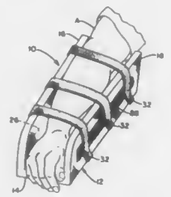
DEVICE FOR IMMOBILIZING LIMB OF PATIENT

Philip W. McLean, 3356 Revere Rd., and Russell R. English, 3834 Broadview Rd., both of Richfield, Ohio 44286

Filed Jun. 7, 1989, Ser. No. 362,481

Int. Cl.[5] A61F *13/00*

U.S. Cl. 128—878 6 Claims



1. A device for immobilizing a limb of a patient, said device being resilient and comprising:

(a) a longitudinally extending resilient elongated three-sided support member comprising a resilient core and a thin adherent waterproof, washable coating thereon, said support member being of generally U-shaped cross section, and straight in the longitudinal direction, said support member comprising a bottom wall and a pair of side walls extending upwardly from opposite side edges of said bottom wall, said bottom wall and said side walls each being essentially rectangular in shape and of substantially uniform thickness and having planar outside surfaces and planar inside surfaces, said support member being open at the top; and

(b) fastener means including a member adapted to be removably attached to said upwardly extending sides and to extend across the open top of said support member.

4,941,481

DEVICE FOR POSITIONING AND SECURING A PART HAVING CIRCULAR REGIONS

Marcel Wagenknecht, Le Ligon, Switzerland, assignor to Jaquet Orthopedie, S.A., Geneva, Switzerland

Filed Nov. 26, 1986, Ser. No. 935,416

Claims priority, application Switzerland, Nov. 29, 1985, 5119/85; Sep. 29, 1986, 3894/86

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—59 20 Claims

1. A system comprising a part to be positioned and secured and a device for positioning and securing said part, said device comprising two jaws arranged to be pressed against each other to clamp said part, wherein at least one element selected from the group consisting of said part and said jaws comprises at least one region, the cross-section of which is circular, wherein said at least one region has a succession of facets regularly arrayed over at least a portion of said at least one region, wherein adjacent facets meet at obtuse angles and wherein the



boundaries between adjacent facets are sharp edges or sharp points, wherein said at least one region is located on said part to be positioned and secured, wherein the surfaces of the jaws in contact with said part are smooth, and wherein said part to be positioned and secured comprises a sphere having at least one faceted segment, and wherein said sphere includes a central bore intended to receive a rod.

4,941,482

APPARATUS FOR MEASURING THE DENSITY OF A TOBACCO STREAM

Uwe Heitmann, Hamburg; Heinz-Christen Lorenzen, Wentorf; Wolfgang Siems, Hamburg, and Peter Pinck, Gross-Hansdorf, all of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 28, 1988, Ser. No. 225,693

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1987, 3725366

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] A24C *5/14*

U.S. Cl. 131—84.4 4 Claims



1. A method of measuring the density of an unwrapped tobacco stream in a rod making machine, comprising the steps of advancing the stream by a radiation-permeable conveyor along a first path; directing against the stream at least one beam of radiation along a second path adjacent a predetermined portion of said first path so that radiation which propagates itself along the second path penetrates into and through the stream and through the conveyor and that radiation which penetrates through successive increments of the stream is indicative of the density of the respective increments; and measuring the intensity of radiation which penetrates through and issues from the conveyor.

4,941,483

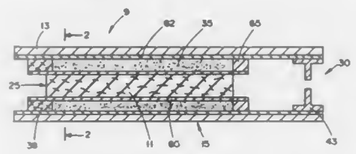
AEROSOL DELIVERY ARTICLE

Henry T. Ridings, Lewisville, and Chandra K. Banerjee, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 18, 1989, Ser. No. 410,191

Int. Cl.[5] A24D *1/00, 1/18*

U.S. Cl. 131—194 23 Claims



1. An aerosol delivery article comprising:

(a) a volatile component including a flavor and/or a drug; and

(b) a non-combustion heat source for heating the volatile component, and including

(i) at least two metallic agents capable of interacting electrochemically with one another, and

(ii) a normally solid dispersing agent.

4,941,484

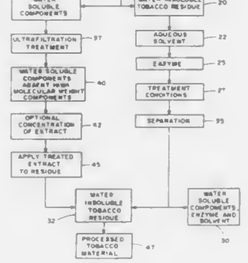
TOBACCO PROCESSING

William L. Clapp, and Barry S. Fagg, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 30, 1989, Ser. No. 358,725

Int. Cl.[5] A24B *15/20, 15/24*

U.S. Cl. 131—297 15 Claims



1. A process for reducing the protein content of tobacco material, the process comprising:

(i) extracting components from tobacco material with a solvent having an aqueous character;

(ii) separating extracted tobacco components from extracted tobacco material;

(iii) subjecting the extracted tobacco material to aqueous enzyme treatment to decompose essentially water insoluble protein components of the tobacco material to water soluble and/or water dispersible fragments; and separating tobacco material subjected to such treatment from decomposed protein fragments resulting from such treatment;

(iv) subjecting the extracted tobacco components to membrane treatment and collecting permeate resulting from such treatment; and

(v) contacting the extracted tobacco material resulting from step (iii) with the permeate collected in step (iv).

4,941,485

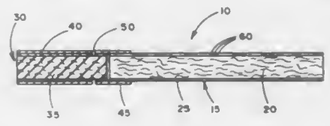
CIGARETTE

Patricia F. Perfetti, Winston-Salem, and Gary R. Andersen, Clemmons, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 18, 1989, Ser. No. 339,933

Int. Cl.[5] A24D *4/02*

U.S. Cl. 131—365 30 Claims



1. A cigarette comprising a rod of smokable material contained in a circumscribing paper wrapping material, the wrapping material having (i) a cellulosic base web containing a water insoluble inorganic filler, (ii) an amount of water soluble alkali metal salt to provide at least about 5 mg water soluble alkali metal cation per gram of dry base web, (iii) an amount of water soluble alkali earth metal salt to provide at least about 5 mg water soluble alkali earth metal cation per gram of dry base web, and (iv) an amount of said water soluble alkali metal salt and said water soluble alkali earth metal salt to provide at least about 20 mg water soluble alkali metal and alkali earth metal ions per gram of dry base web.

4,941,486

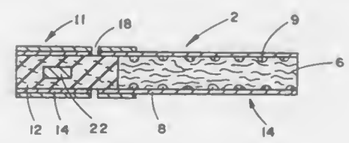
CIGARETTE HAVING SIDESTREAM AROMA

Michael F. Dube, 1641 Eaglecrest Dr., Pfafftown, N.C. 27040, and Barry L. Saintsing, Rte. 8, Lexington, N.C. 27292

Continuation-in-part of Ser. No. 827,568, Feb. 10, 1986. This application Jan. 15, 1988, Ser. No. 145,724

Int. Cl.[5] A24B *3/12;* A24D *1/02*

U.S. Cl. 131—365 28 Claims



1. A cigarette comprising smokable material contained in circumscribing wrapping material, the wrapping material having in intimate contact therewith a flavor precursor in an amount sufficient to provide alteration to the aroma of the sidestream smoke of the cigarette upon burning during use thereof; wherein the flavor precursor provides substantially less perceivable aroma characteristics to the mainstream smoke of the cigarette than to the sidestream smoke during use thereof, and wherein the flavor precursor provides essentially no perceivable aroma characteristics to the cigarette prior to use thereof.

4,941,487

FLUORIDATED DENTAL FLOSS

Floyd V. VanBeneden, 26330 Shirley Ave., Euclid, Ohio 44132

Filed Jul. 11, 1989, Ser. No. 377,958
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 1 Claim



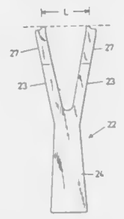
1. Dental floss consisting entirely of:
an elongated base of dental-floss material having an undefined length, said base being ribbon-like in form to have a rectangular cross-section;
patches of fluoride on said base, said patches each being approximately one-half inch in length and being spaced apart about one-half inch, and being less than about one mm in thickness.

4,941,488

TENSILE THREAD HOLDER FOR TOOTH CARE

Rochus Marxer, Römerstrasse 217, FL-9485 Nendeln, and Reinhard Franck, Heiligkreuz 51, FL-9490 Vaduz, both of Liechtenstein

Filed Apr. 7, 1988, Ser. No. 178,496
Claims priority, application Austria, Apr. 17, 1987, 982/87
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 1 Claim



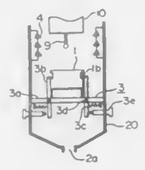
1. A holder for receiving a tensile thread for tooth care, particularly for cleaning the spaces between teeth, the ends of the thread having thickened portions in the form of spherical knots, a plurality of tensile threads arranged in a row spaced apart from each other and parallel relative to each other, the threads having a length which corresponds approximately to the mounting length in the holder, the knots located immediately adjacent to each other on each side of the row of threads being connected to each other in reduced-diameter intended breaking points, the holder comprising two fork-like arms with free ends, the free ends defining slots for receiving the thread, wherein the slots are provided in spherically-shaped outwardly facing indentations for receiving the spherical knots of the threads, the arms defining outer edges, the indentations being offset toward the middle of the fork-type arms relative to the outer edges of the arms, the arms having shoulder surfaces adjacent the spherical indentations, the shoulder surfaces being offset relative to the outer ends of the arms and being concavely arched, and parallel edges formed between the shoulder surfaces defining sharp cutting edges for cutting the intended breaking points.

4,941,489

CARRIER CLEANING AND DRYING APPARATUS

Yasuo Kamimura, Hachioji; Toshiaki Ohmori, Itami; Motonori Yanagi, Itami; Takaaki Fukumoto, Itami, and Masaharu Hama, Itami, all of Japan, assignors to Dan Science Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 190,336, May 5, 1988, abandoned. This application Sep. 5, 1989, Ser. No. 402,988
Claims priority, application Japan, May 6, 1987, 62-67625[U]; May 6, 1987, 62-67626[U]
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95 9 Claims



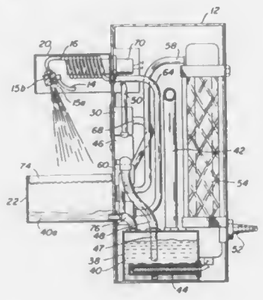
1. An apparatus for cleaning and drying a wafer processing carrier comprising:
a cleaning tank having at least one side wall and upper and lower portions for accommodating a wafer processing carrier;
a high-pressure injection nozzle disposed in the upper portion of said cleaning tank for injecting a cleaning solution toward the wafer processing carrier in said cleaning tank at high pressure;
means for supporting the wafer processing carrier in said cleaning tank and for swinging the wafer processing carrier through an arc while the cleaning solution is being injected toward the wafer processing carrier;
means for moving said high-pressure injection nozzle within said cleaning tank while the cleaning solution is being injected toward the wafer processing carrier; and
a shower nozzle disposed on said side wall of said cleaning tank for spraying the cleaning solution on said carrier.

4,941,490

LOW TEMPERATURE APPARATUS FOR CLEANING JEWELRY AND GEMS

Stanley Gross, 1311 Green Rd., Roslyn, Pa. 19001

Filed Mar. 10, 1989, Ser. No. 321,677
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—98 18 Claims



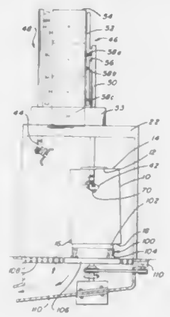
1. An apparatus for low temperature cleaning of jewelry or sensitive gems which comprises:
a liquid system containing a cleaning liquid of water;
means for delivery of said liquid as a mist into a cleaning zone, and including means to maintain the temperature of the mist delivered into the cleaning zone substantially between 84° and 104° F.;
a compressed gas system;
means for delivery of compressed gas from said gas system into said cleaning zone;
means to control the delivery of said compressed gas; and
means to control the delivery of said liquid.

4,941,491

METHOD AND APPARATUS FOR CLEANING CONTAINERS

William G. Goerss, Fenton, and William J. Farrah, Grosse Pointe Farms, both of Mich., assignors to Automated Cleaning Systems, Inc., Westland, Mich.

Filed Apr. 7, 1989, Ser. No. 335,095
Int. Cl.[5] B08B *3/02, 9/18*
U.S. Cl. 134—111 18 Claims



1. In an apparatus for cleaning containers having an opening in a top thereof, said apparatus having a spray head for spraying cleaning fluid onto the interior of the container, wherein the improvement comprises:
vertical positioning means for vertically moving the spray head along a vertical axis to a plurality of preselected positions within the container;
tilting means for tilting the spray head about a horizontal axis so that solvent is sprayed onto the interior walls of the container at a plurality of preselected angles;
means for rotating the container about a vertical axis relative to the spray head; and
an external spray head for cleaning exterior portions of the container.

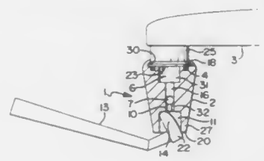
4,941,492

RAZOR BLADE RINSING DEVICE

Dale D. Morgan, 28168 Lorraine, Warren, Mich. 48093

Filed May 18, 1989, Ser. No. 353,544
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—182 6 Claims

1. A body with a cavity formed therein for removably receiving a razor head, comprising:
a) at least two side walls;
b) means for sealing attachment of the body to a directed fluid source;
1) the means for attachment being formed within the body,
2) the means for attachment having:
i) a semi-circular side surface open to at least one body side wall;
ii) a bottom surface;
iii) the semicircular surface and the bottom surface forming a receiving aperture for receiving the fluid source;
iv) the means for attachment having an annular gasket on the bottom surface to opposingly mate with and seal a terminus of the fluid source;
c) a first conduit formed within the body in fluid communication with the receiving aperture the first conduit having a receiving end and a discharge end, the receiving end having a diameter larger than that of the discharge end;



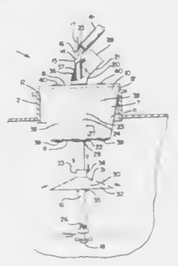
d) a second conduit formed within the body in fluid communication with the discharge end of the first conduit, the second conduit having at least one fluid outlet;
e) the cavity formed within the body being sized for receiving a razor blade, the cavity being in fluid communication with the outlet of the second conduit and an exterior surface of the body.

4,941,493

DEVICE FOR WASHING AND DRYING THE INSIDE TANK OF A TANKER TRUCK

Tom Wieringa, Oakbrook, Ill., assignor to Carry Companies of Illinois, Bridgeview, Ill.

Filed Aug. 15, 1988, Ser. No. 232,661
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—166 R 6 Claims



6. A device for washing and drying the inside tank of a tanker truck, said device being adaptable for fitting into a manway located in the tank, said device comprising:
a cone-shaped base comprising an upper portion having a top and a lower portion having a bottom, the diameter of the lower portion being sufficiently small to allow said lower portion to pass through the manway and the diameter of the upper portion being sufficiently large to prevent said upper portion from passing through said manway;
a washing medium tube having an inlet and an outlet, said washing medium tube passing through said base in an axial direction, said inlet extending above the top of said base and said outlet extending below the bottom of said base;
a drying medium tube having an inlet and an outlet, said drying medium tube passing through said base in an axial direction, said inlet extending above the top of said base and said outlet terminating near the bottom of said base;
the longitudinal axis of a portion of the washing medium

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tube and the longitudinal axis of a portion of the drying medium tube being on the same line, the diameter of said drying medium tube portion being larger than the diameter of said washing medium tube portion thereby forming an annulus about said washing medium tube portion to provide a drying medium passageway;

a cone-shaped deflector located below the bottom of said base and having its center on the axis line of said drying medium tube portion and said washing medium tube portion, said deflector having an upper portion and a lower portion said upper portion being slidably affixed to said washing medium tube below the bottom of said base, the diameter of the upper portion being less than the diameter of the lower portion; and

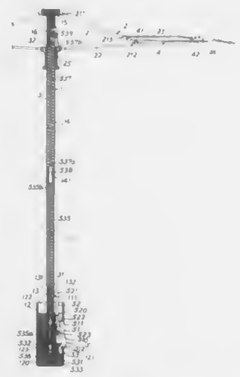
a plurality of vent tubes each having an inlet and an outlet, said vent tubes passing through said base in an axial direction, said inlets terminating near the bottom of said base and said outlets terminating near the top of said base, the diameter of said vent tubes being sufficiently large to allow ventilation from the tank but sufficiently small to maintain a pressure greater than atmospheric in the tank.

4,941,494

LIGHTLY-OPERATING AUTOMATIC UMBRELLA FOR PREVENTING FALSE OPERATION

Tsun-Zong Wu, No. 16, Chen Tai Rd., Sec. 3, Wu-Ku Hsiang, Taipei Hsien, Taiwan (24801)

Filed Oct. 23, 1989, Ser. No. 425,463
Int. Cl.[5] A45B *25/16*
U.S. Cl. 135—20 M **9 Claims**



1. An automatic umbrella comprising:

a central shaft means including a lower tubular shaft, a grip fixed on a lower portion of said lower tubular shaft, a sleeve inserted in said lower shaft, an upper tubular shaft telescopically mounted on said lower tubular shaft, and an upper notch formed on an upper portion of said upper shaft;

a rib assembly for securing an umbrella cloth thereon including at least a top rib having an inner end portion of said top rib pivotally secured to said upper notch and a stretcher rib pivotally secured to at least one said top rib having an inner end portion of said stretcher rib pivotally secured to a runner slidably encompassed on said upper shaft;

an extending spring formed as an elongate coil spring retained in said central shaft means having a lower end of said extending spring retained on an upper end of said sleeve and having an upper end of said extending spring retained on an inner block secured to said upper notch inside said upper shaft, said extending spring having a length when releasing its elastic force upon an extension of said central shaft means generally equal to a length of an extended central shaft means;

at least a retraction restoring means secured in said rib assembly normally urging said rib assembly downwardly inwardly towards said central shaft means for closing the umbrella; and a control means formed in said grip selectively actuating an extension controller formed in an upper portion of said grip for extending said shaft means and said rib assembly for opening the umbrella, or actuating a retraction controller generally formed in a lower portion of said grip and inside said shaft means for closing the umbrella;

the improvement which comprises:

said extension controller generally formed as a biasing lever pivotally secured in a socket formed in an upper side portion of said grip, having a hook portion formed on an upper portion of said extension controller engageable with a hook hole formed in a lower portion of said upper shaft, and a depression block formed on a lower portion of said extension controller resiliently protruding outwardly by a tensioning spring in said grip to be depressible by said control means for biasing said hook portion inwardly to engage said hook hole in said upper shaft for locking said upper shaft for folding the shaft means and the umbrella; and

said retraction controller including a sliding latch resiliently formed in a lower portion of said grip to be operatively depressed by said control means, a drag rod slidably held inside said shaft means having a locking head formed on a lower end portion of said drag rod normally locked by said sliding latch, and a flexible rope having an inner end portion of said rope connected to said drag rod and operatively trailed inside said shaft means or outside a tubular wall of said upper shaft as guided by at least a roller pivotally secured in said inner block of said upper notch, and having an outer end portion of said rope secured to said runner, said rod and said rope linearly linked with the locking head locked by said sliding latch to counteract a retraction force urged by said retraction restoring means for preventing a false closing operation of the umbrella when the rib assembly and shaft means are extended to open the umbrella.

4,941,495

CONVALESCENT AID

Marion E. Boyce, and Henrietta E. Boyce, both of Timbercreek Apt. 310, 415 Augusta Blvd., Naples, Fla. 33962

Continuation of Ser. No. 241,088, Sep. 6, 1988, abandoned. This application Oct. 26, 1989, Ser. No. 427,973
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—65 **24 Claims**



1. A portable convalescent aid for aiding a partially incapacitated or convalescing individual in moving between a standing position and a sitting position from an elevated flat surface, comprising:

a pair of spaced-apart handle portions, each said handle portion having two ends thereon;

a pair of front leg portions, each said front leg portion extending down from adjacent one end of one of said handle portions, the lower ends of said front leg portions being constructed and arranged to rest upon a surface;

a pair of rear leg portions, each said rear leg portion extending down from adjacent the other end of one of said handle portions said rear leg portions being longer than said front leg portions; and

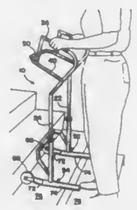
a connecting portion disposed between and connecting said rear leg portions to each other at the lower most ends thereof, said rear leg portions and said front leg portions being dimensioned to rest on said elevated surface to provide said handle portions substantially at the waist level of an individual when seated on said elevated surface so that the individual may readily grasp said handle portions to support the individual's weight thereon and on said connecting portion to assist the individual in moving between the sitting and standing positions.

4,941,496

WALKER WITH PIVOTING WHEEL

Louis G. Berning, 285 Canyon Mesa Dr., Sedona, Ariz. 86336

Filed Mar. 23, 1989, Ser. No. 327,694
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **13 Claims**



1. A walker comprising:

a frame having a pair of spaced apart upright members, and a crosspiece extending between the upright members adjacent the lower end thereof;

a handle portion attached to the upright members adjacent the upper end thereof, said handle portion including a grip pair located above each upright member, each of said pairs including two grips located one above the other, and a transverse element extending between said grip pairs; and

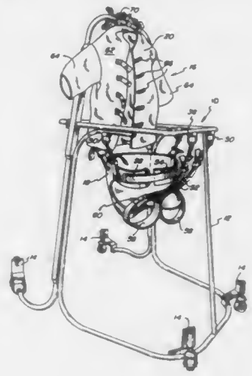
a foot located on the lower end of each upright member and arranged to be perpendicular to the upright member, each foot including a surface-contacting pad which is fixed to said upright member and is constructed and arranged to support the walker on a surface, said pad having a first hinge portion integrally formed therewith and extending forward thereof, said foot further including a second hinge portion flexibly secured to said first hinge portion by a horizontally extending hinge pin and a wheel carried in a wheel mount fixed to said second hinge portion wherein said wheel is hinged to said pad and is flexibly biased to extend linearly from an end of said pad to pivot in a vertical plane about said hinge pin.

4,941,497

WALKER

William R. Prather, 1433 Beacon St., #709, Brookline, Mass. 02146; Warren Wong, 3231 Allan Pl., and Palmer Hafdahl, 21 Craigside Pl. #8D, both of Honolulu, Hi. 96817

Filed Mar. 8, 1989, Ser. No. 320,661
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **16 Claims**



1. A walker, comprising:

an adjustable frame;

a stability bar affixed to and projecting outwardly from said frame for a person to hold while walking, wherein said stability bar is adjustable to enable the distance which it projects outward from the frame to be adjusted in accordance with the size of a person using the walker;

means attached to said frame for enabling movement of the frame;

support means suspended from the frame for holding a person, said support means comprising:

seat means removably attached to the frame for placement on a person prior to attachment to the frame; and

torso means comprising a garment suspended from said frame, for supporting the upper torso of a person.

4,941,498

CRUTCH ATTACHMENT

Richard J. Escallier, 4854 W. Cullom, Chicago, Ill. 60641

Filed Feb. 27, 1989, Ser. No. 316,414
Int. Cl.[5] A61H *03/02*
U.S. Cl. 135—68 **3 Claims**

1. A crutch and carrier assembly for carrying an article on a crutch comprising,

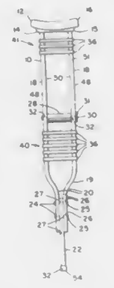
(A) a crutch having a top and a bottom portion and a pair of parallel side rails between said top and said bottom portion, said side rails having outer surfaces and being spaced apart at a predetermined distance,

(B) a carrier including an elastic annulus having inner and outer surfaces and an inner circumference in its unstretched state, said circumference being less than twice said distance between said rails plus around said outer surfaces of said rails,

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(C) only said inner surface of said annulus grippingly encircling said side rails and only one of either said inner surface or said outer surface of said annulus grippingly engaging the article, and

(D) the article being spaced from one of said side rails.

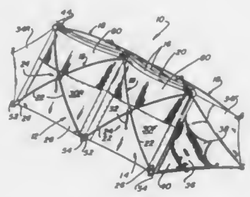


4,941,499

GROUND TENT WITH EXTERNAL FRAME AND IMPROVED SUBFRAME THEREFOR

Bradley A. Pelsue, Englewood, and Mark R. Niksic, Lakewood, both of Colo., assignors to T. A. Pelsue Company, Englewood, Colo.

Filed Apr. 3, 1989, Ser. No. 332,791
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 **8 Claims**



1. In a tenting structure:

a sidewall and roof assembly comprising a pair of inclined pliant erectile skin members each having external and internal surfaces and at least one common straight edge;

means interconnecting the skin members along their common straight edges wherein the erected skin members are adapted to be positioned so that the line defining their interconnection describes the vertex of the angle formed by the planes of the inclined skin members;

at least one frame means for supporting the skin members, each of which frame means includes;

a plurality of flexible struts; and

hub means carrying the proximal ends of the struts, including

a plurality of pivotal sockets carried by the hub to receive the proximal ends of the struts;

releasable stop means engaging the said sockets to arrest the movement thereof at the extremes of approximately 100° of rotation about the pivotal axis of the sockets;

a base member having a plurality of cavities, each having opposing side chambers defining bearing means at the forward end thereof;

journal means integral with the pivotal sockets and disposed for rotation in the bearing means; and

curvilinearly faced seats, one each disposed in the bottom of each cavity and engaging the pivotal sockets on the side thereof opposite the surface thereof engaging the bearing means;

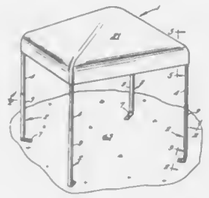
a plurality of pocket means integral with the skin members and disposed along the perimeter of the surface thereof to receive the distal ends of the struts, the straightline distance between opposing pocket means being less than the diameter defined by the hub means and a pair of diametrically opposed flexible rods so as to place the said pair of rods in compression, creating an outwardly distended bow in the said rods.

4,941,500

KNOCKDOWN CANOPY SHELTER

Michael J. Emard, 187 Oar La., Roseburg, Oreg. 97470

Continuation of Ser. No. 920,652, Oct. 20, 1986, abandoned.
This application Jul. 13, 1988, Ser. No. 219,069
Int. Cl.[5] E04H *15/44, 15/46, 15/64*
U.S. Cl. 135—106 **9 Claims**



1. A knockdown portable shelter comprising:

a frame including a centrally located connector and a plurality of supporting members, each having a rafter portion attached and extending radially outward from the connector, a vertically oriented pole portion, an arcuate portion curving downward from the rafter portion to the pole portion and forming a smooth transition joining the rafter portion and pole portion and a foot formed from a curved lower segment of the pole portion;

a flexible canopy adapted to stretch over the rafter and arcuate portions of the supporting members and cooperating with those portions to enhance the structural rigidity of the frame; and

means for securing the canopy to the frame;

whereby the canopy is tensioned by the movement of the pole portions radially outward from the connector due to the weight of the rafter portions and the connector.

4,941,501

SENSOR SYSTEM

Richard L. Bireley, San Diego, Calif., assignor to Aquametrics, Inc., San Diego, Calif.

Filed Feb. 6, 1989, Ser. No. 306,392
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—78.3 **19 Claims**

1. In combination for controlling the watering of a patch of earth in accordance with the amount of moisture in the patch of earth,

a central station displaced from the patch of earth,

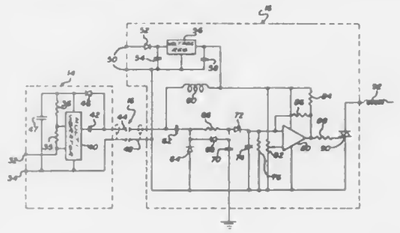
first means at the central station for providing a direct potential,

second means at the patch of earth for sensing the amount of moisture in the earth and for producing a capacitance having a value dependent upon the amount of such moisture,

a coaxial cable extending between the patch of earth and the central station,

third means at the central station for introducing the direct potential to the coaxial cable,

fourth means responsive at the patch of earth to the direct potential passing through the cable and responsive to the capacitance for producing signals at a frequency dependent upon the value of the capacitance and for introducing such signals to the coaxial cable,



fifth means responsive at the central station to the signals passing through the coaxial cable for producing a voltage related to the frequency of the signals, and

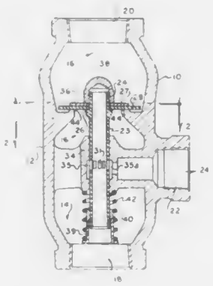
sixth means responsive at the central station to the voltage produced by the fifth means for controlling the watering of the patch of earth.

4,941,502

LOW PRESSURE RECIRCULATION VALVE

George Loos, North Wales, and Horace J. Maxwell, Langhorne, both of Pa., assignors to Keystone International Holdings Corp., Wilmington, Del.

Filed May 31, 1989, Ser. No. 359,134
Int. Cl.[5] F04D *15/00*
U.S. Cl. 137—116 **11 Claims**



1. A low pressure recirculating valve for cooling a centrifugal pump comprising;

a unitary valve casing having a first chamber for connection to a centrifugal pumping means and a second chamber for connection to a fluid outlet, said first chamber having a recirculation port for redirecting fluid from said first chamber to said centrifugal pump;

multiple piece check valve means situated between said first and second chambers for permitting fluid flow from said first chamber to said second chamber, said check valve means comprising a flat disk and a second disk transversely superimposed over said first disk whereby said disks can fit and be assembled within said unitary casing; said check valve means opening when the fluid pressure in said first chamber exceeds the fluid pressure in said second chamber and closing when the fluid pressure in the second chamber approaches that in that said first chamber; and

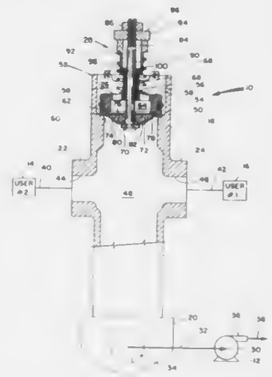
recirculation valve means coupled to said valve means for controlling the flow of fluid from said first chamber through said recirculation port, said recirculation valve impeding such flow when said check valve means is open and permitting such flow when said check valve means is closed.

4,941,503

VACUUM ASSEMBLY INCLUDING AN IMPROVED VACUUM RELIEF VALVE ASSEMBLY

Henry H. Hubner, Jr., Amityville, N.Y., assignor to Air Techniques Incorporated, Hicksville, N.Y.

Filed May 13, 1988, Ser. No. 193,769
Int. Cl.[5] F16K *17/04*
U.S. Cl. 137—454.2 **8 Claims**



1. A vacuum assembly for maintaining a uniform pressure level of vacuum under conditions of non-uniform fluid flow in a system which comprises:

a manifold housing defining a manifold chamber and having an outlet port, one or more inlet ports and a valve receiving chamber in fluid communication with said manifold chamber,

a vacuum source means in fluid communication with said outlet port of said manifold housing to place said manifold chamber under vacuum,

a user station in fluid communication via said inlet port with said manifold chamber of said manifold housing; and

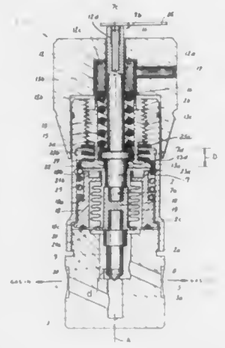
a vacuum relief valve assembly disposed in said valve receiving chamber of said manifold housing and enclosing said manifold chamber and comprised of a valve body in which is slidably positioned a valve stem including a valve disc, said valve body defining a chamber and formed with a seating surface, dampening means for stabilizing vibration between said valve stem and said valve body, said valve disc being spring loaded and contacting said seating surface in line contact relationship, a variable area between said valve disc with said seating surface in an opened position being greater than an area defined at inception of fluid flow between said valve disc and said seating surface.

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4,941,504
MANUAL FLUID-CONTROL VALVE WITH LIMITED CLOSING PRESSURE

Jacques Beauvir, Grand Rue 34 A, CH-2036 Cormondreche, Switzerland

Filed Jun. 27, 1989, Ser. No. 371,929
Int. Cl.[5] F16K *17/06*
U.S. Cl. 137—524 **13 Claims**



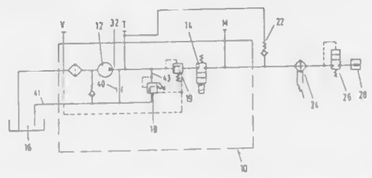
1. A manual fluid-control valve comprising:
a housing extending along a longitudinal axis and defining a chamber formed with a seat and with a fluid inlet and a fluid outlet opening into the chamber at opposite sides of the seat;
a valve body in the housing having an end face and displaceable longitudinally forward into a closed position with the end face engaging the seat and blocking fluid flow through the chamber between the inlet and outlet and an open position with the end face spaced longitudinally backward from the seat and permitting fluid flow through the chamber between the inlet and outlet, the valve body having a longitudinally backwardly directed face;
an operating element formed as a sleeve centered on the axis, longitudinally displaceable in the housing around the valve body, out of direct contact with the valve body, and having a longitudinally forwardly directed face, the housing and operating element being formed with interengaging screwthreads centered on the axis, whereby rotation of the element on the housing axially and longitudinally relatively displaces the element and housing, the operating element including a cap forming an operating knob;
a stem projecting upward through and past the operating element and knob from the valve body; and
a spring braced between the faces of the operating element and the valve body and constituting the only longitudinal-force-transmitting link between the body and the operating element.

4,941,505
OIL SUPPLY SYSTEM FOR A BURNER NOZZLE INCLUDING MEANS FOR PREVENTING THE NOZZLE FROM DRIPPING

Poul Kirkelund, Broager, and Jorn H. Klausen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 10, 1989, Ser. No. 336,000
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814530
Int. Cl.[5] F16K *23/00*
U.S. Cl. 137—563 **9 Claims**

1. An oil supply system for a burner nozzle, comprising an oil supply, a pump having a pressurized fluid outlet connected to the oil supply, a first fluid conduit connected to the outlet, a second fluid conduit adapted for connection to the nozzle, and first valve means for controlling the flow of fluid between the conduits, the first valve means being fluidly connected to the first and second conduits and including second valve means movable between a closed position to block fluid flow therethrough between the first and second conduits and an open position to permit pressurized fluid therethrough from the first conduit to the second conduit, third valve means in parallel to the second valve means and movable between a closed position



blocking fluid flow therethrough from the first conduit to the second conduit and an open position for opening under fluid pressure when fluid pressure in the second conduit is higher than that in the first conduit to permit flow therethrough from the second conduit to the first conduit, a return line, and fourth valve means connected to the first conduit to open to relieve excessive pressure in the first conduit by returning oil to the oil supply through the return line and to close when the excessive pressure in the first conduit has been relieved.

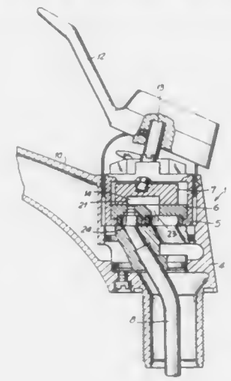
4,941,506
SANITARY MIXING VALVE

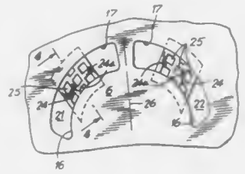
Konrad Bergmann, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Filed Apr. 7, 1989, Ser. No. 335,081
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1988, 3811708
Int. Cl.[5] F16K *11/074, 47/02*
U.S. Cl. 137—625.4 **17 Claims**

1. A single-handle sanitary mixing valve comprising valve means including a stationary valve seat disc having hot and cold water inlet openings and an outlet opening, and a movable disc having a water mixing chamber formed therein positioned in face-to-face sealing contact therewith, and temperature attenuating means including a plurality of spaced-apart openings operatively coupled to each of said inlet openings, said spaced-apart openings formed in one of said attenuating means being symmetrical with respect to said spaced-apart openings in said other attenuating means so that when said mixing valve is in its operative mode, a relatively large movement of the handle produces only a relatively small change in mixed water

temperature, thereby achieving a greater temperature attenuation of mixed water, said temperature attenuating means being



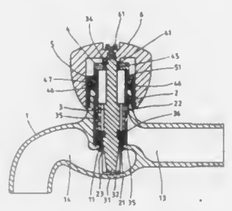


an insert which nests within said not and cold inlet openings of said valve seat disc.

4,941,507
WATER PRESSURE-SEALING FAUCET WITHOUT WATER HAMMER EFFECT

Chung-Shan Shenn, 32, Hoping Road, Hu Wei Town, Yun Lin Hsien, Taiwan

Filed Apr. 14, 1989, Ser. No. 338,730
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.37 **5 Claims**

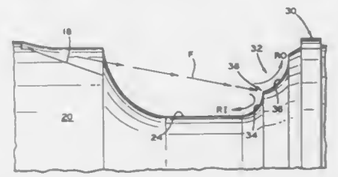


1. A water pressure-sealing faucet adapted to minimize water hammer action, comprising:
a faucet casing that includes an inlet pipe (13), an outlet pipe (14), and a communication opening (11) therebetween; a sleeve (2) located within said inlet pipe, a flow tube (21) extending from said sleeve through said communication opening; the juncture between said sleeve and tube defining an internal valve seat; a series of flow holes (22) spaced along the length of said sleeve for conveying liquid from the inlet pipe into the sleeve;
a cylindrical valve body (35) slidably engaging the inner surface of said sleeve for axial movement toward or away from said valve seat; a cylindrical pin (31) extending from said valve body through the aforementioned flow tube so that when the valve body is spaced axially from the valve seat liquid can flow from the flow holes through the flow tube along the side surface of the pin;
a sealing ring (36) carried on the valve body for sealing engagement with the valve seat to prevent liquid flow into the flow tube;
and a number of flow grooves (32) extending along the pin side surface, each flow groove having a progressively increasing cross section taken in a direction away from the sealing ring (36).

4,941,508
FORCE BALANCED HYDRAULIC SPOOL VALVE

David R. Hennessy, Minneapolis, and Dennis H. Wenker, Afton, both of Minn., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 28, 1989, Ser. No. 458,105
Int. Cl.[5] F15B *13/04*
U.S. Cl. 137—625.69 **10 Claims**



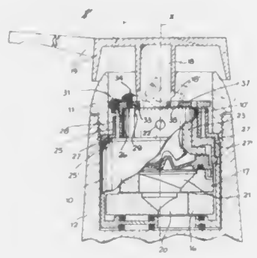
1. In a hydraulic valve assembly including a body having a generally cylindrical internal cavity and a plurality of hydraulic ports through said body, said cavity defining an axis, said ports communicating with said cavity and adapted to convey hydraulic fluid to and from said cavity, wherein said cavity contains a plurality of radially oriented fluid control lands and grooves, said assembly further comprising an axially moveable cylindrical spool supported within said cavity, said spool also containing radially oriented fluid control lands and grooves adapted to interface with said lands and grooves of said cavity, wherein the intermediate portion of said cavity comprises an open center core portion, said hydraulic ports being adapted to admit hydraulic fluid under pressure into said center core portion, an intermediate portion of said spool defining a central land bounded on each side by an immediately adjacent groove and a power land, each power land axially spaced from said central land by the distance of said associated adjacent groove, each opposed axially spaced power land including a centrally directed notch on an edge of said power land adjacent its respective adjacent groove, each notch being adapted to direct a hydraulic fluid stream across said adjacent groove to one side of said central land, each side of said central land comprising an opposed piston face shaped for controlling postimpact radial flow components of said fluid stream; an improvement comprising at least one of said piston faces including an inner radially concave annulus and an outer radially concave annulus together defining a convex split point annulus boundary between them, said split point annulus positioned relative to one of said notches so as to generate inversely directed radial flows across each of said annuli from said split point annulus.

4,941,509

MIXING VALVE FOR HOT AND COLD WATER

Alessio Orlandi, Castiglione d/Stiviere, Italy, assignor to Galatron S.r.l., Castiglione d/Stiviere, Italy

Filed Aug. 21, 1989, Ser. No. 396,516
Claims priority, application Italy, Aug. 22, 1988, 5206 A/88
Int. Cl.[5] F16K *11/06, 51/00*
U.S. Cl. 137—625.17 **4 Claims**



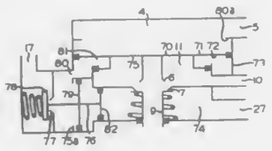
1. A mixing valve for hot and cold water comprising:
a cartridge body defining a valve space; hot and cold water outlet openings connected to said valve space; a first valve disk fixed in said cartridge body valve space and a second valve disk displaceably positioned within said valve space; a control lever for displacing said second valve disk, said cartridge body having a vertical axis, said control lever swinging about an axis transverse to said vertical axis; clamping ring means for fixing said cartridge body into a tap; temperature setting means connected to said control lever for limiting rotation of said control lever around the vertical axis, said temperature control means including a bush having angularly spaced shoulders, said bush being fixed to said cartridge body, a setting ring disposed concentric to said bush and connected to said control lever for rotation with said control lever, a stop screw fitted to said setting ring for cooperation with said shoulders to limit the rotation of said lever, said stop screw being fixed inside an arc-shaped slot recessed in said setting ring; and, volume rate of flow limiting means connected to said lever for limiting the movement of said lever about said transverse axis to limit the volume rate of flow of water, said volume rate of flow limiting means including a slide gate positioned on said setting ring, said slide gate including an opening, said control lever passing through said opening of said slide gate, a cross member connected to said slide gate, said slide gate and said cross member being displaceable with respect to said slide ring and said control lever, said slide gate including a slot, a screw positioned in said slot and fixable relative to said setting ring for fixing said slide gate and said cross member relative to said setting ring to limit the movement of said control lever about said transverse axis.

4,941,510

RELAY VALVE FOR PNEUMATIC OR HYDRAULIC APPLICATION

Gerhard Fauck, Hanover; Wolfgang Pohl, Garbsen, and Helmut Ulrich, Springe, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 828,927, Feb. 12, 1986, which is a continuation of Ser. No. 679,420, Dec. 7, 1984, abandoned. This application Oct. 30, 1989, Ser. No. 428,547
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 3344841
Int. Cl.[5] F16K *21/00*
U.S. Cl. 137—627.5 **4 Claims**



1. A relay valve for a pneumatic brake installation for vehicles, comprising:
(a) an inlet valve having a control connection which is pressurized with a control pressure and having at least one supply connection which is pressurized by supply pressure and which is put in communication with at least one working connection;
(b) an outlet valve for connecting the working connection to the atmosphere;
(c) said inlet valve and said outlet valve being operated by a relay piston which can be pressurized by the control pressure to move the inlet valve in the opening direction and to move the outlet valve in the closing direction and being operated by the relay piston which can be pressurized in the closing direction by the working pressure supplied to a reaction chamber which is connected to the working connection to move the inlet valve and in the opening direction to move the outlet valve;
(d) means which provides a graduated increase of the working pressure beyond the value corresponding to the delivered control pressure, up to the available supply pressure; and
(e) said means is activated above a predetermined pressure value of a second control pressure.

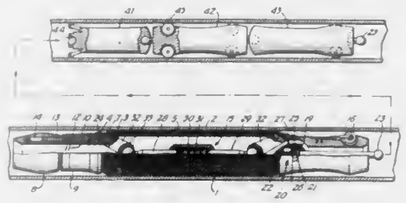
4,941,511

DEVICE WITH A VALVE FUNCTION

Trond V. Johansen; Ola Ruch, both of Trondheim; Ludvig Naess, Tiller; K. P. Kristjansson, Skjetnehaugen, and S. F. Utengen, Flatasen, all of Norway, assignors to Den norske stats oljeselskap a.s, Norway

PCT No. PCT/NO87/00054, § 371 Date May 6, 1988, § 102(e) Date May 6, 1988, PCT Pub. No. WO88/00313, PCT Pub. Date Jan. 14, 1988
PCT Filed Jul. 8, 1987, Ser. No. 170,386
Claims priority, application Norway, Jul. 9, 1986, 862775
Int. Cl.[5] F16L *55/10;* **F16K** *7/10*
U.S. Cl. 138—89 **7 Claims**

1. A device with valve function which can be brought into and out of a pipeline, and be parked in the pipeline over long periods of time as a safety valve during operation of the pipeline, the device comprises:
a first section comprising a valve which in uninfluenced position being kept in centered open position by centering springs (22) for allowing normal fluid flow through said device and being closed automatically and instantly when the differential pressure of the normal fluid flow acting on the first section exceeds a predetermined limit,
a second section comprising a parking brake/packing sealing unit consisting of an elastomer hose which can be brought to bear tight agaisnt the wall of the pipeline by means of being compressed in the radial direction of the device, causing the parking brake/seal packing (9) to expand in axial direction,
a cylindrical wire anchor connecting the first and second sections and consisting of at least one layer of high-grade wire (2) which outwards borders to the pipeline wall, and inside comprise a fluid-tight elastomer layer (5) where both layers (2, 5) at each end of the cylindrical wire anchor are attached on the first and second sections respectively, said cylindrical wire anchor being urged against the pipeline wall as a consequence of the differential pressure acting against the first section when the valve is closed,



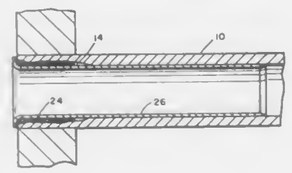
a shaft (15) being disposed within said wire anchor and installed with spring action means for movement in an axial direction to compensate for contraction thereof which arises due to the increased differential pressure to urge the wire anchor outwardly against the wall of the pipeline to provide for sufficient contact between the wire anchor and the pipeline wall, thereby providing additional brake means for preventing movement of said device and said shaft is connected with rigid linkage means (32) for connecting the ends of the shaft (15) with the first and second sections, and
a channel for communicating the normal fluid flow through the first section, the cylindrical wire and the second section.

4,941,512

METHOD OF REPAIRING HEAT EXCHANGER TUBE ENDS

Kevin W. McParland, Fairfield, Conn., assignor to CTI Industries, Inc., Fairfield, Conn.

Continuation of Ser. No. 271,158, Nov. 14, 1988, abandoned, which is a continuation of Ser. No. 97,665, Sep. 15, 1987, abandoned. This application Jul. 25, 1989, Ser. No. 384,972
Int. Cl.[5] F16L *1/00*
U.S. Cl. 138—97 **3 Claims**



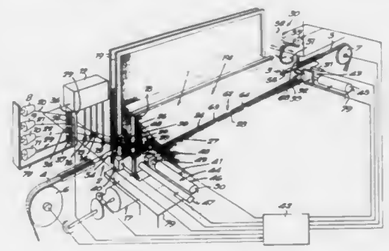
1. The method of repairing a tube having a damaged inlet end supported in a tube sheet by a tube to tube sheet joint in a heat exchanger comprising the steps of:
inspecting inlet end of said tube for determining the condition of the end of the tube;
cleaning the inlet end of said tube by removing loose metal, debris and corrosion to bare metal when a damaged inlet end is found;
installing a metallurgically compatible metal insert in the damaged inlet end of said tube, said insert having an upstream insert end adjacent said inlet end of said tube and a downstream insert end spaced from said inlet end;
non-welding securing said insert along its entire length in said tube without welding said insert in said tube by non-explosively, controllably roller expanding the insert along its entire length within said tube to substantially minimize any end step on the downstream end of said insert, improve the tube to tube sheet joint strength, and prevent overexpansion of the damaged tube and insert to avoid fracturing the tube or insert; and
flaring the upstream end of said insert to the existing tube profile.

4,941,513

METHOD FOR REMOVING AN INCORRECT PIECE OF WEFT THREAD FROM A SHED

Henry Shaw, Vleteren, Belgium, assignor to Picanol N.V., Ieper, Belgium

Filed Mar. 10, 1989, Ser. No. 321,832
Claims priority, application Belgium, Mar. 10, 1988, 8700271
Int. Cl.[5] D03D *47/30, 51/00*
U.S. Cl. 139—116.2 **15 Claims**



1. A method for removing from a fell line in a shed of a weaving machine an incorrect weft thread which is not bound in by warp threads and which extends across a length of the shed to a first end of the shed, comprising the steps of:
a. inserting a pulling thread into the shed from said first end of the shed and transporting the pulling thread through the shed, starting from a position near said first end of the shed, by means of a carrying element having a thread clip which clamps the thread during transport until the pulling thread extends over the entire length of the shed, after which the pulling thread is unclamped, said pulling thread being connected to the incorrect weft thread such that the pulling thread and incorrect weft thread form a loop when the pulling thread is extended over the entire length of the shed; and
b. guiding the pulling thread around a thread guide element situated adjacent a second end of the shed opposite said first end by drawing, from said first end of the shed, the pulling thread together with the loose weft thread in such a way that the loose weft thread is released from the fell line in the form of a loop, guided around said thread guide element, transported back through the shed towards said first end, and removed form the shed at said first end.

4,941,514

MULTI-WEFT PAPER MACHINE CLOTH WITH INTERMEDIATE LAYER SELECTED TO CONTROL PERMEABILITY

Seppo Taipale, Siilinjärvi, Finland, assignor to Tamfeld Oy Ab, Tampere, Finland

Continuation of Ser. No. 35,460, Apr. 7, 1987, abandoned. This application Jul. 5, 1989, Ser. No. 376,898
Claims priority, application Finland, Feb. 10, 1987, 870537
Int. Cl.[5] D03D *15/00*
U.S. Cl. 139—383 A **14 Claims**



1. A multi-layer paper machine cloth having a single system of longitudinal warp threads and a multiple system of transverse weft threads, and a pre-selected permeability value, said transverse weft threads comprising:

a surface layer including a first plurality of weft threads having a first thickness;

a lower layer including a second plurality of weft threads having a second thickness; and

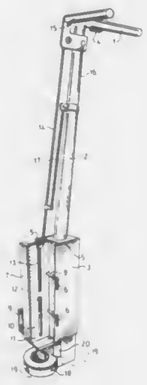
an intermediate layer including a third plurality of weft threads having a third thickness, said intermediate layer being between said surface layer and said lower layer and said warp threads being interlaced with an woven to bind the surface, intermediate and lower weft layers, said third thickness being selected relative to said first and second thicknesses so that the overall permeability of the cloth is at said preselected permeability value.

4,941,515

LASHING MACHINE

Jörgen Vrenning, Ejdervägen, Huddinge, Sweden

PCT No. PCT/SE87/00368, § 371 Date Feb. 17, 1988, § 102(e) Date Feb. 17, 1988, PCT Pub. No. WO88/01671, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 21, 1987, Ser. No. 319,765
Claims priority, application Sweden, Aug. 27, 1986, 8603613
Int. Cl.[5] B21F *15/04*
U.S. Cl. 140—119 **12 Claims**



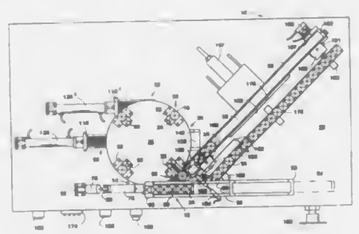
1. A lashing machine for lashing together mutually crossing elongated members with the aid of U-shaped wire ties, and particularly for lashing together reinforcement rods, said apparatus comprising a magazine (9) for ties (10); means (12) for dispensing ties singly from the magazine in a manner such that respective ties can be caused to engage over two mutually crossing elongated members at their mutual point of intersection; and a bead (18) for receiving, holding and twisting together the limbs of respective U-shaped ties (10), characterized in that the head (18) comprises two mutually opposing pivotable jaws (23) which define therebetween a slot-like opening for receiving the limbs of respective ties (10) and which can be swung in a swinging movement relative to one another in a manner to reduce the width of the slot-like opening so as to grip the limbs of the tie therebetween; means for retaining said jaws stationary during said swinging movement of said jaws; and means for rotating the jaws about a common axis in the closed position of said jaws, in a manner to twist together the limbs of the tie held between said jaws.

4,941,516

METHOD AND APPARATUS FOR STRAIGHTENING THE PINS OF A PIN GRID ARRAY

Klaus D. Weiswurm, 818 E. Myrtle St., San Antonio, Tex. 78212

Filed Oct. 20, 1988, Ser. No. 260,602
Int. Cl.[5] B21F *1/02*
U.S. Cl. 140—147 **21 Claims**





1. An apparatus for straightening the pins of a pin grid array comprising:

means for positioning a pin grid array having a plurality of nominally parallel pins extending from the wafer thereof at a plurality of stations for performing pin straightening operations;

means for loading the pin grid array into said positioning means;

means for combing the pins of the pin grid array, said combing means comprising at least one plurality of parallel elongate members for insertion in close proximity to the wafer between the pins of the pin grid array;

said combing means comprising means for inserting the elongate members in close proximity to the wafer between the pins in first and second directions with respect to the pin grid array while the pin grid array is positioned in at least one of the stations by said positioning means and, once inserted between the pins, moving the elongate members outwardly away from the wafer of the pin grid array to comb the pins thereof;

means for fine straightening the pins of a combed pin grid array when the combed pin grid array is positioned by said positioning means at another of the stations, said fine straightening means including a member having a plurality of holes for receiving the pins of the combed pin grid array and means for moving said pin receiving member toward and away from the wafer of the combed pin grid array, each of said holes having a funnel-shaped profile for fine straightening of a pin received therein; and

means for unloading a pin grid array having straightened pins extending therefrom from said positioning means.

20. An apparatus for use in straightening the pins of a pin grid array comprising:

a rake; and

a plurality of tines mounted to said rake in an arrangement selected so as to allow said tines to be inserted between the nominally parallel pins of a pin grid array in close proximity to the wafer thereof;

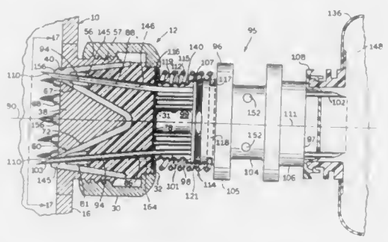
each said tine having an end a top, a bottom, and first and second convex side surfaces between the top and bottom; the end of each said tine being pointed; and the top of each said tine being broader than the bottom thereof for facilitating the passage of said tine between the pins in close proximity to the wafer with the top of each tine facing the wafer and then downwardly through the pins in a direction away from the wafer.

4,941,517

ASEPTIC FLUID TRANSFER APPARATUS AND METHODS

Edwin J. Galloway, Menasha, Wis., assignor to Galloway Trust, Neenah, Wis.

Filed Oct. 20, 1988, Ser. No. 261,020
Int. Cl.[5] G01N *1/12*; B65D *41/20*
U.S. Cl. 141—1 **74 Claims**



9. A fluid receiver fitting, comprising:

(a) a resiliently deformable seal member, said seal member comprising (i) a first outer surface of said fitting, said first outer surface comprising a seal means, and (ii) a first inner surface of said fitting, said first inner surface comprising a first central portion, a first upstanding wall portion, and a penetration zone between said first central portion and said first upstanding wall portion, said first outer surface comprising a plurality of separate and distinct seal elements opposing, and aligned with, said penetration zone, each said seal element forming a downwardly extending projection from said seal means, said projections defining an array thereof, a second upstanding wall portion extending outwardly from said bottom portions, and a second central surface portion extending inwardly and upwardly of said bottom portions,

the composition of said seal member between said penetration zone and said bottom portions comprising a pierceable, self-closing material; and

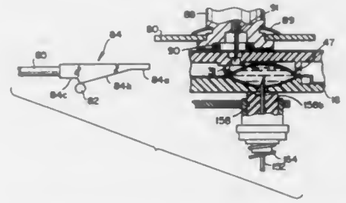
(b) a channel member, said channel member comprising a second outer surface and a second inner surface of said fitting, said second inner surface comprising a first channel member surface portion in contact with said penetration zone, said channel member having needle guide channels extending from said second outer surface toward said first channel member surface portion, said needle guide channels being oriented and positioned such that needles inserted into said channels from said second outer surface pass, along paths, through said channels, said penetration zone, and said plurality of separate and distinct seal elements of said seal member, each said path passing through a different one of said seal elements.

4,941,518

FLUID INJECTION SYSTEM

Harold R. Williams, Capistrano Beach, and Robert M. Spencer, San Juan Capistrano, both of Calif., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed May 20, 1987, Ser. No. 52,698
Int. Cl.[5] B67C *9/00*
U.S. Cl. 141—1 **12 Claims**



1. A method of injecting liquid into a chamber, comprising:

positioning, adjacent to the chamber, a closed unpressurized at least partially flexible container having a known quantity of liquid therein, and including a flexible wall;

temporarily connecting said container to said chamber through a valve;

forcing liquid out of said container, by compressing said container to open said valve, including applying pneumatic pressure to the exterior of said container in a manner to cause the pneumatic pressure to move the flexible wall against an opposite wall of the container and thereby force the liquid out of said container, and into said chamber; and

maintaining a vacuum in said chamber during said connecting and forcing steps.

4,941,519

LIQUID FEED SYSTEM USING A NON-REUSABLE CONTAINER

Joseph T. Sestak, and Robert W. Childers, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Aug. 19, 1988, Ser. No. 233,776
Int. Cl.[5] B65D *49/00*; B65B *3/04*
U.S. Cl. 141—22 **15 Claims**

13. A container for use with an apparatus for dispensing a liquid into equipment having an inlet port, said container comprising:

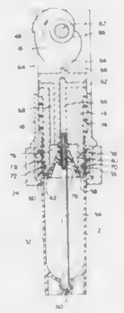
a top portion having an opening therethrough for receiving a member for fluidly connecting the container to the inlet port of the equipment; and

a bottom portion for holding the liquid;

means extending from said opening into said bottom portion for permitting the liquid to exit said bottom portion when said member is received within said opening, said exit permitting means being removably positioned in said

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opening to permit said exit permitting means to be disconnected from said opening to render said exit permitting



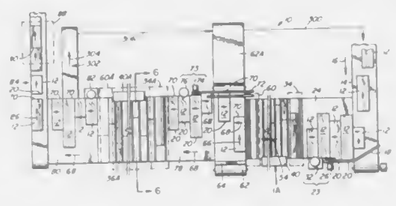
means permanently ineffective for passing liquid from said bottom portion.

4,941,520
FORMULATING PASTY MATERIALS
Martin E. Dowzall, 299 Village Pl., Wyckoff, N.J. 07481, and Vazgen J. Houssian, 389 Mountain Rd., Union City, N.J. 07087
Continuation-in-part of Ser. No. 863,978, May 16, 1986. This application Aug. 18, 1987, Ser. No. 87,006
Int. Cl.[5] B65B *35/28;* **B01F** *11/00;* **G55B** *1/00*
U.S. Cl. 141—114 **9 Claims**



1. Apparatus for formulating pasty materials comprising:
a set of supply containers each containing a pasty material and each having an extrusion nozzle;
at least one receiving tube, each of said at least one receiving tube being adapted to fit on each extrusion nozzle; and
means for estimating the amount of material extruded from a selected container of said set into one of said at least one receiving tube when said at least one receiving tube is fitted on one of said extrusion nozzles; and
each of said at least one receiving tube being of flexible material to allow material extruded into said at least one receiving tube to be ejected from said at least one receiving tube by application of a traveling pinching action along said at least one receiving tube and wherein said set of supply containers each contain basic color components from which a pasty material of desired color may be obtained by mixture of specific proportions of two or more of said components, said proportions fro a single color being determined in a single receiving tube.

4,941,521
FINGER JOINTING GREEN LUMBER
Alfred W. J. Redekop, Langley, and Derek Barnes, Vancouver, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada
Filed Oct. 3, 1989, Ser. No. 416,634
Int. Cl.[5] B27F *1/00*
U.S. Cl. 144—347 **34 Claims**



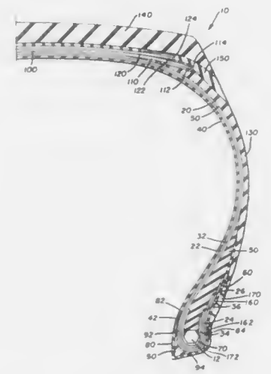
1. A method of finger jointing green lumber pieces wherein a first set of fingers is formed at one longitudinal end of each piece and a second set of fingers is formed at the other longitudinal end of said piece, said method comprising applying heat substantially solely to said first set of fingers to dry said first set of fingers and heat said one longitudinal end of each said piece in a first drying station, applying heat substantially solely to said second set of fingers to dry said second set of fingers and heat said opposite end of each said lumber piece in a second drying station, applying a thermosetting adhesive to one of said first and second sets of fingers, crowding said first set of fingers on one of said lumber pieces into a mating relationship with said second set of fingers on an adjacent lumber piece with said adhesive therebetween to form a joint in an assembly station, said one lumber piece and said adjacent lumber piece having their longitudinal axes substantially in alignment to form said joint, curing said adhesive in said joint by transferring heat energy applied to said one and said adjacent pieces in said first and second drying stations from said fingers to said adhesive in a time period so that said lumber pieces leave said first drying station said joint is formed in said assembly station and said adhesive is cured to secure said joint before migration of moisture from said pieces into said joint can interfere with said curing of said adhesive.

4,941,522
TIRE
Mitsuo Sakurai, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 119,456, Nov. 10, 1987, abandoned. This application Oct. 5, 1988, Ser. No. 253,452
Claims priority, application Japan, Nov. 17, 1986, 61-175331
Int. Cl.[5] B60C *13/02*
U.S. Cl. 152—523 **2 Claims**



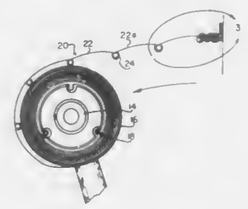
1. A rubber tire having a bar code stamped with a bar code plate into a sidewall portion thereof during vulcanization of a green tire, said bar code comprising a pair of side edges equally spaced one from the other and joined by semi-circular ends and a plurality of alternating grooves and ribs of varying widths wherein said ribs are formed at the same height level as said side portion of said tire and merge into said side portion of said tire at said side edges of said bar code whereby the surface of said ribs is continuous with the surface of said side portion of said tire.

4,941,523
PNEUMATIC TIRE
Richard L. Galante, Akron; Terry J. Waibel, Wadsworth, and Terrell D. Windham, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 23, 1989, Ser. No. 313,784
Int. Cl.[5] B60C *15/06, 21/04*
U.S. Cl. 152—543 **2 Claims**



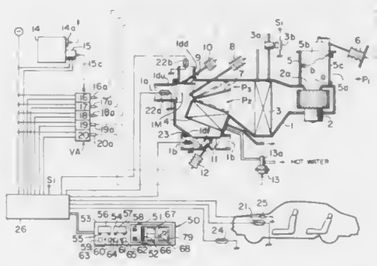
1. A pneumatic tire comprising:
a pair of axially spaced apart annular tensile members;
one or more continuous carcass plies extending between the annular tensile members, each carcass ply comprising cords selected from the group consisting of steel cords and polyester cords, each carcass ply having a central portion and lateral edge portions, each of the lateral edge portions being folded axially and radially outwardly around one of said annular tensile members;
a belt structure comprising a plurality of belt plies reinforced with steel cords disposed radially outwardly of the carcass plies;
an air-impermeable line forming an inside surface of the tire with each edge of the liner disposed radially outwardly and axially inwardly of the associated annular tensile member;
a layer of air-permeable rubber reinforced with nylon cord is disposed in the area of each annular tensile member extending from a first edge located axially inward and radially outward of the associated annular tensile member such that said layer of air permeable rubber is in overlapping relationship with said liner toward said annular tensile member, the layer of air-permeable rubber being folded axially radially outwardly around said annular tensile member such that a second edge of the layer of air-permeable rubber is disposed axially outwardly of the carcass plies; and
a cordless air-impermeable gum strip interposed between the layer of air-permeable rubber and the carcass plies, the gum strip extending from a first edge disposed radially outward and axially inward of the associated annular tensile member to a second edge disposed radially inward of said annular tensile member, the first edge of said air permeable gum strip being disposed radially outward of the associated edge of said air-impermeable liner.

4,941,524
AWNING HINGE
Bradley G. Greer, Irvine, Calif., assignor to A & E Systems, Inc., Santa Ana, Calif.
Filed Jul. 28, 1988, Ser. No. 226,186
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—67 **7 Claims**



1. In combination for attachment to a recreational vehicle having a retaining member,
awning fabric,
a metallic cover for the fabric, the metallic cover being formed from a plurality of slats hinged relative to one another pivotable into a first relationship for housing the awning fabric and pivotable into a second relationship to provide an unwinding of the fabric, the slat at one end of the cover being attached to the awning fabric, the slat at the other end of the cover being provided with a retainer member,
a first member having first and second detaining portions at opposite ends of the first member, the detaining portion at-the first end of the first member being detained by the retaining member on the slat at the other end of the cover and the detaining portion at the second-. end of the first member being detained by the retaining member on the recreational vehicle, and
a second member coupled to the first member and having a flap disposed relative to the slat at the other end of the cover to seal the slat against water leakage with the cover in the open relationship.

4,941,525
AUTOMOTIVE AIR CONDITIONER
Toshikazu Ito, and Tsuneo Kagohata, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 761, Jan. 6, 1987, abandoned. This application Nov. 23, 1988, Ser. No. 275,680
Claims priority, application Japan, Jan. 10, 1986, 61-2078
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—12 **2 Claims**



1. An air-conditioner mounted on a vehicle comprising:
a blower means for delivering air into a passenger room;

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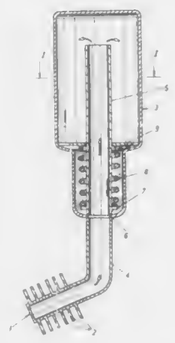
a heater core through which hot water circulates to heat the air from said blower means;
an air mixing door disposed for adjusting a mixture ratio between cold air flowing in a bypass passage bypassing said heater core, and hot air to be directed to said heater core;
an outside temperature sensor for generating a first signal in response to the outside temperature;
a passenger room temperature setter for generating a second signal in response to a set passenger room temperature;
a passenger room temperature sensor for generating a third signal in response to a passenger room temperature;
a fourth signal generating means for generating a fourth signal representative of a desired passenger room temperature in response to at least said second signal;
a first arithmetic means for calculating a desired blown air temperature under a calculation model programmed in a ROM of a microcomputer on the basis of only said first and said second signals;
a second arithmetic means for calculating a desired blow air flow of said blower means on the basis of said second and said third signals; and
means for controlling operation and non-operation of a compressor operatively associated with an evaporator upstream of the heater core on the basis of ambient temperature;
means for adjusting a blown air temperature on the basis of a difference between said fourth signal and said third signal when said difference equals or exceeds an absolute predetermined value, and for selecting, when such difference is below said absolute predetermined value, a blown air temperature obtained in advance on the basis of a thermal load of the passenger room, in accordance with arithmetic results of said first arithmetic means, and means for adjusting a blow air flow on the basis of said second arithmetic means.

4,941,526

DEVICE FOR REGULATION OF THE FLOW OF AN OPERATIVE MEDIUM

Hans-Ove Nilsson, KÅllered, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Feb. 11, 1988, Ser. No. 146,374
Claims priority, application Sweden, May 15, 1986, 8602214
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—32 **5 Claims**



1. A device for regulation of the transfer of heat in a heat pipe means of an operative medium contained therein, said heat pipe comprising a heat-emitting condenser element, a heat-absorbing evaporator element and a continuously open interconnecting conduit joining two elements together for flow of vapor from said evaporator element to said condenser element, return conduit means extending from said condenser element to said evaporator element for return of condensed liquid thereto, said regulator device comprising a valve seat formed in said return conduit and a valve body cooperating with said valve seat to open and close a valve opening formed between said valve body and said valve seat, and a member consisting of a configuration memory alloy in the form of the helical spring surrounding and connected to the valve body and which is arranged to alter its configuration upon the attainment of a predetermined temperature and in doing so, cause the valve body to open or close the valve opening.

4,941,527

HEAT PIPE WITH TEMPERATURE GRADIENT

Jerome E. Toth, Hatboro, and Donald M. Ernst, Leola, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Apr. 26, 1989, Ser. No. 343,594
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—47 **14 Claims**



8. A heat pipe furnace with a temperature gradient over a portion of its length comprising:
a sealed casing wrapped around and enclosing a volume which is a heated zone, non-condensible gases being evacuated from the casing;
a vapor passage located adjacent to the surface of the casing which is adjacent to the heated zone, the vapor passage extending over the length of the heated zone and being of such a restricted cross sectional area to develop a temperature gradient over the length of the vapor passage;
a vaporizable fluid within the sealed casing;
a heat source which applies heat to the sealed casing adjacent to one end of the heated zone; and
a heat sink which removes heat from the sealed casing adjacent to the end of the heated zone remote from the heat source.

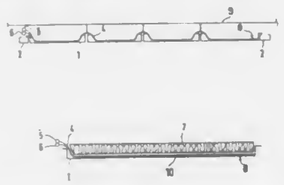
4,941,528

CEILING MADE OF METAL PANELS

Donald Herbst, Marienplatz 11, D-1000 Berlin 45, Fed. Rep. of Germany

Filed Jul. 15, 1988, Ser. No. 219,659
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1987, 3723792
Int. Cl.[5] F28D *7/08*
U.S. Cl. 165—56 **12 Claims**

1. A room ceiling comprising:
ceiling panels attachable together along adjacent edges;
a supporting structure for supporting said panels in a desired configuration to form a ceiling;
tubular pipes being above, and in direct contact with said panels, said pipes having a flowable medium passing therethrough, said pipes being formed of flexible tubes disposed closely adjacent one another to form flexible mats of said tubular pipes;
wherein said pipes possess a degree of flexibility such that said pipes will bend under their own weight to conform to the desired configuration of the ceiling;



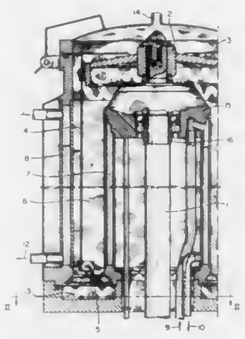
wherein said flowable medium has characteristics for heatin and cooling; and
wherein a predetermined room temperature may be achieved.

4,941,529

PROCESSING APPARATUS FOR VISCOUS MATERIALS

Jort Boer, Vorden, Netherlands, assignor to N.V. Machinefabriek Terlet, Zutphen, Netherlands

Filed Aug. 10, 1988, Ser. No. 230,419
Claims priority, application Netherlands, Aug. 13, 1987, 8701906
Int. Cl.[5] F28F *17/00*
U.S. Cl. 165—94 **2 Claims**



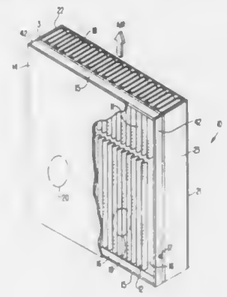
1. A processing apparatus for viscous materials, comprising:
innermost and outermost concentric circular cylindrical walls bounding a vertically disposed annular space, said annular space having a radial width, viscous materials to be processed being fed in at the bottom of the annular space and processed viscous materials being removed at the top of the annular space,
a vertically disposed rotating shaft at the centre line of the circular cylindrical walls, said rotating shaft having a top and a bottom, the top of said rotating shaft being mounted in a wall and sealed with respect thereto, said wall in which the top of the rotating shaft is mounted sealing off the top of the innermost circular cylindrical wall,
a multiplicity of essentially radial arms which are attached to the shaft above the wall in which the top of the rotating shaft is mounted, and
vertical components attached to ends of said radial arms, said vertical components traveling around in the annular space as the shaft rotates, an inlet through which the materials to be processed are fed in debouching tangentially into an annular chamber beneath the annular space, said inlet having a width extending in a radial direction of the annular chamber, said annular chamber having a radial width which is greater than the width of the inlet and greater than the radial width of the annular space.

4,941,530

ENHANCED AIR FIN COOLING ARRANGEMENT FOR A HERMETICALLY SEALED MODULAR ELECTRONIC COLD PLATE UTILIZING REFLUX COOLING

Lawrence E. Crowe, Lindenwood, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 13, 1989, Ser. No. 296,820
Int. Cl.[5] F28D *15/02;* **H01L** *23/42*
U.S. Cl. 165—104.33 **6 Claims**



1. A modular reflux cooling plate, for one or more heat generating components, comprising:
at least one condensing region;
boiling channels disposed adjacent the at least one condensing region;
at least one downcomer in the vicinity of the boiling channels so as to be operatively communicated between the at least one condensing region and the boiling channels;
end plates hermetically sealing the at least one condensing region, the boiling channels and the at least one downcomer therebetween so that a coolant can be provided in the region of the boiling channels, and
means for supplying cooling air from the boiling channels to the at least one condensing region arranged adjacent one of the end plates to define a cooling circuit defined by the boiling channels, the at least one condensing region, and the at least one downcomer,
wherein the one or more heat generating components are mounted externally on the other of the end plates adjacent the boiling channels to form an assembly adapted to be joined with one or more other modular reflux cooling plates with assemblies thereon for providing shared heat exchange between the at least one condensing region and the cooling air supply means,
wherein the at least one condensing region comprises a condensing region above and below the boiling channels.

4,941,531

INTERNAL COMBUSTION ENGINE RADIATOR

Igor Moisseeff, Myrtle Bank, Australia, assignor to Moisseeff Advanced Technology, Limited, Perth, Australia

Filed Nov. 3, 1988, Ser. No. 266,778
Int. Cl.[5] F28D *21/00*
U.S. Cl. 165—125 **10 Claims**

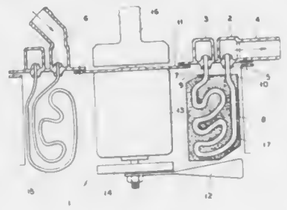
1. A cylindrical heat exchanger, particularly for the cooling of an internal combustion engine,
one end of the heat exchanger being provided with a pair of concentric manifolds, one of said manifolds being an inner

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manifold and radially spaced from the other manifold which is an outer manifold;

a water inlet connected to one of the manifolds and a water outlet connected to the other manifold;

a plurality of radially spaced heat exchange members extending longitudinally of the heat exchanger between said pair of manifolds and the other end of said heat exchanger, each said heat exchange member having a water flow path therein;



said flow path having an inlet and an outlet;

said inlet being connected to said one manifold and said outlet being connected to said other manifold; and

an axial flow fan at said outer end of said heat exchanger and mounted axially thereof to cause a flow of air to pass longitudinally of said heat exchanger over said heat exchange members and out through an opening adjacent to said two manifolds.

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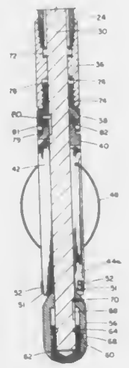
ANCHOR DEVICE

Floyd R. Hurt, and Lawrence W. Berger, both of Belfield, N. Dak., assignors to Elder Oil Tools, Yorktown, Tex.

Filed Mar. 31, 1989, Ser. No. 331,290

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—216 11 Claims



1. Anchor means for retaining a pipe member in a fixed position in a well bore traversing earth formations where the anchor means is sized to pass through a smaller diameter well bore and to be anchored to a wall in a lower, larger diameter well bore comprising,

an elongated anchor supporting member with an upper coupling end adapted for coupling to a pipe member and a lower terminal end,

an expander member attached to said terminal end of said anchor supporting member, said expander member having adjacently located, lengthwise extending, first inclined expander surfaces and second inclined expander surfaces where said first and said second inclined expander surfaces respectively have different angles of inclination relative to a central longitudinal axis for said anchor supporting member,

an annular arm support member slidably mounted relative to said anchor supporting member for longitudinal movement of said arm support member between a first contracted position and a second extended position,

elongated arm members pivotally connected at one end to said arm support member so that the other end of said arm members can be moved radially outwardly from said anchor supporting member, said arm members being circumferentially disposed about said arm support member, said arm members having adjacently located, lengthwise extending, inner first and second inclined surfaces with different angles of inclination relative to the longitudinal axis for an arm member,

wall engaging friction means coupled to said arm support member for frictionally engaging the wall of a well bore,

wall engaging means on said arm members for gripping engagement with the wall of a well bore, and

release means including a housing member rotatively coupled to said supporting member and threadedly coupled to said arm support member for selectively moving said arm support member between said first contracted position and said second extended position upon rotation of said housing member so that said first and second inclined arm surfaces on said slip members selectively engage said first and second inclined expander surfaces on said expander member and move said wall engaging means between a retracted condition and an extended condition radially outward and in gripping engagement with a wall of a well bore, said release means being operable upon rotation on an opposite direction for moving said wall engaging means from an extended condition to a retracted condition.

4,941,533

SUBTERRANEAN PERMEABILITY MODIFICATION BY USING MICROBIAL POLYSACCHARIDE POLYMERS

Clarence S. Buller, and Shapour Vossoughi, both of Lawrence, Kans., assignors to The University of Kansas, Lawrence, Kans.

Filed May 16, 1989, Ser. No. 352,733

Int. Cl.[5] E21B *33/138, 43/22, 43/27, 47/00*

U.S. Cl. 166—252 105 Claims

1. In a method for enhanced recovery of hydrocarbon fluids by the injection of a flooding fluid into a subterranean hydrocarbon fluid bearing formation through an injection well extending from the surface of the earth into the formation, to displace in situ hydrocarbon fluids from the formation towards at least one production well spaced at a distance away from the injection well, the improvement which comprises:

(1) first injecting a quantity of acidic water into the said formation through said injection well,

(2) thereafter injecting a quantity of reversibly gelable, water insoluble, alkaline beta 1,3 polyglucan homopolymer solution, which solution gels immediately upon one of neutralization and acidification thereof, into said injection well and

(3) thereafter injecting a drive fluid into said injection well and producing at least some hydrocarbon fluids from the said production well.

99. A process of selectively blocking the migration of fluids in a permeable, porous, earth formation body having hydrocarbon fluids therein comprising injecting into said body one of a mineral acid and an organic acid and thereafter injecting into said body an alkaline medium containing regelable polysaccharide polymer whereby the latter medium, in at least part thereof, is neutralized by the contact with said acid, such resulting in precipitation of at least some of the said polymer in said body.

4,941,534

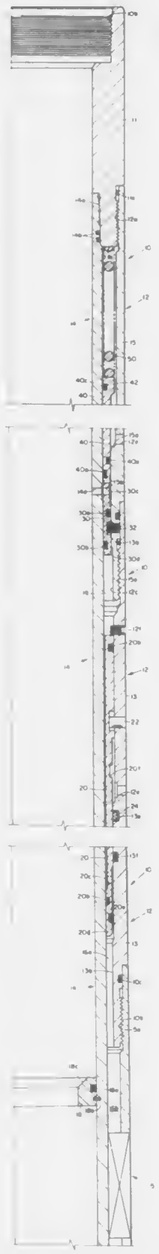
METHOD AND APPARATUS FOR SEALING A CASING IN A SUBTERRANEAN WELL BORE

Vel Berzin, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 28, 1989, Ser. No. 345,441

Int. Cl.[5] E21B *33/13, 34/10*

U.S. Cl. 166—285 7 Claims



1. Apparatus for sealing a casing in a subterranean well bore, comprising, in combination:

a tubular valving assemblage attachable to the the casing;

said tubular valving assemblage comprising concentric inner and outer tubular bodies defining an elongated annular chamber therebetween;

port means in said inner tubular body communicating with the bore of said casing, whereby an inflation fluid supplied through said casing can enter said annular chamber through said port means;

an inflatable packer secured to the tubular valving assemblage and having a fluid inlet passage communicating with said annular chamber;

first sleeve valve means disposed in said annular chamber above said fluid inlet passage;

said first sleeve valve means having an upper position permitting pressured inflation fluid to flow into said fluid passage means to inflate said inflatable packer and a lower position preventing fluid flow into said fluid passage means;

first shearable means securing said first valve means in said upper position; and

seal means on said first sleeve valve means cooperating with one at least wall of said annular chamber to produce an upwardly facing piston area, whereby an increase in the inflation fluid pressure resulting from filling the inflatable packer will produce a downward force on said first sleeve valve to move same to said lower position.

4,941,535

MANUAL PORT CLOSING TOOL FOR WELL CEMENTING

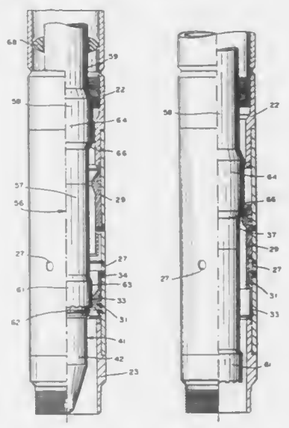
Gary L. Porter, and William B. Cade, both of Hobbs, N. Mex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 258,929, Oct. 17, 1988, Pat. No. 4,850,432.

This application Jan. 17, 1989, Ser. No. 297,214

Int. Cl.[5] E21B *33/14*

U.S. Cl. 166—285 3 Claims



1. In a method for cementing a cased well, wherein a cementing staging collar forms an integral part of the well casing, said staging collar including:

a casing defining means forming a chamber having axially aligned inlet port and primary discharge port respectively for conducting a cement flow through said means forming said chamber, and a secondary discharge port in said

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casing between said inlet port and said primary discharge ports, a multi-segment sleeve operably retained in said means forming said chamber, one sleeve segment of said multi-segment sleeve being longitudinally dispalceable to affect a closure across said secondary discharge port to preclude cement flow therethrough, said casing having been at least partially cemented to the extent of substantially filling said means forming said chamber with hardenable cement, the improvement therein of

providing a sleeve segment actuating tool—having at least one cutter means depending from the lower end thereof, and being engageable with means for rotating and advancing said sleeve segment actuating tool into the casing—

concurrently rotating and advancing said sleeve segment actuating tool to erode a passage through hardened cement in the staging collar means forming said chamber, and

contacting said one sleeve segment with said actuating tool to displace said sleeve segment into closed relationship with said secondary discharge port.

4,941,536

SET RETARDED CEMENT COMPOSITIONS AND METHODS FOR WELL CEMENTING

Lance E. Brothers, Ninnekah; Donald W. Lindsey, Marlow, and Dralen T. Terry, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 27, 1989, Ser. No. 372,976
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—293 **12 Claims**

6. A method of cementing a zone in a subterranean formation penetrated by a wellbore comprising the steps of:

forming a pumpable set retarded cement slurry comprising hydraulic cement, fresh water, particulate silica having a particle size in the range of from about 0.02 to about 0.5 micron and a set retarder comprising a copolymer consisting essentially of 2-acrylamido, 2-methylpropane sulfonic acid (AMPS) and acrylic acid having an average molecular weight below about 5000 and comprising from about 40 to about 60 mole percent AMPS;

pumping said cement slurry into said zone by way of said wellbore, and

allowing said cement slurry to set therein.

4,941,537

METHOD FOR REDUCING THE VISCOSITY OF AQUEOUS FLUID

Paul W. Langemeier; Martha A. Phelps, and Michael E. Morgan, all of Louisville, Ky., assignors to Hi-Tek Polymers, Inc., Jeffersontown, Ky.

Continuation of Ser. No. 160,142, Feb. 25, 1988, abandoned. This application Jun. 22, 1989, Ser. No. 371,651
Int. Cl.[5] E21B *43/26*
U.S. Cl. 166—308 **24 Claims**

1. A process for reducing the viscosity of aqueous fluid thickened with a tertiary amino polygalactomannan wherein the tertiary amino group substituted on the polygalactomannan is derived from a dialkylaminoalkyl halide or a dialkylaminoalkyl epoxide wherein the alkyl groups of said halide or said epoxide contain from 1 to 6 carbon atoms and wherein the total number of carbon atoms in the alkyl groups does not exceed 12 which comprises adding to the aqueous fluid an alkali metal or an alkaline earth metal salt of hypochlorous acid or a chlorinated isocyanurate.

13. A process for fracturing a subterranean formation penetrated by a borehole which comprises injecting into the borehole and into contact with the formation at a rate and pressure sufficient to fracture said formation a water-based fluid comprising:

(a) an aqueous liquid;

(b) as a thickening agent to increase the viscoity of the aqueous liquid a viscosity increasing amount of a tertiary amino polygalactomannan wherein the tertiary amino group substituent on the polygalactomannan is derived from a dialkylaminoalkyl halide or a dialkylaminoalkyl epoxide wherein the alkyl groups of said halide or said epoxide contain from 1 to 6 carbon atoms and wherein the total number of carbon atoms in the alkyl groups does not exceed 12; and

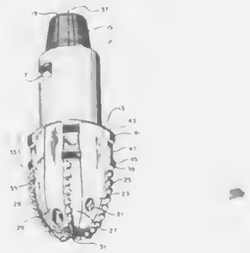
(c) as a breaker to reduce the viscosity of the fluid after said fluid has contacted the formation and after its intended purpose as a viscous fluid has been served an effective amount of an alkali metal or alkaline earth metal salt of hypochlorous acid, or a chlorinated isocyanurate.

4,941,538

ONE-PIECE DRILL BIT WITH IMPROVED GAGE DESIGN

William W. King, Spring, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 20, 1989, Ser. No. 409,706
Int. Cl.[5] E21B *10/46*
U.S. Cl. 170—329 **6 Claims**



1. A single piece drill bit for use in drilling a borehole in an earthen formation, comprising:

a body including a solid bit face on one end and a shank on the opposite end with means for connection to a drill string for rotation about a longitudinal axis, the bit face increasing in external diameter between a nose and a gage region, the gage region terminating in a shoulder adjacent the bit shank;

an upper stabilizing region of full gage diameter cutter elements positioned adjacent the bit shoulder in the gage region of the bit;

a lower stabilizing region of full gage diameter cutter elements spaced apart axially on the bit face from the upper stabilizing region, the lower stabilizing region also being in the gage region of the bit;

an undercut region located on the bit face between the upper and lower stabilizing regions, the undercut region being selectively sized to minimize contact of the gage region with the borehole wall, thereby increasing the effective gage length of the bit without increasing the total contact area of the bit face with the wall of the borehole being drilled.

4,941,539

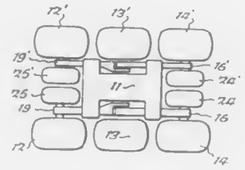
ALL-TERRAIN VEHICLE

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y. 14120

Filed Mar. 3, 1989, Ser. No. 319,127
Int. Cl.[5] B62D *61/10*
U.S. Cl. 180—22 **16 Claims**

1. A vehicle comprising a body, elongated links having outer end portions, pivot means mounting said elongated links on opposite sides of said body, inner and outer sides on said elongated links, main wheel mounted outwardly of said outer side of each of said outer end portions of said elongated links,

auxiliary wheel means, and means mounting said auxiliary wheel means inwardly of said inner side of each of said elongated links to engage objects which lie in the path of said



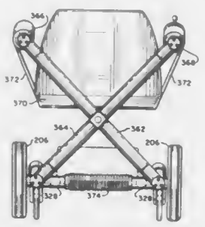
auxiliary wheels, said auxiliary wheel means being of smaller diameter than said main wheels so as not to engage the ground unless said objects are in the path of said auxiliary wheel means.

4,941,540

UNIVERSAL ELECTRIC WHEELED CHAIR

Lawrence A. Bernstein, 6456 Surfside Way, Malibu, Calif. 90265

Continuation of Ser. No. 924,895, Oct. 30, 1986, Pat. No. 4,825,971, which is a continuation-in-part of Ser. No. 691,168, Jan. 14, 1985, abandoned. This application Feb. 28, 1989, Ser. No. 317,194
Int. Cl.[5] A61G *5/02*
U.S. Cl. 180—65.1 **8 Claims**



1. A lightweight electric powered wheeled chair comprising:

a tubular wheeled chair frame having two front and two rear wheels mounted on said frame,

first and second small high speed motors each weighing less than two pounds mounted in alignment with and coupled to said rear wheels;

a plurality of flashlight type battery cells mounted in said tubular frame;

electric circuit means for applying power from said battery cells to said motors;

said tubular frame including two lower side frame members, two rear frame members, pivotally connected together intermediate their ends to form an "X" configuration, with the lower ends of each of said rear frame members being pivotally secured to said lower side frame members, two forwardly extending upper side members mechanically coupled to the upper ends of said rear frame members, and a seat supported from said forwardly extending upper side members; and

means included in said wheeled chair assembly for permitting said rear frame members to pivot downwardly to a substantially horizontal and parallel position to form a collapsed configuration;

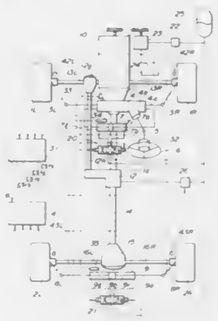
whereby the lightweight and collapsible configuration of said wheeled chair makes it easy to transport.

4,941,541

DEVICE FOR DISTRIBUTING DRIVE POWER IN THE DRIVE TRAIN OF A FOUR WHEEL DRIVE VEHICLE

Hideo Ito, Zushi, and Masatsugu Yokote, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 7, 1988, Ser. No. 254,875
Claims priority, application Japan, Oct. 8, 1987, 62-254218; Oct. 8, 1987, 62-254219
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—140 **6 Claims**



1. In a four wheel drive train for an automotive vehicle:

an auxiliary steering device for providing auxiliary steering of at least one of said front and rear wheels, said auxiliary steering device being responsive to a manually induced steering angle of the front wheels in a manner to vary the amount of auxiliary steering produced by said auxiliary steering device;

auxiliary steering control means for controlling said auxiliary steering device;

sensor means for sensing a steering condition which is induced by the amount a yaw rate is increased by said auxiliary steering device;

a device for distributing driving torque from a prime mover between the forward and rear wheels of the vehicle;

a device for controlling said torque distribution device; and

means for correcting the amount of driving torque which is supplied to the front wheels by said torque distributing device, said correcting means being responsive to said sensor means in a manner wherein when sensor means senses a steering condition wherein the ease with which yaw can be induced changes, the amount by which said driving torque distribution device distributes driving torque between the front and rear wheels is changed relative to the torque distribution before one of the auxiliary steering and the yaw rate varies in a manner to avoid sudden changes in the steering characteristics of the vehicle.

4,941,542

AUTOMOTIVE FOUR WHEEL STEERING SYSTEM

Atsuo Tomoda; Takaaki Itoh, and Takao Kijima, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 101,687, Sep. 28, 1987, abandoned. This application Jun. 7, 1989, Ser. No. 363,432
Claims priority, application Japan, Oct. 1, 1986, 61-235037; Oct. 2, 1986, 61-235020
Int. Cl.[5] B62D *6/02*
U.S. Cl. 180—140 **8 Claims**

1. In an automotive vehicle having front and rear wheel pairs and a steering wheel drivingly coupled with the front wheel pair for steering the vehicle with respect to the direction of run of the vehicle, said steering wheel being rotatable in

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opposite directions from a neutral position at which the vehicle can run straightforward, a fluid-operated, four wheel steering system which comprises:

a front wheel steering mechanism including a front steering rod that is adapted to steer the front wheel pair in response to rotation of the steering wheel;

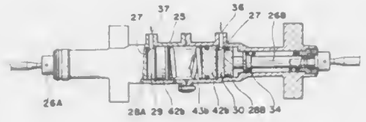
a fluid-operated front cylinder means actuated in response to the rotation of the steering wheel from the neutral position, said front cylinder means including a front piston member that is mechanically coupled to the front steering rod for movement in response to rotation of the steering wheel, said front cylinder means having first and second front cylinder chambers positioned on opposite sides of said front piston member, said first front cylinder chamber having a volume that is adapted to be reduced when the steering wheel is rotated to turn the front wheel pair leftwards with respect to the direction of movement of the vehicle, and the second front cylinder chamber having a volume that is adapted to be reduced when the steering wheel is rotated to turn the front wheel pair rightwards with respect to the direction of movement of the vehicle;

a fluid-operated rear cylinder means for steering the rear wheel pair for turning at least one rear wheel of the rear wheel pair with respect to the direction of straightforward run of the vehicle, said rear cylinder means including a first rear cylinder assembly and a second rear cylinder assembly, said first rear cylinder assembly being adapted to cause a right-hand rear wheel of the rear wheel pair to turn when supplied with a fluid medium and said second rear cylinder assembly being adapted to cause a left-hand rear wheel of the rear wheel pair to turn when supplied with a fluid medium;

said front and rear wheel pairs being adapted to turn in the same direction;

a fluid passage means for operatively coupling the front and rear cylinder means together to permit a fluid medium to be supplied from the front cylinder means to the rear cylinder means to thereby actuate the rear cylinder means, said fluid passage means including a first fluid passage that communicates the first front cylinder chamber with the first rear cylinder assembly for supplying fluid medium under pressure to the first rear cylinder assembly and a second fluid passage that communicates the second front cylinder chamber with the second rear cylinder assembly for supplying fluid medium under pressure to the second rear cylinder assembly; and

a fluid medium accommodating means disposed in the rear cylinder means for accommodating a portion of the fluid medium being supplied from the front cylinder means to the fluid-operated rear cylinder means only when the pressure of the fluid medium in the front cylinder means increases such that the pressure in the rear cylinder means increases to a value greater than a predetermined value as a result of rotation of the steering wheel when the automotive vehicle is traveling at relatively low speeds, said fluid medium accommodating means being operable to accommodate a portion of the fluid medium independent of the turn of the rear wheel pair.



4,941,543

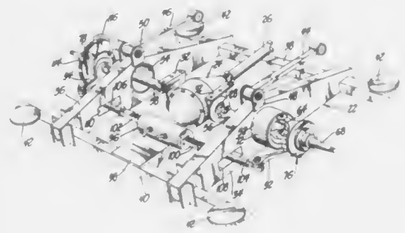
REAR WHEEL SUSPENSION AND STEERING SYSTEM

James G. Ewen, Royal Oak, Mich., assignor to DLMA Transportation Inc., Troy, Mich.

Filed Dec. 23, 1988, Ser. No. 289,027

Int. Cl.[5] B60K *17/30*

U.S. Cl. 180—254 **2 Claims**



1. A rear wheel support and driving system of the type comprising a rack-type dead axle (22) adapted to support a vehicle body thereupon through suitable spring means, a air of wheels (30) rotatably supported upon said dead axle, a differential drive mechanism (24) adapted to be supported upon the vehicle body and movable with said body relative to the dead axle, the differential mechanism including a power input shaft (26) and power output shafts (28 and 30), a pair of live axles (56 and 58) drivingly connecting the output shafts with said wheels, the dead axle being generally rectilinear in shape and having a first pair of longitudinal beams (34 and 36) respectively transversely spaced outboard of said differential mechanism, a second pair of cross beams (38 and 40) respectively spaced fore and aft of said differential mechanism and secured to the first pair of beams, the improvement comprising:

A. said longitudinal beams (34 and 36) including transversely aligned openings (52 and 54);

B. hollow sleeves (72 and 74) secured within the beam openings (52 and 54) and projecting transversely outboard of beams (34 and 36), said live axles (56 and 58) extending through said sleeves;

C. means (76 and 78) for steerably supporting the wheels upon the sleeves; said supporting means including a steering arm (92–94) fixed thereto and operatively connected to the power steering device (96);

D. a power steering device (96) mounted on the dead axle and operatively connected to the steerable wheel supporting means (76 and 78) for imparting steering movement to the wheels, the power steering device (96) includes a pair of operating arms (100 and 102) extending generally parallel to the cross beam (40), rod members (104 and 106) articulated at their ends between said operating arms and the steering arms (92 and 94), each longitudinal beam (34–36) includes a second opening (108–110) intermediate the first opening (52–54) and the dead axle cross beam (40), the rod members (104 and 106) respectively extending through the second openings whereby the outer end of each rod member is disposed outboard of the associated longitudinal beam (34 and 36).

4,941,544

BEARING ARRANGEMENT FOR A DRIVE ASSEMBLY OF A MOTOR VEHICLE

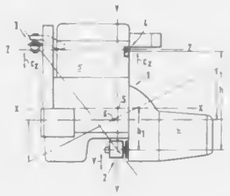
Rüdiger Fischle, Leonberg, and Ulrich von Broock, Hoxter, both of Fed. Rep. of Germany, assignors to Dr. Ing.h.c.F. Porsche AG, Fed. Rep. of Germany

Filed May 30, 1989, Ser. No. 358,405

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818302

Int. Cl.[5] B60K *5/04, 5/12*

U.S. Cl. 180—292 **4 Claims**



1. A bearing arrangement for a drive assembly of a motor vehicle which is held on a body side of the vehicle comprising:

a central bearing means arranged below a horizontal plane extending through a center of gravity of the drive assembly;

a torque support means arranged above the horizontal plane, the central bearing means and the torque support means being arranged approximately at a common vertical transverse plane extending through the center of gravity; and

a support bearing means held on a front end of the assembly and supported with respect to the vehicle body;

wherein the central bearing means is arranged below the center of gravity and in a low-vibration area of the drive assembly, the central bearing means being a single bearing which absorbs substantially an entire static load of the drive assembly;

wherein the torque support means is arranged with respect to the central bearing means at a base distance which corresponds to approximately an overall height of the drive assembly, and with the central bearing means being located substantially at the vertical plane extending through the center of gravity; and

wherein the support bearing means, with respect to a front view of the vehicle, is arranged diagonally opposite the central bearing means at a vertical longitudinal plane extending through the center of gravity.

4,941,545

MUFFLER ASSEMBLY

Richard C. Wilcox, Columbus; James Allman, North Vernon, and Stacy Smith, Franklin, all of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Apr. 28, 1989, Ser. No. 345,141

Int. Cl.[5] F01N *1/02, 1/08, 7/18*

U.S. Cl. 181—282 **22 Claims**

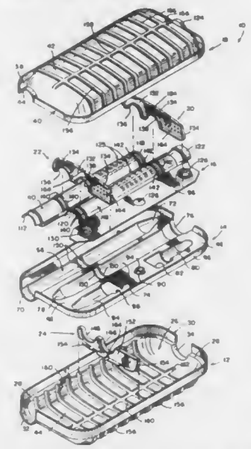
1. A muffler assembly comprising

a first shell half,

a second shell half attached to the first shell half at a perimetrically extending split line to define a muffler chamber therebetween, the first and second shell halves cooperating to define a flange-receiving space therebetween at the split line, an inlet port for admitting exhaust gas into the muffler chamber, and an outlet port for expelling exhaust gas from the muffler chamber,

a first tuning plate disposed in the muffler chamber, the first tuning plate having a flange edge trapped in the flange-receiving space to retain the first tuning plate in a fixed position dividing the muffler chamber into a first chamber between the first tuning plate and the first shell half and a second chamber between the first tuning plate and the second shell half,

a second tuning plate disposed in the second chamber, the second tuning plate cooperating with the first tuning plate to define exhaust gas-conducting tubes connected to the muffler chamber inlet and outlet,



means for attaching the second tuning plate to the first tuning plate to provide the exhaust gas-conducting tubes and to retain the second tuning plate in mating engagement with the first tuning plate without extending into the flange-receiving space at the split line so that only the first shell half, second shell half, and first tuning plate are rigidly joined together at the split line.

4,941,546

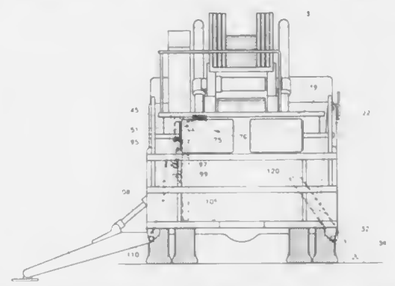
AERIAL LADDER ROTATION LIMITER

Thomas R. Nist, Princeton, W. Va., and Edward V. Garnett, Huntington Beach, Calif., assignors to Figgie International Inc., Willoughby, Ohio

Filed Feb. 7, 1989, Ser. No. 307,898

Int. Cl.[5] E06C *5/00*

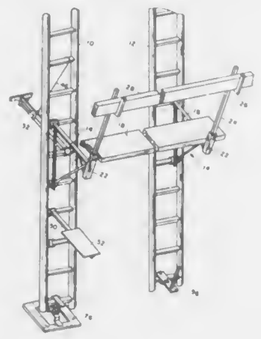
U.S. Cl. 182—17 **17 Claims**



1. Aerial apparatus comprising a platform, vertically extendible means mounted on said platform, said platform being rotatable to position said vertically extendible means for use at a desired circumferential location, stabilizing means extendible outwardly of said platform for stabilizing said vertically extendible means within a predetermined circumferential sector, and means responsive to extension of said stabilizing means for permitting said vertically extendible means to be positioned only within said predetermined circumferential sector.

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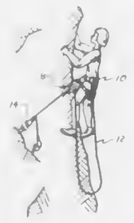
4,941,547
SAFETY FEATURED LADDER SCAFFOLDING
Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579
Filed Sep. 25, 1989, Ser. No. 411,900
Int. Cl.[5] E06C *1/04, 5/36, 7/44*
U.S. Cl. 182—107 12 Claims



1. A wall supported scaffold formed of first and second ladders each having a lower end and a top end and a plurality of substantially equally spaced rungs, said ladders being spaced apart with their top ends leaning against a common wall, said scaffold including:
a ladder jack secured by rung locking means to each of said ladders, said jack having a substantially horizontal platform plank supporting member; and
an antiflexing brace coupled between a rung on each of said ladders and the common wall, said brace having a tubular member with first and second ends, the first end of said tubular member being pivotally secured by rung locking means to a rung of its ladder, a second member having first and second ends, the first end of said second member being slideable into bore in the second end of said tubular member, the second end of said second member supporting a wall pad for contacting said common wall, and an adjustment member overlying said tubular member and attached to the second end of said second member for adjusting and locking the overall length of said antiflexing brace.

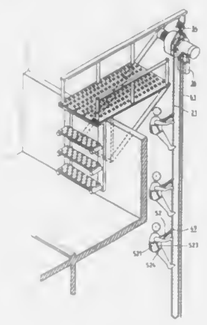
4,941,548
FALL ARRESTING DEVICE FOR CLIMBERS
Mark W. Blanchard, P.O. Box 8030, Mammoth Lakes, Calif. 93546
Filed Nov. 17, 1989, Ser. No. 438,578
Int. Cl.[5] A62B *1/20*
U.S. Cl. 182—234 16 Claims

1. A fall arresting device comprising:
a housing,
a drum,
means for rotatably mounting said drum within said housing,
a centrifugal clutch means which halts rotation of said drum with respect to said housing when said drum reaches a predetermined rate of rotation,
a clove hitch knot formed in a rope and tied around said drum, whereby said device may slide freely along said



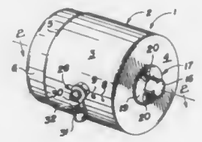
rope at less than a predetermined rate of travel yet lock securely to said rope when said rate of travel is attained.

4,941,549
FIRE ESCAPE APPARATUS
Liou Da-Tan, and Chang Shion-Huey, both of No. 23, Lane 43, Da-Pong Rd., Taichung, Taiwan
Filed Sep. 19, 1989, Ser. No. 409,204
Int. Cl.[5] A62B *1/10, 35/00*
U.S. Cl. 182—234 20 Claims



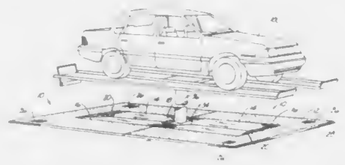
1. A fire escaping apparatus comprising:
a main housing having a first end, a second opposite end and a through housing hole, and capable of being held attached to a place from where relevant persons can escape a fire;
a hollow active shaft rotatably mounted in said housing hole;
a following shaft rotatably mounted in said active shaft, and having a third end and a fourth opposite end;
a driving member secured on said active shaft and rotatably mounted in said housing hole;
an escaping loop rope capable of positively circulating on a periphery, of said driving member and of being suspended thereunder to be within easy reach of a ground surface for one of said persons;
a speed-increasing mechanism mounted between said active and following shafts for enabling said following shaft to rotate at a speed higher than that of said active shaft; and
a speed-limiting mechanism mounted on said fourth end for limiting said speed of said following shaft under a predetermined value so that said one person grasping on said rope can be rapidly safely transported from said place to said ground surface.

4,941,550
BEARING LUBRICATING DEVICE
Kenneth D. Blake, Rt. 2 Box 723B, Winnfield, La. 71483
Filed Apr. 24, 1989, Ser. No. 342,549
Int. Cl.[5] F16C *1/24;* F16N *11/04*
U.S. Cl. 184—5.1 49 Claims



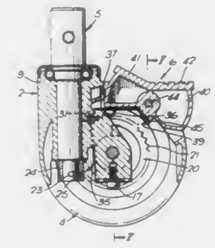
1. A bearing lubricating device for lubricating wheel bearings, comprising a generally cylindrically-shaped housing adapted to contain a lubricant, said housing having a closed end and an open end provided in communication with the wheel bearings; piston means slidably disposed in said housing, with one end of said piston means slidably projecting from said closed end of said housing; bias means provided in said housing, said bias means engaging said piston means for biasing said piston means inwardly of said housing and forcing the lubricant into contact with the wheel bearings; and a lubricant fitting seated in said housing for selectively introducing fresh lubricant into said housing.

4,941,551
VEHICLE SERVICE AREA FLOOR MAT
Douglas L. Visser, 4305 Highway 200 East, Sandpoint, Id. 83864
Filed May 19, 1989, Ser. No. 354,382
Int. Cl.[5] F16N *31/00*
U.S. Cl. 184—106 12 Claims



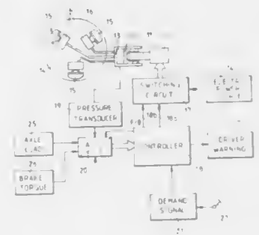
1. A service area mat for use on a floor in a vehicle maintenance area, said mat comprising:
a rectangular shaped body portion having a top, a bottom and edges;
a textured apron area disposed inwardly of the edges of the top of said body portion;
a center recessed portion disposed inwardly from said apron area and being tapered downwardly toward a low end of said body portion;
fluid collecting means disposed at said low end of said center portion; and
a plurality of projections extending downwardly from said bottom of said body portion.

4,941,552
CASTOR WITH BRAKE MECHANISM
Stafford T. Screen, Stourbridge, England, assignor to Colson Castors (Europe) Limited, West Midlands, United Kingdom
Filed Oct. 7, 1988, Ser. No. 255,830
Claims priority, application United Kingdom, Oct. 21, 1987, 8724678
Int. Cl.[5] B60B *33/00*
U.S. Cl. 188—1.12 17 Claims



1. A castor comprising:
a body,
at least one castor wheel carried by said body for rotation about a generally horizontal wheel axis,
a mounting member, said body being carried on said mounting member for swivelling about a generally vertical axis spaced from said wheel axis,
a first series of brake teeth on said castor wheel and a second series of teeth on said mounting member, and an integrally formed resilient brake member having first and second detent portions, said brake member being selectively movable between a braking position and a release position, wherein said first and second detent portions resiliently engage said first and second series of teeth respectively to brake said castor against body swivelling and wheel rotation and in said braking position said first and second detent portions are spaced from said first and second series of teeth.

4,941,553
VEHICLE BRAKING SYSTEM
Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries, Birmingham, United Kingdom
Filed Nov. 18, 1988, Ser. No. 273,341
Claims priority, application United Kingdom, Nov. 20, 1987, 8727290; Jan. 19, 1988, 8801089; Jan. 19, 1988, 8801088
Int. Cl.[5] B60T *8/62*
U.S. Cl. 188—156 12 Claims



1. A braking system comprising a rotating part, a friction element for cooperating with said rotating part to provide braking, a motor having an output member for controlling said

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friction element, and a control circuit for receiving a variable demand signal, said motor comprising a stator and a rotor which is arranged to be brought to rest at any one of a plurality of distinct positions, said control circuit controlling said motor so as to drive said output member to a position in accordance with the variable demand signal and to provide automatic adjustment of a datum position of said friction element to compensate automatically for wear thereof.

4,941,554

HYDRAULIC TORQUE RESISTANCE DEVICE

Phillip A. Sollami, 1300 E. Pine, Herrin, Ill. 62948

Filed Jan. 13, 1989, Ser. No. 296,680

Int. Cl.[5] F01C *9/00*; F16F *9/14*

U.S. Cl. 188—310 **8 Claims**



1. Apparatus for applying an adjustable resistance to the rotation of a shaft, said apparatus comprising in combination

housing means enclosing a generally cylindrical bore,

said shaft extending through said bore along the central longitudinal axis thereof,

stator means extending radially between said shaft and the wall of said bore,

a vane affixed to said shaft and sealed to said wall of said bore to provide a first chamber between one side of said vane and one side of said stator and to provide a second chamber between the other side of said vane and the other side of said stator,

hydraulic fluid filling said first and second chambers,

first and second passageways opening respectively into said first and second chambers,

adjustable valve means connecting said first passageway to said second passageway,

said adjustable valve means positioning an adjustable restrictive orifice through which fluid must pass in order to flow between said first and second chambers,

said housing includes a tubular body member enclosing said cylindrical bore and first and second head members respectively mounted to said body member over opposite ends of said bore,

said first and second passageways extending through said first head member and opening onto one surface of of said first head member in mutual proximity,

a recess in said one surface of said first head member into which said first and second passageways open,

said adjustable valve means including a valve body member mounted to said first head member over said recess and a valve element,

said valve body member having a hole extending therethrough in alignment with the opening of said first passageway into said recess, and

said valve element being axially movable in said hole toward and away from said opening to provide an adjustable restriction to the flow of said hydraulic fluid between said first and second passageways.

4,941,555

ELECTRIC MONORAIL CONVEYOR

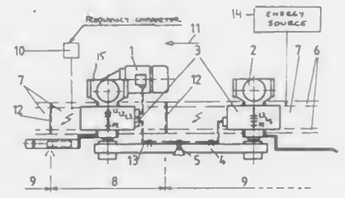
Eloy da Silva Antunes, Dillingen, Fed. Rep. of Germany, assignor to Selwert Stahl- und Apparatebau GmbH, Dillingen, Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 223,546

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724763

Int. Cl.[5] B60L *15/00*; B60M *1/00*

U.S. Cl. 191—14 **3 Claims**



1. A conveyor comprising elongated guide means; at least one vehicle suspended on and movable along said guide means; and drive means for said vehicle comprising a third rail adjacent said guide means and including alternating first and second sections and insulating means provided between said first and second sections and including means for galvanically separating said first sections from said second sections, electric motor means provided on said vehicle and arranged to advance the vehicle along said guide means, said motor means being electrically connected with said third rail, a follower tracking said third rail, the distance of the locus of tracking of the third rail by said follower from the electrical connection between said motor and said third rail being greater than the length of one of said second sections, means for electrically connecting said follower with said motor means, means for supplying higher-frequency current to the first sections of said third rail, and means for supplying lower-frequency current to the second sections of said third rail including means for gradually reducing the frequency of lower-frequency current when said motor means advances from one of said first sections to the adjacent second sections of said third rail.

4,941,556

ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

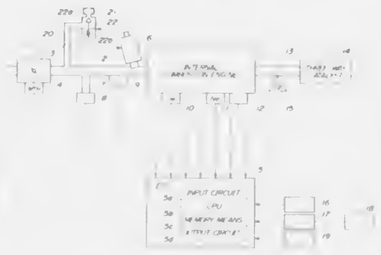
Eitetsu Akiyama, Wako, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,517

Claims priority, application Japan, Oct. 12, 1988, 63-256472

Int. Cl.[5] F16D *43/00*; B60K *20/00*

U.S. Cl. 192—0.062 **5 Claims**



1. In an electronically-controlled fuel injection system for an

internal combustion engine, said system having acceleration determining means for determining whether or not said engine is in an accelerating condition, and accelerating fuel increasing means for increasing an amount of fuel supplied to said engine by means of an incremental value when said acceleration determining means determines that said engine is in said accelerating condition,

the improvement comprising:

rotational speed detecting means for detecting whether or not the rotational speed of said engine exceeds a predetermined value while said acceleration determining means determines that said engine is in said accelerating condition;

time period discriminating means for discriminating whether or not a predetermined time period has elapsed from the time said rotational speed detecting means detected that the rotational speed of said engine increased above said predetermined value; and

incremental value limiting means for limiting said incremental value to a predetermined upper limit value if the former exceeds the latter before said time period discriminating means discriminates that said predetermined time period has elapsed.

4,941,557

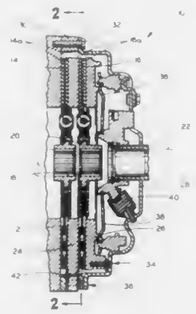
INTERMEDIATE PLATE POSITIONER MEANS FOR A FRICTION CLUTCH ASSEMBLY

Richard A. Flotow, Butler, and Thomas G. Dickson, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 822,925, Jan. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 647,621, Sep. 5, 1984, abandoned. This application Apr. 19, 1988, Ser. No. 186,651

Int. Cl.[5] F16D *13/75*

U.S. Cl. 192—70.25 **6 Claims**



1. A friction clutch for selectively connecting an input shaft to an output shaft for rotation therewith comprising:

a flywheel attached to the input shaft for rotation therewith;

a cover attached to said flywheel for rotation therewith;

a pressure plate disposed between said flywheel and said cover, said pressure plate being connected to said cover for rotation therewith and being axially movable relative thereto between engaged and released positions;

an intermediate plate disposed between said flywheel and said pressure plate;

means for connecting said intermediate plate to said cover for rotation therewith, said connecting means permitting axial movement of said intermediate plate between engaged and released positions and exerting a relatively small force urging said intermediate plate toward said cover;

first and second axially movable clutch disks connected to the output shaft for rotation therewith, said first clutch disk being disposed between said flywheel and said intermediate plate and said second clutch disk being disposed between said intermediate plate and said pressure plate, said clutch disks including friction facing material having an initial thickness which is decreased as wear occurs thereto;

means for selectively exerting a relatively large force against said pressure plate to axially move said pressure plate toward said engaged position such that said clutch disks are frictionally engaged between said pressure plate, said intermediate plate, and said flywheel to connect the input shaft to the output shaft for rotation therewith; and

a positioner pin extending through an aperture formed in said intermediate plate having a first end adjacent said flywheel and a second end adjacent said cover, said positioner pin being maintained in said aperture in an interference fit with said intermediate plate and having a frictional resistance to movement through said aperture which is greater than said relatively small force and less than said relatively large force, said first end of said positioner pin abutting said flywheel when said clutch is engaged and said second end of said positioner pin abutting said cover when said clutch is disengaged, said positioner pin being shaped in the form of a hollow cylinder having a longitudinal slot formed therethrough defining longitudinally extending side portions, an inwardly extending flange being formed along each of said side portions, said flange portions being spaced apart from one another when said positioner pin is disposed within said aperture.

4,941,558

CLUTCH DISC

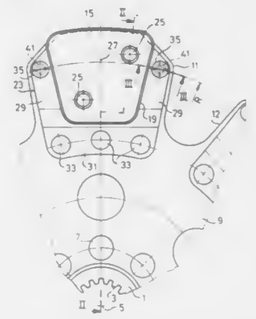
Alfred Schraut, Waigolshausen, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 7, 1988, Ser. No. 255,548

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 8713810[U]

Int. Cl.[5] F16D *13/60*

U.S. Cl. 192—107 C **2 Claims**



1. A clutch disc for a motor vehicle friction clutch, comprising:

a hub (1) with a lining carrier disc (9) held thereon, which lining carrier disc (9) includes in the region of its outer circumference several star-shaped radially projecting lining carrier segments (11) offset against each other in a circumferential direction, the carrier segments being separated from each other by recesses (12) which are arranged to open towards the outer circumference of the carrier disc (9);

friction pad plates (13), (15) arranged in pairs axially on both sides of each lining carrier segment (11), said pairs of friction pad plates including first friction pad plate (13)

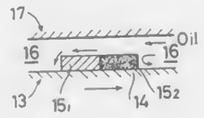
fastened at the lining carrier segment (11). and a second friction pad plate (15);
radially curved spring segments (23), each second friction pad plate (15) being fastened at one of the spring segments (23);
first fastening elements (35) arranged so as to guide each spring segment in a circumferential direction on both sides of the second friction pad plate (15) so that the spring segment is radially movable with axial clearance at the lining carrier segment (11); and
second fastening elements (33) arranged so as to retain the spring segments radially toward the hub (1) at the lining carrier disc (9), the lining carrier segments (11) being relatively non-resilient with respect to the spring segments (23), and the spring segments (23) being arranged so as to project beyond the second friction pad plates (15) in a circumferential direction on both sides of the second friction pad plates (15), as well as radially towards the hub with edge strips (29), (31) which are continuously flat between the first and second fastening elements and which essentially follow an edge contour of the second friction pad plates (15).

4,941,559

WET FRICTION MEMBER, AND WET FRICTIONAL ENGAGEMENT APPARATUS FOR A TRANSMISSION USING THE SAME

Keiichi Ishikawa; Tadashi Tsuchiyama, both of c/o Kabushiki Kaisha Honda Gijutsu Kenkyusho, No. 4-1, 1-chome, Chuo, Wako-shi, Saitama-ken; Yasuyuki Suzuki, and Hiroaki Hasegawa, both of c/o Kabushiki Kaisha FCC Kenkyusho, of No. 7000-46, Tekunorando, Hosoe-cho, Inasa-gun, Shizuoka-ken, all of Japan

Filed Jun. 9, 1989, Ser. No. 363,731
Claims priority, application Japan, Jun. 13, 1988, 63-143485
Int. Cl.[5] F16D *13/6, 13/74*
U.S. Cl. 192—107 R **4 Claims**



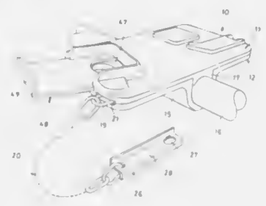
3. A wet frictional engagement apparatus comprising:
an input side member,
an output side member,
a wet friction member attached to one of said input side member and said output side member,
an opposite member facing said friction member and attached to the other of said input side member and said output side member, and
means for applying pressure to engage said friction member and said opposite member; said wet friction member comprising:
a substrate,
a plurality of first friction submembers mounted spaced apart on said substrate,
a plurality of second friction submembers mounted on said substrate, each adjacent one of said first friction submembers forming a pair of submembers, each pair of submembers being spaced from each adjacent pair by an oil groove, each said first friction member being relatively less oil-permeable and each second friction member being relatively more oil-permeable, whereby said wet friction member has a different effective coefficient of friction depending on which direction relative motion between said friction member and said opposite member occurs when pressure is applied by said means.

4,941,560

SECURITY DEVICE FOR TROLLEYS

Raymond J. Bailey, Caboolture, Australia, assignor to GDT PTY. Ltd., Queensland, Australia

PCT No. PCT/AU87/00240, § 371 Date Feb. 3, 1989, § 102(e) Date Feb. 3, 1989, PCT Pub. No. WO88/01084, PCT Pub. Date Feb. 11, 1988
PCT Filed Apr. 6, 1988, Ser. No. 328,127
Claims priority, application Australia, Aug. 6, 1986, PH7304
Int. Cl.[5] G07F *17/00*
U.S. Cl. 194—250 **15 Claims**



1. A security device for releasably connecting an article to at least one other article in a queue, row or stack of the articles, the device including:
a body mountable on the article and having two ends;
a flexible member attached to one said end of the body and having a key means at a free end of said flexible member;
a longitudinal cavity in the other said end of the body to releasably receive the key means of a similar device on a second article in the queue, row or stack;
a locking arm movably mounted in the cavity to releasably engage the key means of the device on the second article;
a tongue in the body operable to move the locking arm from an engaged position with the key means of the device on the second article to a released position where the key means is no longer engaged by the locking arm; and
an operating member movably mounted in the body and arranged to receive a suitable coin and so arranged that the operating member will move the tongue only when the coin is received in the operating member;
wherein the locking arm has (a) a first cam face engageable by the tongue to move the locking arm to the released position to enable the key means to be withdrawn from the body, (b) a second cam face engageable by the key means as the key means is inserted into the body to move the locking arm to the engaged position where the locking arm engages the key means and (c) and engaging means for releasably engaging the tongue when the key means is released such that retrieval of the coin from the operating member is prevented.

4,941,561

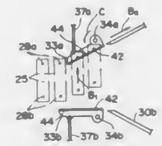
ARTICLE SORTING DEVICE

Keiji Yamabe, and Masao Yoshinaga, both of Tokyo, Japan, assignors to Nihon Cement Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 399,325
Claims priority, application Japan, Feb. 27, 1987, 62-28932
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 **2 Claims**

1. In an article sorting device equipped with a pair of spaced, substantially parallel endless chains which are connected to drive means so as to drive said chains to rotate in a common direction;
a plurality of article conveying boards that are mounted on said endless chains and slidable in a direction perpendicular to the driven direction of said pair of endless chains, sorting pins attached to a bottom surface thereof for movement along sorting pin moving paths; and

a pair of sorting members that enter the moving paths of said sorting pins, each sorting member having an end part, and guide the sorting pins in prescribed directions;
the article sorting device characterized in that a downward slanted part is provided at each end part of said sorting



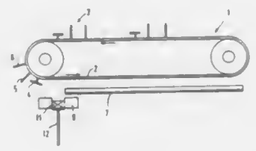
members that enters the moving path of said sorting pin, the slanted parts having upper edges formed in a wedge shape, said sorting pins having lower end parts that correspond to the slanted parts of said sorting members, said lower end parts being formed in a conical form.

4,941,562

ARRANGEMENT FOR TRANSPORTING ARTICLES, IN PARTICULAR PACKAGES OF RECTANGULAR BOX-SHAPE

Wilhelm Proepper; Harald Juenkersfeld, both of Wuppertal, and Georg Fischer, Velbert, all of Fed. Rep. of Germany, assignors to Benz & Hilgers GmbH, Duesseldorf, Fed. Rep. of Germany

Filed May 5, 1988, Ser. No. 190,737
Claims priority, application Fed. Rep. of Germany, May 9, 1987, 3715570
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—416 **12 Claims**



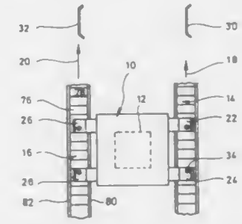
1. An improved arrangement for turning each of a series rectangular box-shaped articles during their transportation in a feed direction along a substantially horizontal feed path means which is laterally limited by curved guide means, including endless, drivable push means coacting with each one of said series of rectangular box-shaped articles, said push means include sliders which first engage excentrically each box-shaped article for turning it and then engage it centrally or symmetrically, the improvement comprising in combination,
said feed path means includes a plurality of contiguous paths, each one of which has an outlet end,
said contiguous paths converge toward each other near their outlet ends,
said sliders include first and second slide means,
said first slide means consist of a plurality of elements which are mounted in a row and spaced at a predetermined distance adjacent to each other, said distance is selected in such a way as to permit the passage of a rectangular box-shaped article between adjacent elements,
said second slider means consist of a single transverse slider which extends transversely across all contiguous paths,
said curved guide means is constructed in such a way that during a forward slide movement of said rectangular box-shaped articles along said contiguous paths said rectangular box-shaped articles are moved laterally, whereby the first slide means engage said rectangular box-shaped articles excentrically so that said articles are slidably turned into an intermediate position by engagement with said curved guide means and thereafter they are engaged by said single transverse slider and said articles are further turned and moved in said feed direction towards the outlet ends of said contiguous paths.

4,941,563

CONVEYING DEVICE

Otmar Fahrion, Dürerstr. 9, D-7014 Kornwestheim, Fed. Rep. of Germany

PCT No. PCT/EP87/00551, § 371 Date Jan. 25, 1989, § 102(e) Date Jan. 25, 1989, PCT Pub. No. WO88/02345, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 28, 1987, Ser. No. 327,920
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633702
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—465.3 **24 Claims**



1. Conveying device with at least two endless conveyors (14, 16) extending parallel to each other, which form a substantially closed conveying surface and with pallets (10), which rest by way of contact members (22 to 28) on the endless conveyors (14, 16), at least two of the endless conveyors (14, 16) travelling at different speeds and the frictional connection between the pallets (10) and the groups of endless conveyors (14, 16) travelling at different speeds being able to be controlled depending on the displacement, characterized in that the control of the frictional connection between the pallets (10) and the endless conveyors (14, 16) takes place by controlling the frictional connection between the contact members (22 to 28) of the pallets (10) and the conveying surfaces (78) of the endless conveyors (14, 16), this control taking place jointly for all the contact members (22 to 28) co-operating with one of the endless conveyors (14, 16) and in phase opposition for the various sets of contact members (22 to 28) associated respectively with one of the endless conveyors (14, 16).

4,941,564

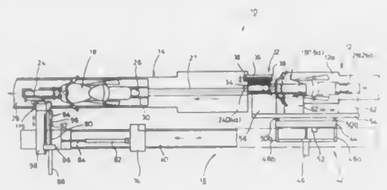
METHOD OF AND APPARATUS FOR TRANSFERRING MOTORCYCLE

Hiroyuki Noguchi; Makoto Makino, and David M. Nye, all of Marysville, Ohio, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1989, Ser. No. 333,908
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—468.2 **25 Claims**

5. An apparatus for transferring a motorcycle being assembled from a first conveyor line to a second conveyor line, comprising:
a wheel gripping means for gripping a first wheel of the motorcycle, said wheel gripping means being reciprocally movable between the first and second conveyor lines; and
a wheel transfer base means for placing the second wheel of

the motorcycle, said wheel transfer base means being reciprocally movable between the first conveyor line and



a prescribed position on the second conveyor line in synchronism with said wheel gripping means.

4,941,565

DISPERSION FEEDER

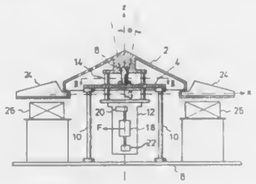
Ryuichi Hirota, Miki; Masatomi Tsuruoka, Hyogo, and Shinichi Inoue, Kobe, all of Japan, assignors to Yamato Scale Company, Limited, Akashi, Japan

Continuation of Ser. No. 907,020, Sep. 15, 1986, abandoned. This application Apr. 18, 1988, Ser. No. 182,924

Claims priority, application Japan, Dec. 17, 1985, 60-194952[U]

Int. Cl.[5] **B65G** *47/72*

U.S. Cl. 198—601 **8 Claims**



1. A dispersion feeder for use in a combination weighing machine of the type having a plurality of weighing units circularly arranged around said dispersion feeder and a plurality of linear vibration feeders radially arranged between said dispersion feeder and respective weighing units for transferring product from said dispersion feeder to said weighing units; said dispersion feeder comprising a dispersion table generally symmetric about a vertical axis for dispersedly transferring product fed onto said table toward the periphery thereof, a first movable support base disposed under said table, a central elastic column having an upper end affixed to said dispersion table and a lower end affixed to said first support base for movably supporting said table above said first support base, a second suport base disposed under said first suport base, a plurality of elastic columns having upper ends affixed to said first support base and lower ends affixed to said second suport base for movably supporting said first support base above said second support base, and means affixed to said dispersion table for applying a force thereto to impart to said dispersion table a precessional movement about said vertical axis and to induce orbital movement of said first support base about said vertical axis.

4,941,566

SPIRAL CONVEYOR WITH TEXTURED CAPSTAN

Guy L. Irwin, 512 Oreland Mill Rd., Oreland, Pa. 19075

Filed Feb. 21, 1989, Ser. No. 312,810

Int. Cl.[5] **B65G** *21/18*

U.S. Cl. 198—778 **10 Claims**

1. A spiral conveyor, comprising:

a conveyor belt;

said conveyor belt being of a type that is capable of telescoping at one edge to conform to a spiral shape;

a capstan;

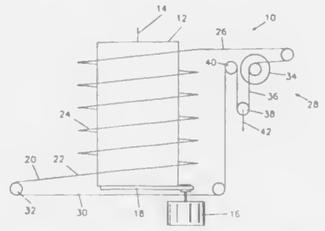
said capstan being generally cylindrical with a vertical central axis;

means for rotating said capstan about said vertical central axis;

a peripheral surface on said capstan;

at least a portion of said conveyor belt being conformed in said spiral shape with an inner edge thereof contacting said peripheral surface;

means for applying a longitudinal tension to said conveyor



belt at least in a vicinity of a departure of said conveyor belt from said spiral shape;

said inner edge including a plurality of protuberances;

a plurality of grooves in said peripheral surface; and

said plurality of grooves being shaped and disposed to interact with said plurality of protuberances to modify a cumulative friction between said inner edge and said peripheral surface;

said capstan includes a plurality of parallel vertical bars;

outer surfaces of said vertical bars forming said peripheral surface; and

said plurality of grooves being disposed in said outer surfaces.

4,941,567

CONVEYOR BELT

Lennart Olsson, Nyhamnsläge, Sweden, assignor to Frigoscandia Contracting AB, Helsingborg, Sweden

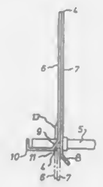
PCT No. PCT/SE86/00582, § 371 Date Jun. 21, 1988, § 102(e) Date Jun. 21, 1988, PCT Pub. No. WO87/04136, PCT Pub. Date Jul. 16, 1987

PCT Filed Dec. 22, 1986, Ser. No. 209,683

Claims priority, application Sweden, Dec. 27, 1985, 8506136

Int. Cl.[5] **B65G** *21/18*

U.S. Cl. 198—778 **4 Claims**



1. A conveyor belt which is adapted in endless design to follow, through a part of its length, a path comprising a number of superimposed, helically extending tiers forming a belt pile, said belt conveyor consisting of mutually articulated and relatively adjustable link means, each comprising a bottom part (2) and spacer means (3) arranged at the longitudinal edges of said bottom part and forming the two sides of the belt, said spacer means being adapted, with their upper edge portions

(4), to bear against the lower edge portions of the overlying tier of the conveyor belt and being fixedly connected, through a part (6) of their length, to the longitudinal edges of said bottom part, and and through the remaining part (7), being movably relative to said bottom part, characterized in that each spacer means (3) on the outer side of the belt pile is provided with shoulders (8, 9) mutually displaced in the lateral direction of the belt (1) and, for engaging both the inner and the outer side of an upper edge portion (4) of the corresponding spacer means of the underlying belt tier, and thus for positively guiding this edge portion in both lateral directions between said oppositely directed shoulders, and that each spacer means (3) on the inner side of the belt tier has at least those shoulders (8) which are intended to engage the inner side of an upper edge portion (4) of the corresponding spacer means of the underlying belt tier, and characterised in that the shoulder of the spacer means (3), which shoulder is intended to engage the inner side of said upper edge portion (4), is formed by a flange (8) which is directed obliquely downwardly and inwardly from the spacer means part (7) which is movable relative to said bottom part (2), and that the shoulder of said spacer means (3), which shoulder is intended to engage the outer side of said upper edge portion (4), is formed by a lower portion (9) of the spacer means part (6) which is fixed relative to said bottom part (2), said portion (9) being angled obliquely downwardly and outwardly.

4,941,568

ACCURATE TRACKING CENTER DRIVEN OPEN AREA BELT

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 105,011, Oct. 6, 1987, abandoned. This application Dec. 4, 1989, Ser. No. 445,916

Int. Cl.[5] **B65G** *17/06*

U.S. Cl. 198—853 **22 Claims**



1. An integrally molded plastic module having a plurality of elongated members joining first and second groups of link ends, said module suitable for forming a linked conveyor belt by pivotally connecting a multiplicity of such modules end-to-end, said module comprising:

a plurality of links spaced apart a first selected distance, selected ones of said spaced links including an elongated member extending between and joining two link ends of said first group to two link ends of said second group, each of said two link ends of said first group circumscribing a pivot hole aligned along a first pivot axis, and each of said two link ends of said second group circumscribing a pivot hole aligned along a second pivot axis parallel to said first pivot axis, said first and second pivot axes defining a common plane therebetween, said two link ends of each group spaced apart a second selected distance which is less than said first selected distance, one of said two link ends of said first group including a portion extending perpendicular to and away from said pivot axes such that intermeshing of link ends of said first group with said second group is selectively limited, and said plurality of elongated members being resistant to bending in a direction so as to maintain said common plane between said first and second pivot axis; and

a cross member integrally molded with and joining each of said plurality of spaced links to maintain each one of said plurality parallel to each other and spaced at said first selected distance, said cross member and said plurality of links defining a first side and a second side.

4,941,569

KEY CASE HAVING A SWING-OUT FLAT KEY

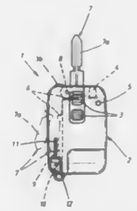
Martin Lindmayer, Böblingen; Rudi Kneib, Sindelfingen; Günther Weikert, Weil der Stadt; Wolfgang Schneider, Calw; Rolf Krügener, and Klaus-Peter Claar, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 14, 1989, Ser. No. 436,039

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1988, 3842790

Int. Cl.[5] **A45C** *11/32, 15/00*

U.S. Cl. 206—38.1 **9 Claims**



1. A key case having a swing-out flat key and a slotted passage opening for the flat key;

the key case having an opening extending continuously over a corner of the case with merging adjoining longitudinal sections at a front and side edge of the key case for entry of the flat key into the key case;

wherein the flat key has a grip part and a shank part angled approximately perpendicularly hereto;

wherein the flat key is articulated on the key case via a pivot means engaging its grip part in an area near a free end of the flat key;

wherein the pivot means is located in an area near to the front edge of the key case and at a lateral distance from the aforementioned corner of the key case and from a center longitudinal axis of the key case;

wherein the shank part of the flat key, in a swung-out working position, projects from approximately the center of the front edgeof the key case;

wherein the key case is designed as an elongated rectangular housing;

wherein the passage opening provides a boundary for a key receiving space which is a two-legged receiving shaft which, viewed over its length, is essentially L-shaped and extends with the longer leg of the L-shape along the side edge and with the shorter leg of the L-shape along the front edge of the housing;

wherein the flat key, in its non-working position is pivoted into a lowered position with its shank part entering into the longer leg of the L-shaped receiving space and with its grip part into a longitudinal area of the shorter leg of the L-shaped housing space near the corner of the key case; and

wherein the shank part of the flat key can be pivoted on the pivot means to travel outside the housing and around the aforementioned corner into a working position where the key shank part is pointed in the opposite direction from its non-working position and whereupon the grip part which is also pivoted the shank part engages into a longitudinal

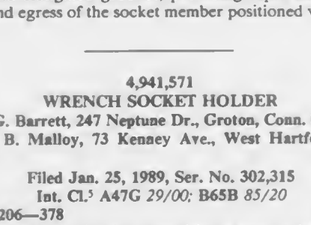
area of the shorter leg more remote from the aforementioned corner than the pivot means.

4,941,570

WRENCH SOCKET DISPENSER

Kurt J. Kruger, Milford, and John T. Loechner, Westport, both of Conn., assignors to Easco Hand Tools, Inc., Hunt Valley, Md.

Filed Apr. 19, 1989, Ser. No. 340,215
Int. Cl.[5] B65D *83/02, 43/20*
U.S. Cl. 206—267 **6 Claims**



1. A case for storing and selectively dispensing socket members for use with a universal socket wrench comprising:

A. a substantially continuous, unitary base comprising a plurality of elongated, parallel U-shaped grooves positioned in a side-by-side relationship, each of said elongated grooves having

a. a size and shape for receiving and holding one of said socket members,

b. sidewalls defined by said U-shape for separating said grooves, with said sidewalls being sufficient in height to laterally retain the socket members stored therein,

c. first and second open zones formed at each end of each elongated groove, and

d. a third, elongated open zone extending the entire length of each elongated groove, defined by the opening of said U-shape and enabling the socket members stored therein to be laterally removed and replaced in its entirety rapidly and efficiently;

B. a belt incorporating a single aperture zone which comprises a size and shaped substantially equal to the size and shape of the third open zone of the grooves of the base; and

C. at least two end pieces, each being

a. constructed for mounting to one side edge of said base for closing the first and second open zones thereof and preventing axial, longitudinal withdrawal of said socket member from said groove, and

comprising a belt receiving slot formed therein, positioned in juxtaposed spaced, facing cooperating relationship with the slot of the opposed end piece, defining a belt receiving track enabling the movement of the belt relative to the base

whereby the aperture zone of the belt is selectively positionable into overlying, juxtaposed, spaced relationship with any one of said elongated grooves, providing rapid and efficient ingress and egress of the socket member positioned within said groove.

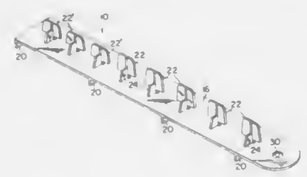
4,941,571

WRENCH SOCKET HOLDER

Charles G. Barrett, 247 Neptune Dr., Groton, Conn. 06340, and James B. Malloy, 73 Kenaey Ave., West Hartford, Conn. 06107

Filed Jan. 25, 1989, Ser. No. 302,315
Int. Cl.[5] A47G *29/00;* **B65B** *85/20*
U.S. Cl. 206—378 **20 Claims**

1. Wrench socket holder comprising a support base, a resilient flexible wrench socket retaining member having a pair of upwardly converging opposite edges, an attaching means for connecting said wrench socket retaining member to said support base for flexure in generally tangential directions about an upwardly extending axis of symmetry of said wrench socket



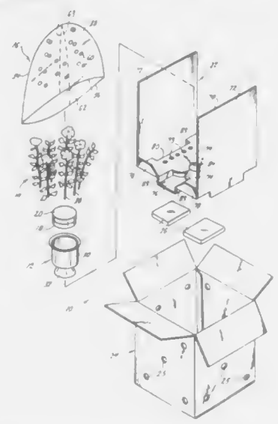
retaining member, said axis being generally normal to said support base, said flexure causing each of said opposite edges to move in an arc about said upwardly extending axis of symmetry.

4,941,572

METHOD AND PACKAGE FOR FRESH CUT FLOWER ARRANGEMENTS AND PLANTS

Charles C. Harris, St. Louis, Mo., assignor to Jetram Sales, Inc., St. Louis, Mo.

Filed May 24, 1989, Ser. No. 357,062
Int. Cl.[5] B65D *85/50;* **A01G** *9/02;* **B65B** *55/18*
U.S. Cl. 206—423 **22 Claims**



1. A package for horticultural articles, the package comprising:

(a) a container for a horticultural article including an upper portion and a lower portion,

(b) a water-containing absorbent material disposed in the lower portion of the container adapted to receive the horticultural article,

(c) a foamed-in-place non-absorbent foam block disposed in the upper portion of the container above the absorbent material substantially completely filling the upper portion of the container to a selected level to support the article in a generally upright position and forming a substantially impervious cap for the absorbent material,

(d) a cover of plastic film disposed about the horticultural article, and

(e) a shipping container receiving the article container therewithin including means for holding the article container in a stable condition during shipping.

4,941,573

PACKAGE IDENTIFICATION SYSTEM

Leland L. Fuerstman, Charlotte, N.C., assignor to Color Ident Systems Corporation, Charlotte, N.C.

Filed May 26, 1988, Ser. No. 199,009
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—459 **15 Claims**



1. An identification system for distinguishing among the individual containers of a consumer package of beverages comprising

a plurality of beverage containers substantially identical in size and shape to each other and containing identical contents therein;

means removably holding said containers together for packaging said containers as an integrated consumer package of beverages;

a first indicia borne on the major surface area of each container with each indicia borne on each container being identical with the indicia of each of the other containers and serving to convey information about the beverage such as the name, origin, ingredients and the like;

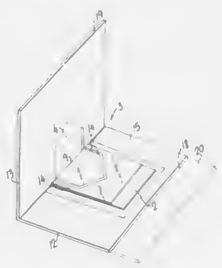
a smaller identifying indicia positioned on a minor surface area of each container, with the smaller identifying indicia on each container being distinctly and visibly different from the smaller, identifying indicia on each of the other containers in the consumer package so that during consumption of the beverage a user may readily distinguish his container from the other containers in the package.

4,941,574

PACKAGE FOR A LIQUID SAMPLE AND AN ASSOCIATED METHOD FOR PACKAGING A LIQUID SAMPLE

Frank Meehan, 203 Cathedral Ave., Hempstead, N.Y. 11550

Filed Aug. 11, 1989, Ser. No. 392,343
Int. Cl.[5] B65D *75/28*
U.S. Cl. 206—466 **28 Claims**



I. A package for a liquid sample comprising a sealed envelope containing a small quantity of liquid, said envelope including seal means which can be peeled open to provide access to said liquid, said envelope being relatively flat and thin, a flat protective enclosure for said envelope, said envelope being engaged within and enclosed in said enclosure, said enclosure having an opening through which said envelope is visible and engageable, and means releasably connecting said envelope in said enclosure such that upon engaging said envelope at said opening and applying a force to the envelope, the connecting means can be overcome and said envelope can be removed from the enclosure in intact sealed state, said enclosure being of a thickness to provide outer surfaces which extend beyond the envelope and protect the envelope.

12. A package for a liquid sample comprising a sealed envelope of film material containing a liquid sample, protective support means engaging said envelope around a portion of the perimetral extent of said envelope to leave a remaining portion of the envelope free and unsupported, said protective support means being relatively rigid compared to said envelope to hold said envelope with stability in a position in which said support means has outer surfaces between which said envelope is confined, and means for detachable separation of said envelope in intact sealed state from said support means by manually engaging said free and unsupported remaining portion of said envelope and detaching the envelope from the support means.

26. A packaging method for a liquid sample comprising:

sealing a liquid sample in an envelope of film material;

detachably supporting said envelope in a protective enclosure having greater rigidity than the envelope by engaging the envelope around a portion of the perimetral extent of the envelope to leave the envelope exposed outside the engaged portion and free and unsupported along the remaining portion of its perimetral extent,

providing the protective enclosure with a thickness such that the envelope is recessed below outer surfaces of the enclosure, and

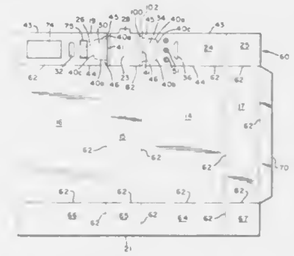
separating the envelope in intact state from the enclosure by manually engaging and pulling the exposed portion of the envelope to overcome the detachable support of the envelope by the enclosure.

4,941,575

SIFT-PROOF CARTON AND BLANK THEREFOR

Herbert Friedman, Fort Lee, N.J., assignor to Ivy Hill Corporation, New York, N.Y.

Filed Apr. 27, 1989, Ser. No. 344,972
Int. Cl.[5] B65D *5/70*
U.S. Cl. 206—621.3 **18 Claims**



1. In a carton comprising

(A) sides and ends defining a rectangular parallelepiped, said sides being formed by side panels and said ends by end panels, one of the carton ends comprising first, second, and third end panels which are connected to first, second and third side panels, respectively;

(i) said first and third end panels extending from said first and third side panels, respectively, a substantial distance towards said third and first side panels, respectively, in an at least partially overlying relationship,

(ii) said second end panel being pivotably connected to

said second side panel and extending partially over said first and third end panels; and

(B) means adhering said second end panel to the outer of said first and third end panels which permits said second end panel to be separated from said outer end panel and pivoted to expose the previously underlying portion of said outer end panel;

the improvement comprising

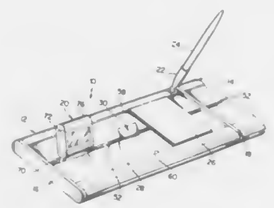
an insert having one surface thereof secured adjacent one end to said second panel and adjacent the other end to said outer end panel, thereby providing a sift-resistant carton.

4,941,576

HOLDER FOR A TAPE MARKER FLAG DISPENSER AND THE LIKE

Louis Sugarman, Barrington, and Max B. Dressler, Warwick, both of R.I., assignors to Alcraft, Inc., Pawtucket, R.I.

Filed Apr. 13, 1989, Ser. No. 338,230
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **12 Claims**



1. A holder for a dispenser for tape marker flags and the like wherein the dispenser includes a housing having an enlarged body portion and an upwardly extending open ended tubular neck portion of elongated cross sectional length and reduced cross sectional width on said body portion and a supply of tape marker flags in said body portion which are individually dispensable from said housing through said neck portion, said holder comprising a channel member having an upper surface and having a channel therein, said channel member being adapted to be received and supported on a supporting surface so that said upper surface faces upwardly, said channel including an enlarged inner portion and a reduced mouth portion which opens upwardly along said upper surface, said channel being open at one end thereof, said channel being dimensioned for receiving said dispenser therein through said open end and for positioning said dispenser so that said body portion is received in said channel inner portion and said neck portion extends upwardly into said mouth portion terminating adjacent said upper surface, said mouth portion being dimensioned for positioning said neck portion in substantially aligned relation therein and for preventing removal of said dispenser from said channel member therethrough.

4,941,577

PORTABLE ROBOTIC TOOL RACK

Herbert E. Ferree, Greensburg; Harry N. Andrews, Export; Frank W. Cooper, Jr., and Joseph R. Herberg, both of Monroeville Borough, all of Pa., assignors to Space Industries Partnership, L.P., Webster, Tex.

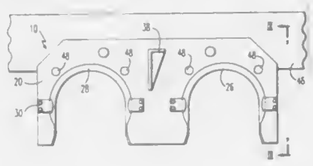
Filed Jul. 21, 1988, Ser. No. 222,584
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—70.6 **5 Claims**

1. A rack for holding a plurality of tools, each of said tools having means thereon for releasably engaging a tool using device, said rack comprising:

a plate member having a plurality of openings therein, each of said openings being dimensioned to receive one of said tools;

means for releasably securing said plate member to a surface;

self-engaging means associated with each of said openings for releasably securing said tool; and



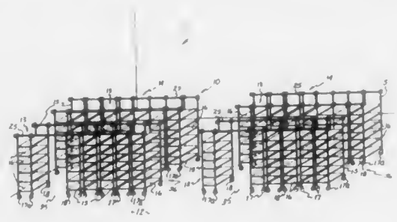
means associated with each of said openings for interacting with said tool using device to permit engagement and disengagement of said tool to said tool using device.

4,941,578

HIGH DENSITY STORAGE SYSTEM

Charles K. Deveniag, 11431 Village Brooke Ct., Cincinnati, Ohio 45249

Filed Aug. 5, 1988, Ser. No. 229,301
Int. Cl.[5] A47F *43/00*
U.S. Cl. 211—186 **8 Claims**



1. A system of shelving racks, said system comprising a pair of end racks and multiple inner racks supported between said end racks,

each of said racks having four vertical corner posts and horizontal shelves supported from said posts, each of said racks including said end racks having wheels mounted on the lower ends of said posts, said wheels being adapted to be rotated about horizontal axes and movable over a horizontal support surface,

guide means mounted on the tops of each of the corner posts of said racks,

a pair of upper straight, parallel guide rails supported solely from said guide means,

means for securing the guide means of said end racks to said guide rails, and

means for releasably locking at least two wheels of each of said end racks against rotation so as to selectively prevent movement of said end racks over said horizontal support surface.

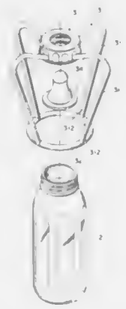
4,941,579

AUXILIARY DEVICE FOR A NURSING BOTTLE

Hwang-Sheng Lee, 84, Fl., 6-3, Sec. 3, San-Min Rd., Taichung, Taiwan

Filed Apr. 11, 1989, Ser. No. 336,420
Int. Cl.[5] A61J *9/00, 9/06;* A47G *23/02*
U.S. Cl. 215—11.1 **4 Claims**

1. An auxiliary device for a nursing bottle, said nursing bottle including a container for liquid with a mouth provided at an upper end of said container, a nipple, and an annular anchoring member for threaded engagement with said container so as to secure said nipple onto said upper end of said container, said auxiliary device including a plurality of plastic strips extending from an outer surface of an upper portion of said bottle to an outer surface of a lower portion of said bottle so that any one of said strips can be grasped by a hand of a baby, each of said strips has a generally horizontal portion



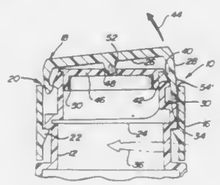
extending radially and outwardly from said upper portion of said bottle, and an inclined generally straight portion extending from an outer end of said horizontal portion inwardly to the lower portion of said bottle and the strips being sufficient in number so that at least two of said strips are always engageable with a horizontal surface for supporting the nipple and mouth of the container in an upwardly tilted disposition to prevent leakage of liquid from the container.

4,941,580

DISPENSING CLOSURE

Randall K. Julian, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed May 26, 1989, Ser. No. 357,092
Int. Cl.[5] B65D *41/32*
U.S. Cl. 215—235 **36 Claims**



1. A dispensing closure for attachment to a container for dispensing a product through an opening in the container comprising:

a base ring having means for attachment to said container permitting rotation without axial movement relative to said container;

a lid;

a hinge connecting said lid to said base ring allowing the lid to be swung between a closed position blocking access to said container opening and an open dispensing position; and

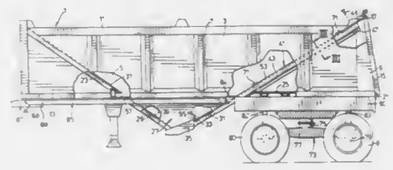
a cam element on said lid arranged so that when the base ring is rotated, the lid will be moved from its closed position toward its open position so that the lid can be swung to its open dispensing position.

4,941,581

CONVERTIBLE CONTAINER AND VEHICLE

Charles W. Searles; Robert A. Searles, and William S. Searles, all of Ontario, Canada, assignors to Searles Trailer and Equipment Ltd., Ontario, Canada

Filed May 29, 1987, Ser. No. 55,272
Int. Cl.[5] B65D *88/00*
U.S. Cl. 220—1.5 **26 Claims**



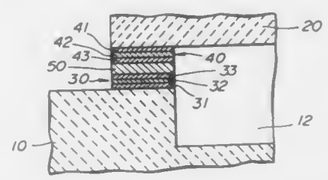
1. A convertible cargo container, comprising: sidewalls; a rear door movably mounted between the sidewalls; a front end wall extending between the sidewalls and sloping downwardly in the direction of the rear door; a floor extending between the sidewalls and forwardly from the rear door; a hopper means mounted between the floor and the front end wall; a support means on the sidewalls for supporting a sheet above the floor; and a movably mounted sheet having first and second positions, in the first position the sheet lying between the sidewalls, covering the hopper means, and in the second position the sheet being supported on the support means between the sidewalls, sloping downwardly in the direction of the front end wall, and between the hopper means and the rear door.

4,941,582

HERMETICALLY SEALED CERAMIC PACKAGE

Asao Morikawa, and Kazuo Kondo, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 2, 1989, Ser. No. 415,777
Claims priority, application Japan, Oct. 7, 1988, 63-132232[U]
Int. Cl.[5] B65D *6/32*
U.S. Cl. 220—2.1 R **10 Claims**



1. A hermetically sealed ceramic package for an electric or electronic device, comprising:

a base member to support said device, the base member being formed of a low temperature fired ceramic;

a cap member formed of a ceramic; and

a hermetically sealing joint provided between an upper surface of the base member and a lower surface of the cap member, the sealing joint comprising a copper-metallized layer formed on said upper surface of the base member, a first intermediate layer which is laid on said copper-metallized layer and is formed of a metal not alloyable with copper or gold, a first gold layer laid on said first intermediate layer, a copper-metallized layer formed on said lower surface of the cap member, a second intermediate layer which is laid on the copper-metallized layer on the said lower surface and is formed of a metal not alloyable with copper or gold, a second gold layer laid on said

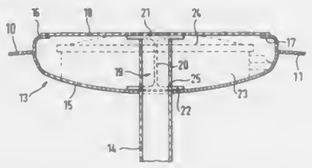
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second intermediate layer and a joint layer which is tightly interposed between said first and second gold layers and is formed of a gold-tin eutectic alloy.

4,941,583
PRESSURE TANK

Helmut Gerhard, Weltefeld, Fed. Rep. of Germany, assignor to Westerwaelder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Filed Jan. 2, 1990, Ser. No. 459,960
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 8901105[U]
Int. Cl.[5] B65D *88/06*
U.S. Cl. 220—5 A 10 Claims



1. A pressure-resistant tank having a casing composed of part-cylindrical casing portions with parallel longitudinal axes fitted between hollow longitudinal members, opposite longitudinal members being interconnected by tie rods which extend vertically through the tank interior,

wherein the tank casing is formed by only two casing portions fitted between top and bottom longitudinal members, said top longitudinal member being composed of a top shell which is curved transverse to the longitudinal direction and projects into the tank interior, and of a tension plate interconnecting the upper ends of the top shell.

4,941,584
REUSABLE PLASTIC DRUM CONTAINER ASSEMBLY

Robert B. Bowers, Park Ridge, and Mark Chookazian, Paramus, both of N.J., assignors to Ashland Oil Inc., Russell, Ky.

Division of Ser. No. 128,030, Dec. 3, 1987, Pat. No. 4,880,580.
This application Jun. 21, 1989, Ser. No. 369,778
Int. Cl.[5] B65D *7/00*
U.S. Cl. 220—5 R 8 Claims



1. A reusable plastic drum container assembly, which comprises:

a plastic drum shell;

a plastic bottom closure mounted to an end of said plastic drum shell;

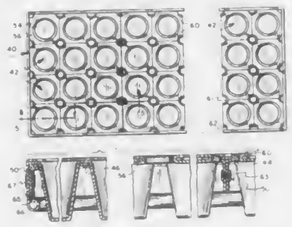
a plastic top closure mounted to another end of said plastic drum shell, said top closure being formed with a neck member comprised of a cylindrically-shaped portion including a cylindrically-shaped orifice extending upwardly from said top closure and formed with an indentation about a surface portion thereof; and

a fitting-receiving member including a fitting orifice mounted to said neck member, said fitting-receiving member formed with a circularly-shaped channel for receiving said neck member of said top closure, said fitting-receiving member being affixed to said neck member by thermoplastic electromagnetic material melted and conformed within an area defined by surfaces of said neck member and interior surfaces defining said channel of said fitting-receiving member.

4,941,585
BAKING PAN

Wilbert K. Hare, Lemont; Morris Kaufman, Morton Grove, and William M. Moroziuk, River Grove, all of Ill., assignors to Ekco/Glaco Inc., Humbolt, Tenn.

Filed May 12, 1988, Ser. No. 192,907
Int. Cl.[5] A47J *43/18*
U.S. Cl. 220—23.2 6 Claims



1. A baking pan assembly comprising a flat panel member formed to provide a downwardly extending flange at the periphery thereof, a plurality of relatively large apertures therethrough and a plurality of relatively small apertures therethrough, said small apertures positioned equi-distant from adjacent large apertures, a plurality of baking units, each baking unit formed to provide a central cup-like portion terminating at the open end thereof in an outwardly extending rectangular-shaped flange, each said baking unit having said central cup-like portion disposed within a large aperture and said rectangular-shaped flange overlying the flat panel member to dispose each corner portion of each flange adjacent a small aperture of said flat member, each corner of the baking unit flange is notched and the panel member is formed to provide an upstanding collar adjacent each small aperture swedged to entrap the adjacent flange corners of said baking units between said collar and said panel member.

4,941,586
CONTAINER

Tauno Tarna, Tampere, Finland, assignor to Sarvis Oy, Tampere, Finland

Filed Jan. 18, 1989, Ser. No. 298,091
Int. Cl.[5] B65D *8/02*
U.S. Cl. 220—83 12 Claims

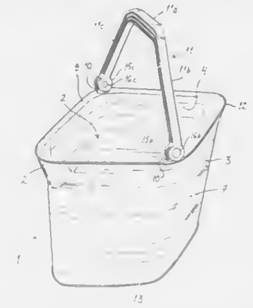
1. A container of an upwardly open type, such as a bucket, comprising:

a receptacle portion and a handle for carrying the receptacle portion in a suspended position;

a receptacle of a predetermined depth provided in the receptacle portion for receiving material therein, the receptacle being defined by an inner side wall terminating in an upward direction in a brim, and an inner bottom surface, the receptacle being contained within the receptacle portion defined by an outer side surface and an outer bottom surface, the surfaces constituting the main outer space-requiring dimensions of the container;

the outer side surface terminating in an upward direction in the brim and forming a cross-section area of substantially similar configuration along the most part of the direction of depth of the receptacle in a plane perpendicular to the direction of depth of said receptacle;

wherein the cross-section area is of an oblong configuration



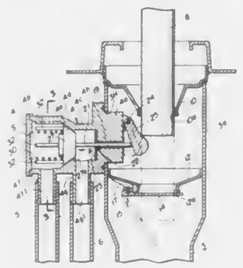
for allowing the container to be positioned in an ergonomically favorable position for carrying and handling, the direction of oblongness extending substantially parallel with the direction of operation of the container; and

wherein the brim and the area of the outer side surface which is immediately below it project outwardly towards the direction of oblongness at the region of one extremity of the oblong cross-section to form a spout in order to facilitate pouring of the material out of the receptacle.

4,941,587
FUEL TANK SYSTEM

Yoshinobu Terada, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,898
Claims priority, application Japan, Jun. 6, 1988, 63-74857
Int. Cl.[5] B65D *6/12, 6/40*
U.S. Cl. 220—85 VS 11 Claims



1. a fuel tank system comprising:

a fuel tank;

a fuel filler pipe connected to said fuel tank for insertion of a refueling nozzle to refuel said tank;

a guide member disposed in said fuel filler pipe, said guide member having a central hole of a diameter for insertion of said refueling nozzle;

a shutter assembly disposed in said fuel filler pipe spaced from said guide member, said shutter assembly having a central hole of a diameter for insertion of said refueling nozzle and a shutter operable by a refueling nozzle inserted into the fuel filler pipe through said guide member central hole and said shutter assembly central hole;

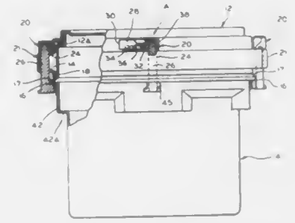
an engagement member disposed in said fuel filler pipe and angularly movable through a constant angle by being engaged by the refueling nozzle inserted in said fuel filler pipe and extending from said guide member to said shutter assembly; and

a fuel venting mechanism including an on-off valve responsive to the angular movement of said engagement member for providing fluid communication between said fuel tank and an associated mechanism.

4,941,588
OVERPACK DRUM

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Des Plaines, Ill.

Filed Aug. 28, 1989, Ser. No. 398,960
Int. Cl.[5] B65D *85/00*
U.S. Cl. 220—302 7 Claims



1. A salvage drum for containing hazardous materials comprising:

a lid having side walls with a circular bottom;

a container having a side wall that is circular in cross section, said side wall having a sealing means extending therefrom that is in contact with said lid's circular bottom when said lid is placed in its covering position on top of said container's side walls;

a plurality of cam locks located around the periphery of said lid, said cam locks having a locked and open position and being associated with said lid and each having a cam surface formed to lock the lid on the container in the closed position and release the lid from the container in its open position, said cam locks each having a latch bolt associated with each of said cam surfaces, said cam surfaces force said lid into locking contact with said container lid in said locked position and releasing pressure on said container lid in said open position, whereby said cam locks act to cause sufficient release and locking of said lid to said container.

4,941,589
INNER LINING FOR CARGO CONTAINER

Veronica Chen, No. 14, Lane 223, Chin-Shan Rd., San-Min Dist., Kaohsiung City, Taiwan

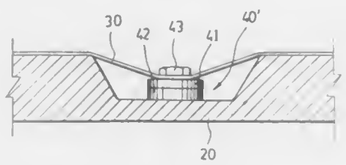
Filed Sep. 28, 1989, Ser. No. 413,893
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—403 4 Claims

1. A device for lining the inner surface of a cargo container comprising:

a fluid impervious flexible bag which lines the entire inner surface of the wall of the cargo container; and

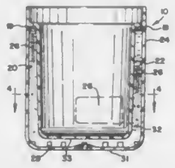
magnetic pieces to hold the flexible bag against the inner surface of the wall of the cargo container, the magnetic elements being distributed on and attached to the inner surface of the wall of the cargo container at appropriate

intervals before the flexible bag contacts the wall of the cargo container;



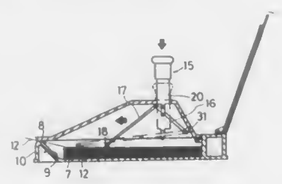
bolts adhered to said magnetic pieces; and
nuts to clamp the flexible bag between said bolts and nuts.

4,941,590
WATER-FILLED GLASS TOY
Terese A. Pantaleo, 7854 Redondo La., Orland Park, Ill. 60462, and Donald E. Perrin, 255 N. 6th St., Clinton, Iowa 52732
Filed Jun. 16, 1989, Ser. No. 367,380
Int. Cl.[5] B65D *65/00*
U.S. Cl. 220—428 **6 Claims**



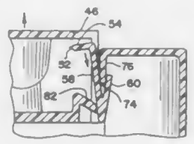
1. An article of manufacture comprising:
(a) an inner surface;
(b) an outer, generally visually transparent surface;
(c) a generally annular space between and defined by said inner and outer surfaces, said annular space containing a liquid;
(d) a generally flat disk within said annular space and floating upon said liquid; and,
(e) means within said annular space for imparting turbulence to said liquid as said article is rotated about its axis.

4,941,591
OFFICE-TYPE STATIONERY SET
Shuh-Chin Lin, 5, Lane 4, Alley 35, Anlo Rd., Chung-Ho, Taipei Hsien, and Min-Ling Li, Taipei, both of Taiwan, assignors to Shuh-Chin Lin, Taiwan
Filed Jan. 30, 1989, Ser. No. 304,856
Int. Cl.[5] B65H *1/04*
U.S. Cl. 221—100 **3 Claims**



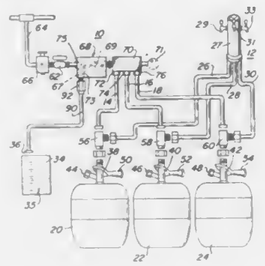
1. An office-type stationery set, which comprises:
a basic seat to be placed on a desk; said seat having a front wall and a rear wall, the basic seat including:
at least one pen-stand set on a top of a pen-stand seat to one side of the basic seat,
a paper deposit box on one portion of the basic seat adapted to hold at least one memo sheet, said box having a lid and a slope on an inner front end permitting the at least one memo sheet to uprise along and pass through a chink between a top rim of the front wall and the lid, and,
a paper dispensing device connected with a protrusion on the lid of the paper deposit box;
an upright paper holder seat connected on the rear wall of the basic seat for removably receiving selected ones of said at least one memo sheet.

4,941,592
HINGED DISPENSING CLOSURE WITH A TAMPER-EVIDENT SEAL
Lawrence R. Kitterman, Antioch, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.
Filed Jun. 19, 1989, Ser. No. 367,868
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—23 **7 Claims**



1. A plastic molded tamper-evident dispensing closure comprising a body with means for securance to a container and a lid hingedly secured to said body and movable from a closed non-dispensing position to an open dispensing position on said body, said body further defining a dispensing opening,
tamper-evident seal means integrally formed with said lid and interlocked with said body in said closed non-dispensing position,
said seal means comprising a seal segment frangibly connected to said lid and which is readily visible to a user of the closure, frangible means connecting said seal segment and said lid, and an integral depending locking section extending downwardly from said seal segment, said locking section including a locking step extending laterally from said locking section,
said body defining recess means below said seal segment and adjacent said locking step and including a first body portion, said locking step extending laterally into said recess with said first body portion overlying said locking step for engagement with said locking step to prevent movement of said lid from said closed position, and said body providing a second portion opposite said overlying first body portion and confronting said locking section for maintaining said locking step beneath said overlying first body portion,
whereby said lid may not be moved from said closed non-dispensing position without severing said frangible means to separate said seal means from said lid.

4,941,593
CLEANING SYSTEM FOR BEVERAGE DELIVERY CONDUITS
Robert C. Hicks, 273 Green Hill Rd., Telford, Pa. 18969, and Raymond M. Benyaker, 117 Canterbury La., Lansdale, Pa. 19446
Filed Jan. 11, 1989, Ser. No. 295,760
Int. Cl.[5] B67D *1/08*
U.S. Cl. 222—148 **8 Claims**



1. In combination with a beverage delivery system for delivering a beverage for a beverage source through conduits to a dispenser, an automatic cleaning system connected to said beverage delivery system to permit selective cleaning of said conduits comprising:
a. A source of pressurized water,
b. Multiple shuttle valves connected to said conduits for selectively connecting said beverage source to said dispenser through said conduits to permit beverage to be dispensed during a normal operation of said beverage delivery and to block the passage from said beverage source to said conduits during said cleaning operation,
c. a source of cleaning solution,
d. means for selectively connecting said pressurized water to cause water to flow through said conduits and said dispenser during said cleaning operation,
e. means connecting said source of cleaning solution to cause a predetermined amount of cleaning solution to be mixed with the water flowing through said conduits,
f. said predetermined amount of cleaning solution corresponding to the pressure of the water entering said conduits, and
g. means to measure the pressure of the water and the cleaning solution entering the conduits during the cleaning operation, the means to measure the pressure comprising a pressure gauge which provides information to effect a change of concentration of the cleaning solution.

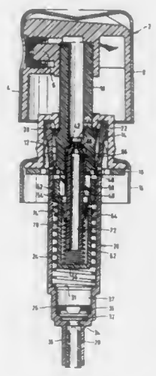
4,941,594
DISPENSING-TUBE AND CAP HOLDER FOR USE IN COMBINATION WITH AN AEROSOL CAN
Edwin L. Larson, 2501 Wellesley Ave., Los Angeles, Calif. 90064
Filed Jun. 2, 1987, Ser. No. 57,397
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—192 **1 Claim**

1. A dispensing-tube and cap holder for use in combination with an aerosol can including a cylindrical container which has an annular sidewall, a top peripheral rim and a bottom peripheral rim, a valve which is fluidly coupled to the cylindrical container and a cap which is used for covering the valve when the aerosol can is not in use and a dispensing-tube which may be fluidly coupled to the valve, said dispensing-tube and cap holder comprising:
a. a curved, rectangular sheet having a front surface, a rear surface, a top edge, a bottom edge and two side edges the length of which is slightly shorter than the length of the cylindrical container;
b. sheathing means for holding the dispensing-tube, said sheathing means being disposed on one of said two side edges;
c. tube-tensioning means for securing the dispensing-tube in said sheathing means, said tube-tensioning means being



disposed on said front surface of said curved, rectangular sheet adjacent to said bottom edge;
d. cap-holding means for holding the cap, said cap-holding means being disposed on said front surface of said curved, rectangular sheet adjacent to said top edge; and
e. attaching means for attaching said curved, rectangular sheet to the cylindrical container so that it is mounted on the annular sidewall of the cylindrical container.

4,941,595
SPRAY PUMP
Pedro P. Montaner, and Victor R. Turró, both of Barcelona, Spain, assignors to Monturas A.S., Barcelona, Spain
Filed Aug. 14, 1989, Ser. No. 393,874
Claims priority, application Spain, Oct. 10, 1988, 8803075
Int. Cl.[5] B05B *11/02*
U.S. Cl. 222—321 **4 Claims**



1. A spray pump of the type comprising: a main cylinder in which there is defined a pumping chamber; a main piston mounted to slide in said main cylinder between a first inactive position and a second end-of-stroke position, said piston being extended by a hollow rod and having a valve seat therein; first spring means urging said piston to said first position; a secondary cylinder comprised within the main cylinder and having a closed bottom and an open upper end; a secondary piston provided with an upper extension having an end in contact with said valve seat; said secondary piston being mounted to

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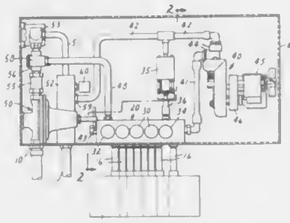
slide within said secondary cylinder between a first closed position in which the end contacts the valve seat and a second open position, in which the end is not in contact with said valve seat; and a second spring means urging said secondary piston to said first position therefore, characterised in that there is a fixed connection between said main piston and said secondary cylinder, forming a space therebetween through which the pumping chamber and said secondary cylinder are in communication.

4,941,596

MIXING SYSTEM FOR USE WITH CONCENTRATED LIQUIDS

John L. Marty, White Bear Lake, and Philip S. Plumbo, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 14, 1986, Ser. No. 884,994
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—144.5 **2 Claims**



1. A fluid dispensing system for dispensing a solution comprising a predetermined amount of a concentrate together with a carrier fluid, said system comprising

a closed manifold chamber for storing a quantity of carrier fluid,

a plurality of ports leading to said manifold chamber, each of said ports being connected by a valve to said manifold chamber and being connected to a supply of concentrate,

a first positive displacement pump connected to said chamber and operable upon each cycle of said pump to displace from said manifold chamber a predetermined volume of said carrier fluid and to replace it with an equal volume of concentrate;

a second positive displacement pump connected to said manifold chamber for pumping a second predetermined volume of fluid from said manifold chamber during each cycle, which second predetermined volume is different from that of said first pump during each cycle of operation;

a pressure regulator, said pressure regulator being adapted for connection to a source of carrier fluid and means for connecting said pressure regulator to said manifold chamber, said means including a valve for controlling the flow of fluid from said pressure regulator to said manifold chamber;

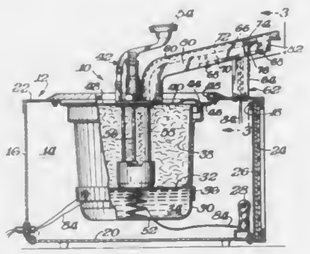
whereby, operation of said first pump and said second pump will draw predetermined amounts of concentrate through said ports into said manifold chamber and a predetermined amount of carrier fluid may be dispensed through said manifold chamber. cm 2. A fluid dispensing system according to claim 1 wherein said system comprises an output manifold having a passageway connected to receive discharge from said first pump and from said second pump and carrier fluid direct from said regulator.

4,941,597

DISPENSER WITH HEATED SPOUT

David A. Lopez, Newark, Del., and Luther Toulson, Marydel, Md., assignors to Metal Masters Foodservice Equipment Co., Smyrna, Del.

Filed Oct. 25, 1985, Ser. No. 791,599
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—146.5 **10 Claims**



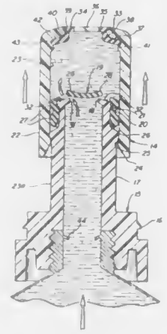
1. In a dispenser comprising a housing, a product container positioned within and supported by the housing, product heating means for maintaining the contents of the container at an elevated temperature, pump means for removing product from the container, a spout connected to receive product removed from the container by the pump, and spout heating means for maintaining the spout and the product contained therein at an elevated temperature whereby the product is maintained in a flowable state, the improvement according to which the spout heating means comprises a base upwardly extending from the housing and a heat conductive elongate block secured to the base, the block having opposite side surfaces and a top surface constructed and arranged to engage the underside of the spout in heat transfer relationship therewith, means heating the block, and a heat conductive sheath engaging the upper portion of the spout and the side surfaces of the block in heat transfer relationship therewith.

4,941,598

DOSING CAP

Lawrence E. Lambelet, Jr., Flemington, N.J., and Thomas A. Frazier, Williamsport, Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Nov. 8, 1988, Ser. No. 268,416
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—321 **7 Claims**



1. A dosing and dispensing apparatus for supplying a measured dose of a viscous product from a container through an opening in the container comprising:

(a) means for sealingly attaching the apparatus to said container in communication with said opening;

(b) a conduit for communicating with said opening and for directing product out of said container into a dosing chamber;

(c) an expandable dosing chamber communicating with said conduit, having a predetermined minimum volume in a contracted position and a predetermined maximum value in an expanded position, said dosing chamber partially defined by a cap member which surrounds and slidably engages said conduit so as to be telescopingly received on said conduit;

(d) stops for restricting the sliding movement of said cap beyond an extended position where said cap and conduit define the expanded position of said dosing chamber;

(e) a check valve associated with said conduit and seated on a first end of said conduit to permit flow of product through said conduit into said dosing chamber and preventing flow out of said dosing chamber through said conduit said check valve including a depending skirt surrounding the outer surface of said first end of said conduit and sandwiched between said outer surface and said cap member to provide a seal therebetween;

(f) a discharge opening defined by said dosing chamber through which product is discharged from said dosing chamber when said dosing chamber contains product and is collapsed from its expanded position to its contracted position; and

(g) a back pressure means for controlling the flow of product out of said discharge opening by permitting flow of product out of said discharge opening when the pressure within the chamber is greater than that necessary to expand the chamber from its contracted position and substantially preventing flow when the pressure is no greater than that needed to expand the chamber from its contracted position.

4,941,599

METHOD AND APPARATUS FOR THOROUGHLY MIXING A SUSPENSION CONTAINING A FLUID AND SOLID MATTER CONSTITUENTS

Ulrich Reinertz, Wuppertal; Wolfgang Tröger, Pulheim, and Jürgen Wockel, Wuppertal, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 15, 1988, Ser. No. 284,998
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1987, 3742466
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—401 **19 Claims**

1. A spray device for spraying a thoroughly mixed suspension of liquid and solid matter constituents onto a surface, the spray device comprising:

a pressure and seal tight container enclosed on all sides to define a chamber for accommodating the suspension therein, said container having a lower portion terminating in a base wall defining a base region of said chamber whereat said solid matter constituents tend to collect to form a sediment and said container also having an upper portion defining a top region of said chamber;

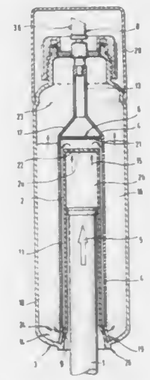
aperture means formed in said base wall for leading directly into said base region;

pressure charging means mounted on said container for pumping air into said chamber, said pressure charging means including a cylinder and a piston for generating a charge of air under pressure in said cylinder;

passage means connecting said cylinder to said aperture means for conducting said charge of air in a first direction from said cylinder to said aperture means so as to permit said charge to enter into said base region to break up said sediment and thoroughly mix said solid matter constituents in said liquid as the air under pressure rises in said chamber and through said suspension to collect in said top region of said chamber to impart pressure to said suspension;

said aperture means being formed only in said base wall so as to permit the full flow of sid charge of air to act on said sediment in said base region;

a nozzle unit mounted on said container and including nozzle



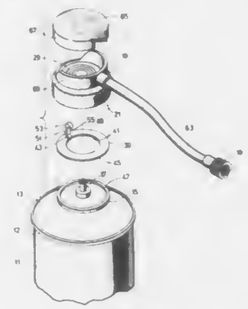
channel means leading from said passage means to the ambient; and, valve means for opening said nozzle channel means to the ambient to thereby vent said chamber and permit the air of said charge to entrain the thoroughly mixed suspension and flow out of said chamber through said aperture means and along said passage means in a second direction opposite said first direction and into said nozzle channel means to enter the ambient as a spray.

4,941,600

DISPENSER LOCK ASSEMBLY FOR A PRESSURIZED CONTAINER

Gary H. Berriochoa, Roanone, and Howard Dudley, Grapevine, both of Tex., assignors to Technical Chemical Company, Dallas, Tex.

Filed Aug. 31, 1989, Ser. No. 401,644
Int. Cl.[5] B65D *83/24*
U.S. Cl. 222—402.13 **11 Claims**



1. A lock assembly for continuously dispensing the pressurized contents of an aerosol container of the type having an upstanding valve stem protruding from one end of the container, the lock assembly comprising:

a cap having a generally cylindrical skirt portion adapted for attachment to the container in a position surrounding the

stem, the skirt portion extending upwardly to define an interior recess;

an actuator tab hingedly connected to the cap within the interior recess and extending across the stem when the skirt is attached to the container, the actuator tab including a stem-engaging internal bore and a fluid passageway for connecting a stem so engaged to a discharge orifice;

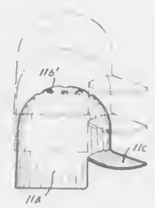
a ring lock located within the cap interior recess below the actuator tab, the ring lock having a ring-shaped body with a central opening for receiving the valve stem and having a hook portion which extends upwardly from the ring-shaped body generally parallel to the valve stem for engaging the actuator tab when the actuator tab is depressed within the interior recess of the cap.

4,941,601

CAP DRIER AND SHAPER

Ronald K. Thomas, and Judith A. Thomas, both of 1850 U.S. Hwy. 27 South, Avon Park, Fla. 32825

Filed Aug. 16, 1989, Ser. No. 394,475
Int. Cl.[5] A42C *1/00*
U.S. Cl. 223—24 **2 Claims**



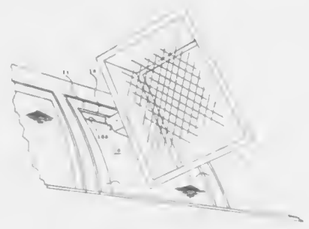
1. In combination a fabric cap and a cap drier and shaper comprising a continuous side wall blending into a crown, and a bill extending outwardly from and above a free edge of said continuous side wall, where a cut-out area in said continuous side wall beneath said bill serves a stacking relationship, and where said fabric cap overlies said continuous side wall, said crown and said bill in a drying and shaping relationship.

4,941,602

AIR DRYING AIR CHILLING CONTAINER ATTACHABLE TO A CAR WINDOW

Todd A. Wells, P.O. Box 8382, Richmond, Va. 23226

Continuation-in-part of Ser. No. 124,581, Dec. 29, 1987, abandoned. This application Jul. 18, 1989, Ser. No. 402,386
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.45 R **5 Claims**



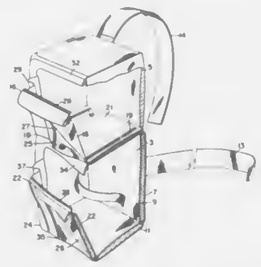
1. Apparatus for holding articles outside of an automotive vehicle while exposing them to the air stream resulting from movement of the vehicle, comprising a container having walls completely enclosing an interior chamber adapted to hold articles such as shoes and canned beverages, access means for accessing said chamber, and means for removably attaching the container to a window of a vehicle so that the container is held in a fixed position outside of the vehicle, said container walls having openings therethrough adapted to permit movement of air through the interior of the container while it is in said fixed position during travel of the vehicle to which the container is so attached.

4,941,603

INSULATED BACKPACK

John J. Creamer, 3207 Illinois Rd., Wilmette, Ill. 60091, and John Muller, 720 Mountain Rd., West Hartford, Conn. 06117

Filed Mar. 16, 1987, Ser. No. 26,114
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—148 **3 Claims**



1. A backpack having a plurality of compartments including a thermally insulated for carrying cold articles within a lower end portion of said backpack, which has at least one other compartment located above said thermally insulated compartment, said backpack further comprising;

A. A housing, formed of a combination of semi-flexible, waterproof material and composite, insulating material, said composite material bbeing located between layers of said semi-flexible material to define a first wall structure, said housing also formed by said semi-flexible material to define a second wall structure, said thermally insulated compartment being defined by said first wall structure, for preventing thermal conductivity of said cold articles from reaching a wearer of said backpack, while maintaining a desired lower temperature of said articles, said at least one other compartment being defined by said second wall structure;

B. Carrying straps which are integrally attached to the front side of said housing, for adjustably adapting said backpack to said wearer;

C. A first access opening located at the rear side of said housing, leading into said other compartment, a second access opening, located at the rear side of said housing and leading into said insulated compartment, a sealable panel within said housing and defined by said first wall structure, one edge of said panel being pivotably attached to the rear side of said housing, the remaining edges of said panel being removably attached to the remaining wall structure of said housing so as to be in a horizontal position between said compartments;

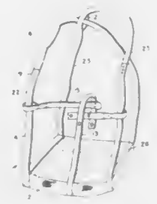
D. Said sealable panel dividing said thermally insulated compartment and said other compartment whereby each compartment is accessible through its respective first and second access openings and both compartments are accessible through the first opening so as a large single compartment is obtained when said panel is detached from said housing and positioned in an upright position.

4,941,604

FRONT PACK INFANT CARRIER

Nell N. Nagareda, 1746 Malia St., Honolulu, Hi. 96819

Filed May 1, 1989, Ser. No. 345,228
Int. Cl.[5] A47D *13/02*
U.S. Cl. 224—160 **12 Claims**



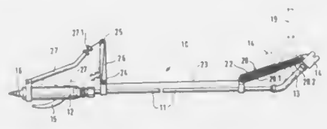
9. A front pack child carrier comprising a thick cushioned seat having a covering extending around the seat and having an upper face, a bottom face, a front face, a rear face, and left and right side faces, first and second shoulder straps extending upward in loops between diametrically opposite corners, the first strap extending from a corner at the intersection of the front face and right side face to a corner at the intersection of the rear face and left side face, and the second shoulder strap extending from an intersection of the front face and left side face to an intersection of the rear face and right side face, a horizontal waist strap having looped ends for surrounding front portions of the shoulder strap above a front face of the seat and a vertical strap having a loop around the horizontal strap between the front portions of the shoulder strap and extending downward therefrom over the front face and beneath the bottom of the seat, and a strap extending from the rear of the seat for being held to the waist of the wearer wherein the strap which extends from then rear of the seat is an extension of the vertical strapk which extends from the horizontal strap downward around the seat bottom face and terminates in a loop which is attachable to a device extending around a wearer's waist.

4,941,605

PRESSURE AIR TOOL FOR BLOWING THREADS INTO THREAD GUIDING PIPES

Heinz Brunner, Albstadt-Ebingen, and Waldemar Pschellok, Albstadt-Tailfingen, both of Fed. Rep. of Germany, assignors to Sipra Patententwicklungs-und Beteiligungsgesellschaft mbH, Albstadt-Tailfingen, Fed. Rep. of Germany

Filed Sep. 12, 1988, Ser. No. 243,446
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731108; Feb. 1, 1988, 3802843
Int. Cl.[5] B65H *20/14*
U.S. Cl. 226—97 **4 Claims**



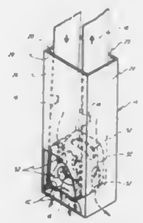
1. A pressure air tool for blowing threads into thread guiding pipes and comprising an air guiding pipe having opposite ends; a blowing head pivotably supported at one of said opposite ends of said air guiding pipe; a handle mounted on the other of said opposite ends of said air guiding pipe; and means for adjusting a position of said blowing head at said one of said opposite ends of said air guiding pipe, said adjusting means comprising a hand adjusting element supported on said handle and means for drivingly connecting said hand adjusting element with said blowing head, said blowing head including an end surface having a blowing opening and a plurality of slots extending radially of said blowing opening for receiving threads to be blown into a thread guiding pipe.

4,941,606

DEVICE TO STABILIZE A NOTCHED WEB IN A VACUUM BOX

Donald O. Bigelow, Webster, and Thomas W. Palone, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,229
Int. Cl.[5] B65H *20/24*; G11B *15/58*
U.S. Cl. 226—118 **4 Claims**



1. A device to stabilize a web with one or more openings, such as notches along the web as the web passes through a vacuum box, the box having walls defining an elongate chamber for receiving a loop of the web, the chamber having an opening through which the web enters and leaves the chamber, and vacuum means spaced from the opening for drawing air through the chamber so that the loop of web is held under tension in the chamber, the device comprising:

an endless ring of flexible material, the ring having a plurality of vent holes extending through the ring and spaced from each other, the holes being positionable within the loop of the web and being unattached to the vacuum box so that the ring is freely rotatable by the web in response to movement of the web through the chamber, the ring having an imperforate portion covering the opening in the web as the opening passes the ring so air is not drawn through the opening by the vacuum means as the opening passes the ring.

4,941,607

MAGAZINE FOR CALENDER ROLLS

Jürgen Schlunke, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 8, 1988, Ser. No. 282,021
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1987, 3742293
Int. Cl.[5] B65H *20/02*; B30B *30/00*
U.S. Cl. 226—189 **15 Claims**

1. A magazine for storage of calender rolls of the type having first and second end portions, comprising a pair of spaced-apart frame members; a row of substantially vertically spaced-apart mobile holders on each of said frame members, each holder on one of said frame members being disposed at the level of a holder on the other of said frame members and each holder having means for supporting one end portion of a roll, said holders being movable to and from predetermined retracted positions; means for moving said holders relative to the

respective frame members; and friction wheels provided on at least one of said frame members and operative to engage rolls



the end portions of which are carried by pairs of said supporting means in retracted positions of the respective holders.

4,941,608

HOT WATER SUPPLYING SYSTEM

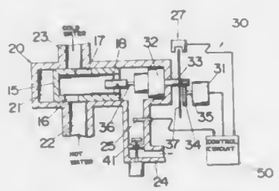
Tomoyuki Shimizu, Himeji; Yoshikazu Taniguchi, Yamasaki; Motohiro Higuchi, Ako, and Masashi Suzuki, Tatsuno, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Dec. 11, 1989, Ser. No. 448,638

Claims priority, application Japan, Dec. 23, 1988, 63-326961; Dec. 23, 1988, 63-326962; Dec. 23, 1988, 63-326963; Dec. 23, 1988, 63-326964; Dec. 23, 1988, 63-326967

Int. Cl.[5] G05D *23/12*

U.S. Cl. 236—12.12 9 Claims



1. A hot water supplying system comprising:

hot and cold water inlets adapted to be coupled respectively to hot and cold water sources;

an outlet;

a mixing chamber in fluid communication with said hot and cold inlets as well as said discharge outlet;

a mixing valve operatively connected to an electric motor to be thereby movable within said mixing chamber so as to vary the mixing ratio of the volume of the hot water to the cold water being fed from said hot and cold water inlets for discharging the water through said outlet,

controller means having input means to select a temperature of the water intended to be discharged from said mixing chamber through said outlet, said controller means controlling said motor, in accordance with a predetermined relation between a temperature scale determined in said controller means and the position of said mixing valve in said mixing chamber, to move said mixing valve into a suitable position in order to discharge the water at said temperature selected at said input means;

said mixing valve comprising a temperature-responsive actuator which adjusts the position of the mixing valve independently of the control of said controller means in response to the temperature of the water being discharged through said outlet for self-adjustment of the water temperature to said selected temperature;

said system further including an initial compensation means which comprises:

temperature sensor means for sensing the temperature of the water being discharged from said mixing chamber;

positioning means for driving said motor to move said mixing chamber to a reference position;

deviation detecting means which detects a deviation between the temperature of the water being discharged with said mixing valve at said reference position and the temperature designated at said controller means as corresponding to said reference position of said mixing valve;

offset means for determining and storing an offset value which corresponds to the shifting amount of said mixing valve required to maintain said deviation within an acceptable level;

compensation means for reestablishing, based upon said offset value, the relation between said temperature scale at said controller means and the position of said mixing valve within said mixing chamber in order to exactly associate the temperature to be selected at said controller means with the position of said mixing valve for discharging the water at a temperature as close as possible to the temperature to be selected at said controller means.

4,941,609

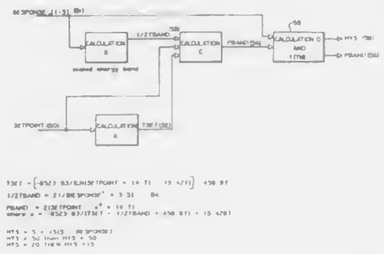
METHOD AND APPARATUS FOR CONTROLLING FIRING RATE IN A HEATING SYSTEM

James I. Bartels, Hudson; Michael J. Seidel, Wauwatosa, and Paul A. Schimbke, Shorewood, all of Wis., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 27, 1989, Ser. No. 303,438

Int. Cl.[5] G05D *15/00*

U.S. Cl. 236—78 D 4 Claims



1. In a method for controlling firing rate in a heating system to compensate for design thermal mass characteristics of the heating system, an improvement comprising the steps of:

deriving the design thermal mass characteristics of the heating system from heating system identification information identifying the heating system to be controlled;

selecting a weighted control response factor representative of load characteristics of a load type affecting firing rate control and representative of desired control tightness; and

controlling the firing rate, based on the weighted control response factor and the design thermal mass characteristics, to match the heating system, the load type being controlled and the desired control tightness for desired control.

4,941,610

CONSTRUCTION PIECE FOR TOY VEHICLE TRACK

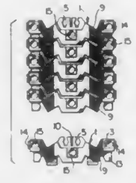
Vicente T. Frauca, Cosejo de Ciento, Spain, assignor to Irwin Toy Limited, Toronto, Canada

Filed Feb. 1, 1989, Ser. No. 304,621

Claims priority, application Spain, Jun. 24, 1988, 8802034; Nov. 24, 1988, 8803501

Int. Cl.[5] E01B *23/00*

U.S. Cl. 238—10 A 5 Claims



1. A toy track piece capable of being joined with other identical pieces to form a toy vehicle track by having interengaging means for connecting a front side of one piece to the rear side of an identical piece, characterized by being laterally elongated and having on one face a segment of a generally flat road-type track for a toy road vehicle, said road-type track being defined at its sides by flange elements which project upwardly from each end portion of said track piece and which together with flange elements of said other identical pieces form flanges enclosing the track sides, and by having on the opposite face a pair of projecting rectangular segments which together provide rail tracks for a toy railway vehicle, said rectangular segments being located inwardly of said end portions of the track piece which carry the flange elements.

4,941,611

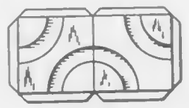
TOY ROADWAY TILE

Duane R. Arsenault, 86 Prospect St., Gardner, Mass. 01440, assignor to Alan J. Kirby, Tyngsboro and Duane R. Arsenault, Gardner, both of, Mass.

Filed Nov. 17, 1986, Ser. No. 931,639

Int. Cl.[5] A63H *18/02*

U.S. Cl. 238—10 A 4 Claims



4. A toy roadway tile comprising:

(a) a main body having a top surface, a bottom surface and at least three straight edges of equal length,

(b) roadways defining a pattern on said top surface,

(c) configuration defining land areas on said top surface, and wherein said land areas are elevated above said roadways, and

(d) a tab plate attached to the bottom surface of said main body and having projections which extend beyond each of said straight edges of the main body, to provide means for engaging similar roadway tiles, wherein said bottom surface of the main body is attached to the tab plate inwardly of the main body's edges, so that the projection of said tab plate is fully inserted between the tab plate and main body of a similar roadway tile so that a straight edge of said similar roadway tile abutts a straight edge of said roadway tile, and whereby the patterns of roadways on the abutting roadway tiles are contiguous, wherein said roadway tile further comprises a second main body which is attached to the other surface of said tab plate, said second main body having a top surface, a bottom surface and at least three straight edges of equal length, and wherein said top surface of the second main body includes a pattern of roadway and a configuration of land areas, which are of a different pattern and configuration than the roadways and land areas of said first main body, and wherein said land areas of the second main body are elevated above said roadways of the second main body.

4,941,612

UNIT FUEL INJECTOR

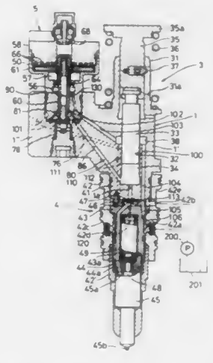
Xia-be Li, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 395,432

Claims priority, application Japan, Sep. 1, 1988, 63-216350

Int. Cl.[5] F02M *55/02, 57/02*

U.S. Cl. 239—88 6 Claims



1. A unit fuel injector comprising:

(a) a body;

(b) pump means mounted on said body and including a cylinder hole formed in said body, and a plunger received in said cylinder hole so as to be reciprocally movable along said cylinder hole to achieve a pump stroke and a suction stroke, a pump chamber being defined by said cylinder hole and said plunger;

(c) injection nozzle means mounted on said body and including an injection port connected to said pump chamber, and an injection valve for controlling the communication between said injection part and said pump chamber, said injection valve being opened upon increase of the pressure within said pump chamber to a predetermined level, thereby injecting fuel from said injection port;

(d) electromagnetic valve means mounted on said body and including a guide hole formed in said body, and a spill chamber formed in said body and connected to said guide hole, a valve seat being provided between said guide hole and said spill chamber, said electromagnetic valve means further including a valve member received in said guide hole for sliding movement there along, and a solenoid drive means for controlling the movement of said valve member, said valve member having a stem portion and an abutment portion formed on said stem portion and disposed in said spill chamber, said stem portion having a reduced diameter portion adjacent to said abutment portion, an annular space being defined by said reduced diameter portion and an inner peripheral surface of said guide hole, said spill chamber being connected to said pump chamber via said annular space, said valve member being movable between a first position where said abutment portion is held away from said valve seat and a second position where said abutment portion is held against said valve seat, the communication between said spill chamber

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and said pump chamber being interrupted when said valve member is moved from said first position to said second position during said pump stroke, thereby increasing the pressure within said pump chamber to start the injection of the fuel from said injection port, and said spill chamber and said pump chamber being communicated with each other via said annular space when said valve member is moved from said second position to said first position during said pump stroke, so that the fuel of high pressure within said pump chamber is spilled to said spill chamber to thereby terminate the fuel injection; and

(e) means for propelling said valve in such a direction that said abutment portion is moved away from said valve seat, said propelling means including a bore formed in said body, and a flange provided on an outer periphery of said stem portion of said valve member, said flange being slidably fitted in said bore to divide said bore into a pressure introduction chamber and a low pressure chamber along the axis of said valve member, said pressure introduction chamber being connected to said spill chamber so as to receive said spill fuel pressure in said spill chamber, said low pressure chamber being connected to a low pressure source disposed exteriorly of said body, the pressure of said low pressure source being lower than said spill fuel pressure, whereby said valve member is propelled in a direction away from said valve seat due to a pressure differential across said flange when said pressure introduction chamber receives said spill fuel pressure.

4,941,613

FUEL INJECTION NOZZLE

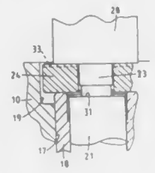
Martin P. Hardy, and Paul Buckley, both of Gillingham, England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Apr. 10, 1989, Ser. No. 335,356

Claims priority, application United Kingdom, Apr. 20, 1988, 8809268

Int. Cl.[5] **F02M** *47/00*

U.S. Cl. 239—124 **9 Claims**



1. A liquid fuel injection nozzle for supplying fuel to an internal combustion engine, the nozzle being of the so called inwardly opening type and comprising:

a nozzle body;

a blind bore formed in the body and extending from one end thereof;

a seating defined at the blind end of the bore;

a fuel inlet passage communicating with the bore intermediate the ends thereof;

a sleeve slidable in the end portion of the bore remote from the blind end thereof;

a valve member means, having a portion slidable in the sleeve, and shaped for engagement with the seating, for controllably preventing fuel flow through an outlet;

a spring abutment engaged with the valve member means and engageable by the sleeve;

a spring engaged with the spring abutment such that when fuel under pressure is supplied through said inlet passage, the fuel pressure acting on said valve member means and the sleeve will effect movement of the valve member means and the sleeve against the action of the spring engaging the abutment to allow fuel flow through the outlet;

means defining a stop surface engageable by an end surface of the sleeve for limiting the movement of the sleeve, the further movement of the valve member being under the action of the fuel pressure acting on the valve member alone; and

means defining a leakage path extending from a zone defined within the annular area of contact between said end surface of the sleeve and the spring abutment.

4,941,614

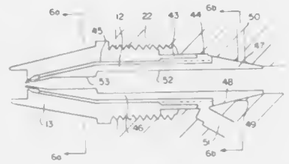
NOZZLE FOR SPRAYING EQUIPMENT

Jan Ilott, 14 Montague Hill, Kingsdown, Bristol, United Kingdom

Continuation-in-part of Ser. No. 948,357, Nov. 26, 1986, abandoned. This application Jul. 1, 1988, Ser. No. 215,194

Int. Cl.[5] **B05B** *1/28*

U.S. Cl. 239—294 **14 Claims**



1. A nozzle, for a gas-operated spraying apparatus, said nozzle having an axial passage for paint to be dispensed;

a first end of said nozzle an outlet communicating with said axial passage;

a needle located in said passage, said needle having a tapered end projecting through said outlet;

said needle having a first end position wherein said tapered end forms a seal for said outlet;

said needle being arranged for movement from said first end position in a first direction axially of said passage progressively towards a second position;

said needle, in said progressive movement towards said second position, being arranged to unseal said outlet and to define an opening peripherally of said tapered end of said needle;

said needle, at least initially in said progressive movement, extending through said outlet to dispense paint;

said needle being arranged for movement in a second direction, opposite said first direction, from said first end position, to confirm said seal;

said nozzle being formed of a material having a resilient memory and said tapered end of said needle, on movement of said needle beyond said first end position in said second opposite direction, being arranged to expand said outlet of said nozzle but, on movement again of said needle in said first direction towards said second position, permitting said outlet of said nozzle to contract around said tapered end of said needle, under the influence of said resilient memory, to its original shape.

4,941,615

AEROSOL DISPENSER

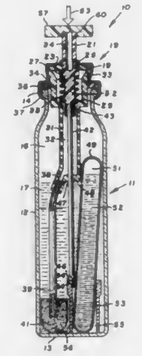
Lee R. Bolduc, 6416 Gainsborough Dr., Raleigh, N.C. 27612

Filed Oct. 3, 1988, Ser. No. 251,806

Int. Cl.[5] **B67B** *7/24*

U.S. Cl. 239—309 **35 Claims**

1. An aerosol dispenser comprising: a container having a bottom wall, an open top, and a chamber for storing a propellant and first material under pressure, a cap mounted on the container closing said open top, a housing extended into the chamber through said open top, said housing having a passage, control valve means mounted on the cap and housing operable to control the flow of propellant and material from said passage, said control valve means normally closed and having a movable member extended into the passage which can be moved to open said valve means whereby propellant and materials are dispensed from the container, a dip tube connected to the housing extended to the bottom portion of the chamber for carrying propellant and materials to the passage, a porous filter mounted on the dip tube to prevent foreign particles from flowing into the passage whereby when said



valve means is open the propellant and materials in said chamber flow through the filter and dip tube into the passage, frangible ampule means located within said chamber storing a second material separate from the first material until the ampule means is broken, sleeve means located in said chamber surrounding a portion of the ampule means, rod means connected to the movable member extended into said sleeve means, said rod means and sleeve means having engagable means whereby when the movable member is first moved to open the valve means the ampule is broken whereby the second material is mixed with the first material in said chamber.

4,941,616

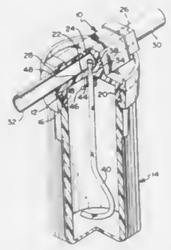
LOW METERING RATE LIQUID DISPENSER

Gar D. Liebler, 2661 B S. Lapeer, Lake Orion, Mich. 48035

Filed May 15, 1989, Ser. No. 352,042

Int. Cl.[5] **B05B** *7/30*

U.S. Cl. 239—310 **3 Claims**



1. A dispenser for metering an additive into a liquid medium at a low rate comprising:

a vessel for holding an additive, the vessel having an opening,

a cap removably secured to the vessel opening to provide a closure for the vessel,

the cap having inlet and outlet means for coupling to a conduit and a flow passage connecting the inlet and outlet means,

a first aperture in the cap between the flow passage and the vessel opening,

a fibrous wick in the first aperture and extending into the flow passage and into the vessel, the portion of the wick in the vessel being exposed throughout its length to additive, whereby liquid additive is transported from the vessel to the flow passage through the wick, and

a second aperture in the cap between the flow passage and the vessel opening of smaller size than the first aperture to allow pressure equalization between the flow passage and the vessel.

4,941,617

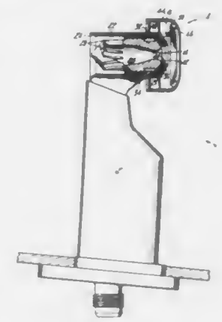
AIRBLAST FUEL NOZZLE

Sid Russell, Suffield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1988, Ser. No. 284,270

Int. Cl.[5] **B05B** *7/04, 7/10*

U.S. Cl. 239—400 **7 Claims**



1. A gas turbine fuel nozzle of the type in which fuel is injection into a core stream of atomizing air, wherein the improvement comprises:

means for injecting fuel radially inwardly into the core air stream, including a swirl chamber radially outwardly of the core stream and opening into the core stream and swirl means upstream of the swirl chamber across which fuel is flowable into the swirl chamber wherein the swirl chamber is of sufficient volume and orientation as to cause the formation of a swirling toroid of fuel and air within the chamber at low fuel flow rates.

4,941,618

NEBULIZER EMPLOYING A FINE MESH SCREEN

Karl J. Hildebrand, Tyngsboro, and John Urh, Stoneham, both of Mass., assignors to Leeman Labs Inc., Lowell, Mass.

Filed Jul. 7, 1986, Ser. No. 882,686

Int. Cl.[5] **B05B** *7/00*

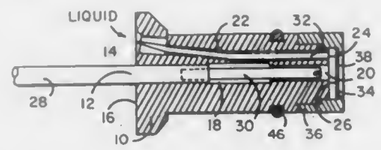
U.S. Cl. 239—432 **2 Claims**

1. A nebulizer for producing a quantity of fine liquid droplets from a liquid comprising in combination:

a. a nozzle for producing and directing a stream of gas;

b. a fine mesh screen positioned to receive said stream of gas, said screen of substantially greater area than that of the cross-section of said stream and the width of the mesh of

said screen substantially smaller than the diameter of said stream; and



c. means for flowing said liquid over said screen whereby said droplets are created by the shearing action of said stream impinging on said screen and said liquid.

4,941,619

METHOD OF SHREDDING CANS

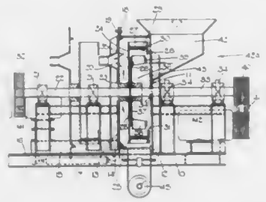
William Cutler, Cleveland, United Kingdom, assignor to AMG Resources Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 497,421, May 24, 1983, abandoned. This application May 31, 1985, Ser. No. 739,762

Claims priority, application United Kingdom, May 27, 1982, 8215599

Int. Cl.[5] B02C *19/20*

U.S. Cl. 241—22 **2 Claims**



1. A method of shredding cans, comprising the steps of feeding the cans to a chamber having an apertured peripheral wall and a rotor mounted in the chamber, effecting contra rotation of the chamber and the rotor; rotating the rotor at a sufficiently high rate of speed to throw the cans outwardly by impellers on the rotor so as to cause a bed of partly shredded cans to be established on the inside of the apertured peripheral wall of the chamber which bed is spaced outwardly of the impellers; reducing the size of the partly shredded cans in the bed by a shearing action within the bed of partly shredded cans caused by the rotation of the impellers and the contra rotation of the chamber as further cans are urged against the bed so that the fully shredded cans can pass through the apertures in the peripheral wall; and removing the fully shredded cans which have passed through the apertures.

4,941,620

APPARATUS FOR STORING FLEXIBLE WEBS ON THE CORES OF TAKEUP REELS

Herbert Wilsch, Unterhaching; Leonhard Huber, Glonn; Helmut Treiber, Munich; Peter Lermann, Weyarn, and Erich Nagel, Anzing, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

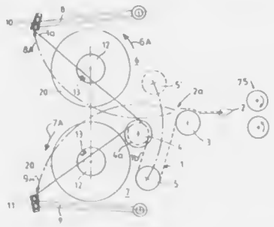
Filed Feb. 23, 1989, Ser. No. 315,468

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1988, 3806200

Int. Cl.[5] B65H *18/10, 20/02*

U.S. Cl. 242—67.1 R **12 Claims**

1. Apparatus for storing elongated flexible webs in convoluted condition, particularly for storing webs which contain a photosensitive material and have leaders, comprising means for advancing successive webs along a predetermined path having a discharge end so that the leaders of such webs assume predetermined positions at the discharge end of said path; at least one rotary driving member adjacent said discharge end; means for driving and separably coupling said rotary driving member with a takeup reel, the takeup reel comprising a cylindrical core having a first end, a second end, and a peripheral surface; a protuberance mounted at a predetermined location adjacent said rotary driving member; means for moving said protuberance with respect to the core of the takeup reel which is coupled to said at least one driving member between a first position in which said protuberance is adjacent to the peripheral surface of the core and defines therewith a gap and at least one second position in which said protuberance is remote from the peripheral surface of the core, the takeup reel being detachable from said at least one driving member and separable from said protuberance; and means for transferring the leader of the web from said discharge end of said path to a position against the peripheral surface of the core of the takeup reel which is coupled to said at least one driving member so that, upon movement of said protuberance; and means for transferring the leader of the web from said discharge end of said path to a position against the peripheral surface of the core of the takeup reel which is coupled to said at least one driving member so that, upon movement of said protuberance to said first position, the leader of the web being located in said gap, whereby rotation of said rotary driving member causes the web to be wound over said protuberance and convoluted onto the peripheral surface of the core of the reel which is coupled to said at least one driving member.



4,941,621

AXIALLY COMPRESSIBLE SPOOL

Roberto Pasini, Milan, Italy, assignor to Tubettificio Europa S.p.A., Milan, Italy

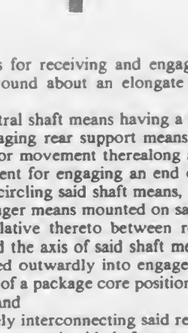
Filed Jun. 13, 1989, Ser. No. 365,298

Claims priority, application Italy, Jun. 30, 1988, 21164 A/88

Int. Cl.[5] B65H *75/20*

U.S. Cl. 242—118.1 **12 Claims**

1. A spool for winding yarn the spool having an axially compressible body comprising end annular members and a plurality of intermediate ring members, said annular members and said intermediate ring members being coaxially arranged and connected by yielding spacer members defining a winding surface for the yarn, said spacer members being peripherally arranged on the spool body, and comprising at least one inclined portion with respect to the longitudinal axis of the spool body; stiffening means being provided between contiguous intermediate ring members, said stiffening means comprising breakable members parallelly arranged to the longitudinal axis of the body of the spool, and stop means between contiguous ring members to limit the axial compression of the spool body,



said stop means comprising apposite breakable portions of said stiffening members.

4,941,622

PACKAGE ADAPTER

James L. Alexander, 1024 N. Tryon St., Charlotte, N.C. 28206

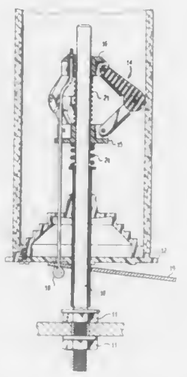
PCT No. PCT/US88/02155, § 371 Date Nov. 6, 1989, § 102(e) Date Nov. 6, 1989, PCT Pub. No. WO88/10229, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 22, 1988, Ser. No. 435,494

Claims priority, application Australia, Jun. 26, 1987, PI2732

Int. Cl.[5] B65H *49/06*

U.S. Cl. 242—129.7 **10 Claims**



1. An apparatus for receiving and engaging a package of strand material wound about an elongate hollow core and comprising:

an elongate central shaft means having a free end,

a core end engaging rear support means mounted on said shaft means for movement therealong and for forming a sliding abutment for engaging an end of a package core positioned encircling said shaft means,

a plurality of finger means mounted on said shaft means for movement relative thereto between retracted positions drawn toward the axis of said shaft means and extended positions urged outwardly into engagement with the inside diameter of a package core positioned encircling said shaft means, and

means operatively interconnecting said rear support means, said finger means and said shaft means for moving said finger means from said retracted positions toward said extended positions upon movement of said rear support means along said shaft means in a direction away from said free end and for releasably latching said rear support means and said finger means in positions engaging the end and inside diameter of an elongate hollow core positioned encircling said shaft means.

4,941,623

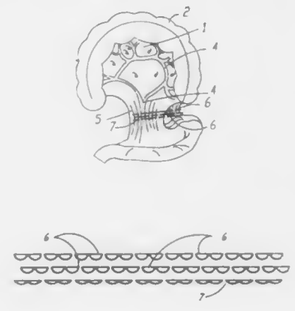
STAPLING PROCESS AND DEVICE FOR USE ON THE MESENTERY OF THE ABDOMEN

J. Crayton Pruitt, St. Petersburg, Fla., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 350,758, May 12, 1987, which is a continuation-in-part of Ser. No. 237,433, Aug. 26, 1988, Pat. No. 4,848,637, which is a continuation-in-part of Ser. No. 60,469, Jun. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 864,336, May 19, 1986, abandoned. This application Dec. 26, 1989, Ser. No. 456,361

Int. Cl.[5] B31B *1/00*

U.S. Cl. 227—19 **18 Claims**



1. In a stapling device designed for use on a patient which comprises:

(a) a handle by which the device may be held in the operator's hand;

(b) a sleeve having a forward and a rear end thereto, which sleeve is connected at a point near its rear end to said handle at an angle of about 90°–100°, at which point said handle is slidably mounted at the interior of said sleeve, and said sleeve having a knob extending from the rear end thereof;

(c) a shaft extending lengthwise and inside said sleeve and being connected at one end to said handle adjacent to the area where said handle is slidably mounted on said sleeve;

(d) an adjusting means for advancing said shaft toward the forward end of said sleeve and for retracting said shaft toward the rear end of said sleeve, said adjustment being effected by the axial rotation of said knob extending from the rear end of said sleeve;

(e) a cartridge holding means attached to and positioned perpendicularly from the opposite end of said shaft from the end connected to said handle, said cartridge holding means being capable of being advanced and retracted with said shaft movement;

(f) a support means extending downward and forward from the front end of said sleeve;

(g) an anvil held by said support means in a position parallel to and opposite to said cartridge holding means;

the improvement whereby said stapler device is suitable for use on a patient's mesentery which comprises:

(h) a cartridge positioned on said cartridge holding means having at least two and no more than four parallel rows of staples, each staple having crown and two prongs each

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prong being attached to an end of said crown, each intermediate row of staples being substantially equidistant from adjacent rows, with the staples in each row having the same length of crown and each crown being staggered at the quarter point in the length of the crown of the adjacent staple in the adjacent row of staples; whereby the ends of looped prongs are opposite the approximate midpoint of a looped prong on an adjacent row, and

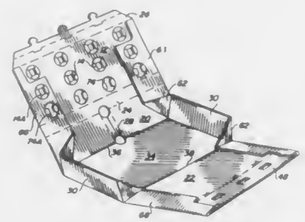
(i) an anvil having grooves therein spaced from and positioned opposite to and facing the prongs of the staples in said cartridge and positioned to receive and to turn the prongs of each said staple toward each other and toward the crown of said staple.

4,941,624

WRAP-AROUND CARRIER WITH HANDLE

Richard L. Schuster, Monroe, La., assignor to Manville Corporation, Denver, Colo.

Filed Oct. 5, 1989, Ser. No. 417,344
Int. Cl.[5] B65D *5/46*
U.S. Cl. 229—117.13 **27 Claims**



1. A wrap-around article carrier, comprising:

a bottom panel having side edges and end edges;

side panels connected to the side edges of the bottom panel by fold lines;

end panels connected to the end edges of the bottom panel by fold lines;

a top panel connecting the side panels;

at least one of the side panels having an angled upper portion adjacent the top panel, the angled portion forming an obtuse angle with said one side panel and an obtuse angle with the top panel, the angled portion being connected to the top panel; and

said one side panel containing a handle opening comprising two elongated spaced edges extending transversely of said one side panel between the angled portion of said one side panel and the bottom panel, the handle opening being large enough for the fingers of a user to be inserted in order to lift the carrier from the underside of said one side panel adjacent one of the elongated spaced edges of the handle opening.

4,941,625

CREEL FOR THE SIMULTANEOUS CHANGING OF REELS OF METALLIC WIRE

Giancarlo Saro, Ceresetto Di Martignacco, Italy, assignor to Impianti Industriali SpA, Osoppo, Italy

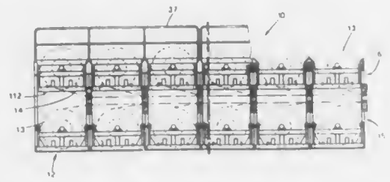
Filed Jun. 17, 1988, Ser. No. 208,036
Claims priority, application Italy, Jul. 3, 1987, 83400 A/87
Int. Cl.[5] B65H *49/20, 67/00*
U.S. Cl. 242—131 **14 Claims**

1. Creel for simultaneous changing of reels of metallic wire for cooperating with metallic mesh production machines, comprising:

a structure including a first lower tier and a second upper tier, said second upper tier parallel to and superimposed on said first lower tier;

a plurality of lower support units for supporting reels of wire, positioned in a lengthwise sequence on said first lower tier; and

a plurality of upper support units for supporting reels of wire, positioned in a similar manner as said lower support units in a lengthwise sequence on said second upper tier,



the number of the upper support units equal to the number of the lower support units;

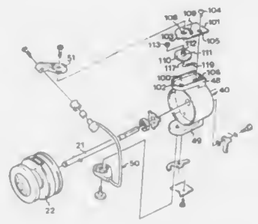
said upper support units and said lower support units each comprising a fixed portion fixedly connected to said structure and a movable portion for moving crosswise to the lengthwise direction of the structure.

4,941,626

BAIL MECHANISM IN AN OPEN-FACE FISHING REEL OF THE FIXED-SPOOL TYPE

Karl L. Carlsson, Asarum, Sweden, assignor to Abu Garcia Produktion AB, Svangsta, Sweden

Filed Oct. 27, 1989, Ser. No. 427,435
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—231 **4 Claims**



1. A bail mechanism in an open-face fishing reel of the fixed-spool type having a housing, a rotor mounted on said housing, and a line spool coaxial with said rotor and adapted to oscillate in the axial direction, said bail mechanism comprising

a bail for winding a line onto said line spool;

two attachments arranged on said rotor substantially diametrically opposite each other; and

two mounting elements carrying said bail and being so rotatably mounted on a respective one of said attachments that said bail is pivotable about a bail axis substantially at right angles to the axis of said rotor, between a folded-in line winding position and a folded-out position in which said bail is released of the line;

at least one of said attachments being designed so as to form an open chamber and having a cover plate detachably mounted over said chamber for closing it;

said cover plate having a through hole whose center is located on said bail axis, and supporting on its inside a rotary disc having a center pin extending through said hole in said cover plate and non-rotatably connected to the associated mounting element for carrying this element on the outside of said cover plate;

a tension spring being mounted between two spring holders, one of which is eccentrically mounted on the side of said rotary disc facing said chamber, and the other of which is mounted on the inside of said cover plate; and

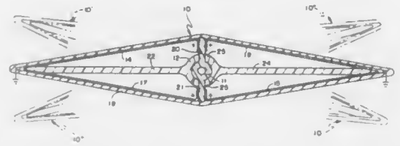
said rotary disc being rotatable against the action of said tension spring, between two positions corresponding to said folded-out and said folded-in position of said bail.

4,941,627

GUIDANCE AND CONTROL FIN

William M. Moscrip, King George County, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1975, Ser. No. 641,116
Int. Cl.[5] F42B *10/64*
U.S. Cl. 244—3.21 **7 Claims**



1. A self-actuating control fin for steerable vehicles operable in a fluid medium comprising:

a shaft formed of electrically insulating material adapted to be rigidly secured to the body of the missile or projectile;

a pair of short arms formed integral with said shaft and projecting therefrom in opposite directions and normal to the plane of the fin;

a hollow rigid rotor encompassing said shaft and mounted for oscillation thereon;

a pair of long arms formed integral with said rotor and projecting therefrom in opposite directions in the plane of the fin; and

a plurality of sections of memory effect alloy each fastened to the tip of one shaft arm and one rotor arm to define a fin of rhombical cross-section, said alloy sections having been previously stretched at a temperature below its critical transition temperature whereby resistive dissipation of an electric current in opposite sides, in a rhombic sense, will cause shortening of these sides and consequent deflection of the fin to change its angle of attack.

4,941,628

LIFT GENERATING APPARATUS, IN AIRCRAFT EMPLOYING THE LIFT GENERATING APPARATUS, AND A LIFT GENERATING METHOD

Yujiro Sakamoto, Akashi; Toshio Kurosaka, Takarazuka; Hirohiko Fukumoto, Kobe; Tosbiya Miyake, and Hirohiko Tokunaga, both of Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 2, 1989, Ser. No. 305,019
Claims priority, application Japan, Feb. 2, 1988, 63-23310; Jul. 20, 1988, 63-180686
Int. Cl.[5] B64C *39/06*
U.S. Cl. 244—12.2 **13 Claims**

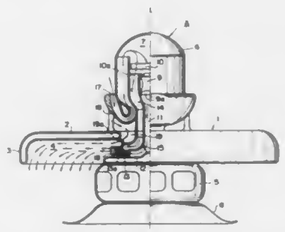
1. A lift generating apparatus comprising:

a circular principal wing having a peripheral portion thereof bent downward, forming a space opening downwardly thereunder;

a high-pressure gas producing device provided on the principal wing,

a plurality of jet nozzles provided within a central portion of the space for jetting a high-pressure gas compressed by said gas producing device and jetting by said gas producing device in a direction radially outward from the central portion of the bowl-shaped space;

a plurality of suction nozzles disposed coaxially with said jet nozzles, said suction nozzles being communicated with said gas producing device for sucking external air as a secondary fluid from outside the bowl-shaped space by



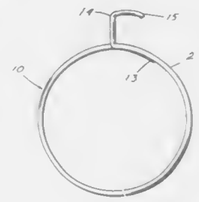
suction generated by jets of the high-pressure gas jetted from the gas producing device.

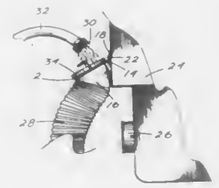
4,941,629

SUPPORT DEVICE FOR A HOSE ADAPTER

Chris C. Horn, HCO 1 Box 16, Niland, Calif. 92257-9705

Filed Jun. 20, 1989, Ser. No. 368,552
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 **2 Claims**





1. A support device for a recreational vehicle sewer hose adapter, comprising:

(a) an expandable ring having intersecting terminal ends;

(b) a hook formed supplemental in a continuation of one of said terminal ends, which hook extends outwardly from the ring and lies generally in the same plane as the ring;

(c) structural resilience in said expandable ring allowing forced circumferential enlargement of said expandable ring maintained generally circular with said structural resilience providing return of said expandable ring to a remembered circumferential dimension;

(d) a ring support plate attachable to said recreational vehicle with said ring support plate having a protruding cover providing a through passageway behind said cover, said passageway adapted for releasable locking attachment of said hook with said ring fitted around the hose adapter.

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4,941,630

ISOLATING PIPE STRAP FOR PLUMBING PIPES

Joseph A. Albano, 1595 Ridley St., Santa Rosa, Calif. 95401

Filed Feb. 28, 1989, Ser. No. 316,780
Int. Cl.[5] F16B *15/00*
U.S. Cl. 248—71 2 Claims

1. An isolating pipe strap, comprising

two substantially divergent rod-like support arms continuously connected centrally at a bight section;

said support arms angling outward from said bight section in a common plane;

said support arms having distal ends bent at substantially right angles into parallelling short sharpened shanks;

said sharpened shanks being means for attachment of said strap to a support surface;

said bight section forming an outer loop and having said outer loop encased in dielectric insulation;

said bight section affixed with pipe insulation;

said pipe insulation being an elongated cylindrical section of resilient material affixed as an inner loop in said bight section attached by a portion thereof to said dielectric insulation;

said pipe insulation having a cut therethrough providing a separation of said cylindrical section allowing an overlapping of the pipe insulation over a pipe.

4,941,631

SEMI-MICRO MANIPULATOR

Donald W. Misch, Department of Biology, Coker Hall 010A, Campus Box 3280, University of North Carolina; Irvine R. Hagadorn, deceased, late of Northwood Dr.; by Thomas D. Higgins, III, legal representative, 820 Airport Rd., all of Chapel Hill, N.C. 27514; William M. Darby, 9701 A Reichsford Rd., Ijamsville, Md. 21754, and Murray S. Swanson, 9549 Longs Mill Rd., Rocky Rodge, Md. 21778

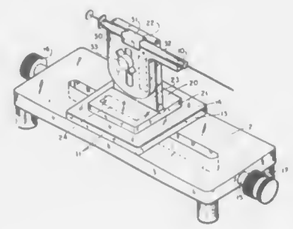
Filed Jul. 10, 1988, Ser. No. 75,900
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—178 8 Claims

1. An apparatus for manipulating devices requiring precise positioning comprising:

(a) a base, the base comprising a stand and a plate slidably attached for translational movement along the stand, wherein the plate is provided with a metallic face plate attached to the side of the plate opposite the side of the plate slidably attached to the stand;

(b) means attached to the stand and the plate for controlling the translational movement of the plate in relation to the stand;

(c) a pedestal slidably attached to the metallic face plate, the pedestal comprising a horizontal member which is slidably attached to the metallic face plate and a vertical plate member, wherein the horizontal member comprises at least one magnetic element attached to the side of the horizontal member in contact with the metallic face plate for allowing the slidable positioning of the pedestal on the metallic face plate, and wherein the vertical plate member is provided with a second metallic face plate attached to one side of the vertical plate member;



(d) second plate means attached to the pedestal for adjustably supporting the devices requiring precise positioning, wherein the second plate means comprises at least one magnetic element attached to the side of the second plate means in contact with the second metallic face plate so that the second plate means is slidably attached to the second metallic face plate and so that the second plate means can be rotationally and translationally moved to another position on the second metallic face plate; and

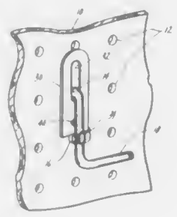
(e) means for controlling translational and rotational movement of said second plate means relative to the second metallic face plate.

4,941,632

PEGBOARD HOOK RETAINING CLIP

Donald E. Couls, 48150 Furgot, Utica, Mich. 48087, and William J. Love, 32129 Block, Garden City, Mich. 48135

Filed Dec. 30, 1988, Ser. No. 292,446
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—221.2 8 Claims



1. A retaining clip adapted for use with a pegboard hook mounted on a pegboard having first and second spaced apertures, the hook having an elongated shank supported parallel to the board, the hook having a first end and an integral elbow adjacent said first end receivable in the first aperture such that the first end of the hook is disposed on the opposite side of the pegboard as the shank, the hook having a finger receivable in the second aperture, the hook being removable from the pegboard by swinging the finger out of the second aperture and about said elbow, said retaining clip comprising:

an elongated plate-like body having a first end and a second end, the body having a longitudinal closed slot having a first slot end and a second slot end, the first slot end being disposed adjacent the first end of the body, the body having a tab retaining spaced from the second end of the slot a distance less than the distance between the elbow and the finger on the pegboard hook such that the clip body is receivable therebetween, the tab having a concave opening for receiving the shank of the hook by a motion of the clip body in a direction parallel to the board to a locked position in which the first end of the clip body is spaced from the hook's elbow and on the opposite side thereof as the tab, and the first end of the clip body is disposed on the pegboard on the opposite side thereof as the first end of the hook,

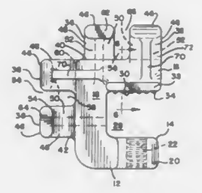
whereby the tab releasably prevents the finger on the hook from being swung out of the second pegboard aperture.

4,941,633

ROPE SUPPORT DEVICE

Robert L. Walker, 20 White Oaks Cir., St. Charles, Ill. 60174, and William E. Homan, 302 Center Pkwy., Yorkville, Ill. 60560

Filed Nov. 21, 1986, Ser. No. 934,508
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—228 6 Claims



1. A support device particularly adapted for attachment to a structural column of a building under construction to in part hold a length of high-strength rope guard rail strung about said building, said support device comprising:

a body having means prepared for ready attachment to said structural column and said body including a first end segment connected to a side segment to define an L-like shape,

a set of spaced apart clips formed as part of said first end segment and a further pair of said clips formed as part of said side segment with said clips of said sets respective extending outwardly from said first end and said side segment, each said clip having an outer end strap joined to said body by a connecting strap to form a holding area with said holding areas of each said clip set positioned respectively to face in an opposite direction, and said holding areas of said clips spaced on each side of a radiused corner formed at a joiner of said first end segment and said side segment positioned to face in an opposite direction,

a rope passageway defined by alignment of said clips holding areas and said radiused corner, and

an access opening formed respectively between said clips of each said set to allow selective movement of said rope to and from said rope passageway,

wherein a series of said support devices may be attached selectively one each to a series of said building structural columns to form a series of support points for said rope length positioned about an exterior of said building, as attached said rope being carried in one said clip set of those support devices attached to structural columns positioned between further structural columns defining outside corners of said building, and said rope being carried in both said clip sets of those support devices attached to said corner structural columns.

4,941,634

MOUNTING APPARATUS FOR EYEGLASSES

Gary D. Gomes, Alameda County; Craig M. Gomes, San Mateo County; Frank M. Figone, San Mateo County, and Moira J. Figone, San Mateo County, all of Calif., assignors to GFS, Inc., San Mateo, Calif.

Filed Jan. 9, 1989, Ser. No. 295,814
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—229 5 Claims



1. Apparatus for mounting eyeglasses to an object comprising:

a shaped body including a slot defined by at least one composite resilient finger, said composite resilient finger including U-shaped spring means embedded within said body and said finger and surrounding said slot to resiliently bias said finger to a position closely proximate said body for receiving and holding eyeglass bridges of different sizes, and said composite resilient finger and said body defining said slot being formed of a material which is soft and compliant relative to plastic eyeglass materials to resist scratching eyeglasses; and

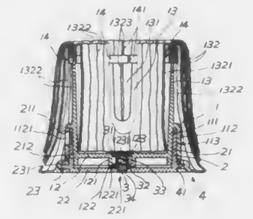
a jaw formed in the lower portion of said body, said jaw providing means to secure the body to an object to support eyeglasses whose bridge is placed in the slot on the object.

4,941,635

CUP-HOLDER STABILIZER

Yung-Huei Lan, 3F No. 32 Lane 61 Sec.2 Hang-Chuo S.Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 818,368, Jan. 13, 1986, Pat. No. 4,760,987. This application May 10, 1988, Ser. No. 191,899
Int. Cl.[5] A45D *42/14*; F16B *47/00*
U.S. Cl. 248—346.1 2 Claims



1. A cup-holder stabilizer for holding a cup and the like on a flat surface, comprising:

an upper holder portion, having an outside surface and including an upper cylinder which has an upper portion and a lower portion, said upper portion of said upper

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cylinder having an upper end, said lower portion of said upper cylinder including an outer fold wall and an inner fold wall connected together at respective upper ends thereof, said outer and inner fold walls having respective portions other than said connected upper ends thereof separated by a first distance so as to define a ring-shaped space between said other portions of said outer and inner fold walls, said inner fold walls defining therein a first inner cylindrical space which is adapted for reception of said cup and the like to be held, said inner fold wall being provided at a lower end thereof with a first base plate which has on a central portion thereof a small cylinder projecting downwardly from said central portion of said first base plate, said small cylinder having a second inner space, said outer fold wall being provided with an elongated slot having a longitudinal length in the height direction of said outer fold wall;

a plug having a lower portion and a top end and configured to be adapted to be received in said second inner space of said small cylinder, said small cylinder having a lower end which is provided with a second base plate having in a central portion thereof a first small bore of such an inner diameter as to allow said lower portion of said pug to pass therehtrough, said top end of said plug being provided with a flange having an outside diameter larger than said inner diameter of said first small bore so as to prevent said plug from dropping out via said first small bore, said small cylinder having an upper end which is provided with a cover plate, said top end of said plug having in a top surface thereof a dent which has a bottom surface and is configured to be adapted to receive a coil spring having an upper end and a lower end, said upper end of said coil spring being rested against said cover plate while said lower end of said spring is arranged to urge against said bottom surface of said dent to push said plug downward;

a lower cylinder, which is configured to be allowed to fit into and to slide along said ring-shaped space between said outer and inner fold walls, said lower cylinder having an outside surface which is provided in a top end portion thereof with a protrusion configured and arranged to fit into said elongated slot of said outer fold wall of said upper cylinder so that, when said upper cylinder is moved in one of an upward and downward directions with respect to said lower cylinder, said protrusion may slide along said elongated slot in the other one of said upward and downward directions with the travel distance of said protrusion being limited within said longitudinal length of said elongated slot, said lower cylinder having a lower end which is provided with a third base plate having a second small central bore configured and arranged so that is may be sealed by said lower portion of said plug, said lower end of said lower cylinder being provided peripherally with an outer circular flange;

a skirt-shaped piece configured and arranged to be fitted around said outer circular flange at said lower end of said lower cylinder so as to form together with said third base plate a cupule adapted to suctorially attach to the flat surface; and

a thin cylinder connected to said upper end of said upper portion of said upper cylinder and provided with a separable adapter having multi-layered skirt-shaped soft pads which may be moved between a first position, in which they are outside said upper holder portion, and a second position, in which they are in said first inner cylindrical space, said pads being formed and arranged to be used to cover said outside surface of said upper holder portion when they are moved to said first position and to be used to serve for padding purpose when they are moved to said second position, said pads being formed in one of the forms of a net form, a strip form, a surrounding arranged tubular form and a combination thereof;

whereby, when said upper and lower cylinders are driven to move toward each other by reception of said cup in said first inner cylindrical space and deposition of said cup-holder stabilizer on the flat surface, said lower portion of said plug will be brought to seal up said second small central bore in said third base plate so as to allow said cupule formed together by said third base plate and said skirt-shaped piece to suctorially attach to the flat surface; when said upper and lower cylinders are driven to move apart from each other by lift of said upper cylinder from the flat surface, said second base plate will be brought in touch with said flange of said plug and then pull said plug up so that said second small central bore of said third base plate is opened to disable the suctorial attachment effect of said cupule to the flat surface so as to allow said cup-holder stabilizer to be lifted up.

4,941,636

LOCKING SLIDE APPARATUS FOR MOUNTING A SEAT

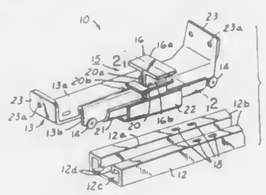
Mikio Fujiwara, and Minoru Komohara, both of Ayase, Japan, assignors to Ikeda Bussan Company Ltd., Kanagawa, Japan

Filed Jul. 24, 1989, Ser. No. 384,401

Claims priority, application Japan, Sep. 16, 1988, 63-121231[U]

Int. Cl.[5] **A62B** *35/60*

U.S. Cl. 248—430 **4 Claims**



1. A locking slide apparatus for mounting a seat in a vehicle, the locking slide apparatus comprising:

an elongated stationary rail securable to a vehicle floor, said stationary rail having an upper horizontal side, a lower horizontal side and two vertical sides defining a substantially rectangular cross section, said upper horizontal side having a slot longitudinally disposed therein and extending along at least a portion of the length thereof, said upper horizontal side further having a row of lock holes extending vertically therethrough and along at least one side of the slot to form a linear rack;

a slide mechanism supported by and longitudinally slidable along said stationary rail, said slide mechanism including an elongated horizontal slide member, said horizontal slide member having two vertical slide members depending therefrom along a substantial portion of a longitudinal border thereof, said horizontal slide member further having a guide piece extending vertically upward from said horizontal slide member, said guide piece being coplanar with and longitudinally spaced between said two vertical slide members, said vertical slide members extending downwardly from said horizontal slide member through said slot in said upper horizontal side of said stationary rail, each of said vertical slide members supporting a horizontally aligned shaft upon which is rotatably mounted a roller on each side of said vertical slide member, said rollers being rotatably disposed between said upper horizontal side and said lower horizontal side of said stationary rail, said slide mechanism being adapted to support the seat thereon;

a lock mechanism having a vertical member supported by and vertically slidable along said slide mechanism, a horizontal lower flange connected to said vertical member, and at least one pawl connected to and extending vertically upward from said lower flange to inserted upwardly into a vertical lock hole in said upper horizontal side of said stationary rail to prevent said slide mechanism from sliding along said stationary rail;

means for resiliently biasing said lock pawl in an upward direction to urge said lock pawl into a vertical lock bole in said upper horizontal side of said stationary rail; and

a guide plate connected to said slide mechanism proximate said guide piece, said guide plate being substantially C-shaped to define, in cooperation with said guide piece, a guide hole through which said vertical member of said lock mechanism is slidably guided.

4,941,637

SAFETY SLIDE WITH ROLLERS FOR VEHICLE SEATS

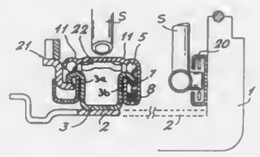
Yves Pipon, St. Georges des Groseillers, France, assignor to A. & M. Cousin - Etablissements Cousin/Freres, France

Filed Mar. 3, 1989, Ser. No. 318,269

Claims priority, application France, Mar. 22, 1988, 88 03690

Int. Cl.[5] **F16M** *13/00*

U.S. Cl. 248—430 **3 Claims**



1. A safety slide for vehicle seats comprising a lower fixed profile and an upper mobile profile, wherein the upper mobile profile has stiffening longitudinal corrugations, and the lower fixed profile is of a U-shaped section and is formed with vertical wings, said vertical wings being extended by horizontally bent portions and then vertically bent portions for forming, with the stiffening longitudinal corrugations of the upper mobile profile, an upper guiding path for balls and forming a lower rolling path for rollers placed between: (i) said vertically bent portions of the vertical wings of said lower fixed profile, (ii) corresponding vertically bent wing portions formed on the upper mobile profile, and (iii) guiding elements placed in bottom of the upper mobile profile, whereby said rollers are guided, on a one hand, by said vertically bent wing portions of the upper mobile profile and said guiding elements and, on an other hand, by the lower rolling path formed by the wings of the lower fixed profile so as to ensure a considerable transverse strength and a considerable tearing strength of the upper mobile profile with respect to the lower fixed profile.

4,941,638

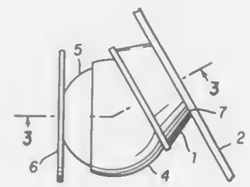
BLIND SPOT MIRROR

Albert G. DiSalvatore, 1702 E. 45 St., Ashtabula, Ohio 44004

Filed Nov. 25, 1988, Ser. No. 276,130

Int. Cl.[5] **G02B** *5/08*

U.S. Cl. 248—481 **5 Claims**



1. A blind spot flat mirror having a base mounted on and infixed relation to the inner surface of a windshield, typically on an inside upper corner of the windshield, said base having a seat receiving and fixed to an exterior convex surface of a frustum of a spherical hollow shell of a ball joint to compensate for the inclination of the windshield, a ball rotatably received in said shell for tilting movement through an acute angle relative to the shell in all directions, and a flat seat on said ball fixed to the back surface of a flat mirror.

4,941,639

REMOTELY CONTROLLED REARVIEW MIRROR FOR MOTOR VEHICLES

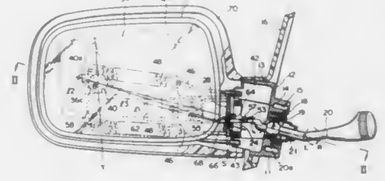
Masahito Sakao, Saitama, Japan, assignor to Kabushiki Kaisha Matsuyama Seisakusho, Tokyo, Japan

Filed May 4, 1988, Ser. No. 190,176

Claims priority, application Japan, May 7, 1987, 62-111136

Int. Cl.[5] **G02B** *7/18*

U.S. Cl. 248—549 **7 Claims**



1. A remotely controlled rearview mirror assembly for use on an automobile which has a longitudinal axis, which axis in nominally horizontal when the automobile is in a nominally horizontal state, comprising:

a mount securable on said automobile in a given orientation relative to nominal vertical and horizontal planes containing said longitudinal axis;

a housing adapted to be secured on said mount;

a mirror swingably supported in said housing;

a control lever swingably secured on said mount for remotely controlling said mirror to move to desired angular positions thereof from within the automobile; and

a link mechanism operatively interconnecting said mirror and said control lever and angularly movable vertically and laterally in response to angular and rotational movement of said control lever for moving said mirror to said desired angular position,

when said mount is secured in said given orientation, said link mechanism being angularly movable vertically about an axis which is inclined upwardly in a lateral direction away from a nominal vertical plane containing said longitudinal axis, and also angularly movable laterally about an axis which lies in a plane including a line substantially normal to said nominal horizontal plane containing said longitudinal axis whereby, when the mirror is moved to change the angle of the mirror relative to a vertical plane, the rear sight appearing on said mirror is not displaced laterally.

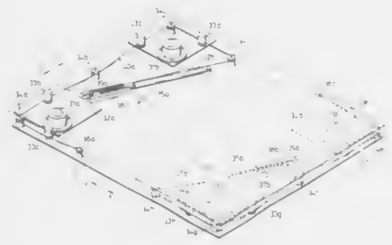
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4,941,640

VIBRATION ISOLATING APPARATUS

Ken Nakamura, Tokyo; Toshiaki Onoda, Yokohama, and Yoshihiro Gofuku, Fujisawa, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Division of Ser. No. 841,449, Mar. 19, 1986, Pat. No. 4,763,869.
This application Feb. 10, 1988, Ser. No. 154,848
Claims priority, application Japan, Mar. 20, 1985, 60-40926[U]; May 20, 1985, 60-74495[U]; Oct. 17, 1985, 60-157871[U]; Nov. 5, 1985, 60-170184[U]
The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.
Int. Cl.[5] F16M *9/00*
U.S. Cl. 248—562 **8 Claims**



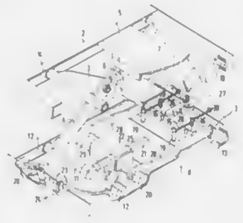
1. A vibration isolating apparatus comprising:
an upper bed which is adapted to have an object placed thereon;
a lower bed which directly receives an external vibration, said lower bed having a plurality of fixing portions;
support means for supporting said upper bed so that said upper bed is relatively displaceable with respect to said lower bed in a horizontal direction with a small friction;
a plurality of guide members separated from each other and provided on said upper and/or lower beds;
a plurality of wires each arranged in a form of an open loop; and
a plurality of gas springs for absorbing a tension in a corresponding wire depending on a deformation of a shape of the open loop formed by said corresponding wire due to a displacement of said lower bed with respect to said upper bed caused by the external vibration, each gas spring comprising a cylinder portion with one closed end, a gas which is sealed inside said cylinder portion, a guide located at the other end of said cylinder portion, and a rod portion guided by said guide and having one end within said cylinder portion and the other end extending out of the cylinder portion,
each of said plurality of wires being arranged around some guide members of said plurality of guide members so that said each wire passes around a guide member provided on one of said upper and lower beds after another guide member provided on the other of said upper and lower beds, said each wire having one end engaged with a corresponding one of said plurality of fixing portions, and the other end engaged with the rod portion or the cylinder portion of a corresponding gas spring so that a length of said corresponding gas spring is variable.

4,941,641

VEHICLE SEAT

Manfred Granzow, Dorentrup, and Hans-Peter Mischer, Bad Meinberg, both of Fed. Rep. of Germany, assignors to Gebr. Isringhausen, Bad Meinberg, Fed. Rep. of Germany

PCT No. PCT/DE88/00292, § 371 Date Mar. 13, 1989, § 102(e) Date Mar. 13, 1989, PCT Pub. No. WO88/09270, PCT Pub. Date Dec. 1, 1988
PCT Filed May 19, 1988, Ser. No. 306,027
Claims priority, application Fed. Rep. of Germany, May 22, 1987, 3717703
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—588 **5 Claims**



1. In an air sprung vehicle seat comprising a base frame adapted to be mounted on a vehicle, a seat frame, scissors linkage means including first and second scissors members mounted on said base frame and operative for supporting said seat frame so that the vertical position thereof is adjustable relative to said base frame, air spring means adapted to be connected to a source of pressurized air and responsive to internal air pressure in said air spring means for adjusting the vertical position of said seat frame relative to said base frame, and locking mean actuatable for locking the vertical position of said seat frame relative to said base frame, the improvement comprising said locking means including a fixing element articulated to said scissors means and moving therewith during vertical movement of said seat frame relative to said base frame, said fixing element including a fixing section having a length which is at least as great as the length of the maximum vertical movement of said seat frame relative to said base frame, said locking means further including a fixing device for securing said fixing section in order to secure the relative position of said fixing element in said seat.

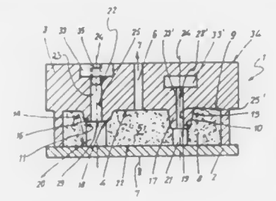
4,941,642

MOLD CONSTRUCTION COMPRISING A PLURALITY OF MOLD PORTIONS

Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany, and Hans H. Glättli, Seestr. 252, CH-Küsnacht, Switzerland

Filed Oct. 4, 1988, Ser. No. 253,263
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1987, 3734118
Int. Cl.[5] B29C *39/26*
U.S. Cl. 249—122 **16 Claims**

1. A mold construction comprising: a first mold portion, and a second mold portion, said first and second mold portions enclosing a mold chamber, at least one of said mold portions being provided with at least one mold core protruding into said chamber, said at least one mold core having an end face, said at least one of said mold portions having at least one recess open to said end face, each of said at least one mold core comprising a shank and an insert, at least one shank being in said at least one recess, said shank having a first end and a second end said at least one mold core with at least part of its end face abutting said at least one mold portion in an abutting region surrounding said at least one recess and fastened to said second end of said shank, said shank being connected to said at least one mold portion in a way that the at least one mold core is secured against being pulled away in the direction toward



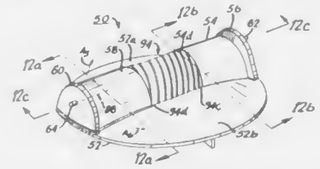
the opposing of said first and second mold portions seen during ejection of a mold part molded in said mold chamber.

4,941,643

APPARATUS FOR FORMING INVERTS AND MANHOLE ASSEMBLIES AND THE LIKE UTILIZING ADJUSTABLE INVERT FORMING MEMBERS JOINED WITH AN INTERMEDIATE FLEXIBLE PORTION

Jack Ditcher, Tullytown, Pa., assignor to A-LOK Products, Inc., Tullytown, Pa.

Filed Jan. 26, 1989, Ser. No. 303,170
Int. Cl.[5] B28B *7/30, 21/88*
U.S. Cl. 249—145 **13 Claims**



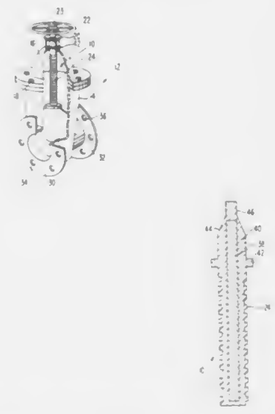
1. Apparatus for forming a channel in a cast member comprising inner and outer cylindrical shaped mold means defining a hollow cylindrical shaped interior region for casting a manhole assembly;
base defining means for forming the base portion of the manhole base and having a substantially annular shaped base member having a curved sloping surface and first and second rigid channel forming means;
said first channel forming means being integrally secured to the curved sloping surface of said base member and arranged along an imaginary radius of said base member and having an inner end adjacent to the center of the base member and an outer end arranged near the periphery of said base member;
said second channel forming means being movable upon said base member and having inner and outer ends;
flexible means arranged between the inner ends of said first and second channel forming means; and
securing means for releasably securing said second channel forming means to said base member adjustably along an arc opposed to the first channel-forming means, whereby said flexible means provides continuous invert channel form from the first channel-forming means the second channel-forming means and an adjustment of an angle formed by said first and second channel-forming means.

4,941,644

VALVE STEM

Richard H. Robinson, Alexander City, Ala., assignor to Robinson Foundry, Inc., Alexander City, Ala.

Division of Ser. No. 337,673, Apr. 13, 1989, Pat. No. 4,916,789.
This application Jan. 9, 1990, Ser. No. 462,727
Int. Cl.[5] F16K *3/30*
U.S. Cl. 251—360 **18 Claims**



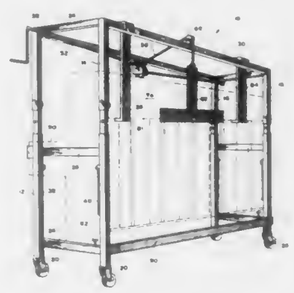
1. A valve stem comprising:
an elongated member having an outside surface configured to define the outer surface of a valve stem including a threaded portion and an engagement surface turning portion, said elongated member being formed by an evaporative pattern casting process; and
a rod member cast in said elongated member, said rod member being substantially as long as said elongated member and formed of a different material than that of said elongated member.

4,941,645

PIANO LIFTING AND TRANSPORTING APPARATUS

Dan M. Hall, 1400 Beverly Garden Dr., Metairie, La. 70002

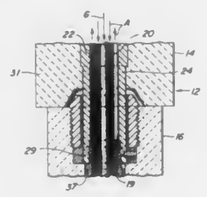
Filed Jul. 11, 1988, Ser. No. 217,311
Int. Cl.[5] B60P *3/00*; B66C *1/00*
U.S Cl. 254—324 **4 Claims**



1. A device for lifting and transporting a piano comprising:
an inverted U-shaped frame having a substantially rectangular portion and a pair of front and a pair of rear vertical posts;

a wheel means connected to a free lower end of each of said vertical posts;
a hoist means descending from a rear center of said horizontal top portion of the frame;
a T-shaped lifting member connected to said hoist means, having a horizontal portion for engaging a rear horizontal frame post of the piano;
a detachable rear horizontal cross member extending between lower portions of said rear vertical posts and a detachable front horizontal cross member extending between middle portions of said front vertical posts; and
at least one detachable suspension bar adapted for suspension from the top portion of the frame and for engagement with the rear horizontal frame post of the piano a distance from said T-shaped lifting member.

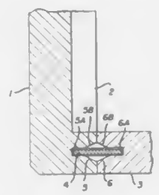
4,941,646
AIR COOLED GAS INJECTION LANCE
Philip D. Stelts, Center Valley; David W. Kern, Slatedale, and Kenneth J. Fioravanti, Allentown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem and Air Products & Chemicals, Inc., Allentown, both of, Pa.
Filed Nov. 23, 1988, Ser. No. 276,255
Int. Cl.[5] C21C *5/32*
U.S. Cl. 266—270 **3 Claims**



1. A refractory coated lance for introducing a reactive gas into a bath of molten metal the lance comprising:
(a) a first centrally located conduit for conveying a reactive gas extending from a reactive gas supply to the lance tip,
(b) a second centrally located conduit coaxially spaced and surrounding the upper portion of said first centrally located conduit for conveying a stream of gaseous cooling fluid at a high mass flow rate along the outer wall surface of said first conduit,
(c) a third centrally located conduit coaxially spaced and surrounding said first and second centrally located conduits, said third conduit having an outer insulating sleeve under a covering of refractory material and a threaded connection to permit the separation of the upper and lower portions thereof,
(d) a conical gas tight sealing means connecting the lower end of said third centrally conduit to outer periphery of first said centrally located conduit at a point below the discharge end of said second conduit and above the lance tip,
(e) an opening at the upper end of said third centrally located conduit for discharging the high velocity gaseous cooling fluid to the atmosphere.

4,941,647
PROTECTIVE LINING FOR ALUMINUM REFINING VESSEL
John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Sep. 12, 1989, Ser. No. 406,277
Int. Cl.[5] C22B *21/06*
U.S. Cl. 266—285 **6 Claims**

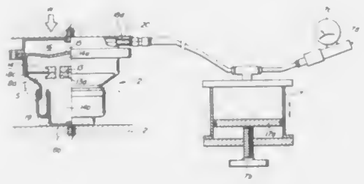
1. In a protective lining for a vessel for the holding, with or without refining, of molten aluminum, comprising a graphite side plate and an end plate adapted to be fitted closely together at a side thereof, said plates being secured together at the lower ends thereof, but being attached at the upper ends thereof to the walls of an outer, externally heated, cast iron tub and capable of being pulled apart, one from the other, at said upper ends thereof upon expansion of the tub during heating of the operating temperature of the vessel, thereby opening a channel for the flow of molten aluminum between the refining space within the vessel and the space between the plates and said cast iron tub, the improvement comprising:
(a) graphite side and end plates having cut-out portions at corresponding portions along the height thereof at the joint between said plates as said plates are fitted closely together, said cut-out portions extending vertically from the top of the plates to the point at which said plates are not pulled apart upon heating;
(b) a refractory sheet member not susceptible to attack by



molten aluminum, said sheet member being positioned across said corresponding cut-out portions of the side and end plates as fitted closely together, said sheet member extending in length vertically in said cut-out portions from above the intended operating level of molten aluminum to below the point at which said plates are pulled part upon heating, the width and thickness of said sheet member being such, relative to said cut-out portions, that, as the plates are pulled apart at the upper ends thereof upon heating of the vessel to operating temperature, the refractory sheet member serves as an effective barrier to the flow of molten aluminum through the channel otherwise created by the pulling apart of said side and end plates, whereby the joint between the side and end plates allows relative motion as required upon heating the vessel to operating temperature, while maintaining an effective barrier to the flow of aluminum between the plates in their pulled-apart position.

4,941,648
SHOCK ABSORBING DEVICE FOR VEHICULAR SEAT
Syuzaburo Kimura, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase City, Japan
Filed May 1, 1989, Ser. No. 345,187
Claims priority, application Japan, Jul. 29, 1988, 63-100961[U]
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—131 **6 Claims**

1. A shock absorbing device for a vehicular seat, comprising:
a link mechanism having lower and upper base members which are movable toward and away from each other; and
a shock damper interposed between said lower and upper base members to dampen shocks and vibrations applied to the same, said shock damper including:
an axially expandable housing having lower and upper parts which are respectively secured to said lower and upper base members of said link mechanism;
a diaphragm disposed in said housing to partition an interior of said housing into an air-filled part and a liquid-filled part;
a partition wall disposed in said liquid-filled lower part to partition the same into first and second chambers, said partition wall having an aperture formed therethrough; and

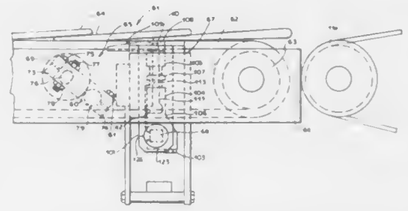


an orifice member axially movably disposed in the aperture of said partition wall, so that said orifice member is selectively projectable into said first and second chambers, said orifice member having an axially extending orifice formed therethrough.

4,941,649
FLUID-FILLED CYLINDRICAL ELASTIC MOUNT HAVING MEANS FOR IMPROVED DURABILITY OF ELASTIC BODY
Yoshiki Funahashi, Iwakura, and Masayuki Hibi, Komaki, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan
Filed Jul. 18, 1988, Ser. No. 220,317
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—140.1 **10 Claims**

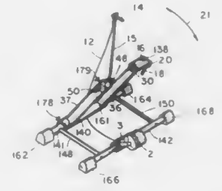
1. A fluid-filled cylindrical elastic mount for flexible coupling of two members, comprising:
an inner sleeve;
an outer sleeve disposed outwardly of said inner sleeve;
an elastic body interposed between said inner and outer sleeves for elastic connection therebetween, said elastic body having a pressure-receiving chamber filled with a non-compressible fluid;
means for defining an equilibrium chamber filled with said non-compressible fluid, said means including an elastic wall;
means for defining a restricted passage for restricted fluid communication between said pressure-receiving chamber and said equilibrium chamber; and
said elastic body having a portion defining a void formed therethrough in an axial direction of said elastic mount, said void and said pressure-receiving chamber being positioned between said inner and outer sleeves, as viewed in a load-receiving direction in which said elastic body is compressed when said elastic mount is attached to said two members, such that said void is positioned between said pressure-receiving chamber and one of said inner and outer sleeves in said load-receiving direction.

4,941,650
VACUUM COUNTER FOR STACKED SIGNATURES
William Raybuck, Rockledge, Fla., assignor to Stacker Machine Co., Inc., Mountainside, N.J.
Continuation of Ser. No. 151,006, Feb. 1, 1988, abandoned. This application Jun. 28, 1989, Ser. No. 373,695
Int. Cl.[5] B65H *33/04*
U.S. Cl. 270—95 **7 Claims**



1. An apparatus for forming an indicium in a stream of continuously moving shingled signatures, said indicium consisting of a signature displaced laterally from said stream comprising:
a frame;
a vacuum head shaft mounted in said frame and being laterally movable in said frame;
means for laterally moving said vacuum head shaft; and
at least one vacuum head mounted on said vacuum head shaft below said signatures, said vacuum head having a body and a top, said top having a recessed vacuum chamber, whereby a vacuum is formed in said recessed chamber to hold said signature on said top of said vacuum head and said vacuum head shaft is moved laterally by said means for moving said vacuum head causing said signature indicium to move laterially of said moving signature stream.

4,941,651
BICYCLE TRAINER
Cal M. Phillips, North Miami Beach, Fla., assignor to RTS Trainer Corporation, Fort Lauderdale, Fla.
Filed May 13, 1988, Ser. No. 193,677
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—73 **14 Claims**



1. A support stand for a bicycle that can be used as a training device, comprising:
(a) a horizontal support having a front and a rear adapted to be placed on a relatively flat surface, wherein said front and said rear are mutually spaceable at varying distances;
(b) first and second upwardly extending mutually spaced legs mounted on said rear;
(c) first and second opposed socket members mounted near an upper extremity of said first and second legs, wherein said socket members are substantially perpendicular to said legs and extendable towards and away from an axle of

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a bicycle, said socket members having a socket for capturing an axle of a bicycle;

(d) first and second spacing bars respectively connecting said first and second legs to said front, wherein said spacing bars are pivotally attached to said legs at a point spaced apart from where the legs are mounted on the rear, and wherein the spacing bars are fixedly connected to the front; and

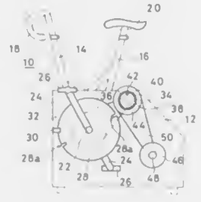
(e) a roller for supporting a bicycle wheel being rotatively mounted on and extending between said first and second spacing bars, wherein said roller is mounted towards said front, whereby any sized bicycle wheel may be mounted in a driving relationship on the roller by adjusting the socket members' height when thrusting the legs forward and rearward varying the distances between the front and the rear.

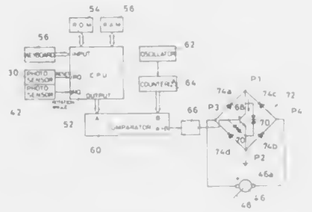
4,941,652

BICYCLE TYPE TRAINING MACHINE

Masakazu Nagano; Katsuya Nakagawa, and Yoshiaki Nakanishi, all of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Feb. 8, 1988, Ser. No. 152,976
Claims priority, application Japan, Feb. 9, 1987, 62-028980
Int. Cl.[5] A63B *69/16, 21/00, 23/04*
U.S. Cl. 272—73 **17 Claims**





1. A bicycle type training machine, comprising:

a body;

a pedal crank, rotatably support on said body, having two ends and including pedals attached on to each end;

rotation angle detecting means provided on said body for detecting a rotation angle of said pedal crank;

data generating means, responsive to said detecting means, for generating desired load data;

a reference clock signal generation for generating a reference clock signal;

counter means which receives said reference clock signal;

comparing means which compares said desired load data from said data generating means with a counted value of said counter means; and

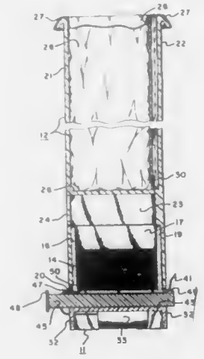
electrical braking means, linked to said pedal crank and responsive to said comparing means, for generating a braking force, wherein said electrical, braking means includes pulse generating means for generating a pulse having a duty ratio, said duty ratio comprising relative time periods of a first level and a second level of a pulse in accordance with said desired load data.

4,941,653

COMBINATION NEWSPAPER AND TRASH RECEPTACLE

James G. Sterner, Jr., R.R. 4, Box 60, Sewell, N.J. 08080

Filed Jul. 7, 1989, Ser. No. 376,983
Int. Cl.[5] B65D *85/62*
U.S. Cl. 220—1 T **9 Claims**



1. A combination trash receptacle for storing newspapers and other trash separately comprising:

a lower newspaper receptacle having a receptacle base, a floor superimposed thereupon of length and breadth of that of a common newspaper and having upwardly extending front, rear and opposed side walls;

an upper trash receptacle having front, rear and opposed side walls dimensioned to nest with the upwardly extending front, rear and opposed side walls of the lower newspaper receptacle; and

a floor within the upper trash receptacle whereby newspapers may be stored within the lower newspaper receptacle and other trash within the upper trash receptacle prior to disposal.

4,941,654

METHOD AND APPARATUS FOR STACKING APERTURED SHEETS WITHOUT JAMMING

Gary L. Kelley, Milford, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 29, 1985, Ser. No. 760,010
Int. Cl.[5] B65H *31/00*
U.S. Cl. 271—209 **6 Claims**

1. A sheet stacker comprising:

a. a sheet receptor station for accumulating a stack of sheets;

b. sheet feed means for feeding each sheet in a given feed direction toward said stacking station, said stacking station further including a base;

c. arch forming means for supporting said stack only at a plurality of centralized portions thereof for permitting edge portions thereof to be pulled downwardly toward said base by gravity to form an arch in said stack transverse to said direction of feed, together with movable

sheet support means, coupled between said base and said arch forming means, for permitting said sheets to be lowered toward said base as the weight of the stack of sheets over said arch forming means increases.

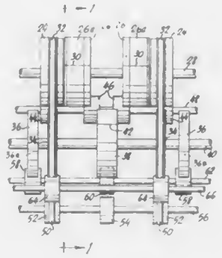


4,941,655

SKEW-CORRECTING AND DELAY MECHANISM FOR SHEET FEEDER

Theodore Winkler, Levittown, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Filed Nov. 15, 1988, Ser. No. 271,914
Int. Cl.[5] B65H *9/00*
U.S. Cl. 271—242 **6 Claims**



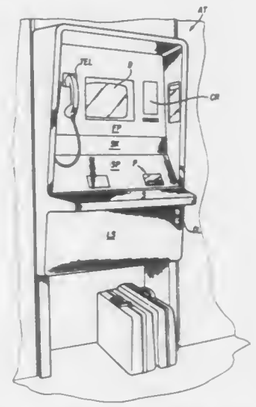
1. Skew-correcting apparatus including in combination first and second sets of opposing feed rollers, said first set comprising a pair of first end rollers and a first center roller between said first end rollers, said second set comprising a pair of second end rollers and a second center roller between said second end rollers, said first center roller having a sheet-gripping portion of limited circumferential extent forming a nip with said second center roller, said first end rollers respectively engaging said second end rollers, means for coupling said second set of rollers for concomitant rotation, means for mounting said first end rollers for rotation relative to said first center roller, means for driving said first center roller, and means for retarding the rotation of rollers other than said first center roller, whereby said other rollers are normally stationary to align the leading edge of a sheet but are driven by said sheet-gripping portion of said first center roller to advance said sheet through said nip.

4,941,656

SHEET HANDLING MECHANISM

Michael L. Davies, American Fork, and Lawrence Weber, Centerville, both of Utah, assignors to Unisys Corp., Detroit, Mich.

Filed Dec. 8, 1986, Ser. No. 939,514
Int. Cl.[5] B65H *31/00*
U.S. Cl. 271—278 **24 Claims**



1. A machine for automatically preparing and dispensing unit records to a subject person; this machine including:

record preparation means adapted to print and prepare one or several unit records in a set, responsive to prescribed preparation commands, and to further eject the records serially to a preparation-output station; said machine being secured against unauthorized access and arranged to allow operator access by opening of a predetermined delivery port only upon prescribed access signals; plus record printing means and;

moveable unit-record receiving means normally disposed operatively adjacent said preparation-output station and adapted to receive printed records, there, from said preparation mean and to be moved to present these records to be accessible to the subject person from said delivery port, said record receiving means also being selectively operable to automatically dump its contents into associated discard-record storage means upon occurrence of any of the several prescribed anomalous conditions.

4,941,657

SHEET SORTING DEVICE

Tadayuki Kitajima, Yokohama; Toshiyuki Asakawa, Sagamihara; Masataka Naito, Yokohama; Kazuhiro Matsuo, and Toshiaki Murayama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 195,092, May 17, 1988, abandoned, which is a division of Ser. No. 838,826, Mar. 12, 1986, Pat. No. 4,854,571. This application Nov. 13, 1989, Ser. No. 436,091
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—293 **8 Claims**

1. A sheet sorting device for sorting sheets conveyed onto multi-stage bin trays, comprising:

a plurality of bin trays provided in multiple stages;

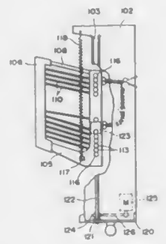
a support member supporting said bin trays and vertically movable;

drive means for moving said support member and the fore end of each bin tray for receiving sheets as well as the end of each bin tray remote there from up and down; and

a spring member for suspending said support member from

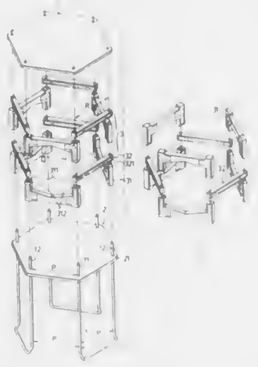
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the sheet sorting device and receiving substantially the combined load of said support member and said bin trays



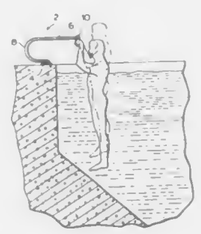
to offset said combined load which otherwise would be applied to said drive means.

4,941,658
FABRICATED AMUSEMENT PLATFORM
Kent Poo, Taipei, Taiwan, assignor to Omni World, Inc., Taipei, Taiwan
Filed Jun. 6, 1989, Ser. No. 362,140
Int. Cl.[5] A63B *17/00*
U.S. Cl. 272—56.5 R **3 Claims**



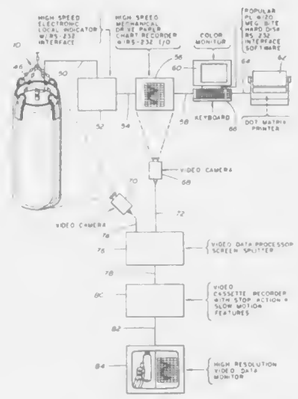
1. A fabricated platform comprising:
a plurality of skeleton members having at least one pair of columns adapted to be disposed vertically on a mounting surface;
a plurality of block members each having a pair of throughholes adapted to be simultaneously passed through by a pair of columns of one of said skeleton members; and
at least one first plate member having a plurality of pairs of holes formed therethrough, the two holes in each pair being spaced apart from each other at a distance which equals the distance between said two columns of one of said skeleton members; whereby said platform is fabricated by passing said columns of said skeleton members through said throughholes of said block members and said holes of said first plate member in order to vertically stack said block members and stably support said first plate member which is suspended among said columns of said skeleton members.

4,941,659
AQUATIC EXERCISER
Claudio Silvestri, 2825 Islington Avenue, Suite 410, Weston, Ontario, Canada (M9L 2K1)
Filed Jan. 31, 1989, Ser. No. 304,246
Int. Cl.[5] A63B *1/00*
U.S. Cl. 272—62 **9 Claims**



1. An exerciser comprising a mounting base having a base plate with a plurality of apertures therein by means of which said base plate is securable adjacent a support edge having a level of water in a forward direction, therebeyond;
an extension member having a lower arm extending rearwardly from said base, into a 'U' shaped section which curves upward and back over itself into an upper arm which extends cantilevered, over said lower arm in said forward direction, to a point beyond said base plate;
said 'U' shaped section of said extension member being located to one side of said mounting base with said upper arm having its free end terminating at a position located to the opposite side of said mounting base;
said upper arm supporting a user engaging member at its free end.

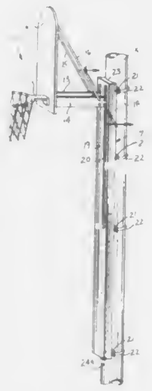
4,941,660
IMPACT AND SPEED MEASURING SYSTEM
Donald G. Winn, and Daniel M. Josephson, both of 6710 Escondido Dr., Houston, Tex. 77083
Filed Sep. 2, 1988, Ser. No. 239,986
Int. Cl.[5] A63B *69/00*
U.S. Cl. 272—76 **1 Claim**



1. A system for measuring and recording total applied force instead of only peak force associated with martial and boxing arts, said system including in combination

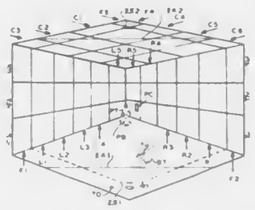
bag means vertically supported at the upper end and including a transducer,
interface means connected to said transducer,
recorder means providing a recording and connected to said interface means,
computer means including program means connected to said recorder means, said computer means being comprised of standard components not requiring customizing,
dot matrix printer means connected to said computer means for providing the compared results from the computer means, wherein said results including the total applied force instead of only the peak force for an entire training session, number of strikes, force of each strike, average force per strike, average strikes per minute, maximum and minimum force strikes and when such strikes occurred, fastest and slowest time between two strikes, and the time when the average force per strike starts to decline rapidly to indicate fatigue of the muscles used to strike said bag means so that progress of training may be ascertained,
first and second video cameras, said first video camera being focused on said bag means and said second video camera being focused on said recorder means,
video data processor means connected to said first and second video cameras,
video cassette recorder means connected to said video data processor means, and
video data monitor means connected to said video cassette recorder means whereby said bag means and the person applying a plurality of intermittent strikes to said bag means is displayed in synchronization alongside the total applied force from each of said plurality of intermittent strikes.

4,941,661
ADJUSTABLE BASKETBALL BACKBOARD APPARATUS
Gregory S. Lykens, 1409 Kingswood Dr., Fulton, Mo. 65251
Filed Feb. 13, 1989, Ser. No. 309,484
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—15 R **10 Claims**



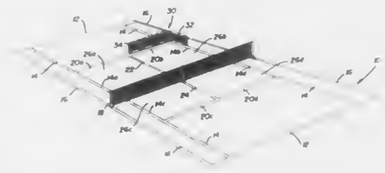
1. An adjustable basketball backboard apparatus for securement to a support standard for varying the height of the apparatus relative to the standard, the apparatus comprising,
a basketball net member orthogonally secured to a forward face of a vertically oriented backboard,
and a first and second support arm secured their forward ends to a rearward face of the backboard and extending rearwardly of the backboard with rearward ends of the support arms extending interiorly of a support housing, said support housing including a rotatably mounted support rod coextensive with said support housing including a lowermost torguing means to effect rotation of the support rod,
and a support means to securedly receive the rearward ends of the support arms and vertically adjustable relative to the support rod upon rotation of the support rod relative to the support means by application of force to the torguing means.

4,941,662
BASEBALL GAME
James DePersa, P.O. Box 665, Landing, N.J. 07850
Filed Nov. 14, 1988, Ser. No. 270,091
Int. Cl.[5] A63C *69/00*
U.S. Cl. 273—25 **16 Claims**



1. An apparatus for playing a baseball game played on a playfield having a ball pitching position and a batting position placed therein, comprising
a ball detection means located in a ball passage zone between said pitching position and said batting position for providing a ball passage signal in response to passage of said ball through a ball passage zone:
a plurality of field zones placed about the perimeter of said playfield, each said field zone having ball intercept detecting means positioned for intercepting a ball and providing in response to said interception a signal indicating the position of a ball entering said zone, said signal corresponding to a position indicating a bit, foul or out; and
scoring means coupled to said intercept detecting means for registering a hit, foul or out in response to said, said scoring means including:
iming means for indicating the elapsed time between a ball passing through said ball passage zone and interception of a ball by said ball intercept detecting means to provide a speed signal, said scoring means being operable to indicate a score in response to said speed signal.

4,941,663
TENNIS SERVICE CATCHING NET
MacQuarrie Walker, 25 Nortontown Rd., Madison, Conn. 06433
Filed Apr. 26, 1989, Ser. No. 343,502
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—29 A **16 Claims**



1. A service practice court for tennis comprising:
a tennis net; a regulation service area having rear and outside service lines on one side of said tennis net; a regulation

base line on the other side of said tennis net; and a service catching device comprising

a first frame section having vertical members defining the ends of said first section and at least one horizontal member connecting said vertical members,

said first frame section having a horizontal length substantially the same as that of, and disposed along, the rear line of an individual regulation tennis court service area;

a second frame section, adjacent to said first frame section, having vertical members defining the ends of said second section and at least one horizontal member connecting said vertical members, said second frame section having a horizontal length less that of said first frame section and disposed along a portion of the outside line of said service area, said first and second frame sections being secured perpendicular to each other along a common vertical edge and having opposite free ends to form an "L" shape as seen in plan view; and

a sheet material secured within each of said frame sections to restrict passage of a tennis ball,

said frame sections and associated sheet material adapted to retain tennis balls served into said service area from the opposite side of said tennis court.

4,941,664

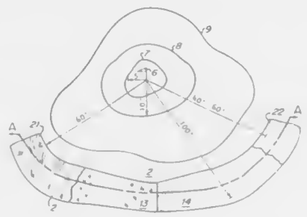
GOLF SHOT DUPLICATOR

Dwight W. Pate, 101 Mirada Rd., Half Moon Bay, Calif. 94019

Filed Jan. 30, 1989, Ser. No. 302,926

Int. Cl.[5] A63B *69/36, 67/02*

U.S. Cl. 273—35 B **2 Claims**



1. A course for duplicating golf shots comprising:

a target area including a plurality of targets at spaced locations therein; and a teeing loop disposed substantially about said target area, the teeing loop including a plurality of teeing locations at spaced apart positions therealong for playing selected ones of said plurality of targets, said teeing location having golf balls teeing surfaces including tall grass, short grass, sand and hardpan dirt, with such surfaces disposed at various elevations and degrees of level, up-sloping, down-sloping side-sloping terrain.

4,941,665

ROTATOR GAME DEVICE

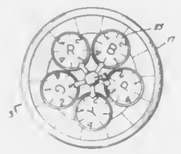
Reuben B. Klamer, 828 Prospect St., La Jolla, Calif. 92037

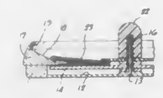
Filed Jan. 25, 1989, Ser. No. 301,816

Int. Cl.[5] A63F *5/04*

U.S. Cl. 273—142 H **12 Claims**

1. A rotator game device for the generation of randomly selected data comprising a housing, a base member rotatable within said housing and having a plurality of centrally located detents or collars, a retainer member at the top of said housing overlying part of said base member without contacting the same and having a circular inclined surface and retaining lip, and a plurality of removable wheels carrying indicia and having one edge supported on the base member and the other edge supported on the inclined surface of said retainer member in a spaced relationship from said retaining lip, such that when the base member is at rest the wheels are nested under the influence of gravity in the detents of the base member, and when the base member is rotating the wheels are displaced outwardly and up the inclined surface of the retainer member to contact the retaining lip under the influence of centrifugal force, resulting in the wheels revolving in the direction of





movement of said base member with respect to said housing and said retainer member while individually counter rotating until centrifugal force decreases to the point where they fall under the influence of gravity back to the detents in the base member.

4,941,666

GOLF CLUB, SET OF GOLF CLUBS, AND METHOD OF PRODUCING THE SAME

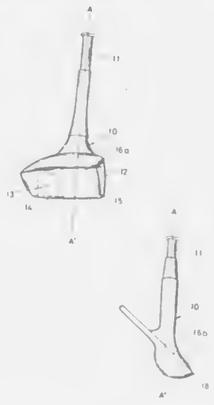
Noriyuki Suganuma, 2-9-17, Nagata-Minami, Minami-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Aug. 18, 1987, Ser. No. 86,549

Claims priority, application Japan, Aug. 27, 1986, 61-198945; Aug. 27, 1986, 61-198946

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—169 **9 Claims**



1. A golf club which is used for so-called through-the green shots from a tee shot to a shot causing a ball to be on a putting green, wherein said golf club comprises a club head (**10**) having a striking face defined in part by a leading edge, and a shaft (**11**) extending from said club head, said club head having a center of mass (**16***a*, **16***b*) substantially located in a front portion in a static state of said golf club with respect to a central plane

(A—A′) which passes longitudinally through the center of said shaft substantially parallel to said leading edge (**11**) and divides said club head into said front portion containing said striking face and a rear portion.

6. A method of producing a set of golf clubs which is constituted by a plurality of different golf clubs, each of the golf clubs in said set comprising at least a club head (**10**) having a striking face defined in part by a leading edge and a shaft (**11**) extending from said club head, and the steps of forming a club head structure such that a position of a center of mass (**16***a*, **16***b*) of said club head is substantially located in a front portion at the striking face side of said club head in s static state of said golf club with respect to a central plane (A—A′) which passes longitudinally through the center of said shaft substantially parallel to said leading edge (**11**) and divides said club head into said front portion containing said striking face and a rear portion, and assembling said plurality of different club heads by mounting each said club head structure onto an end of one of said plurality of shafts.

4,941,667

GOLF PRACTICING APPARATUS

Thomas Wiklund, Trangsund, Sweden, assignor to Golf Comback AB, Viklung, Sweden

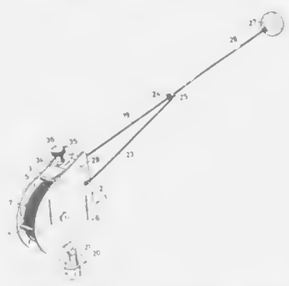
PCT No. PCT/SE88/00492, § 371 Date Jun. 9, 1989, § 102(e) Date Jun. 9, 1989, PCT Pub. No. WO89/04699, PCT Pub. Date Jun. 1, 1989

PCT Filed Sep. 23, 1988, Ser. No. 375,028

Claims priority, application Sweden, Nov. 27, 1987, 8704732

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—185 C **5 Claims**



1. Golf practising apparatus comprising a housing (**1**) having rotatably mounted therein a capstan (**7**) for taking up and paying out a line (**19, 26**) which is firmly connected to the capstan and which has a golf ball (**27**) connected to the free end thereof, characterized in that the housing is provided with a ground anchoring device (**20**) which permits the housing (**1**) to be rotated about a substantially vertical axis; in that extending outwardly from the housing is an elongated, resilient line guide (**23**) having provided on the end thereof remote from the housing a guide device (**24**) which freely embraces the line; in that the line comprises a first, outer highly stretchable elastic line part (**26**) and a second line part (**19**) of low stretchability and connected to the capstan; and in that attached between the first and the second line parts is a stop device (**25**) which is intended to co-act with the guide device (**24**) when line is wound onto the capstan in a manner to prevent the first line part (**26**) from being wound onto the capstan (**7**); and in that a brake means (**16**) is configured to exert on the capstan (**7**) a braking force which increases with increasing lengths of line paid out from the capstan.

4,941,668

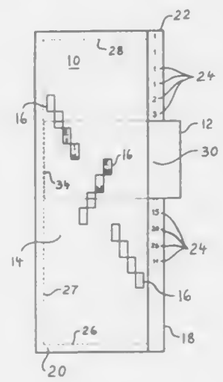
WORD PUZZLE CARD GAME

Matthew M. Mobrem, 3203 Nuttree Woods Dr., Midlothian, Va. 23112

Filed Aug. 4, 1989, Ser. No. 389,858

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—248 **9 Claims**





1. A word puzzle card game comprising:

means for selectively revealing and disclosing characters of words, said means for selective revealing and disclosing including:

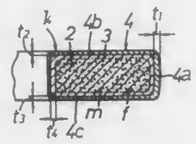
a plurality of puzzle cards each having imprinted upon a surface thereof a word or phrase to be determined; and,

at least one template mask device having masking means for concealing portions of said surface while one of said plurality of puzzle cards is displaceably disposed behind said masking means in any one of a plurality of displacement positions, said making means having windows for selectively revealing said characters while said surface is partially concealed by said masking means,

each of said plurality of puzzle cards being displaceable to said plurality of displacement positions with respect to said masking means to selectively réveal different said characters of said word or phrase; and,

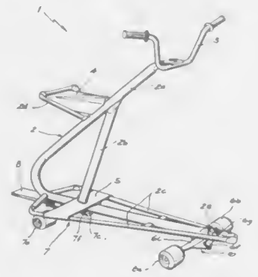
wherein said characters are located within cells of an identical matrix on each of said plurality of puzzle cards, said cells being arranged in rows and columns, each of said cells bearing a unique indicium, said indicium corresponding to the position of said each of said cells within said matrix, and wherein said windows selectively reveal said cells including said character or characters and said unique indicium located therein.

4,941,669
FIBER-REINFORCED PISTON RING FOR INTERNAL COMBUSTION ENGINE
Yoshikazu Fujisawa; Tsunehisa Hata, and Tadayoshi Hayashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 23, 1989, Ser. No. 315,398
Claims priority, application Japan, Jan. 24, 1988, 63-41393; Jan. 24, 1988, 63-41394
Int. Cl.[5] F16J 9/20, 9/22
U.S. Cl. 277—235 R 8 Claims



2. A fiber-reinforced piston ring for an internal combustion engine, comprising a main annular composite body formed of a reinforcing fiber of long carbon fibers oriented in a circumferential direction of the piston ring in a matrix of an aluminum alloy and having a fiber volume fraction in a range of 5% to 60%, a single-material layer formed of an aluminum alloy and covering the surface of said main composite body, and a hard layer covering the entire surface of said single-material layer, wherein said hard layer is provided with a greater thickness on a surface portion of the piston ring that slidably engages the cylinder wall of the engine than the thickness on the remaining surfaces.

4,941,670
RIDE-ON DEVICE FOR TRANSPORTATION AND STUNT RIDING
David A. Parr, 1 Nattai Close, Thornleigh NSW, Australia
Filed Sep. 9, 1988, Ser. No. 242,396
Claims priority, application Australia, Sep. 10, 1987, PI4318
Int. Cl.[5] B62D 7/00
U.S. Cl. 280—87.021 11 Claims



1. A transportation and stunt riding device adapted for use on a supporting surface comprising:
a V-shaped frame having a first arm and a second arm and a longitudinal axis, said first arm and said second arm being fixed with respect to each other;
upper and lower body stabilization and support means mounted on said frame;
at least two wheel mounting means mounted to said frame and having at least four wheels rotatably attached to said at least two wheel mounting means adapted to be powered by at least one of potential and kinetic energy, the direction of travel of said device being governed by the non-perpendicular positioning of the frames relative to the supporting surface;
wherein one of said wheel mounting means includes front wheel mounting means defined by a first plate pivotally connected to the second arn of the V-shaped member by a stub axle integrally mounted on the first plate and passing through sleeve attached to the second arm of the V-shaped member, at least one wheel engaging axle permanently affixed to said first plate.

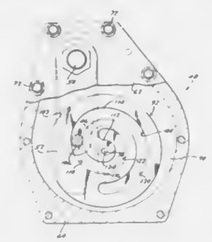
4,941,671
FOUR-WHEEL STEERABLE VEHICLE HAVING A FORE/AFT SLIDING LINK
Svein Ellingsen, Bothell, Wash., assignor to Paccar Inc., Bellevue, Wash.
Filed Mar. 31, 1989, Ser. No. 331,459
Int. Cl.[5] B62D 61/10
U.S. Cl. 280—91 22 Claims



1. An apparatus providing controlled steering of four wheels on a vehicle, two of said wheels being front axle wheels coupled to a front axle and two of said wheels being rear axle wheels coupled to a rear axle, comprising:
a steering shaft rotatably coupled to a frame of said vehicle, said steering shaft having a steering wheel means coupled thereto for rotation by a driver to steer said vehicle;
a steering gear coupled to said steering shaft and to said frame of said vehicle;
an arm coupled to said steering gear, said arm pivoting about a point when said steering shaft rotates;
a first drag link having a first end pivotally coupled to said arm and a second end pivotally coupled to a front-wheel steering control arm, said front-wheel steering control arm coupled to said front axle wheels;
a second drag link having a first end pivotally coupled to said arm;
a sliding link extending from a position adjacent said front axle to a position adjacent said rear axle, said second drag link being pivotally coupled to said sliding link;
a third drag link having a first end pivotally coupled to a second end of said sliding link and a second end pivotally coupled to an idler arm, said idler arm being coupled at an idler arm pivot point to said frame at a position adjacent said rear axle; and
a fourth drag link having a first end pivotally coupled to said idler arm and a second end pivotally coupled to a rear-wheel steering control arm, said rear-wheel steering control arm coupled to said rear axle wheels.

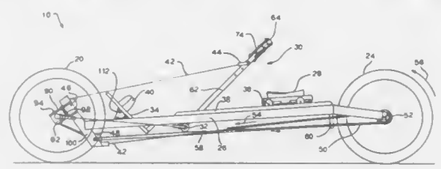
4,941,672
REAR WHEEL STEERING DRIVE MECHANISM
Lawrence J. Godin, West Bloomfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed May 8, 1989, Ser. No. 348,436
Int. Cl.[5] B62D 7/15
U.S. Cl. 280—91 5 Claims

1. A rear wheel steering drive mechanism for a vehicle having a front wheel steering system and a rear wheel steering system, the rear wheel steering drive mechanism comprising a casing, an input shaft and an output shaft journaled in the casing, the input shaft adapted to be operatively connected to the front wheel steering system for rotation thereby whenever the front wheel steering system is activated, the output shaft adapted to be operatively connected to the rear wheel steering system to selectively transmit front wheel steering system activity to the rear wheel steering system, a cam member positioned within the casing and connected to the input shaft for rotation therewith, the cam member having a spiral cam groove, a cam arm connected to the output shaft for rotation therewith, a cam pin extending from the cam arm into the cam groove, the cam groove having a central circular first cam portion the center of which is coincident with the axis of rotation of the cam member, the cam pin being positioned at substantially the midpoint of the first cam portion when the vehicle front wheel steering system is in the straight ahead mode whereby initial actuation of the front wheel steering system with concomitant turning of the input shaft and cam



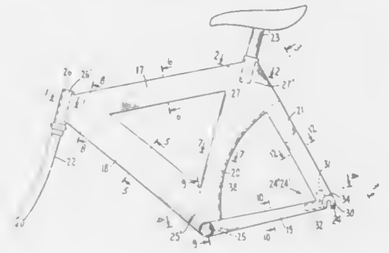
member is ineffective to cause movement of the cam arm so long as the cam pin is positioned within the first cam portion, the cam groove having a second cam portion spiralling radially outwardly from one end of the first cam portion and a third cam portion spiralling radially inwardly from the other end of the first cam portion, said second and third cam portions being circular and having a common center differing in location from that of the first cam portion, continued actuation of the front wheel steering system ultimately rotating the input shaft and cam member to a position where the cam pin enters one of the second or third cam portions depending upon the direction of front wheel steering with resultant pivoting of the cam arm and rotation of the output shaft and actuation of the rear wheel steering system.

4,941,673
EXERCISE DEVICE
Sam H. Bennett, 4930 S. 5th St. W., Idaho Falls, Id. 83401
Filed Feb. 13, 1989, Ser. No. 309,216
Int. Cl.[5] B62M 1/12; B62D 9/02
U.S. Cl. 280—112.2 14 Claims



1. An exercise apparatus comprising:
a. a frame member having a front-to-back longitudinal axis;
b. at least three wheels affixed to the frame;
c. a rowing post moveably affixed to the frame and providing locomotion to the wheels when moved in a first plane aligned along the longitudinal axis;
d. steering handles affixed to the rowing post and adapted to pivot in a second plane which includes the rowing post and at an angle to the longitudinal axis; and
e. means to cant the frame when the apparatus is turned, comprising a forwardly and downwardly angled inclined plane having a front axle pivoted thereon such that movement of the axle upon the inclined plane causes canting of the frame.

4,941,674
TUBULAR BICYCLE FRAME
Brent J. Trimble, 8025 Sundi Way, Anchorage, Ak. 99502
Continuation of Ser. No. 861,983, May 12, 1986, abandoned.
This application Jan. 29, 1988, Ser. No. 149,984
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] B62K 3/02, 19/02
U.S. Cl. 280—281.1 34 Claims



1. A bicycle frame having a steering support means for rotatably supporting a front fork assembly for carrying handle bars and a front wheel assembly, a seat support means for supporting a seat assembly, a pedal support means for supporting a pedal crank and chain wheel assembly, and a rear wheel support means for supporting a rear wheel assembly, said frame comprising:
a hollow tubular top portion connecting and extending between said steering support means and said seat support means;
a hollow tubular down tube portion connecting and extending between said steering support means and said pedal support means;
a hollow tubular seat column portion connecting and extending between said seat support means and said pedal support means;
a pair of hollow chain stay portions connecting and extending between said pedal support means and said rear wheel support means; and,
a pair of hollow seat stay portions connecting and extending between said seat support means and said rear wheel support means;
said top portion, said down portion and said seat column portion forming an open front triangle,
said seat column portion, said chain stay portions and said seat stay portions forming an open rear triangle with one of said chain stay portions and a corresponding one of said seat stay portions on either side of said rear wheel assembly,
said seat column portion providing a hollow common portion of said front and rear triangles and the outer edges of the other sides of said front triangle and the other two sides of said rear triangle substantially defining an outline of the geometry of said frame as viewed from one side thereof,
said tubular portions being integrally united to form a hollow tubular bicycle frame having a unitary construction with two generally triangular shapes defined by said hollow portions and with said hollow common portion forming a side of each of said generally triangular shapes, said unitary construction being a continuous hollow shell without abutting joints;
and the members forming said rear triangle being integrally united to form a unitary frame portion having a hollow common junction between said seat column member and

said pair of chain stay members, a hollow common junction between said seat column member and said pair of seat stay members, and a pair of hollow common rear junctions one on either side of said rear wheel assembly between a corresponding one of said pair of chain stay members and a corresponding one of said pair of seat stay members.

4,941,675

CROSS COUNTRY SKI LINKAGE APPARATUS INCLUDING PRE-STRESSED BLADE

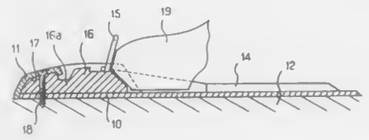
Marc Provence, Annecy, France, assignor to Salomon S.A., Annecy, France

Filed Nov. 5, 1986, Ser. No. 927,117

Claims priority, application France, Nov. 26, 1985, 85 17444

Int. Cl.[5] A63C *9/00*

U.S. Cl. 280—615 **26 Claims**



25. A ski boot and linkage apparatus for cross country skiing comprising:

a ski boot, said ski boot having an upper portion for receiving a foot and having a front end and a sole;

an elastic elongate element for associating the upper side of a ski with said boot for permitting the heel of said boot to lift therefrom by flexing of said elastic element; and

an upper support surface on said ski;

wherein said elastic elongate element and said upper support surface have configurations for deforming and creating a pre-stressed moment of said elastic elongate element when it is associated with said upper support surface for urging said elastic elongate element toward said ski, and

wherein said elastic elongate element extends from said front end and adapted to connect said ski boot to said ski, said elastic elongate element further comprising a forward lower surface area and a rearward surface area which slope with respect to each other to meet at an intersection below a flexion zone of said elastic elongate element.

4,941,676

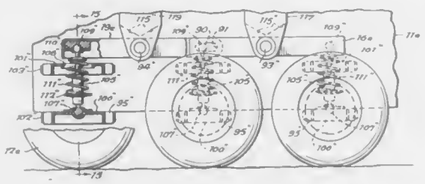
ALL-TERRAIN VEHICLE

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y. 14120

Division of Ser. No. 319,127, Mar. 3, 1989. This application Oct. 25, 1989, Ser. No. 426,428

Int. Cl.[5] B60G *5/00*

U.S. Cl. 280—685 **13 Claims**



1. A vehicle comprising a vehicle body, first and second bogies, first and second longitudinally spaced axles on said vehicle body mounting central portions of each of said first and second bogies, respectively, for pivotal movement, each of said bogies having inner and outer ends, first spring-shock strut means mounting an outer wheel for rotation relative to each outer end of each of said first and second bogies, second spring-shock strut means mounting an inner wheel on the inner end of said second bogie, and linkage means coupling said inner ends of said first and second bogies for causing said first and second bogies on said vehicle to pivot in unison about said first and second axles, respectively.

4,941,677

INDEPENDENT WHEEL SUSPENSION SYSTEM

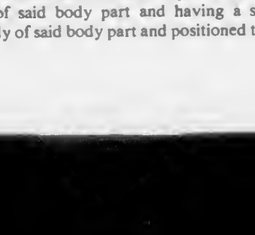
Yoshiyuki Matsumoto, and Kanji Kubo, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1988, Ser. No. 230,081

Claims priority, application Japan, Aug. 10, 1987, 62-199513; Aug. 10, 1987, 62-199514; Aug. 10, 1987, 62-199515; Aug. 10, 1987, 62-122270[U]; Aug. 10, 1987, 62-122271[U]; Sep. 4, 1987, 62-221380

Int. Cl.[5] B60G *3/18*

U.S. Cl. 280—690 **16 Claims**



1. A wheel suspension system comprising:

a wheel carrier, rotatably supporting a wheel, said wheel carrier having an upper part and a lower part which are coupled to a vehicle body by way of an upper lateral link means and a lower lateral link means, respectively,

said upper lateral link means includes a pair of upper lateral link members, arranged one behind the other, having inner ends of said upper lateral link members pivotally attached to said vehicle body at a substantially same elevation and having outer ends pivotally attached to said wheel carrier at mutually different elevations.

4,941,678

LIGHTWEIGHT REACTION CAN FOR PASSENGER INFLATORS

Donald R. Lauritzen, Hyrum, Utah; Michael J. Ward, Howell, Mich., and Scott R. Anderson, Syracuse, Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Jun. 29, 1989, Ser. No. 373,318

Int. Cl.[5] B60R *21/12*

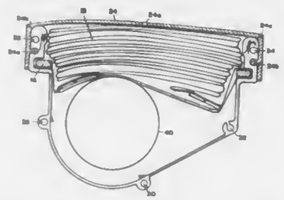
U.S. Cl. 280—732 **8 Claims**

1. A lightweight reaction can for vehicle passenger inflators comprising,

a trough-shaped body part having opposite ends, opposite side walls, and a bottom wall with an inflatable bag ring retaining notch on the inner side of each side wall, said body part further having inflatable bag cover retaining grooves on the outer side of each side wall, and a plurality of end plate attachment grooves on each opposite end,

first and second end plates attached to a respectively associated opposite end of said body part by means positioned in cooperative relation with the respective end plate attachment grooves,

each of said first and second end plates acting to retain the shape of said body part and having a shoulder facing inwardly of said body part and positioned to be in substantial alignment with the inflatable bag retaining notches on the inside walls thereof, each of said first and second end plates further having a reaction can attachment flange and a gas generator flange seat positioned to receive and to support an associated one of the ends of an elongated inflator gas generator positioned therein, and



a cover for the reaction can to protect an inflator inflatable bag positioned therein, said cover being retained on said reaction can by said inflatable bag cover retaining grooves on the outer side of each side wall of said body part.

4,941,679

AXIALLY ADJUSTABLE STEERING DEVICE FOR MOTOR VEHICLES

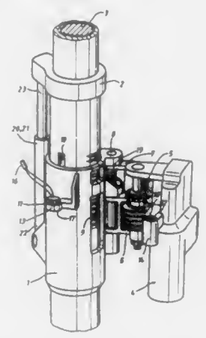
Karl-Heinz Baumann, Bondorf; Herbert Holtze, Weil der Stadt; Martin Wünsche, Bad Schwalbach, and Wolfgang Schwede, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jun. 27, 1989, Ser. No. 371,753

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1988, 3822460

Int. Cl.[5] B62D *1/18*

U.S. Cl. 280—775 **7 Claims**



1. Axially adjustable steering device for motor vehicles, which comprises two jacket-tube parts of which an outer jacket-tube part is secured to the body and an inner jacket-tube part, in which a steering shaft is fixed axially, is displaceable telescopically in the outer jacket-tube part by means of a controllable drive, a driven worm gear mounted in a reception part engaging into a tooth-profile part extending axially on the displaceable inner jacket-tube part and acting on the latter in a longitudinally displacing manner, a reception part of the worm gear being pivotably mounted fixedly relative to the vehicle and being retained via a locking means in an engagement position of the worm gear and tooth-profile part, wherein, the locking means is releasable in a controlled manner during a front collision, and wherein the worm gear is thereafter pivoted out of engagement with the tooth-profile part with the result that the inner jacket-tube part is movable into a position shifted furtherest in the direction of the vehicle front.

4,941,680

MULTIPURPOSE CHASSIS FOR COMMERCIAL AND SPECIAL VEHICLES

Walter Balker, Chilenstrasse 2, 8433 Weiach, Switzerland

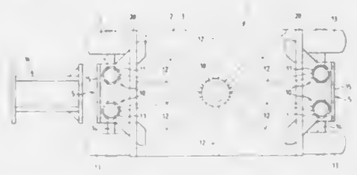
PCT No. PCT/CH88/00082, § 371 Date Dec. 15, 1988, § 102(e) Date Dec. 15, 1988, PCT Pub. No. WO88/08384, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 26, 1988, Ser. No. 297,867

Claims priority, application Switzerland, Apr. 29, 1987, 1644/87

Int. Cl.[5] B62D *21/18*

U.S. Cl. 280—793 **6 Claims**



1. A multipurpose chassis for commercial and special vehicles comprising

upper and lower carrier plates (2,3) each having a central opening at a central region thereof;

a reinforcing ring (18,35) fixedly attached to said upper and lower plates at said central region substantially aligned with said opening;

first and second pairs of guide tubes (11, 21, 31) fixedly attached to said upper plate at opposite ends of said chassis for receiving suspension apparatus, the longitudinal axes of said guide tubes being substantially perpendicular to said upper plate; and

a plurality of elongated reinforcement member (12, 32, 51) extending between and being fixedly attached to said upper and lower carrier plates and being attached at one end to said ring,

each said reinforcement member having a cross-section shaped to support loads and stabilize said chassis,

said reinforcement members extending generally radially from said reinforcing ring toward the edges of said plates with four said members extending diagonally, two said members extending generally perpendicular to a normal direction of motion of said chassis and four said members extending between and being attached at opposite ends to said ring and said guide tubes.

4,941,681

SLIDER AND ANCHOR LATCH DEVICE ASSEMBLY FOR PASSIVE SEAT BELT SYSTEM

Takanobu Sasaki, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 313,633

Claims priority, application Japan, Feb. 24, 1988, 63-23606

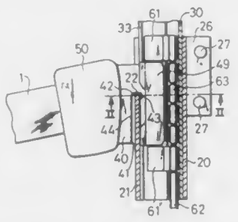
Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—804 **9 Claims**

1. An assembly of a slider and an anchor latch device, said assembly being suitable for use in a passive seat belt system of the type that a slider carries a webbing fastened thereto, is provided movably on and along a slide rail between an occupant-restraining position where the webbing may restrain an occupant and an occupant-releasing position where the webbing may release the occupant, and has a slider head received in the slide rail, comprising:

an anchor base formed of a plate-like member and engageable with the slider when the slider is in the restraining

position, said anchor base transversely surrounding the slide rails and having a front wall facing toward a webbing-fastened portion of the slider located in the occupant-restraining position and a pair of side walls extending from the front wall, said slider engaging with said front wall when the slider is in the occupant-restraining position; and



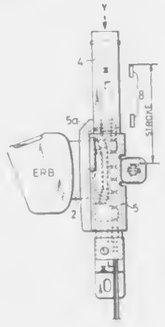
a maintaining means for maintaining the slider and anchor base out of contact at a part of an area of engagement between the slider and anchor base upon engagement thereof, said part being on the side of the slider head and on the side closest to the releasing position.

4,941,682

ADJUSTING MECHANISM FOR WEBBING-SUPPORTING MEMBER IN PASSIVE SEAT BELT SYSTEM

Kazuo Yamamoto, Kanagawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 318,061
Claims priority, application Japan, Mar. 1, 1988, 63-48507
Int. Cl.[5] B60R *22/06*
U.S. Cl. 280—804 **12 Claims**



1. An adjusting mechanism for a webbing-supporting member in a passive seat belt system, comprising:

an elongated member to be mounted on a vehicle body, said elongated member being bent with a predetermined radius of curvature in a direction transverse to the length of the vehicle body;

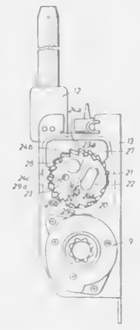
an anchor base transversely surrounding the elongated member, movable along the length of the elongated member and adapted to support a member to which a webbing is fastened, said anchor base having a pair of planar walls extending straight in the direction of the length of the elongated member and in parallel to each other, whereby a spacing between the bent elongated member and at least one of the planar walls of the anchor base in the direction of the thickness of the elongated member varies along the length of the bent elongated member, reaching a maximum substantially at a longitudinal intermediate portion of the anchor base on a concave side of the elongated member and a maximum substantially at least one of longitudinal ends of the anchor base on a convex side of the elongated member; and a spacer provided between the elongated member and anchor base to substantially fill up the spacing between the elongated member and said at least one planar wall of the anchor base.

4,941,683

VEHICLE SEAT BELT TIGHTENING SYSTEM

Hiroshi Tabata; Shizuyo Nakao; Yoshihiko Kinoshita, and Atsushi Katsuki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1989, Ser. No. 322,269
Claims priority, application Japan, Mar. 11, 1988, 63-57819; Mar. 21, 1988, 63-66990
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—807 **18 Claims**



1. A vehicle seat belt tightening system for taking up slack from a seat belt in high acceleration or deceleration condition to positively restrain a vehicle occupant but otherwise permitting said seat belt to be paid out to accommodate a movement of said vehicle occupant, comprising:

retractor means having a frame and a winding spool pivotally mounted thereon for winding a seat belt thereon;

said winding spool of said retractor means having a spring-loaded winding spool;

seat belt tightening means integrally attached to said frame at a seat belt outlet end of said retractor means, and provided with clamping means for selectively engaging said seat belt and guide means for guiding a movement of said clamping means in a direction to take up slack from said seat belt;

said guide means comprising a journal bearing for supporting said clamping means for rotational motion around a center line which extends in parallel with the rotational center line of said winding spool;

drive means integrally attached to said frame adjacent said seat belt tightening means for selectively activating said seat belt tightening means; and

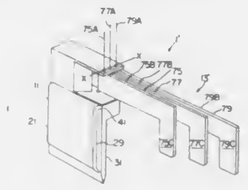
deceleration detecting means integrally attached to said frame adjacent said drive means for activating said drive means when a level of acceleration or deceleration of a vehicle crash is detected.

4,941,684

AUTOMATIC BOOK MARK

Amos Frank, and Joel Kehat, both of Haifa, Israel, assignors to Joseph D. Ben-Dak, Kiryat, Israel

Filed Aug. 15, 1988, Ser. No. 232,176
Int. Cl.[5] B42D *9/00*
U.S. Cl. 281—42 **16 Claims**



1. A book mark for use in combination with a book having a front cover, a back cover and a spine therebetween, said book mark comprising:

a clamp means for releasable attachment to a book;

a marker means, integrally formed with said clamp means and arranged to extend in use from said clamp means generally outward a said spine of said book, for releasably marking a page in said book;

said clamp means and said marker means formed of a flexible, resilient material;

wherein said clamp means is a substantially U-shaped member, having a first substantially vertical edge and a second substantially vertical edge, comprising:

a substantially vertical first plate-like member forming one of the legs of the U, said first plate-like member having a first end, a second end, a first face and a second face, said second face of said first plate-like member contacting engageable of said book, said first plate-like member having a first flange portion extending substantially horizontally outward from said second face proximate said second end, said first flange portion having an outboard end, a second flange portion extending substantially vertically downward from said outboard end of said first flange portion, said second flange portion substantially parallel to said first plate-like member, said second flange portion having an expanded outer edge of predetermined geometric shape;

a substantially vertical second plate-like member forming the other of the legs of the U, said second plate-like member having a first end, a second end, a first face and a second face, said second face of said second plate-like member contactingly engageable of said book; said second plate-like member having a third flange portion extending substantially horizontally outward from said first face proximate said second end, said third flange portion having an upper face, a bore passing through said third flange portion substantially parallel to said second plate-like member, said bore having a predetermined geometric shape adapted to receive and slidingly engage said expanded outer edge of said second flange portion, a slit formed in said third flange portion and coextensive therewith communicating said upper face of said third flange portion with said bore, said slit adapted to receive and slidingly engage said second flange portion;

said first flange portion, said second flange portion, said third flange portion, said bore and said slit cooperating to interconnect said first plate-like member and said second plate-like member so that said second face of said first plate-like member faces and is disposed substantially parallel to said second face of said second plate-like member for resiliently engaging a portion of said book therebetween;

and wherein said marker means comprises:

an arm member extending substantially horizontally from said first vertical edge of said U-shaped member proximate said first flange portion, said arm member having an outboard end remote from said U-shape member;

a marker member extending substantially vertically downward from said arm member, said marker member contactingly engageable of a page of said book;

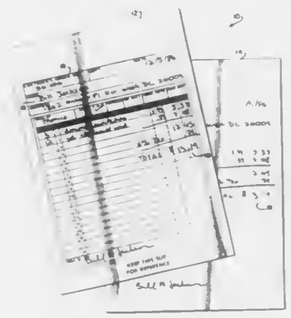
and wherein said U-shaped member, said arm member and said marker member cooperate so that, when said U-shaped member engages a portion of said book, with said second vertical edge proximate said spine of said book, and said marker member engages a page of said book, said arm member yieldably urges said marker member into engagement with said page of said book.

4,941,685

MULTIPLE PART FACSIMILE FORM

Michael W. Anderson, W. Seneca, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Nov. 17, 1988, Ser. No. 272,211
Int. Cl.[5] B41L *1/00*; H04N *1/00, 1/40*
U.S. Cl. 282—1 R **9 Claims**



1. A multi-part form for receiving variable information and transmitting the variable information on a facsimile machine, comprising:

a form set having first and second form parts;

said first form part having preprinted information thereon;

said second form part underlying said first form part and being entirely void of preprinted information thereon; and

means carried by said set for transferring variable information recorded on said first part onto said second part such that the variable information recorded on said second part may be transmitted by facsimile using said second part as the facsimile transmittal copy.

4,941,686

IDENTITY CARD

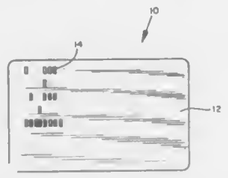
Charles R. Johnson, 3115 S. Rosanna St., Las Vegas, Nev. 89117

Filed Sep. 19, 1988, Ser. No. 246,367
Int. Cl.[5] B42D *15/00, 15/04, 19/00*; B05D *3/12*
U.S. Cl. 283—87 **15 Claims**

1. An optically-readable identity card having a multi-layered laminated construction, the identity card having aperture means in the body of the card for allowing light from a light

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source to pass through the aperture means and be sensed by a light sensor, and the multi-layered laminated construction



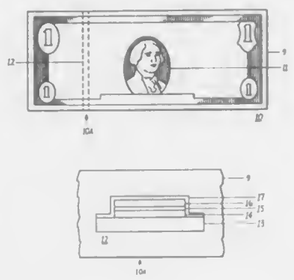
having a central core layer of plastic vinyl which is colored to limit the passage of light through the body of the card.

4,941,687

SECURITY PAPER FOR CURRENCY AND BANK NOTES

Timothy T. Crane, Dalton, Mass., assignor to Crane & Co., Dalton, Mass.

Filed Nov. 9, 1989, Ser. No. 433,916
Int. Cl.[5] B42D *15/00*; C23F *1/00*
U.S. Cl. 283—91 8 Claims



1. A security paper comprising:
a sheet of paper having printed indicia on a first surface;
a plastic security strip embedded within said paper;
a first pigmented material selectively applied to said plastic strip;
a plurality of metal characters on said first pigmented material; and
a second pigmented material over said metal characters, whereby said metal characters are thereby visible with transmitted light and invisible under reflected light once embedded in said security paper.

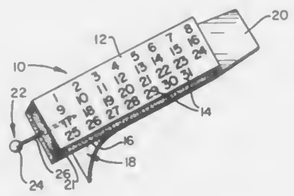
4,941,688

PERIODIC EVENT RECORDER

Truman Jones, 1204 Douglas St., Big Spring, Tex. 79720

Filed Nov. 15, 1989, Ser. No. 437,372
Int. Cl.[5] B42D *15/00*; G09F *9/00*
U.S. Cl. 283—72 19 Claims

1. A periodic event recorder comprising a label, indicia on the label which correspond to a desired time or frequency interval, a penetrable substrate attached to the underside of the label, means for attaching the underside of the penetrable substrate to an object associated with performance of a desired task, and a stylus adapted to puncture that portion of the label



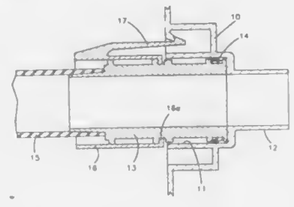
bearing the indicia corresponding to performance of the desired task at a particular time or frequency interval.

4,941,689

COUPLING DEVICE FOR VACUUM CLEANER

Rolf G. Sjöberg, Kungsängen, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 23, 1988, Ser. No. 275,590
Claims priority, application Sweden, Feb. 9, 1988, 8800417
Int. Cl.[5] A47L *9/24*; F16L *39/02*
U.S. Cl. 285—7 1 Claim



1. A coupling device for releasably connecting a suction hose (15) to the inlet of a vacuum cleaner housing (10), said inlet having a cylindrical socket (11) adapted to receive a tube connection piece (13) attached at one end to the suction hose (15), characterized by a coupling sleeve (16) which by means of a latch means (17) is adapted to be releasably connected to the vacuum cleaner housing in a non-rotatable position, said tube connection piece (13) being rotatably connected within the coupling sleeve (16) and having a portion at the other end provided with a sealing ring (14), said portion extending sealingly into said socket (11) in the connected position.

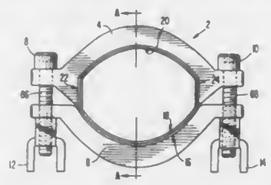
4,941,690

TUBING CLAMP ASSEMBLY

Robert L. Bodine, Sr., 1204 W. Washington St., Lot 7, E. Peoria, Ill. 61611

Filed Jun. 21, 1989, Ser. No. 369,624
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—38 11 Claims

1. A tubing clamp for connecting telescoped inner and outer tubes, said tubing clamp comprising a top portion and a bottom portion formed to surround said inner and outer tubes and having a region of contact with said outer tube, the top portion having at least one sharp inwardly-projecting edge, and the bottom portion having at least one sharp inwardly-projecting edge, said tubing clamp having two independent force-applying means for drawing said top portion and bottom portion together about the inner and outer tubes, the force-applying means operating independently of each other to draw the top portion and bottom portion together about the inner and outer tubes so that the inwardly projecting edges of the top portion and bottom portion deform the inner and outer tubes to form at least one continuous interlocking indented seal about the circumference of the inner and outer tubes, said force applying means including threaded means for connecting the top portion and bottom portion, said threaded means having a shank which is separable from the top and bottom portions of the



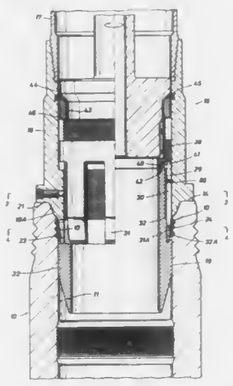
tubing clamp and passes through holes provided in said top and bottom portions, said top and bottom portion being shaped so that a portion of the said shank is exposed when the top and bottom portions are tightened onto the tubes, such that the shank may be cut to separate the top portion and bottom portions.

4,941,691

SUBSEA WELLHEAD EQUIPMENT

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Jun. 8, 1988, Ser. No. 204,089
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 9 Claims



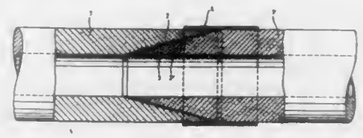
1. For use in connecting a conductor to a tubular wellhead member mounted in an upright position at a subsea location and having a groove about its bore whose upper end is conically tapered downwardly and outwardly with respect to the bore and upwardly facing seat means about the upper end of the bore, a tieback connector comprising
body means lowerable with the conductor and having a lower end which fits within the bore of the wellhead member, as the body means is so lowered, and downwardly facing shoulder means thereon adapted to be supported on the seat means to prevent further downward movement of the body means,
locking means carried about the body means for disposal opposite the groove, when the shoulder lands on the seat, and being radially movable with respect thereto between an inner position to permit the locking means to move into the bore and an outer position within the groove,
said locking means having conically tapered surfaces on its inner side and downwardly and outwardly conically tapered surfaces on its outer side to conform with the conically tapered upper end of the groove,
wedge means connected to the body means for vertical movement without rotation with respect to the body means and having conical surfaces on its outer side which are complimentary to and slidable over the inner conical surfaces of the locking means and surfaces on its inner side for sliding over an inner surface of the body means generally opposite the locking means, as the wedge body moves in one vertical direction with respect to the body means, so as to wedge the locking means into the groove and the conically tapered surface thereon tightly against the conically tapered surface of the upper end of the groove, and
a nut threadedly connected to the wedge means and mounted on the body means for rotation with respect thereto while being held against vertical movement in said opposite vertical direction,
said nut having means thereon engagable by means on a tool lowered through the conductor for rotating the nut in order to move said wedge means in said one vertical direction.

4,941,692

ADHESIVE CONNECTION OF TUBES FORMED OF CARBON OR GRAPHITE

Kurt Schaffner, Augsburg; Adolf Sweidl, Kühlenthal, and Gerhard Ullmann, Graz-Geras, all of Fed. Rep. of Germany, assignors to SIGRI GmbH, Meitingen, Fed. Rep. of Germany

Filed May 22, 1989, Ser. No. 355,406
Claims priority, application Fed. Rep. of Germany, May 27, 1988, 3818066
Int. Cl.[5] F16L *13/04*
U.S. Cl. 285—114 7 Claims



1. Adhesive connection of conical end surfaces of carbon or graphite tubes, comprising a sleeve formed of fibers and being impregnated with a thermoplast, said sleeve surrounding a given bonding position of two carbon or graphite tubes and being bonded to said tubes, said tubes having conical end surfaces being fitted and adhesively attached together at said given bonding position.

4,941,693

CONNECTOR FOR AIR DUCTS

William C. Spande, Seminole; Tod A. Spande, Bushnell, and Amy L. Spande, Daytona Beach, all of Fla., assignors to Spiral Specialties, Inc., Bushnell, Fla.

Filed Apr. 18, 1989, Ser. No. 340,086
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—331 10 Claims



1. An annular connector for connecting first and second air ducts, said connector having a central axis, interconnected recessed opposite end segments spaced apart along said axis for respectively receiving said first and second ducts, and an annular middle portion extending between and interconnecting said

recessed end segments, each of said recessed end segments of the connector comprising:

an annular outer member shaped and dimensioned to fit snugly but slidably around a spiral-wound air duct having an external spiral rib thereon;

an annular inner member shaped and dimensioned to fit snugly inside said duct substantially beyond said outer member in the direction along said axis away from said middle portion of the connector, whereby to engage the inside of the corresponding duct substantially beyond said outer member in said direction;

said outer and inner members defining between them an annular recess which is open at the end of said end segment away from said middle portion of the connector to receive said air duct and closed at its end next to said middle portion of the connector by said middle portion;

and sealing mastic filling said recess at said closed end for substantially air-tight engagement with the end of said duct received in said recess.

4,941,694

POWER ACTUATOR FOR MOTOR-VEHICLE CENTRAL LOCK SYSTEM

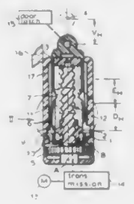
Peter Bartel, Hattingen, and Rolf Schüler, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Apr. 25, 1989, Ser. No. 343,584

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1988, 3823505

Int. Cl.[5] **E05B** *47/00*

U.S. Cl. 292—201 **8 Claims**



1. In combination with a door latch actuatable between a locked and an unlocked condition, a power actuator comprising:

a housing fixed adjacent the latch;

a slide linked to the latch and displaceable along an axis in the housing between locked and unlocked positions respectively corresponding to the locked and unlocked conditions of the latch, the slide being formed with a radially elastically deflectable entrainment formation and with a crosspiece;

a spindle extending along the axis;

a nut carried on the spindle and engageable with the entrainment formation and the crosspiece of the slide;

a radially elastically deflectable locking dog axially fixed to the slide and engageable with the nut, the housing being formed with a radially inwardly open recess in which the dog is engageable only in the locked position of the slide; and

drive means including an electric motor connected to the spindle for rotating same and thereby displacing the nut from

an antitheft end position engaging the crosspiece and the dog, pressing the dog into the recess, and positively retaining the slide in the locked position, through

an intermediate position engaging the entrainment formation of the nut in the locked position of the slide and out of engagement with the dog, and into

an unlocked end position engaging the entrainment formation of the nut in the unlocked position of the slide,

the slide being displaceable between its unlocked and locked positions in the unlocked end position of the nut by elastic deflection of the entrainment formation.

4,941,695

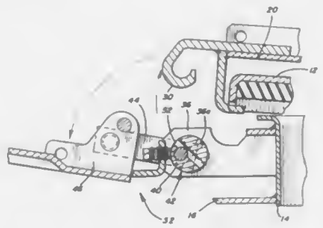
HATCH COVER ASSEMBLY

Roy W. Miller, Highland, Ind., assignor to Pullman Leasing Company, Chicago, Ill.

Filed May 18, 1989, Ser. No. 353,543

Int. Cl.[5] **E05C** *19/14*

U.S. Cl. 292—256.5 **13 Claims**



1. In a lading container having a deck means defining a hatch opening, a hatch cover arrangement comprising:

a hatch cover adapted to cover the hatch opening and to act on an associated sealing means around the hatch opening, the hatch cover being pivotable toward and away from the hatch opening;

a latch engagement structure connected with the hatch cover;

a latch structure connected with the deck means and adapted to engage with the latch engagement structure for securing the hatch cover over the hatch opening;

the latch structure including a latch bracket member fixedly connected with the deck means and having a latch bracket aperture therein;

an elongate adjustment member supported in the latch bracket aperture in the bracket member and rotatable therein, said adjustment member defining rotation means for providing a tool bearing surface facilitating the rotation of said adjustment member within said bracket member;

locking means selectively allowing rotation of the adjustment member in the latch bracket aperture and selectively securing the adjustment member against rotation in the latch bracket aperture in one of a plurality of rotated positions of said adjustment member;

pivot means supported by the adjustment member and spaced from the axis of rotation of the adjustment member in the latch bracket aperture, whereby rotation of the adjustment member adjusts the distance of the pivot means from the deck means; and

a latch arrangement operatively associated with the pivot means and adapted to be engagable with the latch engagement structure whereby rotation of the adjustment member adjusts the tightness of the closure of the hatch cover over the hatch opening; and

lateral positioning means cooperative with said locking means for maintaining said locking means in lateral adjusted position.

4,941,696

DOOR LOCK DEVICE FOR VEHICLE

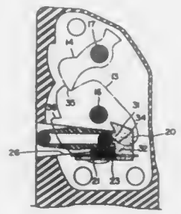
Shinjiro Yamada, and Shuji Nakamura, both of Utsunomiya, Japan, assignors to Mitsue Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 322,877

Claims priority, application Japan, Mar. 14, 1988, 63-59843; Mar. 18, 1988, 63-65344

Int. Cl.[5] **E05C** *3/26*

U.S. Cl. 292—340 **2 Claims**



1. A door locking device for a vehicle comprising a striker secured to the vehicle body and a lock body secured to a door and capable of engaging with said striker, said striker including a U-shaped rod having a horizontal portion and a pair of legs extending perpendicularly from the opposite ends of said horizontal portion, said horizontal portion having upper and lower engagement surfaces becoming narrower as one goes toward the lock body, the lock body having a first advancement groove, into which said horizontal portion is advanced, and a second advancement groove, into which at least one of said legs is advanced, said first advancement groove having an upper surface inclined to be parallel to the upper inclined surface of said horizontal portion and a lower surface provided with a slide piece movable in the direction of movement of said striker, said slide piece having an upper surface inclined to be parallel to the lower engagement surface of said horizontal portion, whereby with engagement of said lock body with said striker in the full-latch state the horizontal portion is clamped between the upper surface of said first advancement groove and the upper surface of said slide piece and wherein a terminal section of said first advancement groove is provided with a first elastic body engaged by said horizontal portion and a second elastic body engaged by said slide piece, said horizontal portion and said first elastic body are engaged with each other before said lock body is fully latched, and said slide piece and said second elastic body are simultaneously engaged with each other before the lock body is fully latched and wherein a terminal section of said first advancement groove is provided with a first elastic body engaged by said horizontal portion and a second elastic body engaged by said slide piece, said horizontal portion and said first elastic body are engaged with each other before said lock body is fully latched, and said slide piece and said second elastic body are simultaneously engaged with each other before the lock body is fully latched.

4,941,697

OVER-LOADING IDLING LOCK SET

Caesar Fan, 4Fl., No. 102, Fu Chow Rd., Chung Li, Taiwan

Filed Nov. 28, 1989, Ser. No. 442,126

Int. Cl.[5] **E05B** *13/00*

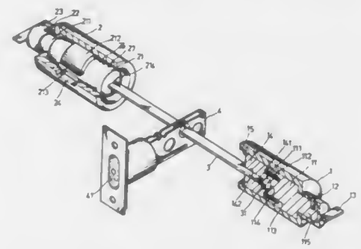
U.S. Cl. 292—336.3 **1 Claim**

1. An over-loading idling lock set comprising:

an outdoor body containing a first rotary lock core connected to an outdoor handle disposed outside said outdoor body, a sealing block being disposed on inner side of said lock core, plural ball members being respectively disposed adjacent contacting surfaces of said lock core and sealing block whereby said ball members protrude beyond said lock core and extend into restricting holes, a C-shaped retainer being disposed on inner side of said sealing block and fixed to said outdoor body;

an indoor body containing a second rotary lock core connected to an indoor handle disposed outside said indoor body, an interrupted annular projection being formed on said second lock core, forming a longitudinal groove suitable for receiving a vertically movable controlling bolt, a restoring spring being disposed on inner side of said annular projection, a C-shaped retainer being disposed on inner side of said restoring spring and fixed to said indoor body; and

an actuating shaft, connected to said sealing block and second lock core, capable of driving a latch bolt to open said lock set, whereby when said controlling bolt is inserted into said longitudinal groove to prevent said second lock



core from rotation, a restricting spring applies an insufficient pushing force on said ball members so that said ball members are separate from said restricting holes, causing said outdoor handle to idle without opening said lock set, while when said controlling bolt is pulled out from said longitudinal groove, said ball members are effectively extended into said restricting holes due to sufficient pushing force of restricting springs, and said lock set may be opened by means of rotating said indoor handle and outdoor handle, said second lock core may be pushed forward without pulling up said controlling bolt to move said second lock core forward and separate said controlling bolt from said longitudinal groove, permitting said second lock core to freely rotate whereby by means of rotating said indoor and outdoor handles, said lock set is opened.

4,941,698

CHAIN LIFTING PLATE

Jeffrey M. Klibert, Lancaster; Stephen S. Kleinert, Ephrata, both of Pa., and Robert L. Bennett, Humble, Tex., assignors to Lift-All Company, Inc., Manheim, Pa.

Filed Dec. 27, 1988, Ser. No. 290,631

Int. Cl.[5] **B66C** *1/10*

U.S. Cl. 294—82.12 **3 Claims**

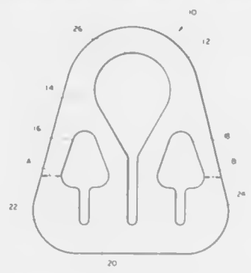
1. A chain lifting plate for use with a chain which has multiple links and hook-shaped end fittings, the chain lifting plate comprising:

a plate with an upper edge, a lower edge, two side edges and at least three holes;

a first hole being located equidistant from the side edges of the plate and having a larger upper portion nearer to the upper edge of the plate with a slot extending down from the upper portion, the slot being located equidistant from the side edges of the plate and being of a width greater than the thickness of the links of a chain with which the chain lifting plate is used, and the upper portion of the first hole being rounded to accept a crane hook;

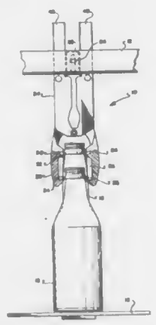
second and third holes located on the plate in balanced location on both sides of the first hole, the second and third holes each having a larger upper portion nearer to the upper edge of the plate with a slot extending down

from the upper portion, the slot being of a width greater than the thickness of links of a chain with which the chain lifting plate is used, the larger upper portion being too small to freely pass through it an end hook of a chain with which the lifting plate is used, and the upper portions of



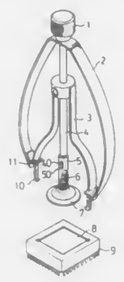
the second and third holes being located close enough to a side edge of the plate so that an end hook of a chain used with the plate can be hooked around the plate dimension between the upper portion of each hole and a plate side edge in order to move an end hook through the hole.

4,941,699
UNCASER FINGER
William G. Wilfong, Mogadore, Ohio, assignor to Figgie International, Inc., Richmond, Va.
Filed Oct. 28, 1988, Ser. No. 264,332
Int. Cl.[5] B25B *1/04*
U.S. Cl. 294—99.1 **11 Claims**



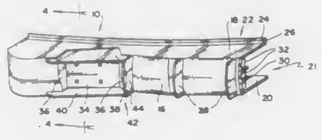
1. An uncaser finger, comprising:
a housing;
a pair of opposed jaws, slidably received within said housing;
a plurality of gripping surfaces on each said jaw;
said gripping surfaces of one of said jaws being in opposed alignment with said gripping surfaces on the other of said jaws of said pair, said gripping surfaces comprising a pair of parallel lips extending laterally across a substantially flat surface on said jaws; and
a pair of flanges extending along each side of said substantially flat surface at opposite ends of said lips.

4,941,700
GATE ARRAY IC PULLER
Huoo-Shuenn Lin, No. 23, Lane 4, Chih Huei Street, Pan Chiao, and Juh-San Hsu, No. 22, Chang-Chun Three Street, Taipei, both of Taiwan
Filed Sep. 28, 1988, Ser. No. 250,757
Int. Cl.[5] B25J *15/12;* **H05K** *13/04*
U.S. Cl. 294—99.2 **6 Claims**



1. A tool for pulling an integrated circuit chip having width and top and bottom surfaces from a printed circuit board comprising:
an elongated bolt having upper and lower ends,
a presser board member affixed to the lower end of said elongated bolt moveable from a normal lower position to an upper position for engaging the top surface of an integrated circuit chip,
an inner pair of opposed flat spring members each secured at an upper end to said elongated bolt and at the other end having a pair of inwardly directed opposed hooks normally spaced a predetermined distance from each other, and
an outer pair of opposed bowed, handmanipulable flat spring members each secured at an upper end to the upper end of said elongated bolt and disposed in the same vertical plane as said inner pair of spring members, and each having at a lower end a ring slidably receiving a corresponding spring member of said inner pair, whereby when said outer spring members are pressed together, the spacing between said opposed hooks is narrowed to a spacing less than said predetermined distance for engaging the underside of an integrated circuit chip.

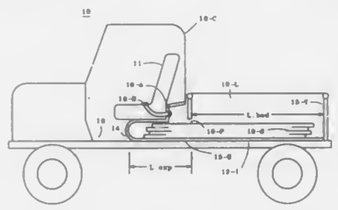
4,941,701
VEHICLE BUMPER
Norman S. Loren, Warren, Mich., assignor to Michael Ladney, Sterling Heights, Mich.
Filed Dec. 28, 1987, Ser. No. 138,060
Int. Cl.[5] B60R *19/03, 19/22, 19/24*
U.S. Cl. 293—155 **6 Claims**



1. A bumper beam for use as the principal energy management member in a vehicle bumper of the type adapted to mount to a vehicle at a pair of mounting points (14) spaced

from the longitudinal center line of the vehicle comprising an integrally-molded, one-piece, elongated plastic body (12) having a generally open channel shape (21) defined by upper and lower substantially horizontal surfaces (18,20) joined by a substantially vertical surface (16) and a pair of mounting surfaces 34 formed as recesses in the vertical surface in alignment with the mounting points.

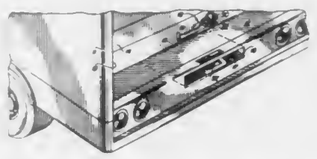
4,941,702
UNDERSEAT EXPANSION BED VEHICLE FOR TRANSPORTING LONG LOAD MATERIAL
James F. Southward, 1360 5th Ave., Belmont, Calif. 94002
Filed Feb. 23, 1989, Ser. No. 314,032
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—37.6 **23 Claims**



1. A vehicle for personnel and load material, comprising:
personnel section in the front of the vehicle;
a front seating means within the personnel section having a front foot space;
a back seating means within the personnel section having a back foot space;
load section in the back of the vehicle for receiving the load material;
initial bed area in the load section having a length dimension extending in the front-back direction of the vehicle and a width dimension extending in the side-side direction;
a back expansion bed area under the back seating means for expanding the load capacity of the vehicle in the length dimension beyond the initial bed area;
a foot expansion area formed by the foot space for the personnel of the back seating means;
back stop means for preventing the load material from extending beyond the back expansion area, and which is movable for further expanding the load capacity of the vehicle in the length dimension beyond the initial bed area and the back expansion area to include the foot expansion area by permitting the load material to enter the foot expansion area; and
foot stop means for preventing the expansion bed area from extending beyond the foot expansion area.

4,941,703
TRUCK RAMP STORAGE SYSTEM
William J. Curry, Tempe, Ariz., assignor to U-Haul International, Phoenix, Ariz.
Filed Apr. 10, 1989, Ser. No. 335,746
Int. Cl.[5] B60P *1/43*
U.S. Cl. 296—37.6 **3 Claims**

2. The combination of a truck body having a loading opening therein giving access to a cargo space therein, a door for closing said opening, a latching mechanism for latching said door in its closed position, said latching mechanism comprising a latch bolt movably mounted on the door and a catch pin on said truck body, a ramp storage space open to the exterior of said truck body, said storage space having its opening closely adjacent the loading opening in the truck body, a ramp insertable into and removable from said ramp storage space through the storage space opening, and a pawl on said latch bolt engagable with said ramp when the latch bolt is in engagement with



said catch pin for preventing removal of said ramp from said ramp storage space.

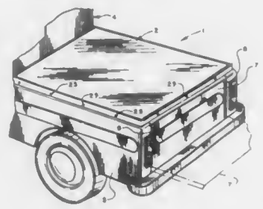
4,941,704
SUN VISOR FOR VEHICLES
Heinz Baumert, Sindelfingen; Ulrich Bruhnke, Ehningen; Ferdinand Greiner, Aidlingen, and Siegfried Nothacker, Weil der Stadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany
Filed Feb. 13, 1989, Ser. No. 309,196
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1988, 3804586
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.11 **16 Claims**



1. A sun visor for vehicles having:
a sun visor body which can bend along its longitudinal extension, which can be pivoted out of a rest position into a plurality of use positions, and which can be held in these positions;
at least one bearing having a bearing axis line which extends along a longitudinal edge of the sun visor body in an arcuate line;
pivot means for the pivotable mounting of the sun visor body on a side body of the vehicle;
the sun visor body being rotatably mounted at two end regions on an associated shaft portion of a curved shaft attached to the pivot means;
the sun visor body being pivotably mounted on the curved shaft between the rest position and the use positions;
the sun visor body between its rotatably mounted end regions being guided so as to be rotatable and slideable in the direction of a transverse extension of the sun visor body by an intermediate bearing, engaging in a bifurcated fashion around an associated longitudinal portion of the curved shaft wherein the sun visor body without translation along the curved shaft, automatically changes its bend from a concave configuration along its longitudinal extension, to a flat configuration along its longitudinal extension, and then to a convex configuration along its longitudinal extension as the sun visor body is rotated about the curved shaft from its rest position into its use positions, due to different forces being applied by the curved shaft to end portions of the sun visor body then to a portion of the curved shaft of the sun visor intermediate its end portion; and
the sun visor body being also guided so as to be longitudinally displaceable on the shaft.

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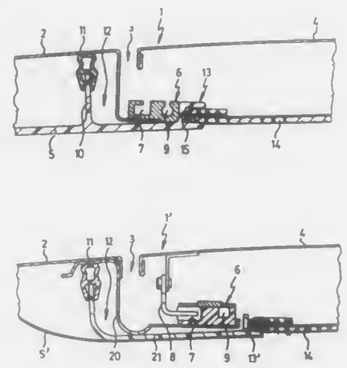
4,941,705
FRAME ASSEMBLY FOR PICKUP TRUCK BED COVER
David B. Wurtz, 5868 Massillon Rd., Dalton, Ohio 44618
Filed Jul. 10, 1989, Ser. No. 377,316
Int. Cl.[5] B60J 7/10
U.S. Cl. 296—100 16 Claims



1. A combination of a pickup truck, a cover, and a frame assembly for attaching the cover over an open bed of the pickup truck, said truck bed having a pair of spaced, parallel upright sidewalls and a pair of spaced, parallel upright front and rear walls, said rear wall being movable between open and closed positions, said assembly including:
(a) a pair of spaced, parallel elongated side frame members mounted on and extending along the upright sidewalls;
(b) an elongated front frame member mounted on and extending along the upright front wall, and generally between a front end of the side frame members;
(c) means attached to a rear end of each of the side frame members for forming a channel therebetween; and
(d) an elongated rear frame member extending along the upright rear wall, and generally between the rear ends of the side frame members, said rear frame member being directly slideably engageable within the channels formed between the side frame members and the means attached to the rear ends of said side frame members, so that subsequent to detachment of the cover from the frame assembly, the rear frame member is slideably disengaged from said channels to provide unobstructed access to the truck bed upon movement of the rear wall of the truck to the open position.

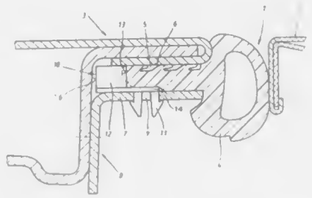
4,941,706
VEHICLE ROOF
Hans Jardin, Inning, Fed. Rep. of Germany, assignor to Webasto AG Fahrzeugtechnik, Gauting, Fed. Rep. of Germany
Filed Aug. 15, 1988, Ser. No. 232,174
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727721
Int. Cl.[5] B60J 7/00
U.S. Cl. 296—213 10 Claims

1. Vehicle roof having a fixed roof area having an aperture formed therein, a closure panel for selectively opening and closing said aperture, a support frame carrying drive and guide parts for sliding the closure panel, and an interior headlining comprised of a fixed interior headliner for covering an interior side of the fixed roof area, a slidable interior headliner for covering an interior side of said closure panel, guide means for slidably guiding said slidable interior headliner; wherein said fixed interior headliner and said support frame constitute separate structures for separately carrying each of said guide means and said closure panel; wherein said separate structures act in a manner forming a means for enabling the guide means and closure panel to be supported, and adjusted independent of each other, the guide means being carried by said fixed interior headliner and said closure panel being supported upon said support frame.



2. Vehicle roof according to claim 1, wherein said guide means for the slidable interior headliner is an integrally formed portion of said fixed interior headliner.

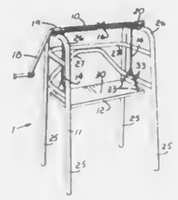
4,941,707
METHOD FOR INSTALLING A CAVITY SEAL ELEMENT INSERTED IN A GROOVE AND AN APPARATUS FOR SETTING A SPACING OF THE GROOVE
Rolf Öbrle, Herrenberg, and Werner Herlemann, Aidlingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany
Filed Sep. 12, 1988, Ser. No. 242,820
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1987, 3730742
Int. Cl.[5] B60J 7/00
U.S. Cl. 296—216 11 Claims



1. Method for installing a cavity seal element for sealing a gap between a rigid sliding roof and a fixed roof region of a motor car surrounding the rigid sliding roof, the cavity seal element being housed beneath the fixed roof region in a groove formed between the fixed roof region and a rail attached to the roof and having mutually spaced perforations in an upper member, the method comprising the steps of:
setting a predetermined minimum spacing of the groove with a spacing element having a head part for abutting the fixed roof region and a foot part constructed as a clip for insertion into a perforation of the rail and for attaching the spacing element to the rail:
inserting the foot part of each of at least two spacing elements into a respective one of the spaced perforations of the rail;

attaching the rail with the spaced and inserted spacing elements to the roof; and
inserting the cavity seal element into the groove formed between the fixed roof region and the rail when the rail is attached to the roof and spaced by the inserted spacing elements.

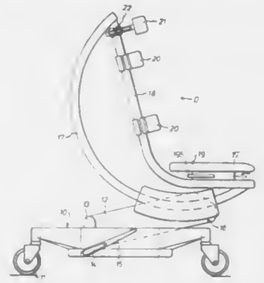
4,941,708
LIFTING APPARATUS
H. Hugh Heffner, Rte. 3, Box 47E, Odessa, Mo. 64076
Filed Sep. 27, 1988, Ser. No. 249,670
Int. Cl.[5] A61H 3/04
U.S. Cl. 297—6 10 Claims



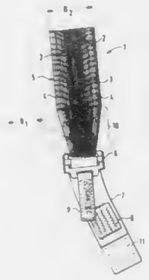
1. A lifting system adapted to raise a person from the floor to a standing or raised sitting position; said system comprising:
(a) a walker having a plurality of legs and a pair of generally hroizontal and parallel handles adapted to be grasped by a person when using said walker to walk; said walker having a lifting configuration wherein said system may be used to raise a person and a walker configuration wherein the walker may be used by a person to assist in walking;
(b) a lifting apparatus usable with said walker; said apparatus relatively easily being positioned on said walker such that said walker is in the lifting configuration thereof and removed from said walker such that said walker is in the walker configuration thereof; said lifting apparatus, when in use with said walker, having:
(1) a shaft extending between said walker handles;
(2) connecting means including a semi-circular member for selectively positioning and holding said shaft on said handles while allowing rotation of said shaft;
(3) crank means for selectively rotating said shaft;
(4) a seat positioned to hang between said walker handles and being adapted to support the person to be raised; said seat having a lowered position and a plurality of raised positions; and
(5) flexible cord means suspending said seat from said shaft; said cord means winding about said shaft upon rotation of said shaft by said crank means so as to draw said seat toward said shaft, thereby moving said seat from the lowered position to one of the raised positions thereof.

4,941,709
EXAMINATION CHAIR FOR PLACING A PATIENT IN DESIRED POSITIONS FOR E.G. RADIOLOGICAL EXAMINATION
Anders Möller, Kullvägen 1, S-135 53 Tyresö , Sweden
PCT No. PCT/SE87/00566, § 371 Date Jan. 1, 1988, § 102(e) Date Jun. 1, 1988, PCT Pub. No. WO88/04149, PCT Pub. Date Jun. 16, 1988
PCT Filed Nov. 30, 1987, Ser. No. 368,361
Claims priority, application Sweden, Dec. 1, 1986, 8605126
Int. Cl.[5] A47C 1/02
U.S. Cl. 297—325 7 Claims

1. Examination chair for placing a patient in desired positions for e.g. radiological examination, especially of the lungs and pleurae, comprising an underframe (10) carrying the seat and back-rest assembly (18, 19, 20, 21) of the chair by means of two parallel, rigidly interconnected circular arc sections (17) which are longitudinally displaceably mounted in holders (16) connected to the underframe and can be locked in the adjusted position characterised in that said holders (16) are affixed adjacent means (12) mounted vertically movable on the underframe (10); that the seat and back-rest assembly (18, 19, 20, 21) is affixed to the circular arc sections (17) by means of parallel elongate members (18) bent at an angle and connected at their opposite ends to said sections adjacent the opposite ends thereof, said members being positioned between the sections and the center point (0) of the arc form of said sections; that said seat (19) comprises a lower part (19'') fixedly connected to one leg of said elongate members (18), and a patient-receiving upper part (19') rotatably mounted on said lower part so that the upper part (19') is rotatable relative to the arc sections (17); and that the back-rest is formed of a plurality of supports displaceably mounted on the other leg of said elongate members (18).



4,941,710
DEVICE FOR PERMANENTLY INDICATING AN OVERSTRETCHING OF A SAFETY SEAT BELT, ESPECIALLY IN AN AIRCRAFT
Faruk Baymak, Hamburg, and Helmut Stueben, Gruensendeich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Apr. 25, 1988, Ser. No. 185,889
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714088
Int. Cl.[5] A63B 35/00
U.S. Cl. 297—471 7 Claims



1. A device for permanently indicating an overstretching of a safety belt for restraining a passenger in a seat in a vehicle, especially in an aircraft in the event of an accident, comprising a belt strap woven of weft threads and first and second length-

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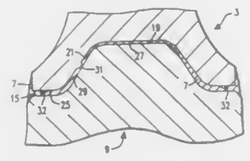
wise threads or fibers alongside one another, visual indicator means formed by said second threads or fibers as an integral part of said woven belt strap for indicating a first belt strap condition prior to an excessive load application and a second different belt strap condition in response to an excessive load applied to said belt strap, said second threads or fibers having a plastic deformability larger than a respective deformability of said first threads or fibers, whereby said second threads or fibers buckle to form stretch marks in response to excessive deformation to indicate said second belt strap condition, said first belt strap condition without stretch marks signifying a proper operational state of said belt strap, said second belt strap condition signifying, in the form of said stretch marks, which are present in said second threads or fibers but not in said first threads or fibers after an excessive deformation, that said belt strap must be replaced.

4,941,711

CEMENTED CARBIDE TIP

Stephen P. Stiffler, New Enterprise, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 221,819, Jul. 20, 1988. This application Jan. 27, 1989, Ser. No. 303,514
Int. Cl.[5] E21B *10/46*
U.S. Cl. 299—79 16 Claims



1. A cemented carbide tip for attachment to a ferrous metal body to form an excavating cutter bit, said tip comprising:
a forward end for engaging and excavating asphalt;
a rearward end for attachment to an end of said ferrous metal body;
said tip being rotationally symmetric about a longitudinal axis extending from said forward end to said rearward end;
said rearward end having an annular rearwardly facing outer surface and an inner socket extending forwardly therefrom and being shaped to fit with a protrusion on the ferrous body end;
means protruding from said rearward end for engaging the ferrous body end and placing said tip in a spaced relationship relative thereto for facilitating formation therebetween of a braze joint having a predetermined cross-sectional thickness profile;
wherein said protruding means includes a plurality of first bumps formed on said inner socket of said rearward end and being spaced from one another, and a plurality of second bumps formed on said outer surface of said rearward end and being spaced from one another.

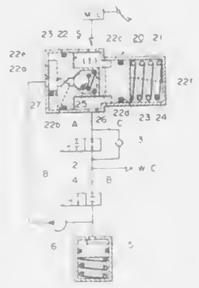
7. A cemented carbide tip comprising:
a forward end for engaging an earth formation;
a rearward end for attachment to an end of a ferrous metal body;
said tip being rotationally symmetric about a longitudinal axis extending from said forward end to said rearward end;
said rearward end having an annular rearwardly facing outer surface having a portion lying perpendicular to said longitudinal axis and an inner socket extending forwardly from said annular rearwardly facing outer surface and being shaped to fit with a protrusion on the ferrous body end;
means protruding from said rearward end on said outer surface thereof for engaging the ferrous body end and placing said tip in a spaced relationship relative thereto for facilitating formation therebetween of a braze joint having a predetermined cross-sectional thickness profile; and
wherein said protruding means includes a plurality of bumps spaced from one another and formed on said portion of said outer surface of said rearward end.

4,941,712

BRAKE FLUID PRESSURE CONTROL APPARATUS IN AN ANTI-LOCK CONTROL SYSTEM

Yoshiaki Hirobe, Shiraoka, Japan, assignor to Akebono Brake Industry Co., Ltd., Saitama, Japan

Filed Dec. 14, 1988, Ser. No. 284,389
Claims priority, application Japan, Dec. 19, 1987, 62-336402
Int. Cl.[5] B60T *8/62*
U.S. Cl. 303—115 6 Claims



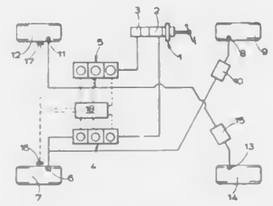
1. A brake fluid pressure control apparatus of a type equipped with an electromagnetic valve device for controlling communication between a master cylinder and wheel cylinders through a supply passage and communication between the wheel cylinders and a reservoir through a return passage, and a hydraulic pump for returning the brake fluid in said reservoir to said supply passage; said brake fluid pressure control apparatus comprising: a fluid pressure control valve provided in said supply passage between said master cylinder and said electromagnetic valve device; a stepped piston having a relatively large surface area at one end and a relatively smaller surface area at the other end slidably fitted into said pressure control valve and urged from the side of the small surface area by means of a return spring; a fluid pressure chamber formed between a stepped portion of said stepped piston and a housing of said fluid pressure control valve in such a manner as to communicate with said supply passage; a back pressure chamber formed at said one end of said stepped piston in such a manner as to communicate with said hydraulic pump so that a return-pressure-fluid from said wheel cylinders, at the time of a decrease of the pressure during anti-lock control, is pressurized by means of said hydraulic pump, is introduced into said back pressure chamber to achieve a pressure accumulation therein by moving said stepped piston against the force of said return spring, and is returned to the master cylinder in an amount corresponding to the change in volume of said fluid pressure which change corresponds to the movement of said stepped piston, and further comprising a return fluid passage and a check valve provided in said stepped piston for returning the return-pressure-fluid to the master cylinder, said return fluid passage including a throttle portion.

4,941,713

HYDRAULIC ANTI-LOCK BRAKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries, Birmingham, England

Filed May 5, 1989, Ser. No. 348,205
Claims priority, application United Kingdom, May 10, 1988, 8811013
Int. Cl.[5] B60T *8/40*
U.S. Cl. 303—116 12 Claims



1. An hydraulic anti-lock braking system for a vehicle comprising a brake on a wheel, an hydraulic master cylinder for supplying hydraulic fluid under pressure to said brake to apply said brake, a first passage between said master cylinder and said brake, sensor means responsive to the behaviour of said wheel, a control module responsive to signals from said sensor means, modulator means for modulating the supply of fluid from said master cylinder to said brake in accordance with signals from said control module, said modulator means comprising an expansion chamber to which fluid is dumped from said brake, a return passage from said brake to said expansion chamber and through which said fluid is adapted to be dumped, a pump having an output adapted to generate the energy necessary to recover fluid from said expansion chamber to re-apply said brake automatically after said pressure fluid applied to said brake has first been released to said expansion chamber through said return passage, said pump withdrawing from said expansion chamber the actual fluid dumped from said brake, a second passage between said pump and said master cylinder, a third passage between said pump and said brake, a valve assembly responsive to signals from said control module, wherein said valve assembly comprises an inlet valve disposed in said first passage for controlling communication between said master cylinder and said brake, a re-application valve disposed in said third passage for controlling communication between said output from said pump and said brake, and a dump valve disposed in said return passage for controlling communication between said brake and said expansion chamber, a one-way valve in said second passage to permit flow of fluid in a first direction from said pump to said master cylinder but to prevent flow in a second opposite direction, a first connection between said control module and said inlet valve, and a second connection between said control module and said re-application and dump valves, whereby said inlet valve, and said re-application and dump valves are operable independently in a predetermined sequence by said control module in accordance with the nature of a given signal from said sensor.

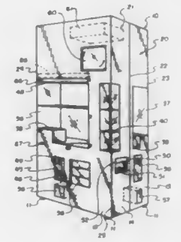
4,941,714

JEWELRY DISPLAY AND SERVICING KIOSK

Anthony Seymour, 4460 South Highland Dr., Salt Lake City, Utah 84124

Filed Oct. 10, 1989, Ser. No. 418,520
Int. Cl.[5] A24F *25/00*
U.S. Cl. 312—31 11 Claims

1. A jewelry display device for positioning in either free-standing condition or against a wall, said display device comprising:
an upright enclosure including top and bottom covers and at least two display walls having exterior and interior wall faces coupled to the top and bottom covers and having recessed shelving at the exterior wall faces for supporting items of jewelry in an ornamental display, said display walls being respectively joined to each other at lateral edges to form a continuous, free-standing wall which obscures view of the interior wall faces of the enclosure from an exterior location;
steam cleaning apparatus coupled at an exterior face of one of the display walls, said apparatus including a small opening communicating with the enclosed contained area;



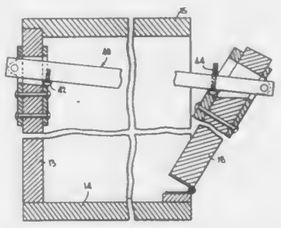
steam generating means positioned within the contained area for generating a source of steam under pressure;
steam transmission conduit coupled to the generating means and extending through the small opening to provide an applicator end for the steam cleaning apparatus;
a valve controlled outlet coupled in line with the steam transmission conduit for releasing steam as part of the cleaning apparatus.

4,941,715

VERTICAL FILING CABINET CONTAINING TELESCOPIC HANGING ASSEMBLIES WITH ADJUSTABLE SUPPORT MEANS CONNECTED THERETO

Adolf Schreiber, Red Lion, Pa., assignor to H. Schreiber Company, Red Lion, Pa.

Filed Jan. 25, 1989, Ser. No. 301,059
Int. Cl.[5] A47B *63/02*
U.S. Cl. 312—184 7 Claims



1. A vertical filing cabinet which comprises left and right side walls, a rear wall, a bottom, a top and a front wall, said front wall including a door which can pivot about a horizontal axis, a telescopic hanging assembly which extends between said rear wall and said door to support objects to be suspended within the interior of said cabinet, said telescopic hanging assembly including a first end that is pivotally supported by said door and a second end that is pivotally supported by said rear wall, and an adjustable support means connected to said telescopic hanging assembly to provide support to said telescopic hanging assembly whenever said door is opened to a

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desired degree, said adjustable support means having a first portion movably located within said telescopic hanging assembly and a second portion that is located exteriorly of said telescopic hanging assembly, said second portion having a head end that abuts one of said rear wall and said door when said door is opened to said desired degree.

4,941,716

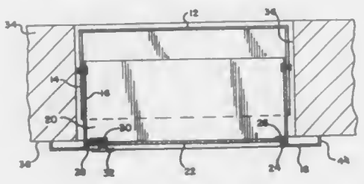
CABINET CONSTRUCTION

Eugene P. Rome, 1730 N. 77th Ave., Elmwood Park, Ill. 60135, and Carl P. Rome, 28 W. 172 Roosevelt, Winfield, Ill. 60190

Filed Jan. 3, 1986, Ser. No. 815,917

Int. Cl.[5] H47B *45/00*

U.S. Cl. 312—205 **19 Claims**



1. A cabinet construction receivable within a recess defined by a wall supporting the cabinet, said cabinet defining an enclosure formed by a back panel positioned at the rear of the recess, side panels, a front panel, an opening defined by the front panel, and a door hinged to said front panel to close said opening and to permit access to the interior of the cabinet, and said front panel defining flanges adapted to extend over surfaces on said wall surrounding said recess, said side panels comprising first and second portions, one side panel portion being associated with said back panel and the other side panel portion being associated with said front panel, said side panel portions being telescopically arranged with respect to each other, means permitting adjustment of the relative positions of said side panel portions whereby the distance between the front and back panels can be adjusted to vary the depth of the cabinet interior, and means for securing said side panel portions in a selected position with respect to each other.

4,941,717

KNOCKDOWN TABLE AND CABINET STRUCTURE

Bryan J. Beaulieu, Burnsville, Minn., assignor to Skyline Displays, Inc., Burnsville, Minn.

Filed Oct. 10, 1989, Ser. No. 419,382

Int. Cl.[5] A47B *48/00*

U.S. Cl. 312—265.3 **13 Claims**

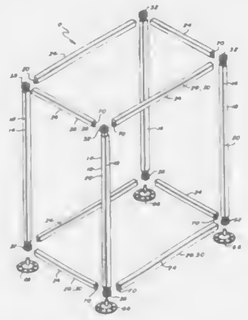
1. A knockdown table and cabinet structure adapted for ease of assembly and disassembly, comprising:

(a) a plurality of hollow tubular frame member of substantially square cross section, the frame members including first and second groups;

(b) a plurality of fastening devices, each fastening device having a slidably insertable end adapted for slidable insertion into the end of a tubular frame member of the first group with a wide guide slot therein and an extending end with a narrow locking slot bridging into the guide slot; a shoulder at the junction of the slidably insertable end and the extending end, said shoulder sized to abut against the end of a tubular frame member and thereby to limit the extending end from ingress into said tubular frame member;

(c) resilient fastening means for joining together a pair of said fastening devices at opposite ends of a tubular frame member, passing inside said tubular frame member, said resilient fastening means permitting partial egress of said slidably insertable ends from said tubular frame member and resiliently urging said pair of fastening devices inwardly toward abutment of said shoulders against respective ends of said tubular frame member;

(d) a plurality of end connectors, each connector having a slidably insertable end adapted for insertion and affixing into the end of a tubular frame member AND second group and a projecting male connector end of a dimension sized to be readily insertable into the guide slot but not



insertable into the locking slot but movable into the locking slot from the guide slot for rigid and secure locking engagement of the respective frame members together, said locking engagement being aided by the resilient fastening means holding respective pairs of said fastening devices inwardly in said tubular frame members to abut said shoulders against respective ends of said tubular frame members.

4,941,718

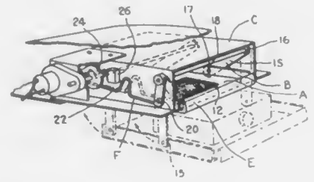
CONCEALED RETRACTABLE HOUSINGS

William J. Alexander, III, Mauldin, and Fred A. Chapman, Simpsonville, both of S.C., assignors to Alexander Machinery, Inc., Mauldin, S.C.

Filed Mar. 21, 1988, Ser. No. 171,038

Int. Cl.[5] A47B *88/22*

U.S. Cl. 312—312 **4 Claims**



1. Apparatus for concealing an article between a ceiling and a roof comprising:

a frame between the ceiling and the roof;

a lower support for said article;

pivotal means pivotally mounted to said frame and said lower support carrying said support for movement from a retracted position within said frame between the roof and ceiling to a position below the ceiling;

said pivotal means including means for lowering and swinging forward said lower support;

electrically operated means operating said pivotal means for movement of said support from said retracted position to said position below the ceiling and for returning said support to said retracted position;

said means pivotal means including for maintaining said lower support level during movement; and

switch means actuating said electrically operated means;

whereby said position below the ceiling is below and in front of said retracted position.

4,941,719

LIGHT SCANNING SYSTEM

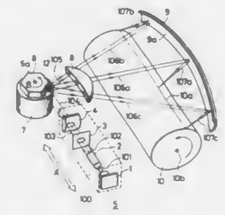
Takanori Hisada; Takesuke Maruyama; Masaharu Deguchi; Yoshihiko Noro, all of Yokohama; Yoshifumi Hosma, Hitachi; Yoshio Ariki, and Shunichi Taguchi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1987, Ser. No. 52,884

Claims priority, application Japan, May 23, 1986, 61-117227

Int. Cl.[5] G02B *26/10*

U.S. Cl. 350—6.8 **1 Claim**



1. A light scanning system for scanning a light beam onto an image surface comprising:

light means for generating a light beam;

light deflecting means having a rotating mirror with a reflecting surface for deflecting an incoming light beam from said light means;

focusing means disposed between said light means and said light deflecting means for focusing the light beam upon said reflecting surface of said rotating mirror of said light deflecting means to a line image;

field curvature correcting means including a single spherical leans provided with a spherical surface and having positive power for focusing the light beam deflected by said light deflecting means onto said image surface, and said spherical lens enabling correction of the field curvature and partial correction of the scan-nonlinearity of an image formed on said image surface;

a first reflecting mirror disposed in the scan plane with its optical axis inclined at an angle of θ_3 ($\theta_3 \neq 0$) with the scan plane for reflecting tbe light beam passing through said spherical lens;

scan-nonlinearity correcting means including a second reflecting mirror with a toric-surface having a first circular arc with a larger radius of curvature in a first plane which is larger than a second radius curvature in a second plane perpendicular to the first plane, said second reflecting mirror of said scan-nonlinearity correcting means being disposed for reflecting the light beam reflected by said first reflecting mirror and for enabling correction of the scan-nonlinearity of the light beam which is not corrected by said spherical lens and having the toric-surface thereof with a concave shape optically facing said spherical lens, said toric-surface reflecting mirror of said scan-nonlinearity correcting means establishing an optically conjugated relationship between said reflecting surface of said rotating mirror of said light deflecting means and said image surface for preventing of the displacement of the light beam from the scan plane formed by the deflected light beam resulting from a tilt of said first reflecting surface of said rotating mirror of said light deflecting means, and said toric-surface reflecting mirror of said scan-nonlinearity correcting means being disposed with its optical axis inclined at an angle of θ_2 ($\theta_2 \neq 0$) with a scan plane formed by the light beam reflected on said first reflecting mirror, and said θ_2 being defined by the relation:

$$-\frac{0.3}{S} < \sin\theta_2 < \frac{0.3}{S}$$

$$S = R - \sqrt{R^2 - (d/2)^2}$$

where R represents the larger radius of curvature of said toric-surfaced reflecting mirror and d represents the distance in the scanning direction of said toric-surfaced reflecting mirror.

4,941,720

OPTICAL CABLE NETWORK WITH AN EXCESS NUMBER OF LEADS IN RESERVE

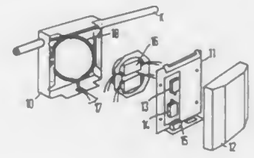
Karlhorst Barwig, Herrsching; Gerd Ortkraus, Egling, and Guenther Klimaszek, Berlin, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 7, 1989, Ser. No. 307,009

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1988, 3808664

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.2 **6 Claims**



1. In an optical cable network constructed with light waveguide cables for one or more transmission systems selected from ring systems, star systems and bus systems, said cable network comprising a plurality of existing and, respectively, planned connecting points for individual system nodes, the improvements comprising all existing and, respectively, further planned connecting nodes of the optical cable network being connected in series with one another by means of a prescribed plurality of through light waveguide leads, which are each composed of two fibers, in one or more light waveguide cables, a number of leads of said plurality of through light waveguide leads being determined based on the maximum size of said network, each of the through light waveguide leads being laid in multiple loops at each connecting point for forming a cable reserve and only those light waveguide leads required for a system connection at each connecting point being cut to provide free ends which are connected to the system components by a splice.

4,941,721

RASTER SCANNING SYSTEM UTILIZING OVERFILLED POLYGON FACET DESIGN

Martin E. Banton, Fairport, and Michael E. Harrigan, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1989, Ser. No. 359,604

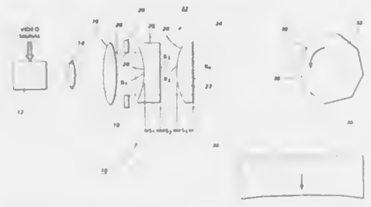
Int. Cl.[5] G02B *26/10, 13/18*

U.S. Cl. 350—6.8 **3 Claims**

1. A raster input scanning system utilizing an overfilled

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polygon facet design for forming lens images at a photosensitive medium comprising:
means for providing a beam of radiant energy,
means for modulating said energy beam in response to electrical signals,
means for expanding the modulated beam,
a polygon having at least one reflective facet positioned in the optical path of said modulated beam and adapted to scan said spot across said medium, and



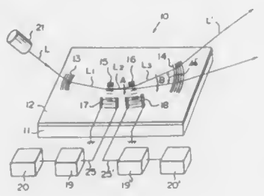
an aspheric lens system positioned between said modulating means and said polygon, said aspheric lens adapted to transform the modulated output beam into a beam having a generally flat uniform intensity profile which overfills said facet as it rotates therethrough, said aspheric lens system comprising a first negative lens element and a second positive lens element each of said lens elements having one aspherical surface, and one generally planar surface.

4,941,722

LIGHT BEAM DEFLECTOR

Masami Hatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 23, 1989, Ser. No. 355,519
Claims priority, application Japan, May 27, 1988, 63-130015
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.13 **4 Claims**



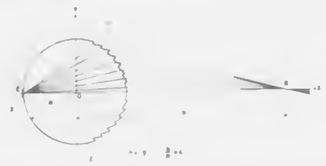
1. A light beam deflector comprising:
(i) an optical waveguide made of a material capable of propagating surface elastic waves therethrough;
(ii) n (n≧2) surface elastic wave generating means for generating in said optical waveguide surface elastic waves which travel across the path of a guided wave traveling in said optical wave guide, thereby diffracting and deflecting said guided wave n times and amplifying the deflection of the guided wave caused by the diffraction thereof;
wherein each of said n surface elastic wave generating means comprises an interdigital transducer having electrode fingers spaced at distances that very stepwise, and a driver for applying an alternating voltage having a continuously varying high frequency to said interdigital transducer; and
wherein said drivers have means for applying alternating voltages having frequencies shifted from each other to said interdigital transducers, respectively, so that periodic variations in the intensities of the surface elastic waves generated respectively from said interdigital transducers will not amplify each other.

4,941,723

ROD SHAPED LINEAR LIGHT DIFFUSION APPARATUS

Shigeru Sasada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Mar. 15, 1989, Ser. No. 324,399
Claims priority, application Japan, Mar. 18, 1988, 63-63400; Apr. 5, 1988, 63-82323; Apr. 6, 1988, 63-83127
Int. Cl.[5] G02B *6/00, 3/04, 3/08*
U.S. Cl. 350—96.10 **23 Claims**



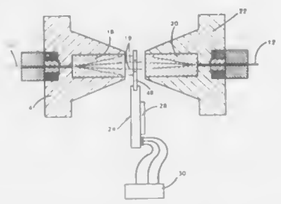
1. A method of converging light rays, said method comprising the steps of:
(a) transmitting light in an axial direction through a transparent axial rod;
(b) irregularly reflecting rays of said light from an elongated first surface of said transparent axial rod; and
(c) converging said rays by refracting said rays at an elongated second surface of said transparent axial rod.

4,941,724

OPTICAL FIBER CONNECTION UTILIZING PHOTODIODE MEANS

Donald V. Couden, Boca Raton; Paul C. Karr, Ormond Beach, and Layton Balliet, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1988, Ser. No. 237,338
Int. Cl.[5] G02B *6/32*
U.S. Cl. 350—96.18 **5 Claims**



1. Apparatus for tapping a fiber optic system, which system includes first and second optical fibers, comprising;
(a) first lense means adapted to be optically connected to said first optical fiber for collimating light transmitted by said first optical fiber on a light path;
(b) second lense means, spaced from and in optical alignment with said first lense means, adapted to be optically connected to said second optical fiber for decollimating light received from said first lense means and providing said decollimated light to said second optical fiber; and
(c) discrete sensing means interposed intermediately between said first and second lense means and physically positioned to intercept a minor portion of the collimated light from said first lense means, and adapted to generate a signal indicative of a characteristic of said collimated light;
wherein said sensing means includes a photodiode characterized by support means carrying said photodiode, said support means being further characterized by aperture means therein positioned to pass a major portion of the collimated light;
whereby, a minor portion of the light transmitted is used to tap a signal by said photodiode and a major portion is passed on through said aperture means.

4,941,725

ALL-OPTICAL PLANAR MODULATOR STRUCTURE WITH CHANNEL WAVEGUIDES

Richard J. F. Normandin, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 228,473, Aug. 5, 1988, Pat. No. 4,867,515. This application Aug. 25, 1989, Ser. No. 398,647
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.13 **9 Claims**

1. A planar optical modulator structure comprising:
a plurality of channel waveguides having a substrate and a plurality of channels provided thereon,
each of the said plurality of channels having the refractive index higher than that of the said substrate for transmitting therethrough under a guiding condition a beam of light having the wavelength longer than the bandgap energy of the said channel and having a buffer layer thereon,
a plurality of input fiber optics optically coupled to the said plurality of channels for sending the beams of light thereinto,
a plurality of output fiber optics optically coupled to the said channels for receiving the said beams of light therefrom, and
a plurality of control means, each made of a plastic material having a higher refractive index than that of the buffer layer and positioned between the said channels, and
the said control means for carrying beams of control light therethrough, each having the wavelength shorter than the said bandgap energy, in that
light deviation means are provided in the control means to direct a predetermined amount of the said beams of control light perpendicularly to the said plurality of channels through the said buffer layer,
so that each beam of control light lowers the effective refractive index of each channel to a cutoff level to disturb the said guiding condition.

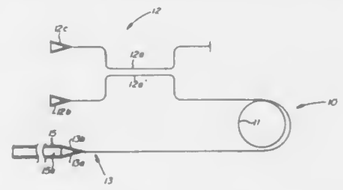
4,941,726

TAPERED FIBER AMPLIFIER

Stephen D. Russell, San Diego, and Timothy C. Stamnitz, Encinitas, both of Calif., assignors to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1988, Ser. No. 239,158
Int. Cl.[5] G02B *6/26, 7/42*
U.S. Cl. 350—96.15 **8 Claims**

1. An apparatus for amplifying data signals comprising:
a first tapered optical portion optically coupled to receive the data signals at an input end, and having a light transmission portion interposed between the input end and an output end, the first tapered optical portion being fabricated so as not to disturb single-mode and the input end has a greater area than the output end, thereby concentrating the data signal intensity therethrough;
a source of optical pump signals;
a second tapered optical portion optically coupled to receive the optical pump signals at an input end and having a light transmissive portion interposed between the input end and an output end, the second tapered optical portion being



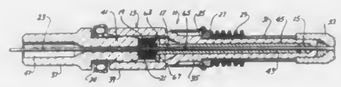
fabricated as not to disturb single-mode and the input end has a greater area than the output end thereby concentrating the pump signal intensity therethrough;
a coupler section coupled to receive the concentrated data signal intensity from the first tapered optical section and the concentrated pump signal intensity from the second tapered optical section; and
means optically coupled to the coupler section having a sufficient length of optical transmissive material for optically amplifying the data signals by Raman effect.

4,941,727

CRIMPABLE FIBER OPTIC TERMINUS

Jack J. Maranto, Capistrano Beach, and Norbert L. Moulin, Placentia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

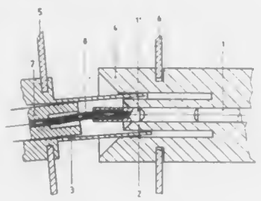
Filed Aug. 5, 1988, Ser. No. 229,378
Int. Cl.[5] G02B *6/36*
U.S. Cl. 350—96.20 **12 Claims**



1. A fiber optic terminus comprising:
a body having a passage therein;
an elastomeric coupling element confined in said passage, said coupling element having a passage adapted to receive a portion of the optical fiber;
said coupling element being resiliently deformable to constrict said passage of the coupling element by expanding radially and compressing axially in response to a force on the coupling element acting generally longitudinally of at least a region of the passage through the coupling element; and
means including a resilient member for applying said force to the coupling element so as to cause the coupling element to translate at least a portion of said force to said optical fiber and thereby frictionally grip said fiber in the passage of the coupling element.

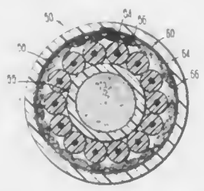
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4,941,728
OPTICAL FIBER PLUG-IN CONNECTION HAVING A RADIALLY ELASTICALLY SUPPORTED PLUG PIN
Anton Pautz, Munich, and Manfred Lang, Taufkirchen, both of Fed. Rep. of Germany, assignors to Spinner GmbH, Elektrotechnische Fabrik, Munich, Fed. Rep. of Germany
Filed Feb. 3, 1988, Ser. No. 151,926
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3704070
Int. Cl.[5] G02B *6/38*
U.S. Cl. 350—96.21 **6 Claims**



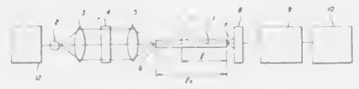
1. An optical fiber plug-in connection, comprising:
a coupler including a coupler centering sleeve, a coupler sleeve centrally retained within said coupler centering sleeve and a fiber containing coupler pin accommodated in said coupler sleeve;
a plug including a plug centering sleeve insertable in said coupler centering sleeve, a cable clamp supported in said plug centering sleeve, and a fiber containing plug pin; and
support means for radially elastically supporting said plug pin relative to said cable clamp, said support means including a flexible tube enclosing said fiber and connecting said plug pin with said cable clamp.

4,941,729
BUILDING CABLES WHICH INCLUDE NON-HALOGENATED PLASTIC MATERIALS
Tommy G. Hardin, Lilburn, and Behrooz A. Khorramian, Norcross, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 27, 1989, Ser. No. 303,172
Int. Cl.[5] G02B *6/44, 6/00*; H02G *15/02*
U.S. Cl. 350—96.23 **15 Claims**



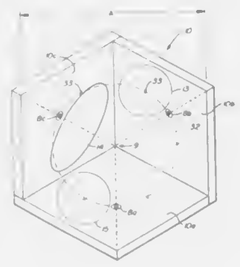
1. A communication cable, which comprises:
a core which comprises at least one transmission medium;
a plastic material which encloses said at least one transmission medium;
a jacket which comprises a plastic material and which encloses said at least one transmission medium;
said plastic material which encloses said at least one transmission medium and said plastic material of said jacket each including a plastic material which is selected from the group consisting of a filled polyolefin, a polyetherimide, a silicone-polyimide copolymer, and blend compositions of a polyetherimide and a silicone-polyimide copolymer; and
a thermal barrier which is disposed between said at least one transmission medium and said jacket, said thermal barrier being a laminate comprising a layer of a metallic material and a layer of a plastic material which is selected from the group consisting of a polyetherimide, a silicone-polyimide copolymer, a polyimide, and blend compositions of a polyetherimide and a silicone-polyimide copolymer.

4,941,730
PLASTIC OPTICAL TRANSMITTABLE FIBERS
Minoru Takase; Naoya Ueno, and Toshimi Arashi, all of Chiba, Japan, assignors to Idemitsu Petrochemical Company Limited, Tokyo, Japan
Filed May 13, 1988, Ser. No. 193,609
Claims priority, application Japan, May 15, 1987, 62-118192
Int. Cl.[5] G02B *1/04, 6/02*
U.S. Cl. 350—96.34 **6 Claims**



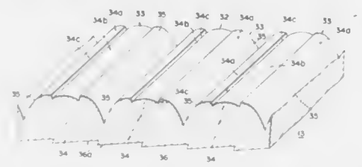
1. A plastic optical transmittable fiber comprising a core and a cladding, the cladding comprising a copolymer containing 70 to 99.5 mole % of 4-methyl pentene-1 units and 30 to 0.5 mole % of units of an α-olefin of 2 to 24 carbon atoms, and a polycarbonate core material having a refractive index higher than that of the cladding by at least 0.01.

4,941,731
CORNER CUBE UTILIZING GENERALLY SPHERICAL SURFACES
John Macken, 3300 Coffey La., Santa Rosa, Calif. 95401
Filed Jul. 1, 1987, Ser. No. 68,939
Int. Cl.[5] G02B *5/122*
U.S. Cl. 350—102 **10 Claims**



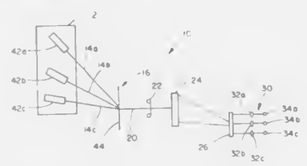
1. A method of making a corner cube exhibiting optical power comprising:
Providing three r. irrors, generally spherical in shape, each mirror having a generally spherical surface having a radius of curvature generally equal to R; positioning said spherical surfaces such that each of said three spherical surfaces has a point of tangency to an imaginary perfect corner cube; and sizing each of said three mirrors to form a corner cube having an aperture size A, where R is greater than 3A.

4,941,732
TRANSMISSION TYPE PROJECTION SCREEN
Osamu Umeda, Gifu; Tohru Nakakusu, Hoya; Makoto Sato, Fussa, and Tatsuo Shimazaki, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 79,883, Jul. 30, 1987, Pat. No. 4,875,064. This application May 31, 1989, Ser. No. 359,399
Claims priority, application Japan, Aug. 6, 1986, 61-119814[U]; Mar. 28, 1987, 62-46179[U]; Jul. 3, 1987, 62-101814[U]
Int. Cl.[5] G03B *21/60*
U.S. Cl. 350—128 **16 Claims**



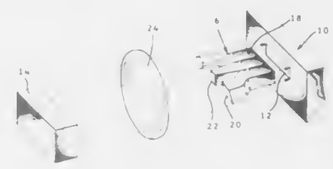
1. A back-surface projection screen for observing a light image, projected from the rear surface of a screen, on a front surface side, which comprises a lenticular lens constructed of a great number of lens units in a continuous array with a top surface section defined as a lens section and with a total-reflection surface formed at each side of the lens section, in which, with respect to a central area of the lens section of each lens unit, linear surfaces are provided in an opposed relation at the total-reflection surfaces of each lens unit.

4,941,733
OPTICAL CORRELATOR SYSTEM
Kenneth G. Leib, Wantagh, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 7, 1989, Ser. No. 334,928
Int. Cl.[5] G02B *27/46, 5/32*
U.S. Cl. 350—162.13 **17 Claims**



1. A polychromatic optical correlator system, comprising:
means to generate simultaneously a plurality of electromagnetic signal beams at a plurality of wavelengths;
beam combining means to direct the signal beams along an axis to form a multicomponent, multiwavelength beam comprising said signal beams;
beam modulating image means to expose at least one view to the signal beams to spatially modulate each of the signal beams;
an optical memory element having a plurality of matched filters stored therein;
a multiple beam generating holographic lens located in the path of the multicomponent, multiwavelength beam to deflect each of the component signal beams thereof onto the optical memory element, with each of the signal beams being focused on a respective one of the matched filters of the optical memory element; and
optical detection means located in the paths of output beams of the optical memory element to produce a signal when the correlation between the pattern of one of the signal beams focused on the optical memory element and the matched filter on which said one of the beams is focused, rises above a predetermined value.

4,941,734
BEAM ALLOCATION AND DELIVERY SYSTEM FOR EXCIMER LASER
Richard T. Williams, Winston-Salem, and Jeff C. Wu, Clemmons, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 18, 1988, Ser. No. 273,381
Int. Cl.[5] G02B *27/00*
U.S. Cl. 350—321 **4 Claims**



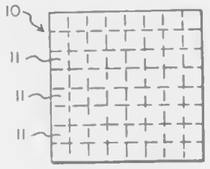
1. An efficient system for reshaping a fixed, generally rectangular excimer laser beam and focussing such reshaped beam onto a workpiece remote from a source of said excimer laser beam, the system comprising an excimer laser emitting a generally rectangular beam, a first end of at least one elongated fibrous or solid light-guide disposed adjacent the beam source, where the cross-section of said first end of said elongated fibrous of solid light-guide is of a first size sufficient to fully accept said rectangular beam, and a remote end of said elongated fibrous or solid light-guide is of a second size, smaller than the first size of "diamond" shaped cross-section whereby to direct said laser beam onto a workpiece disposed a distance therefrom, said beam being transmitted through said elongated fibrous or solid light-guide and reshaped from rectangular to "diamond" shaped, and focused onto said workpiece by an imaging lens.

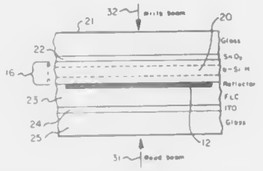
4,941,735
OPTICALLY ADDRESSABLE SPATIAL LIGHT MODULATOR
Garret R. Moddel, and Kirstina M. Johnson, both of Boulder, Colo., assignors to University of Colorado Foundation, Inc., Boulder, Colo.
Filed Mar. 2, 1989, Ser. No. 318,775
Int. Cl.[5] G02F *1/13*
U.S. Cl. 350—342 **51 Claims**

1. A multi-pixel liquid crystal spatial light modulator having a plurality of picture elements, comprising;
a pair of spaced transparent electrically conductive films,
a photosensitive film carried by one of said conductive films,
a plurality of conductive elements carried by said photosensitive film and arranged to define the position of each individual one of said plurality of modulator picture elements, each individual one of said conductive elements being electrically isolated from all other conductive elements,
an apertured film carried by said photosensitive film substantially coplanar with said conductive elements, said apertured film having apertures formed therein and arranged in the form of the modulator picture elements, so as to define a plurality of areas of uncovered photosensitive film area, each of said uncovered areas of photosensitive film surrounding one of said conductive elements,
liquid crystal activating voltage source means connected to said conductive films,
chiral smectic liquid crystal means confined between said one conductive film and said photosensitive film,

write beam means selectively directable to the side of said photosensitive film opposite from said plurality of conductive elements,

whereby individual picture elements of said modulator are individually addressed by activating the portion of said





photosensitive film that is associated with said addressed picture elements,

thereby causing the corresponding conductive-element-defined chiral smectic liquid crystal picture elements to switch states, and read wavefront means directable to a side of said modulator.

4,941,736

FERROELECTRIC LIQUID CRYSTAL DEVICE AND DRIVING METHOD THEREFOR

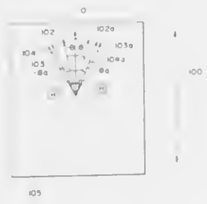
Osamu Taniguchi, Kawasaki; Junichiro Kanbe, Yokohama; Shinjiro Okada, Kawasaki; Akira Tsuboyama, Tokyo, and Masahiko Enari, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 854,583, Apr. 22, 1986, abandoned, and a continuation-in-part of Ser. No. 170,109, Mar. 11, 1988, abandoned, which is a continuation of Ser. Nn. 28,130, Mar. 19, 1987, abandoned. This application Jul. 29, 1988, Ser. No. 225,827

Claims priority, application Japan, Apr. 23, 1985, 60-087084; Apr. 24, 1985, 64-087830; Apr. 24, 1985, 60-087829; Apr. 24, 1985, 64-087828; Mar. 24, 1986, 61-065054; Mar. 25, 1986, 61-067585; Aug. 25, 1987, 62-198408

Int. Cl.[5] G02F *1/13*

U.S. Cl. 350—350 S **36 Claims**



1. A ferroelectric liquid crystal device, comprising:

a pair of substrates each having a plurality of electrodes oppositely spaced from each other, the electrodes on said pair of substrates being disposed so as to intersect with each other, and a ferroelectric liquid crystal layer disposed between the substrates having a thickness which is small enough to release a helical structure of the ferroelectric liquid crystal in the absence of an electric field, wherein a pixel is at each intersection of the opposite electrodes formed on the pair of substrates and non-pixel portions are where the opposite electrodes do not face each other, wherein

the ferroelectric liquid crystal provides two average molecular axes forming an angle 2θ therebetween under the application of no electric field;

the ferroelectric liquid crystal provides a first average molecular axis under application of a voltage of one polarity exceeding one threshold and a second average molecular axis under application of a voltage of the other polarity exceeding the other thereshold, said first and second average molecular axes forming an angle 2 H therebetween satisfying H $>\theta$; the ferroelectric liquid crystal at the nonpixel portions forming an orientation state providing an average molecular axis forming an angle θ or $-\theta$; the ferroelectric liquid crystal also providing a third average molecular axis after application of said voltage of one polarity exceeding the one thereshold and then under or after application of an AC voltage which is insufficient to result in said second average molecular axis and a fourth average molecular axis after application of said voltage of the other polarity exceeding the other threshold and then under of after application of an AC voltage which is insufficient to result in said first average molecular axis, said third and fourth average molecular axes forming an angle $2\theta_a$ therebetween satisfying H $\geqq\theta_a>\theta$; and

a pair of cross nicol polarizers disposed to sandwich the ferroelectric liquid crystal layer such that the polarizing axis of one of the polarizers substantially coincides with one of said third and fourth average molecular axes.

4,941,737

LIQUID-CRYSTAL DISPLAY DEVICE USING TWISTED NEMATIC LIQUID CRYSTAL MOLECULES

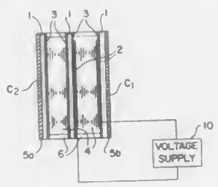
Naofumi Kimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 6, 1988, Ser. No. 254,042

Claims priority, application Japan, Oct. 7, 1987, 62-253278

Int. Cl.[5] G02F *1/13*

U.S. Cl. 350—335 **18 Claims**



1. A liquid-crystal display device comprising:

a multi-layer-type liquid-crystal cell that is composed of at least first and second cell layers, said cell layers containing liquid-crystal molecules with a twisted nematic orientation therein;

said first cell layer having an angle of twist of said liquid-crystal molecules opposite to an angle of twist of the liquid-crystal molecules in said second cell layer;

said liquid-crystal molecules in said first cell layer in the vicinity of said second cell layer having a first orientation; and

said liquid-crystal molecules in said second cell layer in the vicinity of said first cell layer having a second orientation;

said first and second orientation forming an angle which varies between 70° to 80° or 110° to 150°; and

voltage-applying means, operatively connected to said first cell layer, for applying a voltage to said first cell layer to vary said first orientation of said liquid-crystal molecules;

said second orientation of said liquid-crystal molecules in said second layer cell not being varied by said voltage applying means.

4,941,738

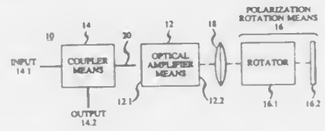
POLARIZATION INDEPENDENT OPTICAL AMPLIFIER APPARATUS

Nils A. Olsson, New Providence, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Jul. 29, 1988, Ser. No. 225,700

Int. Cl.[5] G02B *5/30*

U.S. Cl. 350—377 **7 Claims**



1. Optical amplifier apparatus for amplifying optical radiation having arbitrary polarization, amplification being independent of said polarization, said apparatus comprising

an optical amplifier which has different gains for TE and TM modes of said optical radiation,

means for transmitting both polarizations of said radiation essentially simultaneously through said amplifier, and

means located external to any resonator for rotating both of said polarizations of said radiation by n90°, where n is an odd integer, after it emanates from said amplifier and for transmitting said polarization-rotated radiation through said amplifier again so that the gains of said TE and TM modes passing through said amplifier an even number of times are essentially equal.

4,941,739

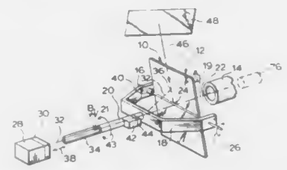
MIRROR SCANNER

Gregory Z. Grudic, Richmond; Michael F. Kelly, and Peter D. Lawrence, both of Vancouver, all of Canada, assignors to University of British Columbia, Canada

Filed Jan. 17, 1989, Ser. No. 297,406

Int. Cl.[5] G02B *26/08*

U.S. Cl. 350—486 **7 Claims**



1. A scanner comprising a mirror having a reflective surface, an optical system having a focal axis directed at an area of said reflecting surface, means for mounting said mirror to rotate about a first axis located substantially in the plane of said reflecting surface, means for rotating said mirror about said first axis, means mounting said mirror and said first axis for rotation about a second axis, said second axis being formed by a hollow shaft, said means to rotate said mirror about said first axis including a substantially non extendable cable under tension extending through said hollow shaft and connected to said mirror in a position spaced from said first axis, means for biasing said mirror to maintain tension in said cable and means for moving said connecting means substantially axially of said hollow shaft, said first axis and said second axis being substantially mutually perpendicular and intersecting, means for rotating said mirror and said first axis about said second axis, said second axis and said focal axis being substantially in axial alignment.

4,941,740

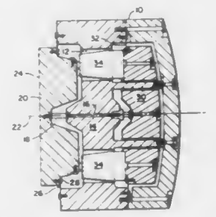
MIRROR MOUNT WITH ANNULAR FLAT DIAPHRAGM ENCIRCLING CIRCULAR MIRROR AND INCLUDING A PLURALITY OF ACTUATORS

Warren R. Sigman, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 22, 1989, Ser. No. 369,804

Int. Cl.[5] G02B *7/18, 5/08, 26/08*

U.S. Cl. 350—636 **10 Claims**



1. A positionally adjustable mirror arrangement, comprising:

a support body,

a circular mirror having a central axis perpendicular to the face of said mirror;

a first annular flat diaphragm completely encircling and secured to the periphery of said mirror, and secured to said support body;

a plurality of actuators for rotating said mirror around transverse axes perpendicular to said central axis, said transverse axes being substantially in the plane of said diaphragm.

4,941,741

OPHTHALMIC DISEASE DETECTION APPARATUS

Susumu Mizuta, Tokyo, Japan, assignor to Kowa Company, Ltd., Japan

Filed Jul. 7, 1988, Ser. No. 216,385

Claims priority, application Japan, Jul. 15, 1987, 62-174951

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—221 **12 Claims**

1. An apparatus for detecting ophthalmic diseases in a patient's eye comprising:

a laser source for producing a laser beam;

a laser beam projector for projecting the laser beam;

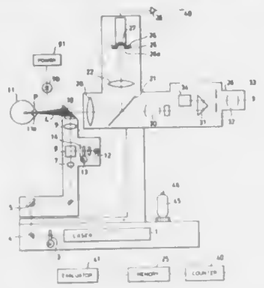
means for focusing the laser beam at a selected spot in the patient'eye;

means for receiving light scattered from the patient's eye and photoelectrically converting it into an electrical signal;

a mask disposed in the front of said photoelectric converting means and formed thereon with a slit having predetermined width to limit the scattered light that impinges on said photoelectric converting means;

light shield means for blocking the light scattered from the eye, the light shield means being disposed in the slit to be displaceable so as to shield the light scattered from the selected spot in the eye to extract noise corresponding to light other than the light scattered from the selected spot in the eye; and

means for processing the electrical signal derived from the light scattered from the eye with the noise removed there-



from to evaluate for opthalmic diseases in the patient's eye.

4,941,742

ARRANGEMENT FOR MEASURING THE CONCENTRATION OF GASEOUS AND VAPOROUS COMPONENTS OF A FLUID MIXTURE

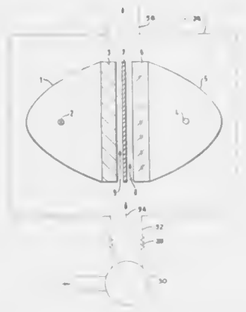
Bernhard Schrader; Petra Heinrich, both of Essen, and Raimund Wyzgol, Dortmund, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Dec. 22, 1988, Ser. No. 288,309

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743684

Int. Cl.[5] G01N *1/10, 21/05*

U.S. Cl. 356—38 **7 Claims**



1. An arrangement for measuring the concentration of gaseous and/or vaporous components of a flowing fluid mixture, the arrangement comprising:

light source means for irradiating light radiation and directing the same along a predetermined light radiation path;

detecting means mounted downstream of said light source means for receiving said light radiation;

flow path means for conducting said flow of said fluid mixture through said light radiation path;

a membrane having two surfaces and being disposed in said flow path means so as to subdivide the latter into two component flow paths for conducting respective component flows of said fluid mixture over respective ones of said surfaces;

said membrane being transparent to said light radiation and being selectively permeable to particles of said components to be measured for accumulating the latter and so act upon said light radiation moving along said light radiation path;

said light source means and said detecting means being mounted adjacent corresponding ones of said surfaces of said membrane so as to conjointly define said component flow paths with said membrane and so as to cause said light radiation path to be substantially perpendicular to said membrane; and,

said membrane being mounted in said flow path means so as to be parallel to the flow of said fluid mixture.

4,941,743

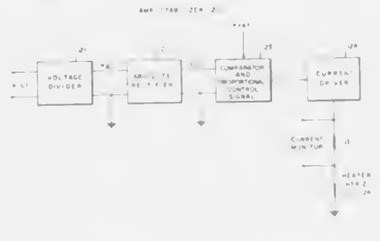
HIGH STABILITY HIGH INTENSITY ATOMIC EMISSION LIGHT SOURCE

Tetsuo Hadeishi, Kensington, and Thurston Le Vay, Arcadia, both of Calif., assignors to Gruen Optik Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany and Glass Instruments Inc., Pasadena, Calif.

Filed Oct. 7, 1988, Ser. No. 254,627

Int. Cl.[5] G01J *3/443;* **H01J** *7/24, 13/32, 61/52*

U.S. Cl. 356—311 **7 Claims**



1. Apparatus for providing a high intensity atomic emission light source comprising:

(a) a discharge lamp having a discharge region and a sample region in fluid communication with each other;

(b) at least first and second electrodes positioned within said discharge region;

(c) said discharge lamp containing a noble gas and a sample material selected from a group consisting of individual elements and halides of refractory metals;

(d) first heating means positioned for heating said discharge region;

(e) second heating means positioned for heating said sample region;

(f) means for detecting a discharge voltage across said electrodes; and

(g) means responsive to said means for detecting for controlling said heating means to control a temperature of at least one of said sample region and said discharge region so as to maintain said discharge voltage constant across said electrodes during operation of said discharge lamp,

wherein said first heating means operates to heat said discharge region to a temperature higher than that of said sample region.

4,941,744

INTEGRATED-PHOTOCIRCUIT INTERFEROMETER

Takashi Yokokura; Nobuo Hori; Hiroaki Shimozono, and Satoru Niimura, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1988, Ser. No. 215,684

Claims priority, application Japan, Jul. 7, 1987, 62-167726

Int. Cl.[5] G01B *9/02*

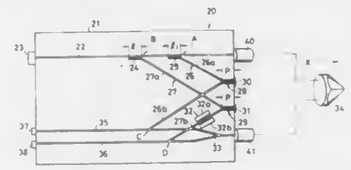
U.S. Cl. 356—358 **8 Claims**

1. An integrated-photocircuit interferometer with a thin-walled substrate having formed therein:

an exit waveguide for directing coherent light for measurement from a light source toward an object;

an inlet waveguide having a plurality of branch waveguides for receiving said light for measurement reflected from said object and for guiding said received light through said plurality of branch waveguides to a corresponding plurality of photodetectors; and

reference waveguides optically connecting said exit wave-



guide to said branch waveguides for extracting a plurality of reference beams from the light for measurement propagating through said exit waveguide and for guiding each of said reference beams into a corresponding one of said branch waveguides, said reference waveguide providing different optical path length differences for said plurality of reference beams.

4,941,745

PROJECTION ALIGNER FOR FABRICATING SEMICONDUCTOR DEVICE HAVING PROJECTION OPTICS

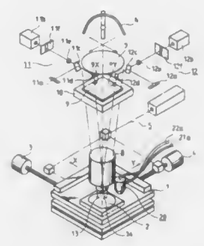
Shuji Sugiyama, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1988, Ser. No. 291,163

Claims priority, application Japan, Dec. 30, 1987, 62-333186

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—401 **8 Claims**



1. A projection aligner for fabricating a semiconductor device having a projection optics which projects a circuit pattern of a reticle on a wafer comprising:

an X-Y stage for mounting the wafer thereon,

a stage controller for moving the X-Y stage to an X or Y direction,

developing means for developing an alignment mark on the wafer projected by the projection optics,

an alignment mark detector set on the projection optics for detecting the alignment mark,

correction means for correcting a relative positional relation between the alignment mark detector and the projection optics by measuring an offset error with respect to a zero point of the alignment mark detector, after the alignment mark is projected on the wafer by the projection optics, is moved to the developing means so as to be developed by the developing means, is moved to a previously set position and is detected by the alignment mark detector while keeping the wafer fixedly mounted on the X-Y stage.

4,941,746

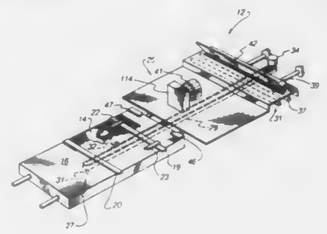
APPARATUS FOR AUTOMATICALLY DETERMINING THE DENSITIES OF A GRAPHIC IMAGE

Frank A. Hull, Circle Pines, Minn.; H. Brent Archer, Miami, Fla., and Curt Frederick, Blaine, Minn., assignors to Chesley F. Carlson Company, Plymouth, Minn.

Continuation-in-part of Ser. No. 51,270, May 4, 1987, abandoned, which is a continuation of Ser. No. 722,907, Apr. 12, 1983, abandoned. This application Dec. 14, 1987, Ser. No. 132,521

Int. Cl.[5] G01N *21/00*

U.S. Cl. 356—444 **19 Claims**



1. An apparatus for automatically determining the densities of a graphic image having highlight, shadow and intermediate densities comprising:

a support means for supporting the graphic image;

a light source positioned to direct light on or through the graphic image;

a scanning head positioned adjacent the support means to measure the highlight, shadow and intermediate densities, the scanning head comprising:

a plurality of light sensitive elements positioned to detect the amount of light from the graphic image and thereby to provide data relating to the density of the graphic image; and

means for focusing the light on the plurality of light sensitive elements;

automated means for causing relative scanning movement between the scanning head and the graphic image for at least two scans, one of which measures highlight and shadow densities and another of which determines the intermediate densities;

means for calibrating the plurality of light sensitive elements;

means for correcting the data from each light sensitive element according to the calibration; and

means for processing the corrected data from each of the light sensitive elements to determine the highlight and shadow densities of the graphic image and the intermediate densities of graphic image.

4,941,747

OPTICAL SENSING ARRANGEMENTS

John P. Dakin, Hampshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 10, 1989, Ser. No. 308,521

Claims priority, application United Kingdom, Feb. 10, 1988, 8802998

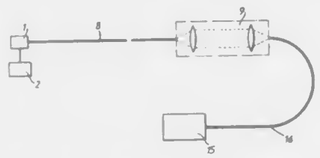
Int. Cl.[5] G01J *3/26;* **G01B** *9/02*

U.S. Cl. 356—346 **6 Claims**

1. An optical scanning arrangement for gas sensing, in which scanned light source means comprising a white or broadband light source and a frequency scanning comb filter produces a spectrum of regularly spaced wavelengths or lines which correspond as regards spacing to an absorption line spectrum or a gas to be monitored and in which a multi-line output from the light source means propagates through a region to be

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sensed for gas and means for determining the light output from the sensed region for detecting attenuation of components of



the multi-line output from the light source means due to absorption by said gas being monitored.

4,941,748

EXTRUDER WITH CERAMIC PROCESSING UNIT

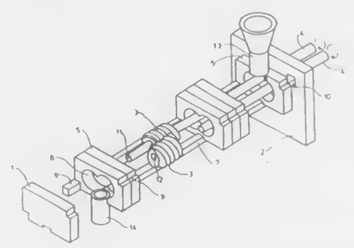
Werner Pusch, and Martin Ullrich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 320,025

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1988, 3810079

Int. Cl.[5] **B29C** *47/40, 47/60, 47/66*

U.S. Cl. 366—85 **10 Claims**



1. An extruder comprising: at least one screw element mounted on a screw shaft for rotation around a longitudinal axis thereof; means forming a barrel with a reaction space therein for rotatably receiving the at least one screw element and screw shaft, wherein the means forming the barrel comprises a plurality of barrel plates, each composed entirely of ceramic material and having an aperture therein and means mounting the plates in an abutting relationship perpendicular to the longitudinal axis of the screw shaft and with the apertures aligned to define the reaction space.

4,941,749

HUB FOR AN AGITATOR HAVING HOLLOW BLADES AND AN INTERNAL HEAT-CONVEYING FLUID FLOW CIRCUIT

Alain Bouchez, Vincennes; Patrice Cognard, Boulogne; Gérard Marie, Rueil Malmaison, and Alain Schmidt, Mesnil le Roy, all of France, assignors to Societe Anonyme: Moritz, France

Filed Dec. 27, 1988, Ser. No. 289,664

Claims priority, application France, Dec. 29, 1987, 87 18510

Int. Cl.[5] **B01F** *7/20, 15/06;* **F28F** *5/04*

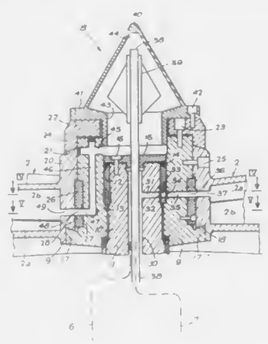
U.S. Cl. 366—147 **10 Claims**

1. A hub for an agitator having hollow blades and an internal fluid flow circuit, the hub being of the type intended for mounting at the end of a fluted drive shaft which is connected to at least one fluid flow circuit including a go circuit and a return circuit, the hub comprising:

a fluted ring threaded onto the shaft and carrying the roots of the hollow blades;

an axial fastening liner interposed between the shaft and the ring and locked axially in position by a fluid-tight stopper fitted to the end of the shaft, which shaft delimits an axial bore in communication with the go circuit, said stopper having a tube in communication with the return circuit passing through said stopper and extending above it;

a hollow cap applied to the top of the ring in order to delimit a fluid-tight manifold chamber into which the tube opens out; and



fluid-tight fluid flow means passing firstly through the shaft, the liner, the ring, and the blade roots in order to put the blades into communication with the go circuit, and secondly the ring and the blade roots in order to put the blades into communication with the manifold chamber which itself is in communication with the return circuit via the tube.

4,941,750

MOVING AGITATOR MEMBER FOR APPARATUS FOR MIXING SUBSTANCES IN POWDER, PASTE, OR GRANULAR FORM

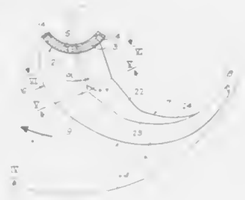
Alain Bouchez, Vincennes; Patrice Cognard, Boulogne; Marie Geárard, Rueil Malmaison, and Alain Schmidt, Mesnil Le Roi, all of France, assignors to Societe Anonyme: Moritz, France

Filed Dec. 27, 1988, Ser. No. 289,681

Claims priority, application France, Dec. 30, 1987, 87 18546

Int. Cl.[5] **B01F** *7/20, 15/06*

U.S. Cl. 366—147 **5 Claims**



1. A rotating agitator member for apparatus for mixing substances in powder, paste, or granular form, of the type comprising a hub suitable for fitting to the terminal portion of a drive shaft projecting into a receptacle constituting the apparatus, said hub processing n shaped blades each having a leading edge following the corresponding inside face of the receptacle as closely as possible, with each blade comprising:

a base suitable for fixing to the hub and centered on the axis of rotation x—x′ thereof;

a blade root extending from an outside face of the base along a direction which is substantially radial relative to the axis of rotation x—x′; and

a curved blade segment running on from the blade root and rising at an angle β relative to the axis of rotation x—x′, said curved blade segment sweeping rearwardly in order to present a convex leading edge in the direction or rotation of the agitator member;

wherein:

said blade segment is in the form of a half-crescent whose thickness tapers away from the blade root, a leading surface of the curved blade segment being twisted relative to a reference plane perpendicular to the axis of rotation x—x′, the blade root and the blade segment being made in the form of a hollow section member having a right cross section which is triangular in shape and which includes a bottom wall forming a bottom surface and two outer walls forming an upper surface, one of said outer walls including said leading surface and the bottom surface defining a clearance angle γ.

4,941,751

MULTI-COMPONENT MIXING CAPSULE HAVING AN EJECTION DEVICE FOR THE MIXED COMPOUND, IN PARTICULAR FOR DENTAL PURPOSES

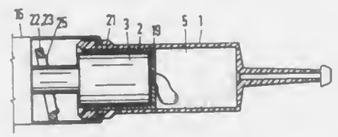
Ernst Mühlbauer, Elbgaustr. 248, 2000 Hamburg 53, Fed. Rep. of Germany

Filed Jul. 14, 1989, Ser. No. 379,862

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1988, 8809184[U]

Int. Cl.[5] **B01F** *5/06*

U.S. Cl. 366—176 **4 Claims**



1. A capsule usable with an actuating tool, for mixing components and ejecting the resulting mixed compound, comprising:

a receptacle part (1) having a front portion forming a mixing chamber (5) with an ejection opening (7) in a front wall thereof and an open rear portion;

a hollow piston (2) which can be displaced in the receptacle part (1), the piston including a rear portion initially extending rearward of the receptacle part and having a radial projection thereon and a perforated front wall (19) defining a rear wall of the mixing chamber (5) away from the ejection opening (7), the hollow portion of the piston on the rear side of the perforated wall defining an accommodation chamber (31) for a film container (32) containing a liquid component;

a ram (3) which can be displaced in the accommodation chamber (31) by the actuating tool (16) in order to first empty the film container (32) through the perforated front wall (19) into the mixing chamber (5), and then advance the piston relative to the receptacle to eject the mixed compound;

wherein,

the piston (2) is initially supported relative to the receptacle by the projection against the tool force pushing forward the ram (3), and then is self-released from the receptacle while the tool advances the ram and piston to empty the film container, and

the projection (22, 23) is connected to the perforated wall (19) of the piston (2) via a tearable portion (25), the tear strength of which is greater than the force of the advancing ram required to empty the film container (32).

4,941,752

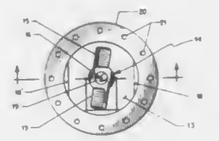
MIXING EQUIPMENT AND METHODS

Robert E. Yant, Medina, and Mark E. Piechuta, Akron, both of Ohio, assignors to Quantum Technologies, Inc., Twinsburg, Ohio

Filed Apr. 25, 1988, Ser. No. 185,456

Int. Cl.[5] **B01F** *7/04, 7/18, 15/00*

U.S. Cl. 366—307 **20 Claims**



1. In a mixing device having a mixing chamber with a cylindrical inner wall, a multibladed agitator adapted for rotation concentrically within said chamber via a suitable drive shaft and a plurality of equally spaced, elongated baffles coaxially extending along the inner wall of said chamber for the major portion of its length, the improvement which comprises each of said baffles having a uniform cross-sectional shape corresponding generally to a small geometric segment of a circle, the radius of which is substantially the same as that of the inner wall of said chamber, with the rounded, substantially cylindrical surface of each baffle fitted against the inner wall of said chamber and with the flat sides of said baffles facing inwardly.

4,941,753

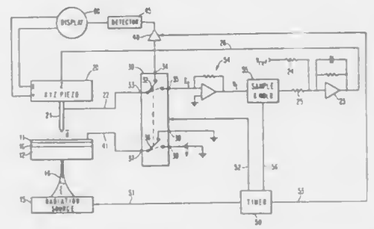
ABSORPTION MICROSCOPY AND/OR SPECTROSCOPY WITH SCANNING TUNNELING MICROSCOPY CONTROL

Hemantha K. Wickramasinghe, Chappaqua, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 7, 1989, Ser. No. 334,833

Int. Cl.[5] **G01K** *1/16;* **G01N** *25/00*

U.S. Cl. 374—120 **22 Claims**



1. Apparatus for absorption measurements comprising:

a sample with a conductive surface,

means for supporting said sample for measurement,

means for directing energy onto said sample to cause local heating of the sample,

a thermal measurement tip,

support means for maintaining said thermal measurement tip within about 10 A° of said conductive surface, and

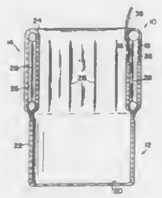
measurement means coupled to said thermal measurement tip for measuring a junction potential between said thermal measurement tip and said conductive surface.

10. A method or effecting absorption measurements comprising:

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(a) supporting a sample with a conductive surface for measurement,
(b) directing energy onto said sample to cause local heating of the sample,
(c) supporting a thermal measurement tip sufficiently close to said conductive surface to equalize Fermi levels between said tip and surface, and
(d) measuring a junction potential between said thermal measurement tip and said conductive surface.

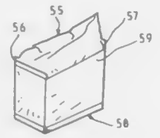
4,941,754
INFLATABLE SELF-SUPPORTING BAG
Paul Murdock, 168 Elm St., Windsor Locks, Conn. 06096
Filed May 26, 1989, Ser. No. 358,121
Int. Cl.[5] B65D *33/00*
U.S. Cl. 383—3 **8 Claims**



1. A collapsed inflatable self-supporting bag comprising a substantially flat generally rectangular structure defined by a plurality of generally rectangular sheet material panels, each of said panels being connected in face-to-face relation to another of said panels, said structure having a lower portion formed from a single ply of sheet material and including two substantially rectangular panels connected together in face-to-face relation along bottom and side marginal edge portions thereof defining a bag bottom and a portion of a bag sidewall, and an inflatable upper portion contiguous to said lower portion and formed by a plurality of generally rectangular air impervious sheet material panels defining two plies including an inner ply and an outer ply, said upper portion defining the remaining portion of said sidewall and a mouth opening at the upper end thereof, said inner ply and said outer ply cooperating to define an air chamber therebetween, connecting means for attaching said inner ply and said outer ply in face-to-face relation to each other along generally parallel lines of attachment to divide said chamber into a plurality of intercommunicating sections inflating means for introducing air into said chamber to inflate said upper portion, said upper portion in its inflated condition having a generally cylindrical configuration being defined by a plurality of intercommunicating elongate tubular portions immediately adjacent to each other and extending in parallel relation to the central axis of said upper portion, said lower portion depending from said upper portion, and closure means for releasably retaining said upper portion in inflated condition.

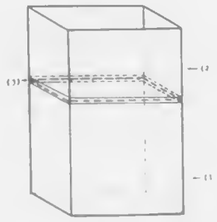
4,941,755
DEVICE FOR MANUFACTURING A CONTAINER OF FLEXIBLE SYNTHETIC MATERIAL
Michel Cazes, Vittel, France, assignor to Societe Generale Des Eaux Minerales De Vittel, Vittel, France
Filed Feb. 19, 1988, Ser. No. 158,307
Int. Cl.[5] B65D *30/16*
U.S. Cl. 383—119 **13 Claims**

1. A sachet of flexible synthetic material comprising:
a flexible body for containing a liquid; and
means for receiving and supporting the flexible body comprising one or more side reinforcing pieces connected at a base to form a bottom portion and a sleeve for engaging the side reinforcing pieces to define a container for receiving the flexible body;



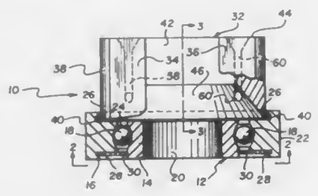
wherein the flexible body is frictionally contained within the receiving and supporting means and wherein said friction is the only means for retaining the flexible body within the receiving and supporting means.

4,941,756
DISPOSABLE BAG WITH ATTACHED NAPKIN
John S. Price, 28 Lauretta Dr., Highland, N.Y. 12528, assignor to John Sterling Price, Highland, N.Y.
Filed Apr. 3, 1989, Ser. No. 331,831
Int. Cl.[5] B65D *30/02, 30/10*
U.S. Cl. 383—127 **4 Claims**



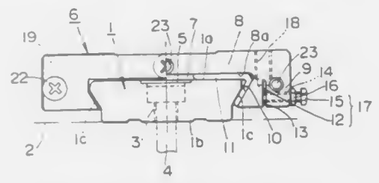
1. A bag of flexible material comprising:
an open bag mouth;
at least one napkin of absorbent material wherein said at least one napkin is releasably connected to the bag about the open bag mouth by adhering means such that the connection defines an overlapping seam.

4,941,757
GREASE RESERVOIR
David F. Hall, Naples, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 31, 1989, Ser. No. 387,192
Int. Cl.[5] F16C *33/66*
U.S. Cl. 384—473 **4 Claims**



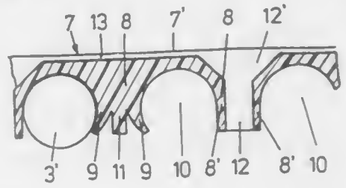
1. A grease reservoir for use with a bearing having (1) an inner race, (2) an outer race radially outward of the inner race, and (3) a generally circular groove in the outer race facing the inner race and located at an end portion of the outer race, the reservoir comprising:
means defining a flexible arcuate reservoir member having spaced ends and a generally cylindrical outer surface extending from one end to the other end, a flange projecting radially outwardly from one side edge of the outer surface, the flange being dimensioned relative to the groove in the bearing so that the flange can be positioned within the groove to attach the member to the bearing, the member being sufficiently flexible so that it can be flexed to position the flange in the groove and to remove the flange from the groove, and a passageway extending through the reservoir member in an axial direction so that grease can be forced into and through the passageway to the bearing when the member is attached fto the bearing.

4,941,758
LINEAR SLIDING GUIDE BEARING
Nobuyuki Osawa, Takasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 11, 1989, Ser. No. 378,134
Claims priority, application Japan, Jul. 29, 1988, 63-100856[U]
Int. Cl.[5] F16C *29/12*
U.S. Cl. 384—40 **3 Claims**



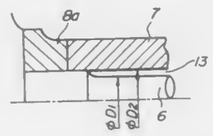
1. A linear sliding guide bearing comprising:
an axially extending guide rail including both sliding side surfaces slanting and expanding upwardly and outwardly from both edges of a bottom surface which is fixed to a base, said guide rail including a plurality of fixing bolt holes penetrating from an upper surface to the bottom and spaced at predetermined intervals along an axis line;
a slider loosely and slidably fitted onto said guide rail and including both side walls having inner surfaces slanting inversely and opposed to the slanting side surfaces of the guide rail with a gap therebetween, said slider including an upper plate portion having an inner surface opposed to the upper surface of said guide rail with a gap therebetween;
a sliding member formed of a thin plastic plate and bonded to the inner surface of the upper plate portion and to the inner surface of both the side walls to fill the gap therebetween;
at least one of the side walls being formed with a slit extending vertically from a bottom surface of the side wall to reach near an upper base portion of the inversely slanted inner surface, said slit also extending axially in parallel to the outer side surface of the side wall; and
pressing means provided on said one of the side walls for pressing a slit surface of the slit to elastically deform the inversely slanted inner surface towards the sliding side surface of said guide rail.

4,941,759
COMB SEPARATOR FOR BALL BEARINGS
Peter Dreschmann, Dittelbrunn, and Horst Gutsche, Schweinfurt, both of Fed. Rep. of Germany, assignors to FAG Kugelgischer Georg Schafer (KGaA), Fed. Rep. of Germany
Filed Jun. 22, 1989, Ser. No. 370,237
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1988, 3821613
Int. Cl.[5] F16C *33/38, 33/44*
U.S. Cl. 384—531 **8 Claims**



1. A generally comb shaped annular separator for use in ball bearings comprising:
an annular ring at a first axial side of the separator; the separator having a second axial side away from the first side for receiving bearing balls therein, and the separator having generally axially extending arms on the second axial side and spaced circumferentially around the separator for defining pockets for receiving bearing balls between circumferentially neighboring pairs of the arms; first ones of the arms alternating with second ones of the arms circumferentially around the separator;
the first arms each having two holding lips defined on them, with a respective one of the holding lips defined on the first arm for engaging behind each of the balls at that first arm, and the respective lip supporting the bearing ball in the respective pocket defined between that first arm and the neighboring second arm for holding the balls in the respective pockets;
each first arm further having a projection therefrom extending generally axially toward the second axial side, and the projection being circumferentially next to without interfering with movement of the respective lips defined on the respective first arm;
passage openings for entrance of lubricant axially extending through at least some of the second arms from the first axial side at the ring of the separator to the second axial side at the ends of the arms.

4,941,760
BALL BEARING TYPE TURBOCHARGER ROTOR ASSEMBLY
Osamu Suzuki, and Noboru Ishida, both of Aichi, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Filed Sep. 12, 1989, Ser. No. 406,103
Claims priority, application Japan, Sep. 12, 1988, 63-227934
Int. Cl.[5] F16C *19/04*
U.S. Cl. 384—537 **5 Claims**



1. A rotor assembly for a turbocharger comprising:
a rotor shaft having a shoulder at one end;

an inner ring of a ball bearing installed on said rotor shaft; and

a tubular spacer installed on said rotor shaft and secured to same by press fitting;

said tubular spacer having an end face which cooperates with said shoulder of said rotor shaft to hold therebetween said inner ring;

said spacer being constructed so that a perpendicularity of said end face relative to a center axis of said spacer is equal to or smaller than 0.1% of an inner diameter of said spacer.

4,941,761

PRINTING DEVICE CAPABLE OF LOW-DENSITY PRINTING AND HIGH-DENSITY PRINTING

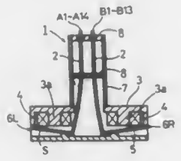
Hiroo Ogawa, Nagoya, and Takamitsu Kawai, Obu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed May 31, 1989, Ser. No. 359,710

Claims priority, application Japan, Jun. 13, 1988, 63-145020

Int. Cl.[5] B41J *3/12*

U.S. Cl. 400—124 **7 Claims**



1. A printing device comprising:

a printing head having a plurality of printing elements arranged in first and second parallel but noncolinear rows and in a staggered manner which prints characters as the printhead scans a printline;

first printing control means for allocating print data to some of said printing elements in said first row spaced at regular intervals, one or more of said printing elements being located in each of said intervals, and for allocating said print data also to some of said printing elements in said second row spaced at regular intervals, one or more of said printing elements being located in each of said intervals, wherein any one of said printing elements allocated in said second row is located at a position intermediate of the adjacent ones of said printing elements allocated in said first row, whereby low-density printing is effected by said printing elements allocated by said first printing control means;

second printing control means for allocating said print data to all of said printing elements in said first and second rows, whereby high-density printing is effected by said printing elements allocated by said second printing control means with the rows in the same orientation relative to the printline as in the low-density mode; and

selecting means for selecting either of said first printing control means or said second printing control means.

4,941,762

SWITCHING MECHANISM FOR A PAPER HOLDING ROLLER OF A PRINTER

Kenjiro Murakami, and Yukihiro Uchiyama, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 302,653

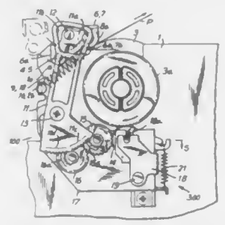
Claims priority, application Japan, Jan. 28, 1988, 63-18116; Jan. 28, 1988, 63-18117

Int. Cl.[5] B41J *13/02*

U.S. Cl. 400—636.1 **19 Claims**

1. In a printer including a frame, a platen rotatably mounted on the frame, a platen power source coupled to the platen for rotating the platen, and an apparatus for selectively moving a print paper holding member between a contact position holding a print paper against the platen and a separation position away from the platen, the improvement which comprises:

paper holding means including the paper holding member and power transmission means for selectively transmitting power from the platen power source to the paper holding means to move the paper holding member between the contact and separation positions, the power transmission



means including trigger means selectively displaceable between a first disengaged position in which the platen power source is not engaged with the paper holding means and a second engaged position in which the platen power source is operatively engaged with the paper holding means for selectively displacing the paper holding means and paper holding member from the separation position to the contact position or from the contact position to the separation position.

4,941,763

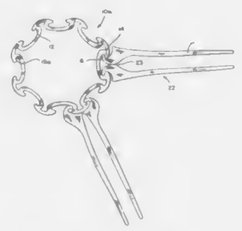
GROOVED SUPPORT COLUMN HAVING ADAPTABLE CONNECTORS

Vaughan O. Estenesser, Dallas, Tex., assignor to MPS Industries, Inc., Arlington, Tex.

Continuation of Ser. No. 113,390, Oct. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 871,241, Jun. 6, 1986, abandoned. This application Nov. 28, 1988, Ser. No. 277,404

Int. Cl.[5] F16D *1/00*

U.S. Cl. 403—3 **5 Claims**



1. A structural apparatus, comprising:

a support column having a plurality of longitudinal grooves, said grooves comprising opposing lips and facing lips;

a connector attachable to said support column, comprising:

a jaw having a hook-shaped tongue for engaging one of said lips;

an elongate flange extending from said jaw;

an outer cam surface between said jaw and said flange;

wherein said tongues of a pair of said connectors are adapted for engaging said opposing lips as said flanges are drawn together and, alternatively, for engaging said facing lips so that said cam surfaces are in abutting contact as said flanges are drawn together, thereby attaching said connectors to said support column.

4,941,764

ARRANGEMENT FOR FASTENING A BRAKE BOOSTER

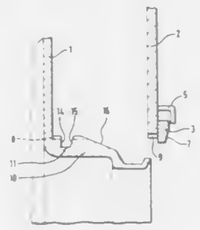
Karl Breitwieser, Reinheim, and Wolfgang Kirchner, Eschborn, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1989, Ser. No. 404,158

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831379

Int. Cl.[5] F16B *1/00*

U.S. Cl. 403—24 **13 Claims**



1. An arrangement for fastening a brake booster to an automotive vehicle having a splash wall by means of a disconnectable junction, the booster housing of said brake booster having a central guiding portion which passes through an opening provided in a splash wall of the automotive vehicle, wherein the guiding portion (**10**) is provided with an annular groove (**11**) receiving a clamping ring (**3**) held on the splash wall (**2**).

4,941,765

ADJUSTABLE HEIGHT CLAMPING STAND

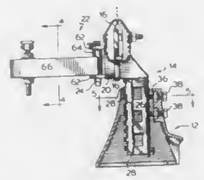
Gerald P. Horan, Markham; John T. Wickmann, Omemee, and Richard C. Olak, Peterborough, Canada, assignors to Chart Industries, Ltd., Ontario, Canada

Filed Apr. 19, 1988, Ser. No. 183,595

Claims priority, application Canada, Dec. 17, 1987, 554660

Int. Cl.[5] F16B *7/10*; B21D *1/12*

U.S. Cl. 403—107 **18 Claims**



1. A clamping system for securing a body in supported relation at a predetermined height, having clamp means for attachment to the body in gripping, supporting relation therewith, and clamp support means secured to said clamp means, including variable height pedestal means having an open base member and a ram member secured in height adjustable relation thereto;

said base member having a first, upwardly extending inner face bounded laterally at the sides thereof by first side wall portions extending therefrom in mutual, laterally divergent relation;

said first face having laterally extending first tooth means projecting inwardly within the base member towards the ram member;

said ram member having a second face in substantially parallel, facing relation with said first face of the base member;

second tooth means extending from said second face towards said first face, in use to engage said first tooth means in load transfer relation therewith;

threaded locking means releasably securing said ram member in laterally stabilized, friction engaging relation with said first divergent side wall portions, and positioning said first and said second tooth means in mutual engaging relation, wherein said ram member is laterally restrained by said base member divergent side wall portions in a substantially centered jamming relation with said base member.

4,941,766

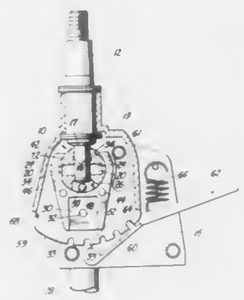
TILT WHEEL UNIVERSAL

John Carlson, Wayne, Pa., assignor to Teleflex Incorporated, Limerick, Pa.

Continuation of Ser. No. 943,500, Dec. 19, 1986, abandoned. This application Sep. 2, 1988, Ser. No. 240,439

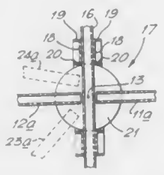
Int. Cl.[5] F16D *3/16*; B62D *1/18*

U.S. Cl. 403—131 **16 Claims**



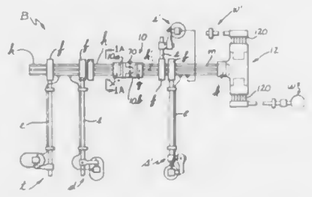
1. A universal joint (**10**) for use in a steering wheel assembly (**10**), said assembly (**10**) comprising; a first shaft (**12**) having a first universal end (**14**), a second shaft (**28**) having a second universal end (**30**), said first universal end (**14**) including oppositely disposed faces (**16**) with a pin (**20**) extending from each of said faces (**16**), cap members (**22**) rotatably disposed on said pin (**20**) and in facing relationship to said faces (**16**) for allowing relative rotational movement about the axis of said pin (**20**) between said first shaft (**12**) and said cap members (**22**), each of said cap members (**22**) having a semi-circular periphery away from said faces (**16**) in the plane containing the axis of said pin (**20**) and including flat sides perpendicular to said faces (**16**) extending between said faces (**16**) and said semicircular peripheries, and socket members (**34**) clamped about said second universal end (**30**) of said second shaft (**28**) and including a circular pocket (**36**) disposed about said cap members (**22**) having flat bottoms (**38**) in sliding engagement with said flat sides of said cap member (**22**) for limiting movement of said cap members (**22**) in said plane relative to said socket members (**34**) so that universal movement occurs between said shafts (**12, 28**) as said circular cap members (**22**) rotate in said pocket (**36**) along with said pin (**20**) and relative rotation occurs about the axis of said pin (**20**) between said first shaft (**12**) and said cap members (**22**) at said faces (**16**), a fastener (**50**) connected between said socket members (**34**) within said pocket (**36**), and said cap members (**22**) having said semi-circular periphery extending beyond said first universal end (**14**) and including reliefs (**26**) extending away from said first universal end (**14**) therein for defining a clearance about said fastener (**50**) for allowing rotational movement of said cap members (**22**).

4,941,767
JOINTS AND STRUCTURES INCORPORATING SAME
John E. Kidd, Shorwell, England, assignor to Westland Aerostructures Limited, Yeovil, England
Filed Dec. 22, 1989, Ser. No. 454,994
Claims priority, application United Kingdom, Dec. 22, 1988, 8829995
Int. Cl.[5] F16B *1/00*; F16D *1/00*
U.S. Cl. 403—218 9 Claims



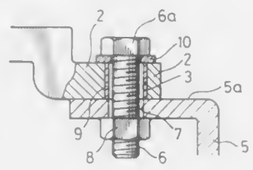
1. A joint for joining structural members extending in at least two intersecting planes comprises a pair of outer spaced-apart annular plate members located parallel to a first one of said intersecting planes for sandwiching structural members extending in that plane, a pair of spaced-apart inner plate members located within said annular plate members and parallel to another of said intersecting planes for sandwiching structural members extending in said another plane, and attachment means for attaching said inner plate members to said outer annular plate members.

4,941,768
QUICK DISCONNECT DEVICE
Timothy R. Arendt, South Euclid, Ohio, assignor to K & A Tool Company, Cleveland, Ohio
Filed Nov. 2, 1988, Ser. No. 266,375
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—331 4 Claims



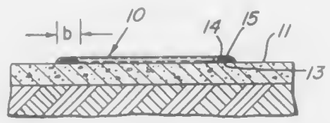
1. A quick, disconnect coupling device for releasably connecting a work station having working tools and the like to a boom arm for locating said work station along an assembly line or the like, said quick disconnect device comprising; a plurality of first coupling parts and means to releasably connect each said first coupling part to the boom arm, projection means on each said first coupling part, a second coupling part, a plurality of recess means on said second coupling part each of which nestably receives a projection means of a first coupling part to enable a plurality of first coupling parts to be nestably releasably connected to the second coupling part, and means for releasably locking said parts in said nested relation and means for releasably attaching tools and the like to said second coupling part at said work station.

4,941,769
STRUCTURE FOR FASTENING A RESIN MEMBER WITH A THREADED BOLT
Yoshihisa Natsume, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Apr. 4, 1989, Ser. No. 333,001
Claims priority, application Japan, Apr. 5, 1988, 63-45250[U]
Int. Cl.[5] F16B *17/00*
U.S. Cl. 403—408.1 10 Claims



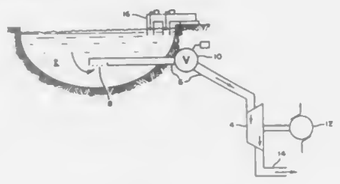
1. A structure for fastening a resin member having a hole with a certain length to another member having a hole with a threaded bolt which is passed through the holes provided in the members, comprising:
a metallic sleeve through which the bolt is to be passed, said metallic sleeve having a longitudinal end being fitted into said hole provided in said resin member for preventing damage from being caused in the resin member by an excessive tightening force of the bolt; and
the length of said sleeve being slightly shorter than the length of said hole of said resin member such that a part of the resin member can be deformed over the longitudinal end of the sleeve when excessive tightening force is applied to the resin member whereby uncontrolled deformation of the resin member is avoided.

4,941,770
METHOD FOR APPLYING A CONDUCTOR LAYER ON A ROAD SURFACE AND ARRANGEMENT OF A HEATING LAYER ON A ROAD SURFACE
Hans-Jürgen Gemmer, Amngelstr. 14, D-6251 Helstenbach, Fed. Rep. of Germany
PCT No. PCT/DE86/00436, § 371 Date Jun. 20, 1988, § 102(e) Date Jun. 20, 1988, PCT Pub. No. WO88/03303, PCT Pub. Date May 5, 1988
PCT Filed Oct. 31, 1986, Ser. No. 221,256
Int. Cl.[5] E01C *3/06, 7/28, 11/24*
U.S. Cl. 404—72 3 Claims



1. Method for applying an inductive conductor layer on a road surface, the conductor layer being enclosed by a protective covering, the method comprising cleaning the road surface, liquifying an electrically conductive material (15) by means of a metal spraying device and applying the conductive material directly to the previously roughened road surface (11) in a film-like manner, resulting in the conductor layer (15), sealing the conductor layer with a protective covering (14) consisting of a fast-setting plastics material which is resistant to temperature, abrasion and aggressive substances and remains elastic within certain limits.

4,941,771
HYDROELECTRIC PLANT
Robert Perper, R.D. #2, Hillsdale, N.Y. 12529
Filed Sep. 6, 1989, Ser. No. 403,617
Int. Cl.[5] E02B *9/00*
U.S. Cl. 405—78 8 Claims

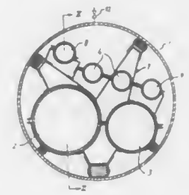


1. A hydroelectric system comprising:
a water-powered turbine having a water inlet and a water outlet,
an electrical generator operatively connected to said turbine,
a float valve system comprising a level sensing means for sensing the water level in a body of water which feeds the water inlet, and a flow control means mounted in said water inlet and operatively connected to said level sensing means for controlling the flow of water through the water inlet,
whereby said level sensing means comprises a float means movably mounted on a foundation and located to rise and fall with the level of said body of water, an electrical switch means operatively connected to said float means and to said flow control means whereby when the level of the body of water rises to a predetermined height, the float means activates the switch means and the switch means sends a signal to the flow control means which causes it to allow water to flow to the turbine by fully opening and staying open until the level of the body of water falls to a predetermined level at which point the float means again activates the switch means which causes the flow control means to fully close thereby stopping the water flow to the turbine.

4,941,772
METHOD OF DISPOSING OF SALT-CONTAINING DUSTS FROM INCINERATOR PLANTS
Werner Roesky, Overath; Dieter Deffner, Bergisch Gladbach, and Manfred Wolter, Leverkusen, all of Fed. Rep. of Germany, assignors to Sante Corporation, Largo, Fla.
Filed Apr. 18, 1989, Ser. No. 339,711
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 35 Claims

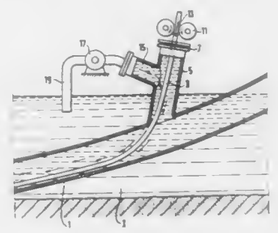
1. A method of disposing of salt-containing dusts from incinerator plants, comprising the steps of
mixing salt-containing dusts with water and other waste materials,
the waste materials comprising at least one of,
ash and fly ash from thermal plants fired with lignite coal or hard coal,
silica containing sands, in particular waste materials of foundaries containing quartz sands, or from waste rubble, or p2 waste materials from calcium carbide production,
the mixture containing at least 8 % hydrothermally reactive calcium oxide or quivalent amounts of other hydrothermally reactive calcium compounds compacting the mixture into discrete compacts wherein
the volume of the mixture is reduced by by compaction to at least approximately 50 % of the original volume; and
hardening the discrete compacts in an autoclave by saturated steam with a pressure of at least 1 bar to form stable compacts.

4,941,773
METHOD FOR THERMAL INSULATION OF PIPELINE BUNDLES UNDER WATER AND PIPELINES INSULATED IN THIS WAY
Theodorus C. M. Vergouw, Schoonhoven, Netherlands, assignor to Smit Offshore Contractors BV, Rotterdam, Netherlands
Filed Apr. 5, 1989, Ser. No. 333,467
Claims priority, application Netherlands, Apr. 7, 1988, 8800894
Int. Cl.[5] F16L *1/04*
U.S. Cl. 405—157 8 Claims



1. Method for application, in subsea pipeline bundles for transport of fluid or gaseous minerals in between one or more gas or fluid conducting lines and a carrier pipe surrounding them, of a thermal insulation filling characterized in that on or near the destined location a crude oil fraction that can be gelled with gelling chemicals suited for viscosifying the crude oil fraction, is pumped with such chemicals into the space to be insulated of the bundle and a variably pressurized gas is introduced to said gel to maintain said gel at a constant pressure sufficient to prevent collapse of said carrier pipe from the pressure of the surrounding seawater on said bundle after lowering said bundles into a subsea environment as a result of the expansion and contraction of said gel, wherein sufficient gelling chemicals are added such that after gellation, the dynamic viscosity of the gel is between 10 and 1000 Pa.S.

4,941,774
METHOD AND AN APPARATUS FOR MOVING A ROPE- OR CABLE-LIKE ELEMENT THROUGH A CABLE CHANNEL PIPE
Rudolf Harmstorf, Kosterbergstrasse 40 F, 2000 Hamburg 55, Fed. Rep. of Germany, assignor to Rudolf Harmstorf, Hamburg, Fed. Rep. of Germany
Filed Oct. 15, 1987, Ser. No. 108,908
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1986, 3635041
Int. Cl.[5] F16L *1/04*
U.S. Cl. 405—158 15 Claims



1. Method for conveying a cable through a cable channel pipe, comprising the steps of at least partially submerging the pipe in a body of water, effecting a continuous flow of water through the pipe, affixing one or more buoyant guiding mem-

VOL 1116 ISS 3 JL 17 1990 UMI

bers to the cable to buoy the cable in the flow of water, and conveying the cable along the length of the pipe by friction between the effected water flow and the cable.

4,941,775

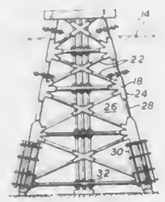
CATHODIC PROTECTION OF CRITICAL OFFSHORE MARINE STRUCTURE CRITICAL COMPONENTS BY MAKING THE CRITICAL COMPONENT NOBLE (PASSIVE) TO THE BALANCE OF THE PLATFORM

Risque L. Benedict, 1528 Tioga Trail, Failbrook, Calif. 92028

Filed Feb. 26, 1988, Ser. No. 161,159

Int. Cl.[5] E02B *17/00*; E02D *5/60, 9/00*; C23F *11/00*

U.S. Cl. 405—216 **85 Claims**



1. A corrosion protection system for protecting critical parts of an offshore structure wherein the structure is composed of an assembly of critical parts representing a small portion of the structure and noncritical parts representing a large portion of the structure, including

means for coating the critical parts with a layer of material having a composition to form a noble or passifying protective treatment so that the critical parts are made electrochemically noble or passive relative to the uncoated noncritical parts when the offshore structure is submerged, and

the noncritical parts being electrochemically active relative to the coated critical parts to provide for cathodic protection current supplied to the coated critical parts by the uncoated active parts to produce corrosion protection to the coated critical parts.

32. A method of providing corrosion protection for critical parts of an offshore structure wherein the structure is composed of an assembly of critical parts representing a small portion of the structure and noncritical parts representing a large portion of the structure, including the following steps:

coating the critical parts with a layer of material having a composition to form a noble or passifying protective treatment so that the critical parts are made electrochemically noble or passive relative to the uncoated noncritical parts when the offshore structure is submerged, and

submerging the offshore structure to have the noncritical parts become electrochemically active relative to the coated critical parts to provide for cathodic protection current supplied to the coated critical parts by the uncoated active parts to produce corrosion protection to the coated critical parts.

69. An accelerated corrosion system for destroying critical parts of an offshore structure wherein the structure is composed of an assembly of critical parts representing a small portion of the structure and noncritical parts representing a large portion of the structure, including

means for coating particular areas of the critical parts with a layer of conductive material and with the layer including a slit to provide for a high cathode to anode ratio between the area of the layer relative to the area of the slit to produce a rapid and deep corrosive groove at the particular areas of the critical parts to provide for accelerated corrosion at a desired time to produce destruction of the offshore structure.

4,941,776

CATENARY ANCHORAGE LINE FOR A FLOATING VEHICLE AND DEVICE AND METHOD FOR USING THIS ANCHORAGE LINE

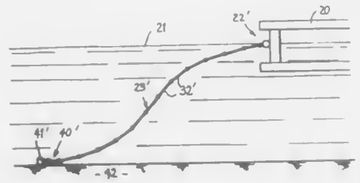
Jean-Michel Bosgiraud, Paris, and Andre Cendre, Cosne Sur Loire, both of France, assignors to Seamet International, Paris and S.M.F. International, Cosne Sur Loire, both of, France

Filed Sep. 12, 1988, Ser. No. 243,266

Claims priority, application France, Sep. 10, 1987, 87 12565

Int. Cl.[5] B63B *21/38*

U.S. Cl. 405—224 **11 Claims**



1. A catenary anchorage line for a floating vehicle, the catenary anchorage line comprising a large number of successive articulatingly connected watertight tubular means closed at each end thereof and delimiting an interior volume filled with air, the anchorage line terminating at a first end at a shallow depth for linkage with the floating vehicle and a second end at a greater depth than said first end for insuring anchorage on a sea bottom, wherein a buoyancy of the anchorage line varies according to a length thereof, with the tubular means having a larger wall thickness relative to a diameter thereof then a wall thickness of the tubular means closer to the first end of the anchorage line.

4,941,777

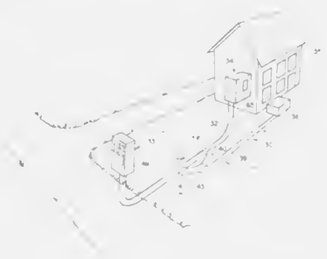
APPARATUS FOR CONVEYING MATERIAL

John P. Kieronski, Charlotte, N.C., assignor to Home Courier Corporation, Concord, N.C.

Continuation-in-part of Ser. No. 876, Jan. 6, 1987, abandoned. This application Nov. 16, 1988, Ser. No. 272,106

Int. Cl.[5] B65E *51/20, 51/32*

U.S. Cl. 406—13 **40 Claims**



1. An apparatus for propelling a carrier member along a pneumatic conveyor tube between two spaced-apart terminals, comprising:

(a) a blower having a suction intake and a blower output;

(b) conduit means interconnecting said blower to the pneumatic tube at two spaced-apart junctions therein;

(c) means for sensing the presence of said carrier member in said pneumatic tube intermediate said spaced-apart junctions;

(d) first valve means alternatively connecting said blower intake and output through said conduit means to said tube for alternatively creating carrier member propelling suction through one of said junctions through the tube past said other junction and creating carrier member propelling pressure in said tube through the other junction upon said sensing means sensing the presence of the carrier member in the tube intermediate said junctions for propelling said carrier member to one of said terminals; and

(e) second valve means in said conduit means for reversing the connection of said blower intake and output to said junctions for propelling said carrier member from said one terminal to the other of said terminals.

4,941,778

METHOD AND APPARATUS FOR MEASURING AND REGULATING THE FLOW RATE OF POWDER IN A POWDER SPRAYING DEVICE

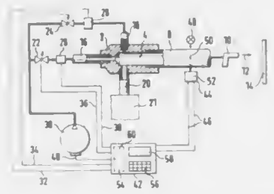
Robert Lehmann, St. Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Jul. 1, 1988, Ser. No. 214,206

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1987, 3721875

Int. Cl.[5] B65G *51/02*

U.S. Cl. 406—28 **23 Claims**



1. A method for determining the flow rate of powder in a spraying device having a gas inlet, a powder inlet, and a channel through which the powder and gas admixed with one another are conveyed, the method comprising the steps of:

directing a beam transversely to a powder/gas flow direction in the channel, receiving a beam that had been subjected to the influence of the powder in the channel, and deriving from the received beam a powder density value indicative of the powder density of the powder in the channel;

generating a first signal representative of the power density value, in which the power density value is equal to A wherein:

$$A = \frac{\text{amount of powder}}{\text{amount of gas}};$$

determining the flow rate of a gas entering through the gas inlet and generating a gas flow rate value indicative of the flow rate of the gas;

generating a second signal representative of the gas flow rate value, wherein the gas flow rate value is represented by B wherein:

$$B = \frac{\text{amount of gas}}{\text{unit of time}};$$

calculating, from the powder density value A and from the gas flow rate value B, a powder flow rate value C indicative of the flow rate of the powder in the channel, by multiplying the power density value A by the gas flow rate value B; and

generating a third signal indicative of the power flow rate value C defined as:

$$C = \frac{\text{amount of powder}}{\text{unit of time}}.$$

4,941,779

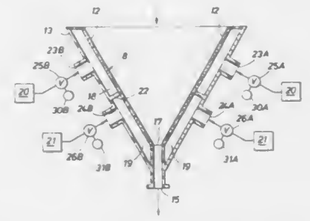
COMPARTMENTED GAS INJECTION DEVICE

Thomas S. Dewitz, Houston; James A. Salter, Katy; James J. McCusker, Houston, all of Tex.; Andrew M. Scott, and Hendricus A. Dirkse, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 98,161, Sep. 18, 1987, abandoned. This application May 18, 1989, Ser. No. 355,860

Int. Cl.[5] B65G *53/38*

U.S. Cl. 406—138 **22 Claims**



1. A method for maintaining a uniform mass flow rate of a particulate solids and gas mixture discharged from a holding vessel apparatus to a receiving reactor, said method comprising:

introducing said mixture into a first containing means having converging walls forming a portion made of porous material having at least one port formed at the apex thereof for discharging said mixture therefrom;

isolating areas outside the porous material portion of said first containing means to form at least two substantially closed compartments;

selectively injecting gaseous fluid under pressure into each of said compartments;

independently controlling the flow rate and direction of said gaseous fluid under pressure at a rate sufficient to aerate the particulate solids in proximity to said portion of porous material but at a rate below that which would fluidize the particulate solids located above said porous material; and

discharging said particulate solids and gas mixture from said first containing means through a conduit having a diameter in the range of about 4–150 millimeters and wherein the suspension density of said solids and gas mixture is in the range of about 50–800 kilograms per cubic meter.

4,941,780

INDEXABLE CUTTING INSERT

Nobuhiro Takahashi, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 16, 1988, Ser. No. 271,669

Claims priority, application Japan, Nov. 24, 1987, 62-177638[U]; Jun. 20, 1988, 63-80642[U]

Int. Cl.[5] B23B *27/22*

U.S. Cl. 407—114 **1 Claim**

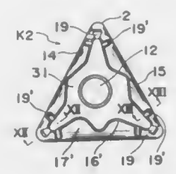
1. In an indexable cutting insert having a shape of a platelike polygon, polygon, in which a plurality of cutting edges are, respectively, formed at sides of the polygon and a boss surface formed with a mounting hole for mounting the indexable cutting insert on an insert holder is provided on each of opposite faces of the indexable cutting insert such that a chip breaker

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groove is formed between the boss surface and ridges of the cutting edges, the improvement comprising:

chip breaker groove having an inner wall extending from the cutting edge and an outer wall extending from the boss surface, a plurality of the projecting ridges rising integrally from the chip breaker groove and extending at each of the vertexes of the polygon, towards the ridges of the cutting edges from each of projecting portions of the boss surface;

said plurality of ridges include a first projecting ridge extending towards the nose portion and a pair of second



projecting ridges provided at opposed sides of and adjacent to the nose portion;

said projecting ridges being formed as to be disposed lower, in level, then the boss surface and the ridges of the cutting edges,

said first projecting ridge formed convexly angularly at the bottom of the chip breaker groove such that most of the outer side wall is exposed and said second projecting ridges form horizontally across the bottom of the chip breaker groove so as to bridge the inner and outer side walls such that a large area of the outer side wall is covered by the second projecting ridges.

4,941,781

MECHANICAL DRILLING AID

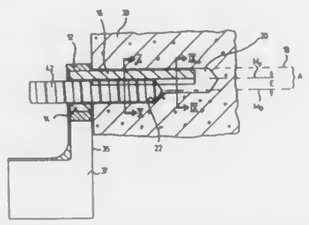
Reinhard Becher, Engelbergstrasse 42, D-7000 Stuttgart 31, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 286,627, Dec. 19, 1988, Pat. No. 4,898,502. This application Dec. 8, 1989, Ser. No. 447,906

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833040

Int. Cl.[5] B23B *49/02*

U.S. Cl. 408—72 B **16 Claims**



1. Mechanical drilling aid for guiding a drilling tool when drilling a correct bore into an object, in particular into a wall, said correct bore to be drilled being disposed eccentrically to an existing faulty bore, wherein the cross-sections of said faulty bore and said correct bore to be drilled intersect each other or extend immediately adjacent to each other, comprising:

a guide element provided with an opening therein having a cylindrical wall serving for guiding said drilling tool, said cylindrical wall defining a circle at least as large as the circumferential circle of said drilling tool and having a longitudinal center axis coaxial with the axis of the drilling tool,

a rod-shaped part projecting from said guide element, said rod-shaped part being introducible into said faulty bore and abutting against an inner wall of said faulty bore, at least along an outer edge of said rod-shaped part,

a separate part corresponding in shape to the rod-shaped part, said separate part is intended to be inserted into said object, thereby filling a space between said correct bore and said faulty bore,

wherein the distance between said outer edge of said rod-shaped part and the longitudinal center axis of said cylindrical wall in said guide element is equal to the sum of the amount of eccentricity between said faulty and said correct bore, and the radius of said faulty bore, wherein said distance is measured across a center point of said cross-section of said faulty bore.

4,941,782

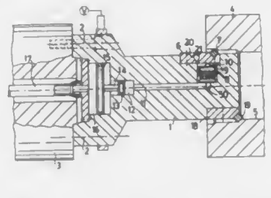
ADJUSTABLE BORING BAR

Kenneth J. Cook, Troy, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Dec. 30, 1988, Ser. No. 292,069

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—147 **7 Claims**



1. A cutting tool of the type having an axis of rotation and a peripheral surface area spaced from the axis of rotation with at least one radially displaceable cutting bit mounted thereto comprising:

mean for biasing said cutting bit in a first radial direction with respect to said axis of rotation,

means for adjustably moving said cutting bit to a predetermined desired position, said adjustable moving means including a fluid pressure source for an incompressible electrorheological fluid, means communicating with said fluid pressure source and said cutting bit for the flow of electrorheological fluid and for adjustably moving said cutting bit in a direction opposing said first radial direction in proportion to pressure being generated by said fluid pressure source,

a valve means operably associated with said communicating means for effecting changes in the dynamic stiffness of said electrorheological fluid in response to an electric field,

electric field producing means for transmitting a sufficient electric field to said valve means to substantially block the flow of electrorheological fluid to said cutting bit from said fluid pressure source and maintain a predetermined radial position of said cutting tool.

4,941,783

DRILLING DEVICE

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Mar. 28, 1989, Ser. No. 329,435

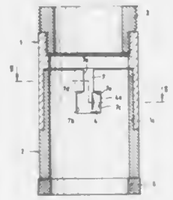
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1988, 3810540

Int. Cl.[5] B23B *51/04*

U.S. Cl. 408—204 **3 Claims**

1. Drilling device having a drilling direction and comprising an axially extending hollow cylindrical retainer with a first end

and an opposite second end disposed transversely of the axial direction with the first end facing in the drilling direction, an axially extending annular drill bit detachably connected to said retainer, said drill bit having a first end and an opposite second end disposed transversely of the axial direction with the first end facing in the drilling direction, said retainer and said drill bit being in overlapping relation in the axial direction, one of said retainer and drill bit has at least one circumferentially and axially extending projection extending circumferentially therefrom and the other one of said retainer and drill bit has at least a recessed portion for receiving said projection, said recessed portion extending in the axial and circumferential directions and having a first axially extending section with a circumferential dimension at least equal to the circumferential dimension of said projection extending from one of the first end of said retainer or the second end of said drill bit, and a second axially extending section extending axially from and aligned with said first axially extending section and spaced from the one of the first end of said retainer or the second end of said drill bit, said first section having opposite axially extending first sides, said



second section having opposite axially extending second sides, said second sides spaced circumferentially from said first sides and said second section having circumferentially extending shoulders, each extending between one of said first and second sides transversely of the axial direction, and said second sides located circumferentially from each of said first sides for a dimension corresponding approximately to the circumferential dimension of said projection, said second end of said drill bit located between the first and second ends of said retainer and said first end of said drill bit spaced axially outwardly from the first end of said retainer, at least two said recesses are located in said drill bit and a corresponding number of said projections are located in said retainer, said projections are tangs formed and bent off from said retainer with said tangs projecting inwardly of said hollow retainer, and each said tang forming an axially extending edge spaced from a connection of said tang to said retainer with an entrainment shoulder thereon being arranged to bear against one of said second sides for effecting the transmission of rotational movement from said retainer to said drill bit.

4,941,784

DEVICE FOR STABILIZING OBJECTS WITHIN THE TRUNK OF A VEHICLE

Daniel Flament, 54 Avenue de Verdun, Croissy sur Seine, France (78290)

PCT No. PCT/FR87/00250, § 371 Date Dec. 30, 1988, § 102(e) Date Dec. 30, 1988, PCT Pub. No. WO88/00144, PCT Pub. Date Jan. 14, 1988

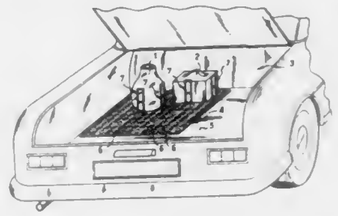
PCT Filed Jun. 26, 1987, Ser. No. 302,232

Claims priority, application France, Jul. 9, 1986, 86 09967; Dec. 26, 1986, 86 18200

Int. Cl.[5] B61B *45/00*

U.S. Cl. 410—121 **12 Claims**

1. Device for stabilizing objects within the trunk of a vehicle, in particular of an automobile, said device comprising a plate (4, 100) which is adapted to be placed on the floor of the trunk, said plate being provided with uniformly spaced holes (6, 101) and a series of members (7) which are adapted to be inserted vertically in the holes for stabilizing the objects, characterized in that said members are pegs (7) and that the plate is



provided with cavities (9, 10, 102) molded in this latter and shaped so as to receive unused pegs in a flat position.

4,941,785

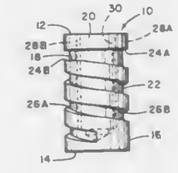
POTTED INSERT FOR HONEYCOMB PANELS

Donald W. Witten, P.O. Box 508, Collinsville, Okla. 74021

Filed Sep. 13, 1989, Ser. No. 406,563

Int. Cl.[5] F16B *39/02*

U.S. Cl. 411—82 **3 Claims**



1. An insert for use in attachment of a threaded member, such as a bolt or the like, to a panel, such as a honeycomb panel, such as by use of epoxy adhesive, the insert comprising:

an unitary elongate member having a generally cylindrical external surface and an outer end and an inner end, and having on the external cylindrical surface at the outer end an integral annular collar portion and having a reduced external diameter circumferential recess contiguous to said collar portion, and having on the external cylindrical surface a spiraled recess communicating at one end with said circumferential recess and extending adjacent to but not to said inner end, the inner end having a diameter substantially equal to that of said member cylindrical surface, and having opposed notches in said annular collar portion communicating said outer end with said circumferential recess, and having an internal threaded recess therein coaxial with said member cylindrical external surface and extending from said outer end to adjacent said inner end.

4,941,786

EXCAVATOR

Heinz Steinbock, Industriestrasse 30+32, 6718 Grunstadt, Fed. Rep. of Germany

Filed Feb. 27, 1989, Ser. No. 315,934

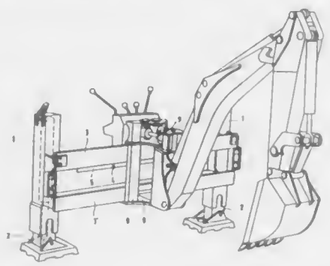
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1988, 8804637[U]

Int. Cl.[5] B66C *9/00*

U.S. Cl. 414—695.7 **1 Claim**

1. An excavator including a frame for slidable attachment of an implement thereto, the frame comprising a pair of lateral limit vertical beams, upper and lower horizontal rails connected to the vertical beams, the rails being separated from one another and each rail defining top, bottom, front and rear

surface, the frame having but a single toothed rack with that rack attached to the bottom surface of the upper horizontal rail and disposed entirely behind the front surface of the upper rail, the rack running parallel to the rails between the vertical beams, a slide member having a plate mounted adjacent the front surfaces of the horizontal rails by an upper guide groove engageably enclosing the top surface of the upper rail and a



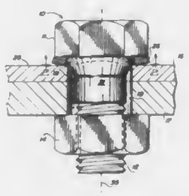
lower guide groove engageably enclosing the bottom surface of the lower rail such that the slide is mounted for horizontal sliding movement on the rails, the slide including means for mounting an implement thereto, and a drive motor attached to the slide and having a pinion meshing with the toothed rack such that actuation of the motor causes sliding movement of the slide on the rails.

4,941,787

LOCKING MECHANISM FOR FASTENER

James Shaffer, Maitland, Fla., assignor to Consulier Industries, Inc., Riviera Beach, Fla.

Filed Oct. 5, 1989, Ser. No. 417,640
Int. Cl.[5] F16B *39/24*
U.S. Cl. 411—136 **3 Claims**



1. A locking mechanism comprising:

a fastener including a longitudinal shank having a lower threaded portion of circular cross-section with an outside diameter and an upper portion having an upwardly and outwardly tapered conical outer surface of elliptical cross-section having a major axis diameter and a minor axis diameter, a head joining a top end of said shank; and

a closed loop, annular ring washer having a circular inner edge of inside diameter greater than said outside diameter of said shank lower portion, and greater than said minor axis diameter of said shank upper portion, but less than said major axis diameter of said shank upper portion;

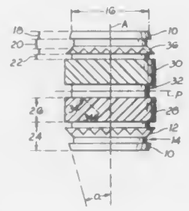
said inner edge of said washer and said cross-section of said upper portion being relatively configured, dimensioned and adapted so that when said bolt shank is inserted into an object with said inner edge of said washer surrounding said shank between said head and said object, and said head is drawn toward said object by means of said threaded portion to tighten said fastener, said washer is deformed axially longitudinally of said shank in circumferential sinusoidally periodic manner by reaction of said inner edge with said outer surface to impart a spring-like locking tension between said head and said object.

4,941,788

SCREW THREADED FASTENERS

Anthony M. Highfield, Ironbridge, England, assignor to P.S.M. International PLC, West Midlands, England

Filed May 30, 1989, Ser. No. 358,127
Claims priority, application United Kingdom, Aug. 3, 1988, 8818414
Int. Cl.[5] F16B *37/00*
U.S. Cl. 411—178 **10 Claims**



1. A double ended fastener which is symmetrical about a mid-point on its longitudinal axis, comprising:

(a) a pilot portion at each end;

(b) an encircling groove next to each pilot portion;

(c) a minor toothed portion next to said groove;

(d) a second like groove next to said minor toothed portion; and

(e) a major toothed portion next to said second groove and extending towards said mid-point, the fastener having a female screw-threaded bore provided over the whole of its length.

4,941,789

APPARATUS FOR PREVENTING CROSS THREADING IN BLIND, HIGH PRECISION THREAD ENGAGEMENT

Charles Sims, P.O. Box 2787, Gulfport, Miss. 39505

Filed Feb. 3, 1988, Ser. No. 151,910
Int. Cl.[5] F16B *33/00*; F24H *1/00*
U.S. Cl. 411—369 **2 Claims**



1. In a lid for blind fastening to a container, a self-aligning fastening means further comprising:

(a) a first threaded male cylindrical member within said container, approximately coaxially aligned with an axis of said container;

(b) a second female fastening member with said lid adapted for rotation with respect to said lid;

(c) said second female fastening member being received within said lid in a high tolerance fit;

(d) said female member extending a distance interior to said lid against resistance of a spring means;

(e) said male member and said female member further comprising:

(1) said male member defining a thread pitch having a thread to thread linear pitch distance and a thread peak to thread peak diameter;

(2) said second female member having a mating famale thread having a thread pitch distance and an internal thread diameter mating to the thread on said male member;

(3) said famale thread defining a coaxial bore within said female member extending from an entry face of said famale member internally a distance into said female member;

(4) said coaxial bore defining an axis of said female member;

(5) a first cylindrical countersunk section within said bore, coaxial with said member axis, intermediate said entry face and said female thread;

(6) said countersunk section being of a diameter substantially equal to but not substantially greater than said thread peak diameter;

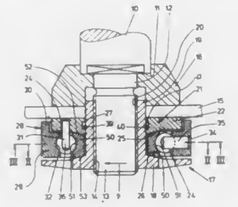
(7) said bore being of a length greater than four times said thread pitch distance.

4,941,790

CLAMP DEVICE FOR AXIALLY CLAMPING A TOOL, PARTICULARLY A DISC

Manfred Kirn, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP88/00015, § 371 Date Jul. 24, 1989, § 102(e) Date Jul. 24, 1989, PCT Pub. No. WO88/06075, PCT Pub. Date Aug. 25, 1988
PCT Filed Jan. 12, 1988, Ser. No. 391,535
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705638
Int. Cl.[5] F16B *37/08*; B24B *45/00*; B27B *5/32*
U.S. Cl. 411—432 **20 Claims**



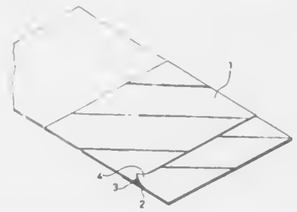
1. A clamp device for axially clamping a tool, in particular a disc, to a flange of a driven spindle, said clamp device comprising a clamp nut to be secured to the driven spindle; a clamp disc arranged between said clamp nut and the tool for pressing the tool to the flange; axial supporting means for securing said clamp disc to said clamp nut for joint axial movement thereof, said axial supporting means including a plurality of annular segments having an outer peripheral surface, a track on said outer peripheral surface, and a wedge-shaped cross-section, said clamp nut and said clamp disc having respective frusto-conical supporting surfaces for engaging said annular segments; an operating member located between said clamp disc and clamp nut and comprising a ring rotatable relative thereto and having an inner track; a plurality of rolling members displaceable in said inner track of said ring and said outer tracks of said annular segments; a plurality of drivers associated with said rolling members, supported on said ring, and projecting into tracks of associated rolling members for enabling displacement of said rolling members in a release direction upon rotation of said ring in a predetermined direction to relieve said annular segments radially and said clamp disc axially, at least one of said clamp disc and clamp nut having a plurality of stops extending transversely into said tracks; and spring means for biasing said ring in a direction opposite to the predetermined direction of rotation thereof so that said drivers press associated rolling members against associated stops in a direction opposite to the release direction, said ring member having in a region of said inner track thereof a plurality of radial depressions into which said rolling members fall upon being displaced upon rotation of said ring in a predetermined direction.

4,941,791

HANDY BOOKBINDER

Yasuhiko Iwamoto, 47-321, Chaya, Kyowa-cho, Obbu-shi, Aichi-ken, Japan

Filed Apr. 11, 1988, Ser. No. 179,676
Claims priority, application Japan, Apr. 15, 1987, 62-057027; Apr. 21, 1987, 62-060540; Sep. 9, 1987, 62-225855
Int. Cl.[5] B42C *11/02*; B42D *3/00, 1/00*; A61F *13/02*
U.S. Cl. 412—19 **7 Claims**



1. A document binding apparatus for holding together sheets of paper, including postal cards, calling cards, business cards, and photographs, comprising:

(a) first and second covers;

(b) a release agent applied to a portion of one surface of the first cover;

(c) a spine member of a predetermined width having an adhesive face on one surface thereof, wherein a portion of the adhesive surface is attached to one surface of the second cover and another portion of the adhesive surface is removably attached to the release agent of the first cover; and

(d) a removable sheet of release paper attached, the protection, to the portion of the adhesive surface of the spine member not attached to the first or second cover, said release paper being removable from the spine member to expose the adhesive surface for binding documents within the apparatus.

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4,941,792

HANDLING DEVICE FOR A DISTRIBUTION CHUTE OF A SHAFT FURNACE AND DRIVE MECHANISM SUITABLE FOR THIS DEVICE

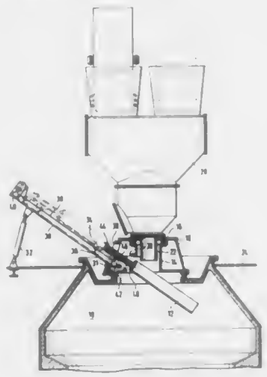
Giovanni Cimenti, Fentange; Emile Lonardi, Bascharage, and Pierre Mailliet, Howald, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jul. 19, 1989, Ser. No. 382,517

Claims priority, application Luxembourg, Jul. 25, 1988, 87291; Nov. 9, 1988, 87380

Int. Cl.[5] F23K *3/18*

U.S. Cl. 414—208 7 Claims



1. An apparatus for charging a shaft furnace, comprising:
a platform adapted for mounting on the shaft furnace;
an outer housing rigidly attached to the platform;
an inner housing rotatably mounted within the outer housing, said inner housing having an axis of rotation;
a distribution chute pivotably suspended from the inner housing;
means for rotating the inner housing about the axis;
means for pivoting the chute relative to the axis; and
means for dismounting the chute, comprising:
an inclined ramp mounted on the platform;
a carriage slidably mounted on the ramp;
means for accessing the chute; and
means for fastening the carriage to the chute.

4,941,793

SYSTEM FOR SENDING-OFF PRESS-FORMED PARTS

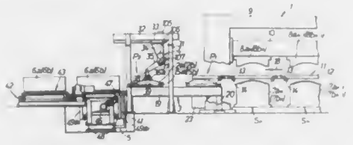
Motoatsu Shiraishi; Masaru Sasagawa; Ken Tazo; Masaaki Kubota, and Shinji Katayama, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1988, Ser. No. 286,908

Claims priority, application Japan, Dec. 21, 1987, 62-323493; Jan. 13, 1988, 63-5456

Int. Cl.[5] B65H *31/00*

U.S. Cl. 414—225 6 Claims



1. A system for removing press-formed parts formed in a pressing machine from said pressing machine, comprising loading transfer means disposed between an ejection position to which a plurality of press-formed parts are simultaneously ejected in parallel from said pressing machine and a pallet loading position established to simultaneously load said press-formed parts onto each pallet of a plurality of carrier pallets which are on standby in parallel to individually correspond to the plurality of press-formed parts to be removed, said loading transfer means comprising a plurality of transfer pallets connected to one another with variable spacing therebetween and reciprocally movable in parallel between the ejection position and the pallet loading position for simultaneously receiving a plurality of press-formed parts from said pressing machine and for simultaneously placing individual of said press formed parts on individual of said transfer pallets, and spacing-varying drive means for varying said spacing between said individual of said transfer pallets while the press-formed parts are transferred between said ejection position and said pallet loading position.

4,941,794

AUTOMATED LOADING/UNLOADING EQUIPMENT

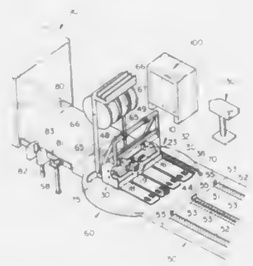
Yoshimasa Hara, Kawagoe; Seisaku Ohkura, Tsurugashima; Fumio Iijima, Sayama; Isamu Tamura, Tokikawa; Tetsuro Fukai, Sayama; Sumiho Tagiri, and Norimasa Takagi, both of Toda, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Nittsu Shoji Kabushiki Kaisha, both of Tokyo, Japan

Continuation-in-part of Ser. No. 166,557, Mar. 10, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 442,454

Claims priority, application Japan, Mar. 11, 1987, 62-57698; Mar. 11, 1987, 62-57699

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—341 3 Claims



1. An automated loading/unloading system having operable traveling lift trucks for loading and unloading cargos, comprising:
a motor for hydraulically steering a driving wheel in the lift truck;
a first mechanism for hydraulically moving multiple forks of the lift truck vertically;
distance sensor means installed at the tip of the forks and at a rear end of the lift truck for determining a cruisable safe distance at both its front and rear;
pressure sensor means installed in a hydraulic line interconnected to the motor for controlling movement of the lift truck.
limit sensor means installed in the lift truck for determining upper and lower limits between which the vertical movement of the forks is confined;
rotational direction sensor means installed in a turntable for determining the direction of rotation and the rotational angle of the turntable;
the rotatably disposed turntable provided to form part of a transport passage adapted for traveling of the lift truck, the turntable including a second mechanism for hydraulically turning and altering the orientation of the lift truck;
external drive means having a high-pressure low-delivery pump which provides high-pressure, low-delivery fluid to the motor, the first mechanism and the second mechanism through a directional control valve means and a low-pressure high-delivery pump which provides low-pressure, high-delivery fluid to the motor through a directional control valve means; and
an external control system which, in accordance with a loading/unloading program, controls the external drive means to actuate the driving wheel, the forks of the lift truck and the turntable in timed relation in response to signals from the distance sensor means, the pressure sensor means, the limit sensor means and the rotational direction sensor means.

4,941,795

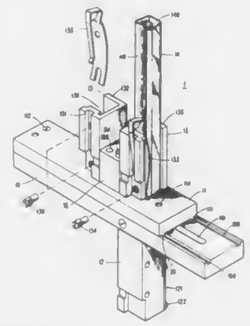
COMPONENT INSERTION MACHINE APPARATUS

William A. Elliott, Reynoldsburg; Richard A. Greene, Pickerington; Robert P. Kennedy, Westerville; Robert P. Poe, Jr., and William H. Steece, both of Columbus, all of Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 21, 1988, Ser. No. 274,098

Int. Cl.[5] H05K *3/30*

U.S. Cl. 414—403 1 Claim



1. Shuttle apparatus for loading components stored in component magazines into a component insertion machine having a mounting post formed with a first cavity therein for receiving ones of the components wherein said shuttle apparatus comprises
a generally rectangularly configured shuttle member having a pair of parallel ribs each formed on a bottom surface of said shuttle member and having a plurality of aligned second cavities formed therein and mounting component magazine receptacles on a top surface for receiving ones of the component magazines and aligning each received component magazine with a corresponding one of said second cavities, and
a generally rectangularly configured base member having an aperture formed therein for receiving the mounting post and having a pair of slots formed along a lateral axis to receive restraining devices free to move within said slots with said slots in combination with a pair of parallel channels each formed along an upper surface thereof to correspond with and receive one of said shuttle member ribs for securing and slidably supporting said shuttle member and enabling the operation thereof for laterally displacing one of said received component magazines with others of received component magazines by aligning ones of said shuttle member second cavities with said first cavity to maintain a continuous supply of components to the component insertion machine.

4,941,796

FRONT LOADING REFUSE VEHICLE

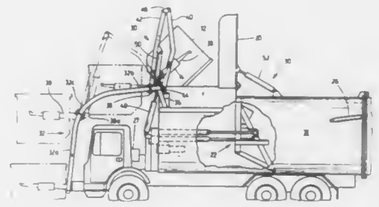
Quinto De Filippi, 29 Edenvalley Drive, Islington, Ontario, Canada (M9A 4Z5)

Filed Jan. 23, 1989, Ser. No. 299,469

Claims priority, application Canada, Apr. 29, 1988, 565609

Int. Cl.[5] B65F *3/02, 3/04, 3/14*

U.S. Cl. 414—409 4 Claims



1. A front loading refuse vehicle of the type used in connection with a refuse receptacle at a refuse collection site, said vehicle comprising:
a front portion including a cab;
a rear portion adapted to carry refuse;
a pair of rails located on respective sides of said front portion, and defining forward rail portions extending upwardly in front of said cab and rearward portions extending rearwardly of said cab, and curved intermediate portions extending between said forward and rearward portions;
carriage means adapted to run on said rails between forward positions at the lower ends of sid forward rail portions, forward of said cab, and rearward positions at rear ends of said rearward rail poritons, rearwardly of said cab;
lifting arms moveably mounted on said carriage means and being adapted to engage said receptacle and lift the same:
hoist arms of a predetermined length pivotally mounted to the rearward ends of said rails for swinging between forward positions adjacent said rearward and intermediate rail portions, and upward positions extending at least perpendicularly upwardly;
hoist arm power means mounted on said vehicle and connected to said hoist arms for operating said hoist arms;
hoist linkage means of a predetermined length substantially equal to said length of said hoist arms, and extending therefrom in a forward position downwardly adjacent said forward rail portions, connecting between said hoist arms and said carriage means, and being moveable from said forward position to a reaerward positon substantially perpendicular alongside said hoist arms in their uprigth postions, whereby operation of said hoist arms and linkages will cause said carriage means to move along said rails from said forward position to said rearward position rearward of said cab, and,
lifting arm power means mounted on said hoist arm linkage means and operable to swing said lifting arms away from and towards said rials, whereby said lifting arms are adapted to engage a refuse receptacle in front of said cab, and raise the same upwardly and transport same rearwardly along said rails to a point rearward of said cab.

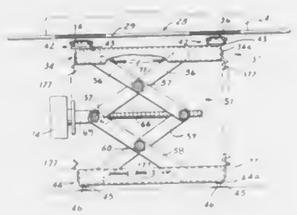
VOL 1116 ISS 3 JL 17 1990 UMI

4,941,797

POWER-OPERATED LIFT AND PRESENTING MECHANISM

Charles M. Smillie, III, West Bloomfield, Mich., assignor to C.M. Smillie & Company, Ferndale, Mich.

Continuation-in-part of Ser. No. 17,922, Feb. 24, 1987, Pat. No. 4,725,183. This applicatioe Dec. 28, 1987, Ser. No. 138,916
The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.
Int. Cl.[5] B65G *67/00*
U.S. Cl. 414—462 **13 Claims**



1. A power operated lift and presenting mechanism for conveniently loading and unloading articles to and from the trunk of an automobile in which the trunk has a floor, the power operated lift and presenting mechanism comprising:

a base structure adapted to be seated on said floor of the trunk;

a carriage movable from a transport position to an elevated position and from the elevated position to the transport position, said carriage having track means disposed generally in a plane parallel to said floor of the trunk, when said base structure is seated on said floor of the trunk, and track following means engaged by said track means so as to be movable to and fro, along said track means, between a retracted position and a presenting position;

a platform connected to said track follower means so as to be movable with said track follower means between the retracted position, in which said platform is disposed generally over said base structure when said base structure is seated on the floor of the trunk, and the presenting position, in which said platform is disposed generally out from over said base structure when said base structure is seated on the floor of the trunk;

power operated lifting means for actuating said carriage upwardly from the transport position to the elevated position and downwardly from the elevated position to the transport position, said platform being in a retracted position when said carriage is so moved;

whereby, when said base structure is seated on said floor of the trunk and said carriage is in the elevated position, said platform may be moved to a presenting position in which said platform projects out from the trunk so that articles may be loaded and unloaded at elevation and disposition that is convenient for loading and unloading the articles;

said lifting means includes a lift assembly disposed between said carriage and said base structure; and

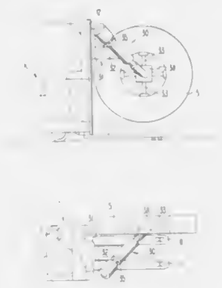
means enclosing said lift assembly, said enclosing means includes bellows respectively connected to said carriage and said base structures and spanning therebetween.

4,941,798

MEANS FOR MANIPULATING AND TRANSPORTING LOADS

Jacques Meier, Bäretswil, Switzerland, assignor to SFT AG Spontanfördertechnik, Weinfelden, Switzerland

Filed Sep. 27, 1988, Ser. No. 250,250
Claims priority, application Switzerland, Oct. 13, 1987, 03998/87
Int. Cl.[5] B66F *9/18;* B65H *29/00;* B66C *1/24*
U.S. Cl. 414—619 **9 Claims**



1. A manipulator for handling a heavy load, the load being of a type having a surface defining an opening into and from which a manipulator member can be inserted and removed and wherein the center of gravity of the load is located in the opening, the manipulator comprising the combination of

a pivot pin having a central axis;

holding means insertable into the opening in said heavy load for engaging said surface defining the opening in said load;

means for attaching said holding means to one end of said pivot pin with said holding means at the center of gravity of said load when said holding means engages said surface such that said holding means is rotatable about said central axis of said pivot pin and so that rotation of said holding means about said central axis causes rotation of said load about its center of gravity; and

mounted means including a vehicle having a longitudinal axis for rotatably holding said pivot pin with said central axis of said pivot pin at a first predetermined angle between zero and ninety degrees with respect to a horizontal plane and a second predetermined angle between zero and ninety degrees with respect to a vertical plane containing said longitudinal axis of said vehicle whereby rotation of said pivot pin moves said holding means and said load through three orthogonal positions.

4,941,799

DISPLACEABLE SUPPORT FOR WHEELCHAIR

George W. Gordon, Allentown, and Theodore F. Economy, Orefield, both of Pa., assignors to Gordecon, Inc., Catasauqua, Pa.

Filed Sep. 20, 1988, Ser. No. 246,972
Int. Cl.[5] A61G *7/00*
U.S. Cl. 414—678 **14 Claims**

1. An apparatus for controllably positioning a wheelchair, comprising:

a base;

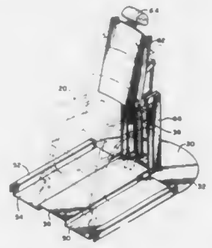
a vertical extension mechanism connected by one end to said base, and means for operating the vertical extension mechanism to extend and to retract;

a chassis connected to a second end of said vertical extension mechanism;

support means for engaging and supporting a wheelchair, the support means being carried at least partly on the chassis, the support means receiving and supporting the wheelchair during extension and retraction;

an angular extension mechanism disposed on the chassis, the angular extension mechanism being operable to rotate the support means around an axis adjacent the chassis; and,

linear vertical guide means on the base for guiding vertical displacement of the chassis on the base, the vertical guide means including a guide shaft and a bushing, one of the guide shaft and the bushing being mounted on a main support leg on the base and the other of the guide shaft and the bushing being mounted on the chassis, the vertical guide means also including at least one roller mounted on the chassis, the roller movably bearing on the main support leg.

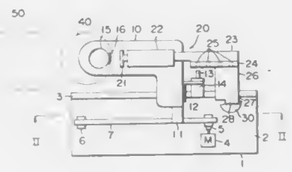


4,941,800

TRANSFER APPARATUS FOR PLATE-LIKE MEMBER

Hisashi Koike; Itaru Takao; Masaki Narushima, and Kiyoshi Takekoshi, all of Yamanashi, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Oct. 21, 1988, Ser. No. 260,608
Int. Cl.[5] B65G *1/00*
U.S. Cl. 414—752 **17 Claims**



1. A plate-like member transfer apparatus for transferring a plate-like member into a storage/guide unit having an entrance for the plate-like member, the entrance being defined by two side walls of the storage/guide unit, said apparatus comprising:

supporting means for supporting the plate-like member thereon such that the plate-like member is movable in response to a force applied thereto;

moving means for moving said supporting means to said storage/guide unit to thereby transfer said plate-like member into said storage/guide unit; and

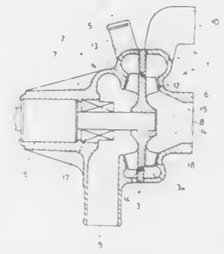
adjusting means, which is moved to said storage/guide unit together with said supporting means by said moving means, for pressing against the plate-like member when the plate-like member contacts at least one of the side walls of the storage/guide unit, wherein the combination of said adjusting means, said moving means, said supporting means, and said at least one of the side walls rotates said plate-like member to a position in which said plate-like member is aligned with the entrance of said storage/guide unit, thereby fitting the plate-like member into the entrance of the storage/guide unit.

4,941,801

DOUBLE WATER PUMP DEVICE

Yoshinari Takakura, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 23, 1989, Ser. No. 327,697
Claims priority, application Japan, Mar. 23, 1988, 63-037825[U]
Int. Cl.[3] F01D *15/00*
U.S. Cl. 415—170.1 **5 Claims**



1. A water pump device comprising:

a pump housing;

a pump shaft rotatably mounted in said housing;

a rotor mounted on said pump shaft;

an annular partition wall mounted on said housing and extending into said housing so as to form a planar extension of said rotor;

means for forming a seal between said partitions wall and said rotor;

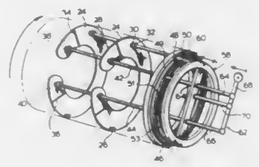
wherein said rotor and partition wall define first and second substantially independent pump chambers in said housing, an inner diameter of said partition wall being greater than an outer diameter of said rotor at any axial plane including said partition wall and said rotor, whereby said partition wall may be fitted on the rotor in the axial direction.

4,941,802

MULTI-BLADED PROPULSION APPARATUS

John C. Ross, 14 Dustan Crescent, Toronto, Ontario, Canada (M4J 4G5)

Filed Jun. 2, 1989, Ser. No. 360,591
Int. Cl.[5] B63H *3/02*
U.S. Cl. 416—164 **7 Claims**



1. A propulsion apparatus for fluid medium comprising:

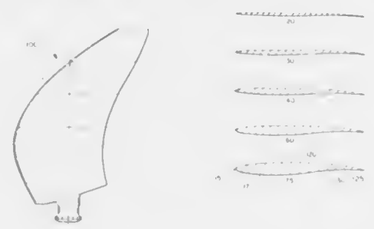
an open-ended sleeve having an inlet and outlet for flow through of fluid, said sleeve being rotatably attached to a drive means;

a series of blades positioned within and along said sleeve, each of said blades having a leading and trailing edge and

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each of said blades being attached to said sleeve for rotation therewith;
said blades cooperating to define a fluid path to accelerate a fluid from said inlet to said outlet to thereby provide thrust for propulsion as said sleeve is rotated;
adjusting means interconnecting said blades for pitch adjustment of said leading and trailing edges of said blades.

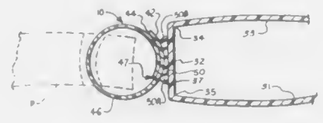
4,941,803
AIRFOILED BLADE
Harry S. Wainauski, Simsbury, Conn., and Carol M. Vaczy, Swampscott, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Filed Feb. 1, 1989, Ser. No. 304,676
Int. Cl.[5] B64C *11/18*
U.S. Cl. 416—242 **7 Claims**



1. An aircraft propeller blade having a root portion, and a tip portion, said blade comprising:
a plurality of airfoil sections having a thickness ratio of between 7.5% and 2%;
each section having along substantially the entire length thereof, a cross sectional shape characterized by;
a parabolic leading edge,
a camber having a minimal slope extending from the leading edge to about a 40% chord and having an apogee at a 74% chord,
a gradual pressure recovery upper surface from about the 40% chord to a trailing edge,
a concave lower surface from about the 40% chord to the trailing edge to generate life, said upper and lower surfaces merging into a relatively blunt trailing edge, and
a maximum thickness positioned along the length of each airfoil section from said tip portion to said root portion, said maximum thickness of each airfoil section located from a 37.5% chord for an airfoil at said tip portion to a 35.0% chord at said root portion for an airfoil whereby said propeller blade forms one of an airfoil family.

4,941,804
PLASTIC MULTI-RING PAPER BINDING SYSTEM USING ONE PIECE COVER
John B. Sarpy, Jr., 2717 Ridgelake Dr., Metairie, La. 70002
Filed Apr. 27, 1989, Ser. No. 344,219
Int. Cl.[5] B42B *5/10*
U.S. Cl. 412—7 **7 Claims**

1. A binding apparatus for binding together sheets of perforated paper, each with correspondingly placed multiple openings along a margin thereof, comprising:
(a) a three panel one piece cover set including front and rear covers connected by a smaller cover spine portion with inner and outer surfaces and a longitudinal center line axis;
(b) a pair of parallel hinges defining respectively pivotal connections between each cover and the spine portion and generally parallel to the spine centerline;
(c) a plastic ring-type binder having a generally circular cross section, and including a curved back portion with a curvature greater than the curvature of the spine portion, and including an inner concave surface and an outer convex surface and parallel side portions, one side portion having a row of multiple, closely spaced flexible rings extending therefrom, each with a free end portion, the rings having a memory which returns them to assume a generally circular configuration after the rings are opened, such as during the addition of perforated paper thereto;
(d) an elongated adhesive bead member extending along the plastic back convex surface and positioned along the spine centerline, generally between the spine end portions and spaced away from the fingers so that the fingers can be



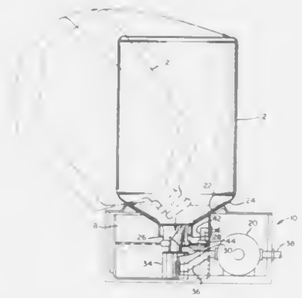
opened for adding paper thereto, bonding the plastic ring-type binder to the cover adjacent the cover spine portion thereof, and without substantial migration of the bead to the cover set outer surface so that printed matter can be added to the cover spine portion outer surface without interference by the bead; and
(e) the bead extending laterally toward the scores and providing spaced thicker portions away from the longitudinal centerline axis of the spine for bonding the plastic ring type binder to the spine as the different curvature of the ring-type binder and spine diverge away from the centerline.

4,941,805
DEVICE FOR CENTERING A DRIVE SHART ON A HUB
David Matthews, 1510 Greenbrier, Green Oaks, Ill. 60048
Continuation of Ser. No. 150,019, Jan. 29, 1989, abandoned. This application Jul. 24, 1989, Ser. No. 384,880
Int. Cl.[5] F01D *5/32*
U.S. Cl. 416—204 R **11 Claims**



1. A method of centering and drivingly connecting the hub of a driven member with a drive shaft having an end face with a centrally projecting externally threaded stud which comprises:
forming an apertured radial wall on the hub for receiving the stud therethrough and for bottoming on the end face of the shaft,
forming shaft embracing portions on the face of the hub to be bottomed on the end face of the shaft to center the true axis of the hub on the shaft, said shaft embracing portions being formed after the driven member is formed and assembled, and
threading a nut on the stud to clamp the wall between the end face of the shaft and the nut.

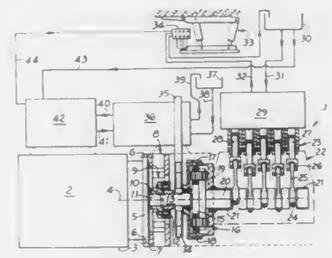
4,941,806
BOTTLED WATER PUMPING APPARATUS
Toran S. Brown, Los Angeles, and William T. McGregor, Malibu, both of Calif., assignors to The McGregor Company, Santa Monica, Calif.
Filed Dec. 12, 1988, Ser. No. 283,502
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—38 **19 Claims**



1. An apparatus for supplying bottled water from a bottle to an appliance comprising:
a unitary assembly for location at an elevation below the elevation at which bottled water is to be supplied to the appliance;
a reservoir for holding water, said reservoir being located adjacent the bottom of said assembly;
a motor driven pump that has an inlet communicating with the water in said reservoir, said pump having an outlet communicating with said appliance;
a water pressure sensitive switch in communication with said pump outlet, said switch being set to connect said motor to a source of electricity for starting the motor and pump automatically when the water pressure in said pump outlet falls below a predetermined value; and
a bottle support disposed above said reservoir for receiving said bottle and supporting said bottle in an inverted position such that said reservoir is partially filled with water from said bottle.

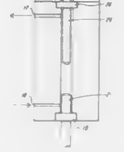
4,941,807
HYDRAULIC POWER GENERATING PACK
Malcolm C. Foster, Sandal, England, assignor to Gullick Dobson Limited, Horbury, England
Filed Feb. 7, 1989, Ser. No. 307,787
Claims priority, application United Kingdom, Feb. 20, 1988, 8803974
Int. Cl.[5] F04B *23/08*
U.S. Cl. 417—199.1 **8 Claims**

1. An hydraulic power generating pack comprising a primary pump of the multi-cylinder, reciprocating ram type, a reciprocable piston located in each of said cylinders and a crank shaft rotatable by a prime mover and serving to displace each said piston to provide a primary hydraulic fluid output at a predetermined constant pressure and constant volume, a power take-off, a secondary pump of the pressure compensated variable delivery type, driven by said power take-off, a pressure intensifier output from said secondary pump driving an intensifier which intensifies to a required secondary pressure



and volume, hydraulic fluid supplied to said intensifier at a first pressure and volume.

4,941,808
MULTI-MODE DIFFERENTIAL FLUID DISPLACEMENT PUMP
Humayun Qureshi, 77 E. Plain St., Wayland, Mass. 01778; Stanley M. Liffmann, 4 Fiske Rd., Andover, Mass. 01810, and John D. Czaban, 4 Duck Pond Rd., Unit 202, Beverly, Mass. 01915
Filed Jun. 29, 1988, Ser. No. 213,169
Int. Cl.[5] F04B *13/00*
U.S. Cl. 417—415 **9 Claims**



1. A multi-mode, differential displacement pump for obtaining two different measured doses with high resolution in a single stroke,
said pump comprising an elongated chamber carrying first and second pistons therein,
said first piston defining a first volume being reciprocally mounted in said chamber,
said second piston defining a second volume being reciprocally mounted in said chamber,
said chamber having a first and a second portion,
means for moving in a single stroke, only one of said pistons in said first portion of said chamber to define a first measured dose and said one piston along with the other of said pistons in said second portion of said chamber to define a second measured dose different from said first measured dose, and
means for positioning said other piston at a predetermined position in said chamber.

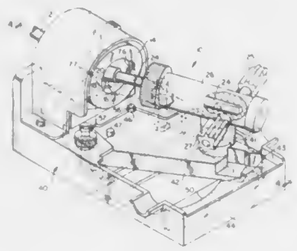
VOL 1116 ISS 3 JL 17 1990 UMI

4,941,809

VALVELESS POSITIVE DISPLACEMENT METERING PUMP

Harry E. Pinkerton, 1 Bridle Path La., Mill Neck, N.Y. 11765

Filed Feb. 13, 1986, Ser. No. 829,398
Int. Cl.[5] F04B *7/06*
U.S. Cl. 417—500 **9 Claims**



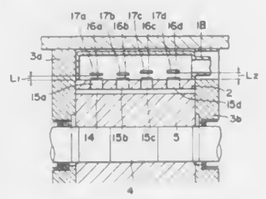
1. A valveless, variable displacement, fixed head volume, piston metering pump comprising:
- a cylinder having port means to direct fluid and a head chamber to contain fluid;
- a rotatable piston in said cylinder, said piston having an axis;
- duct means on said piston communicable with said port means for transfer of said fluid to and from the cylinder head chamber;
- drive means for said piston, said drive means having an axis, and means for causing said piston to reciprocate in said cylinder to and from a fixed dead volume point while rotating in a timed relation with respect to said port means; and
- means for reversing said timed relationship through reversal of relative angularity between said axes to obtain fluid flow reversal at flow rates determined by the degree of relative angularity of the two axes.

4,941,810

SLIDING-VANE ROTARY COMPRESSOR

Masahiro Iio; Yoshio Suzuki; Hidehiko Takayama, and Katsumi Sakamoto, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 366,136
Claims priority, application Japan, Jul. 15, 1988, 63-93590[U]
Int. Cl.[5] F04C *18/344, 29/08*
U.S. Cl. 418—15 **2 Claims**



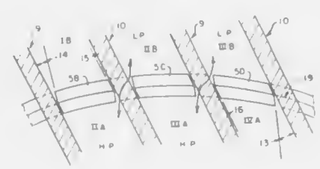
1. A sliding-vane rotary compressor comprising:
(a) a compressor body composed of a cylinder and a pair of side blocks attached to opposite ends of said cylinder, said compressor body having an inlet disposed at one of a front side and a rear side of said cylinder;
(b) a rotor rotatably disposed in said compressor body and carrying thereon a plurality of radially movable sliding vanes, there being defined between said cylinder, rotor and vanes a plurality of compression chambers which vary in volume with each revolution of said rotor;
(c) a plurality of aligned discharge holes disposed in a direction parallel to a longitudinal axis of said cylinder;
(d) a plurality of discharge valves disposed on said cylinder and normally closing said discharge openings, respectively, said discharge valves being displacable to open the corresponding discharge openings when they are forced to open by a compressed fluid, thereby allowing a compressed fluid to flow out from said compression chambers; and
(e) means for limiting the displacement of said discharge valves such that openings of the respective discharge valves progressively increase in a direction from the front side to the rear side of said cylinder when said inlet is disposed at said front side of said cylinder, and said openings of the respective discharge valves progressively increase in a direction from the rear side to the front side of said cylinder when said inlet is disposed at said rear side of said cylinder.

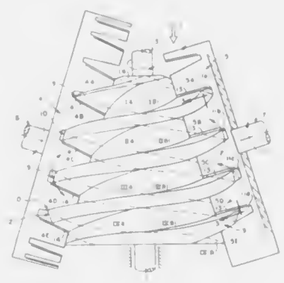
4,941,811

LEAKAGE PATH INTERCONNECTION FOR SINGLE SCREW MECHANISMS

David C. Winyard, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 908,859, Aug. 25, 1986, Pat. No. 4,824,348. This application Dec. 21, 1988, Ser. No. 287,362
Int. Cl.[5] F01C *1/20, 3/08*
U.S. Cl. 418—195 **5 Claims**





1. A single screw mechanism having an inlet and an outlet, comprising:
- a compound mainrotor formed with a plurality of threads, each said thread having a thread winding around said mainrotor of at least one full turn, said mainrotor having a varying radius along the length of said mainrotor;
- a housing, cooperating with said mainrotor threads, forming at least one chamber, each said chamber in fluid communication at a first end with said inlet of said single screw mechanism and in fliud comunication at a second end with said outlet of said single screw mechanism;

- a plurality of cylindrical gaterotor having teeth which are in meshing relation with said mainrotor threads, said gaterotor teeth sealedly cooperating with each said chamber such that said first end of each said chamber is sealed from said second end of each said chamber by a plurality of teeth of one gaterotor and at least one tooth of another gaterotor for at least a portion of each cycle, forming pockets, each said pocket bounded by a leading tooth of one gaterotor and a trailing tooth of another gaterotor;
- characterized in that the instantaneous rate of volume swept by each said tooth per unit of mainrotor rotation and the volume of each said pocket are controlled by varying the engaged area of each said gaterotor tooth commensurate with said varying radius of said mainrotor as each said tooth progresses along the length of said mainrotor.

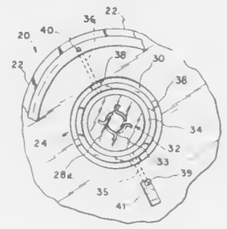
2. A single screw mechanism having an inlet and an outlet, comprising:
- a mainrotor formed with a plurality of threads, each said thread having a thread winding around said mainrotor of at least one full turn;
- a housing, cooperating with said mainrotor threads, forming at least one chamber, each said chamber in fluid communication at a first end43 5ith said inlet of said single screw mechanism and in fluid communication at a second end with said outlet of said single screw mechanism;
- a plurality of cylindrical gaterotors corresponding to the number of mainrotor threads each rotating around axes skew to each other and symmetrically skew to the mainrotor axis and each having teeth which are in meshing relation with said mainrotor threads, said gaterotor teeth sealedly cooperating with each said chamber along a gaterotor sealing plane such that said first end of said chamber is sealed from each said second end of said chamber by a plurality of teeth of one gaterotor and at least one tooth of another gaterotor for at least a portion of each cycle;
- characterized in that as the gaterotor teeth flanks enter the mainrotor they emcounter the minimum relative angle of motion between the teeth and said mainrotor and as the teeth flanks leave the mainrotor they encounter the maximum relative angle of motion between the teeth and said mainrotor.

4,941,812

SPINNERET FOR PRODUCTION OF A HOLLOW FILAMENT WITHIN A HOLLOW FILAMENT COMPOSITE FIBER HAVING SPACING MEANS

Harry V. Samelson, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1988, Ser. No. 193,710
The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.
Int. Cl.[5] B28B *21/52;* **B29C** *47/04, 47/20*
U.S. Cl. 425—131.5 **4 Claims**



3. A spinneret for the production from first and second non-adhering molten polymers of a hollow filament containing within itself a co-spun filament comprising: a plate having upper and lower surfaces connected by a capillary, said capillary comprising an inner segmented passage through which said first molten polymer passes and an outer annular passage concentric with the inner segmented passage through which said second molten polymer passes; said inner segmented passage having a center point each segment of said inner segmented passage comprises a first portion in the form of an arc curved about the center point of the inner segmented passage, a second portion extending in a straight length from said first portion and connected to a third portion, said third portion being in the form of a reverse curve with respect to said first portion.

4,941,813

MOLD GUIDANCE SYSTEM FOR BLOCK MAKING MACHINERY

Lloyd T. Grubb, Jr., Rte. 7, Box 250, Apex, N.C. 27502, and Joseph T. Kennamer, 1606 Dunblane Crt., Cary, N.C. 27511

Filed Dec. 13, 1988, Ser. No. 283,832
Int. Cl.[5] B28B *3/02*
U.S. Cl. 425—195 **10 Claims**



1. In combination with a concrete block making machine having a frame defining a horizontally extending elongate opening in each of two opposing sides thereof, each of said openings having an open end and a closed end, an open bottom mold to receive material therein for molding blocks and defining two inside corners adjacent said closed ends of said openings and two outside corners adjacent said open ends of said openings, said mold being supported on each opposing sides thereof within said respective openings and being mounted for vibratory movement relative to said frame, a head member movable into said mold for compacting block molding material placed therein, a pallet support adapted to lift and hold a pallet against the bottom of said mold when a block is being molded and to then drop to allow for ejection of the completed molded block from the mold, the improvement which comprises:
- a mold guidance system comprising:
  - a mold support arm secured to and extending laterally outwardly from each of said opposing sides of said mold substantially adjacent the two inside corners thereof, and each arm defining an aperture in an outer end thereof;
  - a pair of first clamp elements each secured to a respective side of said frame above said opening defined therein and adjacent to said closed end of said opening in substantial vertical alignment with a respective mold arm aperture;
  - a pair of second clamp elements each secured to a respective side of said frame below said opening defined therein and adjacent to said open end of said opening in substantial vertical alignment with a respective mold arm aperture; and
  - a pair of elongate pins each being slidably positioned within a respective one of the mold arm apertures and fixedly engaged by a respective one of said pair of first clamp elements and a respective one of said pair of second clamp elements;
- whereby said mold may move vertically on said elongate

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pins during vibration thereof during the concrete block making process but is prevented from moving laterally.

4,941,814

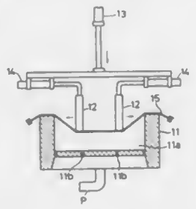
VACUUM FORMING APPARATUS

Kazui Araki, Ora; Yoshio Kobayashi, Ota; Seiji Matsumoto, Ota, and Hisao Fukushima, Ota, all of Japan, assignors to Shigeru Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 72,701, Jul. 13, 1987, Pat. No. 4,847,034. This application Feb. 21, 1989, Ser. No. 313,085

Int. Cl.[5] **B29C** *51/10*

U.S. Cl. 425—388 **9 Claims**



1. A vacuum forming apparatus comprising: a female mold having formed therein a recess, said recess being defined by a wall surface having a bottom face and a side wall face section intersected at an angle with said bottom face;

plug means arranged in facing relation to an opening of said recess, said plug means having a face which is substantially parallel to said side wall face section of said recess:

first moving means for moving at least one of said female mold and said plug means in a first direction in which said plug means and said bottom face of said recess relatively move toward each other while the parallel relation being maintained between said face of said plug and said side wall face section of said recess, to cause said plug means to urge a sheet material toward the bottom face of said recess while stretching the sheet material;

second moving means for moving said plug means in a second direction substantially perpendicular to said first direction, in which said plug means moves toward said side wall face section of said recess while the parallel relation being maintained between said face of said plug and said side wall face section, to cause said plug means to urge the sheet material against said side wall face section; and

means for evacuating a substantially closed space defined by said recess and the sheet material, to being the sheet material into intimate contact with said wall surface of said recess.

4,941,815

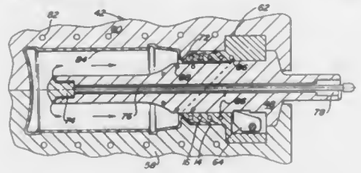
INJECTION-BLOW MOLDING APPARATUS

Randall K. Julian, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jan. 19, 1989, Ser. No. 299,969

Int. Cl.[5] **B29C** *49/06*

U.S. Cl. 425—525 **8 Claims**



1. Apparatus in combination with an injection-blow molding machine for forming a container having a neck with closure attachment means and a radially

an injection mold having a neck forming portion for forming a parison with a container neck; offset structure, said machine including:

a blow mold;

a core rod; and

positioning means for sequentially locating said core rod in an operative position relative to said injection mold to mold a parison and in an operative position relative to said blow mold for forming said container;

said apparatus comprising:

at least one circumferentially continuous neck forming sleeve concentrially spaced around said core rod said sleeve having means for forming said container neck with said closure attachment means and said radially offset structure when said core rod is in said operative position relative to said neck forming portion of said injection mold; and

securing means for maintaining said core rod and neck forming sleeve in fixed axial relationship relative to each other during formation of said parison with said container neck in said injection mold and during location of said neck forming sleeve, said core rod and parison in an operational position relative to said blow mold, said securing means being operable to allow movement of said core rod and neck forming sleeve axially relative to each other for removal of said container from said machine.

4,941,816

ROTARY TYPE INJECTION BLOW MOLDING MACHINE

Katashi Aoki, deceased, late of Sakaimachi, and by Satoru Kimura, heir, 3-5-6, Saido, Urawa-shi, Saitama-ken, both of Japan

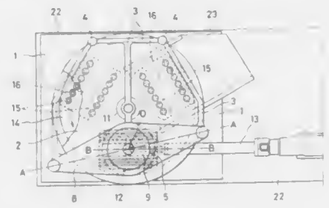
PCT No. PCT/JP88/00387, § 371 Date Dec. 19, 1988, § 102(e) Date Dec. 19, 1988, PCT Pub. No. WO88/08366, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 20, 1988, Ser. No. 315,790

Claims priority, application Japan, Apr. 20, 1987, 62-96686

Int. Cl.[5] **B29C** *49/06, 49/36*

U.S. Cl. 425—533 **3 Claims**



1. In a rotary type blow molding machine in which a transfer plate provided at the underside with lip molds at three locations is intermittently rotatably provided above a machine bed to form a working space between said transfer plate and the machine bed, the three locations on the machine bed being used as three working stages, the three working stages being an injection molding stage, an orientation blow molding stage and a removing stage, said injection molding stage having a vertical type clamping device with tie bars and an injection mold disposed thereon, said orientation blow molding stage having a blow mold and devices required for the orientation blow molding and said removing stage having a release device for releasing molded articles, and an injection device is disposed lengthwise of the machine bed with respect to said injection mold, wherein the improvement comprising said injection molding stage is set sideward on the machine bed, said orientation blow molding stage is positioned inwardly of the machine bed, the clamping device in said injection molding stage is obliquely positioned lengthwise of the machine bed and stands upright, said injection mold is provided parallel to the side edge of the machine bed and in the central portion of said clamping device, and said injection device is arranged on a center line of the injection mold obliquely crossed with respect to an axis of said tie bars in the clamping center of the clamping device.

4,941,817

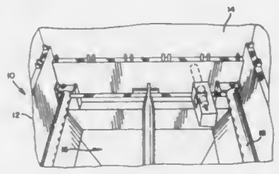
IGNITOR HOUSING FOR BARBECUE GRILL

Erich J. Schlosser, Barrington, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.

Filed Aug. 11, 1989, Ser. No. 392,838

Int. Cl.[5] **F23Q** *7/06*

U.S. Cl. 431—263 **8 Claims**



1. In a barbecue grill having a firebox with a gas burner and ignition means in said firebox for igniting gas supplied to said burner, the improvement comprising:

said ignition means including an electrode and a housing partially enclosing said electrode and defining a ground contact;

said housing having multiple walls that define a generally rectangular chamber having an opening proximate to said gas burner with said opening oriented with respect to the burner;

first and second tabs formed integrally with said housing and received through opening means in said firebox and bent to secure said housing to said firebox; and,

support means in said chamber frictionally engaging said electrode.

4,941,818

CIGARETTE LIGHTER

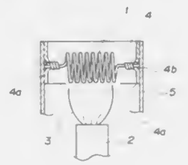
Kazuhide Obe, Kamagaya; Kazuo Sato, Ichikawa; Shunpei Fukuda, and Hiroyuki Nakada, both of Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 18, 1988, Ser. No. 273,466

Claims priority, application Japan, Nov. 21, 1987, 62-177891; Feb. 4, 1988, 63-14249

Int. Cl.[5] **F23Q** *11/00*

U.S. Cl. 431—268 **12 Claims**



1. A cigarette lighter having a combustor portion ignitable by a fuel gas from a nozzle from which said fuel gas is ejected in a fire bowl of the combustor portion, said cigarette lighter comprising an igniting element made of a wire of platinum metal or a platinum-based material having a diameter of the wire in the range from 0.10 mm to 0.25 mm, of which the pitch of the coil does not exceed 1 mm, said coil being mounted at or near the vicinity of said nozzle from which the fuel gas is ejected in a fire bowl of the combustor portion.

4,941,819

AIR CIRCULATION AND EXHAUST CONTROL SYSTEM FOR COMMERCIAL OVENS

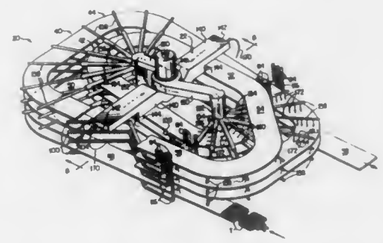
G. Wayne Stewart, Plano; Bill E. Davis, Irving; William M. Thomas, Garland; Michael J. Doble, Plano, and Carlos Bacigalupe, The Colony, all of Tex., assignors to Stewart Systems, Inc., Plano, Tex.

Continuation of Ser. No. 226,893, Aug. 1, 1988, Pat. No. 4,846,647, which is a continuation of Ser. No. 101,841, Sep. 28, 1987, Pat. No. 4,792,303, which is a division of Ser. No. 936,160, Dec. 1, 1986, Pat. No. 4,726,766. This application Apr. 26, 1989, Ser. No. 343,287

The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.

Int. Cl.[5] **F23J** *15/00*

U.S. Cl. 432—8 **15 Claims**



1. A heated air circulation and exhaust control system for an oven comprising:

means forming an oven enclosure defining an oven interior;

conveyor means for transporting food products through the oven interior along a predetermined spiral path having relatively elongated side portions and curved end portion;

inlet apertures within the oven interior for receiving heated gases;

discharge tubes having outlet apertures situated within the oven interior adjacent to the conveyor path at the curved end portions; and

circulation means coupling said inlet apertures to said discharge tubes for causing the flow of heated gases from the inlet aperture to the outlet apertures of the discharge tubes to heat the food products on the conveyor in the curved end portions.

4,941,820

PULSE COMBUSTION ENERGY SYSTEM

Hanford N. Lockwood, Jr., San Mateo, Calif., assignor to NEA Technologies, Inc., Larkspur, Calif.

Continuation of Ser. No. 218,720, Jul. 13, 1988, abandoned, which is a division of Ser. No. 41,794, Apr. 23, 1987, Pat. No. 4,838,784, which is a division of Ser. No. 852,854, Apr. 16, 1986, Pat. No. 4,708,159. This application Oct. 24, 1988, Ser. No. 261,652

Int. Cl.[5] **F27B** *15/00*

U.S. Cl. 432—58 **23 Claims**

1. A drying apparatus comprising:

a pulse combustor having a combustion chamber and a generally tubular outlet in fluid communication with the combustion chamber for emitting high temperature pulses;

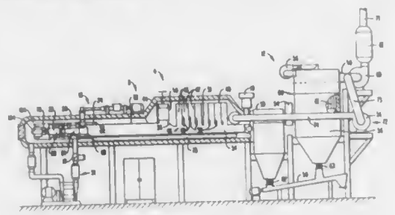
a processing tube for flowing a foreign material to be processed therethrough, the processing tube having an axis including upstream and downstream ends, the upstream

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end being in fluid communication with the outlet of the pulse combustor for receiving the high temperature pluses emitted therefrom;

means for introducing the foreign material to be processed into the high temperature pulses flowing through the upstream end of the processing tube;

means, in fluid communication with the downstream end of the processing tube, for receiving the foreign material flowing therefrom;



means for flowing a separate fluid into the processing tube proximate the upstream end thereof;

means for detecting a prescribed differential pressure through the processing tube; and

means, responsive to the pressure detecting means for modulating the flow of fluid into the upstream end of the processing tube.

4,941,821

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIAL

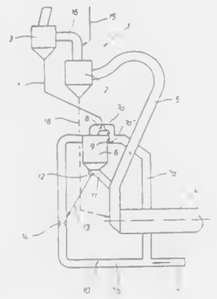
Manfred Dürr, Oelde; Georg Unland, Ennigerloh; Wolfgang Rother, Oelde; Günter Driemeier, Lienen, and Heinz-Herbert Schmits, Rheda-Wiedenbrück, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Jan. 3, 1989, Ser. No. 292,992

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800895

Int. Cl.[5] F27B *15/00, 7/02*

U.S. Cl. 432—106 **9 Claims**



1. Apparatus for the heat treatment of fine-grained material such as cement, said apparatus comprising material preheater means, a material calcination zone in communication with said preheater means, kiln means in communication with said preheater means to receive material therefrom for final burning of said material, cooling means in communication with said kiln means to receive and cool burnt material, tertiary air supply means extending from said cooling means to said calcination zone to deliver oxygen-rich cooling air thereto, exhaust gas supply means extending from said kiln means to said preheater means to deliver hot exhaust gas thereto, and means for delivering a portion of said material from a selected part of said apparatus to said tertiary air supply means for mixing with said cooling air and recycling to said calcination zone.

4,941,822

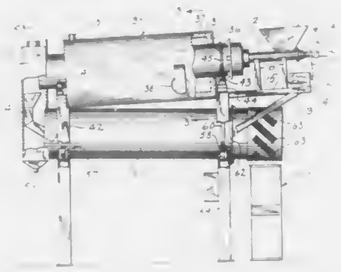
APPARATUS FOR HEAT TREATING CONTAMINATED PARTICULATE MATERIAL

Marvin Evans, 8550 N. Fielding Rd., and David H. Miller, 610 E. Birch Ave., both of Milwaukee, Wis. 53217

Filed Jul. 20, 1989, Ser. No. 382,228

Int. Cl.[5] F27B *7/08*

U.S. Cl. 432—112 **21 Claims**



1. An apparatus for heat treating particulate material, comprising a rotary drum having an upstream end and a downstream end, first drive means for rotating said drum, auger means including a cylindrical housing communicating with the upstream end of said drum, said auger means also including a rotatable hollow shaft and a spiral flight mounted on said shaft, feeding means associated with said auger means for feeding a particulate material to said auger means, second drive means for rotating said spiral flight to convey said material through said housing and into said drum, heating means for heating the external surface of the drum, air supply means connected to said hollow shaft for introducing air through said shaft to said drum, and sealing means for sealing said housing to said drum to prevent the escape of gas at the joint between the rotating drum and said housing.

4,941,823

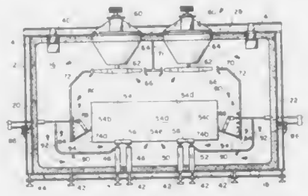
VERTICAL AIR FLOW INGOT PUSHER FURNACE WITH ADJUSTABLE SIDE BAFFLES

Robert H. Ross, Meadville, Pa., assignor to Seco/Warwick Corporation, Meadville, Pa.

Filed Dec. 5, 1989, Ser. No. 446,062

Int. Cl.[5] F27B *9/04*

U.S. Cl. 432—152 **7 Claims**



1. An ingot pusher furnace of the vertical air flow type comprising:

an insulating furnace enclosure formed by a bottom wall, a pair of side walls, a front wall, a rear wall and a top wall,

said enclosure receiving a plurality of ingots to be heated whose length is at a minimum acceptable by the furnace;

means for heating said enclosure by heating a gaseous medium therein:

means for moving said gaseous medium within said enclosure:

a pair of vertical fixed side baffles disposed in a parallel, spaced apart relationship to said side walls of said enclosure, each of said vertical fixed side baffles extending from the rear wall of said enclosure to the front wall thereof, each of said vertical fixed side baffles having an upper end and a lower end;

a horizontal baffle having connecting members and extending from said rear wall to said front wall, said connecting members being joined fixedly to respective upper ends of said vertical fixed side baffles;

adjustable side baffles each having its one end pivotally attached to the respective lower ends of said vertical fixed side baffles, said adjustable side baffles being movable between a vertical position and an angled position;

a pair of L-shaped vanes surrounding the ends of the ingots; and

each of said L-shaped vanes including a vertical portion and a horizontal portion, the vertical portion extending vertically and substantially intermediate the respective vertical fixed side baffles and said side walls, the horizontal position being joined integrally at its one end to the vertical portion and extending towards the center of the ingot,

whereby said adjustable side baffles forcing said gaseous medium contained in said enclosure to flow towards the center portions of the ingots when in the angled position so as to provide uniform heating throughout the ingot.

4,941,824

METHOD OF AND APPARATUS FOR COOLING AND CLEANING THE ROOF AND ENVIRONS OF A COKE OVEN

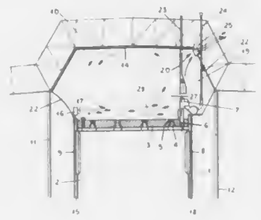
Heinz Hölter, Beisenstrasse 39-41, D-4390 Gladbeck; Heinrich Igelbüscher, Gladbeck, and Heinrich Gresch, Dortmund-Wickede, all of Fed. Rep. of Germany, assignors to Heinz Hölter, Gladbeck, Fed. Rep. of Germany

Filed May 12, 1989, Ser. No. 351,615

Claims priority, application Fed. Rep. of Germany, May 13, 1988, 3816463; May 20, 1988, 3817205; Nov. 25, 1988, 3839834

Int. Cl.[5] F27D *1/12*

U.S. Cl. 432—233 **19 Claims**



1. A method of cooling a roof region of a coke oven and maintaining said roof region free from contaminants, comprising the steps of:

(a) enclosing said roof region with a suction housing defining a space with said roof region;

(b) continuously evacuating said space so as to maintain said space at a subatmospheric pressure;

(c) maintaining said space in communication with at least some regions of covered filling openings and regions of coke-oven doors of said coke oven; and

(d) admitting fresh air to said space in a volume substantially equal to gases evacuated from said space.

6. An apparatus for cooling a roof region of a coke oven and maintaining said roof region free from contaminants, comprising:

a suction housing enclosing said roof region and defining a space with said roof region;

means for continuously evacuating said space so as to maintain said space at a subatmospheric pressure;

means for maintaining said space in communication with at least some regions of covered filling openings and regions of coke-oven doors of said coke oven; and

means for admitting fresh air to said space in a volume substantially equal to gases evacuated from said space.

4,941,825

ORTHODONTIC BRACKET AND LOCK PIN

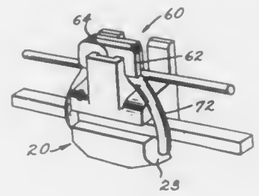
Harry Lerner, Apartado Postal No. 64753 C.C.C.T., Caracas, Venezuela

Continuation-in-part of Ser. No. 96,865, Sep. 15, 1987, Pat. No. 4,838,787. This application Mar. 17, 1989, Ser. No. 324,860

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—14 **2 Claims**



1. An orthodontic bracket device for use with a light wire technique and edgewise correction technique, comprising:

a backing plate for attachment to a tooth band or tooth;

a body portion connected to said backing plate having a frontal slot located therein along a midsection thereof for receipt of an arch wire, said body portion also having a passageway located therethrough which intersects said frontal slot, said passageway extending upwardly through an upwardly protruding portion of said body portion, said upwardly protruding portion being positioned relative to said backing plate so as to create a light wire receiving channel therebetween, said body portion also having a lower portion located immediately beneath said frontal slot;

said light wire receiving channel having a light wire received therein and said passageway having a locking pin means inserted therein for securing said light wire in said light wire receiving channel, said locking pin means having front and back sides and comprising a center shaft member, said center shaft member extending to, but not through, said frontal slot;

said frontal slot having a rectangular arch wire received therein with portions thereof extending beyond said body portion of said bracket device, said arch wire being held securely in said frontal slot by an elastic ligature means, said elastic ligature means permanently secured to said locking pin means for looping around said lower portion of said body portion and riding over said portions of said rectangular arch wire.

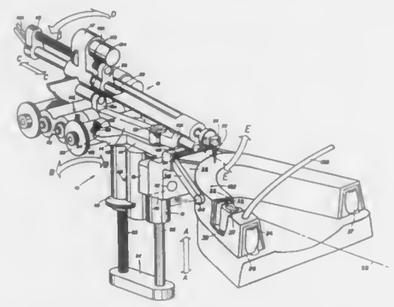
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4,941,826

APPARATUS FOR INDIRECT DENTAL MACHINING

William Loran, 100 Thorndale Dr., #356, San Rafael, Calif. 94903, and Merritt A. Robinson, 475 Fawn Dr., San Anselmo, Calif. 94960

Filed Jun. 9, 1988, Ser. No. 204,632
Int. Cl.[5] A61C *3/06*
U.S. Cl. 433—51 **12 Claims**



1. Apparatus for machining a tooth comprising:
an impression tray;
an elastic and dimensionally stable dental impression material in said tray;
said tray and impression material having been applied to a patient's jaw to form a negative impression thereof;
a positive model of said patient's jaw formed from a negative impression thereof;
a portion of said tray and impression material having been cut away so that when said negative impression is received over a patient's jaw or said positive model, a selected portion of a tooth to be machined is exposed;
a base member;
a rotatable cutter driving member mounted for movement on said base member in at least three degrees of motion;
means for firmly securing said impression tray to said base member;
said impression tray forming anchor means for selectively securing said base member in precisely corresponding positions on said patient's jaw or on said positive model;
recording means operative when said anchor means is secured to said positive mode to record movements of said cutter driving membe relative to said base member in cutting a tooth on said model; and
duplicating means selectively actuated when said anchor means is secured to said patient's jaw to duplicate said recorded movements of said cutter driving member relative to said base member.

4,941,827

TOOTH FASTENING PLUG FOR A PATTERN

Heinz Mack, Sudl. Auffahrtsallee 64, 8000 Munich 19, Fed. Rep. of Germany

Filed Mar. 28, 1989, Ser. No. 329,810
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1988, 3810690
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—74 **9 Claims**

1. A plug connection for fastening tooth or jaw segments to a pattern base, said connection comprising a pin and a matching sleeve in which the pin is firmly seated and wherefrom it can be separated again by counter-pressure, said pin comprising a permanently lockable locking shank and a detachable plug-in shank, wherein;
the detachable plug-in shank of the pin comprises a coupling regin of larger cross-section and an adjacent coupling region of a cross-section smaller than that of the larger cross-section coupling region, and at least either the larger cross-section coupling region or the smaller cross-section coupling region being of cylindrical configuration,
the sleeve comprising a larger cross-section hollow cylindrical region with an inner diameter corresponding to the cross-section of the larger cross-section coupling region of the pin and a smaller cross-section hollow cylindrical region corresponding to the cross-section of the smaller cross-section coupling region of the pin,



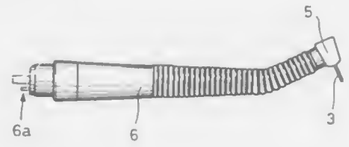
the axial length of the larger cross-section coupling region of the pin being equal to the length of the smaller cross-section hollow cylindrical region of the sleeve, and
the smaller cross-section coupling region of the pin being longer than the larger cross-section coupling of the pin and longer than the smaller cross-section hollow cylindrical region of the sleeve.

4,941,828

DENTAL CHUCKLESS HANDPIECE

Hiroshi Kimura, Ibaragi, Japan, assignor to G-C Dental Industrial Corp., Tokyo, Japan

Filed Jun. 30, 1988, Ser. No. 213,925
Claims priority, application Japan, Jul. 22, 1987, 62-181137
Int. Cl.[5] A61C *1/10*
U.S. Cl. 433—114 **6 Claims**



1. A dental chuckless handpiece of the compressed air drive type, including a body having a head in which bearings are attached to the upper and lower portions of a shaft provided with a turbine impeller, and a rotary member having a cutting tool fixedly provided to the lower end of said shaft is mounted in place through said upper and lower bearings;
at least portions of said body excepting said head being formed of a synthetic resin discriminably colored with a color including transparent color.

4,941,829

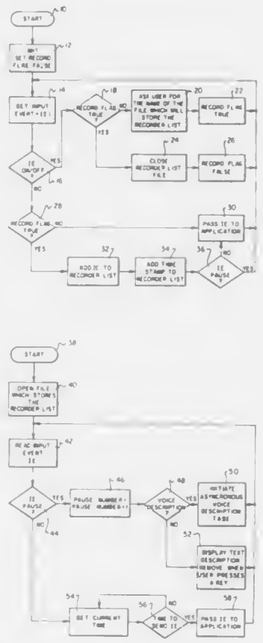
METHOD FOR PROVIDING A DYNAMIC TUTORIAL DISPLAY

Mark W. Estes, Dallas; Ivan R. Eisen, Flower Mound, and Anthony M. Peters, Bedford, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1987, Ser. No. 137,399
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—118 **12 Claims**

1. A method in a data processing system for training a computer operator in the utilization of an interactive software application, comprising the steps of;

storing a correct sequence of operator inputs to a selected interactive software application, prior to training an operator in the utilization of said selected interactive software application;
permitting said operator to utilize said selected interactive software application;
detecting an operator request for assistance;



determining a selected portion of said stored sequence of operator inputs which is illustrative of the type of assistance requested by the operator; and
coupling said selected portion of said stored sequence of operator inputs to said selected interactive software application in a sequential manner.

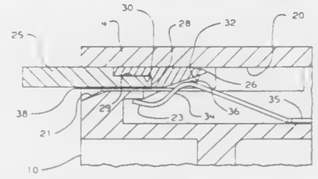
4,941,830

EDGE DESIGN FOR PRINTED CIRCUIT BOARD CONNECTOR

William J. Tkazyik, Hyde Park, N.Y., and Robert G. Urfer, New Milford, Conn., assignora to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 1, 1988, Ser. No. 227,026
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—59 **6 Claims**

1. An improved printed circuit board and connector comprising:
spring biased members in said connector, each spring biased member being fixed at a trailing end and having a free, leading end which includes a bent, generally arcuate portion;
an electrical contact located toward said trailing end on the arcuate portion of each of said spring biased members such that when its spring biased member is in an undeflected position, said electrical contact is in an impact protected position, and when its spring biased member is in a deflected position, said electrical contact is moved to a contact making position;
a printed circuit on said printed circuit board for forming an electrical circuit;
a nose piece bonded on an edge of said printed circuit board, said nose piece and said printed circuit board edge for insertion into said connector, said nose piece being shaped for providing sliding engagement with said spring biased members along said arcuate bent portions thereof spaced forwardly of the electrical contacts such that sliding engagement between said nose piece and said spring biased members will protect said spring biased members and said



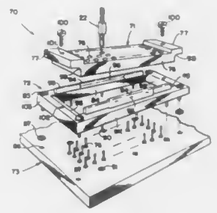
electrical contacts thereon from being damaged by said printed circuit board as said electrical contacts are moved from said impact protected position to said contact making position;
tabs on said printed circuit board electrically connected to said printed circuit, said tabs being adjacent said nose piece and aligned with said spring biased members such that as said spring biased members slide over said nose piece deflecting said spring biased members, said electrical contacts thereon are moved into electrical connection with respective ones of said tabs as said nose piece and said printed circuit board edge are inserted into said connector.

4,941,831

COAXIAL CABLE TERMINATION SYSTEM

John N. Tengler, Chico, Calif., and John T. Venaleck, Madison, Ohio, assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed May 12, 1986, Ser. No. 862,118
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—63 **34 Claims**



1. A termination system for coaxial cables that each have a pair of conductors, one being generally centered to the cable relative to the other, and a characteristic impedance, comprising:
a plurality of terminators for respective coaxial cables, each terminator including a center contact connected to the generally centered conductor of the respective cable, an outer sleeve contact connected to the other conductor of the cable, said sleeve contact generally circumscribing said center contact over an axial extent of the terminator, spacer means for maintaining electrical isolation of said center contact and sleeve contact, said center contact, sleeve contact and spacer means being cooperatively

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interrelated substantially to match the impedance of the coaxial cable, and strain relief means for mechanically securing the terminator to such coaxial cable;

a common electrically conductive member having plural openings therein for receiving and holding respective terminators while effecting common electrical connection of said sleeve contacts;

a printed circuit board having a top surface and a conductive layer on said top surface; and

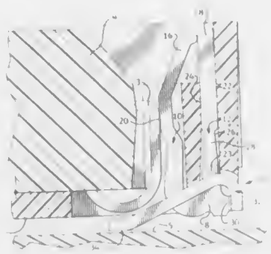
means for mounting said common electrically conductive member to said printed circuit board in spaced relation to said conductive layer with at least one hole in said common electrically conductive member partly overlapping a portion of said conductive layer, and at least one of said plurality of terminators being receivedin said one hole with its sleeve contact projecting beneath a bottom surface of said electrically conductive member and into electrical contact with the overlapped portion of said conductive layer.

4,941,832

LOW PROFILE CHIP CARRIER SOCKET

Iosif Korsunsky, Harrisburg; Monte L. Kopp, Tower City, and Dimitry G. Grabbe, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 30, 1989, Ser. No. 302,305
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—71 **18 Claims**



1. A chip carrier socket for an integrated circuit chip carrier, the chip carrier comprising a chip carrier body having oppositely facing major surfaces and outwardly facing chip carrier side surfaces which extend normally of the major surfaces, and spaced apart contact pads on the chip carrier side surfaces, the socket comprising a socket body having oppositely facing first and second surface portions, a recess in the first major surface for reception of the chip carrier, the recess having recess side surfaces which extend inwardly from the first major surface, contact receiving cavities in the socket body in surrounding relationship to the recess, each cavity having opposed sidewalls extending inwardly from the adjacent recess side surface and an inner end surface which is remote from the recess side surface, a contact terminal in each of the cavities, each terminal having a chip carrier contacting portion for contacting a respective contact pad on the chip carrier, the chip carrier socket comprising:

each contact terminal has a substrate contacting portion provided proximate to the second major surface, the substrate contacting portion having a contact leg which extends from the chip carrier contacting portion, the contact leg being formed so that the contact leg extends in a plane which is essentially parallel to the plane of the chip carrier contacting portion, the contact leg having a substrate engagement surface provided at a free end thereof;

each contact leg has an engagement means provided thereon, the engagement means extends from the contact leg toward the chip carrier contacting portion, a free end of the engagement means is provided in physical engagement with the chip carrier contacting portion;

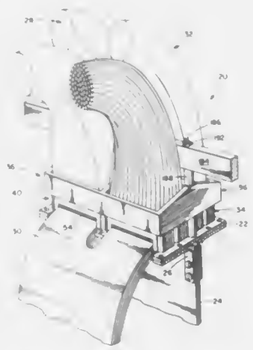
whereby as the chip carrier socket is placed in electrical engagement with the substrate, the substrate engagement surfaces of the contact legs of the terminals engage conductive traces of a printed circuit board, causing contact legs to move to a stressed position, thereby causing the engagement means to frictionally slide across chip carrier contacting portion.

4,941,833

CONTROLLED IMPEDANCE PLUG AND RECEPTACLE

Rocco Noschese, Wilton, Conn., and Michael Lazar, White Plains, N.Y., assignors to Burndy Corporation, Norwalk, Conn.

Filed Oct. 6, 1988, Ser. No. 254,436
Int. Cl.[5] H01R 4/66
U.S. Cl. 439—92 **28 Claims**



3. A controlled impedance connector assembly comprising:

a receptacle including:

a backup plate;

a metalized grounding block mounted on said backup plate having a plurality of spaced parallel terminal receiving bores therein;

insulation plate means fixed to said grounding block having a plurality of contact receiving bores therein, each in communication with an associated terminal receiving bore in said grounding block; and

a plurality of pin contacts fixed to said insulation plate means, each of said pin contacts extending through an associated one of the contact receiving bores therein, each including a head member extending into an associated terminal receiving bore in said grounding block and an oppositely directed tail member for termination at available circuitry; and

a plug matingly engageable with said receptacle including:

a plurality of dielectric segments, each having a front face and a rear face and a plurality of parallel spaced terminal receiving bores therein extending from said front face to said rear face;

a plurality of coaxial leads, each including a terminal mounted at an extremity thereof removably fixed in an associated terminal receiving bore of said dielectric segment;

a frame for mounting said dielectric segments as a unit, said frame extending between a front side and a rear side and defining a plurality of compartments therein, each for supportively receiving at least one of said dielectric segments therein, the dimensions of each of said compartments being slightly larger than its associated one of said dielectric segments; and

mounting means for mounting said dielectric segments to said frame so as to permit freedom of movement of said dielectric segments relative to said frame within defined limits in directions transverse to the axes of the terminal receiving bores therein;

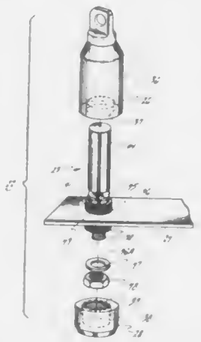
whereby when said plug is matingly engaged with said receptacle, each of said terminals extends into an associated terminal receiving bore within said grounding block and is fittingly engaged with said grounding block and is coupled to an associated one of said pin contacts, the freedom of movement among said dielectric segments assuring mating engagement of all of said terminals in said plug with the associated terminal receiving bores and with said associated pin contacts of said receptacle.

4,941,834

UNIVERSAL HIGH VOLTAGE GROUND STUD INSULATING SYSTEM

John DeLeo, 107 Sun Valley Dr., Southington, Conn. 06489

Filed Feb. 8, 1990, Ser. No. 476,692
Int. Cl.[5] H01R 4/66, 4/70
U.S. Cl. 439—92 **9 Claims**



1. A universal ground stud insulating system comprising in combination:

a first insulative cylinder having a first hollow channel at least part way along an interior of said first cylinder, said first channel terminating at one end having first internal threads formed therein;

a second insulative cylinder having a second hollow channel at least part way along an interior of said second cylinder, said second channel terminating at one end having second internal threads formed therein;

a first washer having threads formed on an exterior surface thereof and arranged for engaging said first cylinder threads; and

a second washer having threads formed on an exterior surface thereof and arranged for engaging said second cylinder threads.

4,941,835

MACHINE-PLUGGABLE ELECTRONIC PACKAGE HAVING A MECHANICAL INTERLOCK

Casimir Lasmayoux, La Colle sur Loup, and Antoine Pantani, Vence, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1989, Ser. No. 322,964
Claims priority, application France, Mar. 15, 1988, 88 480009
Int. Cl.[5] H01R 13/00
U.S. Cl. 439—152 **7 Claims**

1. An electronic package adapted to be connected to a machine and to an external connector, said machine having a cavity therein for receiving said package, a first electrical connector for connection to said package, and first and second locking means extending into said cavity, said first electrical connector being located at one end of said cavity, said package comprising:

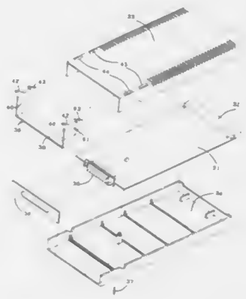
a housing of a shape adapted to fit into said cavity;

a printed circuit board mounted within said housing and having electronic components thereon;

a second electrical connector mounted at one end of said housing and being connected to said printed circuit board, said second electrical connector being adapted to mate with said first electrical connector upon said package being inserted into said cavity;

a third electrical connector mounted on said housing at another end thereof and being adapted to mate with said external electrical connector to establish an electrical connection between said package and equipment outside said machine;

and a lever mounted on said housing and being movable between first and second positions, said lever having first and second lever locking means, and first lever locking



means being adapted to engage said first locking means on said machine and move said package in said cavity so as to engage said first and second electrical connectors upon movement of said lever from said first position to sid second position, said first lever locking means being operative to prevent sid package from being removed from said machine while said lever is in said second position, said second lever locking means being adapted to engage said second locking means on said machine upon movement of said lever from said second position to said first position and disengage said first and second electrical connectors, said lever having a portion located adjacent to said third electrical connector when sid lever is in said second position which portion is adapted to engage said external connector and prevent said lever from being moved from said second position when said third electrical connector is connected to said external connector, and thereby prevent said package from being removed from said machine without first disengaging said external connector.

4,941,836

CONNECTOR HOUSING WITH MOVABLE TERMINALS

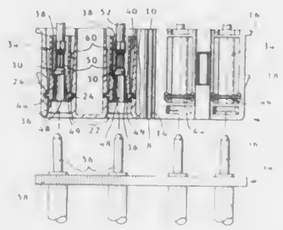
Peter Bormuth, Bensheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 8, 1989, Ser. No. 320,676
Claims priority, application United Kingdom, May 5, 1988, 8810590
Int. Cl.[5] H01R 13/629
U.S. Cl. 439—247 **11 Claims**

1. An electrical connector for use with a mating electrical connector, the electrical connector comprising a first major surface and an oppositely facing second major surface, a con-

nector mating surface is provided at one end of the connector and extends between the first and the second major surfaces, a wire receiving surface is provided at the opposite end of the connector and extends between the first and the second major surfaces, connector openings are positioned in the connector and extend between the connector mating surface and the wire receiving surface, the electrical connector being characterized in that:

terminals are positioned in the connector openings, the dimensions of the connector openings being greater than the



dimensions of the terminals, the terminals have mounting means which cooperate with the walls of the connector openings to secure the terminals in the connector openings while allowing the terminals to move relative to the walls of the connector openings,

channels are provided which extend from the first major surface of the electrical connector to the connector openings of the electrical connector, the channels being dimensioned to allow the mounting means to be inserted therethrough into the openings.

4,941,837

ELECTRICAL CONNECTOR

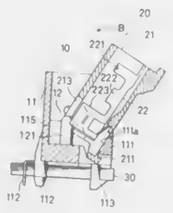
Masahiko Nakamura, Kitakatsuragi, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jun. 8, 1989, Ser. No. 364,334

Claims priority, application Japan, Jun. 17, 1988, 63-80989[U]

Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—341 **2 Claims**



1. A socket and plug coupling assembly comprising:

a socket member of box-like shape having a bottom, two side walls, a rear wall, and a partial front wall adjacent the bottom forming a brace, said socket member including a plurality of contact pins mounted on the bottom and extending upwardly therewithin, said socket member being formed with an inner surface of said brace having a slope inclined downwardly toward said pins, and having at least one opening formed in the bottom adjacent said brace; and

a plug member of a box-like shape and a size fitting to an interior space of said socket member, said plug member having a plurality of openings formed in a bottom and front wall thereof corresponding in position to said contact pins of said socket member, contact means affixed to a rear wall within said plug member adjacent said openings, said plug member rear wall being formed with at least one hook-like nail member extending downwardly and having a distal end portion projecting outwardly, at a position corresponding to said at least one opening in said socket member bottom;

said socket and plug coupling assembly being removably assembled by moving said plug member nail obliquely in contact with said brace inner inclined surface to enter said socket member bottom at least one opening, and then turning the plug inwardly of said socket member such that said socket member contact pins enter said plurality of openings to engage the contact means therewithin, said nail distal end portion thereby engaging a bottom edge of said brace.

4,941,838

ELECTRIC PLUG AND SOCKET CONNECTOR

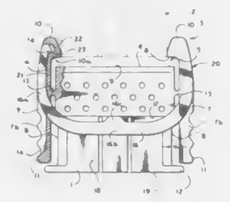
Bernd Zinn, Ennepetal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 29, 1988, Ser. No. 277,140

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1987, 3740580

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—350 **10 Claims**



1. In a lockable electric plug and socket connector with a plug enclosure with compartments for several plug contact elements and a mating plug enclosure with compartments for several mating plug contact elements as well as a snap action locking device for locking the two enclosures with catch noses on the plug enclosure and a U-shaped spring clip mounted on the plug enclosure for cooperation with the catch noses, and a catch edge on the mating plug enclosure so the catch noses can lock behind the catch edge, and with an unlocking tab that acts on the spring clip to unlock the enclosures, the improvement comprising:

two toggle levers provided and formed in one piece on the front sides of the plug enclosure;

the spring clip is a sheet metal part punched from sheet metal and placed on its edge so the spring clip acts on a toggle lever to urge the toggle levers to a locked position, and the catch noses are located on the toggle lever;

the plug enclosure having front sides and the plug having a front characterized in that the width of each toggle lever corresponds approximately to the width of the front sides;

each toggle lever is somewhat longer than the front sides and has a catch noise projecting over the plug front so that the end of the toggle lever opposite the catch noses ends just above a base bulge formed on the plug enclosure opposite the front thereof; and

the toggle levers are positioned a distance away from the front sides of the plug enclosure and are each connected to the plug enclosure by a crosspiece which forms the mount of the toggle lever and is located approximately in the middle of the toggle lever in the longitudinal direction, so the toggle lever is subdivided into a catch lever arm and an unlocking lever arm which forms the unlocking tab.

4,941,839

DOUBLE LOCKING DEVICE FOR CONNECTOR

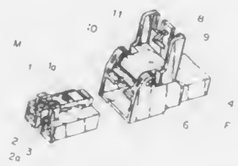
Yasuhiro Nagasaka; Tsuneo Shiga; Kazuyuki Shiraki, all of Toyota; Akira Maeda, Shizuoka; Shigemi Hashizawa, Shizuoka, and Kazuto Ohtaka, Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 358,119, May 30, 1989, abandoned. This application Sep. 22, 1989, Ser. No. 411,151

Claims priority, application Japan, May 30, 1988, 63-70299; Sep. 27, 1988, 63-125093[U]

Int. Cl.[5] H01R *13/639*

U.S. Cl. 439—352 **7 Claims**



1. A double locking device in a connector including a mating pair of a first housing and a second housing with respective terminals accommodated for electrical connection therein, said first and second housings having a first-step locking means engageable with each other, said double locking device comprising:

auxiliary lock means including first auxiliary locking means and second auxiliary locking means, said first auxiliary locking means being pivotably mounted on said first housing and having means normally biasing said first auxiliary locking means to be erected on said first housing, said second auxiliary locking means being secured in said second housing, said first auxiliary locking means being adapted to be manually rotated against the biasing means to be brought into an engagement with the second locking member for a second-step lock of the connector when the first housing and the second housing have been completely engaged with each other for the first-step lock.

4,941,840

CIRCUIT BOARD MOUNTING APPARATUS

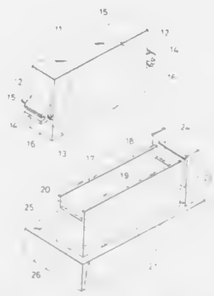
Kazuo Okada, Kamakura, Japan, assignor to Universal Co., Ltd., Oyama, Japan

Filed Nov. 22, 1988, Ser. No. 274,284

Claims priority, application Japan, Dec. 11, 1987, 62-188525

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—376 **9 Claims**



1. A circuit board mounting apparatus comprising:

a rectangular case including a circuit board, said case having an extending portion on at least a leading end, projections on opposite sides of the extending portion and a circuit board terminal projecting out of a bottom of said case;

a holding member for receiving and holding said case, said holding member having an opening on an upper surface thereof and an inside connector for connecting with said terminal; and

a supporting member positioned adjacent a rear end of said holding member, said supporting member having pivoting means for pivoting said extending portion of said case;

said projections of said case being slidable along upper edges of said holding member;

said extending portion having means for engaging said pivoting means of said supporting member when said projections slide along the upper edges to the rear end of said holding member while tilting said case, whereby said case is detachably mounted onto said holding member.

4,941,841

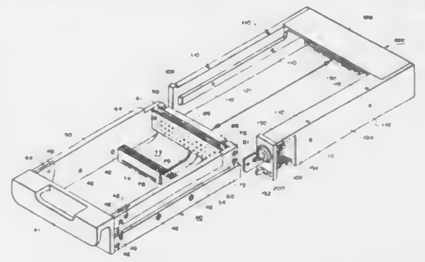
ADAPTER AND A REMOVABLE SLIDE-IN CARTRIDGE FOR AN INFORMATION STORAGE SYSTEM

Julius C. Darden, 1733 Calle Artigas, Thousand Oaks, Calif. 91360; Miguel M. Praca, 21 Thornton Ave. #3, Venice, Calif. 90291, and Philip J. Tomasi, 205 Pepper St., Newbury Park, Calif. 91320

Continuation-in-part of Ser. No. 204,456, Jun. 9, 1988, abandoned. This application Sep. 11, 1989, Ser. No. 406,197

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—377 **4 Claims**



3. In combination with a computer housing, said computer housing having a port for receiving a disk drive apparatus, said disk drive apparatus comprising:

a support bracket separably mounted within said port and electrically connected to said computer housing, said support bracket being bifurcated defining a pair of spaced apart legs, each said leg having an inner surface with said inner surfaces located in a facing relationship to each other, a first electrical connector mounted on said support bracket;

a cartridge, said cartridge defining a box-like frame enclosing an open space, said open space having an open top and an open bottom, a second electrical connector mounted to said box-like frame and located within said open space, a third electrical connector mounted on said box-like frame, said cartridge having side walls, each said side wall having an exterior surface, said cartridge to be located between said legs of said support bracket in a closely conforming manner, said cartridge to be readily removable from said support bracket and be separated therefrom, and when said cartridge is fully inserted in position between said legs said third electrical connector is electrically connected with said first electrical connector;

a disk drive being fixedly mounted by mounting means to said cartridge, said disk drive being wholly contained within said open space, said disk drive being electrically connected to said second electrical connector, said second

electrical connector being electrically connected to said third electrical connector; and

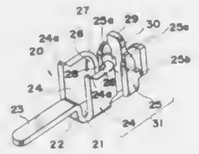
a cooperating guide rail arrangement and track arrangement mounted on said exterior surface of each said side wall of said cartridge and said inner surface of each said leg of said supporting bracket, said guide rail arrangement and said track arrangement permitting only longitudinal movement between said cartridge and said support bracket and insures that positive electrical connection is always produced between said third electrical connector and said first electrical connector when said cartridge is fully inserted within said support bracket.

4,941,842

BOARD-IN TYPE CONTACT-CONNECTORS

Terumi Nakashima, Takatsukishi, and Takeshi Tanaka, Minohshi, both of Japan, assignors to Nippon Acchakutanshi Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1989, Ser. No. 362,044
Claims priority, application Japan, Jun. 10, 1988, 63-77383
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—399 5 Claims



1. A board-in type contact-connector comprising:

an insulating housing means including a plurality of recess means;

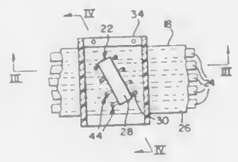
a pluarlity of contacts adapted to be separately received in the recess means of said insulating housing means, each of said contacts including a bottom plate, a beak portion defining a first end of the contact adapted to be received in a printed circuit board, said beak portion projecting from the bottom plate through a raised portion whereby said beak portion is disposed in a longitudinally extending plane spaced from a longitudinally extending plane of the bottom plate, spaced sidewalls provided on respective sides of the bottom plate in an area of the raised portion, and wire connecting means for connecting a wire to the contact including a first pair of oppositely disposed spaced contacting strap means respectively provided on said sidewalls at a position axially spaced from said raised portion for defining a first wire-receiving slot, a second pair of oppositely disposed spaced connecting strap means disposed on said bottom plate for defining a second end of the contact and a second wire receiving slot aligned with said first wire receiving slot, and a pair of oppositely disposed spaced tab means provided on respective sides of said bottom plate interposed between and axially spaced from said first and second paris of connecting strap means, said tab means being adapted to be crimped so as to crimp the wire received in the first and second wire-receiving slots, and wherein means are provided on said tab means for preventing an application of a mechanical load on the wire thereby insuring a firm connection between the wire and the contact.

4,941,843

ELECTRICAL TRUNKLINE SYSTEM

Immo E. Bock, Randburg; Philip L. Nathan, Senderwood, and Peter O. Malpage, Norwood, all of South Africa, assignors to Johannesburg Construction Corporation (Proprietary) Limited, Johannesburg, South Africa

Division of Ser. No. 233,214, Aug. 17, 1988. This application Nov. 13, 1989, Ser. No. 435,727
Claims priority, application South Africa, Aug. 18, 1987, 87/6093
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—425 20 Claims



8. A connector for electrically connecting an electrical device to a cable at any desired position along its length, the cable being flat and ribbon-like and having a plurality of conducting cores arranged next to and spaced from one another in a substantially planar manner with an electrically insulating material covering the cores and filling the spaces between them, which includes

a first member and a second member which have complementary locking formations for locking the members together, with the cable being receivable between the members;

at least one staple-like piercing and contacting element carried by the first member for piercing the insulating material and making electrical contact with a selected one of the cores; and

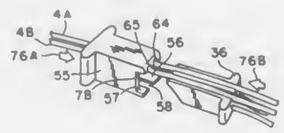
a length of wire having one end electrically connected to the piercing and contacting element.

4,941,844

ELECTRICAL CONNECTOR

Wesley E. Bowden, and Michael D. Swan, both of Emporia, Kans., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Oct. 14, 1988, Ser. No. 258,021
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—425 6 Claims



1. An electrical connector comprising:

a base having a body and a first insulated electrical wire extending to the body and having one of its ends partially embedded therein, the body having an alignment rib axially extending outwardly therefrom at one end thereof, and including at least one camming groove extending therethrough along a top surface thereof;

a terminal pin on the embedded end of the first wire at least partially extending into the groove;

a second insulated wire at least partially received in and extending through the groove to extend outwardly in opposite directions from both ends of the base body, with the terminal pin extending into the groove;

means to engage the second insulated wire received in the groove including the groove in the body having a cantilevered end section and having shoulders axially spaced therealong to assist in holding the second wire within the groove until electrical connection is made; and

a cap having a top wall, two spaced sidewalls extending downwardly from the top wall, a first end adapted to slidingly receive the base body, a second end having a restricted opening therein through which the second wire can extend when the connection is made, and two bottom flanges extending inwardly toward one another from the sidewalls to form a bottom slot, wherein said top wall, sidewalls and bottom flanges of the cap cooperatively define a cavity therewithin selectively to receive the base body;

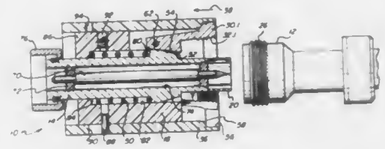
said cap having a camming ramp thereon and the camming groove extending axially along the top wall of the cap from the first end thereof to the camming ramp, the camming groove and ramp facing inwardly toward the cavity, the cap being adapted to slidingly receive the base body and to partially surround the second insulated wire during relative movement therebetween, with the camming ramp slidingly contacting the second insulated wire during relative movement therebetween to force the same into an insulation displaced connection with the terminal pin.

4,941,846

QUICK CONNECT/DISCONNECT MICROWAVE CONNECTOR

Ronald Guimond, Amesbury; Anthony Martiniello, Wilmington; David W. Hardy, Rowley, all of Mass., and Raymond Tellier, Salem, N.H., assignors to Adams-Russell Electronic Company, Inc., Amesbury, Mass.

Filed May 31, 1989, Ser. No. 359,161
Int. Cl.[5] H01R *17/18*
U.S. Cl. 439—578 14 Claims



1. A microwave connector for quick connection to and disconnection from a microwave coupling having externally facing ridges, comprising:

a housing body;

a microwave line segment having a conductor that terminates at a forward end, said microwave line segment being mounted to the housing body and being movable relative thereto between forward and rearward positions;

the forward end of the microwave line segment being shaped so as to be able to be pushed onto the microwave coupling to establish a microwave connection between the microwave line segment and the microwave coupling;

said housing body having a plurality of fingers with inwardly-facing ridge portions that interlock with the externally-facing ridges on the microwave coupling, said fingers being moveable from an open position to an interlock position that is towards the microwave line segment, with the space between the fingers being sufficient to receive the microwave coupling to enable it to establish a microwave connection with the microwave line segment while bringing the externally-facing ridges in juxtaposed relationship with the ridges on the fingers;

an outer sleeve mounted over the housing body and its fingers and being moveable relative thereto in forward and rearward directions, said sleeve having an inwardly-facing cam surface that in one rearward position of the sleeve enables the fingers to move to their open positions and in another forward position forces the fingers to move inwardly so that their inwardly-facing ridge portion interlock with the externally-facing ridges of a microwave coupling that is in microwave connection with the microwave line segment;

means for biasing the microwave line segment towards its forward position with respect to the outer sleeve and said fingers towards their open position;

the forward end of the microwave line segment being located so as to form an abutting microwave connection when forward motion of the sleeve causes the fingers to become interlocked with the ridges on a microwave coupling;

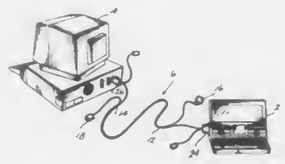
whereby said microwave connector can be quickly-connected to and quickly disconnected from the microwave coupling by respectively pushing and pulling on the outer sleeve.

4,941,845

DATA TRANSFER CABLE

Mark Eppley, Bothell, and Peter B. Rysavy, Seattle, both of Wash., assignors to Traveling Software, Inc., Bothell, Wash.

Filed Jun. 7, 1989, Ser. No. 362,703
Int. Cl.[5] H01R *11/03*
U.S. Cl. 439—505 6 Claims



1. A cable assembly for use for transferring data between computers and/or associated devices comprising:

a pair of cables, each cable having a connector at its opposite ends for attachment to a computer or an associated device,

the connectors on one cable constructed to permit the transfer of data in parallel,

the connectors on the other cable constructed to permit the transfer of data serially,

means for holding said cables together for a portion of the distance along their lengths,

additional cables electrically connected to said serial connectors and shorter in length than the cables in said pair of cables, and

a serial connector on the free end of each of said additional cables.

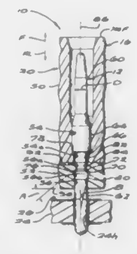
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4,941,847

ELECTRICAL CONNECTOR CONTACT RETENTION SYSTEM

David E. Welsh, Tustin, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 24, 1989, Ser. No. 384,579
Int. Cl.[5] H01R *13/424*
U.S. Cl. 439—595 5 Claims



1. In an electrical first connector which includes a housing holding a plurality of first contacts for mating with the contacts of another connector, the improvement wherein:

said housing includes first and second layers, each formed of an insulative material, said layers having a plurality of aligned contact-receiving holes;

said first contacts lie in said aligned holes of said housing layers, and each contact includes a forward mating portion and a rearward tail portion, and each contact includes a rearwardly-facing first shoulder and a forwardly-facing second shoulder;

said first layer being formed of rigid insulative material and each hole therein having a forwardly-facing abutment that abuts said first shoulder of one of said contacts, to withstand mating forces on the contact;

said second layer being formed of elastomeric material and each hole therein having a rearwardly-facing abutment that engages said second shoulder of one of said contacts.

4,941,848

SHIELDED PLUG JACK CONNECTOR

Walter M. Philippson, Woodside; Robert J. Brennan, Ossining, and Terrence Meighen, Stormville, all of N.Y., assignors to Stewart Stamping Corp., Glenrock, Pa.

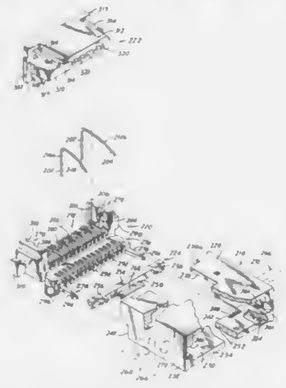
Continuation-in-part of Ser. No. 247,878, Sep. 22, 1987, Pat. No. 4,889,503, which is a division of Ser. No. 800,679, Nov. 22, 1985, Pat. No. 4,781,623, which is a continuation-in-part of Ser. No. 655,696, Sep. 28, 1984, Pat. No. 4,653,837, which is a continuation-in-part of Ser. No. 612,722, May 21, 1984, Pat. No. 4,641,901, which is a continuation-in-part of Ser. No. 570,806, Jan. 16, 1984, Pat. No. 4,537,459. This application May 22, 1989, Ser. No. 354,999
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—607 1 Claim

1. A modular jack adapted for connection to a printed circuit board and to a plug having cable shield terminating means, comprising:

a jack housing formed of a plurality of jack parts adapted to lockingly interfit with each other to define an elongated receptacle for receiving the plug, the receptacle having an entrance opening at one end of the housing;

a first one of said plurality of jack parts constituting a grounding and shielding part formed of electrically conductive material and having top, bottom and side walls defining a closed, sleeve-like member, each of said walls having a longitudinally extending inner surface at least a substantial portion of which bounds said plug receptacle such that a substantial portion of the length of said elongated receptacle is bounded on all of its sides by the electrically conductive material of said grounding and shielding part;

a second one of said plurality of jack parts constituting a contact guide part in which jack contact guide means are formed for receiving and guiding corresponding portions of respective jack contacts, said jack contact guide means including a first set of vertical surfaces situated in a common plane and a second set of vertical surfaces situated in another common plane, said pin portions of respective said jack contacts abutting against respective ones of said vertical surfaces, and a plurality of channels formed in a top surface of said contact guide parts, each channel communicating with a respective said vertical surface for receiving a portion of a respective jack contact;



a third one of said plurality of said jack parts constituting a contact fixing part including a planar portion overlying said top surface of said contact guide part to confine the jack contact portions within said guide channels, and vertical surfaces abutting against said jack contact pin portions which abut against said first and second vertical surfaces of said contact guide part; and

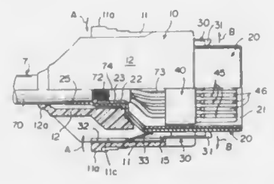
a plurality of jack contacts, each contact having a first pin portion including a part extending externally of the housing adapted for connection to a printed circuit board and a second contact portion extending into said receptacle adapted for engagement by a contact of the plug.

4,941,849

SHIELDED ELECTRICAL CONNECTOR HAVING AN INSULATING COVER ON THE SHIELDING MEMBER

Yoshitsugu Fujiura, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 13, 1988, Ser. No. 234,998
Claims priority, application Japan, Dec. 12, 1986, 61-296525; PCT Int'l Appl., Nov. 16, 1987, PCT/US87/02983
Int. Cl.[5] H01R *9/03*
U.S. Cl. 439—610 7 Claims



1. A shielded electrical connector comprising an insulating housing having electrical contacts secured in the housing, the electrical contacts having contact portions and conductor-connection portions for electrical connection to insulated electrical conductors of a shielded cable, a shielding member covering the insulating housing and for electrical connection with a shield of the cable, an insulating cover positioned on the shielding member, characterized in that:

said insulating cover has flexible arms and openings extending along respective sides between the shielding member and the insulating cover;

latching members having sections positioned respectively in said flexible arms and in said openings and latching sections extending forwardly from said insulating cover for latching engagement with latching sections of a matable electrical connector; and

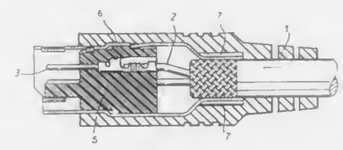
fulcrums provided between the latching members and the shielding member enabling the sections and latching sections to move toward and away from the shielding member.

4,941,850

SHIELDED CABLE CONNECTOR

Malcolm D. Ankers, 64 Mount Avenue, Worksop, Notts., S81 7JL., and Roy E. Weston, 144 Stanton Road, Sandiacre, Notts., NG10 5EP, both of England

Filed Jan. 25, 1989, Ser. No. 301,812
Claims priority, application United Kingdom, Feb. 8, 1988, 8802801
Int. Cl.[5] H01R *13/648, 43/04*
U.S. Cl. 439—610 6 Claims



1. A cable connector construction comprising a body of insulating material provided with a number of bores each receiving an electrical contact attached to an end of an insulated electrical conductor extending from a cable; a seamless tube of ferromagnetic material of substantially uniform cross-sectional area which receives the body within its bore with the cable extending from one end of the tube, said one end of the tube being collapsed on to itself and directly on to the cable surface so as to form a plurality of radial fins whereby to form a seal at said one end of the tube between the inner periphery of the tube and the outer periphery of the cable.

4,941,851

FUSE HOLDER FOR FLAT-TYPE FUSE BLOCK

Fu-Cheng Hsueh, No. 1045, Jen-Ai Tsun, Jen-Te Hsiang, Tainan Hsien, Taiwan

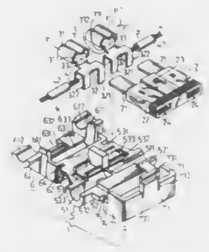
Filed Aug. 15, 1989, Ser. No. 394,047
Int. Cl.[5] H01R *13/08*
U.S. Cl. 439—621 5 Claims

1. A fuse holder for connecting a flat-type fuse block between a pair of wires, said flat-type fuse block having a flat plastic body, a pair of juxtaposed, laterally spaced co-planar, parallel and generally flat male terminals, and a fusible element disposed inside said flat body which interconnects said pair of male terminals, said fuse holder comprising:

a housing of insulating material including a bottom wall which has an intermediate first channel member extending from one end thereof to another opposite end thereof and opening at both ends thereof, a first partition provided transversely in said first channel member, a second partition provided on said bottom wall adjacent to said first channel member and aligned with said first partition, and two clip seats respectively provided on said bottom wall at two sides of said second partition and raised to a position relative to said first channel member, said bottom wall further having first and second hinged ends extending along the direction of said first channel member, said first hinged end being adjacent to said clip seat and opposite said second hinged end;

a pair of female terminals each of which has a first resilient clip portion placed on each of said clip seats and a second clip portion extending from said first resilient clip portion into said first channel member, each of said first resilient clip portions having an access opening which is directed toward said first channel member;

said housing further having a rear cover portion, hinged to said first hinged end, which houses and clamps said female terminals cooperatively with said bottom wall when said



rear cover portion is turned upward to a closed position, said rear cover portion having a second channel member which is mated with said first channel member to define a bore with two open ends forming an access to said second clip portion;

said housing further having a front cover portion which is hinged to said second hinged end, said front cover portion cooperatively confining, with said bottom wall, a chamber for receiving said flat body of said flat-type fuse block when said front cover portion is turned upward to a closed position;

means for releasably locking said rear cover portion against said bottom wall, said locking means being interlocked when said rear cover portion is depressed against said bottom wall; and

means for releasably fastening said rear and front cover portions.

4,941,852

TERMINAL FOR BALLAST BOBBIN

Larry J. Costa, Danville, Ill., assignor to Valmont Industries, Inc., Valley, Nebr.

Filed Feb. 27, 1989, Ser. No. 315,492
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—733 2 Claims

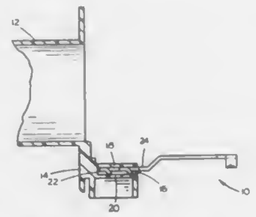
1. A terminal for insertion into a bobbin pocket, comprising:

a substantially flat, resilient electrically conductive terminal member having a forward end for insertion forwardly into the bobbin pocket, a rearward end, an upper face and a lower face, a forward portion which will be received within the bobbin pocket, and a rearward portion which will project rearwardly out of the bobbin pocket;

said forward portion having a notch formed in each side edge thereof, each notch having a forward edge;

a tooth bent downwardly and rearwardly along each side edge

forwardly of said notches with the forward edge of the notch forming the lower leading edge of the projecting



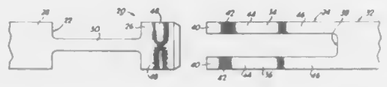
tooth, said leading edge having a sharp burr protruding therefrom for gripping a wall of the pocket.

4,941,853

ELECTRICAL CONTACT TORSION BAR SYSTEMS

Frank A. Harwath, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Sep. 12, 1989, Ser. No. 406,201
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—848 **15 Claims**



1. An electrical contact system comprising:
first and second electrical terminals relatively movable in an axial direction into engagement with one another;
said first terminal including a contact portion engageable with said second terminal, a reaction portion spaced in the axial direction from said contact portion and a spring portion connected between said reaction portion and said contact portion; and
said second terminal including contact means engageable with said contact portion of said first terminal for displacing said contact portion relative to said reaction portion and flexing said spring portion to maintain a contact force between said contact portion and said contact means;
the contact system being characterized by:
said spring portion comprising a torsion bar extending at least partly in the axial direction;
said torsion bar coinciding with the central axis of said first terminal; and
said contact portion being a blade symmetrical about said central axis and being displaced in an arcuate path around an axis of rotation extending in said axial direction in response to engagement by said contact means.

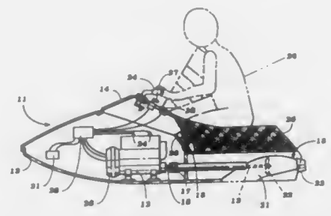
4,941,854

BOARDING SENSOR AND CONTROLLER FOR SMALL WATERCRAFT

Hideharu Takahashi, and Yoshiaki Uchida, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 25, 1988, Ser. No. 276,065
Claims priority, application Japan, Nov. 27, 1987, 62-297827; May 23, 1988, 63-123954
Int. Cl.[5] B60K *28/00*; B63H *19/00*
U.S. Cl. 440—1 **18 Claims**

1. A boarding sensor and control means for small watercraft powered by an engine and having a steering mechanism wherein said boarding sensor comprises a reflection sensor which outputs a non-boarding signal to said control means when a driver is not within a detection area of said reflection sensor and said control means regulates navigation of said



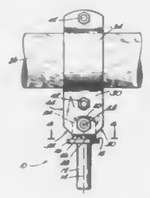
watercraft by decelerating said engine to an idle and being adapted to operate said watercraft steering mechanism to return said watercraft to a fallen driver.

4,941,855

OARLOCK

Hugh R. Agner, 30834 Jeanie La., Burlington, Wis. 53105

Filed Nov. 28, 1988, Ser. No. 276,696
Int. Cl.[5] B63H *16/04*
U.S. Cl. 440—104 **18 Claims**



1. An oarlock comprising a pin adapted to be mounted for pivotal movement about a generally vertical axis, said pin including a generally horizontal, upwardly facing surface and an upper portion located above said surface, and
an oar supporting member mounted on said upper portion of said pin for pivotal movement relative thereto about a generally horizontal axis, said member including opposite clamping halves and means for clamping said halves around an oar, and said member having a periphery including a portion which engages said upwardly facing surface in response to pivotal movement of said member in one direction and about said horizontal axis so as to limit pivotal movement of said member in said one direction.

4,941,856

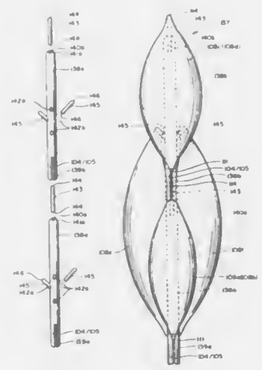
BALLOON SCULPTURING METHODS, APPARATUS AND PRODUCTS

Craig J. Lovik, 8565 Custer School Rd., Custer, Wash. 98240

Division of Ser. No. 183,720, Apr. 19, 1988, Pat. No. 4,850,926. This application Jun. 21, 1989, Ser. No. 369,536
Int. Cl.[5] A63H *3/06*; F16B *7/00*
U.S. Cl. 446—220 **4 Claims**

1. A balloon sculpture formed from a plurality of balloons of the type having a constricted neck portion terminating at one end in an inflation aperture and at the other end in an imperforate inflatable sidewall, said balloon sculpture comprising, in combination:
(a) a plurality of rigid, lineal, rod-like balloon formers each including:

(i) a first end;
(ii) a second end;
(iii) means defining at least one axially extending diametric slot formed in at least one (1) of said first and second former ends, said slot defining means further defining an axial bore formed in said at least one (1) of said first and second former ends; and,
(iv) means defining an axial bore in the other of said first and second former ends;
(b) at least one connector pin adapted to be inserted into, and project from, said axial bore defining means in said other of said first and second former ends, said projecting portion of said connector pin adapted to extend axially partially into said slot defining means in a second of said plurality of rod-like formers for connecting said formers in end-to-end relation;
(c) means for supporting a plurality of interconnected end-to-end rod-like formers in an upright state; and,
(d) a plurality of at least partially inflated balloons, each of said balloons having:
(i) its constricted neck portion passing through said slot defining means in one of said plurality of interconnected end-to-end rod-like formers;



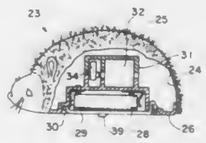
(ii) at least one (1) of its inflation aperture and/or its constricted neck portion removably secured to the particular former through which its constricted neck portion passes;
(iii) its at least partially inflated sidewall stretched along, and in juxtaposition to, at least a portion of the unslotted length of at least one of said interconnected end-to-end formers; and,
(iv) a portion of said stretched, partially inflated sidewall being secured to one of said plurality of rigid, lineal, rod-like formers at a point spaced axially from the slotted end of the particular one of said formers through which that balloon's constricted neck portion passes;
whereby, said interconnected end-to-end rod-like formers define a lineal barrier precluding distension of that portion of said sidewall(s) of the particular ones of said balloons secured thereto and in juxtaposition therewith so as to cause each of said plurality of at least partially inflated balloons to assume an inflated configuration having one generally flat axial plane abutting at least one of said formers, tapered pointed extremities, and a generally ovate configuration in all other axial planes bisecting said interconnected end-to-end formers and wherein said plurality of balloons at least partially surround and conceal said formers.

4,941,857

ANIMAL TOYS HAVING SWITCH AND VIBRATION MOTOR

Hiroaki Fujimaki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Continuation of Ser. No. 192,612, May 11, 1988, Pat. No. 4,867,726. This application Jul. 6, 1989, Ser. No. 375,924
Claims priority, application Japan, Aug. 27, 1987, 62-130857; Sep. 10, 1987, 62-138429
Int. Cl.[5] A63H *11/02*
U.S. Cl. 446—353 **5 Claims**



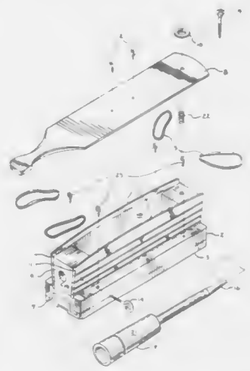
1. An animal toy comprising:
a body shaped in the shape of an animal and having inner and outer surfaces;
means for moving the body;
an electrical motor attached to the moving means for actuating the moving means;
a control circuit electrically coupled to the electrical motor;
a pair of spaced apart contacts electrically connected tot he control circuit but isolated from each other;
the control circuit being closable to switch on the electrical motor when the pair of spaced apart electrical contacts are simultaneously touched by a human hand, wherein the body comprises an upper body shell having an open bottom, and a bottom plate receivable int he open bottom of the upper body shell, the pair of spaced apart contacts being mounted in the bottom plate.

4,941,858

COMBINED TURKEY CALL WITH DUAL SOUNDERS

Mark C. Adams, Rte. 5, Box 5216, Cleveland, Ga. 30528

Filed Sep. 8, 1989, Ser. No. 404,507
Int. Cl.[5] A63H *5/00*
U.S. Cl. 446—397 **1 Claim**



1. A turkey call comprising two sounders in combination in one box with:
a single acoustical sound chamber having longitudinal side walls and a bottom wall, said side walls capable of transmitting vibrations and having inclined and beveled upper

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edges and a convex undersurface outer edge, said sound chamber in vibration proximity to and audible communication with the sounders consisting of:

(1) an actuator arm pivotally mounted by a compression spring device on one end of the arm and additionally elastically engaged on its under surface to the top edges of the side walls as the actuator is moved horizontally producing sound in the sound chamber, and

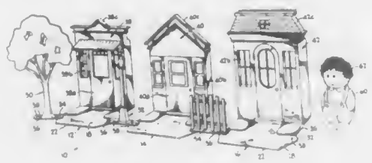
(2) a stylus call consisting of a slate inlaid plate secured to the outside of the bottom wall of the box and a stylus assembly having, on one end, a stylus handle of a substantially cylindrically-shaped tone tube and on the other end, a stylus needle for engaging the slate plate to generate vibratory sound in the sound chamber.

4,941,859

TOWN PLAYSET

John V. Zaruba, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 26, 1989, Ser. No. 303,610
Int. Cl.[5] A63H *3/52, 3/00, 33/08*
U.S. Cl. 446—476 **5 Claims**



1. A playset comprising in combination:

a plurality of

individual toy building facades;

each building facade having a different appearance and including a simulated building front and a generally flat base;

each facade extending upwardly from its respective base;

each toy building facade base having a front edge generally parallel to the simulated building front and opposed side edges;

a number of connecting structures representing things other than toy building facades and being disposed intermediate adjacent facades;

each connecting structure including a generally flat base; and

means for connecting the base of one of the intermediate structures to the base of each of two adjacent facades adjacent their respective side edges.

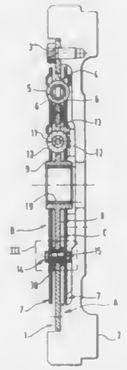
4,941,860

COAXIAL TORSION DAMPER, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Michel Graton, Paris, France, assignor to VALEO, Paris, France

Filed Jan. 10, 1989, Ser. No. 295,459
Claims priority, application France, Jan. 13, 1988, 88 00291
Int. Cl.[5] F16D *3/14*
U.S. Cl. 464—68 **6 Claims**

1. A torsion damper, particularly for automotive vehicles, of the kind comprising a disc connected to a pair of guide rings (7) by means of a first spring damping device provided with a first set of springs (5) disposed partly in first openings (4) formed in the disc (1) and partly in openings (6) formed in the guide rings (7), and a damper or hub plate (8) which is connected to said guide rings by means of a second damping device provided with a second set of springs (11) disposed, on one hand, on a pitch circle having a diameter of which is smaller than that of which the first springs (5) are arranged, and on the other hand, partly in openings (12) formed in the guide ring (7), and partly in second openings (13) formed in the hub plate (8), with the damper plate being mounted coaxially with respect to said disc and located within the space defined radially by the disc (1), and said guide rings being connected to each other by means of spacers (14) each having a shank and passing through passage means (15) formed in said disc and said damper plate, wherein said passage means comprises, in respect of each of said spac-



ers, a notch (20) formed in the inner periphery of said disc and a notch (21) formed in the outer periphery of the damper plate and wherein said notches are offset circumferentially with respect to each other and are disposed on a pitch circle the diameter of which is smaller than that of which the first springs (5) are arranged and greater than that of which the second springs (11) are arranged.

4,941,861

INTERLOCKING SHAFT COUPLING

Robert A. Painter, Winchester, Mass., assignor to Electronic Instrument & Specialty Corp., Stoneham, Mass.

Filed Dec. 28, 1987, Ser. No. 137,942
Int. Cl.[5] F16D *3/04*
U.S. Cl. 464—102 **6 Claims**

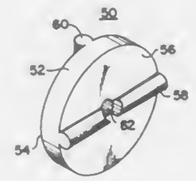
1. A three piece interlocking coupling for connecting two opposing rotary shafts, comprising:

a plastic disk-shaped center member having two substantially identical salient interlocking elements protruding therefrom, one from each of its two faces, each said element having a substantially circular cross section and a longitudinal axis parallel to a diameter of said center member, each said axis oriented at right angles to the other of said axes, each said element protruding from said face far enough to be partially undercut and having a central hole bisecting said element and said longitudinal axis, said central hole having a diameter substantially the same as the diameter of said salient interlocking element for reducing the thickness of said center member where said salient interlocking elements cross to reduce warpage upon curing of the plastic;

first and second plastic cylindrical hub members, each said hub member having a recess for receiving a rotary shaft in one of its ends and a receiving recess in the other of its ends having a substantially circular cross section and a longitudinal axis parallel to a diameter of said hub member, said receiving recess shaped substantially as a complement to said interlocking elements to permit interlocking, sliding, and pivoting engagement with said center member; and

a protruding member integrally formed in the center of the receiving recess in at least one of said hub members, said protruding member having a width of less than the diame-

ter of said central hole and protruding a distance of less than the radius of said salient interlocking elements for





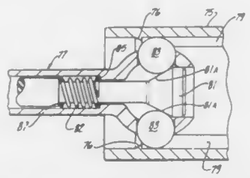
limiting the movement of said interlocking element in said receiving recess.

4,941,862

QUICK DISCONNECT CONSTANT VELOCITY UNIVERSAL JOINT

Daniel W. Hazebrook, Detroit, and Steven C. Hahn, Mt. Clemens, both of Mich., assignors to GKN Automotive Inc., Auburn Hills, Mich.

Division of Ser. No. 945,183, Dec. 23, 1986, Pat. No. 4,753,626, which is a continuation of Ser. No. 704,196, Feb. 22, 1985, abandoned. This application Mar. 21, 1988, Ser. No. 170,944
Int. Cl.[5] F16D *3/221*
U.S. Cl. 464—141 **10 Claims**



1. A quick disconnect constant velocity universal joint for transmitting a driving torque, comprising:

a hollow inner joint member having an axis of rotation, said hollow inner joint member having an outer spherical surface and a plurality of radial apertures provided through its walls along a common plane transverse to said axis of rotation;

a plurality of roller balls, one disposed in each of said radial apertures, said roller balls being free to move in said radial apertures in a radial direction from a first predetermined innermost position to a second predetermined outermost position;

an outer joint member having a cylindrical portion for receiving said outer spherical surface of said hollow inner joint member therein, the internal surface of said cylindrical portion having a plurality of rectilinear grooves provided therein, one groove for each of said plurality of roller balls; and

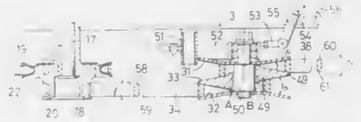
plunger means for operatively connecting said plurality of roller balls to said plurality of rectilinear grooves, said plunger means disposed in said hollow inner joint member for positioning said plurality of roller balls, said plunger means having a straight tapered portion near one end thereof and resilient biasing means for displacing and plurality of roller balls from said first predetermined innermost position permitting said hollow inner joint member and said outer joint member to be separated from each other to said second predetermined outermost position into said plurality of grooves to operatively connect said hollow inner joint member with said outer joint member, said plurality of roller balls being in continuous contact with said straight tapered portion at said second predetermined outermost position such that as said hollow inner joint member articulates with respect to said outer joint member, said plurality of rollers balls move along said straight tapered portion of said plunger means to maintain intimate contact with said plurality of rectilinear grooves of said outer joint member.

4,941,863

STEPLESS SPEED CHANGE MECHANISM IN BELT TRANSMISSION DEVICE

Keiichi Sampei; Masami Kawasaki; Yoshito Dei; Katsumi Fukumoto, and Kazuo Furukawa, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 28, 1989, Ser. No. 329,936
Claims priority, application Japan, Mar. 28, 1988, 63-75175; Oct. 25, 1988, 63-270386
Int. Cl.[5] F16H *9/16*
U.S. Cl. 474—33 **22 Claims**



1. A stepless speed change mechanism in a belt transmission device comprising a first belt passed through a groove in a drive pulley on a drive shaft and a first groove in an intermediate pulley on an intermediate shaft, and a second belt passed through a second groove in the intermediate pulley and a groove in a driven pulley on a driven shaft, each of the two grooves in the intermediate pulley having an axial width gradually decreasing radially inwardly of the pulley, the first and second grooves being defined by a partition provided therebetween and movable on the intermediate shaft axially thereof, the pitch diameter of each of the two grooves in the intermediate pulley being variable by the axial movement of the partition, the stepless speed change mechanism being characterized in that the state of contact of the first belt with the first groove portion is varied relative to the state of contact of the second belt with the second groove portion so that when the partition on the intermediate shaft is moved axially thereof, the axial component of the pushing force exerted on the partition by one of the first and second belts differs in magnitude from the axial component of the reaction force exerted on the partition by the other belt.

4,941,864

CLUTCHABLE PULLEY SYSTEM SANS IDLER-PULLEY

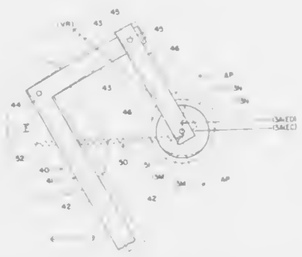
Robert O. Bottum, Lincoln, Nebr., assignor to Exmark Manufacturing Company Incorporated, Beatrice, Nebr.

Filed Sep. 27, 1989, Ser. No. 413,099
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—133 **6 Claims**

1. Clutchable pulley system mounted to a framework, said pulley system comprising:

(A) a power-source pulley revolvably surrounding an axial shaft therefor that is spatially fixed at said framework;
(B) at least one primary-load pulley revolvably surrounding an axial shaft therefor that is spatially fixed at said framework, said axial shaft being substantially co-parallel to the axial shaft of said power-source pulley;
(C) a plurally-grooved transfer pulley revolvably surrounding an axial shaft therefor that is maintained in substantial co-parallelism with the axial shafts for said power-source and primary-load pulleys, said transfer pulley axial shaft lacking a spatially fixed relationship with said framework and being movable along an arcuate-path that extends concavely toward said power-source and primary-load pulleys;
(D) an annular first-belt having a first-length, said first-belt being constantly frictionally trained with said power-source pulley, said at least one primary-load pulley, and to a circumferential first-groove of said plurally-grooved transfer pulley;





(E) at least one secondary-load pulley, each revolvably surrounding an axial shaft therefor that is spatially fixed at said framework, said axial shaft being substantially co-parallel to the axial shafts for said power-source and primary-load pulleys;
(F) an annular second-belt having a second-length, said secondary-belt being substantially co-parallel with said first-belt and encircling the aggregate of: said at least one secondary-load pulley and a circumferential second-groove of said plurally-grooved transfer pulley; and
(G) transfer pulley shaft control means for controllably moving said transfer pulley shaft between at least two positions along said arcuate-path, one of said two positions being a shaft first-position wherein the secondary-belt is not frictionally engaged with the said pulleys aggregate and the second of said two positions being a shaft second-position wherein the secondary-belt is frictionally engaged with the said pulleys aggregation.

4,941,865

METHOD AND APPARATUS FOR FORMING METALLIZED PACKAGING MATERIAL

Joseph Skudrzyk, St. Louis County, Mo., assignor to Packaging Concepts, Inc., St. Louis, Mo.

Filed Oct. 24, 1988, Ser. No. 261,222
Int. Cl.[5] B05D *3/12, 1/88;* **B31B** *1/17;* **B31F** *7/02*
U.S. Cl. 493—22 **7 Claims**

1. A continuous method of forming a repetitive pattern on a metallized film substrate comprising the steps of:
continuously feeding a web of the metallized film substrate at a predetermined web speed;
selectively removing predetermined metallized areas from said metallized film substrate during continuous movement thereof;
said removing performed through the dry mechanical engagement and reworking of the metallized film substrate for removing said predetermined metallized areas from said web of metallized film substrate;
said mechanical engagement and reworking of the metallized film substrate performed with a rotating element having a surface which engages the surface of the continuously moving metallized film substrate; and
said removing including repetitively sensing a registered distance on the metal film substrate and selectively actuating said rotating element to remove predetermined metallized areas separated from one another by said aforementioned registered distance.

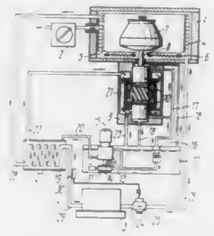
4,941,866

CENTRIFUGE

Boris P. Gorodissky, Leninsky prospekt, 154, kv. 201; Jury A. Lotts, ulitsa Chusovskaya, 11, korpus 6, kv. 91, and Lev N. Veretenov, B.Tolmachevsky pereulok, 4, kv. 10, all of, Moscow, U.S.S.R.

PCT No. PCT/SU86/00120, § 371 Date Jun. 29, 1988, § 102(e) Date Jun. 29, 1988, PCT Pub. No. WO88/03840, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 20, 1986, Ser. No. 241,983
Int. Cl.[5] B04B *15/02*
U.S. Cl. 494—14 **2 Claims**

1. A centrifuge which comprises a replaceable rotor arranged to rotate in a rotor drive coupled vacuum chamber; a means for providing a vacuum to the vacuum chamber, to the rotor, the rotor drive having oil lubricating bearings and a cooling jacket to control a temperature of the rotor drive; an oil reservoir for the lubricating oil; a lubricating oil pump in liquid flow communication with the oil in the reservoir, and in liquid flow communication with the bearings to direct the oil from bearing oil outlet to the oil reservoir; an oil cooling heat exchange means in liquid oil flow communication with the oil pump; the oil cooling heat exchange means being in liquid oil flow communication with the cooling jacket of the rotor drive; a means in liquid oil flow communication with the cooling jacket of the rotor drive to direct the oil from the cooling jacket to the oil reservoir;
a cooling means in cooling medium fluid flow communication with a vacuum chamber cooling unit, to provide cooling for the vacuum chamber
a cooling medium outlet of the vacuum chamber cooling



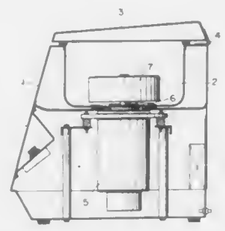
unit being in cooling medium flow communication with the oil cooling heat exchange; an outlet of the oil cooling heat exchange being in cooling medium flow communication with the cooling means.

4,941,867

CONTAINER ROTOR FOR A CENTRIFUGAL SEPARATOR

Kenji Tominaga, Tokyo, Japan, assignor to Tomy Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1989, Ser. No. 389,488
Int. Cl.[5] B04B *5/02*
U.S. Cl. 494—16 **1 Claim**



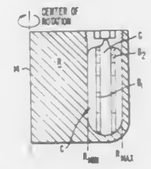
1. A container rotor adapted to be mounted onto the output shaft of a driving motor for a centrifugal separator for holding a plurality of storage tubes containing specimen therein in position for centrifugal separating operation, comprising, in combination;
a rotor body means and a plurality of bucket means;
said rotor body means being of a cylindrical shape with a closed bottom and including a mount for receiving said output shaft of the driving motor in the bottom center thereof, said rotor body means having further receiving recess means for receiving operatively said plurality of bucket means in the circumference of said rotor body means disposed at an equal interval around said mount, said recess means being defined with an opposed pair of support means in the side wall sections thereof;
said plurality of bucket means being of three different types, wherein
one of said bucket means is of the type having a plurality of openings or apertures defined extending in the vertical direction when installed in operative position and at an equal interval from each other for receiving specimen containing tube means therein, and having an opposed pair of trunnion means extending outwardly from the opposite side wall portion thereof so that said bucket means may be held swingably by said support means defined in the side wall sections of said recess means;
another of said bucket means is of the type having a plurality of openings or apertures defined extending diagonally downwardly as viewed when installed in operative position of said recess means and at an equal interval from each other for receiving specimen containing tube means therein, and adapted to be received in securely held position in said recess means; and
still another of said bucket means is of the type having a plurality of openings or apertures defined extending horizontally as viewed when installed in operative position of said recess means and at an equal interval from each other for receiving specimen containing tube means therein, and adapted to be received in securely held position in said recess means.

4,941,868

OPTIMUM CENTRIFUGAL SEPARATION OF PARTICLES BY TRANSIENT ANALYSIS AND FEEDBACK

Steven J. Chulay, deceased, late of Woodside, Calif. (by Viktoria D. Chulay, trustee); Allen P. Minton, Bethesda, Md., and Robert Giebeler, Cupertino, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 10, 1989, Ser. No. 379,261
Int. Cl.[5] B04B *13/00*
U.S. Cl. 494—37 **7 Claims**
MICROFICHE APPENDIX INCLUDED
(66 Microfiche, 3 Pages)



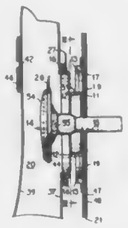
1. A process for predicting the time of centrifugation and position-dependent separation of macromolecules of differing species in a gradient forming solution including a solute and solvent, the gradient forming occurring during centrifugation, said predicting process comprising the steps of;
computing the dimension of a cell relative to the spin axis of a rotor;
assuming placement in said cell of solvent, gradient forming solute and at least one species of macromolecule, said species having variable buoyancy with respect to said gradient forming solute in said solvent;
assuming rotation of said rotor to generate a centrifugal field for an increment of time;
determining for an increment of said cell at a fixed distance from the spin axis of said rotating rotor the density gradient produced by said gradient forming solute in said solvent in said centrifugal field during said increment of time;
determining from the buoyancy of said at least one specie of macromolecule a sedimentation coefficient for said macromolecule in said centrifugal field during said increment of time;
for each radial segment of said cell repeating for said increment of time said determining steps whereby the density gradient of said solute in said solvent and the separation state of said macromolecules relative to said segments are known for said increment of time;
repeating for successive increments of time said determining step whereby a quantitative estimation of the time dependent position of said solute density and macromolecule in said cell is obtained as a function of time.

4,941,869

OSTOMY PLUG-POUCH

Ben A. D'Amico, 563 Emily Dr., Lilburn, Ga. 30093

Filed Oct. 17, 1988, Ser. No. 258,872
Int. Cl.[5] A61F *5/44*
U.S. Cl. 600—32 6 Claims



1. An ostomy pouch and stoma plug apparatus comprising:
(a) a support pad having a hole of sufficient size to allow the stoma to be passed therethrough, coupling rings protruding from a first side of the support pad, the smaller of the two rings being encircled by the larger, the support pad having an adhesive surface disposed on a second side thereof;
(b) a stoma plug having means for sealing the stoma and having a cap with a rim means, the smaller ring having a shoulder engageable with said rim means so that the cap can be coupled to the smaller ring to form a liquid and gas tight seal;
(c) a pouch detachably mountable on the support pad, the pouch having a grooved ring for receiving a protruding portion of the larger ring on the support pad; and
(d) a plurality of relief ports disposed between the two coupling rings, each port being spaced apart from said hole in the support pad, any fluid communication between each port and the hole being along a pathway which impedes direct fluid flow, so that any leakage from the stoma plug that penetrates beneath the adhesive surface between the stoma plug and the relief ports can exit through the ports and can be contained within the pouch.

4,941,870

METHOD FOR MANUFACTURING A SYNTHETIC VASCULAR PROSTHESIS

Masao Okada, Gifu; Kazuhiko Sakai, Kakamigahara; Haruo Kimura, Hashima, and Yoshito Ikada, Uji, all of Japan, assignors to Ube-Nitto Kasei Co., Ltd., Tokyo; Research Development Corporation of Japan, Tokyo and Japan Medical Supply Co., Ltd., Hiroshima, all of, Japan

Division of Ser. No. 117,696, Nov. 6, 1987, Pat. No. 4,878,907.
This application Dec. 30, 1988, Ser. No. 292,554
Claims priority, application Japan, Nov. 10, 1986, 61-265578
Int. Cl.[5] A61F *2/06*
U.S. Cl. 600—36 5 Claims

1. A method for manufacturing a synthetic vascular prosthesis comprising the steps of:
dissolving an elastomer material in a solvent;
adding an inorganic salt to the solution and adjusting the viscosity of the solution;
subjecting the solution to extrusion into a hollow tube;
cutting said tube to a predetermined length to form a tubular base member;
removing the solvent from said base member and drying said base member;
removing the inorganic salt in the inner portion of said base member by dissolution with an acid to form a porous inner portion of said base member;
coating a hydrogel material inside of said base member so that said hydrogel material, forms a hydrogel layer on said base member with partial infiltrating into the pores of said porous inner portion; and



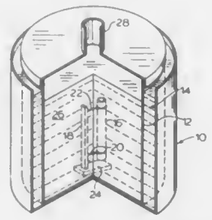
further removing the inorganic salt in the outer portion of said base member by dissolution with an acid, thereby forming a porous outer portion having a multitude of continuous pores.

4,941,871

PREPARATION OF SYNTHETIC MATERIALS FOR IMPLANTATION IN MAMMALIAN TISSUE

Charles A. Ward, Toronto, Canada, assignor to HSC Research Development Corporation, Toronto, Canada

Filed Aug. 25, 1988, Ser. No. 236,147
Claims priority, application Canada, Sep. 25, 1987, 547847
Int. Cl.[5] A61F *2/06, 2/04*
U.S. Cl. 600—36 18 Claims



1. A method for treating a porous synthetic material which has pores extending therethrough to render said material suitable for use in bonding to living tissue, said method comprising:
enveloping said material with a liquid of sufficiently low surface tension to permit said liquid to enter pores of said material, said liquid having a sufficiently low gas content to permit said liquid to remove essentially all the gas nuclei held in said pores of said material,
heating said liquid to induce said liquid to fill essentially all pores in said material and absorb essentially of of said gas nuclei held in said pores,
replacing essentially all of said liquid in said pores of said material with a solution which is compatible with body fluid and in which proteins have a low solubility.

4,941,872

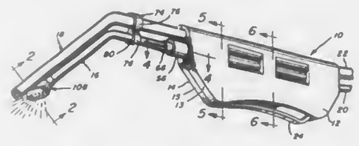
CONTROL HANDLE FOR SURGICAL IRRIGATION AND SUCTION DEVICE

Augustus Felix, Providence, and John Uboch, Warwick, both of R.I., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jan. 22, 1985, Ser. No. 693,277
Int. Cl.[5] A61M *1/30*
U.S. Cl. 604—27 8 Claims

1. A handpiece for a surgical irrigator comprising:
a handle body;
a flexible fluid conduit extending through the body;

connector means carried by the handpiece for connecting to the flexible conduit to a source of irrigation fluid;
means for connecting the other end of the flexible fluid conduit to a fluid outlet;
means for urging a portion of the flexible conduit transversely to form a V-shaped kink in the conduit to shut off flow through the conduit, said urging means comprising a pair of ribs mounted to the body, the ribs being spaced longitudinally along the flexible conduit, and a member engagable with the conduit at a location between the ribs, said member being constructed and arranged as to draw



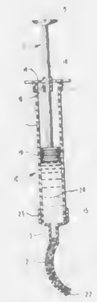
the conduit transversely between the ribs into said V-shaped kinked configuration and in a manner in which the conduit is wrapped partly about the ribs;
said ribs being arranged in relative upstream and downstream positions, the more upstream of the ribs having an upper, conduit-engaging edge which is higher than the upper edge of the downstream rib, said height being measured in a direction opposite the transverse direction in which the member is arranged to draw the tube into the V-shaped kinked configuration; and
means for biasing the member in a direction which shuts off flow through the conduit.

4,941,873

CONTROLLED DIFFUSION MEDICAMENT APPLICATOR

Dan E. Fischer, Salt Lake City, Utah, assignor to Ultradent Products, Inc., Salt Lake City, Utah

Continuation of Ser. No. 604,029, Apr. 26, 1984, Pat. No. 4,578,055, which is a continuation of Ser. No. 60,382, Jul. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 799,168, May 23, 1977, abandoned. This application Feb. 5, 1986, Ser. No. 826,274
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[5] A61B *10/00*
U.S. Cl. 604—54 7 Claims



1. A method for controlling bleeding during dental procedures using a medicament applicator, said medicament applicator comprising a chamber containing a coagulant under pressure connected to a hollow tube having a padded orifice through which the coagulant is dispensed under hydraulic pressure, the method comprising the steps of:
applying under hydraulic pressure a coagulant to a desired area of gingival tissue using the medicament applicator so as to infuse coagulant into exposed capillaries of such tissue such that the blood within said capillaries becomes coagulated; and
simultaneously rubbing the tissue with said medicament applicator in order to remove any coagulated blood existing on the surface of the gingival tissue so as to substantially prevent reinitiation of bleeding.

4,941,874

DEVICE FOR THE ADMINISTRATION OF IMPLANTS

Jürgen K. Sandow, Königstein/Taunus; Wilfried De Felice, Kelkheim; Horst Pajunk, and Heinrich Pajunk, both of Geisingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 229,957
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1987, 3726654; Jan. 26, 1988, 3802158
Int. Cl.[5] A61M *36/12*
U.S. Cl. 604—60 11 Claims



1. A device for the injection of implants comprising:
an active substance container fabricated from transparent plastic, having a first end opening, a second end opening, and a cylindrical plunger channel extending between and connecting said first and second end openings, said cylindrical plunger channel including a flexible O-ring for reducing the internal diameter of said channel at a predetermined location;
a cannula extending from said first end openings;
a plunger rod movably disposed in said channel and extending from said second end opening, said rod having a concentric groove therein for receiving said O-ring;
a first protective cap for covering said cannula; and
a second protective cap for covering said plunger rod.

4,941,875

I.V. SYSTEM FOR SUCCESSIVE ADMINISTRATION OF TWO OR MORE SOLUTIONS AT DIFFERENT RATES

John F. Brennan, 14476 Harbor Island, Detroit, Mich. 48215

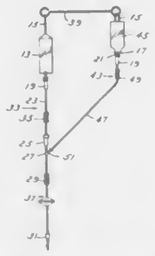
Filed Jul. 18, 1979, Ser. No. 58,725
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—81 45 Claims

31. In a set for the sequential administration of medical liquids to a patient, said set including:
a primary tube for the flow of a primary medical liquid therethrough and including a primary valve for controlling the flow of liquid through said primary tube,
a secondary tube for the flow of a secondary medical liquid therethrough,
a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tube and its proximal end open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising said secondary tube and said common tube, the improvement which comprises:
a secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,
a primary flow control means on said primary tube for adjusting the flow rate of said primary liquid through said

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primary flow path to a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and

an air barrier means within said secondary liquid flow path substantially impervious to air but permitting liquid flow



there through while said set is in use and preventing the flow of air therethrough after said secondary liquid has been depleted, whereby, following administration of said secondary liquid, flow of said primary liquid may be resumed at the preset rate without adjustment of said primary or said secondary flow control means.

4,941,876

DEVICE FOR CONDITIONING LIQUIDS OR LIQUID AND SOLID SUBSTANCES

Gabriel Meyer, and Ernst Howald, both of Vesenaz, Switzerland, assignors to Medicorp Holding S.A., Luxembourg

PCT No. PCT/EP87/00163, § 371 Date Dec. 10, 1987, § 102(e) Date Dec. 10, 1987, PCT Pub. No. WO87/06141, PCT Pub. Date Oct. 22, 1987

PCT Filed Mar. 23, 1987, Ser. No. 143,078

Claims priority, application Switzerland, Apr. 10, 1986, 01413/86

The portion of the term of this patent subsequent to Sep. 9, 2003, has been disclaimed.

Int. Cl.[5] A61M *5/28*

U.S. Cl. 604—89 **11 Claims**

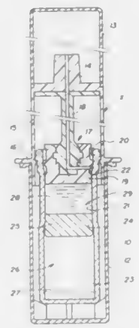
1. A storing, mixing and dispensing device comprising:

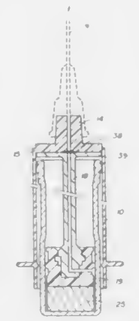
(a) a generally cylindrical elongate ampoule (10) having an open one end and a closed end with a cylindrical zone of relatively large circular cross-section (23) disposed adjacent said closed end and a cylindrical zone of relatively small circular cross-section (21) disposed between said cylindrical zone of relatively large circular cross-section and said open end;

(b) an elastic intermediary stopper (25) slidably movable inside said ampoule, said intermediary stopper, when in a storage position, being sealed in at least a portion of said cylindrical zone of relatively small circular cross-section (21) thereby dividing said ampoule into a first compartment, for containing a first substance, disposed between said closed end and said intermediary stopper and a second compartment, for containing a second substance, disposed between said intermediary stopper and said open end;

said intermediary stopper (25) being shaped to have at least one traverse dimension at least equal to the diameter of said cylindrical zone of relatively large circular cross-section, when in a distended state, and defining, when in said cylindrical zone of relatively large circular cross-section, at least one opening (30) extending past the peripheral surface of said intermediary stopper to interconnect the said first and second compartments;

(c) a piston-valve (17) comprising an axially aligned piston flange (35) and stopper means (19), said stopper means being arranged to engage said cylindrical zone of relatively small circular cross-section to seal the open end of the second compartment when in a storage position of the piston-valve (17), and conduit means, for dispensing substances from said ampoule, located within and extending through said piston-valve (17) and communicating with a peripheral surface of said piston-valve between said piston flange and stopper means, said piston flange (35) being in continuous sealing contact with the interior wall of said ampoule at all times while said stopper means (19) providing sealing contact with the interior wall of the ampoule (10) only when engaged with said cylindrical zone of relatively small circular cross-section so that when said stopper means (19) is positioned in said cylindrical zone of relatively large circular cross-section mixed substances





can flow past said stopper means into said conduit means for dispensing;

wherein when mixing and dispensing of the first and second substances is desired, said piston-valve is moved from its storage position towards said closed end to force said intermediary stopper (25) into said cylindrical zone of relatively large circular cross-section thereby allowing communication and mixing of the substances contained in the first and second compartments, further movement of said piston-valve (17) toward said closed end moves the stopper means into said cylindrical zone of relatively large circular cross-section whereby the piston flange (35) can force the mixed substances out of the ampoule past said stopper means into and through said conduit means.

4,941,877

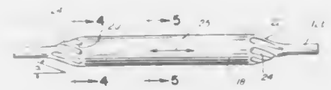
BALLOON CATHETER

Fausto Montano, Jr., Miami Lakes, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Jan. 26, 1989, Ser. No. 302,302

Int. Cl.[5] A61M *29/02*

U.S. Cl. 604—96 **22 Claims**



1. In a catheter having a catheter body, a portion of said body defining an inflatable and collapsible balloon, said balloon having a longitudinal axis and being of larger diameter than the adjacent portion of said body and defining transition zones at the respective balloon ends, the improvement comprising, in combination:

at least one of the transition zones being of flute shape, in which said one of the transition zones defines a plurality of radially inwardly projecting flutes about said transition zone, said flutes extending at radial angles to the balloon axis, said flutes also defining lateral angles to the balloon axis to prevent a flat-collapsed configuration of said balloon.

4,941,878

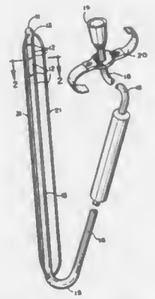
OSTOMY POUCH FLUSHER

Albert V. Petrik, One Limekiln Pke., Glenside, Pa. 19038

Filed Oct. 25, 1988, Ser. No. 262,382

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—105 **5 Claims**



1. An ostomy pouch flusher for emptying and cleaning an ostomy pouch installed upon a user, the ostomy pouch having a first opening surrounding a stoma of the user and a second closable drain opening distal from the first opening, the flusher comprising an elongate wand comprising a hollow tube, water inlet and discharge means adjacent to opposite ends of said wand, a handle connected to said wand adjacent to said water inlet means, said tube including a reversely bent tube extension on said inlet end defining said handle, and a frame extending along at least a portion of said wand adjacent to said discharge means, said frame extending longitudinally along and spaced from a portion of said wand to define an open space, said discharge means being positioned for the discharge of flushing water only in the direction of the open space defined by the frame whereby said wand and frame are insertable into the drain opening of an ostomy pouch and movable therein to spray the interior of said pouch, said frame and said wand maintaining the ostomy pouch in an open condition to facilitate the removal of material from the ostomy pouch through the space defined by the frame and the wand, the frame, the wand and the handle cooperating to prevent movement of the flusher to a position in which the flushing water is discharged directly toward or onto the stoma.

4,941,879

SINGLE USE SYRINGE

John H. A. Butler, 3 St. Mervyns Avenue, Double Bay, New South Wales 2028, and Sandy Richardson, Double Bay, both of Australia, assignors to John H. A. Butler, Double Bay, Australia

PCT No. PCT/AU88/00402, § 371 Date Jul. 10, 1989, § 102(e) Date Jul. 10, 1989, PCT Pub. No. WO89/03698, PCT Pub. Date May 5, 1989

PCT Filed Oct. 14, 1988, Ser. No. 373,291

Claims priority, application Australia, Oct. 14, 1987, PI4881; Mar. 29, 1988, PI7493; Jul. 29, 1988, PI9554; Sep. 13, 1988, PJ0376

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **7 Claims**



1. A single use syringe comprising;

an inter-acting piston and cylinder defining a variable volume chamber within which a liquid to be injected is drawn;

a needle mounting at one end of said cylinder, to receive a needle, a passage extending through said mounting enabling liquid communication between said cylinder and said needle;

a piston rod attached to said piston and operable by a user to cause movement of said piston to vary the volume of said chamber;

a valve means including a valve body located within said chamber between said mounting and said piston and dividing said chamber into a first sub-chamber located between said mounting and valve means, and a second sub-chamber located between said valve means and said piston, said valve body being movable longitudinally of said cylinder between a first position and a second position, and said valve means includes a first valve which, when said body is in said first position, permits flow from said first sub-chamber to said second sub-chamber and prevents flow from said second sub-chamber to said first sub-chamber, but when said body is in said second position, said first valve permits flow from said second sub-chamber to said first sub-chamber and prevents flow from said first sub-chamber to said second sub-chamber, and a second valve which, when said body is in said first position, permits flow from said first sub-chamber to said second sub-chamber, but prevents flow from said first sub-chamber to said second sub-chamber when said body is in said second position; and

means to prevent movement of said body from said second position to said first position.

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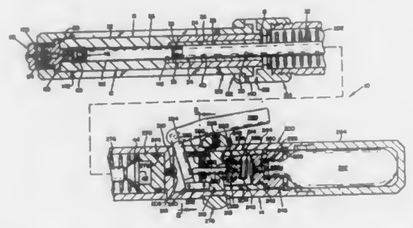
PRE-FILLED AMPULE AND NON-INVASIVE HYPODERMIC INJECTION DEVICE ASSEMBLY

Marvin Burns, Marina Del Rey, Calif., assignor to Bioject, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 64,762, Jun. 19, 1987, Pat. No. 4,790,824. This application Dec. 12, 1988, Ser. No. 284,063

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—143 **15 Claims**



1. An ampule for non-invasive injecting of medication comprising:

an elongate ampule body having a plunger end and an orifice end, a medication holder-retaining area adjacent to said plunger end and a transfer area adjacent to said orifice end;

an elongate medication holder formed from a non-absorbing, non-diffusing, non-reacting material received in said medication holder-retaining area and having a free, plunger-receiving end located adjacent said body plunger end;

a plunger having one end thereof received in and closing one end of said medication holder plunger-receiving end;

a floating seal received in and closing the other end of said medication holder;

orifice means for forming a skin-piercing injection stream located at one end of said transfer area;

a bypass area located adjacent said one end of said transfer area, said bypass area being constructed and arranged to provide passage for medication from said transfer area to said orifice means with said floating seal positioned therein; and

attachment means for securing said ampule to an injection device.

4,941,881

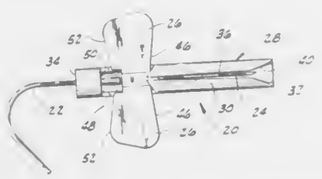
IV INFUSION SET WITH SHEATH

Edwin J. Masters, 142 Autumn, Sikeston, Mo. 63801, and Paul L. Ebaugh, Chateau Girardeau, 3120 Independence, Cape Girardeau, Mo. 63701

Filed Aug. 23, 1989, Ser. No. 397,320

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—162 **19 Claims**



1. An improved IV infusion set of the type comprising a length of tube with a hollow needle at one end, and outwardly projecting flexible wings adjacent the end of the tubing with the needle, the improvement comprising:

a sheath slidably disposed on the tube and adapted to be slid over the needle to cover the needle after use, the sheath including means for locking the sheath in its position covering the needle to prevent needlesticks from the used needle, the means for locking the sheath comprising means on the sheath for engaging the wings.

4,941,882

ADHESIVE DRESSING FOR RETAINING A CANNULA ON THE SKIN

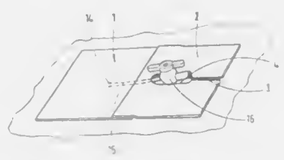
William J. Ward, and Joanne Shorthouse, both of Hull, United Kingdom, assignors to Smith and Nephew Associated Companies, p.l.c., United Kingdom

Filed Mar. 8, 1988, Ser. No. 165,627

Claims priority, application United Kingdom, Mar. 14, 1987, 8706116

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—180 **12 Claims**



1. A dressing for retaining cannulae comprising a backing film coated on one surface with an adhesive layer, the backing film comprising an adhesive coated flexible sheet attached to an adhesive coated handle, the material of the handle being different from the material of the flexible sheet, first and second release sheets covering the adhesive layer in which there is a hole and a dividing line through the dressing and the second release sheet said dividing line extending from the hole to one edge of the dressing and the second release sheet, the second release sheet contacting the adhesive surface of the handle and the hole and dividing line being located within the handle, whereby when the second release sheet is removed the hole in the dressing is adapted to be placed around a cannula.

4,941,883

DISPOSABLE SAFETY SYRINGE

Aldo Venturini, Via Orbetello No. 176, 1-10148 Torino, Italy

Filed Apr. 25, 1988, Ser. No. 186,030

Claims priority, application Italy, Apr. 24, 1987, 67343 A/87; Jul. 10, 1987, 67600 A/87

Int. Cl.[5] A61M *5/18*

U.S. Cl. 604—186 **18 Claims**



15. A disposable safety syringe, comprising: an elongated cylindrical reservoir member, in which a plunger is housed in tight and axially sliding fashion for sucking liquids into and injecting liquids from said reservoir; an elongated tubular sheath formed adjacent said reservoir in side to side arrangement and in fluid communication with said reservoir, each of said reservoir and sheath having a manipulation end and said sheath having a needle end; a hollow needle positioned within said sheath and a needle support member provided within said sheath for sliding movement between an active position of the needle, in which said needle protrudes from said sheath through an needle hole formed in said needle end of said sheath, and a safety position of the needle, in which said needle is withdrawn and maintained within said sheath; communication and sealing means connected to said needle support for providing communication between the hollow needle and the reservoir when said needle is in the active position and to form an air tight seal for air tight fluid communication between the hollow needle and the reservoir when said needle is in the active position, and to form an air tight seal when said needle is withdrawn in the safety position within said sheath.

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4,941,884

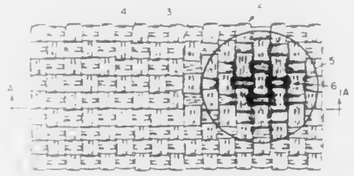
COMFORTABLE FABRICS OF HIGH DURABILITY

James R. Green, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 343,391, Apr. 28, 1989, Pat. No. 4,900,613, which is a continuation-in-part of Ser. No. 93,490, Sep. 4, 1987, abandoned, and a continuation-in-part of Ser. No. 273,716, Nov. 7, 1988, abandoned. This application Oct. 16, 1989, Ser. No. 422,014

Int. Cl.[5] D06B *9/04*

U.S. Cl. 8—120 11 Claims



1. A method for preparing a highly durable fabric resistant to hard surface abrasion and having good aesthetics comprising subjecting a woven fabric made from yarns of discrete organic staple fibers, said fabric having a fabric tightness greater than 1.0 and a fiber tightness of less than 1.0, said fabric containing from 30 to 92% by weight of low staple fibers having a modulus of less than 100 g/dtex with the warp yarn of said fabric containing at least 15% of organic staple fibers having a modulus greater than 200 g/dtex and at least 30% of low modulus staple fibers, to a shrinking treatment sufficient to raise the fiber tightness of the fabric to a level above 1.0.

4,941,885

HAIR REMOVING COMPOSITION AND METHOD CONTAINING THIOREDOXIN, THIOREDOXIN-DERIVED, OR THIOREDOXIN-LIKE DITHIOL PEPTIDES

Vincent P. Pigiet, Winchester, Mass., assignor to Repligen Corporation, Cambridge, Mass.

Continuation of Ser. No. 111,228, Oct. 22, 1987, abandoned, which is a division of Ser. No. 899,707, Aug. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 674,893, Nov. 26, 1984, abandoned. This application Sep. 14, 1989, Ser. No. 407,687

Int. Cl.[5] A61K *7/06, 7/55*

U.S. Cl. 8—161 11 Claims

1. A composition of matter for removing human hair which comprises a thioglycolic acid compound at a concentration of about 0.01M to about 0.2M thioredoxin or a thioredoxin-derived, or thioredoxin-like, dithiol peptide at a concentration of about 1 nmole/ml to about 100 nmole/ml.

4,941,886

PROCESS FOR OBTAINING A SYNTHETIC CHAMOIS LEATHER SIMILAR TO NATURAL CHAMOIS

Giorgio Poletto, Cirie, Italy, assignor to Lorica S.P.A., Corso Lombardia, Italy

Filed Jun. 16, 1988, Ser. No. 208,059

Claims priority, application Italy, Jun. 19, 1987, 67534 A/87

Int. Cl.[5] D06P *7/00*

U.S. Cl. 8—497 11 Claims

1. A method for manufacturing suede-like sheet material starting from a raw material consisting of a sheet material of predetermined thickness having a resin layer and a fibrous layer, said fibrous layer comprising a porous polyurethane matrix having a fibrous reinforcement embedded therein, said reinforcement being formed by a material selected from the group consisting of non-woven fabric, polyester fibers, polyamide fibers and polyethylene fibers, and said resin layer being a covering layer of compact polyurethane resin formed securely on one face of said fibrous layer, the method comprising the steps of:

splitting said sheet material through the fibrous layer into two sheets of reduced thickness, the first sheet of which comprises said covering resin layer and a portion of said fibrous layer, and the second sheet which is formed solely of a second portion of said fibrous layer;

said splitting operation being carried out so as to cut said fibrous reinforcement and divide it between said first and second portions of the fibrous layer; and

subjecting said second sheet to a buffing operation of a type normally used on natural suede, and to a dyeing phase.

4,941,887

QUINOPHTAHALONE DERIVATIVES FOR DYEING DENIM COTTON YARN, OPTIONALLY WITH INDIGO DYES TO GIVE YELLOW, GREEN OR BLACK SHADES

Tetsuo Sakagawa, 1-9-21, Koushien, Nishinomiya-shi, Hyougeken; Takayuki Nakayama, 4-20, Nishinanwacho 5-chome, Amagasaki-shi, Hyougo-ken; Hisanobu Kunihiro, deceased, late of Nishinomiya, and by Masako Kunihiro, legal representative, 21-11, Ohyacho, Nishinomiya-shi, Hyougo-ken, all of Japan

Filed Jan. 22, 1988, Ser. No. 147,206

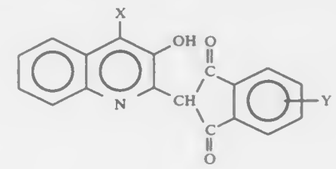
Claims priority, application Japan, Jan. 23, 1987, 62-12594

Int. Cl.[5] C09B *67/22;* D06P *1/22, 3/60*

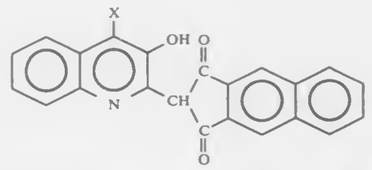
U.S. Cl. 8—642 3 Claims

1. A rope-dyeing process of denim cotton yarns, which comprises repeating the following consecutive steps:

(i) immersing the yarns in the form of a rope in a dyebath which contains at least one member from the group consisting of (a) at least one quinophthalone derivative represented by the following general formula (I) or (II):



(I)



(II)

wherein X means H, Br or Cl and Y denotes H, COOR or $-COOC_2H_4OR$, wherein R is alkyl, and (b) a combination of said at least one quinophthalone derivative and an indigo dye;

(ii) squeezing the yarns; and

(iii) exposing the yarns to air to oxidize said at least one quinophthalone derivative.

4,941,888

COMMODITY STORAGE PILE PROTECTION WITH A RAINWATER HOLDING SPONGE

Fritz Kramer, 911 W. Promontory Dr., Newport Beach, Calif. 92660

Filed Jan. 17, 1989, Ser. No. 297,956

Int. Cl.[5] C10L *9/00;* B05D *1/02*

U.S. Cl. 44—541 13 Claims

2. A weather protected outdoor storage pile of a particulate

solid commodity which comprises said commodity substantially covered with a rainwater protecting thickness layer of an open celled, shrinkage controlled, water absorbing sponge blanket, said water absorbing sponge blanket comprising an aminoplast resin prepared from an aqueous solution of prepolymer resin of:

(a) urea and formaldehyde, methylolurea, dimethylolurea or methylolurea or dimethylolurea modified with,

(b) from 4 to 12% fructose by weight and, a suitable foaming agent, a catalytic amount of acid accelerator, said aqueous solutions being mixed with a gas under a pressure of from 100 to 150 pounds per square inch (p.s.i.) to form a hardenable plastic foam which dries to said sponge having a linear shrinkage factor of from 2 to 6% and water permeability of from 1.5×10^{-5} to 5×10^{-5} cm/sec.

3. A weather protected outdoor storage pile according to claim 2 wherein said commodity is coal.

4,941,889

BARBECUE FLAVORING BLOCKS

Emerson B. Holmes, 1419 N. Gardner St., Los Angeles, Calif. 90046

Filed May 22, 1989, Ser. No. 354,309

Int. Cl.[5] C10L *5/00. 5/14*

U.S. Cl. **44—590** **14 Claims**

9. Flavoring blocks comprising:

wood pieces;

gelatin binder holding the piece together;

water absorbed into the wood pieces; said wood pieces, gelatin, and water pasturized to destroy any bacteria or fungi present; and

a protective coating, wherein at least 50 percent of the weight of the finished wood blocks is water;

said wood pieces and gelatin molded into pieces covered with the protective coating.

12. The blocks of claim 9, including added spice.

13. The blocks of claim 9, wherein the protective coating is hard gelatin.

4,941,890

PROCESS FOR GASIFYING FUELS

Paul Freimann, St. Valentin, and Gernot Staudinger, Graz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Austria

Division of Ser. No. 291,402, Aug. 12, 1988, which is a continuation of Ser. No. 832,988, Feb. 25, 1986, abandoned. This application Mar. 15, 1989, Ser. No. 323,883

Claims priority, application Austria, Mar. 8, 1985, 695/85

Int. Cl.[5] C10J *3/08*

U.S. Cl. **48—197 R** **6 Claims**

1. A method of gasifying low quality solid fuel in a gasifier which includes a primary gas chamber and a burner penetrating into said primary gas chamber, said low quality fuel being fuel whose gasification products include a high proportion of undesirable in the product gas, said method comprising the steps of

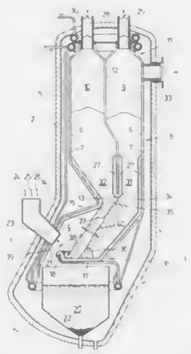
charging coke into said gasifier to form a substantially vertical coke bed having an upper free surface and a lower surface extending obliquely downwards into said primary gas chamber facing said burner,

feeding said low quality solid fuel into said primary gas chamber to form a low quality solid fuel bed superposed on said lower surface of said coke bed and having a sloping surface facing said burner,

directing at least one burner jet onto said low quality solid fuel bed, thereby gasifying said low quality solid fuel to form a crude gas,

forcing said crude gas through said coke bed, thereby removing said undesirable components from said crude gas to form a gas of high purity,

withdrawing said high purity gas from the gasifier, and



collecting and withdrawing slag formed while carrying out the above steps.

4,941,891

TOOL COMPONENT

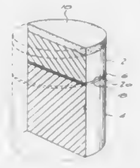
Klaus Tank, 9 Warbleton Avenue, Essexwold, Johannesburg, Transvaal, South Africa, and Noel J. Pipkin, 138/140 Pritchard Street, Johannesburg North, Transvaal, South Africa

Filed Jul. 13, 1988, Ser. No. 218,644

Claims priority, application South Africa, Jul. 14, 1987, 87/5132

Int. Cl.[5] B24D *3/00*

U.S. Cl. **51—293** **15 Claims**



1. A method of bonding a cemented carbide surface to a metal containing surface including the steps of placing a layer of a braze alloy between the surfaces, the alloy consisting of 15–41% Mn, 67–41% Cu, 1–5% Ni and 10–17% Au, all percentages by weight, said alloy having a liquidus below 900° C., urging the surfaces together, and raising the temperature of the alloy to its working temperature thereby creating a bond between the surfaces which has a shear strength exceeding 345 MPa.

4,941,892

TOOL COMPONENT

Klaus Tank, 9 Warbleton Avenue, Essexwold, Bedforview, Transvaal; Noel J. Pipkin, 138-140 Pritchard Street, Johannesburg North, Transvaal, and Nicholas Mastrantonis, 8 Field Place, Edenglen Extension 21, Edenvale, Transvaal, all of South Africa

Filed Jul. 13, 1988, Ser. No. 218,643

Claims priority, application South Africa, Jul. 14, 1987, 87/5131

Int. Cl.[5] B24D *3/02*

U.S. Cl. **51—309** **9 Claims**

1. A tool component comprising a cemented carbide body bonded to a metal containing body by a braze alloy consisting of a liquidus below 900° C. and having the following composition, by weight:

Mn	15–41%
Cu	67–41%
Ni	1–5%
Au	10–17%

and at least one of In, Sn, Zn and Ag, the In and Sn, when present, being in an amount not exceeding 20% by weight and the Zn and Ag, when present, being in an amount not exceeding 30% by weight; and

the shear strength of the bond between the bodies exceeding 335 MPa.

4,941,893

GAS SEPARATION BY SEMI-PERMEABLE MEMBRANES

Shan-Tao Hsieh, Charleston, and George E. Keller, II, South Charleston, both of W. Va., assignors to Union Carbide Chemicals and Plastics Company, Inc., Danbury, Conn.

Filed Sep. 19, 1989, Ser. No. 409,059

Int. Cl.[5] B01D *53/22. 71/68*

U.S. Cl. **55—16** **74 Claims**

1. A method for separating at least a first gas selected from the group consisting of H_2, HX and mixtures thereof contained in a gaseous mixture from at least a second gas selected from the group consisting of SiX_aH_b and mixtures thereof, where X =a halogen ion,

$a = 0$ to 4,

$b = 0$ to 4,

$a + b = 4$

contained in said gaseous mixture which comprises contacting the gaseous mixture with one surface of a semi-permeable membrane which exhibits selective permeation of the at least first gas over that of the at least second gas, and removing from the vicinity of the opposite surface of the semi-permeable membrane a permeate having a concentration of the at least first gas which is greater than the concentration of the at least first gas in the gaseous mixture.

4,941,894

GAS DRYING OR FRACTIONING APPARATUS AND METHOD

James B. Black, Elizabeth, Pa., assignor to Hankison Division of Hansen, Inc., Canonsburg, Pa.

Filed Apr. 12, 1988, Ser. No. 180,300

Int. Cl.[5] B01D *53/04*

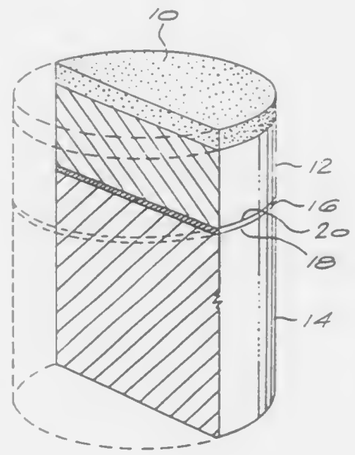
U.S. Cl. **55—20** **32 Claims**

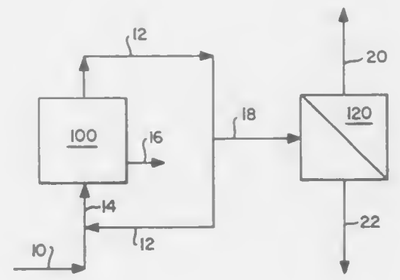
1. In an apparatus for extracting a gas from a gas mixture wherein a flow control means is selectively operable to pass a stream of such a gas mixture in a given flow direction through a gas flow path which includes a desiccant mass in a repetitive sequence of gas drying cycles to adsorb such a gas from such a gas mixture during each such gas drying cycle, and the flow control means being further operable between sequential ones of such gas drying cycles to direct a stream of gaseous medium in a reverse flow direction opposite said given flow direction through the desiccant mass to regenerate the desiccant mass by removing therefrom at least a portion of the product formed upon adsorption of such a gas by such a desiccant mass to thereby permit the desiccant mass to be effective for further gas adsorption in a subsequent gas drying cycle, a control system for limiting the duration of such a subsequent gas drying cycle comprising:

a first detector means adapted to be positioned at a selected location in such a gas flow path;

a second detector means adapted to be positioned in such a gas flow path upstream, with respect to said given flow direction, from said first detector means;

said first and second detector means being operable to gener-





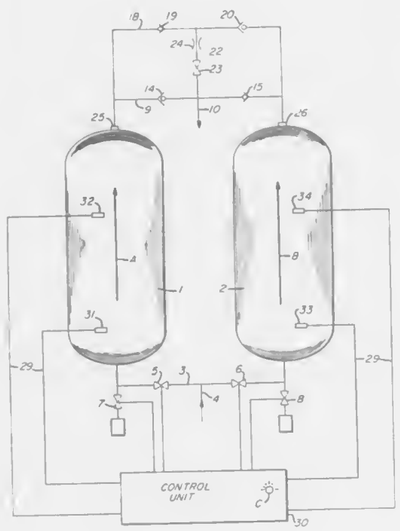
ate control signals in response to temperatures detected thereby in such a flow path;

a control means operable to process control signals generated by said first and second detector means, and means for providing operative communication between said first and second detector means, respectively, and said control means;

said control means including processor means which is operable to compute a first control parameter that is proportional to the difference between the control signal generated by said second detector means at initiation and at termination of such a regeneration cycle, and to repeatedly compute a second control parameter comprised of the difference between the control signal generated by said first detector means at initiation of such a subsequent gas drying cycle and the control signal generated thereby at intervals during said subsequent gas drying cycle;

said processor means being further operable to repeatedly compare said first and second control parameters;

said control means being further operable to actuate such flow control means to terminate said subsequent gas drying cycle when the magnitude of said second control parameter exceeds the magnitude of said first control parameter.



4,941,895

PROCESS FOR THE CONTINUOUS SEPARATION OF MALEIC ANHYDRIDE FROM PROCESS GASES

Stephen C. Ceisel; James F. Conrad, both of Shorewood; Elizabeth M. Lestan, Joliet, all of Ill., and Allen P. Nelson, Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 23, 1989, Ser. No. 397,392

Int. Cl.[5] C07D *307/60*

U.S. Cl. 55—84 **5 Claims**

1. A process for recovery of maleic anhydride from a gaseous mixture of a reactor effluent gas stream containing maleic anhydride which comprises contacting said mixture with maleic anhydride in a gas phase wherein said maleic anhydride is injected into a gas stream effluent from an oxidation reactor, said gas stream effluent is at a temperature of from about 200° F. to about 350° F., and maleic anhydride is recovered in a condenser.

4,941,896

METHOD AND APPARATUS FOR CLEANSING GASES

Lennart Gustavsson; Leif Lindau, and Lars-Erik Johansson, all of Väö , Sweden, assignors to Flakt AB, Nacka, Sweden

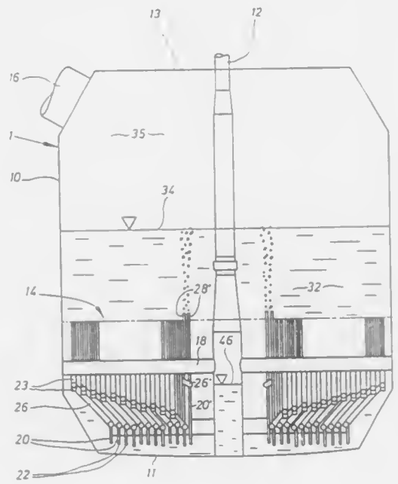
PCT No. PCT/SE87/00421, § 371 Date Mar. 31, 1989, § 102(e) Date Mar. 31, 1989, PCT Pub. No. WO88/01902, PCT Pub. Date Mar. 24, 1988

PCT Filed Sep. 17, 1987, Ser. No. 340,294

Claims priority, application Sweden, Sep. 17, 1986, 8603914; Jul. 6, 1987, 8702770

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—95 **10 Claims**



1. A method for cleansing a gas from contaminants by passing the contaminated gas through venturi devices (28) beneath the surface (34) of a bath (32) comprising a cleansing liquid, and by causing liquid to be drawn by suction from the liquid bath into the flowing gas as a result of the decrease in pressure taking place as the speed of the gas through the venturi devices increases, comprising the steps of dividing the contaminated gas into a plurality of part flows by causing the gas to pass from a downwardly extending distribution pipe into a plurality of venturi devices, each through an inlet orifice (64) situated at a different depth beneath the surface (34), the liquid level within said distribution pipe being changed by changing inlet pressure of the contaminated gas such that at increased inlet pressure an increased number of venturi devices (28) will be operative, causing the liquid sucked into the venturi device to fully embrace the gas part flow and extract the contaminants from the flow, causing the contaminated gas, subsequent to its division into part flows, to flow substantially vertically upwards through the bath, separating the contaminant-laden liquid from the gas, and discharging the gas from above the bath.

4,941,897

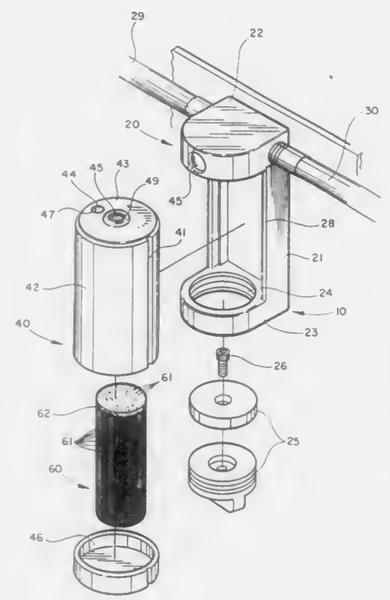
MICROPOROUS FILTER AND METHOD

Clifton B. Vann, III, Charlotte, N.C., assignor to L & H Technologies, Inc., Charlotte, N.C.

Filed Nov. 5, 1987, Ser. No. 117,667

Int. Cl.[5] B01D *53/22*

U.S. Cl. 55—158 **12 Claims**



1. A filter for removing micron and sub-micron molecular-sized particulate matter from a moving gas stream, comprising:

(a) a base having a base gas inlet for being connected to a source of gas to be filtered and a base gas outlet for discharging filtered gas;

(b) an enclosed replaceable and disposable cylindrical filter module for being releasably received in and supported by said base, said filter module having a module gas inlet adapted for sealing gas flow connection to said base gas inlet, and a module gas outlet adapted for sealing gas flow connection to said base gas outlet for discharging filtered gas from the module and base; wherein one of said module gas outlet and said module gas inlet is concentrically positioned in one end of said filter module and the other of said module gas inlet and module gas outlet is eccentrically positioned in the same one end of said filter module for preventing installation of said filter module in said base in reverse gas flow direction; and

(c) a filter element sealingly positioned in said filter module in gas flow interposed relation downstream of said module gas inlet and upstream of said module gas outlet in such manner that the gas must pass through said filter element in order to reach said module gas outlet, said filter element comprising a multiplicity of hollow fibers each defined by a membrane wall formed of a microporous material surrounding a centrally-disposed lumen wherein filtration occurs by passing the gas from an upstream side of the hollow fiber through the membrane wall of the fibers to a downstream side thereof, said filter element comprising a multiplicity of hollow fibers each defined by a membrane wall formed of a microporous material surrounding a centrally-disposed lumen wherein filtration occurs by passing the gas from an upstream side of the hollow fiber through the membrane wall of the fibers to a downstream side thereof.

4,941,898

MULTICYLINDER ROTARY APPARATUS FOR DESULFURIZATION FROM EXHAUST GAS

Takeshi Kimura, Domir Umeda No. 308, No. 11-7, Izumi 1-chome, Suginami-ku, Tokyo-to, Japan, assignor to Takeshi Kimura; Shigeru Kimura; Noriko Kimura and Junko Kimura, all of Tokyo, Japan

Filed May 25, 1989, Ser. No. 357,070

Claims priority, application Japan, May 30, 1988, 63-130182

Int. Cl.[5] B01D *53/18*

U.S. Cl. 55—230 **5 Claims**

1. A gas desulfurization apparatus comprising:

(a) a cylinder casing having an axis and forming a gas inlet and a gas outlet;

(b) a plurality of rotating cylinders in said cylinder casing, each said rotating cylinder axially parallel to said cylinder casing axis and arranged to rotate about said cylinder casing axis, and having an open end adjacent said cylinder casing gas inlet and an open end adjacent said cylinder casing gas outlet;

(c) a drive system means disposed in said cylinder casing attached to each of said cylinders for rotating said cylinders about said cylinder casing axes;

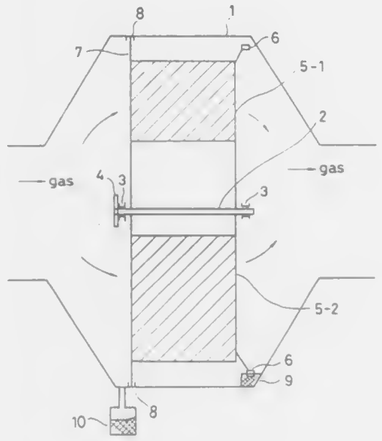
(d) a gas seal disc in said cylinder casing perpendicular to said cylinder casing axis and extending between said cylinder casing and said rotating cylinders for directing gas flow through said rotating cylinders;

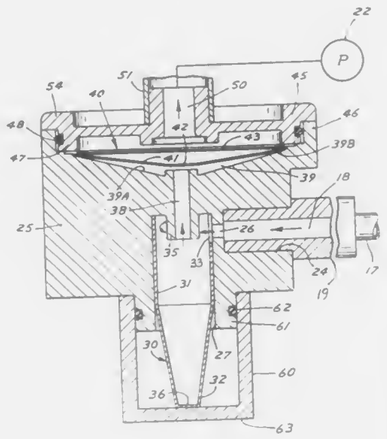
(e) a reservoir in said cylinder casing for storing a desulfuring slurry;

(f) a waste slurry pit connected to said cylinder casing; and,

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(g) a lifter attached to each said rotating cylinder to transfer a quantity of desulfuring slurry from said slurry reservoir into said associated cylinder during the rotating of said cylinders.





4,941,899

CYCLONE PERSONAL SAMPLER FOR AEROSOLS

Benjamin Y. H. Liu, North Oaks, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 24, 1989, Ser. No. 342,479
Int. Cl.[5] B01D *53/24*; G01N *1/24*
U.S. Cl. 55—270 **10 Claims**

1. A personal particle sampler of size to be worn on a shirt pocket or the like for providing information relating to concentration of particles that are below a primary cutoff size comprising a housing, an inlet for atmospheric air, a vortex forming chamber in said housing for forming a vortex of air entering the housing through the inlet, said chamber including a removable section comprising a cup slidably mounted in a bore in the housing and having an enclosed wall and an end spaced from the inlet, an outlet in an end of said chamber adjacent the inlet for outlet flow from the vortex formed, the vortex action depositing particles above a secondary cutoff size in the cup, and filter means to filter the flow from the outlet to collect particles on the filter means.

8. A personal particle sampler for providing information relating to concentration of particles that are below a primary cutoff size comprising a housing of size to be worn by a person, a bore formed in the housing comprising a vortex forming chamber open at one remote end of the chamber, a vortex finder sleeve formed in the housing at an inlet end of the bore forming the chamber, an inlet opening on a side of said chamber aligned with the vortex finder sleeve to form a cyclonic action around the vortex finder sleeve as air flows from the inlet into the chamber, an outlet formed in the center of the vortex finder sleeve for outlet flow from the vortex formed, a cup removably slidably mounted in the bore and having an enclosed cylindrical wall section that forms a liner in the chamber surrounding the vortex finder sleeve, and said cup having a remote end that extends out of the bore of the housing, said inlet opening extending through a wall forming said cylindrical wall section of said cup so that the vortex is formed entirely within said cup, said cup remote end being closed to collect the particles separated by cyclonic action, the cyclonic action depositing particles above a secondary cutoff size in the cup, and means to removably retain the cup in the bore.

4,941,900

APPARATUS AND METHOD FOR GAS-LIQUID SEPARATION AND FILTRATION

Harry Cordes, Largo, Fla., assignor to Pall Corporation, East Hills, N.Y.

Filed Jul. 19, 1988, Ser. No. 221,282
Int. Cl.[5] B01D *29/06*
U.S. Cl. 55—319 **7 Claims**

1. A gas-liquid separating and filtering apparatus for treating supercooled gases comprising:

(a) a housing, said housing having a separate gas inlet and gas outlet;

(b) means for providing supercooled gas to said gas inlet;

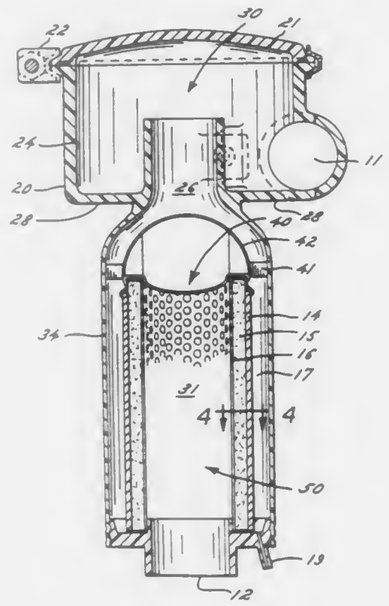
(c) means within said housing for separating substantially all liquid aerosols above about 25 microns in diameter;

(d) means for removing the separated liquid from said housing;

(e) an annular separating and filtering device downstream from said separating means and within said housing comprising:

(i) a coalescing medium for intercepting any remaining entrained aerosols, the coalescing medium being adapted to effect evaporation of at least a portion of the coalesced liquid into the gas; and

(ii) a particulate filter located in close proximity to and downstream from said coalescing medium.



4,941,901

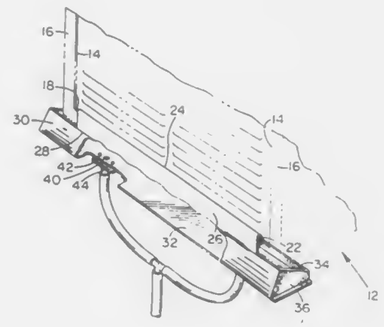
RETROFIT DRAINAGE TROUGH FOR INSTALLATION ON PRE-EXISTENT CABINET CONTAINED, WALL SUPPORTED AIR CONDITIONERS

Rengaswamy Ramakrishnan, and Michael D. Callaway, both of San Antonio, Tex., assignors to U.S. Natural Resources, Inc.,, San Antonio, Tex.

Filed Jul. 7, 1989, Ser. No. 376,699
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—262 **11 Claims**

1. A retrofit attachment for a window or wall mounted air conditioner unit wherein the air conditioner unit is constructed with a surrounding sleeve and forms condensate therein which travels over a sleeve bottom and which is provided with heat rejection means through one end and that end includes an opening formed with a lip parallel to the sleeve bottom, said lip defining the lower border of an opening, an attachment which comprises:

an elongated trough fitting under the sleeve bottom at one edge thereof to catch condensate dripping therefrom, said trough being supported by an overhead holding means for holding the trough in a fixed relationship to the sleeve bottom; and further including means for draining said trough of condensate collected therein through an opening which directs the flow away from the supporting structure on which the air conditioning sleeve is installed.



4,941,902

ICE MAKER AND WATER PURIFIER

John D. Ruff, Alexandria, Va., assignor to Thermadyne, Inc., Alexandria, Va.

Division of Ser. No. 278,447, Dec. 1, 1988, Pat. No. 4,897,099.
This application Nov. 16, 1989, Ser. No. 437,161
Int. Cl.[5] C02F *1/22*
U.S. Cl. 62—532 **9 Claims**

1. A method for providing a supply of purified ice and a supply of purified liquid water from a source of unpurified liquid water, said method comprising the steps of:

(a) cooling selected area of at least one ice-forming surface to a temperature below the freezing temperature of water by conducting thermal energy to at least one evaporator passage from said selected areas of said ice-forming surface;

(b) directing a water stream of the unpurified liquid water over said selected areas to form ice at said selected areas while washing impurities away from the formed ice with said stream;

(c) increasing the temperature at said selected areas at various times to remove said ice from said ice-forming surface;

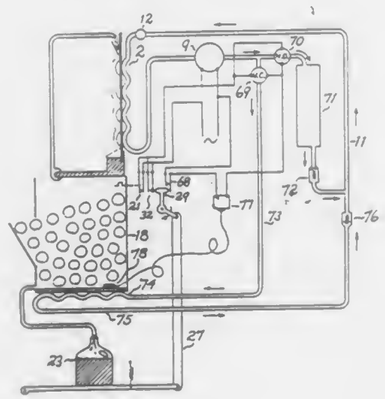
(d) collecting the ice removed in step (c) in a bin;

(e) warming a portion of said bin at selected times to melt some of the ice therein into purified liquid water;

(f) collecting in a container the purified liquid water derived in step (e);

wherein said evaporator passage is part of a continuous refrigerant flow path for refrigerant fluid, said flow path including a compressor, condenser means, a metering device and the evaporator passage, wherein step (a) includes energizing said compressor;

(g) sensing the amount of collected ice in said bin;
(h) sensing the amount of collected purified liquid water in said container;
(i) in response to both the amount of said collected ice in said bin exceeding a first predetermined amount, and the amount of said collected purified liquid water in said container exceeding a second predetermined amount, de-energizing said compressor;
(j) following step (i), re-energizing said compressor whenever either or both of the following occurs: (1) the amount of collected ice in said bin falls below the first predetermined amount; and (2) the amount of collected purified liquid water in said container falls below the second predetermined amount;
wherein said condenser means in said refrigerant flow path includes first and second condensers disposed in respective parallel and alternatively conductive first and second



path sections, said second condenser being disposed at the underside of said bin to heat collected ice at the bottom of said bin;
(k) separating said second condenser from the bottom of said bin by a medium having very low heat flow characteristics;
and wherein step (e) includes the steps of:
(e.1) in response to the amount of collected purified liquid in said container being less than said second predetermined amount, actuating said second path section to cause heated refrigerant fluid to flow through said second condenser; and
(e.2) in response to the amount of collected purified liquid in said container exceeding said second predetermined amount, actuating the first path section to cause refrigerant fluid to flow through said first condenser and thereby bypass said second condenser.

4,941,903

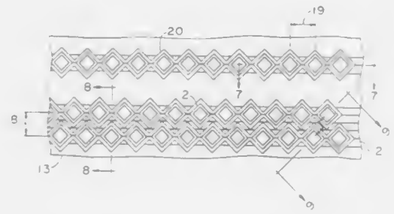
NOVEL FIBER-FORMING BUSHING AND TIP PLATE

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 26, 1989, Ser. No. 357,160

Int. Cl.[5] C03B *37/08*

U.S. Cl. 65—1 **14 Claims**



1. In a bushing for the production of round glass fibers, said bushing having sidewalls, an open top, and a bottom tip plate, the improvement comprising: a plurality of integrally formed, raised ribs of a substantially solid triangular cross section crossing the width of said tip plate, the ribs further having a plurality of separate hollow tips integrally formed therein to accommodate the flow of molten glass, the ribs and tips being substantially parallel to one another, both the tips and ribs projecting downwardly from the tip plate in the direction of the flow of glass, each tip having a substantially constant wall thickness, the bottom edge of each tip being substantially parallel to the plane of the tip plate.

4,941,904

METHOD AND APPARATUS FOR FORMING HOLLOW FIBERS

Herbert W. Barch, Natrona Heights, and William P. Marshall, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

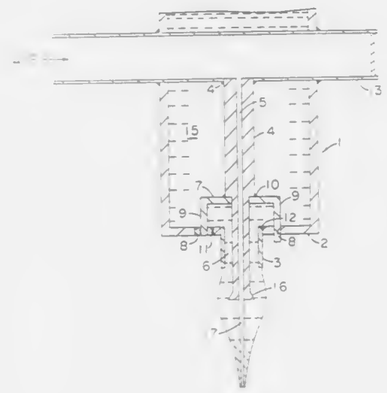
Filed Jun. 19, 1989, Ser. No. 367,908

Int. Cl.[5] C03B *37/075*

U.S. Cl. 65—1 **18 Claims**

1. A method for producing a plurality of hollow glass fibers, comprising the steps of: feeding molten glass through a plurality of tips, supplying a pressurized gas or gaseous mixture through a delivery tube located concentrically within each said tip, injecting said gas or gaseous mixture into said molten glass through the discharge end of each said delivery tube at a distance greater than 0.066 inches beyond the terminus of each

said tip up to a distance beyond which the formation of a hollow lumen is no longer possible inside said molten glass,



attenuating, and simultaneously cooling said molten glass so as to produce a hollow glass fiber from each said tip.

4,941,905

METHODS OF SOOT OVERCLADDING AN OPTICAL PREFORM

Pundi L. Narasimham, Norcross, Ga., assignor to American Telephone and Telegraph Company, AT&T Technologies, Inc., Berkeley Heights, N.J.

Continuation of Ser. No. 6,902,272, Aug. 29, 1986, abandoned. This application Mar. 4, 1988, Ser. No. 168,552

Int. Cl.[5] C03B *37/018, 37/012*

U.S. Cl. 65—3.12 **16 Claims**

1. A method of providing a preform from which optical fiber is drawn, said method comprising the steps of:
providing a glassy substrate which has an axis and an outer peripheral surface and to which microwave energy is capable of being coupled;
causing the outer peripheral surface of the substrate to be substantially surrounded with a material which is optically suitable for light transmission, which is capable of being sintered and consolidated about the substrate and which when sintered is coupled to a source of microwave energy; and then
coupling a source of microwave energy to the substrate to cause each successive portion of the optically suitable material in a direction outwardly from the axis of the substrate to be sintered and consolidated and thereby become coupled to the source of microwave energy so that each next successive portion of unsintered material, which is next to be sintered, is contiguous to a sintered portion which has just been sintered and which is coupled to the source of microwave energy, to provide an optical



preform from which optical fiber is capable of being drawn.

4,941,906

BALANCED MOLDING OF OPTICAL ELEMENTS

Paul S. Schmitt, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 71,405, Jul. 9, 1987, abandoned. This application Apr. 3, 1989, Ser. No. 331,821

The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.

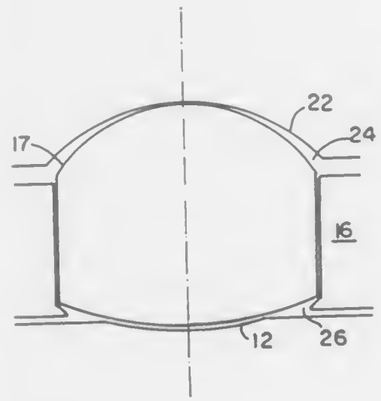
Int. Cl.[5] C03B *29/00, 23/00*

U.S. Cl. 65—29 **19 Claims**

1. A method of molding a glass optical element having first and second optical surfaces comprising:
providing first and second molds having molding surfaces shaped for forming said first and second optical surfaces respectively disposed in an opposing operative relationship,
providing a glass preform,
providing a mounting means for said glass preform operatively associated with said first and second molds,
disposing said glass preform in said mounting means between said molding surfaces in a non-contacting relationship with said molding surfaces,
heating said preform and said first and second molds,
moving said first mold in a direction toward said second mold and toward said glass preform to a position such that

said molding surface of said first mold is short of a contact with said glass preform forming a gap with a void between said molding surface of said first mold and said glass preform,

moving said second mold toward said glass preform so that its molding surface contacts a portion of said glass preform with a resulting adjacent void being provided between the molding surface of said second mold and the portion of said glass preform, which faces the second mold surface but does not contact it,



thereafter moving at least one of said first and second molds toward the other mold whereby said molding surfaces of said molds contact said glass preform to shape said preform in a manner such that voids between the preform and each of said molding surfaces are filled completing formation of said first and second molded optical surfaces of said glass element, and

controlling the movement of said molding surfaces to balance the formation of said optical surfaces of said optical element so that said glass fills said voids substantially equally with respect to each other to thereby provide balanced molding of said glass optical element.

4,941,907

PROCESS FOR PRODUCING AN OPTICAL FLUOROPHOSPHATE GLASS HAVING ANOMALOUS POSITIVE PARTIAL DISPERSION

Norbert Meinert; Werner Huber, both of Solms-Albshausen; Rainer Dreuth, Wetzlar-Niedergirmes, and Henning Franek, Braunfels-Tiefenbach, all of Fed. Rep. of Germany, assignors to Wild Leitz GmbH, Wetzlar, Fed. Rep. of Germany

Division of Ser. No. 268,635, Nov. 8, 1988, Pat. No. 4,859,635, which is a continuation of Ser. No. 59,925, Jun. 9, 1987, abandoned. This application Jul. 5, 1989, Ser. No. 375,494

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1985, 3538491; Oct. 18, 1986, 3633445

Int. Cl.[5] C03C *3/247, 4/00;* C03B *5/18*

U.S. Cl. 65—66 **4 Claims**

1. Process for producing an optical fluorophosphate glass based on metaphosphates and fluorides of alkaline earth metals and of aluminum and on alkaline earth metal oxides having refractive indices n_e between 1.515 and 1.546, Abbe values ν_e between 75.8 and 77.4 and positive anomalous partial dispersion values $+\Delta\nu_e$ between 14.85 and 15.15; said glass having the following composition (in weight-%):

Mg	2.4–2.7
Ca	4.5–4.9
Sr	15.9–17.6
Ba	20.2–22.3
Al	5.6–6.2
P	8.8–9.7
F	22.0–24.3
O	15.7–17.4;

said glass being molten from a mixture which has the following composition (in weight-%):

$Mg(PO_3)_2$	0.5–1
$Ca(PO_3)_2$	1–2
$Ba(PO_3)_2$	21–24
$Al(PO_3)_3$	10–12,

wherein the total content of all metaphosphates is between 33 and 18 weight-%;

MgF_2	6–7
CaF_2	8–10
SrF_2	15–18
AlF_3	14–16

wherein the total content of all fluorides is between 45 and 48 weight-%;

BaO	11–13
SrO	5–7

wherein the total content of all oxides is between 16 and 20 weight-%; characterized in that said process is carried out according to the following steps:

(a) heating the starting mixture at 860–900° C. within a period of 100–130 minutes,

(b) increasing the temperature within 5 minutes to 1150–1170° C.,

(c) subsequently stirring within a period of from 60 to 90 minutes,

(d) reducing the melt temperature to 930–970° C. at a reduced stirring speed, and

(e) casting at a temperature of from 750 to 760° C. in mold preheated to about 510° C.

4,941,908

PROMOTION OF FLOWERING IN FRUIT TREES

Richard P. Pharis, Plant Physiology Research Group, Biology Dept, University of Calgary, Calgary, Alberta, Canada (T2N 1N4); Norman E. Looney, Pomology & Viticulture Section, Agriculture Canada Research Station, Summerland, B.C., Canada (V0H 1Z0), and Lewis N. Mander, Research School of Chemistry, Australia National University, P.O. Box 4, Canberra, A.C.T. 2600, Australia

Continuation of Ser. No. 824,875, Jan. 31, 1986, abandoned. This application Jul. 12, 1988, Ser. No. 220,382

Claims priority, application United Kingdom, Jan. 31, 1985, 8502424

Int. Cl.[5] A01N *45/00*

U.S. Cl. 71—89 **3 Claims**

1. A method of promoting flowering of an apple tree which has demonstrated periodically inconsistent flowering, said method comprising:

applying to said apple tree, as a foliar treatment during the spring or summer preceding the year in which increased flowering is desired, not more than twelve weeks after flowering, a composition consisting essentially of a flowering-inducing effective amount of a gibberellin selected from the group consisting of gibberellin A_1, gibberellin A_4, C-3 epi-gibberellin A_4 and a salt or ester thereof, said gibberellin being applied in the substantial absence of gibberellins A_3 and A_7, said effective amount being in the range of from 3 to 300 micrograms of said gibberellin per spur or short shoot of said tree.

4,941,909

HETEROCYCLIC COMPOUNDS

Jean Wenger, Uster; Paul Winternitz, Greifensee, and Martin Zeller, Dübendorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

PCT No. PCT/CH88/00107, § 371 Date Feb. 14, 1989, § 102(e) Date Feb. 14, 1989, PCT Pub. No. WO88/10254, PCT Pub. Date Dec. 29, 1988

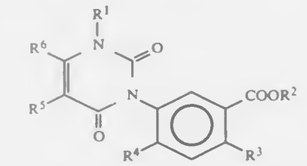
PCT Filed Jun. 16, 1988, Ser. No. 334,952

Claims priority, application Switzerland, Jun. 19, 1987, 2320/87; Sep. 17, 1987, 3580/87

Int. Cl.[5] A01N *43/54, 43/10;* C07D *239/54*

U.S. Cl. 71—92 **19 Claims**

1. Compounds of the formula



wherein

R^1 signifies hydrogen, C_{1-4}-alkyl, $C_{3\ or\ 4}$-alkenyl, $C_{3\ or\ 4}$-alkynyl or C_{1-4}-haloalkyl,

R^2 signifies a group



or, where R^1 signifies haloalkyl, also hydrogen C_{1-8}-alkyl, C_{2-8}-alkenyl, C_{2-8}-alkynyl or C_{2-8}-alkoxyalkyl,

R^3 signifies halogen or cyano,

R^4 signifies hydrogen or halogen,

R^5 signifies hydrogen, fluorine or C_{1-4}-alkyl,

R^6 signifies C_{1-4}-alkyl or C_{1-4}-haloalkyl,

the symbols R^7 each independently signify hydrogen or C_{1-3}-alkyl and

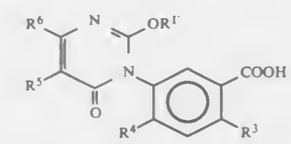
n signifies 0, 1 or 2, and

Q signifies a saturated three- to seven-membered carbocyclic or heterocyclic residue which is optionally substituted with one or more C_{1-4}-alkyl residues, whereby the heterocyclic residue has 1 or 2 hetero atoms selected from oxygen and sulphur and optionally a keto function in the ring,

Q signifies a phenyl residue which is optionally mono- or multiply-substituted with halogen, C_{1-4}-alkyl, C_{1-4}-haloalkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, nitro and/or cyano and which additionally can bear a fused, saturated, carbocyclic or heterocyclic five- to seven-membered ring, whereby the heterocycle has 1 or 2 oxygen atoms in the ring,

and the corresponding enol ethers of those compounds of formula I in which R^1 is different from hydrogen or C_{1-4}-haloalkyl as well as alkali metal, alkaline earth metal, ammonium or organic base salts of those compounds of formula I in which R^1 or R^2 signifies hydrogen.

19. A weed control composition, characterized in that it contains an effective amount of at least one compound of the formula



wherein

$R^{1'}$ signifies C_{1-4}-alkyl, $C_{3\ or\ 4}$-alkenyl or $C_{3\ or\ 4}$-alkynyl,

R^3 signifies halogen or cyano,

R^4 signifies hydrogenor halogen,

R^5 signifies hydrogen, fluorine or C_{1-4}-alkyl and

R^6 signifies C_{1-4}-alkyl or C_{1-4}-haloalkyl, or of an alkali metal, alkaline earth metal, ammonium or organic base salt thereof, as well as formulation adjuvants.

4,941,910

HERBICIDAL PYRIMIDINE DERIVATIVES

Klaus-Helmut Müller, Duesseldorf; Joachim Kluth; Klaus-Günther Tietjen, both of Langenfeld; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

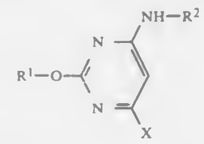
Filed Mar. 10, 1989, Ser. No. 321,941

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1988, 3808739

Int. Cl.[5] A01N *43/54;* C07D *239/47*

U.S. Cl. 71—92 **7 Claims**

1. A pyrimidine derivative of the formula



in which

R^1 stands for C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylzmino or di(C_1–C_4-alkyl)-amino,

R^2 stands for C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino or di(C_1–C_4-alkyl)-amino, for C_3–C_6-cycloalkyl or C_3–C_6-cycloalkyl-C_1–C_3-alkyl which are optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl, or for a radical selected from the group consisting of phenyl, naphthyl, phenyl-C_1–C_4alkyl, naphthyl-C_1–C_4-alkyl, pyfidyl, pyridyl-C_1–C_4-alkyl, quinolinyl, quinolinyl-C_1–C_4-alkyl, isoquinolinyl, isoquinolinyl-C_1–C_4-alkyl, pyrimidinyl, pyrimidinyl-C_1–C_4-alkyl, furyl, furylmethyl, thienyl, thienylmethyl, pyrrolyl, pyrrolyl-C_1–C_4-alkyl, pyrazolyl, pyrazolyl-C_1–C_4-alkyl, imidazolyl and imidazolyl-C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine bromine, iodine, cyano, nitro, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy or C_1–C_2-alkylenedioxy (which are optionally substituted by fluorine and/or chlorine), C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which are optionally substituted by fluo-

rine and/or chlorine), di-(C_1–C_2-alkyl)-amino and/or by C_1–C_4-alkoxy-carbonyl, and stands for fluorine, chlorine, bromine, amino, cyanoamino or for a radical from the group consisting of C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino and di-(C_1–C_4-alkyl)-amino which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino.

4,941,911

2-PHENYLPYRIDAZIN-3-ONE COMPOUNDS, THEIR PREPARATION AND THEIR USE AS HERBICIDES

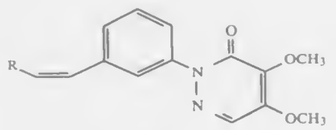
Wolfgang Freund, Neustadt; Gerhard Hamprecht, Weinheim; Bruno Wuerzer, Otterstadt; Karl-Otto Westphalen, Speyer, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,064

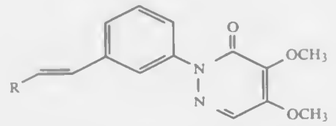
Int. Cl.[5] **A01N** *43/58;* **C07D** *237/14*

U.S. Cl. 71—92 **9 Claims**

1. 2-Phenylpyridazin-3-one compounds of the formulae



Ia



Ib

where R is C_1–C_8-alkyl; benzyl, where the aromatic ring may carry 1 to 3 of the substituents fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio or cyano; C_3–C_8-cycloalkyl which may carry 1 to 3 of the substituents C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkoxy; styryl, where the aromatic ring may carry 1 to 3 of the substituents nitro, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio or cyano; a 6-membered aromatic ring which may be benzo-fused and may carry 1 to 4 of the substituents C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, C_1–C_6-haloalkylthio, fluorine, chlorine, bromine, nitro, cyano, amino, di-C_1–C_4-alkylamino, C_2–C_6-acylamino, C_1–C_4-alkoxycarbonyl, phenoxy or phenylthio.

4,941,912

HERBICIDAL SUBSTITUTED SULPHONYLAMINOAZOLES

Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Christa Fest, Wuppertal; Ernst Gesing, Erkrath-Hochdahl; Klaus-Helmut Müller, Duesseldorf; Hans-Jochem Riebel; Peter Babczinski, both of Wuppertal; Otto Schallner, Monheim; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

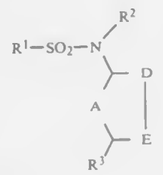
Filed Feb. 28, 1989, Ser. No. 317,219

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1988, 3807034; Jul. 29, 1988, 3825867

Int. Cl.[5] **C07D** *403/04;* **A01N** *43/653*

U.S. Cl. 71—92 **15 Claims**

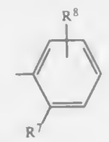
1. A substituted sulphonylaminoazole of the formula



(I)

in which

R^1 stands for the radical



wherein

R^7 and R^8 are identical or different and stand for hydrogen, fluorine, chlorine, bromine, iodine, cyano, nitro, C_1–C_6-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl, di-(C_1–C_4-alkyl)aminocarbonyl, hydroxyl, C_1–C_4-alkoxy, formyloxy, C_1–C_4-alkylcarbonyloxy, C_1–C_4-alkoxycarbonyloxy, C_1–C_4-alkylamino-carbonyloxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, di-(C_1–C_4-alkyl)-aminosulphonyl, C_3–C_6-cycloalkyl or phenyl), for C_2–C_6-alkenyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy-carbonyl, carboxyl or phenyl), for C_2–C_6-alkinyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxycarbonyl, carboxyl or phenyl), for C_1–C_4-alkoxy (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl), for C_1–C_4-alkylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl), for C_3–C_6-alkenyloxy (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxycarbonyl), for C_2–C_6-alkenylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_3-alkylthio or C_1–C_4-alkoxycarbonyl), C_3–C_6-alkinyloxy, C_3–C_6-alkinylthio or for the radical —$S(O)_p$—R^9, p standing for the numbers 1 or 2 and

R^9 standing for C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl), C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkylamino, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino or for the radical —$NHOR^{10}$,

R^{10} standing for C_1–C_6-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkyl-carbonyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-aminocarbonyl), for C_3–C_6-alkenyl (which is optionally substituted by fluorine, chlorine or bromine), C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_2-alkyl, phenyl-C_1–C_2-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl), for benzhydryl or for phenyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, C_1–C_2-fluoroalkoxy, C_1–C_4-alkylthio, trifluoromethylthio or C_1–C_4-alkoxy-carbonyl),

R^7 and R^8 furthermore stand for pnenyl or phenoxy, for C_1–C_4-alkylcarbonylamino, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylamino-carbonylamino, di-(C_1–C_4-alkyl)-amino-carbonylamino, or for the radical —CO—R^{11},

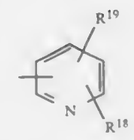
R^{11} standing for C_1–C_6-alkyl, C_1–C_6-alkoxy, C_3–C_6-cycloalkoxy, C_3–C_6-alkenyloxy, C_1–C_4-alkylthio, amino, C_1–C_4-alkylamino, C_1–C_4-alkoxyamino, C_1–C_4-alkoxy-C_1–C_4-alkyl-amino or di-(C_1–C_4-alkyl)-amino (which are optionally substituted by fluorine and/or chlorine),

R^7 and R^8 furthermore stand for C_1–C_4-alkylsulphonyloxy, di-(C_1–C_4-alkyl)-aminosulphonylamino or for the radical —CH=N—R^{12},

R^{12} standing for C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl, for benzyl which is optionally substituted by fluorine or chlorine, for C_3–C_6-alkenyl or C_3–C_6-alkinyl, each of which is optionally substituted by fluorine or chlorine, for phenyl which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, for C_1–C_6-alkoxy, C_3–C_6-alkenoxy, C_3–C_6-alkinoxy or benzyloxy, each of which is optionally substituted by fluorine and/or chlorine, for amino, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino, phenylamino, C_1–C_4-alkyl-carbonyl-amino, C_1–C_4-alkoxy-carbonylamino, C_1–C_4-alkylsulphonylamino or for phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

wherein furthermore

R^1 stands for the radical

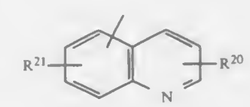


wherein

R^{18} and R^{19} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_2–C_4-alkenyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), for C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which are optionally substituted by fluorine and/or chlorine), and for di-(C_1–C_4-alkyl)aminosulphonyl, C_1–C_4-alkoxy-carbonyl, dimethylaminocarbonyl or dioxolanyl;

wherein furthermore

R^1 stands for the radical

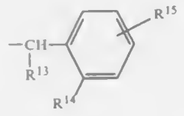


wherein

R^{20} and R^{21} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or bromine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), for C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which are optionally substituted by fluorine and/or chlorine), or for di-(C_1–C_4-alkyl)-aminosulphonyl;

wherein furthermore

R^1 stands for the radical



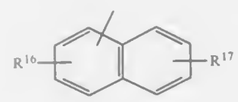
wherein

R^{13} stands for hydrogen or C_1–C_4-alkyl,

R^{14} and R^{15} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), carboxyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylsulphonyl or di-(C_1–C_4-alkyl)aminosulphonyl;

wherein furthermore

R^1 stands for the radical

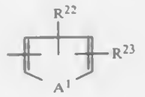


wherein

R^{16} and R^{17} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine) or C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine);

wherein furthermore

R^1 stands for the radical



wherein

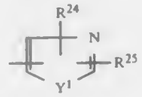
R^{22} and R^{23} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, C_1–C_4-alkoxy and/or C_1–C_4-halogenoalkoxy), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which is optionally substituted by fluorine and/or chlorine), di-(C_1–C_4-alkyl)-amino-sulphonyl or C_1–C_4-alkoxycarbonyl, and

A^1 stands for oxygen, sulphur or the grouping N-Z^1,

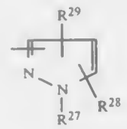
Z^1 standing for hydrogen, C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, bromine or cyano), C_3–C_6-cycloalkyl, benzyl, phenyl (which is optionally substituted by fluorine, chlorine, bromine or nitro), C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxy-carbonyl or di-(C_1–C_4-alkyl)-aminocarbonyl;

wherein furthermore

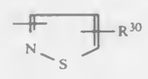
R^1 stands for the radical



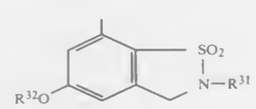
wherein
R^{24} and R^{25} are identical or different and stand for hydrogen, C_1–C_4-alkyl, halogen, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy or C_1–C_4-halogenoalkoxy,
Y^1 stands for sulphur or the grouping N-R^{26},
R^{26} standing for hydrogen or C_1–C_4-alkyl;
wherein furthermore
R^1 stands for the radical



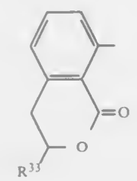
wherein
R^{27} stands for hydrogen, C_1–C_4-alkyl, phenyl or (iso)-quinolinyl,
R^{28} stands for hydrogen, halogen, cyano, nitro, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), dioxolanyl or C_1–C_4-alkoxy-carbonyl and R^{29} stands for hydrogen, halogen or C_1–C_4-alkyl;
wherein furthermore
R^1 stands for the radical



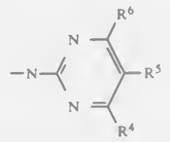
wherein
R^{30} stands for hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy-carbonyl;
wherein furthermore
R^1 stands for the radical



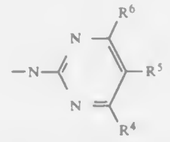
wherein
R^{31} stands for C_1–C_4-alkyl and
R^{32} stands for C_1–C_4-alkyl,
wherein furthermore
R^1 stands for the radical



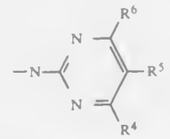
wherein
R^{33} stands for hydrogen or methyl;
in which furthermore
R^2 stands for hydrogen or for the grouping $—SO_2—R^1$,
in which furthermore
R^3 stands for hydrogen, fluorine, chlorine, bromine, iodine, hydroxyl, mercapto, amino or for a radical from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino and di-(C_1–C_4-alkyl)amino, which radical is optionally substituted by fluorine and/or chlorine,
A stands for nitrogen, a CH grouping or the grouping



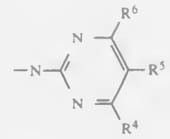
D stands for nitrogen or the grouping



E stands for nitrogen or the grouping



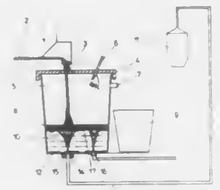
provided one of the radicals A, D or E is



wherein
R^4 stands for hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_2-alkoxy-C_1–C_2-alkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-alkylthio, C_1–C_4-halogenoalkylthio, amino, C_1–C_4-alkylamino, dimethylamino or diethylamino,
R^5 stands for hydrogen, fluorine, chlorine, bromine, cyano, methyl, formyl, acetyl, methoxycarbonyl or ethoxycarbonyl and
R^6 stands for hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-alkylthio, C_1–C_4-alkyl-amino, dimethylamino or diethylamino.

12. A herbicidal composition comprising a herbicidally effective amount of a compound or salt thereof according to claim **1** and diluent.

4,941,913
PROCESS FOR HEATING STEEL MELTS AS WELL AS DEVICE FOR PERFORMING THIS PROCESS
Luzian Pochmarski, Roseggerstrasse, and Otto Köller, Kerpelystrasse, both of Austria, assignors to Voest-Alpine Stahl Donawitz Gesellschaft M.B.H., Leoben-Donawitz, Austria
Filed Jul. 10, 1989, Ser. No. 377,095
Claims priority, application Austria, Jul. 22, 1988, 1882/88
Int. Cl.[5] **C21C** *7/06*
U.S. Cl. 75—537 **12 Claims**



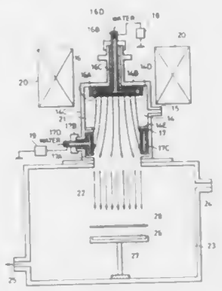
1. Process for heating steel melts comprising:
heating within a ladle steel melts covered with a slag rich in iron oxides; and
exothermically reacting a metal with the oxygen of said melt and the oxygen of said slag by injecting into the mixture of steel melt and slag, via nozzles in the bottom of said ladle, said exothermically-reacting metal with an inert gas during filling of said ladle.

4,941,914
DESULFURIZATION AGENT
Donald B. Craig, Grand Island, and Thomas K. McCluhan, Tonawanda, both of N.Y., assignors to Elkem Metals Company, Pittsburgh, Pa.
Filed May 18, 1989, Ser. No. 353,700
Int. Cl.[5] **C21C** *7/02*
U.S. Cl. 75—309 **12 Claims**

1. A method for making a desulfurization agent for molten iron comprising the steps of forming a molten composition of a calcium oxide; a calcium fluoride; and an aluminum oxide; rapidly cooling said molten composition to a solid composition; and combining said solid composition with a commercial calcium carbide to form a desulfurizing agent.

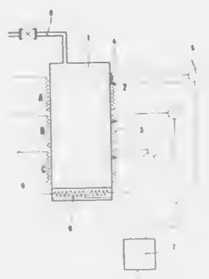
4,941,915
THIN FILM FORMING APPARATUS AND ION SOURCE UTILIZING PLASMA SPUTTERING
Morito Matsuoka, Katsuta, and Ken'ichi Ono, Mito, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed Feb. 7, 1989, Ser. No. 307,342
Claims priority, application Japan, Feb. 8, 1988, 63-25603; Feb. 8, 1988, 63-25604; Aug. 12, 1988, 63-200113
Int. Cl.[5] **C23C** *14/35;* **H01J** *27/02*
U.S. Cl. 204—298.12 **19 Claims**

1. A thin film forming apparatus comprising:
a plasma generating chamber into which a gas is introduced to generate plasma;
a first target and a second target made of materials to be sputtered and disposed at both end portions of an interior of said plasma generating chamber, respectively, one of said first and second targets having the form of a tube and the other of said targets having the form of a plate;
at least one power supply for applying a negative potential to said first and second targets;
magnetic means for establishing a magnetic field within said plasma generating chamber and inducing magnetic flux leaving one of said first and second targets and entering the other target; and



a specimen chamber communicated with said plasma generating chamber on the side of said tubular target and incorporating therein a substrate holder.

4,941,916
PROCESS AND APPARATUS FOR SUPPLYING A KROLL REACTOR WITH ZIRCONIUM TETRACHLORIDE VAPOUR
Jean Boutin, St Martin D'Heres; Pierre Brun, Grenoble, and Airy-Pierre Lamaze, Jarrie, all of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevole, France
Filed Mar. 21, 1988, Ser. No. 171,267
Claims priority, application France, Mar. 31, 1987, 87 4776
Int. Cl.[5] **C22B** *7/00*
U.S. Cl. 75—10.12 **6 Claims**



1. In a process for supply of a Kroll reactor with zirconium tetrachloride vapor by vaporization of zirconium tetrachloride powder in a sublimator utilizing heating power, and passing the vapor obtained into the reactor, the improvement comprising supplying a major portion of the total heating power to the power internally of the sublimator for sublimation of the zirconium tetrachloride powder, and supplying the remainder of the heating power externally of the sublimator to a wall of said sublimator in order to compensate heat losses of the wall.

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4,941,917

PROCESS FOR RECOVERY OF PRECIOUS METALS FROM CARBONACEOUS ORES USING CHLORINE DIOXIDE

Lawrence M. Cenegy, Spring, Tex.; Samuel G. Deal, Salt Lake City; Max E. Cooley, Tooele, both of Utah, and Paul B. Clark, Evanston, Wyo., assignors to Exxon Chemical Patents Inc.,, Linden, N.J. and Barrick (USA) Inc., a part interest

Filed May 30, 1989, Ser. No. 358,957
Int. Cl.[5] C22B *11/04*
U.S. Cl. 75—744 17 Claims

1. A method of treating a carbonaceous ore containing precious metals to destroy or oxidize carbon, said method comprising

(a) forming an aqueous slurry of said ore;

(b) adjusting the pH of said slurry to below about 6; and

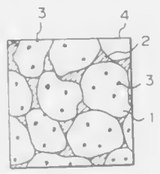
(c) treating the slurry with an effective amount of an aqueous solution of chlorine dioxide to destroy or react with at least 50 wt % of organic carbon in the ore.

4,941,919

COPPER-BASED SLIDING MATERIAL AND METHOD FOR PRODUCING THE SAME

Eiji Asada; Takashi Tomikawa, and Tatsuhiko Fukuoka, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Filed Jun. 15, 1988, Ser. No. 206,789
Claims priority, application Japan, Jun. 17, 1987, 62-149270
Int. Cl.[5] C22C *29/12*
U.S. Cl. 75—235 34 Claims



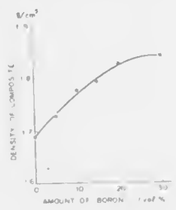
1. A sintered sliding material consisting of from 1 to 10% by weight of graphite, from 0.1 to 7% by weight of alumina, and balance of copper as a matrix, characterized in that the alumina is dispersed in the copper matrix.

4,941,918

SINTERED MAGNESIUM-BASED COMPOSITE MATERIAL AND PROCESS FOR PREPARING SAME

Eiji Horikoshi, Atsugi; Tsutomu Iikawa, Kawasaki, and Takehiko Sato, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 12, 1988, Ser. No. 282,506
Claims priority, application Japan, Dec. 12, 1987, 62-313142; Apr. 12, 1988, 63-089489; Apr. 13, 1988, 63-090927
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—229 20 Claims



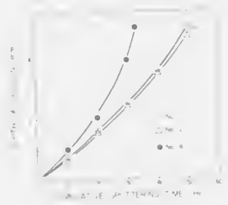
1. A sintered magnesium-based composite material comprising a magnesium or magnesium-based alloy matrix and a boron containing reinforcement additive dispersed in the matrix, said additive comprising boron particles or boron-coated particles of boron carbide, silicon nitride, silicon carbide, aluminum oxide or magnesium oxide.

4,941,920

SINTERED TARGET MEMBER AND METHOD OF PRODUCING SAME

Tsutomu Inui, Yonago; Shun-ichiro Matsumoto, Yasugi; Rokuo Ichiyasu, Yonago, and Takeo Mizuguchi, Yasugi, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 23, 1988, Ser. No. 274,561
Claims priority, application Japan, Nov. 25, 1987, 62-297256; Jun. 16, 1988, 63-148728
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—246 11 Claims



1. A sintered target member consisting essentially of 50–75 weight % of Co, 3–12 weight % of Cr and balance substantially Ni which has a structure comprising dispersion phases consisting essentially of one or more elements constituting said target member and having a maximum permeability of 50 or less.

4,941,921

METHOD OF ADDING BORIC ACID OF A BORATE TO A MIXING CER-1 OR REACTION ZONE

Jure Anic, Krefeld, Fed. Rep. of Germany; Walburga Dedericks, Brussels; Lucas E. A. Huybrechts, Koutich, both of Belgium, and Harry Johnson, Stockport, England, assignors to Cerestar Holding DV, Vilvoorde, Belgium

Filed Jan. 11, 1989, Ser. No. 295,815
Claims priority, application United Kingdom, Jan. 11, 1988, 8800502
Int. Cl.[5] C08L *3/00*
U.S. Cl. 106—213 18 Claims

1. A process which includes the step of adding boric acid or a borate to a mixing or reaction zone, wherein the boric acid or borate is added in the form of a liquid composition containing monoethanolamine or a polyhydroxyorganic compound selected from the group consisting of a sugar alcohol, a pentose, a hexose, a hexulose, sucrose, starch hydrolysates and hydrogenated starch hydrolysates.

4,941,922

STARCH-BASED CORRUGATING ADHESIVE CONTAINING FIBERS

Peter A. Snyder, Charlotte, N.C., assignor to Harper/Love Adhesives Corporation, Charlotte, N.C.

Filed Mar. 20, 1989, Ser. No. 325,930
Int. Cl.[5] C09J *103/00*
U.S. Cl. 106—214 13 Claims

1. An improved starch-based corrugating adhesive which consists essentially of:

a corrugating adhesive including an aqueous mixture of starch, said adhesive being of a type selected from the group consisting of carrier, no-carrier, and carrier-no-carrier adhesives; and

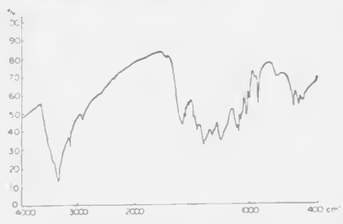
a quantity of fibers dispersed within said corrugating adhesive, said fibers being present in said corrugating adhesive in an amount of from about 2.2 to about 22 pounds of fiber per 100 gallons of corrugating adhesive, said fibers having a diameter range of between about 0.0005 inches and about 0.02 inches, said fibers having a length of between about 0.025 inches and about 0.25 inches.

4,941,923

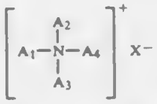
WATER-INSOLUBLE BLACK PIGMENT

Teruhito Sotogoshi, Saitama; Yukio Ishizaka, and Katsunori Nakamura, both of Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1989, Ser. No. 294,162
Claims priority, application Japan, Jan. 18, 1988, 63-6996
Int. Cl.[5] C08K *5/16, 5/00*
U.S. Cl. 106—498 7 Claims



1. A water-insoluble black pigment produced by reacting C. I. Solubilized Sulphur Black 1 with a salt-forming agent selected from the group consisting of inorganic acid salts of alkylamine, alkoxyalkylamine, alkanolamine, carboxyalkylamine, alkylcarboxamide, allylamine, amide of unsaturated carboxylic acid, cyclic amine, cycloalkylamine, oxacycloalkylamine, morpholine derivative, arylamine, aralkylamine, pyridine derivative, quinoline, phthalimide, DL-α-amino-ε-caprolactam and ε-aminocaprolactam, and ammonium salt of the formula (1):



(1)

wherein A_1, A_2, A_3 and A_4 each represent an alkyl or phenyl group and X^- represents an anionic group.

4,941,924

CHEMICAL SOIL STABILIZATION

Ervin Merritt, Mineral Wells, Tex., assignor to Chemical Soil Stabilization Technology, Inc., Aledo, Tex.

Continuation of Ser. No. 160,024, Feb. 25, 1988, abandoned. This application Aug. 22, 1988, Ser. No. 236,346
Int. Cl.[5] E01C *7/36*
U.S. Cl. 106—900 13 Claims

1. A method of stabilizing a cohesive soil having a plasticity index of at least 7, comprising the steps of:

a. admixing sulfuric acid, citrus stripper oil, and water in a predetermined volumetric proportion to said soil to form a treated soil, said predetermined proportion comprising at least 0.01% concentrated sulfuric acid to said soil, at least 3% citrus stripper oil to 97% concentrated sulfuric acid, and an appropriate amount of water to said soil to form a treated soil that is satisfactorily packable;

b. packing said treated soil to consolidate said soil, wherein the compressive strength of said treated and consolidated soil is increased compared to the compressive strength of the untreated soil.

4,941,925

CLEANER FOR HIGH PRESSURE CLEANING OF FERROUS AND NON-FERROUS MATERIAL

E. Michael Kerr, Naperville, and Bernard R. Szyszko, Warrenville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 160,732, Feb. 26, 1988, abandoned. This application Nov. 21, 1989, Ser. No. 439,847
Int. Cl.[5] B08B *3/08*
U.S. Cl. 134—3 6 Claims

1. An improved method of spray cleaning of ferrous and non-ferrous metal surfaces to remove metal working compounds, swarf and chips from said surfaces which comprises spraying onto a ferrous or non-ferrous surface that is contaminated with at least one of metal working compounds, swarf and chips an aqueous detergent solution, the improvement comprising using as the detergent a composition consisting essentially of an aliphatic dicarboxylic acid having the formula of

$$HO_2C-(CH_2)_n-CO_2H$$

wherein n is an integer of from 4 to 10 and mixtures thereof, in water-soluble alkanolamine salt form.

4,941,926

INHIBITING POPCORN POLYMER FORMATION

Sadao Nakajima, Mie-ken, Japan, assignor to Hakuto Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1989, Ser. No. 345,352
Int. Cl.[5] B08B *9/00*
U.S. Cl. 134—22.19 7 Claims

1. A method for the inhibition of popcorn polymer formation in an olefin production apparatus, said method comprising treating the inner surface of the apparatus with an efficient amount of a surface-treating agent diluted with water so as to

include an aqueous solution of an organic acid and/or salts thereof as a main component in a concentration of 0.5 to 10 weight percent while the operation of the olefin production apparatus is suspended and olefins are substantially removed from the apparatus,

said surface-treating agent comprising:

100 weight parts of the surface-treating agent,

(a) at least one compound selected from the group consisting of citric acid, glycolic acid, gluconic acid, ethylene diamine-tetraacetic acid (EDTA), N-hydroxylethyl ethylene diamine-N,N',N'-triacetic acid (HEDTA), diethylene triamine-N,N,N',N'',N''-pentaacetic acid (DTPA), nitrile triacetic acid (NTA), triethylenetetramine-N,N,N',N'',N''',N'''-hexaacetic acid (TTHA), and hydroxyethylimino diacetic acid (HEIDA), oxalic acid, sulfamic acid, tartaric acid, formic acid, acetic acid, thioglycolic acid, malic acid, succinic acid, and benzene sulfonic acid, and salts of sodium, potassium, amine and ammonium thereof in an amount of from 10 to 50 weight parts;

and at least one member selected from the group consisting of (b) a corrosion-resistant agent, in an amount of 0.5 to 5 weight parts; (c) a reducing agent in an amount of 0.5 to 5 weight parts and (d) a penetrant in an amount of 0.25 to 5 weight parts; and balance being water.

4,941,927

FABRICATION OF 18% NI MARAGING STEEL LAMINATES BY ROLL BONDING

Charles F. Hickey, Jr., Ashland, Mass., and Timothy S. Thomas, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1989, Ser. No. 343,778

Int. Cl.[5] C21D *8/02*

U.S. Cl. 148—11.5 Q **4 Claims**

1. A method of fabricating a laminate of at least two layers of maraging steel comprising in combination the steps of:

a. providing a quantity of stock of a first maraging steel alloy;

b. providing a quantity of stock of a second maraging steel alloy;

c. melting each of said alloys to form an ingot of selecting size;

d. heating said ingots to a selected forging temperature;

e. forging said ingots into slabs of a selected size;

f. heating said slabs to a selected rolling temperature;

g. rolling said slabs into plates of a selected size;

h. grinding at least one surface of each of said plates flat to a selected tolerance;

i. placing said flat surfaces in mutual contact;

j. heating said plates to a selected roll bonding temperature;

k. rolling said plates to effect the bond to form said laminate;

l. air cooling said laminate to ambient temperature.

4,941,928

METHOD OF FABRICATING SHAPED BRITTLE INTERMETALLIC COMPOUNDS

Robert L. Ammon, Baldwin Boro; Raymond W. Buckman, Pleasant Hills, and George P. Sabol, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1988, Ser. No. 292,033

Int. Cl.[5] B23K *20/14*

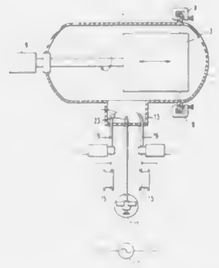
U.S. Cl. 148—2 **13 Claims**

1. A method of fabricating shapes of brittle intermetallic compounds of various metals comprising the steps of

forming two bimetallic wires of predetermined quantities of two different metals;

utilizing the wires that include the two different metals in an arc spray process to spray molten droplets of the two metals from the wires on a target to form an overlay of a desired brittle intermetallic compound of the two metals on the target;

removing the intermetallic compound overlay from the target; and



densifying the overlay removed from the target to form a full density intermetallic shape.

4,941,929

SOLDER PASTE FORMULATION CONTAINING STANNOUS FLUORIDE

Berhan Tecle, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1989, Ser. No. 398,195

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—24 **20 Claims**

1. An improved solder paste composition suitable for screen or stencil printing with a capability for low ionic contamination after use of the paste in a soldering operation comprising

(a) a metal or metal alloy,

(b) a carrier, and

(c) stannous fluoride which composition after soldering and without a cleaning step has an ionic contamination not greater than 2 micrograms NaCl equivalent/sq. inch.

4,941,930

PHOSPHATE COATING COMPOSITION AND METHOD OF APPLYING A ZINC-NICKEL PHOSPHATE COATING

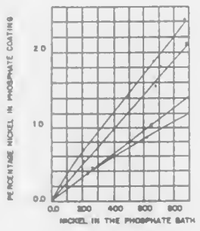
Harry R. Charles, Sterling Heights; Thomas W. Cape, West Bloomfield, and Donald L. Miles, Farmington Hills, all of Mich., assignors to Chemfil Corporation, Troy, Mich.

Division of Ser. No. 912,754, Sep. 26, 1986, Pat. No. 4,793,867.

This application Sep. 12, 1988, Ser. No. 242,986

Int. Cl.[5] C23C *22/18*

U.S. Cl. 148—260 **6 Claims**



1. A liquid concentrate composition consisting essentially of divalent manganeses salt, phosphoric acid, and a nitrogen-containing reducing agent having the following molar proportions—0.001 to 0.388 manganese:1 phosphoric acid wherein the manganese concentrations is less than 2.24 moles per liter; and at least 0.05 nitrogen-containing reducing agent:1 manganese

wherein the nitrogen containing reducing agent is hydroxylamine sulfate, hydrazine sulfate, sodium nitrite, potassium nitrite, or ammonium nitrite.

4,941,931

GAS-GENERATED EXPANDABLE BEADS AS BURNING RATE ACCELERATORS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1983, Ser. No. 528,198

Int. Cl.[5] C06B *45/10*

U.S. Cl. 149—19.2 **3 Claims**

1. In a composite propellant composition consisting essentially in weight percents of the ingredients as follows:

aluminum powder	12.0
ammonium perchlorate (70 μm)	73.0
n-hexylcarborane	6.0
hydroxyl-terminated polybutadiene prepolymer	6.0
trimethylolpropane (additive)	0.06
wetting agent (reaction product of equimolar quantities of 12-hydroxystearic acid and tris[2-methylaziridinyl]phosphine oxide) (additive)	0.30
isophorone diisocyanate (additive)	0.70;

the improvement in burning rate achieved by incorporation into said composite composition during propellant mixing from about 2.0 to about 4.0 weight percent of gas-generated-expandable beads comprised of a blowing agent selected from 4-toluenesulfonyl hydrazide and 4,4'-oxybis(benzenesulfonyl hydrazide) which is coated with a bead forming material consisting of about 95 parts of hydroxy-terminated polybutadiene prepolymer, of about 5 parts of trimethololpropane, and of about 6 parts of isophorone diisocyanate, said coated gas-generated-expandable beads being physically dispersed in said composite propellant composition and chemically crosslinked in said composite propellant composition during curing of said composite propellant composition to form a solid propellant grain, said gas-generated-expandable beads containing about 5–8% by weight of said selected blowing agent that results in bead expansion or rupture during propellant burning when the flame front reaches said gas-generated-expandable bead, said bead expansion or rupture bringing about disruption of the propellant's surface to permit flame penetration into the propellant to thereby achieve a major increase in burning rate of said propellant composition.

4,941,932

METHOD FOR SEALING A CABLE BUNDLE IN LONGITUDINAL DIRECTION

Gunther John, Hamburg, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 26, 1989, Ser. No. 371,516

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1988, 3823312

Int. Cl.[5] H01B *13/06*

U.S. Cl. 156—48 **7 Claims**

1. A method for sealing the interstices between individual cables of a cable bundle to achieve a sealing of said cable bundle in the longitudinal direction thereof, comprising applying a curable liquid resin system to the area between said cables, said resin system comprising the reaction product of a polyisocyanate and at least one fatty acid polyol having a hydroxyl number of at least about 150 and an acid number of no greater than about 1.0, followed by curing thereof to a non-flowable state.

4,941,933

METHOD OF MAKING A BODY MEMBER CONFORMABLE DISPOSABLE ARTICLES

Ralf Korpman, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 926,601, Nov. 3, 1983, abandoned, Division of Ser. No. 838,440, Mar. 10, 1986, Pat. No. 4,662,874. This application Nov. 9, 1988, Ser. No. 269,275

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—160 **9 Claims**



1. A process for preparing a body member conformable disposable article comprising: p1 (a) an electric thermoplastic moisture impermeable backing film, and

(b) an absorbent layer superposed thereon, at least one portion of at least one edge of said backing film, at a position to be fitted around a body member of the wearer, having been folded upon itself and sealed together at the fold, so that when said backing film is laid flat said one edge thereof is in stretched condition; which process comprises providing an elastic thermoplastic moisture impermeable backing film, folding at least one portion of at least one edge of said backing film upon itself around a fold line running transversely of said one edge and forming at least one pinched portion at the fold by sealed a portion of the folded edge of said backing film together at the fold, providing an absorbent layer, and affixing the absorbent layer to the backing film.

4,941,934

METHOD OF MAKING PROTECTIVE CAPS FOR THREADED PIPE ENDS OR PIPE SOCKETS AND PROTECTIVE CAP MADE BY SAID METHOD

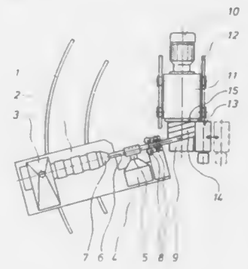
Winfried Reu, Goethestrasse 27, 4700 Hamm, Fed. Rep. of Germany

Filed Nov. 2, 1988, Ser. No. 262,991

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3738417

Int. Cl.[5] B32B *1/00*

U.S. Cl. 156—195 **24 Claims**



1. A method of making a thermoplastic protective cap having a cylindrical wall from a thermoplastic plastic profile comprising the following steps:

heating the thermoplastic plastic profile;

winding the thermoplastic plastic profile in helically overlapping form onto a mandrel to obtain a wall thickness of between ten and ninety percent of total cap wall thickness; and

winding a thermoplastic plastic profile containing a reinforcing material in helically overlapping form onto mandrel containing said thermoplastic plastic profile to obtain the remainder of the cap wall thickness.

4,941,935

PROCESS FOR HIGH SPEED COATING OF SUBSTRATES

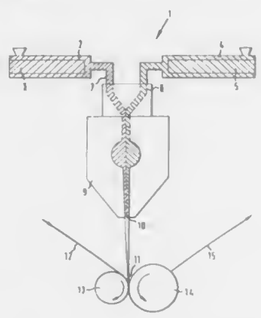
Bertram H. Gregory, Aartselaar, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Nov. 9, 1988, Ser. No. 269,213

Claims priority, application United Kingdom, Sep. 11, 1987, 8726202

Int. Cl.[5] B29C *47/06*

U.S. Cl. 156—243 **18 Claims**



1. A process for high speed coating a substrate moving at a line speed of over 50 m/min comprising co-extruding onto the substrate a layer of an olefin terpolymer tie resin and a layer of polypropylene by combining the terpolymer and polypropylene layers to form a molten co-extruded web and contacting said molten co-extruded web with said substrate, the olefin terpolymer tie resin being between the substrate and the polypropylene wherein the olefin terpolymer tie resin is a terpolymer of ethylene or propylene, an unsaturated carboxylic acid having 3 to 8 carbon atoms or an anhydride having 4 to 8 carbon atoms and an unsaturated ester; provided, the amount of carboxylic acid or anhydride groups in the terpolymer is at least 3 mole % and the amount of ester groups in the terpolymer is at least 3 mole %.

4,941,936

METHOD FOR BONDING FRP MEMBERS VIA DIELECTRIC HEATING

Robert E. Wilkinson, Birmingham; Kenneth A. Iseler, Richmond, both of Mich.; Rueben L. Smith, Findlay, Ohio; Lorenz K. E. Duerr, Schenectady, and Harry M. Cargile, Ballston Lake, both of N.Y., assignors to The Budd Company, Troy, Mich. and LaRose RF Systems, Inc., Millis, Mass.

Filed Apr. 28, 1988, Ser. No. 187,358

Int. Cl.[5] B32B *31/20, 31/28*

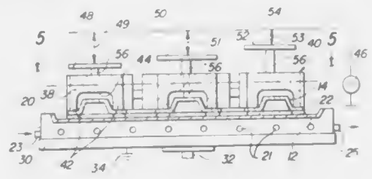
U.S. Cl. 156—274.8 **7 Claims**

1. A method of bonding a cured plastic member to a reinforcement member, said method comprising:

forming an assembly by placing an uncured thermosetting adhesive between mating surfaces of the cured plastic member and the reinforcement member;

placing the assembly between two electrodes, one of said electrodes including a plurality of electrically isolated concentrator members; and

applying a high frequency signal having a frequency of between about 10 megahertz to about 110 megahertz at a voltage of between about 300 to about 8000 volts to the electrodes from a dielectric heater for a period of time



from about 15 seconds to about 120 second which is sufficient to cure the adhesive, said concentrator members providing even concentration of energy from the high frequency signal at selected areas of the adhesive such that the plastic member is bonded to the reinforcement member without substantial adverse affect to the surface quality of the plastic member.

4,941,937

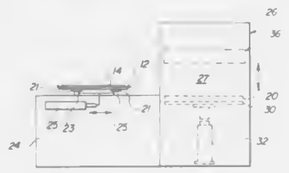
METHOD FOR BONDING REINFORCEMENT MEMBERS TO FRP PANELS

Kenneth A. Iseler, Richmond, and Robert E. Wilkinson, Birmingham, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed Apr. 28, 1988, Ser. No. 187,359

Int. Cl.[5] B32B *31/20, 31/28*

U.S. Cl. 156—274.8 **13 Claims**



11. A method of bonding to a reinforcement member an exterior automotive body skin having a surface area of at least one square foot and a length in at least one dimension exceeding 47 inches, said method comprising the steps of:

forming the skin and reinforcement member by compression molding charges of thermosetting sheet molding compound, with the reinforcement member being configured so as to have a hat shaped cross section with a dome and pair of flanges;

applying a bead of heat curable, two part epoxy adhesive containing a resin and hardener onto the flanges of the reinforcement member;

placing the reinforcement member onto the skin to form an assembly;

inserting the assembly between electrodes in a dielectric heater;

applying an alternating electrical signal having a frequency of between about 10 megahertz to about 110 megahertz at a voltage of between about 300 to about 8000 volts between the electrodes for a period of time from about 15 seconds to about 120 seconds to form a bonded reinforced panel assembly; and

removing the reinforced panel assembly from the nest.

4,941,938

METHOD OF JOINING MATERIALS

Ingvar Karlsson, Bandhagen, Sweden, assignor to Casco Nobel AB, Stockholm, Sweden

PCT No. PCT/SE87/00061, § 371 Date Jul. 6, 1988, § 102(e) Date Jul. 6, 1988, PCT Pub. No. WO87/05041, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 10, 1987, Ser. No. 216,719

Claims priority, application Sweden, Feb. 17, 1986, 8600694

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—281 **11 Claims**

1. A method of joining two or more surfaces together by

(1) applying to at least one of the surfaces a water based adhesive or an adhesive which liberates water during curing, and

(2) generating a salt or salts during the course of the joining operation, which salt will bind water that is present during the joining as water of crystallization.

4,941,939

APPARATUS FOR APPLYING AN ELASTIC BAND ONTO A MOVING WEB

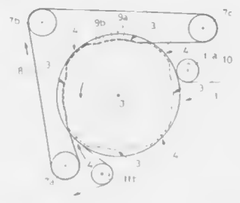
Hironori Nomura, Iyomishima; Taiji Shimakawa, Kawanoe; Junji Shinohara, Iyomishima; Shigetoyo Kobayashi, Kagawa, and Hiroki Yamamoto, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Division of Ser. No. 215,359, Jul. 5, 1988, Pat. No. 4,838,969. This applicatioo Feb. 28, 1989, Ser. No. 291,645

Claims priority, application Japan, Jul. 3, 1987, 62-166523

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—495 **7 Claims**



1. An apparatus for combining a web as a primary component with at least two longitudinal elastic bands so as to affix the elastic bands onto said web in a spaced apart relationship, said apparatus comprising:

(A) a generally circular main support member (1),

(B) a plurality of unevenly contoured segments located around the periphery of said support member (1), each of said contoured segments being composed of a central area (3) that includes:

(a) a middle portion (5),

(b) sloping areas (6) extending from opposite ends of said middle portion (5) to end areas (4), and

(c) vertical edge areas (2) formed along opposite sides of said central area (3),

(C) means (8) to press a web (10) against said plurality of contoured segments, and

(D) means to affix pairs of elastic bands substantially in parallel to each other onto said web at those portions of the web which extend outwardly from said edge areas (2) while said web is being pressed against and folded in conformity with said unevenly contoured peripheral segment.

4,941,940

PRE-SWELLING AND ETCHING OF PLASTICS FOR PLATING

Gordhanbhai N. Patel, Somerset; Durgadas Bolfkal, Highland Park, both of N.J., and Richard A. Bellemare, Watertown, Conn., assignors to JP Laboratories, Inc., Piscataway, N.J.

Filed Nov. 7, 1988, Ser. No. 268,154

Int. Cl.[5] B05D *3/10*

U.S. Cl. 156—628 **11 Claims**

1. A process of two step surface etching of polymeric materials made of polymers having at least one hydrolyzable functionallty selected from the group consisting of polycarbonates, anhydrides, carboxyl esters, sulphonic esters, amides and urethanes, which comprises

the first step of exposing the surface to be etched to a liquid phase capable of microroughening said surface, comprising a good solvent for said polymer and a non-solvent for said polymer provided that where at least one member of the group of said good and said non solvents etchant is immiscible with the other, said liquid phase further comprises a sufficient amount of solubilizing agent miscible with said immiscible components to provide a single liquid phase and

a second step of hydrolyzing the said functionalities on said surface to the extent needed to provide a water wettable surface capable of being plated with electroless nickel or electroless copper to provide a plated layer having a strong level of adhesion to said surface by treating said surface with an etchant selected from the group consisting of

acidic etchants selected from the group consisting of aqueous mineral acids free of metallic components, benzene sulphonic acid and mixtures thereof and basic etchants selected from the group consisting of alkali metal hydroxides, quaternary ammonium hydroxides and mixtures thereof in the presence of triethanolamine.

4,941,941

METHOD OF ANISOTROPICALLY ETCHING SILICON WAFERS AND WAFER ETCHING SOLUTION

Larry W. Austin, Hinesburg, and Harold G. Linde, Richmond, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1989, Ser. No. 416,337

Int. Cl.[5] H01L *21/306*; B44C *1/22*; C09K *13/00*; C03C *15/00*

U.S. Cl. 156—647 **28 Claims**

1. A method of etching silicon, comprising contacting said silicon with an etching solution which comprises an aromatic compound having at least two adjacent hydroxyl groups and a polar functional group on the ring, an amine and water.

4,941,942

METHOD OF MANUFACTURING A MASK SUPPORT OF SIC FOR X-RAY LITHOGRAPHY MASKS

Angelika M. Bruns, Henstedt-Ulzburg; Margret Harms, Hamburg; Holger K. G. Luthje, Halstenbek, and Bernd Matthiessen, Seevetal, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1988, Ser. No. 251,630

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733311

Int. Cl.[5] B44C *1/22*

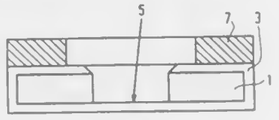
U.S. Cl. 156—657 **16 Claims**

1. A method of manufacturing a mask support or membrane of SiC for X-ray lithography masks comprising the steps of

(a) heating a monocrystalline silicon wafer to a temperture in the range of from 1000° to 1350° C. in a H_2 atmosphere, said monocrystalline silicon wafer having two major surfaces,

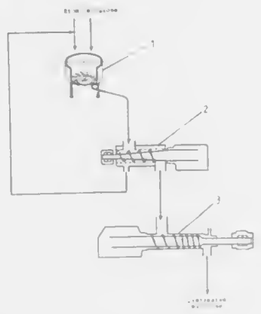
(b) then etching the heatd monocrystalline silicon wafer and subsequently rinsing the etched monocrystalline silicon wafer under the influence of H_2,

(c) depositing a layer of SiC on the rinsed monocrystalline silicon wafer in a gas atmosphere of silicon and hydrocarbons, said layer of SiC coating at least one of said two major surfaces of said monocrystalline silicon wafer,
(d) cooling the coated monocrystalline silicon wafer to ambient temperature in a H_2 atmosphere,



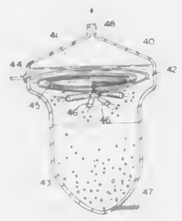
(e) implanting ions into said layer of SiC for mechanically disturbing the crystal structure of said layer of SiC, and
(f) selectively removing said monocrystalline silicon from said layer of SiC except at edges of said monocrystalline silicon wafer, thereby exposing both sides of said layer of SiC.

4,941,943
PROCESS FOR PREPARING SODIUM CARBOXY-METHYL CELLULOSE
Kari Edelman, Palokka, and Torsten Lindroos, Äänekoski, both of Finland, assignors to Metsa-Serla Oy, Kirkniemi, Finland
Filed Jan. 27, 1988, Ser. No. 148,951
Claims priority, application Finland, Jan. 27, 1987, 870360
Int. Cl.[5] C08B *11/00*; D21H *13/04*
U.S. Cl. 162—9 **9 Claims**



1. A process for preparing sodium carboxy-methyl cellulose, comprising:
(a) conducting a pretreatment which includes:
(i) slushing cellulose into a reaction medium until a fiber suspension having a consistency of about 5 to 15 percent is achieved;
(ii) thereafter thickening said fiber suspension until a pulp-containing reaction medium having a consistency of about 20 to 35 percent is achieved;
(iii) thereafter homogenizing said pulp-containing reaction medium using a screw conveyor having a screw pitch which decreases from an inlet opening thereof towards an outlet opening thereof, and thereby increasing the reactivity of said pulp; and
(iv) after conducting step (ii), mercerizing said pulp, thereby activating cellulose therein; and
(b) etherifying said activated cellulose.

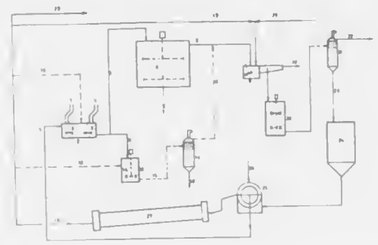
4,941,944
METHOD FOR CONTINUOUS COUNTERCURRENT OGRANOSOLV SACCHARIFICATION OF COMMINUTED LIGNOCELLULOSIC MATERIALS
Robert P. Chang, Burnaby, Canada, assignor to Pierre A. Tonachel, New York, N.Y.
Continuation of Ser. No. 712,784, Mar. 18, 1985, abandoned. This application Jan. 2, 1990, Ser. No. 460,042
Claims priority, application Canada, Jul. 13, 1984, 458893
Int. Cl.[5] D21C *3/20*
U.S. Cl. 162—19 **14 Claims**



7. A method of dissolving lignin and sugar substances from comminuted lignocellulosic material at elevated temperatures and pressures comprising:
(a) introducing comminuted lignocellulosic material into a reaction vessel;
(b) introducing a cooking liquor comprising a major proportion of organic solvent, a minor proportion of water, and a catalytically effective amount of inorganic acid into the reaction vessel;
(c) causing the comminuted lignocellulosic material to be contacted by and dissolved in the cooking liquor wherein the flow of cooking liquor is countercurrent to the flow of lignocellulosic material;
(d) withdrawing cooking liquor from the reaction vessel after the liquor has hydrolyzed and dissolved a substantial amount of the sugars, lignin and other substances in the comminuted lignocellulosic material; and
(e) rapidly cooling the cooking liquor wherein the lignin remains dissolved in the cooking liquor during the cooling.

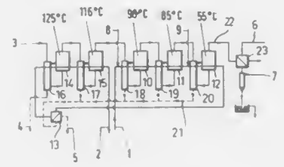
4,941,945
METHOD FOR CLARIFYING GREEN LIQUOR
Bertil Pettersson, Gävle, Sweden, assignor to Hedemora AB, Hedemora, Sweden
PCT No. PCT/SE88/00035, § 371 Date Oct. 12, 1988, § 102(e) Date Oct. 12, 1988, PCT Pub. No. WO88/06203, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 3, 1988, Ser. No. 259,570
Claims priority, application Sweden, Feb. 12, 1987, 8709549
Int. Cl.[5] D21C *11/04*
U.S. Cl. 162—29 **8 Claims**

1. Method of clarifying green liquor in a causticizing process by removing solid particles out of unclarified green liquor prior to subsequent complete causticizing of clarified green liquor by adding caustic lime to the clarified liquor, comprising adding caustic lime to the unclarified green liquor during agitation prior to said removing of the solid particles, said caustic lime added to the unclarified liquor being in an amount



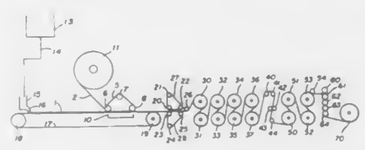
of 0.5–10% of the caustic lime added for said subsequent complete causticizing.

4,941,946
PROCESS FOR DECREASING THE TENDENCY TO FORM DEPOSITS IN PLANTS FOR EVAPORATING SPENT SULFITE LIQUORS
Manfred Henn, Mainaschaff; Klaus Begerow, Straelen, and Volker Wichert, Voerde, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 6, 1989, Ser. No. 307,679
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1988, 3809663
Int. Cl.[5] D21C *11/02*; C23F *14/00*
U.S. Cl. 162—36 **15 Claims**



1. In a process for evaporation of spent sulfite liquor from production of wood pulp, wherein the spent sulfite liquor is passed through a multiple-effect evaporator and is progressively concentrated in an entrance evaporation stage and a succession of evaporation stages downstream from said entrance evaporation stage, the improvement wherein a tendency toward encrustation of calcium sulfate and of silicates on the evaporator is reduced by the steps of:
(a) adding polyacrylic acid which has a low molecular weight of between substantially 500 and 5000 to the spent sulfite liquor at said entrance stage;
(b) adding an aqueous solution of a copolymer of sulfonated styrene and maleic anhydride having a molecular weight between substantially 1,000 and 30,000 to the spent sulfite liquor in at least one of said succession of evaporation stages downstream from said entrance evaporation stage; and
wherein said polyacrylic acid and copolymer are added in amounted effective to reduce the encrustation of calcium sulfate and silicates on the evaporator during concentration of the spent sulfite liquor.

4,941,947
COMPOSITE FIBROUS POLYETHYLENE SHEET
Joseph R. Guckert, Midlothian, and Hyun S. Lim, Chesterfield, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 29, 1989, Ser. No. 415,831
Int. Cl.[5] B32B *5/18*
U.S. Cl. 162—103 **3 Claims**



1. A process for preparing a composite sheet comprising:
depositing polyethylene synthetic pulp on the forming wire of a paper-making machine to form a wet-laid pulp layer,
placing a lightly consolidated flash-spun polyethylene plexifilamentary film-fibril strand sheet atop the wet pulp layer at a point in the paper-making machine where the pulp layer has a water content in the range of 99 to 50% by total weight of the layer to form a sheet assembly, and
then dewatering and drying the assembly to form a composite sheet.

4,941,948
WOOD POWDER-MOLDED PRODUCTS USING WOOD PULP AS THE BINDING AGENT
Junsaburo Yamamoto, 3-7-43 Koyanagi-cho, Fuchu-shi, Tokyo, Japan (183)
Filed May 19, 1988, Ser. No. 195,865
Claims priority, application Japan, May 22, 1987, 62-123881
Int. Cl.[5] D21H *11/08*
U.S. Cl. 162—142 **2 Claims**

1. A method of manufacturing a molded product of wood powder using a wood pulp binder, comprising:
preparing a solids mixture of 100 parts by weight consisting of 20 to 80 parts by weight wood powder having an average particle size between 10 and 100 mesh and 20 to 80 parts by weight of wood pulp having a beating degree between 170 and 200 C.S.F.;
adding water to the solids mixture in an amount of 15 times the weight of the solids mixture and mixing to form a homogeneous mixture;
adjusting the moisture content of the homogeneous mixture to between 60% and 75%;
molding the homogeneous mixture; and
drying the molded mixture having the adjusted moisture content.

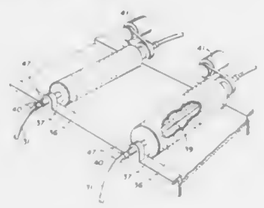
4,941,949
APPARATUS FOR MANUFACTURING TEXTURED ACOUSTICAL TILE
Myron M. Luszczak, Palatine, Ill., assignor to USG Interiors, Inc., Chicago, Ill.
Division of Ser. No. 861, Jan. 6, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,937
Int. Cl.[5] D21F *9/04*
U.S. Cl. 162—310 **1 Claim**

1. Apparatus for producing a three-dimensional texture pattern in the surface of ceiling tile on a moving wet pulp ceiling tile board manufacturing line comprising:
at least one hollow, rotatable, pressurized air cylinder of a first diameter, said cylinder having a plurality of spaced apart perforations penetrating through said cylinder disposed substantially throughout the surface of said cylinder;

an air pressure pipeline coaxially disposed within said air cylinder, said pipeline having a second diameter substantially less than said first diameter and further having a plurality of spaced apart perforations penetrating through said pipeline disposed substantially throughout the surface of said pipeline D';

means for supplying positively pressurized air to said pipeline;

at least one drive motor connected to said cylinder to provide rotation of the cylinder;



means for conveying a wet pulp ceiling tile composition below said air cylinder with the exposed surface of said composition spaced apart from the surface of said air cylinder;

whereby positively pressurized air passes through the perforations in said pipeline into the hollow space between the surface of the pipeline and the surface of the air cylinder, then through the perforations in the rotating cylinder and impinging on the surface of the wet pulp to produce a textured pattern on the wet pulp surface.

4,941,950

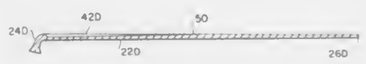
HEADBOX WITH GROOVED TRAILING ELEMENT

Charles L. Sanford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 26, 1989, Ser. No. 385,530

Int. Cl.[5] D21F *1/02*

U.S. Cl. 162—343 **18 Claims**



1. In a headbox of a web forming apparatus, a trailing element device for dividing a flow of stock flowing through a slice chamber of said headbox towards a slice lip of said headbox, said trailing element device comprising:

a rectangular sheet having an upstream and a downstream end and a first and a second surface;

said upstream end of said sheet being pivotally secured within said slice chamber for dividing the flow of stock into a first and a second current;

said downstream end of said sheet freely floating adjacent to the slice lip such that said first current of stock flows past said first surface and said second current of stock flows past said second surface so that turbulence within the slice chamber is reduced;

said first and second surfaces of said sheet defining respectively a first and a second plurality of parallel-spaced grooves extending in a direction from said upstream to said downstream end of said sheet for inhibiting the formation of machine direction vortices within said first and second currents respectively that would otherwise cause streaking of the resultant web; and

each of said grooves extending from said upstream end of said sheet and terminating short of said downstream end of said sheet.

4,941,951

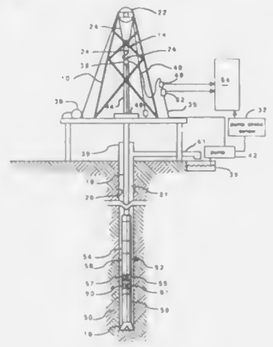
METHOD FOR IMPROVING A DRILLING PROCESS BY CHARACTERIZING THE HYDRAULICS OF THE DRILLING SYSTEM

Michael Sheppard, Missouri City, and Zhian Hedayati, Houston, both of Tex., assignors to Anadrill, Inc., Sugar Land, Tex.

Filed Feb. 27, 1989, Ser. No. 316,251

Int. Cl.[5] E21B *47/06*

U.S. Cl. 175—48 **13 Claims**



1. A method for improving the understanding of the process of drilling a borehole through a subsurface geological formation with a drill string at the bottom of which is a drill bit and through which drilling fluids are circulated, comprising the steps of:

a. providing measuring devices near the bottom of the drill string for measuring the pressure drop across the drill bit and the axial load placed on the drill bit;

b. raising the drill string to lift the drill bit off of the bottom of the borehole so that the axial load placed on the bit due to the weight of the drill string is reduced to zero;

c. making a first measurement indicative of the pressure drop across the drill bit at a plurality of different flow rates while at the same time making a second measurement indicative of the signal from the measuring device for measuring axial load on the drill bit;

d. combining said first and second measurements to obtain a constant representative of the rate of change of said first measurement relative to the rate of change of said second measurement;

e. drilling said formation while determining the weight on the drill bit and the pressure drop across the drill bit; and

f. combining said weight on the drill bit, said pressure drop across the drill bit and said constant in order to generate a weight on bit signal corrected for the effects of pressure drop across the drill bit.

4,941,952

PROCESS FOR THE TREATMENT OF WASTE MATERIAL

Monika Betz, Ketsch, Fed. Rep. of Germany, assignor to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

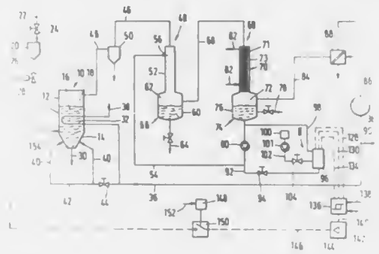
Filed May 22, 1989, Ser. No. 355,405

Claims priority, application Fed. Rep. of Germany, May 21, 1988, 3817437

Int. Cl.[5] C10B *53/00*

U.S. Cl. 201—1 **12 Claims**

1. Process for the treatment of hydrocarbon-containing waste material, which comprises subjecting the waste material to pyrolysis with the addition of an additive material binding acidic pollutants, feeding pyrolysis gas formed during pyrolysis to at least one first precooling stage, feeding the pyrolysis gas to at least one second cooling stage downstream of the at least one first precooling stage in gas flow direction, cooling the at least one second cooling stage to a temperature below the condensation temperature of water vapor for obtaining



low-boiling pyrolysis oil, mixing a solubilizer and water with the diverted part of the low-boiling pyrolysis oil, measuring the pH value of the mixture, comparing the measured pH value of the mixture with a predetermined pH range, correcting the addition of the additive material by automatically reducing the addition of additive material upon a rise in pH value outside the predetermined pH range, and automatically increasing the addition of additive material upon a fall in pH value outside the predetermined pH range.

4,941,953

DURABLE ELECTRODES HAVING A PLATED TINOR TIN OXIDE INTERMEDIATE LAYER FOR ELECTROLYSIS AND PROCESS FOR PRODUCING THE SAME

Yukiei Matsumoto, Kanagawa, and Takayuki Shimamune, Tokyo, both of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Continuation of Ser. No. 52,938, May 22, 1987, abandoned. This application Jun. 5, 1989, Ser. No. 361,727

Claims priority, application Japan, May 22, 1986, 61-116232

Int. Cl.[5] C25D *3/30*; C25B *11/06*

U.S. Cl. 204—541 **13 Claims**

1. An electrode for electrolysis comprising an electrode substrate made of a conductive metal having provided thereon an intermediate layer and a coating of an electrode active substance, said intermediate layer being a dense, non-porous layer and formed by tin-plating and consisting of at least one of tin and tin oxide.

7. A process for producing an electrode for electrolysis which comprises plating tin on an electrode substrate made of a conductive metal to form a dense, non-porous intermediate layer consisting of tin, and coating an electrode active substance thereon.

4,941,954

ELECTROCHEMICAL PREPARATION OF BRANCHED UNSATURATED DINITRILES

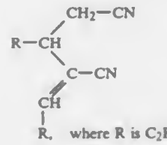
James Y. Becker, Omer, Israel, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1989, Ser. No. 349,243

Int. Cl.[5] C25B *3/00*

U.S. Cl. 204—59 R **9 Claims**

1. A process for the non-symmetric dimerization of an aliphatic unsaturated nitrile having 4 or 5 carbon atoms which comprises passing a direct electric current between electrodes located in a non-aqueous reaction mixture containing the aliphatic unsaturated nitrile and an electrolyte, and recovering a branched aliphatic unsaturated dinitrile in which there is an odd number of carbon atoms between the cyano-groups and having the formula:



where R is C_2H_5 or CH_3

4,941,955

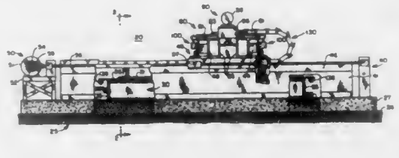
APPARATUS AND METHOD FOR ELECTROCHEMICAL MACHINING OF FLAT PLATES OR SHEETS

John E. Schuster, Flossmoor, Ill., assignor to The Interlake Companies, Inc., Oak Brook, Ill.

Continuation-in-part of Ser. No. 69,865, Jul. 6, 1987, Pat. No. 4,820,390. This application Feb. 1, 1989, Ser. No. 305,456

Int. Cl.[5] B23H *3/10, 7/32*

U.S. Cl. 204—129.5 **21 Claims**



19. A method for electrochemical machining of one of the opposed surfaces of a flat metal workpiece in the form of a plate or sheet, said method comprising the steps of: supporting the workpiece on a first electrode having a flat support surface such that the support surface is disposed in electrical and rigid supporting contact with the surface of the workpiece opposite the one surface over the entire area of the workpiece, providing a second electrode having a working face with an area substantially less than the area of the workpiece, supporting the second electrode with its working face disposed a predetermined slight distance from the one surface of the workpiece in facing relationship therewith so as to establish a predetermined working gap between the working face and a predetermined working area of the workpiece, establishing relative movement between the second electrode and the workpiece for sweeping the working face across the entire one surface of the workpiece, continuously flowing an electrolyte fluid through the working gap in contact with the second electrode and with the workpiece at a pressure substantially greater than atmospheric pressure, and applying an electrical potential across the first and second electrodes for promoting a flow of current through the workpiece and the electrolyte and the first and second electrodes to effect electrochemical removal of material from the one surface of the workpiece.

4,941,956

METHOD OF ENRICHING THE ISOTOPE CARBON 13 BY MEANS OF LASER IRRADIATION

Shigeyoshi Arai, Kyoto; Kyoko Sugita; Shohei Isomura, both of Tokyo, and Hayato Kaetsu, Saitama, all of Japan, assignors to Rikagaku Kenkyusho, Saitama, Japan

Filed Jan. 17, 1989, Ser. No. 297,703

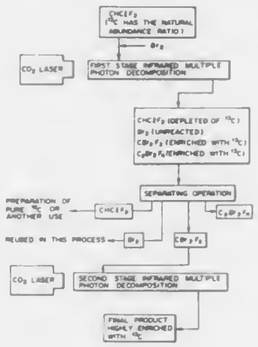
Claims priority, application Japan, Jan. 21, 1988, 63-11555

Int. Cl.[5] B01D *59/34*

U.S. Cl. 204—157.2 **2 Claims**

2. A method of enriching the isotope carbon 13 by means of laser irradiation, comprising

irradiating a mixture of $CHClF_2$ and Br_2 with laser rays emitted from a carbon dioxide gas laser to produce CBr_2F_2, and



irradiating a mixture of the produced CBr_2F_2 and O_2 with laser rays emitted from a carbon dioxide gas laser.

4,941,957

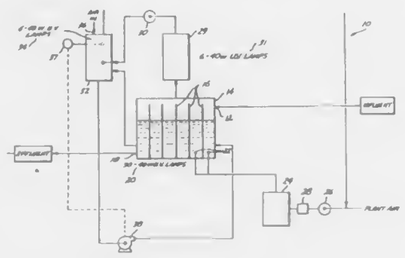
DECOMPOSITION OF VOLATILE OGRANIC HALOGENATED COMPOUNDS CONTAINED IN GASES AND AQUEOUS SOLUTIONS

Jack D. Zeff, Marina del Rey, and Erika Leitis, Canoga Park, both of Calif., assignors to Ultrox International, Santa Ana, Calif.

Continuation-in-part of Ser. No. 921,830, Oct. 22, 1986, Pat. No. 4,780,287, and a continuation of Ser. No. 627,392, Jul. 3, 1984, abandoned. This application Sep. 30, 1988, Ser. No. 250,842

Int. Cl.[5] C01B *7/00;* **B01J** *19/08*

U.S. Cl. 204—157.3 **6 Claims**



1. A method for decomposing volatile organic halogenated compounds in gases comprising passing gas carrying the volatile organic compounds through a porous adsorbent bed of silica gel while irradiating the porous bed with ultraviolet light and/or exposing the porous adsorbent bed to ozone at a distance effective to promote a decrease in the amount of said volatile organic halogenated compounds and for an amount of time effective to decompose the volatile organic halogenated compounds in said gases.

4,941,958

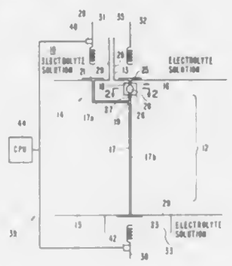
DEVICE AND METHOD FOR DETECTING IONIC COMPONENTS IN SOLUTION

William A. Byers, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 8, 1989, Ser. No. 320,648

Int. Cl.[5] G01N *27/26, 27/28*

U.S. Cl. 204—183.3 **23 Claims**



17. A system for detecting ionic components in solution, comprising:

(a) a plurality of detector elements each including:

(i) a first ion exchange medium, and

(ii) a second ion exchange medium contacting the first ion exchange medium and being in fluid communication therewith via an electrolyte solution,

wherein the second ion exchange medium has a higher ion mobility than the first ion exchange medium;

(b) means for effecting an electric field in the electrolyte solution to cause an analyte introduced at the second ion exchange medium to disassociate into ionic components which selectively migrate from the second ion exchange medium to the first ion exchange medium; and

(c) means for controlling and monitoring the plurality of detecting elements.

4,941,959

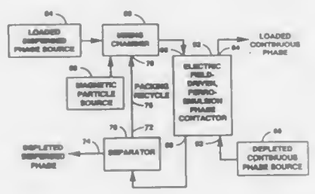
ELECTRIC FIELD-DRIVEN, MAGNETICALLY-STABILIZED FERRO-EMULSION PHASE CONTACTOR

Timothy C. Scott, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Nov. 27, 1989, Ser. No. 441,494

Int. Cl.[5] B03C *5/00*

U.S. Cl. 204—186 **8 Claims**



1. A method for solvent extraction comprising the steps of:

introducing initial droplets of a dispersed phase liquid material containing ferromagnetic particles to a counter-current flow of a continuous phase;

applying a high intensity pulsed electric field to the initial droplets so as to shatter the initial droplets into a ferromagnetic emulsion comprising many smaller daughter droplets in the continuous phase, the daughter droplets having a greater combined total surface area than that of the initial droplets;

applying a magnetic field to the ferromagnetic emulsion to control the position of the ferromagnetic emulsion within the continuous phase;

coalescing a plurality of the daughter droplets into larger reformed droplets; and

separating the reformed droplets from the continuous phase.

4,941,960

BARREL FOR ELECTROPLATING, PHOSPHATING AND PICKLING

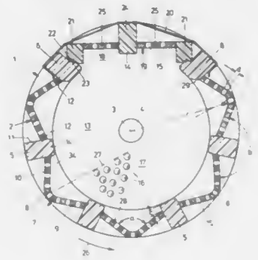
Hans Henig, Albrecht-Achilles-Strasse 48, D-8500 Nürnberg 60, Fed. Rep. of Germany

Filed Dec. 5, 1989, Ser. No. 446,256

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1988, 3841789

Int. Cl.[5] C25D *17/20*

U.S. Cl. 204—213 **16 Claims**



1. A rotatable barrel of an electrically non-conductive plastics material for the surface treatment of pourable small pieces (16) in a treatment bath solution (41), comprising:

two end faces (1, 1', 1'') spaced apart from each other;

a central longitudinal axis (3);

support bars (5, 6; 5', 6'; 5'', 6''; 5*a*; 5*b*) arranged parallel to each other and to said central longitudinal axis (3), which are connected with said end faces (1, 1', 1'');

barrel coat sections (7, 7', 7'', 7'*a*, 7*b*), which are arranged each between two adjacent support bars (5, 6; 5', 6'; 5'', 6''; 5*a*; 5*b*) and which are connected with them, said support bars (5, 6; 5', 6'; 5'', 6''; 5*a*; 5*b*) and said barrel coat sections (7, 7', 7'', 7'*a*, 7*b*) forming one barrel coat (2, 2', 2'') with an inner wall (28);

at least one charge and discharge opening (18, 18'') in said barrel coat (2, 2', 2'');

at least one cover (19, 19') for closing said at least one charge and discharge opening (18, 18'');

an inner room (13, 13') delimited by said end faces (1, 1', 1''), said barrel coat (2, 2', 2'') and said at least one cover (19, 19'), and taking up a charge (17) of said small pieces (16);

openings (15) for the passage of said treatment bath solution (41) provided at least in said barrel coat sections (7, 7', 7'', 7'*a*, 7*b*); and

rotatable bearing devices (4) arranged adjacent to said end faces (1, 1', 1'') and concentrically to said central longitudinal axis (3);

wherein said barrel coat sections (7, 7'', 7'', 7'*1*, 7*b*) are made roof-shaped by means of two partial sections (9, 10; 9', 10'; 9'', 10''; 9*b*, 10*b*) forming a vertex (8, 8', 8*b*) and enclosing a vertex angle (a, a') of more than 90° and less than 180°.

4,941,961

FLEXIBLE ELASTOMER ELECTRODE

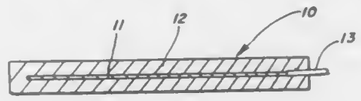
Toru Noguchi; Toshimichi Takada; Takahiro Yonezaki; Yoshio Yamaguchi, all of Kobe; Hajime Kakiuchi, Itami; Shigehito Deki, Kobe; Kazuo Goto, Kobe; Hitoshi Miyata, Amagasaki, and Satoshi Mashimo, Akashi, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Apr. 21, 1989, Ser. No. 341,708

Claims priority, application Japan, Apr. 21, 1988, 63-99960; Jun. 17, 1988, 63-151038; Dec. 13, 1988, 63-315503

Int. Cl.[5] C25B *11/12*

U.S. Cl. 204—294 **32 Claims**



1. A flexible electrode comprising:

an electrically conductive flexible base;

a flexible protective layer having a substantial thickness completely about and enclosing said base, said protective layer formed of an elastomeric material selected from the group of silicone rubbers and fluorine rubbers, said protective layer having electrically conductive material selected from the group consisting of highly conductive carbon black, graphite, and glassy carbon distributed therein, said electrically conductive material being present in the amount of 10 to 30 parts by weight to 100 parts by weight of the elastomeric material, said protective layer being heated and pressurized on said base for a time sufficient to vulcanize said elastomeric material while still resulting in substantial flexibility of said electrode; and

an electrically conductive terminal extending from said base to exteriorly of said protective layer.

4,941,962

ELECTROSTATIC ADSORPTIVE FLUID FILTERING APPARATUS

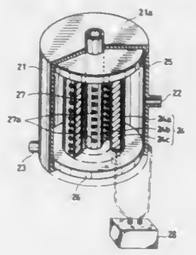
Noboru Inoue, 2-14-24, Azahicho, Takasagocho, Takasago-shi, Hyogo-ken, Japan, assignor to Noboru Inoue, Takasago, Japan

Continuation of Ser. No. 873,040, Jun. 12, 1986, abandoned. This application May 31, 1988, Ser. No. 201,373

Claims priority, application Japan, Jun. 17, 1985, 60-131328

Int. Cl.[5] B01D *15/00, 35/06;* **B03C** *3/00*

U.S. Cl. 204—302 **10 Claims**



1. An electrostatic adsorptive fluid filtering apparatus, comprising:

an outer cylindrical electrode having a fluid inlet;

a charging electrode concentrically inserted in said outer cylindrical electrode, said charging electrode comprising a porous electric conductor formed in a double walled cylinder including concentric inner and outer walls defin-

ing a space therebetween and a hollow interior inside said inner wall, said outer cylindrical electrode and said charging electrode defining together a fluid receiving space communicating with said fluid inlet;

an adsorbent situated in an filling said space between the inner and outer walls of the double walled cylinder;

a central electrode axially extending within said hollow interior of said charging electrode, said central electrode comprising a pipe piece and defining a fluid outlet; and

a source of electrical voltage connected to said outer cylindrical electrode, the charging electrode and the central electrode, wherein a voltage is impressed across said outer cylindrical electrode and said charging electrode, on one side, with the voltage on said central electrode and said outer cylindrical electrode being at the same potential and different from the potential on said charging electrode, while fluid under pressure is introduced through said inlet into said fluid receiving space, and passes through the charging electrode, the adsorbent and the central electrode to said fluid outlet.

4,941,963

SYNTHESIS OF CRYSTALLINE ZSM-11 STRUCTURE

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corp., New York, N.Y.

Filed Aug. 30, 1989, Ser. No. 400,412
Int. Cl.[5] C10G *1/00*; C01B *33/28*
U.S. Cl. 208—46 **20 Claims**

1. A method for synthesizing a crystalline material exhibiting a characteristic X-ray diffraction pattern including values as shown in Table 1

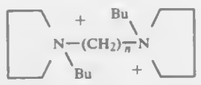
TABLE 1

Interplanar d-Spacing, (A)	Relative Intensity (I/I_o)
11.2 ± .2	m
10.1 ± .2	m
6.73 ± .2	w
5.75 ± .1	w
5.61 ± .1	w
5.03 ± .1	w
4.62 ± .1	w
4.39 ± .08	w
3.86 ± .07	vs
3.86 ± .07	m
3.49 ± .07	w
(3.07, 3.00 ± .05)	w
2.01 ± .02	w

where vs=very strong (75–100), m=medium (25–49), and w=weak (0–24), which comprises (i) preparing a mixture capable of forming said material, said mixture comprising sources of alkali or alkaline earth metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), water and a directing agent (R), and having a composition, in terms of mole ratios, within the following ranges:

YO_2/X_2O_3	at least 20
H_2O/YO_2	5 to 200
OH^-/YO_2	0.01 to 2.0
M/YO_2	0.01 to 3.0
R/YO_2	0.02 to 2.0

wherein R is a diquaternary ammonium of the formula:



and wherein Bu is -butyl and n is 6 or 7; (ii) maintaining said mixture under sufficient conditions until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii), said recovered crystalline material containing said R.

4,941,964

HYDROTREATMENT PROCESS EMPLOYING CATALYST WITH SPECIFIED PORE SIZE DISTRIBUTION

Pei-Shing E. Dai; David E. Sherwood, Jr.; Burton H. Bartley, all of Port Arthur, and Randall H. Petty, Winnie, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 14, 1988, Ser. No. 168,095
Int. Cl.[5] C10G *17/00, 45/00*
U.S. Cl. 208—216 PP **18 Claims**

1. A process for the hydrotreatment of a sulfur and metal-containing hydrocarbon feed which comprises contacting said feed with hydrogen and a catalyst in a manner such that the catalyst is maintained at isothermal conditions and is exposed to a uniform quality of feed, where said catalyst has a composition comprising 3.0–5.0 wt. % of an oxide of a Group VIII metal, 14.5–24.0 wt. % of an oxide of a Group VIB metal and 0–2.0 wt. % of an oxide of phosphorus supported on a porous alumina support, and said catalyst is further characterized by having a total surface area of 150–210 m^2/g and a total pore volume of 0.50–0.75 cc/g with a pore diameter distribution such that micropores having diameters of 100–160A constitute 70–85% of the total pore volume of said catalyst and macropores having diameters of greater than 250A constitute 5.5–22.0% of the total pore volume of said catalyst.

4,941,965

PROCESS FOR THE HYDROCRACKING OF A HYDROCARBON FEEDSTOCK AND HYDROCRACKING PLANT FOR CARRYING

Jacques Amouroux, Bures s/Yvette, and Mehrdad Nikravech, Paris, both of France, assignors to Electricite de France (Service National), Paris, France

Filed May 24, 1988, Ser. No. 197,836
Claims priority, application France, May 22, 1987, 87 07216
Int. Cl.[5] C10G *47/00*
U.S. Cl. 208—108 **12 Claims**

I. A process for the hydrocracking of a feedstock of high-molecular hydrocarbons, which comprises mixing a plasma containing hydrogen at a first temperature into a bed of solid particles fluidized by a stream of gas at a second lower temperature in order to produce radical hydrogen entrained in the stream of gas at a temperature below that of the plasma, and reacting radical hydrogen with the said feedstock of high-molecular hydrocarbons to form, under hydrocracking conditions, low-molecular hydrocarbons entrained in the stream of gas.

4,941,966

PROCESS FOR THE HYDROGENATIVE CONVERSION OF HEAVY OILS AND RESIDUAL OILS

Ludwig Merz, Recklinghausen, and Klaus Niemann, Oberhausen, both of Fed. Rep. of Germany, assignors to Veba Oel Entwicklungs-Gesellschaft mbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Mar. 23, 1988, Ser. No. 172,225
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3710021
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] C10G *49/02*
U.S. Cl. 208—112 **18 Claims**

1. A process for the hydrogenative conversion of mixtures of oil and organic waste products, comprising the steps of:

(i) preparing a hydrogenation mixture comprising

(a) a heavy oil,

(b) a used oil or a waste oil, and

(c) one or more organic waste products different than (b) containing natural or synthetic organic compounds comprising uncrosslinked or crosslinked carbon chains;

(ii) contacting said hydrogenation mixture with 0.1–10 wt. % based on said hydrogenation mixture of an additive selected from the group consisting of carbon, red mud, iron oxides, electrostatic filter dusts and cyclone dusts, wherein said additive comprises a mixture of particles in two different particle size ranges, a fine particle fraction with a particle size 90 microns or less, and a coarse particle fraction with a particle size between 100–1000 microns, said mixture of fractions having a correlation coefficient R^2 less than 0.96 as determined from the equation:

$$R^2 = \frac{[n\Sigma xy - (\Sigma x)(\Sigma y)]^2}{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}$$

wherein n is the number of experimental points, y is ln [−ln (η/100)], x is ln (dp), dp is particle size in microns, and % η is the accumulative weight under a dp in wt. %; and

(iii) hydrogenating said contacted mixture at a hydrogen partial pressure of 50–350 bar, a temperature of 250°–500° C. and a gas/oil ratio of 100–10,000 m^3/t of said hydrogenation mixture calculated at standard temperature and pressure wherein the weight ratio (a)/(b), (a)/(c), or (a) to (b)+(c) is in the range of 100:1 to 1:15.

4,941,967

PROCESS FOR RE-REFINING SPENT LUBEOILS

Leonardus M. M. Mannetje, Permata Hijau, Indonesia, and Ashok S. Laghate, Zoetermeer, Netherlands, assignors to Kinetics Technology International B.V., Zoetermeer, Netherlands

Continuation of Ser. No. 674,315, Nov. 20, 1984, abandoned.
This application Jan. 27, 1987, Ser. No. 9,085
Claims priority, application Netherlands, Nov. 23, 1983, 8304023
Int. Cl.[5] C10M *11/00*
U.S. Cl. 208—184 **11 Claims**

1. A process for re-refining spent lubeoils, comprising

(a) removing water and sludge forming impurities from lubeoil,

(b) subjecting the lubeoil to a pre-distillation at reduced pressure and with a short residence time of the oil in the distillation column,

(c) subsequently subjecting it to film evaporation under vacuum, the liquid film being maintained in turbulent motion by wiping,

(d) subjecting the overhead product obtained with the film evaporation to an after-treatment after condensation, wherein the film evaporation takes place in one or more wiped-film evaporators and a portion of the total heavy bottom product of at least one film evaporator is recirculated to the entrance of the film evaporator.

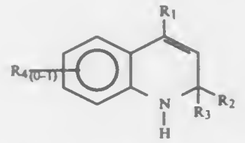
4,941,968

METHOD FOR INHIBITING GUM FORMATION IN LIQUID HYDROCARBON MEDIUMS

Dwight K. Reid, Houston, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 28, 1989, Ser. No. 387,329
Int. Cl.[5] C10G *29/20*
U.S. Cl. 208—236 **15 Claims**

1. A method of inhibiting the formation of gum and sediment in a liquid hydrocarbonaceous medium comprising adding to said medium an inhibiting amount of an alkyl 1,2-dihdroquinoline or polymerized alkyl 1,2-dihydroquinoline, said alkyl 1, 2-dihydroquinoline having the structure



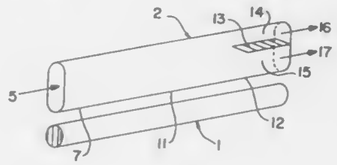
wherein R_1, R_2, and R_3 are the same or different and are chosen form H and C_1–C_6 alkyl, R_4, when present, is C_1–C_{20} alkyl, or C_1–C_{10} alkoxy.

4,941,969

METHOD OF AND AN APPARATUS FOR THE SEPARATION OF PARAMAGNETIC PARTICLES IN THE FINE AND FINEST PARTICLE SIZE RANGES IN A HIGH-INTENSITY MAGNETIC FIELD

Klaus Schönert, Tannenhöhe 4, 3392 Clausthal-Zellerfeld, and Hans-Michael Fricke, Limburgerhof, both of Fed. Rep. of Germany, assignors to Klaus Schönert, Clausthal-Zellerfeld, Fed. Rep. of Germany

PCT No. PCT/DE87/00128, § 371 Date Jan. 25, 1988, § 102(e) Date Jan. 25, 1988, PCT Pub. No. WO87/05829, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 25, 1987, Ser. No. 146,811
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610303
Int. Cl.[5] B03C *1/00*
U.S. Cl. 209—39 **15 Claims**



1. An apparatus for the continuous separation of a fluid medium entraining paramagnetic particles and non-paramagnetic particles into two product streams, a first product stream containing substantially all of the paramagnetic particles inlet to the apparatus, and the second product stream containing substantially none of the paramagnetic particles inlet to the apparatus, comprising:

a magnetic field generating means for generating a horizontally homogeneous magnetic field,

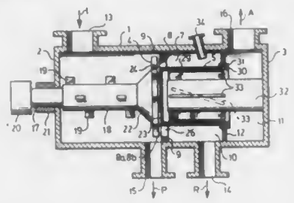
an induction member located within the homogeneous magnetic field generated by the magnetic field generating means and oriented horizontally at right-angles relative to the magnetic field flux,

a separating channel associated with and located above said induction member with respect to the direction of the earth's gravitational force and parallel to said induction member, including an inlet end for receiving fluid medium containing entrained paramagnetic particles, and an outlet end having two outlets, a first outlet suitable for withdrawing the first product stream containing substantially all of the paramagnetic particles inlet to the separating channel, and a second outlet suitable for withdrawing the second product stream containing substantially none of the paramagnetic particles inlet to the separating channel.

4,941,970
APPARATUS FOR DIVIDING A SUSPENSION OF FIBROUS CELLULOSE PULP

Björn Åhs, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden

Filed Jun. 16, 1988, Ser. No. 207,215
Claims priority, application Sweden, Jul. 3, 1987, 8702745
Int. Cl.[5] B07B *1/00, 1/24*
U.S. Cl. 209—234 17 Claims



1. An apparatus for dividing a suspension of fibrous cellulose pulp into a plurality of portions including an undesired parts portion and a remaining portion, the apparatus comprising a closed housing divided into first and second axially aligned chambers having a common longitudinal axis, each provided with inlet and outlet means; a separating means rotatable at high speed in said first chamber to separate the undesired parts portion from the suspension via the outlet means in said first chamber, the inlet means to the second chamber comprising an opening arranged between said first chamber and said second chamber for transferring the remaining suspension portion which has been substantially freed from undesired parts; a cylindrical screening means in said second chamber, connected to said separating means in said first chamber, the separating means and screening means being driven by a common shaft coincident with said longitudinal axis; and a support means in said second chamber provided with blades with which the screening means cooperates to divide the remaining suspension into different fractions which separately leave said second chamber by said outlet means of said second chamber.

4,941,971
APPARATUS FOR MOUNTING IN AN AQUEOUS SYSTEM, A CARTRIDGE FILTER FOR FILTERING THE SYSTEM AND IN PLACE CLEANING THE FILTER

Alva Z. Albright, 1927 Albert St., Alexandria, La. 71301

Continuation-in-part of Ser. No. 764,544, Aug. 12, 1985, abandoned. This application Dec. 2, 1985, Ser. No. 803,291
Int. Cl.[5] B01D *33/06*
U.S. Cl. 210—107 11 Claims

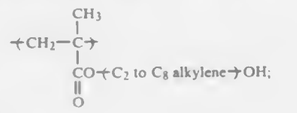
1. Filtering apparatus comprising:
(a) a container;
(b) a filter cartridge mounted in the container;
(c) means for allowing the filter cartridge to rotate relative to the container;
(d) means for causing the filter cartridge to rotate relative to the container, consisting essentially of a nozzle for directing pressurized fluid against the outside of the filter cartridge;
(e) first inlet means communicating with the interior of the container exterior of the filter cartridge for allowing fluid to enter the container exterior of the filter cartridge; and
(f) first outlet means communicating with the interior of the filter cartridge for allowing fluid to exit the container from the interior of the filter cartridge.

4,941,972
CHLORINE-STABLE MEMBRANE COMPOSITIONS

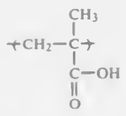
Jee I. Kau, Concord, Calif.; Dale M. Pickelman, Auburn, Mich.; Donald L. Schmidt, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1984, Ser. No. 678,870
Int. Cl.[5] B01D *13/00, 13/01*
U.S. Cl. 210—490 21 Claims

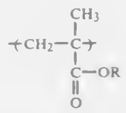
1. A composite membrane comprising a porous substrate and adhering to the substrate at least one selectively permeable film, wherein at least one layer of the film consists essentially of a crosslinked vinyl addition polymer including about 10 to about 80 mole percent of moieties corresponding to formula II, 0 to about 20 mole percent of moieties corresponding to formula III, 0 to about 20 mole percent of moieties corresponding to formula IV, 0 to about 85 mole percent of non-interfering moieties derived from the moieties of formulae II, III or other ethylenically unsaturated moieties and at least one crosslinking group corresponding to formula VI, where formula II is



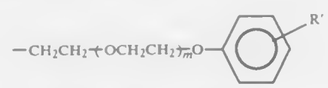
formula III is



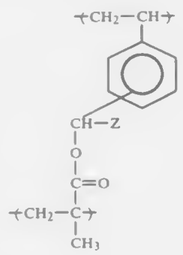
formula IV is



wherein each R is independently C_1 to C_{18} alkyl or alkylphenoxypolyethyleneoxyethyl of the formula



wherein m is an integer from 3 to 40 and R′ is C_1 to C_{20} alkyl; and formula VI is

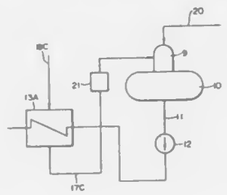


wherein Z is —H or —CH_3.

4,941,973
APPARATUS FOR REMOVING IRON OXIDES FROM WATER IN FEED WATER SYSTEM OF A POWER PLANT

Mamoru Suzuki; Katsumi Suzuki; Kazutoshi Itoh; Akira Minato; Tsuyoshi Kambayashi, and Yoshiyuki Hoshino, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 488,429, Apr. 22, 1983, abandoned, which is a continuation of Ser. No. 276,840, Jun. 24, 1981, abandoned. This application Jun. 29, 1988, Ser. No. 213,142
Claims priority, application Japan, Jun. 25, 1980, 55-85137; Jul. 18, 1980, 55-97535
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—175 19 Claims



18. An apparatus for removing iron oxides from water of a feed water and condensed water system of an electric power plant, which comprises:
a boiler for generating steam;
a turbine connected to the boiler and actuated by the steam;
a condenser for condensing the steam operatively associated with the turbine;
a hot well for storing the condensed water;
means for desalting the condensed water received from said hot well;
a low pressure feed water heater for heating the condensed water obtained from said desalting means;
an air separator for separating air from the condensed water;
an air separator water tank for storing the condensed water taken from said air separator;
a high pressure feed water heater for heating the condensed water obtained from said air separator water tank;
a drain pipe line for feeding drain from said high pressure feed water heater into said air separator; and
means for connecting said boiler, said turbine, said condenser, said hot well, said desalting means, said low pressure feed water heater, said air separator, said air separator water tank and said high pressure feed water heater in fluid communication;
wherein a plurality of permanent magnet blocks are placed in said water tank of said air separator in such a manner that iron oxides contained in the form of magnetite in said condensed water flowing through said water tank of said air separator is magnetically trapped by said permanent magnet blocks.

4,941,974
METHOD OF MAKING LIQUID CHROMATOGRAPHY DUAL ZONE PACKING MATERIALS

Dwight E. Williams, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 212,100, Jun. 27, 1988, Pat. No. 4,855,054, which is a division of Ser. No. 63,147, Jun. 17, 1987, Pat. No. 4,773,994. This application Apr. 10, 1989, Ser. No. 335,885
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 13 Claims

1. A method for making a dual zone reverse phase packing material for liquid chromatographic columns which comprises:
(a) providing a hydroxyl-bearing porous support selected from the group consisting of porous metalloid oxides, porous metallic oxides and porous mixed metallic oxides,
(b) contacting said porous support with less than a saturating amount of fluorocarbon silane which is capable of rapidly reacting with and covalently bonding to the hydroxyl groups on the external surface of said porous support under conditions sufficient to form a lipophobic phase comprising fluorocarbon groups in the external zone of said porous support wherein said fluorocarbon groups have the formula:

$$Me_{3-m}SiC_2H_4C_nF_{2n+1}$$

wherein m is 1–3 and n is 1 or more.
(c) thereafter, contacting said porous support with less than a saturating amount a lipophilic silane which is capable of diffusing into the interior of said porous support and covalently bonding to the hydroxyl groups on the internal surface of said porous support under conditions sufficient to form a lipophilic partitioning phase in the internal zone of said porous support, and
(d) thereafter, contacting said porous support with a ketal silane under conditions sufficient to form ketal blocked diol groups on the external surface.

4,941,975
STAR-SHAPED FILTER NOZZLE

Hermann Schewe, Hiddenhausen, Fed. Rep. of Germany, assignor to Kleemeier, Schewe & Co. KSH GmbH, Herford, Fed. Rep. of Germany

Filed Apr. 14, 1989, Ser. No. 337,817
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 8805521[U]
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—232 4 Claims

1. A star-shaped filter nozzle comprising a central, tubular element having a plurality of lateral openings and a plurality of filter nozzle arms radially protruding from said openings in said central member, each of said arms having an inner end removably inserted into lateral openings of said central member, wherein interconnecting elements on said filter nozzle arms and on said central member form complementary parts of a bayonet lock.

4,941,976
DEHYDRATION OF GLYCOLS

Craig R. Bartels, and John Reale, Jr., both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 97,766, Sep. 17, 1987, Pat. No. 4,802,988. This application Aug. 23, 1988, Ser. No. 235,082
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.
Int. Cl.[5] B01D *69/00*
U.S. Cl. 210—490 5 Claims

1. A non-porous separating layer of thickness of 1–10 microns of cast polyvinyl alcohol of molecular weight $\overline{M}_n$ of 20,000–200,000 which has been cross-linked, in the presence of acid catalyst, with an aliphatic polyaldehyde containing at least three carbon atoms including those in said aldehyde groups, the mole ratio of aldehyde to vinyl alcohol being 0.05–0.30, and thereafter cured at 100°–200° C.

4,941,977
CROSS-FLOW SEPARATOR FOR SEPARATING COMPONENT SUSPENDED IN A LIQUID

Jan Cornelissen, Den Haag, Netherlands, assignor to Pielkenrood Vinitex B.V., Assendelft, Netherlands

Filed Jan. 5, 1987, Ser. No. 538

Claims priority, application Netherlands, Jan. 9, 1986, 8600032

Int. Cl.[5] B01D *21/10*

U.S. Cl. 210—521 **4 Claims**



1. In a cross flow plate separator of the type having an assembly of parallel plates inclined to the horizontal plane in a container between a supply chamber and a discharge chamber, and at least one collecting chamber above or below said assembly for collecting components separated from liquid flowing between said plates from said supply to said discharge chambers, and wherein a plurality of dividing baffles transverse to said flow extend in said at least one collecting chambers to a depth below a sediment layer collected beneath said assembly or into a floating layer in a collecting chamber above said assembly, the improvement comprising:

said plates having supply side edges curled (18) for smoothing said liquid flow entering between said plates from said supply chamber.

4,941,978
CONTROLLING AND RECOVERING OIL SPILLS FROM THE ENVIRONMENT

Albert Gabrick, 2118 Treeridge Cir., Brea, Calif. 92621

Filed Aug. 7, 1989, Ser. No. 390,170

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—693 **8 Claims**

1. The method of preventing oil contamination of an environment by uncontrolled spills of mineral oil and fractions of mineral oil on bodies of water in said environment, which comprises:

a. applying to the spill subdivided particles of an elastomeric gum, consisting essentially of a styrene-ethylene/butylene diblock or triblock copolymer containing from 20 to about 40 percent styrene, in an amount from 0.1 to about 1.5 weight parts per weight part of said oil;

b. permitting said particles to mix with said oil and to absorb said oil thereon and form a low density solid adsorbate, having a non-oily and non-tacky surface, which floats on said body of water; and

c. gathering said solid adsorbate and removing it from said water.

4,941,979
METHOD OF STABILIZING MANGANESE IN AQUEOUS SYSTEMS

Stephen M. Kessler, Fairless Hills, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 8, 1989, Ser. No. 308,172

Int. Cl.[5] C02F *5/10*

U.S. Cl. 210—697 **7 Claims**

1. A process for stabilizing manganese ions in an aqueous solution comprising adding to said aqueous solution containing manganese ions an effective amount for the purpose of a combination of a polymer consisting essentially of unsaturated carboxylic compounds and an orthophosphate, to maintain said manganese ions soluble in said aqueous solution, wherein the ratio of polymer to orthophosphate is from about 2:1 to about 4:1.

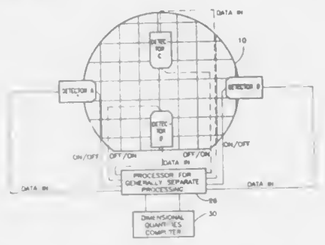
4,941,980
SYSTEM FOR MEASURING A TOPOGRAPHICAL FEATURE ON A SPECIMEN

Uriel Halavee, Ramat Gan; Israel Niv, Shdema, and Tzila Schwarzkopf, Tel Aviv, all of Israel, assignors to Opal, Inc., Santa Clara, Calif.

Filed Feb. 17, 1989, Ser. No. 312,619

Int. Cl.[5] H01J *37/28*

U.S. Cl. 250—310 **12 Claims**



1. A system for measuring a topographical feature on a specimen comprising:

means for scanning an electron beam across a topographical feature at high speed;

at least first and scond electron detector means organized in pairs;

means for signal processing of a first signal received from said first electron detector means thereby to identify elements of across-sectional profile of said feature;

means for signal processing of a second signal received from said second electron detector means generally separately from the signal processing of said first signal thereby to identify elements of a cross-sectional profile of said feature;

means for incorporating said elements identified from said first electron detector means and said elements identified from said second electron detector means thereby to produce a composite picture of said feature.

4,941,981
MODIFIED NON-POLLUTING LIQUID PHASE SHALE SWELLING INHIBITION DRILLING FLUID

Alphonse C. Perricone; Dennis K. Clapper, and Dorothy P. Enright, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 128,798, Dec. 4, 1987, Pat. No. 4,830,765. This application Sep. 16, 1988, Ser. No. 245,050

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] C09K *7/02*

U.S. Cl. 252—8.51 **1 Claim**

1. A non-polluting modified liquid phase subterranean well drilling fluid consiting essentially of:

(1) a liquid phase containing:

(a) a water soluble phase comprising fresh water, sea water, brine, simulated brine, or mixtures thereof; and

(b) a water-soluble component selected from the class consisting of glycol ethers, polypropylene glycols, tripropylene glycol bottoms having from between about 5% and about 20% by volume tripropylene glycol and from between about 95% and about 80% by volume propylene glycol highers, polyethylene glycols, ethylene oxide-propylene oxide copolymers, alcohol-initiated ethylene oxide-propylene oxide polymers and-/or mixtures thereof, the ratio of said water-soluble component to the total liquid phase being from between at least about 20% to about 50% by volume;

(2) a viscosifier for suspension of solids in said liquid phase; and

(3) a filtration control agent, the linear swelling on a reconstituted "gumbo" shale inserted in said drilling fluid for about 60 minutes being lower than that for substantially the same fluid without the water soluble component, as measured by the "Swelling Test", "Rig-site Shale Evaluation Techniques for Control of Shale-Related Wellbore Instability Problems", SPE/IADC Paper No. 16054, Pages 52-53 (1987), said drilling fluid being less toxic to mysid shrimp than an 80:20 oil based drilling fluid containing a mineral seal oil as the oil phase following toxicity test procedures as set forth in "Acute Toxicity of Eight Laboratory Prepared Generic Drilling Fluids to Mysids (Mysidopsis Bahia)", 1984 EPA-600/3-84-067.

4,941,982
CALCIUM-FREE CLEAR HIGH DENSITY FLUIDS

Ahmad Dadgar, and Charles C. Shin, both of Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 938,866, Dec. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 892,155, Jul. 30, 1986, abandoned. This application Jul. 28, 1988, Ser. No. 225,347

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.[5] E21B *43/00*; C09K *7/04*

U.S. Cl. 252—8.551 **7 Claims**

1. A clear, high-density calcium-free fluid adapted for use as well completion, packing and perforating media comprising an aqueous solution of about 44 percent by weight zinc bromide and about 35 up to about 36 percent by weight of at least one member selected from the group consisting of sodium bromide and potassium bromide, the solution having a density of about 19.2 pounds per gallon and a pH lying in the range of about 1.0 to 5.5.

4,941,983
FLUID LOSS-REDUCING ADDITIVES FOR OIL-BASED WELL WORKING FLUIDS

Jacqueline A. Coates; John M. Farrar, and Margaret H., all of Graham, Leeds, Great Britain, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 91,243, Aug. 31, 1987, abandoned. This application Aug. 29, 1988, Ser. No. 238,018

Claims priority, application United Kingdom, Sep. 1, 1986, 8621086

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.[5] C09K *7/06*

U.S. Cl. 252—8.515 **7 Claims**

1. A fluid loss additive for oil-based well-working fluids, the fluid loss additive comprising:

(i) lignite or humic acid (hereinafter referred to as component i); and

(ii) (a) a compound of Formulae I, II, VIII, XXX, or XXXI, or the salts thereof, and/or

(b) a compound of Formulae XI, XII, XIII, XIV, XV, XVI, XVII or XVIII, and/or

(c) the fully or partially reacted reaction product of a phosphoric acid with a compound of Formulae I, II, III, IV, V, VI, VII, VIII, IX, X, XXX, or XXXI,

said compound or compounds being referred to collectively as component ii;

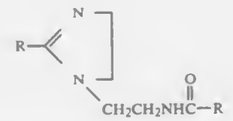
(iii) a dimer and/or trimer fatty acid component (collectively referred to as component iii);

wherein the weight proportion of said components i and ii to component iii is between 10:1 and 1:2,

said compounds of Formulae I-XVIII, and XXX-XXXI having the following significances:

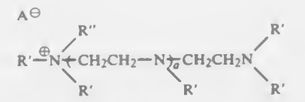


I



II

wherein each R is independently, hydrogen, $C_{1\text{-}21}$alkyl or $C_{2\text{-}21}$alkenyl;



VIII

wherein a is 0 or an integer from 1 to 6 inclusive, each R' independently, has a significance of R or is $(CH_2CH_2O)_x$—H or $(CH_2$—$CH(CH_3)$—O—$)_x$—H;

$A^{\ominus}$ is an anion;

x is an integer from 1 to 10 inclusive;

R" is $-CH_3$ or C_2H_5, and

R is as defined above;

IX $RNHCH_2(CH_2)_yCO_2^{\ominus}X^{\oplus}$

X $RN(CH_2(CH_2)_yCO_2^{\ominus})_2X^{\oplus}$

wherein in Formulae IX and X, $X^{\oplus}$ is a cation, and y is 0 or 1;

XXX. the reaction product of:

1 mole of ethylenediamine with 1 mole of $C_{1\text{-}22}$alkanoic or $C_{3\text{-}22}$alkenoic acid, or

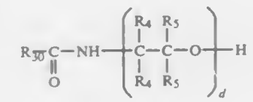
1 mole of diethylene triamine with 1 or 2 moles of $C_{1\text{-}22}$alkanoic or $C_{3\text{-}22}$alkenoic acid, or

1 mole of triethylene tetraamine with 1 to 3 moles of $C_{1\text{-}22}$alkanoic or $C_{3\text{-}22}$alkenoic acid, or

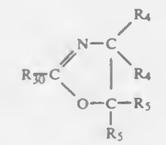
1 mole of tetraethylene pentamine with 1 to 4 moles of $C_{1\text{-}22}$alkanoic or $C_{3\text{-}22}$alkenoic acid;

XXXI. the reaction product of 1 mole of triethanolamine with 1 to 3 moles of $C_{1\text{-}22}$alkanoic or $C_{3\text{-}22}$alkenoic acid;

XI R_{31}-Z-R_{31}

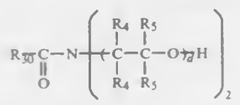


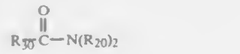
XII



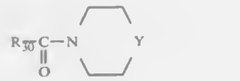
XIII

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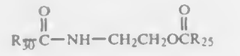
XIV 



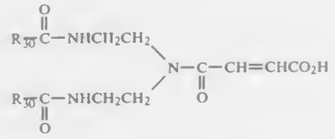
XV



XVI



XVII



XVIII

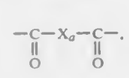
wherein in Formulae XI-XVIII,

each R_{31} independently, is the residue of the reaction product of Formulae III, bound to Z through an amine group;

R_{30} is hydrogen, $C_{1\text{-}21}$alkyl or $C_{2\text{-}21}$alkenyl;

Z is

$C_{1\text{-}4}$alkylene,



or

—CO—

where X_d is direct bond, $C_{2\text{-}12}$alkenylene or $C_{1\text{-}12}$alkylene.

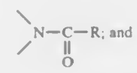
each d, independently, is an integer from 1 to 15 inclusive;

each R_4 independently, is hydrogen, $C_{2\text{-}4}$ alkenyl or $C_{1\text{-}4}$hydroxyalkyl;

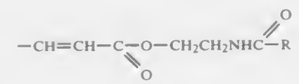
each R_5 independently has one of the significances of R_4;

each R_{20} independently has a significance of R_4 as defined above or R where R is hydrogen, $C_{1\text{-}21}$alkyl or $C_{2\text{-}21}$alkenyl;

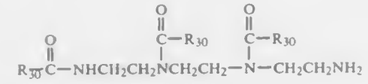
Y is a direct bond, -0- or



R_{25} is —CH=CH—COOH or



III

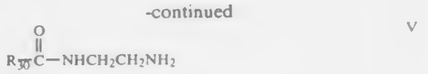


IV

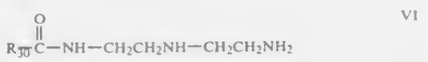


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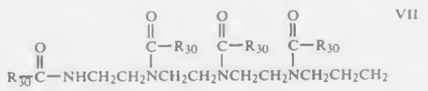
V



VI



VII



wherein each R_{30} is independently, hydrogen, $C_{1\text{-}21}$alkyl or $C_{2\text{-}21}$alkenyl.

7. A process for producing a fluid loss additive for an oil-based well-working fluid comprising the step of mixing together components (i), (ii) and (iii) defined in claim 1, in an oil or oil based fluid at a temperature not greater than 70° C.

4,941,984

LUBRICATING OIL COMPOSITIONS AND METHODS FOR LUBRICATING GASOLINE-FUELED AND/OR ALCOHOL-FUELED, SPARK-IGNITED ENGINES

William B. Chamberlin, III, Kirtland, and Frank V. Zalar, Novelty, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 31, 1989, Ser. No. 387,719
Int. Cl.[5] C10M *105/22*
U.S. Cl. 252—39 **52 Claims**

1. A lubricating oil composition for gasoline fueled or alcohol fueled spark-ignited engines or both, which comprises:

(A) an oil of lubricating viscosity;

(B) at least one detergent selected from the group consisting of a basic magnesium salt of an organic acid, and a mixture of at least one basic magnesium salt of an organic acid and another alkaline earth metal salt of an organic acid wherein more than 50% of the metal in the mixture is magnesium; and

(C) at least one metal salt of

(C-1) a substituted succinic acid acylated polyamine; or

(C-2) a hydrocarbon-substituted aromatic carboxylic acid containing at least one hydroxyl group attached to an aromatic ring, provided that the metal of said metal salt (C) is not calcium or magnesium.

4,941,985

DISPERSANT/ANTIOXIDANT VII LUBRICANT ADDITIVE

Nicholas Benfaremo, Wappingers Falls; Maria M. Kapuscinski, Carmel, and Theodore E. Nalesnik, Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 1, 1989, Ser. No. 444,224
Int. Cl.[5] C10M *145/14*
U.S. Cl. 252—51.5 R **19 Claims**

1. A dispersant/antioxidant bound, Viscosity Indeximproving polymethacrylate composition, having a molecular weight ranging from about 20,000 to about 2,500,000, said compositions comprising a base oil and effective amounts of alkyl, methacrylate monomers, a polyunsaturated monomer, an aromatic nitroso compound and, optionally, a dispersant monomer, said composition being prepared by:

(a) combining a polyunsaturated monomer with (C_1-C_{20}) alkyl monomers and (optional) a dispersant monomer, in an oil solvent to provide an intermediate reaction mixture;

(b) stirring and purging said reaction mixture by nitrogen ebullition at about 200 ml/min. for about 25 to about 35 minutes;

(c) reducing the nitrogen ebullition to about 20 ml/min.;

(d) heating the purged mixture to about 70° C. to about 85° C. and adding a radical polymerization catalyst to the purged mixture;

(e) increasing the temperature of said heated mixture to about 95° -105° C. and maintaining said mixture at such temperature for a sufficient period of time to remove any excess of said polymerization catalyst; and

(f) (optional) recovering the intermediate product polymethacrylate;

(g) combining said intermediate product polymethacrylate with an aromatic nitroso compound to provide an intermediate reaction mixture;

(h) stirring said intermediate reaction mixture while purging with nitrogen at a rate of 20 ml/min for about 20 to about 25 min.;

(i) heating said reaction mixture to about 120° C. and maintaining said temperature for about 30 min.;

(j) increasing the temperatue of the reaction mixture to about !60° C while collecting water over about 1.0 hour; and

(k) recovering the product polymethacrylate.

4,941,986

LIQUID COMPOSITIONS CONTAINING ORGANIC NITRO COMPOUNDS

Scott T. Jolly, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 16, 1989, Ser. No. 324,587
Int. Cl.[5] C10M *105/52, 133/32*
U.S. Cl. 252—51.5 R **24 Claims**

1. A liquid composition comprising

(A) a major amount of at least one fluorine containing hydrocarbon containing one or two carbon atoms; and

(B) a minor amount of a soluble organic lubricant comprising at least one organic nitro compound characterized by the formulae

$$R_zN(H)_x[CH_2C(R^1)(R^2)NO_2]_y \quad (I)$$

and

$$CH_2[N(R)CH_2C(R^1)(R^2)NO_2]_2 \quad (II)$$

wherein

R is a hydrocarbyl group, a polyaminoalkyl group, or R^4XR^5— wherein R^4 is H, hydrocarbyl, hydroxyalkyl or aminoalkyl, X is 0 or NR^6, wherein R^6 is H or a nitroalkyl group, and R^5 is an alkylene group, or R^4X is a morpholinyl group attached to R^5 through the nitrogen atom; and

R^1 and R^2 are each independently H or lower aliphatic groups;

x is 0 or 1;

y is 1 or 2; and

z is 1 or 2, provided that the sum of x, y and z is 3.

4,941,987

LUBRICATING GREASES

Ezio Strepparola, Treviglio; Mario Alfieri, and Piero Gavezotti, both of Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 30, 1988, Ser. No. 292,010
Claims priority, application Italy, Dec. 30, 1987, 23264 A/87
Int. Cl.[5] C10M *105/50*
U.S. Cl. 252—58 **18 Claims**

1. A lubricating grease comprising a thickening agent and a perfluoropolyether or fluoropolyether derivative of the formula R—O—Q—CFX—$(Y)_n$—Z, having a number average molecular weight ranging from 1,500 to 10,000, in which:

R is a perfluoroalkyl radical containing 1 to 3 carbon atoms or it is the group Z—$(Y)_n$—CFX;

Q is a perfluoroalkylpolyether or fluoroalkylpolyether chain;

X is F or CF_3;

Y is a linking divalent radical;

n is zero or 1;

Z is a radical selected from the group consisting of —CH_2OH, —CH_2OR^1, —$COOR^2$, —$CONR^3R^4$, —CN, —CH_2NH_2, —CH_2NHR^5, —$CH_2NR^6R^7$, —CHOH—CH_2OH and —COR^8,

wherein

R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8, alike or different from one another, are an alkyl group containing 1 to 8 carbon atoms, an aromatic group containing 6 or 10 carbon atoms or an alkyl aromatic group containing 7 to 11 carbon atoms and in which the aromatic ring or rings are unsubstituted or substituted with alkyl or polyethoxy substituting groups, or Z is an organic group selected from the group consisting of non-aromatic and non-fluorinated radicals containing two or more heteroatoms, alike or different from one another, selected from the group consisting of O, N, S, Se and P and located in position 1-3, 1-4, or 1-5 to one another;

said aromatic or non-aromatic radicals are unsubstituted or substituted with one or more substituting groups selected from the group consisting of NO_2, CN, R^9 or OR^9, wherein R^9 is an alkyl radical containing 1 to 3 carbon atoms.

10. A lubricating grease comprising a thickening agent and a perfluoropolyether or fluoropolyether derivative of the formula R—O—Q—CFX—$(Y)_n$—Z, having a number average molecular weight ranging from 1,500 to 10,000, in which:

R is a perfluoroalkyl radical containing 1 to 3 carbon atoms or it is the group Z—$(Y)_n$—CFX;

Q is a perfluoroalkylpolyether or fluoroalkylpolyether chain;

X is F or CF_3;

Y is a linking divalent radical;

n is zero or 1;

Z is an organic group selected from the group consisting of aromatic radicals unsubstituted or substituted by one or more heteroatoms, either alike or different from one another, selected from the group consisting of O, N, S, Se and P, said aromatic radicals are unsubstituted or substituted with one or more substituting groups selected from the group consisting of NO_2, CN, R^9 or OR^9, wherein R^9 is an alkyl radical containing 1 to 3 carbon atoms.

4,941,988

LIQUID AUTOMATIC DISHWASHING COMPOSITIONS HAVING AN OPTIMIZED THICKENING SYSTEM

Rodney M. Wise, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 13, 1989, Ser. No. 310,812
Int. Cl.[5] C11D *7/16, 7/20, 7/56*
U.S. Cl. 252—99 **14 Claims**

1. A liquid automatic dishwashing detergent composition having improved rheology comprising:

(a) from 0% to about 5% of a detergent surfactant;

(b) from about 5% to about 40% of a detergency builder material;

(c) a chlorine bleach ingredient to provide from 0% to about 2.5% of available chlorine based on the weight of the detergent composition;

(d) from about 0.25% to about 10.0% of a polycarboxylate polymer thickening agent having a molecular weight greater than about 500,000; and

(e) from about 2% to about 15%, on a solids basis, of an alkali metal silico-aluminate colloidal dispersion, wherein

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the molar ratio of aluminum metal to SiO_2 is from about 0.01:1 to about 0.1:1;

said composition having an apparent yield value of from about 40 to about 800 dynes/cm^2.

4,941,989

CLEANSING AND DISINFECTING COMPOSITIONS

David N. Kramer, Stevenson, and Philip A. Snow, Henderson, both of Md., assignors to Ridgely Products co., Inc., Baltimore, Md.

Filed Jul. 16, 1986, Ser. No. 886,171

Int. Cl.^{5} A02D *5/00*

U.S. Cl. 252—102 **34 Claims**



1. A cleansing and disinfecting composition comprising from about 10% to about 90% by weight of an alkaline water-soluble salt having hydrogen peroxide of crystallization and from about a fraction of a percent to about 30% by weight of a positively charged phase-transfer agent, including either a phosphonium salt, a sulfonium salt, or a quaternary ammonium salt having a chain of carbon atoms on the quaternary nitrogen approximately 6 to 30 atoms in length.

4,941,990

SKIN CLEANSING-CREAM CONDITIONING BAR

James H. McLaughlin, 7 Widgeon La., Little Compton, R.I. 02837

PCT No. PCT/US89/00788, § 371 Date Apr. 7, 1989, § 102(e) Date Apr. 7, 1989, PCT Pub. No. WO89/08444, PCT Pub. Date Sep. 21, 1989

Continuation-in-part of Ser. No. 166,330, Mar. 10, 1988, Pat. No. 4,808,322. This PCT application Feb. 22, 1989, Ser. No. 424,301

Int. Cl.^{5} A61K *7/48, 7/50;* C11D *9/48, 10/04*

U.S. Cl. 252—121 **27 Claims**

1. A non-foaming, skin cleansing-conditioning bar consisting essentially of about 8% to 38% by weight of an anionic surfactant material selected from the group consisting of a sodium or potassium salt of a C-12–C-18 saturated monocarboxylic acid, a water-soluble, non-soap, anionic detergent selected from the group consisting of sodium and potassium salts of C-8–C-18 acyl isethionates, C-8–C-18 alkyl sulfates, C-10–C-20 alkyl sulfonates, C-8–C-18 alkyl monoglyceride sulfates, C-8–C-16 alkylbenzene sulfonates and C-8–C-18 alkyl polyethenoxy ether sulfates containing one to twelve ethenoxy groups in the molecule and mixtures thereof and mixtures of said monocarboxylic acid salt and said non-soap detergent in a weight ratio of said monocarboxylic acid salt to said detergent of 18:1 to about 2.5:1; about 12% to 72% by weight of a water-insoluble emollient selected from the group consisting of a C-14–C-18 alkanol and mixtures of said alkanol with a C-14–C-18 alkanoic acid wherein the weight ratio of said ankanol to said alkanoic acid is in the range of about 23:1 to about 0.6:1; the weight ratio of said emollient material to said surfanctant material being from about 10:1 to about 1.3:1; 0% to 60% of a starch-derived filler; and 2% to 12% by weight of water; said bar having a pH in the range of 6 to 9.5 measured as a 1% by weight aqueous solution and yielding a satisfactory volume of a non-foaming, cleansing-conditioning cream of moderate viscosity when the wetted bar is rotated and manipulated between the wetted hands of the user.

24. A method of cleansing and conditioning the skin comprising the steps of (a) forming a non-foaming, cleansing-conditioning cream by rotating and manipulating a wetted bar between the wetted hands of the user, said bar having the composition set forth in claim 1; (b) applying the cleansing-conditioning cream of step (a) to the skin to be cleansed and conditioned; (c) massaging said cream into the skin with the user's hands and fingers; and (d) rinsing the cream-treated skin with water.

4,941,991

COMPOSITION AND PROCESS FOR USE IN NEUTRALIZING MALODOROUS GASES

A. H. J. Rajamannan, 2120 Argonne Dr., N.E., Minneapolis, Minn. 55421

Filed Oct. 22, 1987, Ser. No. 111,414

Int. Cl.^{5} C09K *3/00*

U.S. Cl. 252—189 **2 Claims**

1. A composition for neutralizing malodorous gases in the air, comprising:

a gas neutralizing agent selected from the group consisting of unsubstituted polyethyleneimine having a molecular weight of from about 300 to about 100,000 and substituted polyethyleneimines modified through substitution of hydroxyalkyl, hydroxychloroalkyl, epoxyyalkyl, hydroxy sulfoalkyl, phenylalkyl, cyanoalkyl, and carbamyl groups on at least one of said imine groups of the polyethyleneimine,

a solvent including water and lower alkanols selected from the group consisting of ethanol, methanol, and isopropanol,

said neutralizing agent comprising 20% to 40% by weight, said water comprising approximately 56% to 58% by weight, and said lower alkanol comprising approximately 2% by weight of said composition,

a cross-linking agent for cross-linking polyethyleneimine with the molecules of malodorous gas selected from the group consisting of ammonium dichromate, glycerol epoxy resins, and polycycloaliphatic polyepoxides, the amount of cross-linking agent comprising about 0.001 part to 2 parts based on the total weight of the unsubstituted or substituted polyethyleneimine, and

said composition being diluted between 1:10 and 1:200 parts water and applied as a spray or mist, into the air containing malodorous gases.

4,941,992

N-SUBSTITUTED AMINO ACID DERIVATIVES FOR USE IN LIQUID CRYSTAL MATERIALS AND DEVICES

Adam Jackson; Richard M. Scrowston; George W. Gray; David Lacey, and Kenneth J. Toyne, all of North Humberside, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

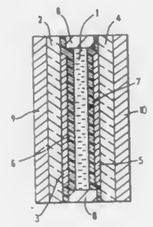
PCT No. PCT/GB86/00599, § 371 Date Jul. 17, 1987, § 102(e) Date Jul. 17, 1987, PCT Pub. No. WO87/02375, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 6, 1986, Ser. No. 93,546

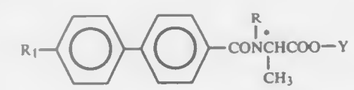
Claims priority, application United Kingdom, Oct. 9, 1985, 8524879

Int. Cl.^{5} C09K *19/12*

U.S. Cl. 252—299.66 **6 Claims**



1. An optically active derivative of an alpha-aminocarboxylic acid having the formula I:



I

where R_1 is selected from the group consisting of C_{1-20} alkyl or alkoxy, R is C_{1-20} n-alkyl and Y is C_{1-20} alkyl.

4,941,993

PROCESS FOR THE PRODUCTION OF CONDENSATION PRODUCTS WHICH CAN BE CONVERTED INTO GLASS

Peter Strehlow, Würzburg, and Helmut Schmidt, Zellingen, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., München, Fed. Rep. of Germany

Filed Mar. 30, 1989, Ser. No. 330,493

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811185

Int. Cl.^{5} C09K *3/36*

U.S. Cl. 252—315.6 **18 Claims**

1. A process for the production of substantially homogeneous condensation products, which are capable of being converted to glass by hydrolytic condensation of compounds of elements whose presence in the glass end product is desired, which comprises bringing a solution containing:

(a) at least one compound of the formula (I):

$$SiR_4 \quad (I)$$

in which radicals R are identical to or different from each other, and each R is a hydrolyzable group or hydroxyl group, or an oligomer derived therefrom or a combination thereof;

(b) at least one compound of the formula (II) or (III):

$$MR'_3 \quad (II)$$

$$TiR'_4 \quad (III)$$

in which M represents Al or B; and the radicals R', which are identical to or different from each other, are each a hydrolyzable group or hydroxyl group or a hydrolyzable aluminum salt or an oligomer derived from said compounds, or a combination thereof; and

(c) at least one hydrolyzable compound or at least one hydroxide, oxide or oxide hydrate of an element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium and barium; into contact with at least an element of water stoichiometrically necessary for complete hydrolysis of said hydrolyzable groups present, in the presence of a complexing agent selected from the group consisting of β-carbonyl carboxylic esters, and C_2–C_5 carboxylic acids and their carboxylate ions, whereby the hydrolysis of said hydrolyzable compounds is effected substantially without loss of less reactive volatile starting compounds, and substantially without formation of precipitates from more reactive starting compounds during hydrolysis.

4,941,994

CORROSION INHIBITORS FOR USE IN HOT HYDROCARBONS

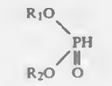
Michael J. Zetlmeisl, and Benjamin T. Outlaw, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 18, 1989, Ser. No. 381,549

Int. Cl.^{5} C23F *11/10*

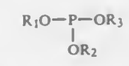
U.S. Cl. 252—389.23 **5 Claims**

1. A process of inhibiting nonaqueous corrosion of iron-containing metal surfaces in crude oil refining and cracking apparatus in a crude oil containing a corrosive amount of napthenic acid undergoing refining and cracking comprising maintaining an effective corrosion inhibiting amount of a dialkyl phosphite or a trialkyl phosphite having the structural formula:



(I)

or



(II)

wherein R_1, R_2, and R_3 are each independently a straight or branched chain lower alkyl radical having 1 to 10 carbon atoms.

4,941,995

NATURAL PRESERVATIVE COMPOSITION FOR WET WIPES

Marc F. Richards, Dover, Del., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jul. 5, 1988, Ser. No. 215,196

Int. Cl.^{5} A61F *13/15*

U.S. Cl. 252—407 **11 Claims**

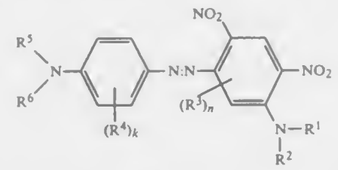
1. A preservative composition for an aqueous lotion-impregnated fibrous wipe, comprising at least two carboxylic acids and grapefruit seed extract in an amount between 0.001 and and 1.0% by weight of the aqueous lotion, the pH of said aqueous lotion being adjusted to keep said carboxylic acids undisassociated.

4,941,996
INCLUSION COMPLEXES PROVIDING SECOND HARMONIC GENERATION
John E. Trend, St. Paul, Minn., and Kent B. Rochford, Tucson, Ariz., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 19, 1987, Ser. No. 89,219
Int. Cl.[5] G02B 5/20
U.S. Cl. 252—584 9 Claims

1. A process for converting a fixed fundamental frequency of coherent laser light into a second harmonic frequency which comprises passing said laser light through a nonlinear optical element comprising a non-centrosymmetric host material, selected from the group consisting of cyclodextrins, cyclodextrin polymers, and amyloses, and guest material, selected from the group consisting of 5-nitroindoline, 4-nitrophenol, the sodium salt of methyl orange, and carbon disulfide, entrapped within the molecular structure of said host material or entrapped between two or more adjacent molecules of said host materials, said complex having a non-zero second order molecular hyperpolarizability, said complex further exhibiting greater second harmonic generation efficiency than either said host material or said guest material exhibits alone, said complex being transparent to said fixed fundamental frequency and to said second harmonic frequency.

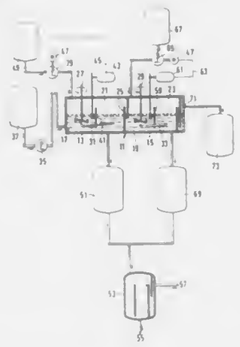
4,941,997
AMPHIPHILIC AZO DYES AND MOLECULAR AGGREGATES THEREOF
Gero Decher, Walluf, Fed. Rep. of Germany, and Bernd Tieke, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jul. 6, 1988, Ser. No. 215,672
Claims priority, application Switzerland, Jul. 13, 1987, 2656/87
Int. Cl.[5] C02B 27/28; C09B 29/085; C07C 245/08
U.S. Cl. 252—586 2 Claims

1. A molecular aggregate of a compound of the formula



wherein R^1 is C_{12}–C_{30}alkyl, R^2 is hydrogen or C_1–C_{30}alkyl, R^3 is C_1–C_3alkyl or C_1–C_3alkoxy, R^4 has one of the meanings of R^3 or is halogen, k and n are each independently of the other 0, 1 or 2, and R^5 and R^6 are each independently of the other C_1–C_4alkyl, wherein the alkyl groups of R^1, R^2, R^3, and R^4 have the meanings above or are partly fluorinated or perfluorinated, with the proviso that R^1 is alkyl of not less than 18 carbon atoms if R^2 is hydrogen or alkyl of less than 12 carbon atoms, wherein said aggregate is assembled in the form of mixed liposomes, microcrystalline films or Langmuir-Blodgett layers.

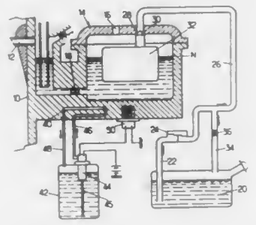
4,941,998
METHOD OF WASHING A SOLVENT IN THE REPROCESSING OF IRRADIATED NUCLEAR FUELS
Klaus Eiben, Ettlingen, and Heinz Evers, Busenberg, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany
Filed May 18, 1988, Ser. No. 195,272
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1987, 3718338
Int. Cl.[5] G21C 19/42, 19/44; G21F 9/08; B01D 11/00
U.S. Cl. 252—627 6 Claims



1. Method of washing an organic solvent in the reprocessing of irradiated nuclear fuel with a mixer-settler having two stages wherein two phases are mixed, the first mixer-settler stage including a mixing chamber and a settling chamber and the second mixer-settler stage also including a mixing chamber and a settling chamber, the method comprising the steps of:
metering the solvent to be washed to the mixing chamber of the first stage as one of the phases;
metering a first aqueous washing solution into the first stage at the mixing chamber thereof as the other one of the phases;
measuring the pH of the dispersion of said phases in said mixing chamber of the first stage to obtain a signal indicative of the pH value of the dispersion;
controlling the quantity of the first aqueous washing solution metered to the mixing chamber of the first stage in response to said signal for maintaining said pH-value within a predetermined range;
drawing off the first aqueous washing solution at the bottom of the first stage;
metering a second aqueous washing solution into the second stage at the mixing chamber thereof for neutralizing the solution which has been subjected to washing by said first aqueous washing solution;
drawing off the second aqueous washing solution at the bottom of said second stage; and,
mixing the spent first and second aqueous washing solutions to form a new process product in the form of a mixed solution which again has two phases.

4,941,999
FUEL SUPPLY DEVICE WITH COOLED FLOW CHAMBER
Guy Noisier, Brunoy, France, assignor to Solex, France
Filed Mar. 13, 1989, Ser. No. 322,290
Claims priority, application France, Mar. 23, 1988, 88 03807
Int. Cl.[5] F02M 5/10
U.S. Cl. 261—130 8 Claims

1. Fuel supply device for internal combustion engine, comprising a constant level chamber defined by a casing for location in close proximity to the engine, a heat exchanger in thermal contact with said casing, and means for circulating a cooling liquid in a closed-loop circuit including said heat exchanger and a windshield cleaner reservoir having a size sufficient for containing a volume of said cooling liquid which is large as compared with the volume of the balance of the closed-loop circuit.



4,942,000
CONTACTLESS KNURLING PROCESS FOR WINDING OF HIGH MODULUS THERMOPLASTIC FILMS
John A. Penoyer, 106 Sturbridge Dr., Greenville, S.C. 29607
Filed Jul. 30, 1986, Ser. No. 891,937
Int. Cl.[5] B29C 35/10, 71/04
U.S. Cl. 264—22 12 Claims

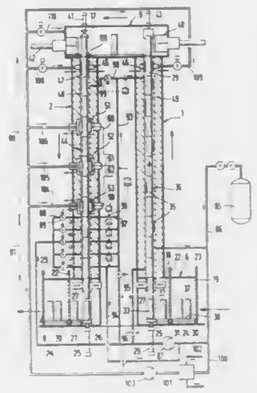
1. A process for improving the winding characteristics of a thermoplastic film comprising modifying the surface of at least one margin of said film on an intermittent basis by means for film surface modification which do not contact the surface of said film web such that the thickness of the film which has been surface-modified is greater than the thickness of the film which has not been surface-modified by an amount effective to improve the winding characteristics of the film.

4,942,001
METHOD OF FORMING A THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY AND COMPOSITION THEREFORE
Edward J. Murphy, Des Plaines; Robert E. Ansel, Hoffman Estates, and John J. Krajewski, Wheeling, all of Ill., assignors to Inc. DeSoto, Des Plaines, Ill.
Continuation-in-part of Ser. No. 162,983, Mar. 2, 1988, abandoned. This application Oct. 31, 1989, Ser. No. 429,568
Int. Cl.[5] B29C 35/08; C08F 4/32, 26/10, 120/18
U.S. Cl. 264—22 20 Claims

1. An ultraviolet-curable liquid composition adapted to cure rapidly to a lightly cross-linked solvent-swellable three-dimensional complexly-shaped polymeric thin-walled element constituted by heat-softenable solid polymer upon exposure to ultraviolet dosage in the range of about 0.1 to about 10 Joules per square centimeter and which possesses reduced distortion comprising, from 20 to 80 weight percent, of a resinous polyacrylate or polymethacrylate dissolved in a combination of 10 to 40 weight percent of a liquid polyacrylate or polymethacrylate, one of the foregoing being a polyacrylate and the other being a polymethacrylate, and 10 to 30 weight percent of a liquid N-vinyl monomer.

13. A method of forming a three-dimensional thin-walled object comprising, providing a reservoir of liquid ultraviolet-curable ethylenically unsaturated material comprising, from 20 to 80 weight percent, of a resinous polyacrylate or polymethacrylate dissolved in a combination of 10 to 35 weight percent of a liquid polyacrylate or polymethacrylate, one of the foregoing being a polyacrylate and the other being a polymethacrylate, and 10 to 40 weight percent of liquid N-vinyl monomer, exposing the surface of said reservoir to a beam of ultraviolet light to apply a dosage in the range of about 0.1 to about 10 Joules per square centimeter to said surface to solidify the liquid near said surface to form a plurality of superposed layers of lightly cross-linked solvent-swellable three-dimensional complexly-shaped polymeric thin-walled element constituted by heat-softenable solid polymer in said reservoir, removing said element from said reservoir, draining excess polymerizable liquid from said element, and then completing the cure of said element to strengthen the same.

4,942,002
PROCESS FOR CONVERTING CARBON BLANKS INTO GRAPHITE ELECTRODES
Horst J. Feist, Am Mühlgraben 7, D-6969 Hardheim, Fed. Rep. of Germany
Filed Jul. 18, 1989, Ser. No. 381,603
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1988, 3824323
Int. Cl.[5] C01B 31/04
U.S. Cl. 264—27 29 Claims



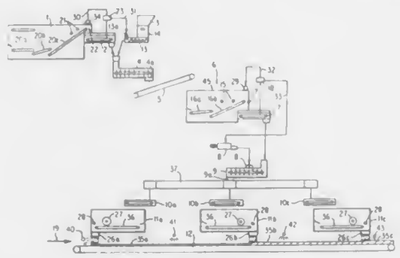
1. A process for converting substantially identical dimensionally stable carbon blanks into graphite electrodes, comprising the steps of accumulating the blanks into at least one column wherein the blanks are disposed on top of each other; thermally insulating the blanks of the at least one column from the surrounding atmosphere; advancing the at least one column along a predetermined path; preheating the blanks in a first portion of said path; directly heating the preheated blanks with electric current in a second portion of the path downstream of the first portion to graphitize the blanks; cooling the blanks in a third portion of said path downstream of the second portion; establishing a layer of inert gas around the column of blanks in said path; withdrawing inert gas from the third portion of the path; and returning the withdrawn gas into the first portion of the path.

4,942,003

METHOD FOR CONTINUOUSLY PRODUCING MOLDED MEMBERS FROM A MIXTURE OF GYPSUM AND FIBROUS MATERIAL

Jörg Bold, Kaiserslautern, Fed. Rep. of Germany, assignor to "Würtex" Maschinenbau Hofmann GmbH & Co., Uhingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 791,225, Oct. 25, 1985, abandoned. This application Mar. 3, 1989, Ser. No. 319,800
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1984, 3439493
Int. Cl.[5] B28C *5/40*
U.S. Cl. 264—40.4 36 Claims



1. A method of continuously producing molded members as plaster-of-Paris construction plates or panels from a mixture of calcinated gypsum having porous granular structure and dry fibrous material purposely added thereto; measuring respective measured-out quantities of said calcinated gypsum and said dry fibrous material which in a first mixing stage are then subjected to scattering as strewn out for being fervently and thoroughly mixed together, weighing the still dry calcinated gypsum/dry fibrous material mixture and subsequently then moistening the mixture by stepwise adding of water beginning in a second mixing stage by supplying water added as dosaged thereto in conformity with the measured weight of said dry mixture with only so much water being added at least as far as to a stoichiometric water quantity as necessary for absorption by the calcinated gypsum/dry fibrous material mixture for setting and curing thereof while continuously mixing the gypsum/fibrous material to assure said second mixing stage proceeding without any clumping or granulation of the gypsum-fibrous mixture arising therewith; dispersing the moistened mixture subsequently onto a support means including a forming line to progressively form multi-layer molded members, with the surface of each molded member being subjected to additional moistening with an over-stoichiometric quantity of water so that curing is assured with transport of calcium-sulfate ions in all directions so that said molded members as plaster-of-Paris construction plates or panels have only a small or nominal bonding or binding-off and drying time, and the latter then being compacted; said method further includes the improvement in combination therewith comprising the steps of:

dividing a mass flow of said calcinated gypsum/dry fibrous material mixture into several independent partial mass flows separate from each other such that via said dividing into partial mass flows there is attained a result whereby solely further post-wetting or subsequently moistening is made possible respectively in an adequate uniform manner;

dispersing a first one of said partial mass flows onto said forming line of said support means as a first layer of a given one of said molded members;

respectively dispersing a second and subsequent ones of said partial mass flows progressively onto said first and subsequent layers of said given molded member as a second and subsequent layers thereof;

additionally and subsequently moistening each of said layers respectively each with water individually prior to dispersing a subsequent layer thereon, with the total quantity of water supplied for a given molded member including intentionally aimed setting and adjustment of an over-stoichiometric water content equalling only up to a maximum of 25% based on mass of said dry calcinated gypsum above the stoichiometric quantity of water mathematically and analytically necessary for bonding or binding of the calcinated gypsum-dry fibrous material as required for curing of the calcinated gypsum/dry fibrous material mixture dispersed to form said given molded member;

providing high strength in the molded member even with brief curing-drying time and only nominal deviation;

assuring that surface uniformity exists in the entire molded member when finished free of any pocks and pitting;

growing crystals together in situ for assuring uniformity and smoothness of the surface of the molded members; and

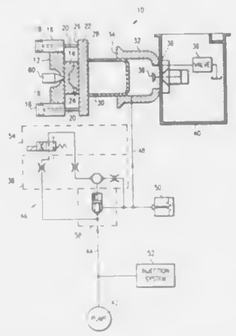
simultaneously matting the layers together and interlocking the crystals to result in a continuous high mechanical strength over entire surfaces and cross section of the produced molded member finished as the plaster-of-Paris construction plate or panel with this high mechanical strength thereof simultaneously also having only a small or nominal deviation or divergence accordingly to be uniform over and throughout the entire plaster-of-Paris construction plate or panel with very smooth surfaces being obtained.

4,942,004

METHOD AND APPARATUS FOR REGULATING MOLD CLAMPING FORCE IN AN INJECTION MOLDING MACHINE

John C. Catanzaro, Lebanon, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 1, 1988, Ser. No. 265,709
Int. Cl.[5] B29C *45/82*
U.S. Cl. 264—40.5 10 Claims



1. A method for regulating the clamping force in an hydraulic clamp cylinder of an injection molding machine, wherein a flow control valve is provided to control the flow of pressurized hydraulic fluid from a pump to the clamp cylinder, said method comprising:

(a) providing a clamping force set point value corresponding with a desired clamping force to be provided by a clamp hydraulic cylinder during a clamp force maintenance portion of a clamp operating cycle;

(b) determining a desired clamp cylinder hydraulic pressure value corresponding with the desired clamping force value;

(c) sensing actual hydraulic pressure in the hydraulic clamp cylinder during a first clamp operating cycle to provide an actual clamp cylinder hydraulic pressure during the clamp force maintenance portion of the clamp operating cycle;

(d) comparing the actual clamp cylinder hydraulic pressure with the desired clamp cylinder hydraulic pressure to provide a signal representative of the actual pressure difference between the actual and the desired pressures; and

(e) during the next succeeding clamp operating cycle, controlling the time of closing of the flow control valve connected with the clamp hydraulic cylinder, relative to the time of closing of the flow control valve during the preceding clamp operating cycle, by adding at least a part of the actual pressure difference in the preceding cycle to the pressure value sensed during the preceding cycle while the clamp was in the clamp force maintenance portion of the clamp operating cycle to provide a control signal to close the flow control valve at a time in the clamp operating cycle to provide a clamping force that is closer to the desired clamping force.

4,942,005

METHOD OF MAKING A SHAPED POLYESTER ARTICLE

Mark A. Pollock, Johnson City; William J. Stowell, and James J. Krutak, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 47,821, May 5, 1987, Pat. No. 4,770,931.
This application Jun. 13, 1988, Ser. No. 205,882
Int. Cl.[5] B29C *41/30, 47/02, 49/08;* B32B *3/26*
U.S. Cl. 264—45.3 6 Claims

1. The method of forming a shaped article having at least one major surface comprising a continuous phase of polyester having dispersed therein microbeads of cellulose acetate at least partially bordered by void space oriented generally flatwise with respect to said major surface of said shaped article, said sheet when consisting only of said polyester continuous phase and said microbeads at least partially bordered by void space characterized by having a Kubelka-Munk R value (infinite thickness) of about 0.90 to about 1.0 and the following Kubelka-Munk values when formed into a 3 mil thick film:

Opacity — about 0.78 to about 1.0
SX — 25 or less
KX — about 0.001 to 0.2
T(i) — about 0.02 to 1.0

said method comprising

(a) forming a mixture of molten polyester and cellulose acetate, wherein the cellulose acetate is a multiplicity of uniformly dispersed microbeads throughout said polyester, said polyester having an I.V. of at least 0.55, said cellulose acetate having an acetyl content of about 28 to 44.8% by weight, a viscosity of about 0.01–90 seconds and a Tg of about 20° C. higher than the Tg of said polyester,

(b) forming a shaped article from said mixture,

(c) orienting said article by stretching at least in one direction to form microbeads of said cellulose acetate uniformly distributed throughout said article and voids at least partially bordering said microbeads on sides thereof in the direction(s) of orientation.

4,942,006

METHOD OF AND APPARATUS FOR INJECTION MOLDING WITH PRESSURIZED-FLUID ASSIST

Norman S. Loren, Warren, Mich., assignor to Michael Ladney, Sterling Heights, Mich.

Filed Dec. 1, 1988, Ser. No. 277,233
Int. Cl.[5] B29C *45/00, 45/34, 45/76, 67/20*
U.S. Cl. 264—50 39 Claims

36. A method for making a structural foam article from a foamable resin having a softening point in an injection molding system including a pressurized fluid source, a mold having interior surfaces and an injection nozzle having a nozzle body for establishing a flow path for molten resin and a valve means having a piston and a tip portion operatively associated with the piston to move therewith, the method comprising the steps of: (a) pressurizing the mold to a predetermined pressure; (b) injecting an amount of foamable resin sufficient for at least partial preparation of the article from the injection nozzle through an injection aperture in the mold, the resin being in communication with a first surface of the piston to cause the tip portion to move towards its open position; (c) causing the piston to move by differential pressure at the valve means to thereby move the tip portion to its closed position; (d) relieving the pressure within the mold to permit foaming by the resin; (e) cooling the article to a temperature beneath the softening point of the resin; and (f) opening the mold to remove the article wherein the improvement comprises:

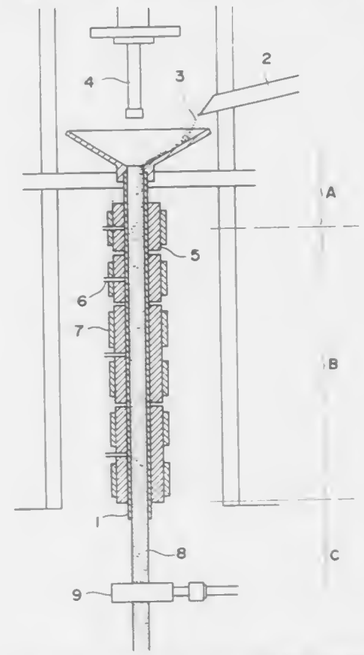
pressurized fluid from the fluid source applies at least a portion of the differential pressure to urge the tip portion towards its closed position.

4,942,007

CONTINUOUS PREPARATION OF SHAPED LONG ARTICLES OF POLYIMIDE

Akihiro Kunimoto, Ube, and Noboru Umemoto, Kuwana, both of Japan, assignors to Ube Industries, Ltd., Ube and NTN-Rulon Industries, Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 888,929, Jul. 23, 1986, abandoned. This application Jan. 14, 1988, Ser. No. 145,661
Claims priority, application Japan, Jul. 25, 1985, 60-164950
Int. Cl.[5] B29C *47/54*
U.S. Cl. 264—122 9 Claims



1. A method of continuously forming a shaped long article of an aromatic polyimide powder which comprises repeating the steps of:

supplying a powdered mixture containing 100 weight parts of a powder of an aromatic polyimide having been prepared by polymerization-imidation of a tetracarboxylic acid containing not less than 50 mol.% of a biphenyltetracarboxylic acid or its derivative and an aromatic diamine; and having a heat loss ratio of not more than 2 wt.%, the heat loss ratio being measured at 360° C. for 1

hour; and having a mean particle size in the range of 0.1 to 40 μm; and 0.2 to 8 weight parts of a fluororesin powder having a mean particle size not larger than 40 μm; to a ram-extrusion apparatus having a mold; and

ram extruding the powdered mixture at a temperature of not lower than 300° C. and at a pressure in the range of 100–1,500 kg/cm², using a back pressure-supplying means which is provided outside of the mold, is maintained at a temperature of not higher than 300° C., and gives a back pressure in the range of 20 to 250 kg/cm², thereby producing a shaped article.

4,942,008

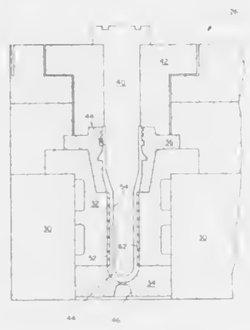
PROCESS FOR MOLDING A MULTIPLE LAYER STRUCTURE

John W. Cahill, 1827 Blossom Ct., Yorktown Hts., N.Y. 10598

Continuation of Ser. No. 753,402, Jul. 10, 1985, abandoned. This application Aug. 25, 1988, Ser. No. 238,979

Int. Cl.[5] B29C *45/14, 45/16, 45/34*

U.S. Cl. 264—150 **19 Claims**



1. An injection molding process for making a multiple layer, plastic structure, and for use with a mold forming a mold cavity and including an axially extending cavity surface forming at least a portion of the mold cavity, said cavity surface having a substantially cylindrical shape tapering axially upwardly outwardly, the method comprising the steps of:

providing a plastic tube;

cutting off a portion of the plastic tube to form a hollow, plastic sleeve having an initial, generally hollow cylindrical shape and including first and second opposite, open axial ends;

placing the plastic sleeve in the mold;

closing the mold to enclose the sleeve in the mold cavity;

conducting a flowing, heated plastic into the mold cavity and through the first open axial end of the sleeve and into the interior thereof;

forcing the flowing plastic radially outward against the sleeve to force the sleeve outward from said initial shape and into a shape conforming with the shape of said cavity surface, and to form, with the sleeve, an integrally bonded laminated structure;

opening the mold; and

removing the structure from the mold.

4,942,009

METHOD OF MANUFACTURING A FERRULE

Tsutomu Ohshima, Ayase, Japan, assignor to Amp Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 225,584, Jul. 27, 1988, abandoned, which is a continuation of Ser. No. 47,224, May 7, 1987, abandoned. This application Mar. 21, 1989, Ser. No. 326,438

Claims priority, application Japan, Sep. 27, 1985, 62-214442

Int. Cl.[5] B29C *33/30, 33/76, 45/36*

U.S. Cl. 264—317 **15 Claims**

1. In a method of manufacturing a ferrule having a small hole in a front end of the ferrule in which a core of an optical fiber is to be received, comprising the steps of; positioning a wire having a diameter of the small hole in a cavity of moulding means for forming the ferrule, introducing mouldable material in the cavity for forming the ferrule by the moulding means with the wire extending through the end of the ferrule, and removing the wire from the end of the ferrule whereby the small hole is formed therein, the improvement comprising the steps of;

passing the wire along a hole through a moveable core that is positioned in the cavity prior to introducing mouldable material in the cavity for forming the ferrule over the core, and

moving the core and the wire to draw out the core and the wire from the ferrule without having to remove the wire from the core.

4,942,010

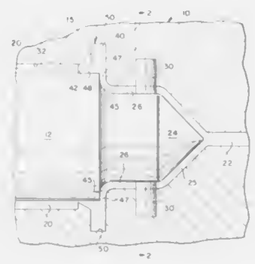
METHOD OF INJECTION MOLDING OF TUBULAR PARTS TO ELIMINATE WELD LINES

W. Howard Baker, Hartsville, Tenn., assignor to Wynn's-Precision, Inc., Lebanon, Tenn.

Continuation of Ser. No. 104,606, Nov. 18, 1987, abandoned, which is a division of Ser. No. 886,959, Jul. 17, 1986, Pat. No. 9,711,602. This application Mar. 23, 1989, Ser. No. 328,732

Int. Cl.[5] B29C *31/04*

U.S. Cl. 264—328.12 **2 Claims**



1. In the delivery of molten plastic material to a mold in the manufacture of tubular plastic parisons in which the plastic material is delivered to the mold through a passageway, and in which the material is parted by an flow-dividing impediment in the passageway, the method of mixing said material downstream of said impediment to eliminate the weld line otherwise formed in the products by the impediment, comprising the steps of causing said material downstream of said impediment, comprising the steps of causing siad material downstream of said impediment and prior to delivery thereof to said mold to move in a direction generally radially outwardly into an annular mixing chamber which has increasing internal volume with increasing radial dimensions, causing said material to reverse direction in said chamber and flow radially inwardly upon itself while within said chamber to a constricted exit region at a radially inner portion of said chamber, whereby the movement of said material into an increasing volume followed by radial inflow upon itself induces frictional heat and causes remixing of said material across the weld line formed by the flow-dividing impediment.

4,942,011

PROCESS FOR PREPARING SILICON CARBIDE FIBERS

John D. Bolt, Landenberg; Steven M. Dinh, Chadds Ford, both of Pa., and Lee A. Silverman, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1988, Ser. No. 189,812

Int. Cl.[5] D01F *9/14*

U.S. Cl. 264—29.2 **13 Claims**

1. A process for making silicon carbide fibers by mixing a polymeric silicon carbide precursor with silicon carbide particles, spinning the mixture to form a green fiber, drawing the fiber to attenuate it and heating the fiber wherein the volume ratio of silicon carbide particles to polymeric silicon carbide precursor is selected so that the green fibers can be heated without slumping, and so that the density of the fiber following heating is maximized.

4,942,012

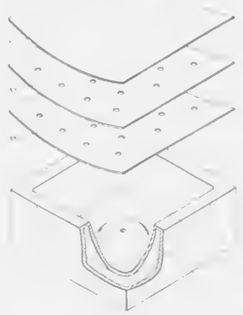
PREPARATION OF LAMINATED STRUCTURES BY THERMOFORMING

Walter J. Lee, Albany, N.Y., and Catherine S. Hissem, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 270,992, Nov. 14, 1988, abandoned. This application Aug. 21, 1989, Ser. No. 396,834

Int. Cl.[5] B29C *51/10, 51/42*

U.S. Cl. 264—510 **12 Claims**



1. A method for producing a thermoformed article which comprises the steps of:

feeding multiple layers of formable material to a mold while heating said mold, the layer outermost from the mold being non-perforated and the other layers being perforated;

vacuum forming said layers to the mold contours, thus producing a molded article;

heating the perforated layers to cause them to flow and seal the perforations; and

removing said molded article from the mold.

4,942,013

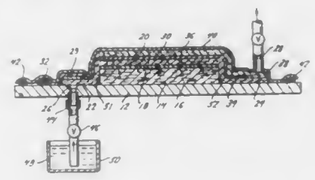
VACUUM RESIN IMPREGNATION PROCESS

Raymond J. Palmer, Newport Beach; Gerard R. Bonnar, Irvine, and William E. Moore, Lytle Creek, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 27, 1989, Ser. No. 329,029

Int. Cl.[5] B29C *43/12*

U.S. Cl. 264—511 **32 Claims**



32. In a process for vacuum impregnation of a fiber reinforcement with a resin to produce a resin-fiber composite, the steps which comprise:

applying a dry fiber reinforcement layer on a tool,

positioning a bleeder layer over said fiber reinforcement layer,

applying a vacuum bag over the entire assembly,

providing a source of liquid resin and a resin inlet line to the assembly and communicating with said bleeder layer,

providing a source of vacuum communicating with said vacuum bag,

drawing a vacuum to permit passage of the liquid resin through said resin inlet line,

spreading the resin flow from the resin inlet line for the full width of said fiber reinforcement layer transversely from edge to edge thereof, and

flowing said liquid resin along a flow path through said bleeder layer and into and through the fiber reinforcement layer longitudinally therein from one end thereof to the opposite end of the fiber reinforcement layer to impregnate same uniformly across the length and width of the fiber reinforcement layer.

4,942,014

NUCLEAR FUEL PIN FABRICATION

Kenneth M. Durow, Blackpool, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 83,282, Aug. 10, 1987, Pat. No. 4,849,156. This application Jan. 3, 1989, Ser. No. 292,957

Claims priority, application United Kingdom, Aug. 15, 1986, 8619948

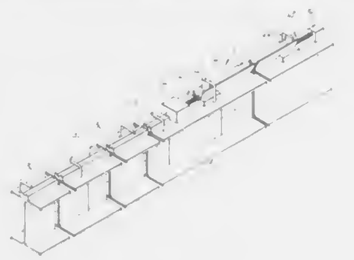
Int. Cl.[5] G21C *21/00*

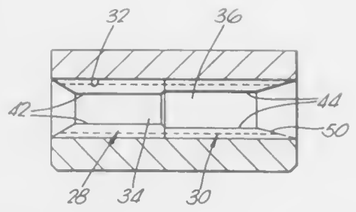
U.S. Cl. 376—261 **10 Claims**

1. A nuclear fuel pellet loading apparatus comprising a body having a guide passage which will allow feed therethrough of nuclear fuel pellets up to a predetermined diameter, the guide passage having a cross-section which is oversized relative to a pellet of said predetermined diameter and is provided with means for locating a pellet of said predetermined diameter in a well-defined position with clearance between the pellet and at least a major part of the passage wall, and a body having a pin-receiving passage, which pin-receiving passage allows insertion therein of a generally cylindrical nuclear fuel pin up to a predetermined diameter, the pin-receiving passage having a cross-section which is oversized relative to said pin of said predetermined diameter, the pin-receiving passage being provided with means for locating a pin of said predetermined diameter in a well-defined position with respect to the guide passage and with clearance between the pin and at least a

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major part of the pin-receiving passage wall, and said locating means of the pin-receiving passage comprising a plurality of





internally projecting ribs whose inner extremities are inscribed by a circle of predetermined diameter.

4,942,015

METHOD FOR PREVENTING AND REPAIRING VIBRATIONAL DAMAGE TO NUCLEAR FUEL RODS

Gary J. Busselman, Richland, and Adolfo Reparaz, Kennewick, both of Wash., assignors to Advanced Nuclear Fuels, Corp., Richland, Wash.

Continuation of Ser. No. 153,124, Feb. 8, 1988, abandoned, which is a division of Ser. No. 48,478, May 6, 1987, Pat. No. 4,784,825, which is a continuation of Ser. No. 630,878, Jul. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 487,907, Apr. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 461,276, Jan. 26, 1983, abandoned. This application Sep. 5, 1989, Ser. No. 403,991

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—261 **5 Claims**



1. In a fuel rod assembly including a plurality of spaced apart grid spacers for holding a plurality of fuel rods of said assembly in a predetermined position within said assembly, a tie plate located at the top of said assembly and rigidly secured to the ends of said fuel rods, a method for repairing a fuel rod assembly having a damaged peripherally located fuel rod, by replacing said damaged fuel rod with an inert rod, comprising the steps of:

removing from the uppermost one of said plurality of grid spacers a sufficient portion of said grid spacer to free said damaged fuel rod;

pulling the freed upper portion of said damaged fuel rod through the removed portion of said grid spacer, away from said fuel rod assembly;

pulling said damaged fuel rod upward to slide it out of the other ones of said grid spacers and ultimately out of said fuel rod assembly;

sliding said inert rod into the space and grid spacer locations formerly occupied by said damaged fuel rod;

pushing the upper end of said inert rod through the removed portion of the uppermost one of said grid spacers; and

securing said inert rod to selected ones of said fuel rods juxtapositioned on either side of said inert rod, thereby securing said inert rod into said fuel rod assembly.

4,942,016

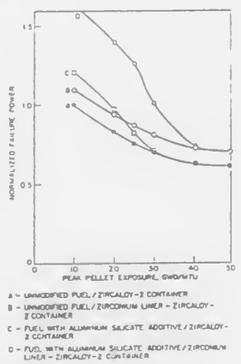
NUCLEAR FUEL ELEMENT

Mickey O. Marlowe; Herman S. Rosenbaum, both of Fremont; Trevor C. Rowland, San Jose; Charles B. Patterson, Jr., San Jose, and John H. Davies, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Sep. 19, 1988, Ser. No. 245,482

Int. Cl.[5] G21C *3/00*

U.S. Cl. 376—418 **10 Claims**



1. A nuclear fuel element comprising an elongated composite cladding container of a zirconium alloy tube consisting of constituents, other than the zirconium, in amounts greater than about 5000 parts per million by weight and having a barrier lining of zirconium metal in a thickness of from about 5 percent to about 30 percent of the thickness of said alloy tube, metallurgically bonded to the inner surface of the alloy tube, a central core of nuclear fuel material disposed within and partially filling said lined tubular container so as to leave a gap between said container and fuel providing the core, said nuclear fuel material being selected from the group consisting of compounds of uranium, plutonium, thorium and mixtures thereof which contain dispersed therethrough an additive of aluminum silicate in an effective amount up to about 5 percent by weight of the fuel material.

4,942,017

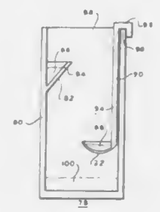
RANDOM ACCESS CHEMISTRY ANALYZER

Jon D. Turpen, Jackson, N.J., assignor to Turpen Laboratory Systems, Inc., Lakewood, N.J.

Division of Ser. No. 801,052, Nov. 22, 1985. This application Nov. 25, 1987, Ser. No. 125,216

Int. Cl.[5] G01N *35/00*

U.S. Cl. 422—64 **7 Claims**



1. A chemical analyzer system, comprising:

rotatable sample holding means having at least two cuvette means, each of said at least two cuvette means including a sample or reagent holding means, said sample or reagent holding means being a detachably removable spoon, said spoon having a detachably removable attachment means;

light source means;

filter means; and

light detection means, said light detection means including a photomultiplier tube, wherein said filter means and said rotatable sample holding means are in the optical path of the light generated by said light source means and wherein said light detection means is at the end of said optical path.

4,942,018

PACKED BED GRADIENT GENERATOR FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Miner N. Munk, Lake Park, Fla., assignor to LDC Analytical Inc., Riviera Beach, Fla.

Continuation of Ser. No. 13,124, Feb. 10, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 328,750

Int. Cl.[5] G01N *30/02*

U.S. Cl. 422—70 **4 Claims**



1. Apparatus for generating a solvent gradient composition for use in a high performance liquid chromatographic column from a first solvent and a second solvent, the solvent gradient composition approximating an error function, comprising:

a hollow cylindrical tube having an inlet port and an outlet port, said inlet port permitting the flow of a first solvent and a second solvent into said tube and said outlet port permitting flow of a solvent gradient composition out of said tube;

a packed bed means located within said tube and between said inlet and outlet ports for generating a solvent gradient composition approximating an error function from said first solvent and said second solvent when said first solvent is passed through said packed bed means and, after the flow of said first solvent through said packed bed means has stopped, said second solvent is subsequently passed through said packed bed means,

said packed bed means comprising a plurality of chemically inert millimeter sized spherical beads,

a chromatographic column operatively coupled to said outlet port of said tube, and

pumping means for sequentially pumping said first solvent into said tube and through said packed bed and chromatographic column and said second solvent into said tube and through said packed bed and, for pumping the solvent gradient composition, as generated by said packed bed means, out of said packed bed means and into said chromatographic column.

4,942,019

GAS PURIFIER

Paul D. Goodell, Ridgewood, N.J., and Lawrence C. Mitchell, Sr., Anaheim, Calif., assignors to Ergenics, Inc., Ringwood, N.J.

Filed Sep. 28, 1988, Ser. No. 250,433

Int. Cl.[5] F01N *3/10;* **B01D** *53/04*

U.S. Cl. 422—169 **3 Claims**

1. In a system for processing a gas, an apparatus comprising:

a main container having an end wall, a rear wall, and an annular side wall defining a substantially closed chamber;

an intake fitting penetrating through the end wall and having an intake projecting from the chamber and having inside the chamber a filter element;

an outlet fitting penetrating through the end wall and having an outlet projecting from the chamber offset from the intake and having inside the chamber a filter element offset from the filter element of the intake fitting;

means defining in the chamber an internally sealed well between the filters; a baffle in the chamber between the filters and extending toward the annular side wall, whereby gas passing between the filters is diverted from the intake around the baffle to the outlet;

a heater in the well;

an outer container surrounding the main container and defining a space thereabout;

means in the space for insulating the main container from the outer container; and an active material generally filling the chamber around the filters and well.

4,942,020

CONVERTER FOR REMOVING POLLUTANTS FROM A GAS STREAM

William A. Whittenberger, Garrettsville, Ohio; Edward M. Smith, Wyncote, Pa.; William R. Alcorn, Cleveland Heights, and Wesley P. Bullock, Windham, both of Ohio, assignors to W.R. Grace & Co.-Conn., New York, N.Y.

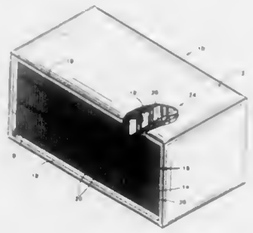
Filed Jun. 27, 1988, Ser. No. 211,864

Int. Cl.[5] B01J *35/04;* **F01N** *3/28*

U.S. Cl. 422—180 **23 Claims**

1. A converter for altering the composition of gases passing therethrough and comprising a gas inlet and a gas outlet; a plurality of individual layers having a predetermined length and extending between the inlet and outlet, said layers being normally nestable corrugated thin metal foil having on each surface thereof a coating comprising a refractory metal oxide and optionally a heavy metal catalyst deposited thereon; and a plurality of flexible fibers positioned between said layers and extending cross-wise of the corrugations and each said fiber having a length sufficient to span said predetermined length in

a direction parallel to the gas flow between the inlet and the outlet wherein said layers are partially nested and separated



from each other by a distance substantially equal to the thickness of said fibers.

4,942,021

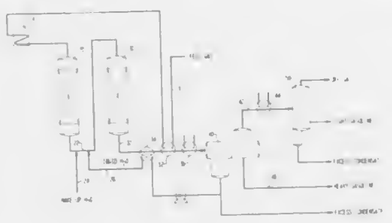
MULTISTAGE SYSTEM FOR CONVERSION OF LOWER OLEFINS WITH REACTOR QUENCHING MEANS

William E. Garwood, Haddonfield; Frederick J. Krambeck, Cherry Hill, both of N.J.; John D. Kushoerick, Boothwyn, Pa., and Samuel A. Tabak, Wenonah, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 775,906, Sep. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 903,915, Sep. 5, 1986, Pat. No. 4,740,645, which is a continuation-in-part of Ser. No. 650,594, Sep. 14, 1986, Pat. No. 4,749,820. This application Dec. 23, 1987, Ser. No. 137,224

Int. Cl.[5] B01T *8/04*

U.S. Cl. 422—194 9 Claims



2. A continuous multi-stage catalytic apparatus for converting ethene-rich lower olefinic feedstock containing reducing gas to heavier liquid hydrocarbon product comprising gasoline and/or distillate range hydrocarbons, comprising in combination:

first reactor means containing a first catalyst for contacting ethene-rich feedstock under oligomerization conditions at elevated temperature and moderate pressure in a primary stage reaction zone with said first catalyst comprising shape selective medium pore zeolite to convert at least a portion of the lower olefinic feedstock to intermediate olefinic hydrocarbons and obtain a primary stage reaction effluent comprising unreacted ethene, reducing gas and said intermediate olefinic hydrocarbons;

means for cooling said primary stage reaction effluent by introducing a stream of cold water sufficient to reduce the primary stage effluent to second stage reaction temperature; and

second reactor means containing a second catalyst for contacting cooled primary stage reaction effluent containing unreacted ethene, reducing gas and at least a portion of the intermediate olefinic hydrocarbons and said water with said second catalyst comprising a secondary stage ionic nickel-containing shape selective medium pore zeolite oligomerization catalyst in a second stage reaction zone at elevated temperature to produce said heavier liquid hydrocarbon product comprising gasoline and/or distillate range hydrocarbons; said water being present in an amount sufficient to maintain selectively of the nickel zeolite catalyst to said heavier liquid hydrocarbon product.

4,942,022

CATALYTIC REACTOR

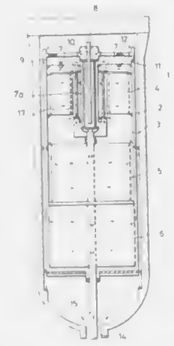
Hiroshi Kasai, Tokyo, and Yuji Kawamoto, Chiba, both of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Dec. 30, 1987, Ser. No. 139,609

Claims priority, application Japan, May 18, 1987, 62-118961

Int. Cl.[5] B01J *8/04*

U.S. Cl. 422—201 9 Claims



1. A vertical catalytic reactor wherein a reaction gas is contacted with solid catalyst means to cause an exothermic conversion reaction whereby to produce a reaction product gas, comprising: an upright reaction vessel having a vertical central axis; a plurality of catalyst beds within said reaction vessel, said catalyst beds being coaxial with and arranged in a vertical stack along said vertical central axis and arranged for sequential flow of said reaction gas therethrough, each of said catalyst beds being composed of a top wall, a bottom wall and inner and outer, cylindrical, perforate, gas-transmitting, upright, side walls, said walls defining an annular space which is packed with the solid catalyst and through which said reaction gas can flow radially; a plurality of heat exchangers in said vessel and coaxial with said vertical central axis, said heat exchangers being connected to said catalyst beds for cooling the effluent reaction gas from each catalyst bed before it is flowed into the next one of said sequentially arranged catalyst beds, at least two of said heat exchangers being disposed in the upper portion of said reaction vessel at substantially the same vertical level therein as the upper most catalyst bed, said two heat exchangers including first passage means for flowing the effluents from two of said catalyst beds separately to said two heat exchangers, respectively, so that said effluents are separately cooled in said two heat exchangers, and second passage means for flowing the feed reaction gas being fed into said reactor through said two heat exchangers in series and in indirect heat exchange relationship with said effluents in said two heat exchangers so that said feed reaction gas acts as colder gas in said two heat exchangers, and conduit means for removing the effluent gas from the last of said catalyst beds as said reaction product gas.

4,942,023

METAL EXTRACTION PROCESS WITH SUBSTITUTED 8-HYDROXYQUINOLINE

Achille J. De Schepper, Lichtaart; Guy G. Haesebroek, Mortsel, and Antoine L. Van Peteghem, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Hoboken, Belgium

Filed Dec. 21, 1988, Ser. No. 287,143

Claims priority, application Luxembourg, Jan. 18, 1988, 87108

Int. Cl.[5] C01G *1/00*

U.S. Cl. 423—22 10 Claims

1. In a process for separating a metal, that forms a complex with a substituted 8-hydroxyquinoline, from an aqueous solution containing said metal, comprising the steps of

(a) preparing a liquid or solid organic phase containing a substituted 8-hydroxyquinoline extractant,

(b) contacting the aqueous solution with the organic phase at such a pH that at least part of said metal is transferred from the aqueou solution into the organic phase, whereby producing an aqueous solution depleted in said metal and an organic phase loaded with said metal,

(c) separating the aqueous solution depleted in said metal from the organic phase loaded with said metal,

(d) recovering said metal from the loaded organic phase, and

(e) reusing in step (b) the organic phase that has been unloaded in step (d),

the improvement which comprises minimizing the degeneration rate of the extractant by using in step (a) a substituted 8-hydroxyquinoline extractant that has, in the undiluted state, a substituted 8-hydroxyquinoline content of at least 90 wt%.

4,942,024

METHOD FOR REFINING HYDROXIDES OF NIOBIUM AND TANTALUM CONTAINING TRANSITION METALS

Hiromi Sasaki; Tadasi Tanaka, and Yasusi Muneno, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jun. 2, 1989, Ser. No. 364,081

Claims priority, application Japan, Jun. 13, 1988, 63-143618

Int. Cl.[5] C01G *33/00, 35/00*

U.S. Cl. 423—65 4 Claims

1. A method of refining hydroxide of a metal of Group V selected from the group consisting of niobium and tantalum, the metal hydroxide containing transition metals as impurities, the method comprising the steps of:

(a) dissolving the metal hydroxide in an aqueous solution of an acid selected from the group consisting of hydrofluoric acid and oxalic acid;

(b) adjusting the pH of the aqueous solution of the metal hydroxide to a value in the range from 1 to 4;

(c) after step (b) maintaining the temperature of the aqueous solution of the metal hydroxide not higher than 60° C. and adding ammonium pyrrolidinedithiocarbamate to the solution such that ammonium pyrrolidinedithiocarbamate amounts to at least 0.05 wt % of M_2O_5, where M represents said metal, that can be formed from the metal M contained in the solution to thereby form a precipitate containing transition metals;

(d) removing said precipitate from the solution of the metal hydroxide; and

(e) after step (d) raising the pH of the solution of the metal hydroxide to a value not lower than 6 to cause precipitation of refined metal hydroxide.

4,942,025

PROCESS FOR THE MANUFACTURE OF GRANULAR MONOHYDRATED SODIUM PERBORATE

Antonino Condò, Milan, and Renzo Ferrario, Coriano Laghetto, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 355,118, May 18, 1989, abandoned, which is a continuation of Ser. No. 205,208, Jun. 10, 1988, abandoned. This application Nov. 3, 1989, Ser. No. 432,309

Claims priority, application Italy, Jun. 17, 1987, 20930 A/87

Int. Cl.[5] C01B *15/12, 35/12*

U.S. Cl. 423—282 9 Claims

1. A process of obtaining granular monohydrated sodium perborate endowed with resistance to abrasion, starting from the corresponding tetrahydrated perborate, characterized in that a carboxylic acid mixture consisting essentially of acetic acid, or alkali metal salt thereof, and formic acid, or alkali metal salt thereof, is added to said tetrahydrated perborate, already present in the granular state, then carrying out a dehydration of the tetrahydrated perborate until the conversion to monohydrated perborate is substantially complete, wherein, at the outlet of the dehydration zone, the moisture content is from 10 to 52 g/kg, the relative humidity is from 10 to 40%, and the temperature is from 45° to 60° C.

4,942,026

NOVEL SYNTHESIS OF SODIPOTASSIC COPPER TUBE SILICATES

Balaram Gupta, N. Plainfield; Cheng K. Saw, Summit, both of N.J.; Malcolm E. Kenny, Cleveland Heights, and Bruce A. Harrington, Cleveland, both of Ohio, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 10, 1989, Ser. No. 349,687

Int. Cl.[5] C01B *33/20, 33/32;* C04B *35/16*

U.S. Cl. 423—326 17 Claims

1. A method of synthesizing a crystalline sodipotassic copper tube silicate specie of the family $Na_{2-2x}K_{2x}CuSi_4O_{10}$ where X is 0, ½ or 1, comprising combining, with an organosilicate at essentially room temperature, stoichiometric amounts of a copper salt, and at least one salt of potassium and sodium, in an aqueous alcohol solution to form a gel, and then sintering the gel at a temperature and for a time sufficient to form said crystalline sodipotassic copper tube silicate.

4,942,027

METHOD FOR PREPARING FERRIERITE

Wayne E. Evans, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 893,430, Aug. 5, 1986, Pat. No. 4,795,623. This application Sep. 28, 1988, Ser. No. 250,874

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—328 15 Claims



1. A method of manufacture of sodium ferrierite which comprises crystallizing an aqueous mixture at hydrothermal

crystallizing conditions of from about 100 ° to about 400° C. over a period of time greater than 10 hours and less than 100 hours to form a crystalline sodium ferrierite, said aqueous mixture comprising a sodium compound, one or more aluminum compounds, a silicon compound and one nitrogen compound selected from the group consisting of piperidine, piperazine, pyridine, 4-picoline-N-oxide and 4-picoline, wherein the mole ratios of both the sodium compound and aluminum compound, in relation to the silicon compound, calculated on the basis of the oxide forms of said sodium compound, aluminum compound and silicon compound, are equal to the presence of 1.6 to 3.4 moles of sodium oxide per 25 moles of said silicon oxide and 0.7 to 1.6 moles of said aluminum oxide per 25 moles of said silicon oxide, and wherein water is present in a molar ratio of 5–500 moles of water per mole of said silicon oxide and said nitrogen compound is present in a molar ratio of 0.05 to 1.0 moles of said nitrogen compound per moles of said silicon oxide and where the mole ratio of sodium oxide to aluminum oxide is greater than 1, and calcining said crystalline sodium ferrierite.

4,942,029

MEDICATED SKIN PREPARATION

Milton H. Scheps, Largo, Fla., assignor to Smith & Nephew United, Inc., Largo, Fla.

Continuation of Ser. No. 909,141, Sep. 19, 1986, abandoned. This application Mar. 14, 1989, Ser. No. 323,625

Int. Cl.[5] A61K *31/74*

U.S. Cl. 424—78 17 Claims

1. A medicated skin composition useful for application to human skin to form an antimicrobial barrier on the skin which composition comprises a film forming amount of a copolymer of methylvinylether and maleic acid, an effective amount of a citric acid ester plasticizer for the copolymer, an antimicrobially effective amount of 2,4,4'-trichloro-2'-hydroxydiphenyl ether and a alcohol solvent therefor.

4,942,030

BIOLOGICAL CONTROL OF WHITEFLIES AND OTHER PESTS WITH A FUNGAL PATHOGEN

Lance S. Osborne, Altamonte Springs, Fla., assignor to University of Florida Research Foundation, Incorporated, Alachua, Fla.

Filed Feb. 12, 1988, Ser. No. 155,332

Int. Cl.[5] A01N *63/00*; C12N *1/14, 15/00*

U.S. Cl. 424—93 15 Claims

1. A *Paecilomyces fumosoroseus* which, when in its essentially biologically pure form, has the virulence against whiteflies characteristic of *Paecilomyces fumosoroseus* Apopka, culture deposit ATCC 20874.

4,942,031

COMPOSITIONS CONTAINING LYCD AND OTHER TOPICALLY ACTIVE MEDICINAL INGREDIENTS

Robert H. Levin, 11127 Jardin Pl., Cincinnati, Ohio 45241

Continuation-in-part of Ser. No. 159,390, Feb. 23, 1988. This application Aug. 16, 1989, Ser. No. 394,862

Int. Cl.[5] A61K *35/72, 31/615, 31/56*

U.S. Cl. 424—520 18 Claims

1. A topical composition adapted for application to the skin comprising, in admixture with a pharmaceutically acceptable topical carrier, an antiinflammatory agent and,. from about 0.1% to about 3.0% by weight of said composition of Live Yeast Cell Derivative (LYCD) in amounts effective to ameliorate the neuralgic gain associated with a herpes infection when applied to an area of the skin proximate the pain.

4,942,032

PROCESS FOR PRODUCING A NOVEL ANTIFUNGAL PRODUCT

Peter A. Vandenbergh, Sarasota, and Blair S. Kunka, Bradenton, both of Fla., assignors to Microlife Technics, Inc., Sarasota, Fla.

Division of Ser. No. 248,438, Sep. 23, 1988. This application Jan. 27, 1989, Ser. No. 302,463

Int. Cl.[5] A61K *35/00*; A63B *69/36*; C12R *1/01, 1/255*

U.S. Cl. 424—115 21 Claims



1. A method for producing an antifungal product (AFP) which comprises:

(a) incubating live cells of a Pediococcus species in a growth medium for the cells so as to produce an isolable amount of the product (AFP) in the growth medium, wherein the product (AFP) produced in the growth medium or separated from the growth medium inhibits the growth of *Penicillium oxalicum* as an assay strain and wherein the product (AFP) comprises a compound as an essential ingredient consisting of valine and lactic acid having a molecular weight of about 400 daltons and less than about 500 daltons and has a FAB mass spectrum as shown in FIG. 2; and

(b) treating the growth medium to eliminate most of the live cells of the Pediococcus species and to produce the product (AFP).

4,942,033

VEGETABLE EXTRACT-BASED COSMETIC OR PHARMACEUTICAL COMPOSITION WHICH ACTS ON CAPILLARY BRITTLENESS

Lucien Aubert, Cap-D'Ail, and Philippe Anthoine, Nice, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 686,836, Dec. 27, 1984, abandoned. This application Aug. 15, 1986, Ser. No. 896,570

Claims priority, application France, Dec. 27, 1983, 83 20826

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 8 Claims

1. A topical composition for decreasing capillary brittleness, comprising an acceptable carrier and a combination of vegetable extracts comprising:

(i) A dry *Ruscus aculeatus* L. extract having a saponin content of greater than 65% by weight, wherein said combination of vegetable extracts contains from 0.1 to 3% by weight of said *Ruscus aculeatus* L. extract in relation to the overall weight of the composition, said extract being a hydroalcoholic extract of an alcohol having from 3 to 6 carbon atoms; and

(ii) A dry *Salvia officinalis* L. extract comprising ursolic acid, flavonoids, rosmarinic acid, picrosalvin and terpenic products, wherein said combination of vegetable extracts contains from 0.1 to 5% by weight of said dry *Salvia officinalis* L. extract in relation to the overall weight of the composition, said extract being selected from the group consisting of an aqueous extract, an alcobolic extract, a hydroalcoholic extract and a propylene glycol extract.

4,942,034

DENTAL STIMULATOR

Ira D. Hill, Clay Court, Locust, N.J. 07760, and Robert D. White, 65 Glen Gray Rd., Oakland, N.J. 07436

Filed Nov. 14, 1988, Ser. No. 270,165

Int. Cl.[5] A61K *7/16, 7/18*; A61C *15/00*; A46B *9/04*

U.S. Cl. 424—401 6 Claims

1. A porous dental stimulator impregnated with an ingestible, nonfoaming, oral hygiene cleaning preparation that coats mouth surfaces with a plaque matrix disrupting film, said cleaning preparation comprising:

a. a surfactant selected from the group consisting of:
sodium lauryl sulfate,
sodium lauroyl sarcosinate,
polyethylene glycol stearate,
polyethylene glycol monostearate,
coconut monoglyceride sulfate,
sodium alkyl sulfates,
sodium alkyl sulfoacetates,
block copolymers of polyoxyethylene/polyoxybutylene,
allylpolyglycol ether carboxylates,
polyethylene derivatives of sorbitan esters,
propoxylated cetyl alcohol,
block copolymers comprising a cogeneric mixture of conjugated polyoxybutylene polyoxylethylene compounds having as a hydrophobe a polyoxybutylene polymer of at least 1200 molecular weight,
soap powder,
and mixtures thereof, and

b. a coating substance insoluble in said surfactant selected from the group consisting of:
silicones,
silicone glycol copolymers,
polydimethyl siloxanes,
long chain hydrocarbons,
normal paraffins having a chain length of 16 carbon atoms or greater,
paraffins with several loci of branching and unsaturation, carbowaxes,
polymers with a limited solubility in ethanol and water solutions where the ethanol: water ratio is greater than 0.3:1 but have essentially no solubility in water or saliva at lower concentrations, and mixtures thereof, and

c. wherein the cleaning preparation is present on said dental stimulator at a loading of from about 5 mg to about 50 mg per stimulator.

4,942,035

CONTINUOUS RELEASE FORMULATIONS

Jeffrey R. Churchill, Northwich, and Francis G. Hutchinson, Lymm, both of United Kingdom, assignors to Imperial Chemical Industries, London, England

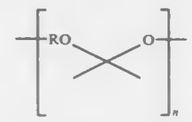
Division of Ser. No. 485,454, Apr. 15, 1983, Pat. No. 4,526,938. This application Mar. 27, 1985, Ser. No. 716,651

Claims priority, application United Kingdom, Apr. 22, 1982, 8211704

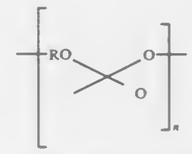
Int. Cl.[5] A61K *31/74, 31/79*; A61F *2/00*

U.S. Cl. 424—423 6 Claims

1. A pharmaceutical composition comprising a pharmacologically effective amount of a pharmacologically useful polypeptide and a pharmaceutically or veterinarily acceptable amphipathic, non-cross-linked linear, branched or graft block copolymer, which has a minimum weight average molecular weight of 5,000, in which the hydrophobic component is biodegradable or hydrolytically unstable under normal physiological conditions, and the hydrophilic component may or may not be biodegradable, the copolymer being capable of absorbing water to form a hydrogel when placed in water or an aqueous physiological-type environment in an animal body, the amphipathic copolymer being a linear block copolymer of the formula $A_m(BA)_n$ or $B_m(AB)_n$ wherein m is 0 or 1, n is an integer, A is a pharmaceutically or veterinarily acceptable hydrophobic polymer and B is a pharmaceutically or veterinarily acceptable hydrophilic polymer, or the amphipathic copolymer is a graft or branched block copolymer of the formula AB_n or BA_n wherein A, B and n have the meanings stated above and wherein respectively either A or B is a backbone polymer with n units of a monomer or polymer B or A respectively grafted onto it, and wherein A is selected from poly (D-, L- and DL-lactic acids), poly (D-, L- and DL-lactides), polyglycolic acid, polyglycolide, poly-ϵ-caprolactone, poly(3-hydroxy-butyric acid), non-therapeutic hydrophobic polypeptides, polyacetals of the formula



wherein R is a hydrocarbon radical, and n has the meaning stated above, polycarbonates or polyorthoesters of the formula:



wherein R and n have the meanings stated above, and copolymers of the formula:



wherein R and n have the meanings stated above, and copolymers derived from two or more monomers from which the above polymers are derived; and the pharmaceutically or veterinarily acceptable hydrophilic polymer B is selected from polyvinyl alcohol, polyvinyl pyrrolidone, polyethylene glycol, polyacrylamide, polymethacrylamide, dextran, alginic acid, sodium alginate, and gelatine, and copolymers of two or more of the monomers from which the above polymers are derived, and polyoxyethylene/polyoxypropylene block copolymers.

4,942,036

THERAPY BY VESICLE DELIVERY TO THE HYDROXYAPATITE OF BONE

W. Blair Geho, 533 Beechwood St., and John R. Lau, 1634 Morgan St., both of Wooster, Ohio 44691

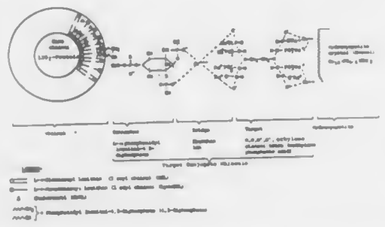
Filed Aug. 25, 1988, Ser. No. 236,253

Int. Cl.[5] A61F *2/00*; A61K *37/22*; B01J *13/02*

U.S. Cl. 424—425 9 Claims

1. The method of providing a continuous supply of chemicals to the body or skeleton of a warm-blooded animal for extended periods of time, comprising preparation of targeted,

permeable, bipolar, lipid vesicles containing said chemicals, said targeted lipid vesicles having affinity for the hydroxyapatite of bone, and administering said targeted vesicles to the internal body compartments of said animal.

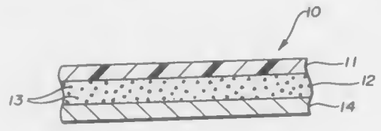


4,942,037

TRANSDERMAL DELIVERY SYSTEMS

Joseph V. Bondi, Collegeville, and Alice E. Loper, Lederach, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 2, 1988, Ser. No. 202,088
Int. Cl.[5] A61F *13/02*
U.S. Cl. 424—448 2 Claims



1. A therapeutic system in the form of a transdermal patch for administering (+)-PHNO comprising (a) a backing member impermeable to (+)-PHNO, (b) a reservoir of solid silicone polymer matrix containing (+)-PHNO and glycerol wherein the said solid reservoir matrix constitutes a solvent for the drug wherein in said matrix the drug is present in excess of its solubility and there is additionally present glycerol as cosolvent in an amount of from about 0.5 to no greater than 40 percent by weight, (c) a rate controlling membrane of silicone polymer, and (d) optionally a face adhesive and wherein said patch provides said (+)-PHNO at a therapeutic rate of from about 2 micrograms to about 20 micrograms per square centimeter per hour.

4,942,038

ENCAPSULATED HUMECTANT

Donald F. H. Wallach, Brookline, Mass., assignor to Micro Vesicular Systems, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 25,525, Mar. 13, 1987, abandoned, and a continuation-in-part of Ser. No. 78,658, Jul. 28, 1987, Pat. No. 4,885,090, and a continuation-in-part of Ser. No. 124,824, Nov. 24, 1987, Pat. No. 4,917,951, and a continuation-in-part of Ser. No. 157,571, Mar. 3, 1988, Pat. No. 4,911,928. This application Aug. 19, 1988, Ser. No. 234,309
Int. Cl.[5] A61K *7/06, 7/075, 9/127;* C09K *3/00*
U.S. Cl. 424—450 19 Claims

1. An humectant for use in external animal care products comprising a moisturizer and mineral oil encapsulated in apaucilammelar lipid vesicle said lipid vesicle having a non-phospholipid surfactant selected from the group consisting of glycerol monostearate, glycerol monooleate, and polyoxyethylene sorbitan oleates, palmitates, and stearates as its major lipid component.

13. An humectant for use in animal care products, said humectant in the form of a paucilamellar lipid vesicle comprising a polyoxyethylene fatty ether, cholesterol, and oleic acid, said paucilamellar vesicle encapsulating a moisturizer and mineral oil.

4,942,039

EFFERVESCENT ANALGESIC ANTACID COMPOSITION HAVING REDUCED SODIUM CONTENT

Ronald N. Duvall, and Gerald Gold, both of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 349,113, May 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 296,537, Jan. 12, 1989, abandoned. This application Sep. 5, 1989, Ser. No. 401,064
Int. Cl.[5] A61K *9/46*
U.S. Cl. 424—466 9 Claims

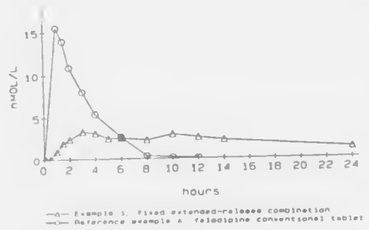
1. An effervescent analgesic antacid composition having a reduced sodium content which is capable of being dissolved in water to form a pleasant tasting solution which comprises a mixture of 0.2–16% of an analgesic selected from the class consisting of acetylsalicylic acid, acetaminophen, ketoprofen and mixtures thereof, 26–40% citric acid, 13–21% sodium bicarbonate, 7–12% calcium carbonate, 8–14% potassium bicarbonate, 0–14% glycine, 0.8–1.5% flavors and sweeteners, 0–31% tableting aids other than lubricants, and 0–6% tablet lubricant other than acetylsalicylic acid, said percents being weight percent based on the total weight of the composition.

4,942,040

PHARMACEUTICAL PREPARATION AND A PROCESS FOR ITS PREPARATION

Gert A. Ragnarsson, Bro; Kajsa M. Silfverstrand, Gothenburg, and John A. Sjögren, Mölnlycke, all of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Filed Sep. 29, 1988, Ser. No. 250,945
Claims priority, application Sweden, Oct. 8, 1987, 8703881
Int. Cl.[5] A61K *9/26*
U.S. Cl. 424—486 11 Claims



1. A controlled release preparation for administration once daily and containing a combination of metoprolol and a poorly water soluble a dihydropyridine being a calcium channel blocking agent, wherein metoprolol is included in the form of small beads containing as the main soluble component a salt of metoprolol coated with a waterinsoluble polymeric membrane and the dihydropyridine is dispersed in a non-ionic solubilizer and whereby both the dispersed dihydropyridine and the beads containing metoprolol are incorporated into a matrix forming a swelling gel in contact with water.

4,942,041

PHARMACEUTICAL COMPOSITIONS EFFECTIVE FOR TREATING SKIN TO DESTROY EGGS OF ENTEROBIUS VERMICULARIS

Walter Guhl, Haan, and Klaus Bansemir, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 20, 1988, Ser. No. 287,436
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1987, 3743374
Int. Cl.[5] A61K *31/083, 31/155, 31/045, 31/019*
U.S. Cl. 424—613 19 Claims

1. A method of treating human patients infested with *Enterobius vermicularis*, comprising applying to the skin of such patients an amount, which is effective to kill the eggs of *Enterobius vermicularis* present on such skin within a few minutes of application thereto, of a composition comprising (i) a bis- or oligo-bis-guanide or a water soluble salt thereof, (ii) an alcohol, (iii) hydrogen peroxide or a compound that releases hydrogen peroxide in contact with water, (iv) a carboxylic acid, and (v) water.

4,942,042

ANTI-DIARRHEA COMPOSITIONS

Hridayn Bhargava, Sharon, Mass., and Jacques Jutteau, Saint-Cloud, France, assignors to Societe de Conseils de Recherches et d'Applications Scientifiques (S. C. A. S.), France

Continuation of Ser. No. 860,628, May 7, 1986, abandoned. This application Aug. 29, 1988, Ser. No. 239,034
Claims priority, application United Kingdom, May 15, 1985, 8512345
Int. Cl.[5] A61K *31/12, 33/06, 33/14*
U.S. Cl. 424—683 12 Claims

1. A method of treating diarrhea in a human patient comprising administering to said patient diarrhea symptom-reducing amounts of first and second compositions, said first and second compositions being admixed together, or administered separately within thirty minutes of each other,

said first composition comprising a powdered absorptive material capable of absorbing pathogenic intestinal bacteria, said powdered absorptive material being a thermally activated, finely powdered, hydrous magnesium aluminum silicate clay, and

said second composition comprising an oral rehydration salt comprising a sodium salt, a potassium salt, and a sugar,

at least said second composition being administered to said patient admixed with water.

4,942,043

SUNFLOWER BASED WILD BIRD FEED

Eugene H. Sander, Hayfield, Minn., assignor to Muscatine Gene's, Inc., Hayfield, Minn.

Continuation-in-part of Ser. No. 126,744, Jan. 13, 1988, abandoned. This application Dec. 14, 1988, Ser. No. 284,325
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—2 10 Claims

1. A method of feeding wild birds comprising:

coating a sunflower seed portion of less than 4-mesh with a dark coloring substance and a top coat including as a primary ingredient corn gluten meal and tallow in an amount sufficient to form a hydrophobic top coat; and

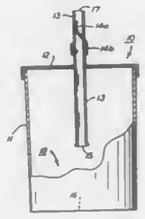
supplying the coated sunflower seed portion to wild birds.

4,942,044

SPAGHETTI SIPPER

Nicholas A. Ruggieri, 5 Braddock St., Rochester, N.Y. 14612

Division of Ser. No. 245,810, Sep. 19, 1988, Pat. No. 4,891,234. This application Sep. 25, 1985, Ser. No. 411,840
Int. Cl.[5] B65B *83/00*
U.S. Cl. 426—2 3 Claims



1. A method of consuming by a person prepared pasta products comprising:

(A) placing the prepared pasta product in a device comprising in combination (1) an open ended container, (2) a removable closure for closing the open end of said container, and (3) tubular means for removing said pasta by suction said means being attached to said removable closure, said tubular means being provided with a pawl mechanism so positioned within said tubular means so as to prevent prepared pasta from returning to said container, one end of said pasta being placed in said tubular means and the other end of said pasta being within said container,

(B) placing the person's mouth on the exterior end of said tubular means,

(C) applying suction to said tubular means until the desired amount of pasta is conveyed into the person, and

(D) severing said pasta at exterior end of said tubular means and then the person consuming said pasta.

4,942,045

GRAPE JUICE CONCENTRATE

Hermann J. Thumm, Lyndoch, Australia, assignor to Chateau Yaldara Pty. Ltd., Lyndoch, Australia

Filed Oct. 28, 1988, Ser. No. 264,337
Int. Cl.[5] A23L *2/08;* C12G *3/00*
U.S. Cl. 426—11 12 Claims

1. A method of producing a grape juice concentrate comprising:

(a) crushing sound grapes and separating juice from pulp,

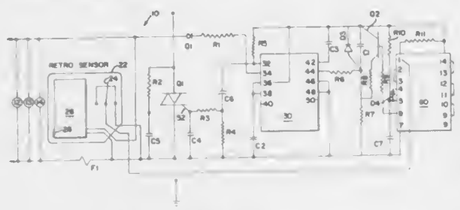
(b) subjecting the separated grape juice to a first stage vacuum concentration at a temperature of between 40° C. and 80° C. under vacuum conditions of between 12 and 15 pounds per square inch (84 and 105 kPa), to produce a first stage grape juice concentrate which has a solids content of between 25 and 40 Baume, and a distillate,

(c) transferring the first stage concentrate to a container and storing said concentrate in the container in the presence of alcohol

(d) subsequently separating at least some of said alcohol from the first stage concentrate, subjecting the first stage concentrate to a second stage of vacuum concentration also at a temperature of between 40° C.and 80° C.under vacuum conditions of between 12 and 15 pounds per square inch (84 and 105 kPa) to remove any remaining alcohol and to produce a second stage grape juice concentrate which has a Baume of between 38 and 55, and

(e) packaging the second stage grape juice concentrate in containers.

4,942,046
LAMP CONTROL PROCESS FOR WARMING FOOD
Arthur C. Scott, 427 Elm St., Deerfield, Ill. 60015
Filed May 16, 1988, Ser. No. 194,267
Int. Cl.[5] A23C *1/00*
U.S. Cl. 426—233 4 Claims



1. A food warming process, comprising the steps of:
placing at least one plate of cooked food upon a stationary counter in a restaurant;
optically sensing the presence of said plate of cooked food on said stationary counter;
automatically activating at least one heat lamp or heating element above the food when the presence of said plate of cooked food on said stationary counter has been optically sensed;
emitting heat from said lamp or heating element to said food to heat or maintain the temperature of said food above a preselected warming temperature;
removing the plate of food from said stationary counter;
optically sensing the absence of said plate of cooked food on said stationary counter;
progressively and automatically dimming, gradually deenergizing, and sequentially decreasing the intensity of the lamp or heating element for a preselected period of time; and serving the plate of food to a customer.

4,942,047
PROCESS FOR PREPARING MARINADED PROTEINACEOUS PRODUCT AND PRODUCT PRODUCED THEREBY
Lawrence L. Buckholz, Jr., Middletown, and Robin Kasper-Lebmann, Elberon, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Continuation-in-part of Ser. No. 371,074, Jun. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 114,057, Oct. 29, 1987, abandoned. This application Dec. 26, 1989, Ser. No. 457,162
Int. Cl.[5] A23L *1/31, 1/315*
U.S. Cl. 426—302 7 Claims

1. A process for preparing a marinaded chicken meat product consisting of the steps of:
(a) providing a chicken meat muscle tissue inner food core having an outer surface;
(b) preparing a marinade mixture comprising:
(i) an inorganic non-toxic phosphate salt;
(ii) water; and
(iii) a reaction product of macerated chicken meat, cysteine hydrochloride and thiamine hydrochloride;
(c) coating the resulting marinade mixture prepared in (b) onto said outer surface and simultaneously causing the marinade mixture of (b) to be in intimate contact with substantially the entirety of said outer surface for a period of time sufficient to cause said chicken meat muscle tissue inner food core to permanently absorb or adsorb said reaction flavor from the mixture (b); and then
(d) cooking the resulting chicken meat muscle tissue inner core;
the percent marinade based on the total weight of marinaded chicken meat food product being 8%, the percent inorganic non-toxic phosphate salt based on the weight of marinaded chicken meat product being from 0.25% up to 0.35%; the percent reaction flavor being from 1.00% up to 3.20% based on the total weight of marinaded chicken meat food product; the percent water based on the total weight of marinaded chicken meat food product being from 4.55% up to 6.15%.

4,942,048
PROCESS FOR PRESERVING FOOD AND DEOXYGENATING COMPOSITION
Yasunobu Nasu, Fuchu; Taichi Ogishima, Akishima; Akira Dei, Tachikawa; Haruhiko Uchida, Musashimurayama; Mitsuru Inami, Takasaki; Tatsuo Furuhashi; Yasuhiko Hino, both of Yono, and Hideo Sugimura, Kita, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1986, Ser. No. 921,689
Claims priority, application Japan, Oct. 29, 1985, 60-242240; Feb. 13, 1986, 61-27860
Int. Cl.[5] A23L *3/34*
U.S. Cl. 426—271 8 Claims

1. A process for preserving food which comprises packing the food in a hermetically sealed container together with: a deoxygenating composition including
(a) at least one deoxygenating material selected from a group consisting of a substantially non-oxidated iron powder and a ferrous compound; and
1 (b) a weakly basic anion exchange resin substituted by a halogen ion
in such a manner that they are not in direct contact with the food.

4,942,049
PROCESS FOR CONTROLLING FOAM IN FOOD PROCESSING AND PRODUCTION
Karl H. Schmid, Mettmann; Alfred Meffert, Monheim; Gilbert Schenker, Erkrath, and Adolf Asbeck, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany
Filed Jan. 11, 1989, Ser. No. 295,878
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1988, 3800492
Int. Cl.[5] A23L *1/42*
U.S. Cl. 426—329 3 Claims

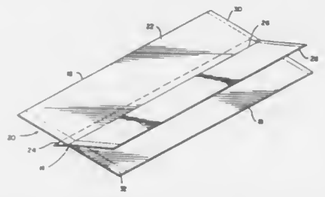
1. A process for controlling foam in an aqueous food processing or fermentation liquid comprising adding to said aqueous liquid a foam-inhibiting effective amount of a compound of formula I

$$R—O—(CH_2CH_2O)_n—R^1 \quad (I)$$

wherein R is a C_{20-24} alkyl group, R^1 is a C_{1-4} alkyl group and n is an integer equal to from 2 to about 10.

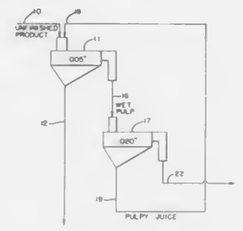
4,942,050
PROCESS FOR FORMING A MICROWAVE POPCORN PACKAGE
Jon A. Ylvisaker, 1914 Patterson Rd., Marietta, N.Y. 13110
Division of Ser. No. 300,178, Jan. 23, 1989, Pat. No. 4,892,744. This application Oct. 27, 1989, Ser. No. 427,699
Int. Cl.[5] B65B *29/08*
U.S. Cl. 426—394 7 Claims

1. A process for forming a package from a length of microwave energy transparent sheet material, said sheet material forming said package having longitudinally extending opposed marginal edges, said method comprising the steps of:
folding said marginal edges of said sheet material to form two substantially planar opposed faces of said sheet material defining a product-containing chamber and two opposed longitudinally extending fold lines in said sheet material joining the longitudinal periphery of said opposed faces;
forming a longitudinally-extending seam intermediate said fold lines, integral with and projecting away from said one of said faces, outside the plane of said one face, said seam comprising a seal between said opposed marginal edges such that said edges are sealed to each other in face to face congruent fashion;
forming a longitudinally-extending pleat intermediate said fold lines, integral with and projecting away from said face opposite said one of said faces, outside the plane of said opposite face, said pleat comprising an additional fold line in said sheet material and additional opposed faces and foldable to lie against said opposite face;
forming two opposed transverse seals extending substantially along only the transverse edges of said package to seal an expandable product placed therein, said transverse seals sealing said opposed faces to each other along said transverse edge and sealing said additional opposed faces to each other that constitute said pleat, said sheet material



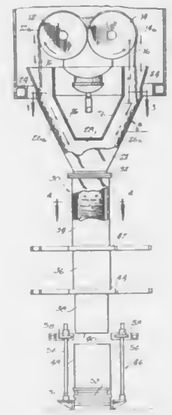
being otherwise unsealed between said opposed faces and said additional opposed faces and the orientation and configuration of said pleat and said transverse seals being such that when said package is placed in a microwave oven with said pleat folded against said opposite face adjacent the oven floor and microwave energy applied to the package, the expandable product will cause the expansion of said pleat creating a three-surface, generally tubular structure with sealed transverse edges, each surface having one common edge with each of the other surfaces and each surface convexly curved between the sealed transverse edges and between its common edges such that only one of said surfaces of the package contacts said oven floor and makes minimal contact between the package and the microwave oven floor thereby reducing heat transfer from said package to said floor.

4,942,051
METHOD FOR SEPARATION OF DEFECTS FROM CITRUS JUICE
Gioacchino Sardisco, Sao Paulo, Brazil, assignor to FMC Corporation, Chicago, Ill.
Filed Feb. 2, 1989, Ser. No. 305,126
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—489 14 Claims



1. A method for producing a finished liquid fruit product from a stream of unfinished products comprising the steps of:
pressing the unfinished products in a small screen finisher having a screen size on the order of 0.005" to produce a finished liquid and a wet pulp, said finished liquid containing first size particles smaller than the screen size of the said finisher and said wet pulp containing particles larger than the screen size of the said finisher;
pressing the wet pulp in a coarse screen finisher to produce a pulpy liquid and a dry pulp, said pulpy liquid containing second size particles smaller than the screen size of the said coarse finisher and said dry pulp containing particles larger than the screen size of the said coarse finisher, said second size particles being a predetermined amount substantially larger than said first size particles, and;
recycling the pulpy liquid through the small screen finisher to produce a finished liquid.

4,942,052
METHOD FOR PRODUCING BLOCKS OF CHEESE CURD
James R. Posdal, Glenview, Ill., assignor to Kraft, Inc., Glenview, Ill.
Filed Nov. 29, 1988, Ser. No. 277,298
Int. Cl.[5] A23C *19/00*; B30B *11/00*
U.S. Cl. 426—512 5 Claims



1. A method of forming a block of cheese curd comprising the steps of:
forming a sheet of cheese curd;
collecting said sheet and placing portions of said sheet in a stacked face-to-face relation in a tower so as to superpose stacked portions one on top of another;
applying a vacuum to said stacked portions of said sheet;
pressing said stacked portions of said sheet under the weight of superposed stacked portions to form a pressed curd;
cutting said pressed curd at the bottom of the tower to form a block of cheese curd beneath the overlying superposed portions; and
supporting said superposed portions while lowering said block of cheese curd.

4,942,053
VACUUM CHILLING FOR PROCESSING MEAT
Daniel L. Franklin; Arthur J. Goembel, and Douglas D. Hahn, all of Austin, Minn., assignors to Geo. A. Hormel & Company, Austin, Minn.
Filed Jul. 19, 1989, Ser. No. 382,105
Int. Cl.[5] A23B *4/00*
U.S. Cl. 426—524 7 Claims

1. A process for processing and treating pieces of meat, the meat having water, comprising:
(a) placing the meat in a container having an interior cavity;
(b) creating a vacuum in the interior cavity of the container,

the vacuum being sufficient to lower, in the interior cavity, the temperature at which water boils so that water in the meat boils;
(c) agitating the meat pieces while in the container;
(d) exhausting the water vapor from the interior of the cavity; and
(e) both cooling the massaging the meat pieces by means of the vacuum, wherein cooling is obtained by water boiling from the meat, thereby cooling the meat and massaging is obtained by expanding the meat when exposed to the vacuum and compressing the meat during agitation.

4,942,054

PROCESS FOR PRODUCING LOW CALORIE FOODS FROM ALKYL GLYCOSIDE FATTY ACID POLYESTERS

Daryl B. Winter, Seattle; Richard S. Meyer; Jeffrey M. Root, both of Tacoma, and Michael L. Campbell, Kent, all of Wash., assignors to Curtice-Burns, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 122,188, Nov. 18, 1987, Pat. No. 4,840,815, which is a continuation-in-part of Ser. No. 49,625, May 13, 1987, abandoned. This application May 3, 1989, Ser. No. 347,264

The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.

Int. Cl.[5] A23D *5/00*

U.S. Cl. 426—611 **30 Claims**

1. In a process for producing a low calorie food containing fat ingredients and nonfat ingredients including the step of substituting a fat substitute for the fat ingredients, the improvement comprising selecting a fat substitute that comprises greater than 10% of an alkyl glycoside fatty acid polyester, the alkyl glycoside fatty acid polyester having at least 4 fatty acid ester groups, wherein each fatty acid independently has from 4 to 24 carbons atoms, and wherein the alkyl glycoside moiety comprises a saccharide portion and an alkyl portion, the alkyl portion having from 1 to 24 carbon atoms.

4,942,055

GRAVITATIONALLY-STABILIZED PEANUT-CONTAINING COMPOSITION

Fitzhugh L. Avera, Alameda, Calif., assignor to PBFB Licensing Corporation, Burnsville, Minn.

Continuation-in-part of Ser. No. 116,636, Nov. 3, 1987, Pat. No. 4,832,977, which is a continuation-in-part of Ser. No. 943,681, Dec. 18, 1986, Pat. No. 4,728,526. This application Feb. 28, 1989, Ser. No. 316,989

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] A23L *1/38*

U.S. Cl. 426—633 **28 Claims**

1. A gravitationally-stabilized peanut-containing solid or semi-solid composition comprising:
(a) about 60–98% by weight of peanuts;
(b) about 1–10% by weight high melting point (HMP) vegetable oil, said HMP vegetable oil being solid or semi-solid at 20° C.;
(c) about 1–10% by weight of water-soluble, edible polydextrose; and
(d) about 0.5–8% by weight of added water; wherein said polydextrose includes polycarboxylic acid cross-linking agents, wherein said polydextrose is dissolved in said water, and wherein said composition is a gravitationally-stabilized solid or semi-solid mixture at a temperature of about 20° C.

4,942,056

METHOD FOR REPLENISHING A DEPLETED INK SHEET

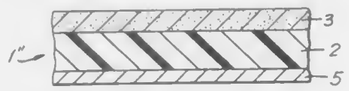
Hidetsugu Shimura, and Hajime Kurihara, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 312,000

Claims priority, application Japan, Feb. 18, 1988, 63-36114; Feb. 18, 1988, 63-36116

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—35 **9 Claims**



1. A method for replenishing an ink sheet including a dielectric layer and a conductive ink layer formed on the dielectric layer wherein portions of the ink layer have been removed during transcription to create deleted portions in the ink layer, comprising:
supplying replacement conductive ink material to the ink sheet so that the conductive ink material contacts the depleted portions formed during transcription and contacts the surface of the non-transcribed portions of the ink layer,
providing a base electrode on the opposite surface of the dielectric layer from the ink layer in at least the region of the depleted portions containing the replacement ink material,
imparting an electric charge to the replacement conductive ink material in the depleted portions so that the conductive ink material is retained on the dielectric layer in the region of the depleted portions and the ink material is not attracted to the non-transcribed portions of the ink layer, and
removing the non-attracted ink material.

4,942,057

MAKING AN AMORPHOUS LAYER

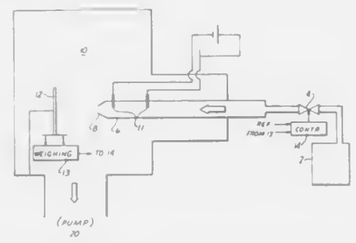
Juergen Steinwandel, Markdorf; Manfred Hauser, Leonberg, and Joerg Hoeschele, Stuttgart, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 14, 1987, Ser. No. 85,854

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1986, 3628443

Int. Cl.[5] B05D *3/06;* **C23C** *16/00*

U.S. Cl. 427—38 **9 Claims**



1. Method of providing and producing a layer on a carrier or on a substrate, the layer to include one or two particular elements, comprising the steps of;
providing a gaseous blend which includes a compound or compounds of said element or elements together with a carrier gas, the carrier gas being a larger component in the blend;
providing for a decomposition process of said compound such that molecular clusters are formed and are included in and as a result of the decomposition process, the clusters including said element or elements;
accelerating the clusters non-electrically by means of a nozzle into a vacuum chamber to obtain an expansion cone and whereby essentially all acceleration after leaving the nozzle is caused by the nozzle; and
providing a target in the vacuum and in a flow path of the clusters as they emerge from said nozzle to be impinged upon by the clusters as having been accelerated by the nozzle, while a shock wave of carrier gas causes the carrier gas to be decelerated ahead of the target.

4,942,058

PROCESS FOR FORMING DEPOSITED FILM

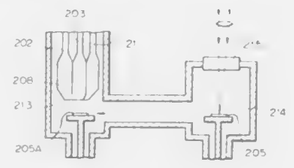
Masafumi Sano, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 183,484, Apr. 15, 1988, abandoned, which is a continuation of Ser. No. 38,710, Apr. 15, 1987, abandoned. This application Jun. 8, 1989, Ser. No. 363,309

Claims priority, application Japan, Apr. 15, 1986, 61-086826

Int. Cl.[5] C23C *16/00;* **B05D** *3/06*

U.S. Cl. 427—431 **9 Claims**



1. A process for forming a crystalline deposited film on a substrate surface in a film forming space, comprising the steps of:
(a) preparing the surface of said substrate by selectively irradiating the surface thereof with an energy beam of an electromagnetic wave or electron beam through an atmosphere of a gas to provide regions on which crystal nuclei are selectively formed;
(b) forming said crystalline deposited film on said surface of said substrate by separately introducing an activated species (A) formed by decomposition of a compound (SX) containing silicon and a halogen and an activated species (B) formed from a chemical substance (B) for film formation which is chemically mutually reactive with said activated species (A) to form a mixture and effect a chemical reaction therebetween to thereby effect the formation of the crystalline deposited film, said crystalline deposited film having a surface; and
(c) producing an etching action on the crystalline deposited film by exposing the crystalline deposited film surface to a gaseous substance (E) capable of effecting an etching action thereon, and thereby effecting crystal growth in a specific face direction.

4,942,059

METHOD FOR HARDFACING METAL ARTICLES

Ian L. W. Wilson, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 29, 1988, Ser. No. 250,659

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—53.1 **5 Claims**

1. A method for applying a nitrided metal hardface coating on a metal object which comprises applying a coating of an alloy onto a metal object in an atmosphere containing nitrogen under nitriding conditions whereby the coating of the object and nitriding of the coating occur concurrently; said alloy containing 20–75% niobium, 5–35% titanium and 10–60% tungsten.

4,942,060

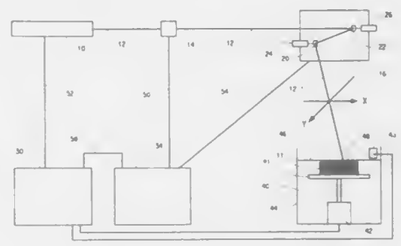
SOLID IMAGING METHOD UTILIZING PHOTOHARDENABLE COMPOSITIONS OF SELF LIMITING THICKNESS BY PHASE SEPARATION

Mario Grossa, Dreieich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 21, 1989, Ser. No. 341,611

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—54.1 **7 Claims**



1. A method for accurately fabricating an integral three dimensional object from successive layers of a photohardenable liquid composition comprising the steps of:
(a) forming a layer of a photohardenable liquid;
(b) photohardening at least a portion of the layer of photohardenable liquid by exposure to actinic radiation;
(c) introducing a new layer of photohardenable liquid onto the layer previously exposed to actinic radiation; and
(d) photohardening at least a portion of the new liquid layer be exposure to actinic radiation, with the requirement that the photohardenable composition comprises an ethylenically unsaturated monomer, a photoinitiator, and a latent radiation deflecting matter, the latent radiation deflecting matter being in solution within the composition, and separating into separate domains upon photohardening the composition by subjecting it to the actinic radiation, the separate domains comprising a gas,, liquid, solid or mixtures thereof wherein at least a majority of the domains are smaller than the depth of photohardening and larger than one-half of the wavelength of the actinic radiation, the separate domains having a first index of refraction and the rest of the photohardened composition having a second index of refraction, and wherein the absolute value of the difference between the first index of refraction and the second index of refraction is greater than 0.01.

4,942,061

PROCESS FOR THE PRODUCTION OF ELECTRICALLY INSULATING COATINGS ON METALLIC SURFACES

Heribert Domes, Weilmünster, Fed. Rep. of Germany, assignor to Stahlwerke Bochum AG, Bochum, Fed. Rep. of Germany

PCT No. PCT/DE88/00351, § 371 Date Jan. 26, 1989, § 102(e) Date Jan. 26, 1989, PCT Pub. No. WO88/10288, PCT Pub. Date Dec. 29, 1988

PCT Filed Jan. 11, 1988, Ser. No. 306,021

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1987, 3720217

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—104 **17 Claims**

1. The method of forming an electrically insulating coating

on a metallic surface, which comprises applying a film of an aqueous composition which contains

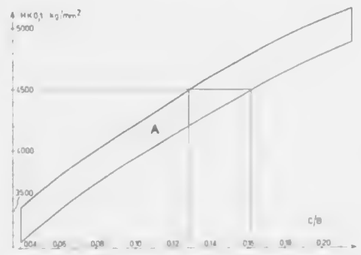
a. a water-dilutable synthetic resin,
b. a dispersed waxlike substance having a particle size between 0.1 and 20 μm and a melting point between 80° and 250° C.,
c. for an inorganic or organic pigment,
d. a borate, and
e. an alkali metal hydroxide, ammonia or an organic amine for adjusting a pH value between 7 to 9, and which is free of fluoride to the metallic surface in a quantity between 0.5 and 20 g/m², and drying the moist film at a temperature between 120° and 350° for a time between 1 hour and 5 seconds.

4,942,062

PROCESS FOR PRODUCING BORON CARBIDE COATINGS OF CONTROLLED HARDNESS

Michel R. Ducarroir, Odeillo; Germain J. Male, Saillagouse; Marcel F. Nadal, Perpignan; Alain G. Basse; Gérard P. Pizzini, both of Pau, and Didier P. Cazajous, Lanne, all of France, assignors to Coating Development Societe Anonyme, Saint-Etienne, France

PCT No. PCT/FR85/00136, § 371 Date Apr. 28, 1986, § 102(e) Date Apr. 28, 1986, PCT Pub. No. WO86/00345, PCT Pub. Date Jan. 16, 1986
PCT Filed Jun. 3, 1985, Ser. No. 851,080
Claims priority, application France, Jun. 27, 1984, 84 10290
Int. Cl.[5] C23C *16/32, 16/52*
U.S. Cl. 427—249 **6 Claims**



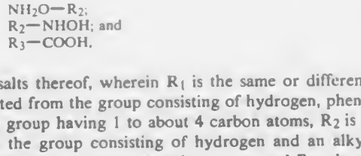
1. A process for producing a coating of boron carbide of controlled hardness on a substrate comprising heating the surface of the substrate to a temperature of between 800° C. and 1200° C., reducing a gaseous mixture comprising at least one boron compound and at least one carbide compound in the presence of the heated substrate while causing the reduced gas mixture to flow over the heated surface of the substrate at a total pressure of less than or equal to 100 millibars with an average flow rate of between 10^{-4} and 10^{-3} g.cm2.5-1, in such a manner as to deposit a coating comprising one or a mixture of phases selected from the group consisting of tetragonal $B_{50}C_2$ and rhombobedral $B_{13}C_2$, establishing a curve of the variation of the hardness of the coating as a function of the composition of the gaseous mixture for conditions of temperature, pressure and flow rate selected, determining the value of the composition corresponding to the hardness of the coating obtained, and adjusting the composition of the gaseous mixture for obtaining a predetermined hardness.

4,942,063

METHOD FOR CONTROLLING THE THICKNESS DISTRIBUTION OF AN INTERFERENCE FILTER

Matthew S. Brennesholtz, Waterloo, and Paul J. Patt, Mount Kisco, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Apr. 20, 1989, Ser. No. 340,835
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—256 **3 Claims**



1. A method of controlling the thickness distribution of a vapor deposited layer on a moving substrate in the direction of travel of the substrate, the layer formed by vaporizing a source material in the vicinity of the moving substrate, the method comprising the steps of:

(a) providing at least one rotatable dodger between the source material and the path of the substrate;
(b) rotating the dodger about an axis parallel to the plane of the substrate and normal to the direction of travel of the substrate when the substrate is at least partially behind the dodger,

so that during rotation of the dodger the substrate is partially shielded from and partially exposed to the source material.

4,942,064

METHOD FOR FIXING CHROMATED COPPER ARSENATE TREATING AGENTS IN WOOD

Theron R. Brayman, Wadsworth, Ohio; Eugene A. Pasek, Monroeville, and Gregory D. Wall, Apollo, both of Pa., assignors to Hickson Corporation, Conley, Ga.

Filed Jun. 21, 1988, Ser. No. 209,512
Int. Cl.[5] B05D *3/00, 3/10*
U.S. Cl. 427—297 **12 Claims**

1. A method for fixing chromated copper arsenate agents in wood comprising the steps of impregnating the wood with chromated copper arsenate; and treating the chromated copper arsenate impregnated wood with a fixative agent selected from the group consisting of compounds having the formula

$$R_1-\underset{\displaystyle R_1}{\overset{\displaystyle R_1}{N}}-\underset{\displaystyle R_1}{\overset{\displaystyle R_1}{N}}-R_1; \quad \text{(a)}$$

$$NH_2O-R_2; \quad \text{(b)}$$

$$R_2-NHOH; \text{ and} \quad \text{(c)}$$

$$R_3-COOH. \quad \text{(d)}$$

and salts thereof, wherein R_1 is the same or different and is selected from the group consisting of hydrogen, phenyl or an alkyl group having 1 to about 4 carbon atoms, R_2 is selected from the group consisting of hydrogen and an alkyl group having from 1 to about 4 carbon atoms and R_3 selected from the group consisting of $(R_4)_2(HO)C-$ and R_4OOC- wherein R_4 is selected from the group consisting of hydrogen, an alkyl group having 1 to about 4 carbon atoms, phenyl and pyridyl.

4,942,065

METHOD FOR CURING SILICONE COATINGS ON PLASTIC SUBSTRATES, AND CURABLE COMPOSITIONS RELATED THERETO

Arnold Factor, Scotia, and Gautam A. Patel, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 360,639, Jun. 2, 1989, abandoned, which is a division of Ser. No. 214,964, Jul. 5, 1988, Pat. No. 4,863,520. This application Jan. 16, 1990, Ser. No. 463,830
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—387 **19 Claims**

1. A method for forming a protective coating on a plastic substrate, comprising applying to the substrate a curable coating composition which comprises a dispersion of

(I) colloidal silica;
(II) at least one alkyltrialkoxysilane; and
(III) any reaction products of (I) and (II),

in a mixture of water with at least one organic solvent; and curing the coating composition at elevated temperatures with an effective amount of a tetrabutylammonium carboxylate catalyst of the formula

$$(C_4H_9)_4N^{\oplus}\ {}^{\ominus}O-\overset{\displaystyle O}{\overset{\|}{C}}-R,$$

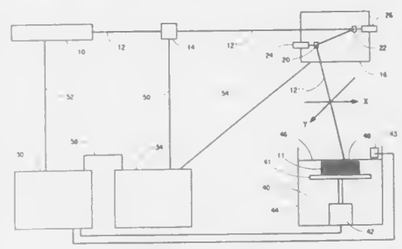
wherein R is selected from the group consisting of hydrogen alkyl groups containing about 1 to about 8 carbon atoms, and aromatic groups containing about 6 to 20 carbon atoms.

4,942,066

SOLID IMAGING METHOD USING PHOTOHARDENABLE MATERIALS OF SELF LIMITING THICKNESS

Roxy N. Fan, East Brunswick, N.J., and Mario Grossa, Dreieich, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 21, 1989, Ser. No. 341,612
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—54.1 **7 Claims**



1. A method for accurately fabricating an integral three dimensional object from successive layers of a photohardenable liquid composition comprising the steps of:

(a) forming a layer of a photohardenable liquid;
(b) photohardening at least a portion of the layer of photohardenable liquid by exposure to actinic radiation;
(c) introducing a new layer of photohardenable liquid onto the layer previously exposed to actinic radiation; and
(d) photohardening at least a portion of the new liquid layer by exposure to actinic radiation, with the requirement that the photohardenable composition comprises an ethylenically unsaturated monomer, a photoinitiator, and radiation deflecting matter, wherein the deflection matter comprises dispersed particulate solid matter, emulsified liquid or gas, wherein substantially all deflecting matter is smaller than the depth of photohardening and wherein the deflecting matter has a first index of refraction, and the rest of the composition has a second index of refraction, and wherein the difference between the first index of refraction and the second index of refraction increases by more than 0.01 upon subjecting the composition to the radiation in order to selectively photoharden it.

4,942,067

WOOD PRESERVATIVE AND METHOD FOR PRESERVING WOOD

Norman T. Harding, 713 Wood St., Pittsburgh, Pa. 15221

Filed Mar. 27, 1989, Ser. No. 328,688
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—393 **3 Claims**

1. A method for preserving wood comprising the steps of

(a) producing a concentrated solution of thujone oil;
(b) heating the wood to be preserved; and
(c) applying the concentrated solution of thujone oil to the heated wood at a pressure approximately in the range of 120 p.s.i. to 2000 p.s.i.

4,942,068

CURTAIN COATING PROCESS

Wolfgang Schweicher, Leverkusen; Hans Frenken, Odenthal-Osenau; Heinrich Bussmann, Leverkusen; Kurt Browatzki, Leverkusen, and Johannes Sobel, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 6, 1988, Ser. No. 142,191
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1987, 3700727
Int. Cl.[5] B05D *1/30*
U.S. Cl. 427—420 **9 Claims**

1. A process for the production of a web coated with at least two layers, at least one layer containing binders based on proteins and/or synthetic polymers and another layer, applied as the lowermost or uppermost layer, containing an instant hardener (hardening layer), by the curtain coating method using a V-coater past which the web is continuously guided, characterized in that the hardening layer applied at the same time as the binder-containing layer is guided at the negatively inclined sliding surface of the V-coater while the binder-containing layer is guided at the opposite sliding surface of the V-coater and the hardening layer is combined with the binder-containing layer at the coating edge to form a layer packet which is applied as a free-falling curtain to the web to be coated.

4,942,069

FLAME RETARDANT COMPOSITIONS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Chemicals and Plastics Company, Inc., Danbury, Conn.

Filed Dec. 7, 1988, Ser. No. 280,979
Int. Cl.[5] A01N *3/00*
U.S. Cl. 428—389 **10 Claims**

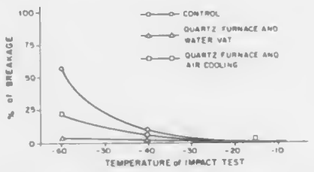
1. A cable comprising a metal core conductor and at least one unfoamed layer surrounding the core consisting essentially of

(i) a thermoplastic polymer;
(ii) a metal hydrate flame retardant compound; and
(iii) essentially unreacted blowing agent, which decomposes at a temperature in the range of about 160° C. to the decomposition temperature of the thermoplastic polymer.

4,942,070
EXTRUDED CONDUITS AND METHOD OF MAKING THE SAME

Jean-Jacques Labaig; Michel Fenie, both of Bernay, and Michel Glotin, Serquigny, all of France, assignors to Atochem, Paris la Defense, France

Division of Ser. No. 34,343, Apr. 3, 1987, Pat. No. 4,812,274.
This application Dec. 5, 1988, Ser. No. 279,976
Claims priority, application France, Apr. 4, 1988, 86 04880
Int. Cl.[5] F16L *9/12*
U.S. Cl. 428—36.9 **2 Claims**

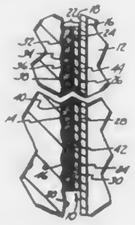


1. An extruded thermoplastic polymer conduit having a conduit wall with a previously oriented surface zone that has been recrystallized by melting and cooling said zone to a crystalline morphology which is identical to the crystalline morphology of the remainder of said conduit wall.

4,942,071
ADHESIVE HOLDING DEVICE WITH SEPARABLE ELEMENTS

Bruce J. Frye, P.O. Box 483, Milltown, Wis. 54858

Filed Oct. 23, 1989, Ser. No. 425,469
Int. Cl.[5] B32B *7/06*
U.S. Cl. 428—40 **12 Claims**

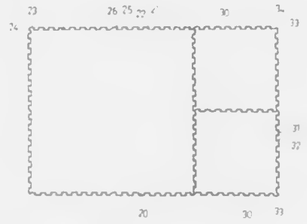


1. An adhesive holding device with separable elements for securing a flat, rogid, back surface of an object to a wall supporting structure which may not be smooth, wherein said holding device includes:
(a) a plurality of coextensive laminates overlying each other;
(b) the laminates including:
(1) a first sheet of plastic material partially defined by opposed, parallel outward and inward surfaces, the outward surface being covered with a pressure sensitive adhesive material adapted to be affixed to the back surface of an object to be secured, and the inward surface being smooth and polished, and of a nature to adhere naturally to another smooth, polished surface,
(2) a relatively thick, resilient, compressible, flat pad partially defined by opposed, nominally parallel, outward and inward surfaces, each such surface being covered with a pressure sensitive adhesive, wherein the inward surface is adapted to be affixed to a surface of a wall supporting structure, and
(3) a second sheet of relatively thin, flexible, effectively non-stretchable material having a smooth and polished outward surface adhered to the inward surface of the first sheet by mutual attraction and having an inward surface captured by the adhesive covering the outward surface of the resilient pad.

4,942,072
CARPET TILES WITH EDGES PROJECTIONS AND GROOVES

Farn-Juoh Chung, No. 1, Miao-Pu Lane, Hsiao-Shin Li, Shan-Hua Town, Tainan Hsien, Taiwan

Filed May 11, 1989, Ser. No. 350,603
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—48 **1 Claim**

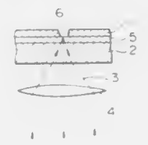


1. A carpet comprising:
a first set of carpet tiles and a second set of carpet tiles, said first and second sets of carpet tiles being of different sizes and being adapted to interlock with one another;
each of said first carpet tiles being in the form of square with four edges, each edge equalling one unit length, and a first plurality of exposed projections which are equally spaced apart therealong, each of said first projections being in the shape of an isosceles trapezoid with a first parallel side adjacent to said edge of said first carpet tile and a second parallel side having a length which is longer than that of said first parallel side, each side of said first carpet tile further having a first plurality of equally spaced complementary grooves arranged between said first projections so as to interlock with corresponding projections of an adjacent carpet tile;
each of said first carpet tiles having four first protrusions respectively extending from four corners thereof, each first protrusion being of a configuration which is a combination of an trapezoid and an isosceles right triangle with a hypotenuse that overlaps a vertical side of said trapezoid;
said trapezoid having an altitude equal to that of each said isosceles trapezoidal projection; an inclined side which is opposite to said vertical side, adjacent to one of said first grooves of said first carpet tile; a first parallel side, remote from said edge of said first carpet tile, having a length equal to that of said first parallel side of said first projection; and a second parallel side opposite to said first parallel side of said trapezoid which has a length equal to the difference of the length between said second parallel side of said first projection and the length of said altitude of said first projection; one of said first projections being spaced from a side of said isosceles right triangle at a distance equal to the length of said first parallel side of said trapezoid along the edge of said first tile;
each of said second carpet tiles, which are in the form of a rectangle with four edges, each edge of which has a length integrally proportional to that of said first carpet tile; a second plurality of projections and complementary grooves having the same size, configuration and arrangement as those of said first projections and complementary grooves of said first carpet tiles; four second protrusions respectively extending from four corners thereof which have the same size and configuration as those of first protrusions of said first carpet tiles; wherein the improvements lie in the fact that each edge of said second carpet tile has a plurality of trapezoidal teeth each having a notch adjacent thereto, said trapezoidal teeth being spaced apart from one another and said corners of said second carpet tile at a distance equal to said unit length, each of said trapezoidal teeth having an altitude equal to that of said first projection of said first carpet tile; a first parallel side adjacent said edge of said second carpet tile which has a length equal to that of said second parallel side of said second projection; a second paraliel side opposite to said first parallel side of said tooth which has a length equal to that of said first parallel side of said second projection; a third side adjacent said second complementary groove of said second carpet tile; and a fourth aide which is adjacent said notch of said second carpet tile having a length which is greater than that of said third side of said tooth; each of said notches being in a shape which accommodates that of said tooth so as to interlock with a corresponding projection of a adjacent carpet tile.

4,942,073
OPTICAL DATA STORAGE MEDIUM

Susumu Era, Ichihara; Setsuo Kobayashi; Mariko Nakamura, both of Hitachi, and Akio Mukoh, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1989, Ser. No. 314,949
Claims priority, application Japan, Mar. 9, 1988, 63-53533
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 **13 Claims**



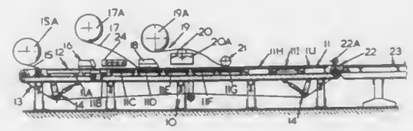
1. An optical data storage medium comprising a resin substrate, a primary coat formed thereon and a recording layer of a dye or dye composition formed on said primary coat which is decomposed or melted by a laser beam, characterized in that the primary coat comprises a silicone resin layer whose surface had been subjected to a plasma treatment.

4,942,074
CARPET TILE

Peter W. Bell; David S. Queen, both of Sanquhar, and John B. Smith, Thornhill, all of Great Britain, assignors to Sanquhar Tile Services Limited, Sanquhar, Scotland

Continuation of Ser. No. 38,870, Apr. 15, 1987, abandoned, which is a division of Ser. No. 814,260, Dec. 30, 1985, abandoned, which is a continuation of Ser. No. 637,725, Aug. 6, 1984, Pat. No. 4,582,554, which is a continuation of Ser. No. 368,688, Apr. 15, 1982, abandoned, which is a continuation of Ser. No. 163,699, Jun. 27, 1980, abandoned. This application Jun. 6, 1988, Ser. No. 203,308
Claims priority, application United Kingdom, Jul. 4, 1979, 7923296
Int. Cl.[5] B32B *1/16, 31/00*
U.S. Cl. 428—95 **9 Claims**

1. A carpet tile product which comprises:
a) a carpet material having a wear surface and an undersurface;
b) a backing layer of solid, hot-melt composition, the backing layer having a one surface and another surface with the one surface bonded to the undersurface of the carpet material;
c) the solid, hot-melt composition selected from the group consisting of atactic polypropylene and bitumen which is liquid at temperatures of greater than about 130° C.;
d) a fabric material embedded within and bonded to the backing layer of the solid hot-melt composition backing layer to provide dimensional stability or resiliency to the carpet tile product; and

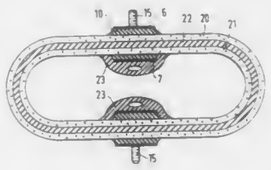


e) a backing sheet material composed of a material substantially resistant to penetration of the hot-melt composition in liquid form, and which backing sheet material is bonded to the other surface of the backing layer and wherein the backing sheet is selected from the group consisting of a laminate of glass and polythene; glass-polythene film-glass; a heat-set, non-woven polyester fabric; and paper-polythene film.

4,942,075
ANNULAR RESILIENT BODY MADE OF FIBER COMPOSITE MATERIALS

Volker Härtel, Germering; Carl Heynemann, Taufkirchen; Werner Hundt, Munich; Siegfried Müller, Allershausen, and Matthias Richter, Inning, all of Fed. Rep. of Germany, assignors to Metzeler GmbH, München, Fed. Rep. of Germany

Filed Jul. 24, 1989, Ser. No. 384,822
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1988, 3825022; Mar. 15, 1989, 3908474
Int. Cl.[5] B32B *5/26;* **F16F** *1/36*
U.S. Cl. 428—109 **29 Claims**



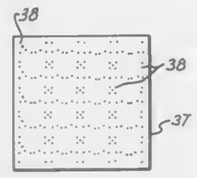
1. Annular resilient body of fiber composite material for vibration-insulating support of drive assemblies, comprising at least one wound body having a circumferential direction and a loading direction, said at least one wound body including a plurality of wound concentric layers formed of synthetic resin impregnated fibers extending in the circumferential direction and transverse to the load direction, and at least one layer of fibers extending at an angle relative to said concentric layers; and force-inducing fastening elements disposed on two opposite sides of said at least one wound body, said fastening elements being formed of metal brackets at least partly encompassing said at least one wound body and elastic rubber layers bracing said metal brackets against said at least one wound body.

4,942,076

CERAMIC SUBSTRATE WITH METAL FILLED VIA HOLES FOR HYBRID MICROCIRCUITS AND METHOD OF MAKING THE SAME

Ramachandra M. P. Panicker, Camarillo, and Anil K. Agarwal, Poway, both of Calif., assignors to Micro Substrates, Inc., Camarillo, Calif.

Filed Nov. 3, 1988, Ser. No. 266,669
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—137 22 Claims



1. A substrate for a hybrid microcircuit including electronic components, said substrate comprising:

a thin sheet of dimensionally stable electrically insulating material having an upper and lower surface;

a plurality of via holes provided on the upper surface of and extending through the sheet of electrically insulating material; and

a metal filling in each of said via holes, said metal filling comprising a porous mass of sintered refractory metal having a low melting point conductive metal reflowed into the porous mass thereof;

whereby the electronic components of said hybrid microcircuit are mounted over selected ones of the via holes on the upper surface of said sheet of electrically insulating material and use the metal fillings therein to provide a ground connection for and to carry internally generated heat away from the electronic components.

4,942,077

TISSUE WEBS HAVING A REGULAR PATTERN OF DENSIFIED AREAS

Greg A. Wendt, Neenah; Kimberly K. Underhill, Appleton; James S. Rugowski, Appleton; Bernhardt E. Kressner, Appleton, all of Wis., and Kai F. Chiu, Brandon, Miss., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 23, 1989, Ser. No. 355,960
Int. Cl.[5] B32B 5/14
U.S. Cl. 428—152 14 Claims



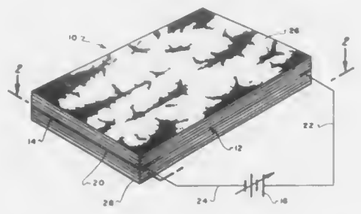
1. A creped tissue web having at least one broken line pattern of individual optically densified areas containing higher mass concentrations of fibers created during the initial formation of the tissue web, said tissue web exhibiting a positive response to the Lunometer Test for at least the machine direction of the tissue web and having a standard deviation for the sine of the crepe angle of 0.18 or less.

4,942,078

ELECTRICALLY HEATED STRUCTURAL COMPOSITE AND METHOD OF ITS MANUFACTURE

Paul R. Newman, Newbury Park, and Patricia H. Cunningham, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 30, 1988, Ser. No. 252,210
Int. Cl.[5] B64D 15/12; H05B 3/10
U.S. Cl. 428—192 9 Claims



1. An electrically conductive structural composite which can be heated by application of an electrical current, comprising:

(a) a plurality of layers of structural fabric which have been treated and prepreged with a laminating resin and cured into a laminate structure, at least one of said layers being a conductive layer of fabric which has been treated with conductive polymer produced by the steps of:

(i) contacting an electrically insulating porous structural fabric with a liquid pyrrole,

(ii) contacting said electrically insulating porous structural fabric with a solution of a strong oxidant capable of oxidizing pyrrole to a pyrrole polymer, and

(iii) oxidizing said pyrrole by said strong oxidant in the presence of a substantially non-nucleophilic anion, and precipitating a conductive pyrrole polymer in the pores of said structural fabric; and

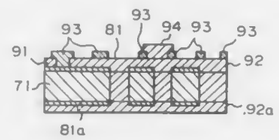
(b) electrical conducting means in electrical contact with said conductive layer for providing passage of electrical current for joule heating of said structural composite.

4,942,079

CERAMIC AND CIRCUIT SUBSTRATE AND ELECTRONIC CIRCUIT SUBSTRATE BY USE THEREOF

Motoo Kumagai, Yokohama; Keiichi Kato, Tokyo; Masato Nagano, and Michiaki Sakaguchi, both of Iwamisawa, all of Japan, assignors to Canon Kabushiki Kaisha and Nippon Oil & Fats Co. Ltd., both of Tokyo, Japan

Filed Jun. 16, 1988, Ser. No. 207,201
Claims priority, application Japan, Jun. 19, 1987, 62-153013
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—209 6 Claims



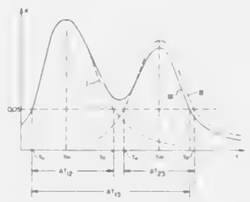
1. A ceramic comprising therein at least two dielectric regions including (a) a first region having (i) a principal composition consisting of from 49.50–54.00 mole percent of TiO_2 and from 50.50–46.00 mole percent of SrO; (ii) from 0.50–5.30 moles MnO_2 per 100 moles of the principal composition and (iii) from 0.02–0.40 moles Y_2O_3 per 100 moles of said principal composition; and (b) a second region having (i) a principal composition consisting of from 49.50–54.00 mole percent of TiO_2 and from 50.50–46.00 mole percent of SrO; (ii) from 0.50–5.30 moles MnO_2 per 100 moles of the principal composition; (iii) from 0.02–0.40 moles Y_2O_3 per 100 moles of the principal composition; and (iv) from 0.40–5.00 moles Al_2O_3 per 100 moles of said principal composition.

4,942,080

COMPOSITE MATERIAL FOR VIBRATION DAMPING AND STRUCTURAL SOUND DAMPING

Wolfgang Heuel, Dortmund; Jobst H. Meyer Zu Bexten, Soest-Ostönnen; Rainer Müller, Unna, and Klaus Stamm, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Stahl Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 152,667, Feb. 5, 1988, abandoned. This application Mar. 6, 1989, Ser. No. 318,838
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704506
Int. Cl.[5] B32B 7/02, 15/08
U.S. Cl. 428—212 10 Claims



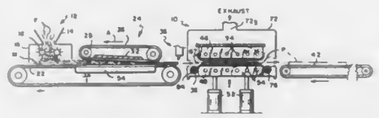
1. Composite material for vibration damping and structural sound damping in which layers of non-resilient material are bonded together by a viscoelastic intermediate layer, characterized in that the composite material consists of more than two non-resilient (1, 2, 3) layers joined in each case by a viscoelastic intermediate layer (K 12, K 23) and the damping ranges or softening ranges of the viscoelastic intermediate layers (K 12, K 23) lie in different temperature ranges.

4,942,081

PROCESS FOR MAKING CELLULOSE-CONTAINING PRODUCTS AND THE PRODUCTS MADE THEREBY

Haigh M. Reiniger, Boston, Mass., assignor to Altomar-II Trust by Kenneth Safe, Jr., Trustee, Boston, Mass.

Filed Jan. 21, 1988, Ser. No. 146,339
Int. Cl.[5] B32B 7/02
U.S. Cl. 428—218 8 Claims



1. A fusion bonded fiber product made by compressing between heated dies a mat of moisture-containing fibers of the type that change irreversibly to an amorphous nonglassy state that permits fiber-to-fiber bonding at a characteristic critical temperature; stopping the further compression of the partially compacted mat when the mat is a small multiple of the final caliper of the product for a period of time sufficient to vaporize the moisture content of the mat; conducting most of the vaporized moisture content from the interior of the mat as saturated steam through the mat surfaces while the temperature of the mat is still well below said critical temperature, continuing the compression of the mat under continuous consolidation to the final density and caliper of the product while heating the mat to a temperature above said critical temperature; and then removing the heat and pressure from the fully compacted mat followed by releasing same as said product directly into the working space.

4,942,082

INCOMPATIBLE POLYMER ALLOYS AND LAMINATES THEREOF

Richard Murphy, North Andover, Mass., assignor to Foss Manufacturing Co., Inc., Haverhill, Mass.

Filed Apr. 12, 1985, Ser. No. 722,361
Int. Cl.[5] B03D 3/00
U.S. Cl. 428—224 7 Claims

1. A stiff laminate comprising an extruded film of a homogeneous alloy of incompatible ionic and non-ionic thermoplastic resins comprising:

At least about 65% weight of an ionic polymer crosslinked at least in part via ionic linking between carboxylic acid groups extending from separate polymeric claims; and,

less than about 35% by weight of a non-ionic thermoplastic resin comprising a polymer of a monomer feed including an olefin having the general formula $RCH{=}CH_2$, wherein R comprises a phenyl radical and at least one layer of a solvent or heat activatable thick solid adhesive layer laminated to at least one side of the alloy film.

4,942,083

ABRASION RESISTANT COATINGS

W. Novis Smith, Jr., 412 S. Perth St., Philadelphia, Pa. 19147

Filed May 16, 1988, Ser. No. 194,110
Int. Cl.[5] B32B 9/04
U.S. Cl. 428—252 15 Claims

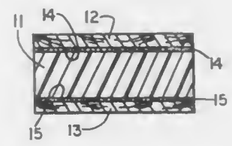
1. A process for applying and adhering an abrasion resistant silicone or siloxane coating to a metallized substrate comprising applying a primer coating comprising a member selected from the group consisting of phosphoric acid, phosphorous acid, chromic acid and a lanthium salt dissolved in a suitable solvent, heating and then applying said abrasion-resistant coating.

4,942,084

RECONSTITUTED WOOD VENEER COVERED STRUCTURAL ELEMENTS

Kendall W. Prince, #50 E. 14th St., Mesa, Ariz. 85201

Filed Jun. 30, 1988, Ser. No. 213,336
Int. Cl.[5] B32B 7/12
U.S. Cl. 428—284 16 Claims



1. A structural element which comprises a structurally stable substrate having a fiber backed reconstituted wood veneer laminated to at least one surface thereof by means of a pressure sensitive adhesive wherein the structural properties of the substrate are not materially affected by the physical properties of the fiber backed reconstituted wood veneer.

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4,942,085

METHOD OF MANUFACTURING A SAG-RESISTANT BONDED PARTICULATE ARTICLE

Gerald J. Guerro, Trumbull, Conn., and Gregory G. Borsinger, Boonton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 299,284, Jan. 23, 1989, abandoned. This application Nov. 15, 1989, Ser. No. 433,984
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—288 20 Claims

1. A method of preventing or minimizing humidity-induced sag in bonded particulate substrates comprising applying to at least one side of said particulate substrate a coating composition comprising an aqueous dispersion of a mixture of an effective amount of a glyoxal resin or derivative thereof and an effective amount of a starch compound, and an effective amount of a filler material, and curing said coating composition.

19. A bonded particulate article resistant to humidity-induced sag produced in accordance with the method of claim 1.

4,942,086

TWO-STAGE HEAT RESISTANT BINDERS FOR NONWOVENS

Paul R. Mudge, Belle Mead; James J. Walker, Whitehouse Sta., and Ronald Pangrazi, Flemington, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Sep. 9, 1988, Ser. No. 242,763
Int. Cl.[5] B05D *3/00*; B32B *11/04, 11/10, 27/30*; E04D *5/02*
U.S. Cl. 428—290 15 Claims

1. A process for preparing a heat resistant nonwoven product comprising the steps of:

(a) impregnating a nonwoven web with an emulsion polymer having a glass transition temperature (Tg) of +10 to +50° C., said polymer being prepared from a two stage polymerization procedure comprising, as a first stage polymer, an ethylene vinyl acetate polymer having a Tg within the range of −10 to +15° C., and a second stage polymer having a Tg of +50 to +120° C., both of said first and second stage polymers containing polymerized therein a pre-crosslinking monomer selected from the group consisting of ethylene glycol diacrylate, 1,3-butylene glycol diacrylate, propylene glycol diacrylate, triethylene glycol dimethacrylate, 1,3-glycerol dimethacrylate, 1,1,1-trimethylol propane dimethacrylate, 1,1,1-trimethylol ethane diacrylate, pentaerythritol trimethacrylate, sorbitol pentamethacrylate, methylenebisacrylamide, methylene bismethacrylamide, divinyl denzene, vinyl methacrylate, vinyl crotonate, vinyl acrylate, divinyl adipate, triallyl cyanurate, triallyl isocyanurate, diallyl phthalate, allyl methacrylate, allyl acrylate, diallyl maleate, diallyl fumarate, diallyl itaconate, diallyl malonate, diallyl carbonate, triallyl citrate, triallyl aconitate, divinyl ether, and ethylene glycol divinyl ether and a post-crosslinking monomer selected from the group consisting of N-alkylolamides of alpha, beta ethylenically unsaturated carboxylic acids having 3–10 carbons, the N-alkylol amides of the vinyl aromatic acids, N-(alkoxyl methyl) acrylates and methacrylates, where the alkyl group has from 1–8 carbon atoms and mixtures of these monomers with allyl carbamate, acrylamide or methacrylamide, with the ratio of the first polymer to the second polymer varying within a range of 6 to 1 to 2 to 1;

(b) removing excess binder;

(c) drying and curing the mat.

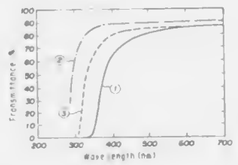
15. An asphalt coated roofing membrane comprising a polyester mat impregnated with an emulsion polymer being prepared from a two stage polymerization procedure comprising, as a first stage polymer, an ethylene vinyl acetate polymer having a Tg within the range of −10 to +15° C., and a second stage polymer having a Tg of +50 to +120° C., both of said first and second stage polymers containing polymerized therein a pre-crosslinking monomer selected from the group consisting of ethylene glycol diacrylate, 1,3-butylene glycol diacrylate, propylene glycol diacrylate, triethylene glycol dimethacrylate, 1,3-glycerol dimethacrylate, 1,1,1-trimethylol propane dimethacrylate, 1,1,1-trimethylol ethane diacrylate, pentaerythritol trimethacrylate, sorbitol pentamethacrylate, methylenebisacrylamide, methylene bismethacrylamide, divinyl benzene, vinyl methacrylate, vinyl crotonate, vinyl acrylate, divinyl adipate, triallyl cyanurate, triallyl isocyanurate, diallyl phthalate, allyl methacrylate, allyl acrylate, diallyl maleate, diallyl fumarate, diallyl itaconate, diallyl malonate, diallyl carbonate, triallyl citrate, triallyl aconitate, divinyl ether, and ethylene glycol divinyl ether and a post-crosslinking monomer selected from the group consisting of N-alkylolamides of alpha, beta ethylenically unsaturated carboxylic acids having 3–10 carbons, the N-alkylol amides of the vinyl aromatic acids, N-(alkoxyl methyl)acrylates and methacrylates, where the alkyl group has from 1–8 carbon atoms and mixtures of these monomers with allyl carbamate, acrylamide or methacrylamide, with the ratio of the first polymer to the second polymer varying within a range of 6 to 1 to 2 to 1; the impregnated mat being subsequently coated with asphalt.

4,942,087

FILMS OF WHOLLY AROMATIC POLYESTER AND PROCESSES FOR PREPARATION THEREOF

Masanori Motooka; Kazuyuki Takimoto, and Kunisuke Fukui, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 16, 1988, Ser. No. 285,015
Claims priority, application Japan, Dec. 28, 1987, 62-33555; Oct. 26, 1988, 63-270270; Oct. 26, 1988, 63-270271
Int. Cl.[5] C08G *63/02, 69/08*; B32B *27/36*
U.S. Cl. 428—332 3 Claims



1. A film of a liquid crystalline wholly aromatic polyester which is non-oriented and transparent having a thickness of from 1 to 1,000 μm and a transparency of from 60 to 95% wherein said liquid crystalline wholly aromatic polyester consists essentially of:

structural units A derived from at least one aromatic hydroxycarboxylic acid and represented by the formula

$$—OC—Ar^1—O—$$ [I]

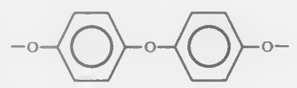
wherein Ar^1 is a divalent aromatic hydrocarbon group and at least 60 mol % of Ar^1 is p-phenylene;

structural units B derived from at least one aromatic diol and represented by the formula

$$—O—Ar^2—O—$$ [II]

wherein Ar^2 is a divalent aromatic group selected from the group consisting of p-phenylene, 4,4'-diphenylene and naphthylenes;

structural units C derived from 4,4'-dihydroxydiphenyl ether and represented by the formula



[III]

and

structural units D derived from at least one aromatic dicarboxylic acid and represented by the formula

$$—OC—Ar^3—CO—$$ [IV]

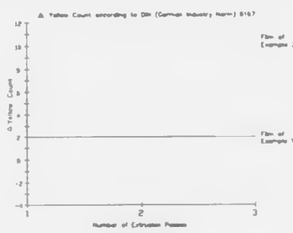
wherein Ar^3 is a divalent aromatic group and at least 60 mol % of Ar^3 is p-phenylene; in such proportions that the amount of the units A is from 30 to 80 mol %, that of the units B is from 1 to 20 mol %, that of the units C is from 2 to 32 mol % and that of the units D is from 10 to 35 mol %, with the proviso that the sum of moles of the units B and C is substantially equal to moles of units D.

4,942,088

RECLAIMABLE POLYESTER FILM HAVING ADHESION-PROMOTING COATING

John D. Gribbin, Schlangenbad; Hermann Dallmann, Wiesbaden; Dieter Engel, Kelsterbach, and Hartmut Hensel, Schlangenbad, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 28, 1987, Ser. No. 113,940
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3637990
Int. Cl.[5] B32B *27/08, 27/36*; C08K *5/09*
U.S. Cl. 428—336 9 Claims



1. A reclaimable, adhesion-promoting coating composition, suitable for use in the manufacture of coated polyester films, produced by the free-radical emulsion polymerization of the following components:

(A) 1 to 99% by weight of a polymer having carboxy and epoxy functional groups in the form of an aqueous system, produced by reaction of a hydroxy-functional reactant consisting of polyester containing OH groups, and an anhydrous mixture prepared from the conversion of trimellitic acid anhydride with propane-1,2-diol, with;

(B) 1 to 99% by weight of at least one copolymerizable monomer of α,β-olefinic unsaturation, the percentages each time relating to the total solids content of the components, and

(C) 0.01 to 10% by weight of at least one polymerizable initiator, relative to the monomer content of component (B), and

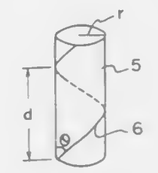
(D) 0 to 20% by weight of anionic or nonionic emulsifiers or of a mixture of the two or of protective colloids, relative to the monomer proportion of component (B) said polymerization being performed at a temperature between 0° C. and 150° C.

4,942,089

RAPIDLY SHRINKING FIBER AND WATER-ABSORBING SHRINKABLE YARN AND OTHER MATERIALS COMPRISING SAME

Tsuneo Genba; Junichi Yoshinaka, and Shingo Nakanishi, all of Okayama, Japan, assignors to Kuraray Company Limited, Okayama, Japan

Division of Ser. No. 921,117, Oct. 21, 1986, Pat. No. 4,809,493. This application Dec. 14, 1988, Ser. No. 284,100
Claims priority, application Japan, Nov. 1, 1985, 60-246914; Dec. 27, 1985, 60-297942; Jul. 4, 1986, 61-158302
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 3 Claims



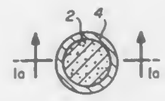
1. A polyvinyl alcohol fiber capable of rapidly shrinking in the presence of water but hardly soluble in water, said fiber being characterized in that the maximum shrinkage percentage in water at 20° C. is not less than 30%, with the time required for the shrinkage percentage to reach 30% being not longer than 10 seconds, that the shrinkage stress in water at 20° C. as measured in the original length state is not less than 150 mg/dr, with the time required for the shrinkage stress of 150 mg/dr to appear being not longer than 10 seconds, that the shrinkage stress in water at 20° C. as measured in the state of 30% shrinkage relative to the original length is not less than 30 mg/dr and that the weight loss due to dissolution upon dispersion in water at 20° C. is not more than 45%.

4,942,090

CHAFF COMPRISING METAL COATED FIBERS

Louis G. Morin, Tarrytown, N.Y., assignor to American Cyanamid

Division of Ser. No. 630,709, Jul. 13, 1984, Pat. No. 4,852,453, Continuation-in-part of Ser. No. 541,611, Oct. 13, 1983, abandoned. This application Apr. 24, 1987, Ser. No. 14,464
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—367 26 Claims



1. Continuous composite fibers, each comprising a semi-metallic core and at least one thin and uniform, firmly adherent, electrically conductive layer of at least one metal on said core, said composite fibers having been chopped into lengths corresponding to the wavelength of one or more radar frequencies.

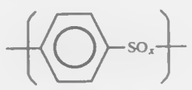
4,942,091

POLYPHENYLENE SULFONE FIBERS AND A METHOD FOR PRODUCTION THEREOF

Masao Umezawa; Toshio Tsubota, and Shiro Imai, all of Shiga, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 223,353
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—398 **6 Claims**

1. Polyphenylene sulfone fibers consisting essentially of a polymer composed of individual structural units represented by the formula:



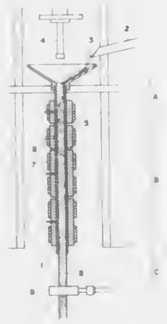
where X is 0, 1 or 2, the average value of X falls within the range of about 1.0 to 2.0 and the molar ratio of SO_2/SO_x is more than 0.3.

4,942,092

EXTRUDED POROUS ARTICLES OF POLYIMIDE AND CONTINUOUS PREPARATION OF THE SAME

Seiichirou Takabayashi, Ube, and Masaki Egami, Yokkaichi, both of Japan, assignors to Ube Industries, Ltd., Ube and NTN-Rulon Industries, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 939,369, Dec. 8, 1986, abandoned. This application Apr. 17, 1989, Ser. No. 339,890
Claims priority, application Japan, Dec. 6, 1985, 60-274613
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—401 **8 Claims**



1. An extruded porous article comprising an aggregated aromatic polyimide powder having a second order glass transition temperature of 250° to 380° C. which has a heat loss ratio of not more than 2 wt. %, the heat loss ratio being measured at 360° C. for 1 hour, and a mean particle size in the range of 1 to 40 μm, said aromatic polyimide having been prepared by polymerization and imidation of a tetracarboxylic acid component containing not less than 50 mol. % of biphenyltetracarboxylic acid or an acid dianhydride thereof and an aromatic diamine component containing not less than 40 mol. % of 4,4'-diaminodiphenyl ether, the pores of said article being formed by partial fusion of said polyimide powder at a heating temperature of 300° to 500° C. and being distributed essentially uniformly in the article, the porosity of said article being in the range of 5–20%, the porosity % being defined by the formula:

$$\left(1 - \frac{\text{apparent density of article}}{\text{true density of article}}\right) \times 100.$$

4,942,093

ADHESIVE SYSTEM FOR BONDING UNCURED RUBBER TO CURED POLYURETHANE

David F. Lawson, Uniontown, Ohio, assignor to Bridgestone/-Firestone, Inc., Akron, Ohio

Filed Sep. 9, 1988, Ser. No. 242,392
Int. Cl.[5] B32B *27/40*; C08F *8/30*; C08G *18/28*
U.S. Cl. 428—423.3 **12 Claims**

1. An adhesive composition, comprising; a thermosetting polymeric mixture of a bismaleimide compound and an isocyanate terminated rubber polymer, said polymeric mixture comprising from about 10 percent to about 90 percent by weight of bismaleimide based upon the total weight of said bismaleimide compound and said isocyanate terminated rubber copolymer, and from about 10 percent to about 90 percent by weight of said isocyanate-terminated rubber based upon the total weight of said bismaleimide compound and said isocyanate-terminated rubber compound, wherein said rubber polymer is a low molecular weight polymer made from a monoolefin monomer having from 2 to 12 carbon atoms, a diene monomer having from about 4 to 10 carbon atoms, or combinations thereof, and containing from about 1.0 to about 4.0 terminal isocyanate groups on each said rubber polymer molecule, said terminal isocyanate groups adapted to crosslink with said bismaleimide compound upon heating, and the molecular weight of said isocyanate terminated rubber polymer being from about 600 to about 30,000.

4,942,094

SILICONE RESIN-MICA LAMINATE AND METHOD OF MANUFACTURING THEREOF

Yoshio Okamura, and Kouichi Tanaka, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1988, Ser. No. 221,577
Claims priority, application Japan, Jul. 21, 1987, 62-182050
Int. Cl.[5] B32B *19/00, 21/12, 19/04*
U.S. Cl. 428—447 **5 Claims**

1. A silicone resin-mica moisture resistant laminate formed from at least two sheets of laminated mica, which laminate comprises

(i) mica layers formed from mica having a thickness of from about 0.01 mm to about 0.5 mm whose surfaces are coated with

(ii) intermediate layers of a cured mixture of (a) at least one of an amino group-containing alkoxysilane compound and a hydrolyzed derivative thereof and (b) an epoxy group-containing organic silicon compound, in a weight ratio of between 90:10 and 10:90 and with

(iii) silicone resin layer, wherein each neighboring pair of mica and silicone resin layers sandwich an intermediate layer (ii),

said epoxy group-containing organic silicon compound being a siloxane represented by the following formula:

$$R_kR'_mSi(OR'')_nO_{(4-k-m-n)/2}$$

where R is a monovalent organic group having at least one epoxy group, R' and R'' are, respectively, a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group and k, m, and n are positive numbers satisfying the inequalities:

$$0.2 \leqq k \leqq 1$$

$$0 \leqq m \leqq 3$$

$$2 \leqq n \leqq 3$$

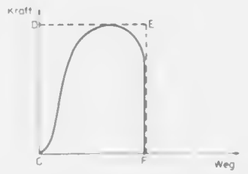
$2 \leqq k+m+n \leqq 4$.

4,942,095

LAMINATE OF POLYMERS STABLE AT HIGH TEMPERATURES AND METAL FOILS APPLIED DIRECTLY TO THE SAID POLYMERS

Hermann Buchert, Bad Durkheim; Gerhard Grimm, Altrip, and Helmut Muenstedt, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 7, 1988, Ser. No. 268,266
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1987, 3737922
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—461 **5 Claims**



1. A laminate essentially composed of:

(A) a thermoplastic which is stable at high temperatures and is derived from a material selected from the group consisting of polyarylethersulfones, polyaryletherketones, polyetherimides and thermotropic polymers and

(B) a metallic foil which is applied directly to said polymers and whose surface area has been increased by chemical or mechanical treatment,

the side having an increased surface area facing the thermoplastic which is stable at high temperatures, and the adhesion between the metallic foil (B) and the thermoplastic (A) which is stable at high temperatures being not less than 1.9 N/mm, measured at a peeling speed of 20 mm/min and a peeling angle of 180°, wherein said thermoplastic has a number average molecular weight of 2,000 to 150,000.

4,942,096

POLYPROPYLENE RESIN COMPOSITION

Masaru Abe, Osaka; Yoichi Kawai, Kanagawa, and Takashi Miyazaki, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 17, 1989, Ser. No. 437,693
Claims priority, application Japan, Nov. 22, 1988, 63-293466
Int. Cl.[5] C08L *51/06, 23/16*; B32B *27/08, 27/28*
U.S. Cl. 428—476.1 **12 Claims**

1. A polypropylene resin composition useful as an adhesive comprising

(A) from about 51 wt. % to about 99 wt. % of a modified polypropylene resin graft-modified with a radical-polymerizable polar unsaturated compound or a mixture of said modified polypropylene resin graft-modified with a radical-polymerizable polar unsaturated compound with an unmodified polypropylene resin,

(B) a substantially non-crystalline α-olefin copolymer, and

(C) an ethylene/α-olefin copolymer having a density of from about 0.860 g/cm^3 to less than about 0.910 g/cm^3, a n-hexane insolubility of at least 50 wt. % and a melting point of at least about is 100° C.,

wherein the weight ratio of (B)/(C) is from about 1/99 to about 99/1.

4,942,097

CERMET CUTTING TOOL

Anakkavur T. Santhanam, Monroeville, and Edward V. Conley, Irwin, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Oct. 14, 1987, Ser. No. 108,259
Int. Cl.[5] B22F *5/00*
U.S. Cl. 428—552 **24 Claims**



1. A cermet cutting tool consisting essentially of:
about 3.5 to about 6.5 w/o nickel;
about 4.5 to about 7.5 w/o cobalt; wherein the sum of nickel+cobalt is between about 8.0 to about 11.0 w/o;
about 20 to about 25 w/o tungsten;
about 5 to about 11.0 w/o molybdenum;
up to about 6 w/o tantalum plus niobium;
up to about 0.05 w/o chromium;
up to about 1 w/o aluminum;
up to about 3 w/o vanadium;
and the remainder being essentially titanium, carbon, and nitrogen, wherein at least substantially all carbon and nitrogen are present as metal compounds selected from the group consisting of metal carbonitrides and mixtures of metal carbides and metal carbonitrides where said metal is selected from the group consisting of tungsten, molybdenum, titanium, tantalum, niobium, vanadium, chromium, and their solid solutions and their mixtures.

4,942,098

CORROSION RESISTANT PERMANENT MAGNET

Atsushi Hamamura, Kyoto; Takaki Hamada; Hiroko Nakamura, both of Takatsuki; Tomoyuki Imai, Hiroshima; Toshiki Matsui, Hiroshima, and Nanao Horiishi, Hiroshima, all of Japan, assignors to Sumitomo Special Metals, Co., Ltd., Osaka and Toda Kogyo Corp., Hiroshima, both of, Japan

Filed Mar. 24, 1988, Ser. No. 172,395
Claims priority, application Japan, Mar. 26, 1987, 62-73920; Apr. 13, 1987, 62-90045; Apr. 13, 1987, 62-90046; Apr. 23, 1987, 62-100980; Apr. 23, 1987, 62-100981; Nov. 26, 1987, 62-297975
Int. Cl.[5] B22F *7/04*
U.S. Cl. 428—555 **14 Claims**



1. A corrosion-resistant permanent magnet comprising a sintered body consisting essentially of 10 to 30 atomic % R wherein R is at least one element selected from the group consisting of Nd, Pr, Dy, Ho and Tb or a mixture of said at least one element and at least one selected from the group consisting of La, Ce, Sm, Gd, Er, Eu, Tm, Yb, Lu and Y, 2 to 28 atomic % B and 65 to 80 atomic % Fe; and having a major phase of a tetragonal crystal structure; the surface of the sin-

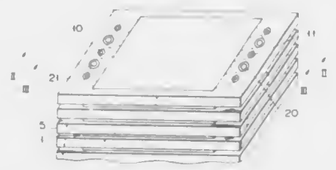
tered body being coated with a noble metal film layer consisting essentially of at least one noble metal selected from the group consisting of Pd, Ag, Pt, Au and alloys thereof and a base metal film layer, disposed on said noble metal layer, consisting essentially of at least one base metal selected from the group consisting of Ni, Cu, Sn, Al, Cr, Zn, Co and alloys thereof; said corrosion resistant permanent magnet being characterized by a deterioration rate of the initial magnetic properties thereof being 10% or less after having been kept at a temperature of 80° C. in a relative humidity of 90% for 500 hours.

4,942,099

FUEL CELL

Kenji Isobe, Kawasaki; Michio Hori, Yokohama; Hiroyasu Yoshizawa, Oomiya; Kazuo Ogawa; Hiroyuki Takahashi, both of Yokohama; Mitsuo Noguchi, Zama, and Toshio Maeda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 28, 1989, Ser. No. 442,785
Claims priority, application Japan, Nov. 28, 1988, 63-298070; Apr. 14, 1989, 1-93126; Jul. 31, 1989, 1-19824
Int. Cl.[5] H01M *2/08*
U.S. Cl. 429—35 45 Claims



1. A fuel cell comprising:
a plurality of unit cells stacked in layers, each adapted to receive two kinds of gases to generate electrical power;
a plurality of separator elements, each formed of a conductive material and having a peripheral region and a first segment channel penetrating the peripheral region thereof, said separator elements being interposed and electrically connected between the adjacent unit cells to form a stacked structure in which the first segment channels are aligned in the stacking direction; and
a plurality of seal members,
each said seal member including
(a) two annular conductive members,
(b) an electrically insulating annular member interposed between the two conductive members, and
(c) a second segment channel penetrating the two conductive members and the insulating member, said two annular conductive members being joined to the adjacent separator elements so as to communicate the second segment channel with the adjacent first segment channels to define a manifold for the intake and exhaust of the gas into and from the unit cells, thereby preventing the gas in the manifold from leaking out, and insulating the adjacent separator elements.

4,942,100

ALUMINIUM BATTERIES

John A. Hunter, Banbury; Geoffrey M. Scamans, Cropredy, both of England, and Wilfred B. O'Callaghan, Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Aug. 7, 1989, Ser. No. 390,390
Claims priority, application United Kingdom, Aug. 9, 1988, 8818856; Mar. 23, 1989, 8906777
Int. Cl.[5] H01M *10/26*
U.S. Cl. 429—50 14 Claims

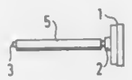
1. A high amp-hour aluminium battery comprising a cathode, an alkaline electrolyte and at least one massive aluminium anode plate, characterized in that the electrolyte contains dissolved indium and the anode is an alloy of aluminium with manganese and with one or both of magnesium and calcium, the manganese concentration being effective to improve the corrosion resistance of the anode without causing passivation.

4,942,101

ELECTROCHEMICAL CELL HAVING AN ALKALINE ELECTROLYTE AND A ZINC NEGATIVE ELECTRODE

Jean F. Audebert, Val de Reuil, and Daniel Manchaussè, Amfreville la Campagne, both of France, assignors to CIPEL and WONDER, both of Levallois Perret, France

Filed Jul. 14, 1989, Ser. No. 380,063
Claims priority, application France, Jul. 25, 1988, 88 10014
Int. Cl.[5] H01M *2/26*
U.S. Cl. 429—165 8 Claims



1. An electrochemical cell having an alkaline electrolyte and a gelled negative electrode containing zinc powder free from mercury, from cadmium, and from lead, and having 1 ppm to 1000 ppm of an organic stabilization compound selected from: polyfluoride compounds of the ethoxyl fluoroalcohol type; and compounds of the polyethoxyl alcohol and alkyl sulfide type; said electrode being provided with a nail-shaped cylindrical negative current collector immersed in the gell and passing through a sealing plug and connected to the negative terminal, wherein said current collector is constituted, at least superficially, by a substance selected from: pure zinc, pure cadmium, indium, and gallium; and wherein said nail includes means assembled thereon without melting metal and serving to increase its developed surface area.

4,942,102

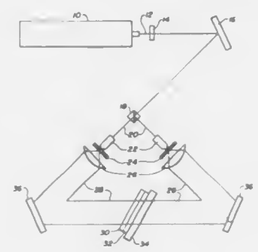
HOLOGRAPHIC OPTICAL ELEMENTS HAVING A REFLECTION HOLOGRAM FORMED IN A PHOTOPOLYMER

Dalen E. Keys, Wilmington; William K. Smothers, Hockessin, and Albert F. Harrington, Claymont; Jacob Beutel, Hackessin, all of Del.; Scott R. Schicker, Logan, Utah; Dillion F. Scofield, Newark, Del., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 144,840, Jan. 15, 1988, abandoned. This application Jun. 22, 1989, Ser. No. 370,274
Int. Cl.[5] G03H *1/00*; G03C *1/68*
U.S. Cl. 430—1 69 Claims

1. A holographic optical element comprising a transparent polymeric film containing a reflection hologram, said film having a refractive index modulation greater than approximately 0.001 and being formed by exposing to coherent light a composition consisting essentially of:
(a) approximately 25 to 90% of a polymeric binder selected from the group consisting of polyvinyl acetate, polyvinyl butyral, polyvinyl acetal, polyvinyl formal, interpolymers containing major segments thereof, and mixtures thereof;

(b) approximately 5 to 60% of an ethylenically unsaturated liquid monomer containing at least one phenyl, biphenyl, phenoxy, naphthyl, naphthyloxy, heteroaromatic group containing up to three aromatic rings, chlorine or bromine moiety;



(c) approximately 0 to 25% of a plasticizer; and
(d) approximately 0.1 to 10% of a photoinitiator system activatable by actinic radiation
wherein said percentages are weight percentages based on total film weight.

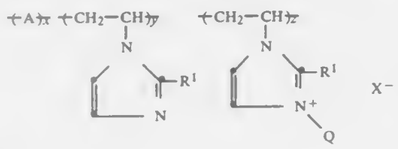
4,942,103

SOLID STATE COLOR IMAGING SENSOR HAVING A COLOR FILTER ARRAY

Raymond F. Reithel, and Richard C. Sutton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1988, Ser. No. 212,381
Int. Cl.[5] G03C *8/42, 1/66*
U.S. Cl. 430—7 4 Claims

1. A solid state color image sensing device comprising a semiconductive support having a surface comprising an array of light sensing pixels and superimposed thereon in microregistration of color filter array having at least three sets of dyed filter elements characterized in that at least one set of said filter elements is formed from a negativeworking dyeable photoresist composition comprising, in admixture,
(a) a poly(vinyl alcohol) binder,
(b) a radiation-sensitive dichromate, and
(c) a polymeric mordant comprising recurring units derived from a quaternized N-vinylimidazole
wherein said polymeric mordant contains recurring units:



wherein:
A is a unit derived from an ethylenically unsaturated monomer:
each R^1 is independently H or methyl;
Q is alkyl or aryl;
X- is an acid anion;
x is 0 to 65 mole percent;
y is 0 to 95 mole percent; and
z is 5 to 50 mole percent.

4,942,104

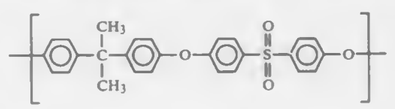
FLEXIBLE ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR HAVING A POLYSULFONE CURL PREVENTION LAYER

Ryouichi Kitajima, and Satoshi Otomura, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

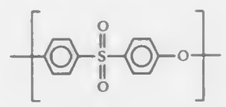
Filed Sep. 16, 1988, Ser. No. 245,281
Claims priority, application Japan, Sep. 17, 1987, 62-232893
Int. Cl.[5] G03G *5/10*
U.S. Cl. 430—56 6 Claims

1. An electrophotographic photoconductor comprising a flexible film-type substrate, an electroconductive layer formed on a front surface of said substrate, a photoconductive layer formed on said electroconductive layer, and a curl prevention layer formed on the backside of said substrate, opposite to said front surface of said substrate, which curl prevention layer consists essentially of a resin component selected from the group consisting of a resin having a repeating unit of formula (I) and a resin having a repeating unit of formula (II):

(I)



(II)



4,942,105

ELECTROSTATOGRAPHIC IMAGING SYSTEM

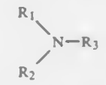
Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1989, Ser. No. 293,050
Int. Cl.[5] G03G *5/14, 13/22*
U.S. Cl. 430—59 13 Claims

1. A flexible electrophotographic imaging member comprising at least one electrophotographic imaging layer, a supporting substrate layer having an electrically conductive surface and an anti-curl layer, said anti-curl layer comprising a film forming binder and from about 3 percent by weight to about 30 percent by weight, based on the total weight of said anti-curl backing layer, of a copolyester resin reaction product of terephthalic acid, isophthalic acid, ethylene glycol and 2,2-dimethyl-1-propane diol, wherein the weight ratio of said terephthalic acid to said isophthalic acid is between about 2:1 to 1:1 and wherein the weight ratio of said ethylene glycol to said 2,2-dimethyl-1-propane diol is between about 2:1 to about 1:1.

9. A flexible electrophotographic imaging member according to claim 1 wherein said electrophotographic imaging layer comprises a charge generating layer and a charge transport layer.

10. A flexible electrophotographic imaging member according to claim 9 wherein said charge transport layer comprises an organic polymer and an aromatic amine compound having the general formula:



wherein R_1 and R_2 are an aromatic group selected from the group consisting of a substituted or unsubstituted phenyl group, naphthyl group, and polyphenyl group and R_3 is selected from the group consisting of a substituted or unsubsti-

tuted aryl group, alkyl group having from 1 to 18 carbon atoms and cycloaliphatic compounds having from 3 to 18 carbon atoms.

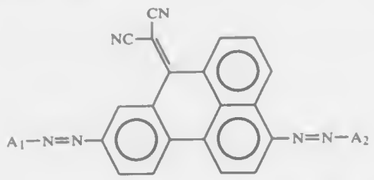
4,942,106

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER CONTAINING DISAZO PIGMENT HAVING COUPLER RESIDUE

Hideyuki Takai, Yokohama, and Tetsuro Kanemaru, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1988, Ser. No. 291,738
Claims priority, application Japan, Dec. 30, 1987, 62-335783
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—72 **8 Claims**

1. An electrophotographic photosensitive member comprising a photosensitive layer on an electroconductive support, characterized in that said photosensitive layer contains a disazo pigment of the formula:



(1)

(wherein A_1 and A_2, which may be either the same or different, each represent a coupler residue having a phenolic hydroxyl group).

4,942,107

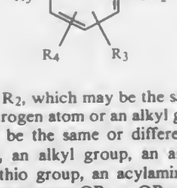
IMAGE-FORMING MATERIAL AND IMAGE RECORDING METHOD USING THE SAME

Keiso Saeki; Tosiaki Endo; Masato Satomura, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1989, Ser. No. 320,734
Claims priority, application Japan, Mar. 8, 1988, 63-54681; Mar. 24, 1988, 63-70354; Mar. 24, 1988, 63-70355; Apr. 1, 1988, 63-80280
Int. Cl.[5] G03C *1/72*; B41M *1/16*
U.S. Cl. 430—138 **20 Claims**

1. An image-forming material comprising microcapsules and a reducing agent which is present outside of the microcapsules, wherein the microcapsules contain (a) a leuco dye capable of oxidatively developing a color, (b) a photo-oxidizing agent, and (c) a phenolic compound selected from the group consisting of:

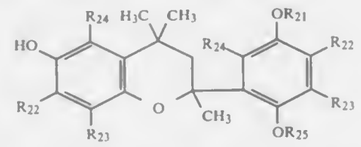
(a) a compound represented by formula (I):



(I)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom or an alkyl group; R_3, R_4, R_5, and R_6, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an alkylthio group, an acylamino group, a hydroxyl group, or a halogen atom; OR_1 or OR_2, or both can form a 5- or 6-membered ring with any of R_3, R_4, R_5, and R_6 which is at the ortho-position in relation to OR_1 or OR_2, respectively, and one or more pairs selected from any combination of two of R_3, R_4, R_5 and R_6 which are mutually at the ortho-position can form a 5-or 6-membered ring,

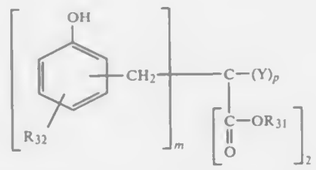
(b) a compound represented by formula (II):



(II)

wherein R_{21} and R_{25} each represents a hydrogen atom, an alkyl group, or a heterocyclic group; and R_{22}, R_{23}, and R_{24}, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxyl group, an aryloxy group, an alkylthio group, an arylthio group, an acylamino group, a diacylamino group, a sulfonamido group, an alkylamino group, an alkoxycarbonyl group, an acyloxy group, or a halogen atom; provided that R_{21} and R_{25} do not simultaneously represent a hydrogen atom,

(c) a compound represented by formula (III):



(III)

wherein R_{31} represents a substituted or unsubstituted 4-piperidyl group; R_{32} represents a hydrogen atom, or one or more substituted or unsubstituted alkyl groups, which may be the same or different, and R_{32} is bonded to the benzene ring; Y represents a hydrogen atom or a substituted or unsubstituted alkyl group; m represents 1 or 2; and p represents 0 or 1; provided that m plus p is 2, and (d) a substituted or unsubstituted o-t-butylphenol compound.

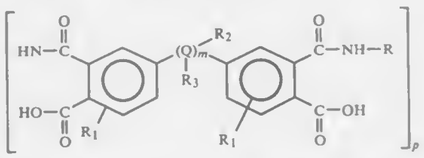
4,942,108

PROCESS OF MAKING DIAZOQUINONE SENSITIZED POLYAMIC ACID BASED PHOTORESIST COMPOSITIONS HAVING REDUCED DISSOLUTION RATES IN ALKALINE DEVELOPERS

Wayne M. Moreau, Wappingers Falls; Kaolin N. Chiong, Pleasantville; Ming-Fea Chow, Poughquagh, and Nancy W. Snyder, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 107,505, Oct. 8, 1987, Pat. No. 4,880,722, which is a continuation-in-part of Ser. No. 804,869, Dec. 5, 1985, abandoned. This application Sep. 8, 1989, Ser. No. 404,700
Int. Cl.[5] G03F *7/023*; G03C *1/60*
U.S. Cl. 430—169 **16 Claims**

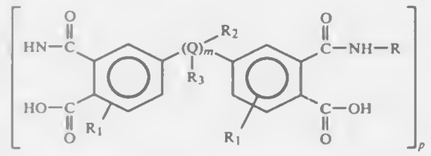
1. A process for forming a resist mask comprising the steps of (1) coating onto a substrate a layer comprising a mixture of polyamic acid material of reduced acidity comprising a polyamic acid having the general formula



wherein Q is C or C=O, R is a divalent aromatic or aliphatic

radical having no active hydrogen, R_1 is hydrogen or an alkyl group containing 1 to 3 carbon atoms, and R_2 and R_3 are independently selected from H, CH_3, C_nH_{2n+1} where n is a positive integer, and CF_3, m is an integer from 0 to 1 and p is a positive integer, which is reacted or blended to form (a) a polyamic acid material having a level of acidity which is reduced by from about 10 to about 40 percent of the original polyamic acid and (b) a diazoquinone photosensitizer, each of (a) and (b) being present in sufficient quantity to form a photoresist composition which, after radiation exposure and development in alkaline solution, produces a resist image of fine line resolution, (2) image-wise exposing said layer to a source of radiation and then (3) developing said layer in an alkaline developer solution to remove the exposed portion of the layer whereby the exposed photoresist exhibits a reduced dissolution rate in the developer.

9. A method of reducing the dissolution rate of a photoresist composition comprised of a mixture of a polyamic acid and a diazoquinone photosensitizer, which comprises reducing the acidity of a polyamic acid having the general formula



wherein Q is C or C=O, R is a divalent aromatic or aliphatic radical having no active hydrogen, R_1 is hydrogen or an alkyl group containing 1 to 3 carbon atoms, and R_2 and R_3 are independently selected from H, CH_3, C_nH_{2n+1} where n is a positive integer, and CF_3, m is an integer from 0 to 1 and p is a positive integer, by reacting or blending said polyamic acid to form (a) a polyamic acid material having a level of acidity which is reduced by from about 10 to about 40 percent of the original polyamic acid and mixing (a) with (b) a diazoquinone photosensitizer, each of (a) and (b) being present in sufficient quantity to form a photoresist composition which, after radiation exposure and development in alkaline solution, produces a resist image of fine line resolution.

4,942,109

LIGHT-SENSITIVE COMPOSITION

Shigeo Koizumi, and Nobuyuki Kita, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Sep. 7, 1988, Ser. No. 241,374
Claims priority, application Japan, Sep. 10, 1987, 62-227492; Sep. 10, 1987, 62-227493
Int. Cl.[5] G03C *1/52*; G03F *7/016*
U.S. Cl. 430—175 **18 Claims**

1. A light-sensitive composition which is developable with an aqueous alkaline solution, comprising at least one light-sensitive resin having an acid value of 15 to 200, which comprises a polymer having at least two photodimerizable unsaturated double bonds adjacent to an aromatic nucleus in the main chain thereof wherein an active mercaptocarboxylic acid is added to a part of the carbon-carbon unsaturated bonds of the polymer, and wherein the active mercaptocarboxylic acid comprises a mercaptocarboxylic acid represented by the formula:

HS—R—COOH

wherein R represents an alkylene group having 1 to 11 carbon atoms.

8. A light-sensitive composition which is developable with an aqueous alkaline solution, comprising (a) at least one light-sensitive resin having an acid value of 15 to 200, comprising a polymer having at least two photodimerizable unsaturated double bonds adjacent to an aromatic nucleus in the main chain thereof wherein an active mercaptocarboxylic acid is added to a part of the carbon-carbon unsaturated bonds of the polymer and (b) at least one negative working diazo resin, and wherein the active mercaptocarboxylic acid comprises a mercaptocarboxylic acid represented by the formula:

HS—R—COOH

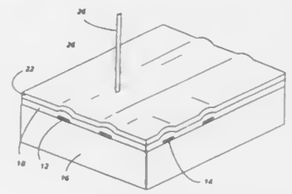
wherein R represents an alkylene group having 1 to 11 carbon atoms.

4,942,110

HIGH RESOLUTION CONDUCTOR PATTERNING

Frank C. Genovese, and Thomas E. Orlowski, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1988, Ser. No. 237,804
Int. Cl.[5] G03C *11/00*; B05D *3/06*
U.S. Cl. 430—198 **5 Claims**



1. A method of laser forming a hardened pattern having electrical properties on an uneven surface of a substrate comprising the steps of:

coating the uneven surface of the substrate with a thick film material,

drying the coating to remove organic coating solvents,

generating a pattern on the substrate by scanning a beam of the laser across the coated substrate with enough power to render the generated pattern insoluble to solvent, the laser providing a spot size of less than 50 microns,

applying solvent to the substrate to wash away the excess thick film material, leaving the laser generated pattern, and

firing the substrate to fix the pattern to the substrate.

4,942,111

PRINTING PLATE PRECURSORS

John R. Wade, Otley; Jeremy R. Burch, Wilberfoss, and Rodney M. Potts, Adel, all of England, assignors to Vickers PLC, England

Continuation of Ser. No. 141,596, Jan. 7, 1988, abandoned. This application Feb. 22, 1990, Ser. No. 484,461
Claims priority, application United Kingdom, Jan. 12, 1987, 8700599
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—273 **8 Claims**

1. A printing plate precursor comprising:

a substrate;

a radiation sensitive layer on the substrate comprising a composition of an ethylenically unsaturated compound and a photoinitiator; and

a barrier layer on said radiation sensitive layer for preventing oxygen inhibition of said radiation sensitive layer, said barrier layer consisting essentially of a first component which is a water soluble transparent polymer having low permeability to oxygen and selected from the group consisting of polyvinyl alcohol, polyacrylamide, polyvinyl pyrrolidone, gum arabic and dextrin and a second component which is an amphoteric polymeric material having basic groups selected from the groups consisting of amine

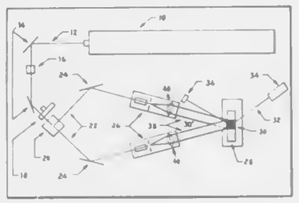
groups, amide groups, imine groups, hydrazone groups, hydrazine groups, nitrogen containing heterocyclic groups and quaternized forms of such groups and acidic groups selected from carboxylic acid groups, phosphonic acid groups, phosphinic acid groups. phosphate groups, phosphite groups, phosphonate groups, phosphinate groups, sulphonic acid groups, sulphinic acid groups, sulphate groups, and sulphite groups.

4,942,112

PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS FOR REFRACTIVE INDEX IMAGING

Bruce M. Monroe, Wilmington, and William K. Smothers, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1988, Ser. No. 144,355
Int. Cl.[5] G03C *1/70, 1/68*
U.S. Cl. 430—282 **14 Claims**



1. A substantially solid, photopolymerizable composition that forms a refractive-index image upon exposure to actinic radiation as the sole processing step, said composition consisting essentially of, by weight:

(a) 25 to 75% of a solvent soluble, thermoplastic polymeric binder;

(b) 5 to 60% of a mixture of (i) a liquid ethylenically unsaturated monomer, said liquid monomer having a boiling point above 100° C. and being capable of addition polymerization, and (ii) a solid ethylenically unsaturated monomer;

(c) 0.1 to 10% of a photoinitiator system that activates polymerization of said unsaturated monomer upon exposure to actinic radiation;

the composition having a refractive index modulation of at least approximately 0.005 as determined with 632.8 nm radiation from a transmission grating having a spatial frequency of about 1000 lines per millimeter, which transmission grating is prepared holographically from a layer of said composition.

2. The composition of claim 1 wherein the solid ethylenically unsaturated monomer contains a carbazole group.

3. The composition of claim 2 wherein the solid ethylenically unsaturated monomer is selected from the group consisting of N-vinyl carbazole; 3,6-dibromo-9-vinyl carbazole; and mixtures thereof.

4,942,113

CONTRAST ENHANCED PHOTOLITHOGRAPHY

Clive Trundle, Silverstone, England, assignor to Plessey Overseas Limited, Essex, England

Continuation of Ser. No. 30,414, Mar. 27, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,249
Claims priority, application United Kingdom, Mar. 27, 1986, 8607715; Jun. 3, 1986, 8613420
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—326 **18 Claims**

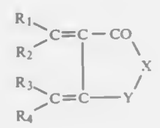
1. A process for producing a developed photoresist having improved resolution by photolithography which comprises the steps of:

(a) forming a photoresist layer on a substrate,

(b) forming a contrast enhancing layer (CEL) directly on the photoresist layer by applying to said photoresist layer a solution or dispersion of a photobleachable, coloured compound in a solvent, followed by heating to form a dry, non-attack superficial layer of a CEL in direct contact with said photoresist, said coloured compound being present in a sufficient amount to render the superficial layer opaque,

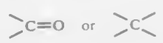
(c) exposing the photoresist through an imaging pattern and through the CEL using radiation which is effective to bleach said compound, and

(d) simultaneously removing the CEL and developing the photoresist using a single developer in which both the CEL and the photoresist are soluble, said photobleachable, coloured compound being selected from a reversible photochromic compound having the general formula (I):



(1)

wherein Y represents



R′ and R″ being hydrogen or alkyl,
X represents oxygen or



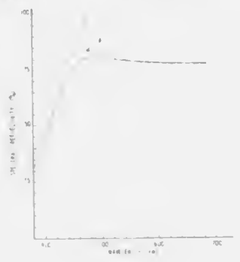
in which A is hydrogen or an alkyl or aryl group, and R_1, R_2, R_3 and R_4 represent aryl, alkyl, aralkyl, hydrogen or heterocyclic groups.

4,942,114

SILVER HALIDE PHOTOGRAPHIC MATERIALS WITH REDUCIBLE BRIGHTENING AGENT RELEASER

Keisuke Shiba, and Keizo Koya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 2, 1988, Ser. No. 189,003
Claims priority, application Japan, Apr. 30, 1987, 62-106894
Int. Cl.[5] G03C *1/40, 1/92*
U.S. Cl. 430—434 **14 Claims**



14. A method for forming an image in a silver halide photographic material having at least one silver halide emulsion layer on a support, comprising:

providing a silver halide photographic material which contains a compound of formula (I):

PWR—(Time)$_t$—FWA (I)

wherein PWR represents a group capable of releasing (Time)$_t$—FWA upon reduction; FWA represents a group which functions as a brightening agent; Time represents a group capable of releasing FWA through a reaction which follows the release of (Time)$_t$—FWA from PWR; and t represents an integer of 0 to 1, wherein said compound of formula (I) does not itself emit or only weakly emits a fluorescent light, and wherein the brightening agent released from the compound of formula (I) strongly emits a fluorescent light,

developing the silver halide after imagewise exposure, and

releasing FWA counter-corresponding to the development of silver halide.

4,942,115

THERMALLY PROCESSABLE IMAGING ELEMENT COMPRISING AN OVERCOAT LAYER

Wojciech M. Przezdziecki, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1989, Ser. No. 342,154
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—523 **7 Claims**

1. A thermally processable imaging element comprising a support bearing a thermally processable hydrophobic imaging layer and, on the side of the imaging layer away from the support, an overcoat layer comprising poly(silicic acid) and a hydrophilic monomer or polymer, wherein

the element comprises a polymeric adhesion promoting layer between the overcoat and the imaging layer.

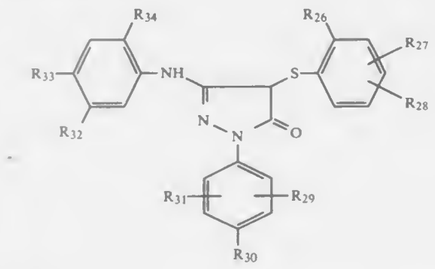
4,942,116

COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING 2-EQUIVALENT MAGENTA COUPLERS

Günter Renner, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 74,689
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1986, 3625816
Int. Cl.[5] G03C *7/384*
U.S. Cl. 430—555 **4 Claims**

1. A color photographic recording material comprising at least one silver halide emulsion layer and at least one layer containing a 2-equivalent magenta coupler corresponding to the following formula



in which

R_{26} is C_3–C_{12} alkyl,

R_{27} is C_3–C_9 alkyl, more especially secondary or tertiary C_3–C_9 alkyl or chlorine, the total number of carbon atoms in the alkyl radicals R_{26} and R_{27} being from to 16,

R_{28} is hydrogen, chlorine or cyano,

R_{29} is chlorine,

R_{30} is hydrogen, methoxy, chlorine, methyl, cyano or B_1,

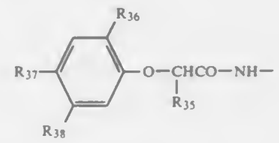
R_{31} is chlorine or methyl,

R_{32} is hydrogen, di-C_1–C_6-alkylaminocarbonyl, C_1–C_6-alkylcarbonylamino or B_1,

R_{33} is hydrogen or chlorine and

R_{34} is chlorine or methoxy,

either R_{30} or R_{32} having the meaning B_1, and B_1 is a group of the formula



in which

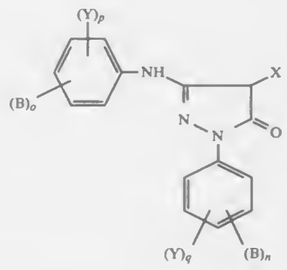
R_{35} is hydrogen or C_1–C_{12} alkyl,

R_{36} is hydrogen, C_1–C_8 alkoxy, hydroxy, C_1–C_8 alkylcarbonyloxy or C_1–C_8 alkyl,

R_{37} is hydrogen, hydroxy, or C_1–C_{12} alkoxy and

R_{38} is hydrogen or C_1–C_8 alkyl.

3. A color photographic material comprising at least one silver halide emulsion layer and at least one layer containing a 2-equivalent magenta coupler corresponding to the following formula



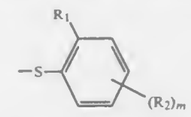
in which

B is a stabilizing group,

selected from the group consisting of groups of mono- and polyols and ethers thereof, sulfamidophenols, secondary or tertiary aromatic amino compounds, and thiophenol derivatives, said stabilizing group being attached through bridge members,

Y is halogen, alkoxy, alkyl, alkylsulfonyl, acylamino, alkoxycarbonyl, aminocarbonyl, amino, trifluoromethyl or cyano,

X is a group corresponding to the following formula



R_1 is alkyl containing at least 3 carbon atoms,

R_2 is alkyl, halogen, cyano or trifluoromethyl,

m, is 0, 1 or 2,

n, o are each 0 or 1

provided that

n is 1 when o is 0 and

n is 0 or 1 when o is 1;

p is 0, 1, 2 or 3

provided that $p+o \leqq 3$,

q is 0 or an integer of up to 5

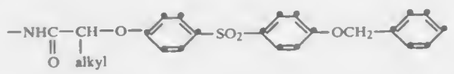
provided that $q+n \leqq 5$,
with the proviso that, where m, p, and/or q have a value of >1, the substituents R^2, and Y maybe the same or different.

4,942,117
PHOTOGRAPHIC SILVER HALIDE MATERIALS AND PROCESS COMPRISING A PYRAZOLOAZOLE COUPLER

Sharon E. Normandin, Macedon; Arlyce T. Bowne, Rochester, both of N.Y.; Nigel E. Milner, and David Clarke, both of Watford, Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 26, 1989, Ser. No. 412,722
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 **6 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and a pyrazolo[3,2-c]-s-triazole coupler having a 2,4,6-trimethylphenyl group directly bonded in the 3-position of the coupler and a ballast group in the 3- or 5-position of the phenyl group wherein the ballast group is represented by the formula:



4,942,118
PHOTOGRAPHIC SILVER HALIDE MATERIALS AND PROCESS COMPRISING A PYRAZOLOAZOLE COUPLER

Sharon E. Normandin, Macedon; Arlyce T. Bowne, Rochester, both of N.Y.; Nigel E. Milner, and David Clarke, both of Watford, Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 23,517, Mar. 9, 1987, abandoned. This application Oct. 13, 1988, Ser. No. 257,373
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 **8 Claims**

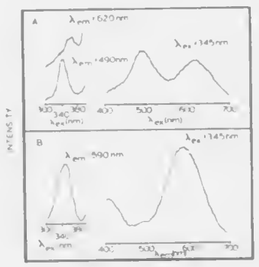
1. In a photographic element comprising a support, a photographic silver halide emulsion and a dye-forming pyrazoloazole coupler having an aryl or heterocyclic group comprising a carbon atom (A) that is bonded directly to the pyrazoloazole nucleus, the improvement wherein the aryl or heterocyclic group comprises a substituent (B) that is a first alkoxy group in at least one position ortho to the carbon atom (A) and the aryl or heterocyclic group, comprises a second alkoxy group, wherein the substituents (B) enables the maximum absorption of dye formed upon reaction of the pyrazoloazole coupler with an oxidized silver halide color developing agent to be controllably shifted and enables increased dye stability.

4,942,119
PHOTOSENSITIVE, RADIATION SENSITIVE, THERMALLY SENSITIVE AND PRESSURE SENSITIVE SILVER SODALITE MATERIALS

Geoffrey A. Ozin, 63 Gormerly Avenue, Toronto, Ontario, Canada (M4V 1Y9); John Godber, 179 Mavety Street, Toronto, Ontario, Canada (M6P 2M1), and Andreas Stein, 286 Perth Avenue, Toronto, Ontario, Canada (M6P 3Y2)

Filed Aug. 3, 1988, Ser. No. 227,939
Int. Cl.[5] G03C *1/02*
U.S. Cl. 430—564 **17 Claims**

1. A silver sodalite material comprising a radiation senstive silver composition entrapped within the cubooctahedral cavities of the sodalite framework, the silver component thereof being reducible with accompanying alteration of the optical properties thereof, with, the sodalite cavities on irradiation, said composition comprising at least one anion selected from the group consisting of oxalate, hydroxide, azide, carbonate,



bicarbonte, sulfate, sulfite, chlorate, perchlorate, acetate and formate, the anion being in charge association with the silver.

4,942,120
MODIFIED PEPTIZER TWINNED GRAIN SILVER HALIDE EMULSIONS AND PROCESSES FOR THEIR PREPARATION

Scott A. King, Penfield; Philip I. Rose, and Joe E. Maskasky, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

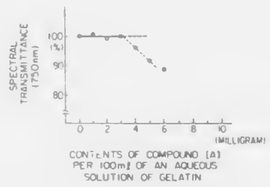
Filed Apr. 28, 1989, Ser. No. 345,050
Int. Cl.[5] G03C *1/02*
U.S. Cl. 430—567 **21 Claims**

1. a photographic emulsion comprising silver halide grains and a gelatino-peptizer, characterized in that
at least 50 percent of the silver halide grains, based on total grain projected area, contain twin planes and
the gelatino-peptizer contains alkylated methionine.

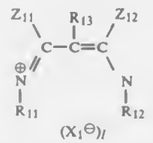
4,942,121
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Makoto Kajiwara; Kaoru Onodera; Toshio Kimura, and Kazuo Komorita, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1985, Ser. No. 811,047
Claims priority, application Japan, Dec. 24, 1984, 59-272336
Int. Cl.[5] G03C *1/16, 1/12*
U.S. Cl. 430—583 **7 Claims**

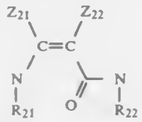


1. A silver halide photographic light-sensitive material comprising a support bearing thereon at least one hydrophilic colloidal layer containing silver halide grains spectrally sensitized with a spectral sensitizer, wherein the spectral sensitizers are selected from those represented by the following Formulas [I] and/or [II] and a hydrophilic colloid forming the hydrophilic colloidal layer contains gelatin whose saturated solubility is not more than 10 in an amount of not less than 35% by weight of the colloid



Formula [I]

wherein Z_{11} and Z_{12} each represent a group of atoms necessary for forming a benzoxazole nucleus, naphthoxazole nucleus, benzothiazole nucleus, naphthothiazole nucleus, benzoselenazole nucleus, naphthoselenazole nucleus, benzoimidazole nucleus, naphthoimidazole nucleus, pyridine nucleus or quinoline nucleus; R_{11} and R_{12} each represent an alkyl group, an alkenyl group or an aryl group; R_{13} represents hydrogen, a methyl group or an ethyl group; $X_1\ominus$ represents an anion; and l represents zero or 1



Formula [II]

wherein Z_{21} represents a group of atoms necessary for forming a benzoxazole nucleus, naphthoxazole nucleus, benzothiazole nucleus, naphthothiazole nucleus, benzoselenazole nucleus, benzoimidazole nucleus or naphthoimidazole nucleus; Z_{22} represents a group of atoms necessary for forming a rhodanine nucleus, 2-thiohydantoine nucleus or 2-thioselenazoline-2,4-dione nucleus; and R_{21} and R_{22} each represent an alkyl group, alkenyl group or aryl group.

4,942,122
AIDS PROGNOSIS TEST DETECTING THE PRESENCE OF ANTIBODIES INHIBITING HIV REVERSE TRANSCRIPTASE

David T. Imagawa, Rancho Palos Verdes; Moon H. Lee, Hacienda Heights, and Kouichi Sano, Gardena, all of Calif., assignors to Research Education Institute, Inc., Torrance, Calif.

Filed Feb. 24, 1987, Ser. No. 17,450
Int. Cl.[5] G01N *33/569*
U.S. Cl. 435—5 **11 Claims**

1. A method of developing a prognosis for a patient known to be immunopostive for HIV comprising:
contacting a sample of a body fluid of said patient with a solution including HIV reverse transcriptase; primed RNA template; and labeled nucleotide precursor complementary to the primed RNA template;
incubating the resulting mixture for a predetermined length of time;
quantitatively detecting the amount of RNA: poly DNA formed;
making a good prognosis that said patient is unlikely to develop the symptoms of AIDS based on finding an amount of an antibody inhibiting HIV reverse transcriptase, or a poor prognosis that a patient is likely to develop the symptoms of AIDS based on a finding of no antibody inhibiting HIV reverse transcriptase.

4,942,123
PPRB110-PHOSPHOPROTEIN- THE RETINOBLASTOMA SUSCEPTIBILITY GENE PRODUCT

Wen-Hwa Lee, and Eva Y.-H. P. Lee, both of San Diego, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 17, 1987, Ser. No. 98,612
Int. Cl.[5] C12Q *1/68*; G01N *33/53, 33/567, 33/577*
U.S. Cl. 435—6 **17 Claims**

1. A method for diagnosing an absence and complete or partial inactivation of the retinoblastoma gene comprising:
(a) obtaining a tissue sample;
(b) labeling the sample with radioactive isotope;
(c) processing the tissue to form a lysate;
(d) reacting a specific anti-ppRB[110] antibody with the lysated tissue to form a ppRB[110] antibody immunocomplex;
(e) autoradiographing said complex obtained in step (d);
(f) determining the presence or absence of the ppRB[110] in the sample by comparing the autoradiogram of step (e) with the autoradiogram of a standard ppRB[110] protein; and
(g) diagnosing an absence and complete or partial inactivation of the retinoblastoma gene when substantially no measurable ppRB[110] antibody immunocomplex is formed.

4,942,124
MULTIPLEX SEQUENCING

George M. Church, Boston, and Stephen Kieffer-Higgins, Dorchester, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 084,623, Aug. 11, 1987. This application Aug. 4, 1988, Ser. No. 228,596
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **12 Claims**

1. A method for sequencing a DNA specimen comprising:
(a) providing a set of at least two vectors, each vector of said set comprising a cloning site and including at least one tag sequence at a position within 50 bases of said cloning site, each tag sequence in each vector differing from each tag sequence of every other vector of said set, and each being incapable of hybridizing to said DNA specimen under stringent conditions,
(b) providing a first and a second DNA sequence from said DNA specimen, said first DNA sequence being different from said second DNA sequence,
(c) ligating said first DNA sequence into the cloning site of one of said vectors, and said second DNA sequence into the cloning side of a second of said vectors, thereby producing a plurality of hybrid vectors,
(d) providing a pool of said hybrid vectors,
(e) treating separate aliquots of said pool in a plurality of vessels to produce fragments comprising said tag sequence, wherein said fragments in each vessel differ in length from each other and all terminate at a fixed known base or bases, wherein said fixed known base or bases in one of said vessels differ from said fixed known base or bases in another of said vessels,
(f) separating said fragments comprising tag sequences from each said vessel according to their size,
(g) hybridizing the separated fragments of step (e) under stringent conditions with a first oligonucleotide probe able to hybridize specifically with one of said tag sequences, and
(h) detecting the pattern of hybridization wherein said pattern reflects the nucleotide sequence of said DNA specimen.

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4,942,125
SV40 EXPRESSION VECTOR CONTAINING HBXAG AS AN EXPRESSION MARKER
Ana M. Moriarty, San Diego, Calif., assignor to Scripps Clinic and Research Foundation, La Jolla, Calif.
Continuation-in-part of Ser. No. 648,142, Sep. 7, 1984, and a continuation-in-part of Ser. No. 587,570, Mar. 8, 1984. This application May 26, 1987, Ser. No. 54,424
Int. Cl.[5] C12Q *1/00, 1/70, 21/00, 21/02*
U.S. Cl. 435—7 11 Claims

1. A polypeptide which comprises an antigenic determinant of HBxAg selected from the group consisting of: Gln-Leu-Asp-Pro-Ala-Arg-Asp-Val-Leu-Cys-Leu-Arg-Pro-Val-Gly; Ser-Ala-Val-Pro-Thr-Asp-His-Gly-Ala-His-Leu-Ser-Leu-Arg-Gly-Leu-Pro-Val-Cys; and Met-Glu-Thr-Thr-Val-Asn-Ala-His-Gln-Ile-Leu-Pro-Lys-Val-Leu-His-Lys-Arg-Thr-Leu-Gly, which is capable of reacting with antibodies which are specific to HBxAg, said polypeptide containing no more than about 40 amino acid residues.

4,942,126
METHOD OF EXTRACTING ANTIGENS OF BACTERIA
Malcolm Slifkin, Pittsburgh, Pa., assignor to Allegheny-Singer Research Institute, Pittsburgh, Pa.
Filed Aug. 13, 1986, Ser. No. 896,053
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—7 9 Claims

1. A method of identifying the presence of Campylobacter species in fecal specimens, comprising:
(a) concentrating Campylobacter organisms from fecal specimens using a concentrating media having at least two layers of different densities to segregate the Campylobacter organisms between the layers;
(b) extracting soluble antigens from said Campylobacter organisms; and
(c) reacting said antigens with Campylobacter antisera to yield a detectable agglutinate.

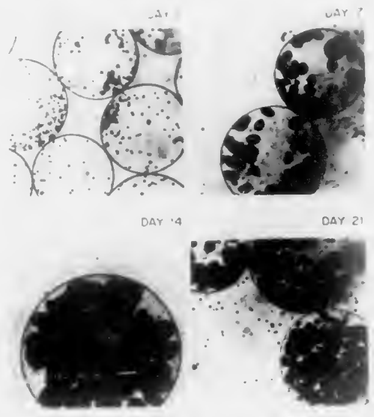
4,942,127
POLYREDOX COUPLES IN ANALYTE DETERMINATIONS
Henry G. Wada, Atherton; Harden McConnell, Stanford, and Dean G. Hafeman, Hillsborough, all of Calif., assignors to Molecular Devices Corporation, Palo Alto, Calif.
Filed May 6, 1988, Ser. No. 191,208
Int. Cl.[5] C12Q *1/60*
U.S. Cl. 435—11 7 Claims

1. In a method for determining the presence of an oxidase by means of employing a metal electrode for detection of a redox reaction in an assay medium, the improvement which comprises:
employing for detection in combination:
(1) a tetramethylbenzidine and hydrogen peroxide; with
(2) an iron- or ruthemium-containing ionic redox couple in which said iron is in a coordinated form capable of undergoing one electron transfer and said ruthenium is coordinated with a nitrogen ligand.

4,942,128
MICROBIAL CELLULOSE MODIFIED DURING SYNTHESIS
R. Malcolm Brown, Jr., Austin, Tex., assignor to Board of Regents, the University of Texas System, Austin, Tex.
Filed Mar. 6, 1987, Ser. No. 22,904
Int. Cl.[5] C12P *19/04;* C12R *1/02;* B32B *7/00;* C08B *11/193*
U.S. Cl. 435—101 49 Claims

1. A process for producing modified cellulose, the process comprising:
inoculating a quantity of nutrient medium comprising between about 1.0% and about 5.0% polysaccharide derivative with a cellulose-producing microorganism;
aerobically incubating the inoculated medium to produce modified cellulose therein; and
collecting the cellulose.

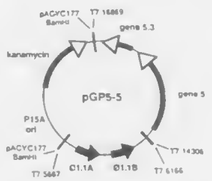
4,942,129
MULTIPLE MEMBRANE MICROENCAPSULATION
Matheus F. A. Goosen, Kingston; Glenn A. King, Peterborough; Andrew J. Daugulis, and Peter Faulkner, both of Kingston, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada
Continuation-in-part of Ser. No. 78,628, Jul. 28, 1987. This application Jul. 12, 1988, Ser. No. 218,589
Int. Cl.[5] C12N *11/04*
U.S. Cl. 435—182 24 Claims



1. A biocompatible microcapsule, having a diameter of about 400–500 m, comprising:
a macromolecular core material comprising living tissue surrounded by a first biocompatible highly permeable hydrogel membrane consisting of ionically interacted biocompatible materials, having a molecular weight cut-off of about 200–400$\times 10^3$; and said first membrane being interacted with ionically interacted biocompatible materials to form a second relatively less permeable hydrogel membrane having a molecular cut-off of about 40–80$\times 10^3$; said first membrane being sufficiently permeable to permit diffusion therethrough of that portion of a water soluble cross-linkable gelling agent used to suspend said living tissue and having a molecular weight of less than 200–400 $\times 10^3$, and permitting expansion of said microcapsule towards an equilibrium state; and said second membrane being sufficiently permeable to permit nutrients to flow from a medium in which said microcapsule is placed into said microcapsule to sustain said living tissue, and sufficiently impermeable to retain said living tissue and any high molecular weight product thereof within the microcapsule.

7. A method of encapsulating living tissue within two semi permeable hydrogel membranes which comprises:
(a) mixing said living tissue with an aqueous solution of water soluble polymeric material which can be reversibly gelled and which has free acid groups.
(b) forming said mixture into droplets and gelling said droplets in a hardening agent;
(c) forming a first biocompatible highly permeable hydrogel membrane about said first gelled droplets to produce a first microcapsule by reaction with a polymer containing free amino groups; said first membrane having a molecular weight cut-off of 200–400$\times 10^3$;
(d) suspending said first microcapsule in a medium which reliquifies said water soluble polymeric material;
(e) incubating said first microcapsule in an aqueous medium for sufficient time to allow at least one third of that portion of said water soluble polymeric material having a molecular weight of less than 200–400$\times 10^3$ to diffuse out of said microcapsule, and to allow said microcapsule to expand towards an equilibrium state;
(f) reacting said incubated first microcapsule with a polymer containing positively charged groups to thereby form an interacted relatively less permeable hydrogel membrane having a molecular weight cut-off of 40–80$\times 10^3$; and
(g) incubating said living tissue within said interacted microcapsule in a nutrient medium; said interacted membrane being sufficiently permeable to permit passage of nutrients and sufficiently impermeable to retain said tissue and any high molecular weight products thereof within said second microcapsule.

4,942,130
T7 DNA POLYMERASE
Stanley Tabor, Cambridge, and Charles C. Richardson, Chestnut Hill, both of Mass., assignors to President & Fellows of Harvard College, Cambridge, Mass.
Continuation-in-part of Ser. No. 3,227, Jan. 14, 1987, Pat. No. 4,795,699. This application Dec. 14, 1987, Ser. No. 132,569
Int. Cl. C12N *9/12, 15/00;* C07H *15/12*
U.S. Cl. 435—194 27 Claims



1. A purified modified gene encoding a modified bacteriophage T7-type DNA polymerase wherein said polymerase comprises sufficient DNA polymerase activity for use in DNA sequencing when said polymerase is combined with any host factor necessary for said DNA polymerase activity, and wherein said modified gene modified to reduce the activity of naturally-occurring exonuclease activity of the naturally occurring DNA polymerase.

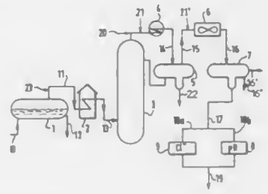
4,942,131
MONOCLONAL ANTIBODY AND METHOD FOR PREPARATION OF HYBRIDOMA PRODUCING SAID ANTIBODY
Masahiko Yamasaki, Hino; Kiyomi Sunaga, Kawasaki, and Yoshitaka Nagai, Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Jun. 3, 1988, Ser. No. 202,586
Claims priority, application Japan, Jun. 4, 1987, 62-138871
Int. Cl.[5] C12P *21/00;* C12N *15/00, 5/00*
U.S. Cl. 435—240.27 2 Claims

1. A monoclonal antibody which recognizes specifically a 4-O-acetyl-N-glycolylneuraminic acid containing sugar chain, said antibody being derived from a hybridoma selected from the group consisting of YHD-08 (ECACC-87060301), YHD-09 (ECACC-87060302), YHD-10 (ECACC-87060303) and YHD-11 (ECACC-87060304).

4,942,132
REAGENT COMPOSITION FOR FECAL OCCULT BLOOD TESTS
Paul J. Lawrence, Campbell, Calif., assignor to Litmus Concepts, Inc., Santa Clara, Calif.
Division of Ser. No. 869,573, Jun. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 680,357, Dec. 11, 1984, Pat. No. 4,615,982, which is a continuation-in-part of Ser. No. 502,446, Dec. 10, 1985. This application Mar. 28, 1988, Ser. No. 175,738
Int. Cl.[5] G01N *21/78, 33/72;* C12Q *1/28*
U.S. Cl. 436—66 34 Claims

1. A complete reagent composition for use in a fecal occult blood test comprising a solution of a leuco dye and a hydroperoxide in a solvent containing at least about 50% by volume of a solvent for iron protoporphyrins, wherein said solvent for iron protoporphyrins is a mixture of a neutralized amine and an organic co-solvent, wherein the neutralized amine is selected from the group consisting of ethanolamine, 2-(diethylamino)ethylamine, and diethanolamine.

4,942,133
PROCEDURE FOR THE CONTINUOUS ANALYSIS OF THE CHLORIDE IONS PRESENT IN THE OVERHEAD WATERS OF A HYDROCARBON DISTILLATION COLUMN
Jean-Francois Pauly, Le Havre, and Gerard Roussel, Goderville, both of France, assignors to Compagnie de Raffinage et de Distribution, Perret, France
Filed Dec. 21, 1988, Ser. No. 288,026
Claims priority, application France, Dec. 21, 1987, 87 17821
Int. Cl.[5] G01N *27/26*
U.S. Cl. 436—125 16 Claims



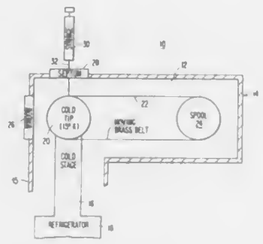
1. A procedure for the continuous analysis of overhead waters for the content of chloride ions present in a hydrocarbon distillation column, which procedure comprises the following steps:
drawing a sample of at least a part of the overhead waters for analysis;
removing hydrocarbons and suspended matter from at least a portion of the sampled waters to yield a partially purified sampling;
blowing nitrogen into the partially purified sampling to remove hydrogen sulfide and residual hydrocarbons;
oxidizing S^{2-} or HS^- sulfide ions in the sampling to sulfate ions;
acidifying the sampling to result in a pH appropriate for obtaining stable ionometry results; and
finally, measuring by ionometry the content of chloride ions present in the partially purified sampling that is oxidized and acidified;
the steps between sampling and measuring may be in any order.

4,942,134

METHOD AND APPARATUS FOR SCIENTIFIC ANALYSIS UNDER LOW TEMPERATURE VACUUM CONDITIONS

James D. Winefordner, and Bradley T. Jones, both of Gainesville, Fla., assignors to The University of Florida, Gainesville, Fla.

Filed Feb. 19, 1988, Ser. No. 157,788
Int. Cl.[5] G01N *1/00, 21/00, 30/62*
U.S. Cl. 436—161 23 Claims



1. A method of scientific analysis of a sample under low temperature vacuum conditions, the steps comprising:
evacuating a vacuum chamber;
cooling a cooling means within the vacuum chamber;
transferring the sample from outside of a vacuum chamber to a sample holding means inside of the vacuum chamber while the vacuum chamber is at vacuum and the cooling means is at low temperature;
cooling the sample by having the cooling means cool the sample holding means;
analyzing the sample when it has reached a given low temperature; and
after the analyzing step is complete, warming the sample such that it evaporates from the sample holding means so as to clean the sample holding means, the cooling means remaining at low temperature during the warming step wherein said warming step is accomplished by separating at least a portion of the sample holding means from the cooling means.

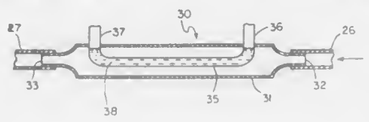
11. An apparatus for placing a sample under low temperature vacuum conditions for scientific analysis comprising:
a vacuum chamber having an entrance port;
a cooling means within the vacuum chamber; a sample holding means within the vacuum chamber and disposed such that the cooling means will cool a sample on said sample holding means to a given low temperature for analysis; and
wherein said entrance port is operable to allow the transfer of a sample from outside said vacuum chamber to said sample holding means inside of said vacuum chamber while the vacuum chamber remains at vacuum and said cooling means is at low temperature, and wherein said apparatus is operable to cause the evaporation of the sample from said sample holding means so as to clean said sample holding means while the vacuum chamber remains at vacuum and said cooling means is at operational low temperature wherein said sample holding means is a conveyor belt having a cool end adjacent to said cooling means and a warm end removed from said cooling means.

4,942,135

METHOD FOR PRECONCENTRATING A SAMPLE FOR SUBSEQUENT ANALYSIS

Solomon Zaromb, Hinsdale, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 892,990, Aug. 4, 1986, Pat. No. 4,829,008.
This application Apr. 14, 1989, Ser. No. 337,983
Int. Cl.[5] G01N *1/18*
U.S. Cl. 436—178 14 Claims



1. A method for preconcentrating traces of contaminants in a gaseous medium for subsequent analysis, said method comprising the steps of:
passing a sample of the gaseous medium through a sorbing device having a gas-impermeable outer container and a gas-permeable inner container disposed therein, whereby the gaseous medium is passed through said outer container and around said inner container, said inner container containing contaminant-sorbing material for trapping and preconcentrating traces of contaminants in the gaseous medium in the sorbing material, and then removing the preconcentrated traces of contaminants from the sorbing device in a fluid sample for injection into an analytical instrument.

4,942,136

METHOD FOR PRODUCTION OF FLUORESCENCE-LABELED FAB'

Shohei Konishi; Akira Imai, both of Yokkaichi; Goro Wakabayashi, Suzuka, and Hiroshi Kishioka, Yokkaichi, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, Tokyo, Japan

Filed Mar. 30, 1988, Ser. No. 175,289
Claims priority, application Japan, Jul. 29, 1987, 62-187648
Int. Cl.[5] G01N *33/563*
U.S. Cl. 436—512 13 Claims

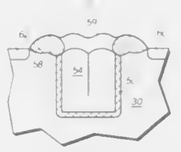
1. A method for producing fluorescence-labeled Fab' molecules, comprising the steps of:
(i) reacting a label substance with Fab' molecules, wherein said label substance is a fluorescent molecule or a molecule which, when bound to the -SH group of said Fab', is fluorescent, thereby obtaining a mixture of unreacted Fab' molecules and fluorescence-labeled Fab' molecules in which said fluorescent label is bound to the thiol group of said Fab' molecule;
(ii) transforming said unreacted Fab' molecules in said mixture to $F(ab')_2$ molecules; and
(iii) separating said fluorescent-labeled Fab' molecules from said mixture by using the difference in molecular weight between said fluorescence-labeled Fab' molecules and said $F(ab')_2$ molecules.

4,942,137

SELF-ALIGNED TRENCH WITH SELECTIVE TRENCH FILL

Richard D. Sivan; James R. Pfiester, and John E. Leiss, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 14, 1989, Ser. No. 393,210
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—63 19 Claims



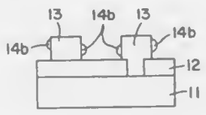
1. A method for fabricating an integrated circuit trench structure, comprising the steps of:
providing a substrate having a surface;
forming a masking layer over said substrate surface;
forming an opening in said masking layer overlying said substrate surface, said opening bounded by a vertical surface and exposing a portion of said substrate surface;
forming a sidewall spacer on said vertical surface, said sidewall spacer covering an edge portion of said exposed substrate surface and leaving exposed a central portion of said exposed substrate surface;
etching a trench in said exposed central portion of said exposed substrate surface, using said sidewall spacer as an etch mask, said trench having a wall surface and a bottom surface, said wall surface being self-aligned with said sidewall spacers;
depositing a material into and substantially filling said trench;
removing said sidewall spacers to expose said edge portion of said exposed substrate surface;
thermally oxidizing said edge portion to form an insulating region overlying said edge portion of said exposed substrate surface and surrounding said central portion of said exposed substrate surface; and
removing said masking layer.

4,942,138

ION-IMPLANTATION OF WIRING ELECTRODES OF A SEMICONDUCTOR DEVICE FOR HILLOCK REDUCTION

Kazumi Miki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1988, Ser. No. 290,039
Claims priority, application Japan, Dec. 26, 1987, 62-332246
Int. Cl.[5] H01L *21/265, 21/28*
U.S. Cl. 437—182 3 Claims



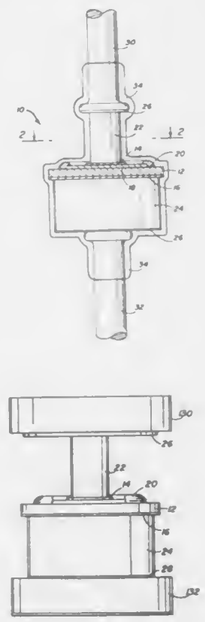
1. An ion-implantation method for suppressing the formation of hillocks in wiring electrodes of a semiconductor device comprising irradiating said wiring electrodes with ion beams containing argon ions or arsenic ions from at least two directions which are inclined with respect to the direction normal to the top surface of said wiring electrodes.

4,942,139

METHOD OF FABRICATING A BRAZED GLASS PRE-PASSIVATED CHIP RECTIFIER

Michael Korwin-Pawlowski, Ft. Salonga, N.Y., assignor to General Instrument Corporation, New York, N.Y.

Filed Feb. 1, 1988, Ser. No. 151,066
Int. Cl.[5] H01L *3/00*
U.S. Cl. 437—209 19 Claims



1. A method of fabricating a semiconductor device, comprising making a p-n junction by diffusion into a semiconductor wafer, patterning the wafer to delineate at least one die with an exposed p-n junction area, applying glass to the exposed p-n junction area of the semiconductor die, and applying a contact member to a surface of the semiconductor die by brazing the contact to the die with an intermediate metalization layer having a melting point above 575° C.

4,942,140

METHOD OF PACKAGING SEMICONDUCTOR DEVICE

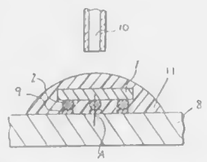
Hideaki Ootsuki; Mitsuyuki Takada; Toru Kokogawa, and Hayato Takasago, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 171,448, Mar. 21, 1988, abandoned. This application Jun. 9, 1989, Ser. No. 363,710
Claims priority, application Japan, Mar. 25, 1987, 62-72245; Mar. 25, 1987, 62-72246
Int. Cl.[5] H01L *21/60, 21/603, 21/56*
U.S. Cl. 437—211 24 Claims

1. A method of packaging a semiconductor device comprising:
positioning a semiconductor device and a mounting body with the electrodes of said semiconductor device and the leads of said mounting body in slidable mechanical contact with each other, said electrodes not being bonded to said leads;
applying a settable electrically insulating resin that shrinks upon setting, covering the portions of said unbonded

electrodes and leads that are in contact with each other; and

setting said insulating resin while keeping said electrodes



and said leads in contact with each other to fix said electrodes to said leads whereby said resin, when set, applies a compressive force between said electrodes and said leads.

4,942,141

INFRARED ABSORBING SQUARYLIUM DYES FOR DYE-DONOR ELEMENT USED IN LASER-INDUCED THERMAL DYE TRANSFER

Charles D. DeBoer, and Steven Evans, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

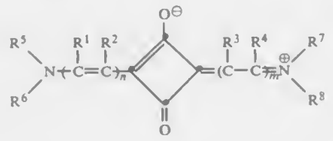
Filed Jun. 16, 1989, Ser. No. 366,952
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **17 Claims**

7. In a process of forming a laser-induced thermal dye transfer image comprising

(a) imagewise-heating by means of a laser a dye-donor element comprising a support having thereon a dye layer and an infrared-absorbing material which is different from the dye in said dye layer, and

(b) transferring a dye image to a dye-receiving element to form said laser-induced thermal dye transfer image,

the improvement wherein said infrared-absorbing material is a squarylium dye which is located in said dye layer and has the following formula:



wherein:

R^1, R^2, R^3 and R^4 each independently represents hydrogen, hydroxy, halogen, cyano, alkoxy, aryloxy, acyloxy, aryloxycarbonyl, alkoxycarbonyl, sulfonyl, carbamoyl, acyl, acylamido, alkylamino, arylamino or a substituted or unsubstituted alkyl, aryl or hetaryl group;

or any of said R^1, R^2, R^3 or R^4 groups may be combined with R^5, R^6, R^7 or R^8 or with each other to form a 5- to 7-membered substituted or unsubstituted carbocyclic or heterocyclic ring;

R^5, R^6, R^7 and R^8 each independently represents hydrogen, a substituted or unsubstituted alkyl or cycloalkyl group having from 1 to about 6 carbon atoms or an aryl or hetaryl group having from about 5 to about 10 atoms;

or R^5 and R^6 or R^7 and R^8 may be joined together to form a 5- to 7-membered substituted or unsubstituted nitrogen-containing heterocyclic ring; and

n and m are each independently 1 to 4.

4,942,142

SUPERCONDUCTING THIN FILM AND A METHOD FOR PREPARING THE SAME

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Jul. 27, 1988, Ser. No. 224,699
Claims priority, application Japan, Jul. 27, 1987, 62-186812
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **12 Claims**

1. A superconducting thin film composed of high temperature compound oxide deposited on a substrate, characterized in that an outer surface of the superconducting thin film is covered with a protective layer which is composed of polymer compound selected from the group consisting of silicon resins, epoxy resins and polyimide resins.

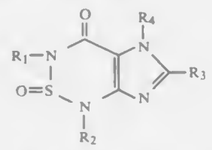
4,942,143

IMIDAZOTHIADIAZINE DERIVATIVES, AND THEIR USE AS MEDICAMENTS

Tsutomu Ohsaki, Saitama; Jinsaku Sakakibara, Nagoya, and Takeo Kuriki, Saitama, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Apr. 6, 1988, Ser. No. 178,231
Claims priority, application Japan, Apr. 8, 1987, 62-86130; Aug. 21, 1987, 62-209066
Int. Cl.[5] A61K *31/54*; C07D *513/04*
U.S. Cl. 514—222.8 **5 Claims**

1. A compound of the formula I



(I)

wherein R_1, R_2 and R_4 are each a C_1–C_{10}-alkyl group unsubstituted or substituted by one or two halogen atoms, oxo groups, amino groups, mono- or di-C_1–C_6-alkylamino groups, hydroxyl groups, C_1–C_6-alkoxy groups, phenoxy groups, morpholino groups, pyrrolidino groups, piperidino groups, or phenoxy groups which in turn are unsubstituted or substituted by one or two halogen atoms, C_1–C_4-alkyl groups, hydroxy groups, C_1–C_4-alkoxy groups, amino groups, mono- or di-C_1–C_4-alkylamino groups, oxo-(C_1–C_4)-alkyl groups, sulfonamido groups or nitro groups, or R_1, R_2 and R_4 represent a phenyl or naphthyl group unsubstituted or substituted by one or two halogen atoms, C_1–C_6-alkyl groups, nitro groups, amino groups, hydroxyl groups, mono- or di-C_1–C_6-alkylamino groups, C_1–C_6-alkoxy groups, phenoxy groups, sulfonamido groups or oxo-C_1–C_6-alkyl groups; or R_1, R_2 and R_4 represent a benzyl or phenethyl group wherein the benzene ring is unsubstituted or substituted by one or two halogen atoms, nitro groups, hydroxyl groups, amino groups, mono- or di-C_1–C_6-alkylamino groups, C_1–C_6-alkoxy groups, phenoxy groups, sulfonamido groups or oxo-C_1–C_6-alkyl groups; and R_3 is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group which is unsubstituted or substituted by one or two halogen atoms, oxo groups, amino groups, mono- or di-C_1–C_6-alkylamino groups, hydroxyl groups, C_1–C_6-alkoxy groups, phenoxy groups, morpholino groups, pyrrolidino groups, piperidino groups or phenoxy groups, which in turn are substituted by one or two halogen atoms, C_1–C_4-alkyl groups, hydroxy groups, C_1–C_4-alkoxy groups, amino groups, mono- or di-C_1–C_4-alkylamino groups, oxo-C_1–C_4-alkyl groups, sulfonamido groups or nitro groups; or R_3 is a phenyl or naphthyl group which is unsubstituted or substituted by one or two halogen atoms, C_1–C_6-alkyl groups, nitro groups, amino groups, hydroxyl groups, mono- or di-C_1–C_6-alkylamino groups, C_1–C_6-alkoxy groups, phenoxy groups, sulfonamido

groups or oxo-C_1–C_6-alkyl groups; or R_3 is a benzyl or phenethyl group wherein the benzene ring is unsubstituted or substituted by one or two halogen atoms, nitro groups, hydroxyl groups, amino groups, mono- or di-C_1–C_6-alkylamino groups, C_1–C_6-alkoxy groups, phenoxy groups, sulfonamido groups or oxo-C_1–C_6-alkyl groups.

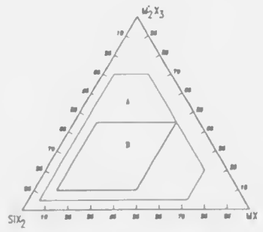
5. A method for the treatment of a patient in need of hypotensive and vasodilating activity which comprises administering to said patient an amount effective for said treatment of a compound of the formula 1 as defined in claim 1 or a pharmacologically acceptable acid addition salt thereof.

4,942,144

INFRARED TRANSMITTING GLASSES WITH HIGH GLASS TRANSITION TEMPERATURES

Steve W. Martin, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 23, 1989, Ser. No. 300,580
Int. Cl.[5] C03C *3/32*
U.S. Cl. 501—40 **7 Claims**



1. A chalcogenide glass having a range of infrared transmission, consisting essentially of: a glass mixture of the formula: $MX+M_2{}_3+SiX_2$, wherein M is

a metal selected from the group consisting of calcium, strontium, barium, zinc and lead, M' is a metal selected from the group consisting of aluminum and gallium and X is selected from the group consisting of sulfur, selenium and tellurium;

the mole percent of MX is within the range of from about 5% to about 70%, the mole percent of $M_2'X_3$ is within the range of from about 5% to about 70%, and the mole percent of SiX_2 is within the range of from about 10% to about 90%, and

the glass has a T_g of at least 500° C.

4,942,145

PRECERAMIC COMPOSITIONS AND CERAMIC PRODUCTS

William E. Moehle; John J. Rogers, and John Semen, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 26, 1989, Ser. No. 357,542
Int. Cl.[5] C04B *35/52, 35/54, 35/56, 35/58*
U.S. Cl. 501—90 **7 Claims**

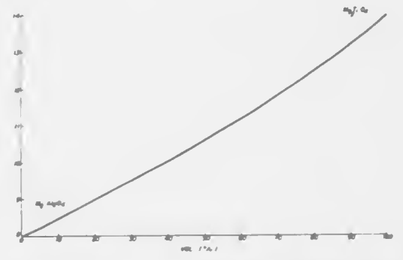
1. A preceramic molding composition having a particle size not larger than about 105 micrometers and consisting essentially of an intimate mixture of (A) about 50–90 parts by weight of powder ingredients comprising about 2–50% by weight of graphite powder and about 98–50% by weight of a second powder selected from silicon carbide, silicon nitride, and mixtures thereof and (B) correspondingly, about 50–10 parts by weight of a preceramic polysilazane binder.

4,942,146

DENSE CERAMIC ALLOYS AND PROCESS OF MAKING SAME

Taki Negas, and Louis P. Domingues, both of Adamstown, Md., assignors to Alpha Industries, Woburn, Mass.

Filed May 15, 1987, Ser. No. 49,984
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—134 **14 Claims**



1. A single phase dense sintered ceramic dielectric alloy of the formula:

$$Mg_xAl_yTi_zO_4$$

wherein

$x+y+z=3$

$x=1-2$

$y=0.1-1.9$

$z=0.1-0.9$

having a dielectric constant of at least 8.5 and no more than 13.8 and a density of at least 98% of the theoretical density.

4,942,147

CATALYST SYSTEM CONTAINING AN AUTOACCELERATION INHIBITOR

Frederick J. Karol, Belle Mead; Kao Sun-Chueh, Piscataway, and James S. Drage, Edison, all of N.J., assignors to Union Carbide Chemicals and Plastics Company, Inc., Danbury, Conn.

Filed May 8, 1989, Ser. No. 349,398
Int. Cl.[5] C08F *4/02, 4/60*
U.S. Cl. 502—113 **35 Claims**

1. A transition metal catalyst system comprising a transition metal catalyst and an autoacceleration inhibitor, which (i) at about the temperature at which the catalyst system autoaccelerates, decomposes into a poison for the catalyst system; (ii) is present in the catalyst system in an amount sufficient to provide the quantity of poison required to inhibit the catalyst system at the autoacceleration temperature; and (iii) is either essentially inert at the normal operating temperature of the catalyst system or will cause substantially less inhibition of the catalyst system at the normal operating temperature than at the autoacceleration temperature.

4,942,148

CATALYST COMPONENT FOR OLEFIN POLYMERIZATION

Hiroyuki Furuhashi; Akira Nakano; Masahide Murata; Masafumi Imai, and Hiroshi Ueno, all of Saitama, Japan, assignors to Toa Nenryo Kogyo, K.K., Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,514
Claims priority, application Japan, Oct. 12, 1987, 62-25477
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—115 2 Claims

1. A catalyst component for olefin polymerization, prepared by bringing a titanium-containing solid which comprises (a) a metal oxide, (b) an organomagnesium compound represented by the following general formula:

$$R^1MgR^2$$

wherein R^1 and R^2 each represents a hydrocarbon group containing from 1 to 20 carbon atoms, a halogen atom, or an OR^3 group in which R^3 represents a hydrocarbon group containing from 1 to 12 carbon atoms, provided that R^1 and R^2 do not represent a halogen atom at the same time, (c) an electron donor compound, and (d) a titanium compound having contacted with each other, into contact with (e) an α-olefin containing 3 carbon atoms or more in the presence of (f) an organoaluminum compound, to thereby contain a poly(α-olefin) in an amount of from 0.1 to 100 g per gram of said titanium-containing solid.

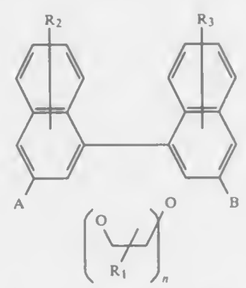
4,942,149

CROWN ETHER COMPOUND AND SEPARATING AGENT

Toshio Shinbo, Ibaraki, Japan; Tomohiko Yamaguchi, Dortmund, Fed. Rep. of Germany, and Kouzou Tachibana, Hyogo, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo and Daicel Chemical Industries, Sakai, both of, Japan

Filed Aug. 25, 1989, Ser. No. 398,844
Claims priority, application Japan, Sep. 5, 1988, 63-221879
Int. Cl.[5] B01J *20/26*; C07D *323/00*
U.S. Cl. 502—401 5 Claims

1. A racemic or optically active crown ether compound having the formula



wherein A and B, which can be the same or different, are hydrogen, straight chain or branched alkyl having from 1 to 6 carbon atoms, aryl having from 6 to 10 carbon atoms, or aralkyl having from 7 to 9 carbon atoms,

R_1 is hydrogen or straight chain or branched alkyl having from 1 to 20 carbon atoms, wherein R_1 can be bonded to any carbon atom on the cyclic polyether and the number of R_1 groups is from 1 to 12, and n is an integer of from 3 to 10, and

R_2 and R_3, which can be the same or different, are straight chain or branched alkyl having from 1 to 30 carbon atoms, aryl having 6 to 18 carbon atoms, or aralkyl having 7 to 30 carbon atoms, wherein R_2 and R_3 can be located anywhere other than at the A and B substitution positions on the condensed ring, and the sum of the number of the R_2 and R_3 groups is from 2 to 5.

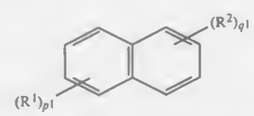
4,942,150

HEAT-SENSITIVE RECORDING MATERIAL

Toshimasa Usami; Toshiharu Tanaka, and Masataka Kiritani, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 786,567, Oct. 11, 1985. This application Aug. 8, 1988, Ser. No. 230,818
Claims priority, application Japan, Oct. 12, 1984, 59-213958
The portion of the term of this patent subsequent to Jul. 1, 2003, has been disclaimed.
Int. Cl.[5] B41M *5/18*
U.S. Cl. 503—213 8 Claims

1. A heat-sensitive recording material comprising a support having provided on the same surface thereof microcapsules containing a basic colorless dye and an organic solvent, and a developer capable of reacting with the basic colorless dye to develop a color, the capsule walls of said microcapsules being impermeable to said basic colorless dye and said developer at room temperature but becoming permeable to said basic colorless dye and/or said developer upon application of heat with a thermal head to thereby provide a color image, wherein said organic solvent is a compound containing at least two benzene rings, and said organic solvent may further contain at least one hetero atom selected from the group consisting of nitrogen, sulfur, oxygen and phosphorus atoms, the total number of hetero atoms constituting less than 10% of the total number of carbon atoms of said organic solvent, said organic solvent being selected from the group consisting of compounds represented by formula (I):



(I)

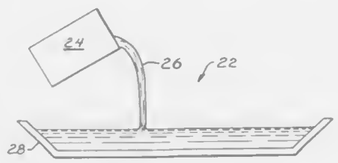
wherein R^1 represents a hydrogen atom or an alkyl group having from 1 to 18 carbon atoms; R^2 represents an alkyl group having from 1 to 18 carbon atoms; and p^1 and q^1 each represents an integer of from 1 to 4, with the proviso that the total number of alkyl groups does not exceed 4.

4,942,151

MAGNETIC PREFERENTIAL ORIENTATION OF METAL OXIDE SUPERCONDUCTING MATERIALS

Donald W. Capone; Bobby D. Dunlap, both of Bolingbrook, and Boyd W. Veal, Downers Grove, all of Ill., assignors to Arch Development Corporation, Argonne, Ill.

Filed Sep. 28, 1987, Ser. No. 101,820
Int. Cl.[5] C04B *33/28*; B28B *1/26*
U.S. Cl. 505—1 15 Claims



1. A method of forming a superconducting metal oxide with improved current carrying capacity wherein said superconducting metal oxide has a polycrystalline structure and is anisotropically superconducting having one or more longer crystal axes along which said metal oxide is superconducting, said method comprising the steps of:

reducing the superconducting metal oxide to a flakelike, powder form, wherein the metal oxide powder is comprised of particles of single crystals, said superconducting metal oxide having a characteristic critical temperature below which it is superconducting;

mixing said metal oxide single crystal particles with binder and solvent to form a slip;

lowering the temperature of said metal oxide single crystal particles in said slip to said characteristic critical temperature;

directing a magnetic field onto said slip to orient said metal oxide single crystal particles along a preferential direction such that said one or more longer axes of each of said metal oxide crystals are in general alignment; and

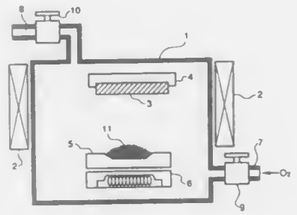
removing the binder and solvent from the oriented metal oxide single crystal particles and sintering said metal oxide single crystal particles.

4,942,152

PROCESS FOR PREPARTING A BISMUTH-TYPE COMPOUND OXIDE SUPERCONDUCTOR

Hideo Itozaki; Keizo Harada, and Shuji Yazu, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 30, 1989, Ser. No. 400,819
Claims priority, application Japan, Aug. 30, 1988, 63-216036
Int. Cl.[5] C01F *11/02*
U.S. Cl. 505—1 20 Claims



1. A process for preparing a superconductor of a bismuth-containing compound oxide, characterized by the steps comprising preparing an intermediate compound oxide composed of metal elements which are constituent elements of said superconductor except bismuth, and subjecting said intermediate compound oxide to heat-treatment at a temperature between 750° and 950° C. in an atmosphere containing bismuth oxide vapour so that bismuth oxide reacts with said intermediate compound oxide to produce the superconductor.

4,942,153

SKIN MOISTURIZING PRODUCT AND PROCESS

Helen M. Fernandez, 20938 Bandera St., Woodland Hills, Calif. 91364

Filed Feb. 3, 1987, Ser. No. 10,225
Int. Cl.[5] A61K *37/12, 35/28*
U.S. Cl. 514—2 12 Claims

1. A skin moisturizing spray composition comprising;

a mixture consisting essentially of a water soluble animal collagen in the range of 1% to 2% with water in the range of 98% to 99%;

whereby said mixture can be applied to the skin in a fine mist spray with said water soluble collagen binding said water to moisturize the skin.

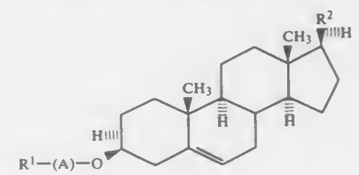
4,942,154

STEROIDAL GLYCOLIPIDS AS HOST RESISTANCE STIMULATORS AGAINST VIRAL INFECTION

Philippe L. Durette, New Providence; Mitree M. Poupipom, Branchburg, and William K. Hagmann, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 18, 1987, Ser. No. 62,997
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[5] A61K *31/705*
U.S. Cl. 514—26 9 Claims

1. A method for enhancing host resistance to viral infection in an AIDS immunocompromised individual consisting of administering to said individual a composition consisting essentially of a compound of the formula:



where:

R^1 is α or β-D-1-thiomannopyranoside, α or β-L-1-thiofucopyranoside;

A is $(CH_2)_n$ where n is 5–7, or $(CH_2)_kX(CH_2)_m$ where X is O or S or NH and k and m are independently 2–4 and the sum of k and m is 4–6;

R^2 is C_1–C_8 linear or branched alkyl or C_2–C_{10} linear or branched alkene;



where B is C_1–C_8 alkyl, C_1–C_8 alkoxy, NR^3R^4 where R^3 and R^4 are independently H, C_1–C_4 alkyl; $CH(CH_3)D$ where D is OH, NH_2, NHR^5 where R^5 is C_1–C_{10} alkyl, or pharmaceutically acceptable salts thereof, in an amount effective to impart resistance to viral infection, and a pharmaceutically acceptable carrier therefor.

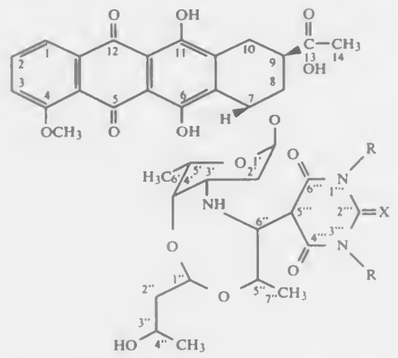
4,942,155

BIOSYNTHETIC ANTHRACYCLINES RELATED TO DAUNORUBICIN

Giuseppe Cassinelli, Voghera; Arpad Grein, Milan; Sergio Merli, Bernareggio Mi, and Giovanni Rivola, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Mar. 9, 1987, Ser. No. 23,390
Claims priority, application United Kingdom, Mar. 13, 1986, 8606204
Int. Cl.[5] C07H *15/252*
U.S. Cl. 514—34 3 Claims

1. A anthracycline glycoside of the general formula:



wherein R represents a methyl group and X is an oxygen atom, or R represents hydrogen and X is a sulphur atom.

3. A pharmaceutical composition for inhibiting the growth of P 388 leukemia and Gross leukemia comprising a therapeutically effective amount of a compound as claimed in claim 1 in admixture with a pharmaceutically acceptable diluent or carrier.

4,942,156

LOW MOLECULAR WEIGHT HEPARIN DERIVATIVES HAVING IMPROVED ANTI-XA SPECIFICITY

Kevin M. Foley, Franklin; Charles C. Griffin, Oxford, and Eduardo Amaya, Monroe, all of Ohio, assignors to Hepar Industries, Inc., Franklin, Ohio

Filed Aug. 20, 1986, Ser. No. 898,431

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[5] A61K *31/715;* C08B *37/10*

U.S. Cl. 514—56 **9 Claims**

1. An ester of low molecular weight heparin characterized by an anti-Xa/APTT ratio greater than 2.8 wherein the ester is prepared by reacting an acid chloride with low molecular weight heparin wherein more than 50% of the ester groups are lower alkyl.

9. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and a pharmaceutically effective amount of a product as claimed in claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, or claim 8.

4,942,157

1-HYDROXY-3-(N-METHYL-N-PROPYLAMINO)PROPANE-1,1-DIPHOSPHONIC ACID, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Rudi Gall, and Elmar Bosies, both of Mannheim, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jnl. 9, 1987, Ser. No. 71,320

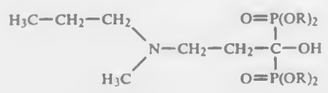
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623397

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—108 **7 Claims**

1. A diphosphonate compound of the formula



(I)

wherein R is hydrogen, and the pharmacologically acceptable salts thereof.

2. A pharmaceutical composition for the treatment or prophylaxis of calcium metabolism disturbance or disease containing an effective amount of at least one compound of claim 1 in pharmaceutically acceptable carrier.

4,942,158

TRANSDERMAL STEROID PENETRANT COMPOSITIONS AND METHODS UTILIZING ISOPROPANOL AND ISOBUTANOL

Pramod P. Sarpotdar, Malvern, Pa., and Tammy B. Strassburg, Rochester, N.Y., assignors to Eastman Kodak, Rochester, N.Y.

Filed Oct. 13, 1988, Ser. No. 257,374

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—170 **20 Claims**

1. A topical composition for the transdermal delivery of a steroid drug which comprises a therapeutically effective amount of a steroid drug in a vehicle comprising a mixture of isopropyl alcohol and isobutyl alcohol, each of these alcohols being present in an amount of from about 45% to about 55% by weight based on the weight of said mixture.

4,942,159

CEPHEM COMPOUNDS, THEIR PRODUCTION AND USE

Shoji Kishimoto, Hyogo; Kiminori Tomimatsu, and Akio Miyake, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

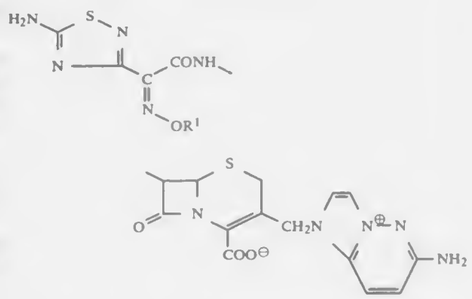
Filed Aug. 24, 1988, Ser. No. 235,566

Claims priority, application Japan, Aug. 25, 1987, 62-212567

Int. Cl.[5] C07D *501/46;* A61K *31/545*

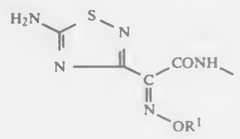
U.S. Cl. 514—202 **8 Claims**

1. A cephem compound of the formula:

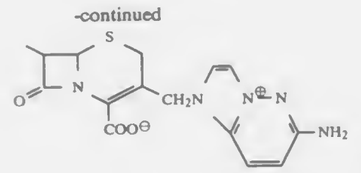


wherein R^1 is a lower alkyl group, or a pharmaceutically acceptable salt or ester thereof.

7. An antimicrobial composition which contains an effective dose of a cephem compound of the general formula:



-continued



wherein R^1 is a lower alkyl group, or a pharmaceutically acceptable salt or ester thereof, together with a carrier or carriers.

4,942,160

NOVEL TREATMENT

Gareth J. Sanger, and Helen E. Marr, both of Harlow, England, assignors to Beecham Group p.l.c., Middlesex, England

Division of Ser. No. 145,537, Jan. 19, 1988, Pat. No. 4,845,092.

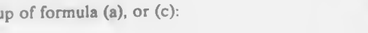
This application May 5, 1989, Ser. No. 348,051

Claims priority, application United Kingdom, Jan. 19, 1987, 8701022

Int. Cl.[5] A61K *31/00*

U.S. Cl. 514—216 **4 Claims**

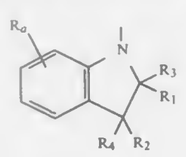
1. A method of treatment of visceral pain in mammals, including humans, which method comprises the administration to the mammal in need of such treatment, a visceral pain relieving effective amount of a compound of formula (I) or a pharmaceutically acceptable salt thereof:



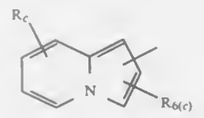
(I)

wherein

X is a group of formula (a), or (c):



(a)



wherein

R_a and R_c are selected from hydrogen, halogen and hydroxy;

R_1 is hydrogen and R_2 is hydrogen or C_{1-4} alkyl; or

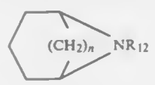
R_1 and R_2 together are bond;

R_3, R_4 and R_6 are independently hydrogen or C_{1-4} alkyl; and

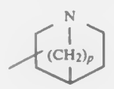
R_4 together with R_2 may be C_{2-7}, polymethylene when R_1 is hydrogen;

Y is NH or O;

Z is a group of formula (f), (g) or (h):

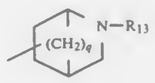


(f)



(g)

-continued



(h)

wherein

n is 2 or 3;

p and q are independently 1 to 3; and

R_{12} or R_{13} is methyl or ethyl.

4,942,161

USE OF BETA BLOCKERS FOR THE TREATMENT OF THE PROGRESSION OF INFANTILE AXIAL MYOPIA

Heinfried Tibartius, Breitenbachplatz 21, 1000 Berlin 33, Fed. Rep. of Germany

Filed Feb. 24, 1989, Ser. No. 315,096

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1988, 3805882

Int. Cl.[5] A61K *31/535, 31/425, 31/385, 31/38*

U.S. Cl. 514—231.2 **3 Claims**

1. A method for treatment of progressive infantile axial myopia in the presence of normal internal eye pressure comprising the step of administering to the eye of a patient a therapeutically effective amount of an aqueous solution of an opthalmologically acceptable beta blocker present in amounts such that on repeated administration essentially no side effects of a systemic nature are observed.

4,942,162

TOPICAL TREATMENT OF SEBORRHEIC DERMATITIS WITH KETOCONAZOLE

E. William Rosenberg, Memphis, and Patricia W. Belew-Noah, Germantown, both of Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation of Ser. No. 815,232, Dec. 31, 1985, abandoned, which is a division of Ser. No. 559,929, Dec. 9, 1983, Pat. No. 4,569,935, which is a continuation-in-part of Ser. No. 474,214, Mar. 17, 1983, Pat. No. 4,491,588, which is a continuation-in-part of Ser. No. 363,845, Mar. 31, 1982, abandoned. This application Jan. 27, 1989, Ser. No. 303,960

Int. Cl.[5] A61K *31/50, 31/495*

U.S. Cl. 514—252 **3 Claims**

1. A method of treating seborrheic dermatitis in humans by topical application of an effective, lesion reducing, amount of ketoconazole to affected areas.

4,942,163

1(2H)-ISOQUINOLINONES AND 1-ISOQUINOLINEAMINES AS CANCER CHEMOTHERAPEUTIC AGENTS

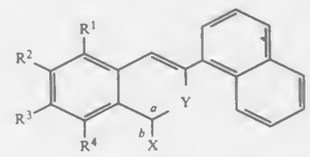
Carl H. Behrens, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1989, Ser. No. 322,191

Int. Cl.[5] A61K *31/495;* C07D *401/04*

U.S. Cl. 514—254 **40 Claims**

1. A compound of Formula (I)



(I)

wherein

R^1 is H, CH_3, or Cl;

R^2 is H, CH_3, or Cl;

R^3 is R^5, Cl, $N(R^5)_2$, or $N^+(R^5)_3I^-$ provided that, if X is NR^6R^7, R^3 is not $N(R^5)_2$ or $N^+(R^5)_3I^-$;
R^4 is H, CH_3, or Cl;
R^5 is H, or C_1 to C_3 alkyl;
X is O, or NR^6R^7; provided that, if X is O, a is a single bond, b is a double bond, and Y is NH, and, if X is NR^6R^7, a is a double bond, b is a single bond, and Y is N;
R^6 and R^7 independently are R^5, $(CH_2)_nN(R^5)_2$ where n is 2 to 8, or R^6 and R^7 taken together represent $(CH_2CH_2)_2NR^5$;
and pharmaceutically acceptable salts thereof.

21. A method of treating lymphocytic leukemia in a mammal comprising administering to a mammal a therapeutically effective amount of a compound of claim 1.

4,942,164

POLYFLUORINATED DIISOCYANATES AND FLUORINATED POLYURETHANES PREPARED THEREFROM

Kurt Baum, Pasadena; Aslam A. Malik, San Dimas, and Donald D. Tzeng, San Jose, all of Calif., assignors to Fluorochem Inc., Azusa, Calif.

Filed May 8, 1989, Ser. No. 350,130
Int. Cl.[5] C08G *18/77*
U.S. Cl. 528—70 **13 Claims**

1. As a composition of matter, a polyfluorinated diisocyanate having the formula $OCN—CH_2CH_2—(CF_2)_n—CH_2CH_2—NCO$, wherein n is a whole number of from 2 to 16, inclusive.

4,942,165

TREATMENT FOR ALZHEIMER'S DISEASE

Richard D. Rotondo, St. Paul, Minn., assignor to Advanced Biologics, Inc., Minneapolis, Minn.

Continuation of Ser. No. 828,763, Feb. 11, 1986, Pat. No. 4,814,339. This application Nov. 28, 1988, Ser. No. 276,818
Int. Cl.[5] A61K *31/44, 31/52*
U.S. Cl. 514—261 **15 Claims**

1. A method of treatment of degenerative mental process in a living subject which consists of administering to said living subject in need of treatment an effective amount of a carrier compound bonded to acetylcholine for transporting choline to the brain, said carrier compound is hydropyridine.

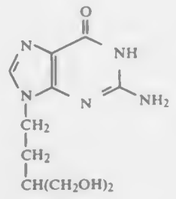
4,942,166

CRYSTALLINE PURINE COMPOUNDS

Michael R. Harnden; Richard L. Jarvest, and Graham R. Geen, all of Epsom, England, assignors to Beecham Group p.l.c., Middlesex, England

Continuation of Ser. No. 221,894, Jul. 20, 1988, abandoned, which is a continuation of Ser. No. 889,362, Jul. 25, 1986, abandoned. This application Jun. 30, 1989, Ser. No. 374,628
Claims priority, application United Kingdom, Jul. 27, 1985, 8519011; Dec. 11, 1985, 8530491
Int. Cl.[5] C07D *473/18;* A61K *31/52*
U.S. Cl. 514—262 **8 Claims**

1. A crystalline monohydrate of the compound of formula (A) or a crystalline sodium salt monohydrate of the compound of formula (A):



(A)

4,942,167

PHARMACEUTICAL COMPOSITIONS OF PIROXICAM IN AQUEOUS SOLUTIONS AND PROCESS FOR THEIR PREPARATION

Paolo Chiesi, and Luciana Pavesi, both of Parma, Italy, assignors to Chiesi Farmaceutici S.p.A., Parma, Italy

Filed Mar. 31, 1989, Ser. No. 331,457
Claims priority, application Italy, Apr. 1, 1988, 20073 A/88
Int. Cl.[5] A61K *31/54*
U.S. Cl. 514—226.5 **7 Claims**

1. A process for the preparation of an aqueous pharmaceutical composition containing as active ingredient a basic salt of piroxicam which consists of (a) dispersing piroxicam in water in a concentration between 1 and 4% w/v; (b) adding under stirring an aqueous solution of an alkali or alkaline earth metal hydroxide in stoichiometric amount up to complete dissolution; (c) adding glycine in an amount between 8 and 10% w/v as a pH stabilizer and stirring to obtain a ready to use solution.

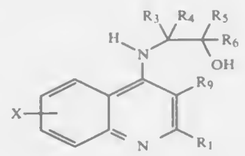
4,942,168

HYDROXYQUINOLINE AMINES, AND METHOD OF ENHANCING MEMORY IN MAMMALS

Karl Schonafinger, Alzenau, Fed. Rep. of Germany, and Helen H. Ong, Whippany, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 72,832, Jul. 13, 1987, Pat. No. 4,743,601. This application Mar. 7, 1988, Ser. No. 164,596
Int. Cl.[5] A61K *31/47;* C07D *215/46*
U.S. Cl. 514—313 **12 Claims**

1. A compound of the formula



where X is hydrogen, loweralkyl, loweralkoxy, hydroxy, halogen, nitro or trifluoromethyl; R_1 is hydrogen or loweralkyl; R_3 and R_4 are independently hydrogen or loweralkyl; R_5+R_6 taken together with the carbon atom to which they are attached constitute a cyclopropane, cyclobutane, cyclopentane, or cyclohexane ring, and R_9 is hydrogen or bromine, the term loweralkyl in each occurrence signifying a straight or branched alkyl group having from 1 to 6 carbon atoms and the term loweralkoxy signifying a straight or branched alkoxy group having from 1 to 6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,942,169

PIPERIDINE DERIVATIVE AND PHARMACEUTICAL COMPOSITION

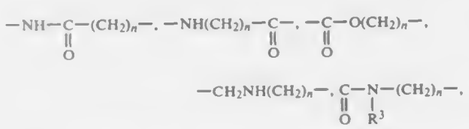
Hachiro Sugimoto, Ushiku; Takaharu Nakamura, Abiko; Yutaka Tsuchiya, Ushiku; Hiroyuki Sugumi, Yatabemachi; Kunizou Higurashi, Tokyo; Norio Karibe, Yatabemachi; Yoshiharu Yamanishi, Ryugasaki; Hiroo Ogura, Tsuchiura; Shin Araki; Atsuhiko Kubota, both of Ibaraki; Michiko Ohtake, Mitsukaido, and Kiyomi Tamatsu, Kamakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 946,459, Dec. 24, 1986, Pat. No. 4,849,431. This application Mar. 10, 1989, Ser. No. 321,624
Claims priority, application Japan, Dec. 27, 1985, 60-293885
Int. Cl.[5] A61K *31/445;* C07D *401/12*
U.S. Cl. 514—318 **18 Claims**

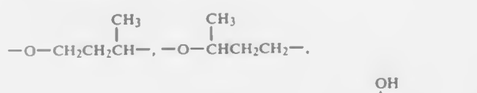
1. A piperidine derivative having the formula (I) or a pharmacologically acceptable salt thereof:

$$R^1—X—A—R^2 \quad (I)$$

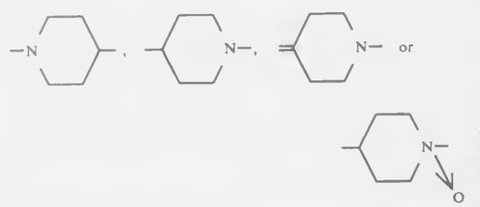
wherein
R^1 is a univalent group derived from one compound selected from the group consisting of pyridine, pyridinecarboxylic acid imide and pyridine N-oxide,
X is $—(CH_2)_n—$, $—O(CH_2)_n—$, $—S(CH_2)_n—$, $—NH(CH_2)_n—$, $—SO_2NH(CH_2)_n—$,



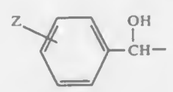
(wherein n is an integer of 1 through 7 and R^3 is hydrogen, lower alkyl or benzyl),



A is



and R^2 is hydrogen, lower alkyl, benzyl, substituted benzyl, benzoyl, substituted benzoyl, pyridyl, 2-hydroxyethyl, pyridylmethyl or a group of the formula



wherein Z represents a halogen atom.

17. A method for treating dementias and sequelae of cerebrovascular diseases which comprises administering to a patient requiring such treatment a pharmacologically effective amount of the piperidine derivative as defined in claim 1.

4,942,170

2-(SUBSTITUTED METHYLIDENE)-N-[3-[PIPERIDIN-1-YL]PROPYL]HYDRAZINE CARBOXIMIDAMIDES USEFUL AS ANTIPARASITICS

Graeme B. Henderson; Peter C. Ulrich, both of New York, and Anthony Cerami, Shelter Island, all of N.Y., assignors to The Rockefeller University, New York, N.Y.

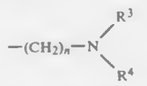
Filed May 27, 1988, Ser. No. 199,664
Int. Cl.[5] A61K *31/445*
U.S. Cl. 514—326 **6 Claims**

1. A method of treating diseases caused by parasitic kinetoplastids in a host vertebrate which comprises administration of a pharmaceutically effective antiparasitic amount of a competitive toxigenic substrate for trypanothione reductase of the formula



(I)

wherein
R_1=H, or lower alkyl;
X=a substituted or unsubstituted furanyl or thienyl group;
R_2=an alkylaminoalkyl group of the formula:



wherein n is an integer of from 1 to 6 and R_3 and R_4 together form a piperidine ring, optionally substituted.

4,942,171

THE COMPOUND, 6-(1-IMIDAZOLYL METHYL)-5,6,7,8-TETRAHYDRONAPHTHALENE-2-CARBOXYLIC ACID AND SALTS THEREOF HAVING ANTIDIABETIC ACTIVITY

Hidemi Masumura; Kyoko Sakuma, and Shinichiro Ashida, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1988, Ser. No. 215,488
Claims priority, application Japan, Jul. 7, 1987, 62-169486
Int. Cl.[5] C07D *233/60;* A61K *31/415*
U.S. Cl. 514—399 **2 Claims**

1. A method for treating a patient in need of an antidiabetaic agent which comprises administering thereto an antidiabetically effective amount of the compound 6-(1-imidazolylmethyl)-5,6,7,8-tetrahydronaphthalene-2-carboxylic acid or a pharmaceutically acceptable salt thereof.

4,942,172

METHOD OF CURING HEPATIC DISEASE

Hitoshi Nakazawa, Narita; Mari Obtsuka, Narashino; Hideaki Matsuda, Abiko; Tatsuhiko Katori, Tone, and Kazuhiko Irinoda, Chiba, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,431
Claims priority, application Japan, Sep. 25, 1987, 62-241543; Jan. 21, 1988, 63-11075
Int. Cl.[5] A61K *31/385*
U.S. Cl. 514—441 **7 Claims**

1. A method of curing of alleviating hepatic disease in a mammal suffering from a hepatic disease selected from the group consisting of cirrhosis, alcoholic hepatitis, and virus-derived hepatitis, comprising: administrating to said mammal a therapeutically effective amount of a cyclic sulfur-containing compound represented by the following formula (I):



wherein the dotted line is optionally present and wherein the groups R_1 and R_2 are independently selected from the group consisting of hydrogen; C_{1-20} alkyl groups and C_{2-12} alkenyl groups.

4,942,173

PESTICIDAL COMPOUNDS

John E. Casida, Berkeley, Calif.; Christopher J. Palmer, Ipswich; John P. Larkin, Buzzard, both of England, and Ian H. Smith, Eaton Bray, United Kingdom, assignors to The Regents of the University of California, Berkeley, Calif.

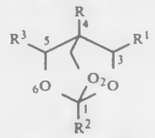
Continuation of Ser. No. 891,697, Jul. 29, 1986, abandoned, Continuation-in-part of Ser. No. 779,167, Sep. 23, 1985, Pat. No. 4,772,624, which is a continuation-in-part of Ser. No. 692,818, Jan. 23, 1984, which is a continuation-in-part of Ser. No. 575,843, Jan. 30, 1984. This application Feb. 24, 1989, Ser. No. 315,247

Claims priority, application United Kingdom, Mar. 12, 1986, 8606130

Int. Cl.[5] C07D *323/04;* A01N *43/32*

U.S. Cl. 514—452 9 Claims

1. A compound of the formula (I):



(I)

wherein R is C_{2-10} alkyl, alkenyl or alkynyl, each optionally substituted by or methyl substituted by cyano, C_{3-4} cycloalkyl, halo, C_{1-4} alkoxy or a group S(O)m R^4 where R^4 is C_{1-4} alkyl and m is 0, 1 or 2, or R is C_{3-10} cycloalkyl, C_{4-10} cycloalkenyl or phenyl, each optionally substituted by C_{1-4} alkoxy, C_{1-3} alkyl, C_{2-4} alkynyl, halo, cyano or a group S(O)m R^4 as defined hereinbefore; R^1 is halo, C_{1-3} alkyl, C_{2-3} alkenyl or alkynyl each optionally substituted by halo, cyano, C_{1-4} alkoxy, alkyl carbalkoxy containing up to 6 carbon atoms, a group S(O)m R^4 as defined hereinbefore or alkynyl substituted by tri-C_{1-4} alkylsilyl, or R^1 is cyano, spirocyclopropyl, gem dimethyl, gem dicyano, gem diethynyl, oxo or methylene optionally substituted by cyano or C_{1-3} alkyl optionally substituted by fluorine, or R^1 and R and the carbon atoms to which they are attached form a C_{5-7} carbocyclic ring optionally substituted by halo, C_{1-3} alkyl or alkoxy or C_{2-3} alkenyl, R^2 is phenyl substituted by an C_{2-3} alkynyl group or by a tri-C_{1-4} alkylsilylalkynyl group and R^3 is hydrogen, C_{1-3} alkyl, C_{2-3} alkenyl or alkynyl each optionally substituted by cyano, C_{1-4} alkylthio, C_{1-4} alkoxy or halo, or R^3 is cyano or halo.

7. An insecticidal or acaricidal composition comprising a compound of formula (I) in admixture with a carrier or diluent.

4,942,174

NOVEL SEBOSUPPRESSIVE COMPOUNDS AND PREPARATIONS

Hinrich Moeller, and Siegfried Wallat, both of Monheim, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

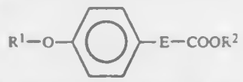
Filed Nov. 10, 1988, Ser. No. 269,940

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1987, 3738407

Int. Cl.[5] C07C *69/76*

U.S. Cl. 514—532 20 Claims

1. In a preparation intended for topical application to human skin, the improvement comprising the presence, in a sebosuppressive effective amount, of an alkyl aryl ether corresponding to the formula:



in which R^1 is a C_8–C_{20} alkyl group with at least one branch, E is either —CH_2–C_2 or —CH=CH—, and R^2 is selected from the group consisting of a C_1–C_4 alkyl group, a C_2–C_4 hydroxyalkyl group, an alkoxyalkyl group containing 1 to 4 C atoms in the alkoxy group and 2 to 4 C atoms in the alkyl group, hydrogen, and a salt-forming cation.

4,942,175

COMPOSITION FOR THE TREATMENT OF SUBSTANCE ABUSE

Patrick J. Frawley, III, Santa Barbara, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.

Filed Apr. 24, 1987, Ser. No. 42,263

Int. Cl.[5] A61K *31/24*

U.S. Cl. 514—535 19 Claims

1. A powdered composition suitable for use in the aversion therapy treatment of cocaine abuse, the composition consisting essentially of:

(A) from about 1.0 to about 3.0 weight percent, based on total composition weight, of a local anesthetic selected from the group consisting of tetracaine, procaine and mixtures thereof; and

(B) from about 95 to about 99 weight percent, based on total composition weight, of a carrier compound selected from the group consisting of mannitol, inositol and mixtures thereof.

4,942,176

N-SUBSTITUTED AMINOALKANOIC ACIDS, A PROCESS FOR THEIR PREPARATION, THEIR USE AND PHARMACEUTICAL PRODUCTS BASED ON THESE COMPOUNDS

Heinrich C. Englert, Hofheim am Taunus; Max Hropot, Flörsheim am Main; Hans-Jochen Lang, Hofheim am Taunus, and Rainer Greger, Heltersheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengellschaft, Frankfurt am Main, Fed. Rep. of Germany

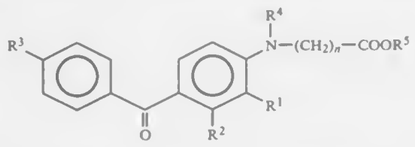
Continuation of Ser. No. 25,582, Mar. 13, 1987, abandoned. This application May 4, 1989, Ser. No. 348,115

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 3608725

Int. Cl.[5] C07C *101/78*

U.S. Cl. 514—539 1 Claim

1. A method for treating diarrhea or the loss of water and electrolytes which comprises administering to one in need of treatment an effective amount of a compound according to the following formula I:



I

in which

R^1, R^2 and R^3 are identical or different and are H, alkyl having 1–2 carbon atoms, F, Cl, Br or I,

R^4 is H or alkyl having 1–4 carbon atoms,

n is a number from 2 to 5, and

R^5 is hydrogen or a radical which ca be eliminated under physiological conditions,

or a pharmaceutically acceptable salt thereof.

4,942,177

COMPOSITION AND METHOD FOR CLEANING AND SANITIZING THE TEATS OF MILK PRODUCING ANIMALS

Keith G. Kastendieck, Rte. 1 Box 410, Washington, Mo. 63090

Filed Nov. 9, 1988, Ser. No. 269,198

Int. Cl.[5] A01N *37/00*

U.S. Cl. 514—560 11 Claims

1. A disinfectant and sanitizing composition for teats and udders of milk producing dairy animals, said composition consisting essentially of food additive materials which are harmless to milk produced subject to migration of the composition from said teats into the milk, said composition having a pH of about 7 and consisting essentially of an aqueous solution of an effective amount of sodium undecylenate as a disinfectant and sanitizing agent and a water soluble organic solvent for said sodium undecylenate, said organic solvent having an emollient characteristic and comprising at least one member of the group consisting of propylene glycol, glycerin, sorbitol, polyethylene glycol, polyethylene glycol fatty acid esters, ethoxylated glycerin, glycol and sorbitol esters.

4,942,178

PLANT PROTECTION AGENTS FOR CONTROL OF FUNGI

Shigeaki Toyoda, Wako; Shunnosuke Watanabe, Higashikurume, and Hiroshi Tabata, Tokyo, all of Japan, assignors to Agro-Kanesho Co., Ltd., Tokyo, Japan

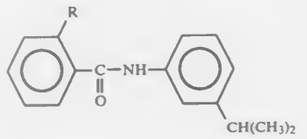
Filed Nov. 30, 1988, Ser. No. 278,243

Claims priority, application Japan, Dec. 1, 1987, 62-304121

Int. Cl.[5] A01N *37/18;* C07C *233/65*

U.S. Cl. 514—617 2 Claims

1. A plant protection agent for control of fungi represented by the following general formula:



[I]

wherein R stands for a trifluoromethyl group.

4,942,179

SINGLE-PHASE COMPOSITION CONTAINING A PERFLUORINATED OIL AND ONE OR MORE SURFACTANT(S), USEFUL AS AN EXCIPIENT FOR COSMETIC AND DERMATOLOGIC FORMULATIONS, AS WELL AS FOR BIOMEDICAL APPLICATIONS

Enrico Borgarello, Turin; Filippo M. Carlini, Vicenza; Carlo Neri, San Donato Milanese, and Edoardo Platone, Asti, all of Italy, assignors to Enitricherche S.p.A., Milan and Enichem Synthesis S.p.A., Palermo, both of, Italy

Filed Jun. 14, 1988, Ser. No. 206,599

Claims priority, application Italy, Jun. 23, 1987, 20977 A/87; Jun. 23, 1987, 20998 A/87

Int. Cl.[5] A61K *31/13, 31/535, 31/445, 31/35*

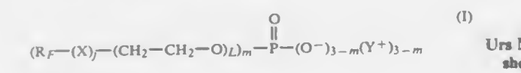
U.S. Cl. 514—659 15 Claims

1. A spontaneously formed single-phase composition useful as an excipient in cosmetic, dermatologic, and biomedical applications, having isotropic or anisotropic forms, the composition comprising:

(a) a perfluorinated oil;

(b) water; and

(c) a surfactant having the formula:

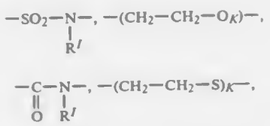


(I)

wherein,

R_F is a F—$(CF_2$—$CF_2)_i$— group,

X is a group selected from:



—$(CH_2$—$O)_K$—, and —$(CH_2$—$S)_K$—, wherein R^I is a (C_1–C_4)-alkyl,

Y is a group selected from: $NH_2(R^{II})_2$ and $N(R^{II})_4$, wherein R^{II} is a hydrogen atom, or a group selected from —CH_2—CH_2—OH and (C_1–C_4)-alkyl,

i is an integer from 3 to 8,

j is zero or 1,

K is 2.L,

L is an integer from 1 to 10, and

m is 1 or 2.

4,942,180

ANTITUMOR CHAMIGRENE DERIVATIVES AND THEIR METHODS OF USE

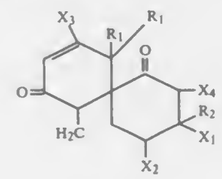
Tatsuo Higa, Okinawa, Japan, and Kenneth M. Snader, Vero Beach, Fla., assignors to Harbor Branch Oceanographic Institution, Inc., Ft. Pierce, Fla.

Filed Sep. 4, 1985, Ser. No. 772,390

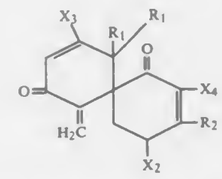
Int. Cl.[5] A61K *31/12;* C07C *49/553*

U.S. Cl. 514—691 6 Claims

1. A composition of the formula I or II:



I



II

wherein both R_1 groups are the same and are —H or —A,

A is lower alkyl,

R_2 is —H or —A,

X_1, X_2, X_3 and X_4 are the same or different and are —H, —OH, —F, —Cl, —Br, —I or —OA.

4,942,181

METHOD OF PROTECTING FISH

Urs N. Riede, Freiburg-St. Georgen, and Ulrich Spitaler, Freisheim, both of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Aug. 11, 1989, Ser. No. 392,710

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1988, 3830616

Int. Cl.[5] A01N *31/00*

U.S. Cl. 514—730 7 Claims

1. A method of protecting fish from stress due to increasing oxygen shortage and/or an increase in ammonia content of the water comprising adding to the water in which the fish are living a sufficient amount of low molecular weight alkali metal huminate with an average molecular weight of 1000 and a range 300 to 1500 to prevent stress.

4,942,182

TREATMENT FOR COCAINE ADDICTION

Susan R. B. Weiss, 4522 Chestnut St., Bethesda, Md. 20814; Robert M. Post, 3510 Turner La., Chevy Chase, Md. 20815, and Thomas G. Aigner, 5900 Ryland Dr., Bethesda, Md. 20817

Filed Mar. 1, 1989, Ser. No. 317,405
Int. Cl.[5] A61K *27/00*
U.S. Cl. 514—812 6 Claims

1. A method of blocking toxic effects of cocaine comprising the chronic administration of carbamazepine to a host susceptible to cocaine addiction in an amount sufficient to achieve a 4 0 12 ug/ml blood concentration of carbamazepine.

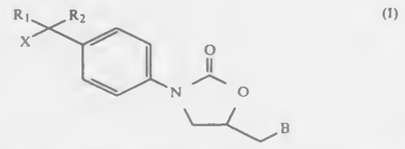
4,942,183

AMINOMETHYL OXOOXAZOLIDINYL AROYLBENZENE DERIVATIVES USEFUL AS ANTIBACTERIAL AGENTS

Walter A. Gregory, and Hollis S. Kezar, III, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

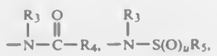
Continuation of Ser. No. 109,032, Oct. 16, 1987, abandoned. This application Jul. 7, 1989, Ser. No. 376,456
Int. Cl.[5] A61K *31/42;* C07D *263/22*
U.S. Cl. 514—376 36 Claims

1. A compound having the formula:



(1)

wherein for the l isomer or racemic mixtures containing it B is NH_2,



or N_3

u is 1 or 2;

R_3 is H, alkyl of 1–10 carbon atoms, or cycloalkyl of 3–8 carbon atoms;

R_4 is H, alkyl of 1–4 carbon atoms, alkenyl of 2–4 carbon atoms, cycloalkyl of 3–4 carbon atoms, or OR_5;

R_5 is alkyl of 1–4 carbon atoms;

R_1 and R_2 taken together are H_2, H and OH, =O, =NOH, H and $N(R_6)_2$, =NOR_5, or



is H or alkyl of 1–4 carbon atoms;

X is pyridinyl or phenyl optionally substituted from 1–3 substitutents each independently selected from a group selected from halogen, alkyl of 1–4 carbon atoms, OR_5, or $S(O)_mR_5$; provided that when X is $S(O)_mR_5$, it comprises only 1 substituent; and m is 0, 1 or 2;

or a pharmaceutically suitable salt thereof.

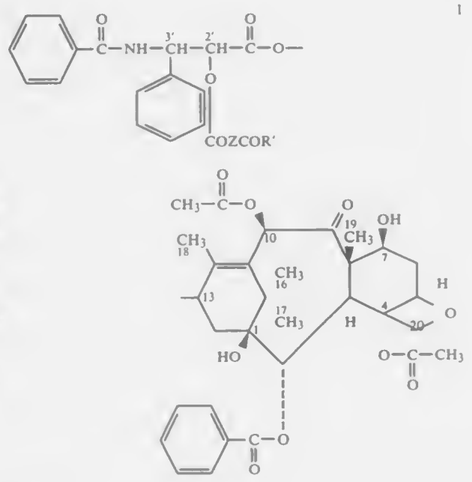
4,942,184

WATER SOLUBLE, ANTINEOPLASTIC DERIVATIVES OF TAXOL

Rudiger D. Haugwitz, Bethesda, Md.; Leon Zalkow, Atlanta, Ga.; Jan Glinski, Ridgefield, Conn.; Mathew Suffness, Silver Spring, Md.; Howard M. Deutsch, Atlanta, Ga., and Venkatachala Narayanan, Gaithersburg, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 7, 1988, Ser. No. 165,173
Int. Cl.[5] A61K *31/335;* C07D *305/14*
U.S. Cl. 514—449 8 Claims

1. Antineoplastic water soluble derivatives of taxol having the following formula:



1

wherein:

Z=ethylene, propylene, CHCH, 1,2-cyclohexane, 1,2-phenylene,

R^1=OH base, NR^2R^3, OR^3, SR^3, $OCH_2CONR^4R^5$, OH

R^2=hydrogen, methyl

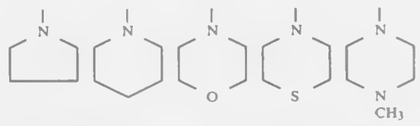
R^3=$(CH_2)_nNR^6R^7$; $(CH_2)_nNR^{\oplus 6}R^7R^8X^{\ominus}$

n=1 to 3

R^4=hydrogen, lower alkyl containing 1 to 4 carbons

R^5=hydrogen, lower alkyl containing 1 to 4 carbons, benzyl, hydroxyethyl, CH_2CO_2H, dimethylaminoethyl

R^6R^7=lower alkyl containing 1 or 2 carbons, benzyl or R^6 and R^7 together with the nitrogen atom of NR^6R^7 form the following rings



R^8=lower alkyl containing 1 or 2 carbons, benzyl

$X^{\ominus}$=halide

base=NH_3, $(HOC_2H_4)_3N$, $N(CH_3)_3$, $CH_3N(C_2H_4OH)_2$, $NH_2(CH_2)_6NH_2$, N-methylglucamine, NaOH, KOH.

8. A pharmaceutical composition comprising antineoplastically effective amount of the derivative of claim 1 as an active ingredient, and pharmaceutically acceptable carrier.

4,942,185

WATER BASE PIGMENT INK COMPOSITIONS FOR USE IN MARKING PENS

Hiroshi Inoue; Wataru Yokono, and Yasuji Okuda, all of Osaka, Japan, assignors to Sakura Color Products Corp., Higashinari, Japan

Filed Nov. 9, 1989, Ser. No. 434,945
Claims priority, application Japan, Nov. 15, 1988, 63-288237
Int. Cl.[5] C08J *9/32*
U.S. Cl. 521—54 7 Claims

1. A water base pigment ink composition for use in marking pens which contain an absorbent ink reservoir and a pen tip connected thereto, the ink composition comprising:

(a) water in amounts of not less than 50% by weight;

(b) an aqueous emulsion of hollow resin particles in amounts of 0.5–40% by weight as solids;

(c) a white pigment in amounts of 1–40% by weight; and

(d) a water-solubilized α-methylstyrene/styrene/acrylic acid copolymer which has a weight average molecular weight of 1000–10,000 and a distribution of molecular weight of 0.5–3.3, but which contains substantially no components having a weight average molecular weight of not more than 500, in amounts of 0.1–30% by weight, based on the ink compositions, respectively.

4,942,186

CONTINUOUSLY FORMING AND TRANSPORTING CONSOLIDATABLE RESIN COATED PARTICULATE MATERIALS IN AQUEOUS GELS

Joseph R. Murphey, and Kenneth D. Totty, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 112,782, Oct. 23, 1987, Pat. No. 4,829,100. This application Mar. 2, 1989, Ser. No. 318,105
Int. Cl.[5] C08L *5/00, 63/00;* C09K *7/02*
U.S. Cl. 523—131 7 Claims

1. A composition comprising:

an aqueous liquid;

a gelling agent comprising at least one member selected from galactomannon gums and derivatives thereof;

a resin composition comprising a hardenable polyepoxide resin, a hardening agent for said resin, a substantially water immiscible reactive diluent present in an amount of from about 2 to about 35 parts per 100 parts by weight of polyepoxide resin, a substantially water immiscible non-reactive diluent present in an amount of from about 4 to about 20 parts per 100 parts by weight of polyepoxide resin, a non-cationic surface active agent; and

wherein said composition is free of cationic surface active agents.

4,942,187

VIBRATION-DAMPING RUBBER COMPOSITION

Takashi Kawata, Mie; Hideo Katsumata, Yokkaichi; Kenya Makino, Kuwana, and Yoshishige Chikatsu, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 130,621, Dec. 9, 1987, abandoned. This application Feb. 23, 1988, Ser. No. 158,739
Claims priority, application Japan, Dec. 13, 1986, 61-295765; Feb. 23, 1987, 62-39609; Mar. 11, 1987, 62-55998; Mar. 30, 1987, 62-76729
Int. Cl.[5] C08L *23/20*
U.S. Cl. 523—200 13 Claims

1. A vibration-damping rubber composition, comprising:

(A) about 100 parts by weight of at least one rubber component selected from the group consisting of hexene-1 homopolymers, copolymers of hexene-1 and a C_{3-20} alpha-olefin other than hexene-1 and mixtures thereof wherein said rubber component is produced by polymerization in the presence of a Ziegler-Natta catalyst,

(B) about 5–150 parts by weight of a reinforcing agent,

(C) up to about 50 parts by weight of a softening agent, which is a process oil, and

(D) about 0.1-5 parts by weight of an organic peroxide crosslinking agent, and an effective amount of a crosslinking aid selected from the group consisting of sulfur, p-benzoquinone dioxime, p, p'-dibenzoylquinone dioxime, dinitrosobenzene, ethylene glycol dimethacrylate, triallyl isocyanurate, trimethylolpropane trimethacrylate, liquid polybutadiene, polybutene and polybutadiene resin.

9. The vibration-damping rubber composition according to claim 1, wherein the reinforcing agent (B) is carbon black, white carbon, basic magnesium carbonate or activated calcium carbonate.

4,942,188

POLYMER MIXTURE COMPRISING POLYBUTYLENE TEREPHTHALATE, AROMATIC POLYCARBONATE AND POLYDIALKYSILOXANE

Wilhelmus Jozefus L. A. Hamersma; Jan de Boer; Wilhelmus M. M. Roovers, all of Bergen op Zoom, and Gerrit de Wit, Ossendrecht, all of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 9, 1988, Ser. No. 269,226
Claims priority, application Netherlands, Jan. 15, 1988, 8800083
Int. Cl.[5] C08K *9/06*
U.S. Cl. 523—212 21 Claims

1. A polymer mixture consisting essentially of, (A) a polybutylene terephthalate and (B) an aromatic polycarbonate, characterized in that the polymer mixture consists essentially of 0.1–5 parts by weight of a dialkyl silicone fluid (C) per 100 parts by weight of A+B, whereby bonding is improved between a surface of an article formed from the polymer mixture and a lacquer layer applied thereto.

4,942,189

INTERFACIAL VISCOSIFICATION OF AQUEOUS SOLUTIONS UTILIZING INTERPOLYMER COMPLEX

Dennis G. Peiffer, East Brunswick; Robert D. Landberg, Bridgewater, and Ilan Duvdevani, Leonia, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 116,054, Nov. 2, 1987, abandoned. This application Jul. 31, 1989, Ser. No. 387,184
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.[5] C08K *3/00, 5/52, 53/00*
U.S. Cl. 523—339 17 Claims

1. A process for forming a thickened aqueous fluid having a viscosity of at least 50 cps, which includes the steps of:

(a) forming a solvent system of a nonpolar organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 weight percent of said solvent system, a viscosity of said solvent system being less than about 100 cps said polar cosolvent being selected from the group consisting of water soluble alcohols, amines, amides, and phosphates, as measured at a shear rate of 1.0 sec^{-1}, at a temperature of 25° C. to 75° C.;

(b) dissolving about 0.01 to about 0.5 weight percent of a water insoluble neutralized sulfonated polymer in said solvent system to form a first solution, a viscosity of said first solution being less than about 200 cps;

(c) dissolving about 0.01 to about 0.5 weight percent of a copolymer of styrene/vinylpyridine in an organic solvent t form a second solution, said copolymer of styrene/vinylpyridine having about 0.5 to 50.0 weight percent of vinylpyridine, a viscosity of said second solution being less than about 200 cps;

(d) mixing together said first solution and said second solution to form in solution a water insoluble interpolymer complex of said neutralized sulfonated polymer and said copolymer of styrene/vinylpyridine, said first solution

and said second solution being mixed in a molar ratio sufficient that the molar ratio of the sulfonate groups of said neutralized sulfonated polymer to the vinyl pyridine groups of said copolymer of styrene/vinylpyridine in said interpolymer complex is about 0.1 to about 20;

(e) adding with mixing about 5 to about 500 volume percent water to said solution of such water insoluble interpolymer complex, said water being immiscible with said solution of said water insoluble interpolymer complex, said polar cosolvent and said water insoluble interpolymer complex transferring from said organic liquid and said organic solvent to said water, causing the viscosity of said water to increase to at least 50 cps, said polar cosolvent being selected from the group consisting of water soluble alcohols, amines, amides, acetamides and phosphates, as measured at a shear rate of 1.0 sec^{-1}, at a temperature of 25° C. to 75° C.; and

(f) separating by decantation said water containing such polar cosolvent and said water insoluble interpolymer complex from said organic liquid and said aromatic solvent.

4,942,190

THERMOSETTING INSULATING RESIN PASTE

Masakazu Murayama; Ken Kimura; Hiroyuki Nakajima; Yasuko Ohno, and Eiki Zidai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 21, 1988, Ser. No. 262,937

Claims priority, application Japan, Oct. 27, 1987, 62-272670

Int. Cl.[5] C08L *63/02;* **C08K** *3/34, 3/22, 3/08*

U.S. Cl. 523—400 **20 Claims**

1. A thermosetting insulting resin paste comprising:

100 parts by weight of an epoxy resin containing a diglycidyl liquid epoxy resin as a main component;

and based on the parts by weight of said epoxy resin;

0.5 to 10 parts by weight of dicyandiamide as a setting agent;

1 to 15 parts by weight of a phenoxy resin;

0.1 to 8 parts by weight of at least one of 2-phenyl-4-methyl-5-dihydroxymethylimidazole and 2-phenyl-4,5-dihydroxymethylimidazole as a setting accelerator; and

50 to 200 parts by weight of a thermally conductive filler.

4,942,191

ALDEHYDE CONDENSATION RESIN GLUE COMPOSITIONS HAVING PEA AND OTHER LEGUMINOUS FLOUR EXTENDERS

John W. Rogers, Richmond, Canada, assignor to Borden, Inc., Columbus, Ohio

Filed Apr. 25, 1988, Ser. No. 186,052

Int. Cl.[5] C08K *5/00*

U.S. Cl. 524—17 **29 Claims**

1. An adhesive composition comprising at least one curable aldehyde condensation resin and an extender comprising a leguminous flour wherein said leguminous flour comprises at least one pea flour.

4,942,192

RUBBER COMPOSITIONS FOR TIRES

Takuo Yasuda, Tokorozawa; Hitoshi Kondo, Higashimurayama; Yoshiaki Echigo, Uji; Tsuneyuki Ohsawa, Uji, and Yoshiaki Maekawa, Uji, all of Japan, assignors to Bridgestone Corporation, Tokyo and Ltd. Unitika, Hyogo, both of, Japan

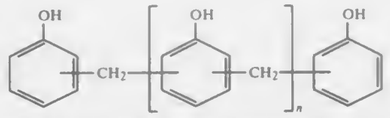
Filed Aug. 26, 1988, Ser. No. 236,954

Claims priority, application Japan, Aug. 26, 1987, 62-210227

Int. Cl.[5] C08L *7/00, 9/00, 9/06, 61/06*

U.S. Cl. 524—44 **5 Claims**

1. A rubber composition for a tire comprising 2 ~ 30 parts by weight of a modified novolak resin having self-curability based on 100 parts by weight of rubber ingredient selected from the group consisting of polyisoprene rubber inclusive of natural rubber, polybutadiene rubber, styrene-butadiene copolymer rubber and a blend thereof, wherein said modified novolak resin is obtained by reacting a novolak resin represented by formula (I):



(I)

wherein n is 2 ~ 6 and a position of methylene bond to phenolic nucleus is an ortho or para site of the phenolic nucleus, with 0.5 to 50 weight % of an aldehyde in an aqueous stabilizer and 0.5 to 20 weight % of a basic catalyst.

4,942,193

TEMPORARY PROTECTIVE COATING COMPOSITIONS

Ellor J. Van Buskirk, and Rudolf Maska, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 11, 1988, Ser. No. 255,286

Int. Cl.[5] C08L *91/06, 91/08*

U.S. Cl. 524—276 **6 Claims**

1. An aqueous protective coating for a metallic substrate, said coating comprises a neutralized acid or base-functional copolymer and a lubricating composition consisting essentially of 5 to 70% by weight of a wax based on the total weight of said copolymer and said wax wherein the copolymer and wax are obtained in combination by free-radical addition polymerization of an acid or a base-functional ethylenically unsaturated monomer in a solvent in the presence of the wax.

4,942,194

RAPID-CRYSTALLIZING POLYPHENYLENE SULPHIDE COMPOSITIONS

Peter Bier, Pittsburgh, Pa.; Klaus Reinking, Wermelskirchen, Fed. Rep. of Germany; Ludwig Bottenbruch, and Erhard Tresper, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1987, Ser. No. 19,016

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607712

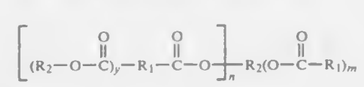
Int. Cl.[5] C08K *5/10, 5/11, 5/12*

U.S. Cl. 524—281 **2 Claims**

1. A process for preparing an injection molded product prepared from highly crystalline, rapid-crystallizing, thermoplastic mixture consisting of

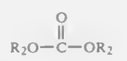
(a) 70–99.5% by weight of a polyphenylene sulphide having a melt viscosity of at least 5 Pas (measured at 306° C. under a shearing stress of 10^3 Pa) and

(b) 0.5–30% by weight, relative to (a) and (b), of a monomeric carboxylic acid ester selected from



(I)

and



(II)

where

R_1 represents identical or different radicals of a linear or branched C_1–C_{25}-aliphatic, cycloaliphatic, C_{10}–C_{24}-aromatic or C_7–C_{24}-araliphatic carboxylic acid,

R_2 represents identical or different radicals of a linear or branched aliphatic, cycloaliphatic, araliphatic or aromatic alcohol having 1 to 20 carbon atoms,

m represents the number 0, 1, 2, 3 or 4,

n represents the number 1, when m represents the number 0,

and represents the number 0, when m represents the number 1, 2, 3 or 4 and

y represents the number 1, 2 or 3,

by the process comprising first mixing the carboxylic acid ester with the polyphenylene sulphide, when the polyphenylene is in a melt, and homogenizing the mixture in the melt, then casting the homogenized mixture into a mould which has a temperature of no more than 120° C., the amount of carboxylic acid ester being chosen in such a way that the injection-moulded polyphenylene sulphide has at least 70% of the crystallinity which is obtained in injection moulding a moulding from unmodified polyphenylene sulphide at mould temperature of at least 130° C.

4,942,195

TOUGHENED RUBBER BASED HOT MELT ADHESIVE COMPOSITIONS FOR BOOKBINDING APPLICATIONS

Thomas P. Flanagan, Green Brook, and Paul Puletti, Glen Gardner, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Aug. 17, 1988, Ser. No. 233,171

Int. Cl.[5] C08J *23/00*

U.S. Cl. 524—294 **10 Claims**

1. A toughened hot melt adhesive composition consisting essentially of:

(a) 10 to 40% by weight of a substantially radial styrene-butadiene block copolymer having a styrene content of at least 35% by weight, a modulus at 300% elongation of at least 4.5 MPa and a solution viscosity less than about 1000 cps;

(b) 20 to 65% by weight of a compatible tackifying resin;

(c) 0.1 to 4% by weight of a stabilizer; and

(d) the remainder of the composition, to total 100%, comprising at least one waxy diluent.

4,942,196

CATHODICALLY DEPOSITABLE ELECTRODEPOSITION PAINTS

Willibald Paar; Rudolf Schipfer, and Johann Gmoser, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed May 12, 1989, Ser. No. 351,072

Claims priority, application Austria, May 13, 1988, 1246/88

Int. Cl.[5] C08L *63/10*

U.S. Cl. 524—327 **8 Claims**

1. A water-dilutable, cathodically depositable electrodeposition paint comprising a binder, in partially or totally neutralized form, containing

(A) 70–99.5% by weight of a cationic film-forming resin, and

(B) 0.5–30% by weight of a reaction product of a tetraalkyl orthotitanate or a titanium acetyl acetonate with a compound containing at least one phenolic hydroxyl group,

with the proviso that the titanium content of the combination, based on the content of binder solids, is from 0.03 to 3.0% by weight.

4,942,197

RUBBER COMPOSITION FOR TIRE TREAD

Yasunori Yoshida, Hyogo; Rinichi Nakayama, and Satoshi Iwama, both of Osaka, all of Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Filed May 31, 1988, Ser. No. 200,370

Claims priority, application Japan, May 28, 1987, 62-134020

Int. Cl.[5] C08K *3/04;* **C08L** *9/06, 15/00;* **B60C** *1/00*

U.S. Cl. 524—496 **5 Claims**

1. Rubber compositions for tire treads including at least 20 parts by weight of styrene-butadiene random copolymer and a carbon black, said styrene-butadiene random copolymer being prepared by using an organic lithium compounds as a polymerization catalyst and being coupled with a mono- or difunctional tin compound as well as a tri- or more functional compound and having a tin content of 300 ppm or more which is bonded to the polymer, said carbon black having the value of N2 SA/IA of 1.1 or more.

4,942,198

AQUEOUS PIGMENTED TWO-COMPONENT LACQUERS FOR SINGLE-LAYERED COATING OF FINISH FILMS AND CONTINUOUS EDGES

Karl-heinz Dickerhof, Drensteinfurt, and Gunther Schwarz, Munster, both of Fed. Rep. of Germany, assignors to Basf Lacke & Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP87/00148, § 371 Date Sep. 27, 1989, § 102(e) Date Sep. 27, 1989, PCT Pub. No. WO87/05921, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 13, 1987, Ser. No. 275,083

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610764

Int. Cl.[5] C08L *61/04*

U.S. Cl. 524—510 **18 Claims**

1. An aqueous two-component lacquer for single-layered coating of finish films and continuous edges, in which the first component (component (A)) contains 0.1 to 15% by weight based on the total weight of component (A), of a blocked acid as a potential hardening catalyst and 10 to 90% by weight based on the total weight of component (A), of an aqueous dispersion of a self-crosslinking polyacrylate, in which the polyacrylate contains, as the groups which facilitate self crosslinking, acid amide derivative groups having the general structural formula —CO—N—(R^1)—CH(R^2)—OR^3, in which

R^1 = an H atom or a —CH(R^2)—OR^3 grouping,

R^2 = an H atom or a —COOR^4 group,

R^3 = an H atom or a hydrocarbon radical containing 1 to 10 C atoms, and

R^4 = an alkyl radical with 1 to 5 C atoms,

and the second component (component (B)) contains 20 to 90% by weight based on the total weight of component (B), of a melamine resin dispersed or dissolved in an aqueous medium or of a melamine/urea resin mixture dispersed or dissolved in an aqueous medium, said components (A) and (B) being mixed before application in a ratio such that 0.4 to 1.0 part by weight of melamine resin or 0.4 to 1.5 parts by weight of melamine/urea resin mixture are present per part by weight of self-crosslinking polyacrylate resin.

4,942,199

METHOD OF SEALING BY INJECTING A MIXTURE BASED ON ACRYLAMIDE AND THE CORRESPONDING MIXTURE

Claude Gosselin, 18 Rue de Bousbecque, 59126 Linselles, France

Filed Apr. 20, 1989, Ser. No. 340,878

Claims priority, application France, Apr. 29, 1988, 88 06075

Int. Cl.[5] C08K *5/29*

U.S. Cl. 524—724 **4 Claims**

1. A kit for sealing by injection comprising a first aqueous solution based on acrylamide, methylenebisacrylamide, and triethanolamide glycol and a second aqueous solution of a polymerization trigger, wherein at least one of the said solutions contains a color indicator which has a given color in the first aqueous solution and a different color in the second aqueous solution, said color indicator having a color changeover zone which corresponds to the optimum respective quantities of the two aqueous solutions for the polymerization reaction, the respective quantities of the two solutions being such that the obtained mixture takes up the color corresponding to the color of the indicator in the first aqueous solution.

4,942,200

POLYAMIDE-POLYARYLATE COMPOSITION CONTAINING ELASTOMERIC MODIFIER AND EPOXY-FUNCTIONAL COPOLYMER

Edmund A. Flexman, and James J. Sosnowski, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 52,335, May 21, 1987, abandoned. This application Mar. 9, 1988, Ser. No. 165,932

Int. Cl.[5] C08L *67/02, 77/02*

U.S. Cl. 525—66 **21 Claims**

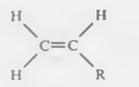
1. A polyamide/polyarylate composition consisting essentially of:

(a) 25–80 weight percent of at least one polyamide resin,

(b) 10–70 weight percent of at least one polyarylate resin,

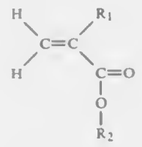
(c) 0.5–30 weight percent of at least one elastomeric modifier which is a graft polymer consisting essentially of at least one monomer containing a functional acid group and at least one substantially saturated copolymer of ethylene and C_3–C_8 alpha-olefins, and

(d) 0.5–7 weight percent of at least one epoxy functional polymer which is a copolymer comprised of at least two of the following monomers:



(a)

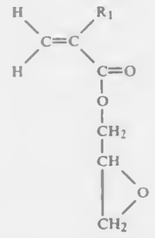
R = H, lower alkyl, phenyl



(b)

R_1 = H, lower alkyl

R_2 = alkyl of 1–8 carbons



(c)

R_1 = H, lower alkyl

where the monomers of formula (a) comprise 50–99 weight percent of the copolymer, the monomers of formula (b) comprise 0–40 weight percent of the copolymer, and the monomer of formula (c) comprise 1–10 weight percent of the copolymer, wherein the epoxy functional polymer and the polyarylate are blended with each other before either the epoxy functional polymer of the polyarylate are blended with either the polyamide or the elastomeric modifier.

4,942,201

ADHESIVE FOR LOW TEMPERATURE APPLICATIONS

Paul C. Briggs, Charlestown, and Donald E. Goslewski, Peabody, both of Mass., assignors to Illinois Tool Works, Inc., Chicago, Ill.

Filed Aug. 29, 1988, Ser. No. 238,302

Int. Cl.[5] C09J *153/02, 151/04*

U.S. Cl. 525—71 **6 Claims**

1. An adhesive composition comprising:

(a) about 55 to about 75 weight percent methyl methacrylate;

(b) 0 to about 15 weight percent methacrylic acid;

(c) about 5 to about 20 weight percent polychloroprene which is soluble in methyl methacrylate and which has a Tg below about −25° C.; and

(d) about 10 to about 30 weight percent of a core-shell graft copolymer which has a butadiene-styrene core and a methyl methacrylate shell and which swells in the monomer but does not dissolve therein, wherein said weight percents are based on the total weight of (a), (b), (c) and (d).

3. An adhesive composition comprising:

(a) about 55 to about 75 weight percent methyl methacrylate;

(b) 0 to about 15 weight percent methacrylic acid;

(c) about 5 to about 20 weight percent nitrile rubber which is soluble in methyl methacrylate and which has a Tg below about −25° C.; and

(d) about 10 to about 30 weight percent of a core-shell graft copolymer which has a butadiene-styrene core and a methyl methacrylate shell and which swells in the monomer but does not dissolve therein, wherein said weight percents are based on the total weight of (a), (b), (c) and (d).

5. An adhesive composition comprising:

(a) about 55 to about 75 weight percent methyl methacrylate;

(b) 0 to about 15 weight percent methacrylic acid;

(c) about 5 to about 20 weight percent of a block copolymer of butadiene or isoprene and styrene which is soluble in methyl methacrylate and which has a Tg below about −25° C.; and

(d) about 10 to about 30 weight percent of a core-shell graft copolymer which has a butadiene-styrene core and a methyl methacrylate shell and which swells in the monomer but does not dissolve therein, wherein said weight percents are based on the total weight of (a), (b), (c) an (d).

4,942,202

RUBBER COMPOSITION AND VULCANIZED RUBBER PRODUCT

Yoshiaki Zama; Itsuki Umeda; Yasuhiko Takemura; Masaaki Takashima, all of Tokyo; Yuichi Funabashi, Ohta; Junichiro Watanabe, Ohta; Kiyoshi Takeda, Ohta, and Hiromichi Yoshida, Ohta, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Toshiba Silicon Co., Ltd., both of Tokyo, Japan

Filed Oct. 28, 1988, Ser. No. 263,882

Claims priority, application Japan, Oct. 30, 1987, 62-273470; Jul. 29, 1988, 63-188327

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—104 **12 Claims**

1. A rubber composition that is prepared by reacting an organic peroxide, under shear deformation, with

3–70 parts by weight of silicone rubber (I) having the formula:

$$R_aSiO_{\frac{4-a}{2}}$$

wherein R is a substituted or unsubstituted monovalent hydrocarbon group, with 0.02–10 mol % of R being occupied by a vinyl group, a is a number ranging from 1.900–2.004 with the silicone rubber having a polymerization degree of 500–10,000;

30–97 parts by weight of a saturated elastomer (II) that does not have sites for crosslinking with an organic peroxide, and therefore substantially fails to be crosslinked even if the silicone rubber (I) is crosslinked with the organic peroxide; and

0–20 parts by weight of another elastomer (III) that is co-crosslinkable with component (I) in the presence of an organic peroxide and which is also co-crosslinkable or highly miscible with component (II), the sum of (I)+(II)+(III) being 100 parts by weight of the composition.

4,942,203

POLYMER COMPOSITIONS

John N. Conti-Ramsden, Wellesley, Mass.; Robert A. Head, Upton; Richard L. Powell, Tarporley, and Brian D. Young, Winsford, all of England, assignors to Imperial Chemical Industries PlC, London, England

Filed Jul. 11, 1988, Ser. No. 217,226

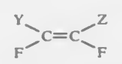
Claims priority, application United Kingdom, Jul. 9, 1987, 8716198

Int. Cl.[5] C08L *71/00, 27/12;* **C08F** *232/02*

U.S. Cl. 525—185 **7 Claims**

1. A polymer composition comprising:

(1) a polyether polyol which is a product obtained by the free radical addition of a fluoro-olefin of the general formula:



wherein Y represents F or fluoroalkyl and Z represents Cl or $F(CF_2)_m$—

wherein m is an integer from 0 to 10 or Y and Z together form a $(CF_2)_p$— chain wherein p represents an integer from 2 to 4, to a polytetramethylene glycol having a molecular weight is the range 162 to 5000 and

(2) at least one acrylic polymer.

4,942,204

AMPHIPHILIC NETWORKS

Joseph P. Kennedy, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Filed Aug. 15, 1988, Ser. No. 232,444

Int. Cl.[5] C08F *255/08*

U.S. Cl. 525—293 **9 Claims**

1. An amphiphilic copolymer network swellable in water or n-heptane but insoluble in either, composed of a polymeric product of reaction of an acrylate or methacrylsyr of dialkyl amino alkyl with a hydrophobic bifunctional acryloyl or methacryloyl capped polyolefin.

4,942,205

ALPHA-FLUOROACRYLIC ACID POLYMER AND ITS USE

Akira Ohmori, Ibaraki, and Takashi Yasuhara, Settsu, both of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Division of Ser. No. 152,296, Feb. 4, 1988, Pat. No. 4,871,820. This application Jun. 6, 1989, Ser. No. 362,041

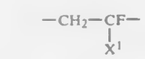
Claims priority, application Japan, Feb. 17, 1987, 62-35401

Int. Cl.[5] C08F *14/18*

U.S. Cl. 525—326.2 **1 Claim**

1. A pervaporation membrane made of an α-fluoroacrylic acid polymer comprising:

(1) about 5 to about 100% by weight of a structural unit represented by the formula

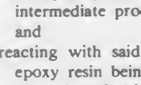


wherein X^1 is (i) carboxyl group optionally converted to alkali metal salt, calcium salt, magnesium salt, zinc salt, iron salt, nickel salt, mercury salt, copper salt, cadmium salt, ammonium salt or C_1–C_{20} alkyl group-containing primary or tertiary amine salt, or (ii) a group —$CONR^4R^5$ (wherein R^4 is hydrogen or C_1–C_{20} alkyl group and R^5 is hydrogen, C_1–C_{20} hydroxyalkyl group, C_1–C_{20} alkyl group containing sulfone group or carboxyl group whereby both could be converted to alkali metal salt, or a group —$R^7NHR^8 \cdot HY^2$);

(2) 0 to about 95% by weight of a structural unit represented by the formula

wherein X^2 is hydrogen, fluorine or methyl and X^3 is C_1–C_{10} alkyl group or C_2–C_{10} fluoroalkyl group (provided that the group could contain 1 to 3 oxygen atoms in the carbon atom chain); and

(3) 0 to about 95% by weight of a structural unit represented by the formula



4,942,206

BLENDS AND COPOLYMERS OF POLYETHERIMIDE AND FUNCTIONALIZED POLYPHENYLENE ETHER

Dwain M. White, Schenectady; Laura A. Socha, Troy, both of N.Y., and Roelof Van Der Meer, AZ Bergan op Zoom, Netherlands, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 21, 1988, Ser. No. 209,447

Claims priority, application Netherlands, Jul. 6, 1987, 8701585

Int. Cl.[5] C08L *71/12*

U.S. Cl. 525—397 **6 Claims**

1. A polyphenylene oxide-polyetherimide copolymer comprising anhydride-functionalized polyphenylene oxide and amine-terminated polyetherimide.

4,942,207

PROCESS FOR THE PREPARATION OF MODIFIED RESIN USEFUL AS A LOW-STRESS SEMICONDUCTOR ENCAPSULANT AND COMPOSITION FORMED THEREFROM

Jung D. Lee; Chang J. Yoo, and Moon Y. Lee, all of Suwon, Rep. of Korea, assignors to Korea Chemical Co., Ltd., Kyungsangnam, Rep. of Korea

Continuation of Ser. No. 160,347, Feb. 25, 1988, abandoned. This application Jul. 24, 1989, Ser. No. 384,093

Claims priority, application Rep. of Korea, Oct. 31, 1987, 87-12192

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—476 **13 Claims**

1. A process for the preparation of a modified resin useful as a semiconductor encapsulant, which comprises the steps of:

reacting in a water medium a silicone oil or a silicone resin having at least two silanol groups or hydrolyzable alkoxy groups with a silane coupling agent having at least two hydrolyzable alkoxy groups to form an aqueous suspension of a reactive intermediate product,

azeotropically distilling said suspension to form a distilled intermediate product after removing water or alcohol, and

reacting with said distilled intermediate product (1) an epoxy resin being a chemical selected from the group consisting of a bisphenol A epoxy resin, a phenol novolac epoxy resin, and a cresol novolac epoxy resin or (2) a phenol resin being a chemical selected from the group consisting of a novolac phenol resin and a cresol novolac phenol resin to produce an addition product comprising insoluble and infusible spherical particles in a matrix.

VOL 1116 ISS 3 JL 17 1990 UMI

4,942,208

POLYACETAL LIGHTER BODY RESIN

Alex S. Forschirm, Parsippany, and Jon H. Davies, Chatham, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

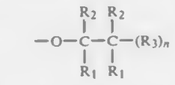
Continuation-in-part of Ser. No. 878,919, Jun. 26, 1986, abandoned. This application Sep. 7, 1988, Ser. No. 241,389

Int. Cl.[5] C08L *59/00, 61/00;* **F23Q** *2/02*

U.S. Cl. 525—414 **15 Claims**

1. A molding composition comprising a blend of two oxymethylene copolymers, said blend comprising 50 to 85% by weight of an oxymethylene copolymer having a melt index of 27.0 grams/10 minutes and from about 15 to 50 wt. % of an oxymethylene copolymer having a melt index of 9.0 grams/10 minutes,

each of said copolymers comprising a majority of recurring —OCH_2— groups interspersed with a minor amount of groups of the formula:



wherein each R_1 and R_2 is selected from the group consisting of hydrogen, lower alkyl and halogen-substituted lower alkyl radicals, each R_3 is selected from the group consisting of methylene, oxymethylene, lower alkyl and haloalkyl-substituted methylene, and lower alkyl and haloalkyl-substituted oxymethylene radicals, and n is an integer from zero to three inclusive.

4,942,209

ANIONIC POLYMERIZATION IN HIGH VISCOSITY DISPERSING MEDIUM TO FORM MICROPARTICLES WITH NARROW SIZE DISTRIBUTION

Binnur Z. Gunesin, New York, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 134,731, Dec. 18, 1987, abandoned. This application Feb. 14, 1989, Ser. No. 311,003

Int. Cl.[5] C08F *2/14, 4/48*

U.S. Cl. 526—173 **20 Claims**

1. A process for the polymerization of an anionically polymerizable vinyl aromatic monomer to obtain a particle size distribution(Dw/Dn) or 1.2 or less by conducting the polymerization at a temperature of 0° to 25° C. in the presence of an anionic polymerization catalyst in a dispersing medium having a viscosity of at least about 2.0 cp at 20° C. which is not a solvent for the polymerized monomer, said dispersing medium containing a dispersing agent which is an A-B diblock copolymer wherein the A block is styrene and the B block is butadiene, isoprene or hydrogenated isoprene.

4,942,210

BRANCHED ISOOLEFIN POLYMER PREPARED WITH ADAMANTANE CATALYST SYSTEM

Irving Kuntz, Linden, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 826,244, Feb. 5, 1986, Pat. No. 4,711,866. This application Aug. 24, 1987, Ser. No. 88,251

Int. Cl.[5] C08F *4/14, 10/10, 36/08*

U.S. Cl. 526—348.7 **7 Claims**

1. An isoolefin polymer having the structural formula:

$$AD—M)_n$$

wherein AD represents an adamantyl nucleus, M is an isoolefin polymer moiety and n is an integer from 2 to 4, wherein said polymer is prepared using a catalyst system comprising a bromo- or chloro- adamantane and a Lewis acid.

4,942,211

ORGANOPOLYSILOXANE COMPOSITIONS WHICH CAN BE CROSSLINKED TO FORM ELASTOMERS WITH THE ELIMINATION OF ALCOHOLS

Oswin Sommer, Burghausen; Norman Dorsch, Post Burghausen; Erhard Bosch, Burgkirchen, and Alfred Kurz, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 6, 1989, Ser. No. 293,909

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1988, 3801389

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—14 **11 Claims**

1. A process for stabilizing an organopolysiloxane composition which can be crosslinked at room temperature with the elimination of an alcohol, which comprises adding a salt of a metal with a branched-chain carboxylic acid having from 5 to 15 carbon atoms, in which the metal is selected from the group consisting of magnesium, calcium, barium, strontium and zinc, to an organopolysiloxane having R' groups and SiC-bonded alkyl radicals which are substituted with radicals selected from the group consisting of amino, mercapto, acryloxy, methacryloxy, epoxy, allyl and cyclohexenyl groups linked to the terminal silicon atoms, where R' is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 10 carbon atoms and monovalent hydrocarbon radicals having from 1 to 10 carbon atoms which are substituted by C_1 to C_3 alkoxy groups.

4,942,212

POLYURETHANE RESIN AND HEAT-SENSITIVE RECORDING MEDIUM

Kazuyuki Hanada, Washinomiyo; Kohichi Kuroda, Tokyo; Iwao Misaizu, Ageo; Masashi Kashimura, Tokyo; Tomoko Goto, Kawaguchi, and Katsumi Kuriyama, Koshigaya, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd. and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan

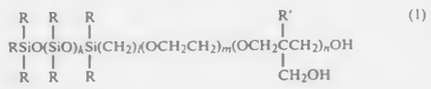
Filed Dec. 6, 1988, Ser. No. 280,583

Claims priority, application Japan, Jan. 20, 1988, 63-8234

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—28 **10 Claims**

1. A polyurethane resin derived from a polyol component and a polyisocyanate component, wherein at least a portion of the polyol component is a siloxane polyol component having the formula (1) or (2) or both:



(1)



(2)

wherein R is an alkyl group, R' is hydrogen or a C_1–C_5 alkyl group, k, l and m are integers of 1–250, 0–5 and 0–15, respectively, and n is an integer of 1–3 in formula (1) and an integer of 2–3 in formula (2), said siloxane polyol component being present in an amount sufficient to provide said polyurethane resin with tack-free and anti-blocking properties, while retaining resin flexibility.

4,942,213

ADDITION COMPOUNDS USEFUL AS DISPERSING AGENTS AND DISPERSION STABILIZERS, PROCESS FOR PRODUCING THEM, THEIR USE AND SOLIDS COATED THEREWITH

Karl-Heinz Haubennestel, and Wolfgang Pritschins, both of Wesel, Fed. Rep. of Germany, assignors to BYK-Chemie GmbH, Wesel, Fed. Rep. of Germany

Filed Nov. 30, 1988, Ser. No. 278,112

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1987, 3741182

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.[5] C08G *18/28*

U.S. Cl. 528—28 **28 Claims**

1. An addition compound or salt thereof useful as a dispersing agent or dispersion stabilizer obtained by

(a) reacting a polyisocyanate having an average functionality of 2.5 to 10 with a monohydroxy compound of formula I

$$Y\text{-}OH \qquad I$$

in which Y represents

(i) an aliphatic or cycloaliphatic hydrocarbon group having 8 to 30 carbon atoms in which hydrogen atoms may be partly replaced by halogen or aryl substituents, or

(ii) an aliphatic, cycloaliphatic or aromatic group containing at least one —O— or —COO— group, having an average molecular weight M_n of 200 to 10,000, and in which hydrogen atoms may be partly replaced by halogen,

in an amount sufficient to react 10 to 70% of the isocyanate groups originally present in the isocyanate;

(b) reacting with a compound of formula II

$$G\text{-}(E)_n \qquad II$$

in which

E represents at least one of —OH, $—NH_2$ and —NHR in which R is an alkyl group having 1 to 4 carbon atoms,

n represents 2 or 3, and

G represents an aliphatic, cycloaliphatic and/or aromatic group containing at least 2 carbon atoms, having an average molecular weight M_n of not more than 3000, and which may contain at least one group selected from the group consisting of —O—, —COO—, —CONH—, —S— and $—SO_2—$,

in an amount sufficient to react 1 to 50% of the isocyanate groups originally present in the isocyanate, and to react a total of 20 to 85% of the isocyanate groups originally present in the polyisocyanate in stages (a) and (b); and

(c) reacting with a compound of formula III

$$Z—(CH_2)_p—Q \qquad III$$

in which

Q represents —OH, —SH, $—NH_2$ or —NHR in which R is an alkyl group having 1 to 4 carbon atoms,

Z represents an aliphatic group having 2 to 10 C atoms and carrying at least one tertiary amino group or represents a heterocyclic group having at least one basic ring nitrogen atom not bonded to a hydrogen atom, and

p is 0 when Z is an aliphatic group or an integer from 0 to 10 when Z is a heterocyclic group,

in an amount sufficient to provide at least one molecule of formula III for each isocyanate group in the polyisocyanate unreacted after stages (a) and (b);

wherein

at least 1 mole % of the compound of formula I defined above is replaced by a compound of formula Ia

$$Y'—OH \qquad Ia$$

in which Y' represents an aliphatic, cycloaliphatic or aromatic group having an average molecular weight M_n of 200 to 10,000 in which hydrogen atoms may be partly replaced by halogen and containing at least one —NHCOO— group, or

at least 1 mole % of the compound of formula I defined above is replaced by a monohydroxyfunctional polyacrylic or polymethacrylic acid ester or a copolymer thereof with up to 50 mole % relative to monomer units of a vinyl comonomer, having an average molecular weight M_n of not more than 10,000, or

at least 1 mole % of the compound of formula II defined above is replaced by a compound of formula IIa

$$G'—(OH)_n \qquad IIa$$

in which G' represents an aliphatic, cycloaliphatic or aromatic group containing at least 2 carbon atoms, having an average molecular weight M_n of not more than 3000, and containing at least one —NHCOO— or $—Si(CH_3)_2O—$ group, and n represents a number from 2 to 3.

4,942,214

FLEXIBLE BREATHABLE POLYURETHANE COATINGS AND FILMS, AND THE PREPOLYMERS FROM WHICH THEY ARE MADE

Dilip J. Sakhpara, Newark, Del., assignor to W. L. Gore & Assoc. Inc., Newark, Del.

Filed Jun. 29, 1988, Ser. No. 213,059

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—59 **7 Claims**

1. Low viscosity, low freezing point isocyanate-capped prepolymers for making breathable coatings and films comprising the reaction product of:

(a) a difunctional poly(oxyalkylene) glycol with a molecular weight between 1000 and 4000, said difunctional poly(oxyalkylene) glycol being a random copolymer of ethylene oxide and propylene oxide added to ethylene glycol, propylene glycol or 1, 4-butanediol; the oxyethylene content of the difunctional poly(oxyalkylene) glycol being between 60% and 95% by weight, and

(b) a polyisocyanate with a functionality between 2.0 and 2.2, said polyisocyanate being selected from the class consisting of diphenyl methane diisocyanate and dicyclohexyl methane diisocyanate.

4,942,215

THERMOSETTING LIQUID COMPOSITION CONTAINING A POLYEPOXIDE AND A TRICARBOXYLIC ISOCYANURATE

Alberto Greco, Dresano, and Luigi Raisa, Induno Olona, both of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Filed Nov. 18, 1988, Ser. No. 273,358

Claims priority, application Italy, Nov. 27, 1987, 22788 A/87

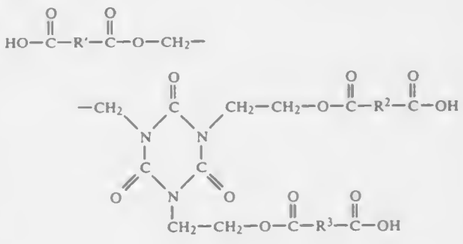
Int. Cl.[5] C08G *59/42*

U.S. Cl. 528—114 **9 Claims**

1. A thermosetting liquid molding composition comprising:

(a) a liquid polyepoxide containing at least two epoxide groups per molecule;

(b) a liquid tricarboxylic acid having the formula



where: R^1, R^2 and R^3, which can be identical or different, independently are selected from the group consisting of an alkylene group containing from 1 to 14 carbon atoms; an alkenyl group containing from 2 to 14 carbon atoms; an unsubstituted monocyclic or bicyclic alkylene or alkenyl group having from 6 to 10 carbon atoms in the ring; a monocyclic or bicyclic alkylene or alkenyl group having from 6 to 10 carbons in the ring substituted with at least one alkyl group; a phenylene group; or a phenylene group substituted with at least one halogen atom; and

(c) a liquid anhydride of a dicarboxylic acid selected from methyltetrahydrophthalic anhydride, methylnadic anhydride and dodecenylsuccinic anhydride; wherein for each epoxide equivalent of component (a) said composition contains from 0.04 to 0.09 equivalents of said tricarboxylic acid (b) and from 0.48 to 0.82 moles of said anhydride (c).

4,942,216

POLYARYL ETHER KETONES HAVING IMPROVED PROCESSIBILITY

Gerhard Heinz, Weisenheim; Robert R. Lieder, Limburgerhof, and Juergen Koch, Neubofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 10, 1989, Ser. No. 308,525

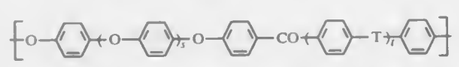
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804159

Int. Cl.[5] **C08G** *8/02, 14/00*

U.S. Cl. 528—125 **8 Claims**

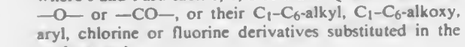
1. A polyaryl ether ketone essentially consisting of

(A) 55–95 mol % of repeating units of the formula I



where s and t are each 0, 1, 2 or 3 and Q and T are each —O— or —CO—, or their C_1–C_6-alkyl, C_1–C_6-alkoxy, aryl, chlorine or fluorine derivatives substituted in the nucleus, and

(B) 5–45 mol % of repeating units of the formula II



where Ar^1, Ar^2, Ar^3, Ar^4 and Ar^5 independently of one another are each a phenylene, biphenylene or naphthylene group or a C_1–C_6-alkyl, C_1–C_6-alkoxy, aryl, chlorine or fluorine derivative of this group, Q′ and T′ are each —O— or —CO— and s′ and t′ are each 0, 1, 2 or 3, with the proviso that one or more of the groups Ar^1, Ar^2, Ar^3, Ar^4 and Ar^5 are a biphenylene or naphthylene group or a C_1–C_6-alkyl, C_1–C_6-alkoxy, aryl, chlorine or fluorine derivative of such a group and, if Ar^1 is a biphenylene group, all parameters s, t, s′ and t′ are not simultaneously 0.

4,942,217

NOVEL HEAT-HARDENABLE BINDERS PHENOL-FORMALDEHYDE+HMT+ACID

Arno Gardziella, Witten-Rudinghausen, and Alois Kwasniok, Iserlohn, both of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Oct. 26, 1988, Ser. No. 263,066

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1987, 3738902

Int. Cl.[5] **C08G** *8/10, 14/04;* **C08F** *6/22;* **C08K** *5/42*

U.S. Cl. 528—129 **21 Claims**

1. A heat-hardenable binder comprising (a) a phenolic resin of a phenolic compound and formaldehyde in a molar ratio of 1:1 to 1:2 and (b) an effective amount of a hardener mixture of hexamethylenetetramine and an acidic latent hardening agent.

4,942,218

PROCESS FOR THE PREPARATION OF POLYMERS HAVING AN INORGANIC BACKBONE

William A. Sanderson, Menlo Park, and David L. King, Mountain View, both of Calif., assignors to Catalytica Associates, Inc., Mountain View, Calif.

Filed May 23, 1988, Ser. No. 197,459

Int. Cl.[5] **C08G** *67/00, 79/04*

U.S. Cl. 528—381 **24 Claims**

1. A method of making an polymer which comprises:

(a) reacting, in the absence of water, an organic compound having the general formula R—H wherein R represents an organo radical having at least one unsaturated carbon-carbon bond and H is covalently bonded to one of said carbons, with PX_3, wherein X is a halogen atom, further provided that R is selected from the group consisting of hydrocarbyl radicals and hetero-atom-containing hydrocarbyl radicals, wherein the heteroatom substituents do not interfere with the di halo-phosphination reaction of step (a), and a Zr compound, to yield a reaction product and (b) oxidizing and (c) hydrolyzing the reaction product of step (a) to yield a polymer represented by the general formula $Zr(O_3PR)_n$ wherein n varies from about 1 to about 2.5.

4,942,219

VISCOELASTIC RESIN FOR VIBRATION DAMPING MATERIAL AND COMPOSITION CONTAINING THE SAME

Takeshi Yatsuka; Seiji Yamazoe; Hiroshi Hirakouchi; Yutaka Mizumura, all of Osaka; Hiroshi Endo, and Nobuo Kadowaki, both of Sagamihara, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed Oct. 20, 1988, Ser. No. 260,303

Claims priority, application Japan, Oct. 20, 1987, 62-264819

Int. Cl.[5] **C08G** *63/02*

U.S. Cl. 528—272 **15 Claims**

1. In a vibration damping material of composits laminate structure containing a resin middle layer, the improvement which comprises inclusion of an amorphous block copolyester resin as said resin middle layer, wherein properties of the amorphous block copolyester resin include no clear melting peak appearing in measurement by differential scanning calorimetry of the amorphous block copolyester resin at a temperature rising rate of 10° C./minute in a nitrogen atmosphere, and a reduced viscosity not less than 0.4 dl/g.

4,942,220

PROCESS FOR PREPARING POLY-AMIDE FROM NITRILE AND AMINE WITH CATALYTIC COMPLEX

Shunichi Murahashi, Ikeda, and Takeshi Naota, Kawanishi, both of Japan, assignors to Osaka University, Suita, Japan

Division of Ser. No. 838,199, Mar. 7, 1986, Pat. No. 4,801,748, which is a continuation-in-part of Ser. No. 828,245, Feb. 11, 1986, abandoned. This application Jun. 19, 1987, Ser. No. 67,414

Claims priority, application Japan, Mar. 8, 1985, 60-44939

Int. Cl.[5] **C08G** *69/28*

U.S. Cl. 528—336 **11 Claims**

1. A process for preparing a polyamide from a carbonitrile and an amine which comprises reacting by heating a mixture of a carbonitrile, an equivalent amount of an amine, which amine is a primary amine or a secondary amine, and at least a stoichiometric amount of water in the presence of an effective amount of a catalyst,

wherein said carbonitrile is a dinitrile represented by the general formula:

$$R^4(CN)_2,$$

where R^4 denotes a bivalent residue of:

a. a saturated aliphatic hydrocarbon;
b. an unsaturated aliphatic hydrocarbon;
c. a group derived from a saturated aliphatic hydrocarbon or an unsaturated aliphatic hydrocarbon by substituting an aromatic group, a heterocyclic ring -containing group, or a heteroatom-containing group for one hydrogen atom thereof;
d. an alicyclic hydrocarbon;
e. an aromatic hydrocarbon;
f. a heterocyclic compound; or
g. a group consisting of two aliphatic hydrocarbon moieties bridged by an aromatic group, heterocyclic group, or a heteroatom,

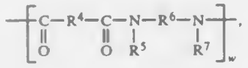
wherein said amine is a diamine represented by the general formula:

$$HN(R^5)—R^6—(R^7)NH,$$

where R^5 and R^7 are the same or different and, respectively, denote a hydrogen atom or a monovalent residue of:

a. a saturated aliphatic hydrocarbon;
b. an unsaturated aliphatic hydrocarbon;
c. a group derived from a saturated aliphatic hydrocarbon or an unsaturated aliphatic hydrocarbon by substituting an aromatic group for one hydrogen atom thereof;
d. an alicyclic hydrocarbon;
e. an aromatic hydrocarbon;
f. a heterocyclic compound; or
g. an aliphatic hydrocarbon having a heterocyclic ring-containing substituent or a heteroatom-containing substituent, and where R^6 denotes a bivalent residue of:
a. a saturated aliphatic hydrocarbon;
b. an unsaturated aliphatic hydrocarbon;
c. a group derived from a saturated aliphatic hydrocarbon or an unsaturated aliphatic hydrocarbon by substituting an aromatic group, a or heterocyclic ring-containing group, or a heteroatom-containing group for one hydrogen atom thereof;
d. an alicyclic hydrocarbon;
e. an aromatic hydrocarbon;
f. a heterocyclic compound; or
g. a group consisting of two aliphatic hydrocarbon moieties bridged by an aromatic group, a heterocyclic group, or a heteroatom, and

wherein said polyamide has a recurring unit represented by the general formula:



where w is an interger, and

wherein said catalyst is comprised of a complex containing at least one metal selected from the group consisting of ruthenium, rhodium and molybdenum, and at least one group selected from the group consisting of hydride, phosphine, carbonyl, ammonia, and hydroxyl.

4,942,221

PROCESS FOR OBTAINING α-AMINO NITRILES AND THEIR APPLICATIONS TO ORGANIC SYNTHESIS

Gerard Moinet, Orsay, and Thierry Imbert, Noisy le Roi, both of France, assignors to Albert Rolland S.A., Paris, France

PCT No. PCT/FR86/00391, § 371 Date Aug. 4, 1987, § 102(e) Date Aug. 4, 1987, PCT Pub. No. WO87/02980, PCT Pub. Date May 21, 1987

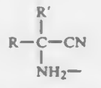
PCT Filed Nov. 19, 1986, Ser. No. 86,731

Claims priority, application France, Nov. 19, 1985, 85 17214

Int. Cl.[5] **C07C** *253/30, 253/08*

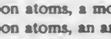
U.S. Cl. 558—408 **8 Claims**

1. A process for obtaining a α-amino nitrile of the formula



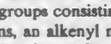
I

wherein R is a substituted or unsubstituted alkyl of 1 to 30 carbon atoms, a mono- or bicyclic aryl, an alkenyl of 2 to 30 carbon atoms, an aryl arylalkyl in which the alkyl moiety has from 1 to 15 carbon atoms, an aryloxy lower alkyl unsubstituted or substituted by one to three substituents on the aryl moiety or a cycloalkyl of 4 to 7 carbon atoms and R′ is hydrogen or an organo selected from the group consisting of unsubstituted or substituted alkyl of 1 to 3 carbon atoms and a mono- or bicyclic aromatic comprising reacting a nitrile selected from the groups consisting of an alkyl nitrile having 1 to 30 carbon atoms, an alkenyl nitrile of 2 to 30 carbon atoms and an aryl nitrile selected from the group consisting of mono-cyclic aryl nitrile and bicyclic aryl nitrile, an arylalkyl nitrile in which the alkyl moiety has from 1 to 15 carbon atoms, an aryloxy lower alkyl nitrile unsubstituted or substituted by one to three substituents on the aryl moiety or a cycloalkyl nitrile of 4 to 7 carbon atoms comprising reacting a compound of formula

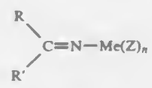


II

wherein R has the above-given meaning with a metallic reducing agent selected from the group consisting of an aluminum hydride, an organo magnesium salt of the formula R′ Mg X wherein R′ is an unsubstituted or substituted alkyl of 1 to 30 carbon atoms or a mono- or bicyclic aryl, an organozinc salt of the formula



wherein R′ is defined as previously given and Hal and X are a halogen atom other than fluorine, organo cadmium salt and organo cooper sale to form a metallic imine of the formula



III

in which R and R′ have the previously-given definitions, Me is a metal atom selected from the group consisting of aluminum, magnesium, zinc, cadmium and copper, Z is lower alkyl or halogen and n is an integer equal to the valence of the metal less one, reacting the latter with a cyaniding agent selected from the group consisting of methylsilyl cyanide, diethylaluminum cyanide, tributylstannicyanide and alkali- or alkaline-earth metal cyanoborohydride, an alkali metal cyanide in the presence of a Crown Ether and hydrocyanic acid in solution in an oxygen-bearing solvent and recovering the corresponding α-amino nitrile of formula I.

4,942,222

METHOD FOR REMOVING ODOR COMPONENTS FROM POLYPHENYLENE ETHER RESINS WITH KETONE

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 6, 1989, Ser. No. 306,132

Int. Cl.[5] **C08G** *65/46*

U.S. Cl. 528—493 **12 Claims**

1. A method for removing odor components from polyphenylene ether resins, comprising extracting a polyphenylene ether resin with a ketone in an amount ranging from about 2 to about 10 millimeters of ketone per gram of polyphenylene ether resin.

4,942,223

PROCESS FOR SEPARATING A POLYMER FROM A SOLUTION CONTAINING THE SAME

Hiroyoshi Takao, Chiba; Yoshio Inoue, Kimitsu, and Hirotami Yamazaki, Ichihara, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Sep. 8, 1983, Ser. No. 530,358

Claims priority, application Japan, Sep. 14, 1982, 59-160515

The portion of the term of this patent subsequent to Oct. 17, 2004, has been disclaimed.

Int. Cl.[5] C08F 6/00; C08G 6/00; C08J 3/00

U.S. Cl. 528—501 **16 Claims**

1. In the step to recover a polymer from a solution containing below 50% the same, a process for separating the solution into the solvent and a more concentrated polymer solution containing not less than 50% by weight of the polymer, which process is characterized by heating the polymer solution at a temperature at which the polymer remains in the thermally stable state; heating a solvent containing none of the polymer at a temperature higher than the heating temperature for the said polymer solution; and joining the thus heated solution and the thus heated solvent, both in liquid state, together for a flash evaporation.

4,942,224

A-ASSOCIATED H-ANTIGENS, MONOCLONAL ANTIBODIES SPECIFIC THERETO AND METHODS FOR EMPLOYING THE SAME IN BLOOD TYPING

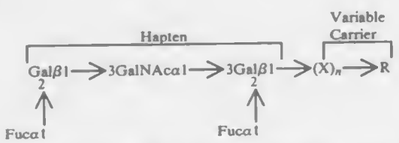
Hearik Clausen, Seattle, Wash., assignor to The Biomembrane Institute, Seattle, Wash.

Division of Ser. No. 2,467, Jan. 12, 1987, Pat. No. 4,857,639. This application Apr. 27, 1989, Ser. No. 343,566

Int. Cl.[5] C08B 37/00; C07H 1/00, 3/00; A61K 37/00

U.S. Cl. 530—387 **24 Claims**

1. A monoclonal antibody having binding specificity for the hapten of the A-associated H-antigen having the following structure:



wherein X is a sugar residue and n=0 or a positive integer and wherein R is a primary amino group containing material selected from the group consisting of a polypeptide, a primary amino group containing lipid or a primary amino group containing support.

4,942,225

PREPARATION OF DIAZO AND AZO COMPOUNDS USING AZIDOFORMAMIDIUM SALTS

Manfred Lorenz, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

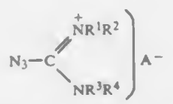
Filed Jun. 20, 1988, Ser. No. 209,254

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1987, 3721851

Int. Cl.[5] C07C 247/04; C09B 27/00; C07D 239/62

U.S. Cl. 534—560 **14 Claims**

1. A process of preparing diazo compounds comprising a transfer of diazo groups to activated methylene compounds comprising reacting an activated methylene compound with a diazo transferring agent, wherein the diazo transferring agent is an azidoformamidinium salt of the formula



in which R^1, R^2, R^3, R^4 denote hydrogen, alkyl, cycloalkyl, aralkyl or wherein R^1+R^2, R^3+R^4 and R^2+R^3 form a 5- or 6-membered ring including the N atom and A^- stands for an anion, said transfer being conducted at a temperature of 0° to 100° C. with from an equimolar amount to an excess amount of the azidoformamidinium salt and in the presence of a solvent suitable for diazo transfer.

12. A process of preparing azo compounds of the formula

$$D—N=N—A \qquad (IV)$$

in which

A denotes the radical of the coupling component and

D denotes the radical of an activated methylene compound, comprising reacting an activated methylene compound with an azidoformamidinium salt to give, by azo group transfer, a diazo compound which is subsequently reacted with a coupling component H—A to give azo compounds of the formula IV.

4,942,226

HALOGENATED PYRIMIDINE NUCLEOSIDES AND THEIR DERIVATIVES

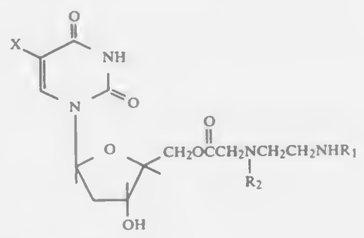
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 29, 1988, Ser. No. 291,714

Int. Cl.[5] C07H 19/073; A61K 31/505, 31/195, 31/215

U.S. Cl. 536—23 **9 Claims**

1. A compound of the formula:



wherein

X is a halogen;

R_1 is hydrogen, a C_1–C_6 alkyl group, or a C_5–C_7 cycloalkyl ethyl group; and

R_2 is hydrogen or a C_1–C_6 alkyl group.

4,942,227

BIFUNCTIONAL MOLECULES HAVING A DNA INTERCALATOR OR DNA GROOVE BINDER LINKED TO ETHYLENE DIAMINE TETRAACETIC ACID, THEIR PREPARATION AND USE TO CLEAVE DNA

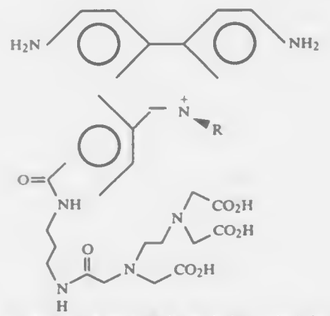
Peter B. Dervan, Pasadena, Calif., and Robert P. Hertzberg, Downingtown, Pa., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 860,604, May 7, 1986, Pat. No. 4,665,184, which is a continuation of Ser. No. 540,914, Oct. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 338,327, Jan. 11, 1982, abandoned. This application Jan. 23, 1987, Ser. No. 6,442

Int. Cl.[5] C07H 21/00

U.S. Cl. 536—27 **8 Claims**

1. The process of cleaving double stranded DNA by contact with a compound having the formula:



wherein the above formula, R is methyl or ethyl, in the presence of effective DNA cleavage promoting amounts of ferrous ion and oxygen.

4,942,228

PRODUCTION OF POLYOL POLYESTERS HAVING REDUCED COLOR CONTENT

Michael S. Gibson, Milford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 6, 1986, Ser. No. 860,285

Int. Cl.[5] C07H 1/00, 13/06; C07C 67/03, 67/60

U.S. Cl. 536—119 **11 Claims**

1. A process for treatment of C_1–C_3 alkyl esters of C_6–C_{22} fatty acids wherein at least 0.1% by weight of the fatty acid moieties contain conjugated or conjugatable sites of unsaturation, said process comprising the steps of:

(A) contacting said C_1–C_3 alkyl esters of fatty acids in a liquid state with an alkoxide base at a temperature of from about 60° C. to about 140° C. for from about 10 minutes to about 120 minutes, the said alkoxide base having the formula $(RO)_nM$, wherein R is an alkyl radical of from 1 to about 5 carbon atoms, M is an alkali metal, an alkaline earth metal or aluminum, and n is 1 when M is alkali metal, 2 when M is alkaline earth metal, and 3 when M is aluminum, and wherein the weight ratio of alkoxide base to ester is at least 0.005:1;

(B) separating undissolved solids from the liquid esters of Step A; and

(C) distilling the liquid esters from Step B and collecting the distilled esters.

6. A process for preparing polyol polyesters of improved color from polyols and C_1–C_3 alkyl esters of C_6–C_{22} fatty acids in which at least 0.1% by weight of the fatty acid moieties in said C_1–C_3 alkyl fatty esters contain conjugated or conjugatable sites of unsaturation, the said process comprising:

1. Pretreating said C_1–C_3 alkyl fatty esters by a process comprising the steps of:

(A) contacting said C_1–C_3 alkyl fatty esters in a liquid state with an alkoxide base at a temperature of from about 60° C. to about 140° C. for from about 10 minutes to about 120 minutes, the said alkoxide base having the formula $(RO)_nM$, wherein R is an alkyl radical of from 1 to about 5 carbon atoms, M is an alkali metal, an alkaline earth metal or aluminum, and n is 1 when M is alkali metal, 2 when M is alkaline earth metal, and 3 when M is aluminum, and wherein the weight ratio of alkoxide base to ester is at least 0.005:1;

(B) separating undissolved solids from the liquid C_1–C_3 alkyl fatty esters of Step A;

(C) distilling the liquid C_1–C_3 alkyl fatty esters from Step B and collecting the distilled esters; and

11. Reacting the distilled C_1–C_3 alkyl fatty esters from I(C) with a polyol in the presence of a basic catalyst and concurrently removing from the reaction mix the C_1–C_3 alcohol formed during the reaction.

4,942,229

PROCESS FOR THE PRODUCTION OF PENICILLANIC ACID COMPOUNDS

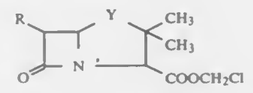
Kazumi Saeki; Masami Hirano; Kunihide Oka; Kazuto Tsukinuki, and Setsuo Oikawa, all of Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Feb. 13, 1989, Ser. No. 310,595

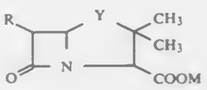
Int. Cl.[5] C07D 499/08

U.S. Cl. 540—310 **10 Claims**

1. A process for the production of a penicillanic acid compound of the formula



wherein R is hydrogen, phenylacetylamino or phenoxyacetylamino and Y is sulfur or sulfonyl, which comprises reacting a compound of the formula



wherein R and Y are as defined above and M is hydrogen or an alkali metal, with bromochloromethane in the presence of a phase transfer catalyst of the formula

$$(R^1)(R^2)(R^3)(R^4)NX$$

wherein R^1, R^2, R^3 and R^4 are the same or different and each is an alkyl or aralkyl group and X is a hydroxide, chloride, bromide or hydrogensulfate ion.

4,942,230

PROCESS FOR PREPARING SYNTHETIC VIRGINIAMYCIN M_1 ANALOGS

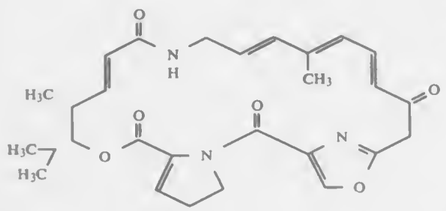
Yiu-kuen T. Lam, Plainsboro, N.J., and Raymond S. Chang, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 208,959, Jun. 17, 1988, abandoned, Division of Ser. No. 934,232, Nov. 21, 1986, Pat. No. 4,772,595. This application Jun. 13, 1989, Ser. No. 365,324

Int. Cl.[5] C07D 498/12

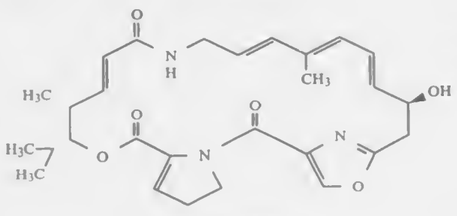
U.S. Cl. 540—456 **2 Claims**

1. A method of converting virginiamycin M_1 to a compound of the formula III:

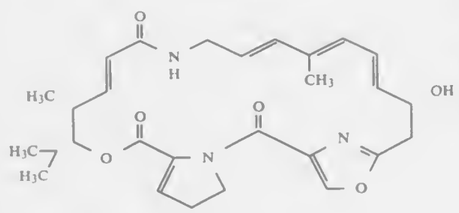


which comprises the steps of:
(a) the addition of about 1 mole equivalent of methanesufonyl chloride to an anhydrous pyridine solution of virginiamycin M_1;
(b) incubation at about 25° C. for about 20 minutes;
(c) removal of the pyridine;
(d) partitioning; and
(e) chromatography.

2. A method of converting the compound of Formula III of claim 1 to the compounds of Formula I:



and Formula II



which comprises the steps of:
(a) the addition of about 1 mole equivalent of sodium borohydride to a methanolic solution of the compound of Formula III of claim 1;
(b) partitioning; and
(c) chromatography.

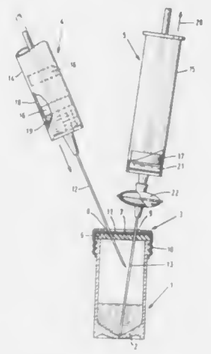
4,942,231

METHOD OF PREPARING A CHLORINATED, BROMINATED, RADIO-BROMINATED, IODINATED AND/OR RADIOIODINATED AROMATIC OR HETEROAROMATIC COMPOUND

John Mertens, Brussels, Belgium, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed May 17, 1985, Ser. No. 735,037
Claims priority, application Belgium, May 24, 1984, 899739; Netherlands, Jul. 5, 1984, 8402138
Int. Cl.[5] C07D *243/14, 33/36;* **C07B** *23/00;* **C07C** *57/58, 87/28*
U.S. Cl. 540—586 **11 Claims**

1. In a method for preparing a chlorinated, brominated, radiobrominated, iodinated or radioiodinated aromatic or heteromatic compound, in which said compound may be optionally substituted with one or more additional substituents, by reacting the corresponding halogenated or diazonium-substituted compound in an acid medium in the presence of copper ions as a catalyst with a water-soluble chloride, bromide, radiobromide, iodide or radioiodide, the improvement comprising



conducting the reaction in the presence of a reducing agent, which is stable in acid medium, in a quantity exceeding the quantity of the catalyst.

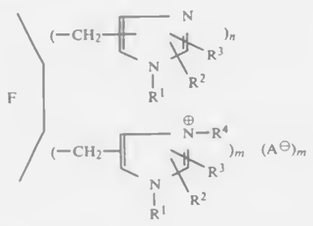
4,942,232

IMIDAZOLYLMETHYLENE-CONTAINING TRIPHENDIOXAZINE DYES

Manfred Ruske, Ludwigshafen, and Manfred Patsch, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

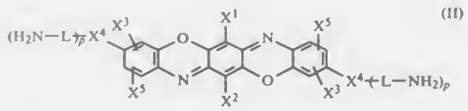
Filed Dec. 2, 1988, Ser. No. 279,202
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1987, 3740978
Int. Cl.[5] C07D *413/10;* **C09B** *57/00*
U.S. Cl. 544—76 **10 Claims**

1. An imidazolylmethylene-containing triphendioxazine dye of the formula I:



(I)

wherein
R^1 is hydrogen, C_1–C_6-alkyl, C_2–C_5-alkenyl or C_2–C_3-hydroxyalkyl,
R^2 and R^3 are identical or different and each is independently of the other hydrogen, C_1–C_6-alkyl or C_2–C_5-alkenyl,
R^4 is hydrogen, C_1–C_6-alkyl or C_2–C_3-hydroxyalkyl,
A^- is one equivalent of an anion,
m is from 0 to 4,
n is from 0 to 4, the sum of m+n being subject to the condition that $1 \leqq (m+n) \leqq 4$, and
F is the (m+n) valent radical of a triphendioxazine chromophore of the formula II:



(II)

wherein
p is 0 or 1,
X^1 and X^2 are identical or different and each is independently of the other hydrogen or chlorine,
X^3 is hydrogen or hydroxysulfonyl,
X^4 is, when p is 0, amino, substituted or unsubstituted benzoylamino, or substituted or unsubstituted phenoxy or, when p is 1, imino or C_1–C_6-alkylimino,
X^5 is chlorine, bromine, methyl, methoxy, sulfamoyl or C_1–C_4-monoalkyl- or -dialkyl-sulfamoyl and
L is C_2–C_5-alkylene,
with the proviso that the number of any sulfo groups present in the radical of the triphendioxazine chromophore is smaller than the number of protonatable nitrogen atoms, quaternizable nitrogen atoms or both.

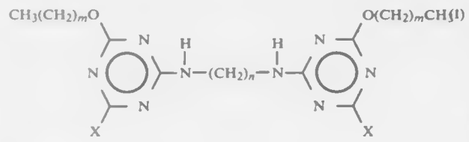
4,942,233

THERMOTROPIC DI-S-TRIAZINIC DERIVATIVES

Roberto Fornasier; Massimo Tornatore, and L. Lowrence Chapoy, all of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 20, 1988, Ser. No. 221,744
Claims priority, application Italy, Jul. 21, 1987, 21369 A/87
Int. Cl.[5] C07D *403/12*
U.S. Cl. 544—212 **3 Claims**

1. A thermotropic di-s-triazinic derivative of the formula:



wherein:
m is zero or an integer of from 1 to 5,
n is an integer of from 5 to 30, and
X is a halogen or a $CH_3(CH_2)_mO$— group.

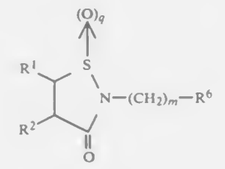
4,942,234

ISOTHIAZOLONE 1,1-DIOXIDE DERIVATIVES WITH PSYCHOTROPIC ACTIVITY

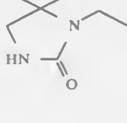
Magid A. Abou-Gharbia, Wilmington, Del.; Guy A. Schiehser, Malvern, and Usha R. Patel, Audobon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 22,197, Mar. 5, 1987, Pat. No. 4,833,249. This application Feb. 28, 1989, Ser. No. 316,888
Int. Cl.[5] C07D *521/00*
U.S. Cl. 544—332 **4 Claims**

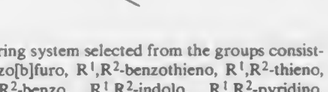
1. A compound having the formula



wherein
R^1 and R^2 taken together represent



where the dotted lines represent optional double bonds;
R^3, R^4 and R^5 are each, independently, hydrogen, lower alkyl, aryl of 6–12 carbon atoms or halo;



wherein R^7 is phenyl, 2-pyridinyl, 2-pyrimidinyl, 3-pyridazinyl or 2-pyrazinyl or any of the foregoing R^7 moieties substituted by lower alkyl, lower alkoxy, halo, cyano, trifluoromethyl or nitro;
X is lower alkylene, vinylene, O or NH;
m is 1–5;
q is 1–2;
and the pharmaceutically acceptable salts thereof.

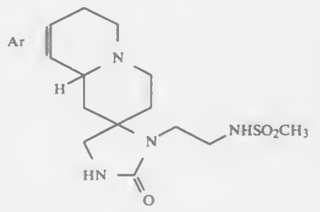
4,942,235

PROCESS FOR CERTAIN (2R-TRANS)HEXAHYDROAROQUINOLIZINES

Ann E. DeCamp, North Plainfield; Ralph P. Volante, East Windsor; Anthony O. King, Colonia, and Ichiro Shinkai, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 16, 1989, Ser. No. 324,138
Int. Cl.[5] C07D *455/03*
U.S. Cl. 546—18 **4 Claims**

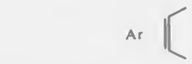
1. A process for facilely producing (2R-trans)-N-[2-(1,3,4,6,7,12b-hexahydro-2'-oxospiro-[2H-aro-[2,3-a]quinolizine-2,4'-imidazolidin]-3'-yl)ethyl]methanesulfonamide having the formula



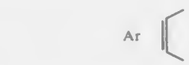
wherein



or is an aromatic ring system selected from the groups consisting of R^1,R^2-benzo[b]furo, R^1,R^2-benzothieno, R^1,R^2-thieno, R^1,R^2-furo, R^1,R^2-benzo, R^1,R^2-indolo, R^1,R^2-pyridino, thiazolo, imidazo, pyrazolo, R^1,R^2-naphtho-, and R^1,R^2 pyrrolo; wherein R^1 and R^2 are independently hydrogen, halo, hydroxy, C_{1-3} alkoxy, lower alkyl, or carboxy, or together are methylenedioxy or C_{3-4} alkylene; and wherein the free bonds of

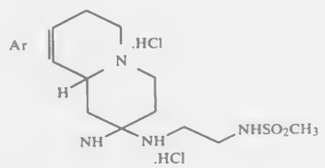


are attached to the quinolozine ring in either configuration of



comprising:

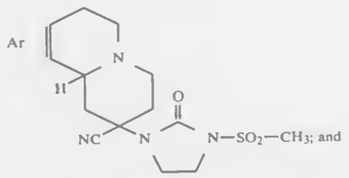
(1) intimately contacting (2R,trans)-N-[2-[2-cyano-(1,3,4,6,7,12b-hexahydro-2H-aro-[2,3-a] quinolizin-2-yl)amino]ethyl]methanesulfonamidebishydrochloride having the formula



wherein



is as above defined, with a substantial molar excess of carbonyldiimidazole in the presence of 1,8-diazabicyclo[5.4.0]undec-7-ene or other hydrogen chloride acceptor at temperatures in the range of from about 15° to 50° C. in an inert organic solvent to obtain (trans)-1,3,4,6,7,12b-hexahydro-2-[3-(methylsulfonyl)-2-oxo-1-imidazolidinyl]-2H-aro-[2,3-a]-quinolizine-2-carbonitrile having the formula



(2) intimately contacting said (trans)-1,3,4,5,7,12b-hexahydro-2-[3-(methylsulfonyl)-2-oxo-1-imidazolidinyl]-2H-aro-[2,3-a]quinolizine-2-carbonitrile with hydrogen in the presence of Raney nickel catalyst and sodium methoxide while maintaining the temperature and pressure at about 50°±1° C. and about 40 psig to obtain (2R-trans)-N-[2-(1,3,4,6,7,12b-hexahydro-2'-oxospiro[2H-aro[2,3-a] quinolizine-2,4'-imidazolidin]-3'-yl)ethyl]-methanesulfonamide.

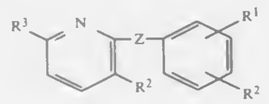
4,942,236

2-ARYL SUBSTITUTED PYRIDYL-CONTAINING PHENYL SULFONAMIDO COMPOUNDS AS ANTIALLERGIC AND ANTIINFLAMMATORY AGENTS

John H. Musser, Malvern; Reinhold H. W. Bender, Valley Forge, and Anthony F. Kreft, III, Trooper, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

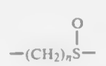
Division of Ser. No. 103,224, Sep. 30, 1987, Pat. No. 4,826,990.
This application Feb. 15, 1989, Ser. No. 311,558
Int. Cl.[5] C07D *213/76, 213/42*
U.S. Cl. 546—334 2 Claims

1. A compound having the formula

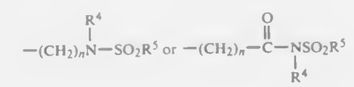


wherein

Z is $-(CH_2)_nO-$, $-(CH_2)_nS-$,

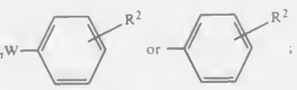


or $-(CH_2)_nSO_2-$;

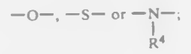


n is 0–5;

R^2 is, independently, hydrogen, loweralkyl, loweralkoxy, trifluoromethyl or halo;

R^3 is $-(CH_2)_mW$-  ;

W represents a bond or



m is 1–15;

R^4 is hydrogen or loweralkyl;

R^5 is lower alkyl, monofluoroloweralkyl, difluoroloweralkyl, polyfluoroloweralkyl, perfluoroloweralkyl or



or a pharmaceutically acceptable salt thereof.

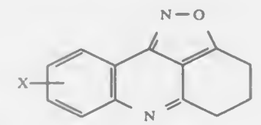
4,942,237

METHOD OF PREPARING ISOXAZOLO(5,4,3-KL)ACRIDINES

Gregory M. Shutske, Somerset, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

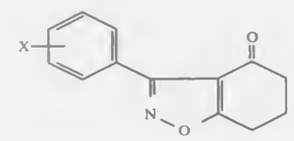
Division of Ser. No. 364,420, Jun. 9, 1989, Pat. No. 4,920,117.
This application Feb. 12, 1990, Ser. No. 494,188
Int. Cl.[5] C07D *498/06*
U.S. Cl. 546—64 2 Claims

1. A method of preparing a compound of the formula,



where

X is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl, which comprises reacting a compound of formula



with hydrazoic acid in the presence of a protic acid or Lewis acid to afford said compound.

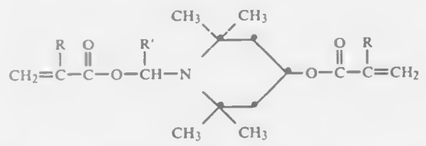
4,942,238

UNSATURATED DERIVATIVES OF 2,2,6,6-TETRAMETHYLPIPERIDINE

Gerhard Rytz, Schwarzenburg, and Mario Slongo, Tafers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 22, 1989, Ser. No. 355,218
Claims priority, application Switzerland, May 27, 1988, 2007/88
Int. Cl.[5] C07D *239/00*
U.S. Cl. 546—242 4 Claims

1. A compound of formula I



wherein R is hydrogen, methyl or cyano, and R' is hydrogen, C_1–C_8alkyl or phenyl.

4,942,239

PROCESS FOR THE PRODUCTION OF 2-HYDROXYPYRIDINE

Winfried Orth, Hassloch; Michael Hassler, Bruchsal; Hans W. Kleffner, Battenberg, and Wolfgang Weiss, Neckarhausen, all of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Mar. 1, 1989, Ser. No. 317,537
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1988, 3814358
Int. Cl.[5] C07D *213/64*
U.S. Cl. 546—290 5 Claims

1. A process for the production of 2-hydroxypyridine comprising reacting 2-chloro-pyridine with an aqueous concentrated potassium hydroxide solution in the presence of a tertiary alcohol at reflux at atmospheric pressure.

4,942,240

PREPARATION OF AROMATIC ALDEHYDES

Norbert Blathe, Villeurbanne, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 28, 1987, Ser. No. 43,363
Claims priority, application France, Apr. 28, 1986, 86 06363
Int. Cl.[5] C07C *45/49*; C07D *213/02*
U.S. Cl. 546—298 15 Claims

1. A process for the preparation of an aromatic aldehyde, comprising reacting hydrogen/carbon monoxide admixture with an aromatic halide in the presence of a noble metal-based catalyst and a tertiary nitrogenous base, and wherein the concentration of said tertiary nitrogenous base, expressed in moles per liter of reaction mixture, is maintained at a value of at least two moles/liter throughout the reaction period.

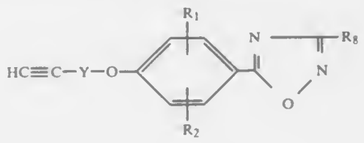
4,942,241

1,2,4-OXADIAZOLYL-PHENOXYALKYLISOXAZOLES AND THEIR USE AS ANTIVIRAL AGENTS

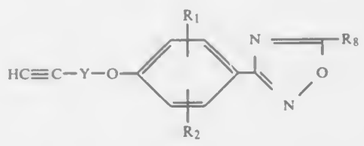
Guy D. Diana, Stephentown, and Thomas R. Bailey, Bethlehem, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 21, 1989, Ser. No. 396,414
Int. Cl.[5] C07D *271/06*
U.S. Cl. 548—131 2 Claims

1. A compound of the formula



or



wherein:

Y is an alkylene bridge of 3–9 carbon atoms;

R_1 and R_2 are hydrogen, halogen, lower-alkyl, lower-alkoxy, nitro, lower-alkoxycarbonyl or trifluoromethyl; and

R_8 is hydrogen or lower-alkyl of 1–5 carbon atoms.

4,942,242

CERTAIN THIAZOL-4-YL-PHENOXY DERIVATIVES HAVING LIPID LOWERING PROPERTIES

Tadao Kojima, No. 1086-2, Minamisaitama-gun, Saitama; Shunji Kageyama, No. 1-36-6, Nakano, Nakano-ku, Tokyo; Minoru Okada, No. 6-10-20, Higashioi, Shinagawa-ku, Tokyo; Isao Ohata, No. 47-17, Omiya-shi, Saitama, and Noboru Sato, No. 3-180-1, Nishimiyashita, Ageo-shi, Saitama, all of Japan

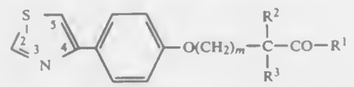
Division of Ser. No. 203, Jan. 2, 1987, Pat. No. 4,794,113, which is a continuation-in-part of Ser. No. 623,174, Jun. 21, 1984, abandoned. This application Oct. 21, 1988, Ser. No. 261,552

Claims priority, application Japan, Jun. 24, 1983, 58-113988; Oct. 27, 1983, 58-201639

Int. Cl.[5] **C07D** *277/32, 277/42, 277/44, 277/54*

U.S. Cl. 548—192 **10 Claims**

1. A phenoxy compound having the formula (I):



wherein R^1 is a hydroxyl group, amino or lower alkoxy group; R^2 and R^3, which may be the same or different, each is a hydrogen atom or C_{1-3} alkyl group; and wherein the thiazolyl group can be unsubstituted, or substituted at the 2-position by lower alkyl group or amino group optionally substituted with lower alkyl group, phenyl group, cyclohexylcarbamoyl group or imidazolyl lower alkanoyl group; or substituted at the 5-position by lower alkyl group; and m is 0 or an integer of 1 to 6 pharmaceutically acceptable salts thereof.

4,942,243

PROCESS FOR PREPARING N''-[4-[[(2-CYANOETHYL)THIO]METHYL]-2-THIAZOLYL]GUANIDINE

Moon G. Koh; Jai M. Shin; Dong S. Kim, and Choon S. Lee, all of Seoul, Rep. of Korea, assignors to Hanil Pharmaceutical Ind., Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 8, 1988, Ser. No. 179,267

Claims priority, application Rep. of Korea, Mar. 11, 1988, 2575-88

Int. Cl.[5] **C07D** *277/48*

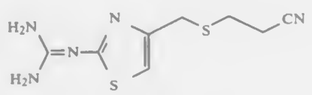
U.S. Cl. 548—193 **6 Claims**

1. A process for preparing N''-[4-[[(2-cyanoethyl)thio]methyl]-2-thiazolyl]guanidine of the formula (I) in high yield which comprises the steps of:

(a) reacting a dihaloacetone of formula (II) with a β-cyanoethylthiol to produce a 1-halo-3-(2-cyanoethylthio)propanone of the formula (III) in a two phase solvent system at a pH of about 4.5–6 at a temperature of about 4° to 30° C., and

(b) reacting said 1-halo-3-(2-cyanoethylthio)propanone of formula (III) with an amidinothiourea at a temperature of about 30°–70° C. for about 3 to 10 hours so as to produced the guanidine of formula (I), wherein the formulas (I), (II), and (III) are as follows:

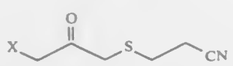
(I)



(II)



(III)



wherein X and Y are a halogen atom such as chlorine or bromine.

4,942,244

DIASTEREOMERIC TRIAZOLYL GLYCOL ETHERS-FUNGICIDES AND GROWTH REGULATORS

Ernst Buschmann, Ludwigshafen; Linhard Sproesser, Bad Durkheim; Bernd Zeeh; Johann Jung, both of Limburgerhof; Wilhelm Rademacher, Limburgerhof; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 829,774, Feb. 13, 1986, abandoned. This application Apr. 8, 1988, Ser. No. 180,690

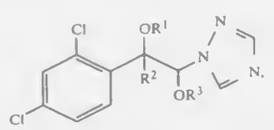
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1985, 3504897

Int. Cl.[5] **C07D** *249/08*

U.S. Cl. 548—268.2 **2 Claims**

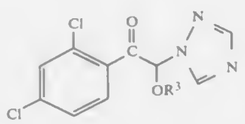
1. A process for the preparation of a diastereomer of the formula I*a*

Ia



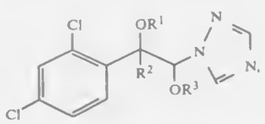
where R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 4 carbon atoms or unsubstituted or substituted benzyl, R^2 is methyl, ethyl or vinyl, R^3 is alkyl of 1 to 6 carbon atoms, cyclohexyl, methylcyclohexyl or unsubstituted or substituted benzyl, the substitutions on the R^1 and R^3 benzyl groups being 1 or 2 halogen, C_1–C_4-alkyl, trifluoromethyl or C_2–C_4-alkenyl substituents, and the asymmetric centers of the molecule have an RR or SS configuration, wherein a ketone of the formula II

II



where R^3 has the above meanings, is subjected to a diastereoselective Grignard reaction with a compound of the formula R^2MgX, where R^2 has the meanings given above and X is Cl, Br or I, and, if required, the resulting alcohol compound of the formula I*a*

Ia



where R^2 and R^3 have the above meanings, R^1 is hydrogen and C_1 and C_2 have an RR or SS configuration, is converted to an ether of the formula I*a*, where R^1 has the meanings stated above with the exception of hydrogen.

4,942,245

BENZIMIDAZOLE DERIVATIVES

Kuniyoshi Masuzawa, Matsudo; Kyuya Okamura, Ohmiya; Keigo Nishino, Ohmiya; Mitsuo Ohashi, Ohmiya, and Katsuya Awano, Oyama, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1988, Ser. No. 180,065

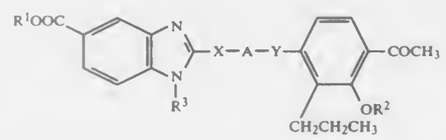
Claims priority, application Japan, Apr. 20, 1987, 62-96818

Int. Cl.[5] **C07D** *235/28, 235/30*

U.S. Cl. 548—329 **22 Claims**

1. A benzimidazole derivative of the formula (I):

(I)



wherein:

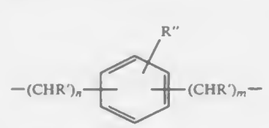
R^1 is a hydrogen atom, a C_{1-6} alkyl group, or a dimethylaminopropyl group;

R^2 is a hydrogen atom, or a C_{1-3} alkanol group;

R^3 is a hydrogen atom, a C-3 alkyl group, or a C_{1-3} alkanoyl group;

X is a sulfur atom, a sulfinyl group, a sulfonyl group, an amino group, or a methylene group;

A is an unsubstituted C_{1-12} alkylene group, a C_{1-12} alkylene group substituted by a hydroxy group or a C_{1-3} lower alkyl group, a $-(CHR')_n-CR''=CR''-(CHR')_m-$ group, or a



group, wherein R' and R'' are each independently a hydrogen atom, a C_{1-3} alkyl group or a hydroxy group, and n and m are each independently equal to 0, 1, 2 or 3; and

Y is an oxygen atom or a sulfur atom; or

an acid or alkali salt or hydrate thereof.

4,942,246

PROCESS FOR PRODUCING 4-BENZOYL-5-HYDROXYPYRAZOLES

Norio Tanaka; Takuya Kakuta; Eiichi Oya, and Masatoshi Baba, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Jun. 2, 1989, Ser. No. 360,468

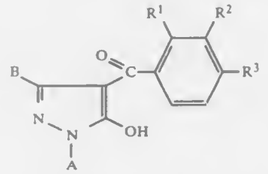
Claims priority, application Japan, Jun. 3, 1988, 63-137095

Int. Cl.[5] **C07D** *231/20*

U.S. Cl. 548—367 **1 Claim**

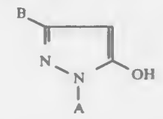
1. A process for producing a 4-benzoyl-5-hydroxylpyrazole of the formula III:

(III)



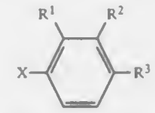
wherein A is an alkyl group having from 1 to 3 carbon atoms, an allyl group or a propargyl group, B is a hydrogen atom or a methyl group, R^1 is an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a trifluoromethyl group, a nitro group, a cyano group or a halogen atom, R^2 is a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a hydroxy group, an alkoxyalkoxy group having from 3 to 6 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a carboxyl group, a nitro group, a cyano group or a halogen atom, and R^3 is an alkylthio group having from 1 or 2 carbon atoms, an alkylsulfinyl group having 1 or 2 carbon atoms, an alkanesulfonyl group having 1 or 2 carbon atoms, a trifluoromethyl group, a nitro group, a cyano group or a halogen atom, which comprises reacting carbon monoxide and a 5-hydroxypyrazole of the formula II:

(II)



wherein A and B are as defined above, to a substituted benzene of the formula I:

(I)



wherein X is a bromine atom, an iodine atom or a diazonium tetrafluoroboron salt group, R^1 is as defined above, provided that when X is a bromine atom, R^1 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^1 is a fluorine atom, a chlorine atom or a bromine atom, R^2 is as defined above, provided that when X is a bromine atom, R^2 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^2 is a fluorine atom, a chlorine atom or a bromine atom, and R^3 is as defined above, provided that when X is a bromine atom, R^3 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^3 is a fluorine atom, a chlorine atom or a bromine atom, in the presence of a base and a catalyst of Group VIII of the Periodic Table.

4,942,247

ORGANIC NITRILES AS INSECT ANTIFEEDANTS

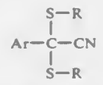
Richard G. Powell, Peoria, Ill.; Kenneth L. Mikolajczak, Belleair Bluff, Fla.; Bruce W. Zilkowski, Peoria, Ill.; Jon Clardy, Ithaca, N.Y., and Ellen K. Mantus, Ithaca, N.Y., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 27, 1989, Ser. No. 371,879

Int. Cl.[5] **C07D** *209/10*

U.S. Cl. 548—505 **10 Claims**

1. A compound of the formula:



wherein R represents alkyl and Ar represents an aromatic ring selected from the group consisting of phenyl or indolyl, in each case unsubstituted, monosubstituted, or polysubstituted by identical or different substituents selected from the group consisting of halogen, alkyl, alkoxy, and halogenated alkyl; with the provision that when R is methyl, Ar is not unsubstituted phenyl.

4,942,248

TERTIARY-ALKYL ESTERS OF 1H-BENZOTRIAZOLE-1-CARBOXYLIC ACIDS

Paul M. Novy, Roselle, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1988, Ser. No. 278,691
Int. Cl.[5] C07D *249/18*
U.S. Cl. 548—533 **6 Claims**

1. A process comprising reacting amino acid salt having at least one unblocked amino or imino group with tertiary-alkyl ester of 1H-benzotriazole-1-carboxylic acid in which the tertiary-alkyl group is tertiary-butyl or tertiary-amyl, to produce the corresponding N-(tertiary-alkoxycarbonyl)-blocked amino acid salt, wherein the six-membered ring of said ester is unsubstituted or substituted with one or two inert minor substituents and wherein the valence of each of the three nitrogen atoms in the five-membered ring of said ester is three.

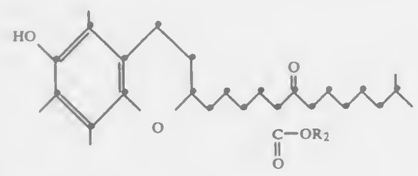
4,942,249

PROCESS FOR PRODUCING VITAMIN E

Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 258,354, Oct. 17, 1988, Pat. No. 4,877,890, which is a division of Ser. No. 58,309, Jun. 5, 1987, Pat. No. 4,801,724. This application Aug. 17, 1989, Ser. No. 396,500
Int. Cl.[5] C07D *311/73*
U.S. Cl. 549—407 **1 Claim**

1. A compound of the formula:



wherein $R_2$is lower alkyl.

4,942,250

PROCESS FOR THE PRODUCTION OF CHLOROTHALONYL

Giuseppe Querzola, Melegnano, and Gino Epis, Lodi, both of Italy, assignors to S.I.P.C.A.M. - Societa Italiana Prodotti Chimici e per l'Agricoltura Milano S.p.A., Milan, Italy

PCT No. PCT/EP86/00218, § 371 Date Dec. 17, 1986, § 102(e) Date Dec. 17, 1986, PCT Pub. No. WO86/06066, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 15, 1986, Ser. No. 18,948
Claims priority, application Italy, Apr. 17, 1985, 20384 A/85
Int. Cl.[5] C07C *121/56*
U.S. Cl. 558—411 **14 Claims**

1. A process for altering the crystallographic structure of 2,4,5,6-tetrachloro-isophthalonitrile produced by chemical synthesis at a temperature above about 250° C., which comprises subjecting the 2,4,5,6-tetrachloro-isophthalonitrile having a crystallographic structure other than that of type I to a at least one of a thermal or mechanical treatment at a temperature lower than about 250° C. for a length of time sufficient to alter the crystallographic structure of said 2,4,5,6-tetrachloro-isophthalonitrile into said type I structure, said type I crystallographic structure, in decreasing order of intensity, being as follows:

Diffraction angle (degrees)	Intensity	Interreticular distances (Å)
51.2	100	3.48
56.0	60	3.19

-continued

Diffraction angle (degrees)	Intensity	Interreticular distances (Å)
28.8	35	6.15
62.3	35	2.87
63.6	35	2.81
40.1	30	4.42
40.7	30	4.37

4,942,251

PROCESS FOR PRODUCING α-ANTHRAQUINONESULFONIC ACIDS AND RECOVERING THE CATALYST USED THEREIN

Kou Huey-Long, Taipei, Taiwan, assignor to China Technical Consultants, Inc., Taiwan

Filed Jan. 15, 1988, Ser. No. 144,505
Int. Cl.[5] C07C *143/36*
U.S. Cl. 552—234 **17 Claims**

1. A process for producing α-anthraquinonesulfonic acids and recovering the catalyst used therein, which comprises:
(a) sulfonating anthraquinone in oleum in the presence of a metal catalyst;
(b) depositing the solubilized metal of the catalyst on a porous carrier by treating the resulting sulfonation mixture without adjusting the pH to a value greater than 7 with a reducing agent in the presence of said porous carrier;
(c) separating the metal catalyst deposited on said porous carrier from the thus treated mixture; and subsequently
(d) recovering the α-anthraquinonesulfonic acid product from the mixture.

4,942,252

SYNTHESIS OF PHOSPHORUS AND ARSENIC, HALIDES AND HYDRIDES

Benjamin C. Hui, Peabody, Mass., and Jörg Lorberth, Weimar-Niederweimar, Fed. Rep. of Germany, assignors to CVD Incorporated, Woburn, Mass.

Filed Aug. 16, 1988, Ser. No. 232,729
Int. Cl.[5] C07F *9/72, 9/50*
U.S. Cl. 556—70 **19 Claims**

1. A method of synthesizing a compound having the formula:

$$R_yMX_{(3-y)}$$

wherein M is selected from the group consisting of phosphorus and arsenic, R is lower alkyl, X is halogen, and y is 1 or 2, comprising the steps of:
A. providing as starting materials compounds having the formulas, R_3M and X_3M wherein each M is the same element and M, X, and R are defined as before;
B. reacting said starting materials to form an intermediate complex according to the following reaction:

$$2\ R_3M+2MX_3 \rightarrow (R_3M.MX_3)_2;\ \text{and}$$

C. reacting said intermediate complex with two additional equivalents of one of said starting materials according to a selected one of the following equations:

$$2\ R_3M+(R_3M.MX_3)_2 \rightarrow 6\ R_2MX$$

$$2\ MX_3+(R_3M.MX_3)_2 \rightarrow 6\ RMX_2$$

thereby providing the product:

$$R_yMX_{(3-y)}$$

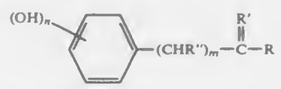
4,942,253

POLYHYDROXYBENZOIC ACID DERIVATIVES

Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3343 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Division of Ser. No. 497,370, May 23, 1983, Pat. No. 4,623,659. This application Sep. 15, 1986, Ser. No. 907,562
Int. Cl.[5] C07C *13/14, 131/00*
U.S. Cl. 558—6 **1 Claim**

1. A compound of the formula



wherein R'' is H or OH and wherein, when m is 1, R is NHOH and R' is NOH, n is 2–5; when m is is 0, R is O—C_{1-3}alkyl and R' is NH, n is 4–5; when m is O, R is NHOH and R' is NH, n is 4–5; when m is 1, R is O—C_{1-3}alkyl and R' is NH, n is 3–5; when m is 1, R is NHOH and R' is NH, n is 3–5; and when m is 0 or 1, R is NH_2 and R' is NH, n is 3–5; or a pharmaceutically-acceptable salt thereof.

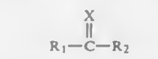
4,942,254

METHODS FOR ACID CATALYZED REACTIONS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation of Ser. No. 771,259, Aug. 30, 1985, Pat. No. 4,722,986, which is a continuation-in-part of Ser. No. 679,235, Dec. 7, 1984, Pat. No. 4,589,925, and Ser. No. 675,774, Nov. 28, 1984, Pat. No. 4,673,152, and Ser. No. 673,358, Nov. 20, 1984, Pat. No. 4,664,171, and Ser. No. 673,508, Nov. 20, 1984, and Ser. No. 453,496, Dec. 27, 1982, which is a continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, abandoned, and Ser. No. 444,667, Nov. 26, 1982, and Ser. No. 331,001, Dec. 15, 1981, Pat. No. 4,402,852, and Ser. No. 330,904, Dec. 15, 1981, Pat. No. 4,404,116, and Ser. No. 318,629, Nov. 5, 1981, Pat. No. 4,445,925, and Ser. No. 318,368, Nov. 5, 1981, Pat. No. 4,447,253, and Ser. No. 318,343, Nov. 15, 1981, Pat. No. 4,397,675. This application Jan. 29, 1988, Ser. No. 149,735
The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.
Int. Cl.[5] C07C *101/02, 149/40;* C08F *8/12, 8/34*
U.S. Cl. 558—250 **9 Claims**

1. A method for carrying out an acid-catalyzed reaction, selected from the group consisting of hydrolysis, alcoholysis, and combinations thereof, by reacting an organic compound having a chemical linkage selected from the group consisting of amido ester, acid ester, thioester, epoxy, and amino linkages, and combinations thereof with a reactant selected from the group consisting of water when said reaction comprises hydrolysis, alcohols when said reaction comprises alcoholysis, thiols when said reaction comprises thiolysis, and combinations thereof, which method comprises the step of conducting said reaction in the presence of a catalytically active amount of the monoadduct of sulfuric acid and a chalcogen-containing compound having the empirical formula



wherein X is a chalcogen, each of R_1 and R_2 is independently selected from the group consisting of hydrogen, NR_3R_4 and NR_5, with at least one of R_1 and R_2 being other than hydrogen, each of R_3 and R_4 is independently selected from the group consisting of hydrogen and monovalent organic radicals, and R_5 is a divalent organic radical, wherein the molar ration of said chalcogen-containing compound to said sulfuric acid is about ½ to less than 2.

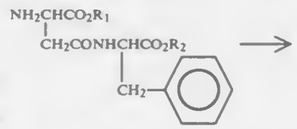
4,942,255

METHOD FOR PRODUCING α-ASPARTYLPHENYLALANINE DERIVATIVES

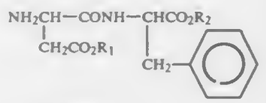
Satoji Takahashi, and Tadashi Takemoto, both of Yokkaichi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,445
Claims priority, application Japan, Feb. 5, 1988, 63-23842; Jun. 21, 1988, 63-152716
Int. Cl.[5] C07C *101/02*
U.S. Cl. 560—41 **8 Claims**

1. A method for converting a β-aspartylphenylalanine derivative represented by formula (1) into an α-aspartylphenylalanine derivative represented by formula (2), which comprises:



Formula (1)



Formula (2)

reacting the compound of formula (1), wherein R_1 and R_2 are independently hydrogen or alkyl groups having 1 to 4 carbon atoms, with a basic compound and with a compound which is an hydroxide, sulfate, chloride, carbonate or acetate of an element selected from the group consisting of zinc, copper, nickel, magnesium, aluminum, iron, tin, silicon and titanium; in an alcoholic solvent wherein said alcohol is present in an amount sufficient to prevent precipitation of salts.

4,942,256

NOVEL INTERMEDIATES IN THE MANUFACTURE OF NOVEL THROMBOXANE A_2 ANTAGONISTS

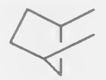
Robert B. Garland, and Masatoru Miyano, both of Northbrook, Ill., assignors to National Research Development Corporation, London, United Kingdom

Filed Dec. 13, 1988, Ser. No. 283,707
Int. Cl.[5] C07C *69/74, 49/297, 49/303;* C07D *311/78*
U.S. Cl. 560—121 **8 Claims**

1. An optically active compound according to the general formula

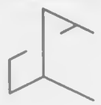


wherein
X is a bicyclic ring of the structure

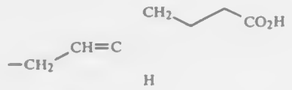


or

-continued



R^1 is hydrogen
R^2 is of the formula



R^3 is hydrogen and
R^4 is



wherein R^5 is alkyl of from one to ten carbon atoms or



wherein R^5 is as defined above.

4,942,257

METHOD OF MANUFACTURING ALKALI METAL SALT OF 2,3,6,7-NAPHTHALENETETRACARBOXYLIC ACID

Yakudo Tachibana; Kazuhiko Tate; Toshifumi Suzuki, all of Tokyo, and Kouji Chiba, Miura, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,635
Claims priority, application Japan, Sep. 5, 1988, 63-221637
Int. Cl.[5] C07C *51/02, 51/347, 51/353*
U.S. Cl. 562—481 **24 Claims**

1. A method of manufacturing an alkali metal salt of a 2,3,6,7-naphthalenetetracarboxylic acid, comprising heating (i) a sodium salt or (ii) a mixture of sodium salt and potassium salt, of at least one naphthalenecarboxylic acid selected from the group consisting of naphthoic acids and naphthalenepolycarboxylic acids other than 2,3,6,7-naphthalenetetracarboxylic acid to an elevated temperature in an inert gas atmosphere in the presence of a Henkel reaction catalyst and sodium halide to convert said salt or mixture of salts of said at least one naphthalenecarboxylic acid into said 2,3,6,7-naphthalenetetracarboxylic acid salt or salts.

4,942,258

PROCESS FOR PREPARATION OF METHACRYLIC ACID WITH REGENERATION OF CATALYST

Thomas G. Smith, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 40,302, Apr. 20, 1987, abandoned, which is a continuation of Ser. No. 624,048, Jun. 25, 1984, abandoned. This application Apr. 12, 1988, Ser. No. 180,304
Int. Cl.[5] C07C *51/353, 57/04*
U.S. Cl. 562—599 **2 Claims**

1. In a vapor-phase process for making methacrylic acid comprising combining in a reactor a feed containing propionic acid and formaldehyde in the presence of a solid catalyst comprising cesium cation and a silica support having a surface area of 20 to 275 m^2/g, a pore volume of 0.1 to 0.8 cc/g, and an average pore diameter of 75 to 200 Angstroms, the improvement comprising intermittently halting said feed to said reactor and decoking said catalyst by passing an oxygen-containing gas containing 1 to 5% by volume oxygen and 95 to 99% by volume inert gas over it at a temperature no greater than about 800° F., said decoking being performed at an initial temperature no greater than 650° F. and then by controlling the exotherm incrementally to a temperature no greater than about 800° F.

4,942,259

PROCESS FOR PREPARING N-VINYL AMIDES

Gene E. Parris, Revere, and John N. Armor, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 27, 1988, Ser. No. 211,806
Int. Cl.[5] C07C *209/78, 209/66, 209/68, 211/21*
U.S. Cl. 564—187 **19 Claims**

1. In a process for forming N-vinyl amides having the structural formula:

$$CH_2{=}CH{-}NHCOR^1$$

wherein R^1 is hydrogen, a C_1 to C_6 alkyl group or a C_6–C_9 aryl or substituted aryl group, by heating to a temperature of about 210°–350° C., carboxylic acid amides having the structural formula:

$$CH_3{-}\underset{\displaystyle R^2}{\underset{|}{CH}}{-}NHCOR^1$$

wherein
R^1 is defined above, and
R^2 is a C_1 to C_9 alkoxy, carboxy or carboxamide group, the improvement for achieving higher conversions and/or selectivities for said N-vinyl amides which comprises:
heating said carboxylic acid amides in the presence of a porous catalytically active material selected from the group consisting of: activated carbon, magnesium oxide, strontium pyrophosphate, neutral or basic calcium hydroxyapatite, $CuCrO_2$ and La_2O_3.

4,942,260

AMINE OXIDE PROCESS WITH CO_2 AND ALUMINUM

Kathleen S. Laurenzo, and Joe D. Sauer, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 29, 1988, Ser. No. 237,098
Int. Cl.[5] C07C *135/02*
U.S. Cl. 564—298 **11 Claims**

1. A process for making a low nitrosamine or substantially nitrosamine-free amine oxide, said process consisting essentially of reacting a tertiary amine with aqueous hydrogen peroxide in the presence of a catalyst formed by adding carbon dioxide to the reaction mixture and in contact with aluminum metal.

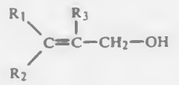
4,942,261

PROCESS FOR PREPARATION OF ALLYL TYPE AMINE

Yoshimasa Ishimura; Takami Oe; Yuseki Suyama, and Nobuyuki Nagato, all of Kawasaki, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 282,095
Claims priority, application Japan, Dec. 11, 1987, 62-312339; Dec. 23, 1987, 62-323833
Int. Cl.[5] C07C *209/16*
U.S. Cl. 564—480 **11 Claims**

1. A process for the preparation of an allyl amine, which comprises reacting an allyl alcohol represented by the following formula (I):



(I)

wherein R_1, R_2 and R_3 independently represent a hydrogen atom or an aliphatic hydrocarbon group having 1 to 8 carbon atoms
with at least one member selected from the group consisting of ammonia, a primary amine and a secondary amine in the presence of a palladium compound and a multidentate phosphorus compound.

4,942,262

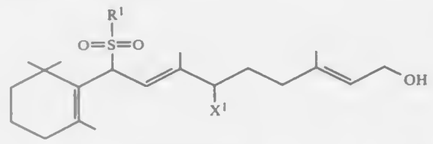
PROCESS FOR PRODUCING VITAMIN A OR ITS CARBOXYLIC ACID ESTERS

Toshiki Mori; Shigeaki Suzuki, and Takashi Onishi, all of Kurashiki, Japan, assignors to Kuraray Company Ltd., Kurashiki, Japan

Filed Jun. 20, 1989, Ser. No. 368,800
Claims priority, application Japan, Jul. 5, 1988, 63-168190; Jul. 5, 1988, 63-168191
Int. Cl.[5] C07C *147/00*
U.S. Cl. 568—32 **12 Claims**

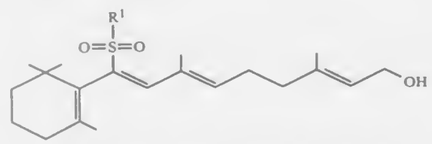
1. A process for producing vitamin A or its carboxylic acid ester, which comprises (i) treating a halogenated sulfone of the general formula (1)

(1)



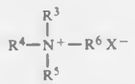
wherein R^1 represents a phenyl group which may be substituted by lower alkyl, halogen or lower alkoxy, and X^1 represents a halogen atom, and/or a vinyl sulfone of the general formula (2)

(2)



wherein R^1 has the same meaning as defined above, with potassium hydroxide in a hydrocarbon solvent in the presence of a quaternary ammonium salt of the general formula (3) or a crown ether

(3)



wherein R^3, R^4, R^5 and R^6 are the same or different and represents an alkyl group of 1–20 carbon atoms or an aralkyl group of 7–9 carbon atoms, and X represents a halogen atom, a lower alkoxy group, a lower alkylcarbonyloxy or a benzoyloxy group, a hydrogensulfate or a hydroxyl group, and, if necessary, acylating the resultant vitamin A.

4,942,263

PREPARATION OF ALDEHYDES

John R. Monnier, Fairport, and Peter J. Muehlbauer, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1989, Ser. No. 337,233
Int. Cl.[5] C07C *45/34*
U.S. Cl. 568—476 **10 Claims**

1. Process for the preparation of crotonaldehyde, said process comprising reacting 1,3-butadiene with oxygen in the presence of a catalytic quantity of a catalyst consisting essentially of metallic silver on a support, said support selected from the class consisting of alumina, silica-alumina, and silica, said support having a surface area of at least about 50 m^2/g; said process being conducted at a temperature of from about 150° C. to about 325° C., and at a pressure of from about 0.1 to about 100 atmospheres.

4,942,264

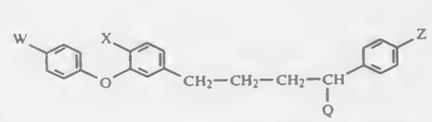
PROCESS FOR THE PREPARATION OF INSECTICIDALLY ACTIVE DIPHENYLETHER COMPOUNDS

Michael J. Bushell, Wokingham, and Ralph A. Raphael, Barton, both of England, assignors to Imperial Chemical Industries PLC, London, Great Britain

Filed Feb. 12, 1988, Ser. No. 158,232
Claims priority, application United Kingdom, Feb. 17, 1987, 8703653
Int. Cl.[5] C07C *43/263;* A61K *31/085*
U.S. Cl. 568—635 **1 Claim**

1. A process for the preparation of a compound of formula (I):

(I)



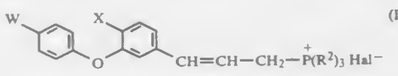
wherein W is hydrogen or halogen, X is hydrogen or fluoro, Q is a group of formula:

$$-(CF_2)_nR^1$$

wherein R^1 is hydrogen, fluoro or chloro and n has a value of one, and Z is halo, alkyl of up to six carbon atoms, alkoxy of up to six carbon atoms, haloalkyl of up to six carbon atoms or haloalkoxy of up to six carbon atoms, which comprises the step of:

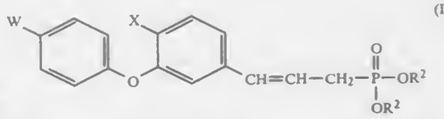
(i) Wittig reaction between either (a) a phosphonium salt of formula (III):

(III)

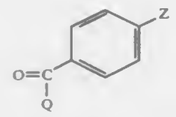


or (b) a phosphonate of formula (IV):

(IV)

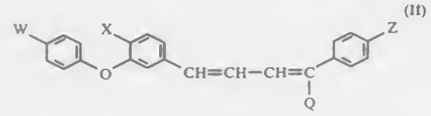


wherein W and X have any of the meanings given hereinbefore, R^2 represents alkyl of up to six carbon atoms or aryl, and Hal^- represents a halide anion, and a ketone of formula (VII):



(VII)

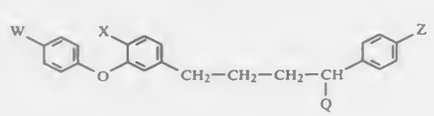
wherein Q and Z have any of the meanings given hereinbefore, in the presence of a strong base, to produce a diene of formula (II):



(II)

followed by the step of:

(ii) reaction of the diene of formula (II) with hydrogen as a reducing agent in the presence of a catalyst, and at a pressure of from 1.5 to 20 atmospheres to produce the corresponding compound of formula (I):



(I)

4,942,265

PROCESS FOR PREPARING 2,2-BIS(4-HYDROXYPHENYL)PROPANE OF HIGH PURITY

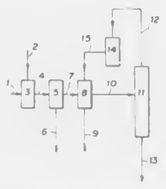
Shigeru Iimuro; Takashi Kitamura, both of Nagoya, and Yoshio Morimoto, Tokai, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,809

Claims priority, application Japan, Dec. 4, 1987, 62-305941

Int. Cl.[5] C07C *37/70, 39/16*

U.S. Cl. 568—724 5 Claims



1. A process for preparing 2,2-bis(4-hydroxyphenyl)propane of high purity comprising:

(a) washing an adduct of 2,2-bis(4-hydroxyphenyl)propane and phenol with phenol;

(b) decomposing the washed adduct into 2,2-bis(4-hydroxyphenyl)propane and phenol by a method selected from the group consisting of distillation, extraction and steam stripping; and

(c) separating the 2,2-bis(4-hydroxyphenyl)propane and phenol resulting from said decomposition of said washed adduct, wherein 2,2-bis(4-hydroxyphenyl)propane of high purity is recovered and the phenol is used to wash said adduct in step (a).

4,942,266

PROCESS FOR PRODUCING FATTY ALCOHOLS AND C_3 DIOLS BY CATALYTIC HYDROGENATION

Theo Fleckenstein, Hilden; Gerd Goebel, Erkrath; Franz-Josef Carduck, Haan; Norbert Bremus, Langenfeld, and Reinhard Eicher, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 17, 1989, Ser. No. 326,185

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1988, 3809270

Int. Cl.[5] C07C *29/136, 31/20, 31/125*

U.S. Cl. 568—864 11 Claims

1. A process for producing fatty alcohols and C_3 diols by the catalytic hydrogenation of fatty triglycerides comprising the steps of:

(1) providing a feed stream comprising gaseous hydrogen and liquid fatty acid triglyceride;

(2) passing said feed stream through a tube bundle reactor having a hydrogenation catalyst therein at a volume load rate of about 0.2 to about 2.5 liters of said feed stream per liter of reactor volume per hour and at a area load rate of about 1.5 to about 24 m^3 feed stream per m^2 of reactor cross-section per hour to produce at least an 80% yield of 1,2-propanediol and at least a 99% yield of fatty alcohols and less than a 0.5% yield of paraffin.

4,942,267

PERCHLOROETHYLENE STABILIZATION

Roger W. Roark; Glenn R. Cairns, both of Painesville, and Edward A. Rowe, Jr., North Perry, all of Ohio, assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 945,167, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 529,987, Sep. 9, 1983, abandoned, which is a continuation of Ser. No. 320,614, Nov. 12, 1981, abandoned. This application Jul. 28, 1988, Ser. No. 225,580

Int. Cl.[5] C07C *17/42, 21/12*

U.S. Cl. 570—109 8 Claims

1. A stabilized perchloroethylene composition comprising perchloroethylene and a stabilizing amount of a mixture entirely free of any compound that contains an oxirane ring and consisting essentially of

(a) an amine component selected from the group consisting of N,N'-dimethylpiperazine, N,N'-diethylpiperazine, N-methylpiperazine, N-ethylpiperazine, and mixtures thereof;

(b) an alcohol component selected from the group consisting of n-butanol, n-pentanol, cyclohexanol, 2-methoxyethanol, 2,3-butanediol, and mixtures thereof; and

(c) an olefin component selected from the group consisting of 1-octene, 1-decene, 1,3,5-cycloheptatriene, dicyclopentadiene, and mixtures thereof.

4. A process for the stabilization of perchloroethylene, which comprises forming a stabilized perchloroethylene composition entirely free of any compound that contains an oxirane ring by adding to perchloroethylene an effectively stabilizing amount of a mixture comprising

(a) an amine component selected from the group consisting of N,N'-dimethylpiperazine, N,N'-diethylpiperazine, N-methylpiperazine, N-ethylpiperazine, and mixtures thereof;

(b) an alcohol component selected from the group consisting of n-butanol, n-pentanol, cyclohexanol, 2-methoxyethanol, 2,3-butanediol, and mixtures thereof; and

(c) an olefin component selected from the group consisting of 1-octene, 1-decene, 1,3,5-cycloheptatriene, dicyclopentadiene, and mixtures thereof.

4,942,268

PROCESS FOR PRODUCING A HALOBENZENE

Toshihiro Suzuki, and Chizu Komatsu, both of Shizuoka, Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 57,650, Jun. 9, 1987, Pat. No. 4,831,199. This application Mar. 15, 1989, Ser. No. 323,845

Claims priority, application Japan, Mar. 7, 1984, 59-41929; Mar. 19, 1984, 59-52953; May 25, 1984, 59-106103

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] C07C *17/12*

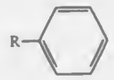
U.S. Cl. 570—206 13 Claims

1. A process for producing a halobenzene of the formula:



(I)

wherein R is a lower alkyl group, a lower alkoxy group, or a halogen atom selected from the group consisting of a fluorine atom, a chlorine atom and a bromine atom, and X is a halogen atom selected from the group consisting of a fluorine atom, a chlorine atom, and a bromine atom, said process comprising halogenating, with a halogenating agent which is selected from the group consisting of chlorine, bromine and sulfuryl chloride, at a temperature and pressure suitable for halogenating, a benzene compound of the formula:



(II)

in a liquid phase in the presence of a catalyst, wherein said catalyst is a combination of a component selected from the group consisting of acidic, propionic acid, isovoleric acid, monochloroacidic acid, monobromoacidic acid, dichloroacidic acid, trichloroacidic acid, α-chloropropionic acid, β-chloropropionic acid, difluoroacidic acid, trifluoroacidic acid, pentafluoropropionic acid, β-chlorotetrafluoropropionic acid, sodium, potassium and barrium salts thereof, and a zeolite having a SiO_2/Al_2O_3 molar ratio of from 3 to 8 and a pore size of from 6 to Å.

4,942,269

PROCESS FOR FRACTIONATING FAST-PYROLYSIS OILS, AND PRODUCTS DERIVED THEREFROM

Helena L. Chum, Arvada, and Stuart K. Black, Denver, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Mar. 17, 1988, Ser. No. 169,506

Int. Cl.[5] C07C *37/20*

U.S. Cl. 585—240 31 Claims

1. A process for fractionating fast-pyrolysis oils from biomass materials to produce phenolic compounds/neutral fractions extract, wherein the neutral fractions have molecular weights of 100 to 800; said extract being substitutable for a part of the phenol in phenol-formaldehyde resins, said process comprising:

admixing said oils with an organic solvent having a solubility parameter of approximately 8.4–9.1 polar components in the 1.8–3.0 range and hydrogen bonding components in the 2–4.8 range;

separating the organic solvent-soluble fraction containing the phenolic compounds/neutral fractions from said mixture and admixing it with water to extract water-soluble materials therefrom;

separating the organic solvent-soluble fraction from said water fraction and admixing said solvent fraction with an aqueous alkali metal bicarbonate solution to extract strong organic acids and highly polar compounds from said solvent fractions; and

separating the residual organic solvent-soluble fraction and removing the organic solvent therefrom to produce said phenolic compounds/neutral fractions extract.

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CABLE SEALING APPARATUS COMPRISING HEAT RESISTANT GEL COMPOSITIONS

Jose P. Gamarra, Union City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 72,309, Jul. 13, 1987, abandoned. This application Jul. 12, 1988, Ser. No. 217,798

Int. Cl.[4] **H02G** *15/08*

U.S. Cl. 174—93 **33 Claims**

1. A cable sealing apparatus, comprising: a first end seal, the first end seal comprising a layer of gel which comprises:

(1) about 2 to about 30 parts by weight of a poly(styrene-ethylene-butylene-styrene) triblock copolymer having a styrene to ethylene butylene block ratio of about 27 to 35 styrene blocks to about 65 to 73 ethylene butylene blocks, and having a molecular weight of at least 100,000; and

(2) about 70 to about 98 parts by weight of a plasticizer;

wherein the triblock copolymer and the plasticizer have been

(a) melt-blended and

(b) have been treated

(i) at sufficiently high temperature or

(ii) under sufficiently high shear

to cause the composition to have a cone penetration of at least about 50 (10^{-1} mm), an ultimate elongation of at least about 200% and a viscosity at 200° C. of at least 10 poise;

the layer of gel including

(A) means formed therein for passage of the cable to be sealed therethrough between inner and outer opposite faces of the gel, the cable to be sealed being held in contact with the gel formed means;

(B) a convoluted member forming an outer circumferential surface of the gel, the convoluted member having a series of ridges and valleys extending circumferentially therearound;

(C) a first member disposed adjacent to and in contact with an outer face of the gel and having means formed therein to facilitate passage of the cable to be sealed therethrough;

(D) a second member disposed adjacent to and in contact with an inner face of the gel and having means formed therein to facilitate passage of the cable to be sealed therethrough; and

(E) gel formed means comprising a plurality of longitudinal slits extending through the gel, a width of at least one of the slits being greater than a diameter of the cable to be sealed.

4,942,271

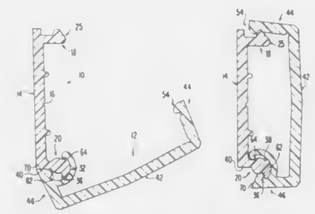
HINGED PLASTIC DUCT FOR CONDUIT

Paul J. Corsi, Terryville; Lawrence W. Engdahl, Guilford, both of Conn., and Daniel E. Klas, North Kingstown, R.I., assignors to Hubbell Incorporated, Orange, Conn.

Filed Dec. 7, 1988, Ser. No. 280,960

Int. Cl.[5] **H02G** *3/04;* **E05D** *7/10*

U.S. Cl. 174—101 **19 Claims**



1. A duct assembly for enclosing conduits therein, the combination comprising:

a base having a generally U-shaped cross section along its longitudinal axis, including a generally planar central portion having first and second legs extending substantially perpendicular thereto;

a cover having a generally U-shaped cross section along its longitudinal axis, including an intermediate portion having third and fourth legs extending substantially perpendicular thereto;

means, coupled to said first and third legs, for releasably coupling said first and third legs together; and

means, coupled to said second and fourth legs, for pivotally coupling said second and fourth legs together through a maximum angular movement of about 60°

said means for pivotally coupling including means for releasably coupling said second and fourth legs, which are coupled and released via application of forces in directions substantially perpendicular to the longitudinal axes of said base and said cover, said means for releasably coupling said second and fourth legs comprising an elongated rib having a maximum transverse thickness, and an elongated groove having an elongated opening at least partially defined by a resilient arm, said maximum transverse thickness of said rib being greater than the height of said elongated opening for providing a snap fit between said rib and said groove,

said means for pivotally coupling further comprising

said elongated rib having at least two curvilinear surfaces with a radially extending planar surface therebetween,

said elongated groove having a pair of complementary curvilinear surfaces with a complementary radially extending planar surface extending therebetween, and

said two curvilinear surfaces and said two complementary curvilinear surfaces coacting to allow pivotal movement between said base and said cover, and said planar surface being engageable with said complementary planar surface to limit the relative inward pivotal movement of said cover relative to said base.

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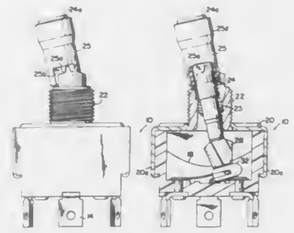
TOGGLE SWITCH WITH SELF-LOCKING FEATURE

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., Plainville, Conn.

Filed Apr. 13, 1989, Ser. No. 337,305

Int. Cl.[5] **H01H** *3/20*

U.S. Cl. 200—43.16 **4 Claims**



1. An illuminated toggle switch comprising a base defining a cavity, fixed and moveable contacts in the cavity, a cover for the cavity including a central bushing, said bushing defining a toggle opening, a transparent generally cylindrically shaped toggle pivotally supported in said toggle opening, said toggle having an inner end portion in said cavity for moving said moveable contact in response to said pivotable toggle movement, said toggle having an outer portion protruding outwardly of said bushing, said bushing having an outer end defining abutment surfaces, a sleeve slideably received on said toggle outer portion and said sleeve having an outer end that is open, said toggle outer portion including an outer end portion defining an enlarged flange projecting beyond said sleeve outer

open end, a spring acting between said toggle outer end flange portion and said sleeve to bias the sleeve toward said bushing, said sleeve having inwardly facing end surfaces engageable with said abutment surfaces of said bushing outer end to prevent movement of said toggle when said sleeve end surfaces and said bushing abutment surfaces are held in engagement by said spring, said bushing outer end abutment surfaces provided on both sides of said moveable toggle, and said inwardly facing surfaces on said sleeve having portions engageable with said bushing outer end abutment surfaces, said abutment surfaces defining at least two distinct sleeve positions, said bushing having parallel flat surfaces facing one another adjacent said abutment surfaces and said sleeve having complementary flat surfaces adjacent said sleeve flat surfaces to prevent rotation of said sleeve on said toggle, said sleeve being fabricated from an opaque material, and a lamp in said base cavity for internally illumining said generally cylindrical toggle so that the flanged outer end portion projecting above the sleeve is visible from the internal illumination of said lamp.

4,942,273

MULTIPLE CIRCUIT SWITCH WITH ROCKABLE ACTIVATOR AND LINEARLY MOVABLE CONTACT HOLDER

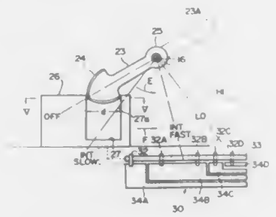
Kenshi Furuhashi; Hiroyasu Ito, and Nobuyuki Enari, all of Niwa, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Japan

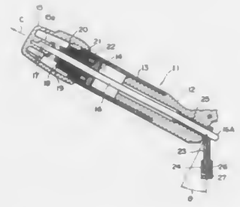
Filed Apr. 12, 1989, Ser. No. 337,154

Claims priority, application Japan, Apr. 14, 1988, 63-50293[U]

Int. Cl.[5] H01H *19/00*

U.S. Cl. 200—61.54 **12 Claims**





1. A switch apparatus which is switched by rotation of an operation knob, comprising:

an arm having two ends which is supported at one end thereof and which is rotated about said one end by said operation knob;

(b) a contact holder having a groove and movable electrical contact point and which is supported so as to be linearly moved by being subjected to a force produced by the rotation of said arm;

(c) a plurality of fixed electrical contact points which are connected to and disconnected from said movable electrical contact point by the linear movement of said contact holder; and

(d) an engagement portion provided at a contact portion of said arm and said contact holder and which has an outer shape which allows a position of said contact portion to be gradually changed by said rotation of said arm, whereby said contact holder can be uniformly moved in a linear direction by said rotational force substantially in proportion to the angle of rotation of said arm.

4,942,274

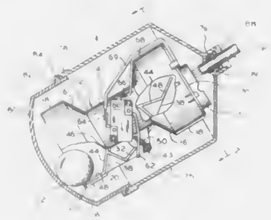
BALL CONTROLLED FLOAT CONTROL UNIT

Richard Riback, Deerfield, and Eric Will, Chicago, both of Ill., assignors to Expert Corporation, Chicago, Ill.

Filed Jun. 21, 1988, Ser. No. 209,558

Int. Cl.[5] H01H *35/18*

U.S. Cl. 200—84 C **13 Claims**



1. A pivotable float control unit including therewithin a raceway housing pivotable with said float control unit and having a ball with a predetermined diameter movable along a raceway defined by said raceway housing, said ball being complimentarily accepted by said raceway, a ball cage pivotable with respect to said raceway housing and having a plurality of segments, at least one surface of said ball cage exposed within said raceway at any given angular orientation of said pivotable raceway housing, said ball being in contact with said at least one surface of said ball cage during all angular attitudes of said pivoted raceway housing and prevented by said housing and said cage from ever being able to be disposed in contact with a second surface facing oppositely to said one surface of said ball cage said raceway housing having a generally hourglass configuration in longitudinal cross-section, said housing including in co-axial arrangement: a reduced central portion, a pair of outwardly flaring frusto-conical portions individually extending co-axially outwardly from opposite ends of said central portion, and a pair of substantially tubular extensions terminating extending co-axially outwardly from oppositely extending frusto-conical portions and terminating the opposite ends of said housing.

4,942,275

CONTROL PANEL FACE

Timothy E. Addy, Montgomery, Ala., and Warner E. Speakman, Brighton, Tenn., assignors to ESI Companies, Inc., Memphis, Tenn.

Filed May 12, 1988, Ser. No. 193,401

Int. Cl.[5] H01H *9/00*

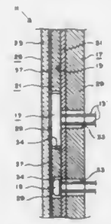
U.S. Cl. 200—308 **8 Claims**

1. A control panel face for supporting at least one control member, said control panel face comprising:

(a) a base having a face surface for receiving at least a portion of said at least one control member, at least a portion of said face surface being made out of magnetic material;

(b) a flexible magnetic sheet for being removably attached to said face surface of said base over said at least one control member; said magnetic sheet having at least one aperture

therethrough for allowing said at least one control member to be controlled therethrough; and



(c) a flexible cover sheet for being attached to said magnetic sheet, said cover sheet including indicia for identifying said at least one control member.

4,942,276

CLICKED KEY BOARD SWITCH

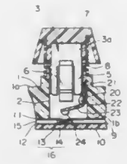
Hideo Kato, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Apr. 11, 1989, Ser. No. 336,057

Claims priority, application Japan, Apr. 11, 1988, 63-47774[U]

Int. Cl.[5] H01H *1/10*

U.S. Cl. 200—517 **7 Claims**



1. A key board switch comprising:

a substrate;

a membrane switch arranged on said substrate;

a frame having a vertically extending aperture, said frame being arranged on said substrate interposing said membrane switch therebetween;

a key stem arranged in said aperture of said frame so as to be vertically movable within said aperture between an upper and lower position; and

a pressing member of said membrane switch provided on said frame, said pressing member being substantially L-shape and extending downwardly from within an upper portion of said aperture in a cantilever fashion, said pressing member having a distal end positioned above said membrane switch and being provided with a projection to be engaged with said key stem when said key stem is pushed down to said lower position to make said membrane switch contact, said key stem being disengaged from said projection when said key is in said upper position.

4,942,277

MICROWAVE POPCORN SERVICE BOWL

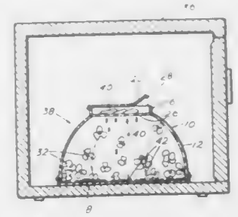
Gary A. Narberes, 976 Jonell Ln., Chico, Calif. 95926

Filed Dec. 15, 1989, Ser. No. 451,445

Int. Cl.[5] H05B *6/80*; A23L *1/18*

U.S. Cl. 219—10.55 E **6 Claims**

1. A popcorn service bowl fabricated of materials pentrable by microwaves in an arrangement provinding said bowl with an opened top end covered by a snap-on removable cover and a bottom end terminating in a compartment, said compartment being accessible from said bowl through multiple apertures in the bottom of said bowl, said compartment having an opening opposite said bowl apertured bottom with said opening covered by a removable snap-on cover, said arrangement adapting said popcorn service bowl to be inverted and used for popping said popcorn in a microwave oven with said compartment removable snap-on cover opend providing a cooking pressure releasing means and said arrangement further adapting said



bowl for serving said popcorn popped with said bowl upright and said top end snap-on removable cover removed, said compartment being a receptacle for containment and disposal of unpopped and partly popped kernels of said popcorn and with bowl inverted, said compartment being useful for loading uncooked popcorn into said bowl and for melting and distributing a buttering substance over said popped popcorn through said bowl bottom apertures.

4,942,278

MICROWAVING OF NORMALLY OPAQUE AND SEMI-OPAQUE SUBSTANCES

Haskell Sheinberg, Los Alamos, N. Mex.; Thomas T. Meek, Knoxville, Tenn., and Rodger D. Blake, Santa Fe, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 281,158, Dec. 5, 1988, Pat. No. 4,857,266.

This application Jul. 24, 1989, Ser. No. 384,194

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.55 M **1 Claim**

1. A method of heating a substance using microwave radiation, where the substance to be heated is not normally capable of being heated by microwave radiation, said method comprising:

a. providing the substance to be heated in the form of small particles;

b. conditioning the surfaces of at least a portion of said small particles by coating each particle surface with a material which is transparent to microwave radiation, thereby facilitating microwave coupling to the substance to be heated and enhancing the effective half power depth of penetration of microwave radiation into the substance to be heated; and

c. exposing said substance to microwave radiation.

4,942,279

RF INDUCTION HEATING APPARATUS FOR FLOATING-ZONE MELTING

Yasuhiro Ikeda, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 186,290, Apr. 26, 1988, abandoned.

This application Dec. 20, 1989, Ser. No. 456,203

Claims priority, application Japan, May 25, 1987, 62-125801; May 25, 1987, 62-125802; May 25, 1987, 62-125803

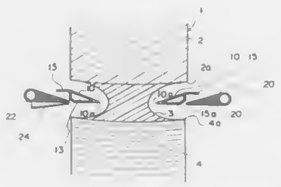
Int. Cl.[5] H05B *6/40*

U.S. Cl. 219—10.75 **8 Claims**

1. An RF induction heating apparatus arrangement for floating-zone melting a rod-like raw material semiconductor mov-

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ing relative to said apparatus, said arrangement comprising a rod-like semiconductor, a first single-turn induction heating coil disposed around said rod-like semiconductor for floating-zone melting said rod-like raw material semiconductor, whereby a floating molten zone is established within said first heating coil in said rod-like semiconductor, said floating molten zone having a crystal growth interface at the bottom thereof, a second heating coil arranged below said first heating coil, and RF power source means connected to said first and second heating coils, wherein the inner periphery of said second heating coil is positioned adjacent the periphery of said crystal growth interface formed at the bottom of the floating zone in said rod-like semiconductor.

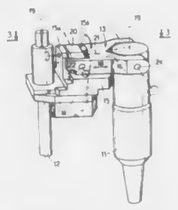


4,942,280

DEVICE FOR WELDING THE END OF A TUBULAR PIECE FASTENED INSIDE A BORE OPENING ONTO A FACE OF A PLATE, SUCH AS A TUBE PLATE OF A STEAM GENERATOR

Jean P. Gaudin, Chassieu, and Jean P. Peyrot, Chilly-Mazarin, both of France, assignors to Framatome, Courbevoie, France

Filed Nov. 14, 1988, Ser. No. 270,722
Claims priority, application France, Nov. 13, 1987, 87 15731
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—60.2 **5 Claims**



1. In a device for welding a circular end part of a tubular piece fastened inside a bore opening onto a face of a plate, such as a steam-generator tube plate having a set of tube passage holes arranged according to a regular network, said device comprising:

a fastening means having a cylindrical part adapted to be introduced in a tube of the network and a jack for actuating said cylindrical part, and

a welding head comprising a centering bush adapted to be introduced into a tubular piece to be welded, and a welding electrode mounted rotatably about an axis of said centering bush,

the improvement consisting of an adjustable connecting assembly between said fastening means and said welding head, allowing translational movements of said welding head relative to said fastening means in the direction of a perpendicular common to an axis of said cylindrical part of said fastening means and to an axis of said centering bush and relative rotational movements about two perpendicular axles, one of which is parallel to the direction of said translational movement, wherein said connecting assembly comprises

(a) a first support fixed to said fastening means and comprising guide means defining a sliding plane and a sliding direction oriented along said perpendicular common to said axis of said cylindrical part of said fastening means and to said axis of said centering bush of said welding head;

(b) a slide block mounted for movement in said sliding direction on said guide means;

(c) a second support carrying said welding head mounted on said slide block and movable in rotation relative to said slide block about a first axle parallel to said sliding direction and about a second axle parallel to said sliding plane and perpendicular to said first axle; and

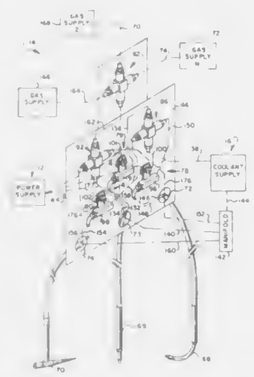
(d) means for returning said slide block in relation to said slide block.

4,942,281

MULTI-TORCH INTERFACE ASSEMBLY FOR INERT GAS WELDING

Craig F. Srba, 6837 Walnut St., Westerville, Ohio 43081

Filed Aug. 3, 1989, Ser. No. 389,163
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—75 **20 Claims**



1. In an inert gas welding system wherein welding torches of varying configuration are removably connectable by an elongate cable with a controlled current source located within a cabinet, and are connectable by elongate inert gas and coolant conduits respectively with a source of inert gas and a source of coolant, the improved multi-torch interface assembly, comprising:

current coupling means coupled in current directing relationship with said controlled current source and with at least two said elongate cables for selection to apply said current source to a select one said elongate cable;

an inert gas valve having an input in gas transfer relationship with said inert gas source and connected with at least two said elongate conduits and actuable to connect said inert gas source with a select one of said elongate inert gas conduits; and

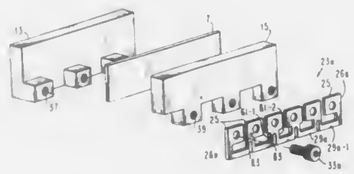
a coolant valve in fluid transfer relationship with said coolant source and connected in coolant transfer relationship with at least two said elongate conduits and actuable to connect said coolant source with a select one of said elongate coolant conduits.

4,942,282

SPLIT HEATER BAR

Wayne P. Jensen, San Marcos, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 16, 1989, Ser. No. 367,164
Int. Cl.[5] B23K *3/04*
U.S. Cl. 219—85.16 **12 Claims**



1. For use with a welding head having a series of spaced apart electrical terminals, an electrically and thermally conductive heater bar comprising in combination:

a. a bar shaped transverse member having a front heating surface and a rear surface; and

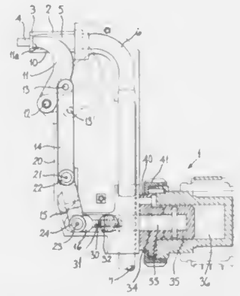
b. a plurality of spaced apart members, each member including at one end a connecting leg extending from the rear surface of said transverse member and terminating at its opposite end in a mounting pad adapted to engage a respective one of said electrical terminals; said heater bar being characterized in that said transverse member is slotted along planes which intersect at least some of said connecting legs.

4,942,283

STUD WELDING APPARATUS

Bruno Mergell, Hainbuchenweg, Fed. Rep. of Germany, assignor to Emhart Industries, Inc., Towson, Md.

Filed Oct. 10, 1989, Ser. No. 419,304
Int. Cl.[5] B23K *9/20*
U.S. Cl. 219—98 **3 Claims**



1. A stud welding apparatus comprising

stud holder means including a cylindrical housing having gripping jaws at one end thereof,

stud feed tube means communicating with said cylindrical housing at the other end thereof,

axially extending slot means defined in said cylindrical housing, and

loading means including

a loading lever pivotally supported at one end for pivotal displacement from a retracted position remote from said cylindrical housing to an advanced position whereat the free end of said loading lever projects through said slot means between said gripping jaws and the end of said cylindrical housing which communicates with said stud feed tube, and engages a stud gripped by said gripping jaws and

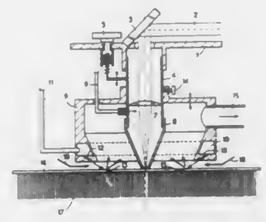
means for pivotally displacing said loading lever between said advanced and retracted positions.

4,942,284

LASER CUTTING APPARATUS PROVIDED WITH A GAS EVACUATION DEVICE

Jean Etcheparre, and Bernard Etcheparre, both of Bordeaux, France, assignors to Lectra Systemes, France

Filed Feb. 22, 1989, Ser. No. 314,190
Claims priority, application France, Feb. 24, 1988, 88 02256
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 **2 Claims**



1. In a laser cutting apparatus comprising a laser radiation emitter, a focussing lens fixed in an adjustable sliding sleeve, said sleeve being extended, towards the material to be cut, by a truncated nozzle of which the small end is in the immediate vicinity of said material to be cut, said apparatus comprising a gas-evacuation device constituted by a hood—called ejector—open towards the material to be cut and fixed on said sliding sleeve,

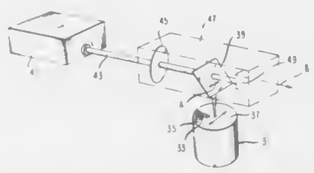
said ejector comprises, on its periphery and on its open face lying opposite the material to be cut, openings allowing the injection of gas-air along convergent axes, and, in its upper part, a pipe for evacuating the gases.

4,942,285

METHOD FOR WELDING METAL HONEYCOMB CARRIER

Hiroyuki Ishikawa, and Hiroyasu Koizumi, both of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Nov. 6, 1989, Ser. No. 431,750
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **12 Claims**



1. A method for welding a metal honeycomb carrier by radiating laser beam to one end surface of a core section formed of metal corrugated and flat plates to mutually weld said corrugated and flat plates, said method comprising:

moving said laser beam in the direction perpendicular to the welding direction while oscillating at a certain amplitude and

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masking the amplitude end of said laser beam and its neighboring area on the end surface of said core section.

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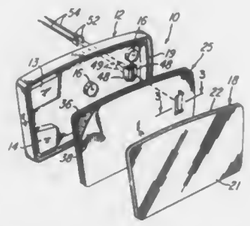
APPARATUS FOR HEATING A MIRROR OR THE LIKE

Robert P. Monter, and Ronald L. Smith, both of Dayton, Ohio, assignors to Thermacon, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 120,325, Nov. 13, 1987, abandoned. This application Feb. 6, 1989, Ser. No. 307,051

Int. Cl.[5] H05B *3/84*

U.S. Cl. 219—219 7 Claims



1. A mirror and heater assembly comprising a mirror having a predetermined shape and size, a single layer of conductive polymer having opposite parallel flat surfaces providing said layer with a substantially uniform thickness, said polymer having a positive temperature coefficient of resistivity, a set of continuous metal foils bonded to said opposite surfaces of said layer and cooperating to form a laminated heater assembly having a uniform thickness with only said single layer of said polymer between said foils, said metal foils and said polymer layer having the same size and shape, means for attaching one of said metal foils forming one side of said heater assembly to said mirror, an integral portion of said laminated heater assembly projecting laterally outwardly from the plane of said heater assembly to form a connecting tab, means for connecting a pair of electrical conductors to the portions of said metal foils on said tab, and said heater assembly being effective to heat substantially the entire mirror according to variations in temperature of different areas of the mirror.

4,942,287

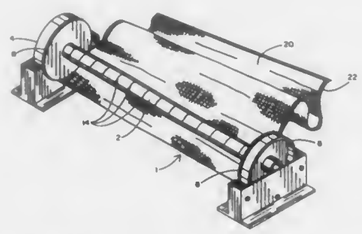
LINOLEUM ROLL HEATER ASSEMBLY

Paul Walker, 233 W. Cirton, Corona, Calif. 91720

Filed Jun. 19, 1989, Ser. No. 367,885

Int. Cl.[5] H05B *3/58*

U.S. Cl. 219—385 13 Claims



1. A heater assembly for heating a roll of material having a hollow core, said heater assembly comprising:

a heating tube to be inserted through the core of the roll of material;

an electrical heating element extending along said heating tube and adapted to be powered from an electrical source to provide heat to the roll of material;

cover means to surround the roll of material and prevent the loss of heat therefrom;

first and second end caps attached to opposite ends of said heating tube to retain the roll of material therebetween, at least one of said end caps being detachable from said heating tube to permit said heating tube to be inserted through the core of the roll of material; and

means by which to removably attach said cover means to said first and second end caps when said cover means surrounds the roll of material.

4,942,288

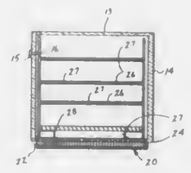
BAKING OVEN

Dillard D. Worsham, and Janet M. Worsham, both of P.O. Box 507, Delhi, Calif. 95315

Filed Mar. 10, 1989, Ser. No. 321,790

Int. Cl.[5] F24C *7/00, 15/34*

U.S. Cl. 219—399 11 Claims



1. A baking oven comprising,

a hood means including a top wall, a rear side wall, and spaced first and second side walls integrally secured together, and

a closure door pivotally mounted to a first side wall and selectively securable to a second side wall, and

wherein said hood means is removably mounted for overlying engagement with a base portion;

said base portion including a base member, said base member including a top surface with a heating element mounted fixedly thereon with a rack extending upwardly from said base member in surrounding relationship to said heating element, and

a heat slab mounted overlying said heating element, and

wherein said heating element includes a continuously formed and upwardly extending heat shield formed about said heating element, and

wherein said heat slab is selectively postionable upon an upper surface of said heat shield.

4,942,289

ELECTRIC HEATING ELEMENT WITH PTC COMPONENT

Hanno Roller, Kandel, and Roland Starck, Rülzheim, both of Fed. Rep. of Germany, assignors to Fritz Eichenauer GmbH & Co. KG, Kandel, Fed. Rep. of Germany

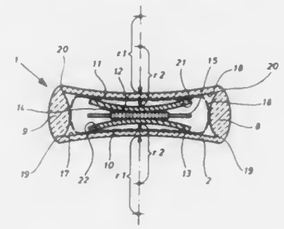
Filed May 3, 1989, Ser. No. 346,702

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815306

Int. Cl.[5] H05B *3/10*

U.S. Cl. 219—504 11 Claims

1. Electric heating element with a contact unit formed from at least one PTC component and contact plates pressed flat on either side thereof, and pressed within a casing, characterized in that the contact plates and casing have a Brinell hardness of 80 to 100, that in the unpressed state of the heating element the contact plates are curved and rest with their convex side on the PTC component, that the casing is made from dimensionally stable-light metal and in the unpressed state has an inner wall convexly facing the contact arrangement and having a finite



radius of curvature, which is larger than the radius of curvature of contact plates.

4,942,290

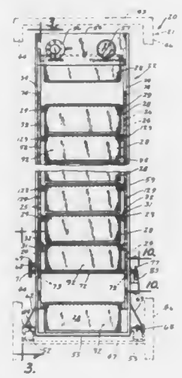
DISPENSING MACHINE HAVING HORIZONTAL PRODUCT CARRIER MOVABLE THROUGH AN ELLIPTICAL-TYPE PATH

David R. Frerking, Des Moines, Iowa, assignor to Fawn Engineering Corp., Des Moines, Iowa

Filed Dec. 27, 1988, Ser. No. 291,004

Int. Cl.[5] G06F *7/08*

U.S. Cl. 235—381 14 Claims



1. In a dispensing machine:

a cabinet;

an endless, upright conveyor mounted within said cabinet having an elliptical-type shape, said elliptical-type shape having opposed vertical stretches;

a dispensing station formed adjacent one of said vertical stretches;

a plurality of product carriers, each carrier having support devices mounted on opposed ends thereof;

means mounting said carriers on said conveyor for movement in succession past said station;

stabilizer means rotatably connected to said mounting means and including a follower secured thereon, said support devices releasably connected to said stabilizer means; and

guide track means having elliptical-type guidepaths with vertical stretches extended parallel said vertical stretches of said conveyor, said follower of each stabilizer means engaged in at least one of said guidepaths whereby said carriers are maintained in a generally horizontally disposed position for receiving and holding product.

4,942,291

POSITION-RESOLVING SENSOR FOR DETECTING INDIVIDUAL LIGHT FLASHES

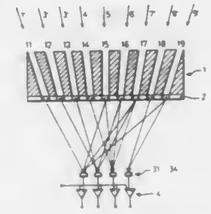
Klaus Dietrich, Gochsheim, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 72,021, Jul. 10, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 331,092

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1986, 3625643

Int. Cl.[5] G01J *1/20*; G01B *11/26*

U.S. Cl. 250—203.3 12 Claims



1. A position-resolving sensor for detecting individual light flashes having a multiplicity of adjacent light-receiving elements and an evaluating circuit which determines the light-receiving element upon which a light-flash impinges, wherein the light-receiving elements are subdivided into a plurality of groups such that each group of light-receiving elements borders exclusively on light-receiving elements belonging to other groups, each group of light-receiving elements being associated with a number of light detectors, at least one optical connecting element establishing a light-conducting connection between each individual light-receiving element and the light detectors, said light detectors being selected from the number of light detectors in accordance with a defined code.

4,942,292

APPARATUS FOR FOLLOWING SUN LIGHT

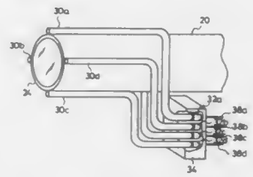
Kiyoshi Ichimura, Tokyo; Kideaki Ito, Tokyo; Masaki Fuse, Tokyo; Chiaki Sasamatsu, Tokyo; Shingo Suzuki, Zama, and Satoshi Takahashi, Tokyo, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1988, Ser. No. 206,831

Claims priority, application Japan, Jun. 11, 1987, 62-146025

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—203.4 9 Claims



1. Apparatus for following sun light for use with sun light condensing apparatus with a lens and a plurality of light-collecting optical fibers whose one ends are arranged within a circular area where said sun light is intended to be condensed by said lens, said apparatus comprising:

(a) means for performing normal tracking in accordance with data including longitude and latitude of a place where said sun light condensing apparatus is mounted, number of days after vernal equniox and time;

(b) at least two pairs of light-receiving means each provided at opposite positions along the periphery of said circular

area in which said light-collecting optical fibers are arranged, each of said light-receiving means including an optical fiber having an end at a position immediately outside said circular area;

(c) a signal processing circuit responsive to output signals from said light-receiving means for producing a control signal when one of a said light receiving means senses incidence of sun light; and

(d) means for interrupting said normal tracking in the presence of said control signal and for moving said sun light condensing apparatus in a direction for one of a pair of said light-receiving means causing generation of said control signal which said one of said pair of said light-receiving means is not receiving sun light toward the other light-receiving means of said pair of light receiving means which is actually receiving sun light.

4,942,293

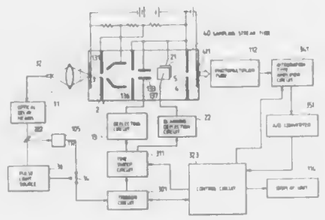
OPTICAL WAVEFORM OBSERVING APPARATUS

Musubu Koishi; Yntaka Tsuchiya; Tomoyoshi Hara, and Kenji Suzuki, all of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 29, 1988, Ser. No. 291,822

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—213 VT **18 Claims**



1. Optical waveform observing apparatus including a sampling streak tube for observing a waveform of an incident light beam having a repetitive frequency, the streak tube including means responsive to a repetitive deflecting trigger signal for deflecting in a sweep mode an electron beam corresponding to the incident light beam so that the electron beam can be sampled, the apparatus comprising:

electrical trigger signal means for generating an electrical trigger signal in synchronism with the repetitive frequency of said incident light beam;

time sweep means, operatively coupled to said trigger signal means, for stepwise delaying by a predetermined time period said electrical trigger signal to provide said deflecting trigger signal, said time sweep means effecting the stepwise delay in said deflecting trigger signal whenever the sampling operation is carried out a predetermined number of times; and

integration means for integrating sampling results, outputted by said streak tube, of the sampling operations carried out the predetermined number of times and providing a corresponding integrated sampling results.

4,942,294

FIBER OPTIC SENSING APPARATUS FOR MULTIPLEXING A PLURALITY OF OPTICAL SIGNALS OF DIFFERENT WAVELENGTHS OVER A SINGLE FIBER OPTIC CABLE

James R. Witte, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 12, 1988, Ser. No. 192,999

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.14 **8 Claims**



1. An optical sensing system, comprising:

an electromagnetic radiation source emitting broadband electromagnetic radiation;

plurality of optical switch devices, each of said switch devices being responsive to physical conditions applied to it to modify and reflect electromagnetic radiation supplied to it;

a wavelength splitter/combiner for receiving said broadband electromagnetic radiation and separation said broadband radiation into a plurality of selected wavelengths, said wavelength splitter/combiner further including means for combining electromagnetic radiation reflected from said switch devices into one composite signal;

a plurality of optical fiber conductors, a separate conductor corresponding to each one of said plurality of optical switch devices, each of said conductor functioning to transmit a selected wavelength from said splitter/combiner to said conductor's corresponding switch device and to transmit reflected radiation from said conductor's corresponding switch device to said splitter/combiner;

an optical conductor for transmitting radiation from said radiation source to said wavelength splitter/combiner and for transmitting said composite signal from said splitter/combiner; and

means for extracting said composite signal from said last-recited optical conductor.

4,942,295

APPARATUS FOR ANGLE MEASUREMENT WITH INSTALLATION MEANS

Arthur Brunner, Trostberg, and Johann Mitterreiter, Tachertling, both of Fed. Rep. of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 25, 1989, Ser. No. 357,087

Claims priority, application Fed. Rep. of Germany, May 25, 1988, 3817612; Mar. 18, 1989, 3908932

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.13 **16 Claims**

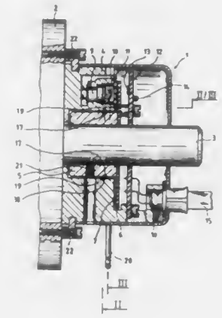
1. An angle measurement apparatus, comprising:

a graduation carrier;

a hub provided so as to connect the apparatus to a shaft and having stop faces;

a stationary scanning arrangement arranged so as to scan the graduation carrier; and

installation means for defining a positional correlation of the graduation carrier and the scanning arrangement, the installation means including at least one fastening element which is designed in the form of clamping elements provided so as to embrace the hub and cooperate with the stop faces of the hub so as to fix the axial functional spacing and radial correlation between the graduation carrier



and the scanning arrangement, the clamping elements being provided in a defined positional relationship at the stationary scanning arrangement.

4,942,296

SUPER-CRITICAL FLUID MASS SPECTROMETER

David S. Jones, Sale, England, assignor to VG Instruments Group Limited, Crawley, England

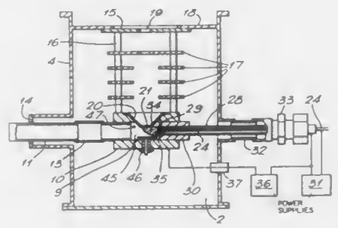
Filed Jul. 7, 1988, Ser. No. 216,092

Claims priority, application United Kingdom, Jul. 10, 1987, 8716252

The portion of the term of this patent subsequent to Dec. 27, 2005, has been disclaimed.

Int. Cl.[5] H01J *49/26*

U.S. Cl. 250—288 **15 Claims**



1. A mass spectrometer for the analysis of a sample in solution in a super-critical fluid, said spectrometer comprising:

(a) means for reducing the pressure of said super-critical fluid solution and introducing at least some of the resulting sample-containing expanded fluid into an ionization chamber maintained substantially below atmospheric pressure;

(b) means for maintaining within said ionization chamber a glow discharge whereby to produce ions characteristic of said sample;

(c) means for extracting from said ionization chamber at least some of said ions, and

(d) means for mass analyzing at least some of the said ions extracted by said means for extracting.

4,942,297

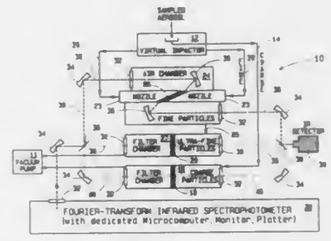
REAL TIME INFRARED AEROSOL ANALYZER

Stanley A. Johnson, Countryside; Gerald T. Reedy, Bourbonnais, and Romesh Kumar, Naperville, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 18, 1988, Ser. No. 273,395

Int. Cl.[5] G01N *21/01*

U.S. Cl. 250—304 **9 Claims**



1. Apparatus for analyzing a sample from an aerosol environment, the sample having gaseous elements with suspended particles, comprising,

means for separating the sample into a plurality of size fractions,

means for collecting a first fraction in filter means, said collecting means having a first sealed chamber and said filter means being located inside said first chamber,

means for impacting a second fraction against an internal reflection element to which said second fraction adheres, said impacting means having a second sealed chamber and said internal reflection element being located inside said second chamber, and

means for analyzing said fractions through infrared spectrophotometry in essentially real time, without removing said filter means from said first chamber, or said internal reflection element from said second chamber,

said analyzing means including means for emitting infrared light, means for focusing and routing the infrared light through said first and second chambers, means for directing the infrared light alternately through said fractions, and means for measuring the infrared light and identifying the particles.

4,942,298

ELECTRON SPECTROMETER

John Comer, Stockport, United Kingdom, assignor to The Victoria University of Manchester, United Kingdom

PCT No. PCT/GB87/00118, § 371 Date Oct. 20, 1988, § 102(e) Date Oct. 20, 1988, PCT Pub. No. WO87/05151, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 18, 1987, Ser. No. 235,872

Claims priority, application United Kingdom, Feb. 20, 1986, 8604256

Int. Cl.[5] H01J *49/44*

U.S. Cl. 250—305 **5 Claims**

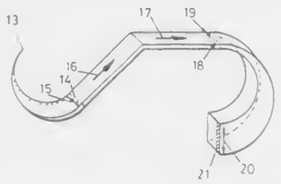
1. An electron spectrometer comprising:

an electron source for providing a beam of electrons having a predetermined energy spectrum,

an electron selector for dispersing in energy the electrons of the beam to produce an elongate selector image each portion of the length of which comprises electrons having a predetermined respective energy,

means for focussing the selector image on a target to produce an elongate target image including scattered electrons having a range of energies, each portion of the length of the target image resulting from a respective portion of the length of the selector image, and

an analyzer for dispersing in energy the scattered electrons of the target image, the analyzer being orientated such that the electrons are dispersed in a direction substantially perpendicular to the length of the target image,



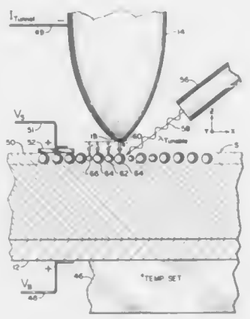
whereby the analyzer produces a rectangular image made up of substantially parallel strips each including electrons of a range of energies but each resulting from the scattering by the target of electrons of a respective energy.

4,942,299

METHOD AND APPARATUS FOR DIFFERENTIAL SPECTROSCOPIC ATOMIC-IMAGING USING SCANNING TUNNELING MICROSCOPY

Lawrence L. Kazmerski, Lakewood, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Mar. 1, 1989, Ser. No. 317,466
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **23 Claims**



16. Spectroscopic scanning tunneling microscope (SSTM) apparatus for differential atomic imaging the surface of a material sample, comprising:

a mounting stage for mounting the sample;

a fine-pointed electrode probe positioned adjacent said mounting stage and being positionable very closely adjacent a sample that is mounted on said stage to accommodate a tunneling current between the sample and the probe;

tunable electronic surface bias means connected to the surface of the sample and to the probe for electronically biasing the surface of the sample in relation to the probe with a surface voltage bias;

photon bias means adjacent the stage for providing photon biasing of selected wavelengths and frequencies on the surface of the sample adjacent the probe;

instrumentation means for measuring tunneling current through the probe and electronic voltage bias;

data processing means connected to said instrumentation means and to said photon bias means for collecting, processing, and storing tunnel current, surface voltage bias, and photon bias data and for calculating and comparing tunnel current to voltage bias relationships in the presence and absence of photon biasing to determine atomic bonding and atomic species in the bonding; and

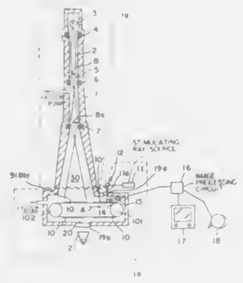
display means connected to said data processing means for producing a visual display of atoms present in the surface of the material including a visually identifiable representation of the individual species of each atom.

4,942,300

ELECTRON BEAM IMAGE RECORDING USING STIMULABLE PHOSPHOR SHEET OF REDUCED THICKNESS AND/OR WITH NO PROTECTIVE LAYER

Nobufumi Mori; Yuichi Hosoi, and Kenji Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 18, 1985, Ser. No. 799,261
Claims priority, application Japan, Nov. 16, 1984, 59-240456; Nov. 16, 1984, 59-240457; Nov. 16, 1984, 59-240458
Int. Cl.[5] G01T *1/29, 1/105*
U.S. Cl. 250—327.2 **4 Claims**



1. A method for recording and reproducing an electron beam image information comprising:

recording an electron beam image transmitted through or reflected from a sample as an electron beam energy latent image on a stimulable phosphor sheet comprising a stimulable phosphor layer which contains substantially no phosphor particle in its surface phase and has an exposed surface with no protective layer thereon;

irradiating said stimulable phosphor sheet with an electromagnetic wave to release at least a portion of electron beam energy stored in said stimulable phosphor sheet and stimulated emission;

detecting the stimulated emission;

and

photoelectrically processing the detected stimulated emission to obtain an electron beam image information of the sample.

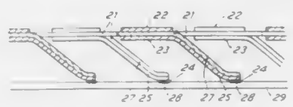
4,942,301

THERMAL IMAGING DEVICE

Roger Voles, London, England, assignor to Thorn EMI Electronics Limited, Hayes, England

Filed Jun. 1, 1989, Ser. No. 359,882
Claims priority, application United Kingdom, Jun. 1, 1988, 8812958
Int. Cl.[5] H01L *27/14*
U.S. Cl. 250—338.3 **9 Claims**

1. A thermal imaging device comprising: a layer comprising pyroelectric material; an array of discrete electrodes carried on one major surface side of the layer; an array of interconnected electrodes carried on the other major surface of the layer so as to define with the layer and discrete electrodes an array of pyroelectric detector elements; an array of electrically conductive contacts carried on said one surface of the layer, each conductive contact being connected to a respective discrete electrode by an elongate electrically conductive strip, portions of the layer each carrying at least one contact and part of the associated conductive strip being formed into tongues attached



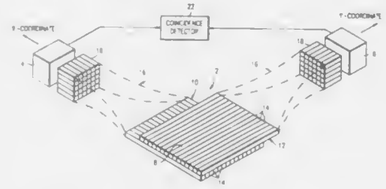
to the major portion of the layer along only part of their peripheries, the free ends of the tongues being pulled out of the plane of the layer, each contact being electrically connected to a respective input of a signal processing means.

4,942,302

LARGE AREA SOLID STATE NUCLER DETECTOR WITH HIGH SPATIAL RESOLUTION

Walter Koechner, Great Falls, Va., assignor to Fibertek, Inc., Herndon, Va.

Filed Feb. 9, 1988, Ser. No. 154,004
Int. Cl.[5] G01T *1/20, 1/172*
U.S. Cl. 250—368 **15 Claims**



1. A nuclear radiation detector system comprising:

a first set of optical fibers;

a second set of optical fibers;

a first predetermined section of each of said fibers in said first set arranged side by side in a common plane to form a first linear array;

a first predetermined section of each of said fibers in said second set arranged side-by-side in a common plane to form a second linear array;

said first and second linear arrays being arranged orthogonally to define a matrix of rows and columns of fibers for sensing the presence of a nuclear particle and converting the nuclear radiation energy thereof to optical energy;

a second predetermined section of each of said fibers in said first set arranged in a bundle to form a first planar array wherein an open end of each of said fibers from an end surface of said first planar array to provide an output for optical energy generated in said first set of optical fibers;

a second predetermined section of each of said fibers in said second set arranged in a bundle to form a second planar array wherein an open end of each of said fibers form an end surface of said second planar array to provide an output for optical energy generated in said second set of optical fibers; and;

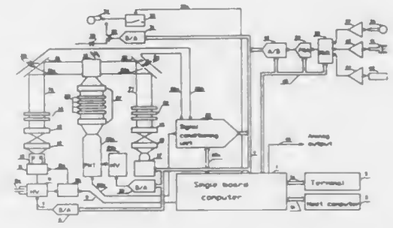
detector means coupled to said first and second planar arrays for measuring the optical energy output thereof to determine the location of the sensed nuclear particle.

4,942,303

COMPUTER CONTROLLED FLUOROMETER DEVICE AND METHOD OF OPERATING SAME

Zbigniew Kolber, Shoreham, and Paul Falkowski, Stony Brook, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Jan. 31, 1989, Ser. No. 304,273
Int. Cl.[5] G01N *21/64, 21/62, 21/63, 21/00*
U.S. Cl. 250—458.1 **14 Claims**



1.. A computer controlled fluorometer device for conveniently making rapid and accurate measurements of plant or phytoplankton photosynthetic parameters including ranges of variable fluorescence, $\Delta\phi_{sat}$, absorption cross section, σ(PSII), decay kinetics of variable fluorescence, and levels of energy transfer between PSII units in either essential darkness or under background illumination, comprising:

(a) a pump flash source, a probe flash source, a sample chamber having a cavity for containing a sample of plant or phytoplankton to be measured, a programmable computer means including a microprocessor, and data and address bus means and D/A converters for operatively connecting said computer means to enable the computer means when programmed to control energy, increment, repetition, and sequencing of both said pump flash source and said probe flash source;

(b) light filter, collimator, and reflector means arranged in operating relationship between said pump flash source and the sample chamber, and between said probe flash source and the sample chamber, for directing pump flashes and probe flashes, produced, respectively, by said flash sources, into the sample chamber;

(c) a light condenser lens system, emission filters, and a fluorescence detector with a photomultiplier (PMT) arranged in series to collect light emitted from said sample chamber and direct it into the PMT, said PMT being operable to produce a signal that corresponds to said light directed into the PMT, the operation of said PMT being controlled by a power supply that is operably connected to it and to said computer means from which control signals are transmitted to the power supply;

(d) signal conditioning unit and two flash monitoring means, each operatively connected, respectively, to monitor pump flash light each probe flash light generated by said flash sources, said monitoring means being further operably connected to transmit signals corresponding to said monitored flashes to said signal conditioning unit, said signal conditioning unit being operably connected to be controlled by, and to transmit signals to, said microprocessor;

(e) a software programmable source of background irradiance, said programmable source being operably connected to receive programmed signals from said microprocessor, and being arranged to emit light into said sample chamber; and

(f) a computer program installed to run said microprocessor, thereby to control the operation of said flash sources, said power supply controlling the PMT, and said signal control unit, to enable the fluormeter device to make said

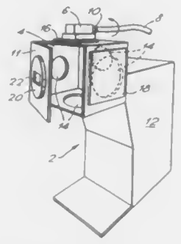
measurements, said computer program being further operable to control said computer means to collect, analyze, and store data relating to said measurements.

4,942,304

ION IMPLANTATION

Malcolm E. Boston, Cambridge, United Kingdom, assignor to Tecvac Limited, United Kingdom

PCT No. PCT/GB87/00691, § 371 Date May 24, 1988, § 102(e) Date May 24, 1988, PCT Pub. No. WO88/02589, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 30, 1987, Ser. No. 197,408
Claims priority, application United Kingdom, Sep. 30, 1986, 8623453
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.3 **12 Claims**



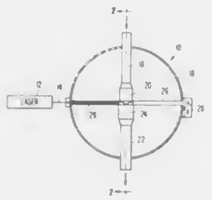
1. Ion implantation apparatus comprising a vacuum chamber and an ion source, the ion source being moveable so as to enable ions to be directed onto a stationary target from a plurality of different directions, wherein the ion source in use is coupled to a flexible cable supplying gas and a high tension thereto, and wherein the end of the flexible cable remote from the ion source is coupled to a high tension supply and to a gas supply, a valve being provided to regulate the flow of gas; the valve is connected to the high tension supply so that in use the valve may be maintained at high tension.

4,942,305

INTEGRATING SPHERE AEROSOL PARTICLE DETECTOR

Holger T. Sommer, Greenbelt, Md., assignor to Pacific Scientific Company, Newport Beach, Calif.

Filed May 12, 1989, Ser. No. 350,769
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—574 **10 Claims**



1. Apparatus for detecting particles in a gas stream comprising:
- an integrating sphere having an interior surface;
- means for conducing the gas stream through said integrating sphere;
- means for projecting a collimated light beam transversely through said gas stream in said integrating sphere, whereby the particles in the gas stream scatter light from said light beam;
- means for detecting light scattered from said light beam within said integrating sphere, said light detecting means comprising a plurality of photodetectors mounted on said integrating sphere,
- and coincidence detection means for detecting the simultaneous light detection by at least two of said photodetectors.

4,942,306

FIBRE OPTIC SENSOR FOR THE CONTINUOUS MEASUREMENT LIQUIDS LEVEL AND OTHER PARAMETERS

Paul D. Colbourne, Dartmouth, Canada, assignor to Focal Technologies Incorporated, Dartmouth, Canada

Filed Dec. 30, 1988, Ser. No. 292,111
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 **17 Claims**



1. An indicating device for showing the level of the interface between two fluids in a container, wherein one fluid has a higher index of refraction than the other, comprising at least two optical fibres, each having at least a portion thereof embedded in a transparent substrate material of similar refractive index to that of the fluid with a higher refractive index, one of said fibres being a source fibre optically connected to a light source, the other being doped with a fluorescent doping material and being a detector fibre optically connected to a detector, the fibres being arranged within the substance such that light emitted from said source fibre illuminates the interior of the substrate, which serves as a larger waveguide, and (a) is coupled into said detector fibre when total internal reflection occurs at the substrate/fluid interface, which is the case when air or a fluid of relatively low refractive index is present, or (b) is not coupled into said detector fibre when refraction occurs at the substrate/fluid interface, which is the case when the fluid of higher refractive index, namely the fluid whose level is to be measured, is present.

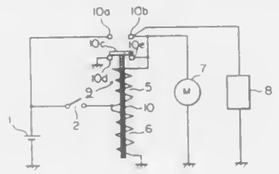
4,942,307

ENGINE STARTER APPARATUS

Akira Morishita, and Shuzoo Isozumi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1988, Ser. No. 284,029
Claims priority, application Japan, Dec. 24, 1987, 62-199048
Int. Cl.[5] F02N *11/08*
U.S. Cl. 290—38 R **3 Claims**

1. An engine starter apparatus comprising
an electric source;
a starter motor connected to said electric source;
a solenoid switch connected between said electric source and said starter motor, said solenoid switch being movable between a closed position in which said electric source is connected to said starter motor and an open position in which said electric source is disconnected from said starter motor;
a supplemental fuel supplier connected in parallel to said



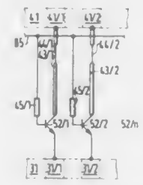
starter motor for supplying additional fuel to the engine when said starter motor is energized; and
short-circuiting means connected to said starter motor for directly short circuiting said starter motor when said solenoid switch is in said open position.

4,942,308

POWER TRANSISTOR MONOLITHIC INTEGRATED STRUCTURE

Gerhard Conzelmann, Leinfelden-Oberaichen; Karl Nagel, Gomaringen, and Gerhard Fiedler, Neckartailfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1989, Ser. No. 301,821
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1988, 3802794
Int. Cl.[5] H03K *17/60*; H01L *27/082*
U.S. Cl. 307—202.1 **6 Claims**



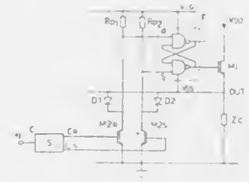
1. A bipolar power transistor monolithic integrated structure made by epitaxial technology, comprising a plurality of parallel connected transistor cells each containing at least one component transistor and transistor electrode terminals, said transistor cells being electrically isolated one from each other; a conductor web leading to an external collector terminal of the power transistor structure; means for connecting collector terminals of said transistor cells to said collector conductor web, said connecting means including a plurality of branch conductors for connecting said collector terminals of the transistor cells to external connection spots connected to said conductor web, each of said branch conductors being provided with a fuse link dimensioned such as to melt when a defect occurs in the associated transistor cell and thereby to separate the defective component transistor; a common cell base control conductor, the base of said at least one component conductor in respective cells being coupled to said common base control conductor via an additional fuse link to disconnect in the event of a defect the base control conductor from the component transistor; and a plurality of electronic controlled switches connected between said common conductor web and the ends of respective additional fuse links remote from the base of the component transistor in respective transistor cells, each of said switches having a control electrode coupled to the collector of the assigned component transistor.

4,942,309

HIGH SIDE DRIVER MOS CIRCUIT

Davide Chieli, Milan, Italy, assignor to SGS-Thomson Microelectronics, s.r.l., Italy

Filed Feb. 22, 1989, Ser. No. 313,556
Claims priority, application Italy, Feb. 25, 1988, 83616 A/88
Int. Cl.[5] H03K *17/16, 17/60*
U.S. Cl. 307—270 **5 Claims**



1. A high side driver circuit for switching a supply voltage V_{DD} across a load Zc by means of a power switching transistor M1, which has a drain connected to the supply voltage rail V_{DD}, and a source connected to a terminal of the load, the other terminal of the load being connected to the ground, with said power switching transistor being driven by a driving circuit controlled by a drive switching signal C, said circuit comprising;
- an input circuit means having an input terminal to which said drive switching signal C is applied, said input circuit means producing at two output terminals thereof, a first pulse signal C_S which is a positive pulse coinciding with a falling edge of said switching signal C and a second pulse signal C_R which is a positive pulse coinciding with a rising edge of said switching signal C, respectively;
- a first transistor M2S having a grounded source and being driven by said first signal C_S, said first transistor having a drain connected through a load element capable of maintaining the said potential of said transistor at a stationary logic 1 level, when said transistor is turned OFF from a supply node V_{GG} of the circuit;
- a second transistor M2R having a grounded source and being driven by said second pulse signal C_R and having a drain connected through a load element capable of maintaining the drain potential of said transistor at a stationary logic 1 level when said transistor is turned OFF from said supply node V_{GG} of the circuit;
- a SET-RESET type flip-flop having a SET input terminal connected to the drain of said first transistor M2S and a RESET input terminal connected to the drain of said second transistor M2R and having an output terminal connected to the gate of said power switching transistor M1;
- wherein a constant potential difference is being maintained between said supply node V_{GG} of the circuit and the source of said power switching transistor M1 by means of a voltage generator, and wherein said driving circuit dissipates only during transitions from one state to another.

4,942,310

ARRANGEMENT FOR THE TRANSFORMATION OF AN ELECTRICAL MULTIPHASE SIGNAL INTO A FREQUENCY

Franz Renggli, Buchrain, and Andreas Joder, Unterägeri, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

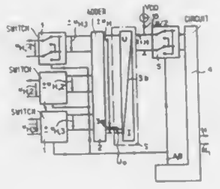
Filed Mar. 17, 1989, Ser. No. 325,135
Int. Cl.[5] H03L *7/00*; H03K *5/22*
U.S. Cl. 307—271 **4 Claims**

1. An arrangement for converting a multiphase electric signal into a frequency comprising:

an adder circuit for adding the phases comprising said multiphase signal,

one first polarity reversing switch for each phase in said multiphase signal,

at least one voltage/current converter connected downstream of said first polarity reversing switches,



at least one second polarity reversing switch connected downstream of said voltage/current converter,

a control circuit for generating a periodic switch-over signal for controlling said first and second polarity reversing switches, and

a constant current source connected at an input of said one second polarity reversing switch.

4,942,311

RESET CIRCUIT FOR AN AUTOMOBILE ANTENNA CONTROL DEVICE

Takuji Harada, Kanagawa, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 254,356, Oct. 6, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 449,506

Claims priority, application Japan, Aug. 10, 1987, 62-254246

Int. Cl.[5] H01Q *1/32;* **H03K** *17/22, 17/20, 17/06*

U.S. Cl. 307—272.3 **3 Claims**

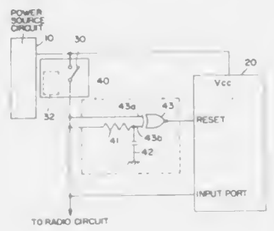
1. An automobile antenna control device comprising:

a microcomputer which is constantly supplied with electric power for controlling extension and retraction of said automobile antenna, said microcomputer having a reset input and an input port;

means for generating a reset signal only when a condition of a power switch of an automobile radio changes from off to on or on to off; and

a means for sensing a condition of said power switch of said automobile radio, said sensing means having an ouput thereof coupled to said generation means and said input port of said microcomputer;

whereby run away operation of said microcomputer can be prevented during a change in condition of said power switch of said automobile radio and said automobile antenna is retracted when said power switch is off and extended when said power switch is on.





OPERATION OF POWER SOURCE SWITCH 30	OFF	ON		OFF	
		AFTER PRESCRIBED TIME AFTER "ON"	AFTER PRESCRIBED TIME HAS PASSED FOLLOWING "ON"	AFTER PRESCRIBED TIME AFTER "OFF"	AFTER PRESCRIBED TIME HAS PASSED FOLLOWING "OFF"
INPUT TERMINAL 43a	0	1	1	0	0
INPUT TERMINAL 43b	0	0	1	1	0
OUTPUT OF EX NOR 45	1	0	1	0	1
ACTUATION OF MICROCOMPUTER 20	SET	RESET	SET	RESET	SET

4,942,312

INTEGRATED-CIRCUIT HAVING TWO NMOS DEPLETION MODE TRANSISTORS FOR PRODUCING STABLE DC VOLTAGE

Eric G. Stevens, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

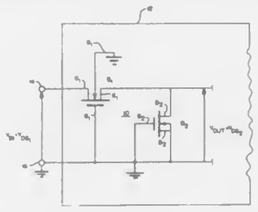
Filed Aug. 19, 1985, Ser. No. 766,994

Int. Cl.[5] H03K *3/013, 17/16, 19/003;* **H02P** *7/06*

U.S. Cl. 307—296.8 **6 Claims**

1. An integrated-circuit which in response to a variable DC input voltage produces a stable DC output voltage, comprising:

a. first and second NMOS depletion mode transistors each having gate, drain and source electrodes electrically connected as follows the source electrode of the first transistor and the drain electrodes of the second transistor being connected, the gate electrodes of both transistors and the source electrode of the second transistor being connected to a reference potential and the drain electrode of the first transistor being connected to the variable DC input voltage; and



b. parameters of the first and second transistors being selected so that the desired stable DC voltage is produced at the electrical junction of the connected source and drain electrodes.

4,942,313

METHOD FOR DETECTING A CURRENT FLOWING OVER THE HUMAN BODY BETWEEN A FORWARD AND A RETURN CONDUCTOR AND A CIRCUIT CONFIGURATION FOR CARRYING OUT THE METHOD

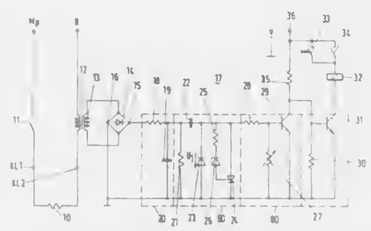
Helmut Kinzel, Weinheim, Fed. Rep. of Germany, assignor to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Aug. 17, 1988, Ser. No. 233,242

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1987, 3728906

Int. Cl.[5] H02H *1/02;* **A61B** *17/36*

U.S. Cl. 307—326 **13 Claims**



1. Method for detecting a current flowing through a human body between forward and return main network conductors at a given network voltage, and for switching off the main network conductors, which comprises detecting a current increase through the human body by means of an output signal emitted by a current sensor connected in one of the network conductors, actuating a switch for switching off the main network conductors only if a value of the output signal of the current sensor is between a lower and an upper threshold value, wherein said lower threshold value represents a current that is of just no danger to a human body, and the upper threshold value represents a maximal allowable current value through a human body, at said given network voltage, rectifying the output signal of the current sensor in a rectifier, differentiating the rectified output signal in a differentiating section, supplying the rectified output signal to a discriminator circuit after differentiation, and limiting a window of the discriminator circuit by the lower and upper threshold values.

4,942,314

PEAK HOLDING CIRCUIT FOR A COLOR TELEVISION RECEIVER

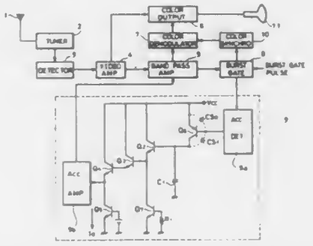
Nobukazu Hosoya, Nara; Kazunori Nohara, Osaka; Yasuyuki Ikeguchi, Higashiosaka; Tooru Sasaki, Matsubara, and Yoshichika Hirao, Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 16, 1988, Ser. No. 245,179

Claims priority, application Japan, Sep. 18, 1987, 62-235428; Sep. 18, 1987, 62-235430

Int. Cl.[5] H04N *5/18;* **H03K** *5/159*

U.S. Cl. 307—352 **6 Claims**



1. A peak holding circuit for holding a peak level of an input signal, comprising:

means for supplying said input signal;

means for holding the peak level of said supplied input signal;

a darlington circuit comprising a plurality of transistors connected in a darlington manner for supplying an output signal in response to the peak level held in said holding means, said darlington circuit having at least a first stage output transistor; and

at least one current cancelling transistor having an emitter connected to ground and a collector connected to an emitter of said first stage output transistor out of said plurality of transistors connected in a darlington manner wherein a collector cut-off current flowing between said collector and said emitter of said current cancelling transistor being approximately equal to a collector cut-off current flowing through said first stage output transistor out of said plurality of transistors connected in a darlington manner.

4,942,315

BASE POINT FLOATING CUT OFF WAVE FORM DIFFERENTIAL SIGNAL DETECTOR CIRCUIT

Lin J. Tarng, 211, Sec. 4, Fu-Hsing Rd., Taichung City, Taiwan, China

Continuation of Ser. No. 66,539, Jun. 26, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 394,256

Int. Cl.[5] H03K *5/08, 5/153*

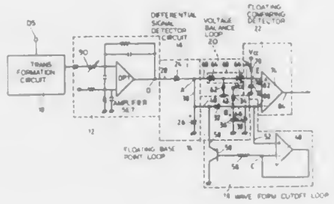
U.S. Cl. 307—358 **1 Claim**

1. In a differential signal detector circuit comprising differential-signal input means comprising an amplifier for providing an amplified differential signal from a sensor, a differential signal detector for detecting the amplified differential signal to provide a detecting signal and a comparing detector having a timer with a time constant for comparing the detecting signal with a base point signal and providing a differential signal detection signal when the detected differential signal differs sufficiently from the base point signal, a floating base point signal improvement, comprising:

a floating base point loop (**16**) for providing the base point signal, the floating base point loop comprising a base point value setting element (**38**) for setting a maximum value of the base point signal, a timer element (**36**) having a time constant and a charging element (**34**) for timing charging

of the base point value setting element to the maximum base point value, the time constant of the timer element being longer than the time constant of the timer in the comparing detector, and a fixed directional impedance element (32) connecting the base point value setting element to the differential signal detection circuit for affecting the detecting signal thereof;

a wave form cutoff loop (18) comprising a current amplifying element (48) responsive to the timed charge to the maximum base point value of the floating base point loop and a clipping element (50) responsive to the current



amplifying element for cutting off the affect of the floating base point loop on the detecting signal of the differential signal detection circuit; and

a voltage balance loop (20) comprising a pair of fixed voltage difference elements (64, 66) connected to each other for no directional impedance difference therebetween and a discharging element (62) connected between the pair of fixed voltage difference elements for voltage balance, the pair of fixed voltage difference elements connecting the differential signal detector circuit to the comparing detector.

4,942,316

CASCODE LOGIC CIRCUIT INCLUDING A POSITIVE LEVEL SHIFT AT THE INPUT OF THE TOP LOGIC STAGE

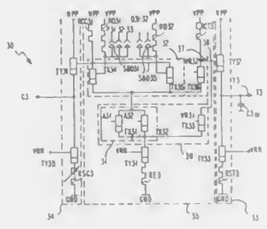
Hervé Béranger, Fontainebleau; Armand Brunin, Le Mee sur Seine; Bruno Caplier, Mennecy, and Jean-Paul Rousseau, Nogent sur Marne, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1988, Ser. No. 275,860

Claims priority, application European Pat. Off., Oct. 19, 1988, 87480023.8

Int. Cl.[5] H03K *19/086*

U.S. Cl. 307—455 **7 Claims**



1. In a 2N level single-ended cascode logic circuit biased between a first supply voltage and a second supply voltage, wherein N is a positive integer greater than zero, said logic circuit of the type including

a logic tree including at least two stacking levels connected in a cascode configuration comprised of top and bottom stages having outputs that are dot-connected to perform predetermined logic function at the tree output;

at least one output circuit comprised of an emitter-follower transistor which is driven by the signal at said tree output;

wherein each stage includes a current switch each being comprised of at least one input transistor connected in a differential amplifier configuration with a reference transistor;

wherein said bottom stage provides a logical OR function;

apparatus comprising:

at least one input transistor of at least one of said top stages having its input coupled to level shift means for providing a positive voltage shift to an input signal applied thereto.

4,942,317

MASTER SLICE TYPE SEMICONDUCTOR INTEGRATED CIRCUIT HAVING 2 OR MORE I/O CELLS PER CONNECTION PAD

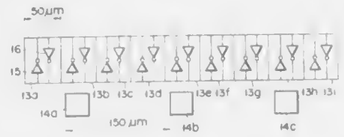
Yasunori Tanaka, Yokohama; Teruo Kobayashi, Tokyo, and Masahiro Ishibashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 12, 1989, Ser. No. 351,001

Claims priority, application Japan, May 16, 1988, 63-118765

Int. Cl.[5] H03K *17/12*

U.S. Cl. 307—465 **6 Claims**



1. A master slice type semiconductor integrated circuit comprising:

a plurality of pads arranged at a predetermined pitch; and

n, wherein n is an integer of 2 or more, I/O cells arranged for each of said plurality of pads, each I/O cell being provided with at least a buffer,

wherein the n number of I/O cells per pad is set in accordance with the pad pitch.

4,942,318

FOR CONDITIONING THE INPUT TO OR THE OUTPUT FROM AN INTEGRATED CIRCUIT

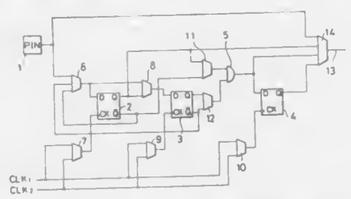
Keiichi Kawana, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Filed Sep. 30, 1988, Ser. No. 251,467

Claims priority, application Japan, Oct. 2, 1987, 62-249185

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **15 Claims**



1. A programmable input/output circuit connected to an input terminal or an output terminal of an integrated circuit, comprising:

input terminal means for connecting the input terminal of an integrated circuit to the programmable input/output circuit or for connecting the integrated circuit to the programmable input/output circuit;

at least one storage element;

at least one combinational logic circuit;

output terminal means for connecting the programmable input/output circuit to the integrated circuit or for connecting the programmable input/output circuit to the output terminal of the integrated circuit; and

at least one programmable selector;

wherein: two or more signal lines from a plurality of signal lines including at least a signal line from said input terminal means, an output signal line from said storage element and an output signal line from said combinational logic circuit are connected to input terminals of said selector; and an output selected by said selector is directly connected to any one of output or input terminals including at least an input terminal of said storage element, an input terminal of said combinational logic circuit and said output terminal means.

4,942,319

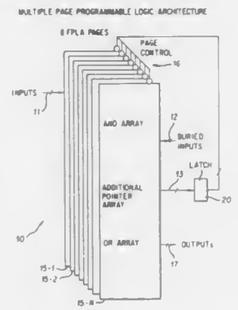
MULTIPLE PAGE PROGRAMMABLE LOGIC ARCHITECTURE

Scott K. Pickett, San Jose; Thomas M. Luich, Campbell, both of Calif., and Arthur L. Swift, IV, Welches, Oreg., assignors to National Semiconductor Corp., Santa Clara, Calif.

Filed Jan. 19, 1989, Ser. No. 299,047

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **32 Claims**



1. A logic array circuit comprising:

a plurality of L input leads for receiving a plurality of input signals, where L is a first positive integer;

a set of N first logic arrays, where N is a second positive integer greater than or equal to one, each of said N first logic arrays including means for receiving signals related to selected ones of said input signals, a plurality of P intermediate output signal leads, a plurality of logic gates for providing P intermediate output signals on said P intermediate signal leads as a function of said signals related to selected ones of said input signals, where P is a third positive integer associated with that one of said N first logic arrays;

means for selecting a subset of D of said first logic arrays, where D is a fourth positive integer greater than or equal to one;

a set of M second logic arrays, where M is a fifth positive integer greater than or equal to one, each of said second logic arrays including one or more input leads for receiving input signals related to said intermediate output signals of said selected ones of said first logic arrays, a plurality of S output leads, where S is a positive integer, one or more logic gates for providing output signals on said S output leads as a function of said input signals of said second logic array;

means for selecting a subset of G of said M second logic arrays for receiving said input signals related to said intermediate output signals of said set of D of said first logic arrays and providing a set of output signals, where G is a sixth positive integer; and

means for controlling said means for selecting such that at least one of said means for selecting operates in response to one or more of said input signals.

4,942,320

TRANSISTOR CIRCUIT WITH IMPROVED α RAY RESISTANT PROPERTIES

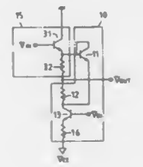
Hiroyuki Itoh, Kodaira; Toshio Yamada, Kokubunji; Akira Masaki, Musashino, and Tohru Kobayashi, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1988, Ser. No. 208,118

Claims priority, application Japan, Jan. 19, 1987, 62-151115

Int. Cl.[5] H03K *5/00, 3/01*

U.S. Cl. 307—546 **42 Claims**



1. A transistor circuit comprising:

a first circuit means having at least a first resistor means and providing an output from one end of said first resistor means;

a first transistor having a base which receives a first bias;

second resistor means connected between a collector of said first transistor and the one end of said first resistor means; and

clamp means connected to the collector of said first transistor and clamping a voltage between the collector of said first transistor and the other end of said first resistor means.

4,942,321

RADIAL MAGNETIC BEARING SYSTEM

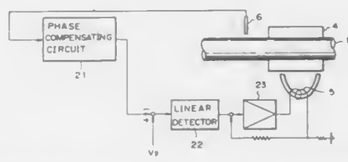
Yoichi Kanemitsu, 3-7-24, Takada, Chigasaki-shi, Kanagawa-ken, Japan

Filed Oct. 5, 1988, Ser. No. 253,516

Claims priority, application Japan, Oct. 7, 1987, 62-254485

Int. Cl.[5] F16C *39/06*

U.S. Cl. 310—90.5 **4 Claims**



1. A radial magnetic bearing system of the type having a rotor yoke made of a magnetic material which is rigidly secured to a rotary shaft, an electromagnetic stator rigidly secured to a casing with a minute gap provided between said stator and said rotor yoke, said stator having coils for generating magnetomotive force, a displacement sensor for measuring a relative displacement between said rotary shaft and said casing, and a combination of a phase compensation circuit and a power amplifier for controlling the level of magnetic attraction force acting between said rotor yoke and said electromag-

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netic stator on the basis of a signal output from said displacement sensor, wherein the improvement comprises:

said electromagnetic stator being arranged to generate three magnetic attraction forces radially at equi-angular spacing of 120° within a plane perpendicular to the axis of said rotary shaft, and

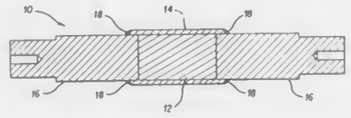
said displacement sensor which has three displacement sensor element being arranged such that each sensor element measures displacement of said rotary shaft with respect to said casing in the direction of one of the three magnetic attraction forces generated by the electromagnetic stator.

4,942,322

PERMANENT MAGNET ROTOR WITH BONDED SHEATH

Derek Raybould, Denville; Gordon E. Fish, Verona, both of N.J., and Joseph Denk, Manhattan Beach, Calif., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed May 27, 1988, Ser. No. 199,632
Int. Cl.[5] H02K *1/06*; B22F *7/00*
U.S. Cl. 310—156 **8 Claims**



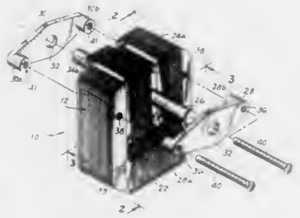
1. A permanent magnet rotor assembly comprising a sheath, a high energy product permanent magnet contained within said sheath and metallurgically bonded thereto, and at least one shaft member, said shaft member being connected to an end of said sheath and said permanent magnet having been compacted and sintered within said sheath to provide between said permanent magnet and said sheath an interface wherein material from said permanent magnet and said sheath is diffused.

4,942,323

TWO POLE ELECTRIC MOTOR WITH STATOR WINDING ENCIRCLING THE ROTOR

Dominic DeCesare, 223 Center St., Elizabeth, N.J. 07202

Filed Jul. 28, 1986, Ser. No. 890,134
Int. Cl.[5] H02K *3/28*
U.S. Cl. 310—208 **22 Claims**



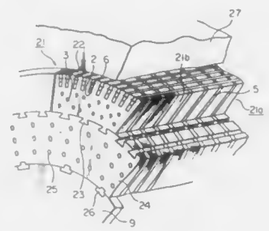
1. An AC induction electric motor comprising a rotor; a stator including a stator core having spaced opposing poles which generally define an air gap therebetween for receiving said rotor rotatably mounted on said stator, and having magnetic circuit means connected to said poles for providing a low reluctance return magnetic circuit both for the effective magnetic field crossing said air gap and passing through said rotor as well as leakage magnetic field which by-passes said rotor; and at least one stator rotor encircling winding at least partially overlapping said air gap and at least partially receiving a portion of said rotor, whereby substantially the entire magnetic field created by said at least stator one rotor encircling winding is forced to pass through said rotor with minimal leakage magnetic field bypassing said rotor, and the effectiveness of said at least one stator rotor encircling winding is optimized.

4,942,324

ROTOR FOR ROTARY ELECTRIC MACHINE

Yuji Ooyama, and Toshinari Shimazu, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 3, 1989, Ser. No. 292,941
Claims priority, application Japan, May 30, 1988, 63-130432
Int. Cl.[5] H02K *1/00, 1/28, 1/22*
U.S. Cl. 310—216 **5 Claims**



1. A rotor for a rotary electric machine comprising:

a rotor shaft;

a clamping base fixed to said rotor shaft;

a circumferentially continuous cylindrical rotor core having axially spaced ends coupled to said clamping base and comprising a plurality of split sectors obtained by circumferentially dividing the rotor core, each split sector being removably attached by at least one joint to the clamping tool and being composed of a laminate of split sector pieces made of sector-shaped thin steel plates, each of said sectors being provided with coil slots at predetermined intervals on the outer periphery of the rotor core; and

at least one rotor coil inserted into each said coil slot at a predetermined pitch, the rotor coils in each split sector being connected to provide coil windings, the coil windings of each sector being separably connected at said axially spaced ends to coil windings of other split sectors so that each split sector can be separated from the clamping base without removing the coil windings from the coil slots located on said split sector.

4,942,325

ELECTRIC MOTOR

Katsuyoshi Fukaya, Aichi, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 30, 1989, Ser. No. 330,807
Claims priority, application Japan, Apr. 18, 1988, 63-50865
Int. Cl.[5] H02K *1/12*
U.S. Cl. 310—257 **6 Claims**

1. An electric motor which comprises:

first and second cup shaped members each having an annular bottom portion disposed substantially in a perpendicular relationship to an axis and centered at the axis, a circumferential surface portion having a cylindrical wall connected to an outer circumferential edge of said bottom portion and extending in a concentrical relationship with the axis, and a plurality of magnetic pole pieces connected to an inner circumferential edge of said bottom portion and extending in a concentrical relationship with the axis in the same direction as said circumferential surface portion, said magnetic pole pieces being disposed in a predetermined angularly spaced relationship from each other around the axis, and

first and second magnetic pole plates each having an annular

plate-formed portion extending in a plane perpendicular to the axis, and a plurality of magnetic pole pieces connected to an inner circumferential edge of said plate-formed portion and disposed in a concentrical relationship with the axis and in the same predetermined angularly spaced relationship from each other around the axis, said magnetic pole pieces being positioned on the same cylindrical plane with said magnetic pole pieces formed on said first and second cup shaped members,

wherein said magnetic pole pieces provided on said first magnetic pole plate are aligned between said magnetic pole pieces provided on said first cup shaped member while said magnetic pole pieces provided on said second magnetic pole plate are aligned between said magnetic pole pieces provided on said second cup shaped member, and wherein said first and second magnetic pole plates contact each other and are assembled in concentrical relationship together with said first and second cup shaped members with a pair of stator armatures disposed between said circumferential surface portions of said first and second cup shaped members and said magnetic pole pieces and with a rotor armature disposed in the inside of said aligned magnetic pole pieces for rotation around a center axis provided by the axis,

said circumferential surface portion of said first cup shaped



member has formed at a free end thereof a plurality of first projections each of which is formed as an extension extending in the direction of the axis in an integral relationship from said circumferential surface portion and has a pair of opposite side edges extending parallel to the axis, a plurality of end edge portions which extend in a plane perpendicular to the axis between said first projections, and a plurality of first recesses which are opened to said end edge portions between said first projections and each of which has a pair of opposite side edges extending parallel to the axis,

said circumferential surface portion of said second cup shaped member has formed at a free end thereof a plurality of second projections each of which is formed as an extension extending in the direction of the axis in an integral relationship from said circumferential surface portion and has a pair of opposite side edges extending parallel to the axis, said second projections being adapted to be fitted in said first recesses of said first cup shaped member, a plurality of end edge portions which extend in a plane perpendicular to the axis between said second projections, and a plurality of second recesses which are opened to said end edge portions between said second projections and each has a pair of opposite side edges extending parallel to the axis, said second recesses being adapted to receive said first projections of said first cup shaped member therein,

said first magnetic pole plate is formed so that said outer circumferential edge of said plate-formed portion thereof has an outer diameter substantially equal to or smaller than the outer diameter of said circumferential surface portion of said second cup shaped member and has formed therein a plurality of first additional recesses each of which has a pair of opposite side edges for engaging with the opposite side edges of a corresponding one of said first projections of said first cup shaped member to receive the first projection therein, and a plurality of second additional recesses at least one of which has a pair of opposite side edges for closely engaging with the opposite side edges of a corresponding one of said second projections of said second cup shaped member by mutual interference to receive the second projection therein by force fitting, and wherein

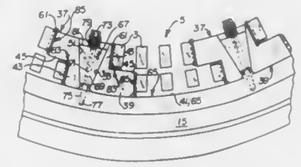
said second magnetic pole plate is formed so that said outer circumferential edge of said plate-formed portion thereof has an outer diameter substantially equal to or slightly greater than the outer diameter of said circumferential surface portion of said first cup shaped member and has formed therein a plurality of third additional recesses each of which has a pair of opposite side edges for engaging with the opposite side edges of a corresponding one of said second projections of said second cup shaped member to receive the second projection therein, and a plurality of fourth additional recesses at least one of which has a pair of opposite side edges for closely engaging with the opposite side edges of a corresponding one of said first projections of said first cup shaped member by mutual interference to receive the first projection therein by force fitting.

4,942,326

BIASED SECUREMENT SYSTEM FOR END WINDING CONDUCTOR

John M. Butler, III, Orlando, and Hector O. Ponce, Pensacola, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 19, 1989, Ser. No. 340,196
Int. Cl.[5] H02K *3/46, 3/00*
U.S. Cl. 310—260 **11 Claims**



9. A biased securement system for end winding conductors of an electromechanical apparatus comprising:

a support ring disposed about a plurality of peripherally spaced said end windings, said support ring having an inner surface and a threaded bore; and

a biased wedge system located between said spaced end windings to compress said end windings in both a radial and circumferential direction;

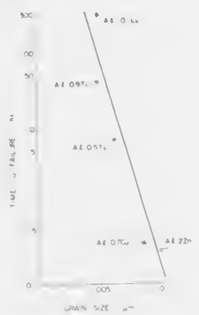
said biased wedge system including:

a pair of confronting spacer blocks trapezoidal in shape and flush with said inner surface of said support ring, said spacer blocks having confronting angular surfaces which converge in the direction of said support ring;

a triangular shaped wedge slideably engageable with said confronting angular surfaces and disposed between said pair of spacer blocks to bias the same in a circumferential direction, said wedge having a passageway therethrough;

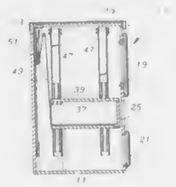
a bolt extending through said passageway and threadedly engaged in said threaded bore and having a head; and
a belleville spring washer disposed between said head and said wedge to bias said wedge towards said support ring.

4,942,327
SOLID STATE ELECTRONIC DEVICE
Hitoshi Watanabe; Norio Hosaka, both of Yokohama; Akitsuna Yuhara, Kawasaki, and Jun Yamada, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 26, 1989, Ser. No. 357,464
Claims priority, application Japan, Jun. 1, 1988, 63-132686
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—313 R 8 Claims



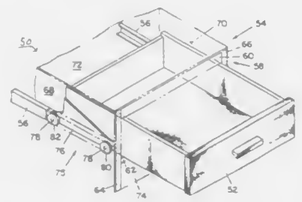
1. A solid state electronic device comprising:
a substrate along which a surface acoustic wave propagates, and
a conductive thin film provided on the surface of said substrate, said conductive thin film constituting at least one of electrodes, electric wiring patterns and bonding pads, wherein at least a part of said conductive thin film is made of a first aluminum alloy added with lithium by 0.05–3 wt %.

4,942,328
CABINET WITH ELEVATING SHELF
Richard Price, 24529 Los Alisos #293, Laguna Hills, Calif. 92653
Filed Mar. 31, 1989, Ser. No. 332,236
Int. Cl.[5] A47B 57/00
U.S. Cl. 312—306 11 Claims



1. A cabinet for retractably storing audio/video equipment comprising:
a main body;
a flip up/slide in top door adapted to rotate from a horizontal to a vertical position and thereafter descend vertically within the main body;
a support shelf disposed within the main body and adapted to slideably vertically traverse within the main body; and
connecting means for elevating the support shelf when the top door vertically descends within the main body.

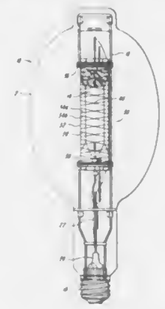
4,942,329
CANTILEVERED DRAWER SLIDE ARRANGEMENT
Gary W. Nelson, 22933 Hatteras St., Woodland Hills, Calif. 91367
Continuation of Ser. No. 882,826, Jul. 7, 1986, Pat. No. 4,732,436, which is a continuation of Ser. No. 533,996, Sep. 20, 1983, Pat. No. 4,615,572. This application Mar. 7, 1988, Ser. No. 165,150
The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.
Int. Cl.[5] A47B 88/00
U.S. Cl. 312—341.1 16 Claims



1. A simplified drawer guide system in combination with a drawer and cabinet comprising
a pair of metal tracks, respectively mounted rigidly to the cabinet at opposite sides of the drawer and extending forwardly and rearwardly, the drawer having upright front, rear and left and right side walls defining a storage space, and the drawer being movable forwardly and rearwardly in a length direction of travel,
left and right metal brackets attached to the outermost surfaces of the left and right side walls of the drawer, at the rear third of the drawer, each bracket having a plate carrying rollers independently of said drawer side walls, wit the rollers spaced in cantilevered and sidewardly offset relation to the plate and to the drawer,
the rollers associated with each bracket being linearly spaced in said length direction and mounted onto one of the tracks for supporting the drawer rearward extent for forward and rearward drawer travel at the same level relative to the cabinet, and throughout drawer travel relative to the cabinet, the linearly spaced rollers, the brackets and tracks being everywhere confined rearwardly of an upright plane defined by the front of the cabinet when the bulk of the drawer is pulled forwardly to project at the front side of said plane,
there being means provided between at least one bracket and at least one track for allowing relative lateral movement between the one bracket and at least one track.

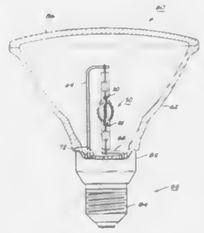
4,942,330
LAMP ASSEMBLY UTILIZING SHIELD AND CERAMIC FIBER MESH FOR CONTAINMENT
Robert J. Karlotski, Weare, N.H.; Thomas J. Sentementes, Wakefield, Mass., and Roger A. Johnson, Grafton, N.H., assignors to GTE Products Corporation, Danvers, Mass.
Filed Sep. 30, 1988, Ser. No. 252,090
Int. Cl.[5] H01J 61/34
U.S. Cl. 313—25 18 Claims

1. A double-enveloped lamp assembly comprising:
a light-source capsule subject to burst on rare occasions;
containment means for absorbing and dissipating a portion of the energy when said light-source capsule bursts, said containment means comprising a light-transmissive shield substantially surrounding said light-source capsule and a mesh disposed on an outer surface of said shield for reinforcing said shield, said mesh being fabricated of substantially nonconducting ceramic fibers which can withstand the operating temperature of said light-source capsule over extended operating times, said ceramic fibers having sufficient strength to reinforce said shield and having a sufficiently small diameter to limit blockage of light emitted by said light-source capsule;



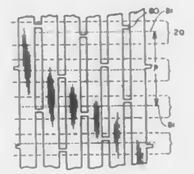
a light-transmissive outer envelope, said light-source capsule, said light-transmissive shield and said mesh being mounted within said outer envelope; and
means for coupling electrical energy to said light-source capsule.

4,942,331
FILAMENT ALIGNMENT SPUD FOR INCANDESCENT LAMPS
Rolf S. Bergman, Cleveland Heights, and William O. Harris, E. Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed May 9, 1989, Ser. No. 349,282
Int. Cl.[5] H01K 1/18, 1/40
U.S. Cl. 313—271 15 Claims



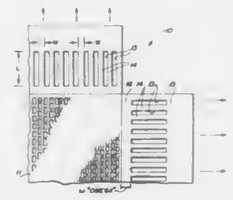
15. A double ended tungsten halogen lamp comprising a vitreous, light transmissive envelope having a mid portion of a predetermined generally spherical or elliptical shape as a filament chamber coated with an infrared reflecting and a visible light transmitting coating and enclosing a filament and one or more halogen compounds and inert gas within, said envelope terminating at each end in a tubular portion, with said filament being radially aligned in said chamber along the optical center thereof and being attached to and supported at each end by a spud located in each of said two tubular portions, said spud made of refractory metal wire in the shape of a ring having at least one turn and with a loop on each side of said ring having a diameter smaller than that of said ring and which extend towards the center thereof, with a leg extending out from the end of each of said loops away from each other and being generally perpendicular to the plane of the ring and coaxial with respect to the center thereof with one of each of said legs welded to a respective end of said filament and the other of each of said legs being at least a portion of an inlead.

4,942,332
TIED SLIT MASK FOR COLOR CATHODE RAY TUBES
Robert Adler, Northfield; John H. Coult, and Paul Strauss, both of Chicago, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Dec. 2, 1988, Ser. No. 279,180
Int. Cl.[5] H01J 29/07
U.S. Cl. 313—402 10 Claims



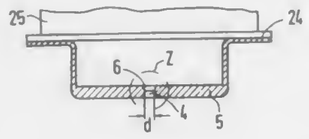
1. A front assembly for a color cathode ray tube including a glass faceplate having on its inner surface a centrally disposed phosphor screen, and a slit-type metal foil shadow mask mounted in tension on a mask-support structure located on opposed sides of said screen, said mask comprising a series of parallel strips separated by slits, the strips being loosely coupled by widely spaced ties, the wide tie spacing being such as to produce a strip coupling which promotes handleability of the mask during mask and tube fabrication and facilitates damping of strip vibration when mounted in a tube, but which is insufficient to induce unacceptable Poisson contraction of the mask when uniaxially tensed along the direction of the strips in the plane of the mask, or to permit an unacceptable thermal expansion perpendicular to and in the plane of said strips.

4,942,333
SHADOW MASK WITH BORDER PATTERN
Lawrence D. Knox, Milford, Mass., assignor to North American Philips Corporation, New York, N.Y.
Filed Dec. 5, 1988, Ser. No. 279,889
Int. Cl.[5] H01J 29/07
U.S. Cl. 313—402 6 Claims



1. A shadow mask adapted for tensioned mounting in a flat faced color CRT, the mask comprising a central apertured viewing area and a surrounding border region, the border region comprising mounting strips connected to the viewing area by a plurality of legs, the legs mutually parallel and orthogonal to an adjacent edge of the viewing area, the border regions being relatively stiff in tension and relatively flexible in transverse bending.

4,942,334
ELECTRON-GUN SYSTEM
Helmut Kimmel, Esslingen, and Hans Reule, Wendlingen, both of Fed. Rep. of Germany, assignors to Nokia Graetz, Pforzheim, Fed. Rep. of Germany
Filed May 31, 1988, Ser. No. 200,606
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1987, 3718838
Int. Cl.[5] H01J 29/51
U.S. Cl. 313—414 6 Claims



6. Electron-gun system for cathode-ray tubes comprising at least one cathode and at least three electrodes, the second of which is a screen grid, which are arranged one behind the other and have apertures defined by cylindrical surfaces through each of which an electron beam can pass, characterized in that the aperture (4) in the screen grid (24) has a conical widening defined by a conical surface contiguous with the cylindrical surface on its side facing the third electrode (25), whereby current transfer into the screen grid and the third electrode is greatly reduced.

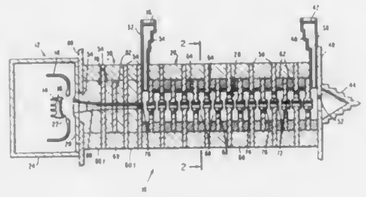
4,942,335
BLUE-LUMINESCING LANTHANUM-GADOLINIUM-OXYBROMIDE, LUMINESCENT SCREEN COMPRISING SUCH AN OXYBROMIDE AND CATHODE RAY TUBE PROVIDED WITH SUCH A SCREEN
Cornelis A. H. A. Mutsaers; Dagobert M. De Leeuw; Dirk B. M. Klaassen, and Cornelis R. Ronda, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 2, 1989, Ser. No. 305,879
Claims priority, application Netherlands, Feb. 3, 1988, 8800254
Int. Cl.[5] C09K 11/86
U.S. Cl. 313—468 14 Claims

1. A blue-luminescing lanthanum-gadolinium-oxybromide, activated by trivalent cerium, characterized in that the oxybromide is also activated by trivalent terbium and is defined by the molecular formula
ti $La_{1-x-y-z}Gd_xCe_yTb_zOBr$,

in which
$0.25 \leqq x \leqq 1-y-z$,
$0.002 \leqq y \leqq 0.05$,
$0.0001 \leqq z \leqq 0.005$ and $y>z$ and exhibits a higher energy efficiency upon cathode ray excitation than said oxybromide absent Tb.

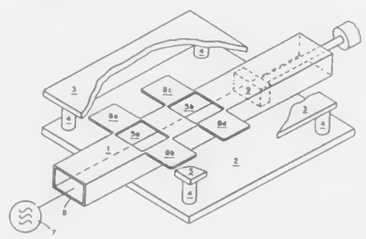
4,942,336
TRAVELING-WAVE TUBE WITH CONFINED-FLOW PERIODIC PERMANENT MAGNET FOCUSING
Kurt Amboss, 751 Haverford Ave., Pacific Palisades, Calif. 90272, and Jon A. Davis, 6842 Verde Ridge Rd., Rancho Palos Verdes, Calif. 90274
Filed Apr. 18, 1988, Ser. No. 182,632
Int. Cl.[5] H01J 25/42
U.S. Cl. 315—3.5 18 Claims

13. In a traveling-wave tube including (a) electron gun means having a cathode for generating a stream of electrons along a predetermined axial path, (b) collector means disposed at an end of said path remote from said electron gun means for collecting electrons of said stream, (c) a gun ferromagnetic pole piece disposed along said path adjacent to said electron gun means, a collector ferromagnetic pole piece disposed along said path adjacent to said collector means, and a plurality of intermediate ferromagnetic pole pieces disposed at respective spaced locations along said path between said gun and collector pole pieces, said gun, collector and intermediate pole pieces having respective aligned apertures along said path to provide a passage for said stream of electrons, (d) a series of permanent magnets respectively interposed between and abutting adjacent ones of said pole pieces with like poles of adjacent magnets confronting one another, and (e) slow-wave



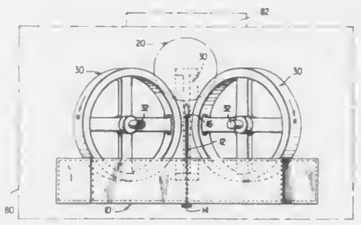
structure means disposed along and surrounding said path and adjacent to at least a portion of said series of magnets for propagating electromagnetic wave energy in such manner that said electromagnetic wave energy can interact with said stream of electrons, the improvement in eliminating field reversal at the cathode, in which:
a first or a third one of said magnets located adjacent from said gun pole piece has an axial thickness which is different from an axial thickness associated with the remainder of said magnets for providing a scalar magnetic potential of essentially zero on said gun pole piece, thereby eliminating the field reversal at the cathode.

4,942,337
SPARK GAP APPARATUS TRIGGERABLE BY MICROWAVE PULSE
Hans Beerwald, Kalkgasse 2, 5370 Kall-Sistig, Fed. Rep. of Germany, and Günter Bohm, Potthofstr. 30, 5840 Witten, Fed. Rep. of Germany
Filed Jun. 20, 1988, Ser. No. 209,110
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1987, 3721007; Dec. 23, 1987, 3743756
Int. Cl.[5] H01J 25/34
U.S. Cl. 315—39 10 Claims



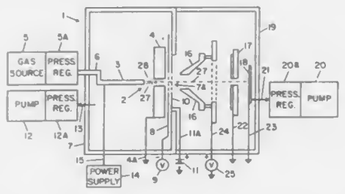
10. A method of providing a high current pulse to a load using triggerable spark gap apparatus including a first electrode comprising a microwave waveguide and a second electrode spaced from said waveguide with said first and second electrodes comprising means for causing the simultaneous existence of a plurality of spark channels therebetween in response to coupling of a microwave pulse to said waveguide, said method comprising the following steps:
(a) connecting said electrodes in a circuit with a power source and a load so that triggering of said electrodes causes a high current pulse from said power source to be applied to said load; and
(b) applying to said waveguide a microwave pulse of sufficient energy to cause said plurality of spark channels without regard to the voltage level of said power source.

4,942,338
METHOD AND APPARATUS FOR PLASMA CONTAINMENT
Sam Bida, Ely, Nev., assignor to Sam Bida, Ely, Nev.
Filed Mar. 21, 1988, Ser. No. 171,437
Int. Cl.[5] H05H 1/04
U.S. Cl. 315—111.71 18 Claims



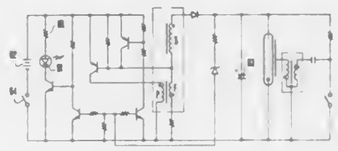
1. The method of containing a body of ionized plasma having an oscillating magnetic field, comprising
positioning a plurality of articles of high permeability material adjacent to said plasma, said high permeability material being substantially non-magnetic per se and not adapted to generate a substantial magnetic field independently of said plasma, and
maintaining said articles in position relative to said plasma to produce forces of magnetic attraction between said high permeability material and said plasma and thereby retain said plasma relative to said articles without the application of an extraneous magnetic field.

4,942,339
INTENSE STEADY STATE ELECTRON BEAM GENERATOR
Ady Hershcovitch, Mount Sinai; Vincent J. Kovarik, Bohemia, and Krsto Prelec, Setauket, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 27, 1988, Ser. No. 249,813
Int. Cl.[5] H01J 29/00
U.S. Cl. 315—111.81 15 Claims



1. An intense, steady state, low emittance electron beam generator comprising a hollow cathode discharge plasma source consisting of a cathode, an anode mounted in spaced relationship to the cathode, a housing surrounding the cathode and anode, pressure regulating means for controlling the ambient pressure between the cathode and anode, power supply means for establishing a discharge voltage between the cathode and anode to generate a plasma source that is operable at a cathode temperature in the range of about 1300° C. to 2500° C. and at an electric potential in the range of −30 volts to −80 volts, thereby to simultaneously produce bulk electrons and fast primary electrons, said fast primary electrons being made to have an energy that is about equal to that of the cathode potential and to have a thermal spread that is close to that of the cathode temperature and within the range of about 0.1 to 0.4 eV, and a pressure regulating means operably connected to supply a preselected gas to the cathode from a source of gas, and further gas pressure regulating means operably connected to maintain the ambient gas pressure between the cathode and anode in a range of about 1.85×10^{-5} torr, in combination with an extraction electrode means that is spaced from the plasma source for extracting a beam of said fast primary electrons from the plasma source and for directing the electron beam toward a target, said target being mounted in spaced relationship to the plasma source, and a second housing disposed around the extraction electrode and target, a pump operably connected to maintain a predetermined pressure within said second housing, and a bulk electron repelling grid operably positioned serially between the plasma source and said extraction electrode means, said grid being operably connected to a source of voltage that is effective to negatively bias the grid to a predetermined negative voltage that causes the grid to repel said bulk electrons away from the target while allowing the fast primary electrons from said plasma source to pass through the grid and move toward the target in a beam having a current in excess of 500 milliamperes, said beam being comprised primarily of fast primary electrons.

4,942,340
ARRANGEMENT FOR DISPLAYING OPERATION OF BOOSTER CIRCUIT FOR FLASH DEVICE CAMERA
Kazuo Ikawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 790,081, Oct. 22, 1985, abandoned. This application Dec. 12, 1988, Ser. No. 284,762
Claims priority, application Japan, Oct. 23, 1984, 59-223711; Feb. 12, 1985, 60-025892; May 14, 1985, 60-102438
Int. Cl.[5] H05B 41/32
U.S. Cl. 315—241 P 3 Claims



1. A booster circuit operation display arrangement in a flash device for a camera, comprising:
(a) an oscillating booster circuit including a boosting oscillation transformer having a secondary winding;
(b) flash means connected to said oscillating booster circuit for receiving a forward current therefrom for flashing;
(c) a display circuit arranged to be operated by a spike voltage of said oscillating booster circuit, said display circuit being connected to an intermediate point of the secondary winding of said boosting oscillation transformer;
(d) mono-directional current passing means connected in series with said display circuit in such a direction that a forward current of said oscillating booster circuit does not enter said display circuits; and

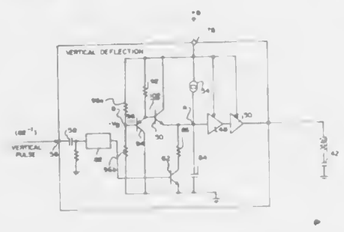
(e) a charging circuit connected in parallel with said display circuit.

4,942,341

VERTICAL RAMP GENERATOR

Norio Imaizumi, Ota, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 9, 1989, Ser. No. 363,830
Claims priority, application Japan, Jun. 20, 1988, 63-151767
Int. Cl.[5] H01J *29/70, 29/76*
U.S. Cl. 315—403 **4 Claims**



1. A vertical ramp generator of a vertical deflection circuit for feeding a sawtooth wave current to a vertical deflection coil corresponding to a vertical pulse, said vertical ramp generator comprising:

a waveform shaping circuit triggered corresponding to said vertical pulse and generating a pulse of a predetermined width;

constant current circuit generating a constant current;

a capacitor charged corresponding to currents from said constant current circuit;

control transistor controlling charge and discharge of said capacitor corresponding to an output signal from said waveform shaping circuits; and

a clamping circuit, wherein said clamping circuit comprises voltage dividing means for dividing a supply voltage by resistances, and

a transistor, a base of said transistor is applied with output voltage from said voltage dividing means and an emitter of said transistor is connected to a terminal of said capacitor,

wherein when terminal voltages of said capacitor fall or rise to a predetermined value, said clamping circuit prevents the terminal voltage from falling or rising from said predetermined value and said clamping circuit varies the predetermined voltage value of each of said circuits corresponding to a supply voltage.

4,942,342

PARALLEL SWEEPING SYSTEM FOR ELECTROSTATIC SWEEPING ION IMPLANTER

Osamu Tsukakoshi, Hiratsuka, Japan, assignor to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan

Filed Sep. 12, 1988, Ser. No. 243,614
Claims priority, application Japan, Sep. 30, 1987, 62-243690; Jun. 20, 1988, 63-150075
Int. Cl.[5] H01J *29/74*
U.S. Cl. 315—410 **4 Claims**

1. A parallel sweeping system for electrostatic sweeping ion implanters, comprising:

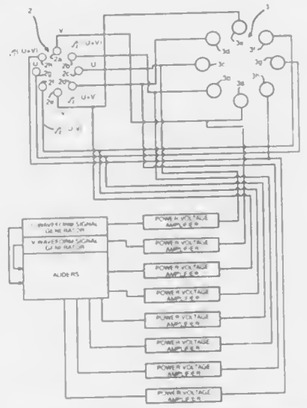
(a) an ion source for generating charged ion beams,

(b) a first electrostatic deflector comprising a plurality of more than four electrodes equally spaced around an optical axis,

(c) a second electrostatic deflector comprising the same plurality of electrodes also equally spaced around said optical axis and axially spaced from said first deflector.

(d) means for electrically connecting pairs of said electrodes, one on said first deflector to the one on the opposite side of said axis of said second deflector,

(e) means for applying different predetermined voltages to each connected pair of electrodes, and



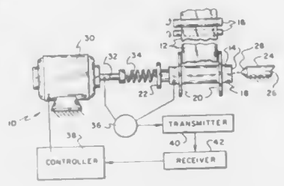
(f) a target wafer to be raster-scanned by said ion beams with exact parallelism to said optical axis.

4,942,343

TORQUE MEASURING AND TRANSMITTING SYSTEM FOR A WEB SPOOLING MECHANISM

David M. Orlicki, Rochester; Bruce E. Koppe, Caledonia, and Thomas W. Palone, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1988, Ser. No. 231,302
Int. Cl.[5] B65H *77/00*
U.S. Cl. 318—6 **6 Claims**



1. In a system for controlling the tension in a web as it is being wound onto a spool, the system having a chuck for rotating the spool to wind the web onto the spool and a motor having a shaft for driving the chuck, the web being subjected to changes in tension as it is wound onto the spool with such tension changes subjecting the chuck to a variable load related to the change in web tension, the improvement comprising:

a spring coupling the shaft to the chuck for effecting rotation of the chuck by the shaft, the spring enabling the chuck to move relative to the shaft in response to the variable load related to web tension while isolating the chuck from the inertia of the motor,

an angle transducer coupled to the motor shaft and the chuck for detecting the instantaneous relative positions of the shaft and the chuck and for providing an output signal indicative of such relative positions, and

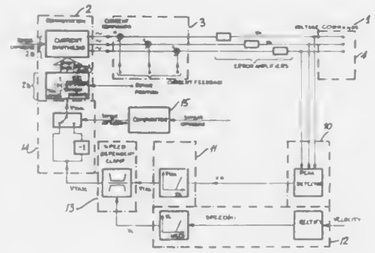
a motor controller for receiving a signal from the transducer and controlling the motor in response to the signal so that the torque applied by the motor shaft to the spring for driving the chuck varies in response to changes in the tension in the web as it is wound onto the spool.

4,942,344

CONTROL SYSTEM FOR BRUSHLESS MOTORS

Francis E. Devitt; John P. Doran, both of Carrigaline, and Kevin J. Gaughan, Rochestown Road, all of Ireland, assignors to Moog Ltd., Ringaskiddy, Ireland

Filed May 2, 1988, Ser. No. 189,039
Claims priority, application Ireland, Apr. 30, 1987, 1115/87
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 **8 Claims**



6. In combination with a brushless motor incorporating a stator, stator windings and a rotor, a control apparatus comprising:

a voltage supply for the stator windings;

means for indicating motor torque demand;

means for indicating motor rotor position;

monitoring means for continuously monitoring a voltage level of the stator windings;

comparing means for continuously comparing said stator winding voltage level with a predetermined maximum value of stator winding voltage level corresponding to full utilization of said stator winding voltage supply;

a commutation circuit for outputting a motor current demand signal in response to the indications of motor torque demand and rotor position, said commutation circuit having means for shifting a torque-angle of said motor current demand signal in response to said comparison between said stator winding voltage level and said maximum value of stator winding voltage level corresponding to full utilization of the stator winding voltage supply; and

a current feedback circuit for outputting a voltage command signal for the stator windings in response to said motor current demand signal and current feedback from the stator windings.

7. A method of controlling torque-angle shift in a brushless motor having a stator, stator windings and a rotor, the method comprising the steps of:

continuously monitoring a stator winding voltage command signal representing a voltage level of the stator windings;

continuously monitoring motor torque direction;

providing a predetermined maximum value of said stator winding voltage command signal corresponding to full utilization of a voltage supply for the stator windings;

continuously comparing said stator winding voltage command signal with said predetermined maximum value of stator winding voltage command signal;

controlling a shift of torque-angle of a current demand signal for said stator windings at an amount determined by said comparison; and

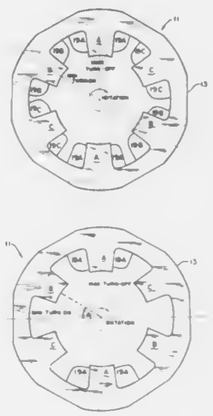
changing the polarity of said torque-angle shift of said current demand signal when the monitored torque direction changes.

4,942,345

POLE CHANGING SWITCHED RELUCTANCE MOTOR AND METHOD

Gary E. Horst, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 14, 1989, Ser. No. 310,739
Int. Cl.[5] H02K *37/00*
U.S. Cl. 318—254 **9 Claims**



1. A switched reluctance motor comprising:

a stator having a plurality of salient stator poles disposed around a central bore;

a rotor disposed for rotation in the central bore of the stator, said rotor having a plurality of salient poles;

said plurality of salient stator poles being divided into at least three phases, each phase having associated therewith separate, independently switchable phase windings wound around the stator poles of that phase;

first switch means for controlling application of power to the windings of the first phase;

second switch means for controlling application of power to the windings of the second phase;

third switch means for controlling application of power to the windings of the third phase; and

control means for governing the operation of the first, second and third switch means;

said control means during low speed operation governing each of the first, second and third switch means to apply power to the corresponding phase windings from a selected turn-on angle to a selected turn-off angle, the maximum difference during low speed operation between the turn-on angle and the turn-off angle for each phase being no greater than the angle subtended by adjacent stator poles as measured from the geometric center of the stator;

said control means during high speed operation governing the switch means so that only the phase windings of the first phase are energized, the difference between the turn-on angle and the turn-off angle for the first phase windings during high speed operation being greater than the angle subtended by adjacent stator poles.

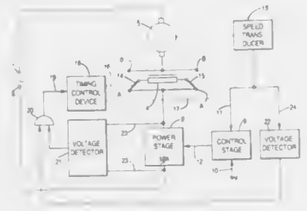
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4,942,346

CIRCUIT FOR CONTROLLING ROTATIONAL DIRECTION AND ROTATIONAL SPEED OF AN ELECTRIC MOTOR

Giuseppe Ardit, Venice; Fiorenzo Cigana, San Dona di Piave, and Renzo Magris, Pordenone, all of Italy, assignors to Procond Elettronica S.p.A., Pordenone, Italy

Filed Jun. 22, 1989, Ser. No. 370,043
Claims priority, application Italy, Jul. 7, 1988, 45743 A/88
Int. Cl.[5] H02F *1/00*
U.S. Cl. 318—280 **15 Claims**



1. A control circuit for controlling a rotational direction and a rotational speed of an electric motor driven by a power source having first and second terminals, particularly an electric motor having a field winding portion having first and second terminals and an armature portion operatively connected to a speed transducer which outputs a rotational speed signal having a value proportional to the rotational speed of the motor, said control circuit comprising:

switching means for selectively electrically connecting the electric motor to the power source and for establishing the rotational direction of the electric motor;

control means, serially connected to said switching means, for establishing a voltage level applied to the electric motor in accordance with a value of a control signal input thereto;

control signal generating means, connected to said control means and having means for connection to the speed transducer, for establishing the value of the control signal in accordance with a predetermined voltage level and the rotational speed signal output by the speed transducer, and for outputting the control signal to the control means;

timing control means, connected to said switching means and said control means and said control signal generating means, for causing said switching means to establish the rotational direction of the electric motor in accordance with a received rotational direction signal, and for identifying a failure according to at least one of said control means and said control signal generating means, and for causing said switching means to electrically disconnect the electric motor from the power source upon identifying a failure according to at least one of said means and said control signal generating means.

4,942,347

MOTOR DRIVE CIRCUIT

Kenji Ohtani, and Yorinobu Murayama, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Japan

Filed Nov. 16, 1989, Ser. No. 437,225
Claims priority, application Japan, Nov. 16, 1988, 63-289247; Nov. 26, 1988, 63-298481; Nov. 26, 1988, 63-298482
Int. Cl.[5] H02P *7/06*
U.S. Cl. 318—434 **9 Claims**

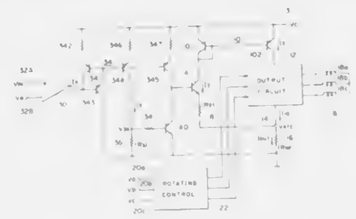
1. In a motor drive circuit incorporating an output circuit for supplying a drive output to a motor, the improvement characterized by comprising:

a differential amplifier for generating a current corresponding to a servo signal;

a first current mirror circuit responsive to said current obtained by said differential amplifier;

a current-voltage converting means for converting a current flowing through said first current mirror circuit;

a buffer circuit for permitting passage of a voltage obtained by said current-voltage converting means;



a first transistor having bias set by said voltage acquired by said buffer circuit and responsive to said current from said first current mirror circuit; and

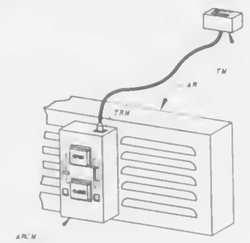
a second current mirror circuit for supplying a drive output, obtained by said first transistor, to said output circuit.

4,942,348

ELECTRONIC AIR REGISTER CONTROLLER

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation-in-part of Ser. No. 17,084, Feb. 20, 1987, Pat. No. 4,835,413. This application Mar. 8, 1989, Ser. No. 320,503
Int. Cl.[5] G05D *23/00*
U.S. Cl. 318—468 **23 Claims**



1. In a home or office having a forced air heating/cooling system with an air duct, the improvement comprising:

air flow control means mounted in relationship with the air duct and operative to control the flow of air therethrough; the air flow control means comprising: (i) electric motor means operatively connected with an air damper means; (ii) electric energy means connected with the electric motor means and operative in response to control actions provided at a control input to provide electric power thereto, thereby to permit control of the air damper means without requiring connection with an external source of electric power, such as an electric utility power line; and (iii) control action means connected with the control input and operative to provide said control actions;

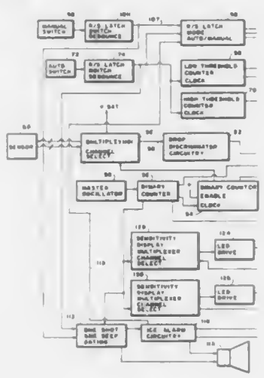
whereby the air flow control means is operable to control the flow of air through the air duct in response to the control actions provided by the control action means, yet without having any electrical connection with a power source external of the air flow control means.

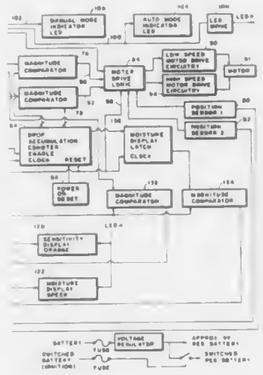
4,942,349

CONTROL SYSTEM FOR OPERATING A WINDOW WIPER IN RESPONSE TO WATER MOISTURE

Donald L. Millerd, 850 Plaza Toluca, San Diego, Calif. 92114; Mari J. Bell, 29852 Quail Hollow La., Valley Center, Calif. 92082, and Robert S. Alpert, 2227 Summerhill Dr., Escinitas, Calif. 00000

Filed Oct. 14, 1988, Ser. No. 258,159
Int. Cl.[5] H02P *3/00*
U.S. Cl. 318—483 **13 Claims**





1. An automatic control system for operating an electrically actuated device in response to the presence of water moisture, said control system comprising, in combination:

(a) a voltage source;

(b) a moisture sensor comprising a plurality of spaced apart, exposed conductive strips;

(c) current detection means, having at least one input and at least one output, for producing a signal at an output when the current flow at an input exceeds a first prescribed threshold;

(d) first means for connecting a first plurality of said conductive strips to said voltage source;

(e) second means for connecting a second plurality of said conductive strips to said current detection means, each one of said second plurality being adjacent one of said first plurality of strips thereby defining adjacent pairs of sensor strips;

(f) means, coupled to said current detection means, for switching on said device when the number of pairs of adjacent sensor strips, for which the current flow through each respective pair exceeds said first prescribed threshold, exceeds a second prescribed threshold;

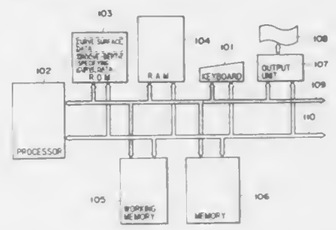
whereby a determination is made by said control system to operate said device, or to terminate its operation, in dependence upon the amount of moisture detected.

4,942,350

METHOD OF CREATING NC DATA FOR GROOVING

Masaki Seki, 3-15-2-406, Takaido-nishi, Suginami-ku, Tokyo 168; Koji Samukawa, and Osamu Hanaoka, both of Fanuc Dai-3 Virakaramatsu, 3527-1, Shibokusa, Oshino-mura, Minamitsuru-gun, Yamanashi 401-05, all of Japan

PCT No. PCT/JP88/00852, § 371 Date Apr. 10, 1989, § 102(e) Date Apr. 10, 1989, PCT Pub. No. WO89/02106, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 26, 1988, Ser. No. 347,894
Claims priority, application Japan, Aug. 26, 1987, 62-212350
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—569 **5 Claims**



1. A method of creating NC data for grooving a three-dimensional curved surface, comprising the steps of:

specifying a groove shape which lies on the three-dimensional curved surface;

specifying a groove-depth specifying curve defining a relationship between a distance dk measured from one end of said groove shape and a groove depth hk of a point at said distance dk;

obtaining said distance dk in accordance with

$$dk = lk \cdot Lj / Li$$

where Li represents a total length of said groove shape, lk represents a distance from said one end of said groove shape and Lj represents a total length of said groove-depth specifying curve;

obtaining, based on said groove-depth specifying curve, said groove depth hk at said distance dk; and

creating NC data for said grooving at said distance dk based on said groove depth identifying a groove depth of a point at the distance lk from said one end of said groove shape.

4,942,351

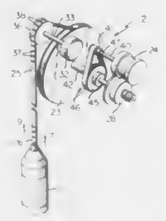
SYSTEM FOR MONITORING A LEVEL OF MATERIAL, DEVICE THEREFOR AND METHODS OF MAKING THE SAME

Paul D. Kronau, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 28, 1989, Ser. No. 329,437
Int. Cl.[5] G01F *23/44*
U.S. Cl. 318—642 **4 Claims**

1. In a system for monitoring a level of material held in a confining means, said system comprising a rotatable reel means, electrically operated motor means operatively interconnected to said reel means for causing rotation of said reel means in either direction of rotation thereof, a flexible support

means wound on said reel means and having a free end means, a probe means operatively interconnected to said free end means of said support means to be carried thereby, brake means operatively interconnected to said reel means for holding said reel means stationary when said brake means is in one condition thereof, and control means operatively interconnected to said motor means and said brake means for causing said brake means and said motor means to raise and lower said probe means by winding up said support means on said reel means and unwinding said support means from said reel means, the improvement wherein said motor means comprises an electrically operated stepper motor means, said control means



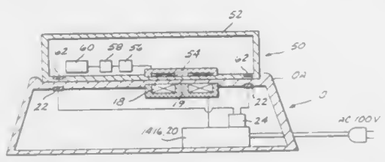
comprising microprocessor means, said flexible support means having conductor means carried thereby, said control means having means to operatively interconnect said conductor means to said microprocessor means, said probe means having means operatively interconnected to said conductor means to signal to said microprocessor means a relationship of said probe means relative to said level of said material in said confining means, said means of said probe means having first means to signal to said microprocessor means its relationship to a first level of said material and having a second means to signal to said microprocessor means its relationship to a second level of said material.

4,942,352

NON-CONTACTING POWER SUPPLYING SYSTEM

Shigeaki Sano, Fuchu, Japan, assignor to Toppan Moore Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1988, Ser. No. 242,469
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **13 Claims**



1. A non-contacting power supplying system comprising:
a power supplying apparatus including a power supplying coil, signal supplying means for supplying a signal at a predetermined frequency, switch means responsive to an applied switching signal for interconnecting said signal supplying means with said power supplying coil to provide said signal at said predetermined frequency to said power supplying coil when said switching signal is supplied to said switch means, and a capacitor connected in parallel with said power supplying coil to establish resonance at a resonant frequency that is at least 1.5 times greater than said predetermined frequency, said power supplying apparatus further including switch control means responsive to a position detection signal for supplying said switching signal to said switch means;
a portable power receiving apparatus including a power receiving coil, said portable power receiving apparatus being positionable in a predetermined spatial relationship with said power supplying apparatus to electromagnetically couple said power receiving coil of said power receiving apparatus with power supplying coil of said power supplying apparatus; and
position detection means for supplying said position detection signal to said switch control means of said power supplying apparatus when said portable power receiving apparatus is in said predetermined spatial orientation with said power supplying apparatus.

4,942,353

HIGH FREQUENCY MATRIX TRANSFORMER POWER CONVERTER MODULE

Edward Herbert, Canton; John D. Repp, Barkhamsted, and Stephen E. Cebry, Burlington, all of Conn., assignors to FMTT, Inc., Canton, Conn.

Filed Sep. 29, 1989, Ser. No. 415,043
Int. Cl.[5] H01F *33/00*
U.S. Cl. 323—361 **12 Claims**



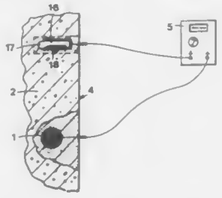
1. Matrix transformer converter module for use in a high frequency power converter, said module comprising,
at least one interdependent magnetic element defining a matrix transformer section;
means in each of said at least one interdependent magnetic elements defining at least one winding comprising an electrical conductor and having first and second ends, said at least one winding passing at least once through each of said at least one interdependent magnetic elements defining said matrix transformer section:
said means defining said at least one winding further means defining a passage for receiving a second electrical conductor having first and second ends to form at least one second winding:
inductor circuit means having two terminals, one of which terminals is coupled to said at least one winding and the other of which terminal is coupled to a output terminal defining a first voltage distribution bus whereby said inductor circuit means is in series between said at least one winding and said output terminal, and
a second voltage distribution bus, said first and second distribution busses being physically and electrically separated from one another whereby a voltage potential is developed between said busses when an electrical conductor carrying an excitation signal is present to form said second winding.

4,942,354

PROCESS FOR MONITORING THE EFFECTIVENESS OF REPAIRS MADE TO ZONES OF REINFORCED CONCRETE STRUCTURES

John B. Miller, Bergtunvn. 9B, N- 1084 Oslo 10, Norway

Continuation-in-part of Ser. No. 83,718, Aug. 10, 1987, abandoned. This application Jun. 16, 1989, Ser. No. 368,994
Claims priority, application Switzerland, Aug. 29, 1986, 3472/86
Int. Cl.[5] G01N *27/26*
U.S. Cl. 324—71.2 **1 Claim**



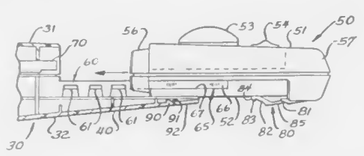
1. A process for continuously or intermittently monitoring the effectiveness of the repairs made to zones of reinforced concrete structures, which comprises implanting one or more lead reference electrodes (16) in the concrete (2) and connecting each of the said electrodes (16) to an instrument (5) for measuring electrical potential, the said instrument itself being connected to a metal strengthening element (1) embedded in the concrete (2).

4,942,356

MODULAR ELECTRONIC DEVICE

David R. Ellingen, Kenosha; Steven E. Michalski, Franklin; Daniel Mieczkowski, and Larry D. Pacetti, both of Kenosha, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Continuation of Ser. No. 189,477, May 12, 1988, abandoned. This application Jun. 26, 1989, Ser. No. 372,228
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—156 **23 Claims**



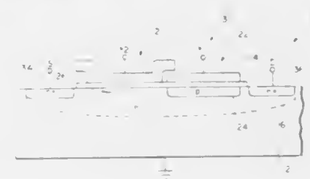
1. A modular electronic device comprising a main unit, at least one plug-in module adapted to be removably slid on to and mounted on said main unit, first and second interfitting electrical connectors respectively on said main unit and said module and automatically interfitting when said module is mounted on said main unit, said main unit being open at one end thereof such that said module is slid through said one end in a longitudinal direction, and first and second interfitting track structure respectively on said main unit and said module for guiding said module on and off of said main unit, said first and second interfitting track structure being constructed and arranged to prevent said module from being moved in a direction transverse to said longitudinal direction, said interfitting track structure including a groove.

4,942,357

METHOD OF TESTING A CHARGE-COUPLED DEVICE

Win-Chyi Chang, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 7, 1989, Ser. No. 390,210
Int. Cl.[5] G01R *31/26*; G11C *29/00*
U.S. Cl. 324—158 R **12 Claims**



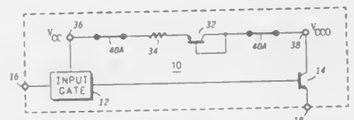
1. A method of testing CCD's to detect the size of barriers and pockets therein, said method comprising the steps of:
test device which includes a forming a two-phase CCD and a transistor having an source and a drain, a buried channel in said device being common to said CCD and said transistor;
applying clock voltages to electrodes of said CCD to simulate the transfer of charge from one phase to another;
applying predetermined voltages to said transistor; and
measuring a source voltage and a drain current for each of said predetermined voltages to determine values thereof which indicate the existence and extent of said barriers and pockets.

4,942,358

INTEGRATED CIRCUIT OPTION IDENTIFICATION CIRCUIT AND METHOD

Gregory A. Davis, and Harold L. Spangler, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1988, Ser. No. 266,446
Int. Cl.[5] G06F *11/22*; G01R *27/02*
U.S. Cl. 324—158 R **5 Claims**



1. A method for identifying at least two versions of integrated circuits each having the same functionality wherein the integrated circuits include two electrically isolated power supply conductors that are at substantially equal potential during normal operation of the integrated circuits, comprising the steps of:
disposing unilaterally current conducting circuit means in the respective versions of integrated circuits;
conductively coupling said conducting means between the two power supply conductors in all but one version of the integrated circuits;
raising the voltage potential at one of the two power supply conductors with respect to the other wherein current flows through said conducting means therebetween; and
detecting said current flow through said conducting circuit means.

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4,942,359

METHOD OF MAGNETIC RESONANCE IMAGING

Koichi Sano, Sagamihara; Tetsuo Yokoyama, Tokyo, and Hideaki Koizumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,901
Claims priority, application Japan, Jan. 29, 1988, 63-17078
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **12 Claims**



1. A method of magnetic resonance imaging comprising the steps of:

(a) applying a static magnetic field, gradient magnetic fields and a radio frequency magnetic field to a subject to be measured, and detecting nuclear magnetic resonance signals from the subject to be measured;

(b) reconstructing first image signal data by performing calculations using complex numbers indicative of the detected signals;

(c) obtaining first projection data by processing the first image signal data along a projection direction;

(d) calculating second image data by performing calculations using absolute values of the first image signal data;

(e) obtaining second projection data by processing the second image signal data along the projection direction; and

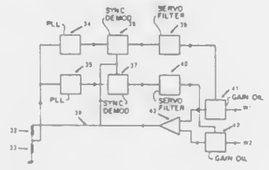
(f) obtaining image data of blood flow of the subject to be measured by performing subtraction between the first projection data and the second projection data.

4,942,360

A METHOD AND APPARATUS OF DISCRIMINATION DETECTION USING MULTIPLE FREQUENCIES TO DETERMINE A RECOGNIZABLE PROFILE OF AN UNDESIRABLE SUBSTANCE

Bruce H. Candy, Hunters Road, Basket Range, Australia (5138)

Filed Sep. 8, 1987, Ser. No. 93,837
Claims priority, application Australia, Sep. 8, 1986, PH7889
Int. Cl.[5] G01V *3/10*
U.S. Cl. 324—329 **18 Claims**



1. A conducting metal discriminating detection apparatus comprising:

means to transmit at least two alternating magnetic fields of different frequency, each below 100 kHz,

means to receive respective signals arising from each of the transmitted frequencies being retransmitted from a target,

means for demodulating the respective received signals to determine a presence of at least one of reactive and/or resistive components;

means for comparing magnitudes of respective component levels at said different frequencies to produce an output signal indicative thereof an interpretable characteristic of which is substantially independent of a background environment which includes substantial material which has a substantial magnetic effect and has a reactive to resistive response ratio which is substantially independent of an interrogating frequency wherein said means for demodulating includes at least one synchronous demodulator for each transmitted signal component, synchronous demodulator references being derived from said transmitted signal components,

a low pass filter coupled to outputs of the synchronous demodulator, and wherein a low-passed output of each said demodulator is sensitive to one only of the transmitted frequencies, and each said synchronous demodulator having its reference selected whereby each said low-passed synchronously demodulated output includes information proportional to either predominantly reactive components of the magnetically interrogated environment at a frequency Wi, where i is the mathematical label of the i-th transmitted frequency (i=1,2,. . .), to which the demodulator is sensitive, the output of such a demodulator's low-pass filter being called RCI the output of the reactive channel of Wi, or to predominantly resistive components of the magnetically interrogated environment at the frequency, Wi, to which the demodulator is sensitive, the output of such a demodulator's low-pass filter being called LCi, the output of the resistive channel of Wi, and further comprising

interpretive means including means adapted to compare by subtraction at least a selected ratio of one of the reactive channel's outputs with another to result in a difference signal called a reactive difference signal RDk, where k is the mathematical label of the Kth reactive difference signal (k=1, . . .), such that RDk yields substantially no change when material that is substantially purely reactive and non-resistive below 100 kHz is moved within the influence of the transmitted fields and this occurs when the reactive channel gains are selected to be substantially equal.

4,942,361

METHOD AND APPARATUS FOR DETERMINING EARTH RESISTIVITIES IN THE PRESENCE OF EXTRANEOUS EARTH CURRENTS

William F. Gast, Dallas, and Charles F. Rhodes, Jr., Garland, both of Tex., assignors to Oryx Energy Company, Dallas, Tex.

Filed Jun. 7, 1988, Ser. No. 202,603
Int. Cl.[5] G01V *3/02*
U.S. Cl. 324—360 **13 Claims**

1. Apparatus for measuring earth resistivity which comprises:

(a) means for providing square-wave direct current pulses,

(b) means for injecting said current pulses through at least one pair of electrodes into the earth,

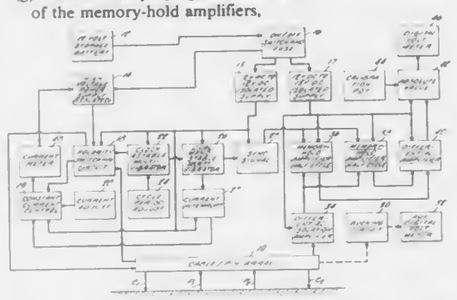
(c) means for measuring the voltage of said pulses as received at electrodes in the earth at locations spaced apart from the location of electrodes for the injection of said current,

(d) means for amplifying said measured voltage received at the electrodes,

(e) two memory-hold amplifiers to receive said amplified pulses,

(f) means for providing synchronizing of the pulses to said memory-hold amplifiers and for providing sample and hold signals to said amplifiers, whereby analog information concerning said amplified voltage is stored for one half-cycle in one of said amplifiers and for the remaining half-cycle in the other of said amplifiers,

(g) means for amplifying the difference between the output of the memory-hold amplifiers,



(h) an absolute value circuit for providing positive output regardless of the input polarity from the differential amplifier, and

(i) voltmeter means for displaying potential between electrodes,

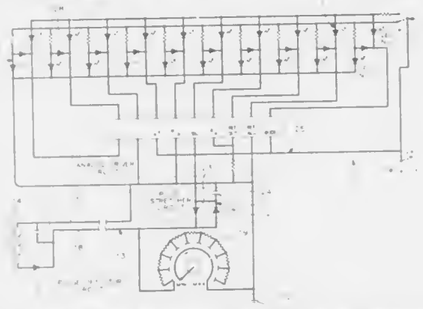
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4,942,362

APPARATUS FOR TESTING IGNITION SYSTEMS

Jeffrey Lance, 8776 Ellsworth Cir., Santee, Calif. 92071

Filed Apr. 3, 1989, Ser. No. 332,485
Int. Cl.[5] F02P *17/00*
U.S. Cl. 324—402 **3 Claims**



1. An analyzation apparatus for ignition systems comprising:

a. a first circuit having a pulse detector circuit with a non-intrusive induction type pick-up pulse detector generating an AC signal proportional to magnetic field variations caused by pulsating current flowing through an ignition circuit wire;

b. a first diode rectifier in the pulse detector circuit to convert the AC signal to a pulsating DC signal;

c. a first capacitor across a first lead and a second lead of the pulse detector circuit to eliminate unwanted signal noise;

d. an attenuator in the pulse detector circuit across the second lead and a ground lead to control an amplitude of the signal from the first diode rectifier;

e. a pulse stretching circuit in the first circuit having a second diode, a third diode and a second capacitor connected to the first lead and to the ground lead to increase the duration of the signal from the first diode rectifier;

f. an LED analog driver circuit in the first circuit that senses the signal from the pulse stretching circuit and converts the signal into a linear voltage;

g. two LED display circuits in the first circuit to provide a visual display proportional to the amplitude of the signal received from the driver circuit and connected in parallel to the driver circuit;

h. a plurality of fourth diodes placed between the LED circuits to prevent current flow from passing from an LED of one of the LED circuits to an adjacent LED of another LED circuit and illuminating the LED of the adjacent LED circuit;

i. a function selector switch in the first circuit connected between the LED analog driver circuit and selectively to one of the LED circuits to selectively direct current to one of the LED circuits and to interrupt current flow to the LED circuits; and

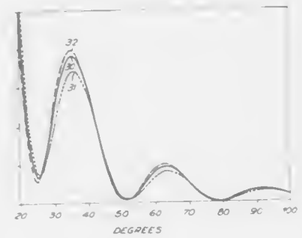
j. power leads connected to the first circuit to provide power to the first circuit from a power source.

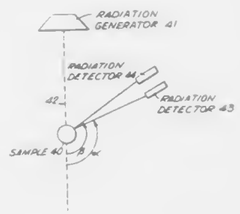
4,942,363

APPARATUS AND METHOD FOR MEASURING TWO PROPERTIES OF AN OBJECT USING SCATTERED ELECTROMAGNETIC RADIATION

David A. Lowitz, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 25, 1989, Ser. No. 342,872
Int. Cl.[5] G01R *27/04*
U.S. Cl. 324—631 **35 Claims**





22. A method for monitoring two components of an object, said object having a dielectric constant, each of said components contributing to said dielectric constant, the contribution of one of said components to said dielectric constant varying substantially over a selected frequency range and the contribution of the other of said components being substantially constant over said selected frequency range, said method comprising the steps of:

directing a beam of electromagnetic radiation linearly polarized in a predetermined direction along a predetermined line of incidence toward said object, said beam of electromagnetic radiation comprising at least two frequency components within said selected frequency range; wherein:

said object scatters said beam of radiation through reflection, interference and refraction as a function of scattering angle, the intensity of scattered radiation forming an angular scattering intensity spectrum for each of said fre-

quency components, each of said spectra varying between localized maxima and minima as a function of scattering angle; said method further comprising:

detecting the angular scattering intensity spectra and generating signals relating to the intensity of radiation scattered from said object at each of said frequency components and polarized only in a direction parallel to said predetermined direction, said signals being characteristic of said angular scattering intensity spectra for radiation polarized in said predetermined direction at said frequencies, such that said generated signals would be known intensity signals if said components of said object were present at predetermined levels, said generated signals having intensities differing from said known intensities when said components of said object differ from said predetermined levels; and

indicating deviation of the level of each of said components of said object from each said predetermined level based on said differing intensity signal for each of said frequency components and to relative amounts by which each of said differing intensity signals differs from its corresponding known intensity signal, thereby indicating the level of each of said components of said object.

4,942,364

MOISTURE AND DEW-DETECTION SENSOR

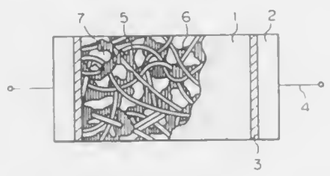
Jun-ichi Nishijima, Katano, and Minoru Fukui, Suita, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1989, Ser. No. 310,179

Claims priority, application Japan, Feb. 19, 1988, 63-35394; May 16, 1988, 63-117064

Int. Cl.[5] G01R *27/08*

U.S. Cl. 324—696 **10 Claims**



1. A moisture and dew-detection sensor comprised of a nonwoven fabric and a moisture sensing resistive substance adhered in a substantially continuous and dispersed state to said nonwoven fabric, said moisture sensing resistive substance including a mixture of a nonionic hygroscopic high polymer and a conductive particle, and a plurality of continuous fine voids formed therein.

4,942,365

SYNCHRONOUS PHASE AND/OR FREQUENCY DETECTION SYSTEM

James R. Satterwhite, Roxboro, N.C., assignor to Teltest Electronics Laboratories, Inc., Roxboro, N.C.

Filed Jul. 24, 1989, Ser. No. 384,414

Int. Cl.[5] H03L *7/00*; H03K *9/06*

U.S. Cl. 328—134 **9 Claims**

1. A detection circuit for detecting and determining the magnitude of a synchronous frequency signal whose phase relationship to a given reference frequency is known or unknown or a non-synchronous signal near the reference frequency, comprising:

(a) a first synchronous detector;

(b) a second synchronous detector;

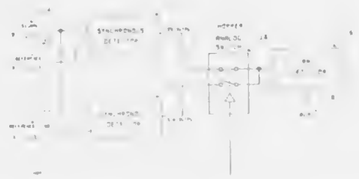
(c) a first signal source means providing:

(i) a first signal comprising a first reference frequency fed to the input side of said first synchronous detector; and

(ii) a second signal comprising a second reference frequency having a plus 90 degree phase relation to the first reference frequency, said second signal being fed to the input side of said second synchronous detector;

(d) a second signal source means providing a third signal comprising a signal to be detected and whose magnitude is to be determined and characterized by being either a synchronous frequency signal whose phase relationship to the first reference frequency is known or unknown or a non-synchronous signal near the first reference frequency, said third signal being fed to the input sides of both said first and second synchronous detectors;

(e) a chopper analog switch having two parallel single pole switches with input and output sides and one of which on its input side is connected to the output of the first synchronous detector and the other of which on its input side is connected to the output of the second synchronous detector;



(f) a RMS detector having input and output sides, the output sides of said single pole switches being connected to the input side of said RMS detector;

(g) a square wave driven chop frequency source connected to means operative to open and close said single pole switches at opposite times at said chop frequency, said chop frequency being higher than the output frequency of said synchronous detectors; and

(h) wherein said first synchronous detector provides a COS Output, said second synchronous detector provides a SIN Output and said RMS detector provides an output indicative of the presence and magnitude of said third signal and if the relative phase of the input signal to the reference is "a" degrees, said COS and SIN outputs being defined by the relation COS *Output* $=0.636\times$*Peak Signal*$\times\cos(a)$ and SIN *Output*$=0.636\times$*Peak Signal*$\times\sin(a)$.

4,942,366

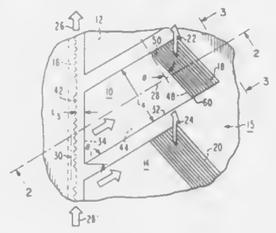
AMPLIFIER DEVICE WITH COUPLED SURFACE EMITTING GRATING

Minoru Toda, Lawrenceville, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1989, Ser. No. 326,714

Int. Cl.[5] H01S *3/19*; H01L *33/00*

U.S. Cl. 330—4.3 **15 Claims**



1. An optical device comprising:

a semiconductor optical amplifier having an optical axis intersecting opposite amplifier ends; and

a surface emission optical grating comprising a plurality of elements optically coupled to the amplifier at one of said ends, said grating having grating elements oriented non-perpendicular to said optical axis at a first angle, the amplifier and said grating orientation angle being arranged to reflect light out of said amplifier.

4,942,367

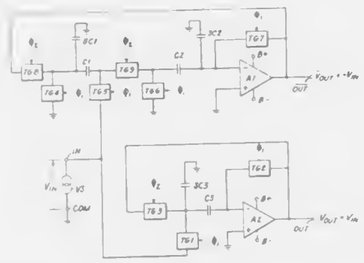
AUTO-ZEROING SWITCHED-CAPACITANCE BUFFER AMPLIFIERS WITH MINUS-UNITY VOLTAGE GAIN

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1989, Ser. No. 414,508

Int. Cl.[5] H03F *1/02*

U.S. Cl. 330—9 **13 Claims**



1. A switched-capacitance amplifier comprising:

a common terminal for receiving a reference voltage;

an input signal terminal for receiving an input signal voltage as referred to said reference voltage;

an inverted output signal terminal for supplying, during each of a second series of separated time intervals interleaved without overlap with a first series of separated time intervals, an inverted output signal voltage that is the negative of the voltage at said input signal terminal, as referred to said reference voltage;

first and second capacitors, each having respective first and second plates;

a first differential-input amplifier having an output connection to said inverted output signal terminal, having a non-inverting input connection to said common terminal, having an inverting input connection, and having an input port between its non-inverting and inverting input connections with which an input offset error voltage is associated;

first selective connection means for connecting, during each of said first series of separated time intervals, the first and second plates of said first capacitor respectively to said common terminal and to said input signal terminal, for charging said first capacitor to said input signal voltage;

second selective connection means for connecting, during each of said first series of separated time intervals, the first and second plates of said second capacitor respectively to said common terminal and to the inverting input connection of said first differential-input amplifier, for charging said second capacitor to the input effect error voltage of said first differential-input amplifier; and

third selective connection means for connecting during each of said second series of separated time intervals said first capacitor, said second capacitor and the input port of said first differential-input amplifier in a first series connection between said inverted output signal terminal and said common terminal.

4,942,368

SIGNAL FEEDBACK AMPLIFIER FOR A CABLE-TV CONVERTER

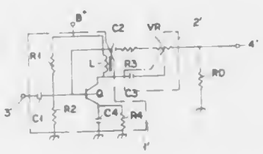
Frederick H. Moon, Seoul, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon-City, Rep. of Korea

Filed Apr. 25, 1989, Ser. No. 343,154

Claims priority, application Rep. of Korea, Apr. 27, 1988, 88-5993

Int. Cl.[5] H03G *3/12*

U.S. Cl. 330—282 **10 Claims**



1. In an amplifier system for a cable-TV converter, the amplifier system having an amplifier having a transistor with a base connected to an input port of the amplifier system that provides a video IF signal and a collector for connection to an output port of the amplifier system, the improvement comprising:

variable gain means connected between the collector of the transistor and the output port for varying the gain therebetween;

variable negative feedback means forming a closed loop between the collector and the base of the transistor for varying negative feedback of the variable negative feedback means inversely with the gain of the variable gain means; and

impedance matching means connected between the variable gain means and the output port for maintaining a substantially constant output impedance at the output port.

4,942,369

CONTROLLED CURRENT PRODUCING DIFFERENTIAL CIRCUIT APPARATUS

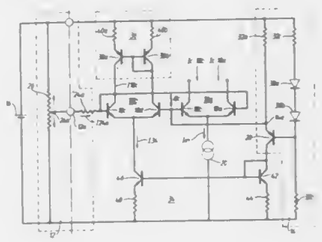
Chikashi Nakagawara; Akihiro Murayama, both of Kanagawa, and Shigeru Nakamura, Nigata, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 18, 1988, Ser. No. 170,376

Claims priority, application Japan, Mar. 20, 1987, 62-64215; Mar. 30, 1987, 62-76641

Int. Cl.[5] H03F *3/04*

U.S. Cl. 330—296 **9 Claims**



1. A controlled current producing differential circuit apparatus, comprising:

control voltage supply means for supplying a control voltage in response to a power supply voltage subject to unexpected fluctuation;

reference voltage supply means responsive to the power supply voltage for supplying a predetermined reference voltage; and

differential circuit means coupled to the control voltage supply means and the reference voltage supply means for outputting a controlled output current in response to the difference between the control voltage and the reference voltage and for compensating for fluctuations in the power supply voltage.

4,942,370

PLL CIRCUIT WITH BAND WIDTH VARYING IN ACCORDANCE WITH THE FREQUENCY OF AN INPUT SIGNAL

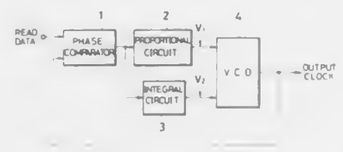
Toshihiro Shigemori, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 4, 1989, Ser. No. 333,299

Claims priority, application Japan, Apr. 8, 1988, 63-85156; Jun. 23, 1988, 53-153494

Int. Cl.[5] H03L *7/087, 7/093*

U.S. Cl. 331—1 A **8 Claims**



1. A phase loop (PLL) circuit comprising:

phase comparing means for receiving an input signal and an output clock signal, detecting a difference in phase between these two signals, and outputting a first signal according to said phase difference;

proportional means for converting said first signal to a first voltage having an amplitude proportional to said phase difference;

integral means for converting said first signal to a second voltage having an amplitude proportional to an integral value of said phase difference; and

voltage-controlled oscillating meands for receiving said first and second voltages and generating said output clock signal having a frequency controlled by said first and second voltages,

a frequency F_0 of said output clock signal being represented by the following formula,

$$F_0 = \frac{1}{a} \frac{V_1 + b}{V_2 + c}$$

where said first and second voltages are respectively designated by V_1 and V_2, and the values, a, b, and c are constants.

2. A phase locked loop (PLL) circuit comprising:

phase comparing means for receiving an input signal and an output clock signal, detecting a first difference in phase between these two signals, and outputting a first signal corresponding to said first phase difference;

signal processing means for detecting a second difference in phase between said output clock signal and a reference clock signal having a predetermined frequency, outputting a second signal corresponding to said second phase difference while said PLL circuit is in a first state where no input signals are received by said phase comparing means, and outputting a third signal while said PLL circuit is in a second state where input signals are received by said phase comparing means, said third signal having a magnitude equal to an average value of the second signal outputted for a predetermined period just before said PLL circuit is changed to be in said second state from said first state;

filter means for outputting a voltage signal corresponding to said second signal when said PLL circuit is in said first state, corresponding to a sum of said first signal and said third signal when said PLL circuit is in said second state; and

voltage-controlled oscillating means for generating said output clock signal having a frequency corresponding to said voltage siganl.

4,942,371

PHASE-LOCKED LOOP HAVING IMPROVED INPUT JITTER CHARACTERISTICS

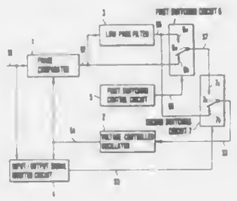
Satoshi Kashiwaba, and Masahiro Nakajima, both of Tokyo Japan, assignors to NEC Corporation, Japan

Filed Aug. 28, 1989, Ser. No. 399,330

Claims priority, application Japan, Aug. 31, 1988, 63-217936

Int. Cl.[5] H03L *7/093*

U.S. Cl. 331—14 **3 Claims**



3. A method for establishing phase synchronization in a phase-locked loop (PLL), including phase comparator means, low-pass filter means, and a voltage-controlled oscillator, comprising:

detecting a phase difference between an input signal and an output signal from said voltage-controlled oscillator;

extracting a low-frequency signal component from the detection result;

selecting one of the detection result and the low-frequency signal component; and

providing to said voltage controlled oscillator the selection result or the low-frequency signal component in accordance with a synchronization/asynchronization state of said voltage-controlled oscillator and frequency components of the input signal.

4,942,372

METHOD AND CIRCUIT FOR REDUCTION OF TEMPERATURE DEPENDENCY IN AN OSCILLATOR

Peter Heimlicher, Klein-Schoenberg 112, CH-1700 Fribourg, Switzerland

Filed Nov. 17, 1988, Ser. No. 272,350

Claims priority, application Switzerland, Dec. 1, 1987, 4679/87

Int. Cl.[5] H03B *5/08;* **H03L** *1/00*

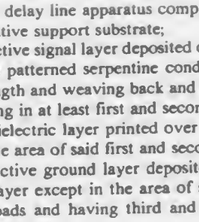
U.S. Cl. 331—65 **9 Claims**

1. A method for reducing the temperature dependency of the oscillating properties of an LC-oscillator having an oscillating circuit including a coil having temperature dependent copper losses; a condenser; and an amplifier means having input means and output means, said input means and said output means being connected to said oscillating circuit; comprising the steps of:

inserting a first positive feedback path having a temperature dependent feedback characteristic between said output means and said oscillating circuit;

inserting a second feedback path having a temperature independent feedback characteristic between said output means and said oscillating circuit;

varying the attenuation of said oscillating circuit; and



varying the feedback characteristics of said second path to compensate for said variable attenuation.

4,942,373

THIN FILM DELAY LINES HAVING A SERPENTINE DELAY PATH

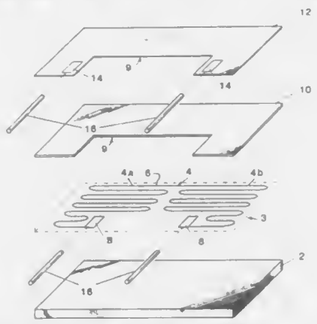
Paul Ozawa; Mark Brooks, and Fumitoshi Nakanata, all of North Mankato, Minn., assignors to Thin Film Technology Corporation, North Mankato, Minn.

Filed Apr. 11, 1988, Ser. No. 180,353

Claims priority, application Japan, Jul. 20, 1987, 62-181877; Oct. 14, 1987, 62-258645

Int. Cl.[5] H01P *9/00*

U.S. Cl. 333—161 **14 Claims**



1. Thin film delay line apparatus comprising:

(a) an insulative support substrate;

(b) a conductive signal layer deposited over said substrate to provide a patterned serpentine conductor of a predetermined length and weaving back and forth upon itself and terminating in at least first and second contact pads;

(c) a first dielectric layer printed over said signal layer except in the area of said first and second contact pads;

(d) a conductive ground layer deposited over said first dielectric layer except in the area of said first and second contact pads and having third and fourth contact pads thereto;

(e) means for making electrical contact to said first, second, third and fourth contact pads;

(f) means for encapsulating said delay line apparatus; and

(g) wherein the inductive and capacitive characteristics of said signal and ground layers and said first dielectric layer relative to one another and between adjacent portions of the serpentine signal layer are such that a signal applied to said first contact pad takes a known time in the range of 1 to 10 nanoseconds to reach said second contact pad.

4,942,374

PHASE-LOCKED LOOP TYPE SYNTHESIZER HAVING MODULATION FUNCTION

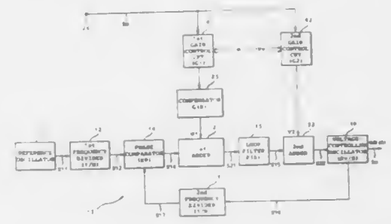
Kenji Sai, Mitaka, Japan, assignor to Japan Radio Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1989, Ser. No. 343,484

Claims priority, application Japan, Apr. 26, 1988, 63-103702

Int. Cl.[5] H03C *3/08, 3/09*

U.S. Cl. 332—124 **3 Claims**



2. In a phase-locked loop type synthesizer comprising a phase-locked loop circuit which comprises a phase comparator, a lop filter, a voltage controlled oscillator having a gain Kv, a circuit for feeding back an output from said voltage controlled oscillator to said phase comparator through a frequency divider having a frequency division ratio N, a first adder for adding a modulation signal through a compensator to an output of said phase comparator to produce a first composite signal, said first composite signal being applied to said loop filter, and a second adder for adding said modulation signal to an output of said loop filter to produce a second composite signal, said second composite signal being applied to said voltage controlled oscillator,

the improvement wherein:

said voltage controlled oscillator has a fixed gain; and

a gain control circuit is coupled in an input line of said modulation signal for said compensator, said gain control circuit having a variable gain G1 which is adjusted to be in inverse proportion to said frequency division ratio N of said frequency divider.

4,942,375

VARIABLE ATTENUATION DEVICE INTENDED TO BE INSERTED BETWEEN A TRANSMITTER CIRCUIT AND LOAD CIRCUIT

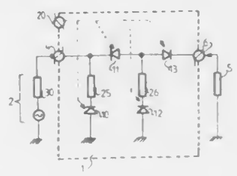
Gilbert Petitjean, Igny; Michel Lebourg, Clamart, and Christian Le Tortorec, Montigny Le Bretonneux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 210,269, Jun. 23, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 408,455

Claims priority, application France, Jun. 30, 1987, 87 09208

Int. Cl.[5] H01P *1/22*

U.S. Cl. 333—81 R **5 Claims**



1. A broadband variable attenuator, having a high attenuation range suitable for use as a modulator with a transmitter

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and a load impedance, said broadband variable attenuator comprising:

a signal transmission path having an input end and an output end and comprising a series pair of p-i-n diodes of opposite relative polarity in series with the input and output ends of said signal transmission path, whereby the impedance of said signal transmission path is dependent upon the impedance of said series pair of p-i-n diodes;

a first signal shunt path between the input end of said signal transmission path and ground, said first signal shunt path comprising a p-i-n diode and an impedance element connected in series, said impedance element having an impedance value selected to match an internal impedance of a transmitter connected in operation to said input end of said signal transmission path, whereby the impedance of said first signal shunt path is dependent upon the impedance of said p-i-n diode thereof;

a second signal shunt path between the junction of said series pair of p-i-n diodes and ground, said second signal shunt path comprising a p-i n diode and an impedance element connected in series, said impedance element having an impedance value selected to match a load impedance connected in operation to said output end of said signal transmission path, whereby the impedance of said second signal shunt path is dependent upon the impedance of said p-i-n diode thereof;

all of said p-i-n diodes having minority carrier lifetimes of about 3 to 5 microseconds, and a resistance to current ratio between about 35 to 80 ohms at one milliampere and greater than 350 ohms at 100 microamperes; and

biasing means responsive to a control bias signal for controllably biasing said p-i-n diodes with respective direct currents effective to change the impedance value of said series pair of p-i-n diodes in one direction and simultaneously change the impedance values of said p-i-n diodes of said first and second shunt signal paths in the opposite direction, whereby the attenuation level of said attenuator is variable under control of the control bias signal between a high attenuation level with said signal transmission path having a high impedance and said signal shunt paths having a low impedance, and a low attenuation level with said signal transmission path having a low impedance and said signal shunt paths having a high impedance.

4,942,376

TUBULAR MICROWAVE PHASE SHIFTER

William G. Sterns, Canoga Park, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 17, 1989, Ser. No. 311,793

Int. Cl.[5] H10P *1/18*

U.S. Cl. 333—160 **6 Claims**



1. A microwave circuit structure having a support structure in the shape of a light weight dielectric cylinder, a cylindrical ground plane on the inside of said dielectric cylinder, a microstrip phase shifter circuit on the outside of said dielectric cylinder, and a cylindrical shield mounted coaxially around the circuit spaced therefrom by a second dielectric.

4,942,377

ROD TYPE DIELECTRIC RESONATING DEVICE WITH COUPLING PLATES

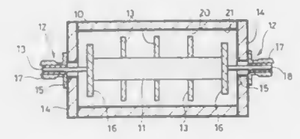
Youhei Ishikawa; Kikuo Tsunoda; Toshiro Hiratsuka, and Hirotsugu Abe, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 23, 1988, Ser. No. 197,693

Claims priority, application Japan, May 29, 1987, 62-85099[U]; May 30, 1987, 62-137500; May 30, 1987, 62-137501

Int. Cl.[5] H01P *1/20, 7/10*

U.S. Cl. 333—202 **19 Claims**



1. A dielectric resonating device, comprising:

a conductive case;

a bar-shaped dielectric resonator body located within the case;

exciting means adjacent said resonator body for exciting the dielectric resonator body; and

at least one plate located extending between the case and the dielectric resonator body, which segments the dielectric resonator body into at least one pair of resonating segments within said case on either side of said at least one plate,

a radially inner portion of said at least one plate being fixed to said dielectric resonator body, and

an outer periphery of said at least one plate being disposed at a location facing said case to define a gap for coupling adjustment between said pair of resonating segments.

4,942,378

HIGH-SPEED SUPERCONDUCTING SWITCH AND METHOD

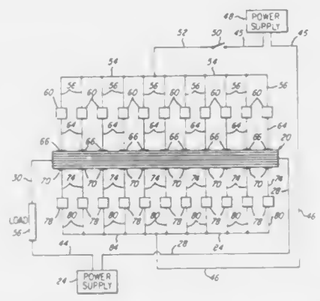
John P. Barber, Dayton, Ohio, assignor to IAP Research, Inc., Dayton, Ohio

Filed May 26, 1989, Ser. No. 358,156

Int. Cl.[5] H01F *7/22*

U.S. Cl. 335—216 **16 Claims**

1. A superconductive switch device comprising a body of superconductive material having a primary current conduction plane within which primary current flows, means for conducting control current through the body of superconductive material in a direction substantially normal to the primary conduction plane, whereby primary current flow in the primary current conduction plane ceases as current flows through the body of superconductive material in a direction substantially normal to the primary conduction plane.



4,942,379

SUPERCONDUCTOR FOR MAGNETIC FIELD SHIELD

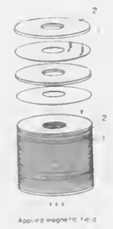
Souichi Ogawa; Takao Sugioka, and Masaru Inoue, all of Osaka, Japan, assignors to Osaka Prefecture and Koatsu Gas Kogyo Co., Ltd., both of Osaka, Japan

Filed Oct. 3, 1989, Ser. No. 416,712

Claims priority, application Japan, Oct. 3, 1988, 63-250546

Int. Cl.[5] H01F *7/22*

U.S. Cl. 335—301 **9 Claims**



1. A superconductr for magnetic field shield comprising closed-ring disc-shaped superconductive magnetic field shielding members and spacing members having the same shape as that of said magnetic field shielding member and alternately laminated with said shielding members, said superconductor for magnetic field shield being characterized in that said shielding member is comprised of a superconductive layer having a thickness of 500 μm or less and closely laminated with metal layers having superior thermal and electrical conductivity and that the ring width of said superconductive layer is 2 mm or more.

4,942,380

HOUSING ASSEMBLY HAVING FLEXIBLE SHIELD AND INSULATOR

William M. Bradford, Ft. Lauderdale; Lloyd W. Silvern, Coral Springs, and Gerard A. Dennis, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 23, 1989, Ser. No. 299,205

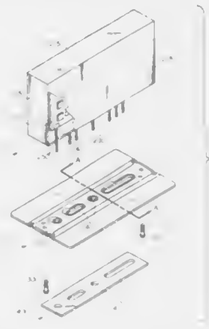
Int. Cl.[5] H01F *7/00*

U.S. Cl. 335—301 **11 Claims**

1. An electromagnetically shielded housing assembly comprising:

a substantially rigid housing member having an open side for receiving an electrical circuit;

a flexible member including conductive material,



means for affixing said flexible member to said housing member, so as to substantially cover said open side; and provide electrical contact between said flexible member and said housing member.

4,942,381

DRIVING ELEMENT WITH A THIN PART, DEFORMABLE IN THE DIRECTION OF ITS THICKNESS

Jean C. Cambien, Sassenage, France, assignor to Delta Concept S.A., Grenoble, France

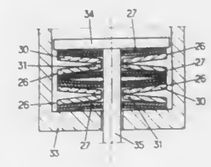
Division of Ser. No. 315,376, Oct. 26, 1988, Pat. No. 4,914,415.

This application Nov. 9, 1989, Ser. No. 433,246

Claims priority, application France, Feb. 27, 1987, 87 02685

Int. Cl.[5] H01H *37/52*

U.S. Cl. 337—370 **6 Claims**



1. Driving element comprising:

at least two disks deformable in the the direction of their thickness so as to occupy arcuate positions,

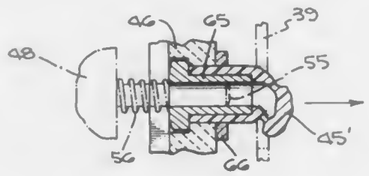
each disk being provided with at least two opposed tabs extending radially and having their outer end parts fixed on an outer part of the disk and their free end being above a central area of the disk surface,

said disks being disposed one on the other and forming a stack in which said disks are deformable in opposite directions,

said stack being positionable between a support and a member to be actuated in the direction of an axis of said stack by the movement of said free ends of said tabs of said disks.

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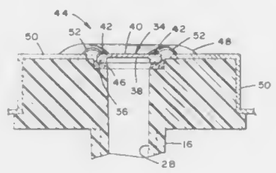
4,942,382
ELECTRICAL SWITCH MECHANISM HAVING TWO RELEASE MODES
Robert L. Barmeister, Yorba Linda, Calif., assignor to W. P. Dawson, Inc., Brea, Calif.
Filed Nov. 29, 1989, Ser. No. 443,256
Int. Cl.[5] H01H *37/76, 71/20*
U.S. Cl. 337—403 **3 Claims**



3. In a normally closed electrical switch mechanism having fixed and movable switch assemblies, spring means urging the movable switch assembly away from engagement with the fixed switch assembly to thereby open the switch, a latch member normally securing the movable switch assembly in its position of engagement with the fixed switch assembly, and means responsive to a predetermined condition external to the switch mechanism for moving the latch member so as to allow the switch to open, the improvement comprising:

a member made of thermoplastic material and positioned between the latch member and the movable switch assembly, the thermoplastic material of said member being responsive to an overheated condition of the internal switch circuitry for losing its structural rigidity so as to release the movable switch assembly and thereby permit the spring means to open the switch even though the latch member remains in place.

4,942,383
LOW COST WET-TO-WET PRESSURE SENSOR PACKAGE
Man K. Lam, and Milton W. Mathias, both of Colorado Springs, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 6, 1989, Ser. No. 320,170
Int. Cl.[5] H01L *10/10*
U.S. Cl. 338—42 **15 Claims**



1. A pressure sensor package, which comprises:

a housing defining a chamber bounded in part by opposing spaced-apart top and bottom end walls;

a pressure-sensitive die disposed in a recess in the bottom end wall of said housing;

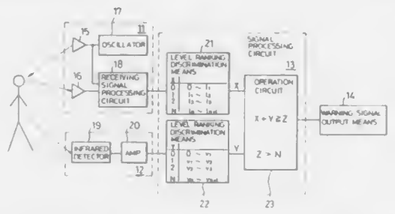
said die including a peripheral edge, a reduced central portion, a top surface with a piezoresistive circuit in the central portion connected to a plurality of exposed circuit elements including contact pads on the peripheral edge, and a bottom surface;

a lead frame secured to the bottom end wall of said housing in spaced relationship with said die, said lead frame including a plurality of internal and external end portions;

a plurality of wire bonds interconnecting the contact pads of said die and the internal end portions of said lead frame; and

bead means for suspending said die between the recess in the bottom end wall of said housing, the internal end portions of said lead frame, and intermediate portions of the bottom end wall of said housing and for protectively covering the exposed circuit elements and contact pads on said die and said wire bonds therein, without overlapping the reduced central portion of said die.

4,942,384
COMPOSITE TYPE CRIME PREVENTIVE SENSOR
Kazumasa Yamauchi, Suita, and Susumu Katayama, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Mar. 31, 1989, Ser. No. 331,367
Claims priority, application Japan, Apr. 8, 1988, 63-87644; May 26, 1988, 63-128652
Int. Cl.[5] G08B *13/00*
U.S. Cl. 340—522 **7 Claims**



1. A composite type crime preventive sensor comprising: a plurality of sensor units respectively of different detecting systems and employed in combination with one another, means for processing output detecting signals from said sensor units, said means for processing output detection signals including means for correlating each of said output detection signals from the respective sensor units with a corresponding one of a plurality of grades depending on signal level to provide a ranked level value for each of said output detection signals, and means for providing as an output an intruder discrimination signal when a sum of the ranked level values is above a preset reference value, wherein said preset reference value is set to be larger than the largest ranked level of said ranked level values.

4,942,385
PHOTOELECTRIC INTRUSION DETECTOR
Shinji Kobayashi, Tokyo; Koichi Takada, Kanagawa; Kazuo Watanabe, Kanagawa, and Motoharu Mitsuse, Kanagawa, all of Japan, assignors to Hochiki Corporation, Tokyo, Japan
Filed Dec. 22, 1988, Ser. No. 288,691
Claims priority, application Japan, Dec. 24, 1987, 62-196374[U]; Jul. 28, 1988, 63-189179
Int. Cl.[5] G05B *13/18*
U.S. Cl. 340—556 **4 Claims**

1. A photoelectric intrusion detector comprising:

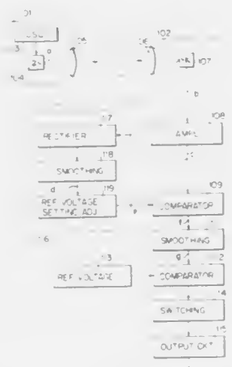
light sensitive means for receiving a pulsed light projected from a light emitting unit at a place remote from said light emitting unit to generate a corresponding electric signal;

first comparison means for comparing said electric signal with a reference voltage to remove a noise component lower than said reference voltage from said electric signal;

circuit means for receiving an output from said first comparison means to generate an output signal having a DC level corresponding thereto;

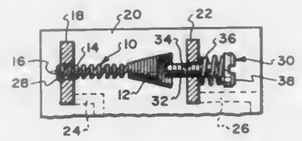
second comparison means for comparing the DC level signal generated by said circuit means with a predetermined threshold value to generate an output when said DC level is lower than said threshsold value;

alarm signal generating means for generating an alarm output when the output of said second comparison means lasts over a predetermined storage time; and



reference voltage generating means for producing a voltage output varying to follow variations of the output from said light sensitive means with a predetermined delay time exceeding the storage time of said alarm signal generating means so as to apply said voltage output to said first comparison means as said reference voltage.

4,942,386
INTEGRATED IMPACT DETECTION AND ALARM SYSTEM
Billy R. Willis, 20219 Londelius St., Canoga Park, Calif. 91306
Filed Dec. 16, 1988, Ser. No. 285,777
Int. Cl.[5] G08B *13/00;* **H01H** *35/02*
U.S. Cl. 340—566 **18 Claims**



1. An integrated alarm system for protecting electronic machines against tampering comprising;

an alarm circuit for activating one or more alarms; mounting means mounting said alarm circuit in said electronic machine;

one or more alarm switches for activating said alarm circuit in response to tampering;

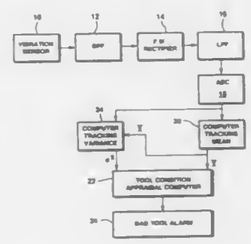
said one or more alarm switches for activating said alarm circuit including at least one impact sensing means for sensing impact to said electronic machine;

said impact sensing means including a deflectable spring having an integrally formed conically tapered portion and a cylindrical portion tightly wound to form threads;

said mounting means including a threaded hole for mounting said deflectible spring;

said cylindrical threaded portion of spring being adjustably threaded into said hole with said conically tapered portion circumjacent an adjustable electrical contact so that the position of said conically tapered portion relative to said electrical contact can be adjusted by threading said spring into or out of said threaded hole to adjust the sensitivity range of said impact sensing means; said deflectable spring and electrical contact being connected to said alarm circuit so that a deflection of said conically tapered end of said spring that causes contact with said electrical contact causes activation of said alarm circuit.

4,942,387
APPARATUS AND METHOD FOR TOOL BREAK AND WEAR DETECTION
Charles E. Thomas, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 5, 1989, Ser. No. 402,600
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—683 **24 Claims**



1. Apparatus for determining the condition of a tool, said apparatus comprising:

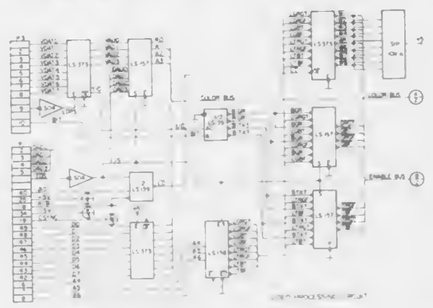
means for sensing the vibration of the tool to provide a vibration signal having AC and DC power components;

means for computing a first signal that is a function of said DC power component of said vibration signal;

means for computing a second signal that is a function of said AC power component of said vibration signal; and

means for comparing said first and second signals.

4,942,388
REAL TIME COLOR DISPLAY
William Reitman, Santa Ana, Calif., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Sep. 2, 1986, Ser. No. 902,584
Int. Cl.[5] G09G *5/04*
U.S. Cl. 340—701 **7 Claims**



1. A color display system for converting input data into color drive signals wherein individual color intensity levels corresponding with individual data input signals may be selectively varied, said system comprising:

an interface circuit connectable to an external data source and first connector terminals of a general purpose pro-

grammable device having processing facilities, said interface circuit being adapted to transfer data and control signals between the programmable device and the data source;

a memory access circuit connectable to the data source and to second connector terminals of the programmable device, said memory access circuit comprising circuitry for generating address information for correspondence with data received from the data source, said memory access circuit being adapted to transfer said data from the data source and said corresponding address information to said second connector terminals of said programmable device; and

a video circuit connected to second and third connector terminals of said programmable device and an external color display, said video circuit further being connectable to receive said data from the data source via said third connector terminals and corresponding address information via said second connector terminals, said video circuit comprising:

color registers for storing color drive signals;

color coding circuitry for loading said color registers and said address information, said address information corresponding to desired color intensity levels such that particular data from the data source corresponds with particular color intensity levels; and

color translating circuitry for communicating said data from said data source to said color registers after said color registers have been loaded, said color translating circuitry being adapted to convert data from said data source into color drive signals for communication to an external color display;

wherein the processing facilities of said programmable device are utilized to generate address information loaded into the color registers, but the transfer of said data from said data source to said video circuit proceeds independent of said processing facilities; and

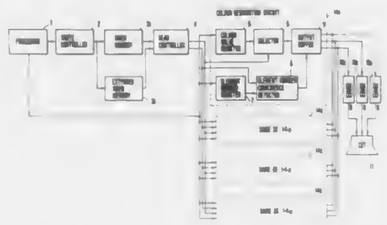
wherein the processing facilities of the programmable device do not participate in the conversion of data from said data source into color drive signals after the color registers are loaded.

4,942,389

DISPLAY CONTROL CIRCUIT

Junji Hinami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,230
Claims priority, application Japan, May 22, 1987, 62-124017
Int. Cl.[5] G09G *1/00*
U.S. Cl. 340—703 **4 Claims**



1. A display control circuit comprising:

a video memory for storing display data assigned with a plurality of bits corresponding to each pixel of a display screen of a display device;

rewritable color value register means rewritable by a processor;

selector means operably connected with said rewritable color value register means and with said video memory for selecting outputs from said rewritable color value register means in accordance with color signal information of the display data read out from said video memory;

element number register means for storing preset element numbers;

element number coincidence detector means operably connected with said element number register means and with said video memory for comparing element number information of the display data read out from said video memory with the preset element numbers; and

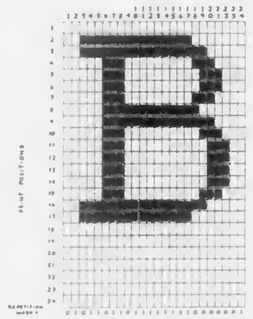
output buffer means operably connected with said element number coincidence detector means and with said selector means, controlled in accordance with an output from said element number coincidence detector means, for supplying a signal to a driver for said display device.

4,942,390

METHOD AND APPARATUS FOR GENERATING A CHARACTER IMAGE

Phue K. Do, Charlotte; Karen K. Kellam, China Grove; Ronnie Chi-on Tong, Charlotte; Ronald W. Willis, Kannapolis, and Carol E. Wyke, Charlotte, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1987, Ser. No. 33,296
Int. Cl.[5] B41J *3/12*
U.S. Cl. 340—735 **8 Claims**



1. A method of constructing a fully formed character out of print slices for a matrix printer comprising the steps of:

(a) selecting a character to be printed from a plurality of characters;

(b) selecting a compressed character, associated with said selected character, containing a set of only the first print slice of a series of repetitive print slices and any unique print slices of said fully formed character wherein said set of print slices of said compressed character are fewer in number than said print slices of said fully formed character;

(c) selecting a mask, associated with said compressed character, from a plurality of said masks, each of said masks having a plurality of bits in either a first state or second state, each of said bits being associated with one of said print slices so that there is a one-to-one correspondence between the number of bits of said mask and the number of slices of said fully formed character;

(d) testing each bit of said mask, to detect for either said first state or said second state;

(e) fetching a new one of said first or unique print slices, when said first state is detected;

(f) omitting the previous step when said second state is detected; and

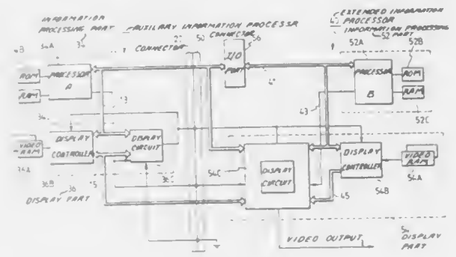
(g) printing the fetched print slices.

4,942,391

PICTURE INFORMATION COMPOSITE SYSTEM

Keiichi Kikuta, Osaka, Japan, assignor to NEC Home Electronics Ltd., Osaka, Japan

Filed Aug. 29, 1988, Ser. No. 237,521
Claims priority, application Japan, Aug. 31, 1987, 62-216974
Int. Cl.[5] G06F *3/14*
U.S. Cl. 340—745 **7 Claims**



1. A picture information composite system comprising:

at least one extended information processor; and

at least one auxiliary information processor, each processor comprising means for outputting a video signal independent of the other and means for coupling said extended information processor to said auxiliary information processor, configured so that they may at least be electrically joined with one another, said information processors further comprising means such that when they are joined to one another by said coupling means, said auxiliary information processor stops creating its output video signal, reads out digital display data with a synchronizing signal from said extended information processor, and provides that data to said extended information processor, said extended information processor comprising means for creating a composite video image using its own digital display data and digital display data from said auxiliary information processor.

4,942,392

OPTICAL DISPLAY DEVICE

Marc Loret, Montrouge; Daniel Boutquet, Paris, and Yannick Le Pen, Mantes La Jolie, all of France, assignors to Sayag Electronic, France

Continuation of Ser. No. 881,897, Jul. 3, 1986, abandoned. This application Dec. 27, 1988, Ser. No. 289,527
Claims priority, application France, Jul. 3, 1985, 85 10177
Int. Cl.[5] G09G *3/32*
U.S. Cl. 340—782 **10 Claims**

1. An optical display device having:

a plurality of LED light sources distributed in rows and columns at the nodal points of a rectangular array, each of said light sources having two electrodes one of which is continuously connected to a DC power source common to all said light sources providing a predetermined constant voltage V0,

a plurality of row lines each connected to the other electrodes of all of said light sources of a same one of said rows through respective thyristors, each thyristor being switchable to a conductive condition,

a plurality of column lines each connected to triggering inputs of all thyristors of a respective one of said columns and connected to a control circuit for applying voltages having either of two values to said column lines, and

circuit means for applying to each of said row lines, in succession:

a first predetermined voltage having a level causing switching to a conductive condition of those thyristors in the respective row which receive a voltage having a predetermined one of said two values,

a rest voltage maintaining the thyristors in the respective row in unchanged condition, and

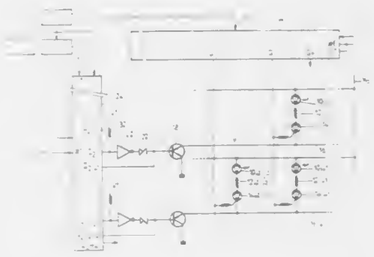
a second predetermined voltage causing cut-off of all thyristors in the respective row.

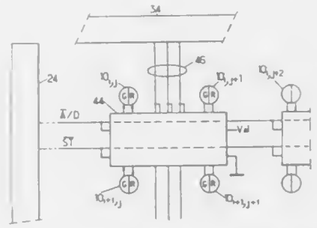
5. An optical display device having:

a pluraltiy of LED light sources distributed in rows and columns at the nodal points of a regular lattice;

a pluraiity of solid state circuits individually connected to a LED light source energization electric power supply and each operatively associated with a respective set of k said LED light sources (k being an integer) for individual control of the energization of said LED light sources, each of said solid state circuits having a plurality of current generators each for delivering current to one of the k light sources of the associated set;

a column interface having a plurality of outputs connected via respective column lines to said solid state circuits for delivering condition signals representative of conditions to be given to said LED light sources one row at a time, said column lines constituting bus lines each for individu-





ally addressing the k light sources of the associated set and providing data representing the electric current values to be delivered by the respective current generators; and

a row interface having a plurality of outputs connected via respective row lines to said circuits for selecting one row to be controlled at a time among said rows, said row lines comprising at least a strobe line per circuit,

said solid state circuits being arranged for maintaining each of said LED light sources in energized condition after it has been energized by said column interface until a new condition signal is applied to the respective solid state circuit,

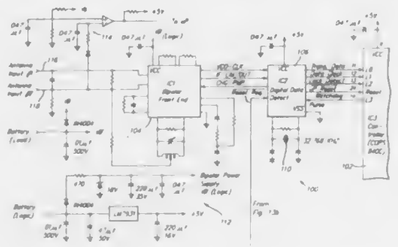
wherein each of said solid state circuits comprises additional means for adjusting a maximum value of the currents delivered by said current generators in response to data delivered by said row and column lines to all said circuits at the same time and wherein said data representing the electric current values identify a percentage of said maximum value.

4,942,393

PASSIVE KEYLESS ENTRY SYSTEM

Thomas J. Waraksa, Clarkston; Keith D. Fraley, Drayton Plains, both of Mich.; Richard E. Kiefer, Boulder, Colo.; Daniel G. Douglas, Louisville, Colo., and Lee H. Gilbert, Boulder, Colo., assignors to Lectron Products, Inc., Rochester Hills, Mich.

Filed May 27, 1988, Ser. No. 199,476
Int. Cl.[5] G08C *19/00*; E05B *65/36*
U.S. Cl. 340—825.72 **8 Claims**



1. A keyless entry system for a vehicle having an electric door lock mechanism, and including:

a portable beacon adapted to be carried by the operator of the vehicle and comprising transmitter means for transmitting a coded beacon signal; and

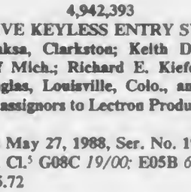
receiver means associated with the vehicle and including antenna means for receiving said beacon signal when said beacon is within a predetermined range and controller means for decoding said beacon signal and activating a predetermined function associated with the vehicle in response thereto, said controller means being further adapted to automatically activate said electric door lock mechanism to lock the doors of the vehicle after the operator leaves the vehicle and carries said beacon out of said predetermined range.

4,942,394

HALL EFFECT ENCODER APPARATUS

Donatas V. Gasiunas, Carmel, N.Y., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 21, 1987, Ser. No. 135,793
Int. Cl.[5] G08C *19/06*
U.S. Cl. 340—870.31 **6 Claims**



1. A printwheel encoder comprising:

(a) a Hall-effect sensor fixed to a shaft;

(b) magnetic means mounted in the shaft adjacent said Hall-effect sensor;

(c) a printwheel rotatably mounted in the shaft for rotation with respect to the sensor said printwheel having printing elements thereon;

(d) a flux-conducting ring disposed in the printwheel and encircling the shaft, said ring having an inner surface formed as a spiral surface which provides a gap between the ring and Hall-effect sensor that varies with the angular position of the printwheel, said Hall-effect sensor providing an output signal whose magnitude depends upon the position of the printwheel;

(e) means for receiving said output signal and for providing digital information corresponding to an output signal of the Hall-effect sensor at each printwheel setting; and

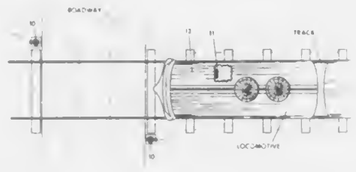
(f) means for storing the magnitude of the output signal associated with each printwheel setting for comparison and later determination of a particular printwheel setting in accordance with the comparison with previously stored values.

4,942,395

RAILROAD GRADE CROSSING MOTORIST WARNING SYSTEM

John S. Ferrari, 8030 E. Girard, Denver, Colo. 80231, and Dale C. Sommers, Box 867, Conifer, Colo. 80433

Filed Aug. 24, 1987, Ser. No. 88,579
Int. Cl.[5] G08G *1/095*
U.S. Cl. 340—907 **2 Claims**



1. A system for warning motorists of the approach of a locomotive and train into a highway/rail crossing, comprising:

a locomotive mounted, MHZ radio frequency transceiver "beacon," contructed to provide a constant, directional, outgoing radio signal, and which transceiver is provided with signaling means to inform a locomotive operator that the outgoing radio signal has been received; and

an intermittently active, railroad crossing "crossbuck" pole-mounted, encased and weatherproofed, MHZ radio frequency transceiver unit, powered and hardwired in conjunction with existing railroad crossing electrical circuitry, said transceiver activates and emits a omnidirectional, low power, coded shortwave radio signal emanated from aforesaid locomotive-mounted transceiver when in near proximity to one another; and

an encased, miniaturized, motor vehicular-mounted, radio frequency compatible, radio frequency sympathetic, radio frequency discriminatory microprocessor receiver unit, provided with multiple visual/audio marked displays upon an integral faceplate; said receiver being powered by the vehicle's battery and said receiver sympathetically collects and discriminates signals emanating from said railroad crossing crossbuck pole mounted transceiver unit, to provide visual warning display and audio motorist alert to a "live railroad crossing" in near proximity.

4,942,396

TO-DIGIT-SERIAL CONVERTERS FOR SYSTEMS PROCESSING DATA IN DIGIT-SERIAL FORMAT

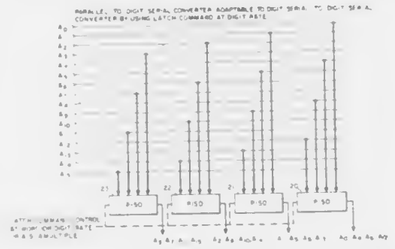
Richard I. Hartley, Schenectady, N.Y.; Peter F. Corbett, Princeton, N.J.; Fathy F. Yassa, and Sharbel E. Noujaim, both of Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 204,792, Jun. 10, 1988, abandoned. This application May 4, 1989, Ser. No. 347,860
Int. Cl.[5] H03M *9/00*
U.S. Cl. 341—101 **16 Claims**

1. Apparatus for converting parallel data into digit-serial data having words each n bits wide into digit-serial data wherein each digit is m bits wide, m being an integer and a submultiple of n, said apparatus comprising:

a plurality n in number of input lines identified by respective consecutive ordinal numbers zeroeth through $(n-1)^{th}$ respectively receptive of progressively more significant bits of each parallel data word supplied during each successive $(n/m)^{th}$ one of a succession of more frequently occurring clock intervals;

a plurality of parallel-in/serial-out registers, m in number, identified by respective consecutive ordinal numbers zeroeth through $(m-1)^{th}$, each said register having a respective (n/m)-bit input port for receiving a respective (n/m)-bit-wide input signal responsive to a respective load command, and each said register having a respective single-bit-wide output port from which stored data can be clocked serially a single bit each said clock interval;



means for concurrently applying the respective load commands of said plurality of parallel-in/serial-out registers; and

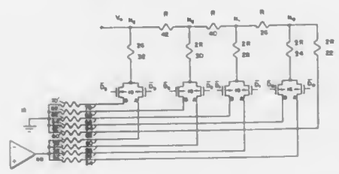
means for applying the zeroeth through $(m-1)^{th}$ bits of each said parallel data word to the least significant bit places of the input ports of the correspondingly numbered parallel in/serial out registers; and for applying each progressively higher numbered bit of each said parallel data word beyond the $(m-1)^{th}$ to the next more significant bit place of the input port of the same parallel-in/-serial-out register receiving the bit numbered (n/m) lower, whereby said digit-serial data m bits wide are supplied from the single-bit-wide input ports of said plurality of parallel-in/serial-out registers.

4,942,397

ELIMINATION OF LINEARITY SUPERPOSITION ERROR IN DIGITAL-TO-ANALOG CONVERTERS

Peter Real, North Andover, Mass., assignor to Signal Processing Technologies, Inc., Colorado Springs, Colo.

Filed Jul. 26, 1988, Ser. No. 224,517
Int. Cl.[5] H03M *1/06*
U.S. Cl. 341—118 **9 Claims**



1. Converting means for converting digital signals each representing one of n digits in a number in a sequence of numbers if such sequence is provided to the converting means at control inputs thereof, the converting means converting such digital signals into a corresponding analog signal to be provided at a voltage output of the converting means, the analog signal being comprised of a sum of selected fractions of a first reference voltage if provided at a first voltage reference terminating region of the converting means which is adapted to be electrically connected to a first voltage reference source, the converting means comprising:

an R-2R resistive network, electrically connected to the voltage output, having a first plurality of resistances each with first and second terminating regions and each of substantially a first resistance value, this first plurality of resistances having each member thereof electrically connected in series with one another at such terminating regions, and with the R-2R resistive network also having a second plurality of resistances each with first and second terminating regions such that the first terminating region of each is electrically connected to a terminating region of at least one member of the first plurality of resistances and each having substantially a second resistance value;

a plurality of switching means each consisting of a switch output and first, second, third and fourth switch inputs such that signals on the third and fourth inputs of each can selectively electrically connect one of the first and second inputs thereof to the output thereof, the switch output of each being electrically connected to a second terminating region of a corresponding one of the second plurality of resistances, the third and fourth switch inputs of each being electrically connected to selected ones of the converting means control inputs;

a plurality of conductive first interconnecting means each electrically connecting a first switch input of one of the plurality of switching means to the first voltage reference terminating region by separately extending therebetween; and

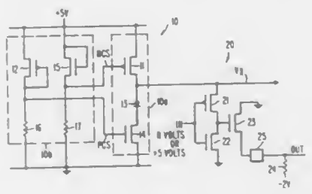
a plurality of conductive second interconnecting means each electrically connecting a second switch input of one of the plurality of switching means to a second voltage reference terminating region, adapted for electrical connection to a second reference voltage source, by separately extending therebetween.

4,942,398

DIGITAL SIGNAL TRANSLATOR HAVING COMPENSATION FOR P-CHANNEL AND N-CHANNEL THRESHOLD VOLTAGE SHIFTS

LaVerne R. Peterson, San Diego, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 21, 1989, Ser. No. 326,596
Int. Cl.[5] H03M *5/04*
U.S. Cl. 341—118 **12 Claims**



1. A digital translator on a semiconductor chip that contains N-channel transistors and P-channel transistors which have threshold voltages that vary about respective nominal values; said translator including an input/output module which is made of said transistors and which receives a digital input signal having two input voltage levels and in response generates a digital output signal having two different output voltage levels; wherein to avoid shifts in said output voltage levels due to said threshold variations said translator further includes:

a voltage generator means which produces a reference voltage and sends it to said input/output module;

said generator including a circuit of said N-channel transistors and said P-channel transistors for varying said refer-

ence voltage in proportion to the threshold voltage of said N-channel transistors regardless of how the threshold voltage of said P-channel transistors varies;

said input/output module including an output transistor which is one of said N-channel transistors; and, a means for coupling said reference voltage to said output transistor when said input signal is at one of said two input voltage levels and for otherwise coupling a fixed bias voltage thereto;

said output transistor being adapted to produce said output signal by conducting in proportion to said reference voltage when that voltage is received, and by not conducting when said bias voltage is received.

4,942,399

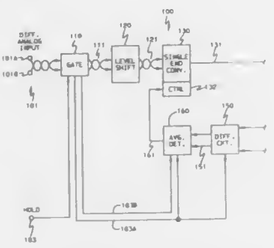
ADAPTIVE FLASH ANALOG/DIGITAL CONVERTER FOR DIFFERENTIAL INPUT SIGNAL

Timothy C. Buchholtz; Michael R. Gruver; Raymond A. Richetta, all of Rochester, and Timothy J. Schmerbeck, Kasson, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1989, Ser. No. 324,267

Int. Cl.[5] H03M *1/36*

U.S. Cl. 341—143 **9 Claims**



1. A circuit for converting a differential analog input signal to a coded digital output signal, comprising:

a level shifter for shifting the level of said differential input signal with respect to a ground potential;

converter means coupled to said level shifter for converting said differential input signal to a single-ended analog signal referenced to said ground potential, said converter means including control means for varying the level of said single-ended analog signal with respect to said ground potential in response to a control signal such that an average value of said single-ended analog signal always corresponds to a zero value of said differential analog input signal;

a reference generator for producing a plurality of reference signals between constant upper and lower reference values, one of said reference signals being a midpoint value between said upper and lower values;

differencing means coupled to said converter means and to said reference generator for producing a difference signal representing the difference between said single-ended analog signal and said one reference signal having said midpoint value;

an average detector coupled to said differencing means and to said converter means for determining and storing an average value of said difference signal, and for producing said control signal representing said average value;

comparator means comprising a plurality of individual comparators each receiving said single-ended analog signal and a different one of said reference signals, said comparator means producing simultaneously a plurality of uncoded digital signals representing said shifted analog input signal, at least a particular one of said digital signals always representing a zero value of said differential analog input signal.

4,942,400

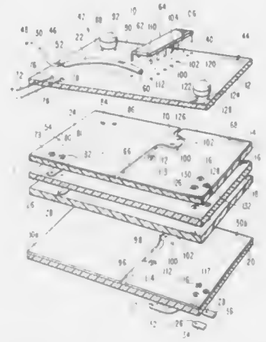
ANALOG TO DIGITAL CONVERTER WITH MULTILAYER PRINTED CIRCUIT MOUNTING

Richard J. Tarzaiski, Magnolia, and Richard C. Hwang, Mt. Laurel Township, Burlington County both of N.J., assignors to General Electric Company, Moorestown, N.J.

Filed Feb. 9, 1990, Ser. No. 478,102

Int. Cl.[5] H03M *1/36*; H01R *9/00*

U.S. Cl. 341—155 **4 Claims**



1. An analog-to-digital converter arrangement, comprising:

a six-layer printed-circuit board, said printed-circuit board defining a broad region upon which components may be mounted, said broad region being divided into separate analog and digital portions having limited overlap, a first layer of said printed-circuit board defining analog signal-carrying paths, a second layer of said board defining an analog ground plane underlying said analog portion of said broad region and said first layer, third and fourth layers of said board being arranged with paths for carrying operating power to components mounted on said board, a fifth layer of said board defining a digital ground plane underlying said digital portion of said broad region, and a sixth layer of said printed-circuit board defining digital signal carrying paths;

an analog-to-digital converter integrated circuit including a plurality of interface pins mounted in said printed-circuit board, said pins including at least one analog ground pin and one digital ground pin, at least one analog signal input voltage pin, and plural digital output pins, said integrated circuit being mounted adjacent said overlap, with said analog signal input voltage pin making electrical contact only with one of said paths of said first layer, with said plural digital output pins making contact only with corresponding ones of said digital signal carrying paths, and with said analog and digital ground pins extending through said board and contacting both said analog and digital ground planes, whereby connection between said analog and digital ground planes occurs only in a region near said analog and digital ground pins;

energizing power conditioning means mounted on said board and making electrical contact only with said paths of said third and fourth layers for receiving power, and for conditioning said power, and for applying conditioned power to at least said integrated circuit for energization thereof; and

differential driving means coupled to said digital signal carrying paths and to said digital ground plane and adapted to be coupled to an off-board load, for receiving said digital signals from said integrated circuit by way of said digital signal carrying paths, and for generating differential signals in response to said digital signals, for thereby avoiding the need to make connection to said digital ground plane in order to utilize said digital signals.

4,942,401

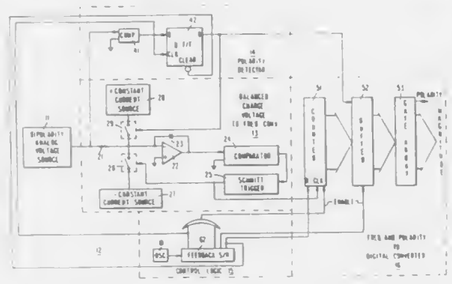
ANALOG TO DIGITAL CONVERSION WITH CHARGE BALANCED VOLTAGE TO FREQUENCY CONVERTER HAVING POLARITY RESPONSIVE OFFSET

Bill Gessaman, Everett; Paul Lantz, and Jon Parle, both of Seattle, all of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Feb. 24, 1989, Ser. No. 314,904

Int. Cl.[5] H03M *1/60*

U.S. Cl. 341—157 **13 Claims**



1. A circuit for converting an input voltage having first and second opposite polarities to an output frequency wherein the output frequency is related to the value of the input voltage, the input voltage value including zero, the output frequency having a non-zero value for a zero input value, comprising

a capacitor;

means responsive to the input voltage for cyclically charging the capacitor in first and second opposite directions so that zero net charge is applied to the capacitor during each cycle, the means for charging including means for charging the capacitor (a) in the first direction at a first rate determined by the value of the input voltage and a predetermined current while the input voltage has the first polarity, (b) in the second direction at a second rate determined by the value of the input voltage while the input voltage has the first polarity, (c) in the first direction at a third rate determined by the value of the input voltage, a predetermined voltage and the predetermined current while the input voltage has the second polarity and (d) in the second direction at a fourth rate determined by the value of the input voltage, the predetermined voltage while the input voltage has the second polarity, the predetermined voltage and predetermined current being of opposite polarity; and

means responsive to the charging and discharging of the capacitor for deriving the output frequency.

4,942,402

RADIATION ABSORBER AND METHOD OF MAKING IT

Brian E. Prewer, and Brian Milner, both of Wells, England, assignors to Thorn Emi Electronics Limited, Hayes, England

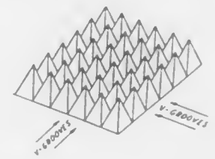
Filed Oct. 26, 1988, Ser. No. 262,798

Claims priority, application United Kingdom, Oct. 27, 1987, 8725110

Int. Cl.[5] H01Q *17/00*

U.S. Cl. 342—1 **4 Claims**

1. A radiation absorber designed to absorb radiation in the frequency range 0.5–2.5 THz comprising a body of cured, electrically insulating, silicone-based elastomer containing a n inert, electrically insulating, powdered siliceous filler, the surface of said absorber exposed to the radiation being profiled to enhance the absorption of said radiation by said absorber and thus to reduce the reflectivity of said absorber to said radiation in the said frequency range, wherein said electrically



insulating silicone-based elastomer comprises a room temperature polymerising aromatic/aliphatic hydrocarbon substituted polysiloxane.

4,942,403

PHASED-ARRAY RADAR

Hiroshi Yokoyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,395

Claims priority, application Japan, Dec. 11, 1987, 62-313289

Int. Cl.[5] H01Q *3/22*; G01S *13/00*

U.S. Cl. 342—372 **5 Claims**

1. A phased-array radar capable of electronically directing a directional beam of an antenna in any of N different directions, i.e., direction θ_1 to direction θ_N, comprising:

transmit trigger selector means responsive to a control signal for selectively setting a high transmit repetition frequency and a low transmit repetition frequency;

beam direction control means responsive to a direction command signal for directing the directional beam of said antenna in a designated direction; and

radar control means for generating the control signal and the direction command signal;

said radar control means controlling said transmit trigger selector means and said beam direction control means such that when the low transmit repetition frequency is selected, the directional beam is directed in one direction for a predetermined period of time and then continuously directed in a plurality of different directions for a predetermined period of time each at the high transmit repetition frequency;

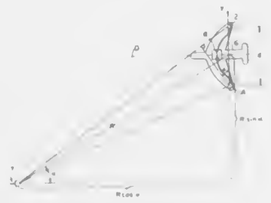
said radar control means repeating said procedure to command the directions θ_1 to θ_N at the low transmit repetition frequency while commanding the directions θ_1 to θ_N a plurality of times each at the high transmit repetition frequency.

4,942,404

PASSIVE DOPPLER DIFFERENTIAL RANGING SYSTEM AND METHOD

Marvin S. Kefer, Massapequa, N.Y., assignor to AIL Systems, Inc., Deer Park, N.Y.

Filed Jul. 18, 1989, Ser. No. 381,763
Int. Cl.[5] G01S *5/02, 3/52*
U.S. Cl. 342—418 **2 Claims**



1. A method for use on an aircraft for determining the range, R, of a threat passively, which comprises the steps of:

mounting a first receiving antenna and a second receiving antenna on an aircraft and positioning the first and second antennas a known distance, d, apart from each other;

determining a first azimuth angle α of the threat with respect to the aircraft at a first time t_o, the azimuth angle o being defined as the angle of the threat from the direction of motion of the aircraft taken in a two-dimensional plane at the first time t_o;

determining a first differential doppler phase shift, $\Delta\phi$, between the first and second antennas of a received signal transmitted by the threat, using the equation:

$$\Delta\phi = \frac{2\pi d}{\lambda} \cdot \sin\alpha$$

$$\text{where } \lambda = \frac{\text{speed of light}}{\text{frequency of the received signal transmitted by the threat}}$$

measuring the velocity, v, of the aircraft;

determining a second differential doppler phase shift, $\Delta\phi_1$, at time t_1 between the first and second antennas of a received signal transmitted by the threat, using the equation:

$$\Delta\phi_1 = \frac{360 \cdot d}{\lambda} \sin\left(\tan^{-1}\left[\frac{R\sin\alpha}{R\cos\alpha} - v\Delta t\right]\right)$$

$$\text{where } \Delta t = t_1 - t_o$$

where $\Delta t = t_1 - t_o$

determining the differential differential doppler phase shift, $\Delta\Delta\phi$, by subtracting the first differential doppler phase shift, $\Delta\phi$, from the second differential doppler phase shift, $\Delta\phi_1$; and

determining the range, R, of the threat at time t_1 by using the following equation:

$$R = \frac{v\Delta t}{\cos\alpha - \dfrac{\sin\alpha}{\tan\left[\sin^{-1}\left(\dfrac{\Delta\Delta\phi \cdot \lambda}{360 \cdot d} + \sin\alpha\right)\right]}}$$

-continued

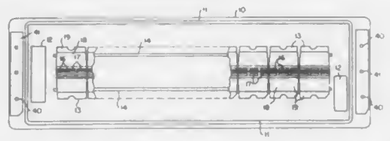
where $\Delta t = t_1 - t_o$

4,942,405

LIGHT EMITTING DIODE PRINT HEAD ASSEMBLY

Jospeh W. Dody, Mountain View; Richard J. Klinke, Sunnyvale; Christopher A. Lowery, Fremont; Vera D. Vallentin-Price, Sunnyvale; Gary D. Sasser, and William P. Sullivan, both of San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 11, 1988, Ser. No. 256,001
Int. Cl.[5] G01D *9/42, 9/00;* **H01L** *27/15, 33/00*
U.S. Cl. 346—107 R **13 Claims**



1. A method for assembling a row of LED dice on a print head comprising the steps of:

placing a row of the LED dice on the front face of a flat tile with the cleaved edges a predetermined distance from one lateral edge o the tile;

adhesively bonding to the dice to the front face of the tile with the LED faces of the dice substantially coplanar;

placing a row of tiles with the front face of each tile on a planar fixture and with one lateral edge of each tile against a linear fixture; and

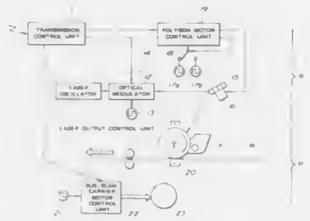
adhesively bonding a mother plate to the back face of the row of tiles while on the fixture.

4,942,406

LASER PRINTER WITH CLOCK POLYGON CONTROL FOR INCHES AND MILLIMETERS

Yukio Tsuda, Musashino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1988, Ser. No. 248,844
Claims priority, application Japan, Sep. 29, 1987, 62-242644
Int. Cl.[5] B41J *2/44;* **G01D** *15/14;* **G02B** *26/08*
U.S. Cl. 346—108 **4 Claims**



1. A laser printer with clock generator polygon control for inches and millimeters, comprising:

a laser generator for generating laser light;

a light modulator for modulating the laser light in response to input picture image information, the laser light being generated by the laser generator at a speed corresponding to a density of scanning lines in an inch system;

a recording unit having a photosensitive drum rotating at a constant speed corresponding to the density of the scanning lines in the inch system for forming a latent picture image thereon in response to light from said light modulator incident thereon and for printing a developed latent picture image onto a printing paper;

a polygon mirror for reflecting and scanning the laser light modulated by the light modulator onto the photosensitive drum so as to form a picture image corresponding to the latent picture image on the photosensitive drum;

a first clock generator for setting a rotation speed of the polygon mirror to a first rotation speed corresponding to the density of the scanning lines in the inch system;

a second clock generator for setting the rotation speed of the polygon mirror to a rotation speed which is reduced by a predetermined ratio from the first rotation speed; and

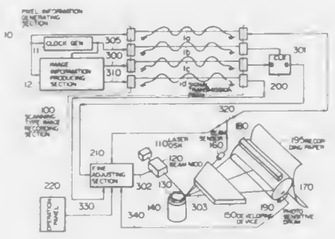
switching means for selecting one of the first and the second clock generators in accordance with a density of the scanning lines of the picture image information, the switching means selecting the first clock generator when the picture image information has a density of scanning lines in the inch system and the second clock generator when the picture image information has a density of scanning lines in a millimeter system.

4,942,407

SCANNING TYPE IMAGE RECORDING APPARATUS

Hiroyuki Tadokoro, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,497
Claims priority, application Japan, Oct. 5, 1988, 63-249867
Int. Cl.[5] G01D *15/14*
U.S. Cl. 346—108 **13 Claims**



1. A scanning type image recording apparatus in which an electrostatic latent image is formed onto a recording medium by clock signal generating means for generating a clock signal, pixel signal generating means for generating a time sequential pixel signal synchronously with the clock signal, modulating means for modulating a light beam in accordance with the time sequential pixel signal; scanning means for deflecting the light beam and scanning the recording medium, and start point detecting means which is provided over a scanning line of the light beam deflected by said scanning means and feeds back scan start timing information to said clock signal generating means and said pixel signal generating means and, said electrostatic latent image is developed by developing means, said scanning type image recording apparatus further comprising:

input means for indicating a fine adjustment value of a pulse width of said time sequential pixel signal;

scanning position control means for discriminating that the scanning line of the optical beam does not exist on the recording medium on the basis of the scan start timing information from said start point detecting means; and

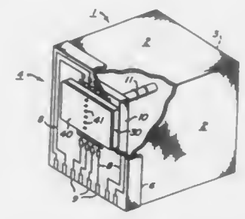
pulse width fine adjusting means for setting a pulse width fine adjustment value in accordance with an indication of said input means during the discrimination of said scanning position control means and for outputting a final pixel signal which is obtained by finely adjusting the time sequential pixel signal to said modulating means.

4,942,408

BUBBLE INK JET PRINT HEAD AND CARTRIDGE CONSTRUCTION AND FABRICATION METHOD

Hilarion Braun, Xenia, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1989, Ser. No. 342,135
Int. Cl.[5] B41V *2/05, 2/175*
U.S. Cl. 346—140 R **8 Claims**



1. A bubble jet print cartridge of the normal drop ejection kind comprising:

(a) an ink housing including an enclosed ink reservoir region and an ink supply and distribution wall member having (i) top and bottom surfaces and (ii) ink passage means extendng from a central region of said bottom wall surface, covering said reservoir region, to an outlet(s) on the outer periphery of said top surface of said wall member;

(b) a drop ejection chip comprising a continuous substrate having resistive heater elements and electrode leads supported on an upper surface thereof, the lower surface of said substrate being attached to said wall member top surface with a peripheral chip edge(s) adjacent, but not covering, said ink outlets(s);

(c) a raised ink barrier fence formed on the upper surface of said wall member and said upper chip surface to surround said heater elements of said chip and said ink outlet(s), said fence having a height extending above the top surface of said supported chip; and

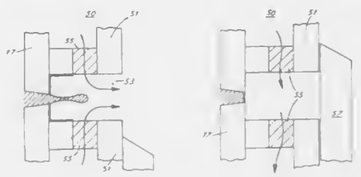
(d) an orifice plate member affixed at its periphery to the top of said barrier fence.

4,942,409

DROP-ON-DEMAND PRINTHEAD

Anthony D. Paton, The Thatched Cottage, 51 Mills Lane, Longstanton St. Michael, Cambridge; Stephen Temple, 66 Girton Road, Cambridge, CB3 0IN, and Mark R. Shepherd, 116 King James Way, Royston, Hertfordshire, SG8 7EF, all of England

Filed Apr. 28, 1989, Ser. No. 345,610
Claims priority, application United Kingdom, Apr. 29, 1988, 8810241
Int. Cl.[5] G01D *15/18;* **B41J** *2/04, 2/14, 2/155*
U.S. Cl. 346—140 R **6 Claims**



1. A drop-on-demand ink drop printhead for selectively printing drops of ink in a print line on a web or sheet movable relatively to the printhead, comprising a body formed with a series of parallel directed ink channels, respective ink ejector

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apertures formed in a row at corresponding ends of said channels, means for ejecting ink drops from said channels through said ejector apertures, a housekeeping manifold fitted to the ejector aperture ends of the ink channels and extending alongside the row of ink ejector apertures, said manifold comprising a pair of parallel, spaced walls defining a trench extending therebetween through which ink drops from said apertures are discharged, said walls separating said manifold into upper and lower parts and each including a plurality of openings connecting said upper and lower manifold parts with said trench and duct means for supplying environmental fluids to or exhausting such fluids from the region of said ejector apertures by way of said trench, said openings and said upper and lower manifold parts.

4,942,410

TONER RECEPTIVE COATING

John J. Fitch, Natick, and Tim Parker, Shrewsbury, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jul. 6, 1989, Ser. No. 376,888
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—160.1 23 Claims

1. A toner receptive coating for paper substrates and polymeric film substrates for use in receiving pressure transferred toned images from printers and electrostatic copiers employing dry magnetic toners, said toner receptive coating comprising:

a blend of particulate fillers comprising particulate mineral filler and a particulate polymeric wax filler, and a polymeric binder for the blend of particulate fillers,

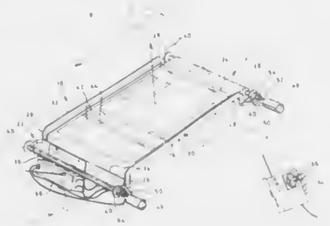
said particulate mineral filler having the property of securing said dry toner particles and restraining their mobility, and said mineral filler reducing coating tack to prevent the coating from sticking to the underside of the substrate if the substrate is unwound from a roll, and said particulate polymer wax filler having the property of imparting lubricity to the coating so that the dry magnetic toned images transferred to the coating will not substantially rub off onto adjacent portions of the coating on the substrate if the transferred toned image is rubbed or abraded.

4,942,411

AUTOMATIC OVERLAY FEED APPARATUS FOR AN OVERHEAD PROJECTOR

Steve A. Polston, 424 Ferret Rd., Knoxville, Tenn. 37922

Filed Jun. 27, 1988, Ser. No. 211,856
Int. Cl.[5] G03B *1/04, 23/12*
U.S. Cl. 353—26 R 2 Claims



1. An automatic overlay feed apparatus for automatically feeding projectable overlays to the object area of an overhead projector, said apparatus utilizing an overlay scroll having first and second end portions and defining a plurality of projectable overlays sequentially arranged from said first end portion to said second end portion, said apparatus comprising:

a frame for being supported on said projector, said frame having a first end portion and a second end portion;

overlay scrolling means for selectively moving said projectable overlays into position on said object area, said scrolling means including a first winding shaft rotatably mounted on said frame for engaging said first end portion of said overlay scroll and for windably receiving said overlay scroll, and a second winding shaft rotatably mounted on said frame in a position selectively spaced from, and in substantially parallel alignment with, said first shaft for engaging said second end portion of said scroll, whereby as said frame is selectively positioned on said projector, and as said scroll is windably received by said first and second winding shafts, a selected portion of said scroll extending between said first and second winding shafts overlays said object area of said projector;

motor means for selectively rotating said first and second winding shafts, said motor means including a first motor for selectively rotating said first winding shaft and a second motor for selectively rotating said second winding shaft, each said first and second motor having a drive shaft;

a first electromagnetically actuated clutch coupling for connecting said drive shaft of said first motor with said first winding shaft whereby said first winding shaft can be selectively disengaged to rotate independently from said drive shaft, said clutch coupling including an armature member mounted on said drive shaft of said first motor, a rotor member mounted on said first winding shaft, and a field member for being electromagnetically charged by a suitable power source, said field member being mounted on said frame in close proximity to said rotor member, whereby the selective electromagnetic charging of said field member electromagnetically charges said rotor member whereupon said rotor member attracts and engages said armature member such that said drive shaft serves to rotate said first winding shaft; and

a second electromagnetically actuated clutch coupling for connecting said drive shaft of said second motor with said second winding shaft, whereby said second winding shaft can be selectively disengaged to rotate independently from said drive shaft of said second motor, said clutch coupling including an armature member mounted on said drive shaft of said second motor, a rotor member mounted on said second winding shaft, and a field member for being electromagnetically charged by a suitable power source, said field member being mounted on said frame in close proximity to said rotor member, whereby the selective electromagnetic charging of said field member electromagnetically charges said rotor member whereupon said rotor member attracts and engages said armature member such that said drive shaft serves to rotate said second winding shaft.

4,942,412

FORMING MULTIPLE EXPOSURES ON SINGLE FILM SHEETS, IN A FILM PACK

Alton D. Wheeler, 3940 Fox Meadow La., Pasadena, Tex. 77504

Filed Nov. 7, 1988, Ser. No. 267,836
Int. Cl.[5] G03B *1/00*
U.S. Cl. 354—125 22 Claims

1. In a camera having a photographic film pack reception zone from which film prints are ejected after film exposure, the combination comprising:

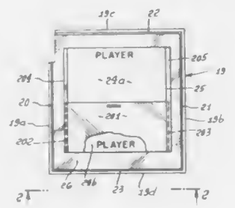
(a) first means providing for timewise separated exposures of different sections of an in-place film, in said zone, and

(b) second means to allow ejection of the in-place film only after completion of said exposures of said different sections of the in-place film,

(c) said first means including template means having different zones for passing light corresponding to said separated exposures, respectively,

(d) the photographic film being carried by carrier structure including a frame bounding a light passing zone,

(e) the template means being in the form of a locally transparent, generally planar and rectangular sheet adapted to pass an image to be reproduced on the film,



(f) the template means having multiple elongated ribs integral with said sheet, and projecting outwardly from the plane of the sheet,

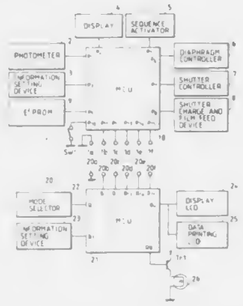
(g) said multiple ribs substantially bounding said different light passing zones to block light access to said zones in directions parallel and proximate to the plane of the sheet.

4,942,413

CAMERA

Takashi Saegusa, Kawasaki; Tetsuro Goto, Chiba, and Seiichi Yasukawa, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 19, 1989, Ser. No. 354,397
Claims priority, application Japan, May 26, 1988, 63-129029; May 27, 1988, 63-129573; May 30, 1988, 63-71340[U]
Int. Cl.[5] G03B *1/12*
U.S. Cl. 354—173.11 6 Claims



1. A film winding device comprising:

first timer means for measuring a first time associated with a data printing operation;

second timer means for measuring a second time associated with a shutter;

logical sum means for receiving signals output from said first and second timer means, discriminating whether or not both said first and second timer means output completion signals, and changing its output on the basis of the discrimination result; and

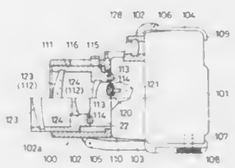
film winding means for detecting a change in output from said logical sum means to start a film winding operation.

4,942,414

FRONT CONVERSION ADAPTER FOR LENS SHUTTER TYPE OF ZOOM LENS CAMERA

Norimichi Takahashi; Hitoshi Tanaka, and Koichi Maruyama, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 244,789
Claims priority, application Japan, Sep. 17, 1987, 62-233330
Int. Cl.[5] G03B *13/32*
U.S. Cl. 354—195.12 18 Claims



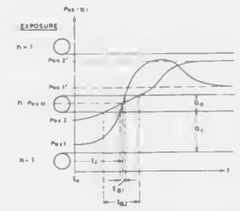
1. A front conversion adapter adapted to be attached to a front face of a lens shutter type of camera having a photographing optical system having a zoom lens, and a finder optical system separate from the photographing optical system, wherein a lens frame of the photographing optical system is adapted to be moved in accordance with the zooming operation, wherein said front conversion adapter comprises an adapter body which can be attached to a camera body of an associated lens shutter type of camera, and a conversion optical system which is located in front of the photographing optical system and which is adapted to move in the optical axis direction of the photographing optical system in order to change the focal length of the photographing optical system, said conversion optical system being supported by an adapter lens frame so as to move in the optical axis direction in association with movement of the lens frame of the photographing optical system of the camera body, and in accordance with said zooming operation in at least a part of the focal length area.

4,942,415

SHUTTER FOR A PHOTOGRAMMETRIC CAMERA

Karl Felle, and Heinz Krastel, both of Oberkochen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,686
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1988, 3837682
Int. Cl.[5] G03B *7/00, 9/20*
U.S. Cl. 354—234.1 7 Claims



1. A shutter for a photogrammetric camera comprising:

rotatably mounted disc means for defining a shutter opening;

drive means for rotatably driving said disc means for each exposure operation by accelerating said disc means out of a standstill start position thereof;

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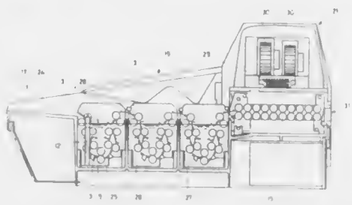
angle encoder means for measuring said start position of said disc means;
a control circuit for providing a signal indicative of a desired exposure time t_g; and,
a device operatively connected to said drive means for displacing said start position of said disc means in dependence upon said signal so as to cause the access time t_z between the start t_o of the acceleration and the exposure for different adjustable exposure times (t_{g1}, t_{g2}) to have a substantially constant value.

4,942,416

PROCESSING SOLUTION FILTERING DEVICE HAVING A FILTER IN A PROCESSING SOLUTION CONTAINER

Yasuhito Yoshimi, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Dec. 19, 1988, Ser. No. 286,518
Claims priority, application Japan, Dec. 19, 1987, 62-193275
Int. Cl.[5] G03B *3/06*
U.S. Cl. 354—299 **15 Claims**



1. A method of easily replacing a filter within a photosensitive material processing system without leakage, said method comprising:
providing a container holding photosensitive material processing solution, the container having a processing solution inlet and a processing solution outlet and a bottom surface, the processing solution extending in the container from said bottom surface to an upper surface of said processing solution along a depth dimension, said outlet being formed on the bottom surface of said container;
providing a filter in said container, said filter having an upper portion located above the upper surface of said processing solution and said filter extending to said outlet, said filter being disposed in said container so that it extends substantially along the entirety of said depth dimension;
removing the filter from the outlet of the container which is full of photosensitive material processing solution by gripping and manipulating the upper portion of said filter,; and
attaching a replacement filter to said outlet of said container by gripping and manipulating an upper portion of said replacement filter, said upper portion of said replacement filter being located above said surface of said photosensitive material processing solution.

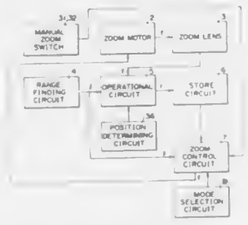
4,942,417

POWERED ZOOM CAMERA

Azuma Miyazawa, Mitaka, and Atsushi Maruyama, Yokohama, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jun. 23, 1989, Ser. No. 370,631
Claims priority, application Japan, Jun. 24, 1988, 63-157454
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 **24 Claims**

1. A powered zoom camera comprising:
a zoom lens;
mode selecting means for selecting one of a manual zoom mode in which the focal length of the zoom lens is manually selected by the actuation of an actuation member disposed so as to be accessible from the exterior of the camera and an automatic zoom mode in which a magnification of the size of the image of an object to be photographed on a focal plane of the camera with respect to the size of a film frame is kept constant in response to a distance or range between the object and the camera lens; and



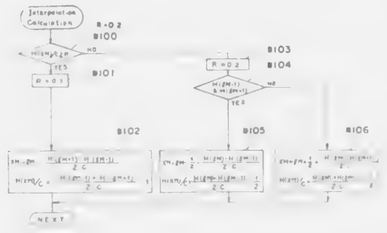
lens drive control means for operating the zoom lens at a low speed when the manual zoom mode is selected and for operating the zoom lens at a high speed when the automatic zoom mode is selected.

4,942,418

FOCUS CONDITION DETECTING DEVICE

Toshio Norita, Sakai; Tokuji Ishida, Daito; Masataka Hamada, Minamikawachi; Toshihiko Karasaki, Sakai, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 231,075, Aug. 11, 1988, Pat. No. 4,835,562, which is a continuation of Ser. No. 14,923, Feb. 13, 1987, Pat. No. 4,768,054. This application May 22, 1989, Ser. No. 355,449
Claims priority, application Japan, Feb. 14, 1986, 61-31392; Mar. 5, 1986, 61-49060; Mar. 5, 1986, 61-49061; Mar. 5, 1986, 61-49062
The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.
Int. Cl.[5] G03B *3/00*; G01J *1/20*
U.S. Cl. 354—408 **2 Claims**



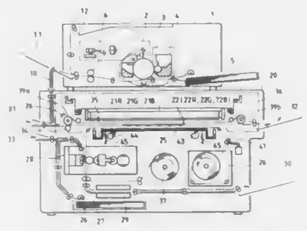
1. An automatic focus detection device, comprising:
an objective lens for forming displaced first and second images;
first and second image signal generating means, having first and second sensors positioned to receive the first and second images and adapted to generate first and second image signals corresponding to the light intensity distributions of the images on the first and second sensors, respectively;
correlation calculating means for calculating correlation between the first and second image signals while repeatedly shifting the second image signal relative to the first image signal by a given pitch to provide a correlation value of each shift with the corresponding amount of each shift;
best correlation finding means for finding a best correlation among the plurality of calculated correlations to produce a best correlation value;
contract detecting means for detecting the contrast of one of the images on the first and second sensors;
interpolation detecting means for carrying out an interpolation calculation to find a true best correlation in accordance with the detected contrast and a correlation in front of and another correlation behind the best correlation along the shifting direction, and
focusing condition detecting means for detecting the focusing condition of the objective lens with respect to the object in accordance with the true best correlation.

4,942,419

IMAGE RECORDING APPARATUS

Hitoshi Nakai, and Toshio Sakai, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 14, 1988, Ser. No. 270,650
Claims priority, application Japan, Nov. 12, 1987, 62-287751; Jan. 12, 1988, 63-2310[U]
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—27 **10 Claims**



1. An image recording apparatus comprising:
a light source for emitting light;
means for positioning a photosensitive recording medium for exposure to light from the light source;
means for providing mask sheets for the formation of mask images;
mask image forming means for forming sequential mask images on the mask sheets;
light transmissive and dielectric conveying means disposed between the light source and the photosensitive recording medium and having an outer mask sheet receiving surface for positioning the mask sheets having mask images thereon between light from the light source and the photosensitive recording means;
means for electrifying said conveying means to cause the conveying means to attach the mask sheets thereto;
means for exposing the photosensitive recording medium through mask images on a plurality mask of sheets conveyed by the conveying means for forming a completed image thereon;
means for conveying mask sheets from the mask image forming means to the conveying means; and
means for removing the mask sheets from the conveying means for discharge from the apparatus.--

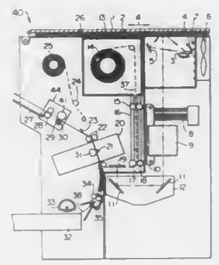
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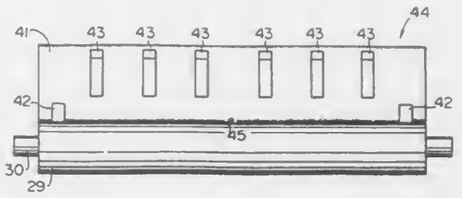
4,942,420

HEAT/PRESSURE APPLYING UNIT FOR COPYING APPARATUS

Takashi Tomizawa, Aichi; Shigeyuki Hayashi, Nagoya; Motoshi Ohno, Nagoya; Takashi Nakata, Nagoya, and Yoichi Horaguchi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 23, 1989, Ser. No. 300,437
Claims priority, application Japan, Jan. 22, 1988, 63-7367[U]
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—27 **14 Claims**





7. A copying apparatus for use with a photo and pressure sensitive recording medium and a developer sheet, which comprises:
original support means for supporting an original having carried thereon image information;
an optical system including a light source means for emitting light to shine upon the original, and optical means for directing the light reflected from the original, toward said recording medium to expose the same to the light thereby forming a latent image onto said recording medium, the latent image corresponding to said image information on the original;
means for developing said latent image on said recording medium, onto said developer sheet to form an image corresponding to said latent image, onto said developer sheet; and
fixing means for fixing said image on said developer sheet, said fixing means comprising a pair or rollers cooperating with each other to define a nip therebetween, said developer sheet being caused to pass through said nip at which at least one of heat and pressure is applied to said developer sheet by said pair or rollers, and first and second stripper means associated with at least one of said pair of rollers, said first stripper means being arranged adjacent said nip for stripping said developer sheet from said at least one roller of said pair of rollers, while said second stripper means is arranged at a location spaced downstream from said first stripper means in the direction of rotation of said at least one roller along a peripheral surface of said at least one roller, for forcibly stripping said developer sheet from said at least one roller.

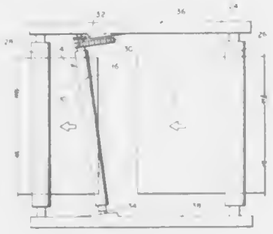
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4,942,421

METHOD OF PREVENTING BENDING OF LITHOGRAPHIC PRINTING PLATES

Robert Gumbinner, Tarrytown, N.Y., assignor to H. T. Products, Inc., Tarrytown, N.Y.

Filed Jul. 19, 1989, Ser. No. 382,888
Int. Cl.[5] G03D *3/08*
U.S. Cl. 355—27 **7 Claims**



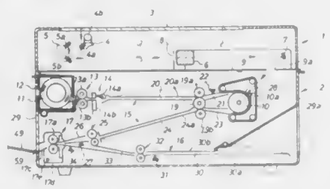
1. Method of preventing bending of lithographic printing plates during processing comprising:
(a) exposing the printing plate;
(b) developing an exposed image by placing the exposed plate within a developing solution, then
(c) advancing the developed plate between a pair of rotating brushes mounted at an oblique angle with respect to the axis of said advancing, such that the trailing edge of said plate laterally incrementally contacts said brushes.

4,942,422

IMAGE REPRODUCING DEVICE AND TRANSFER SHEET USED IN THE DEVICE

Harumitsu Mashiko; Shigeru Suzuki, both of Yokohama, and Takashi Seto, Ayase, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,604
Claims priority, application Japan, May 22, 1987, 62-124008; May 29, 1987, 62-133941; Jun. 5, 1987, 62-139960; Jul. 10, 1987, 62-171272
Int. Cl.[5] G03B *29/00*
U.S. Cl. 355—28 **49 Claims**



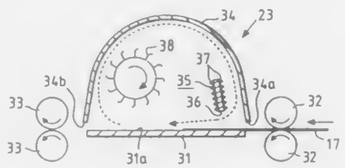
1. An image reproducing device for reproducing an image of an original using a photosensitive film and a transfer material for receiving an image formed on said photosensitive film, comprising:
a scanning means for optically scanning a surface of an original, said surface being to be reproduced, in a predetermined direction, while generating sequentially light beams reflected from each of portions of said scanned surface;
a supply means for supplying said photosensitive film;
an exposure means for exposing said supplied photosensitive film, said exposure means comprising a pair of tension rollers and an exposure station, a pair of said tension rollers being adapted to rotate at a somewhat higher circumferential speed than a speed of said supplied photosensitive film so as to exert a tension on said supplied photosensitive film, said exposure station being situated in an image forming position of said generated light beams between said supply means and said tension rollers for exposing said supplied photosensitive film, and having a flat surface positioned at a height identical with or higher than a height of a straight line connecting a position of said photosensitive film supplied from said supply means with a nip of said tension rollers, said flat surface contacting with said supplied photosensitive film; and
a developing means for superposing said exposed photosensitive film on said transfer material and for spreading a developer between said superposed photosensitive film and said transfer material.

4,942,423

SHEET HEATING DEVICE

Yumio Matsumoto, Kasugai; Yasuo Kimura, Ichinomiya, and Osamu Takagi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 24, 1989, Ser. No. 425,922
Claims priority, application Japan, Oct. 31, 1988, 63-142145[U]
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—30 **3 Claims**



1. A sheet heating device for heating a sheet which has a lateral length, the device comprising:
sheet transferring means for transferring the sheet in one direction, the sheet transferring means defining a sheet path;
a cover member disposed to cover the sheet path;
a heat generating member disposed within the cover member and extending in a direction substantially perpendicular to the traveling direction of the sheet; and
a hot air circulation means disposed within the cover member, the circulation means generating a hot air stream having a width at least equal to the lateral length of the sheet, and directing the hot air in the sheet traveling direction.

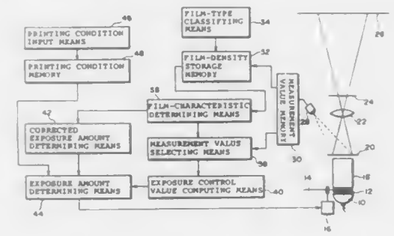
4,942,424

METHOD OF AND APPARATUS FOR PRINTING COLOR PHOTOGRAPH AS WELL AS COLOR FILTER FOR USE IN THE SAME APPARATUS

Takaaki Terashita, and Sethuo Okada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1988, Ser. No. 204,486
Claims priority, application Japan, Jun. 12, 1987, 62-146542; Jun. 12, 1987, 62-146543; Jul. 30, 1987, 62-146544; Aug. 11, 1987, 62-191187; Aug. 11, 1987, 62-200508; Aug. 11, 1987, 62-200509
Int. Cl.[5] G03B *27/80*
U.S. Cl. 355—38 **16 Claims**

1. A color photographic printing method of printing a color film on the basis of a measurement value measured by a light measuring device which has a spectral sensitivity distribution coinciding with or similar to a substantially effective spectral sensitivity distribution of red-sensitive, green-sensitive and blue-sensitive layers of a color paper, and which measures red light, green light and blue light passing through the color film, emitted from a light source, and on the basis of the printing condition of a reference film type, comprising the steps of:
(a) calculating the common film characteristic of the type of a film to be printed;
(b) comparing the common film characteristic of said reference film type with the film characteristic of the type of said film to be printed; and
(c) correcting the printing condition of said reference film type on the basis of the result of the comparison in said Step (b) and calculating an amount of exposure for printing from said measurement value to thereby effect printing of said film.

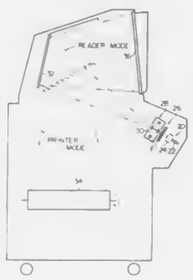


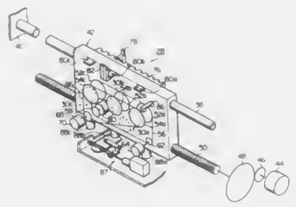
4,942,425

MICROFILM IMAGE PROCESSING APPARATUS

Kuniaki Kamimura; Kenji Sawada, and Yasushi Yamade, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1988, Ser. No. 289,048
Claims priority, application Japan, Dec. 25, 1987, 62-332951
Int. Cl.[5] G03B *27/52*; G02B *7/16*
U.S. Cl. 355—45 **15 Claims**





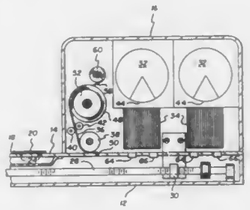
1. A microfilm image processing apparatus comprising
(a) an image viewing screen,
(b) a light receiving member,
(c) a source of light,
(d) microfilm retaining means held in position between said viewing screen and said source of light and operative to retain a microfilm strip therein,
(e) light projecting means positioned between said microfilm retaining means and said viewing screen for projecting toward said viewing screen or toward said light receiving means a beam of light emitted from said source of light and transmitted through an image-carrying microfilm strip retained in said microfilm retaining means, wherein said light projecting means comprises
(e/1) a plurality of projection lenses respectively having different magnifications,
(e/2) lens carrying means carrying said plurality of projection lenses,
(e/3) said lens carrying means being movable in opposite directions perpendicularly to the direction in which a beam of light is to be projected from said light projecting means,
(e/4) said plurality of projection lenses being arranged in an array in the direction of movement of said lens carrying means,
(f) an optical member disposed intermediate between said plurality of projection lenses and said viewing screen and movable between a first position to establish a path of light from one of said projection lenses toward said viewing screen and a second position to establish a path of light from one of said projection lenses toward said light receiving member,
(g) instructing means for generating an instruction signal effective to initiate said lens carrying means into movement,
(h) scan control means responsive to the instruction signal from said instructing means for moving said optical member to said second position thereof and initiating said lens carrying means into movement to scan the image on the microfilm strip retained in said microfilm retaining means and directing the resultant image-carrying beam of light toward said light receiving member through a slit aperture, and
(i) lens exchange means for determining the position of said lens carrying means in the direction perpendicular to the path of light from any one of said plurality of projection lenses when said optical member is held in said first position thereof.

4,942,426

COVER SHEET CLEANING MEANS FOR A CONTACT PRINTER

Robert S. Jones, and John J. Maurer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1989, Ser. No. 440,576
Int. Cl.[5] G03B *27/10*
U.S. Cl. 355—84 **7 Claims**



1. In a contact printer which comprises means for supporting a film and an original in superposed relationship on a vacuum table, means for providing a source of light for exposing said

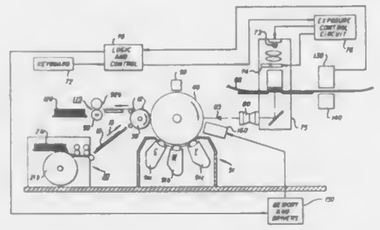
film through said original, means for moving said light over the surface of said superposed film and original, a substantially impervious flexible and transparent cover sheet carried by said light moving means arranged to cover said superposed film and original as said exposing light is scanned across said film and original whereby the vacuum is applied to said film and said original to remove air from therebetween as said film is exposed by said light through said cover sheet and said original, the improvement comprising means for contacting the surface of said cover sheet during use and removing dust and dirt thereon to assure that the optical path for the exposing light remains clear and unobstructed.

4,942,427

METHOD AND APPARATUS FOR ANNOTATING ELECTROPHOTOGRAPHIC PRINTS OF PHOTOGRAPHIC NEGATIVES

David M. Rakov, and Joseph A. Manico, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 9, 1989, Ser. No. 390,948
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—202 **6 Claims**



1. Apparatus for annotating a color print of a photographic negative made by an electrophotographic printer having a photoconductor, comprising:

(a) means for scanning a negative to acquire density information relating to densities of different colors at positions within the negative;

(b) first exposure responsive to such density information for projecting light through the negative onto the photoconductor to form color separation electrostatic images on the photoconductor;

(c) second exposure means for projecting light onto the photoconductor selectively discharging the color separation electrostatic images to annotate the image; and

(d) logic and control means for controlling the second exposure means to effect the annotation in accordance with density information measured by the scanning means.

4,942,428

METHOD AND APPARATUS FOR ANNOTATING ELECTROPHOTOGRAPHIC PRINTS OF PHOTOGRAPHIC NEGATIVES

David M. Rakov, and Joseph A. Manico, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

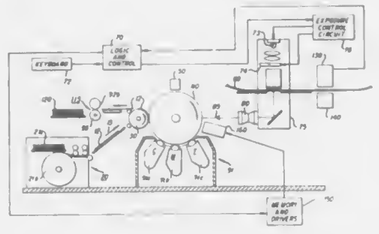
Filed Aug. 9, 1989, Ser. No. 390,949
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—202 **6 Claims**

1. Apparatus for annotating a color print of a photographic negative made by an electrophotographic printer having a photoconductor, comprising:

(a) means for scanning a negative to acquire density information relating to densities of different colors at positions within the negative;

(b) means responsive to such density information for projecting light through the negative onto the photoconductor to form color separation electrostatic images on the photoconductor;

(c) ion projection means for selectively depositing charge on the color separation electrostatic images to annotate the image; and



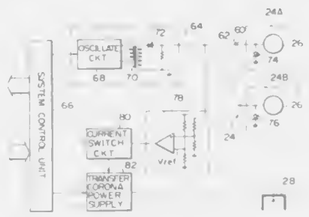
(d) logic and control means for controlling the ion projection means to effect the annotation in accordance with density information measured by the scanning means.

4,942,429

IMAGE RECORDING APPARATUS WITH A REMOVABLE DEVELOPING UNIT

Yohtaro Kakitani, Yokosuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,549
Claims priority, application Japan, Nov. 30, 1987, 62-302493
Int. Cl.[5] G03G *15/00, 15/01*
U.S. Cl. 355—208 **7 Claims**



1. An image recording apparatus comprising recording means which includes at least a developing unit which is removably mounted on a body of said apparatus, said apparatus comprising:

power supply means installed in said body of said apparatus for feeding power to said recording means;

level adjusting means installed in said developing unit for producing a signal a level of which is changed on the basis of power which is generated by said power supply means in association with characteristics particular to a developer stored in said developing unit and is applied to said developing unit as a developing bias voltage; and

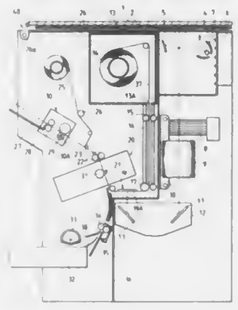
condition changing means for identifying the level of the signal outputted by said level adjusting means and, based on a result of identification, selectively changing at least one of a plurality of recording process factors.

4,942,430

IMAGE RECORDING APPARATUS HAVING SEPARATED OPTICAL AND DEVELOPING UNITS

Makoto Yamada, Gifu; Osamu Nagata, Aichi; Toshio Sugiura, Nagoya; Tsuyoshi Suzuki, Nagoya; Kazuhito Ishida, Nagoya; Eiji Shibata, Nagoya; Kazumasa Makino, Nagoya; Yoichi Horaguchi, Nagoya; Takashi Tomizawa, Aichi; Shigeyuki Hayashi, Nagoya; Motoshi Ohno, Nagoya, and Takashi Nakata, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 8, 1988, Ser. No. 281,327
Claims priority, application Japan, Dec. 11, 1987, 62-189350[U]; Dec. 15, 1987, 62-191005[U]; Dec. 15, 1987, 62-191013[U]
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—232 **10 Claims**



5. An image recording apparatus for recording an image on an imaging surface of an image recording medium, said image corresponding to an image of an original said apparatus comprising:

an original support member on which said original is mounted with its surface to be imaged facing downwardly;

an exposure unit having an exposure zone, said image recording medium passing along said exposure zone with said imaging surface facing down;

an optical system provided at a position between said original support member and said exposure zone; said optical system being provided with a single reflection unit and providing a first optical path directed vertically downwardly from said original support member, a second optical path directed horizontally, and a third optical path directed vertically upwardly, said second optical path being provided by said single reflection unit; and

a pair of frames for accommodating therein said exposure unit and said optical system, and wherein said reflection unit is vertically movably secured to said pair of frames.

4,942,431

IMAGE FORMING APPARATUS

Tatsuya Tada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1989, Ser. No. 398,444
Claims priority, application Japan, Aug. 31, 1988, 63-214803; Aug. 31, 1988, 63-214806
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **12 Claims**

5. An image forming apparatus, comprising:

an image bearing member;

latent image forming means for forming a latent image on said image bearing member;

developing means for developing the latent image, including:

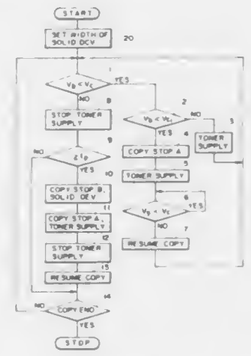
a developer container for containing a developer including carrier and toner particles;

a toner container for containing the toner particles;

toner supply means for supplying the toner particles from said toner container to said developer container;

a developer carrying member for carrying on its surface the developer supplied from said developer container;

a sensor for detecting a toner content in the developer, said apparatus further comprising:



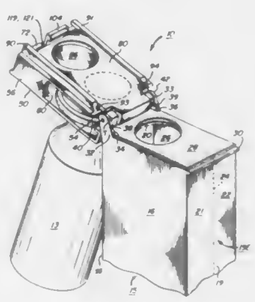
control means for controlling the toner supply from said toner container to said developer container on the basis of an output of said sensor, wherein when a toner supply signal is not produced within a predetermined period of time, a predetermined latent image is formed on said image bearing member, and the predetermined latent image is developed by said developing means, said control means controls a quantity of the toner particles consumed by the development of the predetermined latent image.

4,942,432

APPARATUS FOR ADDING TONER TO AN ELECTROSTATOGRAPHIC DEVELOPMENT STATION

Thomas W. Mort, Rochester; Philip A. Stern, Chili, and Scott W. Garner, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1989, Ser. No. 372,485
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **10 Claims**



1. Apparatus for adding toner from a toner container, which has a mouth opening, into a toner hopper at a development station of an electrostatographic copier or printer, the apparatus including:

(a) a top wall covering and sealing the interior of the hopper to the top, said top wall having a first opening therethrough, and said first opening being substantially the same size as the mouth opening of the toner container; and

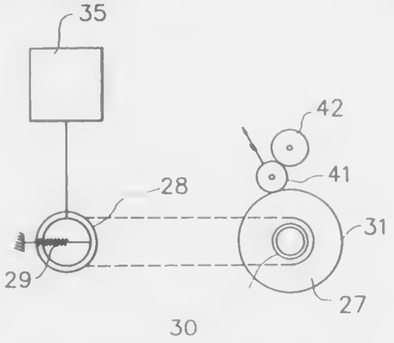
(b) a pivotable member having (i) a first position away from said top wall of the toner hopper and a second position overlying said top wall of the toner hopper, (ii) means for non-slidably attaching a container of toner, (iii) a second opening therethrough for toner flow, and (iv) mounting means associated with the the hopper for mounting said pivotable member, said pivotable member being useful for holding and transporting an open container of toner between said first and second positions, and said first and second openings being such that when said pivotable member is in said second position, said first and second openings will automatically be fully aligned, thus enabling an attached container of toner to also be automatically in a position for toner therein to flow into such hopper, without any further retouching, regrasping or direct rehandling of such a container.

4,942,433

FIXING METHOD AND APPARATUS

Paul O. Stuart, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1989, Ser. No. 352,237
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—284 **9 Claims**



1. A process of fixing color toner images carried on a receiving sheet using a fixing device of the type having at least one roller having a surface which contacts the toner image during fixing, said process including the step of engaging said surface with a release liquid applying wick to apply release liquid thereto, said wick being of a type having an irregular fabric surface that is rotatable with the roller surface,

characterized in that said process further includes the step of determining both whether the receiving sheet is paper based or resin based and, if resin based whether the image to be fixed is composed of black toner or one or more color toners,

if said sheet is resin based and contains one or more color toners, preventing said wick from rotating with said roller surface to force said wick to slide on said roller surface, and

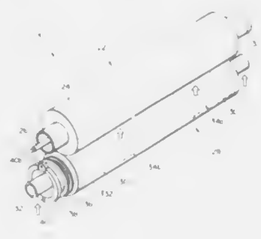
if said sheet is paper based permitting said wick to roll with the roller surface.

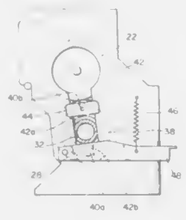
4,942,434

FIXED ROLLER FOR AN ELECTROSTATIC IMAGE RECORDER

Junji Nakai, Tokyo, and Sakae Ishikawa, Kawaguchi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 282,258
Claims priority, application Japan, Dec. 11, 1987, 62-311832; Dec. 16, 1987, 62-316097; Dec. 24, 1987, 62-325405; Dec. 28, 1987, 62-330253; Dec. 28, 1987, 62-330254; Aug. 26, 1988, 63-210617
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 **13 Claims**





1. A heat roller type fixing device for an electrostatic image recorder, comprising:

a hollow cylindrical fixing roller accommodating a heat source in said fixing roller;

a hollow cylindrical pressing roller held in pressing contact with said fixing roller;

a shaft disposed in said pressing roller; and

a plurality of pressing members mounted on said shaft within said pressing roller and urging a cylindrical inner periphery of said pressing roller to impact a pressing force to said pressing roller;

said pressing members being each controllably movable to a predetermined position within said pressing roller wherein said pressing members comprise bearings which are mounted on said shaft.

4,942,435

SHEET FEEDING AND LEVELING APPARATUS

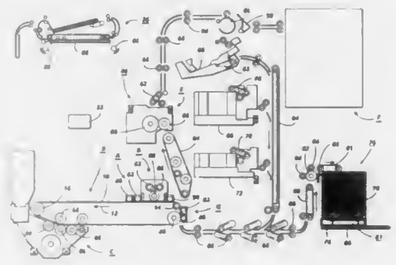
Charles S. Kneisel, Farmington; Kenneth B. Mahon, Rochester, and Raymond A. Povio, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1988, Ser. No. 250,186
Int. Cl.[5] G03G *15/00;* **B65H** *1/12*
U.S. Cl. 355—311 **24 Claims**

9. An electrophotographic printing machine of the type in which a latent image is developed on a photoconductive member and the developed image transferred to a copy sheet with successive copy sheets being supplied from a supply source thereof, wherein the improvement includes:

a tray arranged to have a stack of copy sheets disposed thereon; and

means, adapted to be interposed between said tray and the stack of copy sheets when one marginal region of the stack of copy sheets has a greater thickness than the other marginal region thereof, for supporting the stack of copy sheets so that at least opposed marginal regions of the



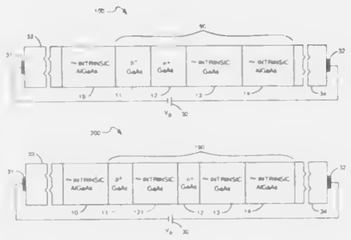
uppermost sheet of the stack of copy sheets are at substantially about the same level, said supporting means comprises means for fixedly supporting the other marginal region of the stack of sheets, and spring means for resiliently supporting at least the one marginal region of the stack of sheets having the greater thickness, said fixed supporting means and said resilient supporting means engaging the lowermost sheet of the stack of copy sheets.

4,942,436

SUPERLATTICE AVALANCHE PHOTODETECTOR

William T. Vetterling, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 31, 1988, Ser. No. 265,035
Int. Cl.[5] H01L *29/205, 27/14*
U.S. Cl. 357—4 **16 Claims**



1. An avalanche photodiode device comprising:

a plurality of superlattice units serially connected with respect to each other each unit of which includes the following contiguous layers in sequence:

a p^+ layer of a first material;

an n^+ layer of the first material;

a substantially intrinsic layer of the first material; and

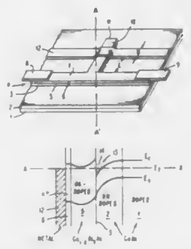
a substantially intrinsic layer of a second material having a larger ionization threshold than that of the first material, said substantially intrinsic layer of said second material of each unit, excepting the last of said serially connected units, adjoining the p^+ layer of the next succeeding unit to define a heterojunction therebetween.

4,942,437

ELECTRON TUNED QUANTUM WELL DEVICE

Alan B. Fowler, Yorktown Heights, N.Y., and Gregory L. Timp, Farmingdale, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 110,611, Oct. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 854,635, Apr. 22, 1986, abandoned. This application Jan. 13, 1989, Ser. No. 298,241
Int. Cl.[5] H01L *29/161*
U.S. Cl. 357—16 **1 Claim**



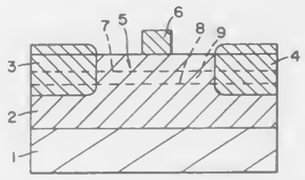
1. In a signal translator which includes a single conducting path of given length on the surface of a semiconductor member of layers of $Ga_{1-x}Al_xAs$ on GaAs said member having a heterojunction therein and a potential well containing electrons adjacent said heterojunction, said GaAs being undoped and separated from a substrate by a buffer layer of GaAs doped with Si to 10^{17} atom/cm^3 and said $Ga_{1-x}Al_xAs$ being undoped adjacent said heterojunction and having a region at the surface of $Ga_{0.35}Al_{0.65}As$ doped with Si to 10^{17} atoms/cm^3, the improvement comprising a turnable stub having a length dimension (L) of 2000 Å connected to and extending from said path at a location along said given length and gate means having a width dimension (W) of 1000 Å for providing a localized electric field across said heterojunction under a portion of said tunable stub the latter having a length less than the means free path length for the scattering of electrons in said second semiconductor material.

4,942,438

COMPOUND SEMICONDUCTOR FIELD-EFFECT TRANSISTOR

Hironobu Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 23, 1988, Ser. No. 248,545
Claims priority, application Japan, Sep. 25, 1987, 62-242143
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—16 **26 Claims**



1. A field effect transistor comprising:

a source and a drain;

a channel region between said source and said drain;

a gate formed on said channel region; and

two planar-doped layers, each of said planar-doped layers

having two-dimensionally doped impurities, said planar-doped layers being located within said channel region, being in contact with both said source and said drain, and being separated by an interval which is equal to or smaller than about 70 Å.

4,942,439

LIGHT-EMITTING DIODE OF GaAsP COMPOUND SEMICONDUCTIVE MATERIAL

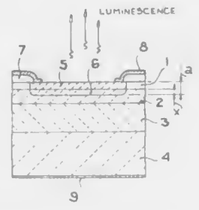
Werner Schairer, Weinsberg, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jun. 29, 1988, Ser. No. 213,181

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 3721761

Int. Cl.[5] H01L *33/00*

U.S. Cl. 357—17 **15 Claims**



1. A light emitting diode, comprising:
a semiconductor substrate;
a GaAsP compound crystal system on said substrate, including:
a first n-doped GaAsP surface layer having a first energy bandgap, on said substrate, and
a second n-doped GaAsP surface layer having a second energy bandgap, directly on said first surface layer; and
a p-type region extending through said second surface layer into said first surface layer, said second energy bandgap being greater than said first energy bandgap.

4,942,440

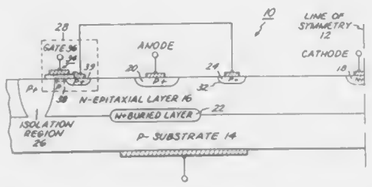
HIGH VOLTAGE SEMICONDUCTOR DEVICES WITH REDUCED ON-RESISTANCE

Bantval J. Baliga, and Eric J. Wildi, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 47,524, May 4, 1987, abandoned, which is a continuation of Ser. No. 774,195, Sep. 9, 1985, abandoned, which is a continuation of Ser. No. 436,244, Oct. 25, 1982, abandoned. This application Sep. 9, 1988, Ser. No. 243,210

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.1 **36 Claims**



1. In combination:
a semiconductor device comprising a body of semiconductor material including:
a substrate of one conductivity type with a layer of opposite conductivity type thereon, and including first and second regions disposed within said layer; said first region being of said opposite conductivity type and more heavily doped than said layer and extending to an upper surface of said body and said second region being of said one conductivity type, extending to said upper surface, being spaced from and surrounding said first region,
a third region of said opposite conductivity type buried between said layer and said substrate beneath said second region and spaced from said second region by a portion of said layer,
a fourth region of said one conductivity type disposed within said layer, forming a P-N junction therewith, extending to said surface, being spaced from and surrounding said first region and, in turn, being surrounded by and spaced from said second region, and
a controllable bias means integrated therein for controllably connecting said fourth region to said substrate and disconnecting said fourth region from said substrate;
a first electrode in ohmic contract with said first region;
a second electrode in ohmic contact with said second region;
a third electrode connected as an output electrode of said controllable bias means;
a fourth electrode in ohmic contact with said fourth region;
a fifth electrode connected as a control electrode for said controllable bias means;
a sixth electrode in ohmic contact with said substrate;
said third electrode being ohmically connected to said fourth electrode to enable said controllable bias means to control the potential of said fourth region to establish different degrees of conductivity in said layer between said first region and said second region in response to control signals applied to said fifth electrode.

4,942,441

THIN FILM SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

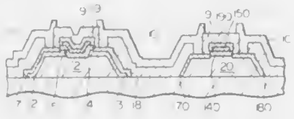
Nobutake Konishi; Yoshikazu Hosokawa, both of Hitachiota; Akio Mimura; Takaya Suzuki, both of Katsuta; Jun-ichi Ohwada, Hitachi; Hideaki Kawakami, Mito, and Kenji Miyata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 30,623

Claims priority, application Japan, Mar. 29, 1986, 61-69818

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.7 **13 Claims**



1. A complementary thin film semiconductor device comprising:
an insulating underlie for supporting the semiconductor device to be formed thereon;
a pair of thin film semiconductor island regions supported on said insulating underlie, spaced from each other and having a high resistivity and a conductivity type of i- or n-type;
a pair of heavily doped n-type regions formed on one of said island regions and spaced from each other by a predetermined distance, the heavily doped regions constituting a source and a drain region of an n-channel thin film transistor (n-TFT) and the predetermined distance defining a channel length of the n-TFT;
a first pair of metal contacts formed on a surface of the other of said island regions and spaced from each other by another predetermined distance, the metal contact forming a high potential barrier when the underlying semiconductor region is of n-type and a reduced potential barrier when the underlying region is of p-type, the pair of metal contacts constituting a source and a drain region of a p-channel thin film transistor (p-TFT) and said another predetermined distance defining a channel length of the p-TFT;
a pair of insulated gate structures formed on said pair of island regions, each at a position between the source and the drain of the associated TFT; and
a second pair of metal contacts formed on said pair of heavily doped n-type regions not to contact directly with said island region, wherein the insulated gate structure of the n-channel thin film transistor is formed to overlap predetermined portions of said source region and said drain region of the n-channel thin film transistor.

4,942,442

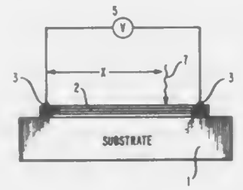
DEVICE INCLUDING A RADIATION SENSOR

Clyde G. Bethea, Plainfield; Daniel Brasen, Lake Hiawatha; Barry F. Levine, Livingston, and Ronald H. Willens, Warren, all of N.J., assignors to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 850,977, Apr. 11, 1986, abandoned. This application Apr. 27, 1989, Ser. No. 346,384

Int. Cl.[5] H01L *49/02*

U.S. Cl. 357—29 **13 Claims**



1. Device comprising a radiation-sensitive element which comprises a substrate-supported layered structure consisting of interleaved at least one first and at least one second layers, and first and second electrical contacts to said element,
CHARACTERIZED IN THAT said at least one first layer consists of semiconductor material, said at least one second layer consists of conductor material, and said contacts are to the same face of said layered structure.

4,942,443

THYRISTOR WITH AUXILIARY EMITTER ELECTRODE AND SHORT-CIRCUIT REGIONS AND METHOD

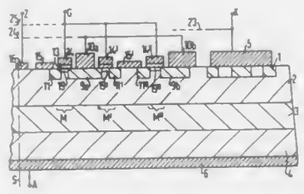
Michael Stoisiek, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,495

Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118317

Int. Cl.[5] H01L *29/74*

U.S. Cl. 357—38 **6 Claims**



1. A thyristor with a semiconductor body having an n-emitter contacted by a cathode with an adjacent p-base layer, a p-emitter contacted by the anode with an adjacent n-base layer, and an auxiliary emitter region with an auxiliary emitter electrode, at least one disconnectible current path designed as a MIS structure provided at the boundary surface of the semiconductor body carrying the auxiliary emitter electrode, said disconnectible current path comprising a semiconductor region of a first conductivity type connected to the adjacent base layer, a second semiconductor region of the first conductivity type connected to the auxiliary emitter electrode, and a semiconductor region of a second conductivity type lying between said semiconductor regions, said semiconductor region of said second conductivity type being covered by a gate having a control terminal and electrically insulated from the semiconductor body, one of said emitters having a plurality of fixed emitter short-circuits, the first semiconductor region of said disconnectible current path including an edge area of the auxiliary emitter region, the said second semiconductor region including a short-circuit region which is inserted into the base layer adjacent to the auxiliary emitter region and connected to said base layer over a conductive coating, and said semiconductor region covered by a gate including a sub-region of said base layer.

4,942,444

THYRISTOR

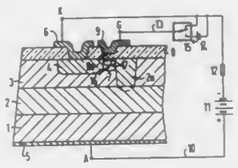
Ulrich Ablassmeier, Waltenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,603

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835089

Int. Cl.[5] H01L *29/74*

U.S. Cl. 357—38 **2 Claims**



1. A plurality of integrated thyristors, comprising:
common body section formed from a series of first, second, and third stacked semiconductor layers of alternate conductivity types with an anode electrode affixed to the first layer at a first end thereof;
a plurality of spaced apart cathode regions formed in the third semiconductor layer at the opposite end of the body adjacent the exterior surface thereof;
each said cathode region has a cathode electrode affixed thereto and has a conductivity type opposite that of said third semiconductor layer;
an insulating layer covering the remaining exterior surface of said third semiconductor layer;
a plurality of spaced apart additional regions, each said additional region being formed in said third semiconductor layer adjacent a corresponding cathode region and at a distance therefrom corresponding to a channel length of a field effect transistor, each said additional region extending through said third semiconductor layer to the next layer and each said additional region having the same conductivity type as does each said cathode region;
each said gate region having a gate electrode on said insulating layer positioned adjacent a corresponding cathode electrode and substantially between said gate region and said associated cathode region; and
adjacent gate regions having their respective gate electrodes

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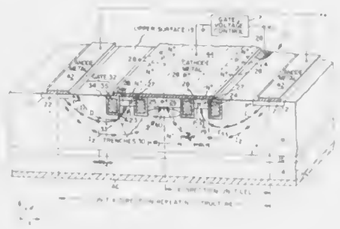
as a common gate electrode comprising a continuous metal layer running above and over the additional region between the adjacent gate regions.

4,942,445

LATERAL DEPLETION MODE TYRISTOR

Bantval J. Baliga, Schenectady, and Hsueb-Rong Chang, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1988, Ser. No. 217,449
Int. Cl.[5] H01L *29/74, 27/02, 29/78*
U.S. Cl. 357—38 23 Claims



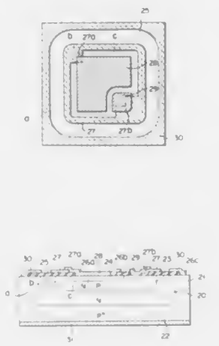
1. A lateral semiconductor device comprising:
a body of semiconductor material having first and second opposed major surfaces, said body including:
a first emitter region of one type conductivity extending to said first surface,
a first base region of opposite type conductivity, disposed adjacent to and forming a first PN junction with said first emitter region and extending to said first surface,
a second base region of said one type conductivity disposed adjacent to said first base region, forming a second PN junction with said first base region and spaced from said first emitter region,
a second emitter region of said opposite type conductivity disposed adjacent to said second base region, forming a third PN junction with said second base region, spaced from said first base region and extending to said first surface;
a first power electrode disposed on said first surface and ohmically contacting said first emitter region;
a second power electrode disposed on said first surface and ohmically contacting said second emitter region;
said device including a regenerative four-layer current path extending between said first and second power electrodes through said first emitter region, first and second base regions and said second emitter region and a non-regenerative three-layer current path extending between said first and second power electrodes through three of said four regions; and
an insulated gate electrode disposed adjacent to a channel portion of one of said base regions, said channel portion being narrow enough that when current is flowing between said first and second power electrodes through said regenerative current path in a regenerative thyristor mode, application of an appropriate turn-off bias voltage to said gate electrode causes said channel portion of said one of said base regions to become sufficiently depleted of carriers to divert enough of said current from said regenerative current path into said non-regenerative current path to interrupt regenerative thyristor action in said regenerative current path to thereby turn said device off.

4,942,446

SEMICONDUCTOR DEVICE FOR SWITCHING, AND THE MANUFACTURING METHOD THEREFOR

Shigenori Yakushiji, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 10,734, Feb. 4, 1987, abandoned. This application Dec. 15, 1988, Ser. No. 285,304
Claims priority, application Japan, Feb. 27, 1986, 61-42257
Int. Cl.[5] H01L *29/74*
U.S. Cl. 357—38 4 Claims



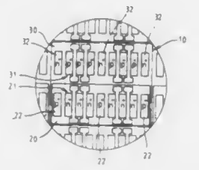
1. A semiconductor device comprising:
a semiconductor substrate region of a first conductivity type surrounded by an element-isolation region;
a first semiconductor diffused base region of a second conductivity type formed in said semiconductor substrate region and forming a first p-n junction exposed at one surface of said semiconductor substrate region;
an anode region of a second conductivity type formed integrally with said element-isolation region and forming a second p-n junction exposed at said one surface of said semiconductor substrate region at a location different from that of said first p-n junction;
an anode electrode connected to said anode region;
a second semiconductor diffused cathode region of the first conductivity type formed in said first semiconductor region, said second semiconductor region being separated by said first semiconductor region from said semiconductor substrate region;
an insulating film formed on said one surface of said semiconductor substrate region; and
a first conductivity layer covering said exposed first p-n junction via said insulating film, said first conductive layer having a first portion and a second portion, with a predetermined electric resistance between said first and second portions, said first portion being electrically connected to said first semiconductor region via a gate electrode, and said second portion being electrically connected to said second semiconductor region via a cathode electrode, wherein said first portion and said second portion are positioned on said first conductive layer in relative spaced-apart relation with a portion of said first p-n junction being covered by said first conductive layer and a remaining portion thereof being covered with an electrode connected to one of said first and second portions; and
a second conductive layer covering said exposed second p-n junction via said insulating film and electrically connected to said element isolation region.

4,942,447

BORDERLESS MASTER SLICE CMOS DEVICE

Hak-song Park; Byoung-jin Chol, both of Seoul, and Heung-chul Oh, Kyounggi-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon Kyounggi-do, Rep. of Korea

Filed May 25, 1989, Ser. No. 357,038
Claims priority, application Rep. of Korea, Jul. 23, 1988, 88-9291
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—42 7 Claims



1. A borderless master slice semiconductor device, comprising:
a plurality of first conduction type independent well regions arranged on the whole area of a second conduction type semiconductor wafer in a row direction;
a plurality of second conduction type MOS transistor groups arranged in a row direction within said first conduction type independent well regions, each of said second conduction type MOS transistor groups having respectively current paths connected in series and gate terminals arranged in parallel in a row direction;
a plurality of first conduction type diffusion regions arranged at the opposite sides of said second conduction type MOS transistor groups in a line;
a plurality of second conduction type intermediate regions disposed between said adjacent first conduction type independent well regions arranged in a column direction;
a plurality of first conduction type MOS transistor groups arranged in a row direction within said second conduction type intermediate regions in correspondence to said second conduction type MOS transistor groups within said first conduction type independent well regions, each of said first conduction type MOS transistor groups having current paths connected in a series and gate terminals arranged in parallel in a row direction; and
a plurality of second conduction type diffusion regions arranged at the opposite sides of said first conduction type MOS transistor groups in a line.

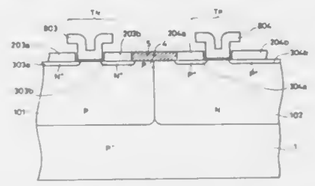
4,942,448

STRUCTURE FOR ISOLATING SEMICONDUCTOR COMPONENTS ON AN INTEGRATED CIRCUIT AND A METHOD OF MANUFACTURING THEREFOR

Katsubiro Tsukamoto; Masahide Inuishi, and Masahiro Shimizu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1988, Ser. No. 262,303
Claims priority, application Japan, Nov. 17, 1987, 62-291340
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—49 33 Claims

1. A semiconductor apparatus having a region for isolation between devices comprising:
a semiconductor substrate having a main surface and having a predetermined impurity concentration of a certain conductivity type;
portions of a polycrystalline silicon layer selectively formed spaced apart rom each other on the main surface of said semiconductor substrate;
a semiconductor region of the inverse conductivity type from that of said semiconductor substrate, formed in said semiconductor substrate under said polycrystalline silicon layer; and
an insulating layer including an oxide film formed on said main surface of said semiconductor substrate to fill in a



portion in which the main surface of said semiconductor substrate is exposed between adjacent portions of said polycrystalline silicon layer spaced from each other, whereby said semiconductor region is isolated by said insulating layer oxide film.

4,942,449

FABRICATION METHOD AND STRUCTURE FOR FIELD ISOLATION IN FIELD EFFECT TRANSISTORS ON INTEGRATED CIRCUIT CHIPS

Ching-Yeu Wei; Patricia A. Piacente, both of Schenectady, and Henry H. Woodbury, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1988, Ser. No. 173,918
Int. Cl.[5] H01L *29/34*
U.S. Cl. 357—54 5 Claims



1. A field isolation structure for field effect transistors, said structure comprising:
a doped silicon plateau region exhibiting a raised, substantially planar central region having a sidewall sloping downwardly away from said central region;
a layer of thermally grown silicon oxide surrounding said central region and including at least a portion extending onto said central region, said oxide layer being tapered in the direction of said sloping sidewall; and
a layer of deposited silicon oxide disposed over and in contact with said thermally grown silicon oxide at least along substantially most of said sidewall and extending, along said portion of said thermally grown silicon oxide, to said central region.

4,942,450

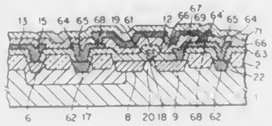
SEMICONDUCTOR MEMORY DEVICE HAVING NON-VOLATILE MEMORY TRANSISTORS

Shinichi Iwashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1988, Ser. No. 216,588
Claims priority, application Japan, Jul. 8, 1987, 62-171511
Int. Cl.[5] H01L *29/78, 29/34, 23/48, 25/04*
U.S. Cl. 357—54 4 Claims

1. A semiconductor memory device comprising a semiconductor substrate of a first conductivity type, a non-volatile memory transistor formed on said substrate having a floating gate electrode and a control gate electrode, a first means for leading out said control gate electrode of said transistor, and a second means for shielding said floating gate electrode of said transistor, said first means including a first impurity region of a

second conductivity type opposite to said first conductivity type formed in said substrate and connected electrically at a first section of said first impurity region to said control gate electrode through a first wiring layer made of a first level metal layer, and a second wiring layer made of said first level metal layer and connected to a second section of said first impurity region, said second means including a second impurity region of said first conductivity type having an impurity concentration higher than said substrate and than said first impurity region, formed in said substrate and crossing said first



impurity region between said first and second sections of said first impurity region, and an metallic film covering said floating gate electrode and said control gate electrode and contacted to said second impurity region, said metallic film being composed of a lower metal layer made of said first level metal layer, connected to said second impurity region, crossing over said first impurity region and having a ring-like plan shape so as to surround said floating and control gate electrodes, and an upper metal layer made of a second level metal layer covering said floating and control gate electrodes and formed on and in contact with said lower metal layer.

4,942,451

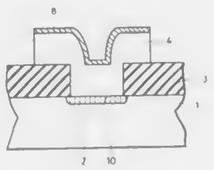
SEMICONDUCTOR DEVICE HAVING IMPROVED ANTIREFLECTION COATING

Reiji Tamaki, and Shigeru Harada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1988, Ser. No. 249,907

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—67 **5 Claims**



1. A semiconductor device formed in a predetermined region of a semiconductor substrate and including an impurity diffused layer to serve as an active region, comprising:

an interconnection layer formed on said semiconductor substrate so as to receive and send electrical signals from and to said impurity diffused layer, and

an antireflection coating containing aluminum as a major constituent and formed on said interconnection layer so as to prevent reflection of exposure light irradiated for patterning a resist film utilized as a mask when said interconnection layer is patterned in a predetermined shape,

said antireflection coating additionally comprising a second element which is the same as an element contained in the substrate and at least a third element in a group adjacent, in the periodic table, to a group to which said second element belongs.

4,942,452

LEAD FRAME AND SEMICONDUCTOR DEVICE

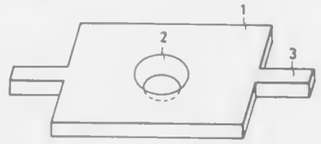
Makoto Kitano; Sueo Kawai, both of Ibaraki; Asao Nishimura, Ushiku; Hideo Miura; Akihiro Yaguchi; Chikako Kitabayashi, both of Ibaraki; Ichio Shimizu, Gunma; Toshio Hatsuda; Toshinori Ozaki, both of Ibaraki; Toshio Hattori, Ushiku, and Souji Sakata, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1988, Ser. No. 158,673

Claims priority, application Japan, Feb. 25, 1987, 62-40287; Mar. 13, 1987, 62-56590

Int. Cl.[5] H01L *23/48, 23/12*

U.S. Cl. 357—68 **23 Claims**



1. In a lead frame comprising a unitary structure of a chip pad for mounting a semiconductor chip on a chip-mounting surface thereof and a group of leads connected to said chip pad along said chip pad, the improvement wherein a through hole is formed in at least a portion of said chip pad, said through hole being projected in a direction which is tilted relative to a direction from the plane of the chip-mounting surface of said chip pad.

4,942,453

IC PACKAGE

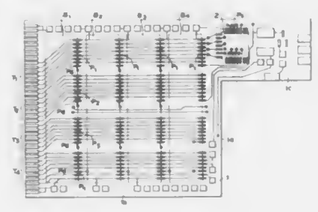
Yoshibiro Ishida; Yoshio Iinuma, and Shingo Ichikawa, all of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 244,794

Claims priority, application Japan, Apr. 26, 1988, 63-102998; May 17, 1988, 63-118169; Jun. 3, 1988, 63-136856

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 357—68 **13 Claims**



1. An IC package comprising:

(a) a main board including;

a plurality of row-direction common printed wiring patterns running in a row direction on at least a front side of said main board, said row-direction common printed wiring patterns being provided in groups,

chip selecting printed terminal patterns each belonging to and provided near said respective groups of said printed wiring patterns, and

a plurality of external connecting printed terminal patterns aligned along one of the edges of said main board, said plurality of external connecting printed terminal patterns having a plural number of external common printed connecting terminal patterns and a smaller number of external chip selecting control printed terminal patterns corresponding to said respective groups of rowdirection printed wiring patterns,

said respective groups of row-direction common printed wiring patterns being connected to the corresponding external common connecting printed terminal patterns by means of printed wiring patterns without crossing each other on the front side of said main board,

(b) a plurality of IC chip units each including;

a single auxiliary board and a plurality of IC chips mounted in a column on said auxiliary board, said single auxiliary board extending in a column direction and being rectangular;

said IC chips each having a plural number of common connecting terminals and a smaller number of chip selecting terminals and being of the substantially same type;

said auxiliary board including;

a plurality of column-direction common printed wiring patterns running in a column direction corresponding to said common connecting printed terminals of said IC chips on a front side of said auxiliary board;

chip selecting printed terminal patterns corresponding to said respective IC chips; and

unit connecting printed terminal patterns provided in a column along one of the edges in parallel with said column-direction common printed wiring patterns of said auxiliary board,

said unit connecting printed terminal patterns including;

unit common connecting printed terminal patterns provided corresponding to said row-direction common printed wiring patterns provided in groups on said main board; and

unit chip selecting printed terminal patterns provided corresponding to the chip selecting printed terminal patterns on said main board;

said common connecting terminals of said respective IC chips being connected to said respective column-direction common printed wiring patterns on the corresponding auxiliary board, and said chip selecting terminals of said respective IC chips being connected to the corresponding chip selecting printed terminal patterns on said auxiliary board,

said column-direction common printed wiring patterns on said auxiliary board being connected to said unit common connecting printed terminal patterns, and said respective chip selecting printed terminal patterns on said auxiliary board being connected to said unit chip selecting printed terminal patterns,

(c) said plurality of IC chip units being superimposed on each other on said main board so that said plurality of IC chip units are arranged in parallel with each other and that the column-direction printed wiring patterns of the respective IC chip unit are perpendicular to the row-direction printed wiring patterns on the main board;

said respective unit common connecting printed terminal patterns being electrically connected to said corresponding row-direction common printed wiring patterns on the main board; and the respective unit chip selecting printed terminal patterns being electrically connected to the corresponding chip selecting printed terminal patterns on the main board; and

(d) at least one chip selecting circuit provided on said main board, input terminals of said chip selecting circuit being connected to said external chip selecting control printed terminal patterns, and output terminals of said chip selecting circuit being connected to said chip selected printed terminal patterns on the main board.

4,942,454

RESIN SEALED SEMICONDUCTOR DEVICE

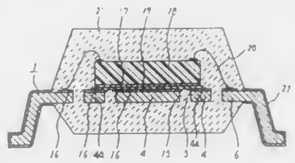
Ryuichiro Mori; Katsuyuki Fukudome; Tatsuhiko Akiyama, and Yoshitaka Takemoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 2, 1988, Ser. No. 227,332

Claims priority, application Japan, Aug. 5, 1987, 62-196853; Jan. 12, 1988, 63-2975

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—70 **3 Claims**



1. A packaged semiconductor device comprising:

a die pad having a main surface and through holes having walls that extend to said main surface;

a metal film having a composition different from that of said die pad disposed on said main surface but not on said walls;

a semiconductor element mounted on said metal film with a fixing material that wets said die pad relatively poorly and that wets said metal film relatively well; and

a resin encapsulating said die pad and semiconductor element and disposed in said holes.

4,942,455

LEAD FRAME FOR A SEMICONDUCTOR DEVICE AND A METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING THE LEAD FRAME

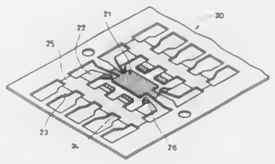
Toshiaki Shinohara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 108,907

Claims priority, application Japan, Oct. 13, 1986, 61-243612

Int. Cl.[5] H01L *29/60*

U.S. Cl. 357—70 **3 Claims**



1. In a lead frame of a resin sealed type semiconductor device package wherein the lead frame includes a die pad disposed in a central portion thereof with an inner lead, a tie bar and an outer lead formed around the die pad with the tie bar disposed between the inner and outer lead, a chip mounted to the pad and wires connecting the chip to a metal plated surface of the inner lead, and molded resin material covering the chip and at least portions of said metal plated surface of the inner lead and the wires, the improvement comprising said molded resin material having at least a pair of border edges free of burs or bur residues and overlying a surface of the inner lead, said border edges free of burs or bur residues being formed by disposing a thin metal layer on predetermined surfaces of at least the inner lead with edges of said thin metal layer defining said border edges of resin material disposed to cover said chip and metal plated surface portions of the inner lead, with said thin metal layer having a melting temperature greater than the

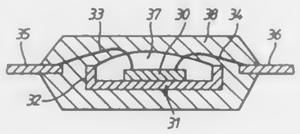
temperature of liquid resin material with said thin metal layer removed from the lead frame subsequent to solidification of the resin material.

4,942,456

PLASTIC PACKAGED DEVICE HAVING A HOLLOW PORTION ENCLOSING A CHIP ELEMENT

Shigeki Sako, Kawagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 22, 1988, Ser. No. 235,455
Claims priority, application Japan, Aug. 28, 1987, 62-214319
Int. Cl.[5] H01L *23/02*
U.S. Cl. 357—72 **10 Claims**



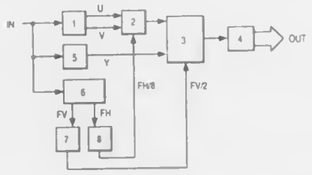
1. A packaged electronic device, comprising:
an electronic chip element;
means for supporting the chip element;
packaging means for enclosed said chip element;
wall means disposed on said supporting means for defining an area surrounding the electronic chip element; and
said packaging means and said wall means defining a hollow space extending from said area and separating the chip element from contact with said packaging means.

4,942,457

CIRCUIT ARRANGEMENT FOR PROCESSING VIDEO COMPONENTS

Heinz-Werner Keesen, Hanover, Fed. Rep. of Germany, and Laurent Perdrieau, Illkirch, France, assignors to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

PCT No. PCT/EP88/00865, § 371 Date May 25, 1989, § 102(e) Date May 25, 1989, PCT Pub. No. WO89/03155, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 27, 1988, Ser. No. 360,918
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3733004
Int. Cl.[5] H04N *11/06*
U.S. Cl. 358—12 **5 Claims**



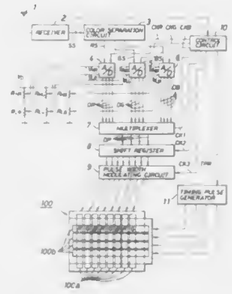
1. A circuit arrangement for processing video signal components including an analog luminance component and first and second analog chrominance components, said circuit arrangement comprising:
respective input terminals for receiving said analog luminance component and said first and second analog chrominance components;
multiplexing means having first, second and third input terminals for respectively receiving said first and second analog chrominance components and said luminance component, and having an output terminal; and
means coupled to said multiplexing means for conditioning said multiplexing means to provide at its output terminal, fields of video signal alternating between a field of said first and second analog chrominance components and a field of said analog luminance components and for conditioning said multiplexing means to provide said field of first and second analog chrominance components as successive groups of N horizontal lines of said first analog chrominance component alternating with groups of M horizontal lines of said second analog chrominance component where M and N are integers greater than one.

4,942,458

COLOR LIQUID CRYSTAL DISPLAY APPARATUS

Akira Miyajima, Tokyo; Atushi Shiraishi, and Yasuyuki Yoshida, both of Saitama, all of Japan, assignors to Citizen Watch Co., Ltd., Japan

Continuation of Ser. No. 268,910, Nov. 8, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 481,801
Claims priority, application Japan, Nov. 10, 1987, 62-282229
Int. Cl.[5] H04N *9/30, 9/73*
U.S. Cl. 358—29 **5 Claims**



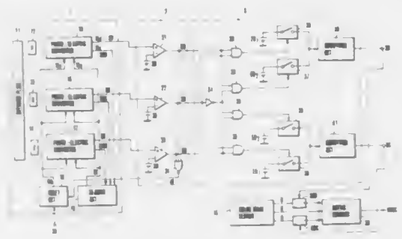
1. An apparatus for adjusting color balance to match the characteristics of a color liquid crystal display comprising:
a receiver for receiving an external radio wave and outputting a video signal;
a color separation circuit for color-separating the video signal and outputting red, green, and blue video output signals;
a separate A/D converter for A/D-converting each of the separate red, green, and blue video output signals and outputting separate red, green, and blue digital output signal;
a liquid crystal panel, having a plurality of pixels formed therein, for displaying an image on the basis of the red, green, and blue digital output signals generated by each said A/D converter; and
adjusting means which can independently adjust both the low and high reference potentials used as references for A/D conversion of each of the red, green, and blue video output signals by each said A/D converter.

4,942,459

COLOR TEMPERATURE DETECTING DEVICE FOR PRODUCING A COLOR TEMPERATURE SIGNAL DEVELOPED USING THE RATIO BETWEEN COLOR COMPONENT SIGNALS

Teruo Hieda; Hiroyuki Shimizu, and Kazunori Masuda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1988, Ser. No. 192,958
Int. Cl.[5] H04N *9/097, 9/73*
U.S. Cl. 358—41 **7 Claims**



1. A color temperature detecting device comprising:
(a) color component detecting means for detecting electric charges for color components excited by incident light and accumulated with the lapse of time to produce color component signals;
(b) comparison means for comparing the color component signals with respective given reference signals to produce discharge time length signals which correspond to the respective accumulated amounts of the electrical charges, said comparison means including: hold means for holding each of said color component signals; discharge means for discharging each of said color component signals held by said hold means; and a comparator for comparing outputs of said hold means with respective predetermined reference levels; and
(c) an output part for obtaining a ratio between the color components on the basis of the discharge time length signals produced from said comparison means to produce as color temperature information a signal according to said ratio.

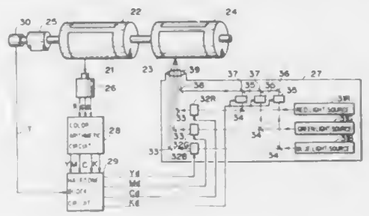
4,942,460

METHOD OF AND APPARATUS FOR RECORDING A HALFTONE DOT COLOR IMAGE ON A COLOR PHOTOSENSITIVE MATERIAL

Yukihiko Inagaki; Yoshikazu Masuda; Shigeru Sasada; Mikizo Katsuyama, and Hirohisa Tanaka, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Dec. 8, 1988, Ser. No. 281,541
Claims priority, application Japan, Dec. 11, 1987, 62-312279
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—75 **16 Claims**

10. An apparatus for recording a halftone dot color image on a color photosensitive material, comprising:
means for providing a white beam;
beam extracting means for extracting red, green and blue beams from said white beam;
means for providing yellow, magenta, cyan and black color separation image signals of a desired color image;
means for converting said yellow, magenta, cyan and black color separation image signals respectively into yellow, magenta, cyan and black halftone dot image signals having particular screen angles;
beam modulating means for modulating said red, green, blue and white beams with said halftone dot image signals of cyan, magenta, yellow and black, respectively, to form modulated red, green, blue and white beams;
beam converging means for converging said modulated red, green, blue and white beams onto said color photosensitive material to form an exposure beam spot; and



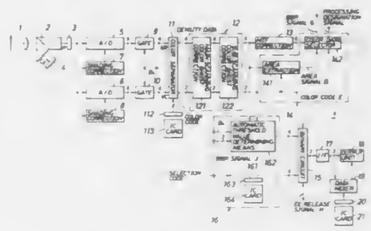
means for exposing said color photosensitive material to said exposure beam spot by moving said color photosensitive material and said exposure beam spot relative to one another, to record said desired color image in a halftone dot manner on said color photosensitive material.

4,942,461

DIGITAL MULTIPLE-COLOR IMAGE PROCESSING APPARATUS

Yoshinori Abe; Kazuo Watanabe; Tetsuo Kimoto; Tetsuo Hirata; Chiharu Kobayashi, and Hideki Endo, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 23, 1988, Ser. No. 235,126
Claims priority, application Japan, Aug. 24, 1987, 62-208174; Sep. 30, 1987, 62-243655; Sep. 30, 1987, 62-243656; Sep. 30, 1987, 62-243657
Int. Cl.[5] H04N *1/46, 1/40;* G03F *3/08*
U.S. Cl. 358—75 **11 Claims**



1. An image processing apparatus comprising:
photoelectric converting means for photoelectrically converting data of an original into an image signal;
multiple-value means for converting the image signal into multiple-valued data by comparing the image signal with predetermined threshold value data; and
detachable external storage means for storing the threshold value data.
4. An image processing apparatus comprising:
converting means for separating a color image data into plurality of color-separated images and converting the color-separated images into a plurality of color signals;
correcting means for obtaining distortion-corrected digital color signals from the plurality of color signals;
color-separating means for separating the digital color signals into color signals each having a plurality of bits by using color separation data; and
detachable external storage means for storing a color separation table containing the color separation data.
6. An image processing apparatus comprising:

converting means for separating a color image into a plurality of color-separated images and converting the color-separated images into a plurality of color signals;
correcting means for obtaining distortion-corrected digital color signals from the plurality of color signals;
color-separating means for separating the digital color signals into color signals each having a plurality of bits using color separation data; and
multiple-value means for converting the color-separating color signals into multiple-valued data by comparing the color-separated color signal with threshold value data including predetermined threshold value data,
wherein said color-separating means and said multiple-value means include RAMs, and said multiple-value means further includes means for determining said threshold value data in response to gray scale data of at least one of said images, or in response to a manual selection signal.

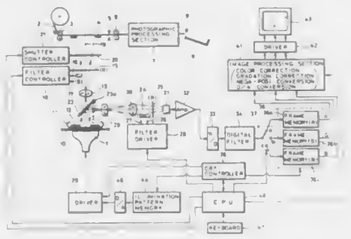
10. An image processing apparatus comprising:
photoelectric converting means for photoelectrically converting data of an original into an image signal and outputting the image signal;
multiple-value means for converting the image signal into multiple-valued data by comparing the image signal with predetermined threshold value data;
data mixing means for mixing predetermined format data with the multiple-valued data converted by said multiple-value means; and
detachable external storage means for storing the format data.

4,942,462

PHOTOGRAPHIC PRINTER HAVING A CRT FOR ILLUMINATING AN ORIGINAL WITH A FLYING SPOT TO PRINT AN IMAGE OF THE ORIGINAL

Kazuo Shiota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 14, 1988, Ser. No. 218,793
Claims priority, application Japan, Jul. 15, 1987, 62-176470; Jul. 31, 1987, 62-191684; Sep. 18, 1987, 62-233799
Int. Cl.[5] G03F *3/10*
U.S. Cl. 358—76 15 Claims



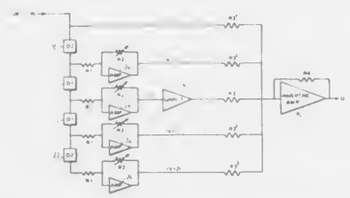
1. A photographic printer having a CRT for illuminating an original to print an image of said original on a photographic material, said printer comprising,
a mirror disposed in a printing path between said CRT and said photographic material for reflecting light passed through said original;
light measuring means for measuring said reflected light to provide a plurality of video signals;
means for converting said video signals into digital form;
a digital filter for filtering said digital video signals to cancel a persistency effect of said CRT; and
a frame memory for memorizing the filtered digital video signals.

4,942,463

IMAGE PROCESSING SYSTEM FOR DETECTING EDGES IN AN IMAGE OF AN ARTICLE

Brian M. Hopkins, Ennis, Ireland, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1989, Ser. No. 340,989
Claims priority, application Ireland, Apr. 22, 1988, 1234/88
Int. Cl.[5] H04N *7/00, 7/18*
U.S. Cl. 358—96 10 Claims



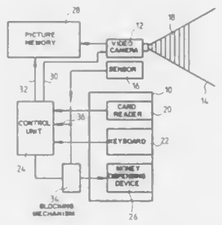
1. An image processing system comprising means for line-by-line scanning an article to generate a video signal representing an image of the article, a plurality 2n of series-connected delay means where n is greater than or equal to one and the time delays of the delay means are substantially symmetrical relative to the mid-point of the series, an input for the video signal at one end of the series of delay means, means for normalizing the amplitudes of the underlayed and successively delayed video signal whereby all such amplitudes are equal when the video signal over the total delay period represents a constant intensity portion of the image, and means for forming a signal D representing the difference between n times the amplitude of the video signal at the mid-point of the series of delay means and the sum of the amplitudes of the video signal at the input of the series of delay means and at the output of each delay means except the delay means whose output is at the mid-point of the series, such signal D defining the positions, in the direction of line scanning, of edges between contrasting region of the image.

4,942,464

SURVEILLANCE DEVICE FOR THE PROTECTION OF AN AUTOMATIC DELIVERY APPARATUS

Erhard Milatz, Johann-Sebastian-Bachstrasse 74, 4019 Monheim, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,564
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1988, 3807727
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—108 4 Claims



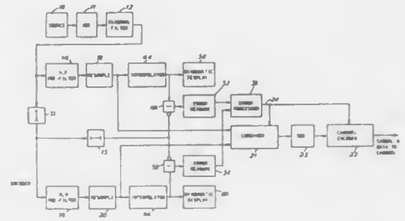
1. A surveillance device for the protection of an automatic delivery apparatus operable by code carriers, characterized by
(a) a picture recording device (12), which is arranged to be triggered responsive to actuation of said automatic delivery apparatus (10), and which takes and stores a picture of a field of view (14) within which a user has to be, when actuating said automatic delivery apparatus,
(b) sensor means (16), which respond to the presence of objects within a forbidden zone comprising a region adjacent to said picture recording device, and
(c) means (34,36) for blocking said automatic delivery apparatus (10), when said sensor means respond to such object.

4,942,466

BANDWIDTH COMPRESSION FOR TELEVISION SIGNALS

Charles P. Sandbank, Reigate; Ian Childs, Sutton, and Richard Storey, Lingfield, all of United Kingdom, assignors to British Broadcasting Corporation, London, England

PCT No. PCT/GB86/00799, § 371 Date Oct. 5, 1987, § 102(e) Date Oct. 5, 1987, PCT Pub. No. WO87/04034, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 23, 1986, Ser. No. 90,584
Claims priority, application United Kingdom, Dec. 24, 1985, 8531776; Dec. 24, 1985, 8531777; Jul. 16, 1986, 8617320; Sep. 11, 1986, 8621893
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—133 17 Claims



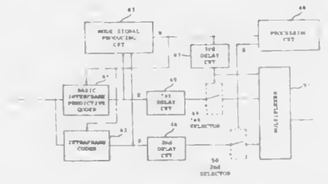
1. A system for transmission of analogue video signals comprising, at a transmitter:
an analogue video signal source;
sampling means for sampling the analogue video signal generated by the source;
bandwidth compression means for compressing the bandwidth of the video signal generated by the source selectively by two or more different methods in response to a control signal, and including sub-sampling means for sub-sampling the sampled analogue video signal generated by the source;
means for converting the sub-sampled, bandwidth compressed video signal into analogue form;
means for transmitting the bandwidth-compressed video signal in analogue form;
control signal generating means responsive to the picture content of the video signal generated by the source to generate the control signal for successive picture areas to command the bandwidth compressing means to select a required one of the bandwidth compression methods for successive picture areas;
and at a receiver;
means for receiving the transmitted bandwidth-compressed video signal;
means for reconstituting a signal for display from the bandwidth-reduced transmitted video signal selectively by two or more different methods in dependence upon picture content;
and means for displaying the reconstituted signal; further including:
means at the transmitter for transmitting in association with the analogue video signal a digital signal comprising the said control signal; and
means at the receiver responsive to the transmitted digital signal to extract the control signal and command the reconstituting means to select the required one of the reconstituting methods for successive picture areas to reconstitute the signal for display.

4,942,465

METHOD OF CODING A DIGITAL VIDEO SIGNAL FOR REVERSE REPRODUCTION OF PICTURES

Mutsumi Ohta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 30, 1989, Ser. No. 358,951
Claims priority, application Japan, May 30, 1988, 63-133477
Int. Cl.[5] H04N *7/137*
U.S. Cl. 358—133 4 Claims

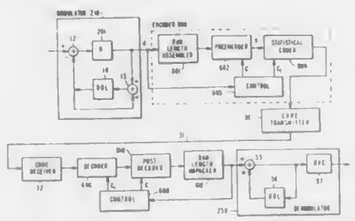


1. A method of coding a digital video signal by subjecting said digital video signal to redundancy reduction coding, said digital video signal being representative of successive pictures, each comprising a predetermined number of picture elements, said method comprising the steps of:
producing a coding mode signal which indicates, as said redundancy reduction coding, a selected one of interframe coding and intraframe coding which are carried out with reference to a first correlation factor between adjacent ones of said successive pictures and a second correlation factor between the picture elements within each of said successive pictures, respectively;
selectively coding said digital video signal into a first coded signal by carrying out said selected one of the interframe and the intraframe coding in response to said coding mode signal, said first coded signal carrying a first result of said interframe coding and a second result of said intraframe coding;
making said selectively coding step carry out said intraframe coding on a particular element of the picture elements of a current picture to produce a second coded signal when said coding mode signal indicates that said particular element should be subjected to said interframe coding and that a corresponding element of a following picture should be subjected to said intraframe coding, said following picture following said current picture in said successive pictures, said corresponding element corresponding to said particular element; and
multiplexing said first and said second coded signals and said coding mode signal into a multiplexed signal.

4,942,467
PREDICTOR CONTROLLED ENCODER FOR DIGITAL TRANSMISSION SYSTEMS

Harvey Waldman, Yardley, Pa., and Chung H. Lu, Plainsboro, N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1988, Ser. No. 280,053
Int. Cl.[5] H04N *7/137*
U.S. Cl. 358—135 **15 Claims**



1. Transmission apparatus for a television system employing statistical coding of differential pulse code modulation (DPCM), said transmission apparatus comprising:

a source of raster-scanned television signal of differing pixel values;

a differential pulse code modulator for generating a current DPCM signal responsive to said raster-scanned television signal to produce a digitized video signal, said modulator including means for generating an error signal representing the difference between the digitized video signal and a prior prediction signal;

a first encoding table in a plurality n in number of different encoding tables consecutively ordinally number first to nth, each first table comprising for a given pixel value, a range of probability of occurrence values h for each different current DPCM signal value d to generate a first set of output codes from a respective first set of input codes each of certain length which set is ordinally numbered the same as the encoding table generating it;

at least one statistical encoding table for responding to said first set of output codes to generate a second set of codes of variable length;

means responsive to said DPCM signal for deriving a further signal from said error signal, said further signal comprising the prediction for a current DPCM signal sample in each scan line usually based on a sample one line earlier in the DPCM signal; and

means responding to each DPCM and further signal for selecting the one of said n plurality of encoding tables that is most likely to cause said encoding tables to generate a variable-length code of short bit length and to generate such variable-length code in response to said current DPCM and further signals.

4,942,468
IMAGE INPUT DEVICE

Hisatake Yokouchi; Takakazu Huno, both of Tokyo; Yolchi Onodera, Hachioji; Koulchi Koike, and Masayuki Tsuneoka, both of Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Apr. 26, 1989, Ser. No. 343,382
Claims priority, application Japan, Apr. 28, 1988, 63-107360
Int. Cl.[5] H04N *5/05, 7/18*
U.S. Cl. 358—138 **6 Claims**

1. An image input device comprising:

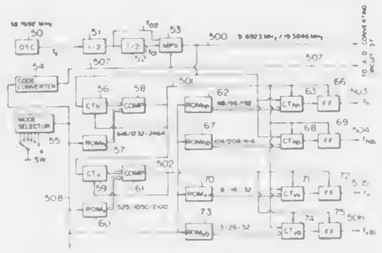
a television camera transforming an image by a line to line scanning into a time sequential video signal;

analogue to digital converting means for sampling successively said video signal and converting it into a digital signal;

image storing means for storing said digital signal;

mode specifying means for generating a mode specifying signal for selecting one of a plurality of sorts of operational modes of said television camera; and

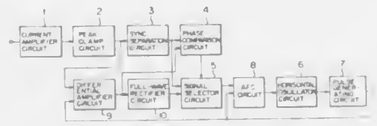
control means including an oscillator generating a main clock; dividing means forming a plurality of sorts of sampling clocks by dividing the main clock coming from said oscillator; selecting means for selecting one of said plurality of sorts of sampling clocks by said mode specifying means to give it to said analogue to digital converting means; and synchronization signal forming means for forming synchronization signals determining horizontal and vertical scanning periods as well as a blanking period in the scanning by counting the sampling clocks thus selected.



4,942,469
PICTURE DISPLAY APPARATUS

Toshio Kanai, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 23, 1989, Ser. No. 299,479
Claims priority, application Japan, Jan. 28, 1988, 63-18027
Int. Cl.[5] H04N *5/08*
U.S. Cl. 358—153 **2 Claims**



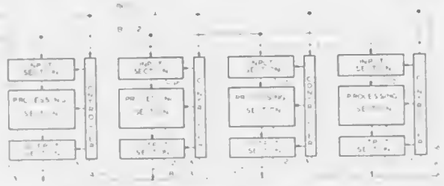
2. A picture display apparatus comprising:

a peak clamp circuit for clamping one of negative and positive peak of an input composite picture signal, a first sync separation circuit for generating a first horizontal synchronizing pulse signal when said composite picture signal clamped by said peak clamp circuit has a signal level which exceeds a predetermined level, a pulse generating circuit for receiving a horizontal synchronizing signal to generate a pulse signal of a given pulse width, a second sync separation circuit for receiving said clamped composite picture signal and the output pulse signal from said pulse generating circuit to extract a second horizontal synchronizing pulse signal from said clamped composite picture signal during the time of occurrence of a pulse in said output pulse signal, and a signal selector circuit for outputting said second horizontal synchornizing signal when said first and second horizontal synchronizing pulse signals are in phase.

4,942,470
REAL TIME PROCESSOR FOR VIDEO SIGNALS

Takao Nishitani, and Ichiro Tamitani, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 135,528, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 756,027, Jul. 17, 1985, abandoned. This application Jul. 5, 1989, Ser. No. 376,901
Claims priority, application Japan, Jul. 20, 1984, 59-150593; Oct. 30, 1984, 59-228625; Nov. 7, 1984, 59-234545; Nov. 20, 1984, 59-245324
Int. Cl.[5] H04N *5/14*
U.S. Cl. 358--160 **9 Claims**



1. A real time video signal processor for processing video signals such as television signals, said video signals having successive frames, each of said frames comprising a plurality of blocks of video signals, said processor comprising:

a plurality of unit processors, a signal line for supplying a synchronization signal indicating a beginning of the input frame to each of said plurality of unit processors, and a data bus for supplying said video signals to said plurality of unit processors, each of said unit processors comprising:

an input section for receiving said frames and storing a corresponding predetermined one of said plurality of blocks of video signals constituting part of an input one of said frames in response to a predetermined one of a first plurality of position signals indicating the position of said corresponding predetermined one of the plurality of blocks of video signals in the input frame,

a processing section for processing said predetermined one of the blocks of video signals stored in the input section to produce a processed block of video signals, and

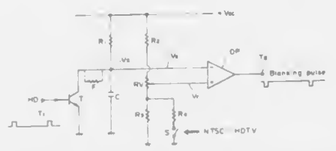
an output section for storing the processed block of video signals and outputting the processed block of video signals in response to a predetermined one of a second plurality of position signals indicating the position of the processed block of video signals in an output frame of video signals; and

a control section for supplying, in response to said synchronization signal, the predetermined one of said first and second plurality of position signals.

4,942,471
BLANKING CIRCUIT FOR TELEVISION RECEIVER

Takashi Chikuma, Kanagawa, and Ichiro Tsutsui, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1989, Ser. No. 385,452
Claims priority, application Japan, Aug. 10, 1988, 63-198094
Int. Cl.[5] H04N *3/24*
U.S. Cl. 358—165 **12 Claims**



1. A blanking circuit for use in a video signal processing circuit of a television receiver for receiving signals according to at least two different broadcast systems having known different numbers of scan lines, respectively comprising:

means for generating a sawtooth waveform signal by resetting a ramp signal periodically with pulses at a horizontal scanning frequency;

means for generating a reference voltage;

means for comparing said sawtooth signal with said reference voltage;

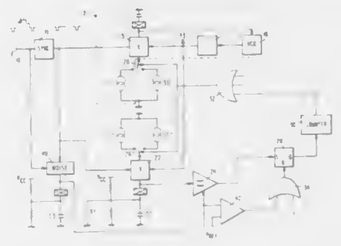
means for selectively changing the relative level of said reference voltage and said sawtooth signal in response to the number of scan lines of the broadcasting system of the received video signal; and

means for supplying the output of said comparing means as a blanking pulse to the video signal processing circuit.

4,942,472
DETECTION CIRCUIT FOR A VIDEO TAPE RECORDER SIGNAL

Michel Imbert, Seyssins, and Jean-Marc Merval, Saint Egreve, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Dec. 6, 1988, Ser. No. 284,311
Claims priority, application France, Jan. 4, 1988, 88 00168
Int. Cl.[5] H04N *5/04*
U.S. Cl. 358—188 **15 Claims**



1. A circuit for recognizing a signal from a video tape recorder (VTR) supplied to a television set input wherein said signal is selectively supplied from either said VTR or from an off-the-air received TV signal, said input being connected to a line synchronization signal separator (**11**) for detecting a line synchronization signal from said signal and supplying said line synchronization signal to a phase locked loop (PLL) (**12**), comprising a first phase comparator (**15**) and a voltage controlled oscillator (**16**), designed for regenerating said line synchronization signal supplied by said synchronization signal separator (**11**), said phase locked loop having a first time constant (**11**, C1) corresponding to said-off-the-air received TV signal input, further comprising:

means (**20**) for switching the PLL to operate using a second time constant (**311**, C1) which is shorter than the first time constant;

a second phase comparator (**22**) for comparing the phases of signals at input and output terminals of the PLL, said second phase comparator having a third time constant (I2, C2) which is shorter than said first and second time constants; and

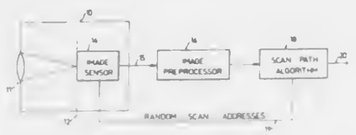
a threshold comparator (**24**) supplying a control signal when the output of the second phase comparator is outside predetermined limits, said switchig means being responsive to said control signal.

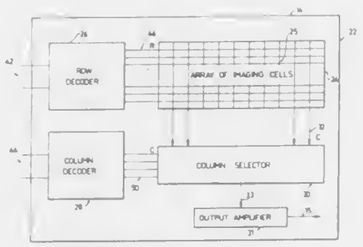
4,942,473

INTELLIGENT SCAN IMAGE SENSOR

Yehoshua Y. Zeevi, Haifa; Ran G. Ar, Kiryat Bialik, and Oliver Hilsenrath, Haifa, all of Israel, assignors to Technion Research & Development Foundation, Echaion City, Israel

Filed Jun. 30, 1988, Ser. No. 213,596
Claims priority, application Israel, Jul. 16, 1987, 83213
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.26 20 Claims





1. A intelligent scan image sensor comprising:
a two-dimensional solid-state array of addressable imaging cell means arranged for exposure to an image, each cell means comprising a photosensitive diode and a sample-and-hold unit, said diode accumulating an electrical quantity having a value in relation to the image light intensity falling thereupon during successive integration periods, said sample and hold unit repeatedly sampling and storing said accumulated quantities as analog video data values at the end of each of said successive integration periods;
row and column selector switch means each respectively associated with one of said two array dimensions; and
video output amplifier means operative with said selector switch means for providing said video data values in random access fashion during a readout operation,
said video data values being selectably gated onto a single output bus of said array by said row and column selector switch means, said single output bus feeding said video output amplifier means wherein said video data values are accessible in said readout operation independent of said repeated sampling operation.

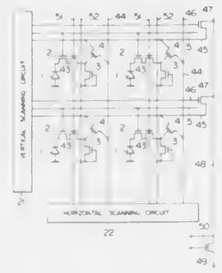
4,942,474

SOLID-STATE IMAGING DEVICE HAVING PHOTO-ELECTRIC CONVERSION ELEMENTS AND OTHER CIRCUIT ELEMENTS ARRANGED TO PROVIDE IMPROVED PHOTO-SENSITIVITY

Hajime Akimoto, Hachioji; Shinya Ohba, Kanagawa, and Toshifumi Ozaki, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,220
Claims priority, application Japan, Dec. 11, 1987, 62-311910; Mar. 25, 1988, 63-69371
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.11 30 Claims

1. A solid-state imaging device comprising:
a plurality of photoelectric conversion elements arranged so as to form a two-dimensional matrix, for storing signal charges corresponding to incident light;
a first signal line for transferring the signal charges of photoelectric conversion elements in a predetermined column, in a column direction;
first switch means for transferring the signal charge stored in one of the photoelectric conversion elements to the first signal line, the first switch means stored in the one photoelectric conversion element into an amplified signal which is either a current signal or a voltage signal and for delivering the amplified signal to the first signal line, selection/-switch means for selecting a predetermined one of the photoelectric conversion elements in the predetermined column to supply the signal charge of the selected photoelectric conversion element to the input part of the amplifier means, and reset means for resetting the electric charge in the input part of the amplifier means;



a second signal line for transferring the signal charge which is supplied from the first signal line, to an output terminal;
second switch means for transferring the signal charge on the first signal line to the second signal line, the second switch means being made up of a plurality of storage means for storing the output charge of the amplifier means at a time the electric charge in the input part of the amplifier means is reset by the reset means and for storing the output charge of the amplifier means at a time the signal charge of the photoelectric conversion element is applied to the amplifier means, and transfer/switch means for transferring the output charges which are stored in plural storage means, successively to the second signal line; and
first and second scanning means for scanning each of the first and second switch means in a predetermined order.

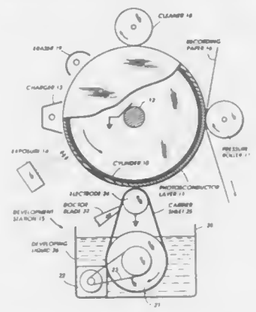
4,942,475

LIQUID DEVELOPMENT APPARATUS WITH PERFORATED LIQUID CARRIER SHEET

Ryosuke Uematsu; Kazunori Shindo; Yoshinobu Kariya, and Shinro Oikawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 17, 1989, Ser. No. 324,863
Claims priority, application Japan, Mar. 17, 1988, 63-65129; Mar. 17, 1988, 63-65133; Mar. 17, 1988, 63-65134; Jul. 21, 1988, 63-183026; Aug. 22, 1988, 63-209232; Sep. 21, 1988, 63-237750
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 12 Claims

1. An apparatus for developing a latent electrotatic images, comprising:
a member having a smooth surface capable of having an electrostatically charged image applied thereto and capable of being driven so that charged image moves past a development zone;
means for applying a latent electrostatic charge image to said surface of said member;
a carrier sheet perforated with a multitude of bores, a portion of said carrier sheet being located in said development zone; and
means for applying a layer of developing liquid under gradually increasing pressure to a first surface of said carrier sheet so that the applied liquid squeezes through the bores of said portion to and beyond a second, opposite surface of said carrier sheet, said liquid applying means being biased at a potential opposite to said latent electrostatically charged image.

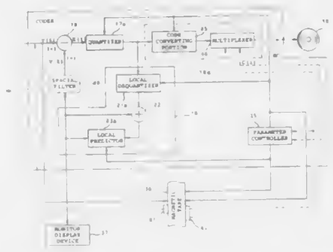


4,942,476

RECORDING SYSTEM FOR RECORDING ON A ROM IMAGE SIGNAL INFORMATION WHICH HAS BEEN SUBJECTED TO EFFICIENT REDUNDANCY CODING

Toshio Koga; Junichi Ohki; Mutsumi Ohta, all of Tokyo, and Hideto Kunihiro, Osaka, all of Japan, assignors to NEC Corporation and NEC Home Electronics Ltd., both of, Japan

Filed May 2, 1988, Ser. No. 189,138
Claims priority, application Japan, Apr. 30, 1987, 62-108351
Int. Cl.[5] H04N *5/76, 5/92*
U.S. Cl. 358—335 4 Claims



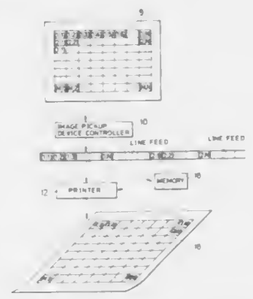
1. A recording method for recording a sequence of recording signals on a main recording medium in response to a sequence of image signals by carrying out redundancy reduction coding of said image signals with reference to a parameter, said recording method comprising the steps of:
adaptively changing said parameter so that said parameter is rendered as a controlled parameter and performing a redundancy reduction coding of said image signals in accordance with said controlled parameter and thereby producing a sequence of coded signals;
decoding said coded signals to obtain a sequence of decoded signals;
visually displaying said decoded signals on a display device to produce a sequence of images resulting from said decoded signals;
repeating said changing step, said decoding step, and said displaying step until an optimum sequence of images is obtained and designating the controlled parameter corresponding to said optimum sequence of images as an optimum parameter;
recording said optimum parameter on an additional recording medium together with said image signals corresponding thereto;
performing redundancy reduction coding of the image signals read out of said additional recording medium in accordance with said optimum parameter to produce a sequence of optimum coded signals; and
writing said sequence of optimum coded signals together with said optimum parameter into said main recording medium.

4,942,477

IMAGE PICKUP PRINTING SYSTEM USING NON-NTSC SIGNALS

Shinya Nakamura, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1988, Ser. No. 269,706
Claims priority, application Japan, Nov. 10, 1987, 62-283697
Int. Cl.[5] H04N *1/40, 1/46*
U.S. Cl. 358—401 2 Claims



1. An image pickup printing system, comprising:
an optical system for focusing an image of an object;
means for converting said image to a plurality of electrical signals being disposed at the focal position of said optical system, said means for converting including a matrix of regions with each region producing one of said plurality of electrical signals;
means for controlling the transfer of said plurality of electrical signals to produce a serial signal formed of serially arranged signals corresponding to rows of said regions with the rows being separated by at least one signal indicating line feed, said serial signal having a format for directly driving a printing means;
memory means connected to said means for controlling for receiving and storing said serial signal;
printing means connected to said memory means and said means for controlling for printing said image wherein the serial signal is selectively received from said memory means and from said means for controlling.

4,942,478
RECORDING APPARATUS

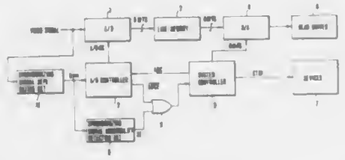
Yoichi Yamagishi, Tokyo, and Makoto Takayama, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 248,317, Sep. 19, 1988, abandoned, which is a continuation of Ser. No. 141,510, Jan. 7, 1988, abandoned, which is a continuation of Ser. No. 907,843, Sep. 16, 1986, abandoned. This application Jun. 27, 1989, Ser. No. 371,994

Claims priority, application Japan, Sep. 19, 1985, 60-205424

Int. Cl.[5] H04N *1/36*

U.S. Cl. 358—409 **21 Claims**



1. A recording apparatus comprising:
(a) detecting means for detecting an abnormality of a synchronizing signal included in an incoming signal;
(b) processing means for processing said incoming signal into a print recording signal;
(c) print recording means for carrying out print recording in accordance with said print recording signal;
(d) inhibiting means for inhibiting said print recording signal from being supplied to said print recording means when the abnormality of said synchronizing signal is detected; and
(e) means for instructing discharge of the recording medium following the prohibiting operation.

4,942,479
IMAGE INFORMATION PROCESSING APPARATUS

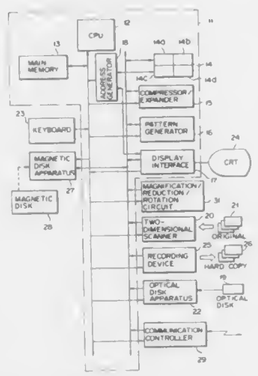
Masayuki Kanno, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 62;495, Jun. 15, 1987, abandoned. This application Apr. 13, 1989, Ser. No. 338,340

Claims priority, application Japan, Jun. 17, 1986, 61-140915

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—448 **22 Claims**



1. An image information processing apparatus, comprising:
means for obtaining information of a first pixel density by scanning an image;
image information storing means for storing the obtained image information together with pixel density data representing the first pixel density;
means for retrieving the stored image information together with the pixel density data;
means for outputting the retrieved image information, said outputting means having a second pixel density;
conversion factor storing means for storing pixel density conversion factors in both a horizontal and a vertical direction of a view image outputted from said outputting means;
means for reading pixel density conversion factors in both the horizontal and the vertical directions corresponding to the first pixel density of the image information of said image information storing means and the second pixel density of said outputting means from said conversion factor storing means; and
means for converting the first pixel density of the image information in both the horizontal and the vertical directions to the second pixel density of said outputting means according to the pixel density conversion factors read out from said conversion factor storing means.

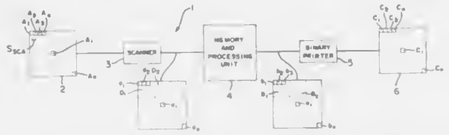
4,942,480
REPRODUCTION OF HALFTONE ORIGINAL WITH MOIRE REDUCTION AND TONE ADJUSTMENT

Joseph S. Shu, White Plains, N.Y., assignor to Nynex Corporation, White Plains, N.Y.

Filed Sep. 6, 1988, Ser. No. 241,073

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—455 **42 Claims**



1. A method for use in creating a reproduction of an original image containing screened artwork formed by halftone dots having a predetermined screen frequency and a predetermined halftone dot spacing in a screen direction, the method comprising the steps of:
scanning the original in a scan direction on an element by element basis to form a digital signal for each element indicative of the gray level of the element, said scanning being at a predetermined scanning frequency having a predetemined relationship with respect to the predetermined screen frequency;
storing the digital signals;
and processing the digital signals to develop corresponding processed signals comprising: providing a two-dimensional processing window for processing arrays of said digital signals corresponding to different, non-overlapping arrays of said elements; and for each array of digital signals being processed by said window (i) forming the processed array of signals such that each processed signal is indicative of a first or a second gray level and such that the average of the gray levels signified by the processed array of signals approximates the average of the gray levels signified by the array of digital signals.

4,942,481
CONTACT-TYPE IMAGE SENSOR

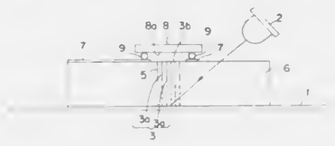
Atsushi Yoshinouchi, Ohjichohon; Masataka Itoh, Nara; Shuhei Tsuchimoto, Nara; Keiji Tarui, Nara, and Satoshi Nishigaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1988, Ser. No. 217,681

Claims priority, application Japan, Jul. 17, 1987, 62-179635; Sep. 30, 1987, 62-247661; Dec. 26, 1987, 62-334622; Dec. 26, 1987, 62-199094

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—471 **2 Claims**



1. A contact-type image sensor comprising a light source that illuminates the manuscript to be read; photodetectors that convert the light reflected by the manuscript into an electrical signal; a substrate that is disposed between said photodetectors and said manuscript; an optical fiber array that is constituted by a bundle of optical fibers that are buried in said substrate, said optical fiber array introducing said reflected light from said manuscript into the light-receiving surfaces of said photodetectors; and a light-absorbing substance that is disposed on the outer surface of each of said optical fibers, wherein said light-absorbing substance is disposed on the outer surface of each of the optical fibers, except for the region with a given length from the end of said optical fiber array that faces said manuscript.

4,942,482
AUTOMATIC PAGE-TURNING DEVICE

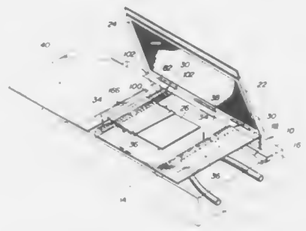
Koichiro Kakinuma, Tokyo, and Minoru Watanabe, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 31, 1986, Ser. No. 891,465

Claims priority, application Japan, Aug. 9, 1985, 60-17493; Feb. 20, 1986, 61-36093

Int. Cl.[5] H04H *1/04*

U.S. Cl. 358—474 **60 Claims**



1. An automatic page-turning device for turning pages of a book or the like as placed in an opened condition to expose a first page to be turned at one side of a spine and a second page in a stack of turned pages at the opposite side of the spine, comprising:
carrier means opposing an outer edge portion of said first page in a first position and being movable to a second position in which said carrier means opposes an outer edge portion of said second page;
means for applying a vacuum to said carrier means in said first position for causing adherence of said first page thereto and the transport of said first page therewith toward said second position;
means associated with said carrier means for isolating said first page from the effect of said vacuum during the travel of said carrier means from said first position toward said second position and thereby releasing said first page from said carrier means;
page guiding means cooperative with said carrier means and movable therewith for receiving said first page as released from said carrier means and carrying said first page at least until said carrier means passes said spine of the book or the like; and
means for withdrawing said first page from said guiding means and stacking the same against said second page during final movement of said carrier means to said second position.

4,942,483
MULTI-CHIP TYPE CONTACT IMAGE SENSOR

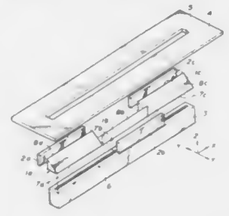
Yukio Kinoshita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1988, Ser. No. 287,141

Claims priority, application Japan, Jan. 14, 1987, 63-4943

Int. Cl.[5] H04H *1/04*

U.S. Cl. 358—484 **4 Claims**



1. A contact image sensor for reading out data from an original document along a straight line, said sensor comprising:
an optical block having a first surface upon which light is incident from the original document and a plurality of exit surfaces through which the light emerges from the block, said exit surfaces being in spaced-apart relation to each other and the block being constructed with light path dividing means for deviating different rays of the light in respectively different directions so that said different rays are respectively directed to different ones of said exit surfaces, and
a plurality of line sensors separately associated with said exit surfaces.

4,942,484
FLOPPY DISK DRIVE WITH CLOSED LOOP SERVOED HIGH DENSITY READ/WRITE GAP, AND WITH LOW DENSITY READ/WRITE GAP FOR THE WRITE UPDATING OF STANDARD OPEN LOOP FORMATTED MEDIUM

Anil K. Nigam, Cupertino, Calif., assignor to Fujitsu America, Inc., San Jose, Calif.

Division of Ser. No. 130,104, Dec. 7, 1987. This application Mar. 30, 1989, Ser. No. 330,903

Int. Cl.[5] G11B *5/09*

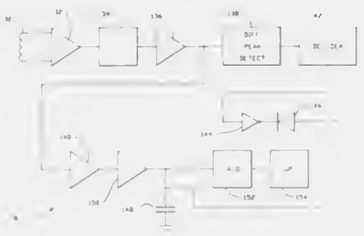
U.S. Cl. 360—46 **8 Claims**

1. An electronic circuit for detecting a servo pattern on a disc for use in a disc drive and for locating a single read/write head core relative to a data track, wherein the servo pattern includes plural patterns of alignment transitions for defining data tracks and plural different patterns of timing decode transitions, wherein each of the different patterns of timing

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decode transitions has a different time interval between itself and one of the patterns of alignment transitions, said electronic circuit comprising:

first means, using the single read/write head core and the different patterns of timing decode transitions, for detecting and decoding the peaks of the transitions of the plural different patterns of timing decode transitions;



second means, using the single read/write head core and the alignment transitions, for detecting and sampling the amplitude of peaks of transitions of the plural patterns of alignment transitions in order to locate data tracks; and

third means, responsive to said first means, for determining when the second means can begin to detect and sample the amplitude of peaks of transitions of the plural patterns of alignment transitions.

4,942,485

APPARATUS CAPABLE OF DATA REPRODUCTION FROM DIGITAL TAPE CASSETTES OR LIKE STORAGE MEDIA EMPLOYING TWO DIFFERENT RECORDING METHODS

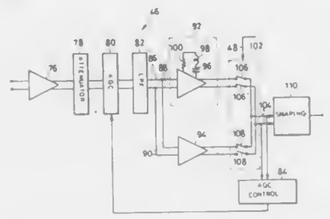
Shinji Umehara, Kodaira, and Yukinobu Nakamura, Tanashi, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Aug. 4, 1988, Ser. No. 228,030

Claims priority, application Japan, Aug. 21, 1987, 62-207864

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—46 4 Claims



1. An apparatus for data transfer with first and second tape assemblies on which data are recorded by different methods and which are interchangeably loaded in and unloaded from the apparatus, wherein the improvement comprises:

(a) a transducer for data transfer with the loaded first or second tape assembly, the transducer producing an electrical data signal representative of the data recovered from the first or second tape assembly;

(b) am amplifier connected to the transducer for amplifying the data signal;

(c) a serial connection of common circuit elements connected to the amplifier for processing the amplified data signal representative of the data recovered from both the first and the second tape assemblies, the common circuit elements comprising an attenuator, an automatic gain control, a low pass filter and a shaping circuit which are connected in that order to the amplifier;

(d) a first exclusive circuit element for exclusive use in processing the amplified data signal representative of the data recovered from the first tape assembly;

(e) a second exclusive circuit element for exclusive use in processing the amplified data signal representative of the data recovered from the second tape assembly, the first and second exclusive circuit elements being connected in parallel with each other between the low pass filter and the shaping circuit;

(f) discriminating means for the identifying the loaded tape assembly as the first or the second; and

(g) a selector circuit connected to the discriminating means and actuated thereby for connecting the first exclusive circuit element into serial relation with the common circuit elements when the loaded tape assembly is identified as the first, and for connecting the second circuit element into serial relation with the common circuit elements when the loaded tape assembly is identified as the second, the selector circuit comprising:

(i) first switch means connected between the first exclusive circuit element and the shaping circuit; and

(ii) second switch means connected between the second exclusive circuit element and the shaping circuit, the first and second switch means being selectively actuated by the discriminating means.

4,942,486

RECORDING DISK HAVING READ-ONLY RECORDING AREA AND WRITABLE RECORDING AREA AND A DRIVING APPARATUS THEREFOR

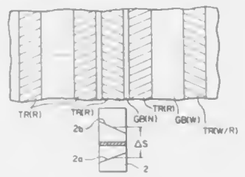
Ken Kutaragi, Kanagawa; Shoji Tanaka, Tokyo, and Yasushi Fujinami, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 30, 1988, Ser. No. 214,121

Claims priority, application Japan, Jul. 1, 1987, 62-164183

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—48 3 Claims



1. A recording disk comprising:

a magnetic recording medium forming the recording disk;

a read-only track area including a plurality of read-only tracks each separated by read-only guard band;

a writable track area including a plurality of writable tracks, each separated by a write guard band; and

an additional write guard band between a last read-only track in said read-only track area and an adjacent writable track in said writable track area, all of said write guard bands having a selected width wider than said read-only guard bands for preventing erroneous writing into said read-only track area during writing of data into said writable track area.

4,942,487

APPARATUS FOR RECORDING/REPRODUCING A DIGITAL SIGNAL AT VARIABLE SPEEDS

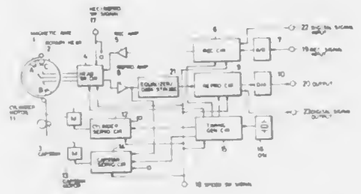
Takaharu Noguchi, and Takao Arai, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1988, Ser. No. 157,795

Claims priority, application Japan, Mar. 13, 1987, 62-56768

Int. Cl.[5] G11B *15/473*

U.S. Cl. 360—77.13 3 Claims



1. An apparatus for recording/reproducing a digital signal on and from a magnetic tape at variable speeds including a normal speed, the apparatus comprising a rotary head including a cylinder having at least two magnetic heads means provided thereon, tracking control means including an automatic track finding circuit for effecting tracking control at the time of reproduction in accordance with tracking signals recorded for each track in a predetermined pattern and at predetermined positions on the magnetic tape and for generating a tracking error signal detected for each track, a revolution speed of a capstan for feeding the magnetic tape being controlled in accordance therewith, feed speed control means for controlling the feed speed of the magnetic tape to be one of N-times normal speed and 1/N-times normal speed at the time of recording/reproduction at one of N-times normal speed and 1/N-times normal speed, where N is an integer greater than one, cylinder control circuit means for controlling the speed of revolution of the cylinder of the rotary head to be one of N-times normal speed and 1/N-times normal speed at the time of recording at one of N-times normal speed and 1/N-times normal speed and for controlling the speed of revolution of the cylinder to be a constant speed at the time of reproduction independently of the operation speed at reproduction, and timing generator circuit means for controlling a processing speed of a recording signal to be one of N-times normal speed and 1/N-times normal speed at the time of recording at one of N-times normal speed and 1/N-times normal speed and for controlling the processing speed of a reproducing signal to be a constant at the time of reproduction independently of the operation speed at reproduction.

4,942,488

VIDEO THEATER SYSTEM

Akihisa Osawa, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

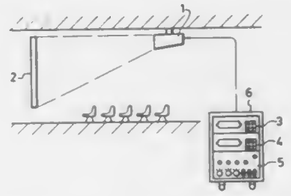
Filed Nov. 14, 1983, Ser. No. 551,022

Claims priority, application Japan, Nov. 25, 1982, 57-206763; Nov. 26, 1982, 57-208345; Nov. 30, 1982, 57-209878

Int. Cl.[5] G03B *31/00*

U.S. Cl. 360—80 8 Claims

1. A video theater system, comprising: a video projector; a projector-screen; a video cassette player; a video cassette containing a video tape for playback in the cassette player; a theater controller means for controlling operation of the theater system; and said video tape having a video program and recorded information codes recorded on a plurality of slant tracks in the video, said controller means including information code reader means for generating code signals based on said recorded information codes recorded on said video tracks, wherein said code signals recorded on slant tracks include



command signals to be supplied to said video projector useful in controlling a projection size thereof.

4,942,489

THIN-FILM MAGNETIC HEAD

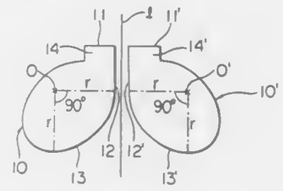
Ko Yoneda, Kawasaki; Yasushi Toda; Tooru Matsuda, both of Yokohama; Kenji Makino, and Kenji Nagata, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 37,070, Apr. 13, 1987, which is a continuation of Ser. No. 641,738, Aug. 17, 1984, abandoned. This application Jan. 5, 1988, Ser. No. 140,786

Claims priority, application Japan, Aug. 24, 1983, 58-153171; Nov. 10, 1983, 58-209827; Dec. 22, 1983, 58-240950

Int. Cl.[5] G11B *5/28*

U.S. Cl. 360—121 4 Claims



1. A thin film magnetic head for simultaneously tracing two tracks, comprising:

a substrate; and

a pair of yokes each being disposed on said substrate and formed by a magnetic thin film, each yoke having a magnetic pole portion and an expanded portion thereof,

wherein each magnetic pole portion is spaced from said substrate to form a magnetic gap disposed between said substrate and each magnetic pole portion, and

wherein the cross sectional area of each expanded portion taken through a plane perpendicular to the top surface of said expanded portion is larger than the cross sectional area of said magnetic pole portion taken through a plane perpendicular to the top surface of said magnetic pole portion, and wherein the distance between said pair of expanded portions increases as the distance from said magnetic pole portions increases.

4,942,490

THIN LAYER MAGNETIC READ/WRITE HEAD

Jean-Claude Lehureau, Sainte Genevieve des Bois, France, assignor to Thomson-CSF, Paris, France

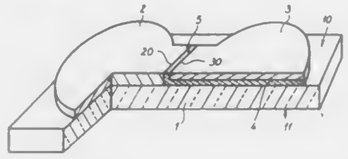
PCT No. PCT/FR87/00424, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO88/03307, PCT Pub. Date May 5, 1988

PCT Filed Oct. 28, 1987, Ser. No. 221,455

Claims priority, application France, Oct. 28, 1986, 8614974

Int. Cl.[5] G11B *5/12*

U.S. Cl. 360—126 **4 Claims**



1. A thin layer magnetic write/read head, comprising:

a substrate having a main side;

a first magnetic circuit pole located on said main side and having a first flank portion forming a first angle with said main side;

a second magnetic circuit pole located on said main side with a layer of non-magnetic material located between said second pole and said main side wherein said second pole further comprises a second flank portion which second flank portion forms a second angle with said main side whereby said second angle is supplementary to said first angle to thereby define a gap of substantially constant thickness between said first and second flank portions, said gap containing non-magnetic material.

4,942,491

MAGNETIC HEAD SUPPORTING DEVICE

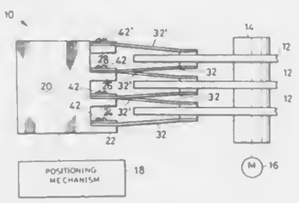
Tsuyoshi Osawa, Tanashi, and Yasuo Yagami, Tokyo, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Aug. 31, 1988, Ser. No. 238,828

Claims priority, application Japan, Sep. 7, 1987, 62-136535

Int. Cl.[5] G11B *5/48*

U.S. Cl. 360—104 **2 Claims**



1. In a data transfer apparatus having a stacked array of double sided magnetic disks rotatable about a common axis, a head supporting device which can be easily and accurately assembled by a single tool such as a screwdriver, the head supporting device comprising:

(a) a unitary support structure having a row of ledges projecting therefrom, the ledges being spaced from each other in a direction parallel to the axis of rotation of the magnetic disk;

(b) there being first and second rows of mounting holes formed in the ledges, each row of mounting holes being offset from one another and being aligned in a direction parallel to the axis of rotation of the magnetic disks;

(c) a plurality of fastener elements;

(d) a first set of head/arm assemblies each including a first arm having a proximal end fastened to one ledge on the support structure by one fastener element received in one of the first row of mounting holes, each first arm carrying on a distal end thereof a first magnetic head for data transfer with a first side of one magnetic disk; and

(e) a second set of head/arm assemblies each including a second arm having a proximal end fastened to one ledge on the support structure by one fastener element received in one of the second row of mounting holes, each second arm carrying on a distal end thereof a second magnetic head for data transfer with a second side of one magnetic disk;

(f) whereby each of the first and second set of head/arm assemblies can be successively fastened to the ledges on the support structure with the fastener elements by inserting an associated tool into and through the aligned mounting holes in the other ledges.

4,942,492

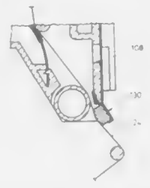
WIPING DEVICE FOR MAGNETIC TAPE CASSETTES

Ay C. Che, No. 1-4, Alley 44, Lane 149, Kuo Ching Rd., Pan-Chiao, Taipei Hsien, Pan-Chiao, Taiwan

Continuation-in-part of Ser. No. 35,902, Apr. 8, 1987, abandoned. This application Dec. 13, 1988, Ser. No. 283,630

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—132 **12 Claims**



1. A wiping device for a magnetic tape cassette, which cassette is adapted for inserting into a magnetic recording and reproducing apparatus and for removing from said apparatus, and includes a generally rectangular box-like housing formed by an upper case section and a mating lower case section disposed in opposing relation and secured together to define a generally enclosed chamber, a supply reel and a take-up reel supported within said chamber between said case sections for rotation on parallel spaced axes, and a magnetic tape having a magnetizable surface, said magnetic tape being wound on said supply reel and having a leading end portion connected to said take-up reel, said device comprising:

an elastic main body, securing means on said main body copperable with means on said housing so that said main body can be mounted to and removed from said housing of said magnetic tape cassette from the outside of said housing without dismantling said secured upper and lower case sections; and

wiping means supported by said main body and having a curved operation surface, when said main body is mounted to said housing, and said magnetic tape is arranged to an operation position by said apparatus, said magnetizable surface of said magnetic tape contacting an effective area of said curved operation surface, and when said magnetic tape is in said operation position and is moved by said apparatus, said magnetic tape exerting an urging force to said wiping means, and said elastic main body urging said wiping means to exert a predetermined urging pressure to said magnetic tape against said urging force, so that said effective area of said curved operation surface can substantially snugly contact said magnetizable surface.

4,942,493

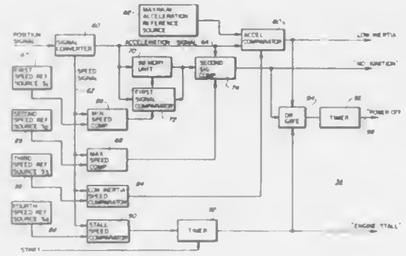
METHOD AND APPARATUS FOR DETECTING PRIME MOVER START MALFUNCTION

Gregory I. Rozman, and Paul G. Baits, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 2, 1988, Ser. No. 265,953

Int. Cl.[5] H02H *5/00*

U.S. Cl. 361—23 **14 Claims**



7. A method of detecting when a motor is disconnected from a load, comprising the steps of:

sensing speed and acceleration of the motor;

comparing the acceleration of the motor above a certain speed to a maximum acceleration; and

developing a signal to indicate that the motor is disconnected from the load when the acceleration of the, motor above the certain speed is greater than the maximum acceleration.

4,942,494

SHORT-CIRCUIT PROTECTOR FOR A HALF-CONTROLLED THREE-PHASE BRIDGE

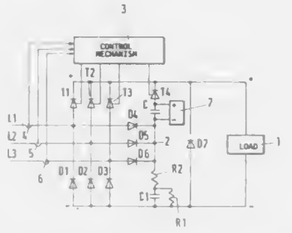
Jan Fabianowski, Küsterkamp 3, D-4600 Dortmund; Robert Ibach, Kleeweg 9, D-5840 Schwerte, and Georg Gierse, Am Herrenbusch 6, D-5810 Witten, all of Fed. Rep. of Germany

Filed Oct. 6, 1989, Ser. No. 418,397

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1988, 3834412

Int. Cl.[5] H02H *3/08*

U.S. Cl. 361—93 **2 Claims**



1. Short-circuit protector for a three-phase bridge, comprising a half-controlled three-phase bridge having bridge thyristors in a cathode group, diodes, and a common output, a free-wheeling diode in a load circuit, said free-wheeling diode being connected in parallel with said half-controlled three-phase bridge, a control mechanism for driving said bridge thyristors, and a plurality of additional diodes having cathodes and supplementing said half-controlled three-phase bridge to form a complete rectifier bridge, a series-circuit of a resistor and a capacitor with a parallel discharge resistor being connected between said common output and a common negative potential, a further capacitor connected to the cathodes of said additional diodes, an external direct-voltage source for charging said further capacitor, and a further thyristor to be driven by said control mechanism, said further thyristor being connected in series with said further capacitor and having a cathode connected to the cathodes of said bridge thyristors.

4,942,495

ELECTROSTATIC PROTECTION DEVICE FOR ELECTRONIC CARDS

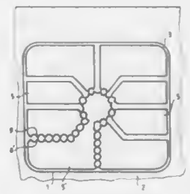
Philippe Peres, Gardanne, and Vincent Deveaud, Trets, both of France, assignors to Gemplus Card International, Aix En Provence, France

Filed Oct. 21, 1988, Ser. No. 261,176

Claims priority, application France, Oct. 23, 1987, 87 14669

Int. Cl.[5] H05F *3/02*

U.S. Cl. 361—220 **2 Claims**



1. An electronic card having a module comprising

an insulating support (3) carrying, on one of its faces, a network of conducting tracks (4) and, on the other face, electrical contacts (5—5') accessible from the outside placed so that each conducting track (4) is connected to a contact (5) and so that each contact (5) is close to a contact (5') at a reference potential:

at least one integrated circuit (6), the input and output terminals of which (7) are connected to the network of conducting tracks (4), the contact at the reference potential (5') bears, on its periphery, one or more metal protuberances (8') facing other metal protuberances (8) borne by the other contacts (5) so as to protect the integrated circuit or circuits against electrostatic discharges; the distance between two facing protuberances (8—8') is smaller than the nominal distance between the contact carried to the reference potential (5') and the other contacts (5); the contacts (5 and 5') have several of said protuberances (8 and 8'), said protuberances having ends facing each other and the distance between the facing ends of said protuberances (8 and 8') is less than 100 micrometers; and wherein said reference potential contact (5') has a portion with said plurality of protuberances which is centrally located, and the electrical contacts (5) are located with their protuberances facing the plurality of protuberances surrounding said centrally located portion.

4,942,496

CERAMIC CAPACITOR AND MANUFACTURING METHOD THEREOF

Hajime Arakawa; Osamu Yamaoka; Kazuyuki Kubota; Motoaki Kakio; Yoshimasa Azuma, and Mitsuru Nagashima, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 28, 1989, Ser. No. 316,653

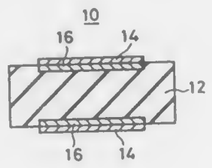
Claims priority, application Japan, Feb. 29, 1988, 63-47765

Int. Cl.[5] H01G *4/10, 7/00*

U.S. Cl. 361—321 **11 Claims**

1. A ceramic capacitor comprising a dielectric ceramic element formed of at least a metal oxide as a main ingredient and electrodes formed on the surface of said dielectric ceramic

element, the capacitor having reduced layers underneath said electrodes on the surface of said dielectric ceramic element, wherein said reduced layers are formed by reducing the surface of said dielectric ceramic element by means of applying and subsequently baking on the surface of said dielectric ceramic element an electrode material with a metal having a stronger oxidizing tendency than the mentioned metal oxide.



4,942,497

COOLING STRUCTURE FOR HEAT GENERATING ELECTRONIC COMPONENTS MOUNTED ON A SUBSTRATE

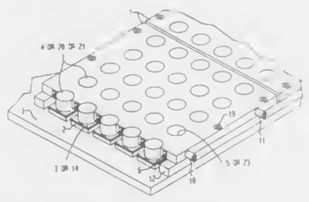
Shinji Mine, and Terumi Shimonishi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 21, 1988, Ser. No. 222,818

Claims priority, application Japan, Jul. 24, 1987, 62-185182; Jul. 29, 1987, 62-189201; Aug. 19, 1987, 62-204168; Oct. 15, 1987, 62-157800

Int. Cl.[5] H05K 7/20

U.S. Cl. 361—385 7 Claims



1. A cooling structure comprising:

heat generating electronic components mounted on a substrate;

a cold plate fixed on said substrate which is provided with cold plate through holes opposed to the respective upper surfaces of said heat generating electronic components;

flow paths formed within said cold plate for circulating a coolant;

an inlet provided on a side of said cold plate for supplying said coolant into said flow paths;

an outlet provided on a side of said cold plate for exhausting said coolant from said flow paths; and

pistons inserted through and held wi thin respective said cold plate through holes so that the lower surfaces of said pistons come into thermal contact with said upper surfaces of said heat generating electronic components.

4,942,498

FIXATION DEVICE WITH ADJUSTABLE TILTING

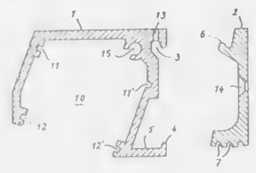
Daniel Toussaint, Spa, Belgium, assignor to Belgian Electronic Research S. A., Belgium

Filed Aug. 17, 1988, Ser. No. 233,138

Claims priority, application Belgium, Jun. 30, 1988, 8800756

Int. Cl.[5] H05K 7/20

U.S. Cl. 361—388 33 Claims



1. A device for mounting an apparatus, comprising:

a first element serving as a mounting frame for the apparatus;

a suspension element adapted for rigid attachment to a support surface;

means for rotatably connecting said first element to said suspension element; and

means for preselecting the angular position of said first element with respect to said suspension element, said preselecting means including means for holding said first element at a preselected angular position with respect to said suspension element.

4,942,499

WIRE HARNESS COUPLER INSTRUMENT PANELS

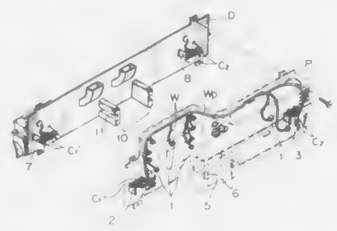
Tatsumi Shibata; Hideharu Hayashi; Yukio Muramatsu, and Masaki Yamamoto, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,672

Claims priority, application Japan, Mar. 25, 1988, 63-38426[U]

Int. Cl.[5] H02B 1/04

U.S. Cl. 361—428 5 Claims



1. A wire harness coupling unit for use on a vehicular instrument panel comprising;

a first wire harness on the vehicle body, mounted on a dashboard of said vehicle and having a plurality of connectors at terminal ends thereof;

a second wire harness mounted on an instrument panel of said vehicle and having a plurality of connectors at terminal ends thereof;

a male coupler member carrying connectors of one of said first and second wire harnesses and including a first bracket securely mounted to one of said dashboard and said instrument panel corresponding to said wire harness carried thereon, said first bracket having apertures for securely holding connectors of one of said first and second wire harnesses; and

a female coupler member carrying connectors of the other one of said first and second wire harnesses being in in face-to-face relation with said male coupler member, and including a second bracket securely mounted to the other of said dashboard and said instrument panel corresponding to said other wire harness carried thereon, said second bracket being positioned opposite said first bracket of said male coupler member for engagement therewith, further said second bracket having apertures for securely holding connectors of the other of said first and second wire harnesses,

said connectors of at least one of said first and second wire harnesses being movably fitted in said male and female coupler members, and, interengaging guide means independently provided on said dashboard and said instrument panel, aligning flexible clips on one of said first and second brackets, said clips engaging portions of the other of said first and second brackets, whereby

said male and female coupler members are engaged with each other with said instrument panel assembled onto said dashboard and thereby couple said connectors of said first wire harness with corresponding connectors of said second wire harness.

4,942,500

CAPACITOR TANTALUM SURFACE FOR USE AS A COUNTERELECTRODE DEVICE AND METHOD

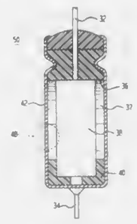
Stuart E. Libby, Bennington, Vt.; William J. Lindskog, Clarksburg, Mass., and Gilbert Green, Jr., Bennington, Vt., assignors to Tansitor Electronics, Inc., Bennington, Vt.

Continuation-in-part of Ser. No. 218,635, Jul. 13, 1988, abandoned, which is a continuation of Ser. No. 133,547, Dec. 16, 1987, Pat. No. 4,780,797. This application Dec. 12, 1988, Ser. No. 319,556

The portion of the term of this patent subsequent to Oct. 25, 2005, has been disclaimed.

Int. Cl.[5] H01G 9/00

U.S. Cl. 361—516 12 Claims



1. In an electrolytic capacitor comprising a porous tantalum anode, a liquid electrolyte, and a metal container cathode, said cathode having an inherently high effective capacitance inner tantalum surface, the improvement comprising an alloy layer formed over the tantalum surface, said alloy layer comprising tantalum and a platinum family metal.

4,942,501

SOLID ELECTROLYTE CAPACITORS AND METHODS OF MAKING THE SAME

Douglas R. MacFarlane, Elsternwick; Arthur K. Philpott, Neerim South, and John R. Tetaz, Templestowe, all of Australia, assignors to Specialised Conductives Pty. Limited, Neerim South, Australia

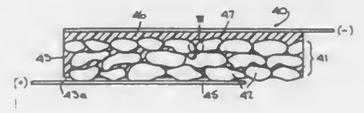
Filed Apr. 28, 1988, Ser. No. 187,239

Claims priority, application Australia, Apr. 30, 1987, PI1684

Int. Cl.[5] H01G 9/00

U.S. Cl. 361—523 73 Claims

1. A compact electrolytic capacitor including an electrically conductive anode, an electrically conductive cathode, and an electrolyte between said anode and said cathode; characterized in that said electrolyte is in the form of an ultrathin layer of a solid solution of (a) at least one ionically conducting salt selected from the group consisting of alkali metal salts, transition metal salts and ammonium salts of (b) at least one acid selected from the group consisting of monobasic, dibasic and tribasic acids other than haloid acids (c) in an ionically conducting polymer of high solvation power.



4,942,502

LIGHT PROJECTING TOY MUSICAL BOX

Michiya Ohashi, Tokyo, Japan, assignor to Tomy Company, Ltd., Toyko, Japan

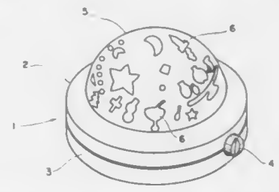
Continuation of Ser. No. 258,528, Aug. 31, 1988, Pat. No. 4,858,079. This application Jul. 18, 1989, Ser. No. 381,390

Claims priority, application Japan, Nov. 16, 1987, 62-174583; Jan. 27, 1988, 63-9094

The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] F21V 21/30; A63H 1/28

U.S. Cl. 362—35 25 Claims



1. A light projecting toy musical box comprising:

a base;

a dome movably mounted on the base and being substantially translucent;

a lamp disposed within the base and projecting light through the dome;

an acoustic mechanism, disposed within the base, for generating musical sound; and

drive means, disposed within the base, for simultaneously moving the dome and actuating the acoustic mechanism, wherein the base is made of an upper shell member and a lower shell member, and

wherein the dome includes a base portion and a flange which extends radially outwardly from the base portion, and the upper and lower shell members define an annular groove for receiving the flange and mounting the dome for rotational movement on the base.

4,942,503

GASEOUS DISCHARGE TUBE AND POWER SUPPLY ASSEMBLY

Harold W. Lyons, Killingworth, Conn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1989, Ser. No. 345,000

Int. Cl.[5] B60Q 1/52

U.S. Cl. 362—74 7 Claims

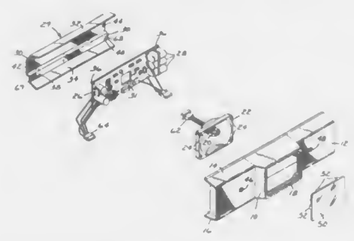
1. An assembly for mounting on a lightbar including:

an elongated U-shaped channel member having two legs and a portion which joins said legs, means for attaching said member to said lightbar, and a hollow protrusion extend-

ing from said U-shaped channel member at said portion, said hollow protrusion having an opening;

a first subassembly secured within said hollow protrusion at said opening including a gaseous discharge tube and a reflector for said gaseous discharge tube;

a second subassembly including a U-shaped support member, a circuit board having a circuitry for operation of said gaseous discharge tube removably secured to said support member, said support member removably secured to said U-shaped channel member with said circuit board positioned generally parallel to a portion of the U-shaped support member connecting two legs of the U-shaped support member.



4,942,504

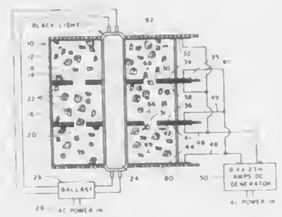
ELECTROSTATIC DISPLAY DEVICE

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Filed Feb. 6, 1990, Ser. No. 475,910

Int. Cl.[5] F21S *3/00*

U.S. Cl. 362—84 **7 Claims**



1. An electrostatic display device comprising:

a viewing chamber having at least one transparent side;

an upper electrostatic plate having an electric charge;

a lower electrostatic plate having an opposing charge from the charge of said upper electrostatic plate;

means for producing blacklight to illuminate said viewing chamber;

a plurality of electrostatically charged fluorescent particles; and

means for generating an electric current to said upper and lower electrostatic plates causing said particles to be attracted to the electrostatic plate opposite of said particles, said particles acquiring the charge of such electrostsatic plate to be then repelled and attracted to said electrostatic plate of opposing charge where said particles then change their charge to the same charge of that electrostatic plate where said particles are again repelled and attracted to the electrostatic plate of opposing charge, such process of changing charges continuing, causing the particles to move within said chamber as said particles are illuminated by said blacklight.

4,942,505

MINIATURE FLASHLIGHT

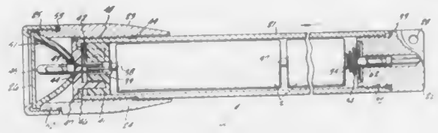
Anthony Maglica, Ontario, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 034,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application May 23, 1989, Ser. No. 356,361

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—187 **17 Claims**



16. A miniature flashlight comprising:

a lamp bulb;

a barrel for retaining a battery source of power therein, said barrel being in electrical communication with the battery source of power when said lamp bulb is energized;

means for retaining said lamp bulb adjacent one end of said barrel;

a head assembly including a light transmitting lens and a beam forming reflector, said assembly being controllably translatable along said barrel in response to rotation thereof relative to said barrel; and

switch means disposed adjacent said one end of said barrel for opening an electrical contact between said lamp bulb and said barrel to de-energize said lamp bulb in response to relative movement of said head assembly in an axial direction toward said barrel, at least a portion of said switch means being axially movable with respect to said barrel such that axial movement of said head assembly towards said barrel in response to relative rotation thereof causes axial movement of said portion of said switch means to open said electrical contact and wherein rotational movement of said head assembly with respect to said barrel additionally varies the relative positional relationship between the reflector and the lamp bulb thereby providing an adjustable focus of light emission from the flashlight lens when the lamp bulb is energized.

4,942,506

ELECTRICAL LIGHT ILLUMINATION FOR KITES FLOWN AT NIGHT

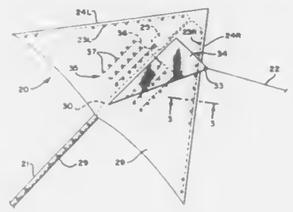
Mark T. Flory, 7214 Gaston, #219, Dallas, Tex. 75214

Filed Feb. 13, 1989, Ser. No. 309,190

Int. Cl.[5] A63H *27/08*

U.S. Cl. 362—253 **9 Claims**

1. An electric light illumination system for kites flown in the hours of darkness at night comprising: kite mounted electrical power source; lighting means mounted on the kite; circuit means connected to said lighting means; and interconnect means for selectively connecting said circuit means to said kite mounted electrical power source; wherein said lighting means includes a plurality of electric lights in said circuit means; said interconnect means includes a switching structure capable of switching electric power to lights of said plurality of lights; said switching structure is connected to, and controlled by, computer control means; and wherein a radio receiver is included in the system mounted on a kite connected to said switching structure.



4,942,507

REFLECTOR FOR DENTAL AND SURGICAL OPERATING ROOM LIGHTING FIXTURES

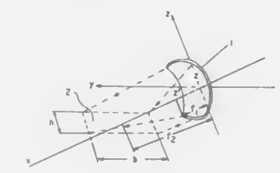
Harry Wagener, Alfeld/Leine, Fed. Rep. of Germany, assignor to AUER-SOG Glaswerke GmbH, Bad Gandersheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 119,510, Nov. 12, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 338,540

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1986, 3638669

Int. Cl.[5] F21V *7/09*

U.S. Cl. 362—296 **6 Claims**



1. A reflector for dental and surgical operating room lighting fixtures which, in a spatial Cartesian coordinate system with axes x, y, z, in which x represents the optical axis of the reflector, has an elliptic shape in the plane $y=0$ and a parabolic shape in the plane $z=0$, with the parabolic shape having a focal point which coincides substantially with a closer focal point $f_1;0;0$ of the ellipse so that the latter defines a common focal point and light beams that come from the common focal point and strike the reflector in the planes $y=0$ and $z=0$, in a plane $x=f_2$ pass through a focal line $x=f_2$; $z=0$, the reflector being so constructed that, in the areas spaced from the optical axis $y=0$; $z=0$, the reflector includes distortions in the surface thereof so that light beams coming from the area of the common focal point and reflected outside planes $y=0$ and $z=0$ pass through the plane $x=f_2$ within a desired approximately rectangular light field and have distances from the focal line so that an essentially uniform light density is present in the light field; the shape of the reflector being determined by the equations:

$$x = \frac{y^2}{4 \cdot f_1} + \frac{f_1 + f_2}{2} \cdot \left(1 - \sqrt{1 - \frac{z^2}{f_1 \cdot f_2}}\right),$$

wherein:

-continued

$$\frac{f_1 + f_2}{2} = a; \text{ and } \sqrt{f_1 \cdot f_2} = b; 2f_1 = p$$

$$x = \frac{z^2}{2p} + a \cdot \left(1 - \sqrt{1 - \frac{z^2}{b^2}}\right);$$

in which p is the parameter of the parabola $y=2px$ resulting in the plane $z=0$ and a and b are the large and the small semiaxis, respectively, of the ellipse resulting in the plane $y=0$.

4,942,508

SWITCHING REGULATOR

Shigeo Nakamura, Yamanashi, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

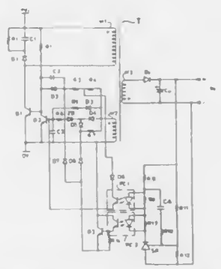
PCT No. PCT/JP88/01059, § 371 Date May 30, 1989, § 102(e) Date May 30, 1989, PCT Pub. No. WO89/04083, PCT Pub. Date May 5, 1989

PCT Filed Oct. 18, 1988, Ser. No. 363,515

Claims priority, application Japan, Oct. 29, 1987, 62-274404

Int. Cl.[5] H02M *3/338, 3/28*

U.S. Cl. 363—19 **3 Claims**



1. A switching regulator for controlling an output voltage by using a pulse width of a switching element such as a translator at a primary side of the switching regulator, comprising:

a speed-up capacitor located at the primary side of the switching regulator;

a capacitor operatively connected to the transistor;

a first feedback element, operatively connected to said capacitor and the transistor, for converting an output voltage at a secondary side into a feedback current, for controlling an amount of charge on said capacitor to control a time for which the transistor at the primary side is kept on, and for controlling an amount of charge of said speed-up capacitor; and

a second feedback element, operatively connected to said speed-up capacitor and said capacitor, for suppressing a discharge current from said speed-up capacitor and said capacitor and decreasing on-time of the transistor to decrease the output voltage when the output voltage is high.

4,942,509

CONTROL ARRANGEMENT FOR A SWITCH MODE POWER SUPPLY

Jonathanes Shires, and John Turner, both of Wetherby, England, assignors to Farnell Instruments Limited, Wetherby, United Kingdom

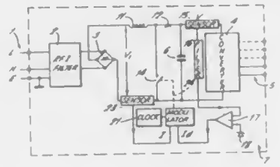
Filed Mar. 28, 1989, Ser. No. 329,450

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—89 **10 Claims**

1. A control arrangement for interfacing a main converter in a switched mode power supply with a full wave rectified mains power supply, the control arrangement receiving an average input voltage V_i having a rectified sinusoidal waveform from

the rectified mains supply and providing an average output d.c. voltage V_o as the input to the main converter, and comprising a voltage converter having an inductance, a switching means to connect the inductance across said input voltage, and a control means determining the average input current I to the voltage converter and operable to control a switching duty



ratio D of the switching means in dependence thereon, wherein the voltage converter has a voltage transfer function which is a function f(D) of the duty ratio, and said control means is arranged so that f(D) is substantially inversely proportional to I so that the average input current has substantially the same waveform as said average input voltage.

4,942,510

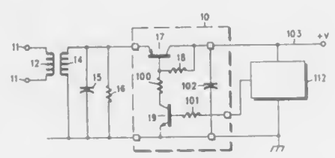
POWER AND SIGNAL TRANSFER INTERFACE CIRCUIT

Arthur J. Edwards, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1989, Ser. No. 445,877

Int. Cl.[5] H02M *7/217*; B60C *23/00*

U.S. Cl. 363—127 **9 Claims**



1. An interface circuit for providing a power source to a functional circuit block from a coupled alternating excitation source and a return transmission path from said block to said source comprising:

a transistor,

associated switch means, and

energy storage means,

said transistor having a forward mode of operation, wherein it serves to rectify forwardly coupled excitation energy to thereby charge said energy storage means as said power source, and

a reverse mode of operation wherein energy stored in said storage means is discharged to provide a back coupled pulse,

said switch means being adapted to cooperate with said functional circuit block to controllably activate said reverse mode to provide said return transmission.

4,942,511

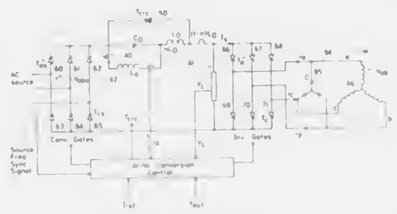
STATIC POWER CONVERSION APPARATUS USING A HIGH FREQUENCY SERIES RESONANT DC LINK

Thomas A. Lipo, Madison, Wis., and Yoshihiro Murai, Seki, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 28, 1989, Ser. No. 414,202

Int. Cl.[5] H02M *7/521*

U.S. Cl. 363—136 **13 Claims**



1. A power converter for converting DC power to AC power comprising:

(a) a DC series resonant link circuit having a capacitor adapted to receive a DC power input, a first inductor connected in series with the capacitor, a second inductor connected in parallel with at least the capacitor, and a DC current bus providing the output current from the resonant circuit;

(b) means for causing the resonant circuit to oscillate stably at or near its resonant frequency and for the current on the DC current bus to be maintained at a desired average DC level and to go to zero current at least once during each cycle of oscillation of the resonant circuit; and

(c) an inverter connected to receive the current on the DC bus and having gated switching devices which are switched on and off only when the current on the DC bus feeding the inverter is substantially zero.

4,942,512

CONTROL METHOD OF ROBOT SYSTEM AND APPARATUS FOR REALIZING THE SAME

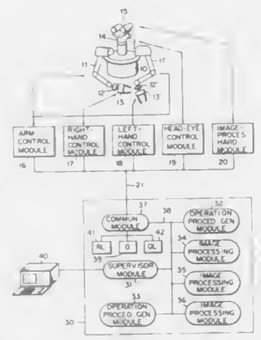
Yoshiaki Kohno, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 19, 1988, Ser. No. 196,063

Claims priority, application Japan, May 21, 1987, 62-124604

Int. Cl.[5] G06F *3/04*

U.S. Cl. 364—133 **9 Claims**



6. A robot system, comprising:

a plurality of modules, each module capable of acting as a source module of a message and as a destination module of a message, each module including means for generating transmission requests and for generating messages to be sent to other modules, and

a commander in communication with the plurality of modules, including:

means for receiving the transmission requests and messages from the modules,

a sequential list memory for storing the received transmission requests in sequential order,

a plurality of queue buffers, corresponding to the plurality of modules, capable of storing the messages to be sent to particular destination modules in the buffers corresponding to the particular destination modules, and

means for transmitting one messages from each of the queue buffers to the destination modules corresponding to the queue buffers, in a predetermined order.

4,942,513

TROUBLE DIAGNOSIS APPARATUS FOR CONTROLLED DEVICE

Makio Sakano, Ibaraki, and Kiyoto Hirase, Santo, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 24, 1988, Ser. No. 197,914

Claims priority, application Japan, May 25, 1987, 62-127753; May 25, 1987, 62-127754; May 25, 1987, 62-127756

Int. Cl.[5] G06F *15/46, 11/00*

U.S. Cl. 364—184 **4 Claims**



1. A trouble diagnosis apparatus for a plurality of devices controlled by a programmable controller, each of said plurality of devices having an assigned registered number, said apparatus comprising:

(a) a mode setting means for selectively setting an operation mode to one of an instruction mode and a diagnosis mode;

(b) an instruction operation control means, operative when said instruction mode is set, for causing the programmable controller to control a designated one of said controlled devices, for checking a change in an output data pattern of the controller, and for storing a changed input-output data pattern in storage means in association with a registered number of the designated controlled device whenever the output data pattern of the controller changes; and

(c) a diagnosis operation control means, operating when said diagnosis mode is set, for discriminating whether each input/output data pattern constituting an input/output data pattern series stored together with a registered number in the storage means appears within each predetermined monitoring time period for a designated controlled device having said registered number assigned thereto, for diagnosing that the designated controlled device develops trouble when an input/output data pattern which is same as the stored input/output data pattern does not appear, and for identifying locations at which the input/output data pattern does not match the stored input/output data pattern as fault locations of the designated controlled device.

4,942,514

PROCESS MONITORING AND CONTROL SYSTEM AND METHOD OF PROCESS MONITORING AND CONTROL

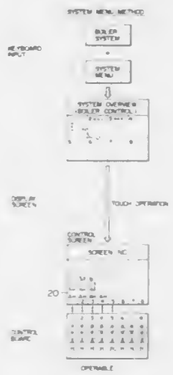
Hisanori Miyagaki, Hitachiota; Katsuhito Shimizu; Haruya Tobita, both of Hitachi; Atsushi Takita, Mito; Tooru Kimura, Hitachi; Akira Sugano, Katsuta; Masayuki Kikuchi, Hitachiota, and Masayuki Fukai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1988, Ser. No. 268,714

Claims priority, application Japan, Nov. 17, 1987, 62-288409; Feb. 17, 1988, 63-32770

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—190 **43 Claims**





1. A process monitoring and control system comprising:

means for displaying a system diagram including diagrams of process control devices on a display screen of a display unit;

input means for providing an instruction upon selection of a particular control device to be controlled;

means for displaying on the display screen, together with at least a diagram of the selected control device, a control screen including at least one of a control data selection area and an operating condition display area corresponding to the particular control device upon an input instruction for selecting the particular control device from the diagrams of the process control devices;

means for indicating to an operator the content of the input

instruction upon provision of the input instruction for selecting control data in the control data selection area on the control screen; and

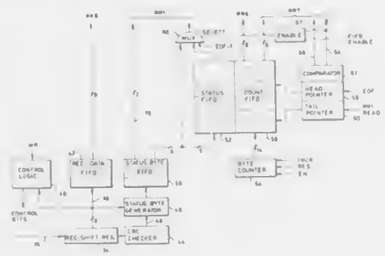
means for providing an operation start signal to the particular control device selected by the input instruction upon operation of a switch corresponding to the control screen from which control data has been selected and belonging to a group from among groups of switches disposed outside of the display screen, each of the groups uniquely corresponding to a separate control screen.

4,942,515

SERIAL COMMUNICATIONS CONTROLLER WITH FIFO REGISTER FOR STORING SUPPLEMENTAL DATA AND COUNTER FOR COUNTING NUMBER OF WORDS WITHIN EACH TRANSFERRED FRAME

Teresa Marzucco, Waltham, Mass.; John Korpusik, Hudson, N.H., and Patricia A. Martin, Westford, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Mar. 31, 1986, Ser. No. 846,337
Int. Cl.[5] G06F *13/28, 12/06, 13/00*
U.S. Cl. 364—200 **5 Claims**



1. Input/output control circuitry for a data communication system for receiving sequential frames of incoming data words, each frame having an end, and for transferring the data words to memory which is separate from the control circuitry, the control circuitry comprising:

means for generating supplemental data to be read from the control circuitry, supplemental data being information which is different from but is associated with each frame of incoming data;

means for counting the number of words within each frame to provide a word count;

means comprising a first-in/first-out register (FIFO),coupled to the means for generating and the means for counting, for storing the supplemental data and the associated word counts with continued transfer of sequential frames of data to said memory, such that the supplemental data and word counts are available to be read from the control circuitry after transfer of the frame with which the supplemental data is associated; and

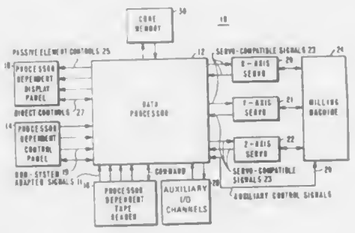
control logic means responsive to said supplemental data for incrementing the first-in/first-out register at the end of each frame and for decrementing the first-in/first-out register as each set of supplemental data and associated word count is read and processed by a central processing unit.

4,942,516

SINGLE CHIP INTEGRATED CIRCUIT COMPUTER ARCHITECTURE

Gilbert P. Hyatt, 7841 Jennifer Cir., La Palma, Calif. 90623

Continuation-in-part of Ser. No. 223,959, Jan. 12, 1981, abandoned, and a continuation-in-part of Ser. No. 860,253, Dec. 14, 1977, abandoned, and a continuation-in-part of Ser. No. 860,256, Dec. 14, 1977, Pat. No. 4,829,419, and a continuation-in-part of Ser. No. 860,258, Dec. 14, 1977, and a continuation-in-part of Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, and a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, and a continuation-in-part of Ser. No. 879,293, Nov. 24, 1969, abandoned. This application Jun. 17, 1988, Ser. No. 209,115
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—200 **41 Claims**



1. A computer system comprising:

a single chip stored program digital computer implemented on a single integrated circuit chip, said single chip stored program digital computer including

(1) an integrated circuit read only memory storing computer instructions, wherein said integrated circuit read only memory is implemented on said single integrated circuit chip;

(2) an integrated circuit alterable memory storing computer operands, wherein said integrated circuit alterable memory is implemented on said single integrated circuit chip; and

(3) an integrated circuit processing circuit coupled to the integrated circuit alterable memory and processing the computer operands stored by said integrated circuit alterable memory in response to the computer instructions stored by said integrated circuit read only memory, wherein said integrated circuit processing circuit is implemented on said single integrated circuit chip.

4,942,517

ENHANCED INPUT/OUTPUT ARCHITECTURE FOR TOROIDALLY-CONNECTED DISTRIBUTED-MEMORY PARALLEL COMPUTERS

Ronald S. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

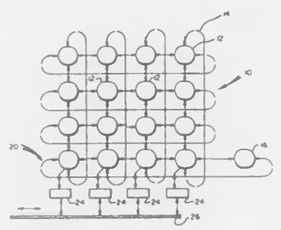
Filed Oct. 8, 1987, Ser. No. 105,836
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 **5 Claims**

1. In a toroidally-connected distributed-memory parallel computer having rows and columns of processors, wherein each processor has an independent memory and is connected to four neighboring processors, the improvement comprising:

(a) at least one common I/O channel;

(b) a plurality of buffering mechanisms, each being connected to such I/O channel and to only one corresponding processor in a given row of processors; and

each such processor of said given row being connected to only one corresponding buffer mechanism in such a manner that it can access its buffer mechanism independently of the access to such buffer mechanism by the I/O channel, and independently of access to the buffer mechanisms corresponding to other processors in said given row.

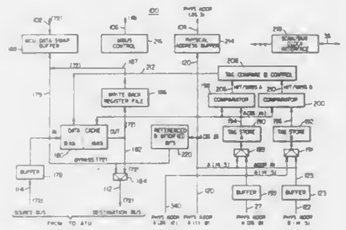


4,942,518

CACHE STORE BYPASS FOR COMPUTER

James R. Weatherford, Lake Dallas; Arthur T. Kimmel, and Steven J. Wallach, both of Dallas, all of Tex., assignors to Convex Computer Corporation, Richardson, Tex.

Division of Ser. No. 622,562, Jun. 20, 1984. This application Nov. 12, 1985, Ser. No. 796,745
Int. Cl.[5] G06F *12/08, 15/347*
U.S. Cl. 364—200 **2 Claims**



1. A physical cache unit for a computer having a main memory and central processor and which utilizes both scalar and vector operands, comprising: 'a cache store for storing only said scalar operands therein,

first bus means for transferring operands between said cache store and said main memory,

second bus means for transferring operands between said cache store and said central processor,

bidirectional bus bypass means for transferring operands between said main memory and said central processor by bypassing said cache store,

means responsive to addresses produced by said central processor for reading scalar operands from said cache store and for transferring said scalar operands through said second bus means to said central processor; and responsive to addresses received from said central processor for transferring said scalar operands from said main memory through said first bus means into said cache store when operands having said addresses are not present in said cache store, and

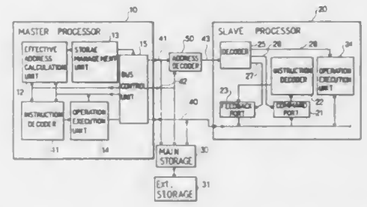
said bidirectional bus bypass means for transferring both said scalar and said vector operands in both directions between said main memory and said central processor for bypassing said cache store when vector operands are requested by said central processor or when scalar operands requested by said central processor are not present in said cache store.

4,942,519

COPROCESSOR HAVING A SLAVE PROCESSOR CAPABLE OF CHECKING ADDRESS MAPPING

Takashi Nakayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 29, 1986, Ser. No. 947,344
Claims priority, application Japan, Dec. 25, 1985, 60-294285
Int. Cl.[5] G06F *15/16, 13/00*
U.S. Cl. 364—200 **19 Claims**



1. A control system for a microprocessor device, said microprocessor device comprising:

a first microprocessor, a second microprocessor controlled by said first microprocessor to execute an operation of a portion of instruction sets,

a main storage for storing programs and data for said first microprocessor and said second microprocessor,

an external storage coupled to said main storage for storing programs and data for said first microprocessor and said second microprocessor, and

a bus coupling said first microprocessor, said second microprocessor and said main storage to each other so as to transfer data and instructions to each other, said instructions including instructions for said first microprocessor and instructions for said second microprocessor;

said first microprocessor including a bus control unit for controlling a status of said bus with respect to said second microprocessor, said main storage and said external storage, a first instruction decoder for decoding an instruction for said first microprocessor into a first decoded instruction and a first operation execution unit for executing said first decoded instruction for said first microprocessor with data stored in a memory location indicated by said first decoded instruction for said first microprocessor;

said second microprocessor including a second instruction decoder for decoding an instruction for said second microprocessor into a second decoded instruction for said second microprocessor and a second operation execution unit for executing said second decoded instruction for said second microprocessor with data stored in a memory location indicated by said second decoded instruction; and wherein

all memory locations of said main storage and said external storage being mapped into a virtual memory with a paging method, and instructions being assigned with virtual addresses,

said control system comprising:

feedback means provided in said second microprocessor and including a feedback port responding to a command from said first microprocessor for temporarily bolding said second decoded instruction for said second microprocessor including an address required for virtual memory management by said first microprocessor; and

means provided in said first microprocessor for reading a content of said feedback port for detecting whether or not a memory location required by said second decoded instruction for said second microprocessor is physically present in said main storage, said detecting means being coupled with said bus control unit for enabling access to said main storage and generating an input/output bus cycle signal for allowance of instruction execution of

said second microprocessor when said memory location required by said second decoded instruction for said second microprocessor is physically present in said main storage and can be accessed, said detecting means operating to generate an interrupt to transfer programs and data from said external storage to said main storage when said memory location required by said second decoded instruction is physically present in said main storage, and thereafter to generate said input/output bus cycle signal for allowance of instruction execution of said second microprocessor,

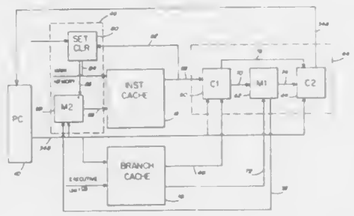
said feedback means also including a third decoder receiving said input/output bus cycle signal for allowance of instruction execution of said second microprocessor for generating an internal start signal to said second operation execution unit of said second microprocessor so that said second operation execution unit of said second microprocessor starts its instruction execution only after said start signal is generated.

4,942,520

METHOD AND APPARATUS FOR INDEXING, ACCESSING AND UPDATING A MEMORY

Brian K. Langendorf, Worcester, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Jul. 31, 1987, Ser. No. 80,453
Int. Cl.[5] G06F *9/34, 9/355, 9/38*
U.S. Cl. 364—200 **21 Claims**



3. A cache memory system for a pipelined digital computer, comprising:

instruction cache means having a plurality of instruction cache locations for storing a plurality of instruction cache data entries, each of said instruction cache data entries having an associated coupling bit field, each of said instruction cache locations accessible by a first index,

branch cache set means having a plurality of branch cache locations for storing a plurality of branch cache data entries, a plurality of said branch cache data entries having a corresponding instruction cache data entry, each of said branch cache locations accessible by a second index comprising a portion of the first index of said corresponding instruction cache data entry, said branch cache data entries each including a back pointer field,

means responsive to one of said first indexes for accessing one of said corresponding instruction cache data entries,

means responsive to the second index and backpointer field of said at least one branch cache data entry for reconstructing the first index of said corresponding instruction cache data entry, and

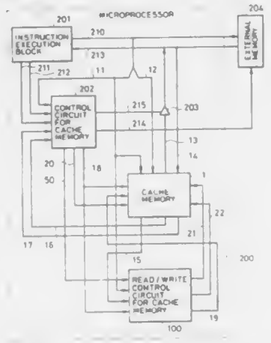
means responsive to said reconstructed first index for accessing the instruction cache location containing said corresponding instruction cache data entry and for initializing said associated coupling bit field,

4,942,521

MICROPROCESSOR WITH A CACHE MEMORY IN WHICH VALIDITY FLAGS FOR FIRST AND SECOND DATA AREAS ARE SIMULTANEOUSLY READABLE

Makoto Hanawa, Kokubunji; Atsushi Hasegawa, Koganei, and Tadahiko Nishimukai, Sagamihara, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 119,919
Claims priority, application Japan, Nov. 14, 1986, 61-271235
Int. Cl.[5] G06F *12/02, 9/30, 13/00*
U.S. Cl. 364—200 **12 Claims**



1. A microprocessor comprising:

(a) an instruction execution block for executing instructions using data stored in a cache memory or in an external memory;

(b) a cache memory coupled to said instruction execution block and including at least first and second data in areas which are commonly accessed by an upper bit signal of an instruction fetch address generated from said instruction execution block, the respective first and second data areas in said cache memory being selectively specified by a lower bit signal of said instruction fetch address, and wherein each area of said first and second data areas in said cache memory includes data and a flag associated with the data which indicates whether or not said data is valid;

(c) first means for reading out a flag in said second data area when a flag in a commonly accessed first data area is read out in response to said upper bit signal and a lower bit signal of an instruction fetch address which specifies said first data area;

(d) second means coupled to said first means for latching information related to a flag of said second data area when a flag of said second data area is read out by said first means; and

(e) third means for reading out said information from said second means in response to a lower bit signal of said instruction fetch address which specifies said second data area when said second data area is consecutively accessed after said first data area is accessed.

4,942,522

TIMER CHANNEL WITH MULTIPLE TIMER REFERENCE FEATURES

Brian F. Wilkie; Vernon B. Goler, both of Austin; Stanley E. Groves, Round Rock, and John J. Vaglica, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 19, 1988, Ser. No. 234,103
Int. Cl.[5] G06F *1/04*
U.S. Cl. 364—200 **8 Claims**

1. A timer responsive to at least two timer reference signals comprising:

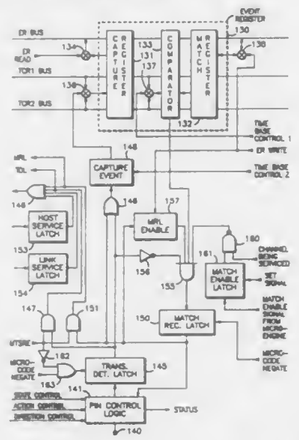
a capture register;

a match register;

first timer reference select means for selecting one of said at least two timer reference signals;

second timer reference select means for selecting one of said at least two timer reference signals;

capture logic means responsive to an input to the timer to load said capture register with a representation of a value of the timer reference signal selected by said first timer reference select means; and



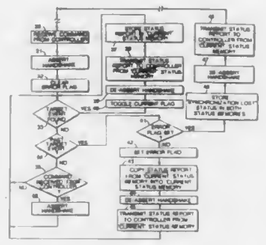
match logic means responsive to the contents of said match register and to the value of the timer reference signal selected by said second timer reference select means to produce a match output if a predetermined relationship exists between the value of the timer reference signal selected by said second timer reference select means and the contents of the match register.

4,942,523

METHOD FOR RECOVERY FROM SYNCHRONIZATION LOSS IN A QUEUED DATA TRANSFER

Mark L. Gembarowski, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 740,105, May 31, 1985, Pat. No. 4,811,283.
This application Nov. 28, 1988, Ser. No. 276,707
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—200 **3 Claims**



1. A method for facilitating recovery from a loss of synchronization in a queued data transfer involving a multiplicity of data sequential transfer subsets of an overall queued data transfer between a controller and a peripheral device in which successful data transfer subsets are indicated by alternately storing a first status report in first and second memories of the peripheral device that are associated with current and not-current ones of said sequential data transfer subsets, the method facilitating recovery from a loss of synchronization comprising the steps of:

(1) detecting by the peripheral device an occurrence of a target synchronization event associated with a particular data transfer subset transmitted by the controller, a failure by the peripheral device to detect said target synchronization event indicating a loss of synchronization between the controller and the peripheral device;

(2) storing said first status report in both a first status memory and a second status memory of the peripheral device, said first status report indicating successful receipt by the periheral device of a data transfer subset immediately preceding a loss of synchronization detected in step (1);

(3) transmitting said first status report stored in said first and second status memories to the controller, thereby indicating successful receipts by the peripheral device of a data transfer subset immediately preceding the data transfer subset whose target synchronization event was not detected in step (1);

(4) storing a second status report in both the first status memory and the second status memory of the peripheral device, said second status report indicating the loss of synchronization detected in step (1); and

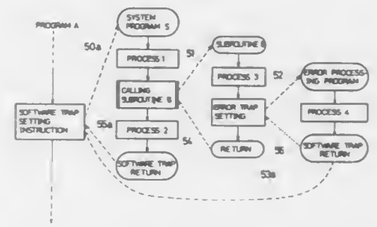
(5) transmitting said second status report stored in said first and second status memories to the controller.

4,942,524

SOFTWARE TRAP SYSTEM WHICH SAVES PREVIOUS CONTENT OF SOFTWARE TRAP HANDLING POINTER IN A STACK UPON EXECUTION OF A TRAP

Yasuhiro Nunomura, Itami, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 24, 1987, Ser. No. 65,778
Claims priority, application Japan, Sep. 3, 1986, 61-208420
Int. Cl.[5] G06F *9/00*
U.S. Cl. 364—200 **4 Claims**



3. A system for processing a software trap, which comprises:

a main memory for storing instructions and having a stack area;

a program counter for holding an address of a next instruction to be fetched from said main memory for execution;

a stack pointer for holding a highest stack location of data stored in multiple layers in said stack area during previous execution of a program;

a software trap handling pointer for continuously holding a stack location of data saved during execution of a previous software trap setting instruction; and

a control unit comprising (a) means for interpreting an instruction fetched from said main memory at an address specified by said program counter and (b) means for controlling not only execution of said instruction but also transmission of data between said software trap handling pointer, program counter, stack pointer, and main memory, said control unit including (a) means for storing, when a software trap is set, information including contents

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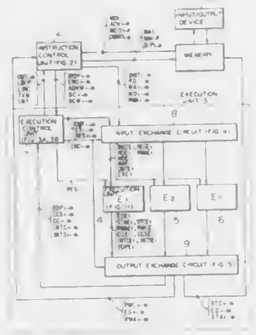
of said software trap handling pointer and a return address in a stack area between said highest stack location and a next stack location, and (b) means for updating contents of said stack pointer and software trap handling pointer to said next stack location but keeping contents of said software trap handling pointer unchanged at said next stack location until said software trap instruction has been executed or a new software trap is set while contents of said stack pointer are continuously updated to a new highest stack location every time a new subroutine or trap servicing program is called, thereby making not only immediate return to said program possible at the time of a software trap return but also additional error decision in said subroutine unnecessary, thus resulting in the increased program processing efficiency.

4,942,525

DATA PROCESSOR FOR CONCURRENT EXECUTING OF INSTRUCTIONS BY PLURAL EXECUTION UNITS

Yooichi Shintani, Hadano; Kazunori Kuriyama, Saitama; Tohru Shonai; Eiki Kamada, both of Hadano, and Kiyoshi Inoue, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1987, Ser. No. 123,139
Claims priority, application Japan, Nov. 21, 1986, 61-276554
Int. Cl.[5] G06F *9/38*
U.S. Cl. 364—200 12 Claims



1. An information processing apparatus for executing sequentially-ordered instructions, which apparatus requires suppression of the execution of a subset of the sequentially ordered instructions, said subset including those instructions succeeding, in the sequential order, one of the sequentially ordered instructions when a predetermined result for an interrupt is generated as a result of execution of the one instruction, comprising:

a plurality of execution means, each for executing an operation:

storage means, connected to said plurality of execution means for storing result data obtained by said plurality of execution means;

control means, connected to said plurality of execution means, for controlling execution of operations by said plurality of execution means, said control means including,

first means for detecting whether or not a plurality of the instructions satisfy a predetermined condition, for enabling two or more of said plurality of execution means to concurrently start execution of operations required by the plurality of instructions when the plurality of instructions satisfy the predetermined condition, and for writing into said storage means result data generated by said two or more of said plurality of execution means for said plurality of instructions wherein the total number of said plurality of instructions is not larger than a total number of said plurality of execution means;

interrupt means, connected to said plurality of execution means and responsive to a predetermined result for an interrupt generated by one of said two or more of said plurality of execution means executing an operation required by one of the plurality of instructions, for generating an interrupt signal;

said control means further including:

second means, responsive to the interrupt signal generated by said interrupt means, for preventing writing of result data from each of a group of said two more of said plurality of execution means that executes an operation required by an instruction succeeding said one instruction among the plurality of instructions into said storage means;

wherein the predetermined condition includes a first condition based on a first execution time period required for execution of an operation required by each of said plurality of instructions and on a second execution time period required for execution of an operation required by each of instructions preceding to said one said plurality of instructions; and

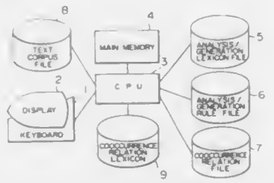
wherein said first condition is predetermined so that prevention by said second means of writing of a result data for each of instructions succeeding to said one of the plurality of instructions can be done before writing of the result data into said storage by said control means if an interrupt signal is generated in the execution of said one instruction, irrespective of which of the plurality of instructions is said one instruction.

4,942,526

METHOD AND SYSTEM FOR GENERATING LEXICON OF COOCCURRENCE RELATIONS IN NATURAL LANGUAGE

Atsushi Okajima, Yokohama; Fumiyuki Yamano, Kawasaki, and Eri Katagiri, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1986, Ser. No. 922,889
Claims priority, application Japan, Oct. 25, 1985, 60-239779
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419 13 Claims



1. A method, using a computer including a processor and a memory, of generating cooccurrence relation information indicating whether a sequence of words in a given sentence described in a natural language is semantically correct or not, said method comprising the steps of:

(a) defining categories of sentences on the basis of the types of documents in which the sentences appear;

(b) defining fields of sentences on the basis of the subject matters of the sentences;

(c) preparing a text corpus by collecting input textual sentences belonging to the same category or the same field as the given sentence;

(d) preparing a cooccurrence relation table containing grammar or a set of grammatical rules for analyzing the textual sentences of the text corpus to permit determining a cooccurrence relation between words in the textual sentences;

(e) determining a hypothesized cooccurrence relation between words in the sequence of words in the given sentence on the basis of a cooccurrence relation from said cooccurrence relation table, the hypothesized cooccurrence relation indicating a particular possible concurrence relation between words in the given sentence;

(f) deriving an actual cooccurrence relation between words in the given sentence from the determined hypothesized cooccurrence relation;

(g) determining whether the actual cooccurrence relation exceeds a predetermined threshold condition for a valid cooccurrence relation; and

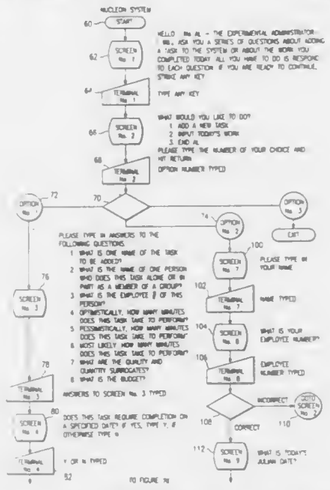
(h) when the actual cooccurrence relation exceeds the predetermined threshold condition, outputting information indicating the actual cooccurrence relation as a valid cooccurrence relation.

4,942,527

COMPUTERIZED MANAGEMENT SYSTEM

Billy G. Schumacher, P.O. Box 2184, Norman, Okla. 73069

Filed Dec. 11, 1987, Ser. No. 131,897
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 8 Claims



1. A computerized management system comprising:

computing machinery (12–52) for automatically managing an organization, said computing machinery including:

an input/output means (16, 28–34) for communicating management related information from an external source (12) to a computer (18) or from the computer to the external source; and

a computer (18) connected to the input/output means for processing continuously the management related information for the continuous management of the organization;

said computer including a working register (50) for storing information and a control means (36–44) having: first instruction means (60–96) for receiving and processing the management related information received from the external source through an emergence stage for producing an organization task/service management plan for an objective in machine language for the objective for storage;

second instruction means (100–152) for processing the plan through a management convergence stage for generating subdivisional plans for communication through the input-/output means to the external source for reducing the objective to a reality in a controlled manner and for receiving information from the external source relating to objective achievement;

third instruction means (154–168) for processing the management related information including the information generated during the emergence and convergence stages through a proliference stage for generating specifications and quantitative goals for a new version of the objective for processing by the first and second instruction means through the emergence and convegence stages; and

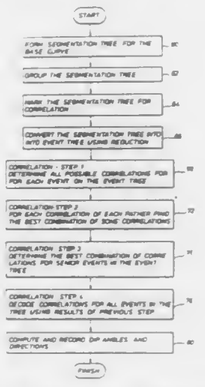
fourth instruction means (170–172) for processing the management related information including information generated during the emergence, convergence, and proliference stages through a divergence stage for producing an organizational policy.

4,942,528

DIPMETER PROCESSING TECHNIQUE

Mark G. Kerzner, Houston, Tex., assignor to Halliburton Logging Services Inc., Houston, Tex.

Continuation-in-part of Ser. No. 63,608, Jun. 18, 1987, Pat. No. 4,853,855. This application Aug. 30, 1988, Ser. No. 238,089
The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.
Int. Cl.[5] G01V *1/28*
U.S. Cl. 364—422 13 Claims



1. A method of correlating a pair of dipmeter curves comprising the steps of:

(a) defining a segmentation tree for one of a pair of dipmeter curves;

(b) converting the segmentation tree into an event tree by deleting curve events falling outside an event criteria based on event width and area;

(c) determining correlation coefficients between pairs of curves using said event tree;

(d) optimizing the correlation coefficients between said pairs of curves to obtain optimum curve correlation; and

(e) determining formation dip from the optimally correlated curves.

4,942,529

LIFT TRUCK CONTROL SYSTEMS

Isaac Avitan, Vestal; Ralph Allen, Greene; David L. Kellogg, Greene; Stephen L. Page, Greene, and David J. Radley, Whitney Point, all of N.Y., assignors to The Raymond Corporation, New York, N.Y.

Filed May 26, 1988, Ser. No. 199,782
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.01 22 Claims

1. In a lift truck having a steerable base frame, a mast, a hydraulic lift system operable to move a load carriage along said mast to raise and lower a payload, a traction motor system for driving said truck, and an operator control for generating a speed request signal for requesting variation of the speed of said traction motor system, the combination comprising:

(a) means for deriving a first signal commensurate with the position of said load carriage along said mast;

(b) means for deriving a second signal commensurate with the steering angle of said base frame;

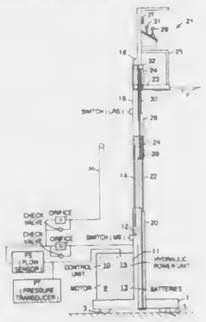
VOL 1116 ISS 3 JL 17 1990 UMI

(c) means for deriving a third signal commensurate with the weight of the payload on said load carriage; and

(d) means responsive to said first, second, third, and speed request signals for providing a speed limit signal, said speed limit signal being supplied to said traction motor system to limit the speed of said truck.

18. A method of generating speed limit values for a lift truck, comprising the steps of:

in a learning mode, storing a first set of data values representing operating parameters of the truck;



in a normal operating mode in which the truck supports a payload, deriving a second set of data values representing operating parameters of the truck, including a data value representing the weight of the payload;

processing the first and the second set of data values to generate an instantaneous truck velocity signal and an instantaneous dynamic speed limit signal, and controlling the speed of said truck in accordance with the value of said instantaneous dynamic speed limit signal.

4,942,530

CONTROL OF VEHICLE AUTOMATIC TRANSMISSION

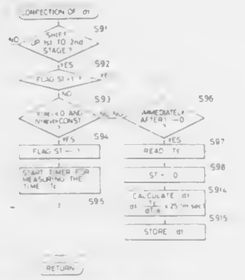
Keiji Boda, Hiroshima; Kouichirou Waki, Mihara; Kazuo Niide, Hiroshima; Hiroaki Yokota, Higashi-Hiroshima; Keizo Yanagisawa, Fuji, and Hokuto Takeuchi, Fujinomiya, all of Japan, assignors to Mazda Motor Corporation, Hiroshima and Japan Automatic Transmission Co., Ltd., Fuji, both of, Japan

Filed Mar. 1, 1988, Ser. No. 162,642

Claims priority, application Japan, Mar. 2, 1987, 62-45323; Jun. 12, 1987, 62-146294

Int. Cl.[5] B60K *41/18, 41/16;* **G05D** *17/02*

U.S. Cl. 364—424.1 **19 Claims**



19. An automatic transmission including

a transmission gear mechanism having input means for introducing power from an engine and a plurality of gear stages of different gear ratios,

first and second friction means for selecting one of said gear stages,

first and second actuating means respectively for actuating said first and second friction means,

a hydraulic circuit for controlling a supply of hydraulic pressure to said first and second actuating means,

control means for controlling the hydraulic circuit to supply the hydraulic pressure to said first and second actuating means for establishing a first condition in which said first means for establishing a first condition in which said first friction means is engaged and said second friction means is disengaged to select a first one of said gear stages and to release the hydraulic pressure from said first and second actuating means for establishing a second condition in which said first friction means is disengaged and said second friction means is engaged to select a second one of said gear stages which is lower than said first gear stage,

pressure release rate adjusting means for adjusting a rate of releasing the hydraulic pressure from said second actuating means,

said control means being means for controlling said pressure release rate adjusting means in a shifting down operation from said first one of the gear stages to said second one of the gear stages so that the pressure release from said second actuating means is made at a faster rate for a predetermined time period in an initial period than in a remainder period,

shift condition detecting means for detecting a shift condition from said first stage to said second stage based on a rotation speed of said input means,

compensation means responsive to said shift condition detected by the shift condition detecting means for modifying said predetermined time period for a next gear shifting operation.

4,942,531

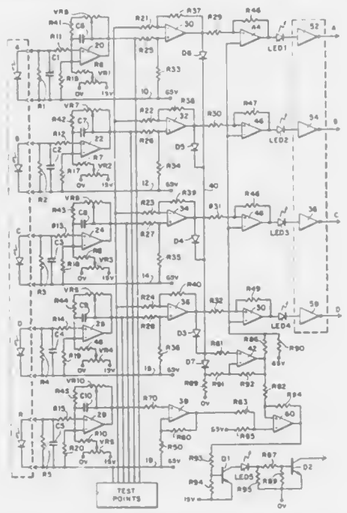
SELF-ADAPTING SIGNAL DETECTOR WITH DIGITAL OUTPUTS

Thomas E. Hainsworth, Holland; F. Nicholaas Spanhak, Jennison, and Richard R. Paske, Jr., Holland, all of Mich., assignors to Bell & Howell Company, Skokie, Ill.

Filed May 16, 1988, Ser. No. 194,337

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.2 **17 Claims**



1. A system for an automatically guided vehicle for detecting the presence of a fluorescent material defining a guidepath comprising:

means for providing a first signal representative of said fluorescent guidepath including one or more optical sensors disposed on said vehicle, wherein not all of said sensors are located over said guidepath and an ultraviolet light for irradiating the fluorescent material causing it to emit visible light;

means for detecting background noise;

means responsive to said first signal providing means and said background noise detecting means for providing a signal according to a predetermined criteria indicative of a valid guidepath; and

means responsive to said plurality of optical sensors and said background noise detecting means for providing a signal representative of the maximum value of the differences between each of the optical sensor signals and the background noise signal to define a maximum remainder signal.

15. A method for detecting a guidepath having a detectable characteristic for an automatically guided vehicle comprising the steps of:

detecting first signals representative of said detectable characteristic with a plurality of sensors;

detecting signals representative of background noise;

subtracting the background noise signal from each of said first signals and selecting the maximum difference signal to define a maximum remainder signal;

selecting the lesser of a predetermined percentage of the maximum remainder signal and a predetermined percentage of the background noise signal to define a reference signal; and

providing a valid guidepath signal for each first signal level that exceeds the reference signal.

4,942,532

SYSTEM FOR CONTROLLING THE STEERING ANGLE OF THE REAR WHEELS OF A FOUR-WHEEL-STEERABLE MOTOR VEHICLE

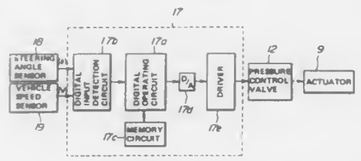
Kazunori Mori, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed May 17, 1988, Ser. No. 195,078

Claims priority, application Japan, May 20, 1987, 62-121015

Int. Cl.[5] B62D *7/14*

U.S. Cl. 364—424.05 **4 Claims**



1. A system for controlling the steering angle of the rear wheels of a four-wheel-steerable motor vehicle comprising:

rear-wheel steering means for steering the rear wheels of the vehicle;

first calculating means for calculating the Laplace transform $\delta f(s)$ of the front wheel steering angle of the front wheels of the vehicle;

second calculating means for calculating the Laplace transform $\delta r(s)$ of the rear heel steering angle of the rear wheels of the vehicle;

third calculating means for calculating a value G according to the equation

$$G=[(BS^2+CS+D)/(AS+1)]$$
$$?(Bs^2+Cs+D)/(As+1)$$

wherein:

A is a function A(V) of the vehicle speed V,

B is a function $B(V,\phi_0)$ of the vehicle speed V and the normal yaw rate gain ϕ_0,

C is a function $C(V,\phi_0)$ of the vehicle speed V and the normal yaw rate gain ϕ_0,

D is a function $D(V,\phi_0)$ of the vehicle speed V and the normal yaw rate gain ϕ_0, and

s is the Laplace transform variable; and

control means for controlling the rear-wheel steering means so that the relationship between the front wheel steering angle and the rear wheel steering angle satisfies the equation

$$\delta r(s)/\delta f(s)=G.$$

4,942,533

MOBILE RANGE FINDER

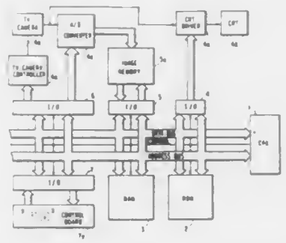
Toshiaki Kakinami, Kawasaki, and Shigemitsu Hamajima, Obu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jul. 7, 1988, Ser. No. 217,261

Claims priority, application Japan, Jul. 9, 1987, 62-171678

Int. Cl.[5] G06K *9/46;* **G01C** *3/00*

U.S. Cl. 364—449 **10 Claims**



1. A mobile range finder for use on a first vehicle to detect the distance to a second vehicle at a desired position in a monitoring direction irrespective of the moving state of the first vehicle comprising:

optical picture information generator means installed at a predetermined position on said first vehicle to provide an image of at least a part of a scene in said monitoring direction and generate corresponding picture information on an image plane;

edge extracting means for extracting a region where the picture information generated by said optical picture information generating means shows a distinct change;

component extracting means for extracting a distinct component comprised of lane marking lines on a road in each region extracted by said edge extracting means;

vanishing point determining means including selecting means for selecting from the lines extracted by said component extracting means at least one line included in a preset positive slope region and at least one line included in a preset negative slope region and means for calculating spatial information concerning said vanishing point from a theoretical point or intersection of respective line extensions of said lines and the location of an image of said vanishing point on said image plane;

inclination angle detecting means for determining an angle of elevation between the optical axis of said optical picture information generating means and a reference line extending towards said vanishing point on the basis of the spatial information concerning said vanishing point and the location of said image of said vanishing point on said image plane;

designating means for designating a desired position in said scene in which said second vehicle would first appear;

designated spatial information generating means for generat-

ing spatial information corresponding to the desired position designated by said designating means; and

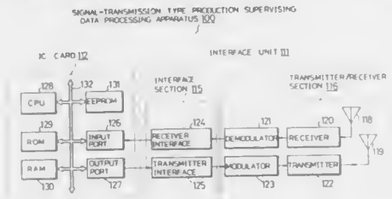
distance detecting means for detecting the distance from the first vehicle to the position designated by said designating means to determine the distance from said first vehicle to said second vehicle in said desired position on the basis of said spatial information generated by said designated spatial information generating means, information concerning the level of the position at which said optical picture information generating means is installed and said inclination angle information determined by said inclination angle detecting means.

4,942,534

SIGNAL-TRANSMISSION TYPE PRODUCTION SUPERVISING SYSTEM INCLUDING IC CARD AND WIRELESS TYPE INTERFACE UNIT

Masaharu Yokoyama, Sagamigara; Koichi Ogino, Tokyo, and Hidetaka Suzuki, Yokogama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 2, 1988, Ser. No. 278,888
Claims priority, application Japan, Dec. 8, 1987, 62-308776
Int. Cl.[5] G06F *13/11*; B62D *63/02*
U.S. Cl. 364—468 **12 Claims**



1. A data processing apparatus comprising:

an IC (integrated circuit) card including a central processing unit, a first memory unit for storing program data for operating said central processing unit; a second memory unit for storing production supervising data, a third memory unit capable of storing data other than said production supervising data, and said other data being transferred from an external data controlling apparatus; and,

interface means detachably coupled to said IC card for receiving at least an instruction signal transmitted from said external data controlling apparatus to convert said instruction signal into a production supervising data read signal, whereby said production supervising data read signal is processed by the central processing unit so as to read said production supervising data from said second memory unit, and for transmitting said production supervising data read from said second memory unit via said interface means to said external data controlling apparatus, while said IC card is electrically connected to said interface means.

4,942,535

COLLATION RECORD GENERATION AND CONTROL

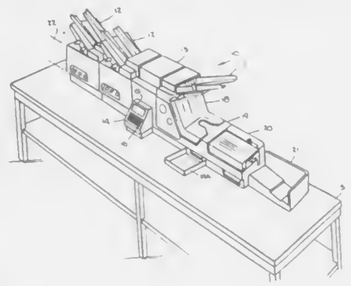
Robert Francisco, New Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

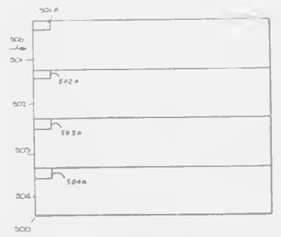
Filed Dec. 30, 1988, Ser. No. 292,616
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—478 **9 Claims**

1. In a material processing system comprising a plurality of material processing stations, and means for transporting articles to be processed serially through said processing stations in a given order;

the improvement wherein each of said processing stations comprises a data and control processing system, and further comprising a communication path interconnecting each said data and control processing system with the data and control processing system of the next preceding and next succeeding material processing station in said given order;

each said data and control processing system comprising means for controlling material processing at each respective station, means for signaling the data and control processing system of the next previous station that the respective station is ready to receive material to be processed therefrom, and means for directing data to the data control and processing system of the next succeeding station concerning material processing steps that have been taken in the respective station on material to be received from the data and control processing system of the next previous station concerning material processing steps that had previously been taken on said material to be passed to the next succeeding station.





4,942,536

METHOD OF AUTOMATIC CIRCUIT TRANSLATION

Toshinori Watanabe, Sagamihara; Fumihiko Mori, Yokohama; Tamotsu Nishiyama, Inagi; Makoto Furihata, Sawa; Yasuo Kominami, and Noboru Horie, both of Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

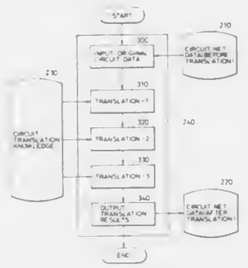
Filed Apr. 21, 1986, Ser. No. 854,032
Claims priority, application Japan, Apr. 19, 1985, 60-82400
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **17 Claims**

1. An automatic circuit translation method for translating first circuit net data representing a first circuit into second circuit net data representing a second circuit realizing the same function as that of a first circuit represented by said first circuit net data in a system having a processor means for processing data and a memory means for storing translation rules of circuit element representations each of which is determined depending upon connective relations of each circuit element with at least one circuit element and upon the function of each circuit element, wherein each of said translation rules is described by a predicate logic program, and wherein each of said first and second circuit net data is described by a predicate logic program, said method comprising the steps of:

inputting said first circuit net data to said processor means;

extracting, by said processor means, the connective relations between circuit elements in the first circuit from the inputted first circuit net data;

selecting a translation rule on the basis of the extracted connective relations;



translating, by said processor means, the circuit elements of the first circuit represented by said inputted first circuit net data to those of the second circuit represented by the second circuit net data based on a selected translation rule; and

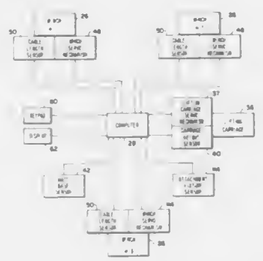
outputting said second circuit net data as results of the translation from said processor means.

4,942,537

SYSTEM FOR ASSEMBLING AND DISASSEMBLING A MAST

Edward H. Verry, Old Orchard Beach, Me., assignor to Fiber Materials, Inc., Biddeford, Me.

Filed Dec. 15, 1988, Ser. No. 285,051
Int. Cl.[5] E04H *12/00*; G06F *15/20*
U.S. Cl. 364—512 **10 Claims**



9. Apparatus for assembling or disassembling a plurality of elongate mast sections adapted to be attached together end-to-end so as to form a unitary mast, said apparatus comprising:

a frame comprising a reference surface;

a lifting carriage attached to said frame and couplable with at least one of said sections of said mast, said lifting carriage being adapted to move said mast up and down along a vertical path;

a plurality of guy lines each having first and second ends, said first ends being attached to said mast at a selected position thereon;

a plurality of winch assemblies each adapted to be anchored to a surface, each of said plurality of winch assemblies comprising a rotatable winch operable in either a forward or a reverse direction for feeding out or reeling in, respectively, a corresponding respective one of said plurality of guy lines, and a motor for causing said winch to rotate in either said forward direction or said reverse direction upon receipt of a control signal, wherein the direction in which each of said motors causes said corresponding respective one of said plurality of winches to rotate and the length of time said each of said motors causes said corresponding respective one of said plurality of winches to rotate in said forward direction or said reverse direction is based upon information contained in said control signal;

a first length sensor coupled to said lifting carriage and designed to provide a first output signal (1) which is representative of the height said lifting carriage is positioned above said reference surface and (2) which varies continuously as said lifting carriage moves along said vertical path;

a plurality of second length sensors each coupled to a corresponding respective one of said plurality of winch assemblies, each of said plurality of second length sensors being designed to provide a second output signal which is representative of the length of said corresponding respective one of said plurality of guy lines which has been unreeled from the one of said plurality of winch assemblies to which said each plurality of second length sensors is coupled; and

a computer coupled to each of said motors of said plurality of winch assemblies, to said first length sensor, and to said plurality of second length sensors, for generating a unique one of said control signals for each of said motors based on information contained in said first output signal, said second output signals, the distance each of said winch assemblies is spaced horizontally and vertically from the surface on which said lifting carriage rests, the distance said reference is positioned above said surface on which said lifting carriage rests, and trigonometric formulae, said control signals being generated to contain information which when received by said motors will cause said motors to operate in either said forward or reverse directions and for periods of time so that the lengths of said plurality of guy lines unreeled from said plurality of winches are such that said plurality of guy lines acting together support said mast in a vertical position.

4,942,538

TELEROBOTIC TRACKER

Joseph S. Yuan, Toronto; Richard A. MacDonald, West Hill, and Felix H. N. Keung, Willowdale, all of Canada, assignors to Spar Aerospace Limited, Mississauga, Canada

Continuation of Ser. No. 232,546, Aug. 15, 1988, abandoned, which is a continuation of Ser. No. 927,875, Nov. 7, 1986, abandoned. This application Feb. 23, 1989, Ser. No. 315,260
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—513 **10 Claims**

1. A telerobotic system adapted for handling a moving objects, said object having at least three points of known position, comprising:

(a) a robot manipulator comprising

(i) a movable robotic arm having an effector for handling an object,

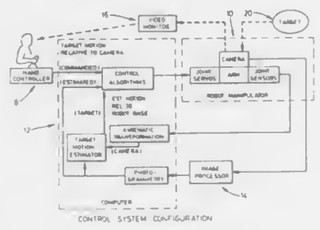
(ii) means for moving said arm in response to arm input signals,

(iii) means for sensing the position of said arm and for generating arm output signals, which arm output signals characterize the dynamic motion behaviour of said arm, and

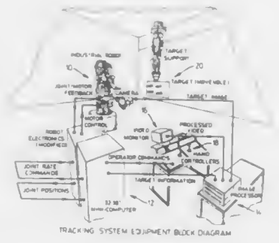
(iv) a video camera carried by said arm, said camera being adapted to respond in real time to real time motion of said moving object within the field of view of said camera;

(b) a video monitor for receiving an input video signal from

said video camera and for displaying an image of the object to a human operator;
(c) image processing means, responsive to the output signal of said camera, for acquiring and pre-processing an image of the object on a frame by frame basis;
(d) hand control means for generating a hand control output signal in response to input from a human operator;



CONTROL SYSTEM CONFIGURATION



TRACKING SYSTEM EQUIPMENT BLOCK DIAGRAM

(e) computer means for generating arm input signals disposed between said hand control means, said robot manipulator, and said image processing means, said computer means receiving (i) output signals from said image processing means and (ii) said arm output signals and (iii) said hand control output signal and generating arm input signals in response to said received signals whereby said arm tracks the real time motion of the object.

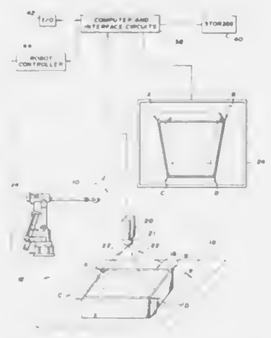
4,942,539

METHOD AND SYSTEM FOR AUTOMATICALLY DETERMINING THE POSITION AND ORIENTATION OF AN OBJECT IN 3-D SPACE

H. Dean McGee, Rochester Hills; Kenneth W. Krause, Rochester, and Bruce E. Coldren, Troy, all of Mich., assignors to GMF Robotics Corporation, Auburn Hills, Mich.

Filed Dec. 21, 1988, Ser. No. 287,885
Int. Cl.[5] G01B *11/00*
U.S. Cl. 364—513 **41 Claims**

1. Method for automatically determining the position and orientation of an object in 3-D space from as few as one digital image generated by as few as one 2-D sensor, the method comprising the steps of:
generating sensor calibration data relating the position and orientation of the 2-D sensor to the 3-D space;
generating reference data relating to at least three non-collinear geometric features of an ideal object;
generating the digital image containing the at least three-non-collinear geometric features of the object wherein at least two of the features reside in the image generated by the one 2-D sensor;
locating each of the features in the digital image;
computing at least three non-parallel 3-D lines as a function of the feature locations and the sensor calibration data, each of the 3-D lines passing through its respective feature of the object at a reference point;
determining a starting point on each of the 3-D lines in the vicinity of its associated reference point;



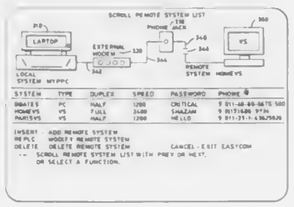
determining the actual 3-D location of each feature on its associated 3-D line utilizing the reference data and its respective starting point on the 3-D line; and
utilizing the reference data and the actual 3-D location of each of the features to determine the position and orientation of the object.

4,942,540

METHOD AN APPARATUS FOR SPECIFICATION OF COMMUNICATION PARAMETERS

Darryl P. Black, Merrimack, N.H., and Elizabeth G. Ricci, Bedford, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Mar. 2, 1987, Ser. No. 20,838
Int. Cl.[5] G06F *3/04*
U.S. Cl. 364—514 **13 Claims**



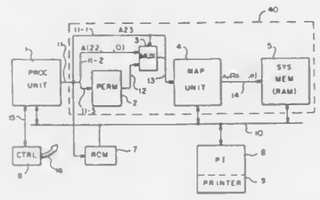
1. A communication parameter editor for use by a user to specify parameters for communication over a communication connection between a local system and a remote system, the editor comprising:
(A) means for prompting for and receiving specifications of communication parameters from the user and
(B) means responsive to the means for prompting and receiving for
(1) displaying, during the prompting for communication parameters, a depiction of the local system, the remote system, and the communication connection therebetween that indicates the value of at least on communication parameter, and
(2) updating said depiction when the value of said one communication parameter changes.

4,942,541

PATCHIFICATION SYSTEM

Jeffrey H. Hoel, Los Altos; Eduardo D. Martinez, Mountain View, and Jacobo Valdes, Palo Alto, all of Calif., assignors to Oms, Inc., Mobile, Ala.

Filed Jan. 22, 1988, Ser. No. 147,260
Int. Cl.[5] G06F *3/12*
U.S. Cl. 364—519 **12 Claims**



1. A page printer processing system for receiving encoded layout data and painting a bit-mapped image stored in read/write physical memory in which each pixel can be independently painted and for shipping out the bit-mapped image to the printer to print a page, including decoding means for receiving the page layout data and converting it to bit-mapped image data, said physical memory storing data, including the bit-mapped page memory data, at random access physical addresses,
means for assigning bit-mapped image data to logical addresses in logical memory, said logical memory divided into logical memory patches,
means for mapping the addresses of logical memory patches to the addresses of physical memory patches so constructed and arranged that at least some logical patches containing identical bit-mapped data are mapped to at least one common patch in physical memory, said mapping means comprising a permuter means for transforming non-contiguous logical addresses to contiguous logical addresses within logical patches, and said mapping means making patches in physical memory other than said at least one common patch available for reuse as soon as the portion of the bit-mapped image stored therein has been shipped out and no further reference to that data is required by placing the addresses thereof upon a stack, and
means for shipping out the bit-mapped image comprising means for supplying sequential logical addresses of logical patches to said mapping means and wherein said mapping means converts the logical addresses to real addresses of patches in physical memory.

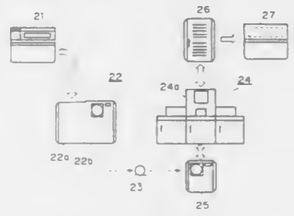
4,942,542

IMAGE PROCESSING COMPUTER SYSTEM OPTIMIZED TO REDUCE IDLE TIME OF COMPUTER

Shinji Yamakawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Oct. 11, 1988, Ser. No. 256,051
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—523 **3 Claims**

1. An image processing computer system, comprising:
an image reading unit for scanning an original to read image data of the original;
a first storage unit of the type which stores data on removable storage medium, connected on-line to said image reading unit, for writing said image data read by said image reading unit onto said removable storage medium;
a second storage unit of the type which stores data on removable storage medium, for loading thereon removable storage medium on which image data has been written by said first storage unit;
a third storage unit having a fixed storage medium for transferring thereto said image data from said second storage unit;
an image editing unit, connected on-line to said second storage unit and said third storage unit, for fetching and editing said image data transferred to said third storage unit and for generating edited image data; and



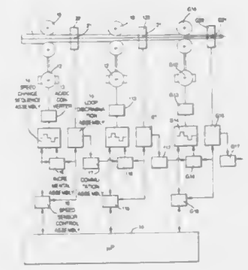
an image recording unit for scanning a photosensitive material to record an image on the photosensitive material in accordance with said edited image data generated by said image editing unit;
said image recording unit being connected on-line to said third storage unit, to receive said edited image data through said third storage unit.

4,942,543

METHOD FOR REGULATING THE PULL IN CONTINUOUS ROLLING TRAINS AND ROLLING TRAIN WHICH ADOPTS SAID METHOD

Luciano Da Rio, Artegna, and Giovanni Bini, Moimacco, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA and CEDA SpA Costruzioni Elettromeccaniche e Dispositivi d'Automazione, Buttrio, Italy

Filed May 13, 1988, Ser. No. 193,528
Claims priority, application Italy, May 15, 1987, 83372 A/87
Int. Cl.[5] G06F *15/46*; B21B *37/06*
U.S. Cl. 364—550 **18 Claims**



13. Rolling train for carrying out a method to regulate the pull in continuous rolling trains,
said method having each stand set in rotation at the desired speed by its own motor so as to produce rolling conditions such as to be able to roll a bar in conditions almost free of pull, whereby a speed variation cycle is carried out, wherein the value of a reference speed is measured and varied to obtain formation of a microloop in the segment of the rolled product located between the stands, this variation of the value being associated with the monitoring of the microloop, and whereby the reference speed of the motor of the corresponding stand is varied for a specified time and this variation of the reference speed, when

applied to the stand upstream of the zone of formation of the microloop, takes place with an increase of the reference speed followed by a successive return to the original reference speed and with a successive reduction of the speed followed by a final return to the reference speed or to the re-aligned speed

wherein said rolling train comprises for each stand an assembly to sequence a change of speed connected to a speed cascade control assembly and to an incremental assembly.

4,942,544

MEDICATION CLOCK

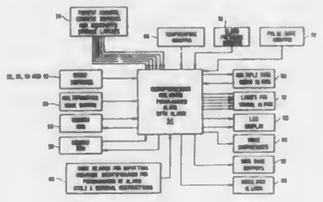
Kenneth B. McIntosh, Rte. #1, Box 479, Rockvale, Tenn. 37153; James O. Pratt, Murfreesboro, Tenn., and Donald E. Stout, Annandale, Va., assignors to Kenneth B. McIntosh, Rockvale, Tenn.

Continuation of Ser. No. 45,047, May 1, 1987, Pat. No. 4,831,562, which is a continuation of Ser. No. 702,746, Feb. 19, 1985, Pat. No. 4,682,299. This application Apr. 14, 1989, Ser. No. 338,104

The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.

Int. Cl.[5] G08B *1/00*; G06G *15/20*

U.S. Cl. 364—569 **15 Claims**



1. A medication clock comprising:

(a) a plurality of compartments with each compartment being separately usable for holding one or more medications to be taken by a person either in response to an alarm or medications not taken in response to an alarm;

(b) a programmable timing means which produces a medication dispensing signal indicating the time that a person is to take one or more medications to be taken at specific times;

(c) means, responsive to the medication dispensing signal produced by the programmable timing means, to produce an alarm for alerting the person that is time to take a particular medication;

(d) means which are separately activable by the person for producing an acknowledgement signal that any one of the medications stored in one of the compartments has been taken either in response to an alarm or not in response to an alarm;

(e) a memory, coupled to the programmable timing means, for storing an identification of each medication taken and the time and date of taking each dosage of each medication as signalled by the occurrence of an acknowledgement signal by one of the means for producing an acknowledgement signal; and

(f) means, coupled to the memory, for providing an output of the identification of the medication, and time and date of each dosage of medication taken by the person which is stored in memory for each of the medications being taken by the person.

4,942,545

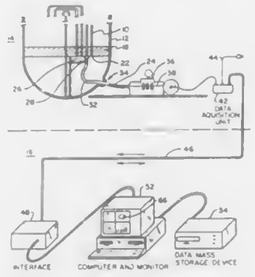
CALIBRATION OF EDDY CURRENT PROFILOMETRY

Mark A. Sapia, Canton, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 6, 1988, Ser. No. 202,503

Int. Cl.[5] G01B *7/00*; G06F *11/00*

U.S. Cl. 364—571.01 **6 Claims**



1. A method of calibration an eddy current profilometry probe in a system for inspecting a substantially cylindrical field tube, the inspection system including a probe having a plurality n of sensor coils, a step tube standard having nominal and step diameters, a data acquisition subsystem connected to the probe, a data storage subsystem connected to the data acquisition system, and a data analysis subsystem including means for accessing the data in the storage subsystem and means for inferring from the accessed data, the radius of the tube at a plurality of axial locations in the tube, and a user interface for communicating the inferred radii to the user, wherein the method comprises the steps of:

passing the probe through the standard to acquire and record in the data acquisition subsystem and data storage subsystem, respectively, eddy current test (ECT) calibration values for each of the n coils at the nominal and the step diameters of the standard;

passing the probe through the tube to acquire and record in the data acquisition subsystem and the data storage subsystem respectively, ECT inspection values for each of the n coils at each of said axial tube locations;

with the data analysis subsystem, selecting from the data storage subsystem the ECT calibration values acquired from the nominal diameter portion of the standard with each of the n coils and assigning to each of the n coils a first set of paired values consisting of the nominal radius and the ECT calibration value from the nominal diameter portion of the standard;

with the data analysis subsystem, selecting from the data storage subsystem the ECT calibration values acquired from the step diameter portion of the standard with each of the n coils and assigning to each of the n coils a second set of paired values consisting of the step radius and the ECT calibration value from the step diameter portion of the standard;

forming n systems of equations, each system having two equations in two unknowns, each equation defining a quantitative relationship equivalent to

$$X_i = -A_i/(Y_i + B_i) + C$$

where

X_i is the tube radius

Y_i is the probe ECT

A_i is a scaling factor

B_i is an adjacent constant

C is an adjacent constant radius

i is each of the 1 through n coils;

for each of the n system of equations, using said first and second sets of paired radii and ECT calibration values, for the quantities X and Y, respectively, to determine the values of A and B for each of the n coils;

selecting an ECT inspection value from the data storage subsystem for at least one of the n coils and determining a corresponding value of field tube radius using said quantitative relationship including said determined values of A and B for said selected coil; and

communicating the determined value of the field tube radius to said user interface.

4,942,546

SYSTEM FOR THE SUPPRESSION OF NOISE AND ITS VARIATIONS FOR THE DETECTION OF A PURE SIGNAL IN A MEASURED NOISY DISCRETE SIGNAL

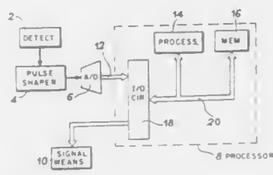
Michel Rambaut, Bures-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 19, 1988, Ser. No. 246,415

Claims priority, application France, Sep. 18, 1987, 87 12970

Int. Cl.[5] H04B *15/00*; G06F *15/20*

U.S. Cl. 364—574 **11 Claims**



1. A system for detecting presence of a pure signal in a measured discrete noisy signal comprising in series connection a detector for converting radiation received into electrical pulses, shaping means for shaping the electrical pulses, an analog-to-digital converter, processing means and signalling means, said processing means including a processor, memory means and an input-output circuit connected to exchange data with the processor and memory means, said processor comprising:

means for measuring a pulse counting rate N_2 having a means noise level M_3 for a first time period ΔT_S;

means for measuring a pulse counting rate N_3 having a means noise level M_2 for a second time period $\Delta T_b = q\Delta T_S$, where q is a positive real number during which said pure signal is not expected to occur;

means for calculating a false detection probability PF as a function of q and said counting rates N_2 and N_3;

means for calculating a false detection level TF as a function of said M_2, M_3 and q;

means for calculating an information I as a function of said false detection probability PF;

means for calculating an information threshold I_m as a function of said false detection level TF; and

means for comparing said information I with said information threshold I_m to thereby determine that a pure signal has been detected in said measured signal, said processing means thereupon controlling said signalling means accordingly.

4,942,547

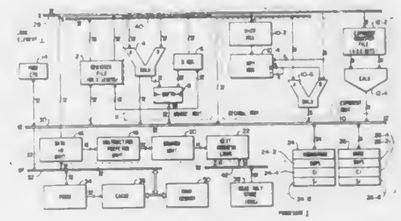
MULTIPROCESSORS ON A SINGLE SEMICONDUCTOR CHIP

Thomas F. Joyce, Westford, Mass.; Richard P. Kelly, Nashua, N.H.; Jian-Kuo Shen, Belmont, and Michel M. Ragain, Medford, both of Mass., assignors to Honeywell Bull, Inc., Waltham, Mass.

Continuation of Ser. No. 722,237, Apr. 11, 1985, abandoned. This application Dec. 7, 1987, Ser. No. 131,246

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **8 Claims**



1. A data processing system includes apparatus for performing the functionality of a basic operating system instruction processor, a scientific instruction processor and a commercial instruction processor integrated into a single semiconductor logic chip, said apparatus comprising:

register file means for storing a plurality of operands including floating point operands, binary coded decimal operands and basic operating system operands;

binary unit means coupled to said register file means for processing mantissas of said floating point operands, and binary data of said basic operating system operands;

decimal unit means coupled to said register file means for processing said binary coded decimal operands; and

exponent unit means coupled to said register file means for processing exponents of said floating point operands; and

instruction processing means coupled to said register means, binary unit means, decimal unit means, and exponent unit means, for processing computer instructions for steering operands to be processed which are held in said register file means to the appropriate ones of said units;

wherein a first result of processing said floating point operands, said binary coded decimal operands and said basic operating system operands is stored back in said register file means.

4,942,548

PARALLEL ADDER HAVING REMOVED DEPENDENCIES

Stamatis Vassiliadis, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1987, Ser. No. 66,364

Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—784 **48 Claims**

1. A method of high speed data processing through first stage, second stage and third stage logic circuits in a digital computer for adding two operands each having a predetermined length and obtaining a multibit result, the steps comprising:

generating with the first stage of logic circuits based on inputs of selected portions of the two operands a plurality of pseudo signals including pseudo generate, pseudo transmit, pseudo transmit half sum, and pseudo half sum signals;

generating with the second stage of logic circuits a plurality of different auxiliary signals produced from said pseudo generate, pseudo transmit, and pseudo half sum signals;

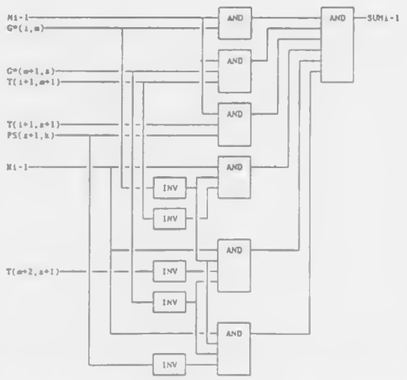
generating with the second stage of logic circuits a new-

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carry signal described by a recursive new-carry equation based on said pseudo generate and pseudo transmit signals; and

generating with the third stage of logic circuits a recursive SUM equation as a function of said pseudo signals and said auxiliary signals and said new-carry signal to produce the multibit result for further processing in the computer.

48. In a computer, an improved high speed adder with multiple logic stages for adding two operands each having a predetermined length of 32 bits, including first stage logic circuits, intermediate stage logic circuits receiving certain inputs from said first stage logic circuits, and final stage logic circuits receiving certain inputs from said intermediate stage logic circuits, wherein said first stage, intermediate and final stage logic circuits comprise AND-OR books not greater than a size of 3×8 where 3 refers to the maximum number of inputs for each AND gate and 8 refers to the maximum number of AND gates providing inputs to the OR gate.



4,942,549

RECURSIVE ADDER FOR CALCULATING THE SUM OF TWO OPERANDS

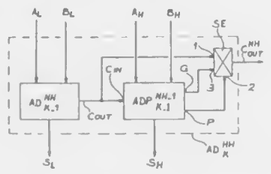
Francis Jutand, Cachan, and Luc Montperrus, Ville D'Avray, both of France, assignors to Etat Francais represente par le Ministere des Postes, des Telecommunications et de l'Espace (CNET), Issy Les Moulineaux, France

Filed Mar. 7, 1989, Ser. No. 320,319

Claims priority, application France, Mar. 7, 1988, 88 02867

Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—786 **4 Claims**



1. A recursive type adder for calculating the sum of two operands A and B respectively formed of binary data $a_1, a_2, \ldots a_n$ and $b_1, b_2, \ldots, b_n$ of different weights, operands A and B with a first and a second operand AL and BL respectively formed of the low weight data and a third and fourth operand AH and BH respectively formed of the high weight data, the adder having a recursion level NH, NH being an integer higher than or equal to 1, and an order K, K being an integer defining a number of elementary addition cells in a level 1 adder, being labelled AD_K^{NH}, which comprises:

(a) a first recursive adder AD_{K-1}^{NH} of order K−1 and level NH with inputs respectively receiving the first and second low weight operands AL and BL, and a first and a second output respectively furnishing a sum operand SL from the first and second low weight operands AL and BL, and carry output bit COUT, for the additon effected;

(b) a second recursive adder ADP_{K-1}^{NH-1} or order K−1 and level NH−1 with inputs respectively receiving the third and fourth high weight operands AH and BH, an input CIN connected to the second output (COUT) of the first adder and a first, a second and a third output respectively furnishing a sum operand SH from the third and fourth high weight operands AH and BH, a carry propagation bit P corresponding to said sum and a generation bit G from said carry; and

(c) a global carry selector (SE) with three inputs (1, 2, 3) respectively connected to the second output (COUT) of the first adder and to the second and third outputs (G, P) of the second adder, and an output furnishing an outgoing global carry bit C_{OUT}^{NH} resulting from the logic OR operations

$$C_{OUT} = G + P \cdot COUT.$$

4,942,550

PRINTED CIRCUIT BOARD TOPOGRAPHY FOR HIGH SPEED INTELLIGENT INDUSTRIAL CONTROLLER WITH MULTIPLE BOARDS LOCATED WITHIN A SINGLE SLOT

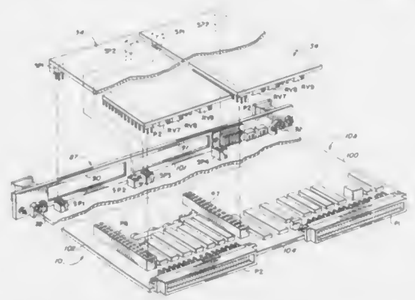
Kenneth W. Murray, Livingston, Scotland, assignor to Burr-Brown Ltd., Livingston, Scotland

Filed Jun. 6, 1988, Ser. No. 202,944

Claims priority, application United Kingdom, Jun. 23, 1987, 8714639

Int. Cl.[5] G06F *9/02*

U.S. Cl. 364—900 **14 Claims**



1. An industrial input/output controller for connection to a bus on a back plane, comprising in combination:

(a) a processor board having right, left, upper, and lower edges, including a first connector for plug-in connection to a VMEbus connector on the back plane, a first buffer circuit connected to the first connector, a first address bus and a first data bus each connected to the first buffer circuit, a dual port random access memory connected to the first address bus and the first data bus, a second buffer circuit connected to the first address bus and the first data bus, a second address bus and a second data bus each connected to the second buffer circuit, a microprocessor, a random access memory, read-only memory, an asynchronous communications interface adaptor, a programmable timer module, interrupt handling and generation circuitry, electrical isolation circuitry each connected to the second address bus and the second data bus, a third address bus and a third data bus each connected to the electrical isolation circuitry, and second and third connectors each connected to both the third address bus and the third data bus;

(b) a first daughter board having right, upper, left, and lower edges including a fourth connector, a fifth connector, and first I/O circuitry connected between the fourth and fifth connectors;

(c) a second daughter board having right, upper, left, and lower edges, including a sixth connector, a seventh connector, and second I/O circuitry connected between the sixth and second connectors;

the first and second daughter boards being attached in close parallel relationship, the fourth connector of the first daughter board being plugged into the second connector of the processor board and the sixth connector of the second daughter board being plugged into the third connector of the processor board both to electrically connect the first and second daughter boards to the third address bus and the third data bus and rigidly attach the first and second daughter boards and the processor board, the fifth and seventh connectors being available for connection of external I/O conductors to the first and second daughter boards, respectively, the first and second daughter boards covering a first area comprising approximately the lower two-thirds of the component side of the processor board, a second area including approximately the upper one-third of the component side of the processor board,

the first connector being located along the right edge of the processor board adjacent to the upper edge thereof, the first buffer circuit being located partly in the second area and partly in the first area adjacent to the first connector, the random access memory, a first portion of the second buffer circuit, and the read-only memory being located in the second area from right to left along the upper edge of the processor board, the microprocessor being located below the first portion or the second buffer circuitry, a second portion of the second buffer circuit being located between the microprocessor and the first buffer circuit below the random access memory,

the interrupt handling and generation circuitry being located in the first area adjacent to the first buffer circuit, the second connector being located in the first area along the lower edge of the processor board adjacent to the lower portion of the right edge thereof, a first portion of the isolation control circuitry being located in the first area along the lower portion of the right edge of the processor board above the second connector, the third connector being parallel to the second connector and located in the first area above the first portion of the isolation control circuitry beneath the interrupt handling and generation circuitry and the first buffer, the electrical isolation circuitry being located in the first area to the left of the first portion of the isolation control circuitry between the second and third connectors, a second portion of the isolation control circuitry being located in the first area to the left of the electrical isolation circuitry, the random access memory being located in the first area in the lower left corner of the component side of the processor board to the left of the second portion of the isolation control circuitry whereby only a single slot space for connection to the VME bus is required.

4,942,551

METHOD AND APPARATUS FOR STORING MIDI INFORMATION IN SUBCODE PACKS

Walter R. Klappert, Topanga, and Alan J. McPherson, Burbank, both of Calif., assignors to WNM Ventures Inc., Burbank, Calif.

Filed Jun. 24, 1988, Ser. No. 211,355

Int. Cl.[5] G11B *7/00, 20/00;* G06F *3/06*

U.S. Cl. 364—900 **23 Claims**



1. A system for storing MIDI information in subcode packs for encoding on a compact disc having a main channel and a subcode channel comprising:

(a) a computer having a random access memory, a processor and coupled to a storage device;

(b) MIDI source means for generating MIDI signals;

(c) first interface means coupled to said MIDI source means and said computer for converting the MIDI signals to a form for loading into said memory for access by said processor;

(d) program means for controlling the operation of said processor and said memory so as to convert the MIDI data in said memory to a plurality of subcode packs and writing said subcode packs to a storage medium on said storage device;

(e) second interface means for retrieving said subcode packs on said storage medium and for coupling to a compact disc encoder for converting the MIDI data in the retrieved subcode packs to electric signals useable by the compact disc encoder to encode said MIDI data in the subcode channel on the compact disc.

4,942,552

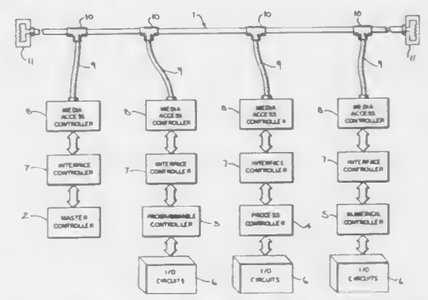
METHOD AND APPARATUS FOR SAVING AND PERFORMING INDUSTRIAL CONTROL COMMANDS

Richard A. Merrill, Ann Arbor; Bruce L. Crockett, Plackney, and Robert C. Strader, Saline, all of Mich., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Nov. 20, 1986, Ser. No. 932,987

Int. Cl.[5] G06F *13/00, 13/14, 9/40*

U.S. Cl. 364—900 **14 Claims**



1. A method for processing communications command messages in an interface controller which forms part of a network station, the interface controller being connected to a communications network interconnecting a plurality of network stations, and in which each command message is a member of a predetermined set of command messages, the method comprising the steps of:

(a) receiving a first command message in the interface controller from the communications network, the first com-

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mand message being a SAVE type remote command message which was originated by one of said plurality of network stations, the first command message including an embedded command and a first ID field comprising a unique identifier corresponding to the embedded command, the embedded command comprising at least a first destination field which identifies one or more of said plurality of network stations and a first operation code which identifies one command message from said predetermined set of command messages, the embedded command being embedded in the format of the first command message;

(b) storing the embedded command in a remote command table which forms a part of said interface controller at a location in the remote command table corresponding to the unique identifier in the first ID field;

(c) repeating steps (a) and (b) to receive and store a plurality of embedded commands in the remote command table, each embedded command being stored in the remote command table at a location corresponding to the unique identifier in the ID field;

(d) receiving a second command message in the interface controller from the communications network, the second command message being a PERFORM type remote command message which was originated from one of said plurality of network stations and the second command message including one or more second ID fields, each second ID field including the unique identifier corresponding to one of said plurality of embedded commands; and

(e) responding to the second command message by the interface controller by (i) retrieving the embedded command corresponding to the unique identifier in one of the second ID fields from the remote command table, (ii) forming a third command message by including a second destination field in the third command message which comprises the first destination field from the retrieved embedded command and by including a second operation code in the third command message which comprises the first command code from the retrieved embedded command, (iii) transmitting the third command message onto the communications network to one or more target network stations as designated by the second destination field, and (iv) performing steps (i) through (iii) for each embedded command corresponding to the unique identifier in each second ID field.

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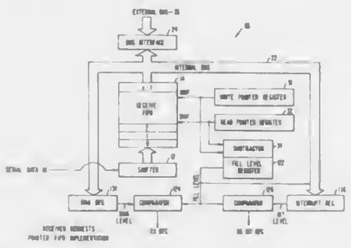
SYSTEM FOR PROVIDING NOTIFICATION OF IMPENDING FIFO OVERRUNS AND UNDERRUNS

Monte J. Dalrymple, Fremont, and Lois F. Brubaker, Newark, both of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed May 12, 1988, Ser. No. 192,946

Int. Cl.[5] G06F *13/38*

U.S. Cl. 364—900 **7 Claims**



1. An apparatus for providing notification of impending FIFO overruns and underruns to a direct memory access controller or a co-processor having a predetermined first request level and to a microprocessor having a predetermined second request level, comprising:

means for detecting the fill or empty level of a FIFO and generating an output to indicate the fill or empty level detected;

means for comparing the output of the detecting and generating means to the first request level and for generating a notification to the direct memory access controller or the co-processor when the first request level is exceeded; and

means for comparing the output of the detecting and generating means to the sound request level and for generating a notification to the microprocessor when the second request level is exceeded by the fill or empty level.

4,942,554

THREE-DIMENSIONAL, ONE-TRANSISTOR CELL ARRANGEMENT FOR DYNAMIC SEMICONDUCTOR MEMORIES COMPRISING TRENCH CAPACITOR AND METHOD FOR MANUFACTURING SAME

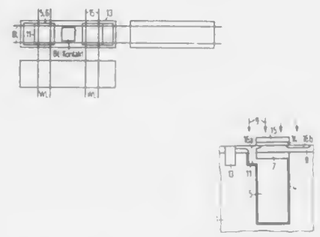
Roland Kircher, and Josef Goeltzlich, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 18, 1988, Ser. No. 259,699

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1987, 3740171

Int. Cl.[5] G11C *11/24*; H01C *29/78*

U.S. Cl. 365—149 **13 Claims**



1. A three-dimensional, one-transistor cell arrangement for dynamic semiconductor memories, having a field effect transistor and one capacitor for the charges to be stored, the capacitor is created as a trench capacitor in the substrate, the capacitor including a first electrode formed by the substrate and a second electrode that stores the charges is formed by doped polycrystalline silicon that fills up the trench, the field effect transistor resides at the surface of the substrate and has an insulated gate electrode the capacitor separated by an insulating layer is arranged under the field effect transistor a recrystallized silicon layer is applied on the insulating layer and source/drain zones are arranged in the recrystallized silicon layer, the capacitor is connected with the source/drain zones via an electrically conductive contact and:

in an upper portion of the trench, an asymmetrical extension of the trench opening is introduced into the substrate in the upper part of the trench, the asymmetrical extension being filled with polycrystalline silicon having the same doping as in the trench, the electrically conductive contact is established via this filled extension and representing a subregion of the second electrode of the capacitor that stores the charge;

the insulating layer separating the transistor from the capacitor is arranged next to the asymmetrical extension of the trench opening in the trench having the same geometry as the lower portion of the trench; and

the gate electrode of the transistor is arranged over the insulating layer and above the recrystallized silicon layer situated thereover, being arranged thereat such that the source zone generated in the recrystallized silicon layer overlaps the electrically conductive contact in the asymmetrical extension of the trench opening.

4,942,555

BI-MOS SEMICONDUCTOR MEMORY HAVING HIGH SOFT ERROR IMMUNITY

Hisayuki Higuchi, Koknbunji; Makoto Suzuki, Hachioji; Noriyuki Homma, Kodaira, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 38,940, Apr. 16, 1987, Pat. No. 4,866,673. This application Jul. 7, 1989, Ser. No. 376,865

Claims priority, application Japan, Apr. 17, 1986, 61-89012

The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—189.07 **7 Claims**

1. A semiconductor memory comprising:

a plurality of pairs of data lines;

a plurality of word lines orthogonally crossing said data lines; and

a detection circuit for detecting memory data from a conduction ratio between a transistor of a flip-flop type memory cell, which is connected to one of said word lines and one pair of said plurality of pairs of data lines, and a load device which is connected to one data line of said one pair of said data lines,

wherein the voltage of said word line for reading out said memory data from said flip-flop type memory cell is set to a voltage lower than the sum of the voltage of said data line and the threshold voltage of a data transfer MOS transistor of said memory cell, and a signal read out from said memory cell through said data line is inputted to a differential amplifier using a base or gate of a junction type transistor as its input, and

wherein a voltage of said word line for writing data into said flip-flop type memory cell is set to a voltage higher than said voltage of said word line for reading out data from said flip-flop type memory cell.

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SEMICONDUCTOR MEMORY DEVICE

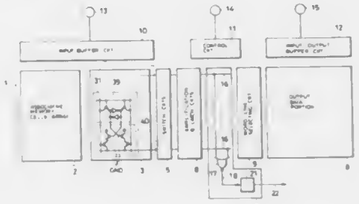
Toshio Sasaki, Tokyo; Masakazu Aoki, Tokorozawa; Masashi Horiguchi, Kokubunji; Yoshinobu Nakagome, Hachioji; Shinichi Ikenaga, Kokubunji, and Toshiaki Masuhara, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 41,198, Apr. 22, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 377,181

Claims priority, application Japan, Apr. 23, 1986, 61-92090; May 9, 1986, 61-104640; Jul. 25, 1986, 61-173640

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **30 Claims**



1. A semiconductor memory device comprising:

an associative memory including a plurality of associative memory cells divided into individual groups of associative memory cells, each associative memory cell including a memory cell which stores reference data, and a comparator which compares said reference data with an inquiry data and which generates a coincidence detection signal from an output thereof;

a switch circuit including at least first switching means and second switching means for providing controllable transfer of coincidence detection signals therethrough;

wherein respective outputs of the comparators which correspond to one of said groups of associate memory cells of said associative memory are interconnected to a first end of said first switching means, respective outputs of the comparators which correspond to another one of said groups of associative memory cells of said associative memory are interconnected to a first end of said second switching means, and a second end of said first switching means and a second end of said second switching means are interconnected to a coincidence detecting common line;

wherein each of said first and second switching means has a control terminal for controlling the closing and opening of the connections between said first end and said second end, and

wherein said switch circuit further includes control circuit means for controllably opening or closing said first and second switching means and having a first output which is connected to said control terminal of said first switching means and a second output which is connected to said control terminal of said second switching means.

4,942,557

MARINE SEISMIC SYSTEM

Aaron J. Seriff, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 18, 1983, Ser. No. 495,854

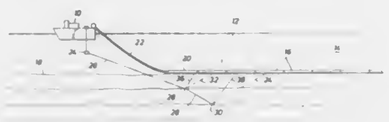
Int. Cl.[5] G01V *1/38, 1/47*

U.S. Cl. 367—15 **11 Claims**

1. A method of marine seismic exploration of the earth strata beneath a body of water, said method comprising the steps of:

generating in said body of water downwardly travelling compressional waves and sensing at the interface between

said body of water and earth strata upwardly travelling reflected shear waves that have been converted at said



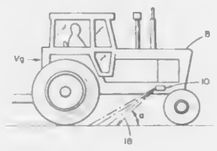
earth strata from said downwardly travelling compressional waves.

4,942,558

ULTRASONIC VELOCITY SENSOR

Thomas K. Hiniker, N. Mankato, and Semor D. Tofte, Mankato, both of Minn., assignors to Micro-Trak Systems, Inc., Mankato, Minn.

Filed Mar. 31, 1988, Ser. No. 175,777
Int. Cl.[5] G01S *15/58*
U.S. Cl. 367—91 **12 Claims**



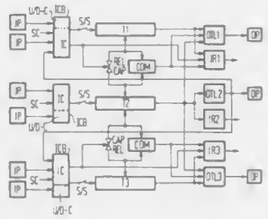
1. An ultrasonic velocity sensor comprising:
(a) a transducer for alternatively transmitting an ultrasonic frequency signal and receiving a reflection of the transmitted signal;
(b) clock means for driving the signal transmitted by the tranducer at a predetermined frequency and for providing clock signals to a signal processing means;
(c) amplifier means for processing the reflected signals sensed by the transducer to amplify those signals which are in a predetermined frequency range;
(d) temperature sensing means for sensing the temperature of the medium through which the ultrasonic signal is transmitted and generating an electrical signal indicative of that temperature;
(e) signal processing means for receiving the temperature-indicative signal generated by the temperature sensing means receiving the signal received at the transducer and amplified at the amplifier means, and processing the signals received to generate a signal indicative of the velocity of the transducer relative to the surfaCe which relfects the reflected signal;
(f) software means for controlling the signal processing means, said software means including means for averaging the readings sampled from the transducer by the signal processing means, means for determining whether successive measurements of the frequency of the received signal indicate a rate of acceleration greater than a predetermined amount and means for limiting the change in the velocity signal output by the sensor if the acceleration exceeds said predetermined amount.

4,942,559

COUNTER/TIMER CIRCUIT FOR A MICROCONTROLLER

Rod Fleck, Munich, Fed. Rep. of Germany; Mark Poret, Mesa, Ariz.; Karl-Heinz Mattheis, Forstinning, Fed. Rep. of Germany; Javier Magana, Austin, Tex., and Christoph Meinhold, Planegg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany and Advanced Micro Devices Inc., Austin, Tex.

Filed Jul. 7, 1989, Ser. No. 376,857
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 23823235
Int. Cl.[5] G04F *8/00*; H03K *21/38*
U.S. Cl. 368—113 **9 Claims**



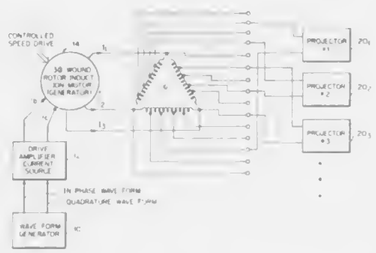
1. Counter/timer circuit for a microcontroller, comprising a central register and two auxiliary registers each having transfer outputs and counting inputs, bistable output storage elements each being connected to a respective one of said transfer outputs, interrupt request flags each being connected to a respective one of said transfer outputs, start/stop elements each being connected to a respective one of said counting inputs, input control blocks each being connected to a respective one of said start/stop elements, first reload, capture and compare units connected between one of said auxiliary registers and said central register, and second reload, capture and compare units connected between the other of said auxiliary registers and said central register.

4,942,560

SONAR PROJECTOR ARRAY DRIVE SIGNAL SOURCE

William P. Harthill, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 13, 1989, Ser. No. 322,265
Int. Cl.[5] H04B *1/02*
U.S. Cl. 367—137 **7 Claims**



1. A sonar projector drive signal source comprising:
waveform generator means for transforming inphase and quadrature excitation to three-phase rotor excitation;
a three-phase generator excited by said waveform generator means and driven at a synchronous frequency corresponding to a center frequency of a desired bandpass signal;

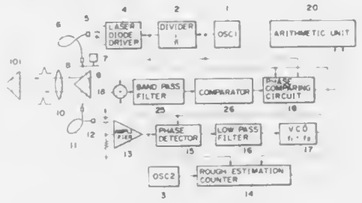
a three-phase delta connected transformer connected to an output of said three-phase generator, said transformer having a plurality of taps; and
a plurality of acoustic projectors connected to respective taps on said transformer.

4,942,561

DELAY TIME MEASURING DEVICE

Masahiro Ohishi, and Fumio Ohtomo, both of Tokyo, Japan, assignors to Kabushikikaisha Topcon, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,630
Claims priority, application Japan, Jun. 29, 1988, 63-161894; Dec. 28, 1988, 63-334971
Int. Cl.[5] G04F *8/00*; G01C *3/08*
U.S. Cl. 368—118 **13 Claims**



1. A delay time measuring device comprising:
first reference signal means for supplying a first reference signal having a prescribed frequency;
second reference signal means for supplying a second reference signal synchronized with said first reference signal and having a lower frequency than that of said first reeference signal;
light emission means, coupled to said second reference signal means, for emitting a pulse of light toward a measuring piont in response to said second reference signal;
light reception means for receiving a reflected light signal from the measuring point;
first measuring signal means, coupled to said light reception means, for generating a first measuring signal sychronized with said reflected light signal and having a frequency equal to the frequency of said first reference signal plus the frequency of said second reference signal;
second measuring signal means, coupled to said first refference signal means and said first measuring signal means, for mixing said first reference signal and said first measuring signal and forming a second measuring signal representative of the difference in frequency between said signals; and
phase difference detection means, coupled to said second reference signal means and said second measuring signal means, for developing a precision time delay representative signal based on the phase difference between said second reference signal and said second measuring signal.

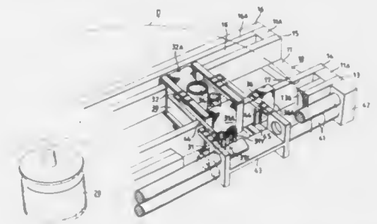
4,942,562

PICKUP ACTUATOR FOR DISK-TYPE MEDIA

Jun Suzuki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 21, 1988, Ser. No. 171,073
Claims priority, application Japan, Apr. 15, 1987, 62-93907
Int. Cl.[5] G11B *07/12, 03/10, 21/08*
U.S. Cl. 369—44.11 **1 Claim**

1. An actuator for an optical pickup unit, comprising:
a first pair of first and second yoke plates having an air gap therebetween;
a second pair of first and second yoke plates having a second gap therebetween;
an air gap defined between said first and second pairs of yoke plates;
each of said first yoke plates including an elongated magnet fixed thereto;
guide means extending in parallel with said first and second pairs of yoke plates;
slider means slidably received on said guide means;
a pickup unit including at least one lens unit;
means for supporting said pickup unit including at least one suspension arm connected at one end to said pickup unit and at a second end to said slider;
said pickup unit further including first and second bobbins disposed surrounding said second yoke plates, respectively, first and second coils wound about said first and second bobbins, for controlling positioning of said pickup unit in a tracking direction, a portion of said first and second coils facing said elongated magnets;
a pair of third coils supported by each of said first and second coils and facing said elongated magnets, said third coils controlling positioning of said pickup unit in focusing and tilt directions;
a third bobbin rigidly connected to said slider and surrounding one of said second yoke plates; and
a fourth coil wound on said third bobbin and having a portion facing one of said elongated magnets, for controlling the advance of said pickup unit in a radial direction of a disk.



4,942,563

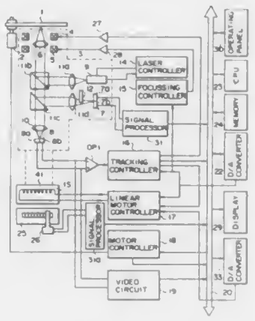
SIGNAL PROCESSING APPARATUS AND METHOD CAPABLE OF PROVIDING PRECISE DIGITAL DATA

Mikio Yamamuro, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1988, Ser. No. 249,928
Claims priority, application Japan, Sep. 30, 1987, 62-246095; Sep. 30, 1987, 62-246096; Sep. 30, 1987, 62-246097
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.11 **9 Claims**

1. An apparatus for processing signals from a detector, the detector having at least first and second areas for generating electrical signals upon receiving a physical quantity, comprising:
first operation means for deriving out the sum of the electrical signals from at least the first and second areas of the detector to generate a first operation signal, the first operation signal having a predetermined amplitude;
second operation means for deriving out the difference between the electrical signals from at least the first and second areas of the detector to generate a second operation signal; and
converting means for converting the second operation signal

generated by the second operation means into digital data in accordance with a conversion gain determined by the



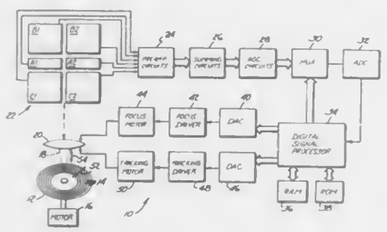
amplitude of the first operation signal generated by the first operation means.

4,942,564

SERVO SYSTEM GAIN COMPENSATION METHOD FOR MAGNETO-OPTIC DISK DRIVES

Gregory V. Hofer, Colorado Springs, and James C. McDonald, Black Forest, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1988, Ser. No. 265,219
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—58 **21 Claims**



1. A method for operating programmable processing means in an optical disk drive to compensate servo system gain, including:

receiving a servo error signal;

outputting a servo control signal;

storing data characteristic of a desired servo system gain at a predetermined test frequency;

generating a test signal at the test frequency;

summing the test signal and the servo error signal;

determining current servo system gain at the test frequency;

computing a gain factor as a function of the current servo system gain and desired servo system gain;

storing data characteristic of the gain factor; and

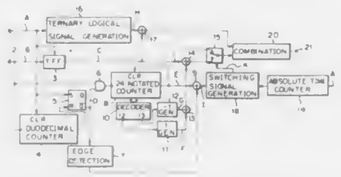
multiplying the servo error signal by the gain factor so the servo system gain equals the desired servo system gain.

4,942,565

APPARATUS FOR RECORDING A WOBBLING, SPIRAL GUIDE GROOVE ON AN OPTICAL DISC

Roger Lagadec, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 102,009, Sep. 28, 1987, abandoned. This application Jul. 28, 1989, Ser. No. 387,425
Claims priority, application Japan, Sep. 30, 1986, 61-232741
Int. Cl.[5] G11B *1/24*
U.S. Cl. 369—59 **6 Claims**



1. Apparatus for forming a wobbling, substantially spiral pregroove on a disc-shaped recording medium for use as a tracking guide when subsequently recording data on the recording medium, said apparatus comprising:

means for rotating said disc-shaped recording medium;

a laser beam source for generating a laser beam;

means for moving said laser light beam source radially relative to said disc-shaped recording medium;

optical means for guiding said laser beam to said disc-shaped recording medium, said optical means including deflecting means for deflecting said laser beam in a radial direction of said disc-shaped recording medium in response to a modulated control signal while said disc-shaped recording medium rotates and said laser light beam source moves radially relative to said recording medium, whereby a wobbling, substantially spiral tracking guide pregroove is formed on said disc-shaped recording medium; and

control signal generating means connected to receive a first signal that has a first predetermined frequency and to receive a coded information second signal that has a second predetermined frequency at least an order of magnitude lower than said first predetermined frequency, said modulated control signal being generated by superimposing said second signal on said first signal, said modulated control signal being fed to said deflecting means for causing said laser light beam to wobble as the substantially spiral pregroove is formed on said recording medium in accordance with said modulated control signal.

4,942,566

DEVICE FOR ILLUMINATING AN AUXILIARY TRACK OF A MOTION PICTURE FILM

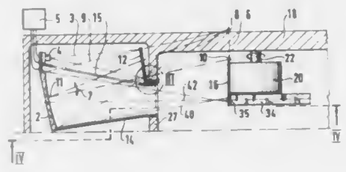
Bruno Godard, Les Ulis, France, assignor to Societe anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Jun. 20, 1988, Ser. No. 208,617
Claims priority, application France, Jun. 19, 1987, 87 08618
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—113 **16 Claims**

1. An illuminating device for illuminating an auxiliary track of a motion picture film running in a run direction, over at least one read window which is elongate along a read line transverse to said run direction, the length of said read window being at least equal to the width of said auxiliary track, said device comprising:

a source of light for forming an incident light beam having a virtual point origin on said read line and propagating along a mean incident direction; and

an optical system for forming said incident light beam into an illuminating beam focused on said film in order to illuminate said area in the plane of said film corresponding to said read window, said optical system comprising a concave focusing mirror having a reflecting surface which has a center point and which is a portion of a surface of revolution about an axis of revolution which coincides with said read line, such that all light rays coming from said point origin and irradiating said reflecting surface are reflecting towards said line, with a normal to the center



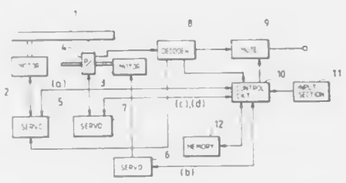
point of said mirror forming a mean angle of inclination with said mean incident direction, said angle of inclination and the angular extent of said mirror on either side of said center point in a plane passing through said read line being such that the beam reflected by said mirror illuminates the entire length of the read window.

4,942,567

DISK REPRODUCING METHOD

Takahumi Shiba, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 26, 1988, Ser. No. 160,807
Claims priority, application Japan, Feb. 27, 1987, 62-46357
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—124 **3 Claims**



1. A disk reproducing method, comprising the steps of:

rotating a disk with a spindle motor;

controlling the rotation of said spindle motor with a first servo circuit;

reproducing data on said disk by tracking said disk with a pickup;

controlling the tracking of said pickup with a second servo circuit wherein said tracking is controlled by adjusting a gain of said second servo circuit;

driving said pickup with a slider motor radially of said disk;

controlling the rotation of said slider motor with a third servo circuit, said rotation being controlled by adjusting said third servo circuit in communication with said second servo circuit; and

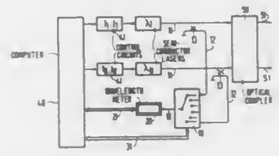
when said first servo circuit is maintained at other than a predetermined speed for a first predetermined period of time, turning off said second and third servo circuits for a second predetermined period of time and then turning said second and third servo circuits back on.

4,942,568

OPTICAL TRANSMISSION DEVICE

Giok D. Khoe, and Ching K. Wong, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 13, 1988, Ser. No. 143,872
Claims priority, application Netherlands, Jan. 19, 1987, 8700108
Int. Cl.[5] H04B *10/04*; H04J *14/02*
U.S. Cl. 370—3 **7 Claims**



1. An optical transmission device comprising:

a. a plurality of semiconductor lasers for transmitting an equal plurality of respective radiation beams modulated with respective information streams and having respective wavelengths which are different for each information stream;

b. a measuring system for measuring each wavelength including:

i. a selection device for successively and temporally selecting the respective radiation beams one at a time; and

ii. a wavelength meter for determining the wavelength of a current one of the respective radiation beams selected by the selection device; and,

c. a control device for influencing the wavelengths of the semiconductor lasers as a function of a signal generated by the measuring system;

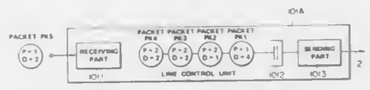
wherein the selection device is a switching device for establishing and interrupting a respective radiation path from each respective semiconductor laser to the wavelength meter.

4,942,569

CONGESTION CONTROL METHOD FOR PACKET SWITCHING APPARATUS

Junichi Maeno, Akikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1989, Ser. No. 314,865
Claims priority, application Japan, Feb. 29, 1988, 63-46812
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—60 **6 Claims**



1. In a packet switching apparatus interconnected by associated communication lines to one or more other packet switching apparatuses, wherein data packets are output from various types of terminals and are temporarily held in a queue for exchange between the packet switching appartuses, a congestion control method comprising the steps of:

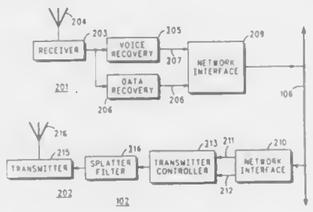
attaching a plurality of types of priority data indicating different priorities for different demands to each of the data packets; and

controlling the queue when a new data packet is input to the queue to satisfy major demands for the data packets concurrently according to said plurality of types of attached priority data of said new data packet and of all the data packets held in the queue.

4,942,570
MULTIPLE CONTROL SLOT TDM/FDM COMMUNICATION SYSTEM

Michael D. Kotzin, Buffalo Grove; Kenneth J. Crisler, Wheaton; Lawrence M. Mohl, Hoffman Estates; Theodore Saltzberg, Chicago; Daehyoung Hong, Hanover Park, all of Ill., and Anthony P. Van den Heuvel, Parkland, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 23, 1989, Ser. No. 300,392
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—80 17 Claims

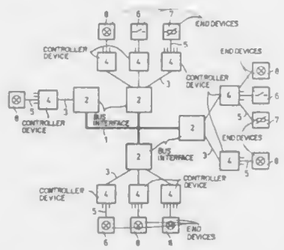


1. A time division multiplexed communication system for allowing communications between two or more communication units, on a communication channel, wherein said system supports a plurality of TDM frames on said communication channel, and wherein each of said TDM frames includes a plurality of time slots, wherein at least some of said time slots substantially support said communications and at least two of said time slots in each TDM frame on said communication channel each substantially support independent communication control information, such that a communication unit need only receive one of the at least two of said time slots per TDM frame in order to receive communication control information relevant to that communication unit.

4,942,571
ON-BOARD NETWORK FOR MOTOR VEHICLES

Antonius Möller, Delmenhorst; Herbert Reimann, Oldenburg; Bernhard Schürmann, Brake, and Gerold Wilts, Ovelgoenne, all of Fed. Rep. of Germany, assignors to Bergmann Kabelwerke AG, Berlin & Brake, Fed. Rep. of Germany

Filed Sep. 8, 1988, Ser. No. 241,612
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1987, 3730468
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.1 15 Claims

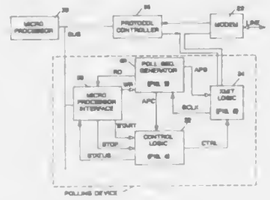


12. A method for operating an on-board network for motor vehicles with multiplex control for switching, monitoring and controlling a plurality of end devices, wherein the network comprises a plurality of control devices, each control device being connected to end devices in a star configuration, and having signal converters for exchanging end device signals with at least one end device; a plurality of bus interfaces, each bus interface being connected to said control devices in a star configuration, each bus interface having first transmitter/-receiver means for exchanging control device signals with at least one of said control devices, second transmitter/receiver means and processor means connecting said first and second transmitter/receiver means; and a common bus, said bus interfaces being connected to said common bus through said second transmitter/receiver means for exchanging data signals amongst said bus interfaces, said bus interfaces operating substantially independently of one another; the method comprising transmitting from each bus interface signals on the common bus in response to control signals from the signal converters of the associated control devices and internal system states of the bus interface and of the control devices in a cycle, and interrupting the cycle each time a state to be transmitted changes, and transmitting the changed state.

4,942,572
PROCESS AND DEVICE FOR HIGH SPEED POLLING

Jean-Louis Picard, La Colle sur Loup, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 139,406, Dec. 29, 1987, abandoned.
This application Jun. 26, 1989, Ser. No. 372,146
Claims priority, application France, Dec. 30, 1986, 86430055
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—85.8 3 Claims



1. A system for polling from a microprocessor controlled Communication Controller, N digital terminals made to communicate with said Controller via a high speed channel, said system including at the Controller site:

means sensitive to an order from said microprocessor for generating and broadcasting a specific pattern announcing subsequent polling operations;

a pseudo random generator sensitive to a subsequent order from said microprocessor for generating and broadcasting a first high rate equal to the bit rate, a random polling sequence of station addresses in which sequential station addresses are separated in time at the broadcasting rate by z bits of other station addresses where z is a whole number greater than or equal to 80.

sensing means within said microprocessor controlled Communication Controller for monitoring the message received back from the terminals;

inhibit means connected to said sensing means for subsequently broadcasting an inhibit message for inhibiting further message sending from the terminals upon a received message being detected by said sensing means;

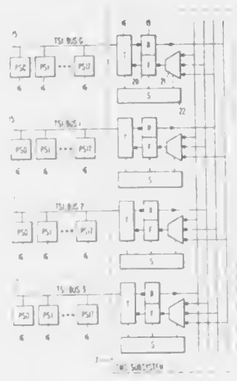
validity checking means sensitive to said sensing means for checking the validity of said received message; and

means sensitive to an invalidity being reported by said validity checking means for switching said polling to a second low rate polling means.

4,942,573
LOOSELY COUPLED PARALLEL NETWORK SIMULATOR

Thomas R. Woodward, West Chester, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 25, 1987, Ser. No. 30,024
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.9 7 Claims



1. A network simulator for simulating a plurality of parallel processing networks, said simulator comprising:

a plurality of buses for transmitting information segments to processing sites;

each of said buses includes data line means to transmit an information segment, at least one control line means to transmit control information related to said information segment; and

a reply line means for indicating that another processing site is coupled to said bus to receive said information segment; and

a plurality of sets of processing sites each set being coupled to a given one of said plurality of buses, each processing site having a processor means and interface means coupling said processor to said bus; and

clock means coupled to each of said interface means to synchronize time intervals during which said respective interface means couples it corresponding processor means to its corresponding bus; and

time multiplex switching means coupled to each of said buses to receive an information segment from one of said buses for transmission on another of said buses; and

each of said interface means including sequencing means coupled to said clock means to select during which time interval the corresponding processor means is to be coupled to its respective bus.

4,942,574
CONCURRENT RESOURCE REQUEST RESOLUTION MECHANISM

Bruce R. Zelle, Naperville, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1988, Ser. No. 175,695
Int. Cl.[5] H04L *5/00*
U.S. Cl. 370—85.15 3 Claims

1. A resource allocation arrangement for allocating ones of a plurality of resources comprising:

a plurality of controller means; and

data ring means connected to each of said controller means for transmitting availability data for each of said resources among said controller means;

each of controller means comprising:

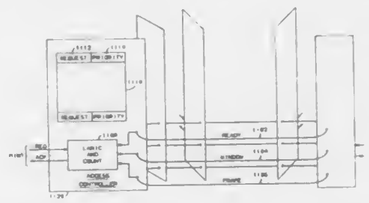
buffer means for storing a requested resource identification;

interface means for receiving data from and transmitting data to said ring means; and

means for checking a list of requested resources against availability data received by said interface means from said ring means;

wherein said data ring means further comprises means for transmitting priority window data for each of said resources;

wherein said interface means is responsive to said checking means for storing a priority indication for one of said requested sources that is found to be busy while said priority window is open;



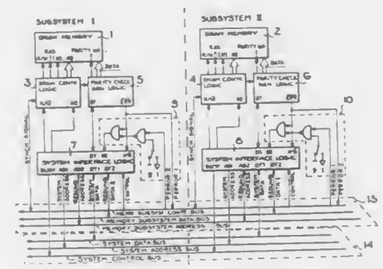
wherein said interface means comprises means responsive to said checking means for seizing one of said requested resources that is found to be available in said availability data if a priority indicator for said requested resource for said means for checking is stored or if said priority window is open by transmitting availability data indicating unavailability for said one requested resource to said rings means for transmission to a next controller means connected to said rings means; and

wherein each of said controllers controls a set of controlled resources and wherein said interface means comprises means for copying an availability state to said priority window data for each member of said set of controlled resources.

4,942,575
ERROR CONNECTION DEVICE FOR PARITY PROTECTED MEMORY SYSTEMS

William E. Earnshaw, N. Lauderdale; Jay Howell, Margate, and Paul B. Ripy, N. Lauderdale, all of Fla., assignors to Modular Computer Systems, Inc.

Filed Jun. 17, 1988, Ser. No. 207,874
Int. Cl.[5] G06F *11/14*
U.S. Cl. 371—10.1 7 Claims



1. A memory system with error detection and correction circuitry for returning error free data to a main system bus, comprising:

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two memory subsystems each for performing read and write operations; and

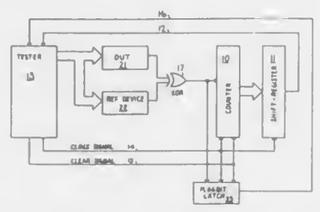
error detection and correction means coupled between said two memory subsystems for allowing only one of said memory subsystems to return error free data to the main bus system as long as at least one of said two memory subsystems contains error free data.

4,942,576

BADBIT COUNTER FOR MEMORY TESTING

Jon P. Bunack; Gary M. Johnson, and Richard R. Clem, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Oct. 24, 1988, Ser. No. 261,611
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—21.2 4 Claims



1. Apparatus for real-time recognizing and counting of digital device badbits in which a digital device under test (DUT) has at least one output, the apparatus comprising:

a reference device, having an operating format corresponding to that of the DUT;

a tester, providing clocking to exercise the DUT;

the DUT and the reference device responsive in parallel to the tester;

a comparing device, having a first input responsive to the DUT output, having a second input responsive to the reference device output, and having an output signal whose first state indicates that the first and second inputs are equivalent, and whose second state indicates that the first and second inputs are not equivalent, said inequivalencies being called badbits;

a counter, having an input responsive to the comparing device output, counting badbits recognized by the comparing device;

a flagbit latch, responsive to an initial digital transition of the comparing device output, indicating the occurrence of at least one badbit;

the tester being responsive to one or more outputs of the apparatus;

a conversion device having at least one input of a first sense and at least one output of a second sense, the inputs responsive to the counter outputs, for converting the count from the first sense to the second sense, the tester being responsive in said second sense to the conversion device output.

4,942,577

LOGIC CIRCUIT SYSTEM WITH LATCH CIRCUITS FOR RELIABLE SCAN-PATH TESTING

Hideharu Ozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

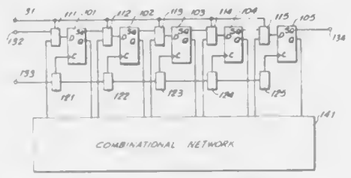
Filed Apr. 21, 1988, Ser. No. 184,315
Claims priority, application Japan, Apr. 21, 1987, 62-98816
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.3 9 Claims

1. A logic circuit system comprising:

a plurality of logic circuits;

a plurality of latch circuits each having an input terminal, a first output terminal, a second output terminal and a clock terminal and including a flip-flop and a delay circuit, said flip-flop having a data input node connected to said input terminal, a data output node connected to said first output terminal and a clock input node connected to said clock terminal, said delay circuit having an input node connected between said data output node of said flip-flop and said second output terminal, said first output terminal being further connected to one of said logic circuits to apply a signal at said first output terminal to said one logic circuit;

a plurality of selectors having a first selector input terminal connected to said second output terminal, a second selector input terminal connected to a different one of said logic circuits to receive a signal from said different one



logic circuit, a selector output terminal connected to said input terminal, and a control signal terminal;

a control means for producing a control signal to be applied to said control signal terminal to selectively connect said selector output terminal to one of said first and second selector input terminals, said plurality of latch circuits being connected to form a shift-register when said selector output terminal is connected to said first selector input terminal and being connected to form a logic circuit with said plurality of logic circuits when said selector output terminal is connected to said second selector input terminal; and

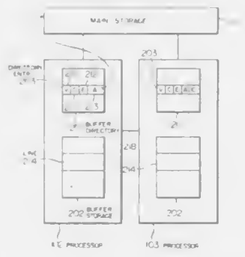
means for applying a clock signal to said clock input node to operate the flip-flops of said latch circuits.

4,942,578

BUFFER CONTROL METHOD AND APPARATUS

Kouji Nakamura, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 5, 1988, Ser. No. 215,036
Claims priority, application Japan, Jul. 6, 1987, 62-167107
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—36 8 Claims



1. A buffer control apparatus for controlling a buffer storage in each of a plurality of processors sharing a main storage by use of control means, said apparatus comprising:

(a) a cache storage for storing data therein;

(b) a cache directory connected to the cache storage having a plurality of entries corresponding to line positions of the cache storage;

each of said entries storing a validity bit, a main storage address, an exclusive bit for indicating whether the line is occupied or not, and a change bit for indicating whether data has been written into the line or not; and

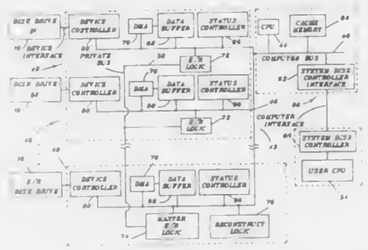
(c) means for checking validity of one of the validity bit, the change bit and the exclusive bit based on a content of others of the validity bit, the change bit and the exclusive bit than the one, said means for checking being arranged to receive the one from the cache directory.

4,942,579

HIGH-SPEED, HIGH-CAPACITY, FAULT-TOLERANT ERROR-CORRECTING STORAGE SYSTEM

Theodore J. Goodlander; Jose M. Valdepenas; Ricardo E. V. McCaskey, and Gerardo Vizcaino, all of Nashua, N.H., assignors to Cab-Tek, Inc., Nashua, N.H.

Continuation of Ser. No. 57,346, Jun. 2, 1987, abandoned. This application Feb. 27, 1989, Ser. No. 317,048
Int. Cl.[5] G06F *11/10, 11/16*
U.S. Cl. 371—51 9 Claims



1. In a high-capacity, error-correcting virtual disk drive storage device for a computer comprising:

a single interfacing logic portion for interfacing with a user CPU, the interfacing logic portion including disk drive controller interface means for interfacing with a standard disk drive controller through which the user CPU is connected to the virtual disk drive storage device;

a plurality of standard disk drives adapted to interface with a standard disk drive controller at an input interface thereof,

a plurality of disk drive controllers connected between the interfacing logic portion and respective ones of the plurality of disk drives, each of the disk drive controllers including controller interface means for presenting a standard system disk drive controller interface to the input interface of its respective disk drive, a data buffer for transferring data to and from its respective disk drive, and parity generator means for generating a parity bit for standard length groups of bits being transferred to its respective disk drive;

virtual disk drive parity generation means for generating parity bits associated as part of data groupings of bits being transferred to the disk drives; and,

reconstruct logic means for sensing a parity error condition from one of the disk drives in combination with a parity error in one of the data groupings of bits as indicated by a parity bit generated by the virtual disk drive parity generation means and for using the knowledge of which of the disk drives' data is in error in combination with the parity bit generated by the virtual disk drive parity generation means to logically reconstruct an erroneous bit creating the joint parity error condition, the improvement for assuring high-speed operation of the virtual disk drive storage device comprising:

(a) the data buffers in combination comprising FIFO buffer means for holding a plurality of sequential data groupings; and,

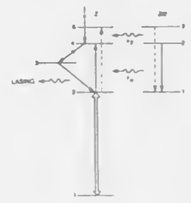
(b) the disk drive controllers each including data transfer logic for transferring respective ones of a sequence of the data groupings from their respective disk drives into said FIFO data buffer means asynchronously and for informing the standard disk drive controller through which the user CPU is connected to the virtual disk drive storage device that a requested read operation is complete only when there are sufficient ones of the sequence of the data groupings being read from all the disk drives to assure that the user CPU cannot remove the sequence of the data groupings being read from all the disk drives from said FIFO data buffer means faster than remaining ones of the sequence of the data groupings being read from all the disk drives are read asynchronously into said FIFO data buffer means.

4,942,580

X-RAY LASER WITH ENHANCED X-RAY GAIN THROUGH PHOTODEPOPULATION

Raymond C. Elton, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1989, Ser. No. 414,499
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—5 14 Claims



1. An x-ray laser comprising:

a first plasma having a nuclear charge Z;

a second plasma having a nuclear charge Z/2 emitting photons;

means for ionizing said first plasma; and

means for cooling said first plasma for recombination pumping;

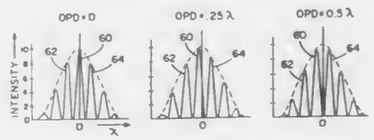
wherein n=2 electrons of said first plasma are excited by said photons of said second plasma, thereby decreasing a population density N_2 of said first plasma.

4,942,581

OPTICAL PHASE DETECTION AND CONTROL SYSTEM

Sarah R. Harrell, Palm Beach, and John D. Rowland, Lake Park, both of Fla., assignors to United Technologies Corp., Hartford, Conn.

Filed Jan. 27, 1989, Ser. No. 303,628
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—9 10 Claims



1. A system for determining a phase relationship between two coherent beams, and when the beams are not in phase, providing a correction output to bring them into phase, said system comprising:

means for combining said beams to create an interference

fringe pattern, said pattern exhibiting, when said beams are in phase, a central peak irradiance fringe bounded on either side by lesser peak irradiance fringes, said fringe pattern responding to a change in relative phase of said beams, to move in one direction or the other depending upon a direction of phase change between said beams;

first and second side fringe detection means positioned to detect said lesser peak irradiance fringes, but not said central peak irradiance fringe, and to provide signals indicative of power in said lesser peak irradiance fringes; and

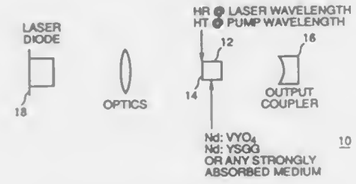
processor means for providing said correction output to bring said beams in phase when said signals indicate unequal power in said lesser peak irradiance fringes.

4,942,582

SINGLE FREQUENCY SOLID STATE LASER

Gregory J. Kintz; Thomas M. Baer, and James D. Kafka, all of Mountain View, Calif., assignors to Spectra-Physics, San Jose, Calif.

Filed Apr. 24, 1989, Ser. No. 341,922
Int. Cl.[5] H01S *3/098, 3/16*
U.S. Cl. 372—18 **26 Claims**



1. A solid state laser having a single longitudinal mode output at a selected laser output wavelength, including:

a block of solid state laser material having a cavity-forming mirror coating on one of two opposing faces,

a pumping source for providing pump radiation at a wavelength such that its absorption depth in said block of solid state laser material is less than the dephasing; distance in said block of solid state laser material at said selected laser output wavelength divided by 2π,

said cavity-forming mirror having a high reflectivity at said selected laser output wavelength and a high transmissiveness at the wavelength of said pump radiation,

means for collecting said pump radiation emitted from said pump source and for directing it into the one of the opposed ends of said block of solid state laser material having said cavity-forming mirror coating, and

an output coupler optically aligned with said block of solid state laser material such that said cavity-forming mirror coating, said block of solid state laser material and said output coupler form a cavity, said output coupler being partially transmissive a said laser output wavelength.

4,942,583

MISALIGNMENT-TOLERANT, GRATING-TUNED EXTERNAL-CAVITY LASER

Moshe Nazarathy, Palo Alto; Paul Zorabedian, Mountain View; William Richard, Atherton, and Tirumala R. Ranganath, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

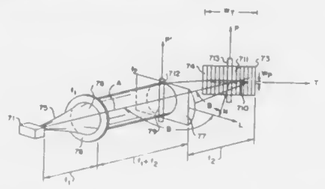
Filed Jun. 17, 1988, Ser. No. 208,340
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **19 Claims**

1. A grating tuned laser system comprising:

a laser amplifier (71) that emits a laser beam (75) along an optical axis A, said laser beam having a pair of lateral dimensions W_P and W_T where W_P is measured along a direction parallel to an axis P perpendicular to optical axis A and W_T is measured along a direction parallel to an axit T perpendicular to axes A and P, said lateral dimensions W_P and W_T being referred to herein as laser beam height and width, respectively;

a grating (73) positioned in the path of said laser beam (75) and oriented relative to said laser amplifier to produce a diffraction order that retroreflects back to the laser amplifier (71), thereby forming an external cavity with said laser amplifier (71);

wherein said grating (73) is rotatable about axis P to enable tuning of the laser amplifier (71);



wherein said grating (73) contains a set of grating rulings (74) that are substantially parallel to axis P; and

wherein a normal N to a front face (711) of the grating (73) at the intersection of the optical axis with the grating (73) makes an angle θ with the optical axis A at the grating;

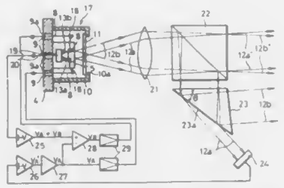
optical relay means, positioned in the path of said laser beam between the laser amplifier and the grating, for reducing the ratio of laser beam height to laser beam width to produce on said grating (73) a laser spot (710) having a ratio of height W_P to width W_T much less than 1.

4,942,584

SEMICONDUCTOR LASER APPARATUS DRIVING SYSTEM

Morihiro Karaki; Masahisa Shinoda, and Yasuyuki Satou, c/o Mitsubishi Denki Kabushiki Kaisha Denshi Shohin Kaihatsu Kenkyusho 1 Babazusho, Nagaokakyo-shi, Japan

Filed Jun. 16, 1989, Ser. No. 368,034
Claims priority, application Japan, Jun. 22, 1988, 63-152423; Jun. 28, 1988, 63-158070; Jul. 12, 1988, 63-171965; Aug. 3, 1988, 63-192669
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—29 **15 Claims**



1. A semiconductor laser apparatus driving system, comprising:

a semiconductor laser apparatus including a plurality of semiconductor laser beam sources;

a first photodetector for receiving backward beams from said plurality of semiconductor laser beam sources collectively;

means for optically separating only one of forward beams from said plurality of semiconductor laser beam sources from said forward beams;

a second photodetector for receiving said separated one forward beam; and

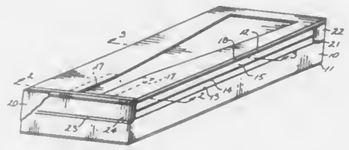
means for determining the magnitude of at least one of said forward beams from output signals of said first and second photodetectors.

4,942,585

HIGH POWER SEMICONDUCTOR LASER

Jeffrey E. Ungar, Los Angeles, Calif., assignor to Ortel Corporation, Alhambra, Calif.

Filed Dec. 22, 1987, Ser. No. 138,557
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—44 **12 Claims**



1. A semiconductor laser comprising:

an elongated active gain medium layer;

a relatively narrower mirror facet at one end of the gain layer;

an output facet at the other end of the gain layer sufficiently aligned with the mirror facet for Fabry-Perot oscillation between the facets, the output facet being relatively wider than the mirror facet;

means adjacent to only the mirror facet for pumping a parallel edged index guided portion of the gain layer for stimulated emission of radiation in a mode selecting waveguide portion of the gain layer; and

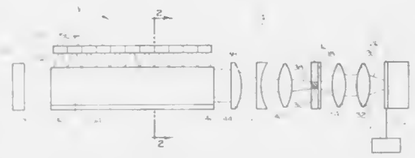
means for pumping a diverging portion of the gain layer between the parallel edged portion and the output facet for stimulated emission of radiation.

4,942,586

HIGH POWER DIODE PUMPED LASER

Shui T. Lai, Del Mar, Calif., assignor to Intelligent Surgical Lasers Inc., San Diego, Calif.

Filed Apr. 25, 1989, Ser. No. 343,949
Int. Cl.[5] H02S *3/14*
U.S. Cl. 372—68 **29 Claims**



1. A device for generating a laser beam having a single cavity which comprises:

a high gain madium for generating a control laser beam;

a low gain medium;

a longitudinal linear laser diode array for pumping said low gain medium to establish a predetermined gain volume defining a reservoir of excited ions; and

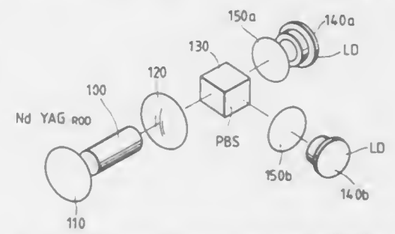
a beam expander disposed between said high gain medium and said low gain medium for focusing said control beam onto said low gain medium to substantially fill said predetermined volume and generate a high power laser beam.

4,942,587

OPTICALLY PUMPED SOLID-STATE LASER OSCILLATOR

Makoto Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 10, 1989, Ser. No. 321,866
Claims priority, application Japan, Mar. 10, 1988, 63-56898
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—71 **6 Claims**



1. An optically pumped solid-state laser oscillating device comprising:

an optical resonator for outputting a laser beam of a predetermined wavelength, said optical resonator having a predetermined optical absorption band and being excited in response to a light having a wavelength falling within said optical absorption band; and

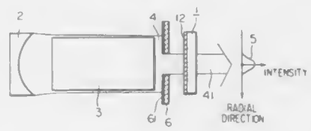
a plurality of excitation light sources for emitting a plurality of semiconductor laser beams and applying said laser beams to said optical resonator, said plurality of semiconductor laser beams having wavelengths different from one another.

4,942,588

LASER DEVICE

Koji Yasui; Masaaki Tanaka, and Masaki Kuzumoto, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 932,348, Nov. 19, 1986, abandoned. This application Jul. 10, 1989, Ser. No. 377,774
Claims priority, application Japan, Nov. 20, 1985, 60-260345; Nov. 25, 1985, 60-264528; Nov. 25, 1985, 60-264529; Nov. 25, 1985, 60-264530; Nov. 25, 1985, 60-264531; Dec. 23, 1985, 60-290143
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—103 **36 Claims**



1. In a laser device, an optical resonator comprising a first end including a total reflection mirror having a total reflection surface and a second end including a partial reflection mirror having a partial reflecting surface, said total and partial reflection surfaces directly facing each other and forming a first resonant optical cavity; and

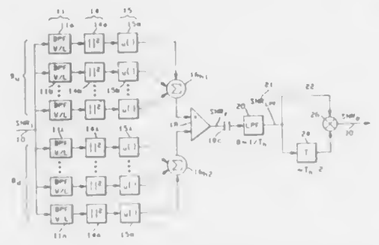
aperture means disposed within the first resonant optical cavity between the first and second ends including a first surface and a second surface directly facing said total and partial reflecting surfaces, respectively, an opening through which a laser beam may pass, and a total reflection portion disposed on said first surface surrounding the opening, said total reflection portion and said total reflection surface directly facing each other and forming a second resonant optical cavity.

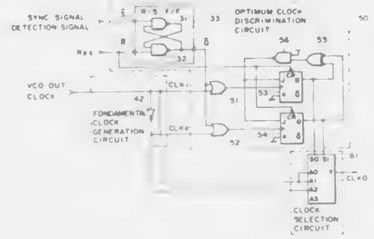
4,942,589

CHANNELIZED BINARY-LEVEL HOP RATE DETECTOR

Patrick J. Smith; Ronald S. Leahy, both of Salt Lake City, Utah, and Scott R. Bullock, Cos, Colo., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 4, 1989, Ser. No. 417,175
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **12 Claims**





10. Apparatus for receiving a frequency-hopped signal comprising in combination:

(a) means for receiving a broad band of frequency signals which encompass a frequency-hopped information signal sequence;

(b) dividing means for channeling said frequency signals into a plurality of sub-bands wherein each sub-band carries a portion of said information signal sequence, said dividing means being split into an upper group and lower group of sub-bands;

(c) a plurality of signal squaring circuits wherein each signal squaring circuit multiplies its portion of said information signal sequence by its own amplitude and transmits it to an associated quantizer circuit unit;

(d) a plurality of quantizer circuit units where each quantizer circuit unit receives the particular power level estimate from its associated squaring circuit and matches it against a preset threshold level, whereupon, if the input signal exceeds the threshold level, the quantizer unit develops a positive voltage output, but a zero volt output if the threshold is not exceeded;

(e) an upper summation circuit unit for adding up the outputs of each one of said upper group of quantizer circuit units to provide a first totality;

(f) a lower summation circuit unit for adding up the outputs of each one of said lower group of quantizer circuit units to provide a second totality;

(g) differential amplifier means for subtracting said second totality from said first totality and providing a difference signal to a low pass filter means; and

(h) delay and multiply circuit means for receiving the output of said low pass filter means, and generating a final output signal representative of the frequency hop rate of the transmitted information signal.

4,942,590

OPTIMUM CLOCK GENERATOR IN DATA COMMUNICATION

Hisashi Terada, Kawasaki, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Oct. 27, 1988, Ser. No. 263,365
Claims priority, application Japan, Oct. 30, 1987, 62-274825
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **2 Claims**

1. A spread spectrum communication receiver comprising:

means in response to a received spread spectrum signal for detecting an initial synchronization time point by referring to a PN code in the received spread spectrum signal;

means for generating a clock signal;

means in response to the clock signal for generating a PN code signal;

means for controlling said PN code generating means to hold the synchronization of the generated PN code signal with the received spread spectrum signal; and

means for decoding the received spread spectrum signal by using the generated PN code signal which is in synchronization with the received spread spectrum signal, wherein

said clock signal generating means for selecting as the clock signal one of a plurality of clock signals having different respective phases in response to the detection of the initial synchronization time point with the selected clock signal having an active transition which takes place after the initial synchronization timing point earlier than the remaining clock signals.

4,942,591

MULTIPLE PHASE PSK DEMODULATOR

Greg A. Nease, Windsor, N.J., and Peter K. Cripps, New Hope, Pa., assignors to Agilis Corporation, Mountain View, Calif.

Filed Mar. 7, 1989, Ser. No. 320,295
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—84 **14 Claims**



1. A method for use in a spread spectrum system for demodulating a differentially encoded spread spectrum spreading code sequence phase modulated on a carrier signal frequency, said method comprising:

converting said phase modulated carrier signal frequency to a first baseband signal using a local oscillator frequency having a first phase;

differentially decoding said first baseband signal to provide a first differentially decoded spread spectrum spreading code sequence output signal;

converting said phase modulated carrier signal frequency to a second baseband signal using a local oscillator frequency having a second phase;

differentially decoding said second baseband signal to provide a second differentially decoded spread spectrum spreading code sequence output signal;

converting said phase modulated carrier signal frequency to a third baseband signal using a local oscillator frequency having a third phase;

differentially decoding said third baseband signal to provide a third differentially decoded spread spectrum spreading code sequence output signal; and

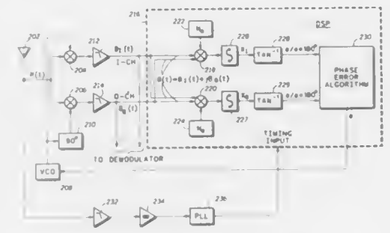
selecting two of said first, second and third differentially decoded spread spectrum spreading code sequence output signals which have substantially the same logic output logic signal level, as the correct differentially decoded spread spectrum spreading code sequence output signal.

4,942,592

SYNCHRONOUS RECEIVER FOR MINIMUM SHIFT KEYING TRANSMISSION

Clifford D. Leitch, Coral Springs, and Francis R. Steel, deceased, late of Parkland, Fla. (by Lynne A. Steel, legal representative), assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 202,617, Jun. 6, 1988, abandoned. This application Nov. 27, 1989, Ser. No. 443,096
Int. Cl.[5] H04L *27/14*
U.S. Cl. 375—90 **20 Claims**



1. A receiver circuit for receiving an MSK transmission and for use with a quadrature circuit having a baseband signal output and including an oscillator, said receiver circuit comprising in combination:

multiplication/integration means for multiplying said baseband signal by an orthogonal function and for integrating the product of said baseband signal and said orthogonal function;

angle computing means for computing two supplementary angles from the integral of the product of said baseband signal and said orthogonal function; and

resolving means for resolving which one of said two supplementary angles is the phase error between the carrier of said MSK transmission and the ouput of said oscillator.

4,942,593

TELECOMMUNICATIONS INTERFACE WITH IMPROVED JITTER REPORTING

Frank A. Whiteside, Coppell, and Michael D. Smith, Lewisville, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Mar. 16, 1989, Ser. No. 324,153
Int. Cl.[5] H04L *7/027*
U.S. Cl. 375—118 **49 Claims**

17. A communications receiver, for receiving incoming synchronous data streams, comprising:

a first clock recovery circuit, which generates a first estimated clock signal from the incoming data stream;

a second clock recovery circuit, which generates a second estimated clock signal from the incoming data stream, said second estimated clock signal being more highly filtered than said first estimated clock signal and having substantially the same average frequency as said first estimated clock signal;

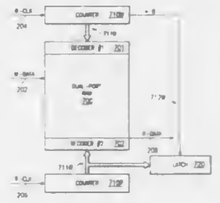
a serial-access memory, configured to operate such that

successive bits of the incoming data are written, with a timing governed by said first estimated clock signal, into address locations specified by the current value of a write-address-pointer which is incremented at each said write operation, and

successive bits are read out, with a timing governed by said second clock signal, from an address location specified by the current value of a read-address-pointer which is incremented at each said read operation;

and a counter,

clocked by said second estimated clock signal, and



having a reset input which is connected to reset whenever said write-address-pointer value crosses a predetermined value, and

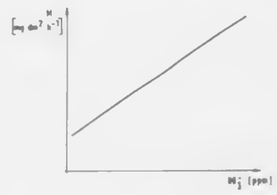
having an output which is connected, through a latch circuit, to be latched whenever said read-address-pointer value crosses a predetermined value, the successive latched outputs of said counter providing an estimate of jitter.

4,942,594

METHOD FOR THE CHEMICAL DECONTAMINATION OF LARGE COMPONENTS AND SYSTEMS OF METALLIC MATERIALS OF NUCLEAR REACTORS

Horst-Otto Bertholdt, Erlangen, and Bernhard Kress, Bubenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 18, 1985, Ser. No. 788,781
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 3439857
Int. Cl.[5] G21F *9/00*; C23G *1/00*
U.S. Cl. 376—310 **18 Claims**



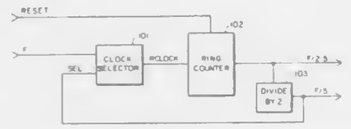
1. The method for the chemical decontamination of metallic elements of large components and systems of water-cooled nuclear reactors which essentially consists of only the single step of effecting the decontamination of the metallic material without addition of acids, by contacting the surfaces of said metallic materials by circulating through said systems an aqueous non-acidic solution essentially consisting of (a) at least one oxidizing chemical selected from the group consisting of chromataes, and cerium IV salts: (b) the water coolant for said reactor and (c) ozone.

4,942,595

CIRCUIT FOR DIVIDING THE FREQUENCY OF A DIGITAL CLOCK SIGNAL BY TWO AND ONE-HALF

Anthony J. Baca, Glendale, Ariz., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 5, 1988, Ser. No. 280,060
Int. Cl.[5] H03K *21/02, 21/38, 23/48*
U.S. Cl. 377—48 **5 Claims**



1. A divide by two and one half (2.5) circuit for receiving a first clock signal and an asynchronous reset signal, said divide by two and one half (2.5) circuit arranged to transmit a second clock signal that has a period two and one half (2.5) times said first clock signal, said divide by two and one half (2.5) circuit comprising:

clock selector means arranged to receive said first clock signal and to output a selected polarity of said first clock signal;

ring counter means having a predetermined number of stages arranged to receive said clock selector means output, and to transmit an output signal that has a period of 3 times (3x) the signal received from said clock selector means;

divide by two means arranged to receive said ring counter means output and to transmit an output signal that has a clock period of two times (2x) said ring counter means output signal, wherein said divide by two means output signal is input to said clock selector means and said ring counter means transmits said second clock signal; and

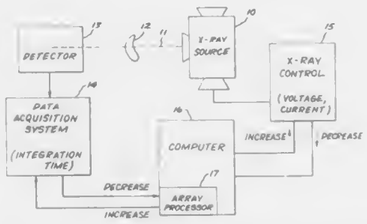
reset synchronizer means arranged to initialize said ring counter means to a seed value other than all said stages at logic zero, in response to said asynchronous reset signal.

4,942,596

ADAPTIVE ENHANCEMENT OF X-RAY IMAGES

Jeffrey W. Eberhard, Schenectady; Rudolph A. A. Koegl, Niskayuna, and John P. Keavency, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1988, Ser. No. 238,806
Int. Cl.[5] H05G *1/34*
U.S. Cl. 378—109 **14 Claims**



1. A method of adaptively enhancing the quality of x-ray images produced by an x-ray imaging system having a plurality of system operating parameters that are adjustable, comprising:

acquiring measured x-ray data for a subsection of an image of a part;

determining a signal to noise parameter of said measured data and comparing to predetermined acceptable limits;

adjusting one or more of said system operating parameters for a next subsection of said image to bring said signal to noise parameter within limits;

acquiring measured x-ray data in sequence for other image subsections while alternately adaptively selecting said system operating parameters to improve image quality; and

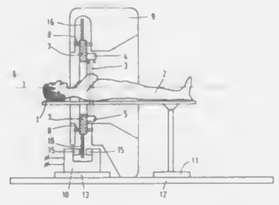
normalizing said acquired data to provide a single parameter for all subsections of said image.

4,942,597

X-RAY SCANNER COMPRISING A LINEAR ELECTRIC DRIVING MOTOR

Paul A. F. Van Acker, and Alphonsus T. Van Der Velden, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 15, 1986, Ser. No. 907,692
Claims priority, application Netherlands, Sep. 17, 1985, 8502533
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—197 **7 Claims**



1. An X-ray scanner comprising an X-ray source and an X-ray detector, which are driven together by a rotational driving system and are mounted in a supporting ring so as to be rotatable about a shaft extending through an examination space, characterized in that the driving mechanism is provided with a linear electric driving motor and characterized in that a stator part of the linear motor is provided with two magnet poles, an electrically conducting annular disk for driving purposes is freely rotatable between said two magnet poles, wherein said annular disk is secured to the supporting ring for the X-ray source and the detector.

4,942,598

TELEPHONE ANSWERING MACHINE IN PAGING SYSTEMS WITH AUTOMATIC NUMBER IDENTIFICATION BASED MESSAGE OPERATIONS

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1988, Ser. No. 164,039
Int. Cl.[5] H04M *1/64, 1/66, 11/00*
U.S. Cl. 379—57 **13 Claims**

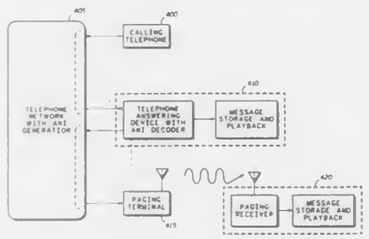
1. Telephone answering apparatus for a subscriber of a paging system, said apparatus coupled to a telephone network for automatically receiving telephone calls including corresponding paging messages directed to said subscriber, such telephone calls including corresponding source identification signals generated by the telephone network to identify the telephone numbers of the corresponding sources of the telephone calls, said apparatus also coupled to a paging terminal of said paging system, said paging terminal operative to transmit paging messages to a portable paging receiver of said subscriber, said apparatus comprising:

means for storing a set of predetermined source identification codes;

means coupled to the telephone network for automatically receiving telephone calls directed to said subscriber and for decoding the source identification signals thereof to generate corresponding decoded source identification codes;

controller means coupled to said receiving means for selecting paging messages of the received telephone calls based on a correlation of the decoded source identification codes of said telephone calls with at least one of said stored set of predetermined source identification codes; and

means for coupling to said paging terminal and governed by said controller means to direct said selected paging messages to said paging terminal for transmission to said subscriber's paging receiver.

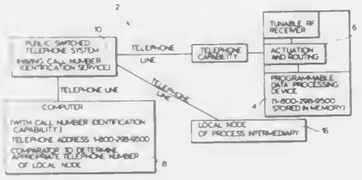


4,942,599

LOCATION IDENTIFICATION

Alastair T. Gordon, and Michael H. Reichmann, both of Toronto, Canada, assignors to Alphanet Technology Corporation, Toronto, Canada

Filed Feb. 2, 1989, Ser. No. 305,445
Int. Cl.[5] H04M *11/00, 3/42*
U.S. Cl. 379—93 **18 Claims**



1. A method for transmitting information to programmable data processing devices by means of a telephone system having Call Number Identification Service, each programmable data processing device having associated therewith a telephone capability, connected to a telephone line; said method comprising with respect to each programmable data processing device:

using said telephone capability of the programmable data processing device to automatically complete a telephone communication via said telephone line with a predetermined computer at a predetermined telephone number,

receiving at the predetermined computer the Calling Number Identification of the telephone line to which the programmable data processing device is connected,

determining at the predetermined computer by means of said Calling Number Identification, information specific to the general location of the telephone line derived from the Calling Number Identification,

transmitting from the predetermined computer to the programmable data processing device the determined information specific to the general location of the telephone line to the data processing device, and

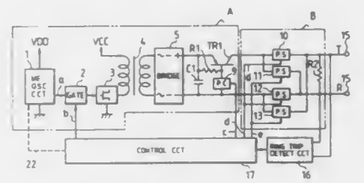
using the determined information within the programmable data processing device to program the programmable data processing device.

4,942,600

COMMUNICATION APPARATUS FOR GENERATING A CALL SIGNAL FROM A TELEPHONE SET TO A DATA TERMINAL

Shoji Suzuki, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1989, Ser. No. 319,053
Claims priority, application Japan, Mar. 7, 1988, 63-053172; Mar. 15, 1988, 63-059246; Jun. 20, 1988, 63-150197
Int. Cl.[5] H04M *11/08*
U.S. Cl. 379—100 **22 Claims**



1. A call signal generating circuit comprising:

a DC/DC converter;

ON/OFF control means for ON/OFF-controlling an output voltage from said DC/DC converter; and

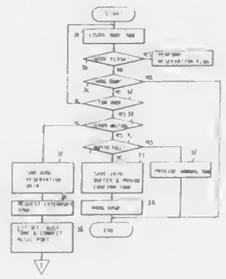
polarity switching means for switching polarities of an ON/-OFF-controlled voltage.

4,942,601

METHOD OF MAKING A CALL RESERVATION AND SENDING AN INTERRUPT TONE IN A PRIVATE BRANCH EXCHANGE (PBX)

Jae-Woon Park, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Jun. 30, 1989, Ser. No. 373,569
Claims priority, application Rep. of Korea, Jun. 30, 1988, 1988-8028
Int. Cl.[5] H04M *3/48*
U.S. Cl. 379—209 **1 Claim**



1. A method of making a call reservation with a subscriber of a subset who is engaged in a telephone conversation in a Private Branch Exchange, making an auto-reservation with the subscriber and sending interrupt tones, said method comprising the steps of:

(a) listening to 'busy' tone and sequentially deciding if or not 'hook flash' is performed, and thereafter if YES, steping a call reservation, or if NO, checking if or not the handset is

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on-hook and a specified time period set according to the 'busy' tone is over, when a dialing is made to the subset engaged in the telephone conversation;

(b) checking if or not there are any other subscribers who are waiting with auto-reservations, when the time-over of the busy tone has occured in the said step (a);

(c) saving information on the subscriber with auto-reservation in the call buffer of said subscriber engaged in the telephone conversation and asking a main system for the interrupt tones, when there is no waiting for auto-reservation in said step (b);

(d) switching from the 'busy' tone of reception unit to a music port to provide a music to the subscriber with the auto-reservation and asking the main system for a certain time length and checking the same, following said step (c);

(e) checking if or not said subscriber engaged in the telephone conversation has hung up his handset, when the time set in said step (d) is over, and thereafter if YES, operating the ringer to send a ring to the subscriber who has hung up the handset and disconnecting the music and providing a call reply sound;

(f) checking if or not the subscriber with auto-reservation has given up his call before the set time in said step (d) is over, and asking the main system for cancellation of the interrupt tone;

(g) checking if or not the reservation buffer is full when there is no reservation waiting in said step (b), and thereafter if YES, sending a warning sound, or if NO, saving his and the counter party's information in the reservation buffer, sending a confirmation sound and waiting until the handset is on-hook;

(h) checking if or not the subscriber engaged in the telephone conversation has hung up after he heard the interrupt tone in said step (c), and thereafter if YES, turning it into a free state, and if NO, checking if or not the 'hook flash' has been performed;

(i) checking if or not the line is 'busy' when the 'hook flash' is performed in said step (h), and thereafter if YES, providing the subscriber engaged in the telephone conversation with the music and holding the current counter party, then giving said confirmation sound and switching the call buffer into the dialing state; and

(j) dialing a call link code depending on the dial state of the call buffer in said step (i), establishing a connection with the subscriber waiting with an auto-reservation to enable a telephone conversation between them.

4,942,602

COORDINATED TRANSFER OF VOICE AND INFORMATION THROUGH A NETWORK OF DIGITAL SWITCHES

William T. Baker, Jr., Palo Alto; Charles M. Buffum, San Jose; Charles H. Jolissaint, Sunnyvale, and Gregg W. Kerlin, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1989, Ser. No. 294,524

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

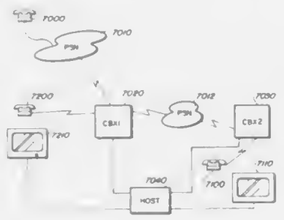
Int. Cl.[5] H04M *3/58, 7/14*

U.S. Cl. 379—212 **26 Claims**

1. A method of coordinating the transfer of a phone call and information associated with the phone call in a system having a plurality of phones managed by a plurality of digital switches communicating via network means, a plurality of display terminals, a host processor, and memory means for storing programs and data structures, the plurality of digital switches including memory means for storing programs and a data structure for uniquely identifying each phone by an extension, control means for selectively controlling interconnections of respective one of the plurality of phones, the host processor having memory means for storing a communication manager, data structures and application programs and communication means or communicating with the plurality of digital switches and the plurality of display terminals, said method comprising the steps of:

(a) sending the host processor a communication in response to a call transfer via the network means, said communication containing a source phone extension and a destination phone extension;

(b) receiving said communication by the communication manager of the host processor;



(c) processing said communication and determining an associated application program and an associated display terminal to link with said destination extension; and

(d) invoking said associated program to communicate via said associated display terminal to display information associated with said cell transfer.

4,942,603

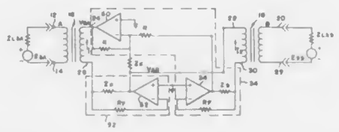
METHODS AND APPARATUS FOR PROVIDING RECIPROCAL IMPEDANCE CONVERSION

Charles W. Chambers, 1270 John Anderson Dr., Ormond Beach, Fla. 32074

Filed Nov. 4, 1987, Ser. No. 117,251

Int. Cl.[5] H04B *3/04*

U.S. Cl. 379—398 **30 Claims**



1. An impedance conversion repeater for bidirectional communications from a switching equipment source generator having a switching equipment source impedance to a subscriber loop load impedance in a first direction, and from a subscriber loop source generator having a subscriber loop source impedance to a switching equipment load impedance in a second direction, comprising:

a switching equipment port for connection to switching equipment;

a subscriber loop port for connection to a cable comprising a portion of a subscriber loop;

first impedance conversion means coupled to the switching equipment port, for transmission of a switching equipment signal from the switching equipment port to the subscriber loop port in the first direction, and for controlling an input impedance of the subscriber loop part to be proportional to a reciprocal of a switching equipment load impedance connected to the switching equipment port;

second impedance conversion means coupled to the subscriber loop port, for transmission of a subscriber loop signal from the subscriber loop port to the switching equipment port in the second direction, and for controlling an input impedance of the switching equipment port to be proportional to a reciprocal of a subscriber loop load impedance connected to the subscriber loop port; and

negative impedance means connected to one of said ports for producing an effect upon bidirectional communications substantially similar to that produced by a series negative impedance connected in series with the switching equipment port.

4,942,604

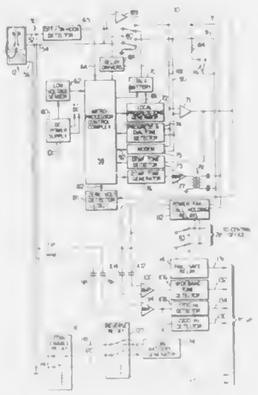
LINE POWER CONTROL CIRCUIT FOR PAY STATION TELEPHONE

Benjamin A. Smith, Celeste, and Conaway K. Hoback, Dallas, both of Tex., assignors to Digital Telecommunications Systems, Inc., Dallas, Tex.

Division of Ser. No. 912,984, Sep. 29, 1986, Pat. No. 4,777,647. This application Jun. 22, 1988, Ser. No. 210,071

Int. Cl.[5] H04M *19/00*

U.S. Cl. 379—412 **26 Claims**



1. Apparatus adapted for use with a telephone system of the type supplying a loop current over a line to a telephone set comprising:

first switch means disposed in series with the line and switchable for providing continuity therethrough so that signals can be carried on the line to the telephone;

a source of power independent of the loop current for initially operating said first switch means to effect the carrying of telephone signals on the line; and

a second switch means operable for connecting the telephone to the line, and a control for controlling the operation of said second switch means, said control being responsive to the loop current on the telephone line for switching operation thereof so that when operated the telephone is connected to the line irrespective of the switched state of said first switched means, whereby when the telephone line continuity is initially established by the operation of said first switch means by said independent source of power, the telephone line continuity is not thereafter affected by the loss of said source of independent power.

4,942,605

SECURITY HANDSET

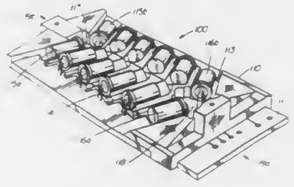
Donald T. McClain, Richardson, Tex., assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 130,190, Dec. 8, 1987, Pat. No. 4,837,819. This application Oct. 28, 1988, Ser. No. 264,992

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.[5] H04M *1/19*

U.S. Cl. 379—424 **26 Claims**



1. A security device for use with a telephone handset having microphone and ear transducers, adapted to prevent eavesdropping while the handset is in an on-hook position, comprising:

first switching means connected across said ear and microphone transducers;

second switching means connected in series with said ear and microphone transducers, such that when said handset is placed within a first predetermined orientation, corresponding to a secure mode, said first switching means becomes closed, shorting said ear and microphone transducers and said second switching means becomes open, and when said handset is placed within a second predetermined orientation, corresponding to an operating mode, said first switching means becomes open to enable said ear and microphone transducers, and said second switching means becomes closed; and

a mounting assembly for said first and second switching means comprised of a mounting block disposed on a circuit board.

4,942,606

COMPUTER WITH IMPROVED KEYBOARD PASSWORD FUNCTIONS

Roger A. Kaiser; James H. Nuckols; Theodore F. Emerson, and Gary L. Brasher, all of Houston, Tex., assignors to Compaq Computer Corporation, Del.

Filed Feb. 7, 1989, Ser. No. 307,404

Int. Cl.[5] H04L *9/32*

U.S. Cl. 380—4 **20 Claims**

1. A method of operating a computer system of the type having a CPU and memory associated therewith and a peripheral controller device coupled to said CPU, comprising the steps of:

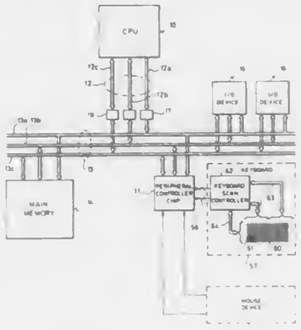
(a) switching said peripheral controller device between

(i) a normal operating mode wherein said peripheral controller device sends unsolicted information to said CPU and said CPU sends unsolicited information to said peripheral controller device without reference to password data, and

(ii) a lock-out mode wherein said peripheral controller device cannot send information to said CPU unless password data previously stored in said memory associated with said CPU is first entered to cause a switch back to said normal operating mode, but said CPU can send information to said peripheral controller device;

(b) monitoring unsolicited information transferred from said CPU to said peripheral controller device when said peripheral controller device is in said lock-out mode, and

selectively allowing only pre-selected information transferred to said peripheral controller device by said CPU to



activate said peripheral controller device for selected functions without switching from said lock-out mode.

4,942,607

METHOD OF TRANSMITTING AN AUDIO SIGNAL

Ernst Schröder, Hanover, and Walter Voessing, Wennigsen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Feb. 3, 1988, Ser. No. 152,026

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703143

Int. Cl.[5] G10L *3/02, 9/18;* H04B *1/66*

U.S. Cl. 381—31 24 Claims



1. A method of transmitting an analog audio signal in digital form to be reconverted to analog form, comprising the steps of:

converting an analog audio signal to a first digital signal;

dividing the first digital signal in time segments;

converting divided portions of the first digital signal in the respective time segments into respective second digital signals representing the respective short-term spectrums of the time segments;

encoding the second digital signals for transmission while omitting from encoding portions of said second signals having signal levels which lie below given thresholds having values based on the psycho-acoustic law of masking, and such that the portions of the second signals having signal levels which are below the thresholds and are thus omitted, represent the frequency components of the short-term spectrum outside of at least one psycho-acoustically differentiable frequency range; and

transmitting the encoded second signals.

4,942,608

PATTERN RECOGNITION APPARATUS USING A COMPOSITE SIMILARITY METHOD

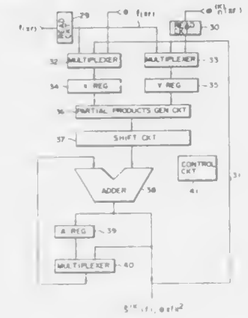
Hiroshi Shigehara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1988, Ser. No. 158,913

Claims priority, application Japan, Feb. 23, 1987, 62-39587

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—43 10 Claims



1. A pattern recognition apparatus comprising:

reception means for receiving an input signal;

feature data extraction means, connected to said reception means, for extracting feature data from the input signal, the feature data being digital data and defining an input pattern vector f;

feature data storage means, connected to said feature data extraction means, for storing the feature data;

dictionary memory means for storing standard pattern data which defines predetermined standard pattern vectors ϕ;

digital arithmetic circuit means, connected to said feature data storage means and said dictionary memory means, for performing calculations in accordance with a multiple similarity method; and

control/determination means for controlling an operation of said digital arithmetic circuit means and for recognizing and determining the input signal, based on the calculation result from said digital arithmetic circuit means and the multiple similarity method, wherein

said digital arithmetic circuit means comprises:

data bus means for transmitting data;

first data selection means, connected to said feature data storage means and said data bus means, for outputting one of the feature data and data on said data bus means;

second data selection circuit means, connected to said dictionary memory means, and said data bus means, for outputting one of the standard pattern data and data on said data bus means;

first register circuit means, connected to said first data selection means, for storing output data from said first data selection means;

second register circuit means, connected to said second data selection means, for storing output data from said second data selection means;

partial product generating circuit means, connected to said first and second register circuit means, for sequentially generating and outputting partial products of the storage data in said first register circuit means and said second register circuit means, in accordance with a predetermined multiplication method;

shift circuit means, connected to said partial product generating means, for shifting the partial products sequentially output from said partial product generating circuit means by a predetermined number of bits, according to the multiplication method, and sequentially outputting the shifted partial products;

a digital adder circuit means, connected to said shift circuit means, for performing addition between data sequentially output from said shift circuit means and other data, and outputting the addition results onto said data bus means;

third register circuit means, connected to said digital adder circuit means, for storing the output data from said digital adder circuit means; and

third data selection circuit means, connected to said digital adder circuit means and said third register circuit means, for selecting one of the output data from said digital adder circuit means and the storage data in said third register circuit means, and supplying the selected data to said digital adder circuit means as the other data and, wherein

said digital arithmetic circuit means performs at least a calculation of inner products of the input pattern vector (f(xr)) and the standard pattern vectors ($\phi^{(k)}$n(xr)) and a calculation of an accumulated value of squared values of the inner products;

said first data selection circuit means sequentially outputs vector components of the input pattern vector f, and said second data selection circuit means sequentially outputs vector components of the standard pattern vector ϕ, during the calculation of the inner products, and said first and second selection circuit means respectively output the inner products supplied from said digital adder circuit means, when calculating the squared values of the inner products;

said partial product generating circuit means sequentially outputs partial products of vector components of the input pattern vector f and the standard pattern vector ϕ during the calculation of the inner products, and sequentially outputs the partial products of the inner products during the calculation of the squared values of the inner products; and

said third data selection circuit means supplies the output data from said digital adder circuit means as the other data to said digital adder circuit means, to accumulate the partial products during the calculation of the inner products, when the inner products are calculated, said third data selection circuit means supplies storage data of said third register circuit means as said other data to said digital adder circuit means, and, after a sum of data of said third data selection circuit means and a first partial product of squared values of the inner products is output from said digital adder circuit means, the output data of said digital adder circuit means is supplied as said other data, and said third register circuit means holds an accumulated value of the squared values of the inner products output from said digital adder circuit means.

4,942,609

ELECTRONIC FLYING INTEGRITY TESTER FOR DISK DRIVES

Forrest C. Meyer, Minnetonka, Minn., assignor to Magnetic Peripherals Inc., Minnetonka, Minn.

Filed Mar. 15, 1989, Ser. No. 324,220

Int. Cl.[5] G11B *5/02, 27/36*

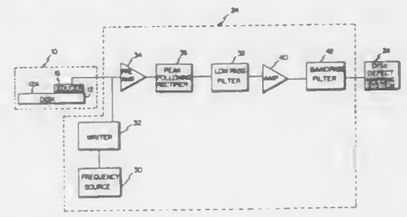
U.S. Cl. 360—25 5 Claims

1. An apparatus for testing operation of a rotating memory drive which includes a rotatable memory medium for storing data and a read/write transducer which is spaced by an air bearing from a surface of the rotating memory medium during operation of the rotating memory drive and which writes data into the memory medium in response to a write signal and produces a playback signal as a function of data read from the memory medium, the apparatus comprising:

means for providing the write signal to cause the read/write transducer to write data into the memory medium at a predetermined frequency; and

means for deriving, from the read/write transducer playback signal, a test output signal which is representative of modulation frequencies of the playback signal due to air bearing disturbances comprising:

amplifier means for increasing amplitude of the playback signal from the read/write transducer; wherein the playback signal is composed of a higher frequency read data signal modulated by the lower frequency response of an air bearing disturbance signal;



demodulator means for separating the air bearing disturbance signal from the read data signal;

a low pass filter for separating out signals and noise having frequencies above expected frequencies of the air bearing disturbance signal; and

a bandpass filter for passing only signals having the frequencies in a range of a frequency response of the air bearing.

4,942,610

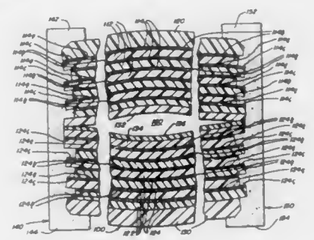
CAPACITIVE STRUCTURE

Charles C. Rayburn, 124 Sunset Ridge, Forest, Va. 24551

Filed Mar. 31, 1989, Ser. No. 331,148

Int. Cl.[5] H01G *1/14, 4/06*

U.S. Cl. 361—309 16 Claims



1. A capacitive structure comprising an upper substructure and a lower substructure, each substructure comprising a plurality of capacitive layers laminated in stacked relation to one another, each capacitive layer having opposed first and second edges, each capacitive layer including a dielectric substrate and a metallized area, which covers a major portion of one surface of the dielectric substrate of such capacitive layer and which extends only to one of the first and second edges of such capacitive layer, the metallized areas on alternate ones of the capacitive layers in each substructure extending to opposite edges, the first edges of alternate ones of the capacitive layers in each such substructure extending beyond the first edges of the remainder of the capacitive layers in such substructure so as to form indentations along the first edges of such substructure, the second edges of alternate ones of the capacitive layers in each substructure extending beyond the second edges of the remainder of the capacitive layers of such substructure so as to form indentations along the second edges of such substructure, the capacitive structure further comprising at least one separating layer sandwiched between the upper and lower substructures, each such separating layer being made of a material

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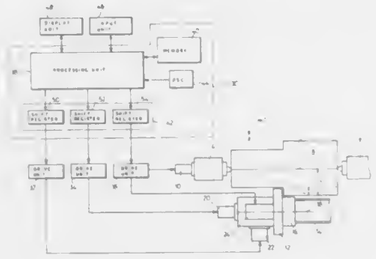
bonding less aggressively to at least one of the upper and lower substructures than the upper and lower substructures would bond to each other if each such separating layer were omitted, the capacitive structure further comprising a first mass of conductive material covering and extending into the indentations formed along the first edges of the capacitive layers of the upper and lower substructures, so as to provide electrical connections to and between the metallized areas extending to the first edges of the capacitive layers of the upper and lower substructures, and a second mass of conductive material covering and extending into the indentations formed along the second edges of the capacitive layers of the upper and lower substructures, so as to provide electrical connections to and between the metallized areas extending to the second edges of the capacitive layers of the upper and lower substructures, the masses of conductive material bonding the capacitive layers of each substructure to one another and bonding the upper and lower substructures to each other with the separating layer sandwiched between the upper and lower substructures, whereby, if the capacitive structure is exposed to thermal stresses tending to cause some of the capacitive layers to delaminate from one another, the separating layer tends to separate from at least one of the upper and lower substructures, thereby substantially to alleviate such stresses, before any of the capacitive layers delaminate from one another.

4,942,611

METHOD OF CORRECTING MISALIGNMENT OF A WORKPIECE ON NUMERICALLY CONTROLLED MACHINE TOOL

Takashi Kusugi, and Yoshinari Sasaki, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1988, Ser. No. 211,291
Claims priority, application Japan, Jun. 26, 1987, 62-160421
Int. Cl.[5] G06F *15/46*; G05B *19/18*; B24B *1/00*
U.S. Cl. 364—474.06 **5 Claims**



1. A method of correcting the misalignment of a workpiece on a numerically controlled machine tool for machining the workpiece into a roll while rotating the workpiece at a prescribed speed, moving the tool back and forth radially thereof, and moving the tool axially thereof, said method comprising the steps of:

measuring the amount of misalignment of the axis of the workpiece and entering the measured amount as corrective data into a control system which stores numerical control data produced by successively programming amounts of radial movement of a tool depending upon axial positions of the tool;

calculating corrected values of at least one of the positional data of the tool in the axial direction and the data on the amount of movement of the tool in the radial direction, based on said corrective data; and

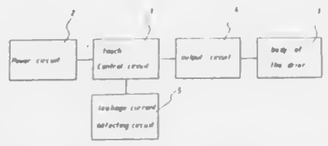
controlling said tool based on the calculated corrected values to machine the workpiece.

4,942,612

LEAKAGE CURRENT PREVENTING MEANS FOR A DRIER

Huck Wu, No. 46, Ho Hu, Lin Kou, Taipei, Taiwan

Filed Dec. 29, 1987, Ser. No. 138,978
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—49 **6 Claims**



1. A drier having a leakage current preventing system comprising:

a power source means for providing a voltage from an AC source and including hot and ground wires,

an output circuit means for supplying said voltage to said dryer and including two TRIACs for permitting said voltage to pass to said output circuit means in response to a pulsed signal, one TRIAC being electrically connected to said hot wire and another TRIAC being electrically connected to said ground wire,

a touch control means for controlling said pulsed signal and including a touch control IC for providing said pulsed signal to said TRIACs in response to an actuating signal and a touch control terminal for providing said actuating signal to said touch IC; said TRIACs, touch control terminal and touch control IC being arranged so that when a user of the dryer touches said touch control terminal, said input signal is sent to said touch control IC and in response thereto said touch control IC provides said pulsed signal to said TRIACs, and

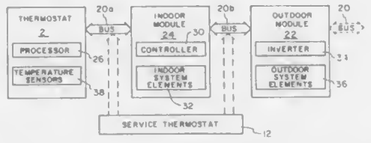
a leakage circuit detecting circuit means including a sensor means for detecting an impedance change in said dryer and actuation means for resetting said touch control IC in response to a detected impedance change by said sensor including an uni-junction transistor (PUT) arranged to receive said detected impedance change from said sensor and to provide said reset signal to said touch control IC, thereby ending said pulsed signal to said TRIACs and preventing supply of voltage to said output circuit and between said TRIACs.

4,942,613

SERVICE THERMOSTAT

Gregory A. Lynch, Murfreesboro, Tenn., assignor to Heil-Quaker Corporation, Laverqne, Tenn.

Filed Dec. 2, 1988, Ser. No. 279,419
Int. Cl.[5] G05B *23/00*
U.S. Cl. 364—557 **15 Claims**



1. A thermostat, adapted for use with a temperature control system having a communication bus and a means for storing predetermined bus addresses, said thermostat comprising:

switching means for selecting a desired one of a plurality of operating modes for said thermostat, said plurality of operating modes including a normal mode and a service mode;

processing means coupled to said switching means, said processing means selectively affects one of said operating modes, based on the position of said switching means;

bus interface means coupled to said processing means and said communication bus, said bus interface means communicating signals over said communication bus;

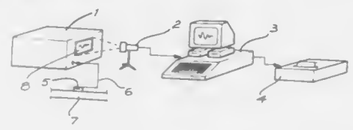
said processing means adapted to communicate bus address signals via said bus interface means, using a bus address signal determined by the current state of said switching means.

4,942,614

CALIBRATION OF ULTRASONIC TRANSDUCERS

Norman Hamilton, Cremorne, Australia, assignor to Australian Atomic Energy Commission, Lucas Heights, Australia

Filed Apr. 7, 1987, Ser. No. 35,441
Claims priority, application Australia, Apr. 16, 1986, PH05496
Int. Cl.[5] G01D *18/00*; G01R *23/00*
U.S. Cl. 364—571.01 **10 Claims**



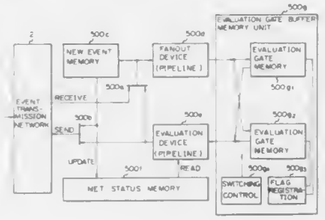
1. Ultrasonic test apparatus comprising an ultrasonic test device of the type which includes a display to display output traces, a digitising camera for scanning and digitizing an output resulting from a test object which is displayed on the ultrasonic test device as a trace which is representative of a received signal of an ultrasonic transducer and its variation with respect to time, a digital computer adapted to receive a digital output signal of the digitising camera and to process said digital output by sampling said digital output representing said signal trace at discrete points with respect to time to determine information on the frequency characterisation of the ultrasonic test device, the frequency characterisation including a frequency spectrum, the digital computer having output means to output information representative of said frequency characterisation.

4,942,615

GATE PROCESSOR ARRANGEMENT FOR SIMULATION PROCESSOR SYSTEM

Fumiyasu Hirose, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 19, 1988, Ser. No. 157,958
Claims priority, application Japan, Feb. 20, 1987, 62-037318
Int. Cl.[5] G06F *9/44*; G01R *31/28*
U.S. Cl. 364—578 **5 Claims**



1. A gate processor arrangement for a logic simulation processor system including a control processor providing timing signals, input and output processors, and an event transmission network, said gate processor system comprising:

a logic network including logic elements divided into sections for receiving input data and outputting connection information;

a new event buffer memory, corresponding to said logic network, for storing an event at a timing t from the control processor for a predetermined one of said logic elements in one of the sections of said logic network;

a fan-out device, coupled to said new event buffer memory, for holding connection information for said one of said predetermined logic elements in said logic network and reading the data of said predetermined one of said logic elements preceding the timing t, the input data of said predetermined one of said logic elements being changed at a timing "t+1";

an evaluation gate buffer memory, coupled to said fan-out device, having a plurality of evaluation gate memory portions connectable to said fan-out device;

a net status memory, coupled to the logic network and said new event buffer memory, for holding net status information corresponding to input data and output data of a predetermined one of said logic elements in said logic network; and

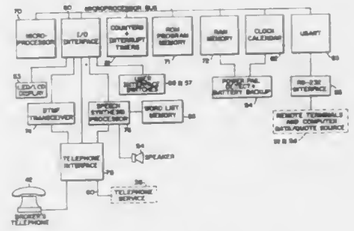
an evaluation device, operatively connected to said evaluation gate buffer memory and said net status memory, responsive to the output of said evaluation gate buffer memory for reading the data in said net status memory, generating information for a change of the logic network status at a timing "t+1", and supplying the generated information to one of the event transmission network and said new event buffer.

4,942,616

INTERACTIVE SYNTHESIZED SPEECH QUOTATION SYSTEM FOR BROKERS

Thomas Linstroth, 2305 Argonne Dr. NE., Minneapolis, Minn. 55421; Michael A. Franey, 4213 Xerxes Ave. S., Minneapolis, Minn. 55410, and George C. Idzorek, 1175 Iris #34, Los Alamos, N. Mex. 87544

Filed Sep. 9, 1985, Ser. No. 774,052
Int. Cl.[5] G10L *5/02*; G06F *15/20*; H04M *11/00*
U.S. Cl. 381—51 **32 Claims**



1. A system for use by a broker at a broker's workstation in his or her office to assist in quoting the prices of tradable instruments such as securities or commodities to customers, said prices available from a data link to an exchange where the tradable instruments are traded, said system comprising:

an outside telephone line servicing said office;

desk telephone handset means at said workstation;

quote retrieval means connected to said data link for obtaining prices of tradable instruments traded on said exchange;

telephone interface means connected to said telephone line for answering calls on said telephone line and for converting incoming signals on said telephone line to digital codes, said incoming signals inputted on the remote end of said telephone line;

signal generating means connected to said telephone line

through said telephone interface means for generating communication signals on said telephone line;

indicator means located at said workstation and perceivable by said broker at said workstation for conveying information to said broker while said broker is at said workstation;

control means connected to receive said digital codes from said telephone interface means and for controlling said signal generating means, said indicator means and said quote retrieval means, whereby a caller can convey requests and information to said control means using said incoming signals, said control means including:

(i) price quoting means responsive to a particular sequence of said digital codes representing a request for a quote of the price of particular tradable instrument traded on said exchange for obtaining the price of said particular tradable instrument from said quote retrieval means and for causing said signal generating means to quote the requested tradable instrument price using said communication signals over said telephone line;

(ii) caller identifying means for obtaining the identification of a caller on said telephone line, said identification obtained from a sequence of said digital codes, and for causing an identification of said caller to be indicated by said indicator means so that it is perceivable by said broker while the caller is on said telephone line obtaining a quote of a price; and

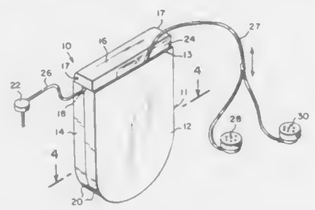
(iii) switching means operable by said broker from said broker's workstation for selectively connecting said telephone line to said desk telephone handset means whereby a broker can interrupt a call from a caller and speak with the caller in person.

4,942,617

EARPHONE CORD TAKE-UP DEVICE

Mark Boylan, 55 Elm St., Hicksville, N.Y. 11801

Filed Dec. 22, 1988, Ser. No. 288,775
Int. Cl.[5] H04M *1/05*; H04R *1/02, 1/06, 1/10*
U.S. Cl. 381—182 1 Claim



1. An earphone cord take-up device which comprises:

(a) a hollow casing having an open top, said casing having a tapered notch formed on one side at the open top thereof so that said cord with said jack can exit therefrom, said casing being divided into a rear portion and a front portion both of which having a curved bottom wall;

(b) a cover pivotally mounted to the open top of said casing, said cover having a passageway formed on front so that said cord with said earphones can exit therethrough;

(c) means for attaching said casing to a belt of a person, said attaching means include a spring clip affixed to rear of said casing that can snap onto the belt;

(d) a pair of elongated cords electrically connected to each other within said casing and each extending outwardly from the open top of said casing;

(e) a jack connected to one of said cords;

(f) a pair of earphones connected to other of said cords;

(g) means for rotatably holding said cord with said earphones within said casing so that said cord with said earphones can be extended therefrom, said rotatably holding means includes a curved inner wall formed within said front portion of said casing in conjunction with said curved bottom wall of said casing thus forming a cylindrical chamber therein, said curved inner wall having a channel extending to said earphone rests, and a spindle formed into said rear portion of said casing and being transversely positioned within said casing with respect to the open top thereof, said spindle having a slot at free end and a key carried on other end thereof, a circular plate carrying a plurality of contact fingers thereon which are electrically connected to said cord with said jack, said plate having a central hole and a keyway so that the central hole can be placed onto said spindle with said keyway engaging with the key to prevent said plate from rotating, a spool cap carrying a plurality of concentric contact rings thereon which are electrically connected to said cord with said earphones, said spool cap having a central hole so that the central hole can be placed onto said spindle allowing said spool cap to rotate thereon with the contact rings making electrical contact with the contact fingers, a flat spiral spring having an inner end and an outer end, said inner end held within the slot in said spindle, a spool base having a central hole and a reinforced wall with a slot therein, the central hole of said spool base can be placed onto said spindle so that the outer end of said spring can be held within the slot within the wall of said spool base, while said spool cap can snap onto the wall of said spool base so that said cord from said earphones can enter the channel in the front portion of said casing and wrap around the wall of said spool base; and

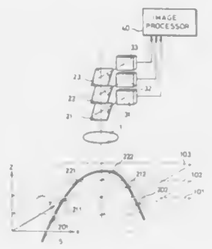
(h) a pair of earphone rests formed within said front portion of said casing so that when said cover is opened and said cord with said earphones are in a retracted position said earphones will be held within said earphone rests.

4,942,618

METHOD AND APPARATUS FOR DETERMINING THE SHAPE OF WIRE OR LIKE ARTICLE

Kazuhiko Sumi; Manabu Hashimoto; Yoshikazu Sakaue; Kazuo Aita; Masahiro Sasakura, and Yutaka Ozaki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1989, Ser. No. 324,185
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 2 Claims



1. A method for determining the shape of a wire or like article positioned in a space, comprising the steps of:

splitting light from the article through an objective lens disposed to face said article into a plurality of optical paths;

deriving an image of said article by each of a plurality of image pickup devices which are disposed in the respective ones of said optical paths, said plurality of image pickup means being disposed at different distances from said objective lens and having their focal planes located in different positions;

processing the thus derived images of said article by means of image processing means to thereby measure the contrast and the width of the image of said article;

detecting the intersections of said article with said focal planes and also measuring distances of various points of said articles from said focal points; and

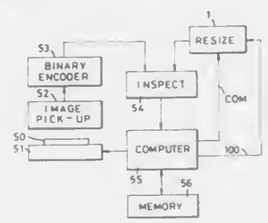
interconnecting said intersections and said points of said article to thereby determine the shape of said spatially disposed article.

4,942,619

PATTERN INSPECTING APPARATUS

Makoto Takagi, Kawasaki; Norio Fujii, Urawa, and Yoshihiko Fujimori, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 3,245, Jan. 14, 1987, abandoned. This application Dec. 23, 1988, Ser. No. 289,428
Claims priority, application Japan, Jan. 20, 1986, 61-10675; May 23, 1986, 61-118831
Int. Cl.[5] G06K *9/42*
U.S. Cl. 382—47 5 Claims



1. A pattern inspection apparatus for inspecting a pattern formed on a substrate on the basis of design information, the pattern on the substrate having dimensional tolerances with respect to size of the pattern represented by said design information, comprising:

means for picking up a pattern formed on the basis of design information and generating image data corresponding to a local area of the pattern;

means for extracting reference information required for forming a pattern within the local area from the design information, the reference information being expressed by logic levels of pixels corresponding to the pattern within the local area;

template means for receiving the reference information and detecting that a predetermined logic level is present at a predetermined position when a pixel logic level distribution is applied to the local area;

resizing means for combining additional information represented by a logic level corresponding to said dimensional tolerances to the pixel at the predetermined position of the reference information in response to said template means so that the size of the pattern represented by said reference information may be coincident with the size of the pattern on the substrate;

said resizing means shifting one edge of a pair of edges determining a width in a predetermined direction of the local area pattern represented by said reference information by an amount corresponding to an odd number times the pixel size and shifting the other edge of said pair of edges by an amount corresponding to zero or an even number times the pixel size; and

means for comparing the resized reference information with the image data.

4,942,620

HIGH TEMPERATURE SENSOR FOR INDUCED VIBRATION DYNAMIC TOUCH SENSOR SYSTEM

Gale E. Nevill, Jr., Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed May 31, 1988, Ser. No. 199,686
Int. Cl.[5] G06K *9/00*; B25J *13/08*
U.S. Cl. 382—58 19 Claims



1. Sensor apparatus comprising:

pad means having a lower surface for contacting a surface of an object;

means for producing sliding contact between said lower surface of said pad means and an object;

means for mechancially coupling said pad means to a transducer means and for spacing said pad means from said transducer means at a predetermined distance, said mechanical coupling means comprising an elongated, substantially straight member connected to said transducer means near an upper end and connected to said pad means at a lower end;

said pad means and said elongated straight member being made of material capable of withstanding temperatures substantially above room temperature;

said transducer means for sensing vibrations and for producing an electrical signal corresponding to the vibrations;

means for deriving from the electrical signal a pattern characteristic of the object; and

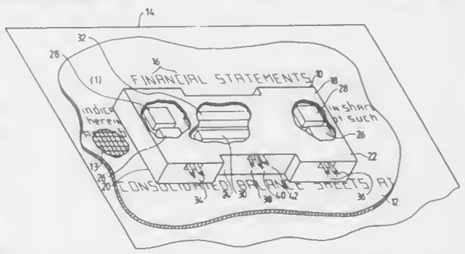
wherein vibrations induced in said pad means during said sliding contact with said object are transmitted to said transducer means by said mechanical coupling means.

4,942,621

METHOD FOR MAPPING SCANNED PIXEL DATA

George T. Angwin, Palo Alto, Calif., assignor to MSC Technologies, Inc., Fremont, Calif.

Filed Nov. 15, 1988, Ser. No. 271,453
Int. Cl.[5] G06K *9/22*
U.S. Cl. 382—59 20 Claims



1. A method for using a scanner to scan pixel data from an image on a page and map said scanned pixel data into a memory of a computer having memory addresses corresponding to discrete X-Y coordinate positions of said page, said scanner having an elongated detector array including detector ele-

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ments 0 through N−1 for detecting pixel data from said page and communicating said pixel data to said computer, a first position sensor separated a first predetermined distance from detector element 0 for detecting and communicating first position information to said computer, and a second position sensor separated a second predetermined distance from said first position sensor for detecting and communicating second position information to said computer, comprising the steps of:

(a) placing said scanner over said page;

(b) commencing detection of said first and second position information by said first and second position sensors and communicating said first and second position information to said computer;

(c) determining the orientation of said scanner with respect to said coordinate positions using said first and second position information;

(d) moving said scanner to a selected first position on said page from which it is desired to commence scanning;

(e) commencing pixel data detection by said detector elements;

(f) moving said scanner over the image to be scanned;

(g) communicating said pixel data output by said detector elements to said computer; and

(h) using said first and second position information to determine memory addresses for storing said pixel data, each said memory address corresponding to a discrete X-Y coordinate position on said page, the pixel data output by a particular detector element, being stored at a memory address corresponding to a coordinate position which is nearest the position of said particular detector element.

4,942,622

MOBILE RADIO-RECEIVER SYSTEM WITH IMPROVED REPRODUCTION CHARACTERISTICS OF RECEPTION SIGNAL HAVING NOISE SUPERIMPOSED THEREON

Kazuo Takayama, Kobe, and Hidefumi Fuse, Nagoya, both of Japan, assignors to Fujitsu Ten Limited, Hyogo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Jul. 13, 1988, Ser. No. 218,231
Claims priority, application Japan, Jul. 16, 1987, 62-175944
Int. Cl.[5] H04B *7/08*
U.S. Cl. 455—278 14 Claims



1. A mobile radio-receiver system comprising:

a pair of antennas installed on a mobile body and spaced at a predetermined distance;

a switching circuit operatively connected to said pair of antennas to receive two different radio-reception signals therefrom which are based upon a same transmission signal and selecting one of said radio-reception signals in response to a switching signal;

detection means, operatively connected to said switching circuit, for detecting said selected signal from therefrom,

noise detection means, operatively connected to said detection means, for detecting noise superimposed on said signal detected at said detection means, and outputting a noise detection signal;

antenna switching control means, operatively connected between said noise detection means and said switching circuit, for outputting said switching signal to said switching circuit in response to said noise detection signal; and

digital signal correction means, operatively connected to said detection means, and including an analog-to-digital converting means, for converting the data from said detection means in an analog form into a digital value, digital-type signal prediction means, for digitally predicting data converted at said analog-to-digital converting means, and digital-to-analog converting means for converting data from said digital-type signal prediction means into data in an analog form, said digital-type signal prediction means being operated in synchronization with a sampling time of said analog-to-digital converting means, and said digital-to-analog converting means being operated in synchronization with the operation of said signal prediction means, for digitally correcting data from said detection means when said noise detection signal indicates the existence of noise, or for outputting said data from said detection means when said noise detection signal does not indicate the existence of noise.

4,942,623

DEVICE AND METHOD FOR MODAL SEPARATION AND COMBINATION IN AN OPTICAL FIBER INTRUSION DETECTION SYSTEM

Charles K. Asawa, Pacific Palisades; Shi-Kay Yao, Anaheim, and John D. Anderson, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 507,422, Jun. 16, 1983, abandoned.
This application Feb. 4, 1987, Ser. No. 11,400
Int. Cl.[5] G03B *5/14*; H04B *9/00*
U.S. Cl. 455—612 25 Claims



1. For use in a bimodal intrusion detection system for optical fiber communications, apparatus for launching two separate information-carrying light beams into an optical output fiber, said apparatus comprising:

first and second sources of light for launching a monitor signal as higher-order modes and a data signal as lower-order modes, respectively, in an output fiber;

lens means for focusing light from said first and second sources of light onto an end of the output fiber; and

spatial modal filter means disposed coaxially with said lens means, for constraining light from said first source of light to impinge on the output fiber at angles of incidence exceeding a predetermined threshold angle.

DESIGNS

JULY 17, 1990

309,210

SNACK CHIP

John C. Seyfert, 514 Riley Dr., Fort Wayne, Ind. 46825

Filed Apr. 14, 1987, Ser. No. 38,527
Term of patent 14 years
U.S. Cl. D1—128



309,211

INSOLE OR THE LIKE

Masahiko Nakagawa, 20-16, Oyamadai 2-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 13, 1988, Ser. No. 218,301
Term of patent 14 years
U.S. Cl. D2—318



309,212

NECKTIE

Jerry Maletsky, 93 Windstone Dr., San Rafael, Calif. 94903, and LiFong Liu, Oakland, Calif., assignors to Jerry Maletsky, San Rafael, Calif.

Filed Jun. 8, 1987, Ser. No. 59,271
Term of patent 14 years
U.S. Cl. D2—602

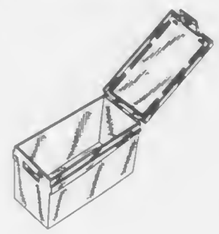


309,213

ENCLOSED CONTAINER

Arlen L. Chaney, Lewiston, Id., assignor to Blount, Inc., Portland, Oreg.

Filed Nov. 20, 1986, Ser. No. 933,066
Term of patent 14 years
U.S. Cl. D3—35

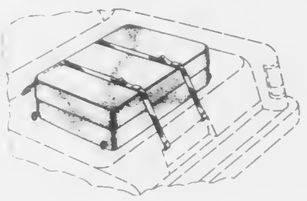


309,214

LUGGAGE CONTAINER VEHICLE ACCESSORY

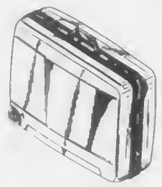
Richard M. Haugland, 520 W. Gleneagles Dr., Phoenix, Ariz. 85023

Filed Nov. 13, 1987, Ser. No. 124,117
Term of patent 14 years
U.S. Cl. D3—40

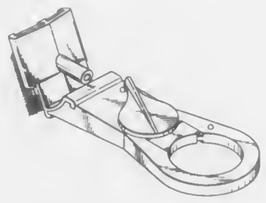


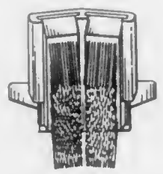
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309,215
MOBILE LUGGAGE CASE
Lai Wei-Mu, No. 31-1, Sec. 1, Wan Ho Rd., Nan Tun District, Taichung, Taiwan
Filed Jul. 8, 1986, Ser. No. 883,514
Term of patent 14 years
U.S. Cl. D3—76



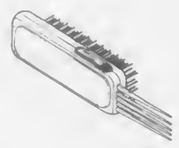
309,216
BICYCLE SPROCKET CLEANER
John F. Hoenselaar, Anacortes, Wash., and Eivind Clausen, Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Aug. 22, 1987, Ser. No. 53,423
Term of patent 14 years
U.S. Cl. D4—114





309,217
COMBINED COMPACT BRUSH AND COMB
Ming-Long Her, 24, Alley 3, Lane 42, Sec. 2, Hsiang Shang Road, Taichung, Taiwan
Filed Apr. 28, 1988, Ser. No. 187,400
Term of patent 14 years
U.S. Cl. D4—116





309,218
PACKAGED UNIT FOR BRUSHES
John T. Rueb, St. Paul, and Mark D. Sorlien, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed May 8, 1987, Ser. No. 47,713
Term of patent 14 years
U.S. Cl. D4—135

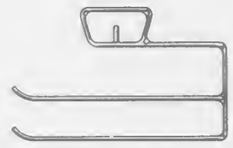


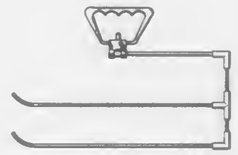
309,219
CAP HOLDER
Robert C. Hasslocher, San Antonio, Tex., assignor to Capstik Products, Inc., San Antonio, Tex.
Filed Jul. 21, 1988, Ser. No. 222,715
Term of patent 14 years
U.S. Cl. D6—316



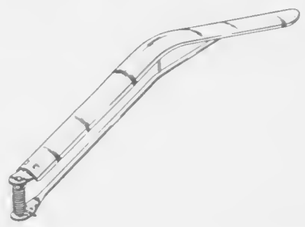


309,220
COMBINED CARRIER AND HANGER FOR FIREMAN'S GEAR
Eugene T. Welch, 38 Stratford Rd., Tinton Falls, N.J. 07724
Filed Feb. 9, 1987, Ser. No. 12,675
Term of patent 14 years
U.S. Cl. D6—317



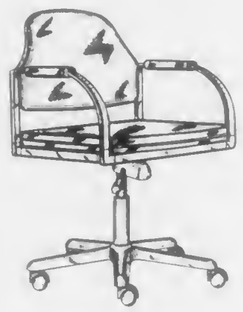


309,221
ARM FOR A HANGER UNIT
Par-Stephan Blom, and Lars-Arne Blom, both of Flasta, Sweden, assignors to Scanflex Medical AB, Taby, Sweden
Division of Ser. No. 32,395, Mar. 30, 1987, Pat. No. D. 302,359.
This application Apr. 21, 1989, Ser. No. 341,660
Term of patent 14 years
U.S. Cl. D6—328

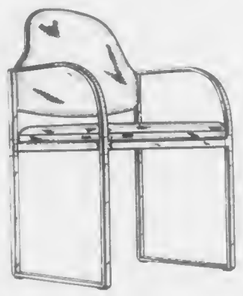


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309,222
CHAIR
Karl Lübke, Rheda-Wiedenbrück, Fed. Rep. of Germany, assignor to Lübke Möbelwerke GmbH & Co. KG., Rheda-Wiedenbrück, Fed. Rep. of Germany
Filed Mar. 16, 1987, Ser. No. 26,523
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 2007
Term of patent 14 years
U.S. Cl. D6—366



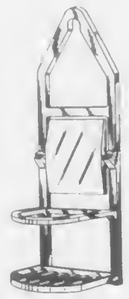
309,223
CHAIR
Karl Lübke, Rheda-Wiedenbrück, Fed. Rep. of Germany, assignor to Lübke Möbelwerke GmbH & Co. KG., Rheda-Wiedenbrück, Fed. Rep. of Germany
Filed Mar. 16, 1987, Ser. No. 26,521
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 2007
Term of patent 14 years
U.S. Cl. D6—373



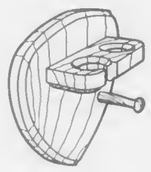
309,224
PRODUCT DISPENSER
Howard Rabin, Knox County, Tenn., assignor to Star Sales of Knoxville, Inc., Knoxville, Tenn.
Filed May 11, 1987, Ser. No. 47,458
Term of patent 14 years
U.S. Cl. D6—408



309,225
COMBINED SHOWER CADDY AND MIRROR
Richard S. Scarbro, 7307 Corum Ridge, Converse, Tex. 78109
Filed Mar. 28, 1988, Ser. No. 174,029
Term of patent 14 years
U.S. Cl. D6—525



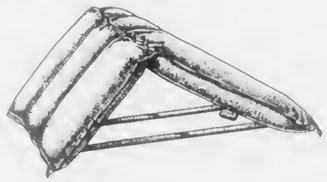
309,226
BASEBALL EQUIPMENT HOLDER
Charles D. Wilcox, 545 E. Pine St., Fort Bragg, Calif. 95437
Filed Jun. 24, 1988, Ser. No. 210,772
Term of patent 14 years
U.S. Cl. D6—552



309,227
POCKETED SEAT BACKREST COVER
Louis Popiolkowski, 249 Parker St., Houston, Pa. 15342
Filed Oct. 8, 1986, Ser. No. 904,234
Term of patent 14 years
U.S. Cl. D6—601



309,228
INFLATABLE BOLSTER
Diarmid McVicar, 114 West First Avenue, Box 878, Qualicum Beach, British Columbia, Canada (V0R 2T0)
Filed Dec. 14, 1987, Ser. No. 132,142
Claims priority, application Canada, Jun. 16, 1987, 16-06-87-1
Term of patent 14 years
U.S. Cl. D6—604

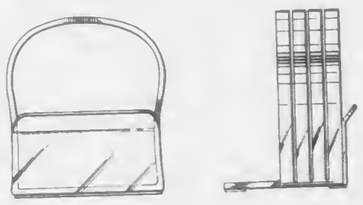


309,229
LOUNGE CHAIR COVER
Michael J. Cass, 193 Middlesex St., Springfield, Mass. 01109
Filed Feb. 8, 1988, Ser. No. 153,800
Term of patent 14 years
U.S. Cl. D6—610



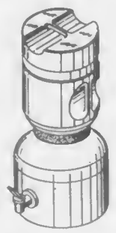
309,230
SLICING GUIDE
Hubert F. Mulherin, Edmunston, Canada, assignor to Business Accounting Computer Services Ltd., Edmundston, Canada
Filed Dec. 29, 1987, Ser. No. 139,336
Claims priority, application Canada, Oct. 7, 1987, 07-10-87-6
Term of patent 14 years
U.S. Cl. D7—673



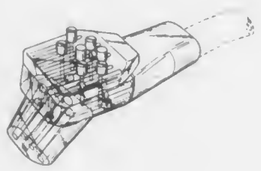


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309,231
COMBINED WATER DISPENSER AND CONTAINER
Raymond L. Larson, Fargo, N. Dak., assignor to BMR Investments, Inc., Fargo, N. Dak.
Filed Mar. 2, 1987, Ser. No. 20,648
Term of patent 14 years
U.S. Cl. D7—313



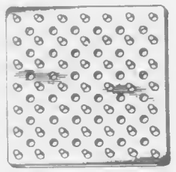
309,232
BEVERAGE DISPENSING HEAD
Mojtaba Valiyee, Moraga; William A. Martindale, and Richard A. Martindale, both of Vacaville, all of Calif., assignors to Automatic Bar Controls, Inc., Vacaville, Calif.
Filed Oct. 20, 1986, Ser. No. 922,985
Term of patent 14 years
U.S. Cl. D7—398



309,233
CAP FOR A GAS BURNER
Lyle B. Lund, Geneva, Ill., assignor to Harper-Wyman Company, Lisle, Ill.
Filed Jan. 22, 1988, Ser. No. 146,797
Term of patent 14 years
U.S. Cl. D7—407



309,234
COOKING PAD
Jack D. Howell, 3415 Linden Ave., Apt. #311, Long Beach, Calif. 90807
Filed Sep. 10, 1986, Ser. No. 905,644
Term of patent 14 years
U.S. Cl. D7—409



309,235
BARBEQUE ATTACHMENT GRID FOR COOKING SEAFOOD
John D. Griffard, Rte. 1, Box 264, Mackinaw, Ill. 61755
Filed Jun. 15, 1987, Ser. No. 61,403
Term of patent 14 years
U.S. Cl. D7—409

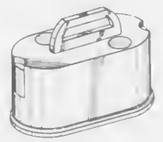
309,236
SPOON
Shiu C. Cheng, No. 16-3, Lane 34, Kinmen Street, Taipei, Taiwan
Filed Oct. 9, 1987, Ser. No. 106,334
Term of patent 14 years
U.S. Cl. D7—647



309,237
VACUUM BOTTLE
Ikuo Kobayashi, and Nobuyuki Kitamura, both of Kyoto, Japan, assignors to Japan Oxygen Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1987, Ser. No. 88,970
Term of patent 14 years
U.S. Cl. D7—605

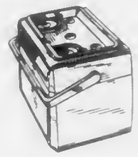


309,238
COMBINED BEVERAGE COOLER AND DISPENSER
Leonard H. Lipman, Humble, Tex., assignor to Falcor Group Inc.
Filed Dec. 12, 1988, Ser. No. 283,758
Term of patent 14 years
U.S. Cl. D7—605

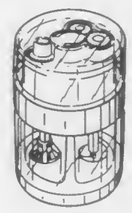


309,239
PICNIC COOLER
Robert R. Deines, and William J. Steffes, both of Wichita, Kans., assignors to Coleman Outdoor Products, Inc., Wichita, Kans.
Filed Nov. 13, 1987, Ser. No. 120,010
Term of patent 14 years
U.S. Cl. D7—605

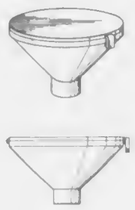




309,240
CONDIMENT GRINDER
Anthony H. Griffin, Lower Froyle, England, assignor to Cole & Mason Limited, Hampshire, England
Filed Apr. 20, 1987, Ser. No. 40,329
Claims priority, application United Kingdom, Oct. 24, 1986, 1037602
Term of patent 14 years
U.S. Cl. D7—679



309,241
RECLOSABLE FUNNEL FIXTURE
Luay Ayyoubi, P.O. Box 8616, The Woodlands, Tex. 77387, and Travis O. Evans, 901 Sunnyside, Houston, Tex. 77076
Filed Jan. 6, 1988, Ser. No. 203,376
Term of patent 14 years
U.S. Cl. D7—700



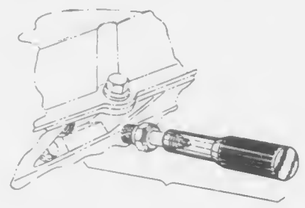
309,242
GROUND AERATOR
Joseph W. Laslo, 14648 93 Avenue, Edmonton, Alberta, Canada (T5R 5G6)
Filed Jan. 6, 1988, Ser. No. 141,466
Term of patent 14 years
U.S. Cl. D8—6



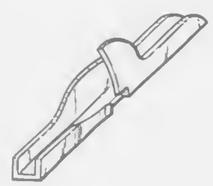
309,243
GARDENER'S TROWEL
E. Hubbard Yonkers, 13 Cooney St., Somerville, Mass. 02143
Filed Oct. 28, 1988, Ser. No. 264,171
Term of patent 14 years
U.S. Cl. D8—10



309,244
SPARK PLUG INSERTER/REMOVER
Michael Reed, 13749 Harold St., Taylor, Mich. 48180
Filed Jul. 27, 1987, Ser. No. 78,489
Term of patent 14 years
U.S. Cl. D8—14



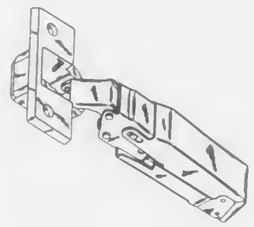
309,245
CAN OPENER
Fernando S. Salvador, 29, Tiburcio Anitua Str., Eibar (Guipuzoa), Spain (20600)
Filed Aug. 9, 1988, Ser. No. 230,117
Claims priority, application Spain, Feb. 9, 1988, 115089
Term of patent 14 years
U.S. Cl. D8—41

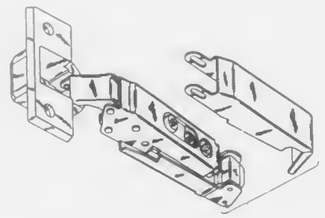


309,246
SCREWDRIVER
Steven S. Cascio, Kenosha; Donald J. Caldwell, Milwaukee; Tom S. Severson; Steven R. Wente, both of Kenosha, and Mark S. Bakula, Muskego, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Filed Dec. 24, 1986, Ser. No. 942,521
Term of patent 14 years
U.S. Cl. D8—82

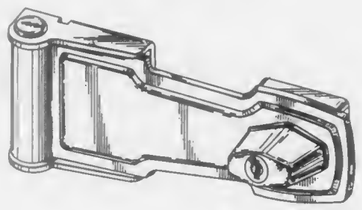


309,247
HINGE WITH PROTECTIVE COVER THEREFOR
Alfred Grass, Hochst/Vlbg., Austria, assignor to Alfred Grass GES.m.b.H. Metallwarenfabrik, Hochst/Vlgb., Austria
Filed Nov. 19, 1987, Ser. No. 122,889
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, URA 867/87
Term of patent 14 years
U.S. Cl. D8—323

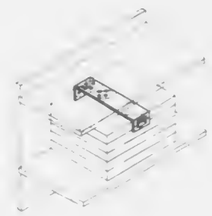




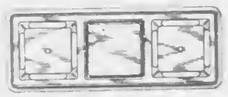
309,248
HASP-TYPE LATCH
Walter J. MacFarlane, Kensington, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 22, 1988, Ser. No. 288,801
Term of patent 14 years
U.S. Cl. D8—338



309,249
PRODUCT DISPLAY MOUNTING BRACKET FOR PROVIDING PRICE TAGS OR CODED INVENTORY LABELS
Joseph Crowley, 9639 Wystone Ave., Northridge, Calif. 91324
Filed Dec. 23, 1986, Ser. No. 946,280
Term of patent 14 years
U.S. Cl. D8—354



309,250
BI-DIRECTIONAL LASHING PATCH
David T. Flood, Elk Grove Village, and Mark J. Udelhofen, Park Ridge, both of Ill., assignors to Illinois Tools Works Inc., Glenview, Ill.
Filed Feb. 20, 1987, Ser. No. 17,434
Term of patent 14 years
U.S. Cl. D8—356



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309,251
TIE DOWN EYELET
Gerald E. Palmer, New Baltimore, Mich., assignor to Gerald E. Palmer Enterprises, New Baltimore, Mich.
Filed Aug. 14, 1987, Ser. No. 85,334
Term of patent 14 years
U.S. Cl. D8—367



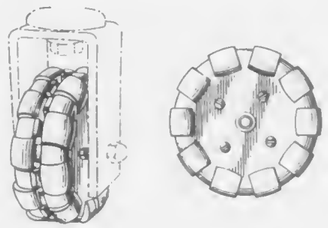
309,252
CLIP STRIP FOR DISPLAYING BAGGED PRODUCTS
Joseph Crowley, 9639 Wystone Ave., Northridge, Calif. 91324
Filed Dec. 23, 1986, Ser. No. 946,277
Term of patent 14 years
U.S. Cl. D8—373



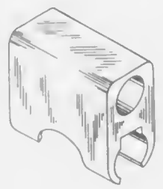
309,253
SEAT BRACKET HOLDER FOR SELF-CONTAINED BREATHING CYLINDER
Richard J. Doebler, N55 W14298 Carol Dr., Menomonee Falls, Wis. 53051
Filed Jun. 26, 1987, Ser. No. 66,644
Term of patent 14 years
U.S. Cl. D8—373



309,254
ROLLER WHEEL
Henry B. O. Guile, Botany, Australia, assignor to Oscar Investments Pty. Limited, New South Wales, Australia
Filed Aug. 5, 1987, Ser. No. 81,893
Claims priority, application Australia, Jun. 25, 1987, 2217/87
Term of patent 14 years
U.S. Cl. D8—375



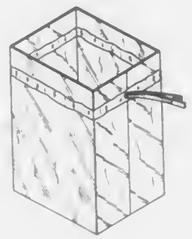
309,255
DETACHABLE FLASHLIGHT MOUNT FOR FIREARMS OR SIMILAR ARTICLE
Harold E. Karow, Jr., 1115 E. Manitoba St., Milwaukee, Wis. 53207
Filed Feb. 12, 1987, Ser. No. 13,722
Term of patent 14 years
U.S. Cl. D8—395

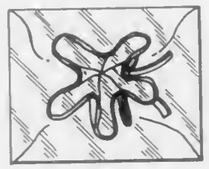


309,256
LIQUID DISPENSER
George F. W. Boesel, Canton, Mass., assignor to Autocrat, Inc., Lincoln, R.I.
Filed Aug. 26, 1987, Ser. No. 89,624
Term of patent 14 years
U.S. Cl. D9—300

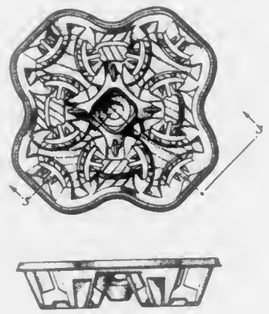


309,257
GIFT SACK
Marion P. Myers, Rte. 2, Box 386, Purcellville, Va. 22132
Filed Jun. 8, 1987, Ser. No. 59,395
The portion of the term of this patent subsequent to Jul. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—305





309,258
BEVERAGE TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre, Waterville, Me.
Filed Jun. 5, 1987, Ser. No. 58,536
Term of patent 14 years
U.S. Cl. D9—341



309,259
CONTAINER BODY FOR LIQUIDS OR THE LIKE
Susan W. S. Chemler, Naperville, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Jul. 1, 1988, Ser. No. 214,620
Term of patent 14 years
U.S. Cl. D9—376



309,260
BOTTLE
George R. Conrad, Dunwoody, Ga., assignor to General Electric Company, Mt. Vernon, Ind.
Filed Oct. 28, 1987, Ser. No. 114,265
Term of patent 14 years
U.S. Cl. D9—378



309,261
JAR
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois Glass Container Inc., Toledo, Ohio
Filed Oct. 13, 1987, Ser. No. 107,729
Term of patent 14 years
U.S. Cl. D9—398

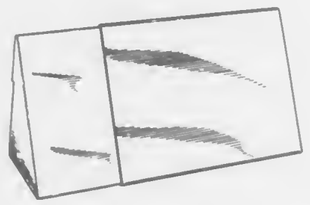


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309,262
DISPLAY CARTON
Charles B. Coiner, Rte. 2, Box 4157, Berryville, Va. 22611
Filed Jun. 16, 1988, Ser. No. 207,441
Term of patent 14 years
U.S. Cl. D9—418



309,263
COMBINED SHIPPING AND DISPLAY CONTAINER FOR SUNGLASSES OR THE LIKE
Aaron M. Markovitz, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sep. 14, 1987, Ser. No. 96,427
Term of patent 14 years
U.S. Cl. D9—432



309,264
LID FOR OVENABLE TRAY
Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Sep. 10, 1987, Ser. No. 94,798
Term of patent 14 years
U.S. Cl. D9—438



309,265
BOTTLE CAP
Philippe Colonna, Chavenay, France, assignor to Cebal, Clichy, France
Filed Apr. 9, 1987, Ser. No. 36,241
Claims priority, application France, Oct. 10, 1986, 86 5313
Term of patent 14 years
U.S. Cl. D9—452



309,266
CLOCK
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 6, 1987, Ser. No. 69,626
Claims priority, application Japan, Jan. 5, 1987, 62-25[U]
Term of patent 14 years
U.S. Cl. D10—6



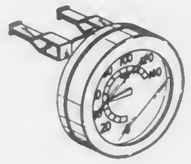
309,267
WRISTWATCH
Hans Saurer, Viganello, Switzerland, assignor to Christian Dior, S.A., Paris, France
Filed May 14, 1987, Ser. No. 50,212
Term of patent 14 years
U.S. Cl. D10—39



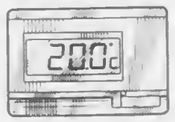
309,268
CENTRAL THERMOSTAT
Seiji Wada; Nobuo Otsuka, both of Kamakura; Toyohiro Kobayashi, Shizuoka, all of Japan, and Peter Thompson, Cypress, Calif., assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 21, 1987, Ser. No. 98,680
Term of patent 14 years
U.S. Cl. D10—50



309,269
THERMOMETER FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to 501 Tanaka Manufacturing Company Limited, Tokyo, Japan
Filed Mar. 11, 1987, Ser. No. 24,799
Claims priority, application Japan, Sep. 12, 1986, 61-35779
Term of patent 14 years
U.S. Cl. D10—57



309,270
THERMOMETER
Seiichi Uchiyama, Tokorozawa, Japan, assignor to Car Mate Manufacturing Company Limited, Tokyo, Japan
Filed Oct. 9, 1987, Ser. No. 107,524
Claims priority, application Japan, Apr. 17, 1987, 62-15072
Term of patent 14 years
U.S. Cl. D10—57

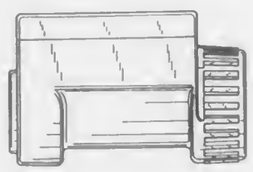




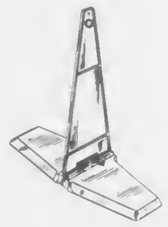
309,271
PROBE FOR ELECTRONIC CLINICAL THERMOMETER
Kenichi Kida, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1987, Ser. No. 103,260
Claims priority, application Japan, Jul. 31, 1987, 62-30900
Term of patent 14 years
U.S. Cl. D10—57



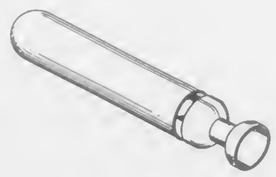
309,272
FLOW METER
Robert E. Hall, Wichita, Kans., assignor to Great Plains Industries, Inc., Wichita, Kans.
Filed Apr. 27, 1987, Ser. No. 43,232
Term of patent 14 years
U.S. Cl. D10—96



309,273
ROAD SAFETY DEVICE
Frank Myers, Alcester, and Roger L. Williams, Broxbourne, both of United Kingdom, assignors to APH Road Safety Ltd., Redditch, United Kingdom
Filed Jan. 11, 1988, Ser. No. 141,906
Term of patent 14 years
U.S. Cl. D10—113



309,274
WHISTLE
Russell C. Gray, 600 S. Park Rose Ave., Monrovia, Calif. 91016
Filed Oct. 5, 1987, Ser. No. 104,096
Term of patent 14 years
U.S. Cl. D10—119



309,275
JEWELRY CHAIN
Marjorie K. Kouns, 15 Minetta St., New York, N.Y. 10012
Filed Jun. 29, 1987, Ser. No. 67,909
Term of patent 14 years
U.S. Cl. D11—11

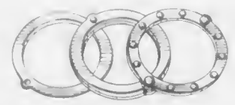






309,276
FINGER RING OR SIMILAR ARTICLE
Andre Mejias, Vevey, Switzerland, assignor to Premiere de Tabbah SA, Fribourg, Switzerland
Filed May 2, 1988, Ser. No. 189,595
Claims priority, application Int'l Pat. Institute, Nov. 25, 1987, DMA/000/699
Term of patent 14 years
U.S. Cl. D11—26



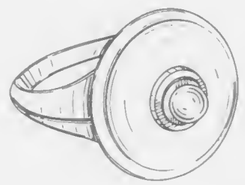


309,277
FINGER RING OR SIMILAR ARTICLE
Andre Mejias, Vevey, Switzerland, assignor to Premiere de Tabbah SA, Fribourg, Switzerland
Filed May 2, 1988, Ser. No. 189,603
Claims priority, application Int'l Pat. Institute, Nov. 25, 1987, DMA/000/699
Term of patent 14 years
U.S. Cl. D11—27

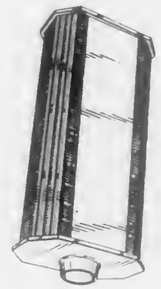




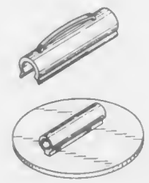
309,278
FINGER RING
André Méjias, Vevey, Switzerland, assignor to Premiere de Tabbah, S.A., Fribourg, Switzerland
Filed Jun. 20, 1988, Ser. No. 208,557
Claims priority, application Int'l Pat. Institute, Dec. 22, 1987, DMA/000/711
Term of patent 14 years
U.S. Cl. D11—35



309,279
COLUMN FOR A TROPHY
Raymond H. Pierce, Gravenhurst, Canada, assignor to Tromar Corporation Ltd., Mississauga, Canada
Division of Ser. No. 903,616, Sep. 3, 1986. This application Sep. 5, 1989, Ser. No. 402,592
Term of patent 14 years
U.S. Cl. D11—164

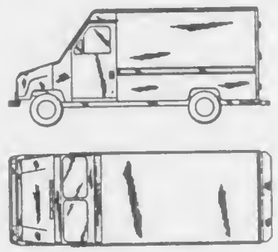


309,280
PACIFIER COUPLER FOR BABY'S GARMENT
Vicki Balfanz-Lee, 9102 NE. Highway 99, Vancouver, Wash. 98665
Filed Sep. 3, 1987, Ser. No. 93,552
Term of patent 14 years
U.S. Cl. D11—215

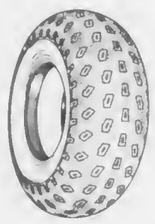


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309,281
VAN
George J. Tisten, Elkhart; Donald J. Wilson, Granger, and Eugene A. Dylewski, II, Granger, all of Ind., assignors to Holiday Rambler Corporation, Wakarusa, Ind.
Filed Oct. 25, 1988, Ser. No. 262,481
Term of patent 14 years
U.S. Cl. D12—99



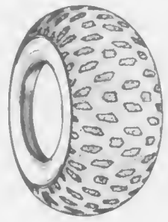
309,282
AUTOMOBILE TIRE
Yoshihiko Hasegawa, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 27, 1987, Ser. No. 113,271
Claims priority, application Japan, Apr. 27, 1987, 62-16845
Term of patent 14 years
U.S. Cl. D12—146



309,283
AUTOMOBILE TIRE
Yasuo Igarashi, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 13, 1987, Ser. No. 106,763
Claims priority, application Japan, Apr. 13, 1987, 62-14466
Term of patent 14 years
U.S. Cl. D12—148



309,284
AUTOMOBILE TIRE
Akihito Monta, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 13, 1987, Ser. No. 106,762
Claims priority, application Japan, Apr. 13, 1987, 62-14468
Term of patent 14 years
U.S. Cl. D12—149



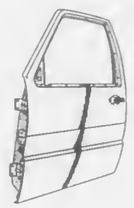
309,285
THREE PIECE SPOILER UNIT FOR ATTACHMENT TO THE REAR OF A VEHICLE
Carlo Giavazzi, Milan, Italy, assignor to Alfa Lancia Industriale S.r.l., Arese, Italy
Filed May 28, 1987, Ser. No. 55,114
Claims priority, application Italy, Nov. 28, 1986, 23884 B/86
Term of patent 14 years
U.S. Cl. D12—181



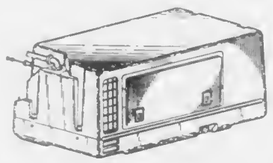
309,286
AUTOMOBILE TIRE
Yoshihiko Hasegawa, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 27, 1987, Ser. No. 113,265
Claims priority, application Japan, Apr. 27, 1987, 62-16846
Term of patent 14 years
U.S. Cl. D12—149



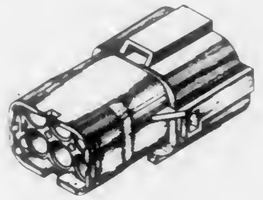
309,287
LEFT FRONT DOOR FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, and Giorgetto Giugiaro, Troffarello, Italy, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,942
Claims priority, application Sweden, Oct. 26, 1983, 83-2778
Term of patent 14 years
U.S. Cl. D12—196



309,288
GENERATOR SET ENCLOSURE
Paul W. Haverly, Coon Rapids, Minn., assignor to Onan Corporation, Minneapolis, Minn.
Filed Nov. 30, 1987, Ser. No. 126,956
Term of patent 14 years
U.S. Cl. D13—114



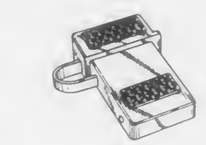
309,289
HOUSING FOR AN ELECTRICAL CONNECTOR
Takayoshi Endo; Sakai Yagi, and Satoshi Yamada, all of Gotenba, Japan, assignors to Yazaki Corp., Japan
Filed Oct. 13, 1987, Ser. No. 108,299
Term of patent 14 years
U.S. Cl. D13—147



309,290
ELECTRIC SWITCH ENCLOSURE
Larry J. Newmark, Avon, and David A. Hibbert, South Windsor, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Mar. 16, 1987, Ser. No. 26,348
Term of patent 14 years
U.S. Cl. D13—169

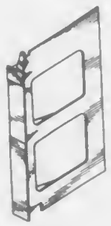


309,291
FLAT FUSE HOLDER
Richard F. Wharton, Glenview, Ill., assignor to Saflo Corporation, Chicago, Ill.
Filed Jan. 4, 1988, Ser. No. 140,592
Term of patent 14 years
U.S. Cl. D13—161

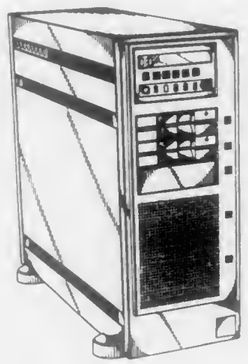


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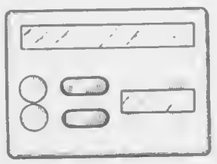
309,292
BLANK FACEPLATE UNIT FOR PRINTED CIRCUIT BOARD MODULE RACKS
Salvatore Sucato, Erie, Pa., assignor to Tegam, Inc., Madison, Ohio
Filed Jul. 28, 1988, Ser. No. 225,136
Term of patent 14 years
U.S. Cl. D13—184



309,294
PERSONAL COMPUTER
Ettore Sottsass, Milano, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Dec. 14, 1987, Ser. No. 132,137
Claims priority, application Italy, Jun. 22, 1987, 53453/87[U]
Term of patent 14 years
U.S. Cl. D14—100



309,293
POCKET DATA INPUT/OUTPUT TERMINAL
Arthur L. Helbig, Jr., 3501 Upper Mill Ct., Ellicott City, Md. 21043
Filed Sep. 29, 1988, Ser. No. 250,502
Term of patent 14 years
U.S. Cl. D14—100

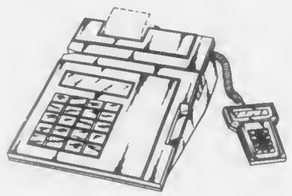


309,295
DATA TERMINAL
Carlos de la Huerga, Shorewood; Todd N. Roberts, Germantown; Christopher J. Salimes, Brookfield, and John P. Tennessen, Milwaukee, all of Wis., assignors to Marquette Electronics, Inc., Milwaukee, Wis.
Filed Jan. 29, 1988, Ser. No. 150,322
Term of patent 14 years
U.S. Cl. D14—100

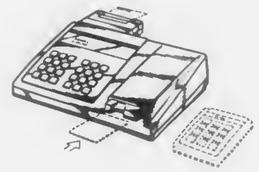




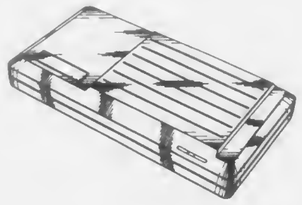
309,296
CREDIT CARD TERMINAL WITH AUXILIARY KEYBOARD
Robert Kohler, Paris, France, assignor to Societe D'Applications Generales D'Electricite, Paris, France
Filed Dec. 14, 1987, Ser. No. 132,143
Claims priority, application France, Jun. 25, 1987, 87 3784
Term of patent 14 years
U.S. Cl. D14—105



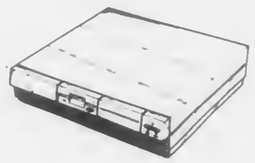
309,297
DATA PROCESSING TERMINAL FOR CREDIT CARD
Masami Suda, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1987, Ser. No. 96,401
Claims priority, application Japan, Aug. 31, 1987, 62-35194
Term of patent 14 years
U.S. Cl. D14—105



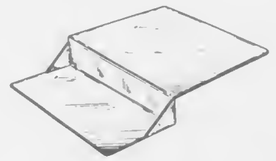
309,298
TELEPHONE DATA MODEM
Floyd J. Pushelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 10, 1988, Ser. No. 269,847
Term of patent 14 years
U.S. Cl. D14—107



309,299
FLOPPY DISK DRIVE
Woo Y. Oh, Inchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Oct. 5, 1988, Ser. No. 254,292
Claims priority, application Rep. of Korea, Apr. 28, 1988, 5784/1988
Term of patent 14 years
U.S. Cl. D14—109



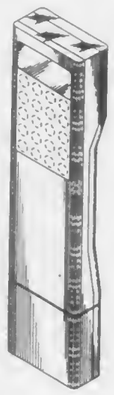
309,300
PORTABLE COMPUTER KEYBOARD SUPPORT
Everett L. Lindgren, Jr., 8000 W. 86th Street Cir., Bloomington, Minn. 55438
Filed Oct. 14, 1988, Ser. No. 258,319
Term of patent 14 years
U.S. Cl. D14—114



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309,301
HOUSING FOR A PORTABLE CELLULAR HANDSET TELEPHONE OR SIMILAR ARTICLE
Leonid Soren, Lincolnwood, and Albert L. Nagele, Wilmette, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 334,001, Apr. 6, 1989, Pat. No. D. 306,163.
This application Oct. 12, 1989, Ser. No. 420,392
Term of patent 14 years
U.S. Cl. D14—138



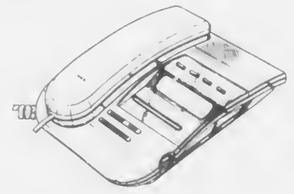


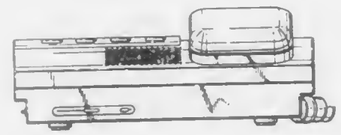
309,302
FRONT COVER FOR CELLULAR PORTABLE TELEPHONE
Douglas M. Dickson, Lynchburg, Va., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.
Filed Dec. 5, 1988, Ser. No. 280,268
Term of patent 14 years
U.S. Cl. D14—138





309,303
COMBINED CLOCK, RADIO, TELEPHONE
Paul Appleby, London, England, assignor to Dialatron Limited, Surrey, United Kingdom
Filed Jun. 28, 1989, Ser. No. 373,217
Term of patent 14 years
U.S. Cl. D14—144

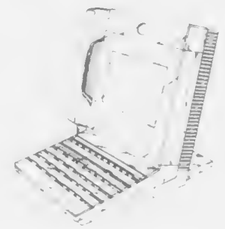


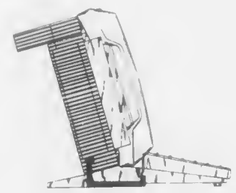


309,305
MICROPHONE
Rolf von Hall, 2575 Palisade Ave., Bronx, N.Y. 10463
Filed Mar. 10, 1988, Ser. No. 166,158
Term of patent 14 years
U.S. Cl. D14—225



309,304
VIDEO COMMUNICATIONS TERMINAL, INCLUDING HOUSING, TELEPHONE HANDSET, KEYBOARD, CAMERA AND IMAGE SCREEN
Kazuhumi Takada, and Kazuhito Takai, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1988, Ser. No. 287,084
Term of patent 14 years
U.S. Cl. D14—144





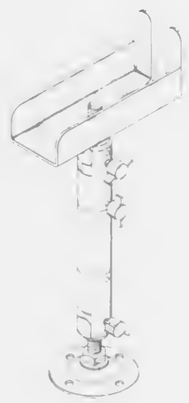
309,306
UNITARY TELEPHONE EAR RECEIVER ELEMENT AND ATTACHED MICROPHONE
Margaret A. Weiser, and Issac Weiser, both of 4760 Corbin Ave., Tarzana, Calif. 91356
Filed Mar. 13, 1989, Ser. No. 322,239
Term of patent 14 years
U.S. Cl. D14—249



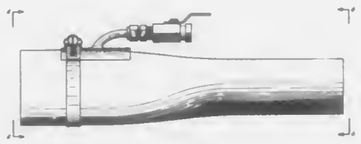


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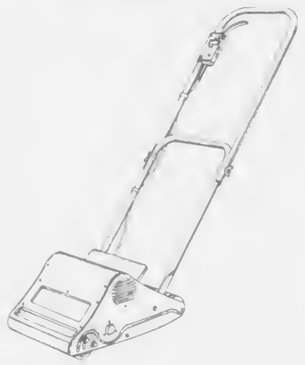
309,307
PEDESTAL FOR A MOBILE TELEPHONE OR SIMILAR ARTICLE
David M. Sigurdson, 8410 Prine, Magnolia, Tex. 77355
Filed Jun. 26, 1989, Ser. No. 371,018
Term of patent 14 years
U.S. Cl. D14—251



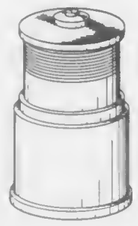
309,309
MIXING NOZZLE FOR A FIBER BLOWING AND SPRAYING MACHINE
Gregory S. Sundheim, Littleton, and John M. Sundheim, Denver, both of Colo., assignors to Enersaver Products, Inc., Denver, Colo.
Filed Dec. 22, 1988, Ser. No. 288,117
Term of patent 14 years
U.S. Cl. D15—13



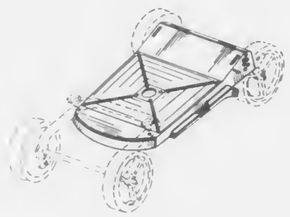
309,310
LAWN MOWER
Fusao Fushiya; Takashi Yamazaki; Katsuyasu Ito, and Matsuo Ohashi, all of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Sep. 11, 1987, Ser. No. 95,246
Claims priority, application Japan, Apr. 10, 1987, 62-14305
Term of patent 14 years
U.S. Cl. D15—14



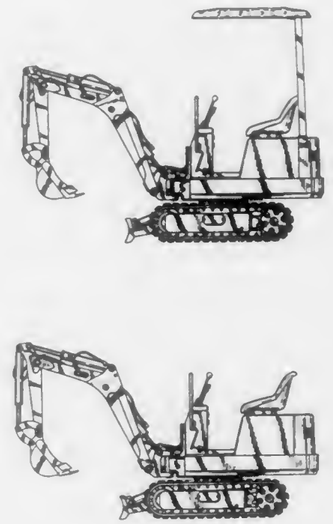
309,308
SUMP-RISER HOUSING
Michael C. Webb, 15 E. Uwchlan Ave., Exton, Pa. 19341
Filed Oct. 6, 1988, Ser. No. 254,129
Term of patent 14 years
U.S. Cl. D15—7



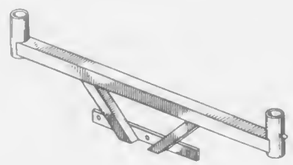
309,311
LAWN MOWER HOUSING OR THE LIKE
Dallas W. Jones, New Hartford; Lauren J. Young, Poland, both of N.Y., and Matthew F. Orr, Shawnee Mission, Kans., assignors to Trim-A-Lawn Corporation, Utica, N.Y.
Filed Nov. 23, 1988, Ser. No. 275,560
Term of patent 14 years
U.S. Cl. D15—17



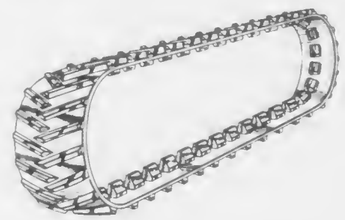
309,313
BACKHOE
Akira Takashima; Shizuo Shimole, and Hisato Katoh, all of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan
Filed Apr. 29, 1988, Ser. No. 187,996
Claims priority, application Japan, Oct. 29, 1987, 62-44276; Oct. 29, 1987, 62-44277
Term of patent 14 years
U.S. Cl. D15—25



309,312
CASTER ARM FOR A MOWING MACHINE
Robert W. Hass, 14366 Azalea Rd., #74, Phelan, Calif. 92371
Filed Dec. 19, 1988, Ser. No. 285,946
Term of patent 14 years
U.S. Cl. D15—17

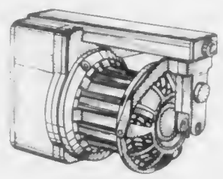


309,314
ENDLESS BELT FOR A BELTED VEHICLE
Charles E. Grawey; Robert J. Grob, and Cullen P. Hart, all of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Feb. 20, 1987, Ser. No. 17,128
Term of patent 14 years
U.S. Cl. D15—28

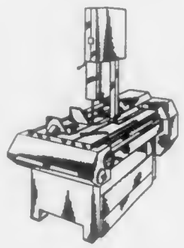


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309,315
YARN FEEDER FOR TEXTILE MACHINES
Bruno Maina, Valdengo, Italy, assignor to Roj Electrotex S.p.A., Biella, Italy
Filed Apr. 12, 1988, Ser. No. 180,828
Claims priority, application Italy, Oct. 12, 1987, 22525B/87
Term of patent 14 years
U.S. Cl. D15—78



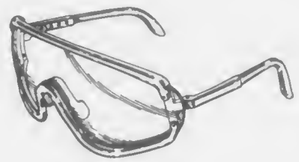
309,316
BAND SAW
Scott J. Collins; Timothy B. Strandell, and John W. Van Akkeren, all of Milwaukee, Wis., assignors to Armstrong-Blum Mfg. Co., Oshkosh, Wis.
Filed Feb. 26, 1988, Ser. No. 160,509
Term of patent 14 years
U.S. Cl. D15—134



309,317
BALL END MILL
Osamu Tsujimura, Kawasaki; Tatsuo Arai, Kitamoto, and Masayuki Okawa, Kawasaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1988, Ser. No. 181,153
Claims priority, application Japan, Oct. 15, 1987, 62-42120
Term of patent 14 years
U.S. Cl. D15—139



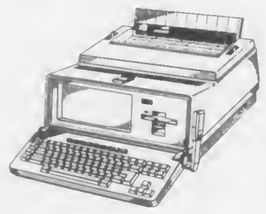
309,318
ACTIVE EYE WEAR
Leonard Bordonaro, 14 Stephen Ave., Englewood Cliffs, N.J. 07632, and Jerome Salsky, 16 Crest Rd., Emerson, N.J. 07630
Filed Apr. 21, 1989, Ser. No. 341,659
Term of patent 14 years
U.S. Cl. D16—112



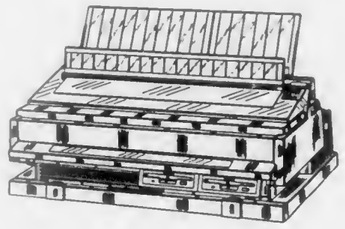
309,319
HEADLESS TAMBOURINE
Michael Greenspoon, 10 Hamayan Street, Givatayim, Israel
Filed Jan. 19, 1988, Ser. No. 146,148
Term of patent 14 years
U.S. Cl. D17—22



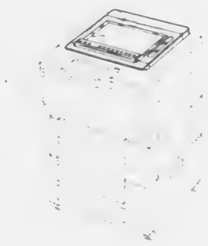
309,320
WORD PROCESSOR
Michifumi Ishigami, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed May 19, 1987, Ser. No. 52,351
Claims priority, application Japan, Dec. 5, 1986, 61-48405
Term of patent 14 years
U.S. Cl. D18—1



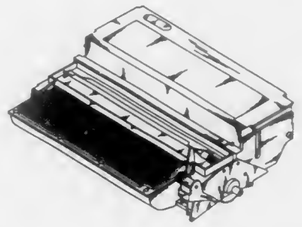
309,321
PRINTER FOR TYPEWRITER
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Aug. 13, 1987, Ser. No. 85,007
Claims priority, application Italy, Feb. 18, 1987, 53032/87[U]
Term of patent 14 years
U.S. Cl. D18—13



309,322
EDITING DEVICE FOR COPYING MACHINE
Tomohiko Hirata, Kawasaki, and Yosuke Ohsawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 10, 1988, Ser. No. 269,560
Claims priority, application Japan, May 13, 1988, 63-18791
Term of patent 14 years
U.S. Cl. D18—40



309,323
CARTRIDGE FOR AN ELECTROPHOTOGRAPHIC PRINTER
James A. Craft, Lexington; William D. Freeman, Harrodsburg; James J. Molloy, Lexington; David T. Shadwick, Lexington; Thomas G. Twardeck, Lexington, and James P. Wang, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 6, 1989, Ser. No. 306,435
Term of patent 14 years
U.S. Cl. D18—40

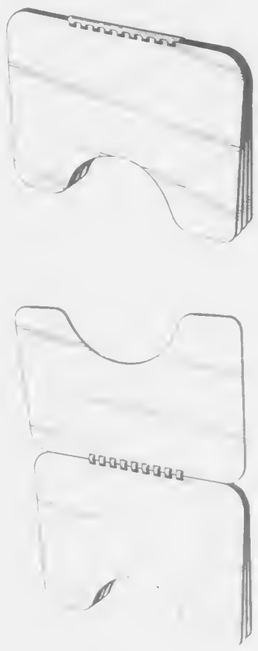


309,324
BOOK
Jean D. Callaghan, 1332 59th Pl., LaGrange, Ill. 60525
Filed Oct. 30, 1987, Ser. No. 114,393
Term of patent 14 years
U.S. Cl. D19—26

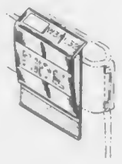


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309,325
KIT FOR TEACHING COLOR COORDINATION
Christine Halls, 2 Keele Street, Ste. 303, Toronto, Ontario, Canada (M6P 4C1)
Filed Nov. 6, 1987, Ser. No. 118,335
Term of patent 14 years
U.S. Cl. D19—62



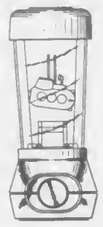
309,326
DISPLAY CLIP FOR ATTACHMENT TO THE WAISTBAND OF TROUSERS FOR DISPLAYING SIZE OF GARMENT AND OTHER INFORMATION
Jay M. Friedman, New York, N.Y., assignor to Palm Beach Incorporated, Cincinnati, Ohio
Filed Sep. 24, 1986, Ser. No. 911,315
Term of patent 14 years
U.S. Cl. D20—43



309,327
GAME BALL PROJECTOR
Edwin H. Chapman, P.O. Box 265, West Union, W. Va. 26456
Filed Aug. 3, 1987, Ser. No. 80,579
Term of patent 14 years
U.S. Cl. D21—2



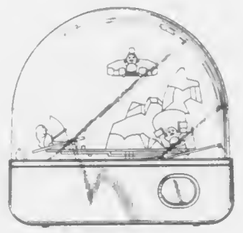
309,328
WATER GAME HOUSING
Mitsunori Noshiro, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Jan. 11, 1988, Ser. No. 141,886
Claims priority, application Japan, Jul. 20, 1987, 62-29379
Term of patent 14 years
U.S. Cl. D21—12



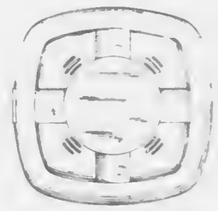
309,329
WATER GAME HOUSING
Makiko Watanabe, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Jan. 11, 1988, Ser. No. 141,903
Claims priority, application Japan, Jul. 28, 1987, 62-30586
Term of patent 14 years
U.S. Cl. D21—12

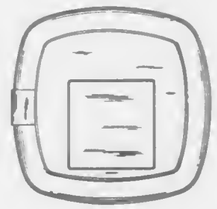


309,330
WATER GAME HOUSING
Makiko Watanabe, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Jan. 11, 1988, Ser. No. 141,905
Claims priority, application Japan, Jul. 16, 1987, 62-29078
Term of patent 14 years
U.S. Cl. D21—12

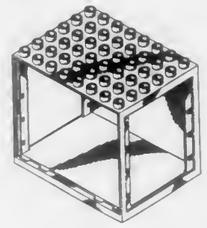


309,331
ELECTRONIC GAME HOUSING
Donny Leung, Tai Koo Shing, Hong Kong, assignor to Video Technology Industries, Inc., Wheeling, Ill.
Filed Oct. 14, 1987, Ser. No. 108,046
Term of patent 14 years
U.S. Cl. D21—13





309,332
TOY BUILDING ELEMENT
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Switzerland
Filed Nov. 29, 1988, Ser. No. 278,144
Term of patent 14 years
U.S. Cl. D21—108



309,333
SPACE ALIEN DOLL
Billy J. Foster, 3458 Petre Rd., Springfield, Ohio 45502
Filed Jan. 29, 1987, Ser. No. 12,045
Term of patent 14 years
U.S. Cl. D21—166



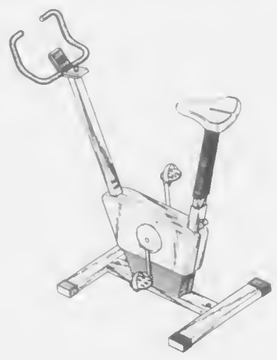
309,334
TALKING POLICE OFFICER FIGURE
Frank T. Italiano, Jr., 33 Binchwood Dr., North Arlington, N.J. 07032
Filed May 18, 1987, Ser. No. 51,149
Term of patent 14 years
U.S. Cl. D21—178



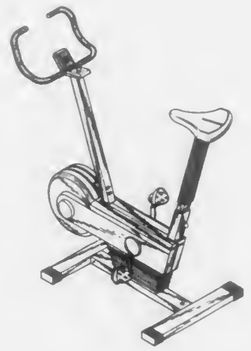
309,335
CYCLE EXERCISER
Lien C. Yang, 11F. No. 149, Roosevelt Rd. Sec. 3, Taipei, Taiwan
Filed Oct. 24, 1988, Ser. No. 261,466
Term of patent 14 years
U.S. Cl. D21—194



309,336
CYCLE EXERCISER
Lien C. Yang, 11F. No. 149, Roosevelt Rd. Sec. 3, Taipei, Taiwan
Filed Oct. 24, 1988, Ser. No. 261,467
Term of patent 14 years
U.S. Cl. D21—194



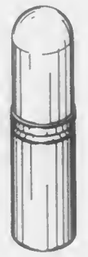
309,337
CYCLE EXERCISER
Lien C. Yang, 11F. No. 149, Roosevelt Rd., Sec. 3, Taipei, Taiwan
Filed Oct. 24, 1988, Ser. No. 261,468
Term of patent 14 years
U.S. Cl. D21—194



309,338
GOLF CLUB PUTTER HEAD
Albert Sopp, 1120 Bernalillo Pl., SE., Albuquerque, N. Mex. 87123
Filed Dec. 28, 1987, Ser. No. 138,013
Term of patent 14 years
U.S. Cl. D21—217



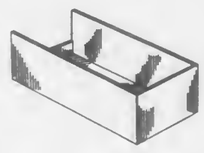
309,339
SOLID PROJECTILES
Eric A. Latfy, 125 E. Missouri Ave., Phoenix, Ariz. 85012
Continuation-in-part of Ser. No. 140,385, Jan. 4, 1988. This application Dec. 12, 1988, Ser. No. 283,872
Term of patent 14 years
U.S. Cl. D22—116



309,340
FISHING REEL
Yasuhisa Kameda, and Toshiaki Yoshikawa, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed May 2, 1988, Ser. No. 189,604
Claims priority, application Japan, Nov. 9, 1987, 62-45708
Term of patent 14 years
U.S. Cl. D22—141

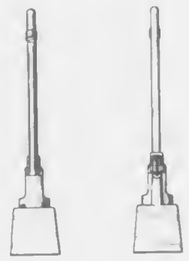


309,341
SPILL CONTAINMENT SYSTEM TROUGH UNIT WITH WEIR FLANGE
William T. Breadmoat, Bakersfield, Calif., assignor to Roy F. Saunders and James P. Peel, both of Bakersfield, Calif., a part interest to each
Filed Feb. 4, 1987, Ser. No. 10,802
Term of patent 14 years
U.S. Cl. D23—200

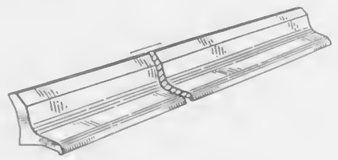


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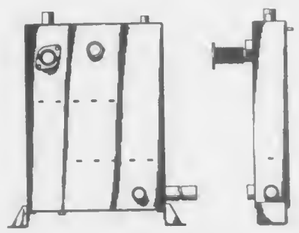
309,342
ELECTRONIC INDICATOR FAUCET
Duane D. Nowlin, New Brighton; John R. Nelson, West St. Paul, and Christopher M. Wilker, Circle Pines, all of Minn., assignors to Ecodyne Corporation, St. Paul, Minn.
Filed Aug. 8, 1986, Ser. No. 894,762
Term of patent 14 years
U.S. Cl. D23—239



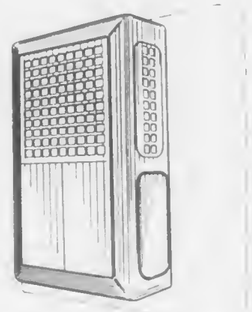
309,343
LOUVER GASKET
Coleman L. Koza, 321 Laclie St., Orillia, Ontario, Canada (L3V 4P2), and Lawrence J. Koza, 42 Cairns Boulevard, Barrie, Ontario, Canada (L4M 4S7)
Filed Apr. 12, 1988, Ser. No. 180,859
Term of patent 14 years
U.S. Cl. D23—269



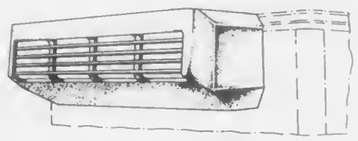
309,344
HEAT EXCHANGER
Herbert R. Ratch; Margo B. Ratch, and David E. Lumbert, all of 18171 Alice La., Huntington Beach, Calif. 92648
Filed Dec. 12, 1988, Ser. No. 283,514
Term of patent 14 years
U.S. Cl. D23—323



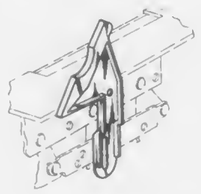
309,345
COVER FOR A TRANSPORT REFRIGERATION UNIT
Lowell M. Anderson, Bloomington; Ambrose Tao, Burnsville; Rodney H. Volk, Eden Prairie; Peter B. Allard, Minnetonka, all of Minn., and Clarence F. Graser, Venice, Fla., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Feb. 9, 1988, Ser. No. 154,671
Term of patent 14 years
U.S. Cl. D23—325



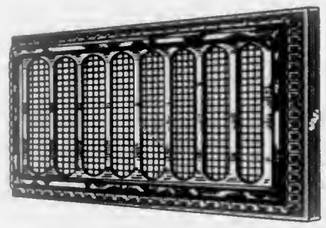
309,346
COVER FOR A TRANSPORT REFRIGERATION UNIT
Peter B. Allard, Minnetonka; Michael R. Weiss, Richfield, and David B. Ziegler, Eden Prairie, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Oct. 21, 1987, Ser. No. 110,987
Term of patent 14 years
U.S. Cl. D23—325



309,347
DAMPER LEVER
Douglas S. Brown, Knoxville, Tenn., assignor to American Metal Products Company, LaFollette, Tenn.
Filed Oct. 13, 1988, Ser. No. 257,492
Term of patent 14 years
U.S. Cl. D23—386



309,348
VENTILATOR GRILLE
Paul M. Sarazen, Jr., 214 Fairview Dr., and Dennis A. Beam, 410 Westfield Dr., both of Shelby, N.C. 28150
Filed Oct. 28, 1988, Ser. No. 264,506
Term of patent 14 years
U.S. Cl. D23—387



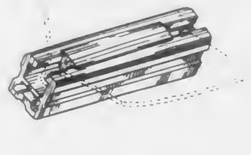
309,349
SAMPLING ADAPTER FOR CARBON DIOXIDE MONITORING IN A RESPIRATORY SYSTEM
Antti Martikainen, Vantaa, and Jorma Auvinen, Nummela, both of Finland, assignors to Instrumentarium Corp., Finland
Filed Nov. 9, 1987, Ser. No. 118,645
Claims priority, application Finland, May 21, 1987, 416/87
Term of patent 14 years
U.S. Cl. D24—17



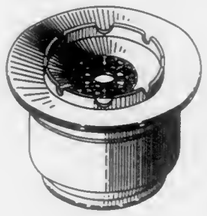
309,350
SURGICAL STERNOTOMY BAND TIGHTENING INSTRUMENT
Lloyd A. Sutherland, Central Islip, and Alfred V. Vasconcellos, Edison, both of N.J., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.
Filed Jun. 1, 1987, Ser. No. 56,565
Term of patent 14 years
U.S. Cl. D24—26



309,351
COMBINED FRAME EXTRUSION AND SPLINE FOR FRAMING AWNINGS
Glorio J. Patsy, Jr., 3560 Strawberry La., Cumming, Ga. 30130
Filed Jun. 5, 1989, Ser. No. 361,112
Term of patent 14 years
U.S. Cl. D25—119

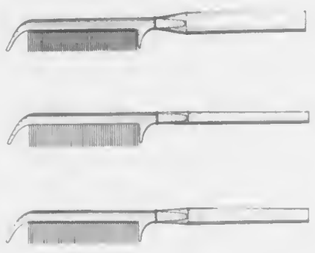


309,352
ASHTRAY
William A. Harder, Shinglehouse, Pa., and Guy Cassaday, Riverside, R.I., assignors to Har-Col Enterprises, Inc., Olean, N.Y.
Filed Dec. 23, 1988, Ser. No. 289,579
Term of patent 14 years
U.S. Cl. D27—135



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309,353
COMBINED COMB AND ROLLER
Photis Nicolaou, 13203 Canterbury, Sterling Heights, Mich. 48077
Filed Feb. 4, 1988, Ser. No. 152,061
Term of patent 14 years
U.S. Cl. D28—26



309,354
HAIR CRIMPING HEAD
Leandro P. Rizzuto, Greenwich, Conn.; Kit-Lun Leung, North Point, and Hou-On Lo, Kowloon, both of Hong Kong, assignors to Conair Corporation, Stamford, Conn.
Filed Jun. 13, 1988, Ser. No. 205,799
Term of patent 14 years
U.S. Cl. D28—35





309,355
RAZOR HANDLE
Jill M. Shurtleff, South Boston, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Feb. 29, 1988, Ser. No. 161,665
Term of patent 14 years
U.S. Cl. D28—48

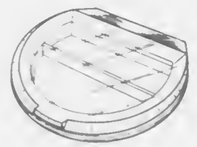


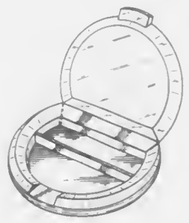
309,356
HAND REST
Joseph F. Johns, 735 SE. Malden, Portland, Oreg. 97202
Filed Feb. 1, 1988, Ser. No. 150,712
Term of patent 14 years
U.S. Cl. D28—56

309,357
DUAL COSMETIC CONTAINER
Marc A. Rosen, New York, N.Y., assignor to Conopco, Inc., New York, N.Y.
Filed Mar. 30, 1987, Ser. No. 32,195
Term of patent 14 years
U.S. Cl. D28—77



309,358
COSMETIC COMPACT
Reinhard Machelett, Meinerzhagen, and Dietrich Machelett, Zum Rothenstein, both of Fed. Rep. of Germany, assignors to Wilhelm Koopman KG, Meinerzhagen, Fed. Rep. of Germany
Filed Jun. 10, 1988, Ser. No. 206,332
Term of patent 14 years
U.S. Cl. D28—78





309,359
CHILD SAFETY HARNESS
Barry L. Joachim, 2116 65 Pl., Lubbock, Tex.
Filed Mar. 23, 1987, Ser. No. 28,925
Term of patent 14 years
U.S. Cl. D29—11





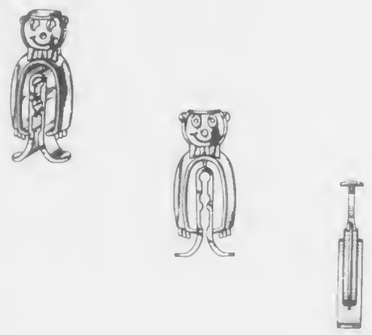
309,360
MITT
Shirley M. Torrence, 4231 Columbus, Bakersfield, Calif. 93306
Filed Feb. 27, 1987, Ser. No. 19,605
Term of patent 14 years
U.S. Cl. D29—22



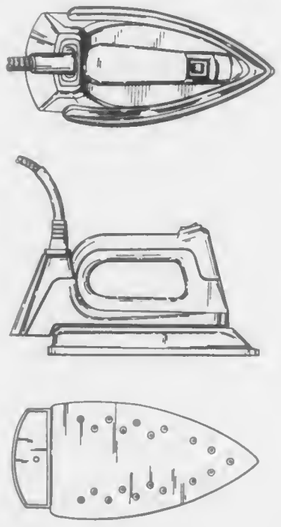




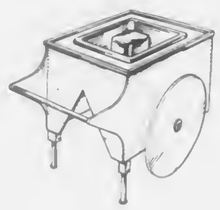
309,361
CLOTHESPIN
Robert C. Collyer, Unit 3C, Summerhouse Lane, Harefield, Middlesex, UB9 6HU, United Kingdom
Filed Nov. 6, 1987, Ser. No. 118,359
Claims priority, application United Kingdom, May 14, 1987, 1042173
Term of patent 14 years
U.S. Cl. D32—62



309,362
FLATIRON
Giuseppe Giannelli, Como, Italy, assignor to Micromax S.p.A., Como, Italy
Filed Sep. 1, 1988, Ser. No. 240,900
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Term of patent 14 years
U.S. Cl. D32—70



309,363
FLOWER CART
Edwin F. Vobeda, 4020 Blue River Ave., Racine, Wis. 53405
Filed Dec. 16, 1988, Ser. No. 285,244
Term of patent 14 years
U.S. Cl. D34—24



309,364
SALVAGE DRUM
Mark D. Shaw; J. Tad Heyman, and Laurence M. Bierce, all of Jacksonville, Fla., assignors to Essef Corporation, Chardon, Ohio
Filed Feb. 6, 1987, Ser. No. 11,721
Term of patent 14 years
U.S. Cl. D34—39



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PATENTS WERE ISSUED ON THE 17TH DAY OF JULY, 1990

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Fan, Caesar. Over-loading idling lock set. 4,941,697, Cl. 292-336.300.
Fan, Roxy N.; and Grossa, Mario, to Du Pont de Nemours, E. I., and Company. Solid imaging method using photohardenable materials of self limiting thickness. 4,942,066, Cl. 427-54.100.
Fanuc Ltd: *See—*
Nakamura, Shigeo, 4,942,508, Cl. 363-19.000.
Farmitalia Carlo Erba S.p.A.: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,942,155, Cl. 514-34.000.
Farnell Instruments Limited: *See—*
Shires, Jonathanes;; and Turner, John, 4,942,509, Cl. 363-89.000.
Farr, Glyn P. R., to Lucas Industries. Hydraulic anti-lock braking systems for vehicles. 4,941,713, Cl. 303-116.000.
Farrah, William J.: *See—*
Goerss, William G.; and Farrah, William J., 4,941,491, Cl. 134-111.000.
Farrar, John M.: *See—*
Coates, Jacqueline A.; Farrar, John M.; and Graham, Margaret H., all of, 4,941,983, Cl. 252-8.515.
Farwell, Lawrence A., to University Patents, Inc. Method and apparatus for detection of deception. 4,941,477, Cl. 128-731.000.
Fauck, Gerhard; Pohl, Wolfgang; and Ulrich, Helmut, to Wabco Westinghouse Fahrzeugbremsen GmbH. Relay valve for pneumatic or hydraulic application. 4,941,510, Cl. 137-627.500.
Faulkner, Peter: *See—*
Goosen, Matheus F. A.; King, Glenn A.; Daugulis, Andrew J.; and Faulkner, Peter, 4,942,129, Cl. 435-182.000.
Faulring, Frank W. Actuating mechanism for a ground-engaging tool. 4,941,416, Cl. 111-102.000.
Fawn Engineering Corp.: *See—*
Frerking, David R., 4,942,290, Cl. 235-381.000.
Feist, Horst J. Process for converting carbon blanks into graphite electrodes. 4,942,002, Cl. 264-27.000.
Felix, Augustus; and Uhoch, John, to C. R. Bard, Inc. Control handle for surgical irrigation and suction device. 4,941,872, Cl. 604-27.000.
Felle, Karl; and Krastel, Heinz, to Carl-Zeiss-Stiftung. Shutter for a photogrammetric camera. 4,942,415, Cl. 354-234.100.
Fenie, Michel: *See—*
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Fernandez, Helen M. Skin moisturizing product and process. 4,942,153, Cl. 514-2.000.
Fernwood, Mark; and Blake, Thomas S. Rear reservoir micro sandblaster. 4,941,298, Cl. 51-438.000.
Ferrari, John S.; and Sommers, Dale C. Railroad grade crossing motorist warning system. 4,942,395, Cl. 340-907.000.
Ferrari, Patrick F. Fish protection system. 4,941,432, Cl. 119-3.000.
Ferrario, Renzo: *See—*
Condo, Antonino; and Ferrario, Renzo, 4,942,025, Cl. 423-282.000.
Ferree, Herbert E.; Andrews, Harry N.; Cooper, Frank W., Jr.; and Herberg, Joseph R., to Space Industries Partnership, L.P. Portable robotic tool rack. 4,941,577, Cl. 211-70.600.
Fest, Christa: *See—*
Kirsten, Rolf; Kluth, Joachim; Fest, Christa; Gesing, Ernst; Muller, Klaus-Helmut; Riebel, Hans-Jochem; Babczinski, Peter; Schallner, Otto; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Harry, 4,941,912, Cl. 71-92.000.
Fiber Materials, Inc.: *See—*
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Fibertek, Inc.: *See—*
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Fichtel & Sachs AG: *See—*
Schraut, Alfred, 4,941,558, Cl. 192-107.00C.
Fiedler, Gerhard: *See—*
Conzelmann, Gerhard; Nagel, Karl; and Fiedler, Gerhard, 4,942,308, Cl. 307-202.100.
Fietzke, Gunter, to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik. Method and apparatus for mass centering of a rotor. 4,941,352, Cl. 73-461.000.
Figgie International Inc.: *See—*
Nist, Thomas R.; and Garnett, Edward V., 4,941,546, Cl. 182-17.000.
Wilfong, William G., 4,941,699, Cl. 294-99.100.
Figone, Frank M.: *See—*
Gomes, Gary D.; Gomes, Craig M.; Figone, Frank M.; and Figone, Moira J., 4,941,634, Cl. 248-229.000.
Figone, Moira J.: *See—*
Gomes, Gary D.; Gomes, Craig M.; Figone, Frank M.; and Figone, Moira J., 4,941,634, Cl. 248-229.000.
Finnegan, Danny E. Rasping device. 4,941,246, Cl. 29-78.000.

Fioravanti, Kenneth J.: *See—*
Stelts, Philip D.; Kern, David W.; and Fioravanti, Kenneth J., 4,941,646, Cl. 266-270.000.
Fischell, Robert E. Electrically actuated inflatable penile erection device. 4,941,461, Cl. 128-79.000.
Fischer, Dan E., to Ultradent Products, Inc. Controlled diffusion medicament applicator. 4,941,873, Cl. 604-54.000.
Fischer, Georg: *See—*
Proepper, Wilhelm; Juenkersfeld, Harald; and Fischer, Georg, 4,941,562, Cl. 198-416.000.
Fischle, Rudiger; and von Broock, Ulrich, to Dr. Ing.h.c.F. Porsche AG. Bearing arrangement for a drive assembly of a motor vehicle. 4,941,544, Cl. 180-292.000.
Fish, Aaron M.; and Somasundaram, Hariharan, to Ileo Unican Inc. Door locking arrangement. 4,941,334, Cl. 70-214.000.
Fish, Gordon E.: *See—*
Raybould, Derek; Fish, Gordon E.; and Denk, Joseph, 4,942,322, Cl. 310-156.000.
Fisher, Joseph, to Joseph Fisher. Non-invasive method and apparatus for measuring mixed venous blood carbon dioxide pressure (PVC02) and other physiological variables. 4,941,476, Cl. 128-719.000.
Fitch, John J.; and Parker, Tim, to Dennison Manufacturing Company. Toner receptive coating. 4,942,410, Cl. 346-160.100.
Flakt AB: *See—*
Gustavsson, Lennart; Lindau, Leif; and Johansson, Lars-Erik J, 4,941,896, Cl. 55-95.000.
Flament, Daniel. Device for stabilizing objects within the trunk of a vehicle. 4,941,784, Cl. 410-121.000.
Flanagan, Thomas P.; and Puletti, Paul, to National Starch and Chemical Investment Holding Corporation. Toughened rubber based hot melt adhesive compositions for bookbinding applications. 4,942,195, Cl. 524-294.000.
Fleck, Rod; Poret, Mark; Mattheis, Karl-Heinz; Magana, Javier; and Meinhold, Christoph, to Siemens Aktiengesellschaft; and Advanced Micro Devices Inc. Counter/timer circuit for a microcontroller. 4,942,559, Cl. 368-113.000.
Fleckenstein, Theo; Goebel, Gerd; Carduck, Franz-Josef; Bremus, Norbert; and Eicher, Reinhard, to Henkel Kommanditgesellschaft auf Aktien. Process for producing fatty alcohols and C_3 diols by catalytic hydrogenation. 4,942,266, Cl. 568-864.000.
Fletcher, Carl R.: *See—*
Sarnoff, Norton; and Fletcher, Carl R., 4,941,401, Cl. 99-446.000.
Flexman, Edmund A.; and Sosnowski, James J., to Du Pont de Nemours, E. I., and Company. Polyamide-polyarylate composition containing elastomeric modifier and epoxy-functional copolymer. 4,942,200, Cl. 525-66.000.
Flider, Frank S., to Justrite Manufacturing Company. Overpack drum. 4,941,588, Cl. 220-302.000.
Fliss, Thomas A., to Albany International Corporation. Method to reduce forming fabric edge curl. 4,941,239, Cl. 26-28.000.
Flory, Mark T. Electrical light illumination for kites flown at night. 4,942,506, Cl. 362-253.000.
Flotow, Richard A.; and Dickson, Thomas G., to Dana Corporation. Intermediate plate positioner means for a friction clutch assembly. 4,941,557, Cl. 192-70.250.
Fluent, Stewart L.; Hart, Colin; McCree, Charles D.; and Lotsch, Charles F., to CertainTeed Corporation. Panel packaging system. 4,941,309, Cl. 53-544.000.
Fluorochem Inc.: *See—*
Baum, Kurt; Malik, Aslam A.; and Tzeng, Donald D., 4,942,164, Cl. 528-70.000.
FMC Corporation: *See—*
Sardisco, Gioacchino, 4,942,051, Cl. 426-489.000.
FMTT, Inc.: *See—*
Herbert, Edward; Repp, John D.; and Cebry, Stephen E., 4,942,353, Cl. 323-361.000.
Focal Technologies Incorporated: *See—*
Colbourne, Paul D., 4,942,306, Cl. 250-577.000.
Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz, 4,941,374, Cl. 83-13.000.
Focke, Heinz, to Focke & Co. (GmbH & Co.). Process and apparatus for the loading of pallets in layers. 4,941,374, Cl. 83-13.000.
Foerster, Erhard: *See—*
Richter, Wolfgang-Dieter; Weeger, Engelbert; Uebel, Lutz; and Foerster, Erhard, 4,941,409, Cl. 105-157.100.
Foley, Kevin M.; Griffin, Charles C.; and Amaya, Eduardo, to Hepar Industries, Inc. Low molecular weight heparin derivatives having improved anti-Xa specificity. 4,942,156, Cl. 514-56.000.
Fong, Conrad T.; Grabenkort, Richard W.; Huntley, Scott P.; and Wecker, Sheldon M., to Abbott Laboratories. Method of packaging for a sterilizable calibratable medical device. 4,941,308, Cl. 53-425.000.
Fornasier, Roberto; Tornatore, Massimo; and Chapoy, L. Lowrence, to Montedison S.p.A. Thermotropic di-s-triazinic derivatives. 4,942,233, Cl. 544-212.000.
Forschirm, Alex S.; and Davies, Jon H., to Hoechst Celanese Corporation. Polyacetal lighter body resin. 4,942,208, Cl. 525-414.000.
Foss Manufacturing Co., Inc.: *See—*
Murphy, Richard, 4,942,082, Cl. 428-224.000.
Foster, Malcolm C., to Gullick Dobson Limited. Hydraulic power generating pack. 4,941,807, Cl. 417-199.100.
Foster, Ruth E.: *See—*
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Fowler, Alan B.; and Timp, Gregory L., to International Business Machines Corporation. Electron tuned quantum well device. 4,942,437, Cl. 357-16.000.
Fraley, Keith D.: *See—*
Waraksa, Thomas J.; Fraley, Keith D.; Kiefer, Richard E.; Douglas, Daniel G.; and Gilbert, Lee H., 4,942,393, Cl. 340-825.720.
Framatome: *See—*
Gaudin, Jean P.; and Peyrot, Jean P., 4,942,280, Cl. 219-60.200.
Francisco, Robert, to Pitney Bowes Inc. Collation record generation and control. 4,942,535, Cl. 364-478.000.
Franck, Reinhard: *See—*
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Franek, Henning: *See—*
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Franey, Michael A.: *See—*
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Frank, Amos; and Kehat, Joel, to Ben-Dak, Joseph D. Automatic book mark. 4,941,684, Cl. 281-42.000.
Franklin, Daniel L.; Goembel, Arthur J.; and Hahn, Douglas D., to Geo. A. Hormel & Company. Vacuum chilling for processing meat. 4,942,053, Cl. 426-524.000.
Frauca, Vicente T., to Irwin Toy Limited. Construction piece for toy vehicle track. 4,941,610, Cl. 238-10.00A.
Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Strehlow, Peter; and Schmidt, Helmut, 4,941,993, Cl. 252-315.600.
Frawley, Patrick J., III, to Schick Laboratories, Inc. Composition for the treatment of substance abuse. 4,942,175, Cl. 514-535.000.
Frazier, Thomas A.: *See—*
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Frederick, Curt: *See—*
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Freimann, Paul; and Staudinger, Gernot, to Voest-Alpine Aktiengesellschaft. Process for gasifying fuels. 4,941,890, Cl. 48-197.00R.
Frenken, Hans: *See—*
Schweicher, Wolfgang; Frenken, Hans; Bussmann, Heinrich; Browatzki, Kurt; and Sobel, Johannes, 4,942,068, Cl. 427-420.000.
Frerking, David R., to Fawn Engineering Corp. Dispensing machine having horizontal product carrier movable through an elliptical-type path. 4,942,290, Cl. 235-381.000.
FreshNes Foods Corporation: *See—*
Miles, Milton C., 4,941,327, Cl. 62-246.000.
Freund, Wolfgang; Hamprecht, Gerhard; Wuerzer, Bruno; Westphalen, Karl-Otto; and Meyer, Norbert, to BASF Aktiengeseilschaft. 2-phenylpyridazin-3-one compounds, their preparation and their use as herbicides. 4,941,911, Cl. 71-92.000.
Freyssinet International (STUP): *See—*
Jartoux, Pierre, 4,941,303, Cl. 52-223.00L.
Fricke, Hans-Michael: *See—*
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Friedman, Herbert, to Ivy Hill Corporation. Sift-proof carton and blank therefor. 4,941,575, Cl. 206-621.300.
Frigoscandia Contracting AB: *See—*
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Frye, Bruce J. Adhesive holding device with separable elements. 4,942,071, Cl. 428-40.000.
Fuerstman, Leland L., to Color Ident Systems Corporation. Package identification system. 4,941,573, Cl. 206-459.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
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Watanabe, Hideo, 4,941,441, Cl. 123-325.000.
Fuji Photo Film Co., Ltd.: *See—*
Hatori, Masami, 4,941,722, Cl. 350-96.130.
Koizumi, Shigeo; and Kita, Nobuyuki, 4,942,109, Cl. 430-175.000.
Mori, Nobufumi; Hosoi, Yuichi; and Takahashi, Kenji, 4,942,300, Cl. 250-327.200.
Saeki, Keiso; Endo, Tosiaki; Satomura, Masato; and Shinozaki, Fumiaki, 4,942,107, Cl. 430-138.000.
Shiba, Keisuke; and Koya, Keizo, 4,942.114, Cl. 430-434.000.
Shiota, Kazuo, 4,942,462, Cl. 358-76.000.
Terashita, Takaaki; and Okada, Sethuo, 4,942,424, Cl. 355-38.000.
Usami, Toshimasa; Tanaka, Toshiharu; and Kiritani, Masataka, 4,942,150, Cl. 503-213.000.
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Fujimaki, Hiroaki, to Tomy Kogyo Co., Inc. Animal toys having switch and vibration motor. 4,941,857, Cl. 446-353.000.
Fujimori, Yoshihiko: *See—*
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Fujinami, Yasushi: *See—*
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Fujisawa, Yoshikazu; Hata, Tsunehisa; and Hayashi, Tadayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Fiber-reinforced piston ring for internal combustion engine. 4,941,669, Cl. 277-235.00R.
Fujita, Nagahisa, to Mazda Motor Company. Engine control apparatus. 4,941,444, Cl. 123-399.000.

Fujita, Nobuhiko: *See—*
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Fujitsu America, Inc.: *See—*
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Fujitsu Limited: *See—*
Hirose, Fumiyasu, 4,942,615, Cl. 364-578.000.
Horikoshi, Eiji; Iikawa, Tsutomu; and Sato, Takehiko, 4,941,918, Cl. 75-229.000.
Fujitsu Ten Limited: *See—*
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Fujiura, Yoshitsugu, to AMP Incorporated. Shielded electrical connector having an insulating cover on the shielding member. 4,941,849, Cl. 439-610.000.
Fujiwara, Mikio; and Komohara, Minoru, to Ikeda Bussan Company Ltd. Locking slide apparatus for mounting a seat. 4,941,636, Cl. 248-430.000.
Fukai, Masayuki: *See—*
Miyagaki, Hisanori; Shimizu, Katsuhito; Tobita, Haruya; Takita, Atsushi; Kimura, Tooru; Sugano, Akira; Kikuchi, Masayuki; and Fukai, Masayuki, 4,942,514, Cl. 364-190.000.
Fukai, Tetsuro: *See—*
Hara, Yoshimasa; Ohkura, Seisaku; Iijima, Fumio; Tamura, Isamu; Fukai, Tetsuro; Tagiri, Sumiho; and Takagi, Norimasa, 4,941,794, Cl. 414-341.000.
Fukatsu, Yoshiaki; Nomura, Etsuji; and Matsui, Kazuma, to Nippondenso Co., Ltd. Gas rate gyro. 4,941,353, Cl. 73-505.000.
Fukaya, Katsuyoshi, to Aisan Kogyo Kabushiki Kaisha. Electric motor. 4,942,325, Cl. 310-257.000.
Fukuda, Shunpei: *See—*
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Fukudome, Katsuyuki: *See—*
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Fukumoto, Hirohiko: *See—*
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Fukumoto, Katsumi: *See—*
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Fukumoto, Takaaki: *See—*
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Fukuoka, Tatsuhiko: *See—*
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Fukushima, Hisao: *See—*
Araki, Kazui; Kobayashi, Yoshio; Matsumoto, Seiji; and Fukushima, Hisao, 4,941,814, Cl. 425-388.000.
Funabashi, Yuichi: *See—*
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Funahashi, Yoshiki; and Hibi, Masayuki, to Tokai Rubber Industries, Ltd. Fluid-filled cylindrical elastic mount having means for improved durability of elastic body. 4,941,649, Cl. 267-140.100.
Furihata, Makoto: *See—*
Watanabe, Toshinori; Mori, Fumihiko; Nishiyama, Tamotsu; Furihata, Makoto; Kominami, Yasuo; and Horie, Noboru, 4,942,536, Cl. 364-490.000.
Furuhashi, Hiroyuki; Nakano, Akira; Murata, Masahide; Imai, Masafumi; and Ueno, Hiroshi, to Toa Nenryo Kogyo, K.K. Catalyst component for olefin polymerization. 4,942,148, Cl. 502-115.000.
Furuhashi, Kenshi; Ito, Hiroyasu; and Enari, Nobuyuki, to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Multiple circuit switch with rockable activator and linearly movable contact holder. 4,942,273, Cl. 200-61.540.
Furuhashi, Tatsuo: *See—*
Nasu, Yasunobu; Ogishima, Taichi; Dei, Akira; Uchida, Haruhiko; Inami, Mitsuru; Furuhashi, Tatsuo; Hino, Yasuhiko; and Sugimura, Hideo, 4,942,048, Cl. 426-271.000.
Furukawa, Kazuo: *See—*
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Fuse, Hidefumi: *See—*
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Fuse, Masaki: *See—*
Ichimura, Kiyoshi; Ito, Kideaki; Fuse, Masaki; Suematsu, Chiaki; Suzuki, Shingo; and Takahashi, Satoshi, 4,942,292, Cl. 250-203.400.
Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
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G-C Dental Industrial Corp.: *See—*
Kimura, Hiroshi, 4,941,828, Cl. 433-114.000.
Gabrick, Albert. Controlling and recovering oil spills from the environment. 4,941,978, Cl. 210-693.000.
Galante, Richard L.; Waibel, Terry J.; and Windham, Terrell D., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,941,523, Cl. 152-543.000.
Galatron S.r.l.: *See—*
Orlandi, Alessio, 4,941,509, Cl. 137-625.170.
Gall, Rudi; and Bosies, Elmar, to Boehringer Mannheim GmbH. 1-hydroxy-3-(N-methyl-N-propylamino)propane-1,1-diphosphonic acid, pharmaceutical compositions and methods of use. 4,942,157, Cl. 514-108.000.
Galloway, Edwin J., to Galloway Trust. Aseptic fluid transfer apparatus and methods. 4,941,517, Cl. 141-1.000.
Galloway Trust: *See—*
Galloway, Edwin J., 4,941,517, Cl. 141-1.000.
Gamarra, Jose P., to Raychem Corporation. Cable sealing apparatus comprising heat resistant gel compositions. 4,942,270, Cl. 174-93.000.
Gardziella, Arno; and Kwasniok, Alois, to Rutgerswerke AG. Novel heat-hardenable binders phenol-formaldehyde+HMT+acid. 4,942,217, Cl. 528-129.000.
Garland, Robert B.; and Miyano, Masateru, to National Research Development Corporation. Novel intermediates in the manufacture of novel thromboxane A_2 antagonists. 4,942,256, Cl. 560-121.000.
Garner, Darryl M., to Garner, Sandra Brown. Portable business card slit cutter. 4,941,381, Cl. 83-468.940.
Garner, Sandra Brown: *See—*
Garner, Darryl M., 4,941,381, Cl. 83-468.940.
Garner, Scott W.: *See—*
Mort, Thomas W.; Stern, Philip A.; and Garner, Scott W., 4,942,432, Cl. 355-260.000.
Garnett, Edward V.: *See—*
Nist, Thomas R.; and Garnett, Edward V., 4,941,546, Cl. 182-17.000.
Garwood, William E.; Krambeck, Frederick J.; Kushnerick, John D.; and Tabak, Samuel A., to Mobil Oil Corporation. Multistage system for conversion of lower olefins with reactor quenching means. 4,942,021, Cl. 422-194.000.
Gas Research Institute: *See—*
Thrasher, William H; Pavlik, Charles M.; and Moon, Larry, 4,941,452, Cl. 126-110.00R.
Gasbarro, Geno N. Apparatus for producing sized controlled portions of meat. 4,941,379, Cl. 83-409.200.
Gasiunas, Donatas V., to Pitney Bowes Inc. Hall effect encoder apparatus. 4,942,394, Cl. 340-870.310.
Gast, William F.; and Rhodes, Charles F., Jr., to Oryx Energy Company. Method and apparatus for determining earth resistivities in the presence of extraneous earth currents. 4,942,361, Cl. 324-360.000.
Gaudin, Jean P.; and Peyrot, Jean P., to Framatome. Device for welding the end of a tubular piece fastened inside a bore opening onto a face of a plate, such as a tube plate of a steam generator. 4,942,280, Cl. 219-60.200.
Gaughan, Kevin J.: *See—*
Devitt, Francis E.; Doran, John P.; and Gaughan, Kevin J., 4,942,344, Cl. 318-254.000.
Gavezotti, Piero: *See—*
Strepparola, Ezio; Alfieri, Mario; and Gavezotti, Piero, 4,941,987, Cl. 252-58.000.
GDT Pty. Ltd.: *See—*
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Gearard, Marie: *See—*
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Takao, Hiroyoshi; Inoue, Yoshio; and Yamazaki, Hirotami, 4,942,223, Cl. 528-501.000.

Intelligent Surgical Lasers Inc.: *See*—
Lai, Shui T., 4,942,586, Cl. 372-68.000.

Interlake Companies, Inc., The: *See*—
Schuster, John E., 4,941,955, Cl. 204-129.500.

International Business Machines Corporation: *See*—
Austin, Larry W.; and Linde, Harold G., 4,941,941, Cl. 156-647.000.
Baker, William T., Jr.; Buffum, Charles M.; Jolissaint, Charles H.; and Kerlin, Gregg W., 4,942,602, Cl. 379-212.000.
Beranger, Herve ; Brunin, Armand; Caplier, Bruno; and Rousseau, Jean-Paul, 4,942,316, Cl. 307-455.000.
Buchholtz, Timothy C.; Gruver, Michael R.; Richetta, Raymond A.; and Schmerbeck, Timothy J., 4,942,399, Cl. 341-143.000.
Couden, Donald V.; Karr, Paul C.; and Balliet, Layton, 4,941,724, Cl. 350-96.180.
Do, Phuc K.; Kellam, Karen K.; Tong, Ronnie Chi-on; Willis, Ronald W.; and Wyke, Carol E., 4,942,390, Cl. 340-735.000.
Estes, Mark W.; Eisen, Ivan R.; and Peters, Anthony M., 4,941,829, Cl. 434-118.000.
Fowler, Alan B.; and Timp, Gregory L., 4,942,437, Cl. 357-16.000.
Ishihara, Takeyuki; and Kanno, Tetsuo, 4,941,377, Cl. 83-211.000.
Lasmayoux, Casimir; and Pantani, Antoine, 4,941,835, Cl. 439-152.000.
Moreau, Wayne M.; Chiong, Kaolin N.; Chow, Ming-Fea; and Snyder, Nancy W., 4,942,108, Cl. 430-169.000.
Picard, Jean-Louis, 4,942,572, Cl. 370-85.800.
Tkazyik, William J.; and Urfer, Robert G., 4,941,830, Cl. 439-59.000.
Vassiliadis, Stamatis, 4,942,548, Cl. 364-784.000.
Wickramasinghe, Hemantha K., 4,941,753, Cl. 374-120.000.

International Flavors & Fragrances Inc.: *See*—
Buckholz, Lawrence L., Jr.; and Kasper-Lehmann, Robin, 4,942,047, Cl. 426-302.000.

International Sanitary Ware Manufacturing Cy, S.A.: *See*—
Van Marcke, Karel C., 4,941,219, Cl. 4-623.000.

Inui, Tsutomu; Matsumoto, Shun-ichiro; Ichiyasu, Rokuo; and Mizuguchi, Takeo, to Hitachi Metals, Ltd. Sintered target member and method of producing same. 4,941,920, Cl. 75-246.000.

Inuishi, Masahide: *See*—
Tsukamoto, Katsuhiro; Inuishi, Masahide; and Shimizu, Masahiro, 4,942,448, Cl. 357-49.000.

Iowa State University Research Foundation, Inc.: *See*—
Martin, Steve W., 4,942,144, Cl. 501-40.000.

Ippolito, Robert: *See*—
Specht, Brian; and Ippolito, Robert, 4,941,369, Cl. 74-551.900.

Irinoda, Kazuhiko: *See*—
Nakazawa, Hitoshi; Ohtsuka, Mari; Matsuda, Hideaki; Katori, Tatsuhiko; and Irinoda, Kazuhiko, 4,942,172, Cl. 514-441.000.

Irwin, Guy L. Spiral conveyor with textured capstan. 4,941,566, Cl. 198-778.000.

Irwin Toy Limited: *See*—
Frauca, Vicente T., 4,941,610, Cl. 238-10.00A.

Iseler, Kenneth A.; and Wilkinson, Robert E., to Budd Company, The. Method for bonding reinforcement members to FRP panels. 4,941,937, Cl. 156-274.800.

Iseler, Kenneth A.: *See*—
Wilkinson, Robert E.; Iseler, Kenneth A.; Smith, Rueben L.; Duerr, Lorenz K. E.; and Cargile, Harry M., 4,941,936, Cl. 156-274.800.

Ishibashi, Masahiro: *See*—
Tanaka, Yasunori; Kobayashi, Teruo; and Ishibashi, Masahiro, 4,942,317, Cl. 307-465.000.

Ishida, Kazuhito: *See*—
Yamada, Makoto; Nagata, Osamu; Sugiura, Toshio; Suzuki, Tsuyoshi; Ishida, Kazuhito; Shibata, Eiji; Makino, Kazumasa; Horaguchi, Yoichi; Tomizawa, Takashi; Hayashi, Shigeyuki; Ohno, Motoshi; and Nakata, Takashi, 4,942,430, Cl. 355-232.000.

Ishida, Noboru: *See*—
Suzuki, Osamu; and Ishida, Noboru, 4,941,760, Cl. 384-537.000.

Ishida, Tokuji: *See*—
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,942,418, Cl. 354-408.000.

Ishida, Yoshihiro; Iinuma, Yoshio; and Ichikawa, Shingo, to Citizen Watch Co., Ltd. IC package. 4,942,453, Cl. 357-68.000.

Ishihara, Takeyuki; and Kanno, Tetsuo, to International Business Machines Corporation. Apparatus for feeding a continuous form and cutforms. 4,941,377, Cl. 83-211.000.

Ishii, Yoshihiko, to Nissan Motor Co., Ltd. Select shock attenuation arrangement for automatic automotive transmission. 4,941,370, Cl. 475-128.000.

Ishikawa, Hiroyuki; and Koizumi, Hiroyasu, to Calsonic Corporation. Method for welding metal honeycomb carrier. 4,942,285, Cl. 219-121.640.

Ishikawa, Keiichi; Tsuchiyama, Tadashi; Suzuki, Yasuyuki; and Hasegawa, Hiroaki. Wet friction member, and wet frictional engagement apparatus for a transmission using the same. 4,941,559, Cl. 192-107.00R.

Ishikawa, Sakae: *See*—
Nakai, Junji; and Ishikawa, Sakae, 4,942,434, Cl. 355-290.000.

Ishikawa, Yoshikazu: *See*—
Koyama, Hideo; Sasajima, Koji; Maki, Kazuya; Yamaguchi, Kouji; and Ishikawa, Yoshikazu, 4,941,371, Cl. 74-865.000.

Ishikawa, Youhei; Tsunoda, Kikuo; Hiratsuka, Toshiro; and Abe, Hirotsugu, to Murata Manufacturing Co., Ltd. Rod type dielectric resonating device with coupling plates. 4,942,377, Cl. 333-202.000.

Ishimaru, Hajima: *See*—
Saeki, Hiroshi; Ikeda, Junji; and Ishimaru, Hajime, 4,941,224, Cl. 15-1.50R.

Ishimaru, Hajime: *See*—
Saeki, Hiroshi; Ikeda, Junji; and Ishimaru, Hajime, 4,941,224, Cl. 15-1.50R.

Ishimura, Yoshimasa; Oe, Takami; Suyama, Yuseki; and Nagato, Nobuyuki, to Showa Denko Kabushiki Kaisha. Process for preparation of allyl type amine. 4,942,261, Cl. 564-480.000.

Ishiwata, Syousuke: *See—*
Suzuki, Osamu; Ishiwata, Syousuke; Hayashi, Mitsuroh; and Oshima, Hideaki, 4,941,346, Cl. 73-54.000.

Ishizaka, Yukio: *See—*
Sotogoshi, Teruhito; Ishizaka, Yukio; and Nakamura, Katsunori, 4,941,923, Cl. 106-498.000.

Isobe, Kenji; Hori, Michio; Yoshizawa, Hiroyasu; Ogawa, Kazuo; Takahashi, Hiroyuki; Noguchi, Mitsuo; and Maeda, Toshio, to Kabushiki Kaisha Toshiba. Fuel cell. 4,942,099, Cl. 429-35.000.

Isomura, Shohei: *See—*
Arai, Shigeyoshi; Sugita, Kyoko; Isomura, Shohei; and Kaetsu, Hayato, 4,941,956, Cl. 204-157.200.

Isozumi, Shuzoo, to Mitsubishi Denki Kabushiki Kaisha. Coaxial type starter device. 4,941,366, Cl. 74-6.000.

Isozumi, Shuzoo: *See—*
Morishita, Akira; and Isozumi, Shuzoo, 4,942,307, Cl. 290-38.00R.

Ito, Hideo; and Yokote, Masatsugu, to Nissan Motor Co., Ltd. Device for distributing drive power in the drive train of a four wheel drive vehicle. 4,941,541, Cl. 180-140.000.

Ito, Hiroyasu: *See—*
Furuhashi, Kenshi; Ito, Hiroyasu; and Enari, Nobuyuki, 4,942,273, Cl. 200-61.540.

ito, Kideaki: *See—*
Ichimura, Kiyoshi; Ito, Kideaki; Fuse, Masaki; Suematsu, Chiaki; Suzuki, Shingo; and Takahashi, Satoshi, 4,942,292, Cl. 250-203.400.

Ito, Toshikazu; and Kagohata, Tsuneo, to Hitachi, Ltd. Automotive air conditioner. 4,941,525, Cl. 165-12.000.

Itoh, Hiroyuki; Yamada, Toshio; Masaki, Akira; and Kobayashi, Tohru, to Hitachi, Ltd. Transistor circuit with improved α ray resistant properties. 4,942,320, Cl. 307-546.000.

Itoh, Kazutoshi: *See—*
Suzuki, Mamoru; Suzuki, Katsumi; Itoh, Kazutoshi; Minato, Akira; Kambayashi, Tsuyoshi; and Hoshino, Yoshiyuki, 4,941,973, Cl. 210-175.000.

Itoh, Kiyoo: *See—*
Higuchi, Hisayuki; Suzuki, Makoto; Homma, Noriyuki; and Itoh, Kiyoo, 4,942,555, Cl. 365-189.070.

Itoh, Masataka: *See—*
Yoshinouchi, Atsushi; Itoh, Masataka; Tsuchimoto, Shuhei; Tarui, Keiji; and Nishigaki, Satoshi, 4,942,481, Cl. 358-471.000.

Itoh, Takaaki: *See—*
Tomoda, Atsuo; Itoh, Takaaki; and Kijima, Takao, 4,941,542, Cl. 180-140.000.

Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries Ltd. Superconducting thin film and a method for preparing the same. 4,942,142, Cl. 505-1.000.

Itozaki, Hideo; Harada, Keizo; and Yazu, Shuji, to Sumitomo Electric Industries, Ltd. Process for preparting a bismuth-type compound oxide superconductor. 4,942,152, Cl. 505-1.000.

ITT Corporation: *See—*
Sterns, William G., 4,942,376, Cl. 333-160.000.
Welsh, David E., 4,941,847, Cl. 439-595.000.

Ivey, Paul C.; and Owen, John M., to Rolls-Royce plc; and Ruston Gas Turbines Limited. Nose bullet anti-icing for gas turbine engines. 4,941,317, Cl. 60-39.093.

Ivy Hill Corporation: *See—*
Friedman, Herbert, 4,941,575, Cl. 206-621.300.

Iwama, Satoshi: *See—*
Yoshida, Yasunori; Nakayama, Rinichi; and Iwama, Satoshi, 4,942,197, Cl. 524-496.000.

Iwamoto, Yasuhiko. Handy bookbinder. 4,941,791, Cl. 412-19.000.

Iwashita, Shinichi, to NEC Corporation. Semiconductor memory device having non-volatile memory transistors. 4,942,450, Cl. 357-54.000.

Jabil Circuit Company: *See—*
Hock, Darryl A., 4,941,348, Cl. 73-119.00A.

Jackson, Adam; Scrowston, Richard M.; Gray, George W.; Lacey, David; and Toyne, Kenneth J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. N-substituted amino acid derivatives for use in liquid crystal materials and devices. 4,941,992, Cl. 252-299.660.

Jager, Harald. Guitar. 4,941,384, Cl. 84-313.000.

Janos, Frantisek; Storek, Josef; and Krepelka, Ladislav, to Obuvnicky prumysl SVIT statni podnik. Cross country skiing boot. 4,941,274, Cl. 36-117.000.

Japan Automatic Transmission Co., Ltd.: *See—*
Boda, Keiji; Waki, Kouichirou; Niide, Kazuo; Yokota, Hiroaki; Yanagisawa, Keizo; and Takeuchi, Hokuto, 4,942,530, Cl. 364-424.100.

Japan Electronic Control Systems Co., Ltd.: *See—*
Nakaniwa, Shinpei; and Tomisawa, Naoki, 4,941,448, Cl. 123-488.000.

Japan Medical Supply Co., Ltd.: *See—*
Okada, Masao; Sakai, Kazuhiko; Kimura, Haruo; and Ikada, Yoshito, 4,941,870, Cl. 600-36.000.

Japan Radio Co., Ltd.: *See—*
Sai, Kenji, 4,942,374, Cl. 332-124.000.

Japan Synthetic Rubber Company, Ltd.: *See—*
Kawata, Takashi; Katsumata, Hideo; Makino, Kenya; and Chikatsu, Yoshishige, 4,942,187, Cl. 523-200.000.
Zama, Yoshiaki; Umeda, Itsuki; Takemura, Yasuhiko; Takashima, Masaaki; Funabashi, Yuichi; Watanabe, Junichiro; Takeda, Kiyoshi; and Yoshida, Hiromichi, 4,942,202, Cl. 525-104.000.

Jaquet Orthopedie, S.A.: *See—*
Wagenknecht, Marcel, 4,941,481, Cl. 606-59.000.

Jardin, Hans, to Webasto AG Fahrzeugtechnik. Vehicle roof. 4,941,706, Cl. 296-213.000.

Jarosak, Robert D. Lawn mower attachment. 4,941,231, Cl. 15-328.000.

Jartoux, Pierre, to Freyssinet International (STUP). Anchoring devices for tensile braces. 4,941,303, Cl. 52-223.00L.

Jarvest, Richard L.: *See—*
Harnden, Michael R.; Jarvest, Richard L.; and Geen, Graham R., 4,942,166, Cl. 514-262.000.

Jensen, Thomas H., to PPG Industries, Inc. Novel fiber-forming bushing and tip plate. 4,941,903, Cl. 65-1.000.

Jensen, Wayne P., to Hughes Aircraft Company. Split heater bar. 4,942,282, Cl. 219-85.160.

Jetram Sales, Inc.: *See—*
Harris, Charles C., 4,941,572, Cl. 206-423.000.

Jitschin, Wolfgang; and Rohl, Peter, to Physikalisch-Technische Bundesanstalt. Transporter for a rotor of a gas friction manometer. 4,941,351, Cl. 73-431.000.

Jobmann, Wolfgang. Rotary opener and closer for screws, screw closures on bottles, jars and the like. 4,941,373, Cl. 81-3.400.

Jochum, Peter: *See—*
Ehmig, Gerhard, Jochum, Peter; and Maurer, Erich, 4,941,391, Cl. 89-1.140.

Jodai, Tetsuji: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 4,942,142, Cl. 505-1.000.

Joder, Andreas: *See—*
Renggli, Franz; and Joder, Andreas, 4,942,310, Cl. 307-271.000.

Johannes Heidenhain GmbH: *See—*
Brunner, Arthur; and Mitterreiter, Johann, 4,942,295, Cl. 250-231.130.

Johannesburg Construction Corporation (Proprietary) Limited: *See—*
Bock, Immo E.; Nathan, Philip L.; and Malpage, Peter O., 4,941,843, Cl. 439-425.000.

Johansen, Trond V.; Ruch, Ola; Naess, Ludvig; Kristjansson, K. P.; and Utengen, S. F., to Den norske stats oljeselskap a.s. Device with a valve function. 4,941,511, Cl. 138-89.000.

Johansson, Lars-Erik J: *See—*
Gustavsson, Lennart; Lindau, Leif; and Johansson, Lars-Erik J, 4,941,896, Cl. 55-95.000.

John Fluke Mfg. Co., Inc.: *See—*
Gessaman, Bill; Lantz, Paul; and Parle, Jon, 4,942,401, Cl. 341-157.000.

John, Gunther, to Minnesota Mining and Manufacturing Company. Method for sealing a cable bundle in longitudinal direction. 4,941,932, Cl. 156-48.000.

Johnson, Charles R. Identity card. 4,941,686, Cl. 283-87.000.

Johnson, Conrad O. Tone plate and clamping device for a musical instrument mouthpiece. 4,941,385, Cl. 84-383.00R.

Johnson, Gary M.: *See—*
Busack, Jon P.; Johnson, Gary M.; and Clem, Richard R., 4,942,576, Cl. 371-21.200.

Johnson, Harry: *See—*
Anic, Jure; Dederichs, Walburga; Huybrechts, Lucas E. A.; and Johnson, Harry, 4,941,921, Cl. 106-213.000.

Johnson & Johnson: *See—*
Korpman, Ralf, 4,941,933, Cl. 156-160.000.

Johnson & Johnson Medical, Inc.: *See—*
Williams, Harold R.; and Spencer, Robert M., 4,941,518, Cl. 141-1.000.

Johnson, Kirstina M.: *See—*
Moddel, Garret R.; and Johnson, Kirstina M., 4,941,735, Cl. 350-342.000.

Johnson, Roger A.: *See—*
Karlotski, Robert J.; Sentementes, Thomas J.; and Johnson, Roger A., 4,942,330, Cl. 313-25.000.

Johnson, Stanley A.; Reedy, Gerald T.; and Kumar, Romesh, to United States of America, Energy. Real time infrared aerosol analyzer. 4,942,297, Cl. 250-304.000.

Jolissaint, Charles H.: *See—*
Baker, William T., Jr.; Buffum, Charles M.; Jolissaint, Charles H.; and Kerlin, Gregg W., 4,942,602, Cl. 379-212.000.

Jolly, Scott T., to Lubrizol Corporation, The. Liquid compositions containing organic nitro compounds. 4,941,986, Cl. 252-51.50R.

Jones, Bradley T.: *See—*
Winefordner, James D.; and Jones, Bradley T., 4,942,134, Cl. 436-161.000.

Jones, David S., to VG Instruments Group Limited. Super-critical fluid mass spectrometer. 4,942,296, Cl. 250-288.000.

Jones, Robert S.; and Maurer, John J., to Eastman Kodak Company. Cover sheet cleaning means for a contact printer. 4,942,426, Cl. 355-84.000.

Jones, Truman. Periodic event recorder. 4,941,688, Cl. 283-72.000.

Joseph Fisher: *See—*
Fisher, Joseph, 4,941,476, Cl. 128-719.000.

Josephson, Daniel M.: *See—*
Winn, Donald G.; and Josephson, Daniel M., 4,941,660, Cl. 272-76.000.

Joyce, Thomas F.; Kelly, Richard P.; Shen, Jian-Kuo; and Raguin, Michel M., to Honeywell Bull, Inc. Multiprocessors on a single semiconductor chip. 4,942,547, Cl. 364-748.000.

JP Laboratories, Inc.: *See—*
Patel, Gordhanbhai N.; Bolikal, Durgadas; and Bellemare, Richard A., 4,941,940, Cl. 156-628.000.

Juenkersfeld, Harald: *See—*
Proepper, Wilhelm; Juenkersfeld, Harald; and Fischer, Georg, 4,941,562, Cl. 198-416.000.

Julian, Randall K., to Sunbeam Plastics Corporation. Dispensing closure. 4,941,580, Cl. 215-235.000.

Julian, Randall K., to Sunbeam Plastics Corporation. Injection-blow molding apparatus. 4,941,815, Cl. 425-525.000.

Jung, Johann: *See—*
Buschmann, Ernst; Sproesser, Linhard; Zeeh, Bernd; Jung, Johann; Rademacher, Wilhelm; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,942,244, Cl. 548-268.200.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 4,941,588, Cl. 220-302.000.

Jutand, Francis; and Montperrus, Luc, to Etat Francais represente par le Ministere des Postes, des Telecommunications et de l'Espace (CNET). Recursive adder for calculating the sum of two operands. 4,942,549, Cl. 364-786.000.

Jutteau, Jacques: *See—*
Bhargava, Hridaya; and Jutteau, Jacques, 4,942,042, Cl. 424-683.000.

K & A Tool Company: *See—*
Arendt, Timothy R., 4,941,768, Cl. 403-331.000.

Kabushiki Kaisha Kenwood: *See—*
Terada, Hisashi, 4,942,590, Cl. 375-1.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Sakamoto, Yujiro; Kurosaka, Toshio; Fukumoto, Hirohiko; Miyake, Toshiya; and Tokunaga, Hirohiko, 4,941,628, Cl. 244-12.200.

Kabushiki Kaisha Machida Seisakusho: *See—*
Watanabe, Yoshio; and Chikama, Toshio, 4,941,455, Cl. 128-4.000.

Kabushiki Kaisha Matsuyama Seisakusho: *See—*
Sakao, Masahito, 4,941,639, Cl. 248-549.000.

Kabushiki Kaisha Tokai-Rika-Denki Seisakusho: *See—*
Furuhashi, Kenshi; Ito, Hiroyasu; and Enari, Nobuyuki, 4,942,273, Cl. 200-61.540.

Kabushiki Kaisha Toshiba: *See—*
Isobe, Kenji; Hori, Michio; Yoshizawa, Hiroyasu; Ogawa, Kazuo; Takahashi, Hiroyuki; Noguchi, Mitsuo; and Maeda, Toshio, 4,942,099, Cl. 429-35.000.
Kanno, Masayuki, 4,942,479, Cl. 358-448.000.
Kohno, Yoshiaki, 4,942,512, Cl. 364-133.000.
Maeno, Junichi, 4,942,569, Cl. 370-60.000.
Nakagawara, Chikashi; Murayama, Akihiro; and Nakamura, Shigeru, 4,942,369, Cl. 330-296.000.
Sako, Shigeki, 4,942,456, Cl. 357-72.000.
Shigehara, Hiroshi, 4,942,608, Cl. 381-43.000.
Tanaka, Yasunori; Kobayashi, Teruo; and Ishibashi, Masahiro, 4,942,317, Cl. 307-465.000.
Tsuda, Yukio, 4,942,406, Cl. 346-108.000.
Yakushiji, Shigenori, 4,942,446, Cl. 357-38.000.
Yamamuro, Mikio, 4,942,563, Cl. 369-44.110.

Kabushikikaisha Topcon: *See—*
Ohishi, Masahiro; and Ohtomo, Fumio, 4,942,561, Cl. 368-118.000.

Kadowaki, Nobuo: *See—*
Yatsuka, Takeshi; Yamazoe, Seiji; Hirakouchi, Hiroshi; Mizumura, Yutaka; Endo, Hiroshi; and Kadowaki, Nobuo, 4,942,219, Cl. 528-272.000.

Kaetsu, Hayato: *See—*
Arai, Shigeyoshi; Sugita, Kyoko; Isomura, Shohei; and Kaetsu, Hayato, 4,941,956, Cl. 204-157.200.

Kafka, James D.: *See—*
Kintz, Gregory J.; Baer, Thomas M.; and Kafka, James D., 4,942,582, Cl. 372-18.000.

Kageyama, Minoru: *See—*
Kawai, Makoto; Nakamura, Kazuhito; and Kageyama, Minoru, 4,941,397, Cl. 92-223.000.

Kageyama, Shunji: *See—*
Kojima, Tadao; Kageyama, Shunji; Okada, Minoru; Ohata, Isao; and Sato, Noboru, 4,942,242, Cl. 548-192.000.

Kagohata, Tsuneo: *See—*
Ito, Toshikazu; and Kagohata, Tsuneo, 4,941,525, Cl. 165-12.000.

Kaiser, Roger A.; Nuckols, James H.; Emerson, Theodore F.; and Brasher, Gary L., to Compaq Computer Corporation. Computer with improved keyboard password functions. 4,942,606, Cl. 380-4.000.

Kajiwara, Makoto; Onodera, Kaoru; Kimura, Toshio; and Komorita, Kazuo, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,942,121, Cl. 430-583.000.

Kajiwara, Toshiyuki: *See—*
Sobue, Masahisa; Okada, Sensuke; Akahori, Kimihiko; Kuniya, Keiichi; Sasaki, Toshimi; Kajiwara, Toshiyuki; Kimura, Tomoaki; and Nihei, Mitsuo, 4,941,251, Cl. 29-132.000.

Kakinami, Toshiaki; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Mobile range finder. 4,942,533, Cl. 364-449.000.

Kakinuma, Koichiro; and Watanabe, Minoru, to Sony Corporation. Automatic page-turning device. 4,942,482, Cl. 358-474.000.

Kakio, Motoaki: *See—*
Arakawa, Hajime; Yamaoka, Osamu; Kubota, Kazuyuki; Kakio, Motoaki; Azuma, Yoshimasa; and Nagashima, Mitsuru, 4,942,496, Cl. 361-321.000.

Kakitani, Yohtaro, to Ricoh Company, Ltd. Image recording apparatus with a removable developing unit. 4,942,429, Cl. 355-208.000.

Kakiuchi, Hajime: *See—*
Noguchi, Toru; Takada, Toshimichi; Yonezaki, Takahiro; Yamaguchi, Yoshio; Kakiuchi, Hajime; Deki, Shigehito; Goto, Kazuo; Miyata, Hitoshi; and Mashimo, Satoshi, 4,941,961, Cl. 204-294.000.

Kakuta, Takuya: *See—*
Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, 4,942,246, Cl. 548-367.000.

Kamada, Eiki: *See—*
Shintani, Yooichi; Kuriyama, Kazunori; Shonai, Tohru; Kamada, Eiki; and Inoue, Kiyoshi, 4,942,525, Cl. 364-200.000.

Kambayashi, Tsuyoshi: *See—*
Suzuki, ..amoru; Suzuki, Katsumi; Itoh, Kazutoshi; Minato, Akira; Kambayashi, Tsuyoshi; and Hoshino, Yoshiyuki, 4,941,973, Cl. 210-175.000.

Kamimura, Kuniaki; Sawada, Kenji; and Yamade, Yasushi, to Minolta Camera Kabushiki Kaisha. Microfilm image processing apparatus. 4,942,425, Cl. 355-45.000.

Kamimura, Yasuo; Ohmori, Toshiaki; Yanagi, Motonori; Fukumoto, Takaaki; and Hama, Masaharu, to Dan Science Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Carrier cleaning and drying apparatus. 4,941,489, Cl. 134-95.000.

Kamman, Kenneth R.: *See—*
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Kneib, Rudi: *See*—
Lindmayer, Martin; Kneib, Rudi; Weikert, Gunther; Schneider, Wolfgang; Krugener, Rolf; and Claar, Klaus-Peter, 4,941,569, Cl. 206-38.100.

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Soehnlein, Dieter; Wirths, Dieter; Knoller, Anton; and Kunert, Peter, 4,941,339, Cl. 72-189.000.

Knox, Lawrence D., to North American Philips Corporation. Shadow mask with border pattern. 4,942,333, Cl. 313-402.000.

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Ogawa, Souichi; Sugioka, Takao; and Inoue, Masaru, 4,942,379, Cl. 335-301.000.

Kobayashi, Chiharu: *See*—
Abe, Yoshinori; Watanabe, Kazuo; Kimoto, Tetsuo; Hirata, Tetsuo; Kobayashi, Chiharu; and Endo, Hideki, 4,942,461, Cl. 358-75.000.

Kobayashi, Setsuo: *See*—
Era, Susumu; Kobayashi, Setsuo; Nakamura, Mariko; and Mukoh, Akio, 4,942,073, Cl. 428-64.000.

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Nomura, Hironori; Shimakawa, Taiji; Shinohara, Junji; Kobayashi, Shigetoyo; and Yamamoto, Hiroki, 4,941,939, Cl. 156-495.000.

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Tanaka, Yasunori; Kobayashi, Teruo; and Ishibashi, Masahiro, 4,942,317, Cl. 307-465.000.

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Itoh, Hiroyuki; Yamada, Toshio; Masaki, Akira; and Kobayashi, Tohru, 4,942,320, Cl. 307-546.000.

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Araki, Kazui; Kobayashi, Yoshio; Matsumoto, Seiji; and Fukushima, Hisao, 4,941,814, Cl. 425-388.000.

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Imura, Kouji; Ohuchi, Tomihisa; Kohno, Kyoji; Shimizu, Tamio; and Aizawa, Michihiko, 4,941,329, Cl. 62-476.000.

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Yokouchi, Hisatake; Huno, Takakazu; Onodera, Yoichi; Koike, Kouichi; and Tsuneoka, Masayuki, 4,942,468, Cl. 358-138.000.

Koishi, Musubu; Tsuchiya, Yutaka; Hara, Tomoyoshi; and Suzuki, Kenji, to Hamamatsu Photonics Kabushiki Kaisha. Optical waveform observing apparatus. 4,942,293, Cl. 250-213.0VT.

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Sano, Koichi; Yokoyama, Tetsuo; and Koizumi, Hideaki, 4,942,359, Cl. 324-309.000.

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Kokogawa, Toru: *See—*
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Kolber, Zbigniew; and Falkowski, Paul, to Associated Universities, Inc. Computer controlled fluorometer device and method of operating same. 4,942,303, Cl. 250-458.100.

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Pochmarski, Luzian; and Koller, Otto, 4,941,913, Cl. 75-537.000.

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Suzuki, Toshihiro; and Komatsu, Chizu, 4,942,268, Cl. 570-206.000.

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Komohara, Minoru: *See—*
Fujiwara, Mikio; and Komohara, Minoru, 4,941,636, Cl. 248-430.000.

Komorita, Kazuo: *See—*
Kajiwara, Makoto; Onodera, Kaoru; Kimura, Toshio; and Komorita, Kazuo, 4,942,121, Cl. 430-583.000.

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Morikawa, Asao; and Kondo, Kazuo, 4,941,582, Cl. 220-2.10R.

Konica Corporation: *See—*
Abe, Yoshinori; Watanabe, Kazuo; Kimoto, Tetsuo; Hirata, Tetsuo; Kobayashi, Chiharu; and Endo, Hideki, 4,942,461, Cl. 358-75.000.
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Kajiwara, Makoto; Onodera, Kaoru; Kimura, Toshio; and Komorita, Kazuo, 4,942,121, Cl. 430-583.000.

Konucik, George J. Quick-change sweat band. 4,941,210, Cl. 2-171.000.

Konves, Richard L. Rotary to linear motion converter. 4,941,367, Cl. 74-53.000.

Kopczynski, John F. All-terrain vehicle. 4,941,539, Cl. 180-22.000.

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Korsunsky, Iosif; Kopp, Monte L.; and Grabbe, Dimitry G., 4,941,832, Cl. 439-71.000.

Koppe, Bruce E.: *See—*
Orlicki, David M.; Koppe, Bruce E.; and Palone, Thomas W., 4,942,343, Cl. 318-6.000.

Korber AG: *See—*
Heitmann, Uwe; Lorenzen, Heinz-Christen; Siems, Wolfgang, and Pinck, Peter, 4,941,482, Cl. 131-84.400.

Korea Chemical Co., Ltd.: *See—*
Lee, Jung D.; Yoo, Chang J.; and Lee, Moon Y., 4,942,207, Cl. 525-476.000.

Korpman, Ralf, to Johnson & Johnson. Method of making a body member conformable disposable articles. 4,941,933, Cl. 156-160.000

Korpusik, John: *See—*
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Kovarik, Vincent J: *See—*
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Kowa Company, Ltd.: *See—*
Mizuta, Susumu, 4,941,741, Cl. 351-221.000.

Koya, Keizo: *See—*
Shiba, Keisuke; and Koya, Keizo, 4,942,114, Cl. 430-434.000.

Koyama, Hideo; Sasajima, Koji; Maki, Kazuya; Yamaguchi, Kouji; and Ishikawa, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic continuously variable speed transmission with direct clutch valve. 4,941,371, Cl. 74-865.000.

Kraft, Inc.: *See—*
Posdal, James R., 4,942,052, Cl. 426-512.000.

Krajewski, John J.: *See—*
Murphy, Edward J.; Ansel, Robert E.; and Krajewski, John J., 4,942,001, Cl. 264-22.000.

Krambeck, Frederick J.: *See—*
Garwood, William E.; Krambeck, Frederick J.; Kushnerick, John D.; and Tabak, Samuel A., 4,942,021, Cl. 422-194.000.

Kramer, David N.; and Snow, Philip A., to Ridgely Products co., Inc. Cleansing and disinfecting compositions. 4,941,989, Cl. 252-102.000.

Kramer, Fritz. Commodity storage pile protection with a rainwater holding sponge. 4,941,888, Cl. 44-541.000.

Krastel, Heinz: *See—*
Felle, Karl; and Krastel, Heinz, 4,942,415, Cl. 354-234.100.

Krause, Kenneth W.: *See—*
McGee, H. Dean; Krause, Kenneth W.; and Coldren, Bruce E., 4,942,539, Cl. 364-513.000.

Kreft, Anthony F., III: *See—*
Musser, John H.; Bender, Reinhold H. W.; and Kreft, Anthony F., III, 4,942,236, Cl. 546-334.000.

Krepelka, Ladislav: *See—*
Janos, Frantisek; Storek, Josef; and Krepelka, Ladislav, 4,941,274, Cl. 36-117.000.

Kress, Bernhard: *See—*
Bertholdt, Horst-Otto; and Kress, Bernhard, 4,942,594, Cl. 376-310.000.

Kressner, Bernhardt E.: *See—*
Wendt, Greg A.; Underhill, Kimberly K.; Rugowski, James S.; Kressner, Bernhardt E.; and Chiu, Kai F., 4,942,077, Cl. 428-152.000.

Kristen, Hanns J., to Tillia Aktiengesellschaft. Apparatus for vacuum sealing plastic bags. 4,941,310, Cl. 53-512.000.

Kristjansson, K. P.: *See—*
Johansen, Trond V.; Ruch, Ola; Naess, Ludvig; Kristjansson, K. P.; and Utengen, S. F., 4,941,511, Cl. 138-89.000.

Kronau, Paul D., to Robertshaw Controls Company. System for monitoring a level of material, device therefor and methods of making the same. 4,942,351, Cl. 318-642.000.

Kroner, Matthias: *See—*
Beer, Michael; Schimko, Philipp; Hofbauer, August; and Kroner, Matthias, 4,941,436, Cl. 123-41.770.

Krugener, Rolf: *See—*
Lindmayer, Martin; Kneib, Rudi; Weikert, Gunther; Schneider, Wolfgang; Krugener, Rolf; and Claar, Klaus-Peter, 4,941,569, Cl. 206-38.100.

Kruger, Kurt J.; and Loechner, John T., to Easco Hand Tools, Inc. Wrench socket dispenser. 4,941,570, Cl. 206-267.000.

Krupp Polysius AG: *See—*
Durr, Manfred; Unland, Georg; Rother, Wolfgang; Driemeier, Gunter; and Schmits, Heinz-Herbert, 4,941,821, Cl. 432-106.000.

Krutak, James J.: *See—*
Pollock, Mark A.; Stowell, William J.; and Krutak, James J., 4,942,005, Cl. 264-45.300.

Kubik, Klaus, to Eduard Kusters Maschinenfabrik GmbH & Co. KG. Sealing arrangement for a roll. 4,941,247, Cl. 29-116.200.

Kubis, Charles S.: *See—*
Pfaffmann, George D.; Balzer, Norbert R.; Kubis, Charles S.; Walter, John; Currie, John P.; and Adams, Graham R., 4,941,306, Cl. 53-306.000.

Kubo, Kanji: *See—*
Matsumoto, Yoshiyuki; and Kubo, Kanji, 4,941,677, Cl. 280-690.000.

Kubota, Atsuhiko: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Tsuchiya, Yutaka; Sugumi, Hiroyuki; Higurashi, Kunizou; Karibe, Norio; Yamanishi, Yoshiharu; Ogura, Hiroo; Araki, Shin; Kubota, Atsuhiko; Ohtake, Michiko; and Tamatsu, Kiyomi, 4,942,169, Cl. 514-318.000.

Kubota, Kazuyuki: *See—*
Arakawa, Hajime; Yamaoka, Osamu; Kubota, Kazuyuki; Kakio, Motoaki; Azuma, Yoshimasa; and Nagashima, Mitsuru, 4,942,496, Cl. 361-321.000.

Kubota Ltd.: *See—*
Sampei, Keiichi; Kawasaki, Masami; Dei, Yosihito; Fukumoto, Katsumi; and Furukawa, Kazuo, 4,941,863, Cl. 474-33.000.

Kubota, Masaaki: *See—*
Shiraishi, Motoatsu; Sasagawa, Masaru; Tazo, Ken; Kubota, Masaaki; and Katayama, Shinji, 4,941,793, Cl. 414-225.000.

Kudo, Katsuhiko: *See—*
Sago, Hiroyoshi; Mizuki, Hideyuki; Kudo, Katsuhiko; and Nakayama, Muneo, 4,941,426, Cl. 118-52.000.

Kumagai, Motoo; Kato, Keiichi; Nagano, Masato; and Sakaguchi, Michiaki, to Canon Kabushiki Kaisha; and Nippon Oil & Fats Co. Ltd. Ceramic and circuit substrate and electronic circuit substrate by use thereof. 4,942,079, Cl. 428-209.000.

Kumar, Romesh: *See—*
Johnson, Stanley A.; Reedy, Gerald T.; and Kumar, Romesh, 4,942,297, Cl. 250-304.000.

Kunert, Peter: *See—*
Soehnlein, Dieter; Wirths, Dieter; Knoller, Anton; and Kunert, Peter, 4,941,339, Cl. 72-189.000.

Kunihiro, Hideto: *See—*
Koga, Toshio; Ohki, Junichi; Ohta, Mutsumi; and Kunihiro, Hideto, 4,942,476, Cl. 358-335.000.

Kunihiro, Hisanobu, deceased: *See—*
Sakagawa, Tetsuo; Nakayama, Takayuki; Kunihiro, Hisanobu, deceased; and Kunihiro, Masako, legal representative, 4,941,887, Cl. 8-642.000.

Kunihiro, Masako, legal representative: *See—*
Sakagawa, Tetsuo; Nakayama, Takayuki; Kunihiro, Hisanobu, deceased; and Kunihiro, Masako, legal representative, 4,941,887, Cl. 8-642.000.

Kunimoto, Akihiro; and Umemoto, Noboru, to UBE Industries, Ltd.; and NTN-Rulon Industries, Co., Ltd. Continuous preparation of shaped long articles of polyimide. 4,942,007, Cl. 264-122.000.

Kuniya, Keiichi: *See—*
Sobue, Masahisa; Okada, Sensuke; Akahori, Kimihiko; Kuniya, Keiichi; Sasaki, Toshimi; Kajiwara, Toshiyuki; Kimura, Tomoaki; and Nihei, Mitsuo, 4,941,251, Cl. 29-132.000.

Kunka, Blair S.: *See—*
Vandenbergh, Peter A.; and Kunka, Blair S., 4,942,032, Cl. 424-115.000.

Kuntz, Irving, to Exxon Chemical Patents Inc. Branched isoolefin polymer prepared with adamantane catalyst system. 4,942,210, Cl. 526-348.700.

Kunugi, Takashi; and Sasaki, Yoshinari, to Toshiba Kikai Kabushiki Kaisha. Method of correcting misalignment of a workpiece on numerically controlled machine tool. 4,942,611, Cl. 364-474.060.

Kuraray Company Limited: *See—*
Genba, Tsuneo; Yoshinaka, Junichi; and Nakanishi, Shingo, 4,942,089, Cl. 428-364.000.
Mori, Toshiki; Suzuki, Shigeaki; and Onishi, Takashi, 4,942,262, Cl. 568-32.000.

Kurihara, Hajime: *See—*
Shimura, Hidetsugu; and Kurihara, Hajime, 4,942,056, Cl. 427-35.000.

Kuriki, Takeo: *See—*
Ohsaki, Tsutomu; Sakakibara, Jinsaku; and Kuriki, Takeo, 4,942,143, Cl. 514-222.800.

Kuriyama, Katsumi: *See—*
Hanada, Kazuyuki; Kuroda, Kohichi; Misaizu, Iwao; Kashimura, Masashi; Goto, Tomoko; and Kuriyama, Katsumi, 4,942,212, Cl. 528-28.000.

Kuriyama, Kazunori: *See—*
Shintani, Yooichi; Kuriyama, Kazunori; Shonai, Tohru; Kamada, Eiki; and Inoue, Kiyoshi, 4,942,525, Cl. 364-200.000.

Kuroda, Kohichi: *See—*
Hanada, Kazuyuki; Kuroda, Kohichi; Misaizu, Iwao; Kashimura, Masashi; Goto, Tomoko; and Kuriyama, Katsumi, 4,942,212, Cl. 528-28.000.

Kurosaka, Toshio: *See—*
Sakamoto, Yujiro; Kurosaka, Toshio; Fukumoto, Hirohiko; Miyake, Toshiya; and Tokunaga, Hirohiko, 4,941,628, Cl. 244-12.200.

Kurz, Alfred: *See—*
Sommer, Oswin; Dorsch, Norman; Bosch, Erhard; and Kurz, Alfred, 4,942,211, Cl. 528-14.000.

Kushnerick, John D.: *See—*
Garwood, William E.; Krambeck, Frederick J.; Kushnerick, John D.; and Tabak, Samuel A., 4,942,021, Cl. 422-194.000.

Kuster & Co. GmbH: *See—*
Marscholl, Klaus; and Medebach, Thomas, 4,941,286, Cl. 49-352.000.

Kusters, Karl-Heinz. Roller for pressure treatment of a continuous web of material. 4,941,250, Cl. 29-116.100.

Kutaragi, Ken; Tanaka, Shoji; and Fujinami, Yasushi, to Sony Corporation. Recording disk having read-only recording area and writable recording area and a driving apparatus therefor. 4,942,486, Cl. 360-48.000.

Kuzumoto, Masaki: *See—*
Yasui, Koji; Tanaka, Masaaki; and Kuzumoto, Masaki, 4,942,588, Cl. 372-103.000.

Kwasniok, Alois: *See—*
Gardziella, Arno; and Kwasniok, Alois, 4,942,217, Cl. 528-129.000.

Kyorin Pharmaceutical Co., Ltd.: *See—*
Masuzawa, Kuniyoshi; Okamura, Kyuya; Nishino, Keigo; Ohashi, Mitsuo; and Awano, Katsuya, 4,942,245, Cl. 548-329.000.

L & H Technologies, Inc.: *See—*
Vann, Cliftoo B., III, 4,941,897, Cl. 55-158.000.

Labaig, Jean-Jacques; Fenie, Michel; and Glotin, Michel, to Atochem. Extruded conduits and method of making the same. 4,942,070, Cl. 428-36.900.

Lacey, David: *See—*
Jackson, Adam; Scrowston, Richard M.; Gray, George W.; Lacey, David; and Toyne, Kenneth J., 4,941,992, Cl. 252-299.660.

Lagadec, Roger, to Sony Corporation. Apparatus for recording a wobbling, spiral guide groove on an optical disc. 4,942,565, Cl. 369-59.000.

Laghate, Ashok S.: *See—*
Mannetje, Leonardus M. M.; and Laghate, Ashok S., 4,941,967, Cl. 208-184.000.

Lai, Shui T., to Intelligent Surgical Lasers Inc. High power diode pumped laser. 4,942,586, Cl. 372-68.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,941,568, Cl. 198-853.000.

Lakic, Nikola. Boot with frictional heat generator and forced air circulation. 4,941,271, Cl. 36-2.600.

Lam, Man K.; and Mathias, Milton W., to Honeywell Inc. Low cost wet-to-wet pressure sensor package. 4,942,383, Cl. 338-42.000.

Lam, Yiu-kuen T.; and Chang, Raymond S., to Merck & Co., Inc. Process for preparing synthetic virginiamycin M_1 analogs. 4,942,230, Cl. 540-456.000.

Lamaze, Airy-Pierre: *See—*
Boutin, Jean; Brun, Pierre; and Lamaze, Airy-Pierre, 4,941,916, Cl. 75-10.120.

Lambelet, Lawrence E., Jr.; and Frazier, Thomas A., to Ortho Pharmaceutical Corporation. Dosing cap. 4,941,598, Cl. 222-321.000.

Lamore, Patrick H. Portable tacking system. 4,941,230, Cl. 15-314.000.

Lan, Yung-Huei. Cup-holder stabilizer. 4,941,635, Cl. 248-346.100.

Lance, Jeffrey. Apparatus for testing ignition systems. 4,942,362, Cl. 324-402.000.

Lang, Hans-Jochen: *See—*
Englert, Heinrich C.; Hropot, Max; Lang, Hans-Jochen; and Greger, Rainer, 4,942,176, Cl. 514-539.000.

Lang, Manfred: *See—*
Pautz, Anton; and Lang, Manfred, 4,941,728, Cl. 350-96.210.

Langemeier, Paul W.; Phelps, Martha A.; and Morgan, Michael E., to Hi-Tek Polymers, Inc. Method for reducing the viscosity of aqueous fluid. 4,941,537, Cl. 166-308.000.

Langendorf, Brian K., to Prime Computer, Inc. Method and apparatus for indexing, accessing and updating a memory. 4,942,520, Cl. 364-200.000.

Lantz, Paul: *See—*
Gessaman, Bill; Lantz, Paul; and Parle, Jon, 4,942,401, Cl. 341-157.000.

Lapeyre, James M., to Laitram Corporation, The. Accurate tracking center driven open area belt. 4,941,568, Cl. 198-853.000.

La Pierre, Roger. Portable, motor-driven paint roller loader. 4,941,229, Cl. 15-257.060.

Larkin, John P.: *See—*
Casida, John E.; Palmer, Christopher J.; Larkin, John P.; and Smith, Ian H., 4,942,173, Cl. 514-452.000.

LaRose RF Systems, Inc.: *See—*
Wilkinson, Robert E.; Iseler, Kenneth A.; Smith, Rueben L.; Duerr, Lorenz K. E.; and Cargile, Harry M., 4,941,936, Cl. 156-274.800.

Larson, Edwin L. Dispensing-tube and cap holder for use in combination with an aerosol can. 4,941,594, Cl. 222-192.000.

Lasmayoux, Casimir; and Pantani, Antoine, to International Business Machines Corporation. Machine-pluggable electronic package having a mechanical interlock. 4,941,835, Cl. 439-152.000.

Lau, John R.: *See—*
Geho, W. Blair; and Lau, John R., 4,942,036, Cl. 424-425.000.

Laurenzo, Kathleen S.; and Sauer, Joe D., to Ethyl Corporation. Amine oxide process with CO_2 and aluminum. 4,942,260, Cl. 564-298.000.

Lauritzen, Donald R.; Ward, Michael J.; and Anderson, Scott R., to Morton Thiokol, Inc. Lightweight reaction can for passenger inflators. 4,941,678, Cl. 280-732.000.

Law, Tony Y. M., to Emmarco Industries Co., Ltd. Can opener. 4,941,262, Cl. 30-419.000.

Lawlor, Joseph A. Mount for firearm sight. 4,941,277, Cl. 42-100.000.

Lawrence, Paul J., to Litmus Concepts, Inc. Reagent composition for fecal occult blood tests. 4,942,132, Cl. 436-66.000.

Lawrence, Peter D.: *See—*
Grudic, Gregory Z.; Kelly, Michael F.; and Lawrence, Peter D., 4,941,739, Cl. 350-486.000.

Lawson, David F., to Bridgestone/Firestone, Inc. Adhesive system for bonding uncured rubber to cured polyurethane. 4,942,093, Cl. 428-423.300.

Lay, Joachim E. Magnetic and aerodynamic levitation vehicle. 4,941,406, Cl. 104-23.100.

Lazar, Michael: *See—*
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British Petroleum Company p.l.c., The: *See*—
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Dumbri, Austin C., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Folded bit line memory with one decoder per pair of spare rows. Re. 33,266, Cl. 365-200.000.

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Schwyn, Geoff, to Monrovia Nursery Company. Fuchsia × hybrida cv. Island Sunset. 7,270, 7-17-90, Cl. 68.000.
Van der Salm, Gerardus C. Lilium "Royal Dutch". 7,272, 7-17-90, Cl. 68.000.
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 341

101 4,942,396
118 4,942,397
143 4,942,399
155 4,942,400
157 4,942,401

CLASS 342

1 4,942,402
372 4,942,403
418 4,942,404

CLASS 346

107 R 4,942,405
108 4,942,406
4,942,407
140 R 4,942,408
4,942,409
160.1 4,942,410

CLASS 350

6.8 4,941,719
4,941,721
96.10 4,941,723
96.13 4,941,722
4,941,725
96.15 4,941,726
96.18 4,941,724
96.2 4,941,720
96.20 4,941,727
96.21 4,941,728
96.23 4,941,729
96.34 4,941,730
102 4,941,731
128 4,941,732
162.13 4,941,733
321 4,941,734
335 4,941,737
342 4,941,735
350 S 4,941,736
377 4,941,738
486 4,941,739
636 4,941,740

CLASS 351

221 4,941,741

CLASS 353

26 R 4,942,411

CLASS 354

125 4,942,412
173.11 4,942,413
195.12 4,942,414
234.1 4,942,415
299 4,942,416
400 4,942,417
408 4,942,418

CLASS 355

27 4,942,419
4,942,420
4,942,421
28 4,942,422
30 4,942,423
38 4,942,424
45 4,942,425
84 4,942,426
202 4,942,427
4,942,428
208 4,942,429
232 4,942,430
246 4,942,431
256 4,942,475
260 4,942,432
284 4,942,433
290 4,942,434
311 4,942,435

CLASS 356

38 4,941,742
311 4,941,743
346 4,941,747
358 4,941,744
401 4,941,745
444 4,941,746

CLASS 357

4 4,942,436
16 4,942,437
4,942,438
17 4,942,439
23.1 4,942,440
23.7 4,942,441
29 4,942,442
38 4,942,443
4,942,444
4,942,445
4,942,446
42 4,942,447
49 4,942,448
54 4,942,449
4,942,450
67 4,942,451
68 4,942,452
4,942,453
70 4,942,454
4,942,455
72 4,942,456

CLASS 358

12 4,942,457
29 4,942,458
41 4,942,459
75 4,942,460
4,942,461
76 4,942,462
96 4,942,463
108 4,942,464
133 4,942,465
4,942,466
135 4,942,467
138 4,942,468
153 4,942,469
160 4,942,470
165 4,942,471
188 4,942,472
213.11 4,942,474
213.26 4,942,473
335 4,942,476
401 4,942,477
409 4,942,478
448 4,942,479
455 4,942,480
471 4,942,481
474 4,942,482
484 4,942,483

CLASS 360

25 4,942,609
46 4,942,484
4,942,485
48 4,942,486
77.13 4,942,487
80 4,942,488
104 4,942,491
121 4,942,489
126 4,942,490
132 4,942,492

CLASS 361

23 4,942,493
49 4,942,612
93 4,942,494
220 4,942,495
309 4,942,610
321 4,942,496
385 4,942,497
388 4,942,498
428 4,942,499
516 4,942,500
523 4,942,501

CLASS 362

35 4,942,502
74 4,942,503
84 4,942,504
187 4,942,505
253 4,942,506
296 4,942,507

CLASS 363

19 4,942,508
89 4,942,509
127 4,942,510
136 4,942,511

CLASS 364

133 4,942,512
158 Re.33,267
184 4,942,513
190 4,942,514
200 4,942,515
4,942,516
4,942,517
4,942,518
4,942,519
4,942,520
4,942,521
4,942,522
4,942,523
4,942,524
4,942,525
401 4,942,527
419 4,942,526
422 4,942,528
424.01 4,942,529
424.05 4,942,532
424.1 4,942,530
424.2 4,942,531
449 4,942,533
468 4,942,534
474.06 4,942,611
478 4,942,535
490 4,942,536
512 4,942,537
513 4,942,538
4,942,539
514 4,942,540
519 4,942,541
523 4,942,542
550 4,942,543
557 4,942,613
569 4,942,544
571.01 4,942,545
4,942,614
574 4,942,546
578 4,942,615
748 4,942,547
784 4,942,548
786 4,942,549
900 4,942,550
4,942,551
4,942,552
4,942,553

CLASS 365

149 4,942,554
189.07 4,942,555
200 Re.33,266
4,942,556

CLASS 366

85 4,941,748
147 4,941,749
4,941,750
176 4,941,751
307 4,941,752

CLASS 367

15 4,942,557
91 4,942,558
137 4,942,560

CLASS 368

113 4,942,559
118 4,942,561

CLASS 369

44.11 4,942,562
4,942,563
58 4,942,564
59 4,942,565
113 4,942,566
124 4,942,567

CLASS 370

3 4,942,568
60 4,942,569
80 4,942,570
85.1 4,942,571
85.15 4,942,574
85.8 4,942,572
85.9 4,942,573

CLASS 371

10.1 4,942,575
21.2 4,942,576
22.3 4,942,577
36 4,942,578
51 4,942,579

CLASS 372

5 4,942,580
9 4,942,581
18 4,942,582
20 4,942,583
29 4,942,584
44 4,942,585
68 4,942,586
71 4,942,587
103 4,942,588

CLASS 374

120 4,941,753

CLASS 375

1 4,942,589
4,942,590
84 4,942,591
90 4,942,592
118 4,942,593

CLASS 376

261 4,942,014
4,942,015
310 4,942,594
418 4,942,016

CLASS 377

48 4,942,595

CLASS 378

109 4,942,596
197 4,942,597
207 B1 4,697,280

CLASS 379

57 4,942,598
93 4,942,599
100 4,942,600
209 4,942,601
212 4,942,602
398 4,942,603
412 4,942,604
424 4,942,605

CLASS 380

4 4,942,606

CLASS 381

31 4,942,607
43 4,942,608
51 4,942,616
182 4,942,617

CLASS 382

8 4,942,618
47 4,942,619
58 4,942,620
59 4,942,621

CLASS 383

3 4,941,754
119 4,941,755
127 4,941,756

CLASS 384

40 4,941,758
473 4,941,757
531 4,941,759
537 4,941,760

CLASS 400

124 4,941,761
636.1 4,941,762

CLASS 403

3 4,941,763
24 4,941,764
107 4,941,765
131 4,941,766
218 4,941,767
331 4,941,768
408.1 4,941,769

CLASS 404

72 4,941,770

CLASS 405

78 4,941,771
128 4,941,772
157 4,941,773
158 4,941,774
216 4,941,775
224 4,941,776

CLASS 406

13 4,941,777
28 4,941,778
138 4,941,779

CLASS 407

114 4,941,780

CLASS 408

72 B 4,941,781
147 4,941,782
204 4,941,783

CLASS 410

121 4,941,784

CLASS 411

82 4,941,785
136 4,941,787
178 4,941,788
369 4,941,789
432 4,941,790

CLASS 412

7 4,941,804
19 4,941,791

CLASS 414

208 4,941,792
225 4,941,793
341 4,941,794
403 4,941,795
409 4,941,796
462 4,941,797
619 4,941,798
678 4,941,799
695.7 4,941,786
752 4,941,800

CLASS 415

170.1 4,941,801

CLASS 416

164 4,941,802
204 R 4,941,805
242 4,941,803

CLASS 417

38 4,941,806
199.1 4,941,807
415 4,941,808
500 4,941,809

CLASS 418

15 4,941,810
195 4,941,811

CLASS 422

64 4,942,017
70 4,942,018
169 4,942,019
180 4,942,020
194 4,942,021
201 4,942,022

CLASS 423

22 4,942,023
65 4,942,024
282 4,942,025
326 4,942,026
328 4,942,027

CLASS 424

78 4,942,029
93 4,942,030
115 4,942,032
195.1 4,942,033
401 4,942,034
423 4,942,035
425 4,942,036
426 B1 4,767,628
448 4,942,037
450 4,942,038
466 4,942,039
486 4,942,040
520 4,942,031
613 4,942,041
683 4,942,042

CLASS 425

131.5 4,941,812
195 4,941,813
388 4,941,814
525 4,941,815
533 4,941,816

CLASS 426

2 4,942,043
4,942,044
11 4,942,045
233 4,942,046
271 4,942,048
302 4,942,047
329 4,942,049
394 4,942,050
489 4,942,051
512 4,942,052
524 4,942,053
611 4,942,054
633 4,942,055

CLASS 427

35 4,942,056
38 4,942,057
53.1 4,942,059
54.1 4,942,060
4,942,066
104 4,942,061
249 4,942,062
256 4,942,063
297 4,942,064
387 4,942,065
393 4,942,067
420 4,942,068
431 4,942,058

CLASS 428

36.9 4,942,070
40 4,942,071
48 4,942,072
64 4,942,073
95 4,942,074
109 4,942,075
137 4,942,076
152 4,942,077
192 4,942,078
209 4,942,079
212 4,942,080
218 4,942,081
224 4,942,082
252 4,942,083
284 4,942,084
288 4,942,085
290 4,942,086
332 4,942,087
336 4,942,088
364 4,942,089
367 4,942,090
389 4,942,069
398 4,942,091
401 4,942,092
423.3 4,942,093
447 4,942,094
461 4,942,095
476.1 4,942,096
552 4,942,097
555 4,942,098

CLASS 429

35 4,942,099
50 4,942,100
165 4,942,101

CLASS 430

1 4,942,102
7 4,942,103
56 4,942,104
59 4,942,105
72 4,942,106
138 4,942,107
169 4,942,108
175 4,942,109
198 4,942,110
273 4,942,111
282 4,942,112
326 4,942,113
434 4,942,114
523 4,942,115
555 4,942,116
558 4,942,117
4,942,118
564 4,942,119
567 4,942,120
583 4,942,121

CLASS 431

263 4,941,817
268 4,941,818

CLASS 432

8 4,941,819
58 4,941,820
106 4,941,821
112 4,941,822
152 4,941,823
233 4,941,824

CLASS 433

14 4,941,825
51 4,941,826
74 4,941,827
114 4,941,828

CLASS 434

118 4,941,829

CLASS 435

5 4,942,122
6 4,942,123
4,942,124
7 4,942,125
4,942,126
11 4,942,127
101 4,942,128
182 4,942,129
194 4,942,130
240.27 4,942,131

CLASS 436

66 4,942,132
125 4,942,133
161 4,942,134
178 4,942,135
512 4,942,136

CLASS 437

63 4,942,137
182 4,942,138
209 4,942,139
211 4,942,140

CLASS 439

59 4,941,830
63 4,941,831
70 Re.33,268
71 4,941,832
92 4,941,833
4,941,834
152 4,941,835
247 4,941,836
341 4,941,837
350 4,941,838
352 4,941,839
376 4,941,840
377 4,941,841
399 4,941,842
425 4,941,843
4,941,844
505 4,941,845
578 4,941,846
595 4,941,847
607 4,941,848
610 4,941,849
4,941,850
621 4,941,851
733 4,941,852
848 4,941,853

CLASS 440

1 4,941,854
104 4,941,855

CLASS 446

220 4,941,856
353 4,941,857
397 4,941,858
476 4,941,859

CLASS 455

278 4,942,622
612 4,942,623

CLASS 464

68 4,941,860
102 4,941,861
141 4,941,862

CLASS 474

33 4,941,863
133 4,941,864

CLASS 475

128 4,941,370

CLASS 493

22 4,941,865

CLASS 494

14 4,941,866
16 4,941,867
37 4,941,868

CLASS 501

40 4,942,144
90 4,942,145
134 4,942,146

CLASS 502

113 4,942,147
115 4,942,148
401 4,942,149

CLASS 503

213 4,942,150
227 4,942,141

CLASS 505

1 4,942,142
4,942,151
4,942,152

CLASS 514

2 4,942,153
26 4,942,154
34 4,942,155
56 4,942,156
108 4,942,157
170 4,942,158
202 4,942,159
216 4,942,160
222.8 4,942,143
226.5 4,942,167
231.2 4,942,161
252 4,942,162
254 4,942,163
261 4,942,165
262 4,942,166
313 4,942,168
318 4,942,169
326 4,942,170
376 4,942,183
399 4,942,171
441 4,942,172
449 4,942,184
452 4,942,173
532 4,942,174
535 4,942,175
539 4,942,176
560 4,942,177
617 4,942,178
659 4,942,179
691 4,942,180
730 4,942,181
812 4,942,182

CLASS 521

54 4,942,185

CLASS 523

131 4,942,186
200 4,942,187
212 4,942,188
339 4,942,189
400 4,942,190

CLASS 524

17 4,942,191
44 4,942,192
276 4,942,193
281 4,942,194
294 4,942,195
327 4,942,196
496 4,942,197
510 4,942,198
724 4,942,199

CLASS 525

66 4,942,200
71 4,942,201
104 4,942,202
185 4,942,203
293 4,942,204
326.2 4,942,205
333.8 Re.33,269
397 4,942,206
414 4,942,208
476 4,942,207

CLASS 526

173 4,942,209
348.7 4,942,210

CLASS 528

14 4,942,211
28 4,942,212
4,942,213
59 4,942,214
70 4,942,164

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114	4,942,215	119	4,942,228	334	4,942,236	CLASS 554		298	4,942,260	32	4,941,869
125	4,942,216	CLASS 540		CLASS 548		70	4,942,252	480	4,942,261	36	4,941,870
129	4,942,217	310	4,942,229	131	4,942,241	CLASS 558		CLASS 568			4,941,871
272	4,942,219	456	4,942,230	192	4,942,242	6	4,942,253	32	4,942,262	CLASS 604	
336	4,942,220	586	4,942,231	193	4,942,243	250	4,942,254	476	4,942,263	27	4,941,872
381	4,942,218	CLASS 544		268.2	4,942,244	408	4,942,221	635	4,942,264	54	4,941,873
493	4,942,222	76	4,942,232	329	4,942,245	411	4,942,250	724	4,942,265	60	4,941,874
501	4,942,223	212	4,942,233	367	4,942,246	CLASS 560		864	4,942,266	81	4,941,875
CLASS 530		332	4,942,234	505	4,942,247	41	4,942,255	CLASS 570		89	4,941,876
387	4,942,224	CLASS 546		533	4,942,248	121	4,942,256	109	4,942,267	96	4,941,877
CLASS 534		18	4,942,235	CLASS 549		CLASS 562		206	4,942,268	105	4,941,878
560	4,942,225	64	4,942,237	407	4,942,249	481	4,942,257	CLASS 585		110	4,941,879
CLASS 536		242	4,942,238	CLASS 552		599	4,942,258	240	4,942,269	143	4,941,880
23	4,942,226	290	4,942,239	234	4,942,251	CLASS 564		CLASS 600		162	4,941,881
27	4,942,227	298	4,942,240			187	4,942,259	28	4,941,453	180	4,941,882
										186	4,941,883
										CLASS 606	
										59	4,941,481
										80	4,941,466

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D1—	128	309,210			309,238		418	309,262	D13—	114	309,288		28	309,314
D2—	318	309,211			309,239		432	309,263		147	309,289		78	309,315
	602	309,212		647	309,236		438	309,264		161	309,291		134	309,316
D3—	35	309,213		673	309,230		452	309,265		169	309,290		139	309,317
	40	309,214		679	309,240	D10—	6	309,266		184	309,292	D16—	112	309,318
	76	309,215		700	309,241		39	309,267	D14—	100	309,293	D17—	22	309,319
D4—	114	309,216	D8—	6	309,242		50	309,268			309,294	D18—	1	309,320
	116	309,217		10	309,243		57	309,269			309,295		13	309,321
	135	309,218		14	309,244			309,270		105	309,296		40	309,322
D6—	316	309,219		41	309,245			309,271			309,297			309,323
	317	309,220		82	309,246		96	309,272		107	309,298	D19—	26	309,324
	328	309,221		323	309,247		113	309,273		109	309,299		62	309,325
	366	309,222		338	309,248		119	309,274		114	309,300	D20—	43	309,326
	373	309,223		354	309,249	D11—	11	309,275		138	309,301	D21—	2	309,327
	408	309,224		356	309,250		26	309,276			309,302		12	309,328
	525	309,225		367	309,251		27	309,277		144	309,303			309,329
	552	309,226		373	309,252		35	309,278			309,304			309,330
	601	309,227			309,253		164	309,279		225	309,305		13	309,331
	604	309,228		375	309,254		215	309,280		249	309,306		108	309,332
	610	309,229		395	309,255	D12—	99	309,281		251	309,307		166	309,333
D7—	313	309,231	D9—	300	309,256		146	309,282	D15—	7	309,308		178	309,334
	398	309,232		305	309,257		148	309,283		13	309,309		194	309,335
	407	309,233		341	309,258		149	309,284		14	309,310			309,336
	409	309,234		376	309,259			309,286		17	309,311			309,337
		309,235		378	309,260		181	309,285			309,312		217	309,338
	605	309,237		398	309,261		196	309,287		25	309,313	D22—	116	309,339

	141	309,340	
D23—	200	309,341	
	239	309,342	
	269	309,343	
	323	309,344	
	325	309,345	
		309,346	
	386	309,347	
	387	309,348	
D24—	17	309,349	
	26	309,350	
D25—	119	309,351	
D27—	135	309,352	
D28—	26	309,353	
	35	309,354	
	48	309,355	
	56	309,356	
	77	309,357	
	78	309,358	
D29—	11	309,359	
	22	309,360	
D32—	62	309,361	
	70	309,362	
D34—	24	309,363	
	39	309,364	

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P.—	68	7,270		7,271		7,272		7,273		7,274	86	7,275

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1109 O.G. 3 on Dec. 5, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of March 1, 1990, and was announced in the *Official Gazette* at 1111 O.G. 24 on Feb. 20, 1990.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1242.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Apr. 30, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on July 21, 1987 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,680,812 through 4,682,370
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 19, 1983 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,393,519 through 4,394,780
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$245.00
By other than a small entity.....$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$495.00
By other than a small entity.....$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 13, 1990
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,328,617	06/262,644	5/11/82
4,328,631	06/222,931	5/11/82
4,328,664	06/228,736	5/11/82
4,328,676	06/247,623	5/11/82
4,328,683	06/224,146	5/11/82
4,328,748	06/228,877	5/11/82
4,328,765	06/257,907	5/11/82
4,328,788	06/241,886	5/11/82
4,328,904	06/231,172	5/11/82
4,328,905	06/237,856	5/11/82
4,328,914	06/220,418	5/11/82
4,328,949	06/230,836	5/11/82
4,329,035	06/221,404	5/11/82
4,329,115	06/230,203	5/11/82
4,329,148	06/222,926	5/11/82
4,329,161	06/264,870	5/11/82
4,329,171	06/223,365	5/11/82
4,329,185	06/226,757	5/11/82
4,329,202	06/235,764	5/11/82
4,329,208	06/225,542	5/11/82
4,329,211	06/244,712	5/11/82
4,329,269	06/225,516	5/11/82
4,329,288	06/220,945	5/11/82
4,329,343	06/228,053	5/11/82
4,329,357	06/232,494	5/11/82
4,329,360	06/250,806	5/11/82
4,329,373	06/268,112	5/11/82
4,329,450	06/238,262	5/11/82
4,329,455	06/224,968	5/11/82
4,329,472	06/253,346	5/11/82
4,329,534	06/234,298	5/11/82
4,329,647	06/270,383	5/11/82
4,329,698	06/218,145	5/11/82
4,587,673	06/728,040	5/13/86
4,587,675	06/546,873	5/13/86
4,587,676	06/568,803	5/13/86
4,587,679	06/678,458	5/13/86
4,587,681	06/733,884	5/13/86
4,587,683	06/717,596	5/13/86
4,587,684	06/541,925	5/13/86
4,587,693	06/775,775	5/13/86
4,587,696	06/552,694	5/13/86
4,587,697	06/622,942	5/13/86
4,587,700	06/618,619	5/13/86
4,587,706	06/706,148	5/13/86
4,587,719	06/617,304	5/13/86
4,587,726	06/644,774	5/13/86
4,587,733	06/654,001	5/13/86
4,587,737	06/637,067	5/13/86
4,587,740	06/736,727	5/13/86
4,587,749	06/675,813	5/13/86
4,587,750	06/690,307	5/13/86
4,587,753	06/590,508	5/13/86
4,587,760	06/754,155	5/13/86
4,587,763	06/744,132	5/13/86
4,587,767	06/304,079	5/13/86
4,587,769	06/736,606	5/13/86
4,587,770	06/616,561	5/13/86
4,587,773	06/722,409	5/13/86
4,587,775	06/631,872	5/13/86
4,587,778	06/658,352	5/13/86
4,587,783	06/641,271	5/13/86
4,587,787	06/540,052	5/13/86
4,587,791	06/685,526	5/13/86
4,587,793	06/692,653	5/13/86
4,587,799	06/612,520	5/13/86
4,587,800	06/702,902	5/13/86
4,587,810	06/634,833	5/13/86
4,587,818	06/472,950	5/13/86
4,587,830	06/755,601	5/13/86
4,587,831	06/736,289	5/13/86
4,587,837	06/692,123	5/13/86
4,587,838	06/610,816	5/13/86
4,587,845	06/661,220	5/13/86
4,587,851	06/705,570	5/13/86
4,587,852	06/622,644	5/13/86
4,587,858	06/695,620	5/13/86
4,587,870	06/669,816	5/13/86
4,587,872	06/721,944	5/13/86
4,587,874	06/572,119	5/13/86
4,587,876	06/653,224	5/13/86
4,587,877	06/673,326	5/13/86
4,587,894	06/702,450	5/13/86
4,587,903	06/559,092	5/13/86
4,587,904	06/689,429	5/13/86
4,587,905	06/555,150	5/13/86
4,587,909	06/657,917	5/13/86
4,587,910	06/646,810	5/13/86
4,587,916	06/663,209	5/13/86

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Patent Number	Serial Number	Issue Date
4,587,917	06/619,577	5/13/86
4,587,920	06/621,241	5/13/86
4,587,924	06/724,355	5/13/86
4,587,931	06/680,279	5/13/86
4,587,934	06/495,073	5/13/86
4,587,949	06/607,569	5/13/86
4,587,950	06/687,614	5/13/86
4,587,952	06/733,275	5/13/86
4,587,957	06/422,306	5/13/86
4,587,959	06/719,063	5/13/86
4,587,960	06/502,707	5/13/86
4,587,961	06/579,798	5/13/86
4,587,962	06/578,230	5/13/86
4,587,963	06/613,030	5/13/86
4,587,969	06/695,791	5/13/86
4,587,971	06/676,461	5/13/86
4,587,979	06/612,148	5/13/86
4,587,981	06/742,326	5/13/86
4,587,982	06/449,771	5/13/86
4,587,986	06/702,121	5/13/86
4,587,987	06/645,531	5/13/86
4,587,988	06/649,511	5/13/86
4,587,994	06/775,225	5/13/86
4,588,007	06/538,915	5/13/86
4,588,017	06/614,677	5/13/86
4,588,033	06/647,173	5/13/86
4,588,042	06/633,654	5/13/86
4,588,044	06/637,135	5/13/86
4,588,048	06/590,988	5/13/86
4,588,051	06/560,649	5/13/86
4,588,056	06/600,836	5/13/86
4,588,082	06/713,551	5/13/86
4,588,083	06/455,255	5/13/86
4,588,085	06/710,439	5/13/86
4,588,088	06/457,056	5/13/86
4,588,089	06/651,523	5/13/86
4,588,097	06/718,874	5/13/86
4,588,101	06/659,544	5/13/86
4,588,107	06/501,937	5/13/86
4,588,109	06/705,086	5/13/86
4,588,115	06/710,106	5/13/86
4,588,116	06/653,169	5/13/86
4,588,120	06/461,449	5/13/86
4,588,136	06/673,626	5/13/86
4,588,137	06/584,325	5/13/86
4,588,138	06/626,371	5/13/86
4,588,148	06/616,904	5/13/86
4,588,152	06/590,306	5/13/86
4,588,165	06/684,373	5/13/86
4,588,166	06/577,019	5/13/86
4,588,178	06/745,436	5/13/86
4,588,186	06/624,470	5/13/86
4,588,187	06/625,102	5/13/86
4,588,193	06/641,864	5/13/86
4,588,194	06/697,725	5/13/86
4,588,196	06/613,258	5/13/86
4,588,203	06/658,583	5/13/86
4,588,205	06/653,002	5/13/86
4,588,208	06/608,450	5/13/86
4,588,210	06/599,099	5/13/86
4,588,222	06/640,629	5/13/86
4,588,223	06/681,098	5/13/86
4,588,224	06/609,811	5/13/86
4,588,227	06/625,706	5/13/86
4,588,232	06/648,906	5/13/86
4,588,234	06/709,881	5/13/86
4,588,241	06/535,244	5/13/86
4,588,250	06/538,621	5/13/86
4,588,252	06/221,531	5/13/86
4,588,285	06/622,489	5/13/86
4,588,286	06/712,406	5/13/86
4,588,291	06/671,008	5/13/86
4,588,299	06/655,935	5/13/86
4,588,300	06/614,994	5/13/86
4,588,310	06/620,104	5/13/86
4,588,317	06/657,898	5/13/86
4,588,318	06/759,510	5/13/86
4,588,323	06/572,576	5/13/86
4,588,335	06/650,469	5/13/86
4,588,340	06/505,311	5/13/86
4,588,345	06/696,090	5/13/86
4,588,347	06/421,547	5/13/86
4,588,357	06/633,932	5/13/86
4,588,363	06/713,358	5/13/86
4,588,372	06/421,926	5/13/86
4,588,375	06/605,056	5/13/86
4,588,377	06/694,596	5/13/86
4,588,379	06/576,299	5/13/86
4,588,387	06/583,633	5/13/86
4,588,388	06/629,750	5/13/86
4,588,396	06/528,048	5/13/86
4,588,410	06/517,524	5/13/86
4,588,433	06/582,121	5/13/86
4,588,455	06/641,715	5/13/86
4,588,462	06/706,967	5/13/86
4,588,475	06/652,818	5/13/86
4,588,479	06/710,031	5/13/86
4,588,489	06/502,058	5/13/86
4,588,505	06/608,028	5/13/86
4,588,507	06/568,741	5/13/86
4,588,521	06/609,345	5/13/86
4,588,522	06/484,528	5/13/86
4,588,529	06/706,586	5/13/86
4,588,551	06/678,467	5/13/86
4,588,555	06/432,506	5/13/86
4,588,560	06/626,559	5/13/86
4,588,562	06/631,443	5/13/86
4,588,565	06/636,765	5/13/86
4,588,567	06/695,634	5/13/86
4,588,568	06/582,928	5/13/86
4,588,571	06/601,804	5/13/86
4,588,600	06/486,254	5/13/86
4,588,605	06/589,346	5/13/86
4,588,614	06/627,482	5/13/86
4,588,618	06/652,622	5/13/86
4,588,619	06/644,854	5/13/86
4,588,621	06/673,760	5/13/86
4,588,622	06/744,103	5/13/86
4,588,640	06/628,709	5/13/86
4,588,657	06/667,159	5/13/86
4,588,658	06/672,079	5/13/86
4,588,663	06/653,703	5/13/86
4,588,669	06/608,457	5/13/86
4,588,674	06/541,734	5/13/86
4,588,690	06/642,628	5/13/86
4,588,698	06/435,528	5/13/86
4,588,715	06/616,720	5/13/86
4,588,719	06/664,222	5/13/86
4,588,723	06/634,851	5/13/86
4,588,734	06/672,645	5/13/86
4,588,735	06/470,824	5/13/86
4,588,736	06/612,340	5/13/86
4,588,737	06/684,214	5/13/86
4,588,738	06/616,145	5/13/86
4,588,744	06/228,987	5/13/86
4,588,748	06/654,068	5/13/86
4,588,749	06/606,597	5/13/86
4,588,757	06/700,536	5/13/86
4,588,758	06/711,520	5/13/86
4,588,791	06/648,221	5/13/86
4,588,792	06/690,791	5/13/86
4,588,797	06/668,223	5/13/86
4,588,812	06/615,201	5/13/86
4,588,817	06/616,640	5/13/86
4,588,821	06/621,013	5/13/86
4,588,822	06/482,409	5/13/86
4,588,831	06/669,965	5/13/86
4,588,833	06/665,226	5/13/86
4,588,848	06/667,047	5/13/86
4,588,853	06/622,776	5/13/86
4,588,866	06/438,472	5/13/86
4,588,874	06/666,176	5/13/86
4,588,878	06/672,214	5/13/86
4,588,880	06/529,613	5/13/86
4,588,898	06/498,220	5/13/86
4,588,906	06/603,541	5/13/86

Patent Number	Serial Number	Issue Date
4,588,914	06/617,455	5/13/86
4,588,919	06/597,977	5/13/86
4,588,921	06/672,154	5/13/86
4,588,960	06/637,630	5/13/86
4,588,975	06/510,082	5/13/86
4,588,976	06/673,168	5/13/86
4,588,992	06/438,244	5/13/86
4,588,993	06/496,275	5/13/86
4,588,998	06/634,543	5/13/86
4,589,009	06/659,044	5/13/86
4,589,017	06/363,473	5/13/86
4,589,024	06/409,628	5/13/86
4,589,030	06/516,466	5/13/86
4,589,043	06/413,546	5/13/86
4,589,055	06/697,286	5/13/86
4,589,073	06/491,294	5/13/86
4,589,077	06/517,590	5/13/86
4,589,078	06/498,773	5/13/86
4,589,085	06/488,824	5/13/86
4,589,086	06/413,213	5/13/86
4,589,089	06/275,131	5/13/86
4,589,101	06/687,021	5/13/86
4,589,104	06/689,779	5/13/86
4,589,108	06/607,118	5/13/86
4,589,116	06/633,598	5/13/86
4,589,124	06/611,992	5/13/86
4,589,136	06/684,025	5/13/86

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C 41(c); 37CFR 1.378)

The patent (s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,519,069	06/437,165	5/21/85	10/27/82	6/18/90
4,540,022	06/383,550	9/10/85	6/01/82	6/20/90
4,548,413	06/577,157	10/22/85	2/06/84	6/22/90
4,550,276	06/388,230	10/29/85	6/14/82	6/20/90
4,552,928	06/651,059	11/12/85	9/17/84	6/20/90
4,575,002	06/602,909	5/11/86	4/23/84	6/22/90

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,500,032, Re. S. N. 07/532,633, Filed June 4, 1990, Cl. 228/180A, METHOD AND APPARATUS FOR PROPER REGISTRATION OF MATING PARTS, Daniel W. Ackerman, Owner of Record: *Universal Instruments Corp., Binghamton, N. Y.*, Attorney or Agent: Franklin D. Wolffe., Ex. Gp.: 325

4,744,634, Re. S. N. 07/534,624, Filed May 15, 1990, Cl. 350/163, METHOD AND APPARATUS FOR REDUCING THE EFFECTS OF VIBRATIONAL DISTURBANCES OF THE FREQUENCY STABILITY OF A LASER, David Fink., Owner of Record: *Hughes Aircraft Co., Los Angeles, Calif.*, Attorney or Agent: William J. Streeter, Ex. Gp.: 257

4,744,764, Re. S. N. 07/525,875, Filed May 17, 1990, Cl. 439/62, CONNECTOR ARRANGEMENT, Leon Rubinstein, Owner of Record: *Rogers Corp., Rogers, Conn.*, Attorney or Agent: John N. Williams, Ex. Gp.: 322

4,746,067, Re. S. N. 07/527,957, Filed May 24, 1990, Cl. 239/338, LIQUID ATOMIQING DEVICE AND METHOD, Steven A. Svoboda, Owner of Record: *Inventor*, Attorney or Agent: Jerry W. Berkstresser, Ex. Gp.: 314

4,747,907, Re. S. N. 07/530,718, Filed May 30, 1990, Cl. 156/642, METAL ETCHING PROCESS WITH ETCH RATE ENHANCEMENT, John Acocella, Owner of Record: *IBM Corp., Hopewell Junction, N. Y.*, Attorney or Agent: Ira D. Blecker, Ex. Gp.: 134

4,748,411, Re. S. N. 07/530,341, Filed May 30, 1990, Cl. 324/309, PHASE ENCODING TECHNIQUE FOR MORE RAPID MAGNETIC RESONANCE IMAGING, G. Neil Holland, Owner of Record: *Picker International, Inc., Highland Hts., Ohio*, Attorney or Agent: Thomas E. Kocovsky, Ex. Gp.: 265

4,751,387, Re. S. N. 07/533,445, Filed June 5, 1990, Cl. 250/331, INFRARED IMAGING SYSTEM AND METHOD, Jean J. A. Robillard, Owner of Record: *Richard L. Scully, Charlottesville, Va.*, Attorney or Agent: James M. Slattery, Ex. Gp.: 256

4,783,127, Re. S. N. 07/535,218, Filed June 8, 1990, Cl. 303/100, ANTI-LOCK BRAKE CONTROL SYSTEM, Alexander Kade, et al., Owner of Record: *General Motors Corp., Detroit, Mich.*, Attorney or Agent: Howard N. Conkey, Ex. Gp.: 313

4,783,183, Re. S. N. 07/524,385, Filed May 17, 1990, Cl. 384/620, THRUST BEARING ASSEMBLY, Cameron Gardella, Owner of Record: *Torrington Co., Torrington, Conn.*, Attorney or Agent: Daniel W. Sixbey, Ex. Gp.: 245

4,812,505, Re. S. N. 07/531,650, Filed June 1, 1990, Cl. 524/377, TREE RESISTANT COMPOSITIONS, Barry Topcik, Owner of Record: *Union Carbide Chemicals and Plastics Co., Inc., Danbury, Conn.*, Attorney or Agent: Saul Bresch, Ex. Gp.: 155

4,816,273, Re. S. N. 07/531,450, Filed May 30, 1990, Cl. 426/393, PROCESS OF PREPARING FROZEN JUICE PRODUCT, Steven Smith, et al., Owner of Record: *Inventor*, Attorney or Agent: Bruce G. Chapman, Ex. Gp.: 132

4,826,466, Re. S. N. 07/530,118, Filed May 29, 1990, Cl. 464/173, STEERING COLUMN BOOT, Fred Triquet, Owner of Record: *Arco Industries Corp., Schoolcraft, Mich.*, Attorney or Agent: Kenneth I. Kohn, Ex. Gp.: 245

4,841,831, Re. S. N. 07/533,527, Filed June 5, 1990, Cl. 86/27, INDEXING RELOADER OF CARTRIDGES, Walter W. Bender, et al., Owner of Record: *Blount, Inc., Portland, Oreg.*, Attorney or Agent: Robert L. Harrington, Ex. Gp.: 221

4,848,074, Re. S. N. 07/526,658, Filed May 29, 1990, Cl. 56/400.12, LEAF BUNDLING RAKE, Lewis E. Allen, Owner of Record: *Inventor*, Attorney or Agent: Norman B. Rainer, Ex. Gp.: 356

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4,863,606, Re. S. N. 07/532,560, Filed June 4, 1990, Cl. 210/605, WASTE WATER TREATING PROCESS, Ronald W. Ryall, Owner of Record: *Inventor*, Attorney or Agent: John J. Conners, Ex. Gp.: 136

4,880,067, Re. S. N. 07/530,816, Filed May 30, 1990, Cl. 175/107, APPARATUS FOR DRILLING A CURVED BOREHOLE, Henk H. Jelsma, Owner of Record: *Baroid Technology, Inc., Houston, Tex.*, Attorney or Agent: Loren G. Helmreich, Ex. Gp.: 356

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

De. 292,030, Reexam No. 90/002,049, Requested June 12, 1990, Cl. D28/041, ORNAMENTAL HEADBAND OR SIMILAR OBJECTS, Rommy Revson, Owner of Record: *Inventor, New York, N. Y.*, Attorney or Agent: Cohen, Potani & Lieberman, Ex. Gp.: 292, Requester: Riviera Trading Corp., New York, N. Y.

3,896,050, Reexam. No. 90/002,050, Requested June 12, 1990, Cl. 433/057, JAW MOVEMENT SIMULATOR, Robert L. Lee, Owner of Record: *Inventor, Colton, Calif.*, Attorney or Agent: Knobbe, Martens, Olson & Bear, Ex. Gp.: 333, Requester: W. E. Jackson, Larson & Taylor, Arlington, Va.

3,976,230, Reexam. No. 90/002,051, Requested June 12, 1990, Cl. 222/146, SYSTEM FOR DISPENSING POLYURETHANE AND THE LIKE, Charles R. Sperry, Owner of Record: *Instapak Corp., A Corp. of N.Y., Danbury, Conn.*, Attorney or Agent: Albert Siegel, Ex. Gp.: 311, Requester: E. R. Carpenter Co., Inc., Richmond, Va.

4,067,079, Reexam. No. 90/002,052, Requested June 12, 1990, Cl. 005/081, PATIENT SHIFTING AID AND METHOD OF USING SAME, Ernest C. Buchman, Owner of Record: *Inventor, Houston, Tex.*, Attorney or Agent: Pravel & Wilson, Ex. Gp.: 351, Requester: Paul R. Gardner, Los Angeles, Calif.

4,571,456, Reexam. No. 90/002,053, Requested June 12, 1990, Cl. 179/002, PORTABLE COMPUTER, David C. Paulsen, et al., Owner of Record: *Grid Systems Corp., A Corp. of Calif., Mountain View, Calif.*, Attorney or Agent: Donald C. Feix, Ex. Gp.: 261, Requester: Dean A. Monco, Chicago, Ill.

Survey of Registered Practitioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on January 31, 1990 fron the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names began with P through S. Enclosed with the letter was a data sheet which should have been completed and returned to OED as soon as possible. All data sheets returned to OED were acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with 37 CFR 10.11(b).

If your last name begins with P through S and you did not receive a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Shirley B. Rasheed at (703) 557-1728.

June 26, 1990 CAMERON WEIFENBACH, *Director*
Office of Enrollment & Discipline

PATENT NOTICES

Certificates of Correction For Week of July 24, 1990

Re. 32,640	4,826,944	4,847,696	4,859,494
4,652,639	4,827,499	4,847,797	4,859,845
4,679,488	4,828,899	4,847,972	4,860,010
4,699,396	4,829,027	4,848,137	4,860,291
4,712,859	4,830,028	4,848,563	4,860,992
4,733,721	4,830,191	4,848,750	4,861,823
4,734,868	4,830,756	4,848,947	4,862,042
4,735,476	4,831,169	4,848,977	4,862,059
4,750,078	4,831,382	4,849,716	4,862,324
4,760,117	4,833,172	4,849,928	4,862,751
4,761,162	4,833,230	4,849,945	4,892,800
4,761,661	4,834,129	4,850,281	4,862,890
4,766,090	4,834,151	4,850,487	4,862,910
4,766,320	4,834,712	4,850,664	4,862,977
4,768,379	4,835,078	4,851,418	4,863,126
4,769,974	4,835,305	4,851,660	4,863,147
4,776,827	4,837,450	4,852,110	4,863,270
4,785,147	4,837,461	4,852,144	4,863,511
4,785,692	4,838,708	4,852,442	4,863,809
4,789,620	4,839,847	4,852,658	4,864,070
4,791,259	4,840,676	4,852,958	4,864,546
4,792,023	4,841,001	4,853,490	4,864,892
4,793,307	4,841,015	4,853,516	4,864,950
4,793,879	4,841,457	4,853,590	4,965,111
4,794,427	4,841,712	4,854,104	4,965,176
4,794,572	4,841,745	4,854,496	4,965,181
4,799,445	4,842,453	4,855,503	4,865,205
4,801,097	4,842,724	4,855,825	4,865,394
4,805,070	4,843,670	4,855,885	4,865,470
4,807,538	4,843,833	4,855,908	4,865,507
4,807,809	4,844,144	4,856,001	4,865,587
4,810,079	4,844,228	4,856,029	4,866,642
4,811,689	4,844,390	4,856,055	4,866,680
4,811,758	4,844,652	4,856,921	4,866,846
4,812,555	4,845,029	4,857,202	4,866,881
4,813,525	4,845,030	4,857,793	4,868,481
4,817,497	4,845,535	4,857,878	4,869,991
4,818,239	4,846,985	4,858,260	4,871,258
4,820,249	4,847,060	4,858,599	4,879,403
4,820,443	4,847,206	4,858,619	4,882,137
4,821,980	4,847,281	4,858,798	4,885,357
4,823,932	4,847,368	4,858,861	4,885,672
4,824,975	4,847,542	4,859,091	4,896,617

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Box Pat. Ext.	Applications for patent term extension.
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Box Reexam	Mail related to Reexamination.
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PATENT APPLICATION	New patent application and associated papers and fees.
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Box Assignments	All assignment documents except those filed in new patent applications.
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These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

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	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF June 16, 1990

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director.	7-7-87
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	10-18-88
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	5-12-88
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-20-88
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-28-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—ROBERT E. GARRETT, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	3-8-88
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-9-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director.	3-31-88
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP— 260 STEWART LEVY, Acting Director	4-22-88
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-24-89
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	6-23-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	10-25-88
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	5-5-89

Expiration of **patents**: The patents within the range of numbers indicated below expire during June 1990 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,736,595 to 3,742,517 inclusive
Plant Patents ..... 3,350 to 3,369 inclusive

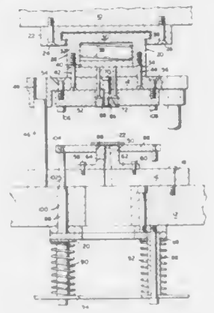
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REEXAMINATIONS

JULY 24, 1990

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,267,753 (1329th)
APPARATUS FOR PRODUCING A BLANK FROM STOCK MATERIAL
Edward D. Bennett, 1401 S. Ocean Blvd. Apt. 902, Pompano Beach, Fla. 33062
Reexamination Request No. 90/001,815, Jul. 28, 1989.
Reexamination Certificate for Patent No. 4,267,753, issued May 19, 1981, Ser. No. 92,403, Nov. 8, 1979.
Filed Jul. 28, 1989, Ser. No. 92,403
Int. Cl.[5] B21D *28/16, 45/08*
U.S. Cl. 83—124



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 8 and 17 are determined to be patentable as amended.

Claims 2–7, 9–16 and 18, dependent on an amended claim, are determined to be patentable.

1. A blanking punch and die combination comprising a blanking die defining an opening *of any shape*, a cooperating blanking punch dimensioned closely to mate with said opening, *with a clearance dimension between the blanking punch and said blanking die opening of about one percent of the thickness of the stock to be blanked,* the *stock engaging blanking* die edge defining said opening being rounded, a stock engaging shedder displaceable within said die opening to engage and clamp stock, a stripper encircling said blanking punch and displaceable therealong to remove surplus stock after a blanking operation and spacer means disposed between the blanking die and the stripper to space the blanking die and the stripper apart by a distance exceeding the thickness of said stock.

B1 4,303,721 (1330th)
CLOSED CELL FOAM PRINTING BLANKET
Jorge M. Rodriguez, Miami, Fla., assignor to W. R. Grace & Co.
Reexamination Request No. 90/001,764, Apr. 27, 1989.
Reexamination Certificate for Patent No. 4,303,721, issued Dec. 1, 1981, Ser. No. 59,343, Jul. 20, 1979.
Filed Apr. 27, 1989, Ser. No. 59,343
Int. Cl.[5] B32B *7/02, 5/18*
U.S. Cl. 428—213

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

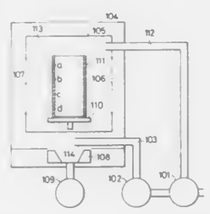
Claims 1, 3 and 6 are determined to be patentable as amended.

Claims 2, 4 and 5, dependent on an amended claim, are determined to be patentable.

New claims 7–9 are added and determined to be patentable.

1. A resilient compressible offset printing blanket of the type comprising
(a) a base layer comprising a member chosen from the group consisting of a machine direction, elongation stabilizing material and an adhesive material;
(b) a compressible layer over said base layer and comprising foamed rubber having a substantially closed celled structure; and
(c) an ink transfer face layer over said compressible layer,
the improvement comprising said resilient compressible offset printing blanket being free of any intervening woven stabilizing layer between the foamed rubber compressible layer and the face layer while having means giving the substance of the stability that would be provided by such a woven stabilizing layer between the foamed rubber compressible layer and the face layer, *said means being a hard rubber layer formed of a rubber and an inorganic filler, or carbon black and a thermosetting polymer. .*

B1 4,481,273 (1331st)
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND PREPARATION THEREOF
Kazuharu Katagiri; Yoshihiro Oguchi, both of Yokohama, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan
Reexamination Request No. 90/001,792, Jun. 20, 1989.
Reexamination Certificate for Patent No. 4,481,273, issued Nov. 6, 1984, Ser. No. 496,430, May 20, 1983.
Filed Jun. 20, 1989, Ser. No. 496,430
Claims priority, application Japan, May 27, 1982, 57-90268
Int. Cl.[5] G03G *5/04, 5/047*
U.S. Cl. 430—59



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 6, 10–12, 15, 17, and 19–24 are cancelled.

Claims 1, 3–5, 7–9, 13, 14, 16, 18, 25, 26 and 31 are determined to be patentable as amended.

Claims 27–30, 32 and 33, dependent on an amended claim, are determined to be patentable.

1. [An] *A cylindrical* electrophotographic photosensitve

member comprising [a photosensitive layer] *a charge generating layer having a thickness of not more than 5μ and comprising a coated film having organic pigment particles dispersed in a binder and a charge transport layer laid thereon, said charge generating layer having been* formed by [coating] *applying* a coating solution containing [a photoconductive compound on an electroconductive] *said organic pigment particles dispersed therein to a cylindrical* substrate of a metal or metal alloy [followed by drying, said electroconductive substrate] having a C/ρ value of 0.250 or less when the heat capacity per unit surface area of said [electroconductive] *cylindrical* substrate is made C cal/cm^2.°C. and the thermal conductivity of the material for said [electroconductive] *cylindrical* substrate is made ρ cal/cm.sec.°C. *followed by drying.*

18. An electrophotographic photosensitive member according to claim [6] *1*, wherein said charge transport layer is a coated film having at least one kind of photoconductive compound selected from the troup consisting of pyrazolines, hydrazones, diphenylmethanes, triphenylmethanes, triphenylamines, oxadiazoles, benzooxazoles, oxazoles, thiazoles, styryls and photoconductive polymers.

B1 4,637,865 (1332nd)

PROCESS FOR METAL RECOVERY AND COMPOSITIONS USEFUL THEREIN

Rodney H. Sergent, and Kenneth N. Thanstrom, assignors to Great Lakes Chemical Corp., West Lafayette, Ind.

Reexamination Request No. 90/001,891, Nov. 7, 1989.
Reexamination Certificate for Patent No. 4,637,865, issued Jan. 20, 1987, Ser. No. 766,833, Aug. 16, 1985.
Filed Nov. 7, 1989, Ser. No. 766,833
Int. Cl.[5] C25C *1/20*
U.S. Cl. 204—111



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–50** is confirmed.

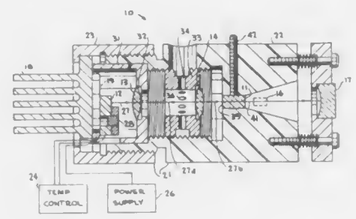
1. A process for extracting a precious metal or base metal from a source material containing said metal, the process comprising contacting said source material with an aqueous leaching solution containing a leaching agent comprising an N-halohydantoin compound, thereby producing an aqueous leachate containing said metal.

B1 4,653,056 (1333rd)

ND-YAG LASER

Thomas M. Baer, Mountain View, and Mark S. Keirstead, San Jose, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Reexamination Request No. 90/001,830, Aug. 24, 1989.
Reexamination Certificate for Patent No. 4,653,056, issued Mar. 24, 1987, Ser. No. 730,002, May 1, 1985.
Filed Aug. 24, 1989, Ser. No. 730,002
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—75



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–44** is confirmed.

Claim **45** is determined to be patentable as amended.

Claims **46** and **47**, dependent on an amended claim, are determined to be patentable.

1. A high efficiency, diode pumped array, compact neodymium-YAG laser, comprising,

a neodymium-YAG laser rod having a front end and a back end, a housing with means holding the neodymium-YAG rod in fixed position in the housing with its front end forward,

a laser diode array for pumping the neodymium-YAG rod, having an output frequency sufficiently matched to the rod to pump the rod, secured in the housing behind and in optical alignment with the rod,

output coupler means including a mirrored surface forming a front end of a laser cavity,

a rear mirror means forming a back end of the laser cavity, with the neodymium-YAG rod within the cavity,

a frequency doubler within the laser cavity, positioned to receive the output beam of the laser rod and to halve its wavelength, doubling its frequency, and

polarization control means for adjusting and maintaining the polarization of the laser beam to a polarization which optimizes frequency doubling of the laser beam by the frequency doubler.

B1 4,692,599 (1334th)

COIL SUPPORT INSULATOR FOR ELECTRIC HEATER

H. Keith Howard, and Jimmy L. Sherrill, both of Cookeville, Tenn., assignors to Adams Industries Inc., Cookeville, Tenn.

Reexamination Request No. 90/001,856, Oct. 2, 1989.
Reexamination Certificate for Patent No. 4,692,599, issued Sep. 8, 1987, Ser. No. 785,595, Oct. 8, 1985.
Continuation of Ser. No. 597,701, Apr. 6, 1984, Pat. No. 4,559,412, which is a division of Ser. No. 206,899, Nov. 14, 1980, Pat. No. 4,458,141. This application Oct. 2, 1989, Ser. No. 785,595
The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.
Int. Cl.[5] H05B *3/06*; H01B *17/56*
U.S. Cl. 219—532

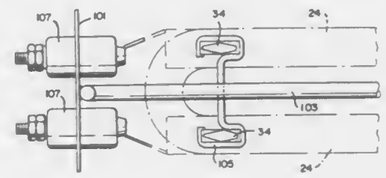
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2 to 6, dependent on an amended claim, are determined to be patentable.

New claims 7 to 10 are added and determined to be patentable.

1. An electric heater comprising an elongate structural member and an insulator means for supporting a heater coil, wherein said insulator means comprises an integral elongate element having at least one notch therein [adapted to support] *for supporting* said heater coil by engaging at least one individual convolution thereof, said insulator having *an exterior surface with at least two faces which extend in transverse*



directions, groove means in [an] *said* exterior surface *for* engaging said structural member, *wherein* said structural member [comprising] *comprises* an elongate rod at least partially encircling said insulator means *by extending along said at least two faces* and [recieve] *received* in said groove means to support said insulator means.

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REISSUES

JULY 24, 1990

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,270

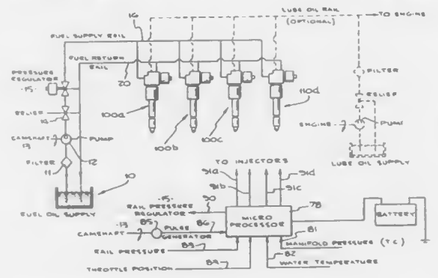
PRESSURE-CONTROLLED FUEL INJECTION FOR INTERNAL COMBUSTION ENGINES

Niels J. Beck, Bonita; Michael A. Calkins, El Cajon; William E. Weseloh, San Diego, and Robert L. Barkhimer, Chula Vista, all of Calif., assignors to BKM, Inc., San Diego, Calif.

Original No. 4,628,881, dated Dec. 16, 1986, Ser. No. 700,692, Feb. 12, 1985. Continuation-in-part of Ser. No. 418,688, Sep. 16, 1982, abandoned. Application for reissue Dec. 14, 1988, Ser. No. 284,472

Int. Cl.[5] **F02M** *47/02*

U.S. Cl. 123—447 **68 Claims**



67. A pressure-metered fuel injection method comprising the steps of

(a) *selecting microprocessor means for controlling liquid pressure level,*

(*b*) selecting a *liquid* fuel source having a [controllable] pressure level *that is controllable by said microprocessor means,*

[(b)] (*c*) supplying liquid fuel *from said source* through a fluid pathway and a non-return valve to an accumulator injector,

[(c)] (*d*) under control of the source pressure, allowing fuel to flow through said pathway and through the non-return valve into the accumulator injector throughout a time interval which is of sufficient duration that the fuel pressure inside the accumulator injector then becomes essentially a function of the source pressure rather than of the parameters of the pathway,

[(d)] (*e*) then closing off and venting the pathway so that the non-return valve closes, and the injector injects a fuel charge whose mass is linearly related to the source pressure, and

[(e)] (*f*) thereafter adjusting the source pressure *by said microprocessor means* so as to adjust the mass of [the next] succeeding fuel [charge] *charges.*

Re. 33,271

DENTAL JACKET CROWN, COPING AND METHOD OF CONSTRUCTION

Itzhak Shoher, 50 Shlomo Hamelich St., Tel Aviv, and Aharon Whiteman, 13 J1 Perez St., Petach Tikvah, both of Israel

Original No. 4,492,579, dated Jan. 8, 1985, Ser. No. 487,839, Apr. 22, 1983. Continuation-in-part of Ser. No. 414,415, Sep. 2, 1982, Pat. No. 4,459,112. Application for reissue Dec. 6, 1985, Ser. No. 805,825

Int. Cl.[5] **A61C** *5/08*

U.S. Cl. 433—222.1 **11 Claims**

1. A *dental* jacket crown comprising a composite body [including] *formed from* a thin foil of high fusing temperature metal, [substantially of platinum] having a surface geometry conforming to a die to which it has been adapted with the foil having [a minimum of at least three folded over pleats in a substantial symmetrical arrangement around the body of a foil with each pleat forming a triangular like flap in the unfolded position and wherein said foil has] *arranged about* an unfolded



area substantially in the center of the foil [body with said foil having] *and* at least one thin coated layer of a gold based noble metal composition of up to 100% gold superimposed over one surface of said [thin foil and disposed beneath the folded over pleats] *high fusing temperature metal* and a relatively thick outer coating of a dental veneering material.

Re. 33,272

FILTER CARTRIDGE FOR FILTERING APPARATUSES

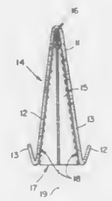
Ernst Turck, Peter-Parler-Strasse 33, D-8264 Waldkraiburg, Fed. Rep. of Germany

Original No. 4,619,676, dated Oct. 28, 1986, Ser. No. 678,282, Mar. 28, 1984. Application for reissue Jun. 27, 1989, Ser. No. 372,055

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311863

Int. Cl.[5] **B01D** *46/12*

U.S. Cl. 55—500 **5 Claims**



1. A filter cartridge for filtering apparatuses for removing impurities from hot and/or highly pressurized flowing gases, with zig-zag formed, gas-penetrated filter material folded at acute angles, whose part surfaces caused by the folding, between the fold lines, are arranged in relatively close juxtaposition to each other, characterized in that: one thin-walled strip **15** is disposed and arranged in the spaces between each two adjacent part surfaces **12**, **13** of the filter material **11**, said thin-walled strip **15** having one straight-formed edge **16** lying in the inside of the fold **14** and one opposite lying zig-zag formed edge **17**, *the zig-zag edge being straight lines to form sharp peaks,* and in that, relative to the medial plane **19** of said thin-walled strip **15**, the bend or crest lines **18** rise steadily *as straight bend lines* from said one straight formed edge **16** toward the sharp peaks of said zig-zag formed edge, *whereby each said strip 15 engages the adjacent surfaces 12, 13 of the associated filter*

material fold solely by a line to surface engagement of each said straight bend line 18 with the surface of said associated filter material folds.

Re. 33,273

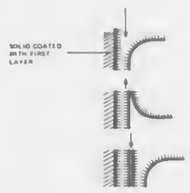
MATERIALS HAVING IMPROVED NONFOULING CHARACTERISTICS AND METHOD OF MAKING SAME

Lois M. Speaker, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Original No. 4,554,076, dated Nov. 19, 1985, Ser. No. 409,097, Aug. 18, 1982. Application for reissue Nov. 13, 1987, Ser. No. 120,599

Int. Cl.[5] B01D *31/00*

U.S. Cl. 210—639 **32 Claims**



1. A method of modifying a surface of a separatory material comprising the step of depositing on said surface [a] *at least one oriented monomolecular* layer of [a] *an essentially water-insoluble* fluorinated amphiphilic molecule *which is capable of forming an oriented monomolecular layer and* which is oriented such that the fluorinated portion of said molecule extends outwardly from said surface.

Re. 33,274

SELECTIVE DISORDERING OF WELL STRUCTURES BY LASER ANNEALING

Robert D. Burnham, Wheaton, Ill., and Noble M. Johnson, Menlo Park, Calif., assignors to Xerox Corporation, Stamford, Conn.

Original No. 4,654,090, dated Mar. 31, 1987, Ser. No. 775,979, Sep. 13, 1985. Application for reissue Jan. 31, 1989, Ser. No. 304,671

Int. Cl.[5] H01L *21/265, 21/203*

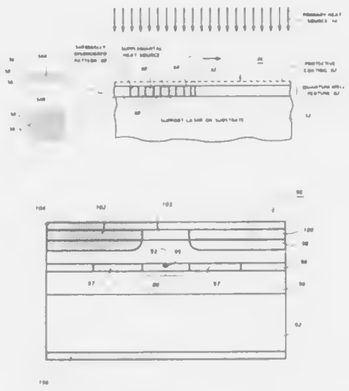
U.S. Cl. 437—174 **13 Claims**

1. A method of converting selected areas of a semiconductor structure into a disordered alloy via thermal disordering comprising a well feature epitaxially deposited on a semiconductor support, said well feature comprising at least one first well layer of narrow bandgap material deposited adjacent to at least a second layer of wider bandgap material or interposed between second and third layers of wider bandgap material, said disordered alloy exhibiting higher bandgap and lower refractive index properties than said first layer and comprising the steps of:

(a) placing said structure within a protective environment to prevent the escape of volatile components from said structure during subsequent processing,

(b) heating said structure to a background temperature [just] below the temperature required to achieve rapid thermal disordering of said feature,

(c) scanning said structure with a laser beam while maintaining said background temperature to disorder said well feature in selected regions scanned by said laser beam, said disordering achieved due to the additional heat supplied by said laser beam forming a pattern of wider bandgap and lower refractive index properties proscribed in said feature by the scanning trace of said laser beam compared to areas of said feature not scanned by said laser beam.



Re. 33,275

ELECTRON SPECTROMETER

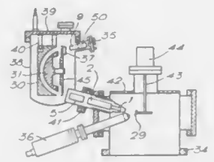
Ian R. M. Wardell, Heathfield, and Peter A. Coxon, Buxted, both of United Kingdom, assignors to VG Instruments Group, Limited, Crawley, United Kingdom

Original No. 4,758,723, dated Jul. 19, 1988, Ser. No. 50,403, May 18, 1987. Application for reissue Sep. 18, 1989, Ser. No. 409,440

Claims priority, application United Kingdom, May 19, 1986, 8612099

Int. Cl.[5] H01J *49/44*

U.S. Cl. 250—305 **17 Claims**



1. An electron spectrometer operable to produce an image of an electron emitting surface, said spectrometer comprising in sequence:

(a) means for causing electrons to be emitted from said surface;

(b) a first [electrostatic] lens system arranged to project at least some of said electrons onto a first diffraction plane as a Fourier transform of an electron image of at least a part of said surface;

(c) a torroidal capacitor type electrostatic energy analyzer having an object plane and conjugate thereto a first image plane, said analyzer being disposed with said object plane coincident with said first diffraction plane and being arranged to project electrons of said Fourier transform as an energy dispersed Fourier transform in said first image plane;

(d) energy selection means for transmitting electrons of said energy dispersed Fourier transform having energies only within a selected range; and

(e) a second [electrostatic] lens system arranged to receive electrons transmitted by said energy selection means and therewith to project an electron image of at least a part of said surface onto a second image plane.

Re. 33,276

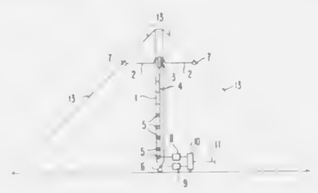
METHOD AND APPARATUS FOR SEPARATELY CONTROLLING SKY WAVE AND GROUND WAVE RADIATION FROM A MEDIUM WAVE ANTENNA

Ogden L. Presholdt, 214 Laurel Hollow Dr., Nokomis, Fla. 34275

Original No. 4,731,615, dated Mar. 15, 1988, Ser. No. 777,252, Sep. 18, 1985. Application for reissue Jul. 14, 1988, Ser. No. 219,006

Int. Cl.[5] H01Q *21/00*

U.S. Cl. 343—725 **15 Claims**



10. An antenna system for controlling the sky wave generated by a first station transmitting radio frequency signals, said first station having a proscribed angle of elevation for ionospheric reflection in relation to another station which is a predetermined distance from said first station, the antenna system comprising:

a first antenna means (antenna means A) oriented in a direction having a vertical component for generating an electromagnetic field E from said vertical componeat carrying said radio frequency signals, said field from said vertical component having a field component $E_{\theta A}$ determined with respect to a zenith direction theta;

a second antenna means (antenna means B) oriented in a direction having a horizontal component for generating another electromagnetic field from said horizontal component carrying said radio frequency signals, said another electromagnetic field from said horizontal component having a further field component $E_{\theta B}$ determined with respect to said zenith direction theta; and

means for setting the magnitude and phase of said field components $E_{\theta A}$ and $E_{\theta B}$ with respect to each other such that at said proscribed angle of elevation for ionospheric reflection said field component $E_{\theta A}$ substantially cancels out said further field component $E_{\theta B}$.

Re. 33,277

AUTOMATIC FOCUSING DEVICE FOR USE IN A CAMERA

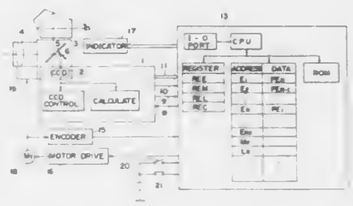
Norio Ishikawa, Osaka, and Takanobu Omaki, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 4,445,761, dated May 1, 1984, Ser. No. 431,288, Oct. 1, 1982. Continuation of Ser. No. 858,211, Apr. 30, 1986, abandoned. Application for reissue May 6, 1988, Ser. No. 190,834

Claims priority, application Japan, Oct. 2, 1981, 56-157921

Int. Cl.[5] G03B *3/10*

U.S. Cl. 354—402 **20 Claims**



16. An automatic focusing device for use in a camera, comprising:

means for receiving light through an objective lens of the camera to produce electric signals;

means for processing the electric signals to generate a defocusing information indicative of defocusing degree and defocusing direction relative to an ideal focal plane;

means for generating a driving power for automatic focus control;

means for controlling the generating means in response to the processing means;

means for causing the receiving means and the processing means to periodically repeat the production of the electric signals and the generation of the defocusing information during the generation of the driving power to keep the controlling means informed of the newest defocusing information in the course of generation of the driving power;

means for detecting a condition for stopping the generation of the driving power to stop the generation of the driving power on the condition; and

means for confirming the establishment of the condition in response to the processing means with the generation of the driving power completely stopped to determine the necessity of reopening the generation of the driving power in case that the condition is not really established.

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PLANT PATENTS

GRANTED JULY 24, 1990

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,276

ROSE PLANT — MEIZOGREL VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 10, 1989, Ser. No. 350,117
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of Miniature rose plant characterized by the following combination of characteristics:
(a) forms in abundance on a continuous basis attractive fully-double blossoms having firm petals,
(b) forms vigorous vegetation,
(c) exhibits a compact and bushy growth habit, and
(d) is well suited for greenhouse forcing while growing in small containers under low light conditions;
substantially as herein shown and described.

7,277

ROSE PLANT-MEITONJE VARIETY

Marie-Louise Meilland, deceased, late of Antibes, France (by Jean-Pierre le Naour, legal representative), assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Mar. 9, 1989, Ser. No. 321,144
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of Miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance on a continuous basis attractive fully double blossoms which are carmine rose in coloration,
(b) exhibits a vigorous, compact and bushy growth habit, and
(c) is not particularly affected by cryptogamic diseases;
substantially as herein shown and described.

7,278

ROSE PLANT — MEIMAFRIS VARIETY

Marie-Louise Meilland, late of Antibes, France (by Jean-Pierre Le Naour, legal representative), assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Mar. 9, 1989, Ser. No. 321,145
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—14 1 Claim

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance very double long lasting cream white blossoms which exhibit a strong fragrance,
(b) exhibits an upright, vigorous, compact and bushy growth habit,
(c) is well adapted for growing in containers, and
(d) is not particularly affected by cryptogamic diseases;
substantially as herein shown and described.

7,279

SEEDLESS HYBRID MAPLE TREE NAMED CELZAM

James W. Zampini, Perry, Ohio, assignor to New Plants, Perry, Ohio

Continuation of Ser. No. 129,401, Dec. 3, 1987, abandoned, which is a continuation of Ser. No. 895,801, Aug. 12, 1986, abandoned. This application Dec. 27, 1988, Ser. No. 290,842
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of substantially seedless hybrid Acer, (maple tree), substantially as herein shown and described, characterized particularly be being substantially seedless, having rapid growth when young, and exhibiting an extremely dense upright structure.

7,280

BLC. MEM. RALPH PLACENTIA C.V. TOREADOR

Ernest Hetherington, Arcadia, Calif., assignor to Stewart Orchids, Carpinteria, Calif.

Filed Nov. 25, 1988, Ser. No. 276,425
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of a hybrid Brassolaeliocattleya orchid, substantially as described and illustrated herein which is distinguished from siblings of this grex Blc. Mem. Ralph Placentia and other orchids by its combination of intense, dark, ruby-purple flower color, superior flower substance, size and strength in stem structure, and vigorous, reliable uniform blooming.

7,281

SARDIS

Th. A. Segers, Hoofddorp, Netherlands, assignor to Twyford Plant Laboratories, Inc., Santa Paula, Calif.

Filed Feb. 28, 1989, Ser. No. 316,908
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. The new distinct variety of gerbera plant herein described and illustrated and identified by the characteristics enumerated above.

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PATENTS

GRANTED JUL. 24, 1990

ERRATA

For CLASS	See PATENT NO.
475-039	4,942,580
475-083	4,942,780
475-342	4,942,781
606-057	4,942,872
606-230	4,942,875
273-139	4,943,090
285-012	4,943,091
280-660	4,943,092
210-164	4,943,100
351-235	4,943,162
411-342	4,943,253
604-002	4,943,274
423-010	4,943,318
420-417	4,943,322
423-566	4,943,411
585-471	4,943,553
521-079	4,943,594
524-265	4,943,601
524-600	4,943,602
525-415	4,943,610
536-124	4,943,649
544-330	4,943,675
525-383	4,943,676
528-405	4,943,677
514-374	4,943,678
562-561	4,943,679
427-154	4,943,680
430-495	4,943,681
528-353	4,943,682
376-245	4,943,683
428-034	4,943,684
428-035	4,943,780
355-271	4,943,863
365-207	4,943,952
367-137	4,943,956
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365-222	4,943,960
365-228	4,943,961
365-230	4,943,962
377-047	4,943,981

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340-825 4,944,029
354-403 4,944,030
355-206 4,944,031
358-012 4,944,032
364-470 4,944,033
364-522 4,944,034
364-556 4,944,035
367-043 4,944,036
369-138 4,944,037
370-085 4,944,038

PATENTS

GRANTED JULY 24, 1990

GENERAL AND MECHANICAL

4,942,624
PROTECTIVE ARM GEAR
Soo S. Cho, Roseland, Fla., assignor to Macho Products, Inc., Palm Bay, Fla.
Filed Jul. 28, 1988, Ser. No. 225,256
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 **11 Claims**



1. For use by a person receiving blows from a participant in martial arts activities or the like, an improved protective device for the arm of the wearer comprising:

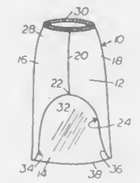
a main elongated body portion formed of a resilient, conformable foam material, the main body portion having an enlarged main section adapted to partially encompass and comform to the outside of a wearer's forearm, and a hand section extending outwardly from the main section and being adapted to cover the hand and knuckles of a wearer, and the main body portion having an interior surface and an exterior surface; and

strap means to secure the main body portion to the arm of a wearer;

the device further comprising a first elongated hand piece extending laterally across the interior surface of the main body portion and securing opposite edges of the hand section; a first elongated cross-piece extending longitudinally across the interior surface from a central part of the first hand piece to an outer end of the hand section; a second elongated hand piece extending laterally across the interior surface of the main body portion, said second hand piece being spaced inwardly toward said main section from said first hand piece and also securing opposite edges of the hand section; and a second elongated cross-piece extending from a central part of the second hand piece to connect the interior surface at a point adjacent the junction of the hand section and the main section;

the first and second hand pieces and the first and second cross-pieces being dimensioned, configured and adapted so that the fingers of the wearer can be inserted between the hand pieces and the interior surface with the cross-pieces being located between adjacent fingers of the wearer, so that when the fingertips of the wearer are curled around the first hand piece, the second cross-piece acts as a limit to hold the second hand piece in fixed position relative to the wearer's hand at the base of the fingers and the first cross-piece acts to draw the outer end of the hand section inwardly toward the main section with the first hand piece, to cause the hand section to conform to the wearer's closed hand when the fingertips are curled into a fist.

4,942,625
SLIP
Linda Mecadon, 3432 San Juan Canyon Rd., San Juan Bautista, Calif. 95054
Filed Nov. 17, 1988, Ser. No. 272,580
Int. Cl.[5] A41B *9/00*
U.S. Cl. 2—73 **14 Claims**



1. An article of lingerie comprising:

a slip having a waist portion and pair of spaced panels extending downwardly form the waist portion, one of the panels having a midpoint, a bottom edge and an opening therein in the lower portion of said one panel, said opening extending downwardly from a location near the midpoint of said one panel and having a transverse dimension which progressively increases as the bottom edge of said one panel is approached, said one panel having an upper, substantially concave edge near the upper end of the opening, a pair of convex edges near the bottom edge of the one panel, and a pair of generally vertical edges interconnecting the ends of the concave edge with respective convex edges, whereby the opening is substantially bell-shaped.

4,942,626
NEEDLESTICK PROTECTIVE GLOVE
Joseph A. Stern, Hampton; Stephen L. Green, Newport News; Charles B. King, and Sharon B. May, both of Hampton, all of Va., assignors to Medev Corporation, Hampton, Va.
Filed Dec. 23, 1988, Ser. No. 289,246
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161 R **8 Claims**



1. A glove for use by medical personnel to protect them from accidental injuries when handling needles which is adapted to cover substantially the entire hand from the wrist to the fingertips which comprises:

a first discrete layer of a flexible material having a pore size which is smaller than the diameter of a needle and which forms a glove including four finger stalls and a thumb stall, said first layer including at least two openings, one in the

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fingerprint area of the index finger stall and the second in the fingerprint area of the middle finger stall, and

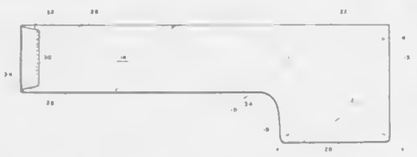
a second discrete layer of flexible material having a pore size which is smaller than the diameter of a needle, said second layer being permanently attached to selected areas of said first layer of material to provide said selected areas with sufficient thickness to prevent needle penetration under normal conditions encountered when handling needles, said selected areas comprising all of said thumb stall, and lateral sides of said index finger stall and said middle finger stall.

4,942,627

SCARF

Judy Copprue, 6521 Baccich St., New Orleans, La. 70122

Filed May 8, 1989, Ser. No. 348,385
Int. Cl.[5] A41D *23/00*
U.S. Cl. 2—207 **5 Claims**



1. A scarf, comprising:

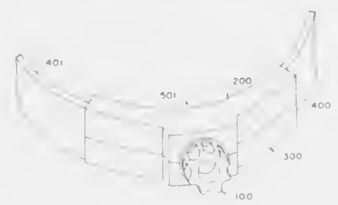
a substantially elongated flexible scarf body having a first substantially square portion and a second substantially rectangular portion narrower in width than the first portion integrally connected to the first portion about one of its ends, one side of the second portion and an adjacent side of the first portion being curved at a part of attachment of said one side to said adjacent side, a free end of the second portion having a reduced width; and wherein the free end of the second portion is folded over towards the first portion and secured to the second portion forming a loop, the loop being adapted to receive at least a part of the first portion therethrough to ensure secure tying of the scarf.

4,942,628

HELMET SUSPENSION HAVING RATCHET ADJUSTMENT

Paul X. Freund, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sep. 20, 1989, Ser. No. 409,932
Int. Cl.[5] A42B *3/04, 3/14*
U.S. Cl. 2—416 **2 Claims**



2. A ratchet device for moving two band portions in relation to each other comprising

overlapping band portions, each of said band portions having in alignment an elongate slot lengthwise of the band, a first row of teeth formed in the top edge of one of said slots and a second row of teeth formed in the bottom edge of the other said slot,

a cylindrical adjusting knob having cog teeth at a first end, gripping means at a second end and a beveled circular lip positioned between said first and second end,

case means formed of two case pieces, each said case piece comprising an inner and outer wall forming an arc-shaped channel adapted to receive said band portions and a cavity adapted to receive said adjusting knob, said cavity outer walls having an opening passing said adjusting knob gripping means, said cavity inner walls having a depression adapted to receive said adjusting knob cog teeth, said cog teeth extending through said slots and engaging said first and second rows of teeth,

said adjusting knob first end abutting the depression end wall and said beveled circular lip abutting the inner surface of said outer wall,

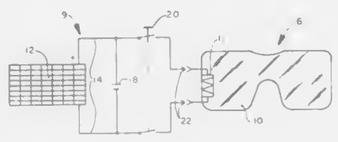
and pin means in said depression to yieldingly engage said cog teeth when the adjusting knob is turned.

4,942,629

SKI GOGGLES WITH HEATED LENS

Günter Stadlmann, Linz, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.

Filed May 30, 1989, Ser. No. 358,704
Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818389
Int. Cl.[5] A61F *9/02*; H05B *3/26*
U.S. Cl. 2—435 **14 Claims**



1. Ski goggles with defogging means comprising: a headband, a lens, an electrical resistive means applying heat to the lens when activated, a power supply for electrical connection to the resistive means for activating same, the power supply including at least one solar cell, and at least one battery connected between the solar cell and the lens resistive means as an additional power reservoir for applying heat to the lens.

4,942,630

SPA WITH DOOR ACCESS FILTER AND CONTROL

Paul Kantor, Saugatuck, and Loren R. Perry, Berrien Springs, both of Mich., assignors to Conway Products Company, Kentwood, Mich.

Filed Oct. 30, 1989, Ser. No. 428,607
Int. Cl.[5] A61H *33/02*
U.S. Cl. 4—542 **30 Claims**

1. A whirlpool spa comprising:

a cabinet;

a reservoir for containing water, mounted in said cabinet;

an opening in said cabinet to facilitate access to the interior thereof;

an access door;

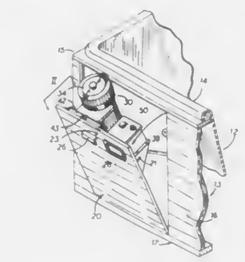
means mounting said access door on said cabinet over said cabinet opening such that said access door can be moved between an open position allowing access through said cabinet opening and a closed position for preventing access through said cabinet opening;

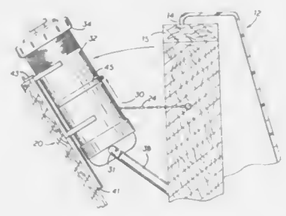
said access door having an outside surface which is exposed to the exterior of said cabinet when said door is closed and an inside surface which is exposed to the exterior of said cabinet only when said access door is opened;

a spa filter in flow communication with said reservoir;

means for pumping water from said reservoir through said spa filter;

said spa filter being mounted on said inside surface of said access door whereby when said access door is moved to





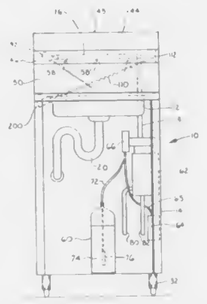
its open position, said spa filter is accessible from the exterior of said cabinet.

4,942,631

HAND SANITIZING STATION

Rudy Rosa, 3626 Baird Ct., Mississauga, Canada, assignor to Barry Robertson and Rudy Rosa, both of Ontario, Canada

Filed Sep. 21, 1988, Ser. No. 247,382
Claims priority, application Canada, Jun. 29, 1988, 570801
Int. Cl.[5] E03C *1/05*
U.S. Cl. 4—623 **20 Claims**



1. A sanitizing device comprising as sink, spray means for spraying a sanitizing solution containing water located above said sink, pipe means for delivering said sanitizing solution to said spray means, said pipe means being adapted for connection to a source of water under pressure, an electrically operated valve for controlling the flow of water through said pipe means, said valve when open permitting water to flow therethrough, a feed pump for delivering a sanitizing chemical concentrate to water passing through said pipe means, first tubing connecting an outlet of said pump to said pipe means, second tubing connected at one end to an inlet of said pump and having an opposite end adapted for placement in a source of said concentrate, and electrical switch means for operating said device, said switch having both an off and an on condition and switching to the one condition upon placement of a user's hands at a predetermined location near said sink, said switch being operatively connected to both said feed pump and said valve and in the on condition causing both said valve to pen and said feed pump to operate simultaneously, wherein said concentrate mixes with the water in said pipe means to form said sanitizing solution.

4,942,632

METHOD FOR WASTE COLLECTION AND STORAGE

William E. Thornton, Jr., Friendswood, and Henry B. Whitmore, San Antonio, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 35,401, Apr. 7, 1989, Pat. No. 4,870,709.
This application Aug. 10, 1989, Ser. No. 391,911
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—661 **8 Claims**



1. A method for collection of fecal material from a human body comprising the following steps:

first moving a piston means for sweeping and compaction of fecal material within a contained body structure from a storage position to a use position to receive said fecal material

uncovering a seat opening for receiving said fecal material therethrough, said first moving step actuating said uncovering step as said piston means is drawn to said use position;

drawing air through said seat opening to direct said fecal material through said seat opening into said contained body structure;

filtering said air after said air leaves said body structure through valves in said body structure;

covering a face of said piston means with a sheet of absorbent material;

second moving of said piston means from said use position to said storage position after depositing said fecal material through said seat opening into said contained body structure, said second moving of said piston means (1) sweeping said fecal material from said contained body structure to a storage end thereof; (2) covering said seat opening and closing said valves and (3) compressing said fecal material in said storage end; and

repeating said prior steps for subsequent uses wherein said sheet and said fecal material are left compressed at said storage end during each subsequent said first moving step.

4,942,633

ADJUSTABLE BED

Henry A. Thomas, 6615 Garlinghouse La., Dallas, Tex. 75252, and Larry J. McBride, 3409 Louis Dr., Plano, Tex. 75023

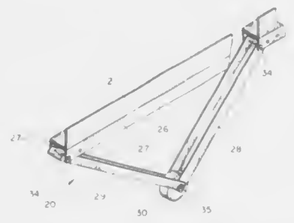
Filed Aug. 23, 1989, Ser. No. 398,165
Int. Cl.[5] A47C *19/00*
U.S. Cl. 5—11 **19 Claims**

14. An adjustable bed including a bed frame for supporting

a mattress and having a head end and a foot end, and a headboard secured to the head end of the bed frame, the adjustable bed further comprising:

the bed frame including first and second side rails, a head cross rail interconnecting the first and second side rails and positioned generally adjacent the head end of the bed frame, and a foot cross rail interconnecting the first and second side rails and positioned generally adjacent the foot end of the bed frame; and

a plurality of adjustable frame support assemblies each affixed to the bed frame for independently varying the height of the head end of the bed frame with respect to the foot end of the bed frame; and



attachment means for interconnecting the head end of the bed frame to the headboard, the attachment means including a first member pivotably connected to the bed frame, a second member for secured engagement with the headboard, locking means for fixing the pivotable orientation of the first member with respect to the bed frame and fastener means for interconnecting the first and second members, such that the headboard lies substantially within a vertical plane while the side rail attached to the headboard is inclined with respect to the horizontal surface perpendicular to the vertical plane.

4,942,634

DAMPED FLUID DISPLACEMENT SUPPORT SYSTEM AND METHOD FOR MAKING THE SAME

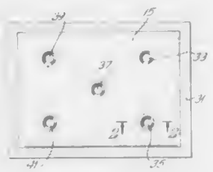
William S. Saloff, Gloversville, and David Saloff, Mount Kisco, both of N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.

PCT No. PCT/US83/01334, § 371 Date Apr. 29, 1985, § 102(e) Date Apr. 29, 1985, PCT Pub. No. WO85/00960, PCT Pub. Date Mar. 14, 1985

PCT Filed Aug. 31, 1983, Ser. No. 744,552

Int. Cl.[5] A47C *27/08*

U.S. Cl. 5—450 15 Claims



1. A damped liquid displacement support system which is substantially completely stable with respect to wave action or rolling motion of the liquid contained therein and nonsusceptible to the accumulation of a substantial amount of said liquid in a particular portion thereof when force is applied thereto, irrespective of the spatial disposition of said system, said support system comprising

an envelope of flexible liquid impervious material. said envelope having two substantially parallel panels of substantially the same size, each panel having a border surface, said border surfaces of said panels being sealed together in a liquid impervious seam, one of said panels serving as a body supporting surface,

a core of resilient liquid-absorbent material occupying substantially all the space within said envelope,

a liquid substantially saturating said core,

a valve mounted in said envelope for communication between the interior thereof and its ambience for admitting and discharging liquids and gases, and

at least one interior divider substantially parallel to and the same size as each of said envelope panels and separating said envelope into at least two compartments each of which contains its own liquid-saturated core, said interior divider having a plurality of peripherally disposed openings and no other holes therethrough, said openings in the periphery of said interior divider being located and sized so as to cause said liquid to migrate between the compartments of said envelope in a controlled substantially uniform flow with substantially no wave action or rolling motion and without accumulation of a substantial amount of said liquid in a particular portion of said envelope when pressure is applied to said envelope having a force component perpendicular to said body supporting surface, irrespective of the spatial disposition of said system, whereby an individual may use said envelope as a support cushion, said liquid within said envelope gradually seeking equilibrium about that portion of the individual's body contacting said envelope.

4,942,635

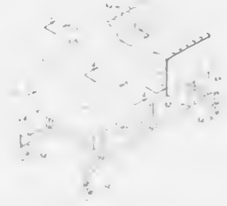
DUAL MODE PATIENT SUPPORT SYSTEM

Thomas S. Hargest; Sohrab Soltninasab, and Robert C. Novack, all of Charleston, S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.

Filed Dec. 20, 1988, Ser. No. 288,071

Int. Cl.[5] A47C *27/10*; A47G *7/04*; A61G *7/057*

U.S. Cl. 5—453 40 Claims



1. A patient support system, comprising:

(a) a frame;

(b) at least one inflatable sack carried by said frame to support at least a portion of the patient's body;

(c) a fluidizable medium carried by said frame to support a different portion of the patient's body; and

(d) means for containing said fluidizable medium, and for permitting the diffusion of air therethrough, said containing and diffusing means being carried by said frame and containing said fluidizable medium.

4,942,636

SPRING BEDDING PRODUCT

Terence A. Scott, and Chester R. Yates, both of Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

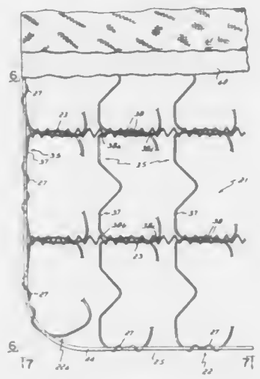
Filed Apr. 19, 1989, Ser. No. 340,372

Int. Cl.[5] A47C *27/04, 27/07*

U.S. Cl. 5—475 21 Claims

1. A bedding mattress comprising

a spring interior having a plurality of bands of springs, each band of springs comprising a single length of spring wire shaped to form a plurality of individual coil springs arranged in a longitudinal row, one end turn of each coil spring lying adjacent to a top face of the band and the other end turn of each coil spring lying adjacent to a bottom face of the band, each coil spring being joined to the adjacent coil springs by interconnecting segments integral with the coil springs, one of said interconnecting segments being located substantially in the top face of the band and the other of said interconnecting segments being located substantially in the bottom face of the band, and each interconnecting segment comprising a bridging portion which extends lengthwise of the row and end portions which extend transversely of the bands from the ends of said bridging portion, the bands being disposed side by side so that their top faces lie in a top main face of the spring interior and their bottom faces lie in a bottom



main face of the spring interior, the bands being interconnected by helical lacing wires lying in the top and bottom faces of the bands and extending across the bands, each helical lacing wire embracing adjacent end portions of interconnecting segments of the bands, the spring interior being characterized by

each of said bridging portions being connected at the ends to said end portions of said interconnecting segments by radiused corners of substantially different radii so as to position adjacent bridging portions in substantially longitudinal alignment perpendicular to said helical lacing wires,

padding overlying at least one of said main faces of said spring interior, and

an upholstered covering material encasing said spring interior and said padding.

4,942,637

DOUBLE-PURPOSE HAND TOOL

Her Yeang-Yai, Room, 10, Floor 2, No. 8, Lane 38, Nan Ho Rd., Taichung, Taiwan

Filed Oct. 18, 1989, Ser. No. 423,815

Int. Cl.[5] B25B *7/32*

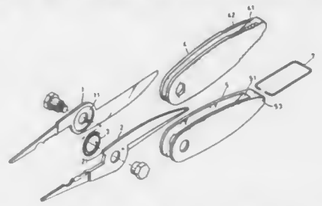
U.S. Cl. 7—135 7 Claims

1. A double-purpose hand tool comprising:

two action members pivotally coupled together by a pivot substantially at their middle portions, said two action members being formed with a pair of shear portions at two corresponding ends thereof and a pair of plier portions at the other two corresponding ends thereof;

a biasing means associated with said two action members which can bias said pair of shear portions apart and can bias said pair of plier portions apart; and

two grip members, each of them being pivoted about said pivot at one of its ends and formed with a space and an abutment portion therein so that each of said two shear portions can be received in its related space and abut against its related abutment portion to expose said two



plier portions, and each of said two plier portions can be received in its related space and abut against its related abutment portion to expose said two shear portions.

4,942,638

HAND-GUIDED, MOBILE CLEANING MACHINE

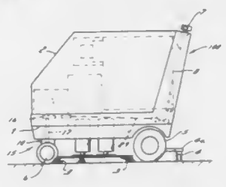
Kurt Helm, Nahe, Fed. Rep. of Germany, assignor to Hako-Werke GmbH & Co., Bad Oldesloe, Fed. Rep. of Germany

Filed Dec. 15, 1988, Ser. No. 285,046

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1987, 3742648

Int. Cl.[5] A47L *11/16, 11/40*

U.S. Cl. 15—50 R 13 Claims



1. A hand-guided, mobile cleaning machine comprising:

a frame;

a front roller assembly and a set of rear rollers each secured to the underside of the frame for movably supporting the machine;

means for driving the rear rollers;

a cleaning tool mounted on the frame for contact with the ground, the cleaning tool being disposed between the front roller assembly and rear rollers;

a handlebar mounted on the rear of the machine; and,

means operatively connecting the handlebar to the front roller assembly for allowing the operator to control the direction of motion of the machine from the rear of the machine by manipulation of the handlebar which causes rotation of the front roller assembly.

4,942,639

BULKY DUST SWEEPER

Osamu Shishido; Satoru Noguchi, and Seiji Seino, all of Shizuoka, Japan, assignors to Amano Corporation, Yokohama, Japan

Filed Oct. 25, 1988, Ser. No. 262,024

[30] Foreign Applications Priority Data Oct. 27, 1987 [JP] Japan 62-270800

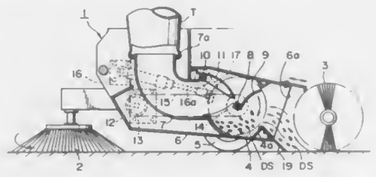
Int. Cl.[5] E01H *1/04*

U.S. Cl. 15—83 2 Claims

1. A bulky dust sweeper comprising:

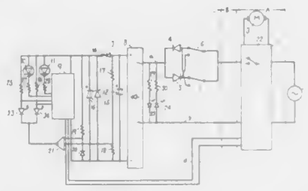
a vehicle body having side brushes at a forward end of the vehicle body for brushing up bulky dust toward the center of the vehicle body, and a main brush mounted on the bottom of said vehicle body for sweeping up the bulky

dust which has been brushed toward the center of the vehicle body by said side brushes;
a hopper on said vehicle body adjacent said main brush and positioned to receive bulky dust swept up by said main brush through a front end of said hopper;
a duct having one end connected to said hopper;
a scraper vane rotatably disposed in said hopper and drive means for rotating said scraper vane for scraping the bulky dust which has been brushed into the hopper by said main brush to the position where said duct is connected to said hopper;



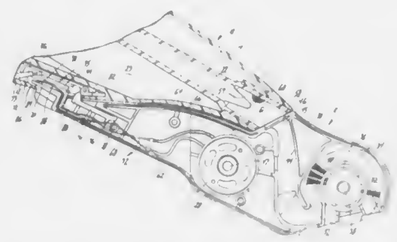
a push-in flap disposed in said sweeper where said duct is connected to said hopper and reciprocal drive means connected to said push-in flap for reciprocatingly moving said push-in flap for pushing the bulky dust which has been scraped to the position where said duct is connected to said hopper by said scraper vane into and toward the other end of said duct; and
a dust collecting bag removably attached to the other end of said duct for receiving and collecting therein the dust pushed through said duct by said push-in flap.

4,942,640
AUTOMATIC ELECTRIC VACUUM CLEANER WITH TEMPORARY MANUAL OVERRIDE
Nobuhiro Hayashi, Shiga; Toshiichiro Tanaka, Youkaichi; Seiji Yamaguchi, Shiga, and Hidetoshi Imai, Youkaichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
PCT No. PCT/JP88/00337, § 371 Date Dec. 1, 1988, § 102(e) Date Dec. 1, 1988, PCT Pub. No. WO88/07347, PCT Pub. Date Oct. 6, 1988
PCT Filed Apr. 1, 1988, Ser. No. 283,324
Claims priority, application Japan, Apr. 2, 1987, 62-81441
Int. Cl.[5] A47L *9/28*
U.S. Cl. 15—319 14 Claims



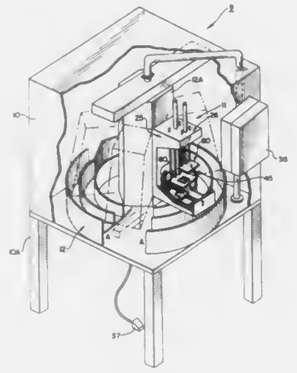
1. An electric vacuum cleaner comprising:
(a) a housing having an electric motor means for driving a suction fan;
(b) a suction nozzle for picking up dust;
(c) a suction hose including a handle portion for connection said suction nozzle to said housing;
(d) manually operable switch means provided at said handle portion of said suction hose for producing a speed command signal while said manually operable switch means is operated;
(e) detection means for detecting an amount of said dust passing through said suction hose per unit time;
(f) switching means responsive to said speed command signal by outputting said speed command signal when said speed command signal is present and by outputting an output signal of said detection means when said command signal is absent; and
(g) controlling means responsive to an output signal from said switching means for controlling a speed of said suction fan driven by said electric motor means in accordance with said output signal of said detection means in the absence of said speed command signal and for setting said electric motor means to drive said suction fan at a predetermined speed in the presence of said speed command signal.

4,942,641
ACCESSORY BRUSH ATTACHMENT
Burton E. Gerke, Jr., Newtown, and Richard B. Kosten, West Haven, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 9, 1989, Ser. No. 294,616
Int. Cl.[5] A47L *5/26*
U.S. Cl. 15—338 9 Claims



1. An accessory brush attachment for a vacuum cleaner comprising:
a motor;
a housing having a front end and a back end, said housing enclosing said motor;
said housing having an intake aperture for reception of dirt, liquid and air drawn into said housing in response to a vacuum produced by the vacuum cleaner;
a rotatable brush disposed within said intake aperture for contacting a surface to be vacuumed;
means interconnecting said brush and said motor for allowing said motor to rotate said brush;
said housing including first means for mounting said accessory brush attachment at a first point to a canister of the vacuum cleaner, said first means comprising a tubular member removably disposed in the end of a nozzle of the canister of the vacuum cleaner; and
said housing including second means for mounted said accessory brush attachment at a second point to a housing of the vacuum cleaner.

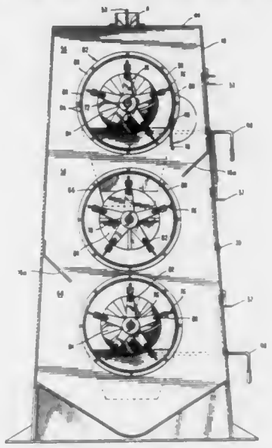
4,942,642
DEBONING SYSTEM AND METHOD OF USING SAME
John H. Funkhouser, II, Del Mar, and Thomas W. Todd, San Diego, both of Calif., assignors to User Friendly Foods, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 264,192, Nov. 28, 1988, which is a continuation-in-part of Ser. No. 111,104, Oct. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 622,995, Jun. 21, 1984, abandoned. This application Dec. 1, 1989, Ser. No. 444,771
Int. Cl.[5] A22C *25/16*
U.S. Cl. 17—46 17 Claims



1. A system for removing proximal bones from fowl wings, comprising:
means defining a small opening, said opening being smaller than the proximal end of the fowl wing;
means for moving the proximal end of the fowl wing through said opening for stripping a portion of the flesh and its covering skin from the proximal bones;
means for gripping said stripped proximal bones;
means for retracting the distal end of the fowl wing away from said opening to extend the fowl wing; and
means for pressing forcibly against the distal end of the extended fowl wing near the proximal bones to disjoint the proximal bones from the fowl wing.

4,942,643
MECHANICAL COTTONSEED DELINTER
Louis T. Kincer; Dale R. Kincer, and Denny L. Kincer, all c/o L. T. Kincer Co., 3509 Globe Ave., Lubbock, Tex. 79404
Filed Jul. 17, 1989, Ser. No. 380,332
Int. Cl.[5] D01R *1/00*
U.S. Cl. 19—44 21 Claims

1. A delinting machine for delinting cottonseed, comprising:
a housing;
an inlet hopper;
a plurality of delinting sections vertically spaced from each other, each of said delinting sections including,
a rotatably driven shaft having a support member fixedly connected thereto;
a brush member connected to said support member and rotated thereby;
a plurality of cone members fixedly connected to said driven shaft;
a screen member fixed to said machine concentric and stationary with respect to said shaft, said support member, said brush member, and said cone member, said rotating brush member brushing said cottonseed against said screen member thereby forcing lint through said screen member and off said cottonseed; and
a variably movable door member for controlling a period of time in which said cottonseed is retained in each of said delinting sections so as to remove lint therefrom;
a drive means for driving each of said driven shafts;



an air inlet control means for controlling air circulation in said machine housing; and,
a discharge duct for discharging delinted cottonseeds from said machine housing.

4,942,644
STRAP HANGER
William W. Bowley, 11624 Wilbert Rd., Chardon, Ohio 44024
Filed Mar. 10, 1986, Ser. No. 713,331
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—16 PB 6 Claims



1. A flexible hanger strap comprising a strip of bendable material having at least one locking hole positioned centrally between the lateral edges of said strap, said hole comprising a longitudinal slot which flares open at each of its ends forming a pair of triangular enlargements the end edges of which are approximately one-half the width of said strap and normal to said longitudinal slot, both ends of said strap having an arrowhead each of which may be respectively inserted and locked into said hole forming double loops with no undue deformation or bending of the edges of said hole or said arrowheads, said arrowheads each having a width approximately equal to the width of the strap and a notched portion being slightly smaller

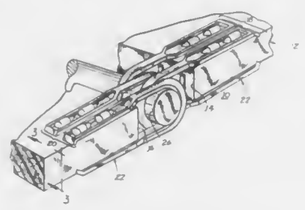
than the width of the triangular enlargements whereby when said loops are formed and said arrowheads are inserted through said bole and said notched portions are aligned respectively within each of said triangular enlargements the shoulder edges of said notched portions engage behind said triangular enlargements with the surface of said strap at said notched portions engaging the ends of said triangular enlargements.

4,942,645

FASTENER WITH INCREASED REACH-BACK

Edward C. Musil, Lyons, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed May 22, 1989, Ser. No. 355,170
Int. Cl.[5] F16G *3/02*
U.S. Cl. 24—33 C **3 Claims**



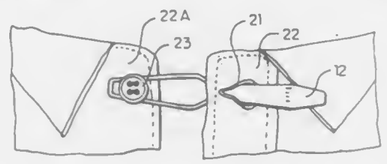
1. A belt and belt fastener assembly comprising:
a belt having a first belt end and a second belt end to be joined together,
a first set of belt fasteners comprising a plurality of belt fasteners each having upper and lower arms fastened to the first belt end at spaced locations along the first belt end, a second set of belt fasteners comprising a plurality of belt fasteners each having upper and lower arms fastened to the second belt end at spacial locations along the second belt end and intermeshed with the first set of belt fasteners,
a first set of hinge loops joining the upper and lower arms on the first set of belt fasteners,
a second set of hinge loops joining the upper and lower arms on the second set of belt fasteners with the second set of hinge loops being intermeshed with the first set of hinge loops and defining an opening,
a hinge pin inserted through said opening defined by the intermeshed loops of the respective intermeshed hinge loops to joint he hinge loops together,
outer extremity surfaces on the first set of hinge loops positioned adjacent the second belt end,
outer extremity surfaces on the second set of hinge loops adjacent the first belt end,
outer free ends on the upper and lower arms of the belt fasteners of the first and second sets of belt fasteners located at a reach back distance from the belt end,
first belt stops on one of the arms of the first set of belt fasteners being offset with respect to the hinge loops of the second belt fasteners and engaging the first belt end,
said first belt stops having belt engaging surfaces being offset with respective to the hinge loops of the second set of belt fasteners and engaging the first belt end so as not to interfere with each other during assembly and to allow the loops to move to the belt end to provide a maximum size of opening when the loops are at the first belt end,
said belt engaging surfaces on said first set being substantially aligned with the exterior hinge loop surfaces of the second set of hinge loops and having a substantial portion of the first belt stops being located inwardly of said exterior hinge loop surfaces and towards the hinge pin to maximize a reach back distance from the free ends of the arms on the first set of belt fasteners,
second belt stops on one of the arms of the second set of belt fasteners being offset with respect to the hinge loops of said first belt fasteners and engaging the second belt end so as not to interfere with each other during assembly and to allow the loops to move to the belt end to provide a maximum size of opening when the loops are at the second belt end,
said belt engaging surfaces on said second set being substantially aligned with the exterior hinge loop surfaces of the first set of hinge loops and having a substantial portion of the second belt stops being located inwardly of said first exterior hinge loop surfaces and towards the hinge pin to maximize a reach back distance from the free ends of the arms on the second set of belt fasteners.

4,942,646

SHIRT COLLAR BUTTONING DEVICE

Gabriel Sebastian, P.O. Box 891 c/o KOA, Indiana Head, Saskatchewan, Canada S0G 2K0

Filed Jul. 31, 1989, Ser. No. 386,776
Claims priority, application Canada, Sep. 29, 1988, 578765
Int. Cl.[5] A44B *1/18*; B25F *1/00*
U.S. Cl. 24—40 **4 Claims**



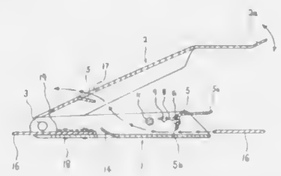
1. A shirt collar buttoning device formed from a one piece length of wire and having a front collar button engaging end and a rear handle end and comprising a planar rear handle portion of spaced apart wires diverging at the forward ends thereof and then inclining downwardly and forwardly from the transverse plane of the handle portion and diverging from one another, then extending forwardly parallel to but spaced forwardly of the handle portion in a transverse plane below the transverse plane of the handle portion and then inclining slightly upwardly and converging to terminate in a rounded closed forward end portion constituting the said front collar button engaging end, the plane of which is lower than the transverse plane of the handle portion.

4,942,647

TENSIONING BUCKLE

Peter H. Wallner, 114 Vasey Cres, Campbell A.C.T 2601, Australia

Filed Sep. 12, 1988, Ser. No. 243,515
Claims priority, application Australia, Sep. 25, 1987, PI4597
Int. Cl.[5] A44B *11/10*
U.S. Cl. 24—170 **4 Claims**



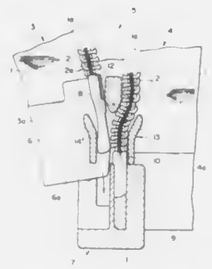
1. A buckle for tensioning belt including the combination of: overlapping U-sectioned upper and lower bodies being pivotably connected and manually leverable about each other; said lower body laterally housing, in proximal order to said pivotably connected end, means to permanently attach a belt end, an upwardly protruding tongue to direct belt, a cylindrical roller, a torsional spring, a manually operated cam contacting said torsional spring; said cam allowing belt to feed between it and said lower body towards said pivotably connected end and preventing belt slipping away from said pivotably connected end, said cam having limited movement by locating in non circular holes in sides of said lower body; said upper body laterally housing; a downwards protruding tongue corresponding to said tongue in said lower body when buckle is in a closed position, a slot adjacent to said tongue, said slot and tongue edges being oriented to allow belt to pass through said slot when buckle is in a closed position and grip belt as said upper body is levered about said lower body.

4,942,648

SEPARABLE TYPE WATER-RESISTANT SLIDE FASTENERS

Hiroshi Yoshida, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 9, 1989, Ser. No. 363,992
Claims priority, application Japan, Jun. 10, 1988, 63-533705
Int. Cl.[5] A41D *13/00*
U.S. Cl. 24—389 **3 Claims**



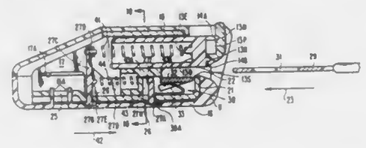
1. A separable type water-resistant slide fastener comprising a pair of fastener stringers including a pair of water-resistant stringer tapes and two pairs of rows of coupling elements each mounted along a respective one of the inner longitudinal marginal portions of and on the opposite or upper and lower surfaces of the stringer tapes; a slider movable reciprocally on and along the coupling element rows to couple and uncouple the same, the slider including an upper and a lower wing joined with each other to define a tape-passing gap therebetween; and a reinforcing strip provided on one fastener stringer to extend from beneath the lower end of the stringer tape to beneath the lowermost element; and a separable bottom-end-stop assembly including an insert pin member formed integrally to the reinforcing strip and extending from beneath the lowermost element down to a predetermined position above the lower end of the stringer tape, a socket member secured to the other fastener stringer in opposite relation to the insert pin member and having a slit in the side facing the one fastener stringer, and a socket pin member secured to the other fastener stringer to project from the socket member; the reinforcing strip having an insert-pin guide extending from the lower end of the insert pin member to the lower end of the one fastener stringer, the insert-pin guide being insertable through the gap into the slit to thereby place the slider and the socket member into coplanar relation to each other before threading the insert pin member through the slider into the socket member; and, when being fully inserted into the socket member, the insert pin member having its upper end lie higher than the upper end of the socket pin member by not less than one inter-element pitch.

4,942,649

SAFETY BELT BUCKLE

James R. Anthony, Carmel; David Merrick, Indianapolis; Ronald F. Homeier, Plainfield, and Allan R. Lortz, Carmel, all of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 160,405, Feb. 25, 1988, Pat. No. 4,876,772. This application May 30, 1989, Ser. No. 357,805
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—637 **19 Claims**



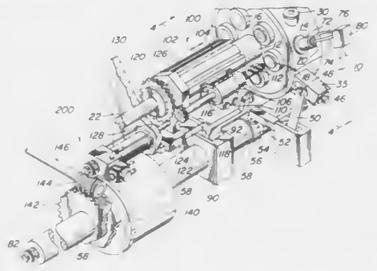
1. A buckle comprising:
a body having an entrance to admit a latchable tongue;
a latch member in said body and having a latching pawl thereon;
said latch member being pivotable in said body to enable said latching pawl to move into a latching position to interfere with movement of a tongue through said entrance;
resilient means urging said pawl to said latching position;
guide means in said body defining a guideway for a release slide; and
a release slide received in said guideway and having a rest position and a release position, and normally biased to said rest position;
said release slide having ribbed surface means guidingly engaged by and slidable on a portion of said guide means for sliding movement from said rest position to said release position; and
said latch member having a portion engageable by a portion of said slide when said slide is moved from said rest position to said release position to move said latching pawl out of said latching position.

4,942,650

FLUID ACTUATED METHOD AND MEANS FOR CONTROLLING A TOOL SLIDE

Richard F. Howarth, 2 Bridle La., Blue Bell, Pa. 19422

Continuation of Ser. No. 883,580, Jul. 9, 1986, abandoned. This application Jun. 2, 1989, Ser. No. 361,731
Int. Cl.[5] B23B *9/04*
U.S. Cl. 29—38 B **6 Claims**



1. In combination with a multiple spindle bar machining apparatus of the type in which an end-tool slide assembly moves along a shaft to bring machining tools into contact with

work pieces, means for controlling the movement of said end tool slide assembly along said shaft, comprising:

(a) a piston rod attached to the end tool slide assembly and parallel to said shaft;

(b) a hydraulic drive for driving said piston rod to move the end tool slide assembly along the shaft, said hydraulic drive having a servo valve controller means to control the movement of the piston rod in response to received servo signals, movement detecting means responsive to linear movement of the piston rod, and converting means for converting said linear movement into proportional rotary movement;

(c) encoder means operatively associated with said hydraulic drive to encode the rotary movement into coded electrical signal information indicating the linear movement of the piston rod; and

(d) programmable controller means for entering and storing control data representing the desired movement of the piston rod, for receiving the coded signal information from the encoder means and comparing the same to the stored control data, and for outputting an appropriate servo signal to the hydraulic controller to position the piston in accordance with the control data.

4,942,651

APPARATUS FOR ASSEMBLING A SEAT FOR USE IN AN AUTOMOBILE

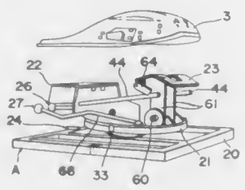
Masanori Miyamoto, Hiroshima, Japan, assignor to Delta Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 20, 1989, Ser. No. 340,671

Claims priority, application Japan, Apr. 20, 1988, 63-54090[U]

Int. Cl.[5] B68G *7/00*

U.S. Cl. 29—91.5 8 Claims



1. A seat cushion assembling apparatus comprising:

a rotary table which is horizontally rotatable;

first and second setting tables mounted on said rotary table and adapted to have a seat slider or a seat placed thereon, said first setting table comprising first and second plates and said second setting table having an upper surface;

a rotation locking means for locking said rotary table at a predetermined rotational position thereof;

a locking means for locking a seat cushion frame on said first setting table;

a widening/narrowing means for varying the distance between said plates of said first setting table; and

an upward/downward pivoting means for pivoting said second setting table between upper and lower set positions.

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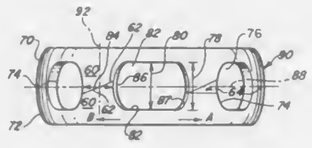
METHOD OF MAKING A CONSTANT VELOCITY JOINT CAGE

Daniel W. Hazebrook, Detroit, Mich., and Jurgen Wagner, Greensboro, N.C., assignors to GKN Automotive, Inc., Auburn Hills, Mich.

Division of Ser. No. 95,840, Sep. 14, 1987, Pat. No. 4,846,764. This application Mar. 13, 1989, Ser. No. 322,667

Int. Cl.[5] B21D *53/12*

U.S. Cl. 29—898.067 12 Claims



1. A method for making a constant velocity joint cage having a plurality of spaced apart windows for guiding balls in a constant velocity joint, comprising the steps of:

cutting a first flat sheet metal stock into a circularly shaped multi-limbed member having a central circular aperture therein, said circularly shaped multi-limbed member further having a plurality of truncated limb radials extending radially outward therefrom, said plurality of truncated limb radials each having a distal edge which forms a predetermined angle with respect to a perpendicular of a radial through each of said plurality of truncated limb radials, said predetermined angle having a value greater than zero degrees;

pressing said multi-limbed member into an annular spherical shape to make a first half-cage member;

repeating said steps of cutting and pressing with a second flat sheet metal stock to make a second half-cage member;

positioning said first and second half-cage members in contact with each other with said truncated limb radials of said first and second half-cage members substantially aligned relative to each other;

rotating said first and second half-cage members relative to each other causing said truncated limb radials to slide relative to each other along said predetermined angle to achieve a predetermined width of said windows; and

welding said first and second half-cage members together to form a constant velocity joint cage.

4,942,653

PRODUCTION METHOD FOR A CHANNELED WALL THRUST NOZZLE

Elden L. Hawkinson, West Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 25, 1989, Ser. No. 398,552

Int. Cl.[5] B21D *53/00*; B22D *19/14*; B28B *21/42*

U.S. Cl. 29—890.01 18 Claims

1. A method of forming a channeled wall thrust nozzle defining a converging-diverging thrust chamber, said method comprising the steps of:

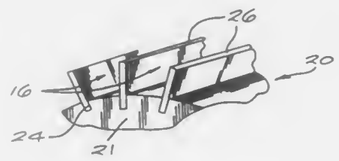
forming a mandrel having a longitudinal converging-diverging cross-section and a transverse cross-section generally conforming respectively with the geometry of the thrust chamber to be formed, the mandrel being transversely split at a narrow diameter throat of the converging-diverging cross-section, thereby defining longitudinally separable mandrel components, said mandrel forming step further including forming an array of longitudinally extending slots in an exterior surface of the mandrel;

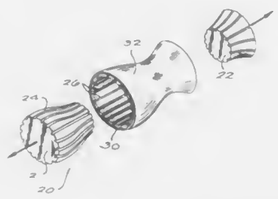
seating a plurality of channel separator ribs individually within the mandrel slots which project outwardly therefrom, thereby defining a plurality of longitudinally extending channels between the ribs;

filling the channels with a removable casting material;

mounting an outer housing shell to outboard edge margins of the channel separator ribs, thereby enclosing outboard sides of the channels;

removing the mandrel from the channel separator ribs by longitudinally separating the mandrel components;





tailoring inboard edge margins of the channel separator ribs to a selected geometry;

mounting an inner housing shell to the inboard edge margins of the channel separator ribs, thereby enclosing inboard sides of the channels; and

removing the casting material from the channels.

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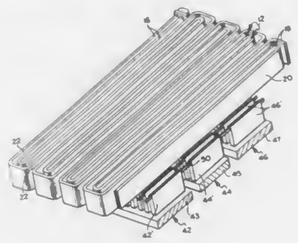
METHOD FOR ASSEMBLY OF SERPENTINE HEAT EXCHANGER

William D. Wright, Lyndonville, and George K. Snyder, Lockport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1989, Ser. No. 356,104

Int. Cl.[5] B21D *53/02*

U.S. Cl. 29—890.035 5 Claims



1. The method of assembling a serpentine style heat exchanger comprising the steps of:

forming fins having a desired thickness,

forming a serpentine tube structure with inter-tube spacing slightly less than the fin thickness thereby impeding insertion of the fins into the inter-tube spaces,

elastically expanding the serpentine structure to enlarge the inter-tube spaces sufficiently to admit the fins,

inserting the fins into the enlarged inter-tube spaces, and

allowing the tube structure to elastically contract and grip the fins so that the fins are held under pressure of the serpentine tube.

4,942,655

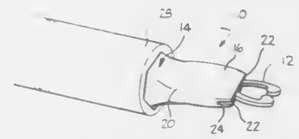
E CLIP FASTENER INSTALLING TOOL

Robert Buzzelli, 29184 Martindale, New Hudson, Mich. 48165

Filed Aug. 8, 1989, Ser. No. 391,191

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—229 6 Claims



1. A fastener installing tool for holding and retaining a fastener in a predetermined position prior to installing the fastener, said tool comprising; a body having first and second end portions and a shank portion extending between said first and second end portions, said first end portion terminating in a pair of blades disposed parallel and in spaced relationship with respect to each other to define a slot therebetween for holding and retaining the fastener therein, said second end portion including a polygonal shape presenting a plurality of surfaces adapted to be supported in a tool bit holder, said assembly characterized by said shank portion presenting a pair of sloping surfaces extending between said first and second end portions and converging toward one another in the direction of said pair of blades to present a low profile at said pair of blades of said first end portion.

4,942,656

PLANT AND METHOD FOR THE TEMPERATURE-EQUALIZATION OF SLABS DOWNSTREAM OF A CONTINUOUS CASTING PLANT

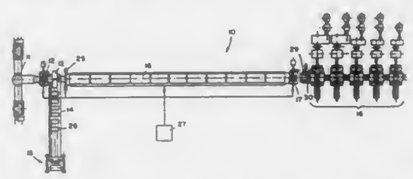
Giampietro Benedetti, Campoformido, and Bruno Di Giusto, Udine, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jul. 12, 1988, Ser. No. 217,894

Claims priority, application Italy, Aug. 5, 1987, 83427 A/87

Int. Cl.[5] B21B *1/46*

U.S. Cl. 29—527.6 11 Claims



1. In a plant for continuously producing strip from a continuous casting machine, the improvement comprising a temperature-equalization plant comprising:

a temperature-equalization furnace having an inlet door and an outlet door;

rollers rotatably mounted for oscillatory movement in said temperature-equalization furnace, means for cooling said rollers, and drive means for driving said rollers to move slab material forward in the temperature-equalization furnace, said drive means including means for driving the rollers in an oscillatory movement in one angular direc-

tion and then an opposite angular direction whereby slab material is oscillated to-and-fro while being retained within the temperature-equalization furnace;

an inlet shears upstream of said inlet door of the temperature-equalization furnace; and

an outlet shears downstream of said outlet door of the temperature-equalization furnace.

9. A method for continuously producing rolled strip from slab received from a continuous casting machine, comprising shearing slab from a continuous casting plant with an inlet shears into slab segments, heating to equalize the temperature of the slab segments in a temperature-equalization furnace having an inlet door, an outlet door, and cooled drive rollers supporting the slab segments, and rolling the heated slab segments in a rolling train, the improvement wherein in the event of an obstacle in the rolling train, the slab segments from the temperature-equalization furnace not yet rolled are sheared from the rolled slab segments by outlet shears, returned to the temperature-equalization furnace and retained in the temperature-equalization furnace in to-and-fro oscillatory movement upon the cooled drive rollers until the obstacle has been removed.

4,942,657

AUTOMATIC CUTTER CHANGE TYPE SHAVING MACHINE

Toshihide Mihara, Amagasaki, and Yuji Odaa, Suita, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Amagasaki, Japan

PCT No. PCT/JP87/00145, § 371 Date Nov. 9, 1988, § 102(e) Date Nov. 9, 1988, PCT Pub. No. WO88/06944, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 10, 1987, Ser. No. 295,726

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **8 Claims**



1. An automatic cutter changing shaving machine comprising:

a support bed, a table and vertical column supported by said support bed, a pair of head stocks on said table, a cutter head mounted for vertical movement on said column by a driving motor, a plurality of rotary cutters which can be loaded to said cutter head for finishing gears, and a carriage movable toward and away from said rotary cutter head along an axis of rotation of one of said cutters by travel driving means for positioning said carriage for attachment and detachment of one of said rotary cutters relative to said cutter head,

said cutter head including a spindle having a through hole extending along the spindle axis, said spindle having a cutter abutting step spaced from an end surface at one end of said spindle and a peripheral surface defining a cutter loading portion between said cutter abutting step and said end surface, a key projecting radially from said peripheral surface, a clamp bar slidably mounted in said through hole and having an end surface near said cutter loading portion of said spindle, said clamp bar having a pin supporting hole coaxial with the spindle axis and extending internally from said end surface of said clamp bar and a clamp member carried by said clamp bar and operable to move radially outward and inward relative to said pin supporting hole in response to advance and retracting movement of said clamp bar in said through hole, means for rotating said spindle and driving means for slidably moving said clamp bar in said through hole to selectively advance and retract said clamp bar relative to said one end of said spindle, said driving means for slidably moving said clamp bar being mounted to an end of said spindle opposite to said one end of said spindle,

each of said rotary cutters having a fitting hole formed concentric with said cutter, each fitting hole including a keyway and being open at one end surface of said cutter and closed at the other end by a sealing wall of said cutter, a cutter locating end surface at said open end surface of said cutter, a pin having an axis aligned with the axis of said rotary cutter and projecting from said sealing wall of said cutter beyond said cutter locating end surface, said pin having a diameter to be slidably received in said pin supporting hole and a clamping portion adapted for engagement with said clamp member when said driving means retracts said clamp bar, and a gripping portion provided externally of said other end of said rotary cutter, said fitting hole and keyway being adapted to slidably receive said cutter loading portion and said key of said spindle with said pin slidably received in said pin supporting hole and said clamping portion in position for selective engagement and disengagement with said clamp member,

said carriage including a cutter change arm rotatably mounted to said carriage for rotation about an axis extending at a right angle relative to the direction of movement of said carriage and having first and second end surfaces which can be selectively moved to a position facing said cutter loading portion of said spindle by rotation of said cutter change arm, and chuck driving means, each of said end surfaces of said cutter change arm having a cutter phase setting instrument to maintain a constant rotational position of each cutter in a circumferential direction relative to said cutter loading portion of said spindle, a patch aligned with the spindle axis when each of said first and second surfaces is moved to said position facing said cutter loading portion, and movable chucking means selectively operable by said chuck driving means to grip and release said gripping portion of one of said rotary cutters when the rotary cutter is abutted by said patch and the constant rotational position of said rotary cutter has been determined by said phase setting instrument.

4,942,658

METHOD FOR MANUFACTURING A MAGNETIC HEAD CORE WITH A FLUX GAP HAVING A PRECISELY CONTROLLED LENGTH

Timothy W. Vandnais, Victoria; Judy M. Ekern, Edina, and Douglas J. Heanenfeat, Minneapolis, all of Minn., assignors to Magnetic Peripherals Inc., Minnetonka, Minn.

Filed Nov. 30, 1988, Ser. No. 277,737

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **7 Claims**

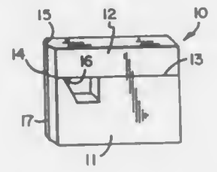
1. A method for construction of a ferrite magnetic head core having a flux gap in the magnetic flux path thereof, said head core to be cut from an O bar comprising a first ferrite piece having a bonding interface area and a second ferrite piece having a flux gap face thereon which can be aligned with the bonding interface area of the first ferrite piece to form the O bar, comprising the steps of:

(a) depositing a hard non-magnetic layer on the second ferrite piece's flux gap face; then

(b) depositing on the hard non-magnetic material a magnetic material bondable to ferrite through the application of heat and pressure above predetermined levels; then

(c) mating the two ferrite pieces with the magnetic material and the first ferrite piece's bonding interface area in facing and juxtaposed position;

(d) applying clamping pressure of at least the predetermined level to the ferrite pieces so as to clamp the two ferrite pieces with the bonding interface area and the deposited magnetic material face against each other; and



(e) while so clamping the ferrite pieces, heating the bonding interface area and the layer of deposited magnetic material adjacent to the bonding interface area to at least the predetermined bonding temperature to thereby bond the deposited magnetic material and the bonding interface area to each other.

4,942,659

WHEEL MOUNTING APPARATUS FOR AUTOMOBILES

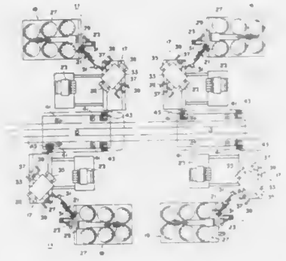
Hiromi Sakurai, Nagoya, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1989, Ser. No. 389,310

Claims priority, application Japan, Aug. 19, 1988, 63-204790; Aug. 19, 1988, 63-204791

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—705 **20 Claims**



1. An automatic wheel mounting apparatus for an automobile, and which includes a robot for positioning a wheel on a hub of the automobile and for tightening nuts onto hub studs, each hub having a separate camber angle associated therewith, said apparatus comprising:

a lifting device for lifting said hub in a direction to cancel its camber angle, a head positioned by said robot, and a measurement and positioning unit disposed on said head and having a hub center measuring device, a hub stud positioning device, and a hub inclination measuring device;

said hub center measuring device comprising vertically movable first and second measurement pieces for contact with the upper and lower parts of a circular outer peripheral surface of said hub, a laterally movable third measurement piece for contact with a side of said outer peripheral surface of said hub, and length measuring devices for measuring the amount of dislocation of said individual measurement pieces;

said hub stud positioning device comprising a hub stud positioning plate having a positioning projection for contact against an outer peripheral surface of said hub studs fixed to said hub, and an actuator for rotating said hub stud positioning plate to a predetermined angular position over an angular range greater than the pitch interval between said hub studs; and

said hub inclination measuring device having a pair of linear length measuring devices disposed laterally for measuring distance to the surface of said hub.

4,942,660

DEVICE FOR LOCATING THE IDEAL SCREWING POSITION OF BOLTS OF LARGE DIMENSIONS

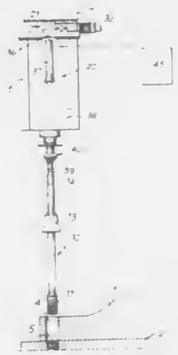
Jean-Claude Bourdonne, Le Breuil, and Alain Briand, Le Creusot, both of France, assignors to Framatome, Courbevoie, France

Division of Ser. No. 924,530, Oct. 29, 1986, Pat. No. 4,785,520. This application May 26, 1988, Ser. No. 199,076

Claims priority, application France, Oct. 29, 1985, 85 16061

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—701 **3 Claims**



1. Device for locating the ideal screwing position of a bolt (10) of large dimensions, especially for fastening a cover (1) to a vessel (2) having tapped orifices (5), said device comprising

(a) means (21) for orienting the bolt (10) in a suitable path, said means comprising a table executing intersecting orthogonal movements, said table (21) comprising a fixed bench (22) supporting a first carriage (25), said first carriage being driven in translation along an axis Y by means of a first screw (23) and a first driving nut (26), said first carriage supporting a second carriage (28), said second carriage being driven in translation on an axis X orthogonal relative to the axis Y by means of second a screw (27) and a second driving nut (30);

(b) a servo-controlled weight-compensating system (37) connected to said bolt-orienting means by an articulated connection (36);

(c) a reversible and variable-speed screwing system (38);

(d) a torque limiter (40) set at a disengaging torque corresponding to a maximum screwing torque;

(e) a member (39) gripping the bolt (10), making it possible to exert a driving torque in either direction and an axial force on said bolt; and

(f) a programmable auto-control unit (45) for controlling the device as a whole.

4,942,661

APPARATUS FOR PERFORMING THE REMOTELY-MANIPULATED INSTALLATION AND REMOVAL OF DETACHABLE CONDUIT UNITS

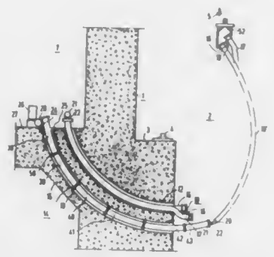
Ernst Höger, Karlstein, and Eberhard Obenauf, Offenbach, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed May 2, 1989, Ser. No. 346,471

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815357

Int. Cl.[5] **B23P** *19/04;* **G21C** *19/16*

U.S. Cl. 29—723 **11 Claims**



1. In a facility having a partition wall separating a first space from a second space, said partition wall defining a through channel between said spaces for accommodating a pass-through conduit unit of a predetermined length therein, and an apparatus for performing a remotely-manipulated installation and removal of the pass-through conduit unit into and out of said channel from one of said spaces, the apparatus comprising:

a feed assembly including a plurality of segments rigidly attachable one to another to form an elongated body in the channel, with each of said segments having a predetermined length;

each two mutually adjacent ones of said segments defining an attachment interface;

releasable attachment means at each of the interfaces and on each of the segment for releasably attaching each two mutually adjacent ones of said segments to each other to hold said segments together as said elongated body;

coupling means for releasably coupling the conduit unit to said feed assembly;

drive means arranged on each one of said segments; a drive unit engaging said drive means for moving said feed assembly in said channel so as to displace and guide said conduit unit along said channel; and,

transport means arranged at a location in said one space and facing toward an end of said conduit unit for holding and remotely manipulating said conduit unit as the conduit unit is installed and removed from said channel.

4,942,662

ADJUSTABLE ARCUATE RAZOR HEAD

Allan F. Radcliffe, 12459 Floresta Ct., San Diego, Calif. 92128

Filed Jan. 17, 1989, Ser. No. 298,033

Int. Cl.[5] **B26B** *21/18, 21/56*

U.S. Cl. 30—49 **8 Claims**

1. A safety razor with means for receiving and bending at least one razor blade arcuately longitudinally wherein the means for receiving and bending comprises:

a. a handle having a longitudinal axial circular bore;

b. a bottom section of the bore having a portion of enlarged diameter;

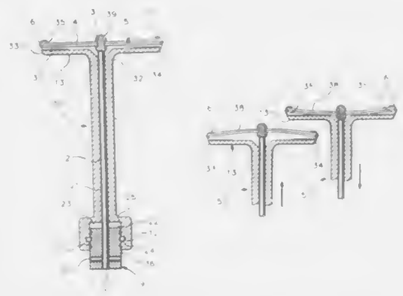
c. the enlarged diameter bore having a circumferential groove on an inside circumference;

d. a razor blade support plate to hold at least one razor blade and with a port in a body of the plate to receive a blade holding fixture;

e. a circular rod extending through the axial bore of the handle having the blade holding fixture on a first end of the circular rod to engage and hold the razor blade support plate and at least one blade and having a cylindrical finger grip fixture attached to a second end of the circular rod;

f. a razor head on a first end of the handle with a spring-loaded clip on a first end and on a second end of the razor head to hold at least one razor blade and the razor blade support plate;

g. a slot in the spring-loaded clip with a width of the slot sufficient to receive the razor blade support plate and at least one razor blade;



h. a portion of the cylindrical finger grip fixture slidably disposed within the enlarged bore of the handle;

i. the finger grip fixture having three axially spaced circumferential grooves on the outside circumferential surface; and

j. a compressive ring seating in the circumferential groove on the inside circumference of the enlarged diameter bore of the handle to provide a detenting action as the movement of the circular rod in the bore of the handle allows the ring to engage one of the three circumferential grooves on the outside circumference of the finger grip fixture providing three axial stops which causes the longitudinal edge of the razor blade support plate and at least one razor blade placed thereon to assume a concave, convex and straight configuration according to the groove in the finger grip fixture selected.

4,942,663

SHEATH

Edward D. Ray, Sr., 1428 N. Bellview, Mesa, Ariz. 85203

Filed Apr. 21, 1989, Ser. No. 341,768

Int. Cl.[5] **B26B** *3/06, 3/00, 29/02;* **A45F** *5/00*

U.S. Cl. 30—151 **8 Claims**

1. A knife sheath comprising elongated front and back panels made of flexible material, said panels being joined along their longitudinal edges and providing an opening at one end for insertion of a knife blade between the panels, and an elongated, flexible magnetic strip carried at the inner face of one of said panels for engagement with a knife blade inserted into the



sheath, said magnetic strip being nearly coextensive in length with said panel.

4,942,664

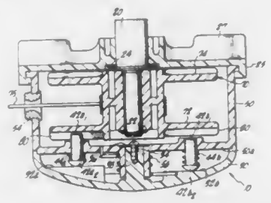
STRING TRIMMER WITH AUTOMATIC FEED

Leonid Zatulovsky, Arleta, Calif., assignor to Allegretti & Company, Chatsworth, Calif.

Filed May 26, 1988, Ser. No. 198,992

Int. Cl.[5] **B26B** *7/00;* **A01G** *3/06*

U.S. Cl. 30—276 **10 Claims**



1. A string trimmer comprising:

a body member rotatably positionable about a main shaft, said body member generally having a cylindrical shape with a first closed end, a second open end, and a side wall having an aperture therein;

a spool for holding line, said spool connectable to a main shaft and generally coaxially positioned within said body member inwardly of said closed end such that the line may be threaded through the aperture in said side wall;

a cap member rotatably connected to and positioned outward of said closed end of said body member; and

means for releasing a length of line through rotation of said body member relative to said spool in response to temporarily restrained rotation of said cap member relative to said body member,

wherein said cap member has an inward face adjacent said closed end of said body member and an outward face, said inward face having a series of ramps, wherein said means for releasing a length of line comprises

rotational biasing means between said body member and said cap member for rotationally biasing said cap member to a first position relative to said body member,

a plurality of stops radially spaced about an outward face of said spool,

a first pin and a second pin extending through apertures in the closed end of said body member, each of said pins having a first end for contacting the stops on said spool and a second end for contacting the ramps on said cap, and

means for biasing each of said pins against the ramps of said cap.

4,942,665

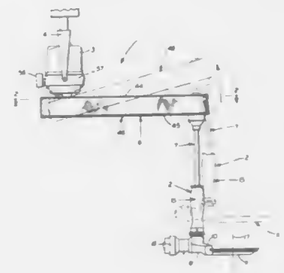
MEAT TRIMMING KNIFE AND DRIVE SYSTEM THEREFORE

Timothy J. McCullough, 833 Aurora Rd., Vermillon, Ohio 44089

Filed Sep. 19, 1989, Ser. No. 409,571

Int. Cl.[5] **A22C** *17/04*

U.S. Cl. 30—276 **22 Claims**



1. A hand manipulated meat trimming knife for removal of meat from bones including:

(a) a blade bolder attachment member;

(b) a blade bolder mounted on the attachment member;

(c) a ring-shaped cutting blade rotatably mounted on the blade holder and having a circumferential cutting edge rotatable about a central rotational axis of the blade;

(d) an elongated handle mounted on the attachment member having a longitudinal axis extending generally parallel to and spaced from the rotational axis of the blade; and

(e) driving means in the handle drivingly connected to the cutting blade for rotatably driving said blade.

4,942,666

APPARATUS FOR MEASURING CAMBER, CASTER AND STEERING AXIS INCLINATION OF A VEHICLE

John T. Wickmann, Omemee, and Phillip Carlton, Bowmanville, both of Canada, assignors to Chart Industries Ltd., Pickering, Canada

Filed Nov. 28, 1989, Ser. No. 442,150

Int. Cl.[5] **G01B** *5/25, 5/255*

U.S. Cl. 33—203.18 **10 Claims**

1. An apparatus for enabling simultaneous readings of the camber, caster and steering axis inclination of steering components that form part of a front wheel suspension of a vehicle equipped with a hub assembly, the steering components including upper and lower steering pivots defined along a steering axis; said apparatus comprising:

an upright having an upper part and a lower part;

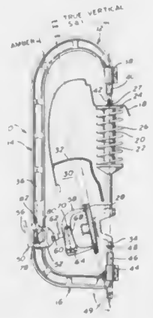
first engaging means at said upper part adapted to engage said upper steering pivot;

second engaging means at said lower part adapted to engage said lower steering pivot;

third engaging means having a first part adjustably mounted on said upright and a second part adapted to bear against said hub assembly;

first gauge means mounted on said second part for giving a camber reading of the hub assembly;

second gauge means mounted on said upright for giving a caster reading of the steering axis; and



third gauge means mounted on said upright for giving a steering axis inclination reading.

4,942,667

PORTABLE AXLE AND FRAME ALIGNMENT TOOL

Jerald C. Fournier, Columbia City, Ind., assignor to Axle-Tru, Inc., Columbia City, Ind.

Continuation of Ser. No. 121,853, Nov. 17, 1987, abandoned. This application Jun. 12, 1989, Ser. No. 370,054

Int. Cl.[5] G01B *11/27*

U.S. Cl. 33—288 17 Claims



1. An apparatus for detecting defects in the alignment of an axle with a frame of a vehicle, and for detecting deformities in said frame, said apparatus comprising:

a first target assembly attachable to an underside of said vehicle, said first target assembly comprising a first generally vertical member having first and second ends, means for attaching the first end of the vertical member to the underside of the vehicle, a first generally horizontal member attached to the second end of the first vertical member, and at least two targets mounted on said first horizontal member and spaced apart on a first line substantially transverse to a longitudinal axis of the vehicle, and spaced an equal vertical distance from said underside;

a second target assembly attached to said underside, said second target comprising a second generally vertical member having first and second ends, means for attaching the first end of the vertical member to the underside of the vehicle, a second generally horizontal member attached to the second end of the second vertical member, and at least two targets spaced apart on a second line substantially transverse to said longitudinal axis of the vehicle, and each spaced said vertical distance from said underside, said second target assembly targets each having an opening;

a light source means for generating a beam of light and for projecting said beam through the opening in one of the second target assembly targets when the light source means is in a first position, and wherein said light source means is movably positionable along a third line substantially transverse to said longitudinal axis of the vehicle to a second position such that said generated beam of light in its two positions defines a reference plane as said light source means is moved from said first to said second position to project the light beam through the openings in the second target assembly targets; and

gauge means, positionable between the underside of the vehicle and the reference plane, for indicating the existence of and degree of vertical deformation of the underside of the vehicle.

4,942,668

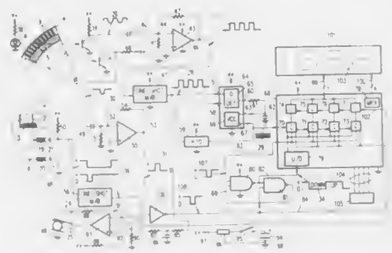
DIGITAL INCLINOMETER

Robert C. Franklin, Los Gatos, Calif., assignor to Zircon International, Inc., Campbell, Calif.

Filed May 11, 1988, Ser. No. 192,809

Int. Cl.[5] G01C *9/06*

U.S. Cl. 33—366 4 Claims



1. A digital inclinometer comprising:

encoding means for indicating rotation rotated by a direct current motor;

means for sensing a certain orientation fixed to the encoding means; and

means for counting the rotation of the encoding means between a particular position of the orientation sensing means and the certain orientation of the orientation sensing means;

wherein the counting means includes;

an index on the encoding means;

means for sensing the index; and

means for measuring digitally the angular distance that the encoding means rotates between the detection of the index by the index sensing means and the certain orientation of the orientation sensing means;

wherein the measuring means includes;

transparent angular index marks forming a part of the encoding means, light-generating means, and light-responsive means for generating an electronic signal in response to light transmitted by the light-generating means through the portion of said encoding means having the angular index marks;

a first comparator having two input terminals with the first terminal electrically connected to ground and the second terminal electrically connected to receive the signal generated by the light-responsive means, to produce a first comparator output signal on an output lead;

a first multivibrator having an input terminal electrically connected to the first comparator output lead to produce a first multivibrator output signal on an output lead;

a second comparator having two input terminals with the first terminal electrically connected to ground and the second terminal electrically connected to an output lead of the index sensing means, so as to produce a second comparator output signal on an output lead;

a second multivibrator having an input terminal electrically connected to an output lead of the orientation sensing means, so as to produce a second multivibrator output signal on an output lead;

motor control means electrically connected to the output lead of the first multivibrator, to control the motor speed;

phase-locked loop means electrically connected to the output lead of the first multivibrator to increase angular resolution and having an output lead;

an up/down counter having three input terminals electrically connected respectively to the output lead of the phase-locked loop means, to the second multivibrator output lead, and to the second comparator output lead, to produce an output signal on an output lead; and

a digital display electrically connected to the counter output lead to visually display the measured angular distance.

4,942,669

DIPSTICK LOCATOR AND WIPER CONSTRUCTION FOR AUTOMOBILES

Edwin F. Schnedl, 614 South View Ter., Alexandria, Va. 22314

Filed Oct. 3, 1989, Ser. No. 416,583

Int. Cl.[5] G01F *23/04*

U.S. Cl. 33—725 6 Claims



1. In a dipstick locator and wiper construction for automobiles, the combination comprising:

a. an adaptor to be attached externally of a dipstick tube into which said dipstick is inserted, said adaptor having

i. a lower section for frictional engagement with the exterior of said dipstick tube,

ii. an intermediate section to accommodate a cap member positioned at the upper end of said dipstick,

iii. and an upwardly extending funnel-shaped top section serving as an easy locator for the lower end of said dipstick,

(a) said funnel-shaped top section terminating in an upper surface from which at least one wiper slot extends downwardly therefrom providing means to wipe residual oil from said dipstick.

4,942,670

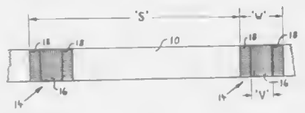
ADHESIVE TEMPLATE TAPE

Harold Brandt, 925 Dogwood Clr., Waynesboro, Va. 22980

Filed Jul. 20, 1989, Ser. No. 382,266

Int. Cl.[5] G01B *3/10*

U.S. Cl. 33—494 27 Claims



1. An adhesive template tape comprising:

an obverse surface;

a reverse surface provided with a self-adhesive layer disposed thereupon;

a plurality of marked fields upon and in said obverse surface, said marked fields being equidistantly spaced longitudinally along said obverse surface, said marked fields having substantially identical longitudinal extents; and

spaces separating said marked fields longitudinally;

said marked fields being provided with highcontrast marking to effect distinct visual contrast relative to said spaces, wherein said self-adhesive layer provides for adhesion of the adhesive template tape to ordinary building construction materials, wherein said marked fields in combination with said spaces serve as visual templates for establishing proper locations and spacing of construction members during erection thereof along and on other construction members when the adhesive template tape is adhesively affixed thereto, so that superpositioning and substantially aligning said construction members upon the adhesive template tape in substantial visual registration correspondence with the markings in said marked fields established proper locations for attachment of said construction member to said other construction members;

wherein said marked fields are compound fields, each said compound field comprising a center field and two substantially identical side fields, each of said substantially identical side fields being disposed along and adjoining a transverse boundary of said center field, said center field being provided with visually constrasting markings relative to said side fields, said center fields extending longitudinally by substantially identical lengths, said compound fields providing a dual purpose utility for aligning of said construction members having a thickness size corresponding to the longitudinal extent of said compound field or, alternately, a thickness size corresponding to the longitudinal extent of said center field.

4,942,671

PROBE HEAD MOUNT FOR A DEFLECTABLE PROBE OR THE LIKE

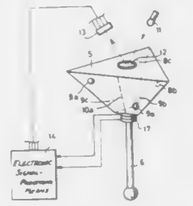
Eckhard Enderle, Aalen-Dewangen; Hans-Peter Aehnelt, Oberkochen, and Dieter Kaufmann, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 30, 1988, Ser. No. 277,710

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824549

Int. Cl.[5] G01B *11/24*

U.S. Cl. 33—559 23 Claims



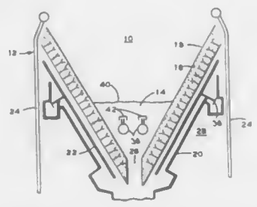
1. A mount for a displaceable probe part in a coordinate-measuring instrument, and wherein the mount comprises a fixed component and movably mounted component, one of which components having substantially the shape of a truncated pyramid having a central longitudinal axis, the movably mounted component being force-displaceable into a seated zero position with respect to the fixed component; and said seated position being determined by at least six locations which are spaced axially and radially from each other with respect to the longitudinal axis of the truncated pyramid (5,7;55,57;65,67).

4,942,672
METHOD OF MEASURING THE HEIGHT OF BURRS AND A BURR MEASURING HEAD
Kunio Yoshida, Gotenba, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Aug. 1, 1989, Ser. No. 387,747
Claims priority, application Japan, Aug. 12, 1988, 63-200834
Int. Cl.[5] G01B 5/18
U.S. Cl. 33—832 7 Claims



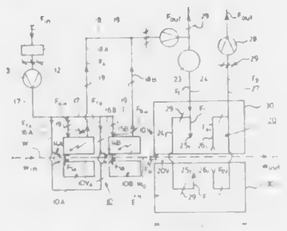
1. A method of measuring the height of burr by a measuring head provided with a measuring bit having a knife-edged tip, and attached to the movable measuring member of a displacement measuring device, comprising the steps of;
placing said measuring head in such a manner that said knife-edged tip is in parallel contact with the bottom sade of said burr;
reading a scale marked by a pointer of said displacement measuring device;
lifting up said measuring head;
turning said measuring head so that said knife-edged tip extend substantially perpendicularly to the edge of said burr;
placing said measuring head so that said knife-edged tip is in contact with said edge of said burr; and
reading again scale marked by said pointer of said displacement measuring device.

4,942,673
SINTERING PREVENTION IN STAGNANT ZONES OF FLUID BED BOILERS
Rick L. Dellinger, Canal Fulton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Aug. 18, 1988, Ser. No. 233,391
Int. Cl.[5] F26B 3/08
U.S. Cl. 34—10 16 Claims



8. An anti-agglomeration method for preventing the sintering of ash-coated particles comprising the steps of:
(a) collecting ash and ash-coated particles in a storage chamber having at least one lower discharge opening therein, some of said particles containing potassium and/or sodium compounds;
(b) venting a heated fluidizing medium into said storage chamber adjacent to but not directly above said discharge opening;
(c) fluidizing said ash and ash-coated particles collected within said storage chamber by means of said fluidizing medium; and
(d) maintaining the separation of said particles containing potassium and/or sodium compounds, which lower the surface eutectic point of said particles, to prevent particle-to-particle interaction and thereby preventing their agglomeration.

4,942,674
METHOD IN THE DRYING OF A PAPER WEB OR EQUIVALENT
Markku Karlsson, Turku, Finland, assignor to Valmet Paper Machinery Inc., Finland
PCT No. PCT/FI88/00078, § 371 Date Jan. 24, 1989, § 102(e) Date Jan. 24, 1989, PCT Pub. No. WO88/09845, PCT Pub. Date Dec. 15, 1988
PCT Filed May 24, 1988, Ser. No. 313,133
Claims priority, application Finland, Jun. 4, 1987, 872504
Int. Cl.[5] F26B 7/00
U.S. Cl. 34—18 8 Claims

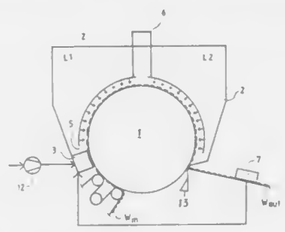


1. A method for contact-free drying of a paper or board web, said method comprising the steps of:
passing said web first through an infrared drying gap bound by two infrared drying units wherein at least one of said infrared drying units contains means for circulating cooling air such that substantially none of said cooling air passes into said infrared drying gap;
then passing said web through a flotation web drying gap bound by two flotation web drying units while simultaneously passing said cooling air from said at least one of said infrared drying units into at least one of said flotation web drying units and then into said flotation web drying gap.

4,942,675
APPARATUS AND METHOD FOR REGULATING THE PROFILE OF A PAPER WEB PASSING OVER A YANKEE CYLINDER IN AN INTEGRATED IR-DRYER/YANKEE HOOD
Hans Sundqvist, Turku, Finland, assignor to Valmet Paper Machinery, Inc., Helsinki, Finland
Filed Mar. 7, 1989, Ser. No. 319,679
Claims priority, application Finland, Mar. 8, 1988, 881070
Int. Cl.[5] F26B 3/00
U.S. Cl. 34—23 22 Claims

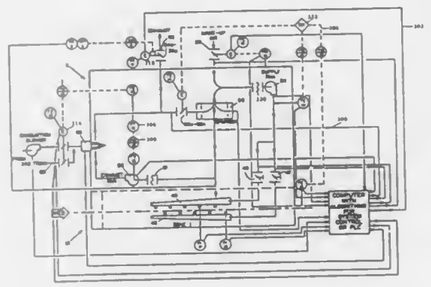
1. A method of regulating the profile of a paper web passing over a Yankee cylinder in an integrated IR-dryer Yankee hood having lateral end portions and a gap between the hood and the cylinder and through which an amount of outside air is leaking into said hood, said method comprising:
introducing cooling air into said IR-dryer;
heating said air in said dryer;
removing heated air from said dryer and passing said air to said end portions of said Yankee hood; and

directing said heated air at said end portions into the gap formed between said hood and said Yankee cylinder for



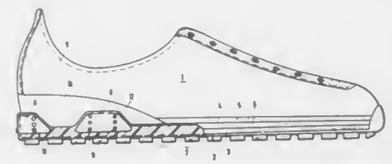
reducing the amount of outside air leaking into said hood through said gap.

4,942,676
CONTROL SYSTEM FOR AIR FLOTATION DRYER WITH A BUILT-IN AFTERBURNER
Richard J. Wimberger, DePere; Donald L. Wickesberg, Neenah, and Richard A. Carman, Green Bay, all of Wis., assignors to W. R. Grace & Co.-Conn., Lexington, Mass.
Filed Jun. 7, 1988, Ser. No. 203,129
Int. Cl.[5] F26B 21/06
U.S. Cl. 34—51 23 Claims



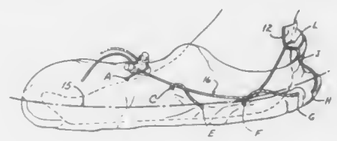
1. Control system for an air flotation dryer for vaporizing hydrocarbons from a web of material having an afterburner including an enclosure containing internally supported opposing air bars supplied by a plenum, said control system comprising:
a. means about air bars for monitoring pressure in said plenum and a hot air return damper connected to said plenum;
b. means in said afterburner for monitoring temperature in a combustion chamber, and a variable speed exhaust fan connected to supply air to said combustion chamber;
c. computer means connected to said combustion chamber temperature monitoring means and said plenum pressure monitoring means; and
d. algorithm in said computer means for controlling exhaust fan speed for said enclosure, for controlling position of an exhaust damper on said enclosure, for controlling plenum pressure, controlling burner firing rate of said afterburner, and for controlling position of said hot air return damper.

4,942,677
SHOE, ESPECIALLY SPORT SHOE OR SHOE FOR MEDICAL PURPOSES
Udo Flemming, Erlangen, and Willi Baner, Herzogenaurach, both of Fed. Rep. of Germany, assignors to PUMA Aktiengesellschaft Rudolf Dassler Sport, Fed. Rep. of Germany
Filed Oct. 11, 1988, Ser. No. 255,484
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1987, 3734205
Int. Cl.[5] A43B 13/28, 21/26
U.S. Cl. 36—27 21 Claims



1. Shoe, especially a sport shoe or shoe for medical purposes, having an upper and a sole formed of an outsole and a midsole disposed between the outsole and the upper as well as an exchangeable adjustment insert means for adjusting at least one of the height and damping characteristics of the sole at least in a heel area thereof, wherein the outsole is separable from the midsole along at least a portion of the length of the sole in an area extending at least from an arch area rearward to a heel end of the shoe, and comprising a detachable fastening means for attaching the outsole to the remainder of the shoe in said area, wherein said adjustment insert means is formed of a flexible material and is selectively inserted in a space formed between the midsole and the outsole when the outsole is separated from the midsole, and wherein said detachable fastening means comprises means for attaching the outsole to the remainder of the shoe with a variably settable spacing therebetween.

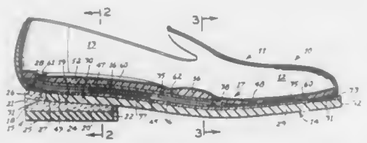
4,942,678
FOOTWEAR
Jerry F. Gumbert, P.O. Box 02011, Columbus, Ohio 43202-2011
Continuation-in-part of Ser. No. 112,689, Oct. 22, 1987, abandoned. This application Aug. 8, 1988, Ser. No. 229,826
Int. Cl.[5] A43B 1/00
U.S. Cl. 36—102 8 Claims



1. Footwear comprising:
a hollow shell having an opening in the upper rear portion thereof through which a foot may be inserted,
said shell having a median line around the perimeter of the shell dividing the shell into substantially equal upper and lower masses,
an elastic band for drawing said shell against the foot contour, said band having plural connections to said shell,
the band connections in the area of the ankle being below said median line,
the band connections fore and aft of said ankle area being above said median line,
whereby the lower portions of said shell on each side of the

ankle area are drawn upwardly, and the upper portions of the footwear are drawn toward each other.

4,942,679
STYLED COMFORT SHOE CONSTRUCTION
Michael D. Brandon, Smyrna; Robert A. Dorris, Hermitage; Robert T. Garrett, Hendersonville; Roy N. Helton, Smyrna; Don G. Roney, Madison, and James R. Vinson, Clarksville, all of Tenn., assignors to Genesco, Inc., Nashville, Tenn.
Filed Feb. 21, 1989, Ser. No. 313,168
Int. Cl.[5] A43B *13/37, 13/40, 13/18*
U.S. Cl. 36—102 19 Claims



1. In a shoe construction:
(a) a heel member having a top surface, a bottom surface, a front edge portion, and styled side and rear surfaces,
(b) an elongated flexible, resilient outsole member having a top face, a bottom surface, forepart and backpart portions and outside edge portions which are co-extensive with said side surfaces of said heel member,
(c) said backpart portion of said outsole member being secured to said top surface of said heel member,
(d) a styled upper having an inturned bottom marginal portion secured flush against said top surface of said outsole member adjacent said outside edge portions of said outsole member, said bottom marginal portion defining an elongated cavity above said outsole member,
(e) an elongated filler member of flexible foam material seated within and occupying substantially the entire space within said cavity, said filler member being highly resilient and water absorptive,
(f) an elongated insole member having forepart, backpart and intermediate portions top and bottom surfaces, and marginal edge portions secured on top of said inturned bottom marginal portion of said upper,
(g) said backpart portion of said insole member being substantially rigid and said forepart portion of said insole member being flexible,
(h) a resilient heel cushion member secured on top of said backpart portion of said insole member,
(i) an elongated resilient socklining member comprising an elongated flexable, synthetic foam material substantially coextensive with said insole member and having a forepart portion, a backport portion, and an intermediate ball area, said backpart portion being secured to the top of said heel cushion member,
(j) said backpart portion of said socklining member including elongated grooves separation said backpart portion into a central portion and a pair of lateral portions, the thickness of said lateral portions being slightly greater than the thickness of said central portion, said backpart portion having the general shape of the backpart portion of the wearer's foot.

4,942,680
SKI BOOT
Cristiano Benetti, Postioma/TV, Italy, assignor to Lange International S.A., Switzerland
Filed Aug. 29, 1989, Ser. No. 399,856
Claims priority, application Switzerland, Nov. 24, 1988, 4364/88
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 4 Claims



1. A ski boot formed of a lower part (1) in the form of a shell, comprising the sole and surrounding at least the foot and the heel, and a shank formed by a front part (2) and a rear part (3) whereof at least the rear part (3) is articulated on the lower part (1) about a transverse pivot (4), and comprising diagonal gripping means formed by a pressure distributor (6) situated within the boot, at the level of the instep, and a stretcher device (7) mounted at the back of the boot, on said articulated rear part (3) of the shank, in order to exert a traction on the pressure distributor towards the heel by means of at least one cord (5) passing over said distributor and guided by guide means disposed laterally on the boot in order to orient the action of the cord on the distributor towards the heel, wherein the cord (5) forms a loop passing, on one side of the boot both below and above the pivot of articulation (4) of the rear part of the shank, substantially at the same distance from this pivot, and, on the other side of the boot freely through a return device (11) fixed to the inside of the shell, in a manner such that during flexion of the shank of the boot the traction exerted by the cord on the distributor is virtually unchanged.

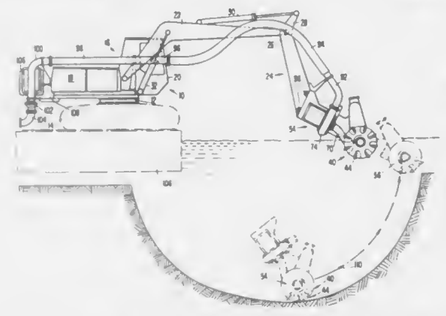
4,942,681
FOOT RETENTION APPARATUS FOR A SKI BOOT
Louis Benoit, Frangy, and Bernard Nerrinck, La Balme De Sillingy, both of France, assignors to Salomon, S.A., Annecy Cedex, France
Filed Mar. 23, 1989, Ser. No. 327,896
Claims priority, application France, Mar. 29, 1988, 88 04483
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 19 Claims



1. A ski boot having a rigid shell comprising:

a foot retention system positioned within the interior of the rigid shell, said foot retention system having at least one foot maintenance element for at least partially surrounding a foot, said foot maintenance element being connected at one end to the boot in the plantar support zone of the foot and at the other end to an activation means for modifying the position of the maintenance element against the foot, said foot maintenance element comprising at least two flexible elements which extend transversely to the longitudinal axis of the boot and between the rigid shell and the foot in the zone of the forefoot, said flexible elements being spaced apart by a distance so as to straddle a predetermined portion of the foot.

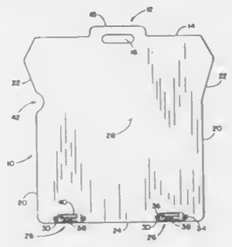
4,942,682
DREDGING MODULE FOR USE WITH CONVENTIONAL BACK HOE APPARATUS
Alexander W. K. McDowell, Annapolis, Md., assignor to Ellicott Machine Corporation, Baltimore, Md.
Filed Jul. 13, 1989, Ser. No. 379,194
Int. Cl.[5] E02F *3/32*
U.S. Cl. 37—66 6 Claims



1. A dredging module for attachment to conventional back hoe apparatus of the type comprising a mobile chassis, a full revolving base, a boom having an inner end pivotally connected to said base, and power means for controlling said boom and base, said module comprising a unitary body having front and rear ends, a dredge cutter wheel rotatably supported at the front end of said body, a hopper carried by said body positioned to receive therein spoil dredged by said cutter wheel, a suction pump carried by said body, suction pipe means connecting said hopper to the inlet of said suction pump, said suction pump including outlet means for connection to a dredge pipe, first motive means carried by said body and operatively connected to said cutter wheel for driving the same, second motive means, separate from said first, carried by said body and operatively connected to said pump for driving the same, and means for releasably connecting said body to conventional back hoe apparatus, said releasable connecting means including means carried by said body for releasably connecting said body to a back hoe stick.

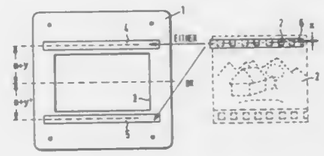
4,942,683
SHIRT LETTERING AND ILLUSTRATING FORM
Darl Lawson, 4630 Chrome Ridge Ct., Placerville, Calif. 95667
Filed Aug. 31, 1989, Ser. No. 401,104
Int. Cl.[5] D06C *3/08;* A41H *5/00*
U.S. Cl. 38—102.91 30 Claims

1. A form for lettering and illustrating shirts comprising, in combination:
a. a stiff, generally rectangular sheet, one edge of said sheet having a handle;
b. an arm tab projecting from each of two edges perpendicular to said edge having said handle, said tabs being adjacent said edge having said handle; and,
c. means fixed adjacent an edge opposite said edge having said handle for retaining a shirt in a taut posture over said



sheet, said means being oriented to open inward toward said edge having said handle.

4,942,684
SLIDE MOUNT FOR PERFORATED FILMS
Eckhardt Ochmichen, Mannapergerstrasse 96, D-7000 Stuttgart 75, Fed. Rep. of Germany
Filed Aug. 8, 1988, Ser. No. 229,232
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1987, 3726157
Int. Cl.[5] A47G *1/06;* G09F *1/12*
U.S. Cl. 40—152 11 Claims



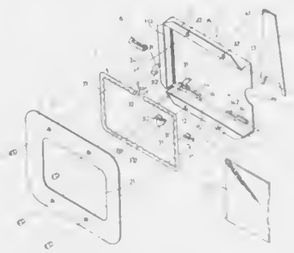
1. A slide mount for a single frame of film having two sets of edge perforations whose respective centers are at a nominal distance from the longitudinal centerline of the film, said mount comprising
two complementary plastic frame parts, each defining a rectangular window centered about a longitudinal centerline of the slide mount, said frame parts being adapted to be closed together to clamp the film between said two frame parts to thereby define a mounting frame having one or more longitudinally-oriented grooves adjacent one or more opposing longitudinally extending edges of the window, and
a single boss strip which is removably insertable into said one or more grooves in at least two alternative predetermined positions relative to said mounting frame, said single boss strip having a plurality of bosses for securing the film thereon via the perforations at one edge thereof,
wherein in at least one of said two alternative positions, the distance of the bosses from the longitudinal centerline of the window is different than said nominal distance, and
wherein when said single boss strip assumes different ones of said two alternative positions and is secured to a corresponding one of said two sets of edge perforations, the single boss strip locates the longitudinal centerline of the film in respective different predetermined vertical positions relative to the longitudinal centerline of the window.

4,942,685

LIGHT ILLUMINATED PHOTO FRAME

Ling-Yung Liu, Taipei, Taiwan, assignor to New Fei Lien Ent. Co., Ltd., Taipei, Taiwan

Filed Sep. 19, 1989, Ser. No. 409,305
Int. Cl.[5] G09F *13/00*; A47G *1/00*
U.S. Cl. 40—152.2 3 Claims



1. A light illuminated photo frame comprising: a front cover made of plastics, ceramics, acrylic resin, metal or wood and having a central opening for the exposition of a photograph received in said photo frame; a supporting frame having a front face with three sides thereof provided with a flange respectively consisting of a vertical wall and an outward extended horizontal fold on which a number of holes is disposed so that said front cover can be fastened thereto either by screws or by glue, a battery box integrally disposed on the rear side of said supporting frame and with a CDS light control means disposed thereon and in operative relation with LED light bulb means so as to permit switching said LED light bulb means on and off automatically by the intensity of external light, an adaptor jack disposed on said battery box, a supporting leg adapted for erecting said photo frame, a pair of slots in orthogonal relation with each other being disposed on the rear side of said supporting frame, the top end of said supporting leg being in selective engagement with one of said slots so as to permit the disposition of said photo frame to vary, and a number of guiding units secured to said front face of said supporting frame for fixing a photograph and a piece of transparent glass or the like in place; each said guiding unit being provided with a first flange and a second flange which are spaced vertically and horizontally at a slight distance with each other; at least two of said guiding units being disposed in alignment with each other at one side of said front face so as to permit the photograph and the glass to be simultaneously fixed in place by said first and second flanges reflecting surfaces on the flanged sides of said front face in place to receive light from said LED light bulb means and reflect same toward the place in the photo frame where a photo may be exposed, whereby said light bulb means produces illumination light which is delivered around the photo frame so that the photograph disposed in said photo frame can be seen in the dark.

4,942,686

PORTABLE DISPLAY SYSTEM

Matthias D. Kemeny, 1625 SW. Westwood Ct., Portland, Oreg. 97201

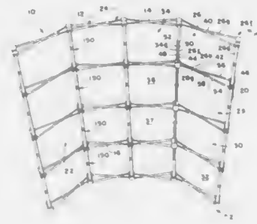
Continuation-in-part of Ser. No. 226,292, Jul. 29, 1988, Pat. No. 4,888,895. This application Jul. 31, 1989, Ser. No. 386,944
Int. Cl.[5] G09F *15/00*
U.S. Cl. 40—610 24 Claims

1. A portable display system comprising:

a collapsible rectangular frame, having a top, a bottom, opposed, spaced apart sides, and a front face and a rear face, including

a plurality of rectangular box units, each unit having a top side, bottom side, right side, left side, forward face and rearward face, wherein said top side, bottom side, right side and left side may be shared with adjoining box units, said top side, bottom side, right side and left side each being defined by a pair of arms, the arms in each pair being joined to one another by a scissor connection intermediate their ends, said top side arms and said bottom side arms further including a telescoping member in at least one of said arms of an arm pair; and

connector block nodes located at each corner of said box units, each of said nodes including pivot means for securing said arms thereto and for allowing collapsing of said frame to a compact form; and



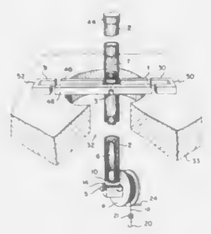
plural display supports extending along files of connector block nodes on the front face of said frame, each support extending between adjacent connector block nodes and including a pair of display-support runners, said runners being joined to one another at one, central end thereof by a central hinge, and joined to a connector block node at the other end thereof by an end hinge.

4,942,687

ICE FISHING MECHANISM

Joseph Post, 5 Rodgers Ave., Billerica, Mass. 01821

Continuation-in-part of Ser. No. 254,044, Oct. 6, 1988, abandoned. This application Aug. 31, 1989, Ser. No. 401,007
Int. Cl.[5] A01K *93/00*
U.S. Cl. 43—17 12 Claims



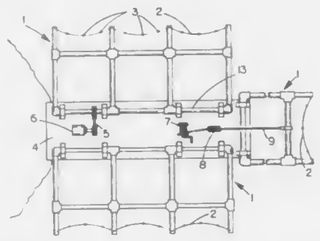
1. An ice fishing rig comprising a crossbar adapted to extend over a hole formed in ice on a body of water, a tubular pole, means supporting the pole on the crossbar with one end adapted to project into the water and the other above the ice, the tubular pole closed at its ends and containing fluid, with at least a portion of the other end of said pole transparent, said fluid within said tubular pole having a freezing point below zero degrees centigrade, a float positioned within said tubular pole and floating in said fluid which float, unless restrained, will rise to the top of said tubular pole and be visible through the transparent portion of the pole, a reel for holding a length of fishing line, means axially supporting said reel at the one end of the pole, magnetic means having a pair of mutually attracting components with one magnetic component positioned on said float and the other magnetic component positioned on said reel in positions such that alignment of the components will restrain the float at the one end of the pole and when the components become non-aligned on rotation of the reel the float will rise in the tube.

4,942,688

APPARATUS FOR TROTLINE FISHING

Mit Thomas, 2960 Phyllis La., Dallas, Tex. 75234

Filed Feb. 15, 1989, Ser. No. 311,035
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—27.2 2 Claims



1. In an apparatus for trotline fishing from a support base adjacent a body of water, the combination comprising:

a. a framework supported from said base,

b. a means on said base for raising and lowering said framework relative to said body of water.

c. at least one trotline on said framework adapted to be lowered into said body of water for extended periods of time,

d. a plurality of fishing hooks spaced along said trotline and containing fish bait thereon,

e. and wherein said framework comprises multiple struts supported in said framework in a manner to rotate about a stationary axis of said framework.

4,942,689

FISHING WEIGHT

Donald J. Link, Shakopee, Minn., and Lonnie D. Stanley, Lufkin, Tex., assignors to Dylist, Inc., Shakopee, Minn.

Filed Jul. 5, 1988, Ser. No. 215,030
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—42.24 12 Claims



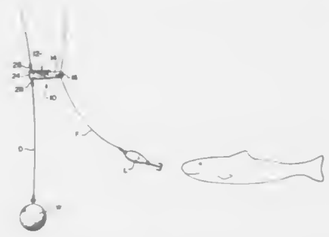
1. A fishing weight comprising a lead body portion having an axial bore therethrough, an enlarged recess formed in one end of said body portion, a flexible, rubbery material substantially filling said recess, a cavity formed in said rubbery material in said recess, said cavity opening into said axial bore and having another opening extending outwardly opposite said axial bore for receiving the eye of a fishhook, said other opening being of a smaller size than the eye of a fishhook and said cavity for releasably retaining the fishhook eye therein until a force is exerted upon said fishhook for withdrawing the fishhook therefrom.

4,942,690

DOWNRIGGER RELEASE

Theodore A. Lund, 4859 Lougheed Highway, Burnaby, British Columbia, Canada V5C 4A7

Filed Mar. 28, 1989, Ser. No. 329,590
Int. Cl.[5] A01K *91/06*
U.S. Cl. 43—42.12 10 Claims



1. A downrigger release, comprising:

(a) a first piece of flexible fastening material for releasable fastening to a downrigger line;

(b) a second piece of flexible fastening material for releasable fastening to said first piece of flexible fastening material; and,

(c) connector means for connecting said second piece of flexible fastening material to a fishing line:

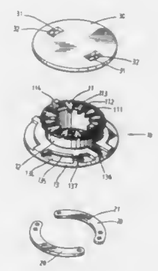
wherein said first piece of flexible fastening material comprises an inner surface having a first portion comprising loop type fastening material and a second portion comprising hook type fastening material, said loop type fastening material being releasably fastenable to said hook type fastening material.

4,942,691

FISHLINE STORING BOX

Jin-Tsair Hwang, No. 5, 97 Lane, Ching- hou Street, Taipei, Taiwan

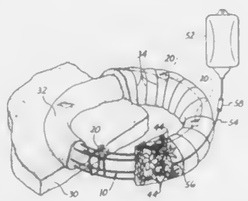
Filed Oct. 7, 1988, Ser. No. 254,580
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—54.1 1 Claim



1. A fishline storing box, comprising:

a cover having a plurality of engaging holes, each engaging hole being provided with a stop;
a main body including:
an upper ring-shaped plate having a plurality of ears extending inwardly, a plurality of lower surfaces each of which is aligned with a respective ear and a plurality of hooks upwardly extending, each of said lower surfaces having a V-shaped groove, each of said hooks being engageable with each of said engaging holes of said cover respectively;
a hollow cylinder coupled to said upper ring-shaped plate at an upper end thereof; and
a base plate connected to a lower end of said hollow cylinder to form a containing space, said base plate having a plurality of recesses formed within an outer rim of an upper surface thereof, a plurality of gaps defining an open communication between each recess and a groove formed in said base plate and a plurality of engaging holes which are engageable with the hooks of another main body; and
a plurality of magnets being received in said grooves respectively.

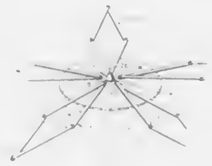
4,942,692
WIRE FRAME FOR LIVING PLANT WREATH
Mary T. Colbert, 187 Homewood Rd., Los Angeles, Calif. 90049
Filed Jan. 17, 1989, Ser. No. 297,252
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—41.12 **6 Claims**



1. An improved wire frame for supporting a festive wreath of living plant, comprising:
upper and lower pairs of generally concentric wire rings;
an intermediate pair of generally concentric wire rings;
a plurality of wire ribs circumferentially spaced apart along said rings and welded to both rings of said intermediate pair;
said ribs also being welded alternately to both rings of said upper pair or said lower pair, thereby to obtain a structurally rigid unitary toroidal wire frame; and
a plurality of candle holders spaced circumferentially on said frame, each said holder comprised of a single length of wire including a coiled wire segment for receiving and supporting the base of a candle and an extended wire segment welded to one ring in each of said upper and lower pairs for supporting said coiled segment and also structurally reinforcing the toroidal frame.

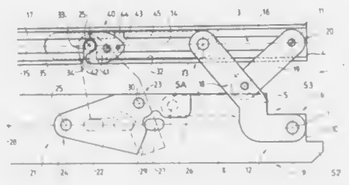
4,942,693
PLANT SUPPORTING UMBRELLA
Josie Sibold, 1109 E. Dallas Rd., Chattanooga, Tenn. 37405
Filed Mar. 24, 1989, Ser. No. 328,319
Int. Cl.[5] A01G *17/06*
U.S. Cl. 47—44 **10 Claims**

1. An umbrella-like arbor for supporting foliage thereon, comprising:
a center pole;
a central support hub atop the center pole; and
a plurality of lattice assemblies radiating from the support hub essentially in planes which intersect the axis of the center pole at the same large acute angle;
each of said lattice assemblies comprising an open framework of interconnected slats lying substantially in the planes of said lattice assemblies, respectively; and



means for rotatably supporting each of said lattice assemblies from said hub on axes generally parallel to the axis of the center pole so that the overall configuration of the arbor may be adapted to a variety of shapes.

4,942,694
FITTINGS FOR DOORS, WINDOWS OR THE LIKE
Philippe Simoncelli, Hoff, France, assignor to Ferco International Usine de Ferrures de Batiment, Sarrebourg, France
Filed Sep. 20, 1989, Ser. No. 409,757
Claims priority, application France, Sep. 26, 1988, 88 12721; Mar. 14, 1989, 89 03577
Int. Cl.[5] E05D *15/52*
U.S. Cl. 49—192 **19 Claims**



1. Fitting for doors, windows or the like, comprising a locking member or operating rod for locking the wing (9) against the fixed frame (11), and acting on hinged fittings consisting of a corner bearing and a casement stay disposed in rabbets, so that the said wing (9) can be opened at least inwardly and disposed in a ventilation position, this fitting comprising control means (21) for opening the wing (9), starting from the closed position, into the ventilation position, followed by inward opening of said wing, by acting successively on the locking member or operating rod (28, 28A).

4,942,695
METHOD FOR CYLINDRICAL SURFACE GRINDING OF WORKSPACES
Horst J. Wedeniwski, Remshalden-Grunbach, Fed. Rep. of Germany, assignor to Fortuna-Werke Maschinenfabrik GmbH, Fed. Rep. of Germany
Filed Oct. 17, 1988, Ser. No. 258,850
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1987, 3735343; Nov. 6, 1987, 3737641
Int. Cl.[5] B24B *5/04*
U.S. Cl. 51—165 R **4 Claims**

1. A method of grinding a cylindrical surface of a workpiece extending along a first axis, comprising of:
determining a diameter (d_w) of said cylindrical surface;

rotating said workpiece about said first axis at a predetermined first peripheral speed (V_w) in a first direction of rotation;
rotating a grinding wheel about a second axis, said second axis being inclined to said first axis, said grinding wheel being rotated at a second peripheral speed (V'_s) in a second direction opposite to said first direction, said grinding wheel having a first and a second conical peripheral surface section, said first surface section engaging an essentially radial helicoidal cutting surface and said second surface section engaging an essentially axial surface section of said cylindrical surface;



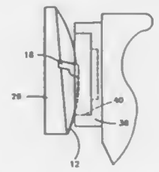
displacing said workpiece and said grinding wheel relative to each other at a predetermined feed speed (V_{fa}) in a direction parallel to said first axis;
selecting a desired roughness (R'_z) of said cylindrical surface after completion of grinding;
determining an overlap factor (U') of said grinding wheel from emperically generated curves of overlap factor (U) as a function of roughness (R_z) and second peripheral speed (V_s) using the selected roughness (R'_s) and second peripheral speed (V'_s);
setting an axial length (l_N) of said essentially axial surface section from the overlap factor (U') according to the formula:

$$l_N = U' \cdot q \cdot \frac{\pi \cdot d_w}{6 \cdot 10^4} \cdot \frac{v_{fs}}{v_s}$$

where (q) is the ratio (V'_s/V_w) of said second and said first peripheral speeds.

4,942,696
BLOCKING SHIM AND METHOD FOR PRESCRIPTION-LABORATORY PROCESSING OF ASPHERIC PROGRESSIVE-ADDITION LENSES
John T. Winthrop, Wellesley; Alexander F. Mesyhart, Brimfield, and James Duszlak, Dudley, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Jun. 9, 1988, Ser. No. 204,567
Int. Cl.[5] B24B *13/005*
U.S. Cl. 51—277 **12 Claims**

1. A shim for mounting aspherical opthalmic lens on a blocking for processing, the shim including:
a plastic element in the general shape of a "T" having a base member, whereby each of the members of the plastic element makes contact with the blocking ring to prevent rocking of said lens relative to said blocking ring and a pair of cross members; and
alignment indicia means at a point of intersection of said base and cross members, said alignment indicia means being

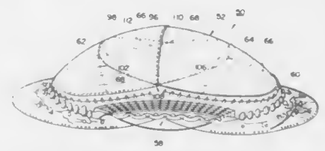


intended to be aligned with the distance fitting center of an aspherical opthalmic progressive lens to be processed.

4,942,697
RARE EARTH POLISHING COMPOSITIONS
Jean Khaladji, Paris, and Marcel Peltier, La Rochelle, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Continuation of Ser. No. 707,139, Mar. 1, 1985, abandoned, which is a division of Ser. No. 218,792, Dec. 22, 1980, Pat. No. 4,529,410. This application Jun. 25, 1987, Ser. No. 65,633
Claims priority, application France, Dec. 27, 1979, 7931742
Int. Cl.[5] B24D *17/00*
U.S. Cl. 51—283 R **14 Claims**

1. A rare earth polishing composition of reproducible homogeneity produced by a process comprising: (a) simultaneously continuously admixing a cerium salt solution, a basic solution, and a solution of at least one acid and/or one salt, the anion or anions of which being adopted to form insoluble rare earth compounds, the number of equivalents of base being equal to or greater than the number of equivalents of cerium, and the pH of the reaction medium being greater than about 6; (b) filtering the precipitate which results from the reaction medium; (c) drying said recovered precipitate; and (d) calcining said dried precipitate, wherein said calcined precipitate comprises a sulphur content of less than 0.1% by weight.

4,942,698
OPENABLE ROOF AND STRUCTURE THEREWITH
Takenori Kumagai, Tokyo, Japan, assignor to Shimizu Construction Co., Ltd., Tokyo, Japan
Filed Nov. 21, 1989, Ser. No. 439,302
Claims priority, application Japan, Nov. 22, 1988, 63-295364; Dec. 19, 1988, 63-319743; Jan. 17, 1989, 1-8024
Int. Cl.[5] E04H *3/10*; **E04B** *3/46*
U.S. Cl. 52—6 **15 Claims**



1. An openable roof comprising:
a plurality of sets comprised of a fixed roof means and movable roof means;
said fixed roof means being fixedly constructed at prescribed locations, each of the fixed roof means having an opening substantially opening upwards, and a generally circular track around the opening; at least one part of each of the fixed roof means substantially intersecting a wall fo the other fixed roof means in such a manner that the openings partially coincide so as to form a complete opening;
said movable roof means being movably disposed on the fixed roof means, each of the movable roof means being

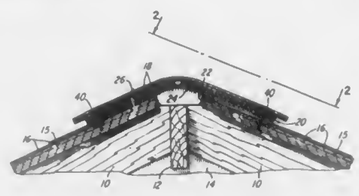
disposed radially inside the circular tracks formed on the corresponding fixed roof means, each of the movable roof means having a first arc-shaped edge disposed on the corresponding circular first track, the curvature of the first arc-shaped edge corresponding to the curvature of the circular first track of the fixed roof means so that each of the movable roof means is able to revolve around an axis of the first track of the corresponding fixed roof means so as to participate to open and close the complete opening.

4,942,699

VENTING OF ROOFS

Larry J. Spinelli, Hamilton, Ohio, assignor to Benjamin Obdyke Incorporated, Warminster, Pa.

Continuation of Ser. No. 125,123, Nov. 25, 1987, abandoned. This application Oct. 13, 1989, Ser. No. 423,524
Int. Cl.[5] E04D *13/16*
U.S. Cl. 52—57 **16 Claims**



1. A vent installation on outer, relatively angled surfaces of a building, characterized in that the vent spaces a cap from said angled surfaces to provide a venting flow path for air to flow outwardly from the building through an elongated slot means formed at the juncture between the angled surfaces,

said vent comprising

an elongated openwork member providing multiple flow-paths for the venting flow of air from said elongated slot and beneath the cap, said openwork member comprising a resilient self-supporting matrix strip, and

a sheet material layer secured to and covering said openwork member and adapted to overly said elongated slot, said sheet material layer being an air-permeable filter material having a multiplicity of closely spaced openings for the free flow of venting air therethrough, said openings being relatively small to provide a barrier to the entry of insects into the interior of the building, through said elongated slot.

4,942,700

REVERSIBLY EXPANDABLE DOUBLY-CURVED TRUSS STRUCTURE

Charles Hoberman, 472 Greenwich St., New York, N.Y. 10013

Filed Oct. 27, 1988, Ser. No. 263,582
Int. Cl.[5] E04B *1/52*
U.S. Cl. 52—81 **12 Claims**

1. A loop-assembly comprising:

at least three scissors-pairs, at least two of the pairs comprising:

two essentially identical rigid angulated strut elements, each having a central and two terminal pivot points which do not lie on a straight line, each strut being pivotally joined to the other of its pair by their central pivot points,

each pair being pivotally joined by two terminal pivot points to two terminal pivot points of another pair such that both scissors pairs lie essentially in the same plane

whereby a closed loop-assembly is thus formed of scissors pairs, and this loop-assembly can freely fold and unfold without bending or distortion of any of its elements, and

a normal line that intersects and is perpendicular to the axes of any two terminal pivot points is non-parallel with at least two other similarly formed lines in the assembly,



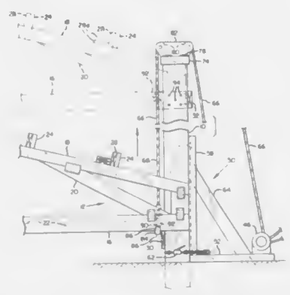
the angles formed between said lines remaining constant as the loop assembly is folded and unfolded.

4,942,701

HYDRAULIC WINCH SYSTEM FOR USE IN ERECTING CLEAR-SPAN, POLE-TYPE BUILDINGS

Jimmie J. Jones, Portland, Oreg.; Sherman L. Watson, Vancouver, Wash., and Charles F. Pence, Portland, Oreg., assignors to Complete Hydraulic Building Systems, Inc., Portland, Oreg.

Filed Jul. 24, 1989, Ser. No. 383,709
Int. Cl.[5] E04G *21/14*
U.S. Cl. 52—126.1 **10 Claims**



1. For use in erecting erecting clear-span, pole-type, buildings including two rows of spaced apart, vertically placed, support poles disposed in opposite pairs and defining opposite sides to the building, and a plurality of roof-supporting truss assemblies arranged side-by-side and each assembly supported by cooperating pairs of opposed poles, each assembly including structural members forming guideways receiving cooperating poles in sliding engagement, each assembly being shiftable during erection of the building between a low level, building-assembly position wherein it is freely slidable on said cooperating poles and an elevated, building-erected position wherein it is attached to the upper portions of the poles preparatory to mounting a roof thereon, an hydraulic winch system for raising the truss assembly from its building assembly position to its building erected position, the hydraulic winch system comprising:

(a) an hydraulic circuit,

(b) in the hydraulic circuit a plurality of hydraulic winches, one for each associated pole,

(c) in the hydraulic circuit valve means for controlling the speed and direction of rotation of each winch,

(d) winch mounting means adjacent each associated pole,

(e) pulley means mounted at the top of each associated pole,

(f) cable means mounted on each winch, reeved about the associated pulley means, and extending downwardly with its end adjacent the truss assembly in its low level. building-assembly position, and

(g) connecting means on the said end of the cable means for connection to the truss assembly.

4,942,702

PRE-FABRICATED PANEL FOR BUILDING, PARTICULARLY FOR BURIAL VAULTS

Paul Lemasson, La Cappe, Cedex 2121, Genilac F-42800, France

PCT No. PCT/FR88/00236, § 371 Date Jan. 11, 1989, § 102(e) Date Jan. 11, 1989, PCT Pub. No. WO88/08912, PCT Pub. Date Nov. 17, 1988
PCT Filed May 11, 1988, Ser. No. 309,794
Claims priority, application France, May 12, 1987, 88 07003
Int. Cl.[5] E04H *13/00*; E04C *2/26*
U.S. Cl. 52—127.7 **8 Claims**



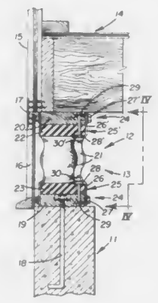
1. Pre-fabricated panel for the construction of burial vaults in particular, wherein each panel is made up of a plate (1) of insulating material inserted during moulding, between two layers of cement (2) and (3) of different density and thickness, the external layer (3) being very slightly crowned, the transversal faces of the end of each panel being fitted in combination in order to enable their axial alignment positioning or angular positioning at 90° whilst being fitted with means apt in order to provide their assembly into position, the said panel being also designed in order to cooperate and be centered with a bottom plate (5) and/or a plate acting as a cover (6).

4,942,703

EARTHQUAKE-PROOF ABSORPTION SYSTEM FOR BUILDINGS OR THE LIKE

Charles M. Nicolai, P.O. Box 2517, Sausalito, Calif. 94965

Filed Jun. 19, 1989, Ser. No. 368,269
Int. Cl.[5] E04B *1/98*; E02D *31/08*
U.S. Cl. 52—167 R **19 Claims**



1. An earthquake-proof structure supported on a foundation by seismic shock absorption means for isolating said structure from movements of said foundation, said seismic shock absorption means comprising

a plurality of elastomeric pad means supporting said structure on said foundation for isolating said structure from horizontal and vertical movements imparted to said foundation when ground surrounding said foundation is subjected to seismic activity, said elastomeric pad means comprising a plurality of upstanding and at least generally aligned elastomeric columns secured between elastomeric upper and lower anchor pads, and

anchoring means for securing said elastomeric pad means between said structure and said foundation, said anchoring means securing said upper and lower elastomeric anchor pads to said structure and to said foundation, respectively, and comprising a pair of brackets each having a first flange disposed on an underside of said elastomeric upper anchor pad and on an upper side of said elastomeric lower anchor pad, respectively, and

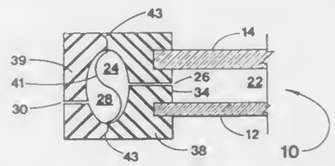
fastening means extending through each said first flange and a respective one of said elastomeric upper and lower anchor pads and secured to a respective one of said structure and said foundation.

4,942,704

SPACER ELEMENT FOR MULTIGLAZED WINDOWS AND WINDOWS USING THE ELEMENT

Richard T. King, 101 NE. 62nd, Seattle, Wash. 98115

Continuation-in-part of Ser. No. 233,535, Aug. 18, 1988. This application Jan. 1, 1989, Ser. No. 359,507
The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.
Int. Cl.[5] E06B *7/12*
U.S. Cl. 52—171 **33 Claims**



1. A spacer element for glass sheets in a multiglazed window which comprises:

an elongated body member of generally rectangular cross section, said body member having first and second face portions and parallel spaced-apart sidewall portions,

the body member having an elongated interior chamber generally located along its longitudinal axis,

said interior chamber being partitioned by a flexible diaphragm means into two separate chambers not in fluid communication with each other, said diaphragm being of generally sinuous configuration, the ends of the diaphragm being anchored across a diameter of the interior chamber so as to divide the interior chamber into two portions of essentially equal cross sectional area;

a multiplicity of longitudinally spaced-apart first apertures which pass between one of the separate chambers and the first face portion; and

a multiplicity of longitudinally spaced-apart second apertures which pass between the other separate chamber and the second face portion,

so that when the spacer element is in place to separate the glass sheets of a multiglazed window, one of the chamber is in fluid communication with the interior volume between the glass sheets and the other chamber is in fluid communication with the external environment, the diaphragm means being moveable to equalize pressure differ-

ences between the interior volume of the window and the external environment.

4,942,705
WINDOW GRATING ARRANGEMENT
Takashi Nakamura, Amagasaki, Japan, assignor to Nakamura Co., Ltd., Hyogo, Japan
Filed Jul. 24, 1989, Ser. No. 384,738
Claims priority, application Japan, Oct. 3, 1988, 63-129737[U]; Jan. 27, 1989, 1-9035[U]
Int. Cl.[5] E06B *3/26*
U.S. Cl. 52—202 6 Claims



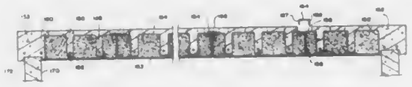
1. A window grating arrangement comprising at least two enlogated, horizontal stationary supports disposed parallel relative to one another and being attached to upper and lower edges of a window opening in the wall of a buiding, an elongated groove formed in each of said supports substantially along the length thereof, a mobile assembly comprised of a protective grating having protective bars, and of at least two cross ties disposed parallel relative to one another and uniting the protective bars into said protective grating, a cross tie each being slidably disposed within an elongated groove, whereby the protective grating selectively covers the window opening and is slidable away from such covering to enable egress through said opening.

4,942,706
HOUSING STRUCTURE
Wayne A. Todd, 2213 Kirby Rd., Memphis, Tenn. 38119, and Hunter D. Ryan, Jr., 283 Richards Way, Cordova, Tenn. 38018
Filed Nov. 13, 1989, Ser. No. 435,545
Int. Cl.[5] E04H *1/02*
U.S. Cl. 52—234 12 Claims



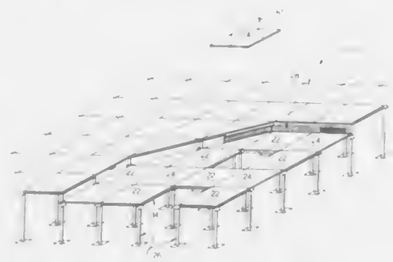
1. A double unit building structure comprising:
a first unit having a front elevation, a rear elevation, a first side wall, and a second side wall; and
a second unit having a front elevation, a rear elevation, a first side wall, and a second side wall;
said first and second units being joined together to form said double unit building structure with first side walls of said first and second units sharing a common border and with said front elevations of said first and second units facing opposite directions.

4,942,707
LOAD-BEARING ROOF OR CEILING ASSEMBLY MADE UP OF INSULATED CONCRETE PANELS
Erik W. Huettemann, 285 Mill Rd., Madison, Ala. 35758
Continuation-in-part of Ser. No. 158,476, Feb. 22, 1988, Pat. No. 4,841,702. This application Jun. 27, 1989, Ser. No. 371,915
The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.
Int. Cl.[5] E04B *1/60*
U.S. Cl. 52—259 12 Claims



1. A load-bearing roof or ceiling assembly comprising:
a plurality of elongated, rectangular panels disposed side by side, forming an array having interior junctures between adjacent panels and external panel edges at edges of the array;
said panels comprising at least one rigid rectangular slab of insulating material having an upper face and a lower face, said upper face having a plurality of longitudinally extending grooves therein, forming channels for containing supporting ribs, concrete cast into said grooves and over said upper face providing concrete ribs and a concrete layer over said face;
said panels at external edges of the array including cast concrete edge frames integral with said ribs and concrete layer; and
said panels at their interior junctures with one another having exposed panel edges without edge frames, said panel edges at interior junctures being sealably joined to one another after placement of panels in operative position in the array.

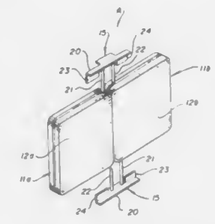
4,942,708
PANEL ASSEMBLY AND SUPPORT STRUCTURE FOR ELEVATED FLOORS
Frank C. Krumholz, and Michael D. Jines, both of Owatonna, Minn., assignors to Wenger Corporation, Owatonna, Minn.
Continuation of Ser. No. 426,086, Nov. 23, 1988, abandoned. This application Aug. 15, 1989, Ser. No. 394,283
Int. Cl.[5] E04D *15/00*
U.S. Cl. 52—263 11 Claims



1. An elevated floor assembly comprising:
a plurality of base panels each having an upper surface, a lower surface and a peripheral edge each of said base panels including a base panel cladding strip received along said base panel edges, said base panel cladding strips each having a generally upright web extending approximately the thickness of said base panel edge, and a generally horizontal access panel engaging flange extending laterally and outwardly from said web;

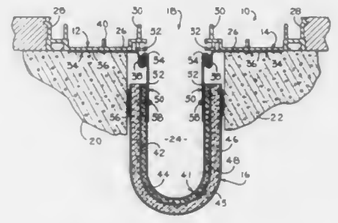
a plurality of access panels each having an upper surface, a lower surface and a peripheral edge; and
a plurality of support legs detachably coupled to said base panels, said base panels and said access panels being positioned in alternating juxtaposition whereby said base panels are supported by said support legs and said access panels are supported by said base panel cladding strip flanges.

4,942,709
DISPLAY PANELS AND CONNECTOR SYSTEM THEREFOR
Michael P. Waldron, 2041 Tustin Ave. #A, Costa Mesa, Calif. 92627
Continuation of Ser. No. 129,780, Dec. 7, 1987, abandoned. This application Mar. 22, 1989, Ser. No. 327,386
Int. Cl.[5] E04B *1/40*
U.S. Cl. 52—285 29 Claims



1. A display component for an exhibit or the like, which component comprises:
a pair of panels having outwardly facing surfaces bounded by edges, the panels being relatively thin compared with the area of their outwardly facing surfaces, a first edge of one panel meting a first edge of the other panel, such that their outwardly facing surfaces together form an essentially coextensive portion of the exhibit, said first meeting edges terminating at least one corner of each panel where each edge turns at substantially ninety degrees onto a second, adjacent edge of the panel,
each panel having an at least partially circular channel extending substantially parallel to both of said first and second edges, extending near but spaced inwardly by the same distance as each other from its respective edge, ending at entry openings near the said corner, on the other of said first or second edges, and each channel extending from its entry opening at said other edge, at least partially along its respective edge, such that the two channels intersect each other near the corner where the first and second edges meet,
each of said edges which has an entry opening also including a tin central slot extending along the centerline of its outer periphery adjacent each of said entry openings, its depth into its edge being substantially greater than its width across its edge,
and a connector member for connecting said pair of panels together, said connecting member comprising a pair of substantially parallel pins, said pins engaging into substantially parallel entry openings, one on each of the two panels of the pair, and hence extending partially into the channel which is an extension of said entry opening and which extends parallel to an edge of the panel which is adjacent to the edge with that entry opening, and
said connecting member further including generally flat thin flags which extend generally parallel to each of the pins edgewise into the said thin central slot of the panel adjacent the entry opening of its respective pin such that the plane which includes the flat thin flag is parallel to the outwardly facing surfaces of its panel.

4,942,710
FIRE-RATED EXPANSION JOINT HAVING THREE DEGREES OF FREEDOM
Roger L. Ramsey, Wichita, Kans., assignor to Balco International, Inc., Wichita, Kans.
Continuation of Ser. No. 190,289, May 6, 1988, abandoned. This application Dec. 13, 1989, Ser. No. 453,095
Int. Cl.[5] E04B *1/56*
U.S. Cl. 52—396 8 Claims



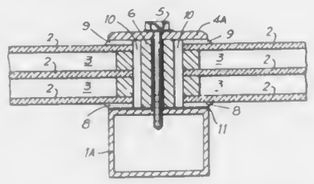
1. An expansion joint for use between a pair of elongated, adjacent, relatively shiftable structural sections presenting therebetween an expansion void having a nominal width, said joint exhibiting three degrees of freedom for accommodating virtually all relative movement of said structural members, said joint comprising:
a pair of elongated supports configured for fixed attachment to a respective structural section adjacent the expansion void;
an elongated, flexible, bridging member composed of a fire-rated material having a width greater than the nominal width of the void and presenting a pair of respective, longitudinal edges; and
means coupling said bridging member with said supports in a void-spanning relationship therewith and in a manner allowing lateral shifting of said member in the event of relative lateral movement of said supports, and allowing vertical movement of at least a portion of said member in the event of relative vertical movement of said supports,
said coupling means including a pair of shiftably interfitted, elongated, U-shaped elements respectively coupling at least one of said edges of the flexible member and the adjacent support, one of said elements being secured to said support, the other of the elements being secured to said member edge, each of said U-shaped elements presenting a pair of side walls with one side wall from each element lapping a side wall of the other element in a longitudinally slidable relationship in order to prevent longitudinal stress on said bridging member in the event of relative longitudinal movement of said support, said coupling means further supporting said bridging member in a depending relationship for disposition thereof downwardly from said structural sections so that said bridging member hangs between said supports.

4,942,711
OUTER WALLS OR ROOFS
Dan Bergquist, Nässjö , Sweden, assignor to Swedal-Systems HB, Nässjö , Sweden
Filed Jan. 18, 1989, Ser. No. 298,486
Claims priority, application Sweden, Jan. 19, 1988, 8800155
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—397 5 Claims

1. An outer wall or roof construction system comprising:
a plurality of wall panels;
first and second internal frame members disposed inwardly of said wall panels for supporting said wall panels, each of said frame members having a surface facing said wall panels and that defines a plane, and said first and second

frame members being disposed in abutting relation to each other so that said planes of the frame members define a common plane and said abutting frame members form a crevice therebetween;

an external cover member disposed outwardly of said wall panels and in spaced apart relation to said frame members so that said wall panels are disposed between the cover member and said frame members;



fastener means for securing the cover member to said frame members with said wall panels secured intermediately therebetween; and

a sheet-like sealing member comprising a layer of a ductile sealing foil disposed substantially parallel to said common plane of said frame members and covering said crevice formed between said abutting frame members so as to form a weather-tight seal at said internal frame members.

4,942,712

ROOF COVERING

Peter B. Thompson, Nordrach, Blagdon, Bristol BS18 6XW, United Kingdom

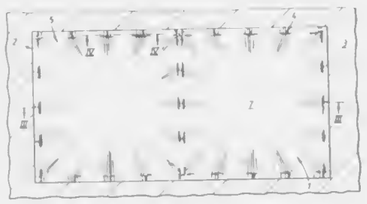
PCT No. PCT/GB87/00838, § 371 Date Jul. 19, 1988, § 102(e) Date Jul. 19, 1988, PCT Pub. No. WO88/03981, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 24, 1987, Ser. No. 223,072

Claims priority, application United Kingdom, Nov. 24, 1986, 8628021

Int. Cl.[5] E04D *3/32, 3/30;* **E04C** *2/32*

U.S. Cl. 52—506 **20 Claims**



1. A roof covering suitable for use on flat or shallow angle roofs, the covering being in the form of a sheet having means for accommodating substantial expansion and contraction of the sheet along its plane dimensions, said means comprising at least one preformed raised deformable intermediate region of the sheet having a predetermined subtended volume and merging curvedly downwardly over upwardly convex surface portions of the sheet directly into pluralities of preformed smooth deformable undulations surrounding the raised region, with each undulation being of subtended volume small compared with said predetermined volume of the raised region, and with the lower points of at least some of the undulations being arranged to rest upon and to be secured to a substantially planar roof substrate.

4,942,713

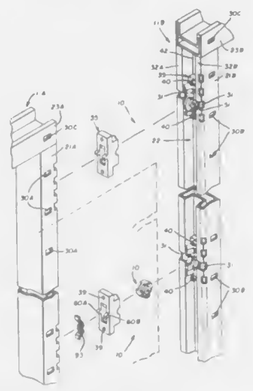
INTERCONNECTING STRUCTURE FOR RELEASABLY SECURING SUCCESSIVE PANELS IN A RELOCATABLE WALL

Francis G. Jackson, Hudsonville, Mich., assignor to Harter Corporation, Sturgis, Mich.

Filed Jun. 9, 1989, Ser. No. 364,027

Int. Cl.[5] E04C *1/10*

U.S. Cl. 52—584 **23 Claims**



1. An interconnecting structure for joining wall panel assemblies in a relocatable wall, said interconnecting structure comprising:

cam key block means;

cam surfaces formed on said cam key block means;

cam key means having a disk portion;

at least two locking bolt means extending transversely outwardly from said disk portion, said locking bolt means being disposed in diametric opposition;

said locking bolt means being complementary to said cam surfaces on said cam key block means;

said cam key means being rotatable with respect to said cam key block means selectively to position said locking bolt means in engagement with the cam surfaces on said cam key block means.

4,942,714

REBAR AND BEAM BOLSTER, SLAB AND BEAM BOLSTER UPPER

Marshall E. Langley, Jr.; Robert C. Sims; Richard M. Sims, and James N. Turek, all of Lexington, Ky., assignors to Turek Marketing International, Lexington, Ky.

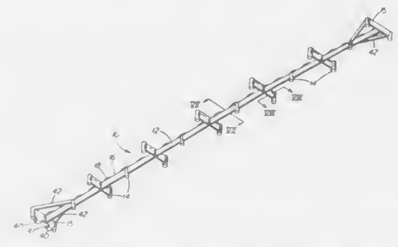
Continuation-in-part of Ser. No. 152,701, Feb. 5, 1988, abandoned. This application Feb. 6, 1989, Ser. No. 308,953

Int. Cl.[5] E04C *5/20*

U.S. Cl. 52—687 **17 Claims**

1. A bolster for supporting reinforcing steel such as beams and rebar in concrete during pouring and setting of said concrete, comprising:

an elongated support member having a surface for supporting said reinforcing steel and leg means for holding said support member in an upright position; said support member and leg means being constructed from a non-biodegradable material; said bolster further including first and second cross members at opposite ends of said bolster as well as means for positively connecting bolsters together in series, said connecting means including a resilient connecting clip mounted to said first cross member at one end of said bolster, said clip being sufficiently resilient to snap



over and engage a second cross member of an adjacent bolster.

4,942,715

APPARATUS FOR THE STABILIZATION AND DRYING OF CUBOID PACKS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Oct. 27, 1988, Ser. No. 263,574

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1987, 3736403

Int. Cl.[5] B65B *51/10*

U.S. Cl. 53—202 **15 Claims**

1. Apparatus for the dimensional stabilization and drying of hinge-lid cuboid packs having folding tabs glued to one another, said apparatus including a drying turret which has a plurality of pockets forming a pocket ring arranged along a concentric circular path, each pocket being adapted to receive a pack, said apparatus being characterized in that:

the drying turret (14) has at least two concentric pocket rings (17, 18) of pockets (15, 16);

the pockets (15, 16) of the pocket rings (17, 18) are aligned with one another in pairs in common radial planes;

in the outer pocket ring (17), a radially outer pocket wall (28) and, in the inner pocket ring (18), a radially inner pocket wall (29) is mounted resiliently and is movable outwards and inwards respectively;

in a pushing-out station (24) and in a pushing-in station (35) of the drying turret (14), the resilient pocket walls (28, 29) are equipped with actuating means, in the form of outwardly directed tension pins (33), and are moved to enlarge the pocket by stationary actuating members during operation of the apparatus;

there is provided means for pushing the packs (10, 11) out of the pockets (15, 16) of the drying turret (14) in an axial direction in the pushing-out station (24) and transferring them to a horizontal discharge conveyor (57) and individually conveying them away thereby in an upright position with narrow side walls (12, 13) of the packs directed downwards and upwards;

there is provided an intermediate conveyor (60) for feeding the packs (10, 11) pushed out of the pockets (15, 16) of the drying turret (14) to the discharge conveyor (57); and

the intermediate conveyor (60) is a continuously rotating conveyor wheel (61) with projecting take-up arms (62), and packs (10, 11) are grasped in succession by the take-up arms (62) and fed to the discharge conveyor (57) along a path in the form of an arc of a circle.

4,942,716

ASEPTIC FILLING MACHINE

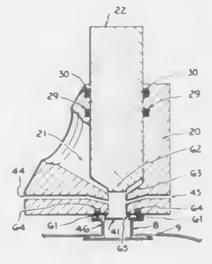
Ian M. Anderson, Sandringham, Australia, assignor to Courtaulds Packaging Australia Limited, Australia

Filed Nov. 20, 1987, Ser. No. 123,096

Claims priority, application Australia, Nov. 21, 1986, PH09089

Int. Cl.[5] B65B *55/08, 55/10, 43/26, 7/02*

U.S. Cl. 53—426 **7 Claims**



1. A system for aseptically filling and storing degradable liquid contents which comprises:

(a) a flexible container having a sealed inlet, said inlet being capable of being opened and resealed;

(b) a fluid dispenser which incorporates a sterilizable product conduit comprising

(i) two openings for allowing ingress and egress of degradable liquid contents

(ii) one of said openings being adapted to abut a container inlet

(iii) a valve member adapted for reciprocal movement within said conduit for closing the other of said openings

(iv) at least one sterilizing fluid inlet and at least one sterilizing fluid outlet opening onto said conduit adjacent the opening which abuts the container inlet,

(c) container support means for bringing said container inlet into engagement with said filling head such that said recess is closed by the container inlet;

(d) means for injecting said sterilizing fluid into said recess;

(e) means located about the periphery of said one opening to open said container inlet;

(f) means to actuate said valve to allow liquid to pass through said recess, and fill said container; and

(g) means located external to said fixed filling head to reseal said inlet.

4,942,717

PROCESS FOR THE PREPARATION OF STERILIZED PLANT MATTER

George Kosuh, P.O. Box 200, Smoky Lake, Alberta, Canada

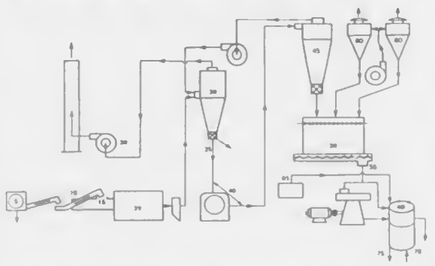
Filed Jul. 26, 1988, Ser. No. 224,580

Int. Cl.[5] B65B *1/24, 31/06, 55/14*

U.S. Cl. 53—428 **16 Claims**

1. A process for the preparation of sterilized plant matter comprising the steps of:

a. treating coarse chopped plant matter with heat to achieve dehydration;
b. compression filling airtight fiber reinforced plastic bags with the still heated dehydrated plant matter;
c. injecting high pressure steam into the heated dehydrated plant matter while in the bag, the size of the bag being such that the high pressure steam can completely and



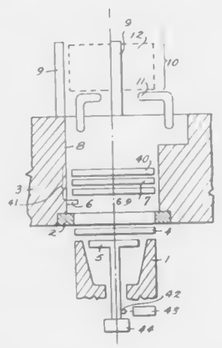
sufficiently penetrate through the heated dehydrated plant matter to attain temperatures sufficient to achieve sterilization; and
d. sealing the bag whereby the temperatures in the bag are maintained for sufficient time duration to achieve sterilization, and condensing steam is absorbed by the dehydrated plant matter to create vacuum conditions in the bag.

4,942,718

PROCESS FOR THE PACKAGING OF LIDS

Michel Courtois, Saint Gratien, and Jacques Fillon, Chelles, both of France, assignors to Cebal, Clichy, France

Filed May 27, 1988, Ser. No. 199,787
Claims priority, application France, Jun. 17, 1987, 87 08894
Int. Cl.[5] B65B *3/12, 5/06, 7/28, 39/06*
U.S. Cl. 53—435 **5 Claims**



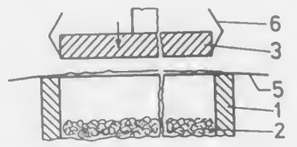
1. A process for the packaging of lids, comprising the steps of:
(a) cutting out from blank material lids in a press equipped with a fixed delivery magazine defined at the sides thereof by guide rods;
(b) conveying by a pushing motion the lids beyond the cutting tool and into the delivery magazine such that the lids form a stack which is supported at its base by movable supports;
(c) covering both the guide rods of the delivery magazine and the stacked lids in the magazine with a substantially cylindrical casing, portions of which surround the guide rods such as to immobilize the stacked lids within an transversely of the casing with a slight clearance;
(d) positioning the casing on the movable supports;
(e) retaining the stacked lids in position upon internal extensions formed on said casing adjacent the base thereof;
(f) extracting the stacked lids and the casing from the delivery magazine;
(g) covering the top and bottom ends of the casing with caps thereby sealing the casing to protect the stacked lids from contamination; and
(h) handling the casing and lids stacked therein for transportation and delivery.

4,942,719

METHOD FOR PACKING FIBROUS MATERIAL INTO BALES AND A FIBER BALE PRESS SUITABLE THEREFOR

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner Maschinenfabrik AG, Rebstein/Schweis, Fed. Rep. of Germany

Filed Sep. 26, 1988, Ser. No. 249,010
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1987, 3732376
Int. Cl.[5] B65B *1/24, 13/20, 5/00*
U.S. Cl. 53—436 **6 Claims**



5. A process for the packaging of fibrous material into a bale in an upright vertical fiber baling press, which comprises inserting a press box consisting of a press box casing with a detachable bottom plate and containing filled-in fibrous material into the baling press; placing a sheet-like piece of packaging material for the top side of the bale to be formed on the topside of the press box casing over the filled-in fibrous material; introducing a ram plate of the press ram downwardly into the press box casing to compress the fibrous material into a bale, said ram plate having lateral surfaces provided with means for urging the packaging material away from said surfaces; detaching the press box casing from the bottom plate; pulling the press box casing upwardly off of the bale of compressed fibrous material with marginal edge sections of the packaging material protruding with respect to a compression surface of the ram plate of the press ram; urging the marginal edge sections of the packaging material, after upwardly removal of the press box casing, away from the ram plate of the press ram with said means; and moving the press box casing overlying a top edge of the bale of fibrous material whereby all marginal edge sections of the piece of packaging material are folded over inwardly toward the sides of the bale.

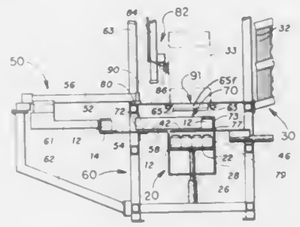
4,942,720

BOTTOM CASE LOADER AND METHOD

Joseph C. Berney, 8755 Caminito Abrazo, La Jolla, Calif. 92037

Filed Jul. 29, 1988, Ser. No. 225,862
Int. Cl.[5] B65B *5/10, 35/30, 35/40, 35/50*
U.S. Cl. 53—447 **9 Claims**

1. A method of loading product into a case from a bottom comprising:
receiving product;
moving received product through an open side wall of a product arrangement area, having three walled sides, on an elevator platen; and arranging the moved product as a first layer of product;
walling the open side wall to the arrangement area such that a removable fourth side wall is formed;
lowering the elevator platen and the first layer of product thereon to a lower position such that the first layer can receive an additional layer of product that is to be slipped off a slip sheet;
removing the fourth side wall of the arrangement area;
moving a slip sheet to an inserted position where it serves as the floor of the arrangement area;
moving received product through the open side wall of the product arrangement area onto the slip sheet and arranging the moved product as a second layer of product;



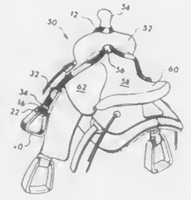
walling the open side wall of the arrangement area;
moving the slip sheet to a retracted position outside of the arrangement area such that the layer of product thereupon drops onto the layer of product on the elevator;
positioning an open case above the arrangement area such that the case opening is downward oriented; and
raising the elevator platen such that the stacked layers of product thereon are inserted into the opened case.

4,942,721

YOUTH STIRRUP ATTACHMENT

Pershing R. Van Scoyk, 7193 W. 32nd Ave., Wheat Ridge, Colo. 80033

Filed Mar. 3, 1989, Ser. No. 318,651
Int. Cl.[5] B68C *1/16*
U.S. Cl. 54—46 **6 Claims**



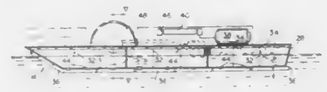
3. A combination full-sized adult saddle having a saddle horn and a hole formed in the pommel of said saddle and a youth stirrup attachment for a person having a small build to ride horseback using said saddle, said attachment comprising:
an elongated strap;
a first stirrup mounted on one end of said strap;
a second stirrup mounted on the other end of said strap; said strap retaining
said attachment on said saddle solely by frictional engagement of said strap with the rear of said saddle horn, whereby said strap is inserted through said hole and looped over said saddle horn so said strap frictionally engages said rear of said saddle horn as weight is applied to both of said stirrups.

4,942,722

PLANT HARVESTER

J. Armand Desrosiers, 212 Scenic Glen Pl. N.W., Calgary, Alberta, Canada

Division of Ser. No. 938,189, Dec. 5, 1986, Pat. No. 4,815,260.
This application Nov. 28, 1988, Ser. No. 276,873
Int. Cl.[5] A01D *34/03, 34/43, 34/64*
U.S. Cl. 56—8 **1 Claim**



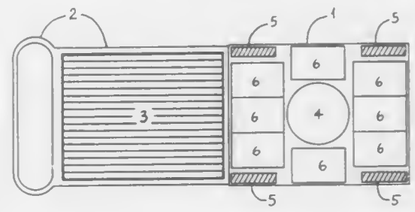
1. A floating harvester comprising a buoyant hull, said hull including a plurality of independent compartments for entrapping air independently therein, said compartments containing openings therein for allowing ingress and egress of water for entrapping air in said compartments and floating said hull upon a body of water, harvester means carried by said hull for harvesting plant growth in said body or water, and means carried on said hull for varying the amount of water and air entrapped in said compartments for adjusting the freeboard of said hull, said means for varying the amount of water and air comprising a source of pressurized air, means for connecting said source of pressurized air to said independent compartments for introducing pressurized air into said compartments for increasing the freeboard of said hull and simultaneously changing the operating depth of said harvester means, each of said compartments including upright partition means therein for damping transverse movement of water contained within said compartments, a top portion of each of said compartments being closed for preventing escape of air therefrom, and said upright partition means being spaced below said top portion for distributing said pressurized air in each of said compartments while damping transverse movement of water within each compartment.

4,942,723

SOLAR POWERED LAWNMOWER

Stephen R. Wassell, 8542 Mt. Vernon Hwy., Alexandria, Va. 22309

Filed Sep. 21, 1989, Ser. No. 410,549
Int. Cl.[5] A01D *34/00, 69/00*
U.S. Cl. 56—10.6 **2 Claims**



1. A lawnmower comprising, in combination, an electric motor, a rechargeable battery park, and a panel of photovoltaic cells, with said motor, said battery pack, and said photovoltaic cells electrically connected, which has said photovoltaic cells positioned in the region of the lawnmower defined by the perimeter of the handle of the lawnmower so that said photovoltaic cells are tilted at the same angle as the handle, with the angle arranged to be approximately perpendicularr to the rays of the sun during periods of solar exposure to said photovoltaic cells, which has said battery pack recharged with the electricity generated by said photovoltaic cells when the lawnmower

is placed in the sunlight, so that said battery pack then possesses the means to power said electric motor.

4,942,724

APPARATUS AND METHOD FOR CHANGING THE POSITION OF A MOWING MECHANISM

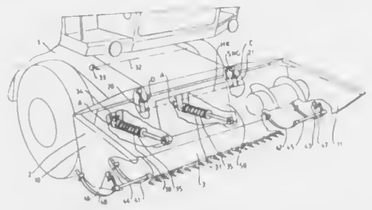
Norbert Diekhans, Gütersloh; Werner Fitzner, Sassenberg, and Heinrich Ostrup, Harsewinkel, all of Fed. Rep. of Germany, assignors to CLASS OHG, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,595

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1988, 3807610

Int. Cl.[5] A01D *35/00*

U.S. Cl. 56—10.4 **28 Claims**



1. A regulating apparatus on a self-propelled harvester (1) having a mowing bar (2), which is swivelable under hydraulic control in a vertically adjustable manner and transversely to the travel direction, and which has ground scanners (40–47) on the side, ground clearance signals (SR, SL) which are supplied to a control unit (ST) for regulating a swiveling transversely to the travel direction,

characterized in that the difference between the ground clearance signals (SR,SL) is used for regulating the swiveling, and the ground clearance signals mean value (SR, SL) serves as am actual-value component for a regulation of a cutting height of the mowing bar (2).

4,942,725

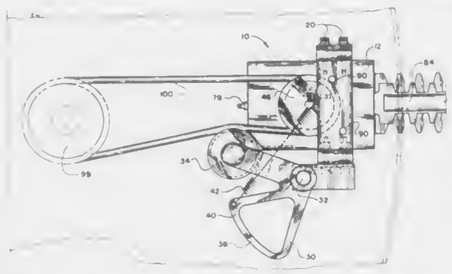
HORIZONTAL CUTTING MACHINE

Fred A. Ruder, Sr., 39975 Jones Rd., Wellington, Ohio 44090

Filed Jul. 3, 1989, Ser. No. 374,997

Int. Cl.[5] A01D *34/06, 34/33, 34/34*

U.S. Cl. 56—16.9 **3 Claims**



1. A mowing machine and power driving source comprising:

a mowing deck including an underside deck surface,

a transfer block including a base support, having a plurality of sides,

a first connecting member affixed to one of said sides of said base support,

a second connecting member affixed to another of said base support sides,

a third connecting member connected to said first and said second connecting members such that a generally rectangular configuration is described by said base support member and said first, second and third connecting members, said third connecting member being attached to the underside deck of said mowing machine, said base support member being further supplied with an opening having a longitudinal axis generally parallel to a plane described by said first, second and third connecting members,

a bearing member including a bearing surface and a keyway slot at one end of said bearing surface, said bearing being slidingly inserted into said opening located on said base support, said bearing member further including on one terminating end thereof, a boss disposed on said end of said bearing member and positioned a certain distance away from the longitudinal axis of said bearing member,

a pulley member mounted on said bearing member, and including keyway means for fastening said pulley to said bearing member,

an idler arm adjustably mounted on one of said connecting members, said idler arm further including an idler pulley,

a torque converter extending from said power driving source and being connected to said pulley member via an endless belt, and

a bar cutter, having an elongated slot, mounted onto said base support member such that said boss sits within said slot such that when rotational motion is applied to said pulley member said boss member imparts reciprocating movement to said bar cutter containing said slot.

4,942,726

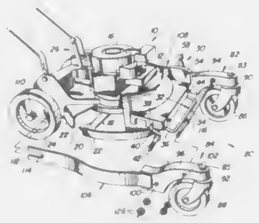
MECHANISM AND METHOD FOR CONVERTING A FIXED WHEEL WALK-BEHIND MOWER TO A CASTER WHEEL WALK-BEHIND MOWER AND VICE VERSA

Hoel L. Bowditch, Foxboro, Mass., assignor to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 90,648, Aug. 28, 1987, abandoned. This application Nov. 7, 1988, Ser. No. 270,480

Int. Cl.[5] A01D *34/74*

U.S. Cl. 56—17.2 **31 Claims**



1. A caster wheel conversion mechanism for a walk behind mower having a housing with front and rear axles carrying fixed direction wheels, said mechanism adapted to convert two fixed wheels to castering wheels and comprising:

at least two caster wheel assemblies each having axle receiving means formed therein; and

at least two interconnection means, each operatively connectable to a respective one of said caster wheel assemblies and said housing, for operatively interconnecting each of said caster wheel assemblies with said housing such that whenever the cutting height of said mower is set and both the front and rear wheels are adjusted to the approximate same height, said caster wheels remain approximately perpendicular to the surface upon which they are supported.

4,942,727

SEED COLLECTOR DEVICE FOR A MOWER

William D. Glan, 15188 Priaceton Rd., Cerulean, Ky. 42215

Filed Oct. 23, 1989, Ser. No. 425,118

Int. Cl.[5] A01D *45/30*

U.S. Cl. 56—126 **11 Claims**



1. A seed collector device for a mower apparatus adapted to move in a longitudinal direction, having a blade device extending transversely of the longitudinal direction and adapted to cut the stalks of vegetation having heads of seed above the blade device, comprising:

(a) a seed collection tray having a longitudinal dimension and a transverse dimension, a top surface, a front transverse edge, a rear transverse edge portion, and opposite ends;

(b) support means mounting said tray above said blade device, said front transverse edge being at an elevation below the seed heads of the vegetation to be cut by said blade device, to engage said stalk as said tray moves forward to cause the seed from the seed heads to fall upon said top surface,

(c) said top surface declining from said front transverse edge toward said rear edge portion, and

(d) collector means for receiving seed moving downward and rearward over said top surface.

4,942,728

STICKLE BAR JOINT CONSTRUCTION

Maurice Loring, Rushville, Ill., assignor to Kondex Corporation, Lomira, Wis.

Filed May 23, 1988, Ser. No. 197,565

Int. Cl.[5] A01D *34/02*

U.S. Cl. 56—296 **7 Claims**



1. A sickle bar for mounting a plurality of adjoining sickle sections along the length of the bar, said sickle bar comprising:

top and bottom bar assemblies each including at least two bars arranged end-to-end;

each split between the ends of the bars in one of the bar assemblies being longitudinally offset relative to each split between the ends of the bars in the other bar assembly.

4,942,729

APPARATUS FOR ALIGNING A STRAND SUPPLY DEVICE AND A STRAND GUIDE OF A TEXTILE MACHINE

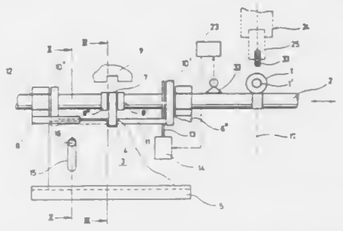
Hermann Güttler, Uhingen, and Karl-Heinz Mark, Weilheim, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Sep. 27, 1989, Ser. No. 413,480

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1988, 3832665

Int. Cl.[5] D01H *15/00, 15/013, 5/58, 13/06*

U.S. Cl. 57—261 **14 Claims**



1. In a textile machine of the type having a supply of a strand of textile material and a device for drafting the strand of textile material, a reciprocable member, a strand guide mounted on the reciprocable member for guiding the strand from the strand supply to the drafting device, means for reciprocating the reciprocable member transversely with respect to the strand during operation of the drafting device to effect reciprocating movement of the strand guide relative to the drafting device during the feed of the strand through the strand guide to the drafting device, and means for initially inserting the strand into the strand guide, an apparatus comprising:

means for aligninx the intial strand inserting means and the strand guide with respect to one another in an alignment position at which the strand is initially inserted into the strand guide.

4,942,730

TEXTILE APPARATUS

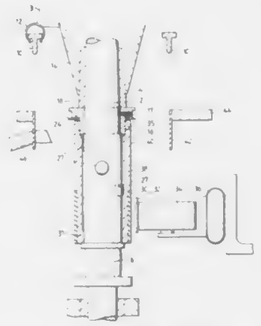
William A. Morrison, Caramoney, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland

Filed Aug. 16, 1988, Ser. No. 232,712

Claims priority, application United Kingdom, Aug. 17, 1987, 8719416

Int. Cl.[5] D01H *1/38, 9/16, 11/00*

U.S. Cl. 57—303 **12 Claims**



1. Apparatus for automatically winding yarn onto a first

bobbin positioned on a spindle to form a wound yarn package and for transferring without interruption the yarn from the wound yarn package on the first bobbin to a replacement bobbin positioned on the spindle, said apparatus comprising:

a spindle for carrying a first bobbin, said spindle being rotatable about its axis to enable yarn to be wound on the first bobbin to form a wound yarn package;

a yarn reserve winding member around which yarn is wound prior to doffing the first bobbin containing the wound yarn package from said spindle;

a yarn severing device located adjacent the axis of said spindle and between said yarn reserve winding member and an adjacent portion of said spindle for cutting the yarn connected between the wound yarn package on the first bobbin on said spindle and a winding on said yarn reserve winding member before doffing the first bobbin containing the wound yarn package from said spindle, and for further cutting the yarn connected between the winding on said yarn reserve winding member and an initial winding on a replacement bobbin positioned on said spindle following doffing of the first bobbin containing the wound yarn package from said spindle;

a first drive means operative for providing rotation of said spindle and said yarn reserve winding member in a first direction to form the wound yarn package on the first bobbin, the winding on said yarn reserve winding member and the initial winding on the replacement bobbin; and

a second drive means independently operative of said first drive means for providing rotation of only said yarn reserve winding member in both said first direction and a second direction opposite to said first direction, so that when said yarn reserve winding member is rotated in said second direction independent of said spindle and said first drive means via said second drive means, the yarn connected between the wound yarn package on the first bobbin positioned on said spindle and the winding on said yarn reserve winding member is cut by said yarn severing device prior to doffing the wound yarn package on the first bobbin from said spindle, and when said yarn reserve winding member is rotated in said first direction independent of said spindle and said first drive means via said second drive means, the yarn connected between the winding on said yarn reserve winding member and the initial winding on the replacement bobbin positioned on said spindle is cut by said yarn severing device.

4,942,731

SPINNING METHOD AND SPINNING APPARATUS

Toshifumi Morihashi, Ohtsu; Shoji Sakai, Nagaokakyo; Teruo Nakayama, Ohtsu; Koshi Noda, Joyo, and Michiaki Fujiwara, Kameoka, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 7, 1988, Ser. No. 281,092

Claims priority, application Japan, Dec. 14, 1987, 62-315774

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—328 **3 Claims**

1. A spinning apparatus, comprising:

a drafting device for drafting a fiber bundle,

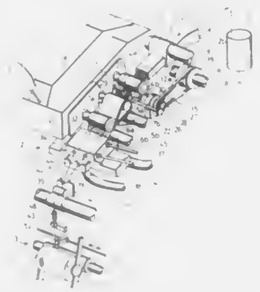
a twisting device for applying a twist to the drafted fiber bundle, the twisting device comprising a pair of false twisters,

a take-up device for taking up yarn delivered from the twisting device,

separating means for separating the fiber bundle into two secondary bundles,

a secondary bundle combining device providing downstream of the separating means,

a fiber bundle guide provided upstream of the drafting device,



wherein the separating means is located between the fiber bundle guide and the drafting device.

4,942,732

REFRACTORY METAL COMPOSITE COATED ARTICLE

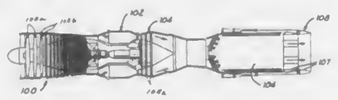
Seymour Priceman, Seaford, N.Y., assignor to Barson Corporation, Troy, Mich.

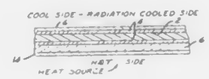
Division of Ser. No. 86,023, Aug. 17, 1987, Pat. No. 4,889,776.

This application Mar. 13, 1989, Ser. No. 322,648

Int. Cl.[5] F02K *3/10*

U.S. Cl. 60—261 **6 Claims**





1. In an engine using a gas flow past an upstream engine component toward a downstream engine component operating at elevated temperature, the combination of said downstream component comprising a substrate of a refractory metal, an oxidation resistant intermetallic layer on the substrate and a ceramic layer adhering to the intermetallic layer, said upstream component comprising a material potentially destructively reactive with said intermetallic layer so as to degrade same when in contact therewith at elevated temperature, said ceramic layer providing a barrier between said intermetallic layer and said material in the event said material comes in contact with said downstream component so as to prevent degradation of said intermetallic layer.

4,942,733

HOT GAS GENERATOR SYSTEM

Gregory S. Hosford, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 30,724, Mar. 26, 1987, Pat. No. 4,825,650.

This application Nov. 21, 1988, Ser. No. 273,893

Int. Cl.[5] F02K *9/42*; F02C *3/28*

U.S. Cl. 60—267 **16 Claims**

1. A hot gas generator system, comprising:

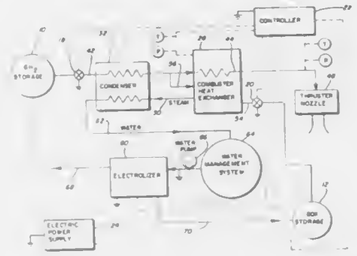
combustor means;

condenser means;

means connecting the combustor means to the condenser means for condensing the product of combustion from the combustor means;

hydrogen supply means;

means connecting the hydrogen supply means to the condenser means and then to the combustor means whereby the hydrogen absorbs heat from the combustion product as it condenses and the hydrogen thereby is preheated



prior to entering the combustor means, and including a first portion for supplying some of the hydrogen to the combustor means for burning therein and a second portion for passing the remainder of the hydrogen through the combustor means for superheating the hydrogen;

oxygen supply means; and

means connecting the oxygen supply means to the combustor means for mixing with the hydrogen therein during combustion.

4,942,734

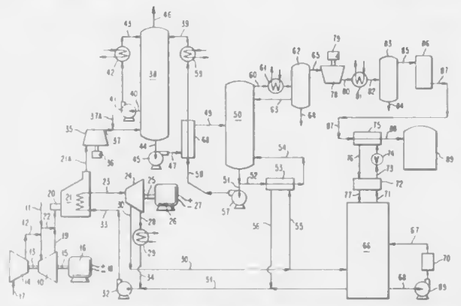
COGENERATION OF ELECTRICITY AND LIQUID CARBON DIOXIDE BY COMBUSTION OF METHANE-RICH GAS

Stephen J. Markbreiter, Edison; Daniel J. Dessanti, Teaneck, both of N.J., and Hans P. Schorr, Douglaston, N.Y., assignors to Kryos Energy Inc., New York and The Brooklyn Union Gas Company, Brooklyn, both of, N.Y.

Filed Mar. 20, 1989, Ser. No. 326,636

Int. Cl.[5] F02C *6/18*; F25B *27/02*

U.S. Cl. 60—39.02 **18 Claims**



1. A cogeneration system for the production of electricity and liquid carbon dioxide by the combustion of methane-rich fuel gas, which comprises four integrated components:

(1) a gas turbine for the combustion of said fuel gas with excess air at elevated pressure, an electric generator driven by said gas turbine, a high-pressure steam boiler connected to receive and burn the exhaust gases from said gas turbine and an additional quantity of said fuel gas, a steam turbine connected to receive high-pressure steam from said steam boiler, and an additional electric generator driven by said steam turbine;

(2) an amine absorption system for the separation of carbon dioxide from the flue gas produced in said steam boiler of component (1), said absoption system having a stripping column with a reboiler connected to be heated with steam from an intermediate-pressure stage of said steam turbine of component (1);

(3) an ammonia absorption refrigeration unit connected to receive steam from said intermediate-pressure stage of said steam turbine of component (1); and

(4) apparatus to liquefy carbon dioxide released by said stripping column of component (2), which comprises a compressor, cooling and drying means, and a carbon dioxide condenser, all connected in series, and said condenser connected to receive refrigeration from said ammonia absorption refrigeration unit of component (3).

4,942,735

APPARATUS FOR DRIVING A MEDICAL APPLIANCE

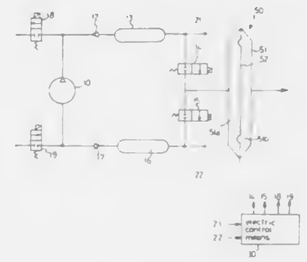
Sadahiko Mushika, Ichinomiya, and Akira Suzuki, Nishio, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi and Kabushiki Kaisha Shinsangyokaihatsu, Tokyo, both of, Japan

Filed Sep. 19, 1988, Ser. No. 246,232

Claims priority, application Japan, Sep. 18, 1987, 62-23582

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—416 **3 Claims**



1. An apparatus for driving a medical appliance comprising:

a positive pressure generating means having an outlet terminal;

a first one-way valve means having an inlet terminal connected to said outlet terminal of said positive pressure generating means;

a first accumulating means connected to an outlet terminal of said first one-way valve means;

a first switching valve means connected to said first accumulating means;

a first pressure sensing means for detecting a pressure between said first one-way valve means and said first switching valve means;

a second switching valve means connected to an outlet terminal of said first switching valve means;

a second accumulating means connected to said second switching valve means;

a second one-way valve means having an inlet terminal connected to said second accumulating means and an outlet terminal connected to an inlet terminal of said positive pressure generating means;

a second pressure sensing means for detecting a pressure between said second switching valve means and said second one-way valve means;

a third switching valve means connected between said pressure generating means and said first one-way valve means for controlling communication of said pressure generating means with the atmosphere;

a fourth switching valve means connected between said pressure generating means and said second one-way valve means for controlling communication of said pressure generating means with the atmosphere;

an isolator means having an inlet connected between said first and second switching valve means and an outlet adapted to be connected to a medical appliance for the alternate application of positive and negative pressures thereto; and

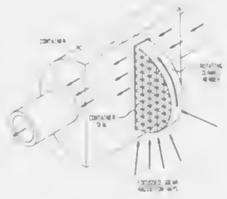
an electronic control means connected to said valve means and said pressure sensing means for opening and closing said first and second switching valve means in accordance with predetermined timings to alternately apply positive and negative fluid pressures to said isolator means, for opening and closing said third and fourth switching valve means in accordance with both positive and negative pressure setting values provided in said electronic control means and output signals from said first and second pressure sensing means and for closing at least one of said third and fourth switching valve means when both of said output signals from said first and second pressure sensing means are above the setting values, respectively for regulating the pressures in said first and second accumulator means.

4,942,736

METHOD OF AND APPARATUS FOR PRODUCING POWER FROM SOLAR ENERGY

Lucien Y. Bronicki, Yavne, Israel, assignor to Ormat Inc., Sparks, Nev.

Filed Sep. 19, 1988, Ser. No. 246,149
Int. Cl.[5] F03G *7/02*
U.S. Cl. 60—641.12 **36 Claims**



1. A method for producing power from solar energy comprising the steps of: compressing gas from an ambient source during a first period of time and storing the compressed gas in a storage reservoir: and supplying said compressed gas from the storage reservoir to a gas turbine through a solar collector during a second period time to produce electricity.

4,942,737

DRIVE CONTROL SYSTEM FOR HYDRAULIC CONSTRUCTION MACHINE

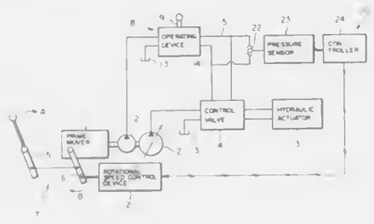
Akira Tatsumi, Tokyo, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00737, § 371 Date May 31, 1988, § 102(e) Date May 31, 1988, PCT Pub. No. WO88/02441, PCT Pub. Date Apr. 7, 1988
PCT Filed Oct. 2, 1987, Ser. No. 205,321
Claims priority, application Japan, Oct. 5, 1986, 61-236676
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—431 **13 Claims**

1. A drive control system for a hydraulic construction machine, comprising a prime mover, a hydraulic pump driven by the prime mover, at least one hydraulic actuator driven by hydraulic fluid discharged from the hydraulic pump, first rotational speed setting means including first operating means for setting rotational speed of the prime mover, and second operating means for controlling operation of the hydraulic actuator, characterized by comprising:

second rotational speed setting means (20, 24) associated with the second operating means for outputting a rotational speed control signal increasing the set rotational speed of the prime mover when displacement of the second operating means exceeds a predetermined value; and

rotational speed control means associated with at least the second rotational speed setting means, for validating the



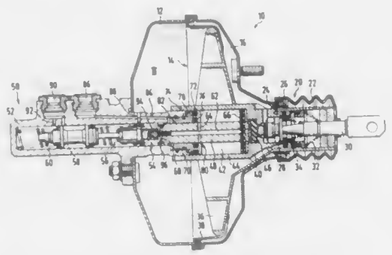
rotational speed set by the first rotational speed setting means (7; 80) in a first region in which displacement of the second operating means is at least equal to or less than said predetermined value, and for setting a rotational speed higher than the rotational speed set by the first rotational speed setting means, modified by the rotational speed control signal from the second rotational speed setting means in a second region in which the displacement of the second operating means is larger than the predetermined value.

4,942,738

PNEUMATIC BRAKE BOOSTER PISTON WITH SLEEVE DEFINING QUICK-FILL INPUT CHAMBER

Manfred Kaub, Rhens, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jul. 30, 1987, Ser. No. 79,530
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1986, 8622758
Int. Cl.[5] B60T *13/10, 13/52, 13/56*
U.S. Cl. 60—550 **14 Claims**



9. A brake pressure booster and master cylinder assembly, comprising:

a booster casing (12) in which a movable wall (14) separates two compartments (16,18) from each other,

a control valve (20) which connects the two compartments (16,18) with each other when it is in an inoperative position and separates the two compartments (16,18) from each other when in an operative position, connecting one

(16) of them to a source of pressure which differs from the pressure in the other compartment (18),

a cylinder casing (52) attached to the booster casing (12), projecting into the same, and containing at least one pressure piston (54) which defines a pressure chamber (56) for pressurizing a brake circuit,

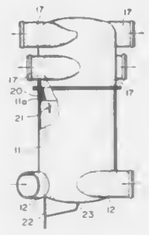
an input piston (40) which has a larger effective surface than said pressure piston (54) and is formed with an integral, sleeve-like envelope (44) defining an input chamber (42) movable together with the movable wall, a relief valve (80) adapted to relieve the input chamber (42) of pressure in case of failure of the brake pressure booster (10), an intermediate piston (70) disposed between said input piston (40) and said pressure piston (54) and including a first part (70a) which is slideably received in said sleeve-like envelope and is sealed thereto by a first seal (72), said intermediate piston (70) having a second part (70b) which is slideably received in said cylinder casing (52) and is sealed thereto by a second seal (74), a spring (78) acting on said intermediate piston (70) urging it to a first position in the direction of said input piston (40), said intermediate piston having a first face (79) exposed to the pressure in said input chamber (42) and an opposed second face (81) exposed to pressure in a space between said first and second seals (72,74), fluid passage means (83) connecting said space to the one of said booster compartments (18) which is under lower pressure than the other compartment (16) when the brake pressure booster (10) is actuated, said intermediate piston (70) being responsive to predetermined differences in relative pressure forces acting on the respective first and second faces (79, 81) to effect movement of said intermediate piston (70) between first and second positions towards and away from said input piston (40), respectively, said intermediate piston (70) having an operative connection with said relief valve (80) whereby said relief valve (80) is opened sooner, in the course of brake actuation if the booster has failed than if it is operative.

4,942,739

MIXING CHAMBER FOR AN AIR-CONDITIONING SYSTEM

Akira Uda, Kakamigahara; Yoshio Yoshida, Ogaki; Makoto Harada, Minokamo, and Masaki Sato, Kakamigahara, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha and Japan Aircraft Development Corporation, both of, Japan

Filed Jul. 11, 1989, Ser. No. 378,379
Claims priority, application Japan, Jul. 11, 1988, 63-172448
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—93 **6 Claims**



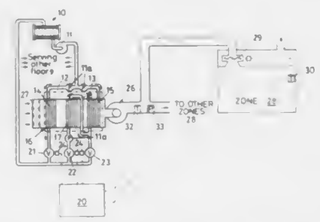
1. A mixing chamber for an air-conditioning system comprising a vessel of a cylindrical configuration, inlet port means formed in said vessel at one axial end portion and oriented in a tangential direction with respect to said vessel to introduce air and form a spiral air flow in said vessel, outlet port means formed in said vessel at the other axial end portion to discharge the air, water capturing means provided on an inner wall surface of said vessel to extend circumferentially along said inner wall surface for preventing water on said inner wall surface from flowing beyond said water capturing means toward said other axial end portion of said vessel, opening means formed in said vessel to open to said inner wall surface at a side adjacent to said inlet port means to draw water accumulated on said inner wall surface of said vessel at said side of said water capturing means.

4,942,740

AIR CONDITIONING AND METHOD OF DEHUMIDIFIER CONTROL

Allan Shaw; Russell E. Luxton, both of 5th Floor, Security House, 233 North Terrace, Adelaide, Australia, and Russell E. Luxton, both of Adelaide, Australia, assignors to Allan Shaw; Russell Estcourt Luxton and Luminis Pty. Ltd., all of Adelaide, Australia

Continuation-in-part of Ser. No. 124,876, Nov. 24, 1987, Pat. No. 4,876,858. This application Mar. 3, 1989, Ser. No. 319,409
Claims priority, application Australia, Nov. 24, 1986, PH 9126
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—93 **26 Claims**



1. An air conditioner comprising a dehumidifier having a plurality of coil portions,

coolant supply means and coolant flow control means controlling coolant flow from the coolant supply means and through the coil portions selectively in one at least of a plurality of coolant circuits which embody said coil portions, so as to establish a plurality of stages of dehumidifier capacity,

an air flow fan, means controlling air flow from the fan to be through one at least of the coil portions, at least one control sensor located to sense magnitude of load,

and coupling means coupling said sensor to said flow control means in such a way that as load reduces from peak load conditions through part load stages towards minimum load conditions, coolant flow is restricted through one at least of the coil portions but coolant flow rate is increased in another of said coil portions to maintain the required sensible heat cooling capacity, in turn increasing the heat transfer coefficient on the coolant side of a heat exchange interface of said other coil portion thereby reducing the temperature of that interface and in turn increasing the ratio of latent heat cooling to sensible heat cooling of that interface.

4,942,741

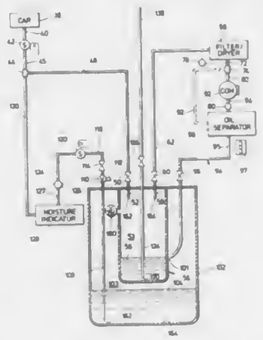
REFRIGERANT RECOVERY DEVICE

John P. Hancock, 1845 E. 101st St., Indianapolis, Ind. 46280, and Ralph A. McClelland, 9646 Hadway Dr., Indianapolis, Ind. 46256

Filed Jul. 3, 1989, Ser. No. 374,821
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **20 Claims**

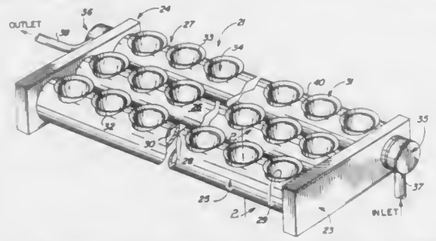
1. A container for use in a refrigerant recovery device, the container comprising:

a refrigerant storage tank having a wall defining an exterior and a generally hollow interior,
a tank inlet means through which refrigerant can flow from the exterior of the tank to the interior of the tank,
a tank outlet means through which refrigerant can flow from the interior of the tank to the exterior of the tank,
a contaminant canister for separating contaminants from refrigerant and for storing the contaminants so separated,



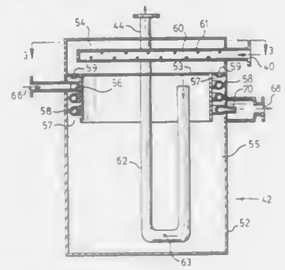
the contaminant canister including a wall defining an interior and an exterior, and being disposed substantially within the interior of the refrigerant storage tank,
a canister inlet means through which refrigerant can flow into the canister,
a canister outlet means through which refrigerant can flow out of the canister and
a contaminant removal means for removing contaminant from the canister.

4,942,742
ICE MAKING APPARATUS
Sergio G. Burruel, 5635 W. Verde La., Phoenix, Ariz. 85031
Filed Apr. 23, 1986, Ser. No. 855,140
Int. Cl.[5] F25C *1/22*
U.S. Cl. 62—347 **9 Claims**



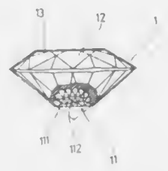
4. A system for producing ice cubes comprising: a plurality of generally elongated, substantially hollow fluid conducting conduit means each having a longitudinal axis, at least one longitudinal conduit surface, a first end portion, a second end portion opposite said first end portion, fluid inlet means operatively connected to one of said first end portions and one of said conduit means and one of said second end portions on a different one of said conduit means, fluid outlet means operatively connected to the ends of said conduit means opposite to the ends connected to said fluid inlet means, said conduit means being disposed so that the longitudinal axis thereof are disposed in spaced generally parallel relationship to each other; a supply of fluid refrigerant means; means for circulating said fluid refrigerant means simultaneously to said inlet means of each said conduit means, through the hollow interior thereof, and out of said outlet means thereof for return to said fluid refrigerant supply means; a supply of heated fluid heat exchange means; means for circulating said fluid heat exchange means simultaneously to said inlet means of each said conduit means, through the hollow interior thereof and out of said outlet means thereof for return to said fluid heat exchange means supply; a supply of water; water flow-directing means operatively disposed relative to said conduit means for directing a flow of water along said conduit surface; means for feeding water from said water supply to said flow directing means; a plurality of ice-forming pockets operably disposed in the surface of each of said conduit means to receive said water from said water flow directing means therewithin; control means for selectively and simultaneously circulating said fluid refrigerant means through each of said conduit means for freezing the water deposited within said pocket means for producing ice cubes therein and for selectively and simultaneously circulating said heated fluid exchange means through each of said conduit means for partially thawing the outer surface of said ice cubes and dislodging said ice cubes from said pockets for gravitational emptying prior to beginning the next ice forming cycle.

4,942,743
HOT GAS DEFROST SYSTEM FOR REFRIGERATION SYSTEMS
Charles Gregory, 1348 #5 Highway, Burlington, Ontario, Canada L7R 3X4
Filed Nov. 8, 1988, Ser. No. 268,412
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 **43 Claims**



29. A refrigeration system comprising:
a refrigerant compressor;
a cooling coil having an inlet and an outlet;
an expansion device for expanding and cooling refrigerant connected between the compressor and the cooling coil inlet;
a controllable defrost control valve connected to the compressor outlet to receive hot compressed refrigerant fluid therefrom;
and a liquid refrigerant vaporizing accumulator connected to the coil for vaporizing liquid fluid issuing from the coil outlet to prevent its delivery to the compressor inlet, the vaporizing accumulator comprising:
a body member,
a partition member within the interior of the body member and dividing the interior into first and second chambers;
an inlet to the first chamber for connection into the refrigeration system so as to receive the refrigerant fluid exiting from the coil under defrost and to produce turbulence therein as it enters the first chamber;
a plurality of bores in the partition connecting the interiors of the two chambers, constituting the only outlet for all of the refrigerant fluid rom the first chamber, and for the passage of the turbulent refrigerant fluid from the first chamber to the second chamber;
a heat exchange pipe of heat conductive material disposed in the second chamber adjacent the said plurality of bores for its surface to be impinged by the turbulent refrigerant fluid passing through the bores for vaporization of any liquid refrigerant entrained therein;
an inlet to the heat exchange pipe and an outlet therefrom for connection into the refrigeration system to receive and to deliver respectively hot refrigerant fluid received from the compressor; and
an outlet from the second chamber for all of the refrigerant fluid into an accumulator outlet pipe within the second chamber.

4,942,744
SELF-SHINING ARTIFICIAL JEWELRY DEVICE
Hsu C. Wei, Rm. 602, 6F, No. 75, Roosevelt Rd., Sec. 2 Taipei, Taiwan
Filed Feb. 3, 1989, Ser. No. 306,519
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—26 **2 Claims**



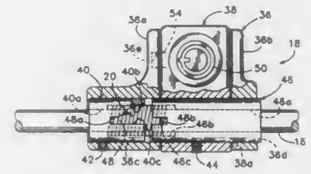
1. A sparkling jewelry device comprising a jewel having a cavity therein, said cavity having an inner surface provided with a plurality of light-reflecting facets, said jewel having an exterior surface provided with a plurality of light-reflecting facets, a colored coating disposed over said exterior light-reflecting facets, and a light-generating element disposed in said cavity for directing light rays upon both of said light-reflecting facets and through said colored coating; and a socket for mounting said jewel and said light-generating element, said socket having a plurality of corrugated reflective surfaces for reflecting additional light rays toward both of said light-reflecting facets.

4,942,745
LOCKING SECURITY ARRANGEMENT
Gregory A. Jacobs, and Merrill G. Neal, both of Redondo Beach, Calif., assignors to Yacht-Yok, A California Partnership, Hermosa Beach, Calif.
Filed Jul. 18, 1989, Ser. No. 381,592
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 **10 Claims**



1. An arrangement for securing a piece of equipment to a securing surface comprising the combination of:
a securing surface;
a piece of equipment having a housing;
a bracket assembly mounted on the securing surface; and
a key-operated lock assembly non-rotatably mounted within the bracket assembly and having a shaft disposed within a mating aperture in the housing of the piece of equipment, the shaft of the lock assembly being capable of removal from the housing of the piece of equipment only with the use of a key.

4,942,746
ANTI-THEFT AUTO LOCKING DEVICE WITH SPRING CLUTCH
Jacob G. Monroy, 4143-A Warner Blvd., Burbank, Calif. 91505
Filed Oct. 17, 1989, Ser. No. 422,767
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—238 **6 Claims**



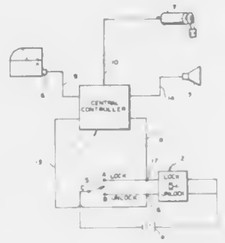
1. A device for preventing the theft of a vehicle having a driver's compartment with a first member movable for operation of the vehicle and a second member spaced from the first member, said device comprising:
first engaging means for securely engaging the first member;
elongate bar means fixedly attached to the first engaging means and having a length sufficient to extend adjacent to the first and second members, the bar means having at least a cylindrical portion posed adjacent the second member when the first engaging means engages the first member;
second engaging means, captured slidingly on the cylindrical portion of the bar means, for securely engaging the second member;
spring means disposed around the bar and having first and second spring ends, the first spring end being attached to the second engaging means in a manner preventing rotation of the first spring end about the bar relative to the second engaging means; and
lock means for locking the second spring end in a securing position relative to the first spring end whereby the spring means is under tension around the bar, thereby frictionally inhibiting movement of the spring means along the bar, the locking means being operable for releasing the spring means from the securing position and allowing rotation of the second spring end around the bar relative to the first spring end sufficient to remove the tension of the spring means on the bar, thereby allowing movement of the spring means, and therefore the second engaging means, along the bar.

4,942,747
OPERATOR LOCKOUT PREVENTION DEVICE
Douglas A. Pinnow, Laguna Hills, Calif., assignor to Universal Photonix, Inc., Laguna Hills, Calif.
Filed Oct. 14, 1988, Ser. No. 257,551
Int. Cl.[5] E05B *47/00*
U.S. Cl. 70—263 **10 Claims**

1. In a motor vehicle including an ignition lock, a power door lock mechanism, first sensor means for generating a first electric signal when an ignition key is in said ignition lock, second sensor means for generating a second electric signal whan a door of the motor vehicle is open, and switch means movable from a lock position to an unlock position for causing said power door lock mechanism to selectively lock and unlock a lock for said door, said switch means closing a locking circuit when in said lock position and an unlocking circuit when in said unlocking position, the improvement comprising:

detection means for generating a locking signal when said locking circuit has been closed by said switch means;

a central controller including logic circuit means connected to each of said first and second sensor means, and to said detection means for generating a third electric signal



whenever said first and second electric signals are simultaneously generated by said first and second sensor means, and said locking circuit is simultaneously closed; and

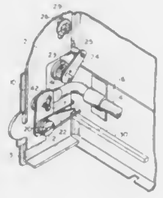
means for transmitting said third electric signal to said unlocking circuit to cause said power door lock mechanism to unlock said door.

4,942,748

SECURITY MECHANISM FOR TELEPHONE PAYSTATIONS

Gerald B. McGough, Huntsville, Ala., assignor to Palco Telecom Inc., Nashville, Tenn.

Filed Jan. 9, 1989, Ser. No. 364,093
Int. Cl.[5] E05B *11/00*
U.S. Cl. 70—389 **8 Claims**



1. A security arrangement for a telephone paystation upper housing, including a cylinder lock, a locking bar engageable by said lock, a torsion bar, and latch means secured to said locking bar and to said torsion bar, said latch means comprising:

a latch plate, including a first opening;

said latch plate further including a second opening, including at least two communicating areas angularly related to each other;

a bearing plate;

a first projection extending from said bearing plate through said first opening facilitating rotational motion of said latch plate around said first projection from said bearing plate;

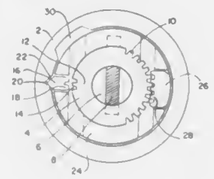
and a projection from said locking bar normally extending through a first one of said communicating areas in said latch plate and in response to vertical movement of said locking bar resulting from engagement by said cylinder lock, said locking bar projection moved into a second one of said communicating areas whereby said locking bar is inhibited from further vertical embodiment.

4,942,749

INTERCHANGEABLE KEY LOCK WITH ROLLING TUMBLERS

Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md. 20817

Filed Jun. 26, 1989, Ser. No. 371,114
Int. Cl.[5] E05B *63/00*
U.S. Cl. 70—495 **9 Claims**



1. A lock in which a first key is initially the correct key so that the lock may be opened by the first but not a second key, and wherein after the lock has been opened by the first key the second key may be placed in the lock whereupon the second key becomes the correct key for unlocking the lock and the first key is no longer the correct key and will not unlock the lock, comprising:

a sidebar comprising means for locking and unlocking the lock,

tumbler means settable to open the lock by said first key, said sidebar being the lock opening means movable to a lock-opening position when said tumbler means has been set to open the lock by the correct key, and

setting changing means for changing, when said sidebar is in said lock open position, the setting of said tumbler means upon the mere insertion of the second key in the lock, so that said second key now becomes the correct key for opening the lock,

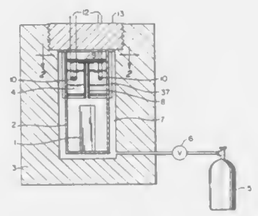
said tumbler means comprising at least one single piece tumbler, the geometry of each tumbler remaining the same irrespective of the key that is inserted into the lock.

4,942,750

APPARATUS AND METHOD FOR THE RAPID ATTAINMENT OF HIGH HYDROSTATIC PRESSURES AND CONCURRENT DELIVERY TO A WORKPIECE

Robert M. Conaway, Columbus, Ohio, assignor to Vital Force, Inc., Columbus, Ohio

Filed Jan. 23, 1989, Ser. No. 338,222
Int. Cl.[5] B21P *26/10*
U.S. Cl. 72—56 **3 Claims**



1. A method for the processing of a workpiece with high temperatures and high pressures comprising the steps:

(a) placing said workpiece into a first thermally insulated chamber, wherein said first chamber has a means therein for heating said workpiece in a controlled manner;

(b) heating said workpiece in said first chamber to the desired temperature;

(c) concurrently with step b, inserting into a second thermally insulated chamber, a heating means in thermal contact with a sufficient quantity of expansible fluid to cause a pressure rise upon expansion in said first chamber and said second chamber to the desired processing pressure for said workpiece, wherein said expansible fluid causes a chemical reaction when in contact with said workpiece, inducing chemical changes in said workpiece;

(d) joining said first and said second chambers by means of a hollow connecting tube, said tube having an impermeable pressure-opening inlet device isolating said first and said second chambers;

(e) inserting said first and said second chambers, as joined in step d, into a pressure-containment vessel;

(f) introducing sufficient heat into said heating means to open said inlet device and raise the pressure in both chambers to the desired value, bringing said expansible fluid into contact with said workpiece, causing thereby chemical changes to occur in said workpiece;

(g) holding the combination of said first and said second chambers, as connected, at the required temperature and pressure for the required length of time;

(h) reducing said pressure;

(i) removing said combination of said first and said second chambers from said pressure-containment vessel;

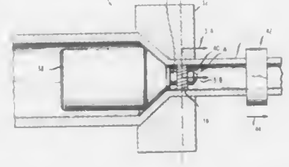
(j) reducing the temperature of said workpiece and removing said workpiece from said first chamber.

4,942,751

PROCESS AND APPARATUS FOR FORMING INTERNALLY ENHANCED TUBING

Francis J. Fuchs, Jr., Naples, Fla., assignor to R. Gale Rhodes, Jr., Rumson, N.J., a part interest

Filed Oct. 13, 1989, Ser. No. 422,984
Int. Cl.[5] B21C *37/20*
U.S. Cl. 72—68 **10 Claims**



1. Process of forming internally enhanced tubing, comprising the steps of:

forming the internal portion of tubing into a plurality of inwardly extending spiral fins having a first radial length; and lengthening said spiral fins to a second radial length greater than said first radial length.

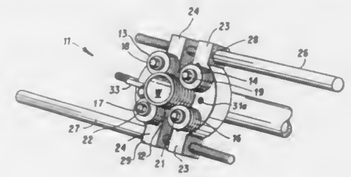
4,942,752

APPARATUS FOR REFORMING AND RESTORING THE SURFACE OF A CYLINDRICAL WORKPIECE MANUALLY

Sheldon Helfman, 496 Orange Ave., West Haven, Conn. 06516

Continuation of Ser. No. 863,871, May 16, 1986, abandoned, which is a continuation-in-part of Ser. No. 777,486, Sep. 19, 1985, abandoned. This application Sep. 26, 1988, Ser. No. 251,025
Int. Cl.[5] B23G *7/02*; B21H *3/04*
U.S. Cl. 72—70 **9 Claims**

1. A device for manually working the surface of a cylindrical metallic workpiece to selectively increase the effective diameter of the workpiece and to reform and restore threads thereon comprising a pair of oppositely disposed C-shaped brackets defining a work receiving opening therebetween for surrounding the work when disposed therein, each of said C-shaped brackets having a plurality of spaced openings therein, said openings in one bracket opposing and being aligned with openings in the other bracket, a plurality of metal forming rollers each having swaging threads on their outer surface, said swaging rollers having opposite end portions, each of said end portions being provided with identical pilot thread sections having pilot swaging threads of progressively increasing crest diameter extending respectively from opposite ends of said rollers inwardly to an intermediate swaging thread section having swaging threads of constant crest diameter to permit thread reforming when said rollers are mounted with either of said roller end portions positioned outwardly of and spaced from said brackets, means for removably securing each of said



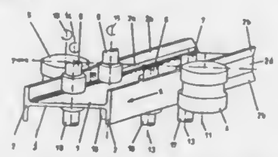
rollers in a selected opening to obtain a variable dispositional array of the rollers and their engagement with a workpiece disposed in said work receiving opening, to thereby accommodate the device to workpieces of different diameters, said removable securing means including a stub shaft extending through a bore in each of said rollers and extending into one of said openings in said C-shaped brackets, a pair of openings provided in each bracket disposed normal to said stub shaft openings, and opposing handle means extending through said pairs of openings for securing the C-shaped brackets together about the work, whereby the handles can be engaged to move the metal working rollers toward and away relative to the workpiece and the surface of the metallic workpiece is worked manually by grasping the handle means and rotating the C-shaped brackets and associated rollers about the workpiece.

4,942,753

PROCESS AND APPARATUS FOR ROLLING STRUCTURAL SHAPES

Horst Willeke, Salzgitter, Fed. Rep. of Germany, assignor to Salzgitter AG, Berlin, Fed. Rep. of Germany

Filed Feb. 15, 1989, Ser. No. 311,608
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1988, 3805364
Int. Cl.[5] B21B *1/12*
U.S. Cl. 72—178 **26 Claims**



1. Process for finishing an overall shape, said overall shape having at least a first shape segment and at least a second shape segment which are joined at an approximately right angle junction therebetween, said process comprising the steps of:

roughing said first and said second shape segments to final dimensions with said second shape segment including at least a portion thereof being outwardly bent with respect to a remainder of said second shape segment and said junction;

bending said at least a portion of said second shape segment to be aligned with said remainder of said second shape

segment and oriented at a right angle with respect to said first shape segment;

said bending including directing compression roll means inwardly toward a section of said second shape segment and against said portion at said section without supporting an immediately opposite section of said second shape segment directly opposed to said compression roll means; and

supporting at least one of said first shape segment and said second shape segment at locations remote from said section of said second shape segment with additional roll means during said bending to prevent undesired bending of said first shape segment and said second shape segment away from said overall shape.

4,942,754

ARRANGEMENT FOR AXIALLY DISPLACING ROLLS IN ROLLING MILL STANDS

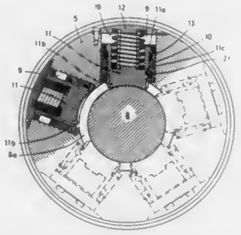
Ulrich Patzelt, Kreuztal, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft

Filed May 18, 1988, Ser. No. 195,210

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716901

Int. Cl.[5] E21B *31/18*

U.S. Cl. 72—247 **3 Claims**



1. In an arrangement for axially displacing rolls in rolling mill stands, wherein the rolls of the rolling mill stand are supported in rolls supports including bearings which are axially slidable within the roll supports, the supports being adjustably and slidably guided in roll housings of the stand, the rolls being displaceable by means of hydraulic piston-cylinder units which are supported relative to the roll housings and are connected to the supports of the bearings of the rolls, a sliding guide being arranged on the roll support for a sliding carriage which supports a coupling device for a roll neck, the roll neck having an annular groove, the hydraulic piston-cylinder units being articulated to the sliding carriage, the coupling device including drive members which are slidable in radial guides and can be placed in the annular groove of the roll neck, the coupling device being supported by a neck bushing of a deep-groove-type radial roller bearing which is immovably arranged in the sliding carriage, the neck bushing having radially extending guide bores, the improvement comprising the drive members including skirt-type pistons, means for guiding the skirt-type pistons in the radially extending guide bores within the neck bushing, spring means for biasing the skirt-type piston in a direction toward the roll neck and pressure medium means for biasing the skirt-type pistons in the opposite direction.

4,942,755

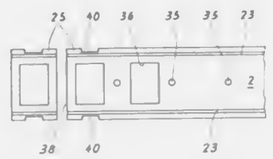
WATCHCASE SUPPORT FASHIONED FROM A CONTOURED STRIP

Paul Gogniat, Bienne, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Switzerland

Filed Dec. 21, 1988, Ser. No. 287,305

Int. Cl.[5] B23P *13/00*

U.S. Cl. 72—254 **20 Claims**



1. A method of making a wristwatch case support, said method comprising the steps of:

forming a contoured strip exhibiting a profile in relief, said profile in relief comprising repeating segments extending in the longitudinal direction of said strip;

shaping said strip while leaving said profile in relief unchanged in at least one zone of each of said repeating segments, said shaping including at least the forming of at least one recess in said strip within each of said repeating segments configured to receive a wristwatch case, whereby each of said segments comprises a wristwatch case support; and,

separating said repeating segments subsequent to said shaping,

whereby said profile in relief is present in each of said supports after said separation.

4,942,756

MULTI-JAW FORMING PRESS ESPECIALLY SUITED FOR DETAILS OF VARIABLE SECTIONS

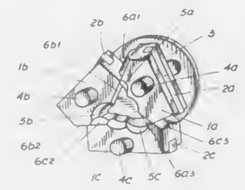
Jan Charzewski, ul. Batuty 7/619, 02-743 Warszawa, Poland

Continuation-in-part of Ser. No. 748,553, Jun. 25, 1985, abandoned. This application Feb. 12, 1988, Ser. No. 158,080

Claims priority, application Poland, Jul. 18, 1984, 248802

Int. Cl.[5] B21D *41/04*

U.S. Cl. 72—399 **3 Claims**



1. A multi-jaw forming press for forming objects the surface of which includes joined together sections, pairs of adjoining sections defining a line at the border therebetween, said press comprising:

movable jaws arranged around an axis of the press and lying in a common plane perpendicular to said axis,

each of said jaws having a guiding surface and a profiled working surface opposite thereto shaped to define a surface section of the object being formed, each said working surface terminating in edges corresponding in shape to respective ones of the border lines of the section to be defined by the working surface,

each of said jaws being movable in sliding contact with an adjacent jaw along a lateral surface of each said adjacent jaw, each said lateral surface adjoining one of the edges of the working surface of the jaw of which it is a part, and each said lateral surface being formed of parallel generating lines passing through its associated adjoining edge,

a rigid system of guides, the guiding surface of each of said jaws being slidably engaged with said guides for movement there along in preselected directions,

connectors embedded in said jaws, and a driver centered on said connectors driving said jaws through said connectors.

4,942,757

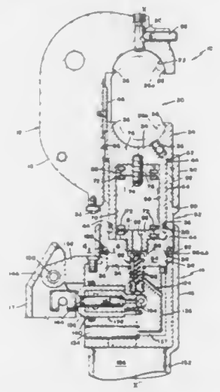
HYDRAULIC PRESS WITH INFINITE HEAD ROTATION

Gennaro L. Pecora, Manchester, N.H., assignor to Burndy Corporation, Norwalk, Conn.

Filed Mar. 31, 1989, Ser. No. 332,341

Int. Cl.[5] B21J *9/12*; B23P *11/00*

U.S. Cl. 72—453.16 **6 Claims**



1. An hydraulic crimping tool comprising a die head subassembly, a pump housing, and operating handles, the die head having an upper jaw for receiving and retaining a first crimping die, a hub affixed to the die head, and a piston and cylinder assembly received by the hub and secured thereto against relative rotation, the piston fitted into the cylinder and having a ram head for receiving a second crimping die cooperating with the upper jaw die for crimping workpieces, the piston having an interior cavity for receiving pressurized fluid for advancing the piston ram during crimping operation, the cylinder having an open bottom wall for directing hydraulic fluid to the piston cavity, the pump housing having an upper surface for receiving the cylinder bottom wall defining a rotational interface between die head and pump housing, an interface port extending through the pump housing across the rotational interface into the cylinder bottom wall opening, the die head and pump housing being mounted for rotation with respect to each other, and means for securing the die head and pump housing against axial movement with respect to each other while accommodating rotation of the head with respect to the pump housing.

4,942,758

HIGH SPEED LEAK TESTER

Dennis H. Cofield, 2817 Roy Pace, El Paso, Tex. 79935

Filed Dec. 4, 1986, Ser. No. 937,887

Int. Cl.[5] G01M *3/26*

U.S. Cl. 73—49.2 **12 Claims**

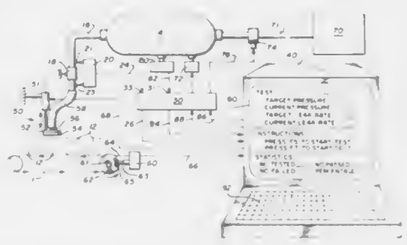
1. A computerized leak tester system for rapidly testing a work piece for fluid leaks comprising:

a. a continuously regulated pressure supply;

b. a valve having a continuously opened restrictive orifice therethrough for producing non-laminar flow;

c. means for coupling said continuously regulated pressure supply to a test piece through said valve such that said work piece is both pressurized and tested through said valve;

d. a differential pressure transducer connected across said valve for producing an analog signal in response to a differential pressure created by non-laminar fluid flow and detected across said valve;



e. an analog to digital conversion means for receiving said signal from said differential pressure transducer and for converting it into a digital signal;

f. a digital computer for receiving said digital signal representing said differential pressure value from said converter and for converting said differential pressure value into a flow rate value and for comparing said flow rate value to a predetermined flow rate value representing a maximum allowable leak rate.

4,942,759

VISCOSITY TESTING APPARATUS

Howard L. Beers, North Fort Myers, Fla., assignor to HF Scientific, Inc., Ft. Myers, Fla.

Filed Aug. 31, 1989, Ser. No. 401,030

Int. Cl.[5] G01N *11/06*

U.S. Cl. 73—56 **17 Claims**



1. A viscosity test apparatus comprising:

a reference chamber partially filled by a predetermined volume of a reference liquid having a known viscosity;

a test chamber attached to said reference chamber and including means for partially filling said test chamber with a test liquid having a volume and a viscosity/temperature characteristic that are substantially similar to those of said reference liquid;

an elongate first conducting column including an open upper end that interconnects said reference chamber and said first column and a lower end having first orifice means that are submersible in said reference liquid for conducting said reference liquid under a pressure head between said first column and said reference chamber; and

a second conducting column mounted within said test chamber in substantial alignment with said first column and

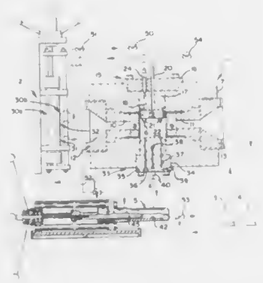
having dimensions substantially identical to said first column, said second column including an open upper end that interconnects said test chamber and said second column, and a lower end having second orifice means that are submersible in said test liquid for conducting test liquid under a pressure head between said second column and said test chamber, said reference and test chambers being simultaneously manipulable to provide said reference and test liquids with respective pressure heads such that the respective levels of the reference liquid and said test liquid in said first and second columns may be compared instantaneously, to provide a measure of viscosity of said test liquid.

4,942,760

APPARATUS FOR THE MEASUREMENT OF INTERFACIAL TENSION

Jaime Almeida, Caracas, Venezuela, assignor to Intevep, S.A., Venezuela

Filed Mar. 28, 1989, Ser. No. 329,581
Int. Cl.[5] G01N *13/02*
U.S. Cl. 73—64.4 **10 Claims**



1. An apparatus for measuring interfacial tension between a gas phase and a liquid phase of a fluid by the pendant drop method comprising:

a visual cell defining a cavity capable of supporting high pressures and temperatures;

plural drop forming means in said cell for forming drops of various sized and comprising a plurality of capillaries of varying sizes positioned within said cavity together with selective positioning means actuatable from outside of said cell for selectively positioning any of said capillaries into fluid-tight communication with an injection means for introducing a drop of the liquid phase into capillary positioned in registry therewith while maintaining existing superatmospheric pressure within the cell; said selective positioning means comprising a substantially horizontal capillary-bearing turret rotatably mounted in said cell, wherein said capillaries are spaced from one another and circularly arranged on said turret substantially parallel to one another, and a shaft secured to said turret and projecting out of said cell and operable to rotate said turret;

recirculation means for recirculating the fluid phases through the cell; and

means for modulating the pressure within the cell.

4,942,761

SENSING ARRANGEMENT FOR MEASURING THE ROTATIONAL SPEED OF A ROTATABLE SHAFT HAVING A CRANK

Manfred Batzill, Neuhausen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed May 11, 1989, Ser. No. 350,347
Claims priority, application Fed. Rep. of Germany, May 11, 1988, 3816114
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—119 R **9 Claims**



1. A scanning arrangement comprising:

a rotational-speed sensor; and

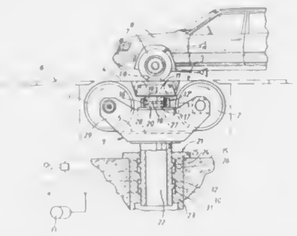
a toothed scanning ring for supplying rotational-speed signals to a shaft, particularly at the crankshaft of an internal-combustion engine, the teeth of the scanning ring affecting the rotational-speed sensor, wherein the scanning ring has a radial through-gap means for permitting a radially bent opening of the ring to extend over a cylindrical part of the crankshafl, and connecting means for form-fittingly connecting the ring with the part after mounting.

4,942,762

FLAT UNIT FOR MOTOR VEHICLE TEST BEDS

Karl Schober, Weinstadt, and Norbert Schaub, Remseck, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,565
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3830048
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117 **18 Claims**



1. A flat-track unit for motor vehicle test beds comprising:

a roadway-simulating endless belt loop means guided over two rollers for accommodating a vehicle wheel on its upper test side and orientated roughly horizontally at a ground level;

wherein the two rollers are mounted in a frame, supported in a vertically floating manner by a spring mounting, and mechanically guided in the vertical direction,

a rectilinear shoe means provided between the rollers for supporting the test side of the belt in a guiding or rolling manner at a contact region where a vehicle wheel is to be located;

wherein said rectilinear supporting shoe means is vertically movable relative to the frame by a vertically orientated hydraulic shoe excitation cylinder;

wherein said vertically orientated hydraulic excitation shoe cylinder acts centrally on the frame and is excited to develop vertical oscillations for simulating roadway vibrations;

wherein one of the two rollers is Connected via a universal-joint shaft to a drive and braking unit for simulating traction and braking forces;

wherein the drive and braking unit is spaced from and in a vertically immovable position next to the frame and has the same axis as the one roller;

wherein the floating spring mounting of the frame is provided by hydropneumatic spring means supported and rigidly connected to a foundation;

a shoe excitation cylinder located completely inside an area of the belt loop and rigidly supported at its bottom by the frame;

wherein the shoe excitation cylinder is vertically excited by only short-stroke and high-frequency oscillations simulating roadway vibrations;

wherein the frame is excited to develop vertical oscillations by a hydraulic frame excitation cylinder rigidly connected between a control bottom portion on the frame and the foundation; and wherein

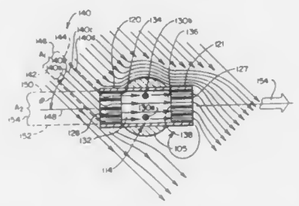
said hydraulic cylinder is excited by only the long-stroke, low-frequency oscillations simulating roadway vibrations.

4,942,763

FLOW SENSOR ASSEMBLY

Joseph W. Harpster, 11450 Overbrook Ln., Galena, Ohio 43021

Filed Mar. 23, 1988, Ser. No. 172,030
Int. Cl.[5] G01F *5/00*
U.S. Cl. 73—202.5 **36 Claims**



1. Apparatus for determining the mass transport of fluid within a conduit, said fluid having a mass transport vector along the axis of said conduit, said mass transport vector being derived from localized components of fluid flow each exhibiting a local flow velocity vector, comprising:

sampling conduit means having a flow axis, positioned within said conduit and having an entrance opening of area extent selected to confront and sample an incident front area of fluid representing a said localized component of fluid flow and said component of fluid flow exhibiting a said local flow velocity vector incident to said flow axis at an angle θ, for admitting that portion of said component as sampled fluid flow;

entrance partitioner means comprising a plurality of conduits positioned within said sampling conduit means, each having a principal cross-sectional dimension, and extending therein a predetermined length from said entrance opening to an end location, said predetermined length being selected as a multiple of said principal dimension effective to intercept discrete portions of said component of fluid flow and alter the direction of flow thereof to a direction substantially parallel with said sampling conduit means flow axis and exhibiting a velocity substantially corresponding with the product of said local flow velocity vector and the cosine of said angle θ;

flow sensor means mounted with said sampling conduit means and responsive to said sampled fluid flow for deriving an output signal corresponding therewith; and

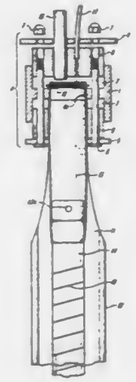
means defining a flow chamber intermediate said flow sensor means and said entrance partitioner means end location for effecting the derivation of a substantially uniform profile of velocity of said sampled fluid flow at said flow sensor means.

4,942,764

MOUNTING HEAD FOR A RESISTANCE-TAPE LEVEL SENSOR

Edwin P. Dews, Hampton Falls, N.H.; William E. Pierce, Winchendon, Mass.; John A. Gunnarson, Concord, Mass., and Albert D. Ehrenfried, Maynard, Mass., assignors to Metritape, Inc., Littleton, Mass.

Filed Mar. 17, 1989, Ser. No. 325,139
Int. Cl.[5] G01F *23/00*; H02G *15/22*
U.S. Cl. 73—301 **14 Claims**



1. A mounting head for a resistance tape sensor comprising:

a cylindrical body of rigid material having an upper cavity portion and a lower cavity portion;

a cylindrical tongue of rigid material coaxially disposed in the lower portion of the body and operative to retain a resistance-tape sensor;

a first deformable elastomeric element disposed in the upper cavity portion;

electrical coupling means disposed through the first deformable elastomeric element and connectable to the sensor to be installed through the cylindrical tongue;

gas coupling means disposed through the firs deformable elastomeric element and coupleable to the interior of the sensor to be installed within the cylindrical tongue;

a second deformable elastomeric element disposed in the lower cavity portion and surrounding and in engagement with the tongue;

a top plate disposed over an end surface of the first deformable elastomeric element;

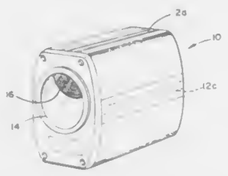
a bottom plate disposed around the tongue and an end surface of the second deformable elastomeric element; and

fastening means for drawing the top plate and bottom plate together to cause deformation of the first and second deformable elastomeric elements to seal all leakage paths into the mounting head.

10. A sensor mounting head in combination with an elongated tape-like sensor disposable within a vessel containing a fluent material the level of which is to be monitored, and operative in response to the pressure of materials surrounding

the immersed sensor to provide an electrical resistance proportional to material level, comprising:
- a rigid tube supporting a confronting end of an elongated tape-like sensor;
- electrical coupling means in the rigid tube electrically connected to the sensor;
- gas coupling means in the rigid tube and in fluid coupling with the interior of the sensor;
- a deformable elastomeric material surrounding a portion of the rigid tube;
- an outer shell enclosing at least partially the deformable elastomeric material;
- retaining means at respective ends of the outer shell and operative to contain the elastomeric material and to generate high internal compressive forces on the rigid tube;
- the electrical coupling means and gas coupling means having portions extending from the interior of the rigid tube to a position external of the head.

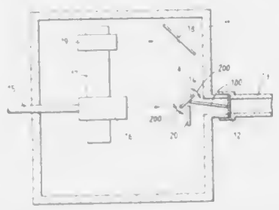
4,942,765
ULTRASONIC VELOCITY SENSOR
Thomas K. Hiniker, N. Mankato, and Semor D. Tofte, Mankato, both of Minn., assignors to Micro-Trak Systems, Inc., Mankato, Minn.
Division of Ser. No. 175,777, Mar. 31, 1988. This application Nov. 28, 1988, Ser. No. 276,768
Int. Cl.[5] G01L *19/14*
U.S. Cl. 73—431 6 Claims



1. A container for a velocity sensor which is adapted to be mounted on an agricultural vehicle comprising:
(a) a housing having a plurality of linear mounting channels defined therein, said channels being adapted for slidably receiving a mounting projection or projections secured to an agricultural vehicle said linear mounting channels being positioned such that they are aligned with the direction of travel of the vehicle when said housing is mounted to the vehicle; and
(b) a transducer for transmitting and receiving pulses, said transducer mounted in said housing and directed such that signal is transmitted by said transducer at a predetermined angle with the line of travel of the vehicle when said housing is secured to the vehicle by the linear mounting channels.

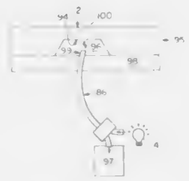
4,942,766
TRANSDUCER
John C. Greenwood, Harlow, and James M. Naden, Dartford, both of Great Britain, assignors to STC PLC, London, England
Filed Nov. 3, 1988, Ser. No. 266,818
Claims priority, application United Kingdom, Mar. 26, 1988, 8807273
Int. Cl.[5] G01L *9/14*
U.S. Cl. 73—704 5 Claims

1. A sensor device for the remote measurement of pressure, the device comprising:
a closed pressure tight housing;
a flexible pressure responsive diaphragm associated with the housing;
a torsional resonator mounted within the housing and having frequency determining means mechanically coupled to the diaphragm whereby in use the resonator frequency corresponds to a pressure applied to the diaphragm;
means for directing a light beam on to said resonator whereby to provide a first light signal modulated with the resonator frequency;
means for transmitting the first modulated signal to a remote station;



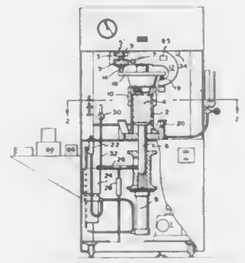
means associated with said resonator for providing from said light directing means a second light signal modulated with the resonator frequency;
photovoltaic means adjacent said resonator and arranged to receive said second modulated light signal and to generate a oscillatory electrical current in response thereto; and
electromagnetic feedback means associated with the torsional resonator and coupled to the photovoltaic means whereby in use the resonator is maintained in an oscillatory condition at its resonant frequency.

4,942,767
PRESSURE TRANSDUCER APPARATUS
Joseph H. Haritonidis, Brookline; Stephen D. Senturia, Boston; David J. Warkentin, and Mehran Mehregany, both of Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 932,780, Nov. 19, 1986. This application Jun. 2, 1989, Ser. No. 360,325
Int. Cl.[5] G01D *5/34*; G01L *7/08, 9/00*
U.S. Cl. 73—705 6 Claims



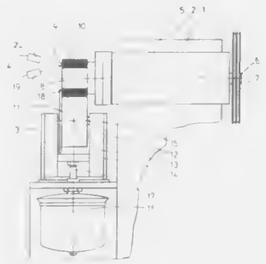
1. A pressure transducer comprising:
a diaphragm;
a source of coherent light;
an optic fiber assembly coupled to the diaphragm and having at least one single mode optic fiber with an end facing the diaphragm and an opposite end coupled to the source for receiving coherent light, the fiber end facing the diaphragm being fixed across a gap therefrom and splitting a coherent light beam carried by the fiber into a transmitted part and a reference part, the transmitted part being emitted from the fiber end across the gap to the diaphragm and reflected therefrom back to the fiber end, the reference part being formed by locally reflecting off the fiber end in a direction back through the fiber, the transmitted part after being reflected off the diaphragm intersecting the reference part at the fiber end, the intersection of parts forming an interference light wave indicative of diaphragm deflection and carried by the fiber in a direction away from the fixed fiber end; and
detection means including light detecting means, coupled to the fiber for receiving the interference light wave, and the detection means providing an indication of diaphragm deflection.

4,942,768
PAVING MATERIAL TESTING MACHINE
John L. McRae, P.O. Box 1109, Vicksburg, Miss. 39180
Filed Jun. 6, 1989, Ser. No. 362,283
Int. Cl.[5] G01N *3/00*
U.S. Cl. 73—795 10 Claims



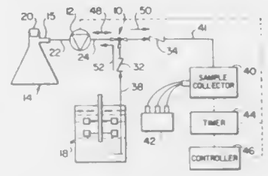
1. In a materials testing machine of the type having a mold chuck mounted for gyratory oscillation for subjecting a sample of paving material to controlled shear strain and controlled normal stress, the improvement comprising means for varying the rate of shear and for controlling the temperature of the sample for evaluation of the effect of viscosity in the sample.

4,942,769
METHOD OF TESTING CORES
Markku S. Järvinen, Huutjärvi; Mikael J. H. Novàky, and Heikki P. J. Rommi, both of Karhula, all of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Sep. 8, 1988, Ser. No. 241,478
Claims priority, application Finland, Sep. 21, 1987, 874103
Int. Cl.[5] G01N *19/00*
U.S. Cl. 73—82.1 19 Claims



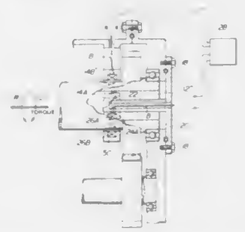
1. A method of testing, by dynamic loading simulating real life conditions, the loading capacity of a core manufactured by reeling and gluing from paper or board layers, the core mounted on a chuck, and utilizing a roll, said method comprising the steps of:
(a) loading the core mounted on a chuck by exerting a nip pressure on the core with the roll;
(b) rotating the core in contact with the roll;
(c) changing one or both of the loading and rotational speed over time in a predetermined manner; and
(d) detecting any changes in the structure of the core.

4,942,770
AUTOMATIC ASEPTIC SAMPLING APPARATUS
Gunilla K. E. Seifert, R.R. #4, Merrickville, Ontario, Canada (K0G 1N0), and Paul P. Matteau, 806-333 Chapel St., Ottawa, Ontario, Canada K1N 8Y8
Filed Jul. 24, 1989, Ser. No. 383,625
Claims priority, application Canada, Sep. 1, 1988, 576514
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.34 10 Claims



1. An apparatus for taking liquid samples from a container, comprising:
(a) a three-way valve having a first port communicating with the container, a second port and an outlet port,
(b) a waste liquid vessel,
(c) a reversible pump communicating on one side thereof with the second port and with the waste liquid vessel on a second side of the pump,
(d) a first flow control means associated with the first port for only permitting the flow of liquid therethrough from the container to said three-way valve, and
(e) a second flow control means associated with the outlet port for only permitting the discharge of liquid therethrough from said three-way valve.

4,942,771
MAGNETOSTRICTION TYPE TORQUE SENSOR
Masaki Sugimoto, Yokosuka; Kunihiko Morikawa, Fujisawa; Nobutaru Hitomi, Yokohama; Kenji Ikeura, Zushi; Hisashi Kitahara, Yokosuka; Hiroyuki Hirano, Fujisawa, and Kazuhiro Takatori, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 15, 1988, Ser. No. 206,722
Claims priority, application Japan, Jun. 15, 1987, 62-148285; Jun. 15, 1987, 62-148286
Int. Cl.[5] G01L *3/10*
U.S. Cl. 73—862.36 6 Claims



3. A torque sensor for sensing the torque in a rotatable body, comprising:
means defining a first set of grooves in a surface of said rotatable body, said first grooves defining a plurality of

first projections therebetween, said first grooves and said first projections being arranged at a first predetermined angle with respect to the axis of rotation of said rotatable body, said first projections undergoing one of compression and elongation when a torque is applied to said rotatable body;

a first coil, said first coil being mounted on a first yoke which juxtaposes said first set of grooves, said first coil being operatively connected with a control circuit which includes a source of alternating current;

means defining a second set of grooves in a surface of said rotatable body, said second set of grooves defining a plurality of second projections which are arranged at a second predetermined angle with respect to the axis of rotation of said rotatable body, said second projections undergoing the other of compression and elongation when said torque is applied to said rotatable body;

a second coil, said second coil being mounted on a second yoke which juxtaposes said second set of grooves, said second coil being connected with said control circuit;

wherein said first and second sets of projections are magnetically permeable and such that when subject to compression the permeability is reduced and the amount of magnetic flux which passes therethrough is reduced, and when subject to elongation the permeability is increased and the amount of magnetic flux which passes therethrough is increased; and

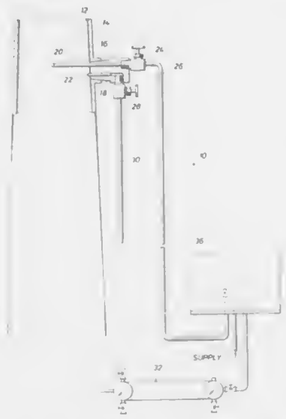
wherein said first and second sets of grooves are defined on different surfaces of said rotatable body.

4,942,772

STACK SAMPLING SYSTEM

Thomas F. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jun. 19, 1989, Ser. No. 368,418
Int. Cl.[5] G01N *1/24*
U.S. Cl. 73—863.83 **12 Claims**



1. A system for obtaining a proportioned sample from a stack discharge gas flow, the system comprising:

(a) an elongate stack sample line extending along a stack to upper portions thereof and connecting to a probe positioned in the upper portions of the stack and having an inlet opening, said probe receiving thereinto a sample of the stack discharge gas flow, and wherein said line delivers the sample to the base area of the stack;

(b) cyclically operated sample removing means for periodically and repetitively removing a portion of the sample from said stack line wherein the removed portion is delivered through a sample outlet line;

(c) storage means connected with said sample outlet line, said storage means comprising a chamber for receiving and holding gases therein to fill said storage means to a specified volume and including valve means for isolating the same therein to permit removal thereof for transfer to another location; and

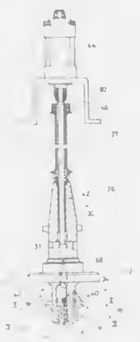
(d) means for timing operation of said sample removing means, said means incorporating a controllable timer and further including a timer controlled valve means for periodic operation of said sample removing means.

4,942,773

DEVICE FOR SAMPLING STEEL MATERIAL

Kaizo Okamoto; Akira Ichihara; Akimune Sato; Kenji Hirata; Katsuhisa Hirayama; Eiji Hina; Shigeru Nakaji; Minoru Sakamoto, all of Kawasaki-dori Kurashiki; Takashi Tanaka, Kobe, and Keizo Shimizu, Akashi, all of Japan, assignors to Kawasaki Steel Corp., Hyogo and Nippon Air Brake Co., Ltd., Kobe, both of, Japan

Division of Ser. No. 79,142, Jul. 28, 1987, Pat. No. 4,833,930.
This application Mar. 21, 1989, Ser. No. 326,726
Claims priority, application Japan, Feb. 10, 1987, 62-29370
Int. Cl.[5] G01N *1/08*
U.S. Cl. 73—864.45 **2 Claims**



1. A device for sampling a block sample directly from the surface of a continuously cast steel piece on a roller table, comprising:

a cutting tool device consisting of an inverted mountain type facing tip that cuts the surrounding of a cylindrical center portion into dish form while leaving said cylindrical center portion uncut, and a curved lever type tip for cutting the root of said cylindrical center portion, said inverted mountain type facing tip and said curved lever type tip being set on the same holder, a center axis of said holder being located horizontally and parallel to a running direction of said roller table, and

a moving device for moving said cutting tool device when in a free position in any of 3 orthogonal directions, namely (A) horizontally parallel to, (B) horizontally rectangular to and (C) perpendicular to the direction of running of said roller table.

4,942,774

ANISOKINETIC SHROUDED AEROSOL SAMPLING PROBE

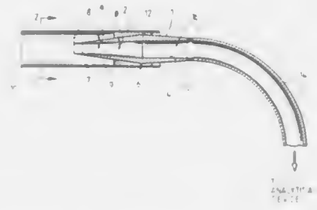
Andrew R. McFarland, College Station, Tex., assignor to The Texas A & M University System, College Station, Tex.

Filed Mar. 20, 1989, Ser. No. 325,987
Int. Cl.[5] G01N *1/00*
U.S. Cl. 73—864.81 **10 Claims**

1. A method of taking samples from a flowing stream of fluid for analyzing the concentration of particulate matter in said flowing stream, comprising the steps of:

a. aerodynamically decelerating a portion of said flowing stream;

b. anisokinetically removing a sample of the decelerated fluid; and,



c. analyzing the sample to determine the concentration of particulate matter contained therein.

4,942,775

METHOD OF AND DEVICE FOR ACCELERATING TEST PIECES ON A CIRCULAR PATH

Martin Monkewitz, Lucerne, and Erich Oppliger, Heimberg, both of Switzerland, assignors to Schweizerische Eidgenossenschaft, Emmen, Switzerland

Filed May 8, 1989, Ser. No. 348,608
Int. Cl.[5] G01N *3/00*
U.S. Cl. 73—865.3 **14 Claims**



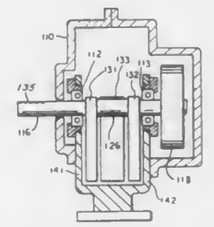
1. A method for the controlled build-up of a stipulated acceleration of a test piece on a circular path, the direction of acceleration being constant at least during the start-up phase with respect to the test piece, wherein in the region of its center of acceleration the test piece (**24**) is rotated by at least 90° perpendicular to the tangential direction of its circular path (K), and at the beginning of the start-up phase of the rotary motion (D) in the circular path (K) the test piece (**24**) is aligned in its longitudinal axis (L) tangential to the circular path (K), and during the start-up phase the test piece (**24**) is rotated with its longitudinal axis (L) towards the center point (**35**) of the circular path (K), and after a stipulated angle of rotation (ϕ) this test piece (**24**) is aligned on the circular path (K) with its longitudinal axis (L) radially towards the main shaft (**35**) of the circular path (K) and experiences a stationary rotational phase in this position.

4,942,776

NON-METALLIC GEAR SHAKER

Michael J. Quirk; Timothy E. Drake, both of Westfield, N.Y., and John E. Zarycki, North East, Pa., assignors to Renold, Inc., Westfield, N.Y.

Filed Apr. 17, 1989, Ser. No. 339,226
Int. Cl.[5] F16H *33/20*; B06B *1/16*
U.S. Cl. 74—61 **6 Claims**



1. A gear coupled counter rotating shaker comprising a housing,

said housing having a first side part and a second side part,

an input gear on said second end of said input shaft,

a third eccentric weight on said intermediate part of said output shaft,

said third eccentric weight being disposed between said first eccentric weight and said second eccentric weight,

an output gear on said second end of said output shaft engaging said input gear,

said third bearing being disposed on said housing adjacent said third eccentric weight,

said fourth bearing being disposed on said output shaft between said third eccentric weight and said output gear,

a one piece input shaft and a one piece output shaft,

said input shaft being received in said first bearing and said second bearing,

said output shaft being supported in said third bearing and said fourth bearing,

a first eccentric weight and a second eccentric weight,

said input shaft having a first end, a second end and an intermediate part,

said output shaft having a first end, a second end and an intermediate part,

said first eccentric weight being supported on said intermediate part of said input shaft,

said second eccentric weight being supported on said intermediate part of said input shaft,

said first eccentric weight and said second eccentric weight are disposed between said first side part of said housing and said second side part of said housing.

4,942,777

DEVICE FOR CYCLICALLY VARYING THE PHASE RELATIONSHIP BETWEEN TWO ROTATING SHAFTS

Morton E. Fife, 3307 Kyle Ave. North, Golden Valley, Minn. 55422

Filed Mar. 13, 1989, Ser. No. 322,572
Int. Cl.[5] F16H *35/06*
U.S. Cl. 74—397 **6 Claims**

1. Apparatus for effecting cyclical accelerations and decelerations in a driven shaft in response to rotating a drive shaft at a constant velocity, including:

a drive shaft and a means for rotating the drive shaft about a fixed longitudinal drive axis, and a drive gear mounted concentrically on said drive shaft for rotation with said drive shaft;

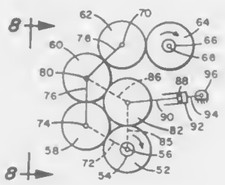
a driven shaft rotatable on a longitudinal driven shaft fixed relative to said drive axis, and a driven gear mounted

concentrically on said driven shaft for rotation with said shaft; and

a drive linkage means for drivably engaging said drive gear and said driven gear, and including:

a first intermediate gear rotatable about a longitudinal first axis, and a first connecting means rotatably mounted to said drive gear and said first intermediate gear, for maintaining said drive gear and first gear in driving engagement while maintaining a fixed distance between the drive axis and the first axis;

a second intermediate gear rotatable about a longitudinal second axis, and a second connecting means rotatably mounted to said first gear and said second gear for maintaining said first gear and said second gear in driving engagement while maintaining a fixed distance between said first and second axes;



a third connecting means rotatably connected to said second gear and said driven gear, for maintaining said second gear and driven gear in driving engagement while maintaining a fixed distance between said second axis and said driven shaft axis; and

a moving means including a transversely reciprocable element connected to an associated one of said first and second intermediate gears for controllably and transversely reciprocating said associated gear while said drive gear rotates, to transversely reciprocate said first and second intermediate gears and their associated axes, and thereby dynamically alter a phase relationship between said drive gear and said driven gear.

4,942,778

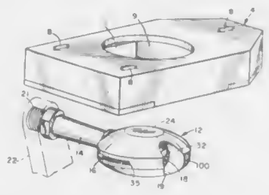
CLIPLESS BICYCLE PEDAL SYSTEM

Richard M. Bryne, 2172 Pine St., San Diego, Calif. 92103

Filed Jul. 10, 1989, Ser. No. 377,223

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.6 23 Claims



1. A clipless bicycle pedal system for releasably binding the sole of a rider's shoe to a pedal which comprises:

a pedal comprising:

an axle fixedly attached to the end of a crank arm of a bicycle; and

a block rotatably mounted on said axle, said block having a top, a bottom and a circumferential edge, said top and said bottom each being a generally convex surface, said block being generally circular in the lateral plane with said circumferential edges joining said top to sid bottom and a leading edge and a trailing edge oppositely disposed within said circumferential edge, and having a plurality of grooves formed in said circumferential edge of said pedal and aligned with longitudinal and lateral planes of a bicycle on which said pedal system is mounted, at least one of said grooves toward said trailing edge of said pedal block and one toward said leading edge; and

a cleat comprising:

a plate member to be fixed to said sole of said rider's shoe and projecting downwardly therefrom, said plate member having a concave recess therein which generally corresponds to a portion of said convex surface of said pedal block, said convex pedal surface being disposed in said concave recess when said plate member is brought into contact with said pedal block;

a plurality of engaging means, each engaging means comprising a tongue portion adapted to be removably seated in one of said grooves in said pedal block; and

urging means cooperating with said tongue portion of said engaging means to releasably secure said rider's shoe to said pedal.

4,942,779

PLANETARY GEAR TRAIN FOR AUTOMATIC TRANSMISSION

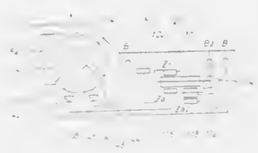
Masahiro Ohkubo, Kadomo, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Division of Ser. No. 39,141, Apr. 16, 1987, Pat. No. 4,869,128. This application May 31, 1989, Ser. No. 359,255

Claims priority, application Japan, Apr. 30, 1986, 61-101504; Apr. 30, 1986, 61-101505; Apr. 30, 1986, 62-101506; May 1, 1986, 61-101446

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—39 13 Claims



1. In an automatic transmission wherein a Ravineaux's planetary gear train including a single row planetary gear and a double row planetary gear both having one planetary carrier in common, is disposed at a rear stage of a four-element torque converter comprising two stators, a turbine and a pump; a planetary gear train of the automatic transmission including a turbine shaft connecting the turbine to a sun gear meshing with the double row planetary gear, a stator cylindrical shaft connecting a first stator to a sun gear meshing with the single row planetary gear, a first brake for limiting rotation of the stator cylindrical shaft, and a second brake for limiting rotation of the planetary carrier, thus an output being able to be taken out from a ring gear meshing with the single row planetary gear.

4,942,780

HST(HYDROSTATIC TRANSMISSION) HOUSING AXLE DRIVING APPARATUS

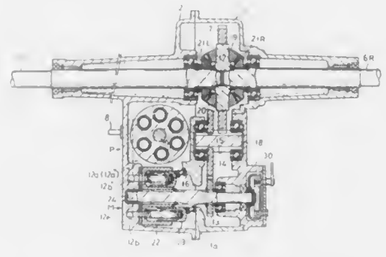
Koichiro Fujisaki; Ryota Ohashi, both of Kobe, and Shusuke Nemoto, Yao, all of Japan, assignors to KANZAKI KOKYUKOKI MFG., CO. LTD., Japan

Continuation of Ser. No. 212,017, Jun. 27, 1988. This application Aug. 23, 1989, Ser. No. 397,960

Claims priority, application Japan, Jun. 26, 1987, 62-160653; Jun. 27, 1987, 62-160689

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—83 2 Claims



1. An axle driving apparatus comprising:

an axle housing, said axle housing being divided into a first axle casing and a second axle casing;

a differential gear unit disposed within said axle housing;

a first axle disposed within said first axle casing;

a second axle disposed within said second axle casing;

a hydraulic pump disposed within said axle housing, said hydraulic pump having a pump shaft which is disposed perpendicular to said first and second axles;

a hydraulic motor disposed within said axle housing, said hydraulic motor having a motor shaft which is disposed in parallel to said first and second axles;

a motor gear fixed to said motor shaft;

a speed reduction transmission for drivingly connecting said motor gear and said differential gear unit;

said speed reduction transmission and said differential gear unit being disposed within said second axle casing;

said hydraulic pump and said hydraulic motor being disposed within said first axle casing;

said hydraulic pump being disposed on a bottom wall of said first axle casing between said first axle and said hydraulic motor;

said hydraulic motor being disposed at an inner side wall of said first axle casing; and

means for transferring oil between said hydraulic pump and said hydraulic motor.

4,942,781

DIFFERENTIAL PLANEL GEAR UNIT

Koubei Hori, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 6, 1989, Ser. No. 294,019

Claims priority, application Japan, Jan. 6, 1988, 63-000404

Int. Cl.[5] F16H *1/32, 55/08*

U.S. Cl. 475—342 5 Claims

1. A differential planet gear unit, comprising:

a sun gear;

planet gears engaged with the sun gear;

a first ring gear having a first number of teeth; and

a second ring gear having a second number of teeth,

the first tooth number being different from the second tooth number, the first and second ring gears coaxially aligning and simultaneously engaging with first and second tooth portions of each planet gear, respectively, diameters of addendum circles of the teeth of the first ring gear and the first tooth portion of each planet gear being different from those of the second ring gear and the second tooth portion





of each planet gear, respectively, to reduce a difference between an approaching contact length and a receding contact length along a contact action line of each of the planet gears and one of the first and second ring gears.

4,942,782

REVERSE SHIFT CONTROL DEVICE ON AUTOMATIC TRANSMISSION

Yoshinari Kuwayama, Tokoname; Fumitomo Yokoyama, Anjo, and Masakatsu Miura, Kariya, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

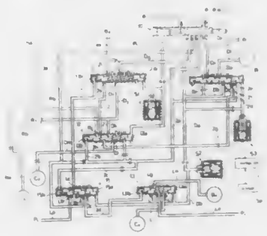
PCT No. PCT/JP87/00454, § 371 Date Mar. 1, 1988, § 102(e) Date Mar. 1, 1988, PCT Pub. No. WO88/00304, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 30, 1987, Ser. No. 172,721

Claims priority, application Japan, Jul. 1, 1986, 61-154695

Int. Cl.[5] B60K *41/10*

U.S. Cl. 74—866 5 Claims



1. In an automatic transmission of a vehicle having a transmission gear mechanism including a plurality of rotatable components and through which transmission gear mechanism power is transmitted in a respective one of power transmitting paths defined therethrough, frictional engaging means operatively connected to the transmission gear mechanism for selecting the power transmitting path through which power is transmitted in the transmission gear mechanism, said frictional engaging means including a third brake, hydraulic servos operatively connected to the frictional engaging means for operating or releasing or for engaging or disengaging the frictional engaging means, a plurality of shift valves operatively bydraulically connected to the hydraulic servos and a source of line pressure and which shift valves are movable between respective positions at which the line pressure is supplied toward the servos and respective positions at which the supply of line pressure is interrupted during forward travelling of the vehicle to provide different speeds which can be output by the transmission while the vehicle is travelling for-

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ward, and a manual valve operatively hydraulically connected in the transmission between the source of line pressure and the shift valves and which manual valve is settable to a plurality of ranges including reverse, a reverse shift control device comprising:

a respective one of said shift valves that is movable to respective positions during forward travelling of the vehicle to provide different speeds which can be output by the transmission while the vehicle is travelling forward;

said third brake being operatively connected to one of said components for braking a normal and a reverse rotation of said one of said components when said third brake is operated; said third brake being operated when the vehicle is travelling in reverse;

one of the hydraulic servos to which said one of said shift valves is operatively hydraulically connected, said one of the hydraulic servos operatively connected to said third brake;

said one of said shift valves having a first port in direct open hydraulic communication with said manual valve, line pressure being supplied directly to said first port from said manual valve when said manual valve is set to said reverse range, and said one of said shift valves having a second port in hydraulic communication with said one of the hydraulic servos, line pressure passing from said second port to said one of the hydraulic servos when said third brake operatively connected to said one of the hydraulic servos is to be operated,

said one of said shift valves being movable between a first position at which said first and said second ports are open to one another and a second position at which said first and said second ports are closed to one another,

solenoid valve means operatively connected to said one of said shift valves for causing said one of said shift valves to move between said positions thereof; and

control means operatively connected to said solenoid valve means for controlling said solenoid valve means to cause said one of said shift valves to move to said second position thereof when said manual valve is set to said reverse range while the vehicle is travelling at a speed higher than a predetermined speed.

4,942,783

TRANSMISSION RATION CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

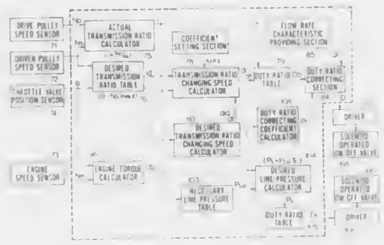
Yoshihiko Morimoto, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 88,060, Aug. 21, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 339,864

Claims priority, application Japan, Aug. 23, 1986, 61-197494

Int. Cl.[5] B60K *41/14*

U.S. Cl. 74—866 **8 Claims**



1. In a control system for a continuously variable transmission for transmitting the power of an internal combustion engine, the transmission having a drive pulley including a hydraulically shiftable first disc and a hydraulic cylinder for operating the first disc, a driven pulley including a hydraulically shiftable second disc and a hydraulic cylinder for operating the second disc, and a belt engaged with both pulleys, the control system having a first hydraulic circuit having a line pressure control valve with a spool and ports to control a line pressure, a transmission ratio control valve with a spool and ports to control a transmission ratio of the transmission and a pump supplying oil to the hydraulic cylinder of the drive pulley through the transmission ratio control and line pressure control valves and to the hydraulic cylinder of the driven pulley controlled by the line pressure control valve, the improvement in the control system which comprises:

sensing means for sensing operating conditions of the engine and the transmission and for producing sensing signals dependent on the conditions;

shift means responsive to the sensing signals for shifting tne spools of each control valve;

actual transmission ratio calculating means responsive to the sensing signals for calculating an actual transmission ratio and for producing an actual transmission ratio signal;

desired transmission ratio calculating means responsive to the sensing signals for calculating a desired transmission ratio and for producing a desired transmission ratio signal;

transmission ratio changing rate calculating means responsive to the actual transmission ratio signal and the desired transmission ratio signal for calculating a transmission ratio changing rate to operate the shift means and for producing a transmission ratio changing rate signal;

engine torque calculating means responsive to the sensing signals for calculating an engine torque and for producing an engine torque signal;

torque ratio calculating means responsive to the engine torque signal for calculating a torque ratio factor;

flow rate characteristic providing means responsive to the actual transmission ratio signal for producing a flow rate characteristic signal; and

correcting means responsive to an output signal of the torque ratio calculating means and to the flow rate characteristic signal for correcting the transmission ratio changing rate signal so that the actual transmission ratio substantially coincides with the desired transmission ratio, so as to prevent hunting or overshooting of the operating conditions of the engine and transmission.

4,942,784

TRANSMISSION CONTROL SYSTEM FOR THE AUTOMATIC TRANSMISSION OF AUTOMOTIVE VEHICLES FOR GEAR TRAIN LOCKING UPON UNINTENDED ACCELERATION

Hirofumi Okahara, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 17, 1988, Ser. No. 258,529

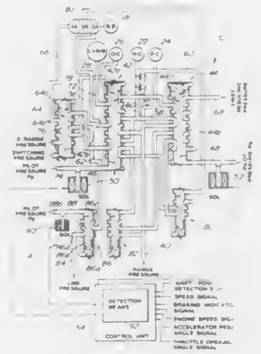
Claims priority, application Japan, Oct. 15, 1987, 62-260545

Int. Cl.[5] B60K *41/06*

U.S. Cl. 74—866 **10 Claims**

1. A transmission control system for an automatic transmission of a vehicle, including a plurality of gears selectively engaged by a plurality of frictional elements in a gear train which are engaged or released by a hydraulic pressure control device characterized by:

means for monitoring an emergency condition wherein an unintended sudden acceleration of said vehicle occurs when vehicle speed is less than a predetermined value, said monitoring means generating a signal indicate of said emergency condition;



means for locking said gear train by engaging a predetermined combination of said frictional elements in response to said signal from said monitoring means.

4,942,785

ARRANGEMENT FOR AN AUTOMATIC SHIFTING OF AN EPICYCLIC, SHIFTABLE TRANSMISSION OF A MOTOR VEHICLE

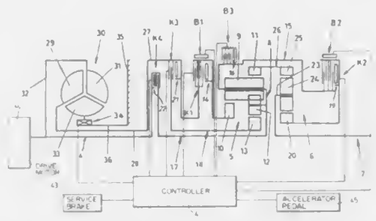
Gunter Jürgens, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 30, 1988, Ser. No. 277,973

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1987, 3740781

Int. Cl.[5] B60K *41/06*

U.S. Cl. 74—867 **9 Claims**



1. An arrangement for an automatic shifting of an epicyclic, shiftable transmission of a motor vehicle, the transmission having transmission elements which are selective engaged by frictional shift elements operated by pressure medium actuators to form at least a forward starting gear and a reverse starting gear of the transmission, the arrangement including, in series in a power train:

an input shaft which is driven from a drive motor;

a first epicyclic transmission section;

a second epicyclic transmission section;

an output shaft which is coupled to vehicle wheels:

an uninterruptible, torsionally rigid drive connection between a transmission element of the first transmission section and a transmission element of the second transmission section, the input shaft being in drive connection with the first transmission section when the transmission is in gear and the power train between the input shaft and the output shaft being interrupted when the transmission is in a neutral position, a single coupling shaft forming the torsionally rigid drive connection between the first and second transmission sections;

means for initiating a first engagement phase when the transmission is in the neutral position and one of the starting gears is preselected in which a transmission element operating as a reaction in the preselected starting gear and at least one further transmission element of the first transmission section, which can be brought into drive connection with the input shaft, are stalled and the second transmission section, which is brought into drive connection with the output shaft is held in a driveless state; and

means for initiating a second engagement phase when a speed of the input shaft approaches zero, in which both a transmission element of the second transmission section which operates as a reaction in the starting gear and is brought into drive connection with the output shaft is stalled and the torque transmissiblity between the input shaft and output shaft rises gently from zero with ending of the braked state of gear elements not operated as a reaction in the starting gear, by control of a working pressure in shift actuators involved in forming a step down of the starting gear.

4,942,786

CONTINUOUSLY VARIABLE TRANSMISSION SYSTEM WITH BY-PASS CHECK VALVES

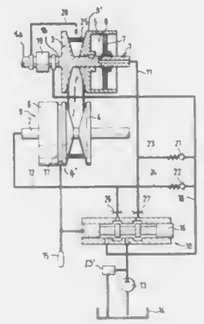
Otto Dittrich, Bad Homburg, Fed. Rep. of Germany, assignor to Reimers Getriebe AG, Zug, Switzerland

Filed Feb. 23, 1989, Ser. No. 314,545

Claims priority, application Fed. Rep. of Germany, May 24, 1988, 3817532

Int. Cl.[5] B60K *41/16*

U.S. Cl. 74—867 **4 Claims**



1. Continuously variable transmission system having

a first shaft (1, 51);

a second shaft (2, 52),

one of said shafts forming a driving shaft and the other of said shafts forming a driven shaft;

a pair of conical disks (3, 3'; 4, 4') on each of said shafts, said conical disks having facing conical surfaces,

one (3', 4') of the disks of the pairs being axially movable with respect to the other;

connecting means (25) operable between the conical surfaces of the disks and connecting the pairs of the disks, and hence the driving and the driven shafts;

fluid pressure means (5, 7, 8, 6, 9) coupled to the axially movable disk for providing axial pressure thereon to tightly frictionally engage the connecting means (25) between said conical surfaces;

a torque sensor (19; 69, 70) on the driving shaft, the torque sensor controlling the fluid pressure in the fluid pressure means (5, 7, 8, 6, 9) in dependence on torque being trans-

ferred between the driving shaft and the associated pair of conical disks; and

a fluid circulating loop including a source of fluid pressure (13), a control valve (10, 50), the fluid pressure means (5, 7, 8, 6, 9), the torque sensor (19; 69, 79), a fluid sump or drain (14, 20) and connecting lines

(a) between the source of fluid pressure (13) and the control valve (10, 50);

(b) (11, 12; 61, 62) between the control valve (10; 50) and the fluid pressure means (5, 7, 8, 6, 9);

(c) (18; 65, 75, 218) between the control valve (10, 50) and the torque sensor (19; 69, 70); and

(d) (20) between the torque sensor and the fluid sump or drain,

wherein the pressure and fluid flow through said lines (c) and (d) is representative of torque being transferred through said transmission system,

and comprising, in accordance with the invention,

a rapid supply means for rapidly changing the fluid pressure applied to the fluid pressure means (5, 7, 8, 6, 9) without subject to time delays due to flow resistances in said loop, said rapid supply means including

additional fluid supply lines (23, 24; 73, 74) and check valves (21, 22; 71, 72) included in said additional fluid supply lines,

said additional fluid supply lines (23, 24; 73, 74), with the check valves (21, 22; 71, 72) therein, being connected

(e) between the line (18, 65, 75, 218) connecting the control valve (10, 50) and the torque sensor (19; 69, 70) with the connecting line (11, 12; 61, 62) between the control valve (10; 50) and the fluid pressure means (5, 7, 8, 6, 9) to supply additional fluid under pressure to the fluid pressure means upon sensing of increased torque transfer in said system and consequent decreased or blocked fluid flow through connecting line (d) (20) between the torque sensor and the fluid sump or drain,

the check valves having a fluid path direction from the torque sensor line control valve (18; 65, 75, 218) to the control valve-fluid pressure means line (11, 12; 61, 62) and bypassing the control valve (10; 50).

4,942,787

APPARATUS FOR AND METHOD OF CONTROLLING HYDRAULIC CLUTCH OPERATION IN AN AUTOMATIC TRANSMISSION

Takashi Aoki; Satoshi Terayama, Tokyo; Yoshihisa Iwaki, Saitama; Noboru Sekine, Saitama; Hiroyuki Shimada, Saitama; Nobuo Takemasa, Saitama, and Junichi Miyake, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1989, Ser. No. 318,128

Claims priority, application Japan, Mar. 3, 1988, 63-50337; Mar. 3, 1988, 63-50338

Int. Cl.[5] B60K *41/06*

U.S. Cl. 74—867 13 Claims

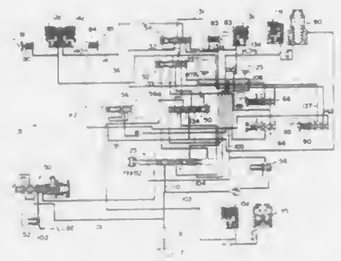
1. An apparatus for controlling hydraulic clutch operation in an automatic transmission comprising:

a hydraulic clutch operatively engaged by use of operational hydraulic pressure;

a hydraulic pressure control valve for regulating the operational hydraulic pressure supplied to said hydraulic clutch in accordance with a control force;

detection means for detecting a condition immediately before engagement in said hydraulic clutch based on a change in said operational hydraulic pressure; and

control means for adjusting a timing to change said control force in said hydraulic pressure control valve in response



to a detection of said condition immediately before engagement by said detection means.

4,942,788

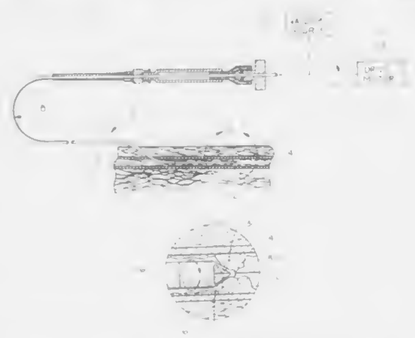
METHOD OF MANUFACTURING A CUTTER FOR ATHERECTOMY DEVICE

Andrew F. Farr, Spring Valley, and Herbert R. Radisch, Jr., San Diego, both of Calif., assignors to InterVentional Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 213,691, Jun. 30, 1988, Pat. No. 4,887,613, which is a continuation-in-part of Ser. No. 123,713, Nov. 23, 1987, Pat. No. 4,895,166. This application Jul. 26, 1989, Ser. No. 386,905

Int. Cl.[5] A61B *10/00*

U.S. Cl. 76—115 14 Claims



1. A method for manufacturing an atherectomy cutter which comprises the steps of:

boring into a cylindrical-shaped rod substantially along its longitudinal axis to form an interior which successively and connectingly includes a cylindrical hollow of relatively large diameter, a narrowingly tapered conical intermediate hollow and a cylindrical hollow of relatively small diameter;

turning the rod to configure an outer surface with the interior to establish a blank of uniform thickness; and

burning a hole into the intermediate hollow of the blank to form a blade for the cutter.

4,942,789

APPARATUS FOR STEP STRIPPING WIRE MEANS

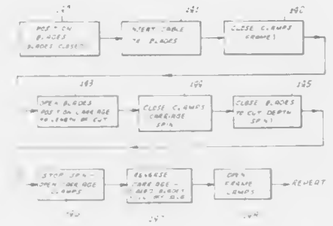
Jack L. Hoffa, Brea, and Greg Nazerian, Pasadena, both of Calif., assignors to Eubanks Engineering Co., Monrovia, Calif.

Continuation-in-part of Ser. No. 220,480, Jul. 18, 1988, Pat. No. 4,869,135. This application Apr. 10, 1989, Ser. No. 335,386

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] H02G *1/12*

U.S. Cl. 81—9.51 33 Claims



1. In apparatus for stripping sheathing from wire at controllable depth, the combination comprising:

(a) a frame,

(b) wire clamp means on the frame for sidewardly clamping the wire sheathing, at a location spaced from the end of the wire advanced past the clamp means,

(c) a carriage on the frame linearly movable longitudinally toward and away from the wire clamp means,

(d) a rotating spindle on the carriage and blade means on the spindle and rotatable thereby to rotatably cut into the wire sheathing,

(e) wire engaging guide means mounted to the carriage, independently of the spindle, for sidewardly engaging the wire sheathing at a location between the clamp means and said blade means,

(f) means to control the depth of cutting of the blade means into the sheathing, and as the spindle rotates,

(g) first drive means operatively connected with the carriage to carry the blade means to selected positions along the wire and at which the blade means then cuts into the sheathing, to controlled depth, the carriage being retractable to pull a cut plug of the sheathing endwise off the wire,

(h) second drive means on the carriage and operatively connected with the spindle to rotate same, the spindle being rotatably mounted on the carriage,

(i) said wire engaging guide means including two guide parts, and including third drive means operatively connected with those parts to move them relatively toward and away from one another,

(j) and a microprocessor operatively connected with said first, second and third drive means for controlling operation thereof.

4,942,790

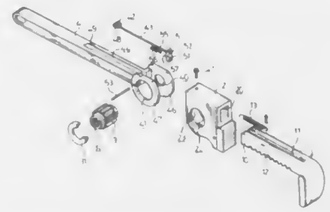
PIPE WRENCH

Bor J. Wang, 3 Fl., No. 740, Chung Cheng Rd., Yung Ho City, Taipei Hsien, Taiwan

Filed Sep. 26, 1989, Ser. No. 412,485

Int. Cl.[5] B25B *13/12*

U.S. Cl. 81—133 3 Claims



1. A pipe wrench comprising a handle, a pair of end plates each with a hole being provided at a front end of said handle, a cavity being formed in said front end for receiving a spring and a ball, and a groove with three position recesses being formed on an upper surface of said handle for receiving a button and a rod; a pawl with two teeth being pivotally fixed in front of said ball; a seat with a transverse hole and a longitudinal hole being pivotally fixed between said end plates of said handle by a ratchet wheel, said ratchet wheel extending through said holes of said end plates and said transverse hole of said seat; and a head with a rack formed on a lower surface thereof being slidably provided in said longitudinal hole of said seat, said rack of said head engaging with said ratchet wheel so that said head can be extended or retracted by a rotation of said ratchet wheel.

4,942,791

ERGONOMIC HANDLE FOR HAND-HELD TOOLS

John F. Stewart, and Russell D. Richardson, both of Lexington, S.C., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 393,835, Aug. 14, 1989, which is a division of Ser. No. 258,236, Oct. 14, 1988, abandoned. This application Sep. 13, 1989, Ser. No. 406,696

Int. Cl.[5] B25B *13/00*

U.S. Cl. 81—177.1 5 Claims



1. In a rotational air tool having a substantially cylindrical motor housing and clutch housing which are joined with a threaded joint, as well as a sleeve with a substantially cylindrical bore designed to accommodate the housings, wherein the improvement comprises:

said sleeve being locked to said housings by a pair of radially inwardly extending male tabs on the inner bore of the sleeve which lockingly mate with a pair of oppositely extending female tabs on the outer surface of said hous-

VOL 1116 ISS 4 24 1990 JMI

ings, to prevent rotational and axial movement of the sleeve relative to the housings;

the outer surface of said sleeve having a trilobular cross-section, and being of substantially the same diameter over the majority of its axial length; and

at least one end portion of said outer surface of said sleeve being flared radially outwardly along the axial length of the handle and wherein the flared end portion has a trilobular cross-sectional shape.

4,942,792

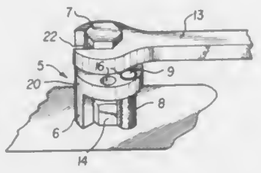
STRIP LUG AND NUT REMOVER

Nelson E. Thornton, 1653 Thetford Rd., Towson, Md. 21204

Continuation of Ser. No. 163,032, Mar. 2, 1988, abandoned, and a continuation of Ser. No. 317,669, Mar. 1, 1989. This application Mar. 1, 1989, Ser. No. 317,669

Int. Cl.[5] B25B *13/50*

U.S. Cl. 81—53.2 **4 Claims**



1. A strip lug and nut remover for removing a stripped nut, comprising a substantially semi-circular hollow housing with a semi-circular bore therein and having a circular shaped closed top and a shoulder of semi-circular shape formed integrally with said closed top and arranged and extending perpendicularly thereto to form said semi-circular bore, said housing having an inner surface, at least two spaced sets of spaced teeth formed in said inner surface of said shoulder of said hollow housing and extending longitudinally of said hollow housing, a series of arcuate grooves formed in the inner surface of said shoulder, each groove being the same length as each set of spaced teeth, said sets of teeth and said arcuate grooves being alternately disposed along said inner surface of said such that one of said arcuate grooves is positioned between said sets of spaced teeth housing with the edges and corner of a stripped nut being positioned against the sets of teeth and grooves, a lug means extending upwardly from said closed top and formed integrally therewith, said top of said hollow housing having at least one aperture extending therethrough, and an eccentrically mounted pin means coupled in one of said at least one aperture in said top of said hollow housing and extending longitudinally downwardly from said top therefrom to engage a stripped nut to be removed, wherein when the semi-circular hollow housing of said strip lug and nut remover is placed over a stripped nut, with the head of a lug wrench being placed over said lug means, with said strip lug and nut remover being and positioned so its shoulder is located against one of the faces of said stripped nut and one of its edges and with said eccentrically mounted pin means is arranged to engage an opposite side of said stripped nut so that when said lug wrench is rotated in the proper direction, said eccentrically mounted pin is positioned in engagement with said stripped nut, and said stripped nut is broken against its adjacent structure so that it can be removed from its mating structure.

4,942,793

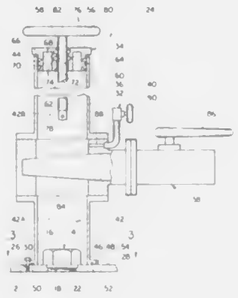
APPARATUS AND METHOD FOR REMOVING AND REPLACING A FEEDTHROUGH CONNECTOR IN A PRESSURIZED SPACECRAFT HULL

Herbert E. Ferree, Hempfield Twp., Westmoreland County, and Ellen J. Revelj, Monroeville, both of Pa., assignors to Space Industries Partnership, L.P., Webster, Tex.

Filed May 16, 1988, Ser. No. 194,620

Int. Cl.[5] B25B *13/02*

U.S. Cl. 81—54 **15 Claims**



1. An apparatus for removing a connector mounted in an access opening in a wall of a pressurized vessel, said apparatus comprising:

(a) an elongated hollow sleeve defining a chamber and having upper and lower opposite open ends;

(b) sleeve attaching means defined on said lower sleeve open end for sealably attaching said sleeve to the vessel wall about the access opening thereof and the connector mounted therein;

(c) a cap sealably mounted to said upper sleeve open end so as to close the same, said cap being removable for opening said upper sleeve open end;

(d) an elongated member mounted to and extending through said cap and being vertically reciprocally movable relative to said cap and through said sleeve chamber between upper and lower ends of said sleeve, said elongated member being operable for engaging the connector, removing the same from the access opening in the wall and lifting the connector from said lower to upper end of said sleeve, said elongated member and connector engaged therewith being removable from said sleeve upon removal of said cap therefrom;

(e) first valve means mounted to said sleeve between and spaced from said upper and lower ends thereof and being actuatable between a first displaced condition wherein said sleeve chamber is closed between said upper and lower sleeve open ends dividing said chamber into upper and lower portions being sealed from one another and preventing vertical movement of said elongated member from said upper to lower end of said sleeve and a second condition wherein said sleeve chamber is opened between said upper and lower sleeve open ends communicating said upper and lower chamber portions with one another and permitting vertical movement of said elongated member between said upper and lower ends of said sleeve; and

(f) second valve means connected in communication with said sleeve above said first valve means and being operable to vent atmosphere external of said sleeve with said upper chamber portion of said sleeve.

4,942,794

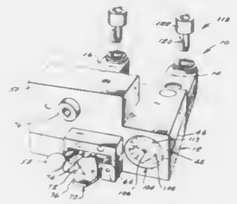
TORQUE TOOL

Robert F. Snyder, Hamden, and John H. Ferguson, Rockyhill, both of Conn., assignors to Raymond Engineering Inc., Middletown, Conn.

Continuation of Ser. No. 244,928, Sep. 15, 1988, abandoned. This application Apr. 27, 1989, Ser. No. 346,362

Int. Cl.[5] B25B *17/00*

U.S. Cl. 81—57.22 **25 Claims**



1. A torque wrench comprising:

a housing having an interior and an exterior;

a first arm pivotably mounted in said housing and extending outwardly of said housing;

a second arm pivotably mounted in said housing and extending outwardly of said housing, said first arm being spaced from said second arm;

first gear train means in said first arm and terminating at a first output gear;

second gear train means in said second arm and terminating at a second output gear;

gear selector means at least partially in said housing, said gear selector means actuating either said first gear train means or said second gear train means; and

third gear train means in said housing for torque multiplication, said third gear train means having an input means thereto, said input means communicating between said third gear train means and the exterior of said housing, said third gear train means including a rotatable drive shaft communicating and adapted to drive said gear selector means.

4,942,795

PRECISION CUTTER WITH AUTOMATED PRESSURE CONTROL

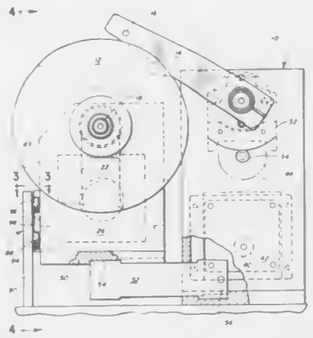
Thomas A. Linke, Wadsworth, Ill.; Alan W. Wilkerson, Cedarburg, Wis., and Ashok K. Parida, Frankfort, Ill., assignors to Buehler Ltd., Lake Bluff, Ill.

Filed Jun. 2, 1988, Ser. No. 201,531

Int. Cl.[5] B23Q *15/013*

U.S. Cl. 83—72 **15 Claims**

1. In an automatic saw of the type having a rotatable saw blade for cutting through a workpiece which is carried on a movable arm which permits the workpiece to be moved into engagement with the saw blade for cutting through the workpiece, the improvement comprising, in combination, a rotatable saw blade mounted on a first shaft, a saw blade drive motor for rotating said first shaft, first frame means supporting said saw blade motor and said first shaft and said saw blade, load cell means providing an electical output signal corresponding to a load supported thereon, said first frame means being mounted on said load cell means to measure the force exerted against said saw blade by said workpiece, arm means for carrying said workpiece, and arm drive means for moving



said arm means toward said saw blade, said arm drive means being controlled in response to said electrical output signal.

4,942,796

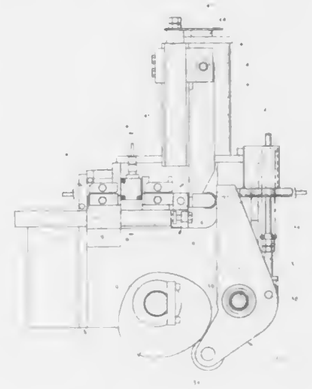
STOCK FEED APPARATUS FOR FORGING MACHINES AND THE LIKE

Harry A. Dom, and John A. Maistros, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Aug. 3, 1988, Ser. No. 228,004

Int. Cl.[5] B26D *5/24, 7/06*

U.S. Cl. 83—72 **18 Claims**



1. A cyclically operable stock feed apparatus for forging machines and the like which intermittely feeds predetermined lengths of elongated stock to a cutter for shearing workpieces having said predetermined length from said stock, comprising a frame, a fixed gripper on said frame, a movable gripper on said frame movable with straight-line movement through a stroke one end of which provides a gripping position and the other end of which provides a release position, and cam drive means operating to cycle said movable gripper between said positions and to open and close said grippers in timed relationship, said cam drive means including:

(a) a firs cam drive moving said movable gripper through said stroke back and forth between said gripping and release positions;

(b) a second cam drive for controlling said movable gripper

so that it is released while said movable gripper moves from said release position to said gripping position;

(c) a third cam drive for controlling said fixed gripper so that it is released while said movable gripper is moving from said gripping position to said release position for feeding stock;

(d) said cam drives operating in timed relationship and being timed so that at least one of said grippers is closed to grip said stock during the entire time of each cycle to maintain complete control of the positions of said stock; and

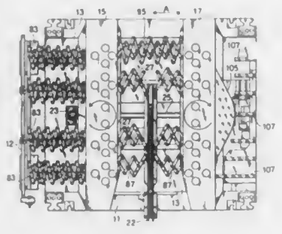
(e) measuring means operating to independently measure the length of stock fed during each cycle of said stock feed apparatus.

4,942,797

PROGRAMMABLE CONTROLLED TURNBLANKING MACHINE

Susumu Nakamura, Tokyo, Japan, assignor to Sankyo Oilless Industry, Inc., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 267,850
Int. Cl.[5] B26D *7/00*
U.S. Cl. 83—76.9 3 Claims



1. A programmable controlled turnblanking machine having first and second blanking dies each provided with a cutting edge and disposed at predetermined positions in a strip feed direction on a bed in order to cut out blanks of predetermined shape and size from a strip in cooperation with each cutting edge of the blanking dies, said programmable controlled turnblanking machine comprising:

a blanking apparatus having a first blanking die disposed in front in said strip feed direction and being prevented from sliding in the strip feed direction and being rotatably supported at a center thereof on said bed, and a second blanking die being disposed behind the first blanking die in said strip feed direction and so as to be slidable on the bed in the strip feed direction, the second blanking die being rotatably supported at a center thereof on said bed, said blanking apparatus including a pusher for pushing out blanks after cutting from between the first and second dies, and means connected to said pusher so that said pusher is always positioned at a center position between the first blanking die and the second blanking die when the second blanking die is moved on said bed;

a teaching unit for inputting a rotational angle θ_1 of said first blanking die, and a slide distance X of said second blanking die as well as rotational angle θ_2 thereof and setting positioning data for the blanking dies as program data; and

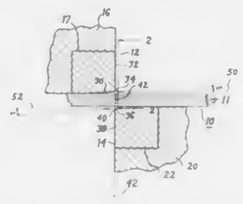
a control box for automatically calling predetermined positions of said first and second blanking dies by inputting a program number of a program based on said program data which have been set by said teaching unit and automatically controlling a slide position and each rotational angle of the first and second blanking dies of said blanking apparatus.

4,942,798

APPARATUS FOR SHEAR-CUTTING A STACK OF AMORPHOUS STEEL SHEETS

Alan I. Taub; Minyoung Lee, and Louis E. Hibbs, Jr., all of Schenectady, N.Y., assignors to General Electric Company, King of Prussia, Pa.

Filed Apr. 6, 1989, Ser. No. 334,248
Int. Cl.[5] B26D *1/08*
U.S. Cl. 83—636 8 Claims



1. Apparatus for shear-cutting a stack of thin amorphous steel sheets along a cutting plane that extends transversely of said stack, comprising:

(a) first and second blades each having a first surface for engaging said stack at one side thereof and a second surface that extends transversely of said first surface and generally parallel to said cutting plane, the first and second surfaces of each blade intersecting at a corner,

(b) means for positioning said blades at the start of a cutting operation so that said corners are positioned at opposite sides of said stack and also on opposite sides of said cutting plane in juxtaposition thereto, and

(c) means for moving one of said blades during a cutting operation so that the corner thereof moves toward the corner of the other blade in a direction parallel to said cutting plane, thereby causing the corners of said blades to shear-cut the stack along said cutting plane, and further characterized by:

(d) said first surface of said one blade being disposed at predetermined rake angle with respect to a reference plane extending through a point on the corner of said one blade and normal to said cutting plane and to the direction of motion of said one blade,

(e) said first surface of said other blade being disposed at predetermined rake angle with respect to a reference plane extending through a point on the corner of said other blade and normal to said cutting plane and to the direction of motion of said one blade, and

(f) the sum of said rake angles being a negative value of between 5 degrees and 35 degrees, and in which: the rake angle of either of said blades is considered to be negative if said first surface of the blade, in intersecting said second surface thereof at said corner of the blade, is so inclined as to make the corner less sharp than it would be if said first surface were located in said reference plane.

4,942,799

METHOD OF GENERATING A TONE SIGNAL

Hideo Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

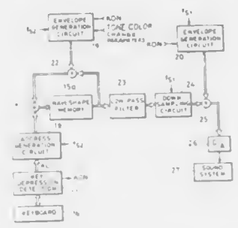
Filed Oct. 22, 1987, Ser. No. 112,386
Claims priority, application Japan, Oct. 24, 1986, 61-251936
Int. Cl.[5] G10H *7/00, 1/06*
U.S. Cl. 84—603 14 Claims

1. A method of generating a tone signal comprising:

a first step of obtaining waveshape data which has been sampled with a predetermined sampling frequency which is the higher of a first sampling frequency and a second sampling frequency;

a second step of performing a predetermined tone synthesis modulation operation to generate spectrum components by using said waveshape data as waveshape data corresponding to at least one of a signal to be modulated and a modulating signal;

a third step of limiting the frequency band of the output signal of said modulation operating to a frequency band



below a frequency which is ½ of the lower of said first and second sampling frequencies; and

a fourth step of resampling the output signal which has been limited in frequency band in said third step with the lower of said first and second sampling frequencies and providing the resampled signal as a tone signal;

4,942,800

PROCESS FOR THE MANUFACTURE OF EXPLOSIVE CARTRIDGES, AND EXPLOSIVE CARTRIDGES OBTAINED USING THE SAID PROCESS

Edmond Bouillet, Wemmel; Jean-Claude Colery, Brussels; Claude Declerck, Brussels, and Pierre Ledoux, Brussels, all of Belgium, assignors to Interox (Société Anonyme), Brussels, Belgium

PCT No. PCT/BE87/00008, § 371 Date Nov. 29, 1988, § 102(e) Date Nov. 29, 1988, PCT Pub. No. WO87/07258, PCT Pub. Date Dec. 3, 1987
PCT Filed May 21, 1987, Ser. No. 295,220
Claims priority, application France, May 30, 1986, 86 07931
Int. Cl.[5] C06D *1/08;* F42B *3/00;* C06B *21/00, 43/00*
U.S. Cl. 86—20.1 13 Claims

1. Process for the manufacture of explosive cartridges containing, in a tubular casing, an explosive composition comprising hydrogen peroxide, at least one oxidizable organic material and at least one gelling agent belonging to the class of macromolecular plastic materials, comprising the steps of:

mixing (a) a solution containing hydrogen peroxide of at least about 60 weight %, (b) oxidizable organic material and (c) at least one precursor monomer of the gelling agent; and

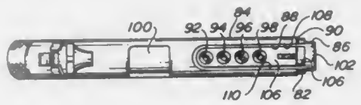
reacting said at least one precursor monomer to form macromolecules of the gelling agent in situ in the tubular casing.

4,942,801

FIREARM GUN RISE AND MUZZLE JUMP REDUCER

Wil Schuemann, 705 Wagner Dr., Carson City, Nev.

Filed Mar. 10, 1989, Ser. No. 321,898
Int. Cl.[5] F41F *17/12*
U.S. Cl. 89—14.3 37 Claims



1. Apparatus for reducing a gun rise and muzzle jump of a semi automatic pistol having a chamber, a barrel having a bore formed therein and extending from the chamber and a muzzle defining an outlet end of the bore, a slide translatable along the barrel from a battery position to a recoil position and return during each discharge cycle of the pistol, said apparatus comprising in combination:

(a) at least one upwardly directed nozzle disposed in the barrel for exhausting propellant gas therethrough from the bore of the barrel upon discharge of the pistol to develope a downwardly directed thrust force on the pistol to counter the gun rise and the muzzle jump of the pistol upon discharge, said nozzle being disposed in the barrel at a location closer to the chamber than to the muzzle;

(b) a plurality of further nozzles disposed in the barrel for exhausting propellant gas therethrough from the bore of the barrel upon discharge of the pistol to develope a downwardly directed thrust force on the pistol to counter the gun rise and muzzle jump of the pistol upon discharge, said plurality of nozzles being disposed in the barrel at locations toward the muzzle from said at least one nozzle;

(c) an opening disposed in said slide for maintaining said at least one nozzle and said plurality of further nozzles exposed during translation of said slide from the battery position to the recoil position and return; and

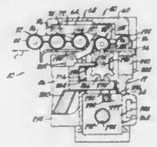
(d) a barrel bushing disposed intermediate said slide and the barrel for supporting said slide upon the barrel, said barrel bushing being configured to maintain said at least one nozzle and said plurality of further nozzles exposed during translation of said slide.

4,942,802

CONVERTIBLE, BELT/CLIP-FED AUTOMATIC GUN WITH POSITIVE SHELL CASING EJECTION

Eugene M. Stoner, Palm City, Fla., assignor to ARES, Inc., Port Clinton, Ohio

Filed Sep. 24, 1987, Ser. No. 100,388
Int. Cl.[5] F41D *10/14*
U.S. Cl. 89—191.01 22 Claims



1. A convertible, belt/clip-fed automatic gun, which comprises:

a. a gun barrel having a breech;

b. a receiver connected to the barrel and having a battery position disposed adjacent said barrel breech, a shell pick up position and a shell casing ejection port;

c. a bolt assembly slidably mounted in the receiver for reciprocating movement, in response to firing of the gun, between the battery position and a recoil position rearwardly of the shell pick up position and the shell casing ejection port, the bolt assembly having means for picking up a shell from the pick up position upon forward bolt assembly movement and for loading the picked up shell into the barrel breech and, after firing, for extracting a fired shell casing from the barrel breech upon rearward recoil movement from the battery position to the recoil position, said bolt assembly having an ammunition belt advancing and shell casing ejection cam track formed thereon;

d. ammunition belt receiving and advancing means, comprising a cam follower pivotally mounted to the receiver, at least one belt advancing pawl mounted to the cam follower, a belt feeding adapter for receiving an ammunition belt and means for releasably attaching said belt feeding adapter to the receiver at a position adjacent to said shell pick up position and in a cooperative relationship with said cam follower;

said cam follower having a cam track following portion thereof in engagement with said bolt assembly cam track and being thereby responsive to rearward movement of the bolt assembly from the breech to the recoil position for causing said belt advancing pawl to inwardly advance an ammunition belt held by the belt feeding adapter in a manner moving a shell in the belt into the shell pick up position and being responsive to forward movement of the bolt assembly from the recoil position to the battery position for moving said belt advancing pawl a shell distance outwardly in readiness for advancing the belt the next time the bolt assembly is moved rearwardly to the recoil position; and

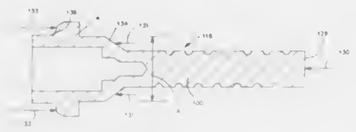
e. an ammunition clip holder and means for releasably attaching the clip holder to the receiver in place of the belt feeding adapter and belt advancing pawl.

4,942,803

STEERING GEAR WITH PRESSURE-BALANCED VALVE

William T. Rabe, Lafayette, Ind., and Wendell L. Gilbert, Lebanon, Tenn., assignors to TRW Inc., Lyndhurst, Ohio

Division of Ser. No. 73,711, Jul. 15, 1987, Pat. No. 4,872,393.
This application Feb. 27, 1989, Ser. No. 316,472
Int. Cl.[5] B62D *5/083*
U.S. Cl. 91—370 **4 Claims**



1. An apparatus comprising:

a fluid motor including a housing defining a chamber and a movable piston located in said chamber and dividing said chamber into first and second portions, said housing being adapted to be connected in fluid communication with a source of high pressure fluid and a reservoir which receives fluid at a relatively low pressure from said fluid motor upon movement of said piston in said chamber,

a one-piece rotatable combined valve part and followup member connected with said piston, said one-piece valve part and follow-up member including an externally threaded portion connected with said piston and a hollow valve portion which is closed at one end, said hollow valve portion including a first surface area which is continuously exposed to the low fluid pressure conducted to reservoir, said first surface area being partially disposed on an end of said one-piece valve part and follow-up member and being partially disposed within said hollow valve portion, said hollow valve portion of said one-piece valve part and follow-up member including a radially outwardly projecting annular flange disposed between opposite end portions of said hollow valve portion, said annular flange having a second surface area which is of the same size as said first surface area and which is continuously exposed to the relatively high fluid pressure conducted from the source of high pressure fluid, said hollow valve portion of said one-piece valve part and follow-up member including a third surface area which is of the same size as said first surface area and is disposed on a side of said flange opposite from said second surface area, said third surface area being exposed to the fluid pressure in said first chamber portion of said fluid motor, said one-piece valve part and follow-up member including a fourth surface area which is partially disposed on said hollow valve portion and is partially disposed on said externally threaded portion of said one-piece valve part and follow-up member, said fourth surface area being of the same size as said first surface area, said fourth surface area being exposed to the fluid pressure in said second chamber portion of said fluid motor,

a rotatable valve core disposed in said hollow valve portion of said one-piece valve port and follow-up member at a location radially inwardly of said flange, said valve core being rotatable relative to said hollow valve portion between an initial condition and first and second actuated conditions,

a torsion bar extending axially along said one-piece valve part and follow-up member and having a first end portion connected to said one-piece valve part and follow-up member adjacent to the closed end of said hollow valve portion and having a second end portion connected to said rotatable valve core, said torsion bar having a central portion which is at least partially disposed radially inwardly of said flange, said torsion bar being resiliently deflected by movement of said valve core from the initial condition toward either of said actuated conditions,

said valve core cooperating with said hollow valve portion to communicate relatively high fluid pressure from the source of fluid pressure to said second chamber portion of said fluid motor and said fourth surface area and to communicate the relatively low fluid pressure at the reservoir to said first chamber portion of said fluid motor and said third surface area when said valve core is in the first actuated condition, said one-piece valve part and follow-up member being pressure balanced when said valve core is in the first actuated condition by the relatively high fluid pressure on said second surface area being offset by the relatively high fluid pressure on said fourth surface area and by the relatively low fluid pressure on said first surface area being offset by the relatively low fluid pressure on said third surface area, said valve core cooperating with said hollow valve portion to communicate relatively high fluid pressure from the source of fluid pressure to said first chamber portion of said fluid motor and said third surface area and to communicate the relatively low fluid pressure at the reservoir to said second chamber portion of said fluid motor and said fourth surface area when said valve core is in the second actuated condition, said one-piece valve part and follow-up member being pressure balanced when said valve core is in the second actuated condition by the relatively high fluid pressure on said second surface area being offset by the relatively high fluid pressure on said third surface area and by the relatively low fluid pressure on said first surface area being offset by the relatively low fluid pressure on said fourth surface area.

4,942,804

PISTON WITH CERAMIC INSERT THAT COVERS PISTON HEAD PORTION DEFINING CAVITY

Tooru Matsuura, and Yoshinori Narita, both of Nagoya City, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya City, Japan

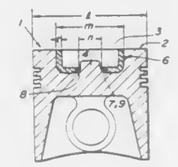
Filed Aug. 9, 1988, Ser. No. 230,048
Claims priority, application Japan, Aug. 11, 1987, 62-122124[U]; Nov. 20, 1987, 62-176435[U]
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—212 **13 Claims**

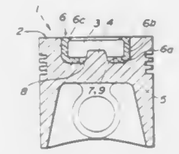
1. A piston comprising:

a cast piston body having a piston head which is partly recessed to form a cavity and has a central projection projecting into said cavity;

a ring-shaped ceramic insert cast in said piston body in such a way as to cover a piston head portion defining said cavity except said central projection-and-its adjacent piston head portion; and

wherein said piston head includes a top surface portion, a bottom surface portion and a circumferential surface portion between said top surface portion and said bottom surface portion, said bottom surface portion having said central projection, said ceramic insert being so shaped as





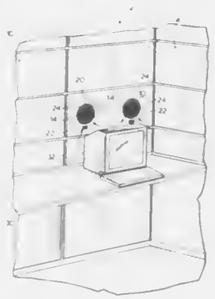
to cover circumferential surface portion of said piston head only.

4,942,805

VENTILATED PANEL

John Hellwig, Toronto, and Philip Bradbury, North York, both of Canada, assignors to Teknion Furniture Systems Inc., Downsview, Canada

Filed Feb. 2, 1989, Ser. No. 305,097
Int. Cl.[5] F24F *7/007*
U.S. Cl. 98—1 **15 Claims**



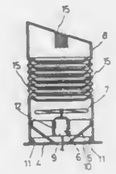
10. In combination, an office panelling system having removable panel covers supported by metal frames generally interior to said panel covers, at least one of said covers having mounted thereon about a port in said panel an electric fan, said fan being oriented for causing a flow of air to pass through said removable panel cover when said fan is operated, and exhaust means for allowing air to leave the panelling system and wherein said electric fan is connected to an electrical supply interior to said office panelling system.

4,942,806

VEHICULAR INTERNAL AIR EXHAUSTING DEVICE

Feng-Lin Hwang, Kaohsung City, Taiwan, assignor to Tech Zeal Industrial C., Ltd., Taiwan, Taiwan

Filed Jul. 24, 1989, Ser. No. 383,480
Int. Cl.[5] B60H *1/26*
U.S. Cl. 98—2.02 **3 Claims**



1. A vehicular internal air exhausting device which comprises:

a power source supply assembly for supplying electricity power from a battery under control of a set of switches;

an air exhausting assembly mounted on a trunk compartment top plate behind a vehicle seat for extracting the vehicular internal heated air toward said trunk compartment, said exhaust assembly comprising: a bottom plate, a motor seat, a motor having an output shaft, an air-extracting blades, and a cylindrical housing shell having an inner diameter; said bottom plate having an outlet in its center for the extracted air which enters the trunk compartment, screw holes near said bottom plate periphery for mounting to the trunk compartment top plate, and said bottom plate having an annular flange inside of and adapted to said housing shell inner diameter for connecting said top plate to said housing shell; said housing shell, containing said motor seat which is cone-formed and has a motor barrel in its center to accommodate said motor and aerofoils provided to bridge connection between said motor barrel and an outer circle of said motor seat; said motor united with said air-extracting blades at its output shaft; said housing shell having air intake cascades in its periphery and top areas, said motor being electrically connected to said power source supply assembly;

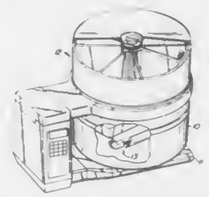
wherein the vehicular internal temperature will become equal to the outside temperature.

4,942,807

TURNING MECHANISM

Don M. Wong, 2296 Bunker Hill Dr., San Mateo, Calif. 94402

Continuation-in-part of Ser. No. 140,176, Dec. 31, 1987, Pat. No. 4,820,054. This application Feb. 14, 1989, Ser. No. 312,368
Int. Cl.[5] A47J *27/00*; B01F *7/14*
U.S. Cl. 99—348 **17 Claims**



1. An implement for use in cooking a food item such as a steak, fish filet or the like, said implement being used with a drive shaft rotating about a horizontal axis for automatically turning over said food item during cooking, comprising:

support means for supporting said food item during turning;

said cam follower having a cam track following portion thereof in engagement with said bolt assembly cam track and being thereby responsive to rearward movement of the bolt assembly from the breech to the recoil position for causing said belt advancing pawl to inwardly advance an ammunition belt held by the belt feeding adapter in a manner moving a shell in the belt into the shell pick up position and being responsive to forward movement of the bolt assembly from the recoil position to the battery position for moving said belt advancing pawl a shell distance outwardly in readiness for advancing the belt the next time the bolt assembly is moved rearwardly to the recoil position; and

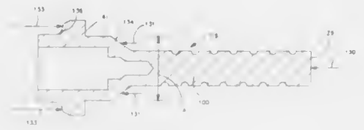
e. an ammunition clip holder and means for releasably attaching the clip holder to the receiver in place of the belt feeding adapter and belt advancing pawl.

4,942,803

STEERING GEAR WITH PRESSURE-BALANCED VALVE

William T. Rabe, Lafayette, Ind., and Wendell L. Gilbert, Lebanon, Tenn., assignors to TRW Inc., Lyndhurst, Ohio

Division of Ser. No. 73,711, Jul. 15, 1987, Pat. No. 4,872,393.
This application Feb. 27, 1989, Ser. No. 316,472
Int. Cl.[5] B62D *5/083*
U.S. Cl. 91—370 4 Claims



1. An apparatus comprising:

a fluid motor including a housing defining a chamber and a movable piston located in said chamber and dividing said chamber into first and second portions, said housing being adapted to be connected in fluid communication with a source of high pressure fluid and a reservoir which receives fluid at a relatively low pressure from said fluid motor upon movement of said piston in said chamber,

a one-piece rotatable combined valve part and followup member connected with said piston, said one-piece valve part and follow-up member including an externally threaded portion connected with said piston and a hollow valve portion which is closed at one end, said hollow valve portion including a first surface area which is continuously exposed to the low fluid pressure conducted to reservoir, said first surface area being partially disposed on an end of said one-piece valve part and follow-up member and being partially disposed within said hollow valve portion, said hollow valve portion of said one-piece valve part and follow-up member including a radially outwardly projecting annular flange disposed between opposite end portions of said hollow valve portion, said annular flange having a second surface area which is of the same size as said first surface area and which is continuously exposed to the relatively high fluid pressure conducted from the source of high pressure fluid, said hollow valve portion of said one-piece valve part and follow-up member including a third surface area which is of the same size as said first surface area and is disposed on a side of said flange opposite from said second surface area, said third surface area being exposed to the fluid pressure in said first chamber portion of said fluid motor, said one-piece valve part and follow-up member including a fourth surface area which is partially disposed on said hollow valve portion and is partially disposed on said externally threaded portion of said one-piece valve part and follow-up member, said fourth surface area being of the same size as said first surface area, said fourth surface area being exposed to the fluid pressure in said second chamber portion of said fluid motor,

a rotatable valve core disposed in said hollow valve portion of said one-piece valve port and follow-up member at a location radially inwardly of said flange, said valve core being rotatable relative to said hollow valve portion between an initial condition and first and second actuated conditions,

a torsion bar extending axially along said one-piece valve part and follow-up member and having a first end portion connected to said one-piece valve part and follow-up member adjacent to the closed end of said hollow valve portion and having a second end portion connected to said rotatable valve core, said torsion bar having a central portion which is at least partially disposed radially inwardly of said flange, said torsion bar being resiliently deflected by movement of said valve core from the initial condition toward either of said actuated conditions,

said valve core cooperating with said hollow valve portion to communicate relatively high fluid pressure from the source of fluid pressure to said second chamber portion of said fluid motor and said fourth surface area and to communicate the relatively low fluid pressure at the reservoir to said first chamber portion of said fluid motor and said third surface area when said valve core is in the first actuated condition, said one-piece valve part and follow-up member being pressure balanced when said valve core is in the first actuated condition by the relatively high fluid pressure on said second surface area being offset by the relatively high fluid pressure on said fourth surface area and by the relatively low fluid pressure on said first surface area being offset by the relatively low fluid pressure on said third surface area, said valve core cooperating with said hollow valve portion to communicate relatively high fluid pressure from the source of fluid pressure to said first chamber portion of said fluid motor and said third surface area and to communicate the relatively low fluid pressure at the reservoir to said second chamber portion of said fluid motor and said fourth surface area when said valve core is in the second actuated condition, said one-piece valve part and follow-up member being pressure balanced when said valve core is in the second actuated condition by the relatively high fluid pressure on said second surface area being offset by the relatively high fluid pressure on said third surface area and by the relatively low fluid pressure on said first surface area being offset by the relatively low fluid pressure on said fourth surface area.

4,942,804

PISTON WITH CERAMIC INSERT THAT COVERS PISTON HEAD PORTION DEFINING CAVITY

Tooru Matsuura, and Yoshinori Narita, both of Nagoya City, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya City, Japan

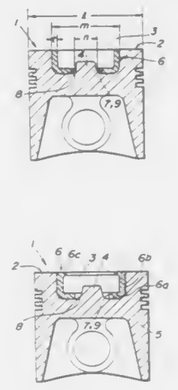
Filed Aug. 9, 1988, Ser. No. 230,048
Claims priority, application Japan, Aug. 11, 1987, 62-122124[U]; Nov. 20, 1987, 62-176435[U]
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—212 13 Claims

1. A piston comprising:

a cast piston body having a piston head which is partly recessed to form a cavity and has a central projection projecting into said cavity;

a ring-shaped ceramic insert cast in said piston body in such a way as to cover a piston head portion defining said cavity except said central projection-and-its adjacent piston head portion; and

wherein said piston head includes a top surface portion, a bottom surface portion and a circumferential surface portion between said top surface portion and said bottom surface portion, said bottom surface portion having said central projection, said ceramic insert being so shaped as



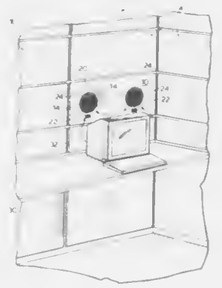
to cover circumferential surface portion of said piston head only.

4,942,805

VENTILATED PANEL

John Hellwig, Toronto, and Philip Bradbury, North York, both of Canada, assignors to Teknion Furniture Systems Inc., Downsview, Canada

Filed Feb. 2, 1989, Ser. No. 305,097
Int. Cl.[5] F24F *7/007*
U.S. Cl. 98—1 15 Claims



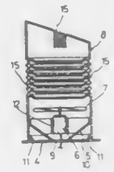
10. In combination, an office panelling system having removable panel covers supported by metal frames generally interior to said panel covers, at least one of said covers having mounted thereon about a port in said panel an electric fan, said fan being oriented for causing a flow of air to pass through said removable panel cover when said fan is operated, and exhaust means for allowing air to leave the panelling system and wherein said electric fan is connected to an electrical supply interior to said office panelling system.

4,942,806

VEHICULAR INTERNAL AIR EXHAUSTING DEVICE

Feng-Lin Hwang, Kaohsiung City, Taiwan, assignor to Tech Zeal Industrial C., Ltd., Taiwan, Taiwan

Filed Jul. 24, 1989, Ser. No. 383,480
Int. Cl.[5] B60H *1/26*
U.S. Cl. 98—2.02 3 Claims



1. A vehicular internal air exhausting device which comprises:

a power source supply assembly for supplying electricity power from a battery under control of a set of switches;

an air exhausting assembly mounted on a trunk compartment top plate behind a vehicle seat for extracting the vehicular internal heated air toward said trunk compartment, said exhaust assembly comprising: a bottom plate, a motor seat, a motor having an output shaft, an air-extracting blades, and a cylindrical housing shell having an inner diameter; said bottom plate having an outlet in its center for the extracted air which enters the trunk compartment, screw holes near said bottom plate periphery for mounting to the trunk compartment top plate, and said bottom plate having an annular flange inside of and adapted to said housing shell inner diameter for connecting said top plate to said housing shell; said housing shell, containing said motor seat which is cone-formed and has a motor barrel in its center to accommodate said motor and aerofoils provided to bridge connection between said motor barrel and an outer circle of said motor seat; said motor united with said air-extracting blades at its output shaft; said housing shell having air intake cascades in its periphery and top areas, said motor being electrically connected to said power source supply assembly;

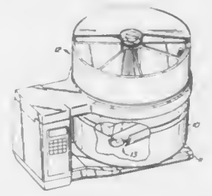
wherein the vehicular internal temperature will become equal to the outside temperature.

4,942,807

TURNING MECHANISM

Don M. Wong, 2296 Bunker Hill Dr., San Mateo, Calif. 94402

Continuation-in-part of Ser. No. 140,176, Dec. 31, 1987, Pat. No. 4,820,054. This application Feb. 14, 1989, Ser. No. 312,368
Int. Cl.[5] A47J *27/00*; B01F *7/14*
U.S. Cl. 99—348 17 Claims



1. An implement for use in cooking a food item such as a steak, fish filet or the like, said implement being used with a drive shaft rotating about a horizontal axis for automatically turning over said food item during cooking, comprising:

support means for supporting said food item during turning;

a turning member adapted for connection to said drive shaft so as to rotate about said horizontal axis, said turning member having a first portion extending perpendicular to said horizontal axis for connection to said support means for providing a moment arm for turning said food item and a second portion for providing leverage for lifting said food item during turning; and

linkage means for flexibly linking said support means to said turning member, said linkage means being connected to the first portion of said turning member at a position spaced apart from said horizontal axis and to said support means at a position proximate an end of said food item, whereby rotation of said turning member by said drive shaft rotates said food item over said horizontal axis.

4,942,808

FOOD PROCESSING APPARATUS

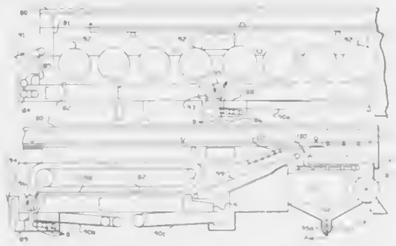
Clark K. Benson, Millbrae; Andrew A. Caridis, Foster City, and Lawrence F. Klein, Hillsborough, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 147,808, Jan. 25, 1988, which is a division of Ser. No. 921,289, Oct. 20, 1986, Pat. No. 4,738,193, which is a continuation-in-part of Ser. No. 698,097, Feb. 4, 1985, abandoned. This application Nov. 10, 1988, Ser. No. 269,514

The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.

Int. Cl.[5] A47J *37/12*

U.S. Cl. 99—404 **3 Claims**



1. An apparatus for continuous cooking of food products comprising a container for containing a liquid cooking medium, conveying means for transporting food products along a predetermined path through said cooking medium, said path defined, in order by a plurality of cooking zones comprising a first zone commencing at a first inlet for introducing oil into said bath and ending at a second inlet along said path for introducing oil into said bath, a second zone commencing at said second inlet and ending at a first set of inlet and outlet means for withdrawing and introducing oil from and to said bath; and two or more contiguous successive zones, respectively beginning and ending with a set of inlet and outlet means for withdrawing and introducing oil into said bath, wherein each said inlet and outlet means is located within a sump dividing adjacent zones, and each of said sumps accommodates a filtering means for separating food products from oil entering said sump.

4,942,809

COOKING JACKET

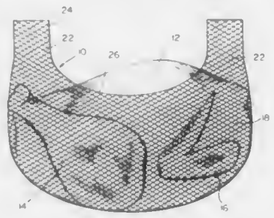
Elsie A. Simmons, Rte. 1, Box 253-B, Charlotte Hall, Md. 20622

Filed Jan. 26, 1989, Ser. No. 302,303

Int. Cl.[5] A47J *43/18*

U.S. Cl. 99—426 **3 Claims**

1. In combination, a cooking jacket and a meat product, said meat product producing drippings when being cooked and having dimensions and weight characteristics which render it difficult to handle and manipulate by conventional kitchen utensils when being cooked in a conventional manner, said cooking jacket comprising a one-piece mesh contained dimensioned to receive and closely fit the meat product, said container including two side panels, each of said side panels having a continuous upward extension adjacent each end thereof to form longitudinally spaced handle loops, said mesh container having a large opening in the area between the handle loops to enable said meat product to be inserted into and removed from the container and providing access to an upper portion of the meat product when being cooked, said mesh container being



continuous around a bottom portion and around both end portions thereof and being constructed of plastic mesh that is flexible, non-meltable at cooking temperatures of the meat product, said mesh container having a lengthwise dimension longer than a transverse dimension to form a sling when the container is supported by lifting the handle loops with the mesh enabling drippings produced when cooking the meat product to remain in a cooking pan when the container with the cooked meat product therein is lifted out of the cooking pan.

4,942,810

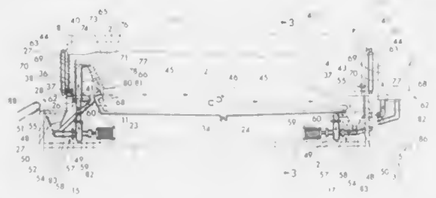
WATER SEAL BLANCHER

David R. Zittel, and Gregory M. Robbins, both of Columbus, Wis., assignors to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Sep. 15, 1988, Ser. No. 245,203

Int. Cl.[5] A23L *3/00*; A23N *12/00*

U.S. Cl. 99—477 **23 Claims**



1. An improved water seal blancher, comprising:

(a) a substantially steam-tight chamber body having an interior, a conveyor apparatus within the chamber body interior for conveying a particulate food product while subjecting the food product to a continuous, controlled steam heat treatment;

(b) a hydro food pump including an intake having an upper opening exposed to the external atmosphere through which the food product may be received and a bottom opening, and having walls of sufficient height for entraining water within the intake to form an intake water seal between the upper opening and the bottom opening; and a liquid pump having an inlet connected in fluid communication to the intake bottom opening and an outlet conduit extending into the chamber body in fluid-tight relation;

(c) a riser tank within the chamber including a bottom defining a bottom hole connected to the pump outlet conduit in fluid communication, and upwardly extending walls, one said wall having a substantially horizontal upper edge of substantial width so that water and entrained food product pumped through the pump outlet conduit into the riser tank will rise and spill over the horizontal upper edge along the width thereof and out of the riser tank;

(d) a separator screen about as wide as the riser tank horizontal upper edge positioned below the upper edge to receive spilled water and food product therefrom so that food product will be caught on the screen and entraining water will fall through the screen, the screen including a topside which is slanted downwardly away from the riser tank horizontal upper edge and toward the conveyor apparatus so that food product which is caught by the screen will move down and off the screen topside onto the conveyor apparatus; and

(e) a return conduit extending out of the container body in fluid-tight relation and to the intake below the effective level of the intake water seal to conduct separated entraining water from the chamber to the intake so that entraining water in the intake, pump and conduits will maintain an effective water seal between the interior of the chamber body and the external atmosphere.

4,942,811

FAT-REMOVING CULINARY IMPLEMENT

James O. Kuhn, 140 Nasssau St., New York, N.Y. 10038

Filed Nov. 21, 1988, Ser. No. 273,594

Int. Cl.[5] A47L *13/20*; A47J *43/28*

U.S. Cl. 99—495 **5 Claims**



1. A culinary implement functioning as a mop to extract from an aqueous food mixture insoluble liquid fats dispersed therein, said implement comprising:

(A) a porous fabric pad having a predetermined thickness formed of compressible filtration material having both hydrophobic and lipophilic properties;

(B) a holder for the pad; and

(C) a handle attached to the holder to form a mop, whereby when the implement is used to sweep the mixture, the fats disposed therein are attracted and adhere to the pad whereas the aqueous food mixture filters therethrough, thereby making it possible to free the food mixture of its fat content, said holder being provided with a pair of rollers having a space therebetween to define a nip for receiving the pad, said nip having a gap whose size is somewhat smaller than the thickness of the pad, said rollers being supported at fixed parallel positions for rotation on shafts between the opposing arms of a yoke, the shaft of one of said rollers being coupled to a hand crank, whereby when one end of the pad is received and compressed in the nip, the remaining portion thereof extends therefrom to form a flat mop which may be swept back and forth in the food mixture.

4,942,812

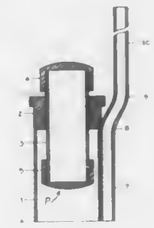
DEVICE FOR COMPRESSING EMPTY CANS

Joel R. Williams, 124 McKendrie St., San Jose, Calif. 95126-1408

Filed Mar. 23, 1989, Ser. No. 327,739

Int. Cl.[5] B30B *1/100, 15/06*

U.S. Cl. 100—214 **5 Claims**



1. A device for compressing a collapsible container, comprising:

(a) a cylindrical shell symmetrical about a central axis and open at one end and closed at its opposite end for substantially enclosing the container to be compressed, said cylindrical shell accepting the container through said open end to be compressed and ejecting the compressed container through said open end, and the opposite closed end forming a slide bearing;

(b) a tubular cylindrical piston having end caps on opposite ends, said piston slidably disposed in said slide bearing and including a portion extending within the shell for compressing a container disposed within said shell, said piston including an extension projecting out of the shell closed by one of said end caps and adapted to be depressed by foot pressure; and

(c) a handle including a mounting portion attached to the exterior of said shell, said handle also including a grip portion parallel to the central axis of said shell and spaced grasped by an operator of said device to provide stability.

4,942,813

METHOD AND APPARATUS FOR DRY OFFSET INTAGLIO PRINTING

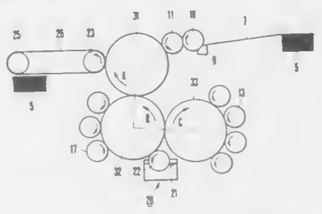
Shigeji Arai, Matsudo, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 883,023, Jul. 8, 1986, abandoned, which is a continuation of Ser. No. 728,051, Jun. 29, 1985, abandoned. This application Jun. 4, 1987, Ser. No. 58,686

Claims priority, application Japan, Jul. 19, 1984, 59-148532

Int. Cl.[5] B41F *9/02, 11/02*

U.S. Cl. 101—152 **2 Claims**



1. A method of offset intaglio printing utilizing an intaglio cylinder, an impression cylinder and a blanket cylinder, the method comprising the steps of:

forming a dry offset image on said blanket cylinder;

forming an intaglio image on said intaglio cylinder;

transferring said dry offset image formed on said blanket cylinder onto a non-image portion of said intaglio cylinder by rotating the same in contact with said blanket cylinder while maintaining the axis of said intaglio cylinder in precise registration relative to the axis of said blanket cylinder so that non-registration of the dry offset image and the intaglio image, due to a potential displacement of the axis of the intaglio cylinder relative to the axis of the blanket cylinder in accordance with substantial pressure applied thereon by the impression cylinder, does not occur; and

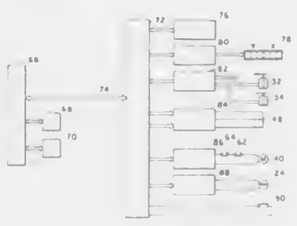
simultaneously transferring onto a sheet wrapped about said impression cylinder said intaglio image and said dry offset image on said intaglio cylinder, in accordance with said pressure.

4,942,814

OPERATION STAND FOR MEASURING SHEET SIZE FOR SHEET-FED PRESS

Osamu Sugiyama, Shizuoka, Japan, assignor to Shinohara Machinery Co., Ltd., Shizuoka, Japan

Filed Aug. 10, 1989, Ser. No. 391,876
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—232 **1 Claim**



1. An operation stand for a sheet-fed press, comprising stopper means set up at the end portions of a table surface of said operation stand and adapted to restrict the positions of the longitudinal and lateral edges of paper, a suction means adapted to apply vacuum to said paper through numerous suction holes provided in the table, so as to bring said paper into close contact with and fix the same to said table surface, a detecting means adapted to scan said paper with a detector with reference to guide shafts extending under said table surface in the longitudinal and lateral directions of said paper and detect the positions of said longitudinal and lateral edges of said paper, an arithmetic means for calculating the size of said paper on the basis of the information on the positions of the edges thereof from said detecting means, and a display means for digitally displaying the size of said paper calculated by said arithmetic means.

4,942,815

METER ROLL MOUNTING MEANS

Larry J. Greer, Chesterfield, and Robert A. Sexton, Manchester, both of Mo., assignors to Allied Gear and Machine Company, St. Louis, Mo.

Filed Nov. 7, 1988, Ser. No. 268,087
Int. Cl.[5] B41F *31/32*; B41L *27/34*
U.S. Cl. 101—352 **10 Claims**

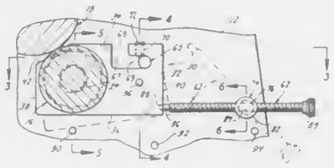
1. In a roll assembly in which a primary roll is mounted for engagement by a secondary roll having an axis of rotation parallel to the axis of rotation of the primary roll, a secondary roll mounting assembly comprising:

a secondary roll having opposed journal ends,

opposed side support means at each end of said secondary roll,

opposed mounting frames each including bearing means receiving an associated journal end,

pin means and cooperating slot means respectively pivotally mounting each mounting frame of said mounting frames to an associated support means of said side support means in spaced relation from said bearing means, one of said pin means and slot means being provided by the respective mounting frame and the other of said pin means and slot means being provided by the associated support means, said pin means being disengageable from said slot means to remove each said mounting frame from said associated support means, and



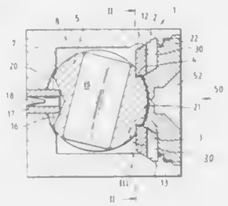
adjustment means including a threadedly adjustable screw between each said associated support means and each respective said mounting frame disposed in spaced relation from said pin means to apply pressure to said mounting frame and control pivoting of said mounting frame about said pin means to swing said secondary roll about said pin means toward and away from said primary roll, said opposed mounting frames and said journal ends being entirely disposed inwardly of said opposed side support means so as to facilitate removal of said mounting frames and said secondary roll as a unit from between the opposed side support means.

4,942,816

SAFE-AND-ARM DEVICE FOR THE FUZE OF A SPIN-STABILIZED PROJECTILE

Adolf Bankel, Uttenreuth; Hans Strauss, Reichenschwand, and Stephan Kerk, Schnaittach, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Sep. 15, 1989, Ser. No. 408,141
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831862
Int. Cl.[5] F42C *15/26*
U.S. Cl. 102—235 **3 Claims**



1. A safe-and-arm device for a fuze for a spin-stabilized projectile; comprising a supporting housing for said fuze; a spherical rotor being rotatably supported within the supporting housing, a radial groove formed in said supporting housing, said rotor having a bore; a detonator inserted in said bore; an annular groove in a peripheral region of said rotor extending in a plane axially offset relative to said radial groove, a spreadable restraining means inserted in said rotor groove for saving the rotor which is retained in a secured position only prior to firing of the projectile through the spreadable restraining means

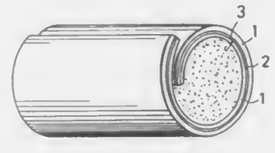
which are axially displaced and spread apart only subsequent to firing of the projectile responsive to axial and spin forces, and said spreading facilitating pivoting of the rotor with the detonator into the armed position after release thereof, said restraining means being a restraining ring contacting an end surface of the annular groove in said rotor through a conical centering mandrel on the fuze housing in the secured position of said rotor, said restraining ring having an inner conical surface conforming with the centering mandrel and an outer conical surface contacting an inner conical surface on the housing, said restraining ring having a plurality of substantially wedge-shaped groove profiles spaced about the circumference thereof forming radially inwardly extending supporting tongues and supporting surfaces, and including an outer ring structure incorporating a plurality of permanently deformable connectors of similar cross-sections intermediate said tongues, said ring structure having a slot cut therethrough, and said restraining ring forming an annular gap facing the bottom of the annular groove.

4,942,817

EXPLOSIVE CARTRIDGE AND PAPER POLYETHYLENE LAMINATED ON BOTH THE SIDES USED THEREFOR

Yoshiyuki Ikeda, Ube, and Toshinori Ariki, Yamaguchi, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1989, Ser. No. 447,367
Claims priority, application Japan, Dec. 15, 1988, 63-161904
Int. Cl.[5] F42G *3/00*
U.S. Cl. 102—331 **9 Claims**



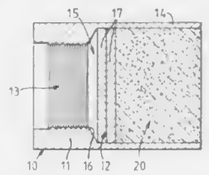
1. An explosive cartridge produced by packaging an explosive with a paper polyethylene-laminated on both the sides, the outer surface of the cartridge having an angle of slide of not more than 12 degrees.

4,942,818

TRAINING OR MARKING BULLETS

Michael E. Saxby, Leamington Spa, England, assignor to Comte De Lalaing (formerly Josse Ghislain Emmanuel De Lalaing), Zandbergen, Belgium

Filed Oct. 31, 1988, Ser. No. 264,691
Claims priority, application United Kingdom, Oct. 31, 1987, 8725589
Int. Cl.[5] F42B *8/12*
U.S. Cl. 102—444 **10 Claims**



1. A bullet comprising:

(a) at least 60% by weight of metal particles having an average particle size less than 200 microns embedded in a soft matrix of a wax material softened by a blended-in plasticizing oil to impart softness to the bullet, and

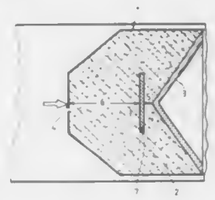
(b) the bullet being at least partially coated with a blend of wax material with a lesser proportion of oil plasticizer than the matrix was material.

4,942,819

HOLLOW CHARGE

Klaus Thoma, Max-Emanuel-Street 12, 8898 Schrobenhausen; Klaus Lindstädt, Teutonen St. 54, 5300 Bonn 2, and Karl Rudolf, Georg-Hitl-St. 8, 8898 Schrobenhausen, all of Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 397,463
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127280
Int. Cl.[5] F42B *1/024*
U.S. Cl. 102—476 **7 Claims**



1. Shaped explosive charge having a leading end facing in the firing direction and a trailing end, an inverted conically shaped jet-forming lining extending from the leading end toward the trailing end, an explosive charge extending from said jet-forming lining toward the trailing end, said lining being arranged when said explosive charge is ignited to produce a channel for a follow-through projectile for use against take-off runways, roadways or other stationary ground targets, wherein the improvement comprises an initiator point (4) located at the trailing end of said explosive charge, a projectile-forming inert material body (7, 8, 9, 10, 11, 12, 15, 16) is located in said explosive charge between and spaced form said initiator point and said jet-forming lining, and the size, geometry, and location of said body is adaptable to the characteristic of the target against which the shaped charge is directed so that the inert material body forms an explosive-formed projectile when said explosive charge is ignited for neutralizing crater base effects caused by the jet-forming lining and improving the effectiveness of the follow-through projectile.

4,942,820

FRAGMENTATION DEVICE

Stephen D. Sawruk, P.O. Box 431, Lanoka Harbor, N.J. 08734

Continuation-in-part of Ser. No. 270,789, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,977, Feb. 29, 1988, abandoned. This application Jul. 18, 1989, Ser. No. 381,193
Int. Cl.[5] F42B *27/00*
U.S. Cl. 102—482 **12 Claims**

1. A fragmentation device, comprising

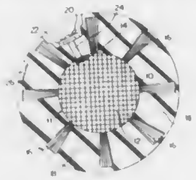
(a) a spherical munition core, the core having an exterior surface;

(b) detonation means integrally disposed within said core, said detonation means comprising electrical connection means extending radially outwardly beyond said exterior surface of said core;

(c) a thick rubberized spherical shell, said shell having a continuous spherical surface, said shell disposed about said munition core and in mechanical communication with the exterior surface of said core, said rubberized shell having therein a plurality of spherically symmetrically

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radially radiating fractures terminating below said continuous outer surface of said shell, which fractures define, within said symmetrical shell, a plurality of radiating spherical segments, said fractures thereby permitting an uniform symmetrical dispersion of said spherical segments



upon detonation of said munition core and of its related explosive forces; and

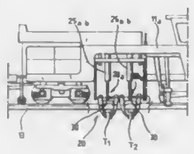
(d) in electrical communication with said detonation means, fuse means, within said rubberized shell situated within said continuous outer spherical surface thereof, for selectively actuating said detonation means.

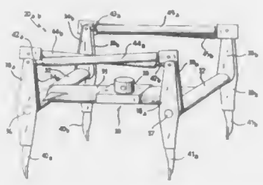
4,942,821

TAMPING MACHINE, PARTICULARLY FOR RAILROAD BALLASTS

Cesare Rossanigo, Bassignana, Italy, assignor to So.Re.Ma. Operatrici Ferroviarie Snc di Cesare Rossanigo & C., Bassignana, Italy

Filed Feb. 21, 1989, Ser. No. 313,414
Claims priority, application Italy, Mar. 9, 1988, 67194 A/88
Int. Cl.[5] E01B *27/16*
U.S. Cl. 104—12 **37 Claims**





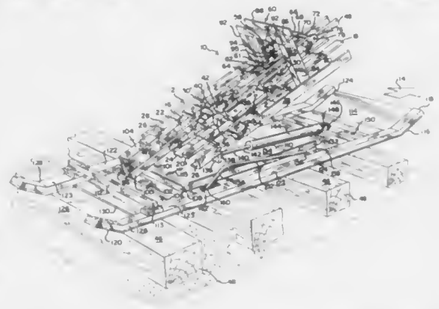
1. Tamping machine, particularly for regenerating railroad ballasts, comprising a frame, at least two pairs of vibrating tamping hammers, at least two pairs of supports, at least two pairs of fluidodynamic actuation jacks, distribution means with alternating cyclic operation, each one of said tamping hammers being rigidly connected to one of said supports, each one of said supports being pivotally connected to said frame, each one of said fluidodynamic actuation jacks being pivotally connected to one of said supports, each one of said fluidodynamic actuation jacks having a first extendable section and a second section, said distribution means feeding each said second section of each one of said fluidodynamic actuation jacks, said tamping machine further comprising first fluidodynamic actuation means and second fluidodynamic means, whereby said distribution means cause said tamping hammers to vibrate cyclically and alternatingly, said first fluidodynamic actuation means selectively and controllably cause each said first extendable section of each one of said fluidodynamic actuation jacks to expand and contract, thereby selectively and controllably moving each one of said tamping hammers between a substantially vertical working position and a substantially horizontal idle position, said second fluidodynamic means selectively cut off said distribution means to a respective said second section when a corresponding one of said tamping hammers is in idle position.

4,942,822

METHOD AND APPARATUS FOR AUTOMATICALLY SETTING RAIL TIE PLATES

Dennis J. Cotic, Waukesha, Wis., assignor to Oak Industries, Inc., San Diego, Calif.

Filed Jun. 7, 1988, Ser. No. 203,328
Int. Cl.[5] E01B *29/20*
U.S. Cl. 104—16 **26 Claims**



1. A mechanism for setting tie plates on upper surfaces of the ties for a railroad track, comprising:

a frame adapted to be moved along the track in a specified direction and having a front end and a rear end;

an inclined slide surface mounted on said frame, said slide surface having an upper end, a lower end disposed proximate to said frame rear end and adapted to accommodate a plurality of plates arranged seriatim for sliding motion thereon from said upper end toward said lower end;

releasable stop means located on said frame and adapted to regulate said movement of the plates on said slide surface to said lower end thereof said stop means releasing the plates seriatim down said slide surface;

a planar surface secured to said frame and having a portion disposed beneath said lower end of said slide surface; and

plate pusher means located on said planar surface near the lower end of said slide surface and adapted to receive each of the plates seriatim as the plates drop from said slide surface, to retract to allow each dropped plate to fall upon said planar surface, and to push each of the plates from said planar surface upon the upper surface of a respective tie in a direction opposite to the direction of movement of said frame.

4,942,823

CABLE CONVEYANCE

Bernd Meindl, Hard, Austria, assignor to Konrad Doppelmayr & Sohn Maschinenfabrik Gesellschaft m.b.H. & Co. KG, Wolfurt, Austria

Filed Aug. 3, 1989, Ser. No. 389,425
Claims priority, application Austria, Aug. 18, 1988, 2049/88
Int. Cl.[5] B61B *7/00*
U.S. Cl. 104—178 **8 Claims**

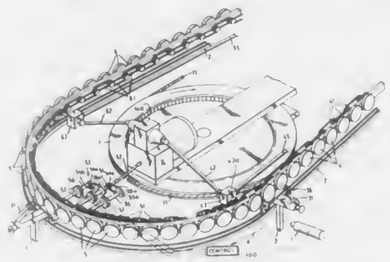
1. A cable conveyance comprising:

a transport cable displaceable between stations;

a plurality of carrier adapted to be affixed to said cable at spaced-apart locations and to be decoupled from said cable; and

at least one station at which said carriers are decoupled from and recoupled to said cable, said station being provided with:

a rail supporting said carriers at said station and defining a path for carriers decoupled from said cable from an arriving side of said station to a return side of said station whereby said carriers are decoupled from said cable at an upstream side of said path and are recoupled to said cable at a downstream side of said path, said path being formed with a decelerating stretch at said upstream side and with an accelerating stretch at said downstream side defining a control stretch therebetween, each of said stretches being formed by wheels spaced apart and engageable with said carriers, whereby said carriers are decelerated from a speed of said cable along said decelerating stretch to permit passengers to dismount and passengers to mount



said carriers and are accelerated to said speed of said cable along said accelerated stretch;

a sensor along said path of carriers decoupled from said cable responding to a spacing between successive carriers, and

drive means along said path for increasing or decreasing the speed of a carrier, said drive means being provided with a controllable drive including:

a transmission provided with a plurality of shafts connected to at least some of the wheels of said control stretch and driven at different speeds and with respective clutches operatively driving said wheels of said control stretch from the respective shafts, said controllable drive enabling individual carriers to be accelerated or decelerated with respect to a normal speed of travel of said carriers through said control stretch in response to said sensor to vary the spacing of said carriers along said path and control the spacing of carriers as the carriers are recoupled to said cable.

4,942,824

ARTICULATED COUPLING FOR TWO RAIL VEHICLES

Michel Cros, La Jarne, France, assignor to Societe Anonyme dite: Alsthom, Paris, France

Filed May 22, 1989, Ser. No. 354,560
Claims priority, application France, May 24, 1988, 88 06878
Int. Cl.[5] B61G *5/02*
U.S. Cl. 105—4.3 **7 Claims**

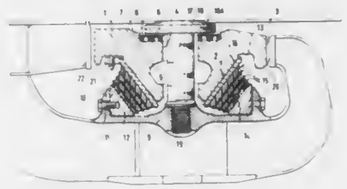
1. An articulated coupling for two rail vehicles supported by a common bogie between the two vehicles via resilient elements, wherein the coupling comprises:

(A) a toroidal part connected to one of the vehicles, having a frustoconical surface in its bottom zone and being cylindrical in its top zone, said toroidal part including a cylindrical ball through its center and being provided with a horizontal circular shoulder around the top of its cylindrical ball; and

(B) a support part connected to the other vehicle, enveloping the toroidal part and comprising:

(a) a sole plate at a lower level than the toroidal part;

(b) a toroidal articulated coupling element of resilient composite material built up from metal plates sandwiched between layers of resilient material resting on the sole plate and surrounding and in contact with the frustoconical outer surface of the toroidal part;



(c) a cylindrical peg fixed to the sole plate, engaged in the cylindrical ball of the toroidal part, being of smaller diameter than said ball and being terminated by a horizontal circular shoulder facing the horizontal circular shoulder of the toroidal part; and

(d) in the top portion of its peripheral zone, an internal cylindrical part facing the cylindrical outside surface of the top zone of the toroidal part.

4,942,825

CONNECT PLATFORM FOR RAIL VEHICLES

Ingo Britzke, Stellbergweg 8, D-3500 Kassel, and Peter Braemert, Rubenstrasse 2, D-3340 Wolfenbüttel, both of Fed. Rep. of Germany

Filed Mar. 3, 1989, Ser. No. 318,697
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1988, 3807167; European Pat. Off., Nov. 24, 1988, 88119662.2.0
Int. Cl.[5] B61D *17/20*; B60D *5/00*
U.S. Cl. 105—18 **24 Claims**



1. A connecting platform system for a railroad car, for cooperation with a platform system of another car articulated to said railroad car, the system comprising:

an inner end frame adapted to be fastened to an end of the railroad car,

an outer end frame having a tunnel-like configuration, spaced from the inner end frame,

a tunnel-like bellows extending between the two end frames,

spring means for supporting the outer end frame on the railroad car, the spring means holding the outer end frame away from the railroad car and toward the outer end of a platform system of another car,

a car plate fixed to the railroad car,

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a bottom reinforcement joined at its outer end to the bottom of the outer end frame, the bottom reinforcement being movably supported at its inner end on the car plate, and

a platform plate resting on the reinforcement,

whereby when said railroad car and another car are coupled together, the spring means will maintain the outer end of the connecting platform system of said railroad car in engagement with the outer end of the platform system of said another car without the need for fastening means between the two platform systems.

4,942,826

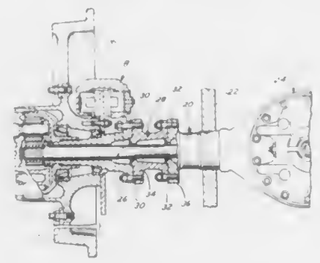
VEHICLE HAVING VARIABLE GAUGE RAIL WHEELS

Warren R. Erickson, LaGrange, Ga., and Robert L. Siewert, Loudon, Tenn., assignors to Trackmobile, Inc., LaGrange, Ga.

Filed Apr. 12, 1989, Ser. No. 336,901

Int. Cl.[5] **B61F** *7/00*; **B61D** *15/00*

U.S. Cl. 105—178 **14 Claims**



6. In a vehicle which comprises at least two axles which carry rail wheels and at least two axles which carry road wheels, and means for raising and lowering said rail wheel and road wheel axles relative to each other to permit selective, alternating suspension of the rail wheels and the road wheels upwardly out of supporting engagement with the ground, said rail wheel axles defining an inner, main axle housing and an outer axle housing, the improvement comprising, in combination:

a spacer of desired width secured to the outer axle housing and inner, main axle housing and positioned therebetween to longitudinally separate said outer and inner housings.

4,942,827

AUTOMOBILE DESK

Ronald Norgaard, 132 N. Prairie, Bloomingdale, Ill. 60108

Filed Dec. 14, 1988, Ser. No. 284,340

Int. Cl.[5] **A47B** *23/00*; **A47C** *7/62*

U.S. Cl. 108—44 **7 Claims**

1. A desk adapted for use in an interior of a vehicle having a seat including a generally vertical seat back portion and a generally horizontal seat bottom portion, comprising:

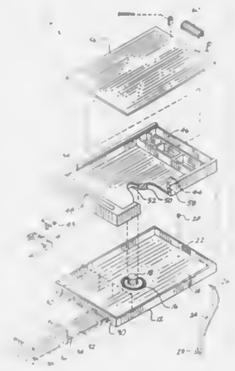
base means dimensioned for support on a conventional vehicle horizontal seat bottom portion;

retaining hook means on said base means for engagement with a bottom edge of a conventional vehicle vertical seat back portion;

tray means;

pivotal mounting means pivotally mounting said tray means on said base means, said pivotal mounting means including a cylindrical post on one of said base means or said tray means and a cooperating socket on the other of said base means or said tray means;

a circular array of equally angularly spaced radially extending projections surrounding one of said post or said socket;



a circular array of equally angularly spaced radially extending recesses surrounding the other of said post or said socket; and

said projections and said recesses in mating engagement.

4,942,828

CARRIER PLATFORM FOR THE TRANSPORT OF MOTOR VEHICLES

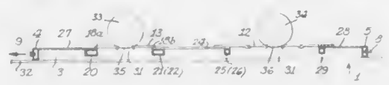
Reinhold Walz, Robdorf; Klaus Hildebrandt, Darmstadt, and Udo Willgerodt, Weiterstadt, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Fed. Rep. of Germany

Filed May 22, 1989, Ser. No. 355,465

Claims priority, application European Pat. Off., May 26, 1988, 88108383.6

Int. Cl.[5] **A47G** *29/00*

U.S. Cl. 108—55.5 **6 Claims**



1. A carrier platform for transporting motor vehicles and the like through assembly, test and other work stations comprising a transport frame with four individual support plates connected thereto and arranged to supportingly engage vehicle wheels, the transport frame including a pair of spaced apart longitudinal spars to which the support plates are connected, two plates to each spar, and wherein the support plates include an opposed front pair constructed and arranged to engage the front wheels of a vehicle being transported and an opposed rear pair that engage the rear wheels of such vehicle, each of the support plates having an opening therein for cradling the wheels of the vehicle being transported, at least one of the opposed pairs of support plates including a slidable connection to the longitudinal spars whereby the opposed pairs are movable toward and away from one another to accomodate vehicle having different wheel base lengths.

4,942,829

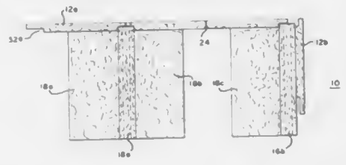
WORK OF ART THAT TRANSFORMS INTO A DINING TABLE

Anne M. Harris, 40 W. 72nd St., New York, N.Y. 10023

Filed Jul. 11, 1989, Ser. No. 378,389

Int. Cl.[5] **A47B** *1/04*

U.S. Cl. 108—79 **5 Claims**



1. A gateleg table having an opened position, a plurality of partially opened positions and a closed position, the table having a plurality of exterior and interior surfaces, the table comprising in combination:

a pair of base support members, each support member having a pair of sides, each side having a respective interior cavity of a predetermined size;

a pair of rectangularly-shaped drop-leaf members having a width of a predetermined dimension, each drop-leaf member operatively connected to a respective side of said support member, each drop-leaf member having a first surface and second surface opposite the first surface, each drop-leaf member having a continuous rectangular portion removed along its entire width on said second surface;

a pair of adjacent rectangularly-shaped surface members having a width of a predetermined dimension, each surface member operatively connected to a respective side of said support members, each surface member having a first surface and a second surface opposite the first surface, each surface member having a continuous rectangular portion removed along its width on said second surface;

a hinge facilitating closing of the table to said closed position and longitudinally extending substantially the entire width of said surface members, said hinge operatively mounted to the adjacent second surface of each surface member;

means to pivot each drop-leaf member in substantially a vertical direction, said means operatively connected to a respective side of said support members and to the second surface of said drop-leaf members;

means to pivot each surface member in substantially a vertical direction, said means operatively connected to a respective side of said support members and to the second surface of said surface members;

a plurality of secondary support members of a predetermined size, each secondary support member having an extended position, said secondary support members housed in said respective cavity when not in their extended position; and

means to pivot the secondary support member in a substantially a horizontal direction to their extended position.

4,942,830

PAPER-PRODUCT SHELVING CONSTRUCTION

Vincent A. Macaluso, Trappe, Pa., and Conrad Hade, South Salem, N.Y., assignors to Cornerboard, Inc., Bridgeport, Pa.

Filed Oct. 13, 1988, Ser. No. 257,356

Int. Cl.[5] **A47B** *3/00*

U.S. Cl. 108—111 **16 Claims**

1. A paper-product shelving construction comprising:

a shroud formed from a single-piece paper-product and having:

(a) a back wall

(b) a first sidewall folded at 90° from said back wall,

(c) a front face folded from said first sidewall and extending parallel to said back wall, said front face having a defined opening,

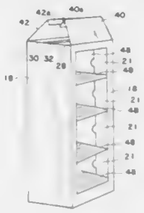
(d) a second sidewall folded from said front face and extending parallel to said first sidewall,

(e) means for attaching a free edge of said second sidewall to a free edge of said back wall,

(f) a first pair of top side flaps folded from the top of said first sidewall toward said second side-wall and forming a slot extending between said first pair of top side flaps from said first sidewall toward said second sidewall,

(g) a second pair of top side flaps folded from the top of said second sidewall toward said first sidewall and forming a slot extending between said second pair of top side flaps from said second sidewall toward said first sidewall, said slot between said second pair of top side flaps aligned with said slot between said first pair of top side flaps,

(h) a top front flap folded from the top of said front face toward said back wall and having a first locking flap folded downward into said aligned slots between said first and said second pairs of top side flaps, and



(i) a top back flap folded from the top of said back wall toward said front face and having a second locking flap folded downward into said aligned slots between said first and said second pairs of top side flaps;

and a shelving assembly fitted within said shroud and having:

(a) a first paper-product support wall positioned adjacent said first sidewall of said shroud and having a first plurality of horizontal slots extending parallel to said first sidewall of said shroud,

(b) a second paper-product support wall positioned adjacent said second sidewall of said shroud and having a second plurality of horizontal slots extending parallel to said second sidewall of said shroud, each of said slots of said second plurality of slots horizontally aligned with a slot of said first plurality of slots, and

(c) a plurality of paper-product fluted shelf members each fitted within a pair of horizontally aligned slots in said first and said second support walls.

4,942,831

DEVICE FOR THE PROTECTED STORAGE OF OBJECTS

Teunis Tel, Groningen, Netherlands, assignor to Seculock B. V., Netherlands

PCT No. PCT/NL88/00001, § 371 Date Sep. 23, 1988, § 102(e) Date Sep. 23, 1988, PCT Pub. No. WO88/05490, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 20, 1988, Ser. No. 265,136

Claims priority, application Netherlands, Jan. 23, 1987, 8700165

Int. Cl.[5] **E05G** *3/00*

U.S. Cl. 109—29 **27 Claims**

1. A device for the protected storage of objects comprising:

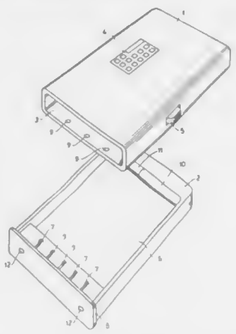
a closable container, comprising a slide having a recess defined in it for accommodating objects therein and a cassette into which the slide is insertable; the cassette, the

slide and the recess being respectively so shaped that with the slide fully inserted into the cassette, access into the recess in the slide is blocked.

damaging means in the container and communicating into the recess and being operable for damaging objects in the recess; command feeding means accessible from the exterior of the container and operable for disabling the damaging means from operating;

an electrical security shield comprising at least one electrical system which extends essentially over the entire surface of the container, including the cassette and the slide;

a processing circuit connected to each of the electrical systems for detecting an electrical parameter of the respective system, the processing circuit being connected with the damaging means for delivering an activation command to the damaging means when a detected parameter



value in any of the electrical systems deviates from a reference value and when the command feeding means has not disabled the damaging means;

each of the cassette and the slide having respective matable connecting means wherein one part of the connecting means is on the cassette and the other part is on the slide, and the connecting means being so placed on the cassette and on the slide that the matable connecting means are in engagement when the cassette is inserted into the slide and the connecting means are disengaged as the cassette is separated from the slide;

a respective set of the connecting means of the slide and of the cassette being connected with each of the electrical systems, such that when the set of connecting means of the cassette and the slide are in engagement, they are connected to the respective electrical system and are connected to the respective processing circuit.

4,942,832

METHOD AND DEVICE FOR CONTROLLING NOX EMISSIONS BY VITIATION

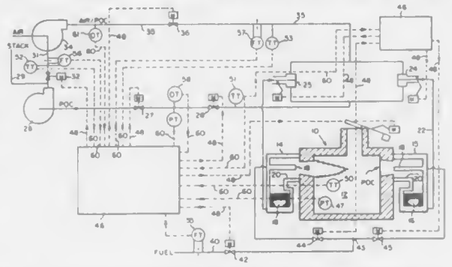
Harry P. Finke, Allegheny County, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed May 4, 1989, Ser. No. 347,408
Int. Cl.[5] F23N *5/02*
U.S. Cl. 110—190 **20 Claims**

1. A furnace for controlling flame temperature and emission of NO_x comprising:

a. at least one burner to which fuel and air are supplied and products of combustion are discharged, wherein said air is vitiated with said products of combustion; and

b. means for controlling the amount of vitiation with said products of combustion as a function of at least two of an



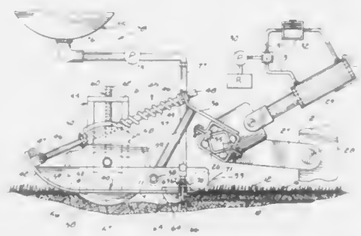
air preheat temperature, a furnace temperature and a fuel flow rate.

4,942,833

TURF TREATING PROCESS AND APPARATUS

Wallace L. Hill, 110 Willow Dr., Nezperce, Id. 83543; Leonard J. Hill, 805 Warner Dr., Lewiston, Id. 83501, and William L. Hill, 501 Beech St., Nezperce, Id. 83543, assignors to Wallace L. Hill, Nez Perce and Leonard J. Hill, Lewiston, both of, Id.

Filed Nov. 1, 1988, Ser. No. 265,834
Int. Cl.[5] A01C *21/00, 23/02*
U.S. Cl. 111—121 **15 Claims**



1. A process for subsurface treatment of turf which includes an above surface exposed growth zone having a mat of exposed plant leaf growth, a thatch zone between the exposed growth zone and a root zone containing closely spaced intermingled roots and soil while minimizing disruption of the turf, comprising the steps of:

forming a narrow slit in the turf by moving a single circular coulter disk, rotatable about a horizontal axis and having opposed substantially planar side surfaces, in a forward direction of travel with the disk rolling and cutting into the turf to form the slit through the mat at the growth zone and to a depth at least part way through the thatch zone, the slit opening upwardly at the exposed growth zone;

moving a skid plate with the coulter disk, the skid plate having a bottom surface sliding in contact with the turf and having an opening therein receiving a portion of the disk and with side walls of the opening positioned closely adjacent to the opposed side surfaces of the disk, thereby holding the turf as the disk cuts through the turf and cleaning the disk and maintaining the turf along side the slit as the disk cuts through the turf;

pressing the skid down against the turf, thereby holding the turf firmly as the disk cuts into the turf such that the slit is formed with minimal disturbance of the turf by the coulter disk;

moving a knife rigidly mounted to the skid plate and projecting from the bottom surface thereof, with a cutting edge aligned with and behind the coulter disk to extend into the slit to a depth no greater than the slit depth along the forward path of travel and with knife side surfaces behind the cutting edge thereof holding the slit open to the width of the slit formed by the disk thereby maintaining the slit in an open condition with minimal disturbance of the turf by the knife; and

placing a turf treating material into the upwardly open slit below the growth zone through an opening in the skid plate aligned with and immediately behind the knife;

providing the knife, the coulter disk, the side plate and the opening in the skid plate in relation to one another and moving them together in relation to the turf in the forward direction of travel in such a manner that the slit formed by the coulter disk will close together over the placed turf treatment material, with the material being covered and retained by the turf below the growth zone and with the turf returning substantially to its original state.

4,942,834

LOOPER SHIFTING DEVICE IN OVERLOCK SEWING MACHINE

Koji Kitai, Tochigi, Japan, assignor to SSMC Inc., Edison, N.J.

Filed Jun. 5, 1989, Ser. No. 361,626
Claims priority, application Japan, Jul. 2, 1988, 63-88190[U]
Int. Cl.[5] D05B *61/00*
U.S. Cl. 112—199 **5 Claims**



1. A looper shifting device in an overlock sewing machine comprising:

a needle vertically movable and having a thread hole through which an upper thread is threaded;

an upper looper movable crossing the transfer direction of a material to be sewn and having a thread hole at a tip end portion thereof through which an upper looper thread is threaded, said upper looper comprising a side wall portion and a blade portion;

a lower looper movable swingably in lateral direction and having a thread hole through which a lower looper thread is threaded;

said needle, said upper looper thread and said lower looper thread effecting one needle three threads looping operation;

characterized in that the looper shifting device further comprising:

a guide passage having a tip end open to a base end side rear portion of the blade portion adjacent to the thread hole of the upper looper;

a horn retractably inserted into the guide passage, a tip end portion of the horn protruded from the opening of the tip end of the guide passage and the tip end side rear portion of the upper looper forming the spreader; and

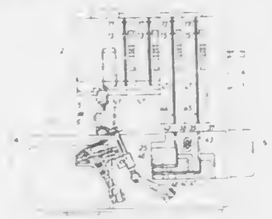
a holding means provided at the upper looper for holding the base end portion of the horn.

4,942,835

OVERLOCK SEWING MACHINE WITH A LOOPER-THREAD GUIDE MECHANISM

Takashi Oguri, Mizunami, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed May 30, 1989, Ser. No. 357,885
Claims priority, application Japan, May 31, 1988, 63-135192
Int. Cl.[5] D05B *1/20*
U.S. Cl. 112—302 **7 Claims**



1. An overlock sewing machine with a looper-thread guide mechanism, comprising:

a vertically moveable needle;

an over looper and an under looper, each having a thread-receiving eye at its end for forming a chain stitch in cooperation with the needle;

an over looper thread tension disk and an under looper thread tension disk, each disposed at a front of a sewing machine body for maintaining tension in each looper thread;

a takeup positioned between the loopers and the thread tension disks for taking up threads in synchrony with a sewing action of the loopers; and

thread guide means in the front of said sewing machine body having an over looper thread guide groove and an under looper thread guide groove, each thread guide groove being L shaped to guide each thread from each tension disk, through a movement area of the takeup, toward each looper.

4,942,836

LIQUID CRYSTAL INDICATING DEVICE IN A SEWING MACHINE

Yasuro Sano, and Takashi Nakamura, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1988, Ser. No. 269,953
Claims priority, application Japan, Nov. 11, 1987, 62-171397
Int. Cl.[5] D05B *3/02*
U.S. Cl. 112—445 **3 Claims**

1. A sewing machine having a pattern data memory (**24**) for storing data of a plurality of different types of patterns which are selectively read out to control stitch forming means including a vertically reciprocating and laterally swingable needle and a fabric feeding device, and an indication data memory for storing data indicating a selected pattern in a display,

the sewing machine comprising:

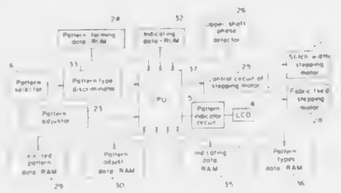
(a) pattern selecting means including a plurality of keys selectively operated to select a pattern from said pattern data memory;

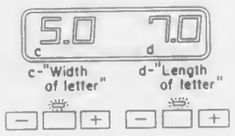
(b) discriminating means (**33**) responsive to operation of a pattern selecting key to discriminate a type of the selected pattern and to produce corresponding pattern type data;

(c) adjusting means (**23**) including two pairs of input keys selectively operated to produce data for adjusting selected patterns in predetermined modes each specific to the types of the selected patterns;

(d) first memory means (**29**) for temporally storing data for a selected pattern;

(e) second memory means (30) for temporally storing data for adjusting the selected pattern;
(f) third memory means (35) for temporally storing indication data for the selected pattern;
(g) fourth memory means (36) for temporally storing the data representing a type of the selected pattern;
(h) a central processing unit (CPU) responsive to a pattern type discriminating operation of said discriminating means to read out the pattern data and the pattern indication data from said pattern data memory (24) and said indication data memory (32) respectively, and to store said pattern data and said indication data in said first and third memory means, respectively, while operating said display (4) to indicate the selected pattern





thereon, and simultaneously store said pattern type data of the selected pattern in said fourth memory means (36), said central processing unit being responsive to selective operation of said adjusting means to write said pattern adjusting data into said second memory means in reference to said pattern type data stored in said fourth memory means, and simultaneously to read out indication data for said pattern adjusting data from said indication data memory and to write the same into said third memory means while operating said display to indicate thereon said pattern adjusting data, and said central processing unit processing the data stored in said first, second and fourth memory means to control said stitch forming means.

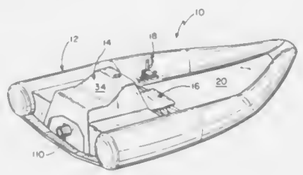
4,942,837
ICE BREAKER
Jens-Holger Heilmann, Hamburg; Richard Hölscher, Embsen; Hermann J. Janssen; Alfred Kleemann, both of Emden; Karl-Heinz Rupp, Hamburg; Joachim Schwarz, Hansdorf; Günter Varges, Emden, and Heinrich Waas, Bonn, all of Fed. Rep. of Germany, assignors to Thyssen Nordseewerke GmbH, Emden, Fed. Rep. of Germany
Filed Jan. 26, 1989, Ser. No. 302,006
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 8802053[U]
Int. Cl.[5] B63B *35/12, 35/08*
U.S. Cl. 114—40 **13 Claims**

1. In an icebreaker having a hull with a forebody and a horizontally extending water line defining hull portions above and below said water line, the improvement to such hull forebody comprising first and second laterally projecting hull components, said first component having an inclined face for engagement with the ice to be broken, said face being inclined upwardly in the forward direction, and said face including a portion above and a portion below the water line, said first projecting hull component further including a longitudinally extending lateral face with portions both above and below the said water line and cooperating with said inclined face to define a first cutting edge, and said second laterally spaced



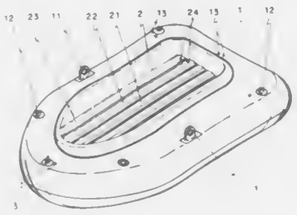
projecting hull component being located adjacent said first projecting component, said second component also including a said longitudinally extending lateral face and a said upwardly inclined face so as to define a second cutting edge downstream of said first cutting edge.

4,942,838
INFLATABLE WATERCRAFT WITH PORTABLE ENGINE PACKAGE
Kirk A. Boyer, Lino Lakes, and Shigeki Yonezawa, Coon Rapids, both of Minn., assignors to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kagyo Kabushiki Kaisha, both of, Japan
Filed Jun. 23, 1989, Ser. No. 370,845
Int. Cl.[5] B63B *7/08*
U.S. Cl. 114—345 **7 Claims**



1. A manually portable watercraft comprising, in combination:
(a) a rigid hull member having a relatively wide, generally rectangular stern portion tapering to a more narrow bow portion;
(b) a plurality of tubular inflatable chamber members secured to said hull member and extending along the opposed side edges thereof from said stern portion to said bow portion;
(c) a baseplate permanently inset in said hull member midway between said opposed side edges proximate the stern portion, said baseplate including a water inlet port extending therethrough;
(d) a manually portable internal combustion engine driven pump module, the pump in said module having a low pressure water inlet and a high pressure water outlet;
(e) deflector means pivotally coupled about a vertical axis relative to said high pressure water outlet for controlling the direction of the water stream exiting said outlet;
(f) means for rapidly coupling and uncoupling said module to said hull member over said baseplate such that when said module is coupled to said hull member, said low pressure water inlet of said pump is in fluid communication with said water inlet port in said baseplate and said high pressure water outlet is pointed in the aft direction at a location above said hull member; and
(g) a joystick lever means releasably attached on one of said inflatable chamber members at a location in reach of an operator to be removable with said module and said joystick lever means being adapted to be connected to said deflector means for pivoting said deflector means.

4,942,839
STABILIZED AND FOLDABLE SAFETY INFLATABLE BOAT
Chang C. Chuan, No. 32, Ching An Hsing Tswen, Ta Pwu Rd., Chi An Village, Jwei Fang Town, Taipei, Taiwan
Filed Apr. 21, 1989, Ser. No. 341,160
Int. Cl.[5] B63B *39/03*
U.S. Cl. 114—345 **1 Claim**



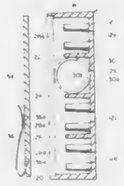
1. A stabilized and foldable safety inflatable boat having an adjustable attitude, comprising:
a body housing formed of a flexible material composition defining a closed cavity having a boat-like contour;
buoyancy means formed in an internal upper portion of said body housing for providing flotation for said boat, said buoyancy means includes a plurality of independent closed chambers adapted for filling with a predetermined volume of air;
stabilization means formed in an internal lower portion of said body housing for containing ballast to stabilize said boat, said stabilization means includes a plurality of closed chambers adapted for filling with a selected volume of water, whereby said attitude is adjusted by selectively changing said volume of water; and,
a mattress body means disposed in an external cavity formed in said body housing for supporting a user of said boat, said mattress body means includes a pair of independent chambers disposed in a serpentine-like planar contour, wherein one of said pair of chambers is filled with water and the other filled with air for providing improved support of said user.

4,942,840
FOOT BRACE FOR KAYAKS
William E. Masters, 313 Dogwood La., Easley, S.C. 29640, and Roger A. Williams, 327 Pineburst, Mauldin, S.C. 29662
Filed Feb. 12, 1988, Ser. No. 155,596
Int. Cl.[5] B63B *35/72*
U.S. Cl. 114—363 **17 Claims**



1. A foot brace for a kayak of the type having a hull with an upper deck, a cockpit having a cockpit opening in which a boater is seated comprising:
an elongated flange bar carried by said hull
inside an interior of said kayak extending in forward and aft directions;
an adjustable foot rest bracket slidably carried by said flange bar having a foot rest projecting laterally from said flange bar and inwardly towards a center of said hull interior so that a boater seated in said cockpit may brace a foot on said foot rest;
means for adjusting the position of said adjustable foot rest bracket along the length of said flange bar including a plurality of index openings formed in said flange bar and a cam means for engaging within said openings;
said cam means being formed on one end of a molded one piece operator lever having a flexible stem integrally attached to said adjustable foot rest bracket in a manner that a flexible joint is created between said operator lever and said adjustable foot rest bracket; and
an operator portion formed on said operator lever for moving said camming means in and out of said index openings as said operator lever flexes about said flexible joint.

4,942,841
VEHICLE SERVICE REMINDER DISPLAY
Jack L. Drucker, Jr., 2653 Halm Ave., Los Angeles, Calif. 90034
Filed Jun. 15, 1989, Ser. No. 366,471
Int. Cl.[5] G09F *11/12*
U.S. Cl. 116—317 **5 Claims**



1. An automotive vehicle service reminder display device comprising in combination:
(a) a shallow case consisting of a rectangular face wall having a series of indicia viewing ports, elongated side walls and end walls enclosing a central chamber for receiving indicia wheels, said case containing at least two divider walls extending from the inside surface of said face wall is parallel alignment with said end walls, said indicia viewing ports being centrally aligned between said divider walls and between said divider walls and the end walls of said case and said indicia viewing ports having associated therewith on the outside of said face wall vehicle service nomenclature;
(b) a plurality of indicia wheels of like diameter positioned in rows of two or more of said wheels between the divider walls and between the divider walls and the end walls of said case, said wheels each having on their periphery an appular series of like imprintable indicia display surface areas said indicia display areas being defined by detent grooves which interlock with the edges of said indicia viewing ports;
(c) means within said case for maintaining the rows of indicia wheels between said divider walls and between said divider walls and said end walls;
(d) closure means for said case mounted to the outer edges of said side walls and said end walls for closing said case and for maintaining said indicia wheels therein with pairs of the detent grooves of each of said wheels in contact with the edges of said indicia viewing ports; and
(e) indicia representing a variety of vehicle service information and data imprinted on the display surface areas of said indicia wheels, said wheels being rotatable under finger

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pressure through said viewing ports to align appropriate indicia information and data with said ports as displayed service information and data.

4,942,842

APPARATUS FOR COATING SHEETS OF DOUGH WITH FAT

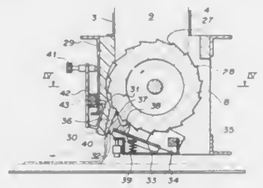
Peter Siegenthaler, Toffen, and Andreas Zwahlen, Burgdorf, both of Switzerland, assignors to Seewer AG, Burgdorf, Switzerland

Filed Jan. 9, 1989, Ser. No. 295,200

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1988, 3800516

Int. Cl.[5] B05C *5/02*

U.S. Cl. 118—24 **14 Claims**



14. In an apparatus for coating sheets of dough with fat having a container for receiving at least one block of fat, a nozzle space, and conveyor means for conveying the fat from the container to the nozzle space, wherein the improvement comprises:

fat-grasping means forming part of said conveyor means, said fat-grasping means having the shape of circular-saw teeth,

a stripper component forming part of said conveyor means for at least partially removing fat from said fat-grasping means and conveying it to said nozzle space, and

a nozzle orifice disposed at one end of said nozzle space.

4,942,843

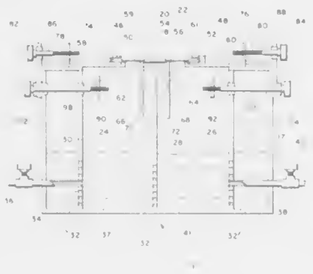
AUTOMATED LEAD WIRE TINNING APPARATUS MECHANICAL ADJUSTMENTS AND IMPROVEMENTS

Mark J. Shireman, Minnetonka, and Florence G. Benson, St. Michael, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 5, 1988, Ser. No. 253,295

Int. Cl.[5] B05C *1/02, 3/02, 3/10*

U.S. Cl. 118—74 **7 Claims**



1. In apparatus for automatically tinning component leads having solder wave means and foam flux means with means for carrying components over the flux and solder wave means for fluxing and tinning opposed component leads, the improvement comprising: the flux means being separate foam flux generating means; each having separate flow rate adjustment means, provided for each lead of a component, the means for carrying components being arranged such that as the components are carried over a foam flux means opposed component leads will be simultaneously immersed in foam flux from the separate foam generating means; with the foam flux height relative to each lead established independently by the separate rate adjustment means.

4,942,844

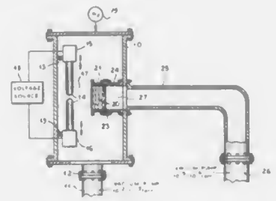
HIGH PENETRATION DEPOSITION PROCESS AND APPARATUS

Eduard Pinkhasov, Eastchester, N.Y., assignor to Vapor Technologies Inc., Mt. Vernon, N.Y.

Division of Ser. No. 276,068, Nov. 25, 1988. This application Dec. 6, 1989, Ser. No. 446,928

Int. Cl.[5] C23C *14/24*

U.S. Cl. 118—723 **6 Claims**



1. An apparatus for effecting filling of interstices of a body with a deposited material, comprising:

means defining two chambers on opposite sides of said body;

means for evacuating one of said chambers to a subatmospheric pressure adapted to sustain vapor formation by an electrical discharge;

means for effecting an electrical discharge in said one of said chambers to vaporize a substance therein; and

means for evacuating the other of said chambers to a lower subatmospheric pressure and a higher vacuum than that in said one of said chambers and thereby inducing said substance to penetrate into said body and deposit in interstices thereof in the form of a deposited material.

4,942,845

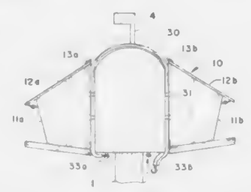
BIRDFEEDER ATTACHABLE TO A MAILBOX

Fred J. Lane, 1475 E. McDaniel, Springfield, Mo. 65802

Filed Sep. 18, 1989, Ser. No. 408,368

Int. Cl.[5] A01K *39/014*

U.S. Cl. 119—52.2 **8 Claims**



1. A birdfeeder for attachment to a hollow enclosure including:

a hollow enclosure for mounting said birdfeeder upon;

two hoppers to contain animal feed, each said hopper having a rear face mounted adjacent and abutting an opposite side each of said hollow enclosure;

a cover disposed over each said hopper that is displaceable to reveal the interior of said hopper;

a feeding tray disposed below each said hopper;

feeding apertures disposed in a lower portion of each of said hoppers over said feeding trays to allow animal feed to flow out of said hoppers into said feeding trays;

a perch adjacent each said feeding tray to allow animals such as birds to alight and feed from said feeding trays; and

at least one flexible mounting strap having the rear face of each said hopper mounted to it such that said rear faces face each other and said at least one strap is mounted over the top of said hollow enclosure with the at least one mounting strap and said rear faces abutting opposite sides of said hollow enclosure.

4,942,846

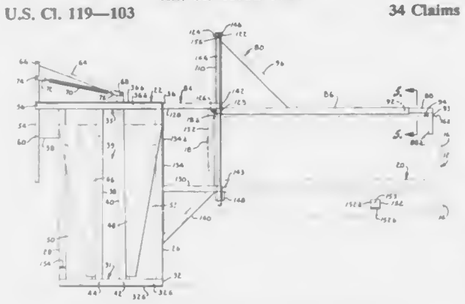
PORTABLE HEADCATCH SUPPORT AND ANIMAL RESTRAINING MECHANISM

John E. Reinhold, Rte. 70, Box 679, and James F. Wilsman, Rte. 80, Box 228, both of Camdenton, Mo. 65020

Filed Apr. 6, 1988, Ser. No. 178,351

Int. Cl.[5] A61D *3/00*

U.S. Cl. 119—103 **34 Claims**



1. An animal restraining mechanism comprising:

a vehicle;

a headcatch for temporarily capturing and restraining said animal; and

means for mounting said headcatch on said vehicle in order that said headcatch can rotatably move between a storage position and a capturing position in a manner permitting said vehicle to form a part said restraining mechanism when said headcatch is rotated said capturing position adjacent said vehicle by providing a barrier in one direction to movement by said animal.

4,942,847

GENERATION AND ACCUMULATION OF STEAM

Lauri Santasalo, Helsinki, and Esko Huhta-Koivisto, Espoo, both of Finland, assignors to Oy Santasalo-Sohlberg AB, Finland

Filed Jan. 27, 1989, Ser. No. 303,160

Claims priority, application Finland, Jan. 28, 1988, 880392

Int. Cl.[5] F22B *37/22*

U.S. Cl. 122—35 **16 Claims**

1. Procedure for generating and accumulating steam for an autoclave or equivalent steam-operated device, comprising the steps of

heating water in a closed tank which is only partially filled with the water until the unfilled portion of the tank contains steam under pressure, thus also causing the water in the tank to be under pressure,

storing thermal energy in the the water that is under pressure,

removing stored steam from the autoclave as required, thus generating steam from at least part of the water stored under pressure,

maintaining heat on the water under pressure to replace thermal energy thereof which is lost upon conversion of water in the tank to steam,



whereby steam is accumulated in the autoclave or equivalent device as steam is removed therefrom for use, and the load of the autoclave or equivalent device is equalized by the steam therein.

4,942,848

AIR-FUEL RATIO CONTROL SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE OR THE LIKE WITH FUEL TYPE DISCRIMINATION CAPABILITIES

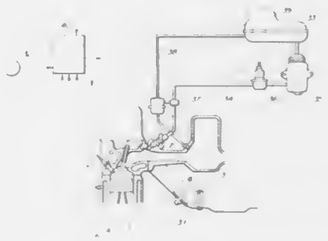
Katsunori Terasaka, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 29, 1988, Ser. No. 188,510

Claims priority, application Japan, Apr. 30, 1987, 62-107365; Aug. 6, 1987, 62-196971

Int. Cl.[5] F02D *41/14*; G01N *33/22*

U.S. Cl. 123—1 A **11 Claims**



1. A method, comprising:

sensing the magnitude of a first parameter, said first parameter having a predetermined relationship with the nature of the fuel supplied to a cylinder of an internal combustion engine;

comparing the magnitude of said first parameter with a first predetermined value;

sensing a temperature which varies with the temperature of the engine in the event that the magnitude of said first parameter exceeds said predetermined value;

determining a correction factor using said temperature; and

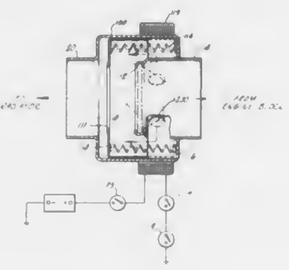
using the correction factor in an engine control.

4,942,849

FAIL-SAFE COOLANT THERMOSTAT SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Vernon E. Shelton, 430 Top Hill Dr., Tyler, Tex. 75703

Filed Apr. 6, 1989, Ser. No. 334,580
Int. Cl.[5] F01P 7/14
U.S. Cl. 123—41.1 7 Claims



1. In a device for controlling the flow of cooling fluid between a fluid-cooled engine and a radiator, wherein a primary passage is provided with a thermostat that normally controls the flow of cooling fluid between the engine and the radiator, the improvement comprising:

a bypass passage connected in parallel with said primary passage and thermostat;

a control valve contained within said bypass passage, said valve comprising a solenoid operated cup-shaped valve body and means for continually urging open said valve toward an open position; and

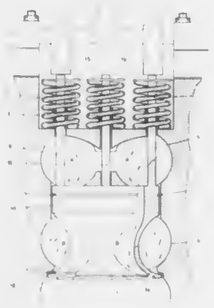
means for de-energizing the solenoid for positioning said control valve in an open condition when either the engine is not operating or the cooling fluid temperature exceeds a predetermined level, and for energizing the solenoid for positioning said control valve in a closed condition when the engine is operating and the cooling fluid temperature is below said predetermined level.

4,942,850

DOUBLE-FLOW VALVE FOR INTERNAL COMBUSTION ENGINES

Angel G. Hernandez, Somontin, ao 116, Madrid, Spain

Filed Mar. 9, 1989, Ser. No. 321,213
Claims priority, application Spain, Mar. 17, 1988, 8800810
Int. Cl.[5] F01L 1/28
U.S. Cl. 123—79 C 7 Claims



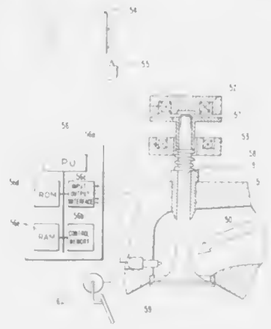
1. A two-way valve for internal combustion engines, wherein there is a main body which is bowl shaped, and containing a cylindrical hollow, wherein at the top of said hollow, it connects with two cylindrical bars placed symmetrically, and at the bottom of said hollow, inside, there is a truncated cone shaped seating area which receives the adjustment of a standard design valve, outside said hollow at the bottom there is an area which extends outwardly from the bowl, and which is machined on top into a truncated cone, which serves to adjust into the body of the cylinder head, said symmetrical cylindrical bars projecting toward the top of the cylinder head, to receive the thrust from two cams on a camshaft, this two-way valve also having a cylindrical area with at least one circular groove into which an expansion ring is adjusted and which expands against a cylindrical zone in the cylinder head.

4,942,851

ELECTROMAGNETIC VALVE CONTROL SYSTEM

Hideo Kawamura, Kanagawa, Japan, assignor to Isuzu Ceramics Research Co., Ltd., Kanagawa, Japan

Filed Nov. 13, 1989, Ser. No. 435,942
Claims priority, application Japan, Nov. 11, 1988, 63-285373
Int. Cl.[5] F01L 9/04
U.S. Cl. 123—90.11 14 Claims



1. An electromagnetic valve control system for controlling the timing of opening and closing an intake valve in an internal combustion engine, comprising:

a magnetic plate adapted to be connected to the intake valve, said magnetic plate being reciprocally movable in a direction;

electromagnets having fixed magnetic poles facing end surfaces of said magnetic plate in said direction;

a flow speed sensor for detecting the speed of flow of intake air toward said intake valve in the internal combustion engine;

valve opening and closing means for opening and closing the intake valve under attractive forces produced between said magnetic plate and said fixed magnetic poles by energizing said electromagnets; and

timing modifying means for modifying the timing of closing the intake valve such that the intake valve will be closed by said valve opening and closing means at the time the speed of flow of intake air as detected by said flow speed sensor becomes zero.

4,942,852

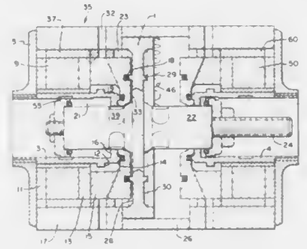
ELECTRO-PNEUMATIC ACTUATOR

William E. Richeson, and Frederick L. Erickson, both of Fort Wayne, Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Jan. 6, 1989, Ser. No. 294,729
Int. Cl.[5] F15B 11/08, 13/04; F01B 11/02
U.S. Cl. 123—90.14 11 Claims

1. A bistable electro-pneumatic transducer having a piston

reciprocable along an axis between first and second positions; a source of high pressure air; a selectively enableable control valve having an enabled position for selectively supplying high pressure air to the piston to move the piston from one of said positions to the other; a permanent magnet latching arrangement for maintaining the control valve in a disabled position and for holding the piston in the corresponding one of the first



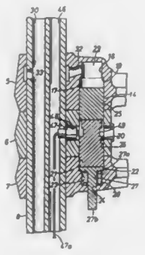
and second positions; electromagnetic means for temporarily neutralizing the latching arrangement to release the control valve to move from the disabled position to the enabled position; energization of the electromagnetic means causing movement of the control valve in one direction along the axis and applying high pressure fluid to a portion of the piston to drive the piston in the opposite direction from one position to the other position along the axis.

4,942,853

VALVE OPERATING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Tsuneo Konno, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 105,209, Oct. 7, 1987, Pat. No. 4,759,322. This application May 18, 1988, Ser. No. 195,310
Claims priority, application Japan, Oct. 23, 1986, 61-252622; May 26, 1987, 62-127178
Int. Cl.[5] F01L 1/26, 1/24, 1/34
U.S. Cl. 123—90.16 8 Claims



1. Apparatus for operating at least one of intake or exhaust valves in an internal combustion engine including a plurality of rocker arms for opening and closing said valves; cam means for driving said rocker arms to impart a mode of operation to said valves; and means for varying the mode of operation of said valves, comprising:

mutually registrable guide holes in said rocker arms;

piston means carried by said rocker arms in said guide holes;

means for selectively moving said piston means between adjacent guide holes for connecting or disconnecting said rocker arms; and

electrically operated sensing means for determining the positional condition of said piston means.

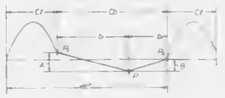
4,942,854

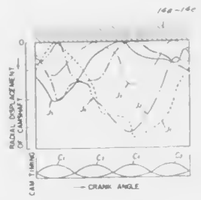
VALVE OPERATING DEVICE FOR USE IN INTERNAL COMBUSTION ENGINE

Hiroshi Shirai; Takashi Tatsumi; Hisashi Kanda; Koichi Fukuo; Masahiko Motsumoto, and Toshiaki Hiro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1989, Ser. No. 317,771
Claims priority, application Japan, Mar. 3, 1988, 63-50426; Apr. 1, 1988, 63-81602; May 30, 1988, 63-132499; May 30, 1988, 63-132500; May 30, 1988, 63-132501
Int. Cl.[5] F01L 1/34, 1/08
U.S. Cl. 123—90.17 26 Claims







25. A valve operating device for operating a plurality of engine valves in an internal combustion engine, comprising:

a plurality of valve springs for normally urging the engine valves in a closing direction;

a plurality of cams having respective cam profiles including respective valve lifting portions for applying forces to open said engine valves and respective base circle poritons for allowing said valves to be closed;

transmitting means for transmitting the force from each of said cams to said engine valve;

a hydraulic lash adjuster combined with said transmitting means for eliminating any gap between said means and each of said engine valves; and

the base circle portions of at least selected ones of said cams having profiles differing from the profiles of the base circle poritons of the others of said cams dependent upon the respective radial displacements thereof in a direction to lift the engine valves.

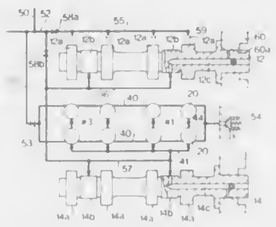
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4,942,855

LUBRICATING SYSTEM OF A VALVE MECHANISM FOR A DOUBLE OVERHEAD CAMSHAFT ENGINE

Naoto Muto, Kawasaki, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,801
Claims priority, application Japan, Oct. 29, 1988, 63-142187[U]
Int. Cl.[5] F01M *1/06*
U.S. Cl. 123—90.33 3 Claims



1. A lubricating system of a valve mechanism for a double overhead camshaft engine having opposed cylinders, an intake valve and an exhaust valve which are disposed one above the other in a vertical plane, camshafts, rocker arms and hydraulic valve-lash adjusters, characterized in that the system has:

a main oil gallery provided for supplying pressurized oil to the valve mechanism;

a first gallery connected with the main gallery for supplying first lubricating oil to the hydraulic valve-lash adjusters;

means for keeping pressure of the first lubricating oil constant;

a second gallery connected with the main gallery for supplying second lubricating oil to journals of the camshafts;

a third gallery connected with the main gallery;

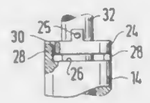
nozzles connected with the third gallery for ejecting third lubricating oil to the camshaft and rocker arm of the upper valve.

4,942,856

IGNITION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Friedrich Jaki, Erdmannhausen, and Hartmut Brammer, Vaihingen/Enz., both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1989, Ser. No. 377,391
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1988, 3830900
Int. Cl.[5] F02P *7/02*
U.S. Cl. 123—146.5 A 20 Claims



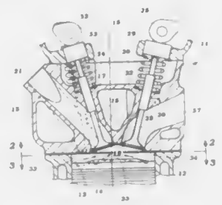
1. An ignition distributor for internal combustion engines having a distributor shaft coupled to a drive device via a claw coupling (29), comprising a first coupling part disposed coaxially on the distributor shaft (32) and firmly mounted on the distributor shaft (32) by means of a connecting element (25), a second coupling part (20) disposed on the distributor shaft (32), further in which the claw coupling (29) includes claws (28) which are formed onto the second coupling part (20) and form-fittingly engage the inside of at least one recess (30; 130; 230; 330) in the first coupling part, and the at least one recess (30; 130; 230; 330) in the vicinity of the claw engagement comprise dimensionally stable wear-resistant plastic having self-lubricating properties.

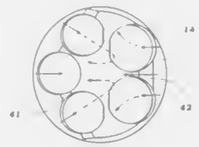
4,942,857

COMBUSTION CHAMBER FOR ENGINE WITH MULTIPLE VALVES

Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 12, 1989, Ser. No. 296,497
Claims priority, application Japan, Jan. 18, 1988, 63-6984
Int. Cl.[5] F02B *15/00*
U.S. Cl. 123—193 H 9 Claims





1. In a combustion chamber for an internal combustion engine comprised of a cylinder bore, a piston reciprocating in said cylinder bore, a cylinder head closing said cylinder bore and defining a combustion chamber with said cylinder bore and said piston, intake valve means on one side of said cylinder bore for admitting a charge to said combustion chamber, and exhaust valve means on the other side of said cylinder bore for discharging of combustion products from said combustion chamber, the improvement comprising said combustion chamber being comprised of a central portion having a pent roof configuration with a peripheral squish area and being configured that the squish flow upon approaching top dead center of said piston is such that the squish flow from one side of the cylinder bore is in a different direction than the squish flow from the other side of the cylinder bore and does not directly oppose the squish flow from the other side of the cylinder bore.

4,942,858

CYLINDER HEAD FOR AIR-COMPRESSING, SELF-IGNITION INTERNAL COMBUSTION ENGINES

Wolf-Dietrich Wagner, Stuttgart; Rolf Klumpp, Kernen; Wolfgang Strobel, Remshalden, and Günter Brenker, Waiblingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

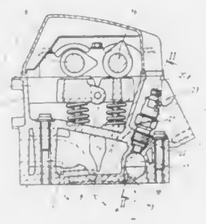
Filed May 4, 1989, Ser. No. 347,057
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1988, 3819656
Int. Cl.[5] F02F *1/42. 1/36;* F02B *19/16;* F01P *3/16*
U.S. Cl. 123—193 H 5 Claims

1. Cylinder head for air-compressing, self-ignition fuel-injection internal combustion engines with several cylinders, comprising:

a cylinder head bottom having substantially planar combustion space sections;

a coolant space extending from the cylinder head bottom to the cylinder head top;

inlet and outlet ducts penetrating the coolant space from an opening in each of the combustion space sections, the inlet and outlet ducts respectively extending towards opposite sides of the cylinder head each in a direction transverse to the longitudinal axis of the cylinder head;



auxiliary combustion chambers located in a transverse center plane of the cylinder head extending between the inlet ducts in a region of a periphery of the combustion space section; and

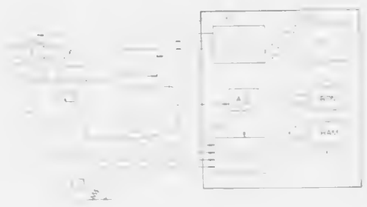
a cylinder head top which extends downwards at an angle across substantially an entire transverse width of the cylinder head in a direction transverse to the cylinder head towards the auxiliary combustion chambers in such a way that upper parts of the auxiliary combustion chambers directly touch a bottom side of the cylinder head top and are immediately adjacent to the cylinder head top.

4,942,859

SAFETY SYSTEM FOR AN AUTOMOTIVE ENGINE

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1989, Ser. No. 344,271
Claims priority, application Japan, Apr. 30, 1988, 63-059606[U]
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 D 2 Claims



1. A safety sytem for an automotive engine of a motor vehicle having an accelerator pedal for controlling a throttle valve of the engine and a transmission for transmitting power of the engine to wheels of the vehicle, comprising:

an accelerator pedal sensor for detecting release of the accelerator pedal and for producing a release signal;

a torque sensor for detecting output torque of the transmission and for producing a torque signal representing the detected torque;

comparator means responsive to the release signal for comparing the detected torque represented by the torque signal with a predetermined value and for producing an abnormality signal when the detected torque is larger than the predetermined value; and

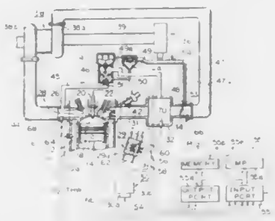
stopping means responsive to the abnormality signal for stopping operation of the engine.

4,942,860

ENGINE CONTROL SYSTEM

Yoshiki Chujo; Tokata Inoue, both of Mishima; Toshiaki Konomi, and Yoshihiko Hyodo, both of Hyodo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 2, 1988, Ser. No. 151,422
Claims priority, application Japan, Feb. 6, 1987, 62-024824; Feb. 6, 1987, 62-024827; Apr. 8, 1987, 62-084861
Int. Cl.[5] F02M *25/06*
U.S. Cl. 123—571 16 Claims



1. An internal combustion engine comprising:

an engine body;

an intake system connected to the engine body for introducing air thereto from outside the engine, the system including a throttle valve for controlling the amount of air introduced;

an exhaust system connected to the engine body for removing resultant combustion gas therefrom;

sensor means arranged in the intake system at a position downstream of the throttle valve, said sensor means being responsive only to the partial pressure of oxygen in the air newly introduced from outside the engine and providing an electrical signal indicating the amount of new air introduced;

calculating means, responsive to the sensed amount of new air introduced, for calculating values of an engine operational characteristic to be controlled as a function of the amount of newly introduced air; and

control means, responsive to the calculated engine operational characteristic value, for controlling the engine operational characteristic as a function of the amount of newly introduced air.

4,942,861

CROSS BOW WITH IMPROVED COCKING MECHANISM

John W. Bozek, 6093 Waterfront Dr., Waterford, Mich. 48095

Continuation of Ser. No. 859,698, May 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 778,316, Sep. 20, 1985, Pat. No. 4,649,892. This application Mar. 28, 1988, Ser. No. 178,763
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—25 7 Claims

1. A cross bow comprising; an elongated stock member having a forward end and a rear end; a drawstring means having end string segments and a drawstring means midportion connected to said end string segments, said drawstring means extending transversely to said stock member with the drawstring means midportion thereof located at the stock member able to undergo drawing movement; spring means for generating a spring force acting on said drawstring means midportion, said spring force increasing with increasing drawing move-

ment thereof so as to urge said drawstring means midportion to a restored position, said spring force reaching a predetermined peak level at a fully drawn position of said drawstring;

trigger means carried on said stock member adjacent the rear end thereof for releasably securing said midportion of said drawstring means in a fully drawn position;

cocking means comprising a cocking lever mounted on said stock member and means causing said cocking lever to act on said spring means upon movement thereof in forward and return movements in opposite direction, movement of said cocking lever in said forward direction acting on said



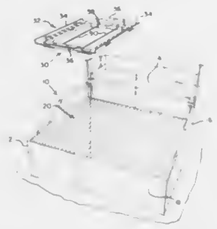
drawstring to draw said drawstring means midportion to said fully drawn position, and simultaneously acting on said spring means to at least partially nullify the generation of said spring force when said drawstring means midportion is fully drawn, by reducing the level at which said spring force otherwise peaks, and upon return movement said means causing said cocking lever to act on said spring means to generate said spring force at said peak level with the aid of a mechanical advantage, whereby reducing the effort otherwise required in drawing the drawstring means midportion to the fully drawn position.

4,942,862

UNIVERSAL RACK FOR BARBECUE GRILL

J. Michael Alden, Palatine; Erich J. Schlosser, Barrington, and James C. Stephen, Arlington Heights, all of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.

Filed Aug. 7, 1989, Ser. No. 390,643
Int. Cl.[5] F24C *15/00*
U.S. Cl. 126—337 R **8 Claims**



1. A universal food holder for a barbecue grill comprising

a peripheral frame member adapted to be supported in a grill above a heat producing source and having food support elements thereon,

said frame being generally rectangular and having opposite sides and opposite ends to define an open space between said sides and said ends, said opposite sides each including a generally L-shaped side member having a vertical leg and a generally horizontal leg with slot means in said horizontal leg, and

said food support elements comprising elongated members having cooperating connections at opposite ends releasably received into said slot means

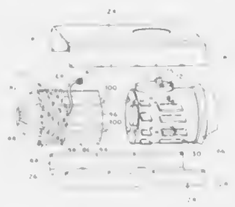
so that said food support elements may be releasable from said frame member for cleaning.

4,942,863

THERMOELECTRIC GENERATOR FOR USE IN A HEATER AND METHOD OF INSTALLATION

Der-Jeou Chou, Taipei, Taiwan, and John C. Young, 408 N. Cedar Bluff Rd., Suite 200, Knoxville, Tenn. 37923, assignors to John C. Young, Farragut, Tenn.

Filed Apr. 6, 1989, Ser. No. 334,595
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 E **17 Claims**



1. A thermoelectric generating assembly for use in a fuel-burning heater designed to utilize a heat exchanger of a predetermined size and shape and wherein the fuel-burning heater includes a burner assembly for generating heat and components which require electrical power for heater operation such as means for moving a heat exchange medium through the heater so that the heat exchange medium is heated by the heat generated by the burner assembly through the heat exchanger, said assembly comprising a body including:

a thermoelectric generator; and

means for mounting the thermoelectric generator in such a relationship to the burner assembly and to the heat exchange medium routed through the heater so that the thermoelectric generator generates electricity for supplying at least a portion of the electrical power requirements of said heater components,

said assembly body possessing a size and shape which approximates that of the heat exchanger with which the fuel-burning heater is designed to be utilized and

said mounting means is compatible with means utilized for mounting the heat exchanger with which the fuel-burning heater is designed to be utilized within the heater so that said assembly can be mounted within the heater in place of the heat exchanger with which the heater is designed to be utilized.

4,942,864

STOVE-TOP SAFETY GRATE FLAME DEFLECTOR

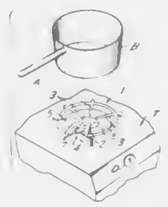
Frank Esposito, 83-15 13th Ave., Apt. 1, Brooklyn, N.Y. 11228

Filed Aug. 16, 1989, Ser. No. 394,580
Int. Cl.[5] F24C *15/10*
U.S. Cl. 126—214 D **20 Claims**

1. A stove-top flame safety deflector which prevents the handle of a pot or other cooking utensil from being heated higher than can be tolerated for hand contact and which can be mounted on existing stove grates located above the gas burners of a stove, which grate has a plurality of generally radially extending fingers, said deflector comprising:

a generally flat upper deflector plate formed generally in the shape of a truncated wedge said deflector plate having an inner edge facing the stove burner and an outer edge spaced from the burner, and a pair of generally oppositely disposed edges, said outer edge having a downwardly extending lip which generally abuts the stove top when said deflector plate rests atop the fingers of the stove grate;

a protective skirt member projecting angularly downwardly from said deflector plate, from its bottom, said skirt member extending lower than the lip on said outer edge when



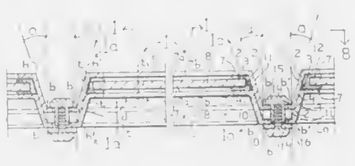
installed on a stove grate, such that when said deflector is located in desired position on the stove grate, the combination of said deflector plate, protective skirt and said outer edge lip substantially prevents flames from the burner from heating the handle beyond the level for safe hand contact.

4,942,865

COMPOUND SOLAR COLLECTOR BUILDING CONSTRUCTION

Patricia Pierce-Bjorklund, P.O. Box 908, 15 Spring St., Essex, Mass. 01929

Continuation-in-part of Ser. No. 81,216, Aug. 3, 1987, abandoned. This application Jun. 20, 1988, Ser. No. 208,962
Int. Cl.[5] E04D *13/18*
U.S. Cl. 126—431 **11 Claims**



1. A compound planar matrix providing solar collector roofs and walls comprising a chambered grid member having an anterior half-matrix forming the first external surface and first internal surface of said compound matrix with respect to incoming radiation, and an opposed posterior half-matrix arranged in mirror-image relation and forming the last internal surface and last external surface of said compound matrix with respect to incoming radiation,

said anterior half-matrix and said posterior half-matrix each consisting of two identical frame members arranged in stacked relation,

each said frame member having identical frame elements arranged in intersecting relation to form grid intersections defining grid compartments surrounded by said intersecting frame elements,

each said identical frame element consisting of a flat portion having inclined webs extending outwardly away from the opposing ends of the flat portion and each inclined web having a second flat portion forming a flange parallel to the first said flat portion and extending further outwardly and all inclined webs having the same angle of inclination,

the two said identical frame members of each said half-matrix being stacked having said inclined portions of each frame element engage to thereby restrain apart the said flanges, and forming a fixed space between the said stacked flanges extending about the periphery of each said grid compartment,

each said grid compartment having a non-opaque planar body placed therein having its peripheral edges restrained and cushioned in the said fixed space formed by the said stacked flanges,

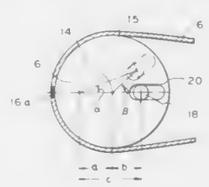
the said anterior and posterior half-matrices being arranged in paired and opposed mirror-image relation to form the said compound matrix having a neutral plane of symmetry and having said flanges form parts of the said opposed external surfaces of said compound matrix and said flat portions fastened to each other at said grid intersections by compressive devices having a thermal non-conductor spacing device disposed between each opposed grid intersection to space apart the opposed half-matrices and forming a thermal barrier between the opposed half-matrices at the said neutral plane of symmetry, said opposed grid compartments forming cooperatively a plurality of internal hollow chambers having passages between chambers provided by said spacing devices, said passages intersecting in each chamber and extending the full length and breadth of the said compound matrix and through its terminal portions and means for entry and exit of air as a medium of heat transfer.

4,942,866

BENDING CONTROL APPARATUS FOR ENDOSCOPE

Junji Usami, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki K.K., Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 311,730
Claims priority, application Japan, Feb. 22, 1988, 63-22900[U]
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **17 Claims**



1. A bending control apparatus for an endoscope comprising:

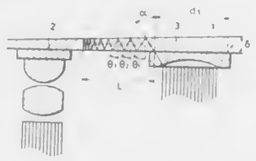
a control wire having one end portion thereof secured to a bendable portion which is bendably provided at the distal end of an insert part of the endoscope;

a pulley rotatably provided in a control part, said pulley having said control wire wound thereon;

manual control means provided outside said control part so as to be rotatable about a position which is offset from the axis of rotation of said pulley by a distance a; and

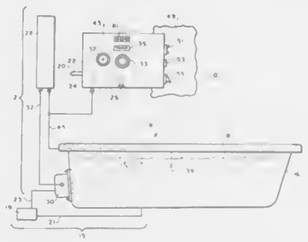
rotational motion transmitting means for transmitting the rotational motion of said manual control means to said pulley at a position which satisfies the conditions of $c>a$ and $c>b$, wherein b is the distance from said transmitting means to the axis of rotation of said pulley and c is the distance from said transmitting means to the axis of rotation of said manual control means.

4,942,867
DISTAL END PART OF ENDOSCOPE
Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Filed Jul. 7, 1989, Ser. No. 376,625
Claims priority, application Japan, Jul. 13, 1988, 63-176081; Jul. 22, 1988, 63-183955
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 13 Claims



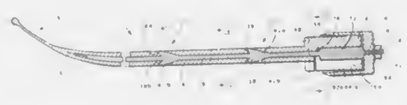
1. A distal end part of an endoscope which is provided at the distal end of the insert part of said endoscope, comprising:
an illuminating window through which illuminating light is emitted;
a viewing window for taking a light image into an objective optical system; and
a transparent cover continuously covering the respective surfaces of said illuminating and viewing windows, said cover being formed such that the wall thickness thereof is gradually changed at the portion thereof which extends between said illuminating and viewing windows.

4,942,868
ULTRASONIC TREATMENT OF ANIMALS
Robert E. Vago, Northbrook, Ill., assignor to Malmros Holding, Inc., Morton Grove, Ill.
Filed Mar. 30, 1988, Ser. No. 175,936
Int. Cl.[5] A61M *25/00*
U.S. Cl. 128—24 A 22 Claims



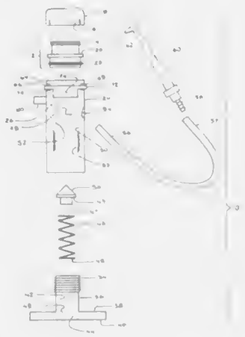
1. A method of treating animals in a working fluid contained within wall means comprising the steps of:
transmitting ultrasonic vibrations at a power density in excess of 15 watts per square centimeter through the working fluid during a first time period in which no portion of the animal is immersed in said working fluid, whereby the working fluid is sterilized;
immersing a body portion of the animal into the working fluid during a second time period different than the first time period with the body portion being in acoustic contact with the working fluid; and
applying ultrasonic vibrations through the working fluid to the body portion at a frequency in a range of 15 kilohertz to 100 kilohertz and a power density below 5 watts per square centimeter during the second time period.

4,942,869
EXPANDABLE URETHRAL BOUGIE
German Borodulin, San Francisco; Alexander Shkornik, San Mateo; Maxim D. Persidsky, San Francisco, and Periachery Narayan, San Rafael, all of Calif., assignors to Urological Instruments Research, Inc., San Francisco, Calif.
Filed Dec. 2, 1988, Ser. No. 278,826
Int. Cl.[5] A61H *1/00*
U.S. Cl. 128—43 38 Claims



1. An instrument comprising
(a) a probe having a first end, a second end, and a central portion therebetween,
the probe comprising a plurality of rods, the rods being bound together at the first end of the probe, the rods being separable at the central portion of the probe, each of said rods comprising a camming surface disposed thereon,
(b) means for restricting radial movement of the rods at the second end of the probe,
(c) means for separating the rods at the central portion, said means for separating comprising
movable cams, said cams being disposed adjacent and between the rods, the cams having camming surfaces,
an actuator for moving the cams axially with respect to the rods, and
means for connecting the actuator to the cams, the cams being movable by the actuator to bring the camming surfaces of the cams together with the camming surfaces of the rods, thereby separating the rods at the central portion of the probe, and
(d) means for locking the rods in an unseparated position.

4,942,870
DENTAL HYGIENE DEVICE
George Damien, 3631 U.S. 19 N., Palm Harbor, Fla. 34684
Filed Aug. 29, 1988, Ser. No. 238,013
Int. Cl.[5] A61H *9/00*
U.S. Cl. 128—66 14 Claims



1. A dental hygiene device that directs water from a faucet onto dental surfaces, comprising:
a hand-held wand member;
a water-emitting nozzle means formed in said wand member;
a fluidic device having a water-receiving first end and a water-discharging second end;

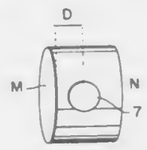
an over-pressure relief valve means for opening said second end when water pressure inside said fluidic device is above a predetermined threshold pressure;
a bore means formed in said fluidic device between its first end and its second end;
an elongate, flexible conduit means that provides fluid communication between said fluidic device and said wand member;
an adapter means having a first end substantially permanently secured to a discharge spout of a faucet and a second end releasably secured to said fluidic device;
a quick release means, having an equilibrium state and a non-equilibrium state, that releases said first end of said fluidic device from said adapter means quickly when in its non-equilibrium state and which securely retains said fluidic device to said adapter means when in its equilibrium state; and
said quick release means being a generally "U"-shaped retaining clip member having a pair of transversely spaced apart, flexible arm members, and wherein each arm member has an obtuse angle bend formed therein.

4,942,871
FLOATABLE BUBBLE BATH ASSEMBLY
Zenzaburo Hara, Tokyo, Japan, assignor to Hara Health Industrial Co., Ltd., Japan
Continuatioo of Ser. No. 249,862, Sep. 27, 1988, abandoned. This application Dec. 22, 1989, Ser. No. 456,039
Claims priority, application Japan, Sep. 29, 1987, 62-246936
Int. Cl.[5] A61H *9/00*
U.S. Cl. 128—66 7 Claims



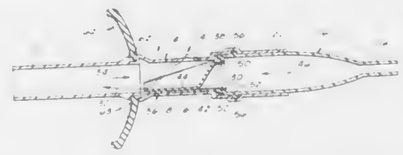
1. In a bubble bath assembly for creating a bubbling effect in water in a bathtub, the bubble bath assembly including: a housing having an inlet and an outlet; pump means, encased within the housing, for drawing water into the housing through the inlet and for discharging water under pressure from the outlet; and water-jetting means, communicatively connected to the outlet of the housing, for discharging water in a jet therefrom, the improvement wherein the housing comprises float means for floating the bubble bath assembly on bath water in such a manner that the water-jetting means is held over the bath water and the inlet of the housing is held under the bath water, and wherein the water-jetting means has an outlet port which directly confronts the bath water when the assembly floats on the bath water, so that water to be discharged from the water-jetting means is directed to the surface of the bath water.

4,942,872
EXTERNAL FASTENER FOR BONES AND JOINTS
Robert Jawish, 146 rue Lourmel, Paris, 75015, France
PCT No. PCT/FR85/00280, § 371 Date Jul. 7, 1986, § 102(e) Date Jul. 7, 1986, PCT Pub. No. WO86/02821, PCT Pub. Date May 22, 1986
PCT Filed Oct. 7, 1985, Ser. No. 889,934
Claims priority, application France, Nov. 15, 1984, 84 17415
Int. Cl.[5] A61B *17/60*; F16C *11/00*
U.S. Cl. 606—57 35 Claims



1. A device adapted to be used externally for fixing bones and joints of a patient, comprising:
(a) a plurality of cylindrical sleeves, each comprising a cylindrical wall provided with holes for receiving a bone-anchoring member therethrough, and each including a front extremity and a rear extremity, said sleeves being releasably connectable to one another in succession by connecting said rear extremity of a first one of said sleeves with said front extremity of a second one of said sleeves in order to form a tubular tutor; and
(b) a plurality of hollow cylindrical members, one houseable in each of said sleeves, each comprising a cylindrical wall provided with holes for receiving a bone-anchoring member therethrough.

4,942,873
RESUSCITATION DEVICE
Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342, and Frank R. Irwin, P.O. Box 636, Oceano, Calif. 93445
Continuation-in-part of Ser. No. 938,419, Dec. 5, 1986, abandoned. This application Sep. 16, 1988, Ser. No. 245,561
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—203.11 7 Claims



1. A mouth-to-mouth resuscitating device comprising:
(a) an elongated, first tubular member having a first, open, end portion for engagement with a victim's mouth, a second open, end portion and an elongated, annular-shaped wall extending therebetween having a cylindrically-shaped section, defining longitudinally-extending, first and second, oppositely-disposed inner, concave surfaces, said wall having an aperture through said second, inner, concave surface defining edge portions;
(b) a second tubular member having a first, open, end portion for engagement with a rescuer's mouth and a second, open, end portion;
(c) interconnection means for releasably interconnecting said first and second tubular members in coaxial alignment proximate the second end portions thereof; and
(d) valving means mounted within said first tubular member and disposed intermediate said first and second end por-

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tions thereof for permitting the flow of fluids through said first tubular member in a first direction, but blocking the flow of fluids through the valving means in the opposite, second, direction while urging fluid flow through the aperture in said wall of said first tubular member, said valving means comprising an integrally formed member including:

(i) a ring-shaped portion;

(ii) a yieldably, deformable wall, including an annular portion having opposite ends and coaxially connected at one end to said ring-shaped portion and extending outwardly from said ring-shaped portion toward said first portion of said first tubular member at the other end, a first, longitudinally extending portion having a concave, inner surface and a convex, outer surface normally disposed in parallel, nesting engagement with said longitudinally-extending, first, concave inner surface of said annular-shaped wall of said first tubular member and a second, longitudinally-extending portion having a convex, outer surface and a concave, inner surface substantially coextensive with and normally, its first position, disposed in parallel, nesting engagement with said concave, inner surface of said first portion of said yieldably deformable wall, said second portion of said wall yieldably deforming towards said second, concave, inner surface of said annular-shaped wall of said first tubular member and sealably engaging with the edges of said aperture in response to fluid flow in the first direction, its second position, thereby positively blocking the flow of air through said aperture yet permitting the flow of fluids through said first tubular member in said first direction; and

(iii) means for sealably connecting said annular portion of said yieldably deformable wall with said ring-shaped portion to provide a fluid-tight seal therebetween.

4,942,874

STEAM INHALER

Takao Terada, Higashiosaka, and Toshiyuki Kobayashi, Kameoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jan. 26, 1989, Ser. No. 301,772

Claims priority, application Japan, Jan. 28, 1988, 63-9892[U]

Int. Cl.[5] A61M *11/00, 16/16, 16/18*

U.S. Cl. 128—203.16 **9 Claims**



1. A steam inhaler, comprising:

a water supply tank accommodating water therein;

a first heating chamber of a relatively small capacity and at least partly located lower than a minimum water surface level of said water supply tank;

a first conduit for conducting water from said water supply tank to said first heating chamber;

a one-way valve provided in said first conduit to prevent the flow of water from said first heating chamber to said water supply tank;

a second heating chamber of a relatively large capacity;

a heating means for heating said first heating chamber and said second heating chamber;

a second conduit for communicating said first heating chamber with said second heating chamber;

a steam nozzle for discharging the steam produced in the second heating chamber; and

a pressure control passage communicating said second heating chamber with an upper part of said water supply tank.

4,942,875

SURGICAL REPAIR DEVICE HAVING ABSORBABLE AND NONABSORBABLE COMPONENTS

Robert A. Hravacek, New Haven; Barry L. Dumican, and Edward J. McCusker, both of Fairfield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 835,493, Mar. 3, 1986, Pat. No. 4,792,336. This application Jan. 21, 1988, Ser. No. 146,510

Int. Cl.[5] A61L *17/00*

U.S. Cl. 606—230 **7 Claims**



1. A knitted or woven surgical repair device having a length to width ratio of greater than one, the device having an absorbable component consisting essentially of a first plurality of fibers, each fiber of the first plurality of fibers prepared from a polymer having a glycolic or lactic acid ester linkage, and a nonabsorbable component consisting of a second plurality of fibers, each fiber of the second plurality of fibers prepared from poly(butylene terephthalate) or a polyether-ester block copolymer, and the device comprising about ten percent of the first plurality of fibers and about ninety percent of the second plurality of fibers, the majority of said first and of said second plurality of fibers being essentially in the lengthwise direction of said device.

4,942,876

PACEMAKER TERMINAL APPARATUS

Gerhard R. Gotthardt, Castle Hill, Australia, assignor to Telectronics, N.V., Curacao, Netherlands Antilles

Filed Aug. 2, 1988, Ser. No. 227,546

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—419 P **18 Claims**



1. A pacemaker terminal for connecting an electrode lead having a proximal end to a pacemaker, comprising:

a first section having a first transverse hole;

a second section having a second transverse hole, said second section being moveably engageable with said first section for aligning said first transverse hole with said second transverse hole to receive the proximal end of the electrode lead; and

means for springingly displacing said second section from said first section so as to move said first and said second transverse holes out of alignment and securely capture the proximal end of the electrode lead therein, said displacing means comprising a canted metallic spring interposed between said first and second sections.

4,942,877

DEVICE FOR MEASURING OXYGEN SATURATION DEGREE IN ARTERIAL BLOOD

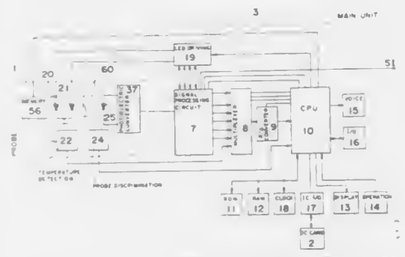
Takao Sakai, Habikino, and Kenji Hamaguri, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 4, 1987, Ser. No. 94,439

Claims priority, application Japan, Sep. 5, 1986, 61-209224

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **28 Claims**



1. An oximeter device for measuring the saturation degree of oxygen in arterial blood, comprising:

a probe having light emitting means for emitting light to an organism to be measured; light receiving means for receiving light from the organism and memory means for storing data necessary for a calculation of a saturation degree of oxygen in arterial blood of an examined organism caused by said light emitting means and said light receiving means, the memory means including a storage of data representative of crosstalk of light received by the light receiving means;

a main unit having a calculation means which reads out the data stored in said memory means and calculates the saturation degree of oxygen on the basis of the read out data nd the output of said light receiving means, and

means for connecting said probe to said main unit.

4,942,878

LOCALIZATION METHOD AND DEVICE FOR DETERMINING THE DEGREE OF FRAGMENTATION OF STONES

Jacques Dory, 91, rue des Molveaux, 77450 Coupvray, France

PCT No. PCT/FR86/00335, § 371 Date May 27, 1987, § 102(e) Date May 27, 1987, PCT Pub. No. WO87/01927, PCT Pub. Date Apr. 9, 1987

Continuation-in-part of Ser. No. 37,369, Apr. 13, 1987, abandoned, which is a division of Ser. No. 728,905, Apr. 30, 1985, Pat. No. 4,658,828. This PCT application Sep. 29, 1986, Ser. No. 63,570

Claims priority, application France, Sep. 27, 1985, 85 14330

Int. Cl.[5] A61B *17/22*

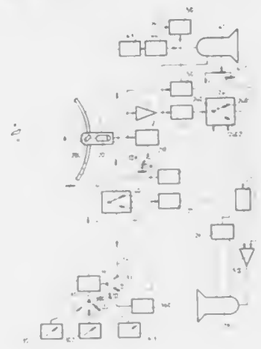
U.S. Cl. 128—660.03 **11 Claims**

1. A method for non invasive fragmentation of a concretion within a region of the body of a patient, comprising the steps of:

(a) generating, during short pulse periods, an elastic wave beam focused upon said concretion and having a predetermined high power adapted for disintegrating the concretion into fragments;

(b) radiating a pulsed acoustical signal beam and sweeping the signal beam across said region;

(c) detecting echoes of the acoustical signal reflected in said region and forming real time images of said region by displaying said echoes;



(d) stopping the generation of said elastic waves and subjecting said fragments to further pulsed and focused elastic waves emitted with a power which is substantially lower than said predetermined high power and sufficient for agitating the fragments, and

(e) radiating a further pulsed acoustic signal beam directed on the agitated fragments, detecting echoes of said further acoustic signal beam reflected by said fragments and deriving from said echoes information relative to the size of said fragments.

4,942,879

MERCURY SPHYGMOMANOMETER

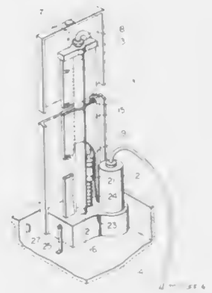
Tsuchiyasu Yokozuka, Fujioka, Japan, assignor to Yamasu Co., Ltd., Saitama, Japan

Filed Jan. 4, 1989, Ser. No. 293,408

Claims priority, application Japan, Mar. 22, 1988, 63-65696

Int. Cl.[5] A61B *5/023*

U.S. Cl. 128—684 **3 Claims**



1. A mercury sphygmomanometer having a mercury passage in which a mercury column rises and falls according to the level of pressure, a mercury reservoir connected to said mercury passage, a calibration plate for reading the top of the mercury column in said mercury passage, a bulb and a cuff

which are connected to said mercury reservoir through a tube, and a valve for opening and closing a communicating tube provided in between said mercury passage and said mercury reservoir in response to an operation of housing said constituent elements in a casing, wherein the improvement comprises:

an air pump connected to the top of said mercury passage through a tube; and

a lever means for opening and closing said valve provided on said communicating tube, said air pump and said lever means being activated in harmony with each other in response to an operation of opening and closing a cover and such that said valve is closed after the mercury is evacuated into said mercury reservoir.

4,942,880

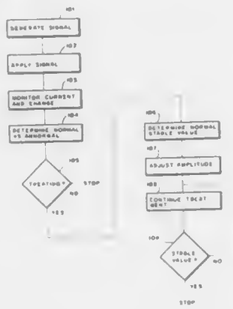
METHOD FOR NON-INVASIVE ELECTRIC DIAGNOSIS AND THERAPY IN HEMODIALYSIS AND GENERAL MEDICINE

Petr Slovák, Praha, Czechoslovakia, assignor to Ceske vysoke uceni technicke v Praze, Praha, Czechoslovakia

Continuation-in-part of Ser. No. 834,917, Feb. 28, 1986, Pat. No. 4,790,319, which is a continuation of Ser. No. 549,487, Nov. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 343,696, Jan. 28, 1982, abandoned. This application Jun. 24, 1988, Ser. No. 211,304

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 2 Claims



1. A method of simultaneous diagnosis and treatment of abnormal tissue comprising the steps of

generating an electric signal composed of electrical pulses in the range of 250 Hz to 5 KHz;

applying said electric signal to a patient through two electrodes attached to points on the surface of the patient's body, one point being the treated point;

monitoring the average value of current passing through the patient's body;

monitoring the rate of change in the average value of the current passing through the patient's body;

determining whether the treated point represents normal tissue or abnormal tissue, based on the rate of change in the average value of the current passing through the patient's body.

4,942,881

IV NEEDLE HOLDER

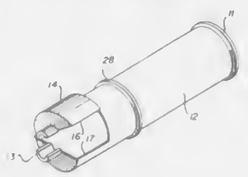
Habib Al-Sioufi, P.O. Box 654, Brookline, Mass. 02146, and Antoine J. Koudsi, 52 Blueberry Clr., Pelham, N.H. 03076

Filed Apr. 26, 1988, Ser. No. 186,432

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—763 10 Claims

1. A blood collection needle holder comprising an elongated tube, open at one end for receiving therein and holding a blood collection container, the other end of said tube terminating in locking means for releasably holding a blood collection needle in communication with said collection container, said locking means comprising a collar longitudinally divided into two sections separated by a longitudinal division and disposed at the end of said tube for engaging and holding a portion of said



blood collection needle when the respective sections of the collar are closed together and for releasing said blood collection needle when said sections are separated, said longitudinal division between said two sections extending to the terminus of said other end to enable removal of said needle from said other end.

4,942,882

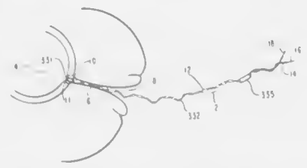
METHOD AND APPARATUS FOR MONITORING DESCENT OF FETUS

Susan Bellinson, 99 A Schofeld St., City Island, N.Y. 10464

Filed Mar. 31, 1988, Ser. No. 175,965

Int. Cl.[5] A61B *5/10*

U.S. Cl. 128—775 5 Claims



1. An apparatus for use as a fetal heartbeat monitor probe in a birth canal said probe having a babyward portion and an outward portion, said probe comprising:

a probe head, at the babyward portion of the probe, said probe head having a babyward end, the babyward end of said probe head having wire attachment means for attaching the probe head to a fetus;

thin flexible wire conductor means for connecting to the probe head through the birth canal, a babyward part of which conductor means is connected to the probe head, an outward part of which comprises the outward portion of the probe;

said conductor means including calibration means for measuring distance from the babyward end of the probe and monitoring the location of the fetus in the birth canal.

4,942,883

DRUG DELIVERY DEVICE

Martin H. Newman, 77 Norwood St., Sharon, Mass. 02067

Filed Sep. 29, 1987, Ser. No. 102,540

Int. Cl.[5] A61N *1/30*

U.S. Cl. 128—798 5 Claims

1. A self-contained transdermal medication delivery system for delivering a pre-specified medication to a body location comprising

a housing containing at least

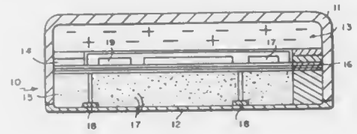
a source of electrical current pulses;

microprocessor control means for automatically providing said current pulses in accordance with a fixed, pre-

determined program established in said microprocessor control means prior to manufacture of said system for controlling the level of said current pulses and the time period over which said pulses are to be provided;

means for retaining said pre-specified medication, being electrically charged, for placement at a body location for forming with said body location an electrical current path responsive to said current pulses to cause said medication to be delivered transdermally from said medication retaining means to said body location;

said microprocessor means thereby permitting a predetermined dosage of said pre-specified medication to be delivered automatically at a predetermined rate to said body location in accordance with said fixed, predetermined



program wherein said medication retaining means is formed separately from said housing and includes a hydrophilic membrane having molecules of a medication distributed therein, and further including

electrode means for coupling to said separately formed medication retaining means;

cable means for interconnecting said electrode means and said source of current pulses,

one or more separately formed cartridges containing medication in liquid form, each cartridge being inserted into said housing means for attachment to said cable means, said cable means including a channel for transporting said liquid medication to the membrane of said medication retaining means for distribution of said medication therein.

4,942,884

PORTABLE BATTERY POWERED ELECTROMAGNETIC THERAPY APPLICATION

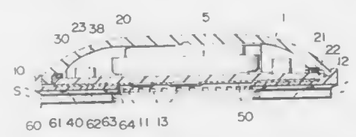
Tsutomu Ichinomiya; Tomohiro Kami, both of Hikone; Fumio Kitagawa, Neyagawa; Sumio Wada, Hikone; Hideaki Abe, Moriguchi; Youichi Ise, Hirakata, and Toshio Kusunoki, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Division of Ser. No. 178,583, Apr. 7, 1988. This application Jun. 8, 1989, Ser. No. 362,936

Claims priority, application Japan, Jnn. 15, 1987, 62-148534

Int. Cl.[5] A61N *1/40*

U.S. Cl. 128—804 14 Claims



1. A portable battery powered diathermy therapy applicator adapted for use on the skin of a patient for applying a high frequency electromagnetic field to a living tissue comprising:

an oscillator for producing the high frequency electromagnetic field;

an antenna connected to and energized by said oscillator to transmit the electromagnetic field to the living tissue;

a battery connected to and driving the oscillator; and

a substrate mounting thereon said antenna, said battery and electrical components forming the circuit of said oscillator;

a flat casing accommodating therein said substrate carrying said antenna, said battery and said electrical components, and support means for attaching said casing onto the skin of the user;

said flat casing being circular in planar configuration and having a top with a rounded periphery.

4,942,885

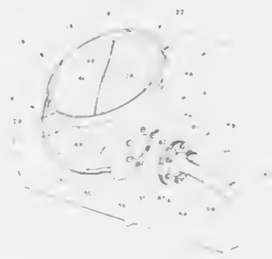
ARTICLE OF CLOTHING FOR USE AS A CONDOM

Anton Davis, 108-33, 171st Pl., Jamaica, N.Y. 11433; Kelvin A. Simmons, 15 Oakley Ave., Massapequa, N.Y. 11758, and Richard Blair, 819 Hegeman Ave., Brooklyn, N.Y. 11207

Filed Apr. 5, 1989, Ser. No. 333,241

Int. Cl.[5] A61F *13/00*

U.S. Cl. 128—842 1 Claim



1. An article of clothing for preventing transmission of sexually-related diseases comprising:

(A) a monolithic body portion which includes

(1) a waist-encircling band having an anterosuperior portion, a posterosuperior portion and an anteroposterior portion when worn by a user,

(2) a codpiece-like element including

(a) a superior portion pendently attached to said waist-encircling band anterosuperior portion,

(b) an inferior portion,

(c) said codpiece-like element being sized and shaped to cover essentially the entire pubic area of a user and to have said inferior portion thereof located between the user's leges when worn and having an opening positioned thererin to receive a user's penis therethrough,

(3) two buttocks encircling straps each attached at one end to said band posterosuperior portion and at the other end to said codpiece-like element inferior portion to extend posterioranteriorly between the user's legs when worn; and

(B) condom-attaching means which includes

(1) a flexible plastic annular mounting plate assembly sized to surround said codpiece-like element opening,

(2) mounting plate fastener means on said codpiece-like element, said mounting plate fastener means including a plurality of angularly spaced apart snaps located circumjacent to said codpiece-like element opening,

(3) fastener receiving means on said mounting plate assembly for co-operating with said mounting plate fastener means to releasably secure said mounting plate assembly to said codpiece-like element, said fastener receiving means including a plurality of angularly spaced apart snap receiving elements,

(4) condom mounting means on said mounting plate assembly for mounting a condom on said mounting plate assembly in a position to cover said codpiece-like element opening, said condom attaching means mounting plate assembly including two concentric annular plate elements,

(5) one annular plate element of said two concentric annu-

VOL 1116 ISS 4 JL 24 1990 UMI

lar plate elements including a plurality of openings defined therethrough,

(6) mounting plate coupling means for releasably coupling said two concentric annular plate elements together, said mounting plate coupling means being positioned adjacent to said snap fasteners on said codpiece-like element, and including

(a) a plurality of projecting snap fastener-receiving elements mounted on the other condom mounting means annular plate element in position to be received through said angularly spaced apart openings in said one annular plate element,

(b) each projecting snap fastener-receiving element including

(1) an elongated body,

(2) a base located at a proximal end of said body and which is fixedly mounted on the other annular plate element,

(3) said elongated body extending through said other annular plate element,

(4) a groove defined in said elongated body, and

(5) a blind-ended bore defined in a distal end of said elongated body, said blind-ended bore being sized and shaped to snappingly receive one of said angularly spaced apart snaps mounted on said codpiece-like element to releasably couple said other annular plate element to said codpiece-like element with said one annular plate element trapped between said codpiece-like element and said other annular plate element,

(c) a projection mounted on said one annular plate element to extend into each of said angularly spaced apart openings, each of said projections being flexible and sized to engage into a groove of a snap fastener-receiving element to snappingly lock said body to said one annular plate element,

(d) a plurality of dimple-like projections on said other annular plate element, and

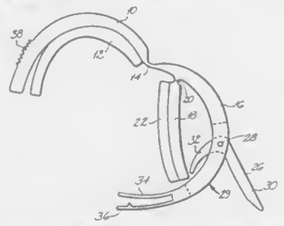
(e) a plurality of dimple-like depressions defined in said one annular plate element in position to receive a one dimple-like projection in each dimple-like depression and capture a condom between said dimple-like projection and said one annular plate element.

4,942,886

EXTERNAL INCONTINENCY DEVICE

John W. Timmons, 5300 Ocean Blvd., #504, Sarasota, Fla. 34242

Filed Feb. 22, 1989, Ser. No. 313,988
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—885 **10 Claims**



1. An external incontinency device comprising:

a first rigid, arcuate member having a free end and a hinged end;

said first arcuate member having a padded inner surface;

a second rigid, arcuate member having a free end and a hinged end, hingedly connected to said hinged end of said first rigid, arcuate member;

compression means including a free end and a hinged end hingedly connected adjacent to said hinged end of said first arcuate member;

said compression means extending across said device to a point in proximity to said free end of said first arcuate member and including a rigid member having a padded upper surface; engaging means secured to said second rigid member for engaging said compression means to move said compression means to a compressing position and for disengaging said compression means to release said compression means from said compression position;

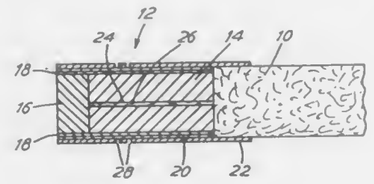
releaseable securing means at said free ends of said first and second arcuate members for holding said free end of said first arcuate member and said free end of said second arcuate member in a desired spaced relationship.

4,942,887

FILTER MOUTHPIECE FOR A SMOKING ARTICLE

Ahmed Abdelgawad, Colombier; Daniel Braem, Doffrane, and Urs Nyffeler, Corcelles, all of Switzerland, assignors to Fabriques de Tabac Reunies, S.A., Nuechatel, Switzerland

Filed Jun. 9, 1988, Ser. No. 204,546
Claims priority, application United Kingdom, Jun. 15, 1987, 8713904
Int. Cl.[5] A24D *3/04*
U.S. Cl. 131—336 **15 Claims**



1. A filter mouthpiece for a smoking article, said filter mouthpiece comprising: a filter, said filter having a peripheral surface and two opposed end surfaces, said end surfaces being permeable to smoke and air and said peripheral surface being rendered generally impermeable to the smoke and air, one of said end surfaces being a tobacco rod end which, when the mouthpiece forms part of a smoking article, abuts a rod of tobacco, and the other of said end surfaces being a mouth end, which, in use, is held in a smoker's mouth; a tube open at both ends, the wall of said tube being substantially impermeable, said tube extending axially through said filter from said tobacco rod end thereof toward but ending short of said mouth end thereof, side wall of said tube having holes through it for the passage of smoke between said tube and said filter. said peripheral surface of the filter mouthpiece being air transmissive over at least one discrete area to admit air into said filter.

4,942,888

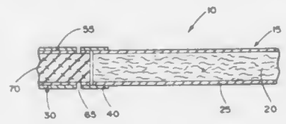
CIGARETTE

Maria T. Montoya, High Point; Alan B. Norman, Clemmons; Norman C. Sanders, Jr., Winston-Salem, and Glenn E. Creamer, Pfafftown, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jan. 18, 1989, Ser. No. 298,539
Int. Cl.[5] A24D *1/02*; A04D *1/18*
U.S. Cl. 131—359 **12 Claims**

1. A cigarette having smokable material contained in a circumscribing outer wrapping material, the cigarette having:

(a) smokable filler material comprising: (i) from about 10 to about 90 weight percent tobacco filler material, and (ii) about 10 to about 90 weight percent of a second smokable material having from about 0 to up to about 90 weight percent inorganic material, from about 10 to about 95 weight percent carbonaceous material which includes pyrolyzed alpha-cellulose, and up to about 15 weight percent binding agent; the amount of carbonaceous material within the blend of smokable material being about 9 percent or more, based on the total weight of the blend; and



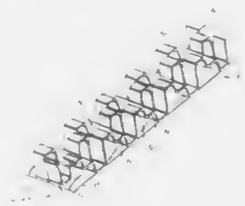
(b) wrapping material circumscribing the smokable filler and having an air permeability of less than about 10 CORESTA units.

4,942,889

EXPANDED WEB OF SHEET MATERIAL AND METHOD OF MAKING SAME

Everett C. Grollimund, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 613,159, May 23, 1989, Pat. No. 4,585,016. This application Feb. 6, 1986, Ser. No. 826,618
Int. Cl.[5] A24D *1/02*
U.S. Cl. 131—365 **19 Claims**



1. A method of making an expanded composite web, comprising:

a. providing a first web of formable sheet material;

b. shearing and forming the first web in a plurality of rows across its width to form convolutions extending longitudinally along the web, each convolution extending above and below the original plane of the web in a generally sinusoidal configuration and joined to the next convolution by a web portion lying substantially in the original plane of the web; and

c. laminating a surface of the sheared and formed first web to a surface of a second web of sheet material.

4,942,890

CONTAINER FOR SCALP PRODUCTS AND BASE THEREFOR

Paulo R. J. Newlands, Rua Fadel Fadel 112/103, Gávea, Rio de Janeiro 22430, Brazil

Filed Oct. 12, 1988, Ser. No. 256,572
Int. Cl.[5] A45D *7/02*
U.S. Cl. 132—212 **13 Claims**

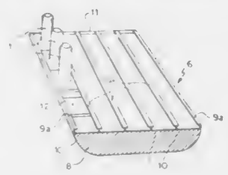
1. A container for a hand-held applicator for applying products to the scalp or other portions of the body,

said container being small enough to permit a plurality of such containers to be mounted beside each other on a support base of the hand-held applicator so that a plurality of containers simultaneously apply their contents to the body,

a hollow elongated reservoir portion having a base end and an application end opposite each other;

a housing inside said reservoir portion near said application end;

a rotatable body mounted in said housing for free rotation,



means for fitting said container individually on said support base, said means including a flange portion for removably mounting said container to said support base.

4,942,891

EYEBROW-COVER ELEMENT

Sandra Trevisan, Via F. Filzi 5, 36050 Quinto Vicentino (Prov. of Vicenza), Italy

Filed Feb. 5, 1988, Ser. No. 152,505
Claims priority, application Italy, Feb. 10, 1987, 63221/87[U]
Int. Cl.[5] A45O *40/30*
U.S. Cl. 132—216 **4 Claims**



1. An eyebrow-cover element comprising,

at least one body defining a substantially elongate arcuate configuration, said body having at least one side and at least one other side,

at least one concavity defined at said one side of said body,

at least one inner surface defined by said concavity,

a perimetral edge defined by said inner surface,

adhesion means, said adhesion means being at least temporarily associable with at least one of said inner surfaces of said concavity and said perimetral edge of said inner surface, for at least temporarily attaching said body to an eyebrow,

at least one containment zone defined by said concavity and being adapted for at least partially accommodating an eyebrow and said adhesion means,

ornaments defined on said other side of said body, wherein said ornaments comprise ornamental motifs.

4,942,892

HAIR-CURLING DEVICE

Jill M. Hill, 264 Lowena Dr., Long Beach, Calif. 90803

Continuation of Ser. No. 161,544, Feb. 29, 1988, abandoned. This application Feb. 28, 1989, Ser. No. 317,096
Int. Cl.[5] A45D *2/20*
U.S. Cl. 132—247 **9 Claims**

1. A hair curler for use in creating Z-shaped, angular or squared curls in the hair comprising:

an elongated substantially flat main body portion;

a first end flap hinged by a thin narrow folding hinge to a first end of the main body;

a second end flap hinged by a thin narrow folding hinge to a second end of the main body;

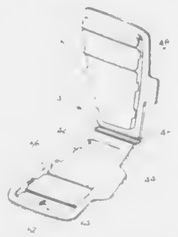
an elongated locking receptacle of generally C-shaped con-

figuration facing outwardly and extending along a free end of the first end flap; and
an elongated locking member extending along a free end of the second flap and shaped to match the contour of the locking receptacle for forming a frictional interlocking fit with the receptacle under compression;
the first and second end flaps together having a length at least that of the main body when folded back about their



respective hinges to overlie the same side of the main body, the locking member and receptacle being interlocked fictionally by compression in a snap fit when the locking member and receptacle are aligned and the end flaps then pressed downwardly toward the main body to thereby fictionally snap the locking member into engagement with the receptacle and thereby hold the device wrapped around hair in the space between the interlocked end flaps and the main body of the hair-curling device.

4,942,893
HAIR HIGHLIGHTING CAPSULE
Allan J. Trottier, 1121 Woodvale Dr., Gallatin, Tenn. 37066
Filed Aug. 3, 1988, Ser. No. 227,555
Int. Cl.[5] A45D *19/18*
U.S. Cl. 132—270 10 Claims



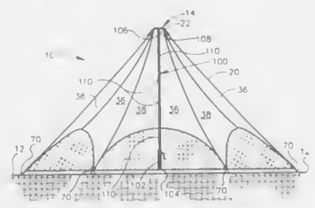
1. A hair highlighting capsule comprising:
a female side formed of a sheet of material, said sheet of material being embossed with a central cavity bounded by a cavity sidewall, said central cavity and cavity sidewall being bounded on three sides by two side lips and an end lip;
a male side formed of a sheet of material, said sheet of material being embossed with a projection bounded by a projection sidewall, said projection and projection sidewall being bounded on three sides by two side lips and an end lip, said projection of said male side being so configured to mate with said central cavity of said female side;
a hinge joining said male side and said female side, said hinge positioned such that said projection and said central cavity will register when said capsule is closed; and means being provided to the male side and to the female side for locking said projection into said cavity.

4,942,894
MULTI PURPOSE CARTRIDGE TYPE HANDLE ASSEMBLY AND TOOLS
Ming-Der Lai, No. 53-2, Lane 239, Pa Der 3rd Road, Pan Chiau City, Taipei Hsien, Taiwan
Filed Nov. 28, 1989, Ser. No. 441,981
Int. Cl.[5] A61C *15/00*; A61B *17/00*
U.S. Cl. 132—323 2 Claims



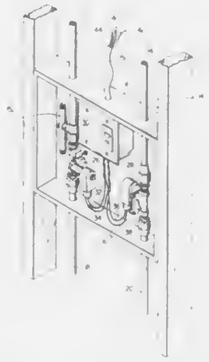
1. A multi-purpose cartridge type handle assembly, including a handle body and sanitary tool adaptor means; the handle body being composed of a body frame, a movable block wedged in the body frame, and a spring fixed between a handle head of the body frame and said movable block; the handle body being able to be assembled and disassembled with ease; sanitary tools including a tooth brush for cleaning the crevice between teeth; a tooth string, and a brush head of common tooth brush, and an operation knife; the body frame comprising said handle head and a U-shaped bracket with both ends fixed to said handle head, said handle head having one round tenon; said movable block being solid and rectangular and having a round tenon on one end and a tongue with a concave bow-shaped edge on the other end; said movable block also having a long concave slot on both sides, of which the width is closely matched with the thickness of the U-shaped bracket, but permitting the movable block to slide along the bracket; the spring having one end fitted over the round tenon of said handle head and the other end fitted over the round tenon of said movable block.

4,942,895
TENSIONED TENT STRUCTURE AND ERECTION METHOD THEREFOR
James P. Lynch, 13 S. Field, Lakewood, Colo. 80226
Filed Nov. 9, 1988, Ser. No. 268,852
Int. Cl.[5] E04H *15/00*
U.S. Cl. 135—99 30 Claims



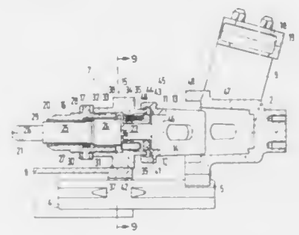
1. A tent structure adapted to be erected on a support surface to provide a sheltered space, comprising:
a flexible covering including a vertex portion and a plurality of corner portions spaced from the vertex portion, said covering configured generally in the shape of a pyramid having a polygonal base with vertices defined by said corner positions, said covering constructed of a plurality of panel sections each having a pair of said edges converging at said vertex portion and an arcuate base edge, each panel section forming a face of said pyramid with said base edges forming a peripheral edge for said covering, adjacent ones of said panel sections being connected at adjacent side edges by primary attachment seams along said primary radial lines;
an anchor means for securing each corner portion to said support surface to cover a surface area thereof;
a pole assembly positionable in an right position between said support surface and said vertex portion and having an effective length which supports said covering in an erect state with said vertex portion spaced above said support surface and with said corner portions adjacent said support surface, said arcuate base edges each extending from respective corner portions adjacent said support surface to a central location above said support surface to form an archway sized to allow ingress into and egress out of said sheltered space; and
extension and contraction means for adjustably varying the effective length of said pole assembly in order to move the vertex portion further from and closer to said support surface when said assembly is in the upright position to respectively increase and decrease tension forces between the vertex portion and the corner portions when the corner portions are anchored to the support surface whereby the covering is held taut when tension is applied to the vertex portion by the pole assembly so that the ten structure is thereby erected.

4,942,896
VALVE ASSEMBLY FOR SHOWERS
J. Michael Slusser, Arlington, Tex., assignor to Production Diagnostics, Inc.
Filed Apr. 11, 1989, Ser. No. 336,260
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—360 13 Claims



1. A valve assembly for control of water comprising:
(a) a frame;
(b) a first inlet conduit mounted on said frame;
(c) a second inlet conduit mounted on said frame;
(d) a first outlet conduit mounted on said frame;
(e) a second outlet conduit mounted on said frame;
(f) a first solenoid valve conducting said first inlet conduit with said first outlet conduit to provide opening and closing of the first passageway formed by said conduit; and
(g) a second solenoid valve connecting said second inlet conduit to said second outlet conduit to provide for opening and closing the second passageway formed by said second conduit thereby controlling flow of fluid therethrough.

4,942,897
REMOTE CONTROL AND REMOTE HANDLING ACCESSORY, ESPECIALLY FOR THE HOT ZONE OF RADIOACTIVE PLANTS
Giuseppe Radovan, Lindau; Klaus Blaseck, Ehlershausen; Lothar Hoffmeister, Hanover; Helmut Westendorf, Haste, all of Fed. Rep. of Germany; Michael J. Sandling, Prixfor, and James W. Davidson, Prixford, both of Great Britain, assignors to Xomox Limited, Devon, Great Britain, United Kingdom and Deutsche Gesellschaft Fur Wiederaufarbeitung Von Kernbrennstoffen MBH, Hanover, Fed. Rep. of Germany
Filed Jun. 9, 1986, Ser. No. 872,194
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1985, 3520541
Int. Cl.[5] F16K *27/00*
U.S. Cl. 137—454.2 8 Claims



1. A remote control handling accessory adapted for use with a pipeline comprising:
a hollow case not subject to wear and permanently secured to said line;
a plurality of elements which are subject to wear and must from time to time be removed and replaced, said elements being connected in operative arrangement and removably secured to the case;
a hollow clamping bracket pivotally secured to the case, said bracket having a first closed position at which it at least partially encloses said elements and a second open position at which it is swung away from and exposes said elements;
said elements extending along an axis which is aligned with the bracket when it is in its first position and including a central bolt which extends along said axis and can be moved back and forth along the axis,
wherein one of the elements is a cover having a hollow thread threadedly engaged by the bolt, all elements other than the bolt and cover cooperating with the cover whereby displacement of the cover along the axis will be also displace said all other elements.

4,942,898
AUTOMATIC CULVERT DIRECTIONAL FLOW CONTROL DEVICE
Frank Osowski, R.R. #2, Box 150, Oslo, Minn. 56744
Filed Jun. 19, 1989, Ser. No. 368,024
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—454.2 9 Claims

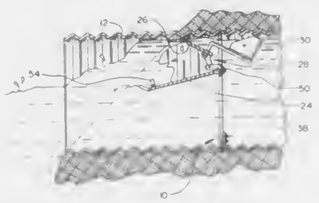
6. An automatic culvert directional flow control device designed to prevent the back flow of water in a culvert comprising:
a generally arcuate supporting member sized to tightly fit at least a portion of an inside diameter of a culvert, the culvert having an inside surface, and sized to fit inside a groove on the inside surface of the culvert;
hinge means attached horizontally across the arc of said supporting means;
normally closed upper and lower semicircularly shaped dampers pivotally attached to said hinge means and being

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in a vertical relationship one over the other when normally closed;

a counter balance attached to the upper damper,

whereby a first predetermined pressure of water bearing against the lower damper will open that damper allowing water to pass through, and where gravity closes said lower damper when the water pressure falls below said



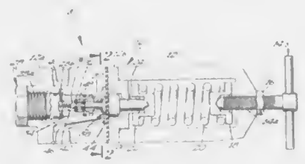
first predetermined pressure, and where a second higher predetermined pressure of water bearing against both dampers will open both dampers, said second damper being opened against the weight of the counter balance means to allow additional water to pass through, where said counter balance means close said upper damper when the water pressure falls below said second predetermined pressure.

4,942,899

CARTRIDGE PRESSURE REGULATOR

William D. Vork, Edina, and James H. Larson, Coon Rapids, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Jul. 10, 1989, Ser. No. 377,474
Int. Cl.[5] G05D *16/08*
U.S. Cl. 137—454.5 2 Claims



1. A fluid pressure regulator comprising a housing having an inlet and outlet, a diaphragm, a ball, a ball retainer, a seat, a valve actuator means for biasing said diaphragm, the improvement comprising:

a cartridge member removably retained in said housing, said ball, said ball retainer and said seat being located in said cartridge member such that said cartridge member containing said ball, said ball retainer, said seat and may all be removed from said housing, as a unit;

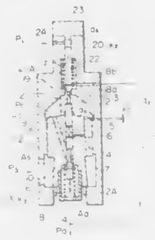
a diaphragm chamber containing said diaphragm and said actuator, said inlet connecting to said chamber and sized so as to maintain flow velocity through said regulator as a relatively high level and directing said flow through said chamber so as to continually flush said chamber, said actuator comprising a head having a diaphragm side and a stem side, said diaphragm comprising a perimeter and said actuator stem side comprises a diametral angular rib for directing flow through said chamber to said perimeter.

4,942,900

PRESSURE CONTROL VALVE

Yusaku Nozawa, Ibaraki; Kazumasa Yuasa, Tsuchiura; Wataru Ootu, and Kinya Takahashi, both of Ibaraki, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1989, Ser. No. 412,491
Claims priority, application Japan, Sep. 28, 1988, 63-243466
Int. Cl.[5] G05D *16/00*
U.S. Cl. 137—490 7 Claims



1. A pressure control valve comprising:

a valve case having an inlet section and an outlet section for hydraulic fluid as well as a signal port to which signal pressure is introduced;

a main valve element of seat type slidably accommodated in said valve case for controlling communication between said inlet and outlet sections by movement of said main valve element;

a control chamber defined within said valve case and between said valve case and an end face of said main valve element remote from said outlet section for biasing said main valve element in a valve closing direction;

a variable restrictor variable in its opening in response to the movement of said main valve element for communication between said control chamber and said inlet section of said valve case;

a first pilot line for communication between said control chamber and said outlet section of said valve case;

a first pilot valve element arranged in said first pilot line;

first valve drive means operative in response to pressure of said inlet section of said valve case for opening said first pilot valve element when the pressure of said inlet section reaches a first predetermined value;

a second pilot line for communication between said control chamber and said outlet section of said valve case:

a second pilot valve element arranged in said second pilot line; and

second valve drive means operative in response to differential pressure between the pressure of said inlet section of said valve case and said signal pressure introduced to said signal port for opening said second pilot valve element when said differential pressure reaches a second predetermined value.

4,942,901

FLUID CUTOFF DEVICE IN A FLUID LINE

Pietro Vescovini, Via Artigiani, 10/12, 41056 Medolla, (Modena), Italy

Filed Jun. 14, 1989, Ser. No. 366,800
Claims priority, application Italy, Jun. 15, 1988, 20977 A/88
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.06 8 Claims

1. A device for the connection, or cutoff, or sealed separation of two branches of a fluid line, comprising:

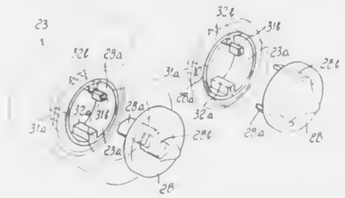
a first coupling having a central axis, a proximal end for connection to a fluid line, a generally cylindrically shaped outer body, and a hollow generally cylindrically shaped inner body with a first inner sealing surface;

a first shutter valve enclosed within said first coupling and adapted to be normally biased closed to abut against the first sealing surface to cut off fluid flow through the first coupling;

a second coupling having a central axis, a proximal end for connection to a fluid line, a generally cylindrically shaped outer body adapted to sealably translate within the inner body of said first coupling, a hollow generally cylindrically shaped inner body with a second inner sealing surface;

a second shutter valve enclosed within said second coupling and adapted to be normally biased closed against the second sealing surface to cut off fluid flow through the second coupling;

a first actuation means within said first coupling engagable with said second shutter valve and adapted to separate said second shutter valve from the second sealing surface



to open said second coupling upon sufficient translational engagement of said second coupling into said first coupling;

said first coupling having a groove in the outer body thereof which has an open distal end, and which extends from the open end thereof along a first longitudinally spiralled portion to a first lateral portion which is perpendicular to the axis of the device, then further along a second longitudinally spiralled portion to a second lateral portion which is perpendicular to the axis of the device;

said second coupling having a follower pin which extends from the proximal end thereof and is adapted to slide along the groove in said first coupling, whereby the engagement of the follower pin in the first lateral portion corresponds to a spaced apart relationship of said first and second couplings so that said first and second shutter valves are closed, and the engagement of the follower pin in the second lateral portion corresponds to a maximum mutual engagement of said first and second couplings to open at least one of said shutter valves.

4,942,902

MIXING CARTRIDGE FAUCET WITH PARTS THAT CAN APPLY PRESSURE TO THE VALVE PLATES OF HARD MATERIAL

Alfons Knapp, Biberach/Riss, Fed. Rep. of Germany, assignor to Masco Corporation, Taylor, Mich.

PCT No. PCT/US88/03087, § 371 Date May 5, 1989, § 102(e) Date May 5, 1989, PCT Pub. No. WO89/02558, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 8, 1988, Ser. No. 369,561
Claims priority, application Italy, Sep. 9, 1987, 67768 A/87; Sep. 9, 1987, 67769 A/87; Sep. 9, 1987, 67770 A/87
Int. Cl.[5] F16K *11/06*
U.S. Cl. 137—625.17 26 Claims

1. A cartridge for a mixing valve faucet that regulates the flow rate and mixing proportions of liquid from two supply inlets to said faucet, said cartridge characterized by:

a main shell;

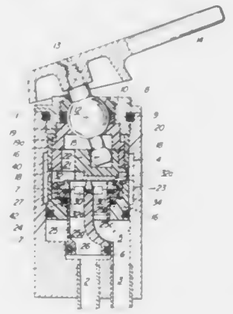
an operating mechanism mounted to said shell;

a movable valve element operably connected to said operating mechanism;

a separate seat member mounted to said shell;

said separate seat member mounting a fixed valve plate to cooperate with said movable valve element;

said separate seat member being slidably and sealably connected to the shell of the cartridge;



sealing means interposed between said shell and said separate seat member for sealing fluid from flowing therebetween;

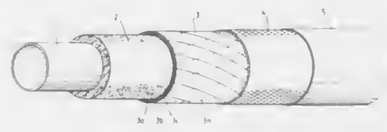
the separate seat member being constructed such that its lower extremity extends in a part of a cavity of the body of the faucet that has a reduced area in cross-section and in which one of the supply pipes is connected.

4,942,903

FIRE AND CORROSION PROTECTED HOSE

Clas T. Jacobsen, Drammen, Norway, assignor to EB Norsk Kabel a.s, Drammen, Norway

PCT No. PCT/NO88/00001, § 371 Date Sep. 8, 1988, § 102(e) Date Sep. 8, 1988, PCT Pub. No. WO88/05885, PCT Pub. Date Aug. 11, 1988
PCT Filed Jan. 5, 1988, Ser. No. 246,663
Claims priority, application Norway, Jan. 29, 1987, 870382; Mar. 25, 1987, 871253
Int. Cl.[5] F16L *35/00, 58/00*
U.S. Cl. 138—110 17 Claims



1. A bendable fire and corrosion protected hose for conducting corroding material, comprising:

an inner bendable polymeric plastic pipe constituting a means to provide corrosion resistance to the hose from said corroding material;

a layer of light, thermal insulating material covering said pipe and which normally cannot stand exposure to temperatures above about 800° C.; and

a fire resistant material provided around said insulating material and which forms a ceramic, stable fire protecting phase at temperatures above about 800° C.;

said insulating material and said fire resistant material permitting bending of said article.

4,942,904

HOLLOW SECTION, IN PARTICULAR A TUBE, OF LONG FIBRE REINFORCED PLASTIC

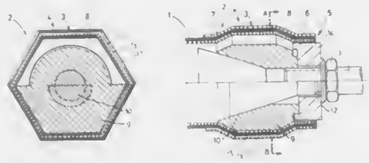
Martin Kacza, Aachen; Hartmut Rest, Langenfeld, and Eberhard Born, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 28, 1988, Ser. No. 250,079

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734343

Int. Cl.[5] F16L *55/12*

U.S. Cl. 138—89 **7 Claims**



1. Hollow section (1, 31), in particular a tube, of long fibre (15, 33) reinforced plastic, having an integrated force induction element (2,32) at least at one end thereof, the element having a jacket (3, 45) consisting of a portion of the hollow section (1,31), the jacket (3, 45) surrounding a core (9) having a tie rod (11) extending therethrough, the improvement wherein the jacket (3, 45) consists of a radial enlargement (4, 47) of the hollow section 61, 31), the enlargement extending around the periphery of the hollow section and tapering into a narrow section (6, 49) at an end (5, 48) of the hollow section (1, 31), the core (9) being in the form of an expansion element which coacts with a clamping member (10) connected to the tie rod (11), and wherein the expansion element lies in a form-fitting manner against the interior of the enlargement (4,47) over the length of said enlargement.

4,942,905

COMPOSITE HOSE CONSTRUCTION

Eiji Takemae; Masakazu Koizumi, both of Hiratsuka, and Tadashi Ishibashi, Kawaguchi, all of Japan, assignors to The Yokohama Rubber Co., Ltd. and Chiyoda Kenki Co., Ltd., both of, Japan

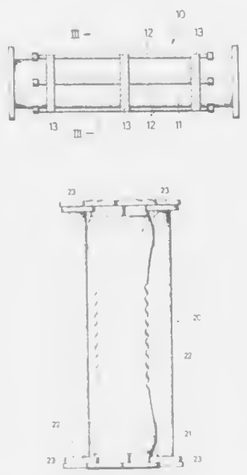
Filed Nov. 14, 1988, Ser. No. 270,326

Claims priority, application Japan, Nov. 18, 1987, 62-289632

Int. Cl.[5] F16L *11/12*

U.S. Cl. 138—118 **4 Claims**

1. A composite hose comprising a flexible main hose having a first diameter, and at least one subhose having a diameter smaller than said first diameter and having a layer of reinforcement, said subhose being disposed longitudinally over and secured integrally with said main hose by fastening means, said layer of reinforcement being oriented at a specified angle with respect to the longitudinal axis of said subhose to constitute a means to cause said main hose to bend in a predetermined direction upon the application of pressure to said subhose where said subhose laterally dilates and the overall length



thereof is reduced to bend said main hose in a predetermined direction.

4,942,906

RUBBER HOSE

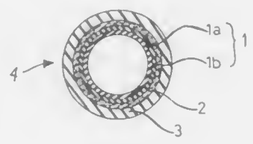
Ichiro Igarashi, Komaki, and Kazuhiko Nishimura, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed Dec. 12, 1988, Ser. No. 283,382

Claims priority, application Japan, Dec. 16, 1987, 62-319328

Int. Cl.[5] F16L *11/08*

U.S. Cl. 138—126 **6 Claims**



1. A rubber hose having:
an outer rubber tube and
an inner rubber tube located radially inwardly of said outer rubber tube,
said inner rubber tube comprising an inner layer and an outer layer located between said inner layer and said outer rubber tube,
a reinforcing fiber layer disposed between said outer rubber tube and said outer layer of said inner rubber tube such that said inner and outer rubber tubes and said reinforcing fiber layer constitute an integral tubular body,
said inner layer being formed of a first polymer blend of acrylic rubber and fluorine-contained resin, said acrylic rubber of said first polymer blend being a copolymer rubber produced by copolymerization of at least four monomers, said at least four monomers including at least one first monomer selected from a group consisting of alkyl acrylate and alkyl methacrylate, at least one second monomer selected from a group consisting of substituted-alkyl esters of acrylic acid and methacrylic acid, at least one third monomer selected from a group consisting of diene; acrylate containing dihydrodicyclopentadienyl radical and methacrylate containing dihydrodicyclopentadienyl radical; ethylenically unsaturated compound containing epoxy radical; and ethylenically unsaturated compound containing active halogen, and at least one fourth monomer selected from a group consisting of other ethylenically unsaturated compound capable of copolymerizing with said at least one first monomer, said at least one second monomer and said at least one third monomer,
said outer layer being formed of a second polymer blend different from said first polymer blend, said second polymer blend containing epichlorohydrin rubber.

4,942,907

INTAKE MANIFOLD

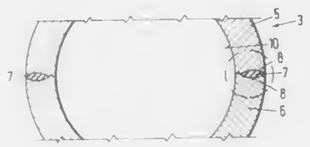
Günter Job, Kapellenweg 14, D-6460 Gelnhausen, and Wilhelm Sedimayr, An der Hammerhalde 15, D-7730 VS-Villingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 121,266, Nov. 16, 1987, abandoned. This application Jun. 9, 1989, Ser. No. 366,198

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1986, 3639219

Int. Cl.[5] F16L *9/16*

U.S. Cl. 138—157 **12 Claims**



1. A pipe for an intake manifold for use in a combustion engine, said pipe having a curved longitudinal axis and comprising at least two complementary sections defining at least one internal space; and means for bonding said sections to each other to establish a connection between said sections, said bonding means consisting of at least one connecting element containing vulcanized elastomeric material and being interposed between said sections adjacent said internal space and a coupling agent securing the connecting element to said sections, and said bonding means constituting a means for damping sound responsive vibrations in the pipe between said sections.

4,942,908

WARP TRANSFER CONTROL SYSTEM OF LOOM FOR FILLING DENSITY CHANGE

Shuichiro Imamura, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 29, 1989, Ser. No. 329,987

Claims priority, application Japan, Mar. 29, 1988, 63-75306

Int. Cl.[5] D03D *49/04*

U.S. Cl. 139—99 **9 Claims**

1. A control system of a loom, comprising:
warp transfer means for transferring warp Yarns in said loom, said warp transfer means comprising warp let-off means including first drive means for varying a warp let-off means including first drive means for varying a warp let-off rate, and fabric take-up means including second drive means for changing a fabric take-up rate of said loom to change a filling density of a woven fabric,
command means for commanding changes of said filling density in accordance with a preset filling density pattern during a normal weaving operation, and
control means for controlling said warp let-off rate and said fabric take-up rate by producing a warp let-off rate control signal representing said warp let-off rate, and a fabric take-up rate control signal representing said fabric take-up rate in such a manner that, each time a change of said filling density is commanded by said command means, said



let-off control signal is changed from a current let-off signal value to an excessive let-off signal value at a first instant, said take-up control signal is changed from a current value directly to a new take-up signal value at a second instant, and said let-off control signal is further changed at a third instant from said excessive let-off signal value to a new let-off signal value which is intermediate between said current let-off signal value and said excessive let-off signal value.

4,942,909

WEFT-FEELER WITH AUTOMATIC ADJUSTMENT OF THE DELAY TIME, FOR WEFT FEEDERS OF SHUTTLELESS LOOMS

Fiorenzo Ghiardo, Vigliano Biellese, Italy, assignor to ROJ Electrotex S.p.A., Biella, Italy

Filed Dec. 28, 1988, Ser. No. 291,306

Claims priority, application Italy, Dec. 31, 1987, 23296 A/87

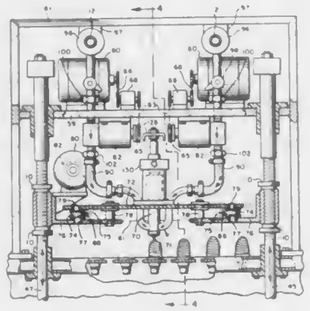
Int. Cl.[5] D03D *51/34*

U.S. Cl. 139—370.2 **4 Claims**

1. A device for detecting weft yarn breakage, said device being adapted to be positioned upstream of a weft yarn feeding and storage device in a shuttleless loom, said device comprising means for detecting weft yarn breakage during operation of a motor of the weft yarn feeding and storage device of the shuttleless loom, and means generating a loom-stoppage signal responsive to detection of a said weft yarn breakage, after a predetermined delay time T has elapsed from detection of a said breakage, wherein said signal-generating means comprises an electronic circuit including means for receiving information indicative of the speed of said motor of said weft yarn feeding and storage device, said electronic circuit automatically adjusting said delay time T in relation to said information indicative of the speed of said motor.

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4,942,910
PROCESS AND APPARATUS FOR MAKING SHAPED CONFECTIONS
Akimitsu Hamamura, Utsunomiya, Japan, assignor to Fantasy Flavors Inc., Wheaton, Ill.
Filed Nov. 7, 1986, Ser. No. 928,417
Int. Cl.[5] B65B *39/14; A23G 9/00*
U.S. Cl. 141—9 **23 Claims**



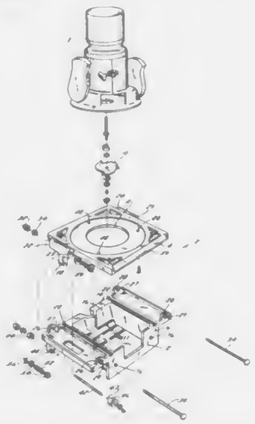
1. A process for making a shaped confection comprising the steps of:
extruding a confectionary material from a plurality of nozzles;
intermittently moving a plurality of containers to a stationary position under said plurality of nozzles for receiving the confectionary material extruded therefrom;
moving said plurality of nozzles in a vertical direction and laterally in a horizontal direction while extruding the confectionary material into the plurality of containers, whereby the plurality of nozzles move in a predetermined path and extrude a shaped confection in each of the containers in said plurality of containers.

4,942,911
HOPPER ASSEMBLIES
Abel Herbet, Paris, France, assignor to BTR Industrial Holdings, Ltd., London, England
Filed Jun. 29, 1988, Ser. No. 213,256
Claims priority, application United Kingdom, Jun. 30, 1987, 8715364
Int. Cl.[5] B65G *65/30*
U.S. Cl. 141—359 **14 Claims**



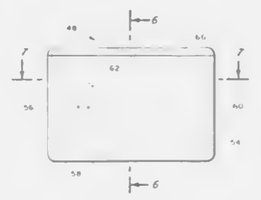
1. A hopper assembly having means defining an upwardly-facing mouth for receiving granular or powder materials; a plurality of support members extending across said mouth; a plurality of resiliently flexible baffles arrayed in a plurality of rows, each row consisting of a plurality of baffles, each said baffle being generally flat and rectangular and being fixedly mounted at, a top edge portion along said supporting member, the baffles in a row extending obliquely downwards side-by-side from respective said top edge portions to respective free edges, each baffle being flexible from said top edge to said free edge; and means for adjusting the angle of obliquity to the horizontal of the top edge portion of said baffle independently and for securing the top edge portion at a desired angle; each baffle being arranged to use to be disposed with its free edge parallel to and in the vicinity of an edge portion of another member disposed on an adjacent said support member, and being so arranged that if material is to be received by the hopper assembly falls onto any said baffle the weight of the material tends to cause the baffle to flex and the free edge of the baffle to move away from the said other member, permitting the material to fall between them, and that the baffle then tends to return resiliently to its original position, where it assists in preventing or reducing the escape of material upwards from the hopper through the mouth.

4,942,912
ROUTER ATTACHMENT
Ved P. Gakhar; Richard A. Dossett, and Wilfred M. McCord, Jr., all of Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.
Filed Jun. 6, 1989, Ser. No. 362,215
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—136 C **22 Claims**



1. A router attachment for cutting into a surface of a workpiece, comprising:
a substantially flat plate adapted to be fixed to the bottom of a router and to rest on the top surface of the workpiece for aligning the router with the workpiece both before and during cutting;
a base member defining a substantially flat front surface for abutting the face of the workpiece into which the cut is to be made both before and during cutting and having a top surface and defining a central opening in its top surface extending through the flat front surface, said central opening being large enough to receive a router bit; and
cooperating means on said substantially flat plate and said base member for mounting the flat plate on the base member to limit motion of the flat plate relative to said base member to a line perpendicular to said flat front surface so that said flat plate can start at a beginning position in contact with the top surface of the workpiece and then move along the top surface of the workpiece to control the height of the cut while permitting the router bit to plunge into the face of the workpiece, while the base member remains in fixed contact with the face of the workpiece.

4,942,913
WALLET
John A. Musso, 3737 Medea Creek, Agoura Hills, Calif. 91301
Continuation-in-part of Ser. No. 267,932, Nov. 7, 1988, abandoned. This application Jun. 5, 1989, Ser. No. 361,246
Int. Cl.[5] A45C *1/06, 11/18, 11/32*
U.S. Cl. 150—138 **1 Claim**



1. In combination with a large wallet, said large wallet having an internal article carrying compartment, a small wallet locatable within said article carrying compartment and totally confined therein, said small wallet removable from said article carrying compartment and separately carryable, said small wallet comprising:
three in number of thin-walled sheet material panels located in juxtaposition defining a first compartment and a second compartment, one of said panels forming a common wall for both said first compartment and said second compartment, said panels being of a polygonal configuration when observed flat-wise, said panels having peripheral edges including a top edge, said peripheral edges being secured together with the exception of said top edge, said top edge including a first access opening and a second access opening, said first access opening providing access into said first compartment, said second access opening providing access into said second compartment, a mating strip attachment mounted in conjunction with said second access opening, said opening, said mating strip attachment being locatable in either a closed position or an open position, said open position permitting access into said second compartment, said closed position preventing access into said second compartment, said common wall having an extension extending a spaced distance from said access opening so therefore said common wall being of a height greater than the remaining two said panels, said top edge of said remaining two said panels being lineal, said extension facilitating manual access through said access openings into and out of said first and second compartments;
the outer said panel of said first compartment being transparent with the remaining said panels being opaque; and
a divider wall located within said second compartment, said divider wall dividing said second compartment into a pair of separate compartments, one of said separate compartments being for the purpose of accommodating a conventional flat door key and the other of said separate compartment to accommodate folding currency.

4,942,914
HEAVY DUTY AND MEDIUM PNEUMATIC RADIAL TIRE
Ken Takahashi, Atsugi; Kazuyuki Kabe, Tokyo, and Tatsuo Suzuki, Hayama, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1988, Ser. No. 277,811
Int. Cl.[5] B60C *9/18, 9/28*
U.S. Cl. 152—531 **5 Claims**

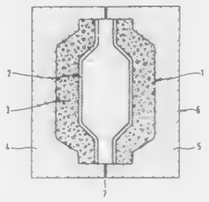
1. A pneumatic radial tire having a belt layer composed of at least three layers each made of a metallic cord and disposed between a carcass layer and a tread, wherein (1) cords constituting the second belt layer as numbered from the carcass layer towards the tread and cords constituting the third belt layer as numbered from the carcass layer towards the tread are each provided at an angle of 10° to 30° relative to the circumferential direction of the tire and cross each other, (2) the first belt layer is separated into two parts at the central region of a crown and respectively disposed on both shoulder portions, said first belt layer being provided at a cord angle of 40° to 75° relative to the circumferential direction of the tire, and (3) at least one organic fiber cord layer having a cord angle of 0° to 10° relative to the circumferential direction of the tire is provided in a circular form in the circumferential direction of the tire in a space formed by the separation into two parts of the





first belt layer between the carcass layer and the second belt layer at the central region of the crown, the total tensile strength of the cords of the organic cord layer is 240 kg/cm or more, one end of said organic fiber cord layer in the circumferential direction of the tire and the other end thereof are each diagonally cut and the cut ends are lapped on each other to form a splice in such a manner that the distance in the circumferential direction of the tire between one end in the widthwise direction of each cut end and the other end thereof is 120 mm or more, the space between said organic fiber cord layer and said carcass layer being 0.8 mm or more before vulcanization.

4,942,915
PROCESS FOR PRODUCTION OF A HOLLOW CASTING
Wilhelm Kallen, and Ulrich Quack, both of Moenchen-Gladbach, Fed. Rep. of Germany, assignors to Eisengiesserei Monforts GmbH & Co., Moenchen-Gladbach, Fed. Rep. of Germany
Filed Aug. 25, 1988, Ser. No. 236,670
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1987, 3728918
Int. Cl.[5] B22D *19/00*
U.S. Cl. 164—34 **1 Claim**



1. A process for producing a hollow metal casting, comprising the steps of:

providing a casting pattern having a foamed material body with a surface, said providing a casting pattern including forming said foamed material body in a shell mold having two halves, and an inner part having a refractory mold part covering said surface of said foamed material body; and

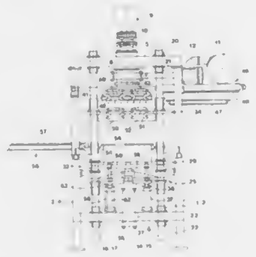
introducing a liquid metal onto said casting pattern to replace said foamed material body as said body transforms into a gas, whereby a hollow metal casting incorporating said refractory mold part is formed.

4,942,916

CORE BLOWING MACHINE

Roger W. Hale, Hinckley, and Gerald B. Senk, Jr., Cleveland, both of Ohio, assignors to Equipment Merchants International, Cleveland, Ohio

Filed Jul. 18, 1988, Ser. No. 220,082
Int. Cl.[5] B22C *9/12, 13/12, 15/22*
U.S. Cl. 164—186 **43 Claims**



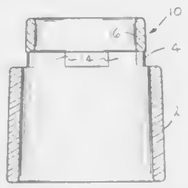
1. A vertical cope and drag foundry core blowing machine comprising an upright frame, a fixed blow head at the top of said frame, a set of guides mounted for vertical sliding movement in said frame, a cope mounting plate fixed to said guides beneath said blow head, a primary table adapted to support a drag mounted on said guides beneath said cope mounting plate for vertical sliding movement therealong, a secondary table beneath said primary table fixed to said guides, first clamp means to elevate said primary table to clamp a drag thereon against a cope to form a core box, and second clamp means to elevate said secondary table and thus said guides to clamp the core box against the blow head.

4,942,917

EXPENDABLE CASTING CORE FOR A CYLINDER

Byron W. Koch, and Robert I. Badenhope, both of Toledo, Ohio, assignors to Farley, Inc., Chicago, Ill.

Filed Jul. 11, 1989, Ser. No. 378,317
Int. Cl.[5] B22C *9/10, 9/24*
U.S. Cl. 164—369 **8 Claims**



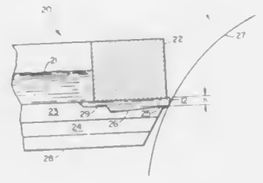
1. An expendable sand core for a jacket around a cylinder in a cylinder block, said core comprising a hollow frusto-core with a printout portion at its narrower end for locating said core in a die for casting said cylinder block.

4,942,918

CONTROLLED-FLOW FIBER CASTING

Robert E. Maringer, 815 Greenridge, Worthington, Ohio 43085

Filed Sep. 26, 1988, Ser. No. 249,618
Int. Cl.[5] B22D *11/06, 11/10*
U.S. Cl. 164—463 **15 Claims**



1. A process for directly casting fine metal fibers directly from the melt comprising

providing a cylindrical substrate having a casting region defined by a plurality of substantially parallel casting surfaces extending circumferentially therearound,

supplying melt from a tundish through a constrictor channel to an elongated orifice in the sidewalls or floor of the tundish having a length at the exit substantially larger than its height and substantially equal to the width of the casting region, and having the height aligned substantially parallel to the rotation of the casting surfaces, said constrictor channel in the tundish communicating the tundish with the orifice having a cross-sectional area smaller than the cross-sectional area of the orifice and having a dimension in the direction of the orifice length at the exit which is substantially less than the length at the exit of the orifice,

providing a meniscus of melt extending from the orifice,

rotating the cylindrical substrate such that the casting surfaces pass through the meniscus of melt and withdraw a melt layer on the casting surfaces in the casting region,

cooling the cylindrical substrate to solidify the layer of melt into fibers on the casting surfaces, and

removing the fibers from the casting surfaces.

7. A tundish for delivering molten metal under low pressure to a casting region on a rotatable, cylindrical substrate, the tundish comprising sidewalls and a floor defining a reservoir for molten metal, an elongated orifice in the sidewalls or floor of the tundish, and a constrictor channel in the tundish communicating the reservoir with the orifice, wherein said orifice has a length at the exit substantially larger than its height and substantially equal to the width of the casting region and having its height aligned substantially parallel to the direction of rotation of the cylindrical substrate, and wherein the constrictor channel has a cross-sectional area less than the orifice and a dimension in the direction of the orifice length at the exit which is substantially less than the length at the exit of the orifice.

4,942,919

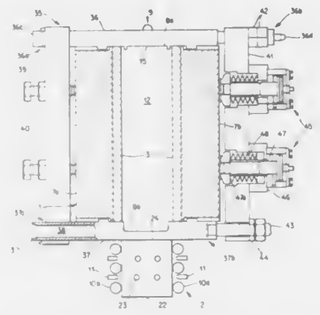
MOLD AND SUPPORT ZONE FOR CONTINUOUS CASTING

Michael Poran, Westwood; Carl Langner, Monsey, and Shlomo Hury, Woodcliff Lake, all of N.J., assignors to SMS Concast, Inc., Montvale, N.J.

Continuation of Ser. No. 157,292, Feb. 17, 1988, abandoned.
This application Mar. 17, 1989, Ser. No. 325,081
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—420 **16 Claims**

1. A continuous casting apparatus, comprising wall means

defining a mold cavity having two ends which are spaced from one another along a predetermined direction, one of said ends constituting an inlet for molten material and the other of said ends constituting an outlet for at least one continuously cast strand of the material; strand support means including a first strand support zone arranged to be located immediately downstream of said cavity and defining a strand guide channel designed to extend along said predetermined direction in substantial alignment with said cavity; a dividing wall designed to be removably mounted in said cavity so as to extend along said predetermined direction and thereby divide said cavity into a



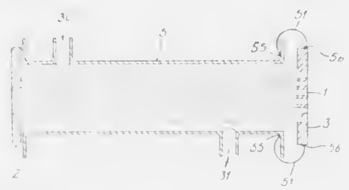
pair of substantially parallel casting passages; a partition designed to be removably positioned in said channel so as to extend along said predetermined direction in substantial alignment with said dividing wall and thereby divide said channel into a pair of substantially parallel guide passages, said partition being designed to extend along at least the major part of said channel; and clamping means designed to be removably mounted on said wall means so as to exert clamping pressure on the same, said clamping means being designed to carry said dividing wall and to clamp the latter in said cavity, and said clamping means further being designed to carry said partition.

4,942,920

HEAT EXCHANGER LEAK DETECTION

Raymond J. Chalifoux, and John Kozachuk, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Apr. 27, 1989, Ser. No. 343,601
Claims priority, application Canada, Jun. 16, 1988, 569673
Int. Cl.[5] G01M *3/28, 3/22;* F28F *11/00*
U.S. Cl. 165—1 **5 Claims**



1. A process to detect leaks in a partially disassembled floating head exchanger having a shell body, a floating head tube sheet and a floating head gap, said process comprising:

(i) attaching a lightweight highly flexible film or fabric membrane having low gas permeability to the perimeter of said floating head tubesheet with first membrane attachment means and to the outside of said shell body with second membrane attachment means, such that said membrane forms a continuous envelope which encloses said floating head gap but which does not cover the exterior end face of said floating head tube sheet, and

(ii) introducing pressurized gas into the shell such that said membrane is exposed to a gauge pressure of at least 2 pounds per square inch but less than 40 pounds per square inch, and

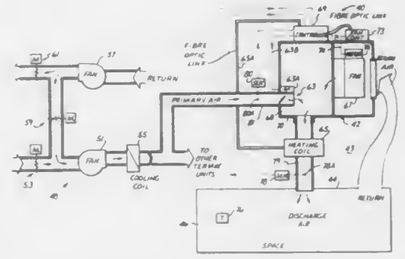
(iii) observing the exterior end face of said tubesheet for the presence of gas leakage.

4,942,921

FORCED AIR VENTILATION SYSTEM

David L. Haessig, Poway; Jamshid Hamidi, and Roger V. Hort, both of San Diego, all of Calif., assignors to Staefa Control Systems, Inc.

Filed Jan. 29, 1988, Ser. No. 150,247
Int. Cl.[5] G05D *23/00*
U.S. Cl. 165—16 **19 Claims**



1. A ventilation system for supplying conditioned low temperature primary air under pressure to a space, comprising:

sensing means for measuring continuously the quantity of primary air currently available for entering the space, the temperature of the air in the space, and the volume of air entering the space;

damper means for supplying a desired quantity of the currently available primary air under pressure to the space;

motive means for supplying a desired quantity of return air under pressure substantially continuously and uninterruptably to the space to condition the air therein;

signal means responsive to said sensing means for generating a pair of signals indicative of a desired quantity of return air conveyed from the space and a desired quantity of the currently available primary air under pressure needed to control the condition of the air in the space;

means for conveying return air from the space to said motive means;

primary air control means responsive to one of said signals for causing said damper means to vary continuously the quantity of currently available primary air under pressure for entering the space relative to the temperature in the space;

return air control means responsive to the other one of said signals for causing said motive means to vary continuously the flow rate of said return air under pressure in a functionally related manner relative to the quantity of available primary air currently needed to condition the air in the space; and

means responsive to said sensing means for causing said signal means to vary said signals substantially continuously and in a functionally related manner relative to the temperature in the space and the flow rate of the currently available primary air under pressure.

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4,942,922

WELDED CORROSION-RESISTANT FERRITIC STAINLESS STEEL TUBING HAVING HIGH RESISTANCE TO HYDROGEN EMBRITTLEMENT AND A CATHODICALLY PROTECTED HEAT EXCHANGER CONTAINING THE SAME

Lawrence S. Redmerski, McKees Rocks; Kenneth E. Pinnow, Pittsburgh, and John J. Eckenrod, Coraopolis, all of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1988, Ser. No. 259,520
Int. Cl.[5] F28F 21/08
U.S. Cl. 165—134.1 24 Claims

19. A heat exchanger handling chemical media containing hydrogen sulfide or nascent hydrogen and fitted with welded corrosion-resistant ferritic stainless steel tubing having high resistance to hydrogen embrittlement, said tubing consisting essentially of, in weight percent,

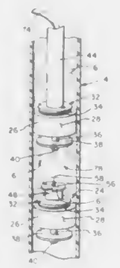
carbon at least 0.002,
nitrogen at least 0.002,
carbon plus nitrogen, 0.02 max.,
chromium 23 to 28,
manganese up to 1,
nickel 1 to 4,
silicon up to 1,
phosphorus up to 0.04,
sulfur up to 0.02,
molybdenum 2 to 5,
aluminum up to 0.1,
columbium 0.6 max. with columbium being at least equal to eight times carbon plus nitrogen, and balance iron and incidental impurities.

4,942,923

APPARATUS FOR ISOLATING A TESTING ZONE IN A BORE HOLE SCREEN CASING

Marvin D. Geeting, 5524 Cresthill Dr., Fort Wayne, Ind. 46804

Filed May 4, 1989, Ser. No. 347,504
Int. Cl.[5] E21B 33/124, 49/08
U.S. Cl. 166—250 19 Claims



1. An apparatus for isolating a testing zone in a bore hole screen casing, said apparatus comprising:

lower plug means selectively placeable within the screen casing at a first selected point along the longitudinal length thereof for fluidly sealing the screen casing thereat and preventing fluid flow upwardly or downwardly through the screen casing;

upper plug means being detached from said lower plug means and selectively placeable independent of said lower plug means within the screen casing at a second selected point along the longitudinal length thereof above said lower plug means for fluidly sealing the screen casing thereat and preventing fluid flow upwardly or downwardly through the screen casing, whereby an isolated test zone is defined between said lower and upper plug means;

said upper plug means having a bore therethrough in communication with said defined isolated test zone; and,

fluid conduit means communicating with said isolated test zone through said upper plug means bore and extending out of the screen casing for accessing said defined isolated test zone.

4,942,924

LINER SETTING ASSEMBLY AND METHOD

Stewart M. Duncan, Jalan Nimur Raya No. 15, Tanah Kusir, Jakarta, Indonesia

Filed Feb. 13, 1989, Ser. No. 310,548
Claims priority, application United Kingdom, Feb. 12, 1988, 8803287; Nov. 1, 1988, 8803287
Int. Cl.[5] E21B 23/00, 33/14
U.S. Cl. 166—290 10 Claims



8. A method of setting a liner into a casing string, the casing string being secured in a borehole, the method comprising:

(a) slidably fitting over the liner a first component and a second component, the first component having an outer peripheral wall, the first component having a first plurality of engaging devices disposed on the outer peripheral wall, the second component partially receiving the first component, the second component having a second plurality of engaging devices, each engaging device of the second plurality having a first surface and a second surface, the first surface engaging one of the first plurality of engaging devices;

(b) inserting the liner into the casing string, the liner having the first and second components fitted thereover;

(c) engaging the second surfaces of the engaging devices of the second plurality with the casing string at a preselected depth;

(d) introducing a bonding constituent into the borehole via the liner; and

(e) reciprocating the liner after the second surfaces of the engaging devices have been engaged with the casing string to enhance bonding of the liner to the borehole.

10. A liner setting assembly for use in setting a liner into a casing string being disposed in a borehole, the assembly comprising:

(a) a first component for slidably fitting over the liner to be set, the first component having outer peripheral walls, the first component having a first plurality of engaging devices disposed on the outer peripheral walls, the first plurality of engaging devices having engaging surfaces;

(b) a second component being adapted to receive the first component, the second component having a second plurality of engaging devices, each engaging device of the second plurality having a first surface and a second surface, the first surface being engageable with a corresponding first surface of the first plurality of engaging devices, the second surface being engageable with the casing string; and

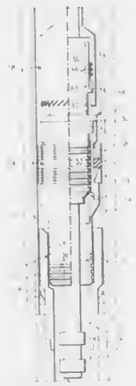
(c) means for permitting the liner to be reciprocatable within the borehole while the second component is set in the casing string.

4,942,925

LINER ISOLATION AND WELL COMPLETION SYSTEM

Daniel J. Themig, Oklahoma City, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 21, 1989, Ser. No. 396,563
Int. Cl.[5] E21B 23/00, 23/06, 33/129
U.S. Cl. 166—382 16 Claims



5. Apparatus for isolating the annulus around a wellbore liner and for achieving down-hole completion in a wellbore which transverses various earth formations, which comprises:

a first string of pipe positioned in said wellbore to serve as a liner for a first portion of said wellbore, said first string of pipe having an axial bore therethrough, the lower end of said first string of pipe being above the bottom of said wellbore,

a second string of pipe, means for hanging said second string of pipe from within the bore of the lower portion of said first string of pipe to serve as a liner for a second portion of said wellbore, said second portion extending downwardly from the lower end of said first string of pipe, said second string of pipe having an axial bore therethrough, the outer diameter of said second string of pipe being less than the inner diameter of the bore of said first string of pipe,

a tubular member extending upwardly from a first position within the bore of said second string of pipe to a second position within the bore of said first string of pipe above the upper end of said second string of pipe,

at least one first annular seal between a lower portion of said tubular member, located within said second string of pipe, and the interior surface of the bore of the laterally adjacent portion of said second string of pipe,

at least one second annular seal between an upper portion of said tubular member, located above said second string of pipe, and the interior surface of the bore of the laterally adjacent portion of said first string of pipe,

a third string of pipe positioned within the bore of said first string of pipe, said third string of pipe having on the lower end thereof an on-off tool, a latch and seal assembly connected to the lower end of said on-off tool, and a tailpipe extending downwardly from said latch and seal assembly, said latch and seal assembly being positioned within said tubular member, and said tailpipe extending at least partially into the bore of said second string of pipe,

said latch and seal assembly releasably securing said latch and seal assembly to said tubular member and providing a fluid seal for the annulus between the interior surface of tubular member and the exterior surface of said latch and seal assembly.

9. A method of isolating the annulus around a wellbore liner and for achieving downhole completion in a wellbore which transverses various earth formations, which comprises:

installing a first string of pipe in said wellbore to serve as a liner for a first portion of said wellbore, said first string of pipe having an axial bore therethrough, the lower end of said first string of pipe being above the bottom of said wellbore,

hanging, from within the lower portion of said first string of pipe, a second string of pipe to serve as a liner for a second portion of said wellbore, said second portion extending downwardly from the lower end of said first string of pipe, said second string of pipe having an axial bore therethrough, the outer diameter of said second string of pipe being less than the inner diameter of the bore of said first string of pipe,

positioning a tubular member so that it extends upwardly from a first position within the bore of said second string of pipe to a second position within the bore of said first string of pipe above the upper end of said second string of pipe,

providing an annular seal between a lower portion of said tubular member, located within said second string of pipe, and the interior surface of the bore of the laterally adjacent portion of said second string of pipe,

providing an annular seal between an upper portion of said tubular member, located above said second string of pipe, and the interior surface of the laterally adjacent portion of said first string of pipe,

lowering through the axial bore of said first string of pipe a third string of pipe, having on the lower end thereof an on-off tool, a latch and seal assembly connected to the lower end of said on-off tool, and a tailpipe extending downwardly from said latch and seal assembly, until said latch and seal assembly is positioned within said tubular member and said tailpipe extends at least partially below the bore of said tubular member, and

activating said latch and seal assembly to releasably secure said latch and seal assembly to said tubular member and to provide a fluid seal for the annulus between the interior surface of tubular member and the exterior surface of said latch and seal assembly.

4,942,926

DEVICE AND METHOD FOR CARRYING OUT OPERATIONS AND/OR MANIPULATIONS IN A WELL

Jacques Lessi, Maule, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

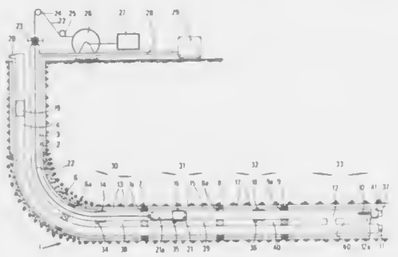
Filed Jan. 27, 1989, Ser. No. 302,333
Claims priority, application France, Jan. 29, 1988, 88 01089
Int. Cl.[5] E21B 23/00, 43/12, 43/14
U.S. Cl. 166—385 22 Claims

1. Method for carrying out at least one of operations and manipulations such as measurements in a well having a casing means with a smaller diameter than a diameter of the well, the well being drilled into geological formations and having at least two distinct producing zones, the method comprising the steps of:

equipping each of said at least two producing zones of the well with at least one of an instrument means and tool means for performing said at least one of said operations and manipulations;

equipping said casing means with a first connector means usable in a liquid medium;

connecting the at least one of said instrument means and tool means to said first connector means by line means;
equipping a transmission cable means with a second connector means adapted to be connected to said first connector means;
introducing said transmission cable means into said casing means;



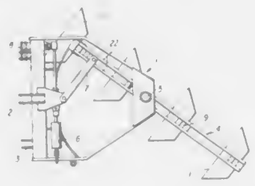
moving said second connector means until said second connector means cooperates with said first connector means; and
carrying out said at least one of said operations and manipulations by controlling said at least one of said operations and manipulations by controlling said at least one of said tool means and instrument means by said transmission cable means.

4,942,927
ADJUSTABLE SUGAR BEET HARVESTER LIFTER WHEEL FILLER SPOKES
Craig P. Halfmann, Rte. 2 - P.O. Box 215, Stephen, Minn. 56757-0215
Filed Jun. 27, 1989, Ser. No. 372,048
Int. Cl.[5] A01D *25/04*
U.S. Cl. 171—58 13 Claims



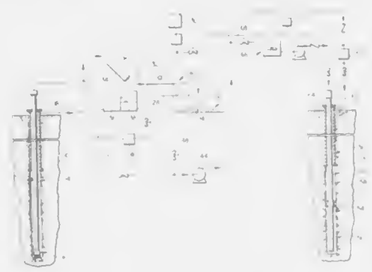
9. A lifter wheel filler spoke assembly comprising:
a ring plate;
a plurality of filler spokes attached to the ring plate, the filler spokes being spaced equally about the outside perimeter of the ring plate, and
a plurality of fastening slots means provided in said ring plate for receiving fastener means for permanently fastening the lifter wheel filler spoke assembly to a lifter wheel in a fixed open or closed position.

4,942,928
BIDIRECTIONAL MOLDBOARD PLOW WITH ADJUSTABLE TILTING MECHANISM
Pompeyo B. Gomez, Monterrey, Mexico, assignor to Industrias John Deere, S.A. de C.V., Nuevo Leon, Mexico
Continuation-in-part of Ser. No. 36,430, Apr. 9, 1987, Pat. No. 4,800,963. This application Oct. 24, 1988, Ser. No. 261,312
Claims priority, application Mexico, Apr. 9, 1986, 2115
Int. Cl.[5] A01B *3/40*
U.S. Cl. 172—219 13 Claims



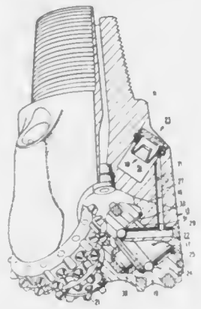
1. A moldboard plow comprising:
a hitching frame having a first and second hitching plate;
a moldboard frame connected to said hitching frame;
a plurality of moldboards fastened to said moldboard frame, said moldboards being bidirectional and being attached to said moldboard frame such that they are rotationally rigid relative to the moldboard frame; and
an adjustable tilting means mounted on said hitching frame for tilting said hitching frame about a generally longitudinal axis.

4,942,929
DISPOSAL AND RECLAMATION OF DRILLING WASTES
Edward Malachosky, Coppell, Tex., and Donna M. Lantero, Anchorage, AK. assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 13, 1989, Ser. No. 322,585
Int. Cl.[5] E21B *21/06*
U.S. Cl. 175—66 12 Claims



1. A method for minimizing drilling wastes formed during the drilling of a wellbore into the earth including reclaiming selected solids of a first selected size and comprising gravel entrained in a drilling fluid and disposing of certain other solids entrained in said drilling fluid, said method comprising the steps of:
conducting drilling fluid from said well being drilled including entrained solids forming drilling cuttings to screening means, screening solids of said first selected size and comprising gravel from said drilling fluid and reclaiming said gravel;
separating said other solids forming a slurry containing said other solids, from said drilling fluid;
forming a slurry containing said other solids,
providing an injection well into an earth formation and defining a wellbore space; and
conducting said slurry to said injection well and injecting said slurry into said wellbore space.

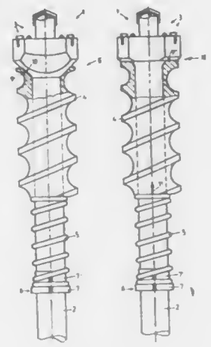
4,942,930
LUBRICATION SYSTEM FOR AN EARTH BORING DRILL BIT AND METHODS FOR FILLING AND RETROFIT INSTALLING THEREOF
Stuart C. Millsapps, Jr., Houston, Tex., assignor to Cummins Engine Company, Inc., Columbus, Ind.
Filed Feb. 28, 1989, Ser. No. 316,770
Int. Cl.[5] E21B *10/24*
U.S. Cl. 175—228 14 Claims



1. Lubrication system of an earth boring drill bit of the type having a bit body, cutters depending from the bit body and rotatably mounted on bearings, a lubricant reservoir formed in said bit body, lubricant passage means for supplying lubricant from the reservoir to the bearings of the cutters, a cap sealed in the top of said reservoir, a folded wall-type, cup-like flexible diaphragm supported at one end by said cap and mounted so that the opposite unsupported end extends from said cap into said lubricant reservoir to contact lubricant disposed in said reservoir at a first side of the flexible diaphragm, and vent means provided in said cap for admitting well bore fluid into contact with said flexible diaphragm at a second, opposite, side thereof from that contacting the lubricant in the reservoir; wherein said cap has a recess that is peripherally bounded by an inner wall, the diameter of the recess being reduced relative to the diameter of the lubricant reservoir; and wherein an open end of said flexible diaphragm is sealingly mounted within said recess against said inner wall so as to extend into said reservoir with a sufficient peripheral clearance between the folded wall of the diaphragm and the reservoir so as to prevent damage to the diaphragm by expansion thereof, in use, against sharp edges of the reservoir.

8. Method of filling a lubrication system of an earth boring drill bit of the type having a bit body, cutters depending from the bit body and rotatably mounted on bearings, a lubricant reservoir formed in said bit body, lubricant passage means for supplying lubricant from the reservoir to the bearings of the cutters, a cap sealed in the top of said reservoir, a folded wall-type, cup-like flexible diaphragm mounted so as to extend from said cap into said lubricant reservoir so as to contact lubricant disposed in said reservoir at a first side of the flexible diaphragm, and vent means provided in said cap for admitting well bore fluid into contact with said flexible diaphragm at a second, opposite, side thereof from that contacting the lubricant in the reservoir, comprising the steps of:
(A) sealingly mounting a lubricating plug, having a through hole and an external configuration matched to that of the cap and diaphragm, within the reservoir;
(B) evacuating air from the lubricating system via a hose coupled to said through hole, and then filling the lubrication system with lubricant via said hose to a lubricant pressure of approximately 250 p.s.i.;
(C) removing said plug from said reservoir;
(D) filling a recess formed in a bottom end of the folded wall diaphragm with lubricant and mounting it on a shoulder ring; and
(E) sealingly mounting said cap in said reservoir with said diaphragm compressed against said shoulder ring and extending into said reservoir from said cap.

4,942,931
DRILLING TOOL HAVING FRICTIONALLY ROTATABLE DRILLING HEAD
Bernhard Moser, Altshausen, Fed. Rep. of Germany, assignor to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany
Filed May 31, 1989, Ser. No. 359,635
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820697
Int. Cl.[5] E21B *10/44, 17/22*
U.S. Cl. 175—323 10 Claims



1. A drilling tool comprising:
a drill shank having first and second ends;
a drill head at said first end of said drill shank;
an interchangeable conveying helix disposed between said drill head and said second end of said drill shank, said conveying helix including a friction forming contact surface for axially supporting said drill head;
a spring supporting device attached to said drill shank at a location remote from said first end; and
a spring disposed between said conveying helix and said spring supporting device and pre-loading said conveying helix for forcing the contact surface of said helix against said drill head for frictionally engaging said helix and said drill head.

4,942,932
AUGER DRILLING SYSTEM
Ross W. Bracewell, 5060 Chestnut Street, Pierrefonds (Montreal), Quebec, Canada
Filed Jan. 30, 1989, Ser. No. 302,917
Int. Cl.[5] E21B *17/22*
U.S. Cl. 175—323 19 Claims

1. An auger for use in drilling into the earth under rotative movement in one direction of rotation, the auger having a cylindrical stem and a helical flight extending along the length of the stem, the helical flight being defined by adjacent seg-

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ments of opposite flight orientation, the flight being broken 180° where it switches from one direction to the other and



being joined to form a wedge in the direction of rotation when it switches from the other direction back to the first.

4,942,933

RELATING TO ROTARY DRILL BITS

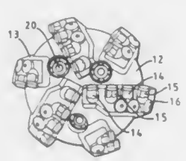
John D. Barr, and Michael T. Wardley, both of Gloucestershire, England, assignors to Reed Tool Company, Ltd., Dyce, Northern Ireland

Continuation-in-part of Ser. No. 129,943, Nov. 25, 1987, abandoned, which is a continuation of Ser. No. 931,647, Nov. 17, 1986, abandoned. This application Sep. 29, 1988, Ser. No. 250,930

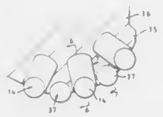
Claims priority, application United Kingdom, May 6, 1988, 8810751

Int. Cl.[5] **E21B** *10/46*

U.S. Cl. 175—329 **13 Claims**







1. A rotary drill bit for use in drilling or coring holes in subsurface formations comprising a bit body having a shank for connection to a drill string, a plurality of cutter assemblies mounted at the surface of the bit body, and a passage in the bit body for supplying drilling fluid to the surface of the bit body for cooling and cleaning the cutter assemblies, at least some of said cutter assemblies each comprising a cutting portion on a mounting body which is received in a socket in the bit body, the mounting body having a centerline disposed at an angle to the normal direction of forward movement of the cutter assembly in use of the bit, and at least three of the cutter assemblies being disposed closely adjacent one another in a row extending generally radially along the bit body, each two adjacent cutter assemblies in said row of at least three having the centerlines of their mounting bodies inclined at different angles to said normal direction of forward movement thereof as measured in planes parallel to said direction.

4,942,934

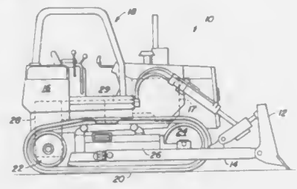
BELTED CRAWLER HAVING AUXILIARY DRIVE WHEEL

Kevin J. Moriarty, Davenport, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 17, 1988, Ser. No. 169,528

Int. Cl.[5] **B62D** *11/04*

U.S. Cl. 180—6.48 **20 Claims**



1. A crawler vehicle comprising:
a frame;
a power unit secured to the frame;
a main drive wheel connected to the frame;
an auxiliary drive wheel connected to the frame;
an endless belted track operatively engaging both drive wheels for propelling said vehicle;
a transmission for operatively coupling the power unit to the main drive wheel for driving the main drive wheel at a speed;
a pump operatively coupled to the power unit providing a fluid output;
a fluid motor operatively coupled to the auxiliary drive wheel, the fluid motor is fluidically coupled to the pump; and
a controller for controlling the fluid output of the pump so that the fluid motor drives the auxiliary drive wheel at a percentage of the speed for the main drive wheel that is different than the speed of the main drive wheel.

4,942,935

AUXILIARY POWER STEERING SYSTEM

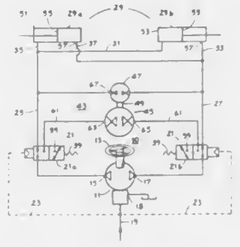
Richard J. Lech, Lockport, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 14, 1989, Ser. No. 380,000

Int. Cl.[5] **B62D** *5/30, 5/06*

U.S. Cl. 180—133 **14 Claims**

1. An auxiliary system for steering a vehicle including:
a power steering unit coupled to a vehicle steering wheel, said steering unit thereby made capable of being manually powered by a vehicle operator for providing a supply of fluid at a first pressure;
valve means connected between said steering unit and a pressure intensification device for selectively providing motive power to said device;
actuator means connected between said device and wheels of a vehicle for steering movement thereof;
said intensification device being powered for rotation by said fluid at said first pressure when said steering unit is manually powered, said device thereby delivering hydraulic fluid to said actuator means at a second pressure for steering said vehicle.



4,942,936

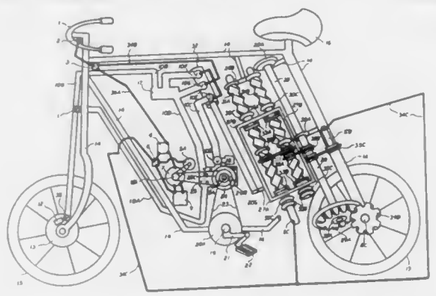
ELECTROHYDRAULIC/AIR BIKE

Elmer W. Gardner, Jr., P.O. Box 39463, Cincinnati, Ohio 45239

Filed Feb. 12, 1988, Ser. No. 156,910

Int. Cl.[5] **B62M** *23/02*

U.S. Cl. 180—207 **1 Claim**



1. A two wheeled motor and occupant propelled vehicle having a fluid power system driven by the occupant and an electric motor and also including means for recovery of kinetic energy comprising:
a pump for pressurizing a working fluid in an accumulator and to provide power to drive the vehicle;
a pedal crank and pulley journalled to the vehicle frame for operating said pump;
a D.C. electric motor and battery operatively connected for additionally driving said pump and providing regenerative braking;
a flywheel capable of storing potential energy operatively connected to said pump;
an alternator connected to said flywheel for charging said battery;
a cylinder motor connected by solenoid valves and conduits to said pump for receiving pressurized working fluid controlled by said solenoid valves;
a piston rod in said cylinder motor providing a reciprocating linear power output;
a pair of worm screw gears each including a worm screw journalled for rotation to the said vehicle frame and rectangular or square gear elements arranged in circumference around and engaging said worm screw for reciprocation therealong thus imparting rotation to said worm screw;
clutch means for selective engagement of said rectangular or square gears to said worm screws connected to said piston rod for linear reciprocation therewith;
An output shaft connected for rotation by said worm screw gears and to a wheel to drive the vehicle;
electric circuit means deriving power from said battery for selective control of said D.C. electric motor; for selective control of said solenoid valves, and for selective control of said clutch means during acceleration, deceleration and braking; and brake means on a wheel of said vehicle for receiving working fluid from said accumulator.

4,942,937

LOCKING DEVICE FOR A GEARSHIFT LEVER

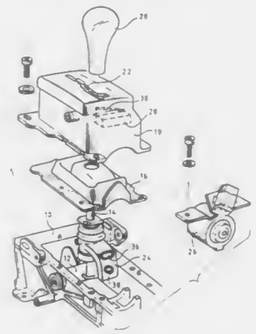
Franz Amberger, Altmannstein, and Wilhelm Bois, Gaimersheim, both of Fed. Rep. of Germany, assignors to Audi AG, Fed. Rep. of Germany

Filed Mar. 13, 1989, Ser. No. 322,370

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835946

Int. Cl.[5] **B60K** *20/00, 41/06*

U.S. Cl. 180—271 **7 Claims**



1. Apparatus for an automatic transmission including:
a gearshift lever movable into various positions to effect different operating and drive conditions of said transmission;
an electrically excitable locking device for locking said gearshift lever in a park position;
a sensor switch for monitoring the position of said gearshift lever and being responsive to movement of said gearshift lever from said park position for electrically exciting said locking device to lock said gearshift lever in said park position.

4,942,938

SPACE UNIT FOR THE RECORDING AND/OR REPRODUCTION OF ACOUSTIC SIGNALS

Thomas Wiegel, Wielandstrasse 13, 1000 Berlin 41, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 87,773

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628590

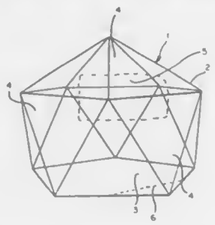
Int. Cl.[5] **E04B** *1/99*

U.S. Cl. 181—30 **11 Claims**

1. A transportable, acoustical space cell (1, 10) for containing sound produced therein, said space cell adapted to be installed in closed rooms or out of doors for surrounding at least one of a means for recording sounds or a means for reproducing sounds, said space cell being closed on all sides and comprising a structure of truncated icosahedral configuration, said space cell being larger in size than a hemi-hedron, said truncated icosahedral structure having an interior volume and interacting with the sound existing in said cell to form a sound field within said space cell in which an ideal mixture of directly

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transmitted sound characteristics reflected sound characteristics, and sound characteristic resulting from resonance of the structure occur, said sound field occupying approximately



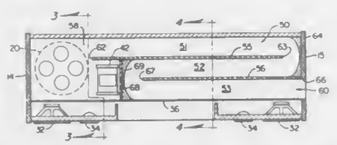
30% and 70% of the interior volume of said space cell and being located substantially at a center of said space cell, said recording means or reproducing means being locatable within said sound field.

4,942,939

SPEAKER SYSTEM WITH FOLDED AUDIO TRANSMISSION PASSAGE

Stanley N. Harrison, 6466 E. Ponderosa Dr., Parker, Colo. 80134

Filed May 18, 1989, Ser. No. 353,540
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—156 **17 Claims**



1. A modular loudspeaker cabinet comprising an elongated enclosure having a plurality of external walls, a woofer for generating sound over a predetermined frequency range mounted internally of said enclosure in one wall thereof in facing, open communication with an opening in said one wall of said enclosure, and an outlet sound port positioned in spaced relation to said driver element in another wall of said enclosure remote from said woofer, baffles extending in equally spaced parallel relation to one another within said enclosure to divide said enclosure into a plurality of communicating folded tubular passage sections extending from open communication with said woofer internally of said enclosure to terminate in said sound outlet port; and a heat sink provided between said woofer and said outlet port whereby air pulses generated by said woofer will cool said heat sink.

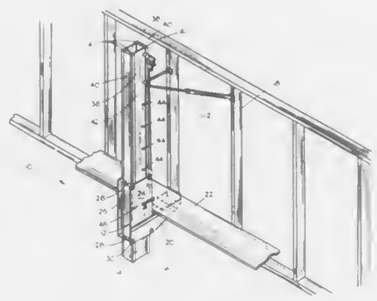
4,942,940

SCAFFOLD JACK

Patrick E. Boeshart, R.R. 1, Box 134, Sioux City, Iowa 51108

Filed Jul. 15, 1988, Ser. No. 219,214
Int. Cl.[5] E04G *1/20, 5/04*
U.S. Cl. 182—82 **14 Claims**

1. In combination:
- a vertically oriented post for supporting a jack and a working platform;
- said post being formed from a pair of parallel and spaced-apart truss joists having spacers therebetween, each truss joist including a web portion connecting a pair of parallel flange portions;
- said post having an upper end and a lower end, and said web portions forming a pair of opposing sides, the sides having a plurality of vertically-spaced and vertically-aligned apertures therein, the apertures in said opposing sides being horizontally aligned to receive a portion of a pawl for supporting a platform above the ground; and
- a jack for supporting a working platform above the ground, comprising:
  - a jack housing operably connected to said post for vertical movement thereon; and



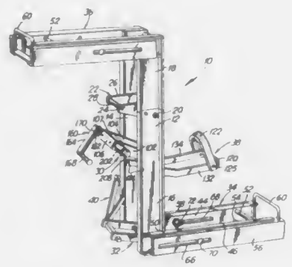
operable pawl means mounted on said housing, located to correspond with said web apertures in at least one side of said post, and operable for selective journaling in said apertures to prevent downward movement of said housing on said post when said pawl is journaled in an aperture.

4,942,941

ANTI-SPIN HANDLE FOR PUMP JACK

Carl Anderson, c/o Alum-A-Pole Corporation, P. O. Box 030066, Staten Island, N.Y. 10303-002

Filed Oct. 25, 1988, Ser. No. 262,465
Int. Cl.[5] A63B *27/00*
U.S. Cl. 182—136 **24 Claims**



1. A pump jack arranged for traveling up and down a pole, comprising:
- a frame member;
- a lower shackle member and an upper shackle member both supported on said frame member; and

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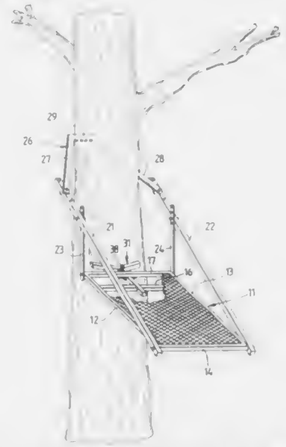
4,942,942

WEDGING TREE STAND

Ralph E. Bradley, 219 Mobile St., Aberdeen, Miss. 39730

Continuation-in-part of Ser. No. 177,185, Apr. 4, 1988, abandoned. This application Dec. 12, 1988, Ser. No. 282,754
Int. Cl.[5] A45F *3/26;* **A01M** *31/02*
U.S. Cl. 182—187 **6 Claims**

1. Apparatus for supporting a person at a selected height in a tree in the form of a sit and climb tree stand having a pair of independent assemblies positionable in spaced relation on a tree, each assembly comprising:
- (a) a generally rectangular frame extending from one side of the tree, said frame having a plurality of rigid tubular members extending longitudinally and transversely therein;
- (b) a platform member affixed to said frame for supporting a person thereon;



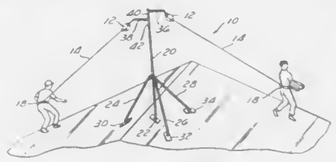
- (c) a tree engaging bar in the form of a V having a pair of spaced apart legs offset from each other, said legs releasably attached to said frame such that said legs receive a tree of variable diameter in wedging engagement therebetween and support said frame therefrom; and
- (d) means for urging said frame outwardly from said tree in selectable increments to position said platform in a generally horizontal plane.

4,942,943

ROOFING SAFETY DEVICE

Brian J. Flaherty, Tustin, Calif., assignor to Davey Roofing, Inc., Irvine, Calif.

Continuation of Ser. No. 352,123, May 15, 1989, abandoned, which is a continuation of Ser. No. 213,772, Jun. 30, 1988, Pat. No. 4,852,692. This application Nov. 28, 1989, Ser. No. 443,069
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—231 **11 Claims**



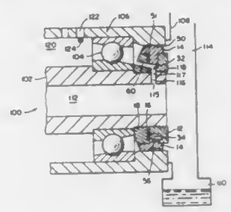
1. A roofing safety device, comprising:
- an axially elongated support member, having a top end and a bottom end;
- at least one safety mechanism attached to said support member, said safety mechanism attachable to a worker on a roof so as to prevent said worker from falling off said roof;
- at least three axially elongated elements for bracing or stabilizing said support member, each having an inner end and an outer end, said inner end attached to said support member; and
- at least three feet, one foot being secured to each of said outer ends of said axially elongated elements and attachable to said roof or adjacent surface, at least two of said feet being rotatable about non-parallel axes.

4,942,944

SCREW PUMP FOR LUBRICATING GENERATOR BEARING

Gary A. Frey, West Chester, Ohio, and James D. Leagel, Toms River, N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 3, 1989, Ser. No. 332,064
Int. Cl.[5] F16N *7/18, 7/32, 7/36*
U.S. Cl. 184—27.1 **20 Claims**



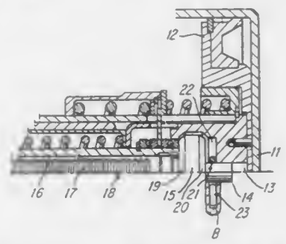
1. Apparatus for providing a lubricating mist to a bearing in a rotating machine, comprising:
- a housing having a circular opening and a passageway through which air can enter a cavity in said housing;
- a rotor shaft secured in said housing for rotation therein having an axial opening, an axial bore extending from said axial opening through which a lubricant can be circulated and a radial passageway extending from a first opening at said axial bore to a second opening; and
- a screw pump secured to said rotor shaft for rotation therewith and having a first orifice coincident with said second opening in said rotor shaft, a second orifice, a passageway extending from said first orifice to said second orifice through which said lubricant can be directed into said cavity to form the lubricating mist, a circumferential surface fitting within said circular opening in said housing, and a helical groove in said circumferential surface through which the lubricating mist is evacuated from said cavity during rotation of said rotor shaft.

4,942,945

BRAKE CYLINDER

Hans Rocholl, and Horst Klein, both of Remscheid, Fed. Rep. of Germany, assignors to Bergische Stahl-Industrie, Remscheid, Fed. Rep. of Germany

Filed Aug. 26, 1988, Ser. No. 237,215
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1987, 3728606
Int. Cl.[5] F16D *65/66*
U.S. Cl. 188—202 **4 Claims**



1. In a brake cylinder, for rail vehicles, that has a built-in, simple-acting linkage regulator for maintaining a uniform play,

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with said regulator including two parts that can be shifted telescopically relative to one another, whereby one part is embodied as a spindle with a screw thread, and the other part is fixedly connected and screwed onto said spindle, with said other part that is connected being disposed on a coupling element that is provided with first coupling surfaces that cooperate with second coupling surfaces of a piston of an operating cylinder, comprising the improvement therewith wherein:

said coupling element, which is provided with said first coupling surfaces, is further provided with a centrally disposed pin that is guided longitudinally thereof in said piston of said cylinder; and

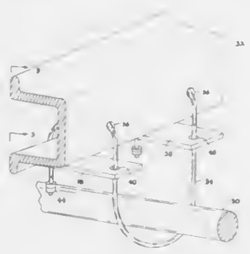
a damping member that is under pressure is clamped transversely onto said pin, with said damping member being secured in such a way that it cannot shift parallel to a longitudinal axis of said pin nor can it rotate with said pin to eliminate every unintended rotation in the linkage regulator for maintaining the uniform play so that adjustment remains constant and cannot vary, said damping member also being provided with the linkage regulator in a location and arranged to extensively suppress all vibrations and impacts in all axes, thereby even under the influence of resonance effects, preventing the coupling element from rotating on its own and hence changing the adjustment in an unacceptable manner, said damping member serving to eliminate every unintended rotation in the linkage regulator to avoid annulment of function thereof.

4,942,946

BOTTOM ROD SAFETY GUARD FOR RAILWAY BRAKE RIGGING

Carl E. Tack, Jr., Carol Stream, Ill., assignor to TransDyne, Inc., Chicago, Ill.

Filed Mar. 17, 1989, Ser. No. 325,383
Int. Cl.[5] B61H *13/34, 16/38*
U.S. Cl. 188—210 **2 Claims**



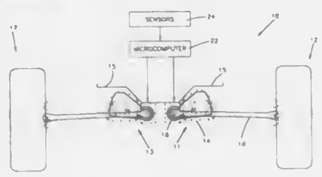
1. In a bottom rod safety guard for the brake rigging of a railway vehicle wherein the safety guard is in the form of a flexible resilient cable and is adapted to be supported from a brake beam and extend downwardly around a rod of said brake rigging, the improvement comprising a pair of connector members each having a first opening at one end slightly larger than the diameter of the cable and a second keyhole opening at the other end, with an enlarged portion of the keyhole opening being located toward a central portion of each connector member, first and second laterally spaced openings through the brake beam above said rod, said cable having an intermediate portion extending around said brake rod, the ends of the cable each having an enlarged terminus with said cable extending from said intermediate portion, through the first opening of the respective connector plates, through the respective first and second openings through the brake beam, and thence into latching engagement with the keyhole opening of the respective connector members.

4,942,947

ROTARY SHOCK ABSORBER WITH A CONTROLLED DAMPING RATE

Emil M. Shtarkman, Southfield, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Apr. 14, 1989, Ser. No. 339,126
Int. Cl.[5] F16F *6/00*
U.S. Cl. 188—267 **14 Claims**



1. A rotary shock absorber for use in a vehicle comprising:

a housing connectable with the vehicle frame and defining at least one chamber for a field-responsive fluid;

means for applying an energy field to the fluid in said chamber to vary the resistance to shear of the fluid as a function of the energy field acting thereon;

a shaft supported for rotation about its longitudinal central axis relative to said housing and extending in the direction of movement of the vehicle;

a rotor blade disposed in said chamber and connected with said shaft and extending radially of said shaft, the movement of said rotor blade in said chamber being resisted by the fluid; and

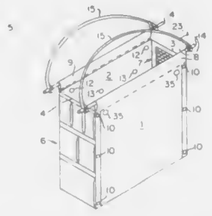
at least one arm having one end connectable to said shaft and extending radially of said shaft, the other end of said arm being connectable with a vehicle wheel for vertical movement with the vehicle wheel, said shaft rotating about its longitudinal central axis relative to said housing and said rotor blade moving in said chamber as the vehicle wheel moves relative to the vehicle frame, the resistance to movement of the arm varying as a function of the resistance to movement of said rotor blade in said chamber.

4,942,948

COMBINATION BEACH BAG/BEACH RECLINER

Donna M. Vickers, 474 Hazelwood Ter., Rochester, N.Y. 14609

Filed Feb. 10, 1989, Ser. No. 308,549
Int. Cl.[5] A45C *9/00;* **B65D** *33/00, 81/36*
U.S. Cl. 190—8 **6 Claims**



1. A beach bag/beach recliner comprising: a rectangular fabric element providing a front portion, back portion and bottom portion, the outer ends of each front and back portions including a sleeve formed thereon, each sleeve having a grommet at each end portion which grommet passes through only aid sleeve outer surface; two rectangular end portions, each having one side thereof as an integral portion of one of said portions of said fabric element, the remaining two sides of each

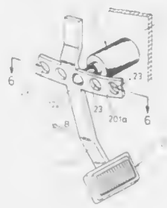
end portion being attachable to the remaining portions of said rectangular element by a plurality of snaps on its respective unattached sides periphery to engage corresponding snaps on respective sides of said other portions of said fabric element to formulate the bag mode; a pair of carrying straps and a pair of support rods, said support rods each being insertable within one of said sleeves, each said carrying strap having first means on the respective ends thereof to encompass each end of said support rods in said sleeve to provide an interlocking engagement therewith for carrying said element in a bag mode formed by the snapping together of said front, back, bottom portions and said end portions; each strap having second means on said ends to engage one end of each support rod in said recliner mode; each aforesaid end portion having on each outer side thereof a plurality of pockets and one the inner sides thereof an elastic net element forming an expandible pocket; a hinged rectangular rigid member dimensioned to be insertable selectively in one of said sleeves in said front and back portions to provide upper lateral support to said portion which provides support for the back of the user in the recliner mode, said rigid member including means on its extremities for engaging the ends of the support rods, one end of each of said support rod passing through the said grommet in said sleeve and being engaged with said rigid member at its extremities, the other end of each support rod cooperatively engaged with said second means on one of said straps to provide ground support to each rod to form the recliner mode.

4,942,949

ANTISLIPPING DEVICE FOR CARS IN A STATIONARY STATE

Yen J. Dai, 2F1, No. 5, Lane 158, Sec. 2, Pao-Fu Road, Yungho, Taipei Hsien, Taiwan

Filed Jun. 12, 1989, Ser. No. 364,098
Int. Cl.[5] B60K *41/20*
U.S. Cl. 192—1.32 **2 Claims**



1. An antislipping device for vehicles in a stationary state, comprising:

means for detecting the rotation of one or more wheels of said vehicle and outputing a signal indicating whether or not said wheels are in a state of rotation;

means for detecting when an accelerator pedal of said vehicle is moved past a predetermined position and outputing a signal indicating the same;

means for holding a brake pedal of said vehicle in a braked position after said brake pedal has been moved into a braked position, comprising;

a retainer plate integrally formed with said brake pedal, having a plurality of aligned holes, each of said holes being provided with a taper on one inner side wall;

a longitudinal housing having a cavity therein and being provided with an opening at one end portion and a through hole at the other end portion, said housing being mounted in proximity to said retainer plate so as to place said through hole opposite said retainer plate;

a slide bolt slidably mounted within said housing so as to be able to extrude out of said housing through said through hole for a predetermined length and penetrate one of said holes in said retainer plate and also be able to retreat into said housing;

a cover that covers said opening of said housing;

means for urging said slide bolt to extrude from said through hole for a predetermined length so as to cause said slide bolt to penetrate one of said holes in said retainer plate, said tapers on said inner wall of said holes being configured so as to force said slide bolt, against said urging means, to retreat into said housing when said brake pedal is moved into a position corresponding to a greater degree of braking;

electromagnetic means for forcing said slide bolt against said urging means so as to retreat into said housing in response to a control signal from a control means;

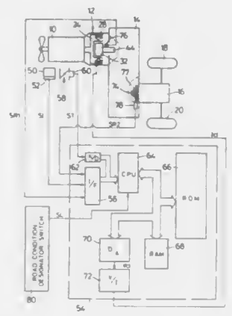
control means electrically connected with said rotational detecting means, said accelerator detecting means and said holding means, for receiving said signals from said detecting means and outputing a control signal to said holding means so as to cause said electromagnetic means to force said slide bolt to retreat into said housing when either said wheels are in a state of rotation or said accelerator pedal is moved past a predetermined position.

4,942,950

METHOD AND APPARATUS FOR CONTROLLING AN ELECTROMAGNETIC CLUTCH FOR USE ON A VEHICLE

Tomoyuki Watanabe; Setsuo Tokoro; Takashi Hayashi, and Takashi Shigematsu, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Continuation of Ser. No. 273,623, Aug. 25, 1988, abandoned, which is a continuation of Ser. No. 56,877, Jun. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 797,693, Nov. 13, 1985, abandoned. This application Nov. 27, 1989, Ser. No. 442,401
Claims priority, application Japan, Nov. 15, 1984, 59-241079
Int. Cl.[5] B60K *41/02*
U.S. Cl. 192—0.096 **8 Claims**



1. A method of controlling a clutch means having an electromagnetic coil which is incorporated in a power transmission system of a vehicle for transmitting a torque of an engine to drive wheels when the vehicle is started on a road surface having a low coefficient of friction wherein a transmission torque, transmitted by said clutch means, is varied with an electric current or voltage applied to said electromagnetic coil, said method comprising the steps of:

checking if a throttle valve of said engine is open and, increasing progressively a transmission torque which is transmitted by said clutch means, if said throttle valve is open;

designating whether a road surface on which the vehicle is driven has a low coefficient of friction by actuating a

switch to indicate the low coefficient of friction of the road surface;

detecing a slip of said drive wheels on said road surface; and

upon detection of the slip of the drive wheels while the road surface is designated as having a low coefficient of friction by actuation of said switch, reducing said transmission torque of the clutch means until the drive wheels have ceased to slip on said road surface.

2. An apparatus for controlling a clutch means which is incorporated in a power transmission system of a vehicle said clutch means having an electromagnetic coil, for transmitting an output of an engine to drive wheels, wherein a transmission torque transmitted by said clutch means is varied with an electric current or voltage applied to said electromagnetic coil said apparatus comprising:

road-condition designating means for indicating that a road surface on which the vehicle is driven has a low coefficient of friction comprising a switch which is actuated to indicate the low coefficient of friction of the road surface;

slip-detecing means for detecting a slip of said drive wheels on said road surface;

means for checking if said road-condition designating means indicates that the road surface has a low coefficient of friction;

means for checking if a throttle valve of said engine is open; and

control means for increasing progressively said electric current or voltage if said throttle valve is open, and for reducing progressively said electric current or voltage in response to said slip detected by said slip detecting means while said road-condition designating means indicates by actuation of said switch that the road surface has a low coefficient of friction, said electric current or voltage being reduced until said drive wheels have ceased to slip on the road surface.

4,942,951

LIQUID FRICTION COUPLING AND MOTOR VEHICLE COMPRISING THE SAME

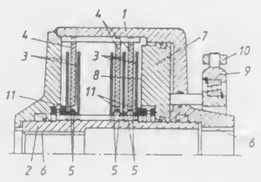
August Kriebernegg, Köflach, and Herfbert Lanzer, Gössendorf, Othmar Peler, Pölau, all of Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Feb. 27, 1989, Ser. No. 316,476

Claims priority, application Austria, Mar. 11, 1988, 660/88

Int. Cl.[5] F16D *35/00*

U.S. Cl. 192—58 C 11 Claims



1. A liquid friction coupling comprising

a housing,

a shaft, which is rotatably mounted in and coaxially protrudes into said housing,

interdigitating sets of interdigitating inner and outer blades, which are axially spaced apart and axially slidably mounted on said shaft and in said housing, respectively, and are non-rotatably connected thereto,

annular spreading springs disposed between adjacent blades of one of said sets and urging said adjacent blades axially apart to form gaps between said adjacent blades,

a viscous liquid located within said housing, said gaps between said blades being occupied by a liquid/air mixture, said liquid/air mixture transmitting torque between said adjacent blades,

an annular piston, which is sealed in and protrudes from said housing and is axially displaceable therein from and to an axially outermost position to decrease and increase, respectively, the axial distance between adjacent ones of said blades, and

actuating means for controlling the torque transmitted between said adjacent blades by adjusting the size of said gaps and the volume occupied by said liquid/air mixture between said adjacent blades, said actuating means being operatively connected to said piston outside said housing and operable to axially displace said piston in said housing, wherein

said annular piston has a planar inner end face, which is normal to the axis of said housing and extends substantially throughout the interior cross-section of said housing and close to said blades,

said liquid occupies not in excess of 60% of the liquid capacity of said housing, and

said liquid has a viscosity of at least 30,000 centistokes.

4,942,952

CENTRIFUGAL CLUTCH

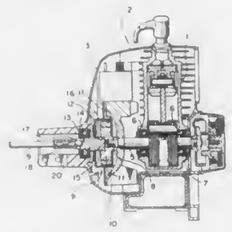
Yoshikiyo Kamata, Hachioji, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed May 22, 1989, Ser. No. 354,961

Claims priority, application Japan, May 26, 1988, 63-69768[U]

Int. Cl.[5] F16D *43/18*

U.S. Cl. 192—105 CD 1 Claim



1. A centrifugal clutch comprising: a clutch boss rotatably and axially fixed supported to a drive side fixture; a clutch drum shaft rotatably supported to a driven side fixture and aligned coaxially with said clutch boss; clutch shoes movable radially outwardly by centrifugal force during rotation of said clutch boss; means for manually adjusting the coaxial alignment of said clutch drum and said clutch boss; and a clutch drum mounted on said clutch drum shaft for receiving transmitted drive force from said clutch boss through said clutch shoes, wherein said clutch boss has in its center an axial center hole; said clutch drum shaft has an inner end portion having an outer diameter somewhat smaller than an inner diameter of said center hole of said clutch boss; the inner end portion of said clutch drum shaft is arranged in the center hole of said clutch boss with a clearance for manual adjustment of the coaxial alignment of said clutch; and said driven side fixture and said drive side fixture are adjustable in relative position to each other.

4,942,953

SLEEVES FOR UNLOADING

Patrice Chefson, St.-Aubin les Elbeuf, France, assignor to Spiragaine S.A., Saint Aubin les Elbeuf, France

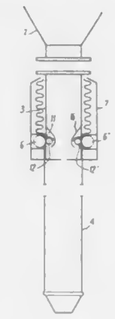
Filed Mar. 23, 1989, Ser. No. 327,620

Claims priority, application France, Mar. 23, 1988, 88 03810

Int. Cl.[5] B65G *11/14*

U.S. Cl. 193—25 C 9 Claims

1. A device for loading bulk products, of the type comprising a retractable and extensible sleeve having an upper end and a lower end and adapted to guide bulk materials from an upper hopper towards a lower container, the sleeve being formed by a supple wall comprising successive reinforcing annular hoops and successive portions of said supple wall between the said hoops, the device further comprising mechanical lifting means to actuate one end of said sleeve which is thus retracted and extended, respectively, and the sleeve in the actuated end is caused to form successive folds of the portions of the supple wall between two successive hoops, the said retracted end of



the sleeve thus being placed in inactive position, wherein said device further comprises an inner protecting liner disposed at the end of the sleeve to be actuated for retraction and extension, respectively, the liner being concentric and inside the sleeve and of a diameter corresponding substantially to a small clearance to the inner diameter of the said folds of the portions of the supple wall folded in accordion manner between two successive reinforcing hoops, the liner thus being adapted to receive against its outer wall the retracted end of the sleeve placed in inactive position and thus protected from the abrasive action of the materials.

4,942,954

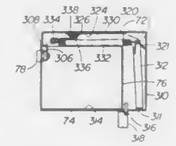
VENDING MACHINE

Thomas A. Nesser; Deborah L. Nesser, both of Rochester; Herbert Lackower, Harrison; John P. Barczak; Edward P. Joslyn, both of Rochester, and Bernard J. Rick, Fairport, all of N.Y., assignors to G. T. Norton, Inc., Rochester, N.Y.

Division of Ser. No. 277,483, Nov. 29, 1988, which is a continuation of Ser. No. 87,487, Aug. 20, 1987, abandoned. This application Jul. 5, 1989, Ser. No. 375,564

Int. Cl.[5] G07F *9/06*

U.S. Cl. 194—351 4 Claims



1. Coin receiving apparatus which comprises a coin box having a coin container having an opening for receiving coins, a closure plate moveably mounted in said container and being moveable in opposite directions to open and close said opening, means internal of said container for biasing said closure plate to move in the closing direction, first detent means for latching said plate in open position, and second detent means with respect to which said container is moveable and having means enabling it to be engaged and moved by siad first detent means when said container moves towards said second detent means so as to leave said first detent means in latched relationship with said open closure plate and to be engaged by said first detent means when siad container moves away from said second detent means for actuating said first detent means to release said closure plate for movement in the closing direction.

4,942,955

CONTAINER TRANSFER SYSTEM

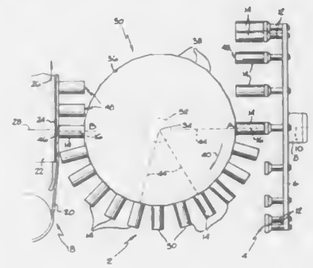
Frank L. Shriver, Lakewood, and Robert H. Schultz, Broomfield, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Continuation-in-part of Ser. No. 69,397, Jul. 1, 1987, Pat. No. 4,771,879. This application Jul. 7, 1988, Ser. No. 216,231

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.[5] B65G *47/91*

U.S. Cl. 198—471.1 12 Claims



1. Apparatus for transferring cylindrical containers or the like having a cylindrical container body portion and an open rim end portion and a closed bottom end portion between a first work station such as a container decorator or the like and second and third work stations such as ovens or the like comprising:

first continuously rotating container carrying means having a plurality of container supporting devices mounted thereon for receiving containers from the first work station and engaging the closed bottom end portion thereof and carrying the containers in a first circular path of movement in a first generally vertical plane about a central generally horizontal axis of rotation;

continuously rotating container transfer wheel means having a plurality of container supporting devices mounted in circumferentially spaced relationship on the circumferential peripheral surface thereof for receiving containers from said first container carrying means and engaging the open rim end portions thereof and carrying the containers in a second circular path of movement in a second generally vertical plane, which is transverse to said first generally vertical plane, about a second central generally horizontal axis of rotation which is transverse to said first axis of rotation and which includes a path portion adjacent said first container carrying means whereat the containers are transferred to said container transfer wheel means from said first container carrying means;

said container transfer wheel means having separating means for separating said containers in said second circular path into two parallel spaced apart circular paths;

spaced apart second and third continuously moving container carrying means having container supporting means thereon for receiving containers from said container transfer wheel means and engaging the closed bottom end portion thereof and carrying the containers to said second and third work stations along paths of movement, said paths of movement including linear path portions adjacent

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said circumferential peripheral surface means on said container transfer wheel means whereat the containers re transferred from said container transfer wheel means to said second and third continuously moving container carrying means;

wherein said plurality of container supporting devices on said container transfer wheel means comprises:

a plurality of equally circumferentially spaced pads having a generally planar surface of a larger area than the cross-sectional area of said containers so as to enable each of said pads to abuttingly engage the open rim end portion of one of the containers;

vacuum supply means for each of said generally planar surfaces of said pads for supplying vacuum thereto to bold a container thereoo during transfer from said first container carrying means to said second and third container carrying means; and moving means for moving each of said plurality of pads in a linear path parallel to said axis of rotation of said second container transfer wheel means;

said plurality of pads are succesively numbered as odd and even numbered pads; and

said moving means moves said odd numbered pads in a linear path in one direction and said even numbered pads in a linear path in an opposite direction.

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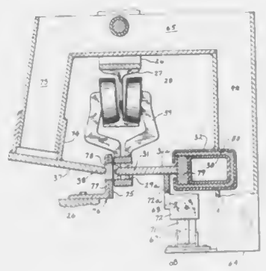
PART INDEXING AND POSITIONING APPARATUS

John N. Acker, and Bradley M. Andreae, both of Sturgeon Bay, Wis., assignors to Therma-Tron-X, Inc., Sturgeon Bay, Wis.

Filed Dec. 30, 1988, Ser. No. 298,473

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—465.3 **15 Claims**



1. A load indexing apparatus for precise powered motion of an elongated member, comprising a linear guide unit having a predetermined cross section, a driven unit movably mounted in said guide unit for linear movement therein, a reciprocating drive unit operable between a first position and second position along the path of said guide unit, a coupling connected to said driven unit and to said reciprocating drive unit, a movable support structure connected to said guide unit and operable to move the guide unit laterally to the line of movement of said drive unit, a positioning unit to move said movable support structure, said driven unit having at least one coupling member aligned for selective engagement with the elongated member in said first and second positions, and said driven unit including a first lateral position engaging said elongated member and a second lateral position disengaged from said elongated member for return movement of said driven unit from said second position to said first position, and a brake unit connected to said guide unit and positioned by said guide unit in a first engaged position to hold said elongated member in fixed relation when said driven unit is in said second lateral position.

4,942,957

CONVEYING ROLLER APPARATUS

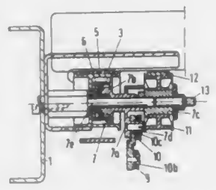
Edgar Bonifer, Münster; Walter Duttiné, Offenbach am Main; Jahns, Werner, Seligenstadt, and Helmut Kratz, Rodgau, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed May 18, 1989, Ser. No. 353,742

Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817388

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **15 Claims**



1. In a conveying roller apparatus having holding locations for the material to be transported and including supporting rolls (2) and switch bars (4) which can be moved into the path of transport for releasing a drive belt (3) from the supporting rolls (2), the drive belt (3) being guided by belt rolls (5) which can be raised and lowered, each belt roll being mounted on an eccentric ring (7*b*) of a switch roll (7) which is mounted on an eccentric support axis (13), the switch roll (7) having adjacent the eccentric bearing ring (7*b*) an eccentric support ring (7*c*) for a brake roll (11) which, in its raised position presses at a brake belt (12), which is fixed in the direction of transport, from below against the supporting rolls (2), all switch rolls (7) of a holding location being controlled by an axially displaceable switch plate 10, the improvement comprising:

a pivotally mounted lever forming said switch bar (4) having a lower end (4*a*); a control element (8) mounted on said side plate (1) for engagement by said lower end (4*a*) of said lever; a straight lever (7*a*) having one end thereof attached to said switch roll (7) in fixed position, said switch plate (10) being pivotally connected to the other end of said lever (7*a*) of said switch roll (7) by pin joints (10*b*); a positioning apparatus (9) pivotally attached to said switch plate (10) and operatively connected to said control element (8) for control by said element; and a logic circuit (15) connected to said control element (8) and said positioning apparatus (9).

4,942,958

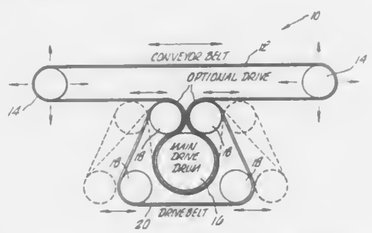
BELT-DRIVE CONVEYOR SYSTEM FOR REFUSE

Erik A. Marttila, 9785 Flying Mane La., Alta Loma, Calif. 91701

Filed Feb. 7, 1989, Ser. No. 307,762

Int. Cl.[5] B65G *23/14*; B60P *1/38*

U.S. Cl. 198—833 **5 Claims**



1. A conveyor belt drive system located in the floor of a container used for transporting refuse and semi-liquid sludge comprising

a main drive drum driven by an external power source;

at least six pulleys whose width is the same as said main drive drum;

a conveyor belt whose width is the same as said main drive drum, said belt being partially wrapped around at least two of said pulleys positioned horizontally apart, said belt also being partially wrapped around said main drive drum which is positioned between and below said pulleys about which said conveyor belt is partially wrapped;

a drive belt means whose width is the same as said main drive drum, said drive belt means being partially wrapped around said main drive drum outside of but in close frictional contact with said conveyor belt, said drive belt also being partially wrapped around the remaining said pulleys, at least two of which are located below and to either side of said main drive drum and at least two of which are located above and to either side of said main drive drum, said upper pulleys forcing said drive belt means into close frictional contact with and thereby increasing both frictional contact pressure and frictional contact area with said conveyor belt as both said drive belt means and said conveyor belt are partially wrapped around said main drive drum.

4,942,960

METHOD OF PRESERVING WINE IN A BOTTLE AND A WINE PRESERVING CONTAINER

Toshihisa Kawaguchi, 8-13, Jinmyo-cho 1-chome; Akira Ota, 1-7, Okano-cho, and Akira Kawasaki, 5-2, Goban-cho, all of Kamo-shi, Niigata-ken, Japan

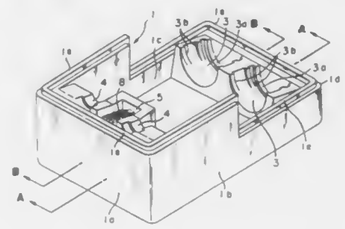
Continuation of Ser. No. 111,716, Oct. 23, 1987, Pat. No. 4,850,480. This application Apr. 5, 1989, Ser. No. 333,306

Claims priority, application Japan, Dec. 19, 1986, 61-303463; Sep. 21, 1987, 62-143990[U]

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] B65D *81/00*

U.S. Cl. 206—205 **1 Claim**



1. A wine preserving container which comprises: a container main body made of a heat insulating foamed material for receiving at least one bottle of wine; a cover made of said heat insulating foamed material to be put on said main body; a partition wall provided in said main body to form a partition chamber; a predetermined amount of water-absorbing material received in said partition chamber; concave means for receiving the neck portion of at least one bottle of wine at one end of said main body and said cover; and recess means for receiving the bottom portion of the at least one bottle of wine, wherein said partition chamber is formed in said main body so that said concave means are communicated with said recess means, a partition recess is formed at the upper edge of said partition wall to receive the shoulder portion of the at least one bottle of wine, and at least one projection is formed in said main body to support the bottom portion of the at least one bottle of wine so as not to cause lateral movement of the bottle, and wherein said heat insulating foamed material and said water absorbing material together impart a constant humid condition in said container.

4,942,959

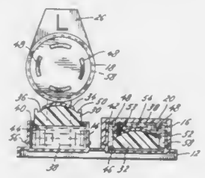
BUOYANT STRUCTURES IN CONTACT LENS CASE

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182, and Janet E. Truhler, 311 Woodridge Dr., Vadnais Heights, Minn. 55110

Filed Oct. 23, 1989, Ser. No. 425,103

Int. Cl.[5] A45C *11/04*

U.S. Cl. 206—5.1 **20 Claims**



1. An improved contact lens carrying case, comprising:

a base member including two contact lens storage compartments, each having an open end and adapted to hold a contact lens solution therein;

a pair of storage compartment caps moveable from a first closed position, closing a respective storage compartment open end, to a second open position, uncovering the respective storage compartment open end; and

free floating pop-up lens retrieval structures located in each storage compartment, each of said structures having a density less than the contact lens solution enabling said structures to be buoyant, said structures being operably moveable to a first immersed position when said cap is in the closed position, and buoyantly rising in the contact lens solution to a second lens retrieval position adjacent said storage compartment open end when said cap is in the open position.

4,942,961

CIGARETTE PACK, ESPECIALLY HINGE-LID PACK

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Continuation of Ser. No. 318,394, Mar. 3, 1989, abandoned. This application Jan. 19, 1990, Ser. No. 467,330

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806818

Int. Cl.[5] A24F *15/00*; B65D *85/10*

U.S. Cl. 206—254 **2 Claims**

1. A hinge-lid cigarette pack having an inner blank in which a cigarette group is wrapped, said inner blank comprising;

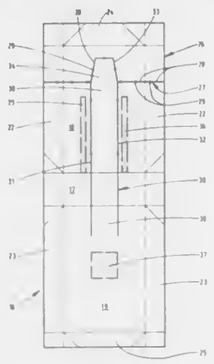
a pull-off flap (26) separable from the inner blank (16) by pulling off as a result of transverse punchings (27) in a front wall (18) and adjoining side tabs (22) of said inner blank (16); and wherein:

the flap adjoins a lift-out strip (30) which has a gripping tab (34) and which extends in said front wall (18) of the inner blank (16) and at least into a region of a bottom wall (17) of the inner blank;

the lift-out strip (30) is delimited from the pull-off flap (26) by a flap punching line (33) in such a way that the flap

(26), when being pulled off, can be easily separated from the lift-out strip (30);

the lift-out strip (30) extends into a region of the flap (26) and within the latter is delimited by an approximately U-shaped said flap punching line (33) in such a way that, when said flap (26) is pulled off, said gripping tab (34), which is free relative to the front wall (18) of the inner blank (16) and which is an upper free end portion of the lift-out strip (30), is exposed; and



said pack (39) comprises a hinge-lid (41) pivotably connected to a rear wall (45) of a pack part (40) also having a front wall (43) in an upper region of which there is provided an internal pack collar (42) which surrounds said blank punchings (27) before flap (26) is pulled off and from which said gripping tab (34) upwardly projects after said flap (26) is pulled off from said inner blank (16).

4,942,962

FREE STANDING GOLF BAG APPARATUS

Rodney B. Jordan, P.O. Box 39, Florien, La. 71429

Continuation-in-part of Ser. No. 272,344, Nov. 17, 1988, abandoned. This application Aug. 7, 1989, Ser. No. 394,245
Int. Cl.[5] A63B *55/00*
U.S. Cl. 206—315.7 9 Claims



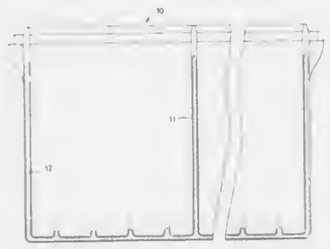
1. A tubular golf club container with a means for supporting said container in a vertical position, said means comprising a chassis, said chassis further comprising a generally round disk having an upper and lower side, and a plurality of sod penetrating prongs, each having a top and bottom end, said top end being hinged to said lower side of said disk as to allow a 90 degree swing from a adjacent and parallel to said disk, to downward and perpendicular to said disk, wherein, said chassis further comprises a plurality of indentations within said lower side of said disk, said sod penetrating prongs being hinged to said lower side of said disk within said indentations as to facilitate being folded into a retracted position within said indentations.

4,942,963

CONTAINER FOR STORAGE BATTERIES

Folco Gibellini, Carate Brianza, Italy, assignor to Aies Gibellini S.p.A., Milan, Italy

Filed Aug. 4, 1988, Ser. No. 228,115
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—333 5 Claims



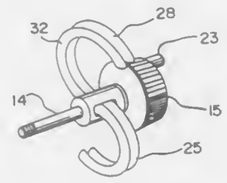
1. An improved, substantially rigid, high impact strength container for electric storage batteries, characterized in that the container is embodied as a single piece of plastic material having a structure consisting of a relatively thin, rigid outer coat of said material, which is compact and of relatively high density, and a thicker inner core enclosed in said outer coat and being made of the same material as said outer coat but having a density appreciably lower than that of the material forming said outer coat, and wherein the said outer coat has a thickness in the range of from 1 to 2.5 mm, and said inner core has an average thickness of approximately 4 mm, the density of the inner core being up to 20% lower than that of the outer coat.

4,942,964

STORING BOX FOR BOOSTER CABLE

Pi-Chen Hsu, Taipei, Taiwan, assignor to Shirley S. Lan, Millburn, N.J.

Filed Aug. 22, 1988, Ser. No. 234,549
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—334 16 Claims



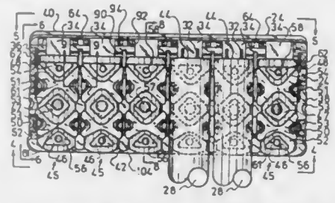
1. A booster cable storage assembly for storing a booster cable assembly having an electrically conductive cable with two ends and a clamp located at each of said ends, said storage assembly comprising a housing member, said housing member having a first compartment for receiving said cord, said first compartment having a first cable receiving opening and a second cable receiving opening, a second compartment for receiving said clamps, and a reel assembly, said reel assembly having a first portion located within said first compartment and a second portion located to the exterior of said housing member, said cable being positioned on said reel assembly, whereby rotation of said reel assembly causes said cable to be selectively wound and unwound with respect to said reel assembly, said second compartment having openings for receiving said clamps.

4,942,965

ELONGATED TRAY FOR SUPPORTING TUBULAR OBJECTS

Robert E. Comer, 1228 42nd Ave., Greeley, Colo. 80634

Filed Jul. 3, 1989, Ser. No. 375,338
Int. Cl.[5] B65D *85/42*
U.S. Cl. 206—419 27 Claims



1. In an elongated tray of the type designed to support a plurality of tubular objects side by side from breaking in transit, and to uniformly distribute stresses occurring in the dropping of a package containing a plurality of trays and tubular objects, the improvement comprising:

(a) a plurality of vertically positioned side by side concaved shaped tubular receiving cavities formed in the tray:

(1) a plurality of tubular supporting surfaces formed in each tubular receiving cavity, the tubular supporting surfaces being formed with a plurality of upper undulation and striation free supporting cavities and a plurality of lower undulation and striation free supporting cavities, the upper supporting cavities and the lower supporting cavities being formed as support ribs underneath the tubular supporting surfaces with the upper and lower undulation and striation free supporting cavities being formed in a generally sinusoidal shape having a series of reversing curved configurations forming peaks and valleys;

(b) the tray being formed of a plastic material having a density ranging between 0.898–0.965 grams per cubic centimeter; and

(c) the thickness of the plastic material formed in the peaks and valleys of the upper and lower undulation and striation free supporting cavities being approximately of equal thickness so that the material forming the tray will not collapse upon a single load being applied but will have a controlled deformation with a controlled resilient return from the deformation upon a repeating load shock being applied to and removed from the tubular receiving cavities thereby permitting the tray to continue to function during repeated load shocks without collapsing during a single load shock.

4,942,966

CONTAINMENT DEVICE FOR A TEST TUBE

David R. Kemp, 2213 Richmond Rd., Paradise, Calif. 95969

Filed Jun. 5, 1989, Ser. No. 361,635
Int. Cl.[5] B65D *85/42*
U.S. Cl. 206—521 3 Claims

1. A protective containment device for a single test tube adapted to allow predictable retrieval of said test tube from said containment device, comprising;

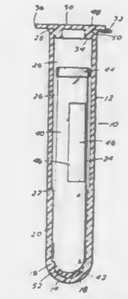
a tubular housing adapted to receive and internally retain said test tube in longitudinal alignment with said tubular housing, said tubular housing having a closed first end and an oppositely disposed opened second end;

said tubular housing having a first and a second internal diameter, said first internal diameter being adjacent said closed first end extending a distance toward said open second end, said second internal diameter being adjacent said opened second end extending a distance toward said closed first end, said second internal diameter being larger than said first internal diameter, a tapering from said first internal diameter to said second internal diameter adapted to provide guidance to a rounded structurally closed end of said test tube when inserted into said tubular housing, said first internal diameter sized to receive said structurally closed end of said test tube providing lateral support to said test tube, said second internal diameter sized larger diametrically than a removable rubbery stopper on said test tube, said first internal diameter sized to maintain said test tube generally centered in said tubular housing with said centering adapted to maintain a separation between said rubbery stopper on said test tube and said second internal diameter, said separation maintained between said rubbery stopper and said second internal diameter adapted to provide smooth sliding of said stoppered test tube from said tubular housing providing said predictable retrieval;

a cap affixed to said opened second end of said tubular housing by a living hinge, said cap adapted to temporarily close said opened second end of said tubular housing;

means adapted to provide liquid tight sealing between said cap and said opened second end when said tubular housing is closed by said cap;

a rubbery pad within said tubular housing at said closed first end adapted to provide protective cushioned support to



said rounded structurally closed end of said test tube when contained within said tubular housing;

said tubular housing being internally longitudinally longer than said stoppered test tube providing space between said rubbery stopper on said test tube and said cap when closed with said test tube fully inserted into said tubular housing toward said closed first end;

a rounded annular support ledge within said tubular housing between said closed first end and said first internal diameter, said support ledge encircling said rubbery pad, said support ledge adapted to contact said rounded structurally closed end of said test tube when said test tube is fully inserted into said tubular housing toward said closed first end, said support ledge adapted to cause said test tube to slide toward said opened second end of said tubular housing upon crushing of said closed first end;

said tubular housing and said cap manufactured of shatter resistant material.

4,942,967

BOTTLE RACK COMPONENT AND ASSEMBLY

Bernardus J. J. A. Schneider, Zuideindseweg 54, 2645, BH Delfgauw, Netherlands

Filed Aug. 14, 1989, Ser. No. 393,645
Int. Cl.[5] A47B *73/00*
U.S. Cl. 211—74 13 Claims

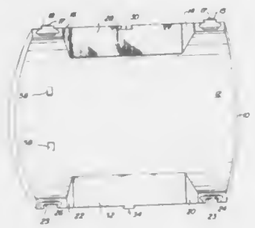
1. In a bottle rack which may include one or more bottle rack components, each of said rack components comprising:

a cradle having an upper bottle cradling surface with a plurality of upstanding legs and a lower surface said upstanding legs having upper ends;

a joint element on an outer surface and upper extremity of each of said upstanding legs adapted to form a joint con-

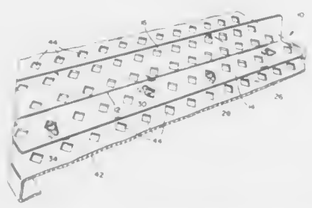
nection between a complementary joint element of an adjacently positioned bottle rack component;

an interconnecting member extending laterally on each side of said upper bottle cradling surface adapted to form an interconnection between adjacently positioned bottle rack components; and



a receptacle means positioned on the lower surface of said cradle adapted to receive the upper ends of a pair of upstanding legs which have been joined in order to permit the positioning of bottle rack components vertically one over other horizontally joined components.

4,942,968
SHELF DIVIDER
Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317
Filed Mar. 21, 1989, Ser. No. 326,794
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—184 **6 Claims**



1. A shelf divider for use on a shelf having rows of apertures, the divider comprising an elongate strip of material divided lengthwise into a shelf attachment panel and a divider panel, the attachment panel having four tabs spaced lengthwise along the divider panel to form a pair of inner tabs and a pair of outer tabs for insertion into respective apertures of an aperture row of the shelf, each tab having a base along which the tab can be flexed, the bases of the respective tabs being substantially colinear and extending lengthwise of the attachment panel, the tabs being spaced to conform with the spacing of the apertures, and with alternate tabs extending in opposite directions with respect to their bases.

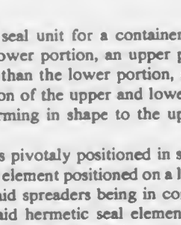
4,942,969
VAPOR PRESSURE RETENTION APPARATUS
John A. Dickey, 516 Addison Ave. NE., Palm Bay, Fla. 32907
Filed Dec. 2, 1988, Ser. No. 278,781
Int. Cl.[5] B65D *23/10*
U.S. Cl. 215—100 R **8 Claims**

1. A pressurizing apparatus for placing around a flexible container holding a carbonated beverage, comprising:

a member for fitting loosely around the container, wherein said member includes a substantially straight portion and a first and a second free end spaced apart from said straight portion and located on opposite sides of said loosely fitting member;

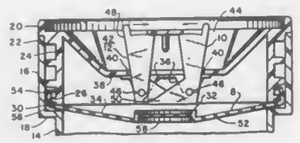
a lever arm having first and second pivot points pivotably coupled to said first and said second free ends, respectively, includes a compression member substantially parallel to said straight portion and to a line connecting said first and second pivot points;

wherein as said lever arm is pivoted with respect to said



loosely fitting member, said compression member moves toward the plane of said loosely fitting member and closer to said straight portion until said compression member crosses the plane of said loosely fitting member thus latching said compression member in that position so as to squeeze the container between said compression member and said straight portion, thereby reducing the amount of carbon dioxide that comes out of solution from the beverage into the air inside of the container.

4,942,970
HERMETICALLY SEALED CANISTER
Murray Jay, Woodsburgh, N.Y. (Vivian Jay, executrix), assignor to Vivian Jay, Woodsburgh, N.Y.
Filed Jul. 14, 1988, Ser. No. 218,972
Int. Cl.[5] B65D *45/00*
U.S. Cl. 215—358 **1 Claim**



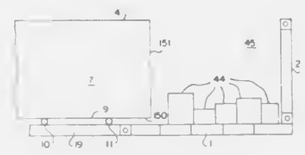
1. A hermetic seal unit for a container comprising a container having a lower portion, an upper portion of a slightly greater diameter than the lower portion, and a shoulder portion at the junction of the upper and lower portions;

a cover conforming in shape to the upper portion of said container;

spreader elements pivotaly positioned in said cover; and

a hermetic seal element positioned on a lower portion of said cover and said spreaders being in contact with the inner surface of said hermetic seal element and said hermetic seal element being in intermittent contact with said top portion and shoulder of said container in order to intermittently define a hermetic seal.

4,942,971
CONTAINER
Peter Neugebauer, Barmstedt, and Helmut Meyer, Halstenbek, both of Fed. Rep. of Germany, assignors to Drehtainer Consulting GmbH, Hamburg, Fed. Rep. of Germany
Filed May 2, 1988, Ser. No. 188,806
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734357; Jan. 7, 1988, 3800205
Int. Cl.[5] B65D *90/58*
U.S. Cl. 220—1.5 **38 Claims**



1. A container comprised of:

a base plate having a longitudinal axis;

two end walls each extending from said base plate, each end wall having a top edge opposite said base plate and two opposing side edges extending from said top edge to said base plate; and

a hood extending from and over said base plate and between said two end walls, said hood being movably connected to said base plate so that said hood is longitudinally displaceable along said base plate, said hood being comprised of at least one rigid part, wherein at least one of said end walls is permanently secured to said hood and releasably secured to said base plate, located adjacent to said side edges of said end walls, wherein at least two of said corner posts (16, 17, 18, 19) are connected to said base plate (1) such that they can be tilted with respect to said base plate, said corner posts providing a load transmitting connection with said base plate so that said hood may move longitudinally along said base plate and said tilted corner posts.

34. A container comprised of:

a base plate having a length and a width and having a longitudinal axis along said length;

two oppositely located end walls, each of said end walls having two opposing side edges, said side edges and said end walls extending generally perpendicularly of said base plate;

a hood slidably attached to said base plate, said hood being comprised of generally two opposing sides which extend generally perpendicularly of said base plate and a roof extending between said two opposing sides and spaced from said base plate;

and corner posts located adjacent said side edges and forming the corners of the combination of said end walls, and hood, at least two of said corner posts being pivotably mounted to said base plate such that said at least two corner posts may be pivoted away from said end walls and toward said base plate to effectively extend the length of said base plate so that said hood can be displaced longitudinally along said base plate and onto said corner posts, said corner posts providing a load transmitting connection with said base plate.

37. A container comprised of:

a base plate having a longitudinal axis;

two end walls, each having a top edge located opposite said base plate and two side edges extending from said top edge to said base plate;

a hood comprised of at least one rigid part and having a roof situated generally opposite of said base plate and two side walls connected to said roof and extending to said base plate, said side walls being movable on said base plate, said hood extending between said two end walls and being displaceable in the direction of said longitudinal axis by movement of said side walls along said base plate, at least one of said end walls being permanently connected to said hood; and

corner posts associated with said side edges and providing a load transmitting connection with said base plate.

38. A container comprising:

a base plate having a longitudinal axis;

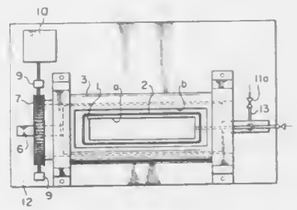
a rigid hood comprised of a roof situated generally opposite of said base plate and opposing lateral walls connected to said roof and extending to said base plate from said roof, said opposing lateral walls being situated generally parallel to said longitudinal axis and defining lower edges which lower edges are guidable along said base plate, said hood being displacable along the direction of the longitudinal axis of said base plate;

two end walls each having a top edge located near said roof, a bottom edge located opposite said top edge and near said base plate, and sides connecting said top and bottom edges, at least one of said end walls being permanently connected to said hood at said top edge and releasably connected to said base plate at said bottom edge;

a mounting associated with said hood and located longitudinally of said base plate, said mounting providing said hood with a degree of perpendicular freedom with respect to said longitudinal axis;

packing sealably located between said base plate and said at least one end wall permanently connected to said hood; and corner posts associated with said sides of said end walls, said corner posts providing a load transmitting connection to said base plate.

4,942,972
PRESSURE VESSEL
Eiichi Hiraoka, Tokyo; Toshio Akagi, Kawasaki; Kiyotaka Yano, Kiyose, and Junji Osaka, Iruma, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Mar. 22, 1989, Ser. No. 327,449
Claims priority, application Japan, Mar. 25, 1988, 63-38360[U]
Int. Cl.[5] B15D *6/12*
U.S. Cl. 220—3 **6 Claims**



1. A pressure vessel, comprising:

a cylindrical, fixed body which is closed at the two ends thereof, the central portion of said body forming a sample accommodating space, said body having a opening formed in at least one lateral portion thereof; and

a drum body surrounding said fixed body in such a matter as to be rotatable relative to the outer periphery of said body, said drum body having an opening formed in a lateral portion at a position which faces said opening formed in said body at one point rotation.

VOL 1116 ISS 4 JL 24 1990 UMI

4,942,973
CONTAINER FOR RELEASING FABRIC CONDITIONERS IN WASHING MACHINES
Stuart S. Bowie, 5 Woodbrook La., Swarthmore, Pa. 19081
Filed Mar. 27, 1989, Ser. No. 329,302
Int. Cl.[5] B65D *43/04*
U.S. Cl. 220—201 5 Claims



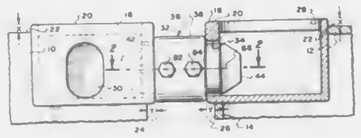
1. A container for clothes conditioner(s) and the like, said container comprising at least two components of substantially rigid materials which are held together by frictional engagement at room temperature and wherein the components comprise different materials having substantially different coefficients of linear expansion, whereby one of said components contracts so much more than the other component in the cold rinse water of a washing machine that the components detach and release conditioner(s) into the rinse water of the washing machine.

4,942,974
TAMPER EVIDENT CONTAINER
Owen D. Larrison, Hacienda Height, Calif., assignor to Sealright Company, Inc., Kansas City, Mo.
Filed Jun. 9, 1989, Ser. No. 366,531
Int. Cl.[5] B65D *53/00, 55/02*
U.S. Cl. 220—214 14 Claims



1. A tamper evident container assembly comprising:
a container having a hollow interior for holding materials packaged therein and an open top for providing access to the interior and the contents thereof;
a removable lid applicable to the container to close said top thereof, said lid covering said top of the container when applied thereto and presenting a peripheral portion engaging the container in a manner to releasably retain the lid on the container, said peripheral portion being deformable to release from the container to permit removal of the lid; and
a relatively stiff annular ring member overlying the lid and having a central opening therethrough exposing the lid and informational material thereon, said ring member being in engagement with said peripheral portion of the lid to resist deformation of said peripheral portion and said ring member having a frangible section which may be broken away to release the ring member from the lid to permit initial removal of the lid from the container.

4,942,975
CONTAINER CONNECTOR HAVING A SKEWED INSTALLATION CONFIGURATION
Mark E. Capron, Oxnard, and James F. Jenkins, Ventura, both of Calif., assignors to The United State of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 5, 1989, Ser. No. 375,682
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—23.4 6 Claims

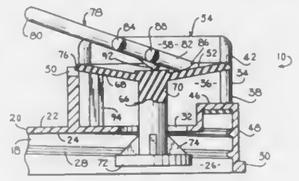


1. A container connector comprising:
a grab bar, said grab bar having a first end and a second end, said first end being substantially identical to said second end, a first longitudinal center axis extending between said first end and said second end, said first end including first retaining means said second end including second retaining means, said first retaining means comprising a first groove formed within the body of said grab bar, said second retaining means comprising a second groove formed within the body of said grab bar, both said first groove and said second groove having an outer wall and an inner wall, each said inner wall being in a plane substantially perpendicular to said first longitudinal center axis, each said outer wall being inclined relative to said first longitudinal center axis, the spacing between said inner walls being slightly greater than the length of said enlarged center section of said position bar, said first retaining means adapted to connect with a first shipping container, said second retaining means adapted to connect with a second shipping container;
a position bar mounted in spaced relationship from but in juxtaposition to said grab bar, said position bar having a second longitudinal center axis, said position bar having an enlarged center section terminating at each longitudinal end in a protruding flange, one said flange to engage with the first shipping container and the other said flange to engage with the second shipping container; and
interconnection means connecting said grab bar and said enlarged center section of said position bar, said interconnection means being adjustable to vary the position of said grab bar relative to said position bar, said first longitudinal center axis being parallel to said second longitudinal center axis when said container connector is installed in its operating position, during installing of said container connector said first longitudinal center axis is located skewed to said second longitudinal center axis.

4,942,976
CONTAINER CLOSURE WITH SPIGOT VALVE
Steven R. Spencer, Kansas City, Mo., assignor to Tapour, Inc., Kansas City, Mo.
Filed Oct. 17, 1988, Ser. No. 258,669
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—254 9 Claims

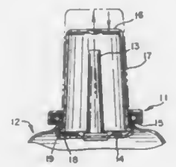
1. A container closure having a spigot valve and comprising:
a lid for the container and having a hole therein, the spigot valve being carried by the lid in association with the hole and including:
a shiftable sealing assembly for opening and closing the hole;
resilient means forming part of the assembly and shiftable from a first position to a second position;
lever means for shifting the resilient means from said first position closing the hole to said second position opening the hole by acting upon said resilient means,

said lever means overlying the resilient means and having a handle portion and a cam portion, said portions being on opposite sides of a pivot point for the lever, the cam portion being in direct engagement with the sealing assembly; and



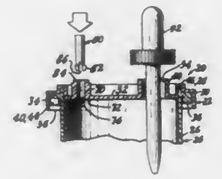
means for retaining said lever to hold the resilient means in the second position and, therefore, the hole in open condition to permit egress of the contents of the container.

4,942,977
BREAKAWAY TAMPER EVIDENT COVER
Daniel P. Hidding, Rte. 2, Ridgecroft La., Barrington Hills, Ill. 60010
Filed Dec. 8, 1988, Ser. No. 281,466
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 6 Claims



1. A tamper evident cover for use with a container having a closure with a surrounding outwardly extending closure bead and a closure inner portion formed under the inside of the closure bead, and a nozzle extending upwardly through the closure for discharging the contents of the container therethrough, said cover comprising:
a generally circular top portion;
a generally cylindrical sidewall extending downwardly from the edge of said top portion forming a generally circular rim equally spaced from said top portion;
a flat, substantially continuous and horizontal flange extending outwardly from said rim over said closure bead;
a locking ring adapted to surround the outwardly extending closure bed, having an inwardly extending locking flange for engaging under the outside of the closure bead to secure the locking ring to the container;
a frangible tear line overlying said closure bead and connecting said locking ring to said outwardly extending flange whereby after said frangible tear line has been ruptured, said cover sidewall and said outwardly extending flange may be forced downwardly into the closure beneath said closure bead and said outwardly extending flange will spring outwardly to engage said closure inner portion under said closure bead to removably retain said cover in position.

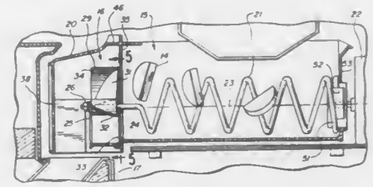
4,942,978
PROTECTIVE LINER FOR CONTAINERS
David M. Bessette, 808 Linden St., Cleveland, Wis. 53015
Continuation-in-part of Ser. No. 282,651, Dec. 12, 1988, abandoned. This application Apr. 24, 1989, Ser. No. 342,298
Int. Cl.[5] B54G *5/00*
U.S. Cl. 220—470 3 Claims



1. In a flexible fluid-tight liner for a container, a flexible membrane forming a first material shaped to fit into close contact with the interior surface of the container,
a plurality of tubes each held in close proximity to the flexible membrane,
said tubes being inflatable and filled with material under pressure whereby each of said tubes forms a stiffening rib or ring which then holds the first membrane against the interior wall of the container even when the

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4,942,979
ICE DISPENSING APPARATUS
William J. Linstromberg, Lincoln Township, Berrien County; Donald E. Janke, Benton Township, Berrien County, and Chris A. Scriber, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Continuation-in-part of Ser. No. 500,324, Jun. 2, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 747,890
Int. Cl.[5] G07F *11/36*
U.S. Cl. 221—75 35 Claims



1. In an ice dispensing apparatus for selectively dispensing uniform quantities of elongated ice pieces from an ice storage receptacle defining an ice transfer position and means for urging the ice pieces in the receptacle generally horizontally toward said transfer position, and baffle means spaced from said transfer position, said baffle means having a generally horizontal upper edge which defines a dispensing position, the improvement comprising
ice transfer means positioned between said transfer position and said baffle means for receiving ice pieces at said transfer position and advancing said ice pieces to said dispensing position, said ice transfer means comprising means for orienting substantially all of the received elongated ice pieces such that their length extends generally parallel to said baffle means and in a generally upright direction at said dispensing position, whereby said ice pieces are caused to fall freely and rapidly over said baffle edge.
21. The method of dispensing uniform quantities of elon-

gated ice pieces from a chamber having an outlet defined by a generally upright baffle defining an upper edge, comprising the steps of:

orienting substantially all of the elongated ice pieces to extend lengthwise upwardly adjacent said baffle upper edge; and

urging the upwardly extending ice pieces to tip over said upper edge to be transferred from said chamber.

4,942,980

VENDING MACHINE

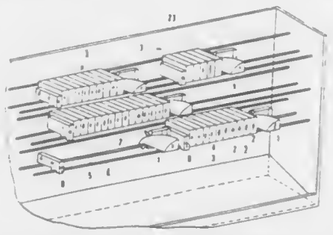
Eberhard Hellermann, Walldorf/Frankfurt, and Hans-Jürgen Welsch, Mannheim, both of Fed. Rep. of Germany, assignors to Harting Elektronik GmbH, Espelkamp, Fed. Rep. of Germany

Filed Mar. 6, 1989, Ser. No. 319,583

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808253

Int. Cl.[5] **B65G** *59/00*

U.S. Cl. 221—244 **28 Claims**



1. A vending machine for dispensing packages comprising elongated support means for supporting a plurality of packages in a substantially horizontal stack, an elongated holder means spaced from said support means to define a slot between said support means and said holder means, said packages having one dimension which exceeds the width of said slot such that when said packages are oriented in one direction, said packages are supported in said stack by said support means and said holder means, said packages having another dimension which is less than the width of said slot, and dispensing means operable to engage an end package in said stack and to tip said end package to thereby orient said other dimension of said package to face said slot so that the package passes through said slot and is thereby dispensed through said slot, said dispensing means having a first position juxtaposed to said end package to be dispensed and a second position juxtaposed to the next succeeding package in said stack, said dispensing means having an upper spring means and a lower spring means, drive means being provided to effect relative movement between said dispensing means and said stack from said first position to said second position, said upper spring means and said lower spring means being operable during said relative movement from said first position to said second position to effect said tipping of said end package, said lower spring means engaging and raising said end package relative to said support means during said relative movement from said first to said second position.

4,942,981

TUBE FOR THE DISTRIBUTION OF A PASTE WITH STRIPES COMPRISING A ONE-PIECE HEAD WITH A DOUBLE SKIRT

Bernard Schneider, Sainte Menehould, France, assignor to Cebal, Clichy, France

Filed Oct. 28, 1988, Ser. No. 263,907

Claims priority, application France, Nov. 3, 1987, 87 16037

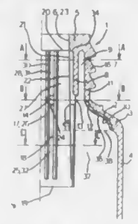
Int. Cl.[5] **B65D** *35/00*

U.S. Cl. 222—94 **19 Claims**

1. A tube for dispensing a paste with stripes comprising a body portion connected to a head portion, both portions made at least in part of plastic material,

the head portion being of unitary construction and comprising a neck portion connected to a shoulder portion comprising a slightly inclined inner annular surface by which said head portion is connected to said body portion;

said head portion comprising an annular outer skirt and an annular inner skirt connected together by a top portion at the top end of said neck portion and defining an annular gap therebetween in said neck portion which gap is closed by said top portion, the interior of said inner skirt being open at the top end of said neck portion and defining a discharge duct and orifice for said tube,



said inner skirt including a plurality of flow openings therein, disposed at least in part above a notional extension of said inclined inner annular surface but below said top portion to thereby define a reservoir in said annular gap between said flow openings and said top portion, and a plurality of pairs of inner longitudinal ribs, a flow opening being disposed between each said pair of ribs, said pairs of ribs extending from the vicinity of the top of said neck portion, to said flow openings to guide paste being dispensed and from said flow openings to the lower third portion of said inner skirt, to brake paste being dispensed.

4,942,982

SILO CLEANING APPARATUS

Wesley D. Hartwigsen, Box 1461; Alan D. Johnson, 2616 Wind River Dr.; Jeffrey C. Beckham, 709 Granite St., and Kenneth L. White, 3233 Watsabangh St., all of, Gillette, Wyo. 82716

Division of Ser. No. 928,090, Nov. 7, 1986, Pat. No. 4,764,221. This application Jan. 28, 1988, Ser. No. 149,338

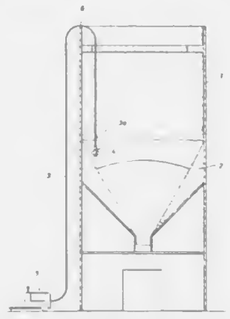
Int. Cl.[5] **B65G** *69/06*

U.S. Cl. 222—195 **9 Claims**

1. An apparatus for removing cohesive masses of particles adhering to the internal walls of a silo, comprising:

a mace;

means for suspending the mace from the top of the silo in a pendulous manner, and in a vertically adjustable manner to place the mace within striking range of the cohesive masses;



means for supplying pressurized gas to the mace for discharge from the mace; and

at least one laterally disposed discharge port on the mace for propelling the mace with a lateral force by discharging the supplied pressurized gas in a direction substantially normal to the axis defined by the suspended mace, propelling the mace in a manner to randomly strike and break up the cohesive masses within the silo.

4,942,983

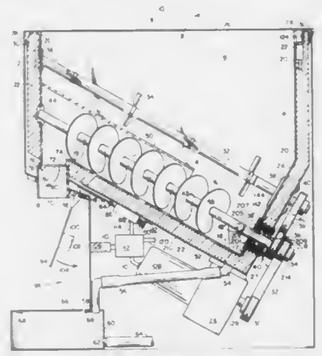
APPARATUS FOR STORING AND DISPENSING PARTICULATE ICE

John R. Bradbury, 6111 Quail Feather La., San Antonio, Tex. 78233

Continuation of Ser. No. 944,845, Dec. 18, 1986, abandoned. This application Oct. 31, 1988, Ser. No. 266,309

Int. Cl.[5] **G01F** *11/20*

U.S. Cl. 222—238 **7 Claims**



1. An apparatus for storing and dispensing particulate ice comprising:

an ice hopper for storage of particulate ice, said ice hopper further comprising a sloped floor;

a selectively actuable means for moving particulate ice contained within said ice hopper upwardly along said sloped floor from the lower end of said sloped floor to the upper end thereof, which ice-moving means has an axis of movement and is adapted to move particulate ice in a direction parallel to said axis of movement;

a first axial means for agitation ice contained within said hopper, which first agitating means is rotatably mounted within said hopper in an orientation having the axis of said first agitating means approximately parallel to said axis of movement of said ice moving means;

an opening in said ice hopper for dispensing particulate ice from said ice hopper, which opening is positioned to receive ice moved by said ice-moving means; and

packing means mounted in a wall of said hopper, said first agitating means having a shaft along its axis which is rotatably mounted in said packing means, said packing means further comprising:

a packing case mounted in said wall and having a hole therethrough for receiving the shaft of said first agitating means;

a thrust bearing mounted in said wall and having a hole therethrough for receiving the shaft of said first agitating means; and

a seal cap received within said hole in said packing case, said seal cap being provided with a means for sealing said seal cap against said shaft of said first agitating means and a means for sealing said seal cap against said packing case.

4,942,984

DRIPLESS SOLDER PASTE DISPENSER

Kenneth L. Miller, Indianapolis, Ind., assignor to SCM Metal Products, Inc., Cleveland, Ohio

Filed Nov. 10, 1988, Ser. No. 269,872

Int. Cl.[5] **G01F** *11/06*

U.S. Cl. 222—309 **5 Claims**

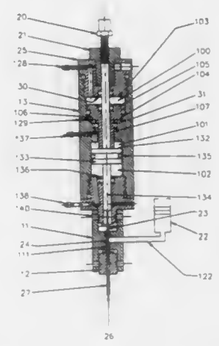
1. A dispensing device comprising: a housing containing upper, middle and lower pressure chambers, each of said chambers being pressurizable;

an upper piston separating the upper and middle pressure chambers, the upper piston having a head and a stem, the cross-sectional dimension of the head being larger than that of the stem and essentially conforming to the inside dimension of the upper pressure chamber, the stem of said upper piston being coincident with the upper surface of the middle chamber;

a lower piston reciprocatably positioned between the middle and lower pressure chambers, the lower piston being such that pressurization of the lower pressure chamber exerts upward pressure on the lower piston, and pressurization of the middle pressure chamber exerts downward pressure on the lower piston;

a reciprocating rod fixedly attached to the lower piston;

a dispensing rod tip attached to the reciprocating rod so as to reciprocate among an upward position, a downward position and an intermediate position with reciprocation of the lower piston and reciprocating rod;



a dispensing tube having a tube opening through which a dispensible semi-solid material may be introduced, the dispensing rod tip being slidably situated within the lumen of the dispensing tube and spacially related to the tube opening such that said tube opening is non-occluded when the dispensing rod tip is in the upward position, thereby allowing the dispensbile semi-solid material to be introduced into the dispensing tube, and said tube opening is occluded when the dispensing rod tip is in the downward position and the intermediate position, the dispensing rod tip being spacially related to the dispensing tube such that when the dispensing tube contains the dispensible material and the dispensing rod tip moves from its downward position to its intermediate position, negative pressure is exerted on the dispensible material causing the material to be snugged back into the dispensing tube

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4,942,985

360 DEGREE VALVE FOR ATOMIZING PUMP DISPENSER

Robert S. Schultz, Old Greenwich, Conn., assignor to Emson Research Inc., Bridgeport, Conn.

Filed Feb. 2, 1989, Ser. No. 305,288

Int. Cl.[5] **B67D** *5/40*

U.S. Cl. 222—376 **6 Claims**

1. A 360° valve body for use with a dispenser comprising:

(a) a lower section of generally cylindrical shape containing therein a central first bore for accepting a dip tube and having a top;

(b) an upper section of generally cylindrical shape but of smaller diameter than said lower section extending from

said top, said upper section having a central second bore therein, said first bore and said second bore having a common axis, said upper section adapted to be inserted into a dispenser

(c) a third bore in the top of said lower section adjacent said upper section and extending to said first bore in said lower section and having therein a seat for a ball check valve;

(d) an arcuate recess formed in a portion of said upper section adjacent said third bore for guiding a ball at one point;

(e) first and second posts, each having an arcuate inner surface, spaced from each other and said arcuate recess for guiding said ball at two other points;

(f) projections on said first and second posts to aid in retaining a ball in place above said seat; and

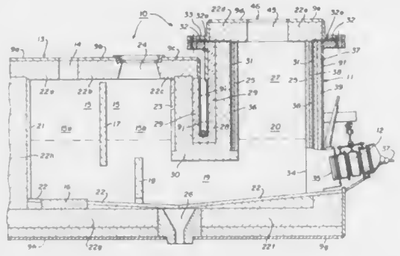
(g) a partially annular wall partially surrounding said upper section, said wall having first and second ends adjacent and spaced from said posts.

4,942,986

PRESSURIZED TUNDISH FOR CONTROLLING A CONTINUOUS FLOW OF MOLTEN METAL

Thomas W. Lewis, 964 Cork Dr., Bethel Park, Pa. 15102; Paul E. Hamill, Jr., R.D. #1, Box 173A1, Jeannette, Pa. 15644; Mustafa R. Ozgu, 790 Yorkshire Rd., Bethlehem, Pa. 18017; Ralph C. Padfield, 1918 Paul Ave., Bethlehem, Pa. 18018; Donovan N. Rego, 1703 W. Brown St., Allentown, Pa. 18104, and Guido P. Brita, 3225 Edna Terrace Ave., Bethlehem, Pa. 18017

Filed Jul. 13, 1988, Ser. No. 218,823
Int. Cl.[5] C21B *3/00*
U.S. Cl. 222—590 **12 Claims**



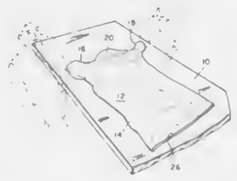
1. A tundish having a first main unpressurized chamber means for receiving molten metal in discrete increments and a second pressurized chamber means in fluid flow communication with said first chamber means for receiving molten metal from said first chamber means on a continuous basis, said second chamber means comprising a metallic box having a flanged cover, a pair of "O" rings at the flange of said flanged cover, and means for controllably introducing a pressurized inert gas into said metallic box.

4,942,987

METHOD OF FOLDING STERILE SURGICAL GARMENTS BEFORE AND AFTER STERILIZATION

Mildred K. Stackhouse, Manhattan Beach, Calif., assignor to Stack Holding Inc., Riverside, Calif.

Filed Mar. 27, 1989, Ser. No. 329,188
Int. Cl.[5] A41D *13/00*
U.S. Cl. 223—37 **3 Claims**



1. A method of folding a surgical gown into a complete package having a hood portion, sleeve portions cuff portion, hem portions, head portion, and an open end comprising the steps of:

placing the gown on a flat surface with the obverse side exposed;

extending the hood portion and the sleeve portions out from the body of the gown so the garment is flat;

pulling the cuff portion of each sleeve up to the shoulder portion thereby folding each sleeve in half and inside out;

gathering the hem portion and folding the gown in half by bringing the hem portion to the shoulder portion thereby leaving half the gown folded inside out with the head portion exposed and the gown substantially flat and in the form of a square;

separating the bottommost portion of the gown and folding the open end of each half sleeve within the folded gown and locating the open end along the edge of the square opposite the head portion;

attaching a pull tab on each sleeve portion within the square and approximately 2 inches from the end of the opening in the sleeve;

folding the head portion within the square;

attaching a single pull tab to the outside portion of the square between each sleeve portions and approximately 4 inches from the bottom of the square;

folding and completely wrapping the gown and inserting the wrapped gown into a sealed plastic container; and

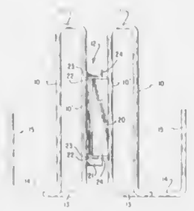
then sterilizing the complete package.

4,942,988

DEVICE TO AID IN PUTTING ON ELASTIC HOSE

Daryl E. Doorenbos, R.R. 2, Box 85A, LeMars, Iowa 51031

Filed Apr. 3, 1989, Ser. No. 332,486
Int. Cl.[5] A47J *51/06*
U.S. Cl. 223—111 **6 Claims**



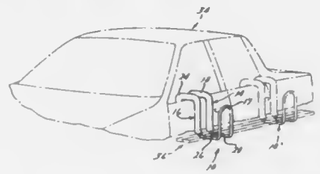
1. An expanding device for stretching elastic members to ease putting such members onto the user comprising a pair of elongated frames adapted to receive said elastic members, the elongation of said frames being in a direction longitudinal of said device, hinge means affixed to each frame of said pair and hinged together on a longitudinal axis whereby said frames can be pivoted toward and away from each other, said hinge means being formed to releasably lock against pivotal action when said frames are in an open position away from each other, and extended handle means on each frame of said pair, said handles being adapted to provide leverage by which said frames can be moved away from each other to said open position.

4,942,989

DEVICE FOR CARRYING LUMBER AND THE LIKE

Kevin W. Miller, Southfield, Mich., assignor to Jupiter Products, Inc., Centerline, Mich.

Filed Jun. 26, 1989, Ser. No. 372,421
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.45 R **15 Claims**



1. A lightweight device adapted for manual mounting and detachment, for carrying elongated articles along an outside surface of an automotive vehicle or the like, said device comprising:

a first S-shaped member having first and second oppositely facing U-shaped loops sharing a common arm;

a second S-shaped member having third and fourth oppositely facing U-shaped loops sharing a common arm;

an intermediate member connecting the first and second S-shaped members together, said intermediate member being of sufficient length and rigidity to maintain said first and second S-shaped members in substantially adjacent and parallel relationship to each other while being spaced apart from each other by a sufficient distance to provide lateral stability when the device is mounted on the vehicle, said first, second and intermediate members being shaped from a one-piece continuous length of tubing; and

whereby the first and third loops are adapted to be hooked over a first part of the vehicle, with the second and fourth loops serving to support one end of the elongated articles along the outside surface of the vehicle in cooperation with another substantially similar device, adapted to be hooked over a second part of the vehicle, which supports a second end of the articles.

4,942,990

CONTRACTORS' CADDY

Wood G. White, 18605 Center St., Castro Valley, Calif. 94546

Filed Jun. 1, 1987, Ser. No. 56,960
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—42.42 **8 Claims**

1. A contractor's caddy system for use in cooperation with a truck having a floorboard at a floorboard area and a front seat to the rear of and above said floorboard area, comprising:

a caddy having a box-like structure with a bottom wall, vertical walls providing front, rear, and side walls, and a flat top wall, with a handle-aligning opening parallel to said front wall and centered between said front and rear walls, and centered between said side walls,

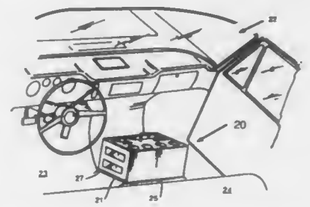
a caddy retainer comprising a base plate with first and second opposed ends, each one of said first and second opposed ends having an upwardly extending peripheral flange,

said caddy being sized to fit detachably on said base plate of said caddy retainer by biasing outwardly said flanges of said caddy retainer to provide a frictional fit between said caddy and said caddy retainer,

said caddy retainer having securing means for firmly securing said caddy retainer to said truck over said floorboard area, to locate said caddy forward of and lower than the front seat at a location readily accessible to the driver, said securing means holding said caddy retainer stationary with respect to said floorboard,

a handle slidably secured to said box-like structure of said caddy and extending through said handle-aligning opening, said handle serving for carrying said caddy when said caddy is separated from said caddy retainer, said handle being located by said handle aligning opening to be centrally between said front and rear walls and centrally between said side walls, and parallel to said front wall, said handle sliding up and down said handle-aligning opening for freely and readily collapsing vertically down from said flat top wall into said caddy, to a position substantially flush with said flat top wall, for storage, and sliding upwardly by being pulled to a second position projecting vertically upwardly for carrying said caddy,

said caddy being recessed down from said top wall and shaped to provide a series of vertical compartments and receptacles, including some deep compartments and receptacles that extend down substantially nearly to said bottom wall and some compartments and recesses that are shallow and are spaced above said bottom wall.

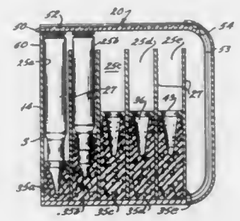


4,942,991

AMMUNITION CONTAINER

Robert M. Lyons, 511 W. 3rd St., Reno, Nev. 89503

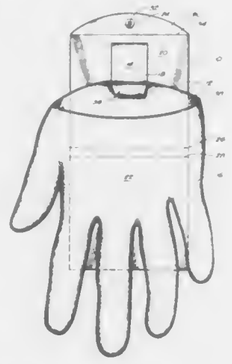
Filed Oct. 30, 1989, Ser. No. 429,039
Int. Cl.[5] B65D *83/02*
U.S. Cl. 224—196 **16 Claims**



1. A portable ammunition container comprising a housing, said housing having an opening formed in the upper end thereof and having opposing side walls and front and rear end walls, a bottom wall joined to said opposing side walls and said front and rear end walls, a plurality of chambers formed within said housing, each of said chambers being spaced with respect to one another by at least one partition means, a resilient foam support pad means provided within each of said chambers,

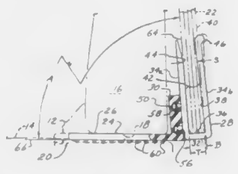
each of said pad means extending from adjacent said bottom wall of said housing upwardly toward and in spaced relationship with respect to the opening therein, a recess formed in each of said pad means for grippingly receiving the bullet end of a round of ammunition therein, each of said pad means being compressible as a round of ammunition is inserted within said recesses therein, and a lid means carried by said housing for selectively closing the opening therein, whereby said pad means are maintained compressed through engagement between said lid means and the other opposite end of the round of ammunition.

4,942,992
GLOVE DISPENSER
Frank E. Fischer, 7500 Bellerive #1419, Houston, Tex. 77036, and Shayne A. Kelly, 2502 Long Reach, Sugarland, Tex. 77478
Filed Oct. 30, 1989, Ser. No. 428,962
Int. Cl.[5] B65D *81/00*; A45F *5/02*
U.S. Cl. 224—240 **20 Claims**



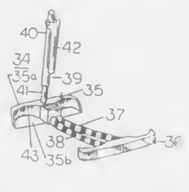
1. A glove dispenser comprising:
a case having an open position and a closed position, said case having means on one side for attachment to a belt: and
a clip within said case and fastened thereto said clip adapted for receiving the cuff of a glove.

4,942,993
VEHICLE SEAT STORAGE APPARATUS
Kenneth L. Delgado, 1318 Susan Ave., Redlands, Calif. 92374
Filed Jun. 20, 1988, Ser. No. 208,471
Int. Cl.[5] B60R *11/06*
U.S. Cl. 224—275 **13 Claims**



1. Apparatus for removably storing an object behind the seat of a vehicle, the seat having a seat member and a back member, an openable passage being formed between the seat member and the back member, the apparatus comprising:
(a) an anchor member for inserting forwardly into the passage from behind the seat, the anchor member having a front portion, a substantially vertically extending leg portion at the rear of the front portion, and opposite side extremities, the anchor member being supported by engagement with the passage;
(b) a support member connected to the anchor member, the support member extending rearwardly behind the seat for supporting the object;
(c) a retainer member connected to the rear of the support member and extending upwardly therefrom for removably holding the object proximate the back member; and
(d) a U-shaped member rigidly connected to the leg portion of the anchor member for receiving the object, the U-shaped member having a base member and a pair of upstanding leg members, one of the leg members forming the retainer member, the base member forming the support member.

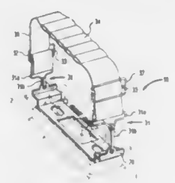
4,942,994
SKI BOOT HOLDER
Lawrence D. Sterenberg, R.R. #4 P.O. Box 325, Marshall, Ill. 62441
Filed Aug. 15, 1988, Ser. No. 232,279
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—247 **10 Claims**



1. In a boot carrier for ski boots, said ski boots being a right and left boot, each of said boots having:
a. a heel and a toe,
b. a flat rigid sole,
c. a toe notch across the toe for ski bindings, and
d. a heel notch across the heel for ski bindings;
wherein the improved carrier comprises:
a unitary, contoured heel frame adapted to fit closely around the backs of both of the heels of a pair of ski boots, said heel frame including contoured cavities generally conforming to the respective back portions of the heels of a pair of ski boots when placed side-by-side in a normally upright position with the backs of the heels nesting in said heel frame flexible tensioning means extending from said contoured heel frame for retaining said ski boots received in said heel frame; and a support means comprising a rod-like, rigid member extending from the mid portion of said contoured heel frame at a small angle from the vertical, toward the front of said boots for supporting the heel frame and ski boots for supporting the heel frame and ski boots received in said heel frame.

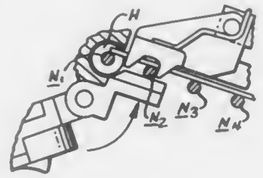
4,942,995
CAR RADIO HOLSTER
Errol Myers, 190 Palmetto St., Brooklyn, N.Y. 11221
Filed Aug. 31, 1989, Ser. No. 401,042
Int. Cl.[5] A45F *3/14*
U.S. Cl. 224—258 **3 Claims**

1. A device for carrying a vehicle radio comprising a frame member fixedly attachable to said radio, and a shoulder strap selectively attachable to said frame member, said frame member being formed in a manner to be fitted about the periphery of the forepart of said radio, said frame member comprising a substantially C-shaped member including a main body portion and reversed-Z-shaped arms extending from each end of said main body portion, said main body portion including a centrally disposed rectangular opening for receipt of the face of said radio and elliptical openings formed to each side of said



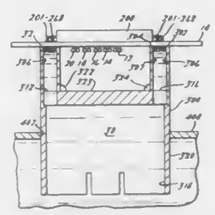
rectangular opening for receipt of the knob spindles of said radio, said arms having openings formed in the distal leg of said Z-shaped member providing means for attachment of said shoulder strap.

4,942,996
FASTENER-DRIVING TOOL
Robert L. Wolfberg, Buffalo Grove; Rudolph A. M. Golsch, Arlington Heights, and Frank C. Howard, Mount Prospect, all of, assignors to Illinois Tool Works, Inc., Chicago, Ill.
Filed Sep. 23, 1988, Ser. No. 248,185
Int. Cl.[5] B25C *1/04*
U.S. Cl. 227—136 **4 Claims**



1. A fastener-driving tool comprising:
(a) a housing structure having a nosepiece defining a drive track adapted to receive a fastener and to guide the fastener as the fastener is driven from the driver track;
(b) a magazine mounted to the housing structure in spaced relation to the drive track and adapted to store a strip of collated fasteners so that a leading portion of the strip extends from the magazine toward the drive track; and
(c) a nail-feeding mechanism mounted operatively to the housing structure, the nail-feeding mechanism including:
(1) means for feeding fasteners individually and sequentially into the drive track from the leading portion of a given strip of collated fasteners thus stored by the magazine, said means including a fastener-feeding element having at least one groove adapted to receive one such fastener;
(2) a fixed structure fixed to the housing structure and adapted to confine one of two sides of the leading portion of the given strip so as to guide the leading portion of the given strip along fastener-guiding surfaces of the fixed structure as fasteners from the leading portion of the given strip are thus fed;
(3) a hinged structure hinged to the nosepiece and adapted when disposed in an operative position to confine the other side of the leading portion of the given strip so as to guide the leading portion of the given strip along fastener-guiding surfaces of the hinged structure as fasteners from the leading portion of the given strip are thus fed, the hinged structure including:
(i) a holding member hinged to the nosepiece, adapted when disposed in an operative position to hold one such fastener in the groove of the fastener-feeding element, and adapted to be hingedly moved to inoperative positions so as to expose said groove, any such fastener in said groove, and any such fastener in the drive track; and
(ii) a hinged cover hinged to the nosepiece, adapted when disposed in an operative position to secure the holding member in the operative position of the holding member, as the sole means for securing the holding member in the operative position of the holding member, and adapted to be hingedly moved to inoperative positions so as to allow the holding member to be hingedly moved to inoperative positions of the holding member, and so as to expose fastener-guiding surfaces of the fixed structure, any fasteners between the magazine and the fastener-feeding element, and any fastener in the drive track; and
(4) means for securing the hinged cover releasably in the operative position of the hinged cover with the holding member in the operative position of the holding member.

4,942,997
SOLDER FLOW WELL FOR REFLOWING SOLDER OF MULTIPIN COMPONENTS
Peter J. Sinkunas, Canton; Rodney L. Ritter, Woodhaven, and James E. Altpeter, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 3, 1987, Ser. No. 92,799
Int. Cl.[5] B23K *3/00*
U.S. Cl. 228—56.1 **5 Claims**



1. A solder well for use in the desoldering and removing of a multi-terminal electrical component from its soldered connection to a printed circuit board, comprising:
a closed outer wall having inner and outer surfaces and configured to have an upper edge that lies in a generally horizontal plane;
a closed inner wall having a first surface that opposes said inner surface of said closed outer wall to define a molten solder receiving channel and configured to have an upper surface that lies in a plane generally coplanar with the upper edge of said closed outer wall;
said solder receiving channel is defined by said closed outer and inner walls to correspond to the pattern of the multipin terminal connections to the printed circuit board; and
said closed inner wall also has a second closed surface that defines a cup to receive excess solder from said channel and a means for draining the cup.

VOL 1116 ISS 4 JL 24 1990 UMI

4,942,998

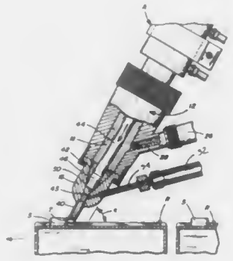
APPARATUS AND PROCESS FOR AUTOMATICALLY DISPENSING METAL ALLOY PASTE MATERIAL FOR JOINING METAL COMPONENTS

Bruce B. Horvath, 1831 E. 291st St., Wickliffe, Ohio 44092; Raymond A. Huribut, 34910 Dixon Rd., Willoughby Hills, Ohio 44094; A. Thomas DiFranco, 6760 Stafford Dr., Mayfield Hts., Ohio 44124, and Bruce R. Williams, 13278 Green Dr., Chesterland, Ohio 44026

Continuation of Ser. No. 285,284, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 165,440, Feb. 29, 1988, abandoned, which is a continuation of Ser. No. 54,142, May 12, 1987, abandoned, which is a continuation of Ser. No. 893,485, Aug. 7, 1986, abandoned, which is a continuation of Ser. No. 788,661, Oct. 17, 1985, abandoned, which is a continuation of Ser. No. 532,998, Sep. 19, 1983, abandoned. This application Aug. 9, 1989, Ser. No. 393,078

Int. Cl.[5] B23K *3/06*

U.S. Cl. 228—102 3 Claims



1. A process for joining a first metal component to a second metal component by means of a soft-solder alloy paste composition, the process comprising the steps of continuously moving said first metal component relative to a paste applicator station including an applicator gun means having an ejector nozzle, automatically controlling movement of said first metal component relative to said ejector nozzle, delivering a predetermined quantity of said alloy paste composition from said applicator gun means to and through said ejector nozzle, applying a predetermined pneumatic pulse into said nozzle in timed sequence with movement of said paste composition for shearing said paste composition to provide a predetermined discrete paste increment unit substantially simultaneously ejecting said increment unit axially from said ejector nozzle onto a predetermined area of said first metal component, said discrete unit of paste material is ejected from said applicator gun means by a distance at least as great as the maximum transverse dimension of the paste deposit resulting from disposition of the said paste unit increment, and said paste material has a viscosity, at ambient temperature, in the range between 150,000 and 500,000 cantipories, and wherein said pneumatic pressure is automatically controlled so as to deliver a pressure between 15 psi to 30 psi, moving said second metal component into engagement with said first metal component with said paste increment unit disposed in the joint area to provide a solder joint, heating said solder joint to physically join said components together, and cooling said joint to provide a metal-to-metal solder joint.

4,942,999

METAL-CERAMIC JOINED COMPOSITE BODIES AND JOINING PROCESS THEREFOR

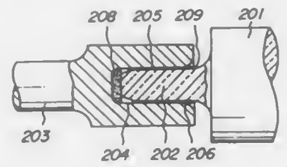
Isao Oda; Takao Soma, both of Nagoya; Nobuo Tsuno, Kasugai; Takashi Ando, and Yoshizumi Nakasuji, both of Nagoya, all of Japan, assignors to NGK Insulators, Inc., Japan

Filed Aug. 25, 1988, Ser. No. 236,145

Claims priority, application Japan, Aug. 31, 1987, 62-215187; Dec. 11, 1987, 62-311836; Mar. 22, 1988, 63-65864; Jun. 3, 1988, 63-135721

Int. Cl.[5] B23K *1/19, 103/16*

U.S. Cl. 228—124 18 Claims



1. A metal-ceramic joined composite body comprising a ceramic member having a projection formed thereon, at least a portion of said projection having a constant outer diameter, and a metallic member having a recess formed therein, at least a portion of said recess having a constant inner diameter, corresponding to that portion of the projection having a constant outer diameter, said projection being inserted and joined into said recess such that an outer peripheral surface of the projection is integrally joined to an inner peripheral surface of the recess by brazing substantially only at that portion of the projection having a constant outer diameter and that portion of the recess having a constant inner diameter, wherein said joining between the metallic member and the ceramic member is substantially limited to the joining between the outer peripheral surface of the projection and the inner peripheral surface of the metallic member by providing a thin layer made of a material not joinable to a brazing metal onto a surface of a tip end of the projection and interposing a low elasticity intermediate member of a material not joinable to a brazing metal between the surface of the tip end of the projection and the bottom surface of the recess.

4,943,000

METHOD OF BRAZING ALUMINUM ALLOYS WITHOUT FILLER METAL

Guy-Michel Raynaud, Saint Egreve; Louis Realis, Charavines, and Didier Constant, Saint Egreve, all of France, assignors to Cegedur Societe de Transformation de L'Aluminum Pechiney, Paris, France

Filed Dec. 16, 1987, Ser. No. 133,883

Claims priority, application France, Dec. 16, 1986, 86 18454

Int. Cl.[5] B23K *20/00*

U.S. Cl. 228—193 9 Claims



1. Method of brazing without filler metal of two components of which at least one is of Al alloy, comprising the steps of;

(a) before brazing, maintaining a component of Al alloy in a region of temperatures included between the temperature of solvus of said Al alloy and 2/5 of the temperature of fusion of said Al alloy expressed in °Kelvin, for a time greater than or equal to the time minimum of one of the TTP curves of said Al alloy, P being either a mechanical characteristic, or the sensitivity to corrosion; and

(b) assembling said components and brazing in a region of temperatures included between the temperature of the most fusible eutectic corresponding to the equilibrium diagram of the constituents of the Al alloy and that of solidus of said Al alloy.

4,943,001

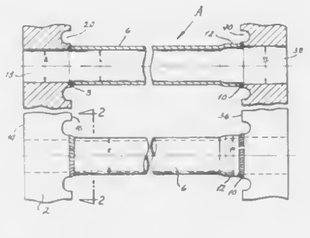
TUBE-TYPE VESSEL HAVING CREVICE-FREE JOINTS AND METHOD FOR MANUFACTURING THE SAME

John J. Meyer, St. Louis, Mo., assignor to Nooter Corporation, St. Louis, Mo.

Filed Jul. 7, 1987, Ser. No. 70,570

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—173.4 11 Claims



1. A process for manufacturing a tube-type vessel, said process comprising: providing a first tubesheet having front and back faces and first bores extended generally between those faces as well as first sockets arranged such that the first bores open out of the back face through the first sockets; providing a second tubesheet having first and second faces and second bores extending generally between those faces as well as second sockets arranged such that the second bores open out of the back face through the second sockets, the diameter of the second bores being greater than the diameter of the first bores and the diameter of the second sockets being greater than the diameter of the first sockets; positioning the tubesheets with their back faces presented toward each other and with their bores aligned, so that for each first bore in the first tubesheet, a corresponding second bore in the second tubesheet aligns with it, with the sockets at the ends of those bores being presented toward each other; inserting a separate tube axially through each second bore in the second tubesheet and bringing its leading end into the socket at the end of the corresponding first bore in the first tubesheet, the tube having an outside diameter that is greater than the diameter of the first bore but less than the diameter of the first socket at the end of the first bore and also less than the diameter of the second bore; while the leading end of the tube is in the first socket, welding that end of the tube to the back face of the first tubesheet around the first bore with which it is aligned; expanding the trailing end of the tube into the second socket at the end of the second bore through which the tube was inserted, so as to produce an enlarged end portion having an outside diameter that is larger than the diameter of the second bore; and while the trailing end of the tube is in the second socket, welding that end of the tube to the back face of the second tubesheet around the second bore with which the tube aligns.

4,943,002

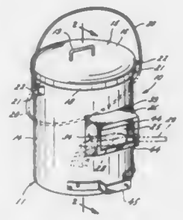
ASH CONTAINER

Daniel Fraher, P.O. Box 141, Aroma Park, Ill. 60910

Filed May 18, 1989, Ser. No. 353,885

Int. Cl.[5] B65D *91/00*

U.S. Cl. 232—43.1 18 Claims



1. An ash container comprising

a receptacle having a bottom wall and a side wall defining an open top,

a removeable cover for closing the open top of said receptacle, a collar extending outwardly from one side of said side wall intermediate said bottom wall and the top of said receptacle defining a side entrance opening to said receptacle,

said side wall having a lower uninterrupted portion below said entrance opening and a upper uninterrupted portion above said entrance opening,

said bottom wall and said lower uninterrupted portion of said side wall defining an ash accumulation zone below said entrance opening for containing ash deposited into said receptacle through said entrance opening, and

said cover and said upper uninterrupted portion of said side wall defining a dust reflection and redirection zone above said entrance opening for confining and redirecting downwardly into said accumulation zone dust from ash deposited into said receptacle through said entrance opening.

4,943,003

CONTROL DEVICE FOR HEAT PUMP WITH HOT-WATER SUPPLY FACILITY

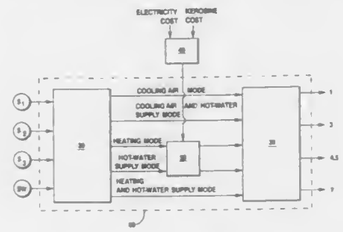
Mitsuo Shimizu; Kazuo Maehara; Hidenobu Shinohara, and Hideo Kojima, all of Isesaki, Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed Feb. 15, 1989, Ser. No. 310,386

Claims priority, application Japan, Feb. 15, 1988, 63-32470

Int. Cl.[5] G05B *13/02*

U.S. Cl. 237—2 B 1 Claim



1. A control device for a heat pump system having a hot-water supply facility and including a heat pump, a boiler and a hot-water supply tank comprising:

input means for inputting the cost of electricity for operating

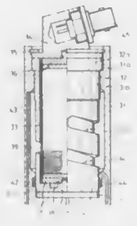
the heat pump and for inputting the cost of fuel for operating the boiler;
first sensor means for detecting the temperature of the ambient air;
second sensor means for detecting the moisture of the ambient air;
third sensor means for detecting the temperature of the hot-water supply;
operation means for selecting an operational mode in accordance with output signals from said sensor means;
comparison means for selecting the cheaper energy cost on the basis of cost data received from said input means in the heating air mode and in the hot-water supply mode; and
control circuit means for operating either the heat pump or the boiler based on the result of the comparison performed by said comparison means.

4,943,004

ACTUATOR FOR A FUEL INJECTOR

Takeshi Takahashi, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 9, 1988, Ser. No. 281,769
Claims priority, application Japan, Dec. 29, 1987, 62-335260
Int. Cl.[5] H01L *41/08*
U.S. Cl. 239—95 **26 Claims**



1. An actuator for a fuel injector, comprising:
an actuator housing having a cylinder bore formed therein;
a hollow cylindrical spring member, one end of which is supported by the actuator housing and another end of which forms a piston slidably inserted into the cylinder bore and defining a cylinder chamber in the cylinder bore, said spring member including a first surface, said cylinder bore including a second surface, said first and second surfaces engaging one another and preventing said one end of the cylindrical spring member from moving toward said another end; and
a piezoelectric element inserted into the hollow cylindrical spring member and supported between the actuator housing and the other end of the hollow cylindrical spring member.

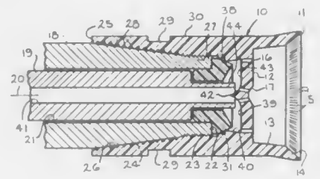
4,943,005

ROTARY ATOMIZING DEVICE

Richard Weinstein, Toledo, Ohio, assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Jul. 26, 1989, Ser. No. 385,734
Int. Cl.[5] B05B *3/10*
U.S. Cl. 239—223 **7 Claims**

1. A rotary paint atomizing device for attachment to a free end of a rotatable tubular drive shaft having an axial passage with a paint feed tube extending coaxially therethrough, said device having an axis of rotation with first and second ends on said axis, said first end of said device forming an opening for receiving said drive shaft end, means in said opening for removably attaching said device to said drive shaft end to retain said device coaxially on said drive shaft end, a surface at said second end for receiving paint and delivering a flowing film of such paint to a paint discharge edge, a front wall separating said first and second ends, said wall having an interior surface forming a forward wall portion of a paint receiving chamber, a plurality of passages through said wall for distributing paint from said chamber onto said surface as said device is rotated by said drive shaft, said device being characterized by an annular



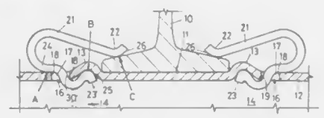
insert positioned coaxially with said shaft and said device and clamped between said drive shaft end and said device, said insert having an axial opening, said insert forming a removable rear wall portion of said paint receiving chamber for providing access to said chamber, and wherein said paint feed tube extends coaxially into said insert opening.

4,943,006

RAIL FASTENING MEANS

Jack Clark, and Norman K. Geddes, both of Adelaide, Australia, assignors to BHP Rail Products, Inc., Melbourne, Australia

Continuation of Ser. No. 398,207, Jul. 14, 1982, abandoned. This application Jul. 3, 1985, Ser. No. 752,476
Claims priority, application Australia, Jan. 25, 1982, 2427
Int. Cl.[5] E01B *9/48*
U.S. Cl. 238—349 **13 Claims**



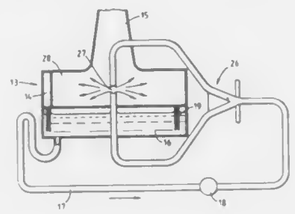
1. A combination of a rail sleeper and fastening clip for fastening the foot of a rail to the sleeper comprising:
a sleeper having an upper and lower surface;
at least one protuberance formed in the sleeper and defining on the upper surface of the sleeper an upstanding rail seat for supporting and retaining a rail for gauge and defining on the lower surface of the sleeper a concave clip retaining recess;
at least one clip aperture formed through the sleeper adjacent to the protuberance and opposite the rail seat;
at least one fastening clip of a general U-shaped configuration having an upper toe, a heel and a lower toe and adapted to resiliently lock through the clip aperture such that the upper toe bears downwardly on the rail foot, the heel bears downwardly on the upper surface of the sleeper and the lower toe bears upwardly against the clip retaining recess; and
the lower toe of the fastening clip being formed of a concave portion adjacent the heel which extends through the clip aperture and beneath the lower surface of the sleeper and terminating in a convex portion which is complementary to and bears against the clip retaining recess.

4,943,007

SPRAY GENERATORS

Michael J. Bowe, New Longton, and Stuart A. Clark, Hoghton, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, England

Filed Mar. 3, 1989, Ser. No. 319,253
Claims priority, application United Kingdom, Mar. 4, 1988, 8805151; May 25, 1988, 8812394; Dec. 2, 1988, 8828332
Int. Cl.[5] B01D *53/18*; B05B *1/10, 12/00*
U.S. Cl. 239—405 **13 Claims**



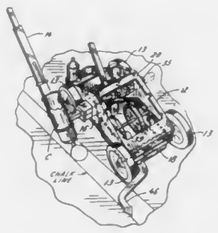
1. A spray generator for producing a spray of droplets of narrow size spectrum comprising a pair of spaced-apart nozzles disposed such that liquid flows issuing therefrom impinge and interact to form a spray, and means for imposing a substantially uniform cyclic disturbance on the liquid flows at the nozzles, which nozzles are located in a vortex chamber, the vortex chamber having a tangential gas inlet and an axial gas outlet, the nozzles being located in a central region as viewed axially.

4,943,008

CHASSIS ASSEMBLY FOR SPRAYING APPARATUS

Thomas J. Sart, Cary, Ill., assignor to Fox Valley Systems, Inc., Cary, Ill.

Filed Mar. 30, 1989, Ser. No. 331,267
Int. Cl.[5] B05B *1/28, 9/04*; E01C *23/16*
U.S. Cl. 239—754 **11 Claims**



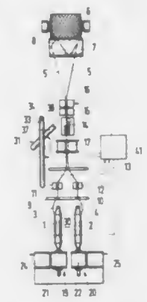
1. A movable spraying apparatus for marking a surface over which the apparatus moves, said apparatus comprising:
chassis means for supporting a container which contains material which the apparatus discharges onto the surface to make a mark, said chassis means comprising: a housing and a beam member secured to said housing, said beam member having a first segment disposed in said housing and a second segment disposed outward of said housing as a cantilever;
wheel means rotatably mounted to said chassis means for supporting said chassis means and allowing a user to move the apparatus over the surface; and
handle means adapted for being selectively and releasably secured to said first or second segment of said beam member for controlling said apparatus and the container to discharge material from the container onto the surface in a predetermined pattern.

4,943,009

PLYING OR DOUBLING MACHINE

Ditmar Gerstner-Stevens, Obertshausen, and Josef Schrod, Eppertshausen, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Mar. 16, 1989, Ser. No. 324,304
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3808957
Int. Cl.[5] B65H *54/00, 63/024*
U.S. Cl. 242—42 **9 Claims**



1. A plying machine wherein at least two original threads taken from run-off spools are together wound as a doubled thread over a plying spool, comprising:
a magazine for replacing one of said run-off spools with at least one reserve spool;
thread watching means for sensing the absence of said original threads along predetermined respective paths and for providing in response thereto a watcher signal;
a common cutting means for concurrently cutting said original threads;
a combining means for binding together said original threads and said doubled thread, said combining means being positioned, at least when binding, at at least one predetermined position on the machine;
a plurality of guiding means, each having a thread grasping means, for providing said original threads and said doubled thread to said combining means; and
control means coupled to said cutting means, to said binding means and to at least one of said guiding means for automatically operating them in response to said watcher signal.

4,943,010

ACCELERATION SENSOR

Toshimasa Yamamoto, and Yuji Nishimura, both of Niwa, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusko, Aichi, Japan

Filed Sep. 22, 1988, Ser. No. 247,528
Claims priority, application Japan, Sep. 24, 1987, 62-145701[U]
Int. Cl.[5] B60R *22/40*
U.S. Cl. 242—107.4 A **16 Claims**

1. An acceleration sensor comprising:
a first inertia body;
first means for holding the first inertial body so that the first inertia body can move upon being subjected acceleration of at least a predetermined magnitude;
a first lever means having a first end portion resting on said first inertia body, and a second end portion;
first means for mounting the first lever means so that the first

lever means can be pushed and swung by said first inertia body when said first inertia body is moved;

a second inertia body;

second means for holding the second inertia body so that the second inertia body can move upon being subjected to vertical acceleration of at least predetermined magnitude;

a second lever means having a first end portion resting on said second inertia body, and a second end portion; and



second means for mounting the second lever means so that the second lever means can be pushed and swung by said second inertia body when said second inertia body is substantially vertically moved so as to push against said second end portion of said first lever means to limit the swinging of said first lever means.

4,943,011

SEAT BELT RETRACTOR WITH TENSION-REDUCING WINDING MECHANISM

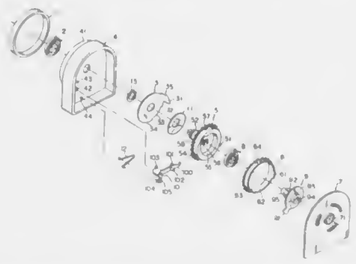
Hideo Kitamura, and Ichiro Nakagawa, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 417,020

Claims priority, application Japan, Oct. 12, 1988, 63-254984

Int. Cl.[5] B60R *22/44*

U.S. Cl. 242—107 **5 Claims**



1. A seat belt retractor having a belt-winding mechanism that includes a belt reel shaft mounted for rotation in a frame, a toothed wheel mounted for rotation relative to the reel shaft, a main spiral winding spring connected at one end to the frame and at the other end to the toothed wheel and biasing the toothed wheel rotationally in the belt-winding direction, an auxiliary spiral winding spring connected at one end to the toothed wheel and at the other end to the reel shaft to bias the reel shaft in the belt-winding direction relative to the toothed wheel, and means for stopping rotation of the toothed wheel in the belt-winding direction to remove the bias of the main winding spring from the reel shaft including a stopper pawl engageable with the toothed wheel, characterized in that the toothed wheel has ratchet teeth engageable by the stopper pawl such as to be prevented from rotating in the belt-winding direction upon such engagement, in that an over-center spring is connected between the frame and the stopper pawl and biases the pawl toward or away from engagement with the ratchet teeth of the toothed wheel, depending on the position to which the stopper pawl is moved, and in that a clutch plate is coupled by a clutch spring to the toothed wheel and has cam surfaces engageable with a clutch control follower pin on the stopper pawl to control the position of the stopper pawl in response to winding and unwinding movements of the belt reel shaft such as to hold the pawl out of engagement with the ratchet teeth when the belt is unwound from the reel and is then allowed to partly rewind onto the reel and to enable the stopper pawl to engage the ratchet teeth and prevent rotation of the gear wheel in the belt-winding direction when the belt is pulled out such as to rotate the reel shaft in the belt-unwinding direction after such partial rewinding.

4,943,012

DOUBLE BEARING FISHING REEL

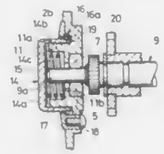
Atsuhito Aoki, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Feb. 9, 1988, Ser. No. 153,927

Claims priority, application Japan, Feb. 9, 1987, 62-18155[U]; Feb. 9, 1987, 62-18156[U]

Int. Cl.[5] A01K *89/033*

U.S. Cl. 242—290 **1 Claim**



1. A double bearinng fishing reel comprising:

(a) a reel body having two spaced-apart side frames opposite each other;

(b) a spool shaft having two end portions rotatably supporting said shaft between said side frames and being rotatable in association with the rotation of a reel handle;

(c) a cylindrical male-threaded protrusion extending laterally from one of said side frames and having a bearing hole therein for receiving one end portion of said spool shaft, said male-threaded protrusion having a first cylindrical wall coaxial with said bearing hole, and a first flange member extending radially inwardly from said first cylindrical wall;

(d) a brake adjusting screw member having a second cylindrical wall and an end wall, wherein the inner wall of said second cylindrical wall is provided with an annular groove, and further including an annular brake adjusting spring fitted in said annular groove, a protrusion extending radially outwardly from said brake adjusting spring, and a wavy surface formed on the inner peripheral surface of a recess of said one side frame so that said wavy portion is engaged with said protrusion from said annular brake adjusting spring to restrain said brake adjusting screw from being loosened and to produce click sounds when said brake adjusting screw member is turned, said second cylindrical wall being threadably engaged with said male-threaded protrusion and said end wall abutting against one end portion of said spool shaft in the axial direction when screwed onto said male-threaded protrusion;

(e) a radial protrusion extending radially outwardly from said second cylindrical wall and having an outer end surface;

(f) a retaining member affixed by fasteners to the outside of said one side frame and having a central bore with a second flange member extending radially inwardly, said second flange member having an inner surface adapted to engage with said outer end surface of said protrusion on said second cylindrical wall so as to restrain said brake adjusting screw member from inadvertently coming off said protrusion of said side frame.

4,943,013

FASTENER SYSTEM FOR A JET ENGINE MOUNTING

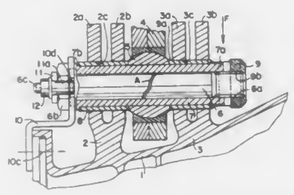
Patrick Kapala, Claye Souilly, and Jean-Pierre Mareix, Avon, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d-Aviation (SNECMA), Paris, France

Filed Aug. 28, 1989, Ser. No. 398,921

Claims priority, application France, Sep. 1, 1988, 88 11434

Int. Cl.[5] B64D *27/00*

U.S. Cl. 244—54 **10 Claims**



1. A fastener system for attaching a jet engine casing to a mounting bar such that the system may be attached and removed with access to only one side of the mounting bar, the system comprising:

(a) upstream and downstream flanges extending from the jet engine casing defining openings generally coincident with an opening defined by the mounting bar, the flanges being located on opposite sides of the mounting bar;

(b) a first hollow sleeve member extending through the opening defined by the downstream flange, the hollow sleeve member defining a threaded portion;

(c) a second hollow sleeve member extending through the opening defined by the upstream flange;

(d) a hollow pin member having a head portion and a shaft portion extending through the opening defined by the mounting bar and into both sleeve members;

(e) anti-rotation means interposed between the downstream hollow sleeve member and the hollow pin member to prevent relative rotation between these elements; and

(f) bolt means extending through the hollow pin member and threadingly engaging the threaded portion of the downstream sleeve member, the bolt means having a headed portion bearing against the head portion of the hollow pin member such that tightening the bolt means urges the hollow sleeve members towards each other.

4,943,014

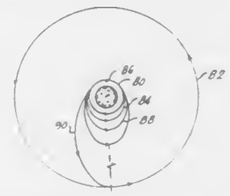
SOFT RIDE METHOD FOR CHANGING THE ALTITUDE OR POSITION OF A SPACECRAFT IN ORBIT

Oliver P. Harwood, Huntington Beach, and John A. Love, Seal Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 170,190, Mar. 18, 1988, abandoned, which is a continuation of Ser. No. 916,907, Dec. 8, 1986, abandoned, which is a continuation of Ser. No. 769,635, Aug. 26, 1985, abandoned, which is a division of Ser. No. 407,379, Aug. 12, 1982, Pat. No. 4,575,029, which is a continuation of Ser. No. 89,349, Oct. 30, 1979, abandoned. This application Apr. 14, 1989, Ser. No. 338,468

Int. Cl.[5] B64G *1/26, 1/10*

U.S. Cl. 244—158 R **10 Claims**



8. A soft ride method for changing the position of an orbiting satellite comprising the steps of:

selecting an orbital location for commencing a soft ride change in orbital position;

providing a relatively low acceleration thrust;

altering the velocity of said satellite; and

repeating said thrust until a desired orbital position is achieved.

4,943,015

FIXING SYSTEM ENABLING A STRUCTURE TO BE RAPIDLY DOCKED FOR SECURING THEREON AN ELEMENT IN A DETACHABLE WAY

Freddy Geyer, Cannes La Bocca; Jean P. Henry, Vallauris, and Paul Libert, Les Adrets De L'Esterel, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Aug. 1, 1989, Ser. No. 388,009

Claims priority, application France, Aug. 5, 1988, 88 10630

Int. Cl.[5] B64G *1/64, 4/00*

U.S. Cl. 244—161 **10 Claims**

1. Fixing system enabling in particular to rapidly dock a structure for securing thereon an element in a detachable way, wherein the system comprises:

pliers able to open spontaneously under the action of a first spring;

a mobile rod able to slide under the action of a second spring so as to close said pliers against the action of said first spring;

a mobile support for said second spring;

controllable locking means to lock said sliding rod and said mobile support and able to occupy three positions, namely;

a first position in which said rod and said support are locked and said second spring is compressed;

a second position in which said rod is unlocked, but said support remains locked; and

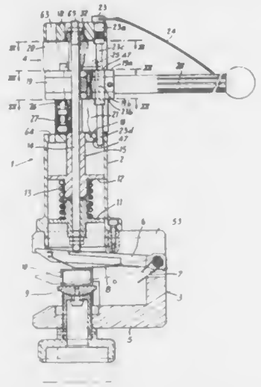
a third position in which said rod and said support are unlocked;

and means with deliberate control to block said locking means and also able to occupy three positions, namely:

a first position in which said locking means are blocked in their first position;

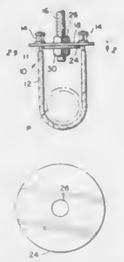
VOL 1116 ISS 4 24 1990 UMI

a second position in which said locking means can pass from their first to their second position; and



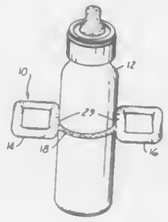
a third position in which said locking means can pass from their second to their third position.

4,943,016
PIPE HANGER ASSEMBLY
Richard Heusecke, 1804 Dixie Dr., Waukesha, Wis. 53186
Continuation-in-part of Ser. No. 659,517, Oct. 12, 1984, abandoned. This application Apr. 4, 1986, Ser. No. 848,235
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—59 **9 Claims**



1. A universal pipe hanger assembly adapted to be suspended from a support for insulating and uniformly supporting the full under surface of a pipe or the like, comprising a substantially uniformly flat or planar washer member having a first aperture therethrough for receiving said support, said washer member comprising additional aperture means for receiving at least one end of a multistrand flexible metal cable, said washer member being adapted to be assembled in stacked relation to other similar washer members if required to add strength to said pipe hanger assembly, a flexible multistrand metal cable hugging a pipe of any size for uniformly carrying the weight of the pipe across the width of the pipe and having the opposite ends of the cable respectively received in the aperture means of said washer member, an insulating and cushioning sheath on the exterior surface of said metal cable and encasing said cable along a substantial portion of the length thereof forming an intimate contact across the full under surface of the pipe insulating and cushioning the cable from the pipe to prevent electrolytic action and abrasion, and first and second substantially identical stop sleeve members distinct from said multi-strand cable but respectively compressively secured to the respective opposite ends of said metal cable and seated on said washer member around the aperture means to retain said cable on said washer member and distribute the load carrying support over the length of the stop sleeves.

4,943,017
FLEXIBLE CONTAINER HOLDER WITH INTEGRAL HANDLES
John W. Ennis, 6049 Balboa Cir., #202, Boca Raton, Fla. 33433
Filed Jan. 23, 1989, Ser. No. 299,657
Int. Cl.[5] A47D *15/00*
U.S. Cl. 248—102 **5 Claims**

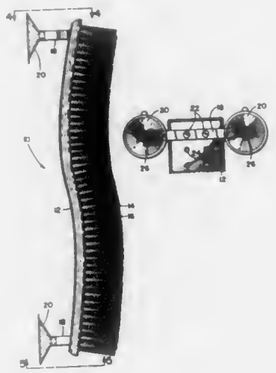


1. A flexible container holder having a centrally located longitudinally extending axis comprising:
a nominally ring-like central portion surrounding said axis and forming a central securing section at the inner periphery of said ring-like central portion for receiving a fluid container, said ring-like central portion being deformable out of a nominal ring shape into various other shapes to conform to the shape of the outer peripheral wall of a particular fluid container; and
flexible handle portions integrally connected to said central ring-like portion at opposite sides of said central ring-like portion and lying in a plane perpendicular to said axis, said handle portions being generally rectangular and having spaces at the inner periphery thereof to accommodate the hands of a person who wishes to hold a container with the flexible container holder, said handle portions having a circular cross-section and said ring-like central portion having a circular cross-section, the cross-section of said ring-like central section being of a smaller diameter than the cross-section of said handle portions, said central securing section being bounded over a small arc of the circumference of said ring-like central section by a portion of both of said handle portions.

4,943,018
WALL-MOUNTABLE BACK BRUSH
Gary A. Glaser, R.R. 1, Box 231, Ridgeland, Wis. 54763, and Garry S. Glaser, 5455 Smetana Dr., Apt. 1215, Minnetonka, Minn. 55343
Filed Dec. 7, 1988, Ser. No. 280,839
Int. Cl.[5] A47K *7/02*
U.S. Cl. 248—110 **9 Claims**

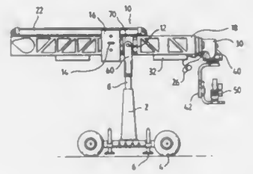
1. A wall-mountable back brush, comprising:
an elongate base having opposite sides and opposite top and bottom ends;
said base being of generally S-shaped continuous curvature between the top and bottom ends in order to fit the lumbar region;
bristles secured to one side of said base;

a plurality of suction cups;
a pair of braces, one at each end of said base; and



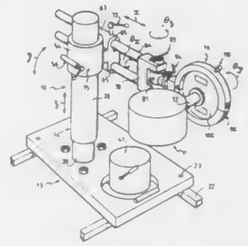
means for securing said braces to said base in adjustable, spaced apart relationship;
at least one suction cup being provided on each brace.

4,943,019
LEVELLING SYSTEM FOR CAMERA CRANES
Gyula Mester, Muenster, Fed. Rep. of Germany, assignor to Technovision Cameras Limited, England, a part interest
Filed Dec. 30, 1988, Ser. No. 292,437
Int. Cl.[5] G03B *17/00*
U.S. Cl. 248—123.1 **6 Claims**



6. A levelling system for use with a camera crane having a telescopic boom mounted on a horizontal pivot, the system comprising a levelling head adapted to be fitted to the boom and provided with a motor and a camera remote head mounting operatively connected to said motor to enable the mounting to be rotated about a horizontal axis, a control circuit for providing control signals to said motor, respective sensing means for direct association with a boom pivot and said motor operative to provide input signals to said control circuit, said control circuit being operative to maintain a camera remote head mounted to said mounting level during all motions of the crane.

4,943,020
MANIPULATOR APPARATUS
Louis Beaucoup; Jean Boncompain, both of Saint Etienne, and Jean-Claude Reynaud, Manosque, all of France, assignors to Schlumberger Technologies, Inc., San Jose, Calif.
Filed Sep. 9, 1988, Ser. No. 242,780
Claims priority, application France, Sep. 17, 1987, 87 13098; Sep. 17, 1987, 87 13099
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—124 **11 Claims**



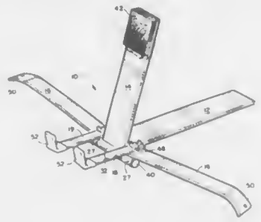
8. A manipulator for manually positioning an object in space and maintaining the position, comprising:
a base;
a first vertical structure mounted on said base;
a second vertical structure in engagement with said first vertical structure and moveable relative thereto along a vertical axis from a fully retracted position in which the respective upper regions of said first and second vertical structures are at substantially the same level, to a fully extended position in which the upper region of said first vertical structure and the lower region of said second vertical structure are at substantially the same level;
an object support arm connected to said second vertical structure and adapted to receive said object;
an adjustable bias force generator mounted in said base and comprising:
a case attached to said base;
a drum rotatably mounted in said case and having a surface of progressively varying diameter; and
an adjustable spring attached to said drum for applying a selected biasing force to said drum; and
a mechanical linkage for transmitting the force from said bias force generator to a lower region of said second vertical structure in opposition to the weight of said second vertical structure, said support member, and said object, the magnitude of said force being selected to counterbalance the weight of said second vertical structure, said support member, and said object, said mechanical linkage including a cable section adapted for spooling on said varying diameter surface of said drum.

4,943,021
GUITAR STAND
Timothy P. Clea, and Emmanuel C. Clea, both of 8431 Paso Iglesia, Spring Valley, Calif. 92077
Filed Aug. 7, 1989, Ser. No. 390,291
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—167 **6 Claims**

1. A collapsible portable guitar stand comprising:
an elongated backrest support leg having a top end and a bottom end;
an elongated rear support leg having a front end and a rear end;

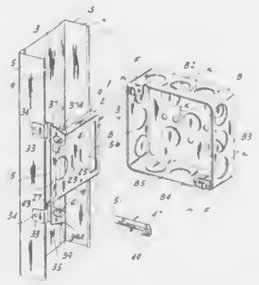
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a pair of elongated side support legs each having an outer end and an inner end;
hinge means for connecting the bottom end of said backrest support leg to the front end of said rear support leg comprising:
a top plate member having a first side, a pair of tubular leg portions are formed on said side and a cutout portion is formed between them;
a bottom plate member has a bottom end having a tubular



leg portion formed thereon that mates with said cutout portion; and
a pin is detachably received in the aligned tubular leg portions of said top plate member and said bottom plate member;
pivot means for securing the respective inner ends of said side support legs to said top plate member; and
support means for the bottom end of a guitar, said support means being pivotally connected to said top plate member.

4,943,022
BRACKET FOR MOUNTING AN ELECTRICAL BOX ON A WALL STUD
Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.
Filed Apr. 12, 1989, Ser. No. 337,148
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—205.1 **19 Claims**



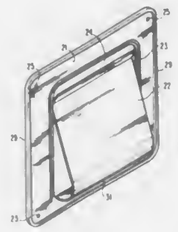
1. A sheet metal bracket adapted for mounting an electrical box on a wall stud having a front face, a rear face and opposite sides, said bracket comprising
sheet metal support means having a front end, a rear end and a length not substantially less than the depth of the wall stud in front-to-rear direction,
sheet metal means adjacent the front end of said support means for attaching the bracket to the front face of the wall stud in a position in which said support means extends rearwardly across one side of the wall stud from a position generally adjacent the front face of the wall stud to a position generally adjacent the rear face of the wall stud, and sheet metal means integral with said support means for affixing an electrical box to said bracket in a position wherein one side of the box is engageable with said support means with the box extending in cantilever fashion laterally outwardly from said support means away from the wall stud.

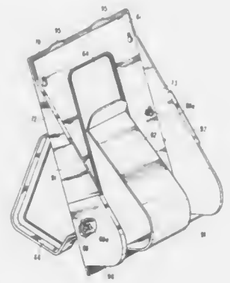
4,943,023
DAM SUPPORT BRACKET FOR MASONRY CONSTRUCTION
Samuel R. Becker, 4336 Eastwood Dr., Sarasota, Fla. 34232
Filed Mar. 15, 1989, Ser. No. 323,954
Int. Cl.[5] E04G *17/00*
U.S. Cl. 248—302 **6 Claims**

1. A bracket for temporarily securing a plate against a side of a concrete block of a wall, the concrete block having an inspection hole formed in its side exposing a cavity within the concrete block which is to be temporarily covered by the plate while concrete is poured into, and hardens within the cavity, the said bracket comprising:
a contoured length of rigid, slender, elongated material lying in a plane and formed into an inverted "L" configuration having negligible flexure and having an upright leg and a generally horizontal leg;
said upright leg structured to be inserted into the cavity adjacent the inspection hole;
said horizontal leg extending outwardly from said upright leg and the cavity between two stacked concrete walls and to be retained in this position by mortar between the concrete blocks;
said horizontal leg having a reverse bend at its distal end through about 180 degrees in the direction of said upright leg, presenting another leg generally parallel to said horizontal leg, to releasably receive and retain a rigid, slender bar in general horizontal orientation against the exposed surface of the plate in cooperation with another adjacent said bracket similarly positioned in another cavity;
said horizontal leg sized to allow a wedge to be releasably driven between the bar and the plate to secure the plate against the concrete block to cover the inspection hole while the concrete hardens within the cavity;
said horizontal leg being severed at a portion thereof which is adapted to extend from the concrete block after the concrete hardens.

4,943,024
PRINTED MATERIAL SUPPORT HOLDER
Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.
Filed Apr. 3, 1989, Ser. No. 332,538
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—316.7 **7 Claims**

1. A holder for printed material and the like comprises:
a substantially flat support panel;
a curved clip having a lower edge which is integrally joined to said support panel and an upper edge, said clip being curved outwardly and upwardly from said lower edge and extending back toward said support panel as it extends toward said upper edge; and





a pair of side panels which are disposed on opposite sides of said support panel and integrally joined therewith.

4,943,025
CUP HOLDER
Arnold D. Warner, 926 W. Main St., Ionia, Mich. 48846
Filed Jul. 6, 1988, Ser. No. 215,723
Int. Cl.[5] A47K *5/00*
U.S. Cl. 248—318 **10 Claims**



1. A cup and cup holder, said cup holder comprising:
a base removably supporting said cup;
a vertical column connected to an edge of said base and extending upwardly therefrom, said vertical column being received in a sleeve located at the edge of said base;
a cantilever arm extending outwardly from said vertical column at least to a point disposed approximately over the central portion of said base;
said vertical column being sufficiently tall and said cantilever arm extending outwardly from a point sufficiently high on said vertical column that said cantilever arm will not interfere with said cup seated on said base or with removal of said cup from said base;
a semi-flexible elongated strip connected to said cantilever arm at said point disposed approximately over the central portion of said base for suspending said cup holder, said semi-flexible strip extending upwardly from said cantilever arm to a hook attached thereto whereby said cup holder and cup seated on said cup holder base can be suspended from the vehicle mirror;
said elongated strip having first and second ends and includes a plurality of apertures disposed along a longitudinal axis of said strip, each of said apertures being adapted to snugly fit around a portion of said cantilever arm such that said flexible elongated strip can be adjustably connected to said cantilever arm by sliding at least one of said apertures over a portion of said cantilever arm;
said base including at least one slightly upraised peripheral lip for preventing said cup from sliding off said base, said lip being sufficiently low that it does not interfere with placement or intentional removal of said cup from said base, and such that intentional removal can be effected even with said cantilever arm extending outwardly to said point disposed approximately over said center of said base.

4,943,026
HANGER FOR SMALL PACKAGES
Gerhard Flidan, Leonberger Strasse 86, D-7259 Friolzheim, Fed. Rep. of Germany
Filed May 17, 1989, Ser. No. 353,317
Claims priority, application Fed. Rep. of Germany, May 20, 1988, 8806612
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—339 **1 Claim**



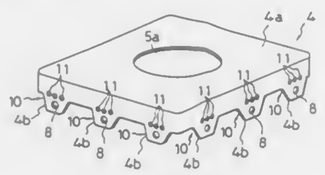
1. A holder for suspending a package comprising:
a hook;
a frame formed on a lower portion of said hook and having an upper frame member and a lower frame portion and a pair of side member connecting said upper frame member and said lower frame portion, said frame lying in a plane;
a locking finger extending downwardly from said upper frame portion and inclined downwardly and outwardly away from said plane of said frame at a front side of said frame in a rest position, said locking finger being formed with an inwardly and upwardly extending barb engageable in said package, said side members each being formed with a guide formation of triangular configuration defining a linear inlet ramp for guiding an edge of said package between said frame and said finger, an apex substantially at a level with said barb, and a linear guide surface extending from said apex toward said plane, said guide surfaces being parallel to said finger in said rest position thereof, said lower portion of said frame forming a security stirrup overlying a cover of said box and preventing unauthorized opening thereof as long as said box is retained in said hanger; and
a double film hinge formed by two closely spaced horizontal film hinges between said upper frame member and said hook, said hook, said frame and said finger are all molded unitarily of a synthetic resin material.

4,943,027

MOUNTING ARRANGEMENT FOR A VEHICLE AIR BAG

Yoshikazu Nakayama, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Mar. 27, 1989, Ser. No. 328,838
Claims priority, application Japan, Mar. 29, 1988, 63-73269
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—548 9 Claims



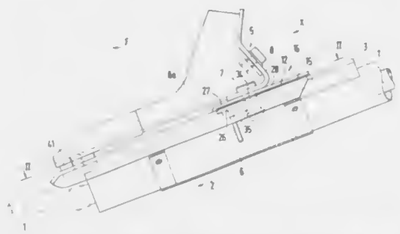
1. A mounting arrangement for a vehicle air bag comprising a mounting bracket affixed to a component of the vehicle, a base plate having a mounting portion on which an air bag and an inflator are mounted, and a plurality of fasteners connecting the base plate to the bracket, characterized in that there are plastically deformable structures associated with the fasteners and the base plate such that the mounting portion of the base plate is displaceable in a direction away from the mounting bracket in response to the forces imposed on the base plate at the end of development of the air bag.

4,943,028

STEERING COLUMN FASTENING ARRANGEMENT FOR MOTOR VEHICLES WITH A DEFORMATION ELEMENT

Martin Hoffmann, Vaihingen-Aurich; Helge Schittenhelm; Franz-Rudolf Wierschem, both of Weissach, and Horst Eichhorn, Tamm, all of Fed. Rep. of Germany, assignors to Porsche AG, Weissach, Fed. Rep. of Germany

Filed Jun. 20, 1988, Ser. No. 208,668
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720320
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—548 18 Claims



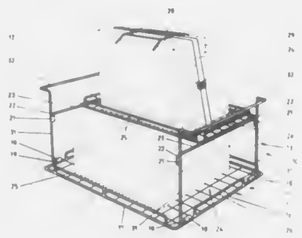
1. A steering column fastening arrangement for a motor vehicle with a deformation means between a steering bracket means retained on the body side and a protective tubular steering member, the deformation means including energy-absorbing plate means operatively connected with a bow-shaped bracket means of the tubular member, and plate means having deformation sections which are arranged corresponding to longitudinal slots of the bow-shaped bracket means, the energy-absorbing plate means frictionally clamped between a lower support element of the bow-shaped bracket means and upper guide elements arranged substantially parallel thereto, the upper guide elements being supported at the steering bracket means of the vehicle body and being provided with longitudinal slots which are arranged corresponding to the further longitudinal slots of the lower support element, displacement bolt means extending through the deformation sections and being guided in both the longitudinal slots, for providing a clamping force to clamp the energy absorbing plate between the lower support element and the upper guide elements, the upper guide and lower support elements extending substantially over the entire length of said deformation sections and said deformation sections being laterally delimited each by the longitudinal slots.

4,943,029

COMPUTER CARRY BASKET

Paul A. P. Szuster, 64 Clifton Street, Malvern, South Australia, Australia (5061)

Filed Jul. 26, 1989, Ser. No. 386,365
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—917 4 Claims



1. A support frame for supporting a computer and its accessories, comprising

a base frame assembly and an upper frame assembly, each having two side rails and two end rails defining a respective peripheral frame,

retaining means on one said peripheral frame upstanding from the rails thereof sufficiently to retain a computer and on the other said frame, upstanding sufficiently to retain a computer accessory, against dislodgement when supported by the base or upper frame assembly.

two carry handle assemblies each comprising a pair of legs, a respective said carry handle bridging the legs, and extending outwardly away from the sides of the base and upper frame assemblies, each leg terminating in an inturned spigot, and

a respective vertical socket sleeve on each said leg between its ends, downwardly directed spigots on each of said side rails of the upper frame assembly which slidably engage within respective said vertical socket sleeves, two further socket sleeves on each said end rail of the base frame assembly which are horizontal, and inturned spigots on the lower ends of said carry handle legs engaging within respective said horizontal socket sleeves,

such that the handle assemblies retain the base and upper frame assemblies horizontal and in spaced relation to one another.

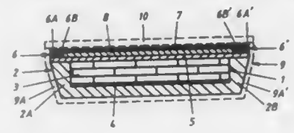
4,943,030

SKI

Josef Fischer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Innkreis, Austria

Division of Ser. No. 923,417, Oct. 27, 1986, Pat. No. 4,781,395.
This application Sep. 8, 1988, Ser. No. 241,473
Claims priority, application Austria, Oct. 28, 1985, 3105/85
Int. Cl.[5] B28B *7/26*
U.S. Cl. 249—121 3 Claims

1. A dish-shaped ski mould having side walls and a base wall, the side walls having lower portions and upper portions, the lower portions being inclined outwardly from the base wall to the upper portions and the upper portions extending vertically



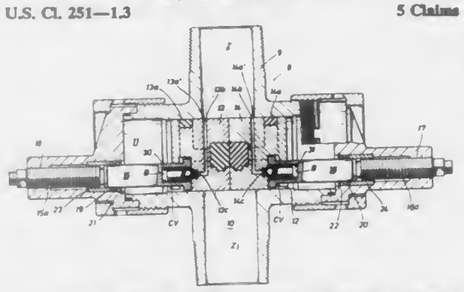
in parallel from the lower portions to a rim of the mould thereby providing a junction at the upper and lower portions forming a support for a prefabricated ski body component.

4,943,031

BLOWOUT PREVENTER

Denzal W. Van Winkle, Houston, Tex., assignor to Drexel Oilfield Services, Inc., Conroe, Tex.

Filed Aug. 17, 1989, Ser. No. 393,901
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.3 5 Claims



1. Apparatus for use with a blowout preventer having a housing with a bore therethrough and longitudinally extending chambers which intersect the bore with rams reciprocable within the chambers between a first position for opening the bore and a second position for closing the bore to divide the bore into zones above and below the rams, said apparatus comprising:

a rod connected to each of the rams and extending longitudinally within each of the chambers and offset relative to the longitudinal axis of the chambers, the connection between said rod and its respective ram including means to accommodate a predetermined amount of free, relative longitudinal movement between said rod and the ram with which it is connected, said means to accommodate including a recess in the ram and an enlargement on the end of the rod for fitting within the recess, the width of said recess being greater than the width of said enlargement whereby said rod when moved longitudinally toward or away from the ram may move said predetermined free amount of longitudinal movement before moving the ram inwardly into the bore or before withdrawing the ram outwardly from the bore;

passage means in at least one ram, said passage means having a first passage end for communicating with the zone above the ram and a second passage end communicating with the chamber adjacent the end of said rod connected to the ram;

means for closing off communication from the zone below the ram to the zone above the ram, said means including valve means supported adjacent the end of said rod, said valve means including:

a longitudinally extending recess in the end of said rod;

a plunger telescopically received in said recess in the end of said rod that is connected with the ram;

spring means supporting said plunger for movement relative to said rod;

stop means to limit the movement of said plunger toward the ram;

closure means associated with the plunger for engaging and closing off said second passage end to prevent communication from the zone below the ram to the zone above the ram;

means to accommodate lateral movement of said valve means relative to said rod, said means to accommodate lateral movement including surface means on said plunger smaller in width than the recess in which said plunger is received to accommodate lateral movement of said plunger and closure means thereon relative to said rod; and

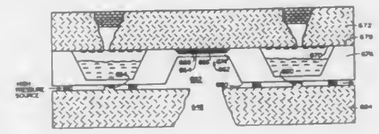
means for supporting the rods for reciprocation in their respective chambers between the first and second ram positions.

4,943,032

INTEGRATED, MICROMINIATURE ELECTRIC TO FLUIDIC VALVE AND PRESSURE/FLOW REGULATOR

Mark Zdeblick, Los Altos Hills, Calif., assignor to Stanford University, Stanford, Calif.

Division of Ser. No. 97,494, Sep. 16, 1987, Pat. No. 4,821,997, which is a continuation-in-part of Ser. No. 911,242, Sep. 24, 1986, Pat. No. 4,824,073. This application Sep. 19, 1988, Ser. No. 246,497
Int. Cl.[5] F16K *27/00*
U.S. Cl. 251—11 4 Claims



4. An integrated pressure regulator comprising: first and second integrated valves comprising:

a first semiconductor wafer having first and second parallel and opposite surfaces and having a first trench formed in said first surface so as to leave a first flexible diaphragm between the bottom of said trench and said second surface of said wafer and having a second trench formed in said first surface so as to leave a second flexible diaphragm between the bottom of said second trench and said second surface of said wafer, and having third and fourth trenches formed in said first and second surfaces, respectively, so as to form a diaphragm, the bottom of said third trench being coated with a conductive film;

a second wafer bonded so as to seal said first and second trenches to form said first and second cavities;

first and second resistor patterns formed on said second wafer so as to be within said first and second cavities, respectively;

a conductive film formed on said second wafer aligned with said third trench so as to form a capacitor with the conductive film on the bottom of said third trench;

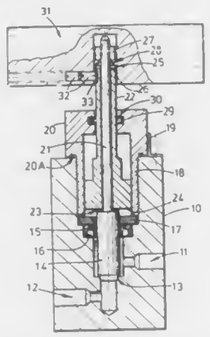
fluid sealed in said first and second cavities that, when heated by current flowing through said first and second resistor patterns, raises the vapor pressure in said first and second cavities so as to flex said first and second diaphragms;

a third water bonded to said semiconductor wafer and having first and second valve seats formed thereon adjacent to said first and second diaphragms, and having first and second input channels formed thereon and coupled, respectively, to said first and second valve seats thereby forming first and second fluid passageways from first and second input ports, and having an output channel formed

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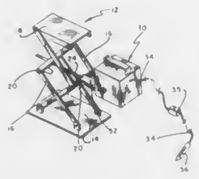
thereon so as to be coupled to both said first and second valve seats so as to form a fluid output passage for each of said first and second integrated valves.

4,943,033
FLOW CONTROL VALVE
Andrew Clayson, Aberdeen, Scotland, assignor to Pacson Limited, Dundee, Scotland
Filed Sep. 18, 1989, Ser. No. 408,706
Claims priority, application United Kingdom, Sep. 20, 1988, 8822048
Int. Cl.[5] F16K *31/50, 1/48*
U.S. Cl. 251—88 **5 Claims**



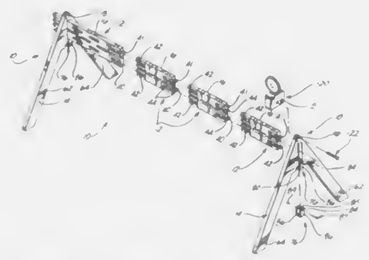
1. A flow control valve comprising a central stem having a valve head at one end thereof and a plain end portion at the other end thereof, a retaining member engaging said plain end portion by means of an interference fit, and an operating sleeve on said stem for shifting the stem axially to close and open the valve by acting respectively on said valve head and on said retaining member.

4,943,034
POWER JACK AND METHOD
Gerald E. Wagnon, Great Bond, Kans., assignor to Wagnon Power Jack, Inc., Great Bend, Kans.
Filed Apr. 24, 1987, Ser. No. 42,057
Int. Cl.[5] B66F *3/22*
U.S. Cl. 254—122 **4 Claims**



1. A jack and an adaptor in combination comprising a jack base; a pair of general parallel collapsible brackets pivotally secured to said jack base; support platform means secured pivotally to the pair of collapsible brackets; a pair of support-aligning bars connected to said pair of collapsible brackets with each support-alinging bar having a structure defining a threaded aperture a threadable jack shaft passing rotatably through the threaded aperture of each support-aligning bar such that when the threadable jack shaft rotates in a predetermined direction the two support-aligning bars are pulled towards each other causing the pair of collapsible brackets to become longer lengthwise and the support platform means to travel upwardly and such that further when the threadable jack shaft rotates in a direction opposite the predetermined direction the two support-aligning bars are pushed apart with respect to each other causing the pair of collapsible brackets to become shorter lengthwise and the support platform means to travel downwardly; an adaptor housing; a drive motor means disposed in said adaptor housing; a drive shaft means releasably engaged to said threadable jack shaft to rotate the same and coupled to said drive motor means; an engagement bracket means for engaging releasably the adaptor to one of the support-aligning bars of the jack and to prevent the adaptor from turning while the drive shaft is rotating the threadable jack shaft; and means for securing and biasing the engagement bracket means against the face of the adaptor housing; said engagement bracket means comprises a structure defining a bifurcated end having a pair of bracket arms where between the threadable jack shaft passes when the adaptor is engaged to one of the support-aligning bars; said structure of said engagement bracket means additionally defines a generally straight body portion and an upright back portion integrally bound normally to said straight body portion; and said upright back portion has a structure defining at least one aperture, and said means for securing and biasing passes through said aperture for biasingly securing the engagement bracket means to the face of the housing.

4,943,035
BARRICADE
Kenneth L. Thomson, Huntington Beach, Calif.; Hank Fenton, Charlie Lake, and Norbert Teach, Coquitlam, both of Canada, assignors to Amplas, Inc., Huntington Beach, Calif.
Filed Jan. 13, 1989, Ser. No. 297,101
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 8800324[U]
Int. Cl.[5] E04H *17/14*
U.S. Cl. 256—64 **9 Claims**



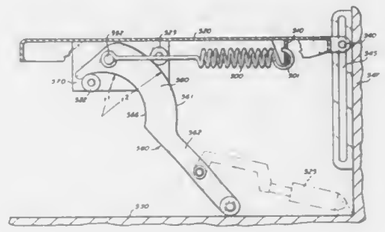
1. A barricade comprising:
(a) an elongated, hollow crossbar member comprising at least one elongated, inter-connecting hollow section interconnectable with other such elongated hollow sections and formed from plastic by a molding process, each such section having first and second elongated sides, first and second edges connecting the sides, and a generally rectangular cross-section transverse to its length, one end of each such section having at least one male extension and its opposite end having at least one female receptacle for receiving and securing the male extension of a mating section, and at least one identation in the first elongated side formed during the molding process, wherein such an indentation extends to the second elongated side such that an interior surface of the indentation on the first elongated side is fused to an interior surface of the second elongated side; and
(b) a collapsible A-frame support for each end of the elongated, hollow crossbar member, each such collapsible A-frame support comprising a pair of hollow legs, with each leg having a bottom end for contact with the ground surface and a top end which includes a tang and notch, with the tang and notch on one leg facing in one direction and the tang and notch on the other leg facing in the opposite direction, the legs being pivotally connected together below their top ends, so that when the legs are fully opened, their top ends are engaged with the tang of each such leg engaging the notch of the other leg, thereby locking the top ends of the legs together to thereby define an opening configured to receive one end of the elongated, hollow crossbar member.

4,943,036
METHOD AND APPARATUS FOR ISOTHERMAL HOLDING OF WIRE WHEN A WIRE IS HEAT-TREATED IN-LINE
Hiroki Sato, and Yoshiki Seto, both of Kanagawa, Japan, assignors to Neturen Company Limited, Tokyo, Japan
Filed Oct. 12, 1988, Ser. No. 262,733
Int. Cl.[5] C21D *9/64*
U.S. Cl. 266—104 **7 Claims**

1. Apparatus for maintaining wire travelling therethrough isothermal for a predetermined period of time, said apparatus comprising:
rapid heating means for rapidly heating wire isothermally to a predetermined temperature over the entire cross section thereof as the wire travels through the rapid heating means; and
temperature holding means disposed in-line with said rapid heating means and downstream thereof with respect to the direction of travel of the wire for maintaining the wire, after the wire is heated isothermally by said rapid heating means, at an isothermal holding temperature during the time the wire travels through the temperature holding means,
said temperature holding means comprising two operatively electrically connected electrodes spaced apart from one another a predetermined distance and disposed in the apparatus so as to contact the wire travelling through the temperature holding means and form a closed circuit therewith, and voltage generating means for maintaining the wire isothermal over the length of wire between said electrodes by applying a sufficient voltage to the wire in contact with said electrodes to generate Joule's heat in the wire corresponding to the amount of heat that would tend to dissipate from the wire under unforced cooling of the wire travelling over said predetermined distance in the temperature holding means.

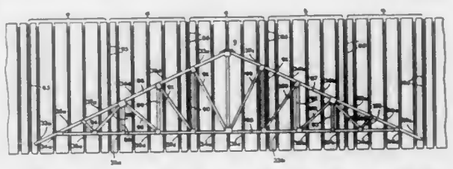
4,943,037
SUSPENSION DEVICE WITH CAM SUPPORT MEMBER
Cole T. Brodersen, Daveaport, and Danny S. Foster, Bluegrass, both of Iowa, assignors to Sears Manufacturing Company, Davenport, Iowa
Continuation-in-part of Ser. No. 195,793, May 19, 1988, Pat. No. 4,856,763. This application Feb. 1, 1989, Ser. No. 305,464
Int. Cl.[5] A47C *7/14*; F16M *13/00*
U.S. Cl. 267—131 **11 Claims**

1. An angularly displaceable support arm for use in a suspension system that maintains two support surfaces in generally spaceable parallel relation, comprising:
a shaft with first and second ends;
a cam disposed at said first end, said cam having a larger arcuate can surface and a smaller arcuate cam surface, said cam surfaces defining a center point about which said cam pivots as the support arm is angularly displaced;



means disposed at said second end for permitting angular displacement of said support arm as the distance between the two support surfaces changes; and
means for operatively connecting said support arm to the suspension system.

4,943,038
TRUSS ASSEMBLY APPARATUS
Charles W. Harnden, Fort Lauderdale, Fla., assignor to Alpine Engineered Products, Inc., Pompano Beach, Fla.
Filed Jul. 17, 1989, Ser. No. 380,588
Int. Cl.[5] B30B *3/02*
U.S. Cl. 269—37 **8 Claims**



1. A truss assembly table having a length and a width comprising:
a plurality of table sections in succession along the length of the table with openings between the sections extending across the width of the table, each of said table sections having a plurality of panels in succession lengthwise of the table separated by openings extending across the width of the table;
a plurality of lead screws extending across the width of the table along and below the openings between said panels;
manually-controlled power-operated means for individually rotating the lead screws;
a plurality of jig stop carriers threadedly coupled individually to said lead screws and movable along said openings between said panels across the width of the table in response to rotation of the corresponding lead screws;
a plurality of jig stops connected individually to said carriers and projecting above the top of the table above said openings between said panels;
and a plurality of power-operated lifts at said openings between said table sections, said lifts being movable upward to raise a completed truss above the top of the jig stops.

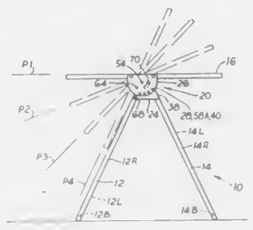
4,943,039
ADJUSTABLE CLAMP
Ronald E. Jackson, 216 W. Southport Rd., Indianapolis, Ind. 46217
Filed Mar. 13, 1989, Ser. No. 322,546
Int. Cl.[5] B25B *1/20*
U.S. Cl. 269—45 **20 Claims**



1. A holding apparatus comprising:
a first and second clamp;
each clamp having a two arm handle each arm having a clamp end and an operator end;
coupling means for joining one of the two arm handles of the first clamp to a one of the two arm handles of the second clamp;
said coupling means including a U-shaped member comprising two leg portions separated by a bight portion;
said coupling means also including two connection means, one connection means connecting the one of the two arm handles of the first clamp to one of the legs of the two legged U-shaped member and another of the two connection means connecting the one of the two arm handles of the second clamp to the other of the two legs of the two legged U-shaped member;
wherein said connection means permit rotation of the clamps about a longitudinal axis of the legs of the U-shaped member as well as permitting rotation of the clamps along an axis at right angles to said longitudinal axis;
each of said connection means including two independently operable securing means for locking the rotation of one of the clamps with respect to the U-shaped member;
wherein one of the two securing means stops one of the clamps from rotating about the longitudinal axis of the leg of the U-shaped member without stopping rotation of the one clamp along the axis at right angles to said longitudinal axis; and;
wherein the other of the two securing means stops rotation of the one clamp at a right angle to said longitudinal axis without stopping rotation of the one clamp about the longitudinal axis of the leg of the U-shaped member.

4,943,040
ADJUSTABLE WORK STAND
Clem B. Finstad, Red Wing, and Howard J. Fredrickson, Cannon Falls, both of Minn., assignors to Cannon Equipment Company, Cannon Falls, Minn.
Filed Jan. 26, 1989, Ser. No. 301,682
Int. Cl.[5] B25B *1/02*
U.S. Cl. 269—69 **25 Claims**

1. A work stand comprising
(a) a fixed leg;
(b) a hinged leg;
(c) a leg bracket rigidly and non-movably affixed to the fixed leg and connected by a leg fulcrum to the hinged leg;
(d) a work table;
(e) a table bracket affixed to the table and hinged to a table fulcrum, said table fulcrum being fixed with respect to said leg bracket;



(f) a lock bolt engaging the hinged leg, the leg bracket and the table bracket, said lock bolt positionally fixing said table and said legs with respect to each other and in a rigid position of use.

4,943,041
LIGHT-WEIGHT FOLDING MASSAGE TABLE
Daniel C. Romein, 16 Dickinson Ave., Toms River, N.J. 08753
Filed Aug. 24, 1989, Ser. No. 398,221
Int. Cl.[5] A61G *13/00*
U.S. Cl. 269—322 **3 Claims**



1. A light-weight folding massage table, comprising:
a pair of hingedly connected rectangular sections, having a padded upper surface and a peripheral underframe, said sections in an optionally opened position, with the sections being coplanar, or in a closed position, with the sections being parallel;
two pairs of telescoping legs rotatably connected to the side of the underframe near each end, which when the table is either in the closed position or in the flat opened position is coplanar to the undersurface of the table, and when the table is in the raised opened position extend angularly outward and downward from the underside of the table, providing substantial longitudinal stability;
a horizontal brace tube affixed to each leg of each leg pair;
two pair of leg brace cables overlappingly attached, in an X-configuration, from the lower end of one leg to the upper end of the other leg of the leg pair by an adjustment means, providing the leg pairs with a high degree of stability;
a pair of table locking bolts which pass through holes in the inner ends of the undersurface of both sections of the table, locking both sections together, when the table is in a fully open position and is held in place by a locking means;
a pair of bridge tubes rotatably connected to the locking bolts at the upper end and slit lengthwise at their lower end, which when the table is in the closed position or in the opened flat position is attached to the undersurface of the table and when the table is in the raised opened position extends angularly downward from the undersurface of the table, wedging the bridge tube againt the frame;
a pair of bridge cables running longitudinally in a V-shaped manner along the inner edge of the underframe, connected at each end to the upper leg joints and passing through the slit in the bridge tube, providing for compression of the table sections;
a bridge support cable is connected from the lower end of each bridge tube, and is secured at its center to the table end frame in an inverted V-shape;
a pair of end cables at each end of the table, attached to the horizontal leg brace by an adjustable means and detachably connected at the other end of the end cable to the end of the table providing longitudinal stability independent of the bridge cables;
two pairs of table-leg brace cables on each side of the table, each being attached at one end to the near end to the lower part of a leg, and attached at the other end to the near end of the opposite section, providing a tension on the end cable and longitudinally stabilizing the leg pairs;
a head rest detachably affixed to the outer end of one section;
a horizontal hand rest removably affixed to the head rest;
carrying handles affixed to one of the outer edges of each section;
a carrying strap is detachably affixed to the edge of the table.

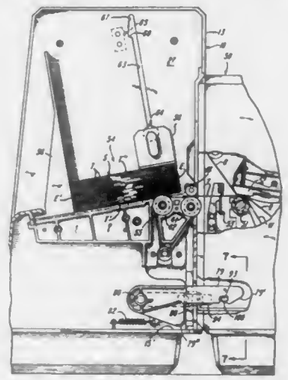
4,943,042
BAND SAW BLADE FIXTURE
Wayne Jung, 4005 Camrose Ave., New Berlin, Wis. 53151
Filed Oct. 30, 1989, Ser. No. 428,906
Int. Cl.[5] B25B *1/00*
U.S. Cl. 269—296 **4 Claims**



1. A flexible band saw blade fixture which comprises
a base member, said base member comprising a plate having an upper and lower portion, said lower portion adapted to be secured within a vise or other clamping device,
blade clamping means, said blade clamping means comprising a plurality of symmetrically located pins extending from one side of said base member upper portion, and
blade access means, said blade access means comprising a void in the base member upper portion situated at the center of said symmetrically located pins.

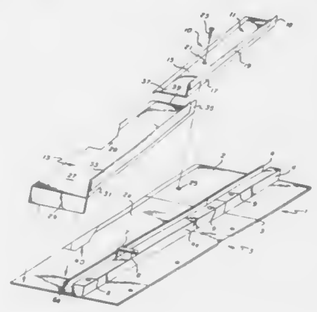
4,943,043
STACKER
Orville C. Huggins, Dayton, and John D. Mistyurik, Tipp City, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Division of Ser. No. 907,263, Sep. 15, 1986, abandoned. This application Jun. 12, 1989, Ser. No. 364,287
Int. Cl.[5] B65H *31/00*
U.S. Cl. 271—212 **12 Claims**

5. A stacker, comprising: a hopper adapted to receive a stack of tags, means for feeding tags into the bottom of the hopper, a weight for resting on the top of the stack, a guide for the weight, a switch at the top of the guide for disabling the feeding means, wherein the guide has means for allowing the



weight to be shifted and held at the top of the guide in cooperation with the switch to keep the feeding means disabled.

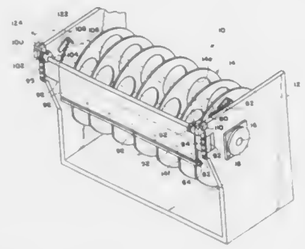
4,943,044
RAILS OF AN INSERTER MACHINE
Charles W. Roscart, R.D. 1, Box 168-C, Imperial, Pa. 15126
Filed Oct. 23, 1987, Ser. No. 111,665
Int. Cl.[5] B65H *9/04*
U.S. Cl. 271—248 **9 Claims**



1. In a machine designed to feed papers from a first station having a first gathering track to a second station having a second gathering track, said gathering tracks having a gap therebetween, an attachment device comprising:
(a) an elongated body sized to overlie at least a portion of said first gathering track, at least a portion of said second gathering track and the entirety of said gap;
(b) first attachment means for attaching said attachment device in partial overlying relation to said first gathering track and second attachment means for attaching said attachment device in partial overlying relation to said second gathering track whereby papers being fed through said machine pass over said attachment device and are not caught in said gap; and
(c) said elongated body comprising first and second body members which are releasably coupled together, said second gathering track being downstream of said first gathering track in a direction of movement of papers thereover, said first and second body members having

overlapping structure with an upper portion of said overlapping structure being located on said first body member whereby smooth flow of papers thereover is substantially unimpeded by said overlapping structure.

4,943,045
PRINTER SHEET FEED SYSTEM
Arthur C. Van Horne; Eldon P. Hoffman, both of Lake Oswego, and Paul D. Bakke, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Aug. 15, 1988, Ser. No. 232,419
Int. Cl.[5] B65H *3/00*
U.S. Cl. 271—277 7 Claims



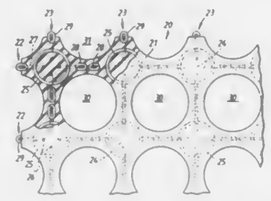
1. Apparatus for conveying a print medium sheet having a leading edge along a travel path through a printing zone where an image is printed on the sheet and having means for conveying the sheet leading edge to the printing zone, said apparatus being characterized by:

means for grasping the sheet leading edge after it travels to the printing zone comprising a base plate and an engaging plate, each having a face adjacent to which a sheet traveling to the printing zone travels, which faces face each other, said engaging plate being movable relative to said base plate between a first position in which the faces are spaced from each other for receiving the leading edge of the sheet, and a second position in which said faces are sufficiently close to grasp a sheet positioned therebetween, first biasing means for urging said engaging plate toward the second position, and an actuating plate positionable in a third position spaced from said engaging plate and a fourth position contacting said engaging plate, and second biasing means for urging said actuating plate toward the fourth position; and

means for transporting said grasping means away from the printing zone, and thereby transporting a grasped print medium sheet through the printing zone.

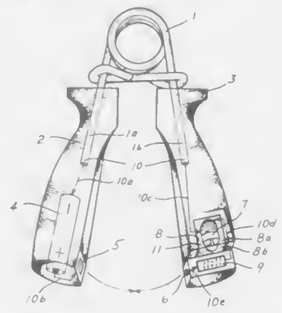
4,943,046
PLAYGROUND APPARATUS
Günter Beltzig, Hohenwart, Fed. Rep. of Germany, assignor to Sutcliffe Group Limited, England
Filed Feb. 22, 1989, Ser. No. 313,711
Claims priority, application United Kingdom, Mar. 1, 1988, 8804782; Feb. 13, 1989, 8903170
Int. Cl.[5] A63G *9/00*
U.S. Cl. 272—1 R 20 Claims

1. Apparatus for use in a children's playground, the apparatus comprising a rigid ground-mountable frame and at least one chain having an end attached to the frame, wherein the at least one chain is a chain embedded in a resilient polymeric material and the disposition of the links of the chain is such as to permit



the chain and polymeric material structure to stretch resiliently under load.

4,943,047
HANDGRIP, WITH LIGHT AND TIMER
Edward E. Noble, P.O. Box 17238, Jacksonville, Fla. 32245-7238
Filed Feb. 26, 1986, Ser. No. 833,115
Int. Cl.[5] A63B *23/16, 21/00*
U.S. Cl. 272—68 1 Claim



1. A handgrip comprising,

a pair of elongated handles to be gripped by the hand, means mounting the handles together for movement of the handles toward and from each other in pivotal movement about a pivot axis that is disposed longitudinally beyond the handles whereby substantially the whole body of the handgrip is disposed longitudinally beyond the pivot axis,

the mounting means including spring means biasing the handles apart and yielding to enable the handles to be moved toward each other into interengagement, and the spring means being of great strength whereby the handles can be moved into such interengagement only by the full strength of the hand,

the handgrip including an electrical circuit which itself includes a battery, timer, light bulb, and contacts, and the contacts being exposed for non-yielding interengagmenet in response to the handles being moved into interengagement and effective when so interengaged for completing circuit and connecting the timer in circuit and thereby effecting operation of the timer, the electric circuit being normally open, and closed only when the handles are interengaged, the timer being inoperative when the circuit is open,

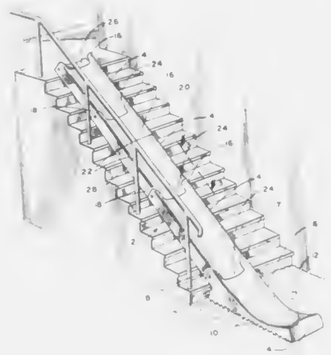
the light bulb being lighted when the circuit is completed, and positioned for eady observation by the user in the normal use of the handgrip,

the light bulb and timer being so relatively positioned that the light bulb when lighted illuminates the timer,

the light bulb and timer being mounted in the same handle, at the swinging end of the handle, the timer being beyond the light bulb in the direction toward the end of the handle, and

said handle having a front opening presenting the light bulb to the user in the normal holding of the handgrip, and an end opening effective for directing light rays longitudinally of the handle and onto the timer and illuminating the timer.

4,943,048
STAIRCASE AMUSEMENT SLIDE
Judith L. Heatges, 3347 E. Calhoun Pkwy., Minneapolis, Minn. 55408
Filed Jun. 26, 1989, Ser. No. 371,980
Int. Cl.[5] A63G *21/02*
U.S. Cl. 272—56.5 R 18 Claims



1. A staircase slide for use on an incline of a set of stairs comprising:

at least one slideboard segment having a proximal and a distal terminus at either end along the length of the slideboard segment;

a terminal segment having a proximal and a distal terminus at either end along the length of the slide;

the proximal and distal termini of the slideboard segment and the proximal terminus of the terminal segment provided with separable connecting means for securely and releasably connecting a distal terminus of a slideboard segment to the proximal terminus of another slideboard segment, and separately and alternatively, releasably connecting a distal terminus of a slideboard segment to the proximal terminus of the terminal segment;

such that, when the terminal segment is positioned at a base of the set of stairs and the modularized connecting means are releasably connected, the length of the slide is supported along the incline of the set of stairs.

4,943,049
WIND-DRAG TYPE CLIMBER
Peter K. C. Lo, P.O. Box 13-124, Taipei, Taiwan
Filed Nov. 2, 1989, Ser. No. 430,784
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 5 Claims

1. A climber comprising:

a base frame;

a handlebar assembly fixed on said base frame so that a user can grip thereon;

two swing arms each mounted pivotally on said base frame at an end thereof;

two pedals respectively carried on the other ends of the swing arms;

a wheel axle journalled on said base frame;

two first annular members sleeved rotatably on two end portions of said wheel axle;

two unidirectional bearings each interposed between said wheel axle and one of said first annular members so as to lock said first annular members on said wheel axle when said first annular members rotate in a predetermined direction;

two second annular members mounted rotatably on said base frame;

a drawing member extending around one of said first annular members, said second annular members and the other one of said first annular members;



two positioning devices each fastening an end of said drawing member to a selected one of several positions along length of one of said swing rods so that, when a user steps on and moves one of said pedals downward, the other of said pedals is moved upward, reciprocal movement of said drawing member alternately rotating said first annular members in clockwise and counterclockwise directions, thereby rotating said wheel axle in said predetermined direction;

a hub sleeved rotatably on said wheel axle;

a wheel body sleeved rigidly on said hub and having a plurality of generally radially extending wheel blades which create air impedance to rotation of said wheel body; and

a speed-increasing mechanism interconnecting said wheel axle and said hub so as to rotate said hub at a speed which is greater than that of said wheel axle.

4,943,050
ONE LEG EXERCISER
Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126
Filed Apr. 13, 1989, Ser. No. 337,347
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 12 Claims

1. A device for exercising the muscles used in running which comprises:

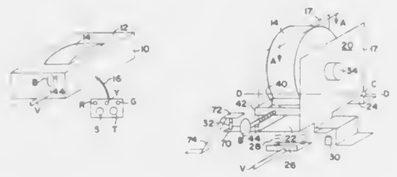
a wheel;

a housing having a platform and a base for supporting the user standing on one foot on said platform;

means for rotatably supporting said wheel;

means for connecting said base to said means for supporting said wheel in a location that permits said user to rotate said

wheel by strokes from the user's other foot applied to said wheel; and



means coupled to said wheel for generating a measurement corresponding to a rotational speed of said wheel and generating a signal responsive to said measurement.

4,943,051

HUMAN ENERGY TRANSMISSION DEVICE

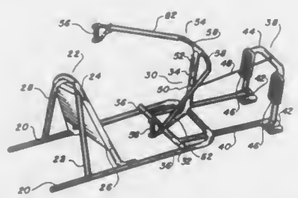
Don Haskins, 22622 Lake Side La., El Toro, Calif. 92630, and Lauren D. Haskins, Jr., 17565 Brightman Ave., Lake Elsinore, Calif. 92330

PCT No. PCT/US86/01119, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/07167, PCT Pub. Date Dec. 3, 1987

PCT Filed May 27, 1986, Ser. No. 77,697

Int. Cl.[5] A63B *69/06;* B62M *29/00;* B63H *16/00*

U.S. Cl. 272—72 14 Claims



1. A human energy transmitting device comprising:

(a) a main frame having parallel sides and a structural backrest;

(b) a pivotal mast disposed between the parallel sides of said frame defining a compound lever freely rotatable thereupon for transmission of human power from combined body members;

(c) rotatable foot engaging means operatively connected to said frame in a planar relationship positioned in such a manner as to be contiguous with ones feet when in the sitting position between the parallel sides of the frame while recumbently reclining on the backrest;

(d) a thrust link freely reciprocable having one end pivotally mounted on the mast and the other end pivotally mounted on the foot engaging means for reciprocation of the mast when pressure is exerted upon the foot engaging means transmitting the force from ones feet when extendably pushing against the backrest to the mast; and,

(e) energy transmitting means having handles thereupon yieldingly connected to said mast, receiving combined linear force from both the foot engagement and the handles when gripped thereupon transmitting ones total energy from both the upper and lower parts of the human body onto a resistance medium.

4,943,052

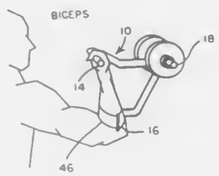
FREE-WEIGHT EXERCISING BARBELLS

Brice Powers, 2234 S. 15th Ave., Broadview, Ill. 60153

Filed Jan. 27, 1989, Ser. No. 302,819

Int. Cl.[5] A63B *13/00*

U.S. Cl. 272—123 11 Claims



1. An exercising barbell, comprising the combination of

a substantially rigid frame having spaced gripping, support and weight portions; elongated bars between the portions; and strap means near the support means and means to secure the strap means together in a looped fashion;

said gripping portion being suited to be gripped by an exerciser's hand, and the support portion being suited then to cooperate with and be secured by the looped strap means to a part of the exerciser's body spaced from the gripping hand, to form a two-point support of the barbell relative to the exerciser, to allow the exerciser to move the two-point support generally along a path within a vertically extended plane and shift the barbell between lower and upper positions in the course of an exercise, whereby the muscle(s) of the exerciser must be stressed; and

the three portions being oriented such that the center of gravity of the barbell is generally proximate the weight portion and is spaced from the gripping and support portions; and in the upper position, said weight portion being horizontally spaced from said path, to cause the barbell to continue to stress the same lifting muscle(s) of the exerciser.

4,943,053

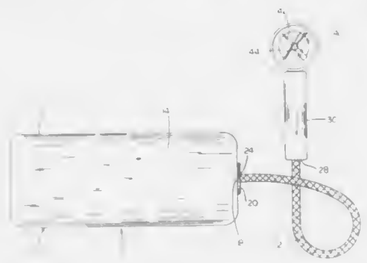
POST-OPERATIVE KNEE REHABILITATIVE DYNAMOMETER

Stephen H. Smith, R.D. 1, Box 150-B, Riegelsville, Pa. 18077

Filed Dec. 22, 1988, Ser. No. 289,587

Int. Cl.[5] A63B *21/02*

U.S. Cl. 272—135 7 Claims



1. A post-operative knee rehabilitative dynamometer comprising:

a. a cylindrically shaped open-cell body of light weight low density polyurethane foam body;

b. an airtight flexible skin having a thickness of about 10 to about 22 mils sealed about said foam body, said skin comprising at least one layer of vinyl material containing rubber based balloons as a thickening agent, at least one layer of vinyl based paint and a gloss coat layer, said skin having an opening to permit pasage of air into and out of said foam body;

c. a hose sealed about said opening with a rubber grommet and extending into the center of said foam body remote from said opening, said hose channeling air passing in and out of said opening;

d. means connected to said hose for measuring the force of air passing through said hose upon application of knee force against said foam body, comprising a gauge having an active and passive marker connected to one end of a coupling member, said coupling member being surrounded by a flexible foam hand grip and connected to said hose on its other end.

4,943,055

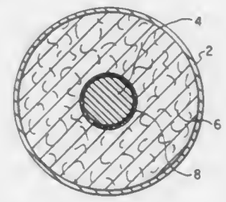
WEIGHTED WARMUP BALL

Deryl Corley, 7108 Caroleane Ct., North Richland Hills, Tex. 76180

Filed Jul. 24, 1989, Ser. No. 384,328

Int. Cl.[5] A63B *69/40*

U.S. Cl. 273—26 R 13 Claims



1. A ball comprising:

a metal center core;

an outer cover;

an intermediate material disposed between said metal center core and said outer core, said intermediate material consisting of packing or filler material; and

means for adhesively bonding said core to said packing or filling material for keeping said core in place within said packing or filling material.

4,943,054

MENTAL GAME

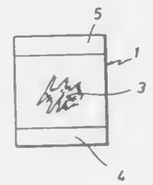
Antonio S. Palou, Aribau 271, 08021, and Margarita V. Tarragona, Pedralbes 18, 08021, both of Barcelona, Spain

Filed Aug. 23, 1989, Ser. No. 399,065

Claims priority, application Spain, Jan. 4, 1989, 8900020

Int. Cl.[5] A63F *9/18*

U.S. Cl. 273—1 R 6 Claims





1. A mental game comprising: a plurality of cards having a front face and a back face, each of said cards having on at least the front face at least one first area containing an illustration and at least one caption and on at least the rear face a second area in which there is at least one second caption; a plurality of supports, each of which is formed by mutually superimposable first and second sheets, at least one of said sheets having means adapted to determine first and second set positions for at least one card, said first sheet being provided with at least one opening which, when the support contains at least one card, is adapted to be superimposed on one of the first areas of said card, while said second sheet is provided with at least one slot which, when the support contains at least one card, is adapted to be superimposed on one of the second areas of the same card.

4,943,056

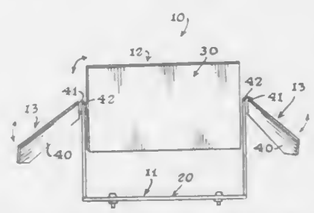
PING PONG TABLE ACCESSORY APPARATUS

Kevin R. Bowers, 1476 Beverly Dr., Arcata, Calif. 95521

Filed Feb. 27, 1989, Ser. No. 315,641

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—30 4 Claims



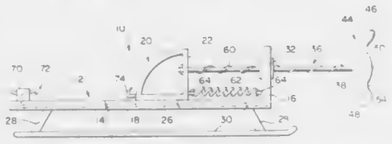
1. A ping pong table accessory apparatus for use with a ping pong table having a horizontal playing surface and net bisecting the horizontal playing surface wherein the apparatus comprises:

a support unit including a pair of upwardly projecting spaced apart support arms, each arm having a bracket element adjacent its upper end and recess in its upper end;

a ball rebound backboard unit comprising an elongated generally rectangular backboard member having horizontally spaced sides and front and rear surfaces, said backboard being operatively secured to a horizontally extending axle member said axle member having ends projecting beyond the sides of said backboard member; said ends of the axle member being received in a respective bracket element on said support arms for pivotally supporting said backboard between said support arms; and

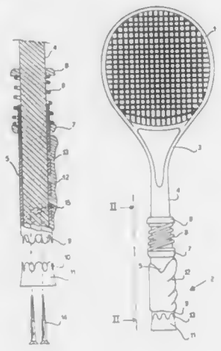
a pair of sideboard units, means engaging said recess for pivotally connecting each of said sideboards to the upper end of a said support arm for movement relative to said backboard.

4,943,057
TORSION-IMPARTING BLOCKING PRACTICE SLED
James G. Felder, 3577 Gaston Ave., Montgomery, Ala. 36105
Filed Aug. 10, 1989, Ser. No. 391,991
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—55 R 13 Claims



1. A football blocking practice sled comprising, an elongated frame having forward and rearward ends, and a blocking pad for engagement by a practicing athlete, means mounting said blocking pad on said frame for rearward movement of said pad along said frame in response to a blocking force, means yieldably resisting said rearward movement and to move said pad in a forward direction upon removal of the blocking force, and, the improvement comprising,
means for imparting a lateral twisting movement to said pad in response to a blocking force and rearward movement of said pad.

4,943,058
TENNIS RACKET WITH FIXED GRIP AND MOVABLE FRAME
Italo Carbonetti, 11 Via Prassitele, I-00125 Axa Acilia Sud RM, Italy
Filed Feb. 22, 1989, Ser. No. 313,525
Claims priority, application Italy, Sep. 21, 1988, 48367 A/88
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 J 4 Claims



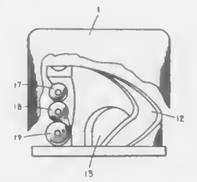
1. In a tennis racket having a frame part and a handle part formed by a hub solid with the frame part, a movable tubular sleeve rotationally and axially sliding on said hub, having an anatomic grip for the gripping of the hand of the tennis player in order to vary the angular attitude of the frame with respect to the grip, to cause the frame to assume a plurality of angular attitudes with respect to it and around its axis, said sleeve having an upper extremity proximal to the frame and a lower opposite extremity, the improvement comprising: said hub is of circular section and said movable sleeve is provided at its lower extremity with a toothed crown profile; a knob element integral with the free extremity of the hub has a toothed crown profile which can be meshed in an axial direction with said crown profile of the movable sleeve; an external periferal abutment is integral with said hub and disposed immediately below the connection of the hub with the frame; an external periferal abutment is integral with said sleeve and placed in proximity to the upper extremity of the same; and a compression coil screw abuts between said two periferal abutments externally to said hub and said sleeve, so that said sleeve can be rendered movable with respect to the hub by unmeshing said crown profiles and translating and turning the sleeve against the action of the spring, whereas the meshing of the crown profiles renders the sleeve and the hub integral with one another; and wherein the sleeve is provided with holes and the grip is anchored in said holes.

4,943,059
GOLF CLUB HAVING REMOVABLE HEAD
Joseph Morell, Annecy, France, assignor to Salomon, S.A., Annecy Cedex, France
Filed Jun. 3, 1988, Ser. No. 201,874
Claims priority, application France, Jun. 16, 1987, 87-08390
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.1 20 Claims



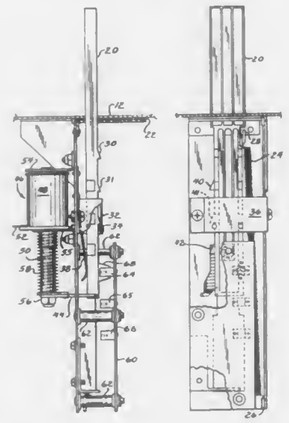
20. A golf club comprising:
(a) a golf club head including a plug member containing a threaded axial bore;
(b) an elongated golf club shaft having a connector portion at one axial end and a gripper portion at the other axial end, said shaft containing an axially extending bore;
(c) a screw retained on the connector portion of said golf club shaft and threaded into said threaded axial bore of the plug member of said golf club head for operatively connecting said golf club shaft to said golf club head, wherein said screw is mounted on said golf club shaft for rotation about an axis of said bore of said golf club shaft, said screw having a threaded shank screwed into said axial bore of said golf club head, and having a screwhead for manually rotating said shank, said screwhead being accessible from said gripper portion of said shaft;
(d) a retention means for retaining said screw to said shaft wherein said retention means includes
(i) a plug carried by said shaft at its connector portion, said plug having an axial aperture for slidably receiving the shank of said screw when the head, thereof, is positioned in the bore of said shaft, whereby engagement of the screw head with the plug limits axial displacement of the screw in one direction; and
(ii) an elastic cap resiliently engaged with the bore of said shaft adjoining the plug of said retention means, said cap serving to limit axial displacement of said screw in a direction opposite to said one direction.

4,943,060
LITTLE MINI SNOWMAN GAME
Duane Peters, and Ty C. Peters, both of 2237 Terrace Dr., New Brighton, Minn. 55112
Filed Feb. 28, 1989, Ser. No. 316,777
Int. Cl.[5] A63B *63/00, 43/00*
U.S. Cl. 273—109 12 Claims



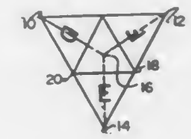
1. A miniature snowman game apparatus comprising a substantially flat base having spaced apart top and bottom surfaces and a plurality of apertures extending through said surfaces; at least one stake means attached to said base such that said stake extend above said top surface through said apertures in said base; said stake being equal to the number of apertures; a ramp means attached to said top surface having an upwardly curved body; a plurality of game pieces having holes therethrough; and a see through cover means attached to said base adapted to enclose said ramp, game pieces and stake means.

4,943,061
MULTI-POSITION DROP TARGET
Irwin J. Grabel, Elmwood Park, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.
Filed Aug. 22, 1989, Ser. No. 396,998
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—127 R 7 Claims



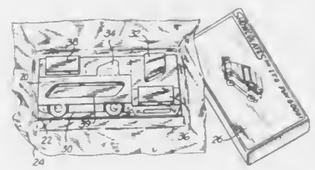
1. A multi-position drop target playfield feature for a rolling ball game comprising:
(a) a target member extending above the playfield movable between a plurality of discrete vertical positions, and having a plurality of reset projections (40–42) vertically disposed thereon, each reset projection corresponding to a different vertical position of said target member;
(b) means for lowering the target member one position each time it is struck by the rolling ball;
(c) means for raising the target member to reset it to its initial position, or to any intermediate position, said means for raising including:
(i) means for engaging said reset projections to raise the target member position;
(ii) means for reciprocally driving said engaging means; whereby each operation of said driving means causes said engaging means to raise the target member one position.

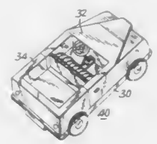
4,943,062
RANDOM INDICIA SELECTOR
Richard A. Gillette, 8567 Pomelo Tree La., Orlando, Fla. 32819
Filed Nov. 23, 1988, Ser. No. 275,437
Int. Cl.[5] A63F *9/04*
U.S. Cl. 273—144 B 13 Claims



1. A random indicia selector comprising:
a housing containing a tumbling compartment;
a first plurality of identically sized, regular tetrahedron shaped dice bearing indicia on each face contained in said housing;
a second plurality of pyramidal shaped display cavities along one side of said tumbling compartment;
said housing sized so all of said first plurality of said dice may be tumbled about at least two axes in said tumbling compartment and a random second plurality of said dice may then be disposed in said display cavities.

4,943,063
CONVERTIBLE COMESTIBLE
Claude R. M. Moreau, 85-06 Sixtieth Ave., Elmhurst, N.Y. 11373
Filed Mar. 29, 1989, Ser. No. 330,055
Int. Cl.[5] A63F *9/10*
U.S. Cl. 273—157 R 22 Claims





1. A convertible comestible comprising a processed foodstuff moldable into a three-dimensional geometric configuration as a food bar, said food bar being made of a plurality of distinctly different shaped and sized constituent portions being separable into a number of three-dimensionally complimenta-

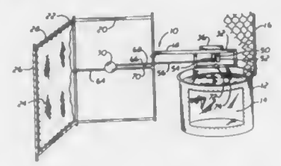
rily sculptured separate portions to interrelate with one another in a permutable three-dimensional configuration, said separate portions affording multi-level grouping in sequential arrangements with contiguous interfacing and occlusive interlocking to form a three-dimensional object in a given configuration.

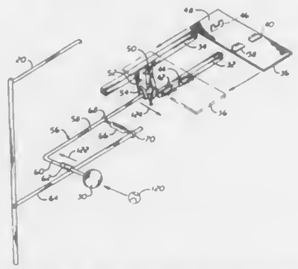
4,943,064

DUNK TANK SEAT RELEASE MECHANISM

Harry C. Smith, Jr., 520 Thompson Ave., Lehigh Acres, Fla. 33936

Filed Aug. 24, 1989, Ser. No. 398,764
Int. Cl.[5] A63B *63/00*; A63F *9/02*
U.S. Cl. 273—384 10 Claims





1. A dunk tank seat release mechanism comprising

support means disposable proximate the rear of a dunk tank

a seat hingably attached to said support means and being alternatable between generally horizontal and collapsed positions;

means, mounted to said support means, for releasably gripping said seat to hold said seat in a generally horizontal position, said means for gripping including a pair of opposing, pivotably interconnected, stationary and movable jaws, a stationary handle fixed to said stationary jaw, a movable handle pivotably attached to said movable jaw and means, for biasing said jaws closed when said movable handle is closed relative to said stationary handle to hold said seat;

an actuator member extending from between said stationary and movable handles generally laterally of the tank, said actuator member having a thickness between said handles such that a spacing of at least ¼" is provided between said actuator member and said movable handle, and further including means for mounting a target to face generally forward of the tank; and

means for pivotably mounting said actuator member to said support means; whereby engagement of said target with a predetermined force pivots said actuator member to engage and open said movable handle of said gripping means so that said jaws open and said seat is released.

4,943,065

BEAN BAG TOSS GAME TARGETS

David J. DeLapa, 501 Tammery Dr., Tallmadge, Ohio 44278

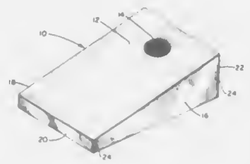
Filed May 25, 1989, Ser. No. 357,328
Int. Cl.[5] A63B *63/00*
U.S. Cl. 273—402 19 Claims

1. In a competitive game including at least one target and at least one bag filled with beans or other materials to be pitched at the target for scoring, a target structure which provides multiple possible scoring methods of the game comprising in combination:

a flexible target surface member having a smooth surface texture and a length L_1 and defined front and rear edges and a hole through it of sufficient size such that a bean bag will pass through it;

a front support member hingedly secured to the underside of said target surface member adjacent the front edge, said member having a height H_1 as measured from a ground plane; and

a rear support member hingedly secured to the underside of





the target surface member adjacent the rear edge, said member having a height H_2 as measured from the ground plane;

the ratio of the heights H_2/H_1 and said length L_1 being dimensioned so as to support said target surface member at an inclined angle "α" with respect to the ground plane such that said target surface member being comprised of a material which exhibits said smooth surface texture and flexibility when supported in said inclined position to enable a bag striking the target surface to either slide or bounce by spring action on the surface due to its slickness and flexibility depending upon the angle of incidence at which said bag strikes the surface.

4,943,066

BALL-LIKE ARTICLE

Delbert L. Lathim, Pasco, Wash.; Ting Liu, and Charles F. Foley, both of Charlotte, N.C., assignors to Research & Development of North Carolina, Charlotte, N.C.

Filed Feb. 2, 1989, Ser. No. 305,518
Int. Cl.[5] A63B *43/02*
U.S. Cl. 273—415 23 Claims

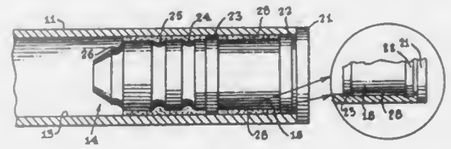
1. A ball-like article comprising a flexible permeable outer skin presenting a relatively soft and smooth peripheral surface which has a plush feel and defining a substantially enclosed interior volume, said skin being of a size and shaped adapted to be readily grasped within the palm of one hand, a quantity of a granular material occupying only a portion of said interior volume with the remainder thereof occupied by air for generally fluidic movability within said interior volume in response to centrifugal, inertial, gravitational, manual and other externally imposed forces to enable said article to assume varied configurations, said article being characterized by a kneadable quality to be adapted for therapeutic manual manipulation, light manual tossing and catching, and other non-impactive recreational activities, and a tail portion attached to said outer skin for grasping and tossing said article.

4,943,067

ARROW INSERT

Thomas A. Saunders, 1424 Vinton St., Omaha, Nebr. 68108

Continuation-in-part of Ser. No. 700,601, Feb. 11, 1985, abandoned. This application Oct. 16, 1985, Ser. No. 787,954
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—416 4 Claims



1. The combination of: an insert; a threaded point for an arrow; and an arrow shaft having a cylindrically shaped wall of a predetermined inner and outer diameter disposed about a longitudinal axis on one end thereof, said insert comprising:

a cylindrical insert body of a first diameter adapted to be disposed in said one end of the arrow shaft;

an enlarged shoulder means disposed on said one end of said insert body extending from the inner to the outer diameter of said one end of said arrow shaft wall for preventing said insert body from sliding too far into said arrow shaft;

a first annular alignment ring means disposed on said one end of said insert body adjacent to said enlarged shoulder means, said first alignment ring means having an outer diameter of a size for causing a tight, closed slidable fit when said first alignment ring means is disposed in said one end of the arrow shaft;

a second annular alignment ring means disposed on the exterior of said insert body at a position spaced at a substantial distance from said first alignment ring means for causing the longitudinal axis of the insert body to be coincident and in alignment with the longitudinal axis of said arrow shaft, the outer diameter of said second alignment ring being larger than said first diameter of the insert body and larger than inner diameter of said arrow shaft and the outer diameter of said first alignment ring being larger than the outer diameter of said second alignment ring and larger than the arrow shaft to form a press fit with said arrow shaft; and

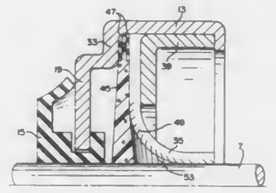
glue trap means for forming an enclosed space between said first and second alignment ring means, said insert body and the inner wall of the arrow shaft for sealingly holding an adhesive material provided for preventing the insert body from sliding out of said one end of the arrow shaft.

4,943,068

UNITIZED EXCLUSION SEAL

Frederick R. Hatch, Ann Arbor; William M. Riley, Milan, and Thomas M. Banks, Ypsilanti, all of Mich., assignors to Mather Seal Company, Milan, Mich.

Continuation of Ser. No. 75,170, Jul. 20, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 378,442
Int. Cl.[5] F16J *15/32, 15/34, 15/44, 15/54*
U.S. Cl. 277—23 3 Claims



1. A unitized seal for excluding debris from a portion of a rotating shaft, comprising:

an annular shaft-engaging member having an annular unitizing channel with a predetermined width formed therein, said channel bounded by radially outwardly extending annular projections having mutully confronting wall surfaces extending radially outwardly from said shaft-engaging member, said annular prejections having stiff axially extending sections to resist axial deflection and prevent disassembly of said unitized seal during installation of said unitized seal over said shaft;

a single lip element projecting radially outwardly from shaft-engaging member, said lip element formed with an annular tip portion having an axial section thinner than said axially-extending sections of said annular projections;

a metallic seal case member for efficiently conducting heat from said lip element to a seal housing, said seal case member comprising a radially inwardly projecting flange having a radial inner extremity formed with a width less than said predetermined width, said flange positioned within said channel with a clearance fit and having an exterior radially extending surface portion in contact with said lip element along a single contact band; and

a seal lip element mounted to said seal case member for sealing lubricant between said seal lip element of said case member and said rotating shaft and extending radially inwardly from said cast member for engagement with a portion of the shaft.

2. A unitized seal for excluding debris from a portion of a rotating shaft, comprising:

an annular shaft-engaging member having an annular unitizing channel with a predetermined width formed therein, said channel bounded by radially outwardly extending annular projections having mutually confronting wall surfaces extending radially outwardly from said shaft-engaging member, said annular projections having stiff axially extending sections to resist axial deflection and prevent disassembly of said unitized seal during installation of said unitized seal over said shaft;

a single lip element projecting radially ourwardly from said shaft-engaging member, said lip element formed with an annular tip portion having an axial section thinner than said axially-extending sections of said annular projections;

a metallic seal case member for efficiently conducting heat from said lip element to a seal housing, said seal case member comprising a radially inwardly projecting flange having a radial inner extremity formed with a width less than said predetermined width, said flange positioned within said channel with a clearance fit and having an exterior radially extending surface portion in contact with said lip element along a single contact band; and

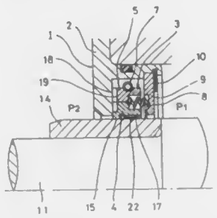
filter means disposed adjacent said shaft engaging member and within said case member for entrapping contaminants within said filter means and extending radially inwardly from said case member for engagement with a portion of the shaft.

4,943,069

SHAFT SEAL DISPOSED ABOUT A ROTATABLE SHAFT

Takeshi Jinnouchi, Sakado, Japan, assignor to Eagle Industry Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1989, Ser. No. 341,462
Claims priority, application Japan, May 10, 1988, 63-111623
Int. Cl.[5] F16J *15/16, 15/40, 15/34*
U.S. Cl. 277—27 9 Claims



1. A shaft seal disposed about a rotating shaft means, comprising a non-rotating seal ring means disposed about said shaft means, resilient means disposed about said seal ring means and biasingly urging said seal ring means radially inwardly toward said shaft means, said seal ring means having a first inner cylindrical surface forming a sealing dam wear means and a second inner cylindrical surface forming a bearing pad means is attached, said seal ring means being biased by said resilient means into sliding contact with said shaft means, said bearing pad means having an initial inner diameter greater than the inner diameter of said sealing dam wear means so as to provide a clearance between said bearing pad means and said rotating shaft means, said sealing ring means having a third cylindrical surface from which said bearing pad means extends, said sealing dam wear means being constructed to rapidly wear upon sliding contact with said rotating shaft means during an initial run-in period such that after said initial run-in period, said bearing pad means comes into sliding contact with said rotating shaft means upon being urged radially inwardly by said biasing means such that both said sealing dam wear means and said bearing pad means are in sliding contact with said rotating shaft means which is the operating relationship between said seal ring means and said rotating shaft means over the life of the seal ring after said initial run-in period, said bearing pad means being constructed to last over the life of the seal ring when operating in said operational relationship.

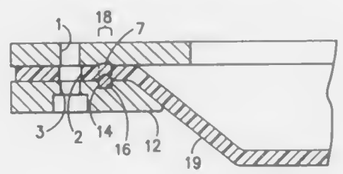
4,943,070

SEALING SYSTEM FOR DIAPHRAGM TYPE VULCANIZING PROCESS

Aage Lang, Kolind, Denmark, assignor to Milliken Denmark A/S, Morke, Denmark

Filed Oct. 13, 1988, Ser. No. 257,065
Claims priority, application Denmark, Jun. 30, 1988, 3639/88
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—235 R 5 Claims

1. Sealing system for a vulcanizing press of the diaphragm type comprising: a diaphragm, a first flange member on one side of said diaphragm encompassing the perimeter thereof, a second flange member on the other side of said diaphragm encompassing the perimeter thereof and being operably associated with said first flange member, an indention in and around the interior side of one of said flange members facing said diaphragm member and means operably associated with said diaphragm member to force a portion of said diaphragm into said indentation when said flange members are pressed together to hold said diaphragm therebetween, said means including an endless groove in the inside of said flange member facing the flange member having said indentation therein and a strand of material of constant cross section in said groove having a height higher than the depth of said groove.

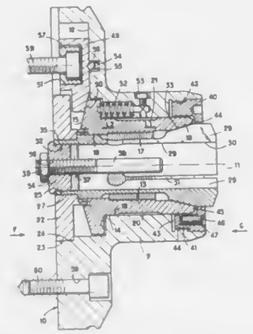


4,943,071

COLLET ADAPTABLE TO A MACHINE-TOOL FITTED WITH A CHUCK

Robert Srebot, Ris-Orangis, and Bernard Berthoud, Pontchierry, both of France, assignors to S.A. Srebort, Cedex, France

Filed Aug. 1, 1989, Ser. No. 388,330
Claims priority, application France, Aug. 3, 1988, 88 10517
Int. Cl.[5] B23B *31/10*
U.S. Cl. 279—43 5 Claims



1. A chuck adapter for clasping a workpiece to be machined on a machine tool having a chuck which includes a front face, at least two clasping jaws movably affixed to jaw position adjustment means and a control device for the position adjustment means, comprising:

a frame having front and rear faces, said rear face having a plurality of radial grooves formed therein and further including means for attachment to the chuck front face, said frame having a central bore opening on said frame front face, said central bore having an axis of symmetry;

a main sliding element slidably carried within said central bore, having a frustoconical rear face disposed toward said frame rear face and a partially cylindrical, partially frustoconical bore opening toward said frame front face, said frustoconical bore portion lying at the extremity of said sliding element bore;

a collet having a rear portion fixed to said frame rear face, and a front portion projecting toward said frame front face, said collet front portion including a plurality of stems uniformly distributed around the circumference thereof, each said stem having an interior face for clasping the workpiece and exterior frustoconical face, said exterior frustoconical face complementary to and bearing against said sliding element frusotoconical bore portion such that axial movement of said sliding element within said frame central bore results in radial movement of each said collet stem;

a plurality of slides, slidably carried in said frame rear face grooves, each said slide having a frustoconical face complementary to and bearing against said sliding element frustoconical rear face such that movement of said slides within said grooves results in axial movement of said sliding element within said frame central bore;

a plurality of adapting jaws, removably mounted on the chuck jaw position adjustment device and removably attached to said slides; and

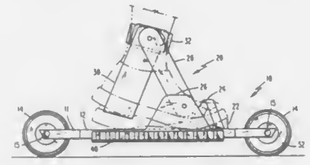
a resilient biasing member, located between said frame and said main sliding element, for urging said sliding element toward said frame rear face.

4,943,072

SIDE-ACTUATED BRAKING SYSTEM FOR PAIRED, WHEELED, FOOT VEHICLES

Sy Henig, 3926 Denfeld Ct., Kensington, Md. 20895-1539

Filed Aug. 24, 1989, Ser. No. 397,830
Int. Cl.[5] A63C *17/00*
U.S. Cl. 280—112 14 Claims



1. Side-actuated braking system for use in a pair of wheeled, foot vehicles, comprising, in each vehicle, a side-actuated braking means comprising

(a) a slidable plate provided at one edge with a row of teeth, said plate being attached to one of a pair of wheeled, foot vehicles so that the row of teeth extends outwardly and opposingly from a side of the one foot vehicle to face and adapted for engagement with a similar row of teeth outwardly extending from the opposing side of the other of the pair of wheeled, foot vehicles, whereby movement of either foot vehicle relative to the other causes sliding movement of the slidable plate when the rows of teeth are engaged;

(b) wheel rotation retardation means actuable between a non-braking position and a braking position; and

(c) interconnection means connecting the slidable plate with the wheel rotation retardation means in a manner such that sliding movement of the plate in either direction from a first non-braking position to a second braking position actuates the wheel retardation means from a non-braking position to a braking position.

4,943,073

HAND TRUCK FOR TRANSPORTING HEAVY FLAT ARTICLES

Robert G. Wander, 3444 Dove Hollow Ct., Palm Harbor, Fla. 34683-2211

Filed May 12, 1989, Ser. No. 351,148
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—47.27 10 Claims

1. A two-wheeled hand truck, comprising:

an axle member having first and second opposite ends;

first and second laterally spaced wheel members rotatably mounted to said first and second ends of said axle member, respectively, for transporting the hand truck relative to a support surface;

a non-rotatable mounting means fixedly secured to said first end of said axle member, laterally outward of said first wheel member;

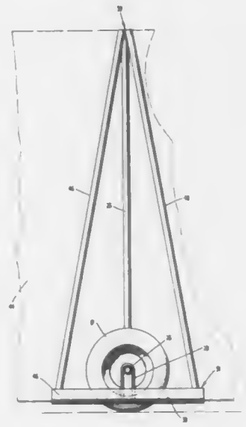
said mounting means being inclined laterally inwardly at a first predetermined angle;

an elongate "L"-shaped angle iron member, having a substantially vertical wall and a substantially horizontal wall, being secured, substantially mid-length thereof, to said mounting means in substantially orthogonal relation to an axle of rotation of said axle member with said vertical wall of said angle iron member extending at said first predetermined angle;

said angle iron member having longitudinally spaced apart forward and rearward opposite ends;

a first, linear in configuration, elongate frame member having a lower end fixedly secured to said forward end of said angle iron member, on a laterally inward side thereof;

said first frame member being inclined laterally inwardly at said first predetermined angle and rearwardly at a second predetermined angle;



a second, linear in configuration, elongate frame member having a lower end fixedly secured to said rearward end of said angle iron member, on a laterally inward side thereof;

said second frame member being inclined laterally inwardly at said first predetermined angle and forwardly at said second predetermined angle;

a third, linear in configuration, elongate frame member having a lower end non-rotatably mounted to said second end of said axle member, laterally inwardly of said second wheel member;

said third frame member being inclined laterally inwardly only at said second predetermined angle;

said first, second and third frame members having upper ends disposed in abutting relation to one another in vertically spaced relation to a point about one-third of a distance from said first wheel member to said second wheel member;

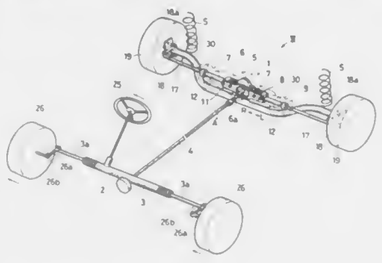
whereby a flat board having a lower edge supported by the horizontal wall of said angle iron member is tilted laterally inwardly by said first predetermined angle and is supported by said first and second frame members along diagonal lines.

4,943,074

STEERING MECHANISM FOR VEHICLE REAR WHEELS

Tomoyuki Kido, Osaka, Japan, assignor to Diahatsu Motor Co., Ltd., Osaka, Japan

Filed Dec. 21, 1988, Ser. No. 287,289
Claims priority, application Japan, Dec. 28, 1987, 62-335827
Int. Cl.[5] B62D *7/00*
U.S. Cl. 280—91 **14 Claims**



1. A steering mechanism for vehicle rear wheels comprising:
an input shaft rotated in response to rotation of a vehicle steering wheel,
a cam member connected to said input shaft for rotation therewith,
a follower support for holding a pair of cam follower rollers spaced widthwise of the vehicle with said cam member interposed therebetween, said support being rectilinearly movable widthwise of the vehicle when said input shaft is rotated, each of said cam follower rollers being rotatably supported on said follower support by means of a roller shaft extending perpendicularly to the widthwise direction of the vehicle, and
a tie member connecting said follower support to a knuckle arm of each rear wheel,
wherein an eccentric bush is interposed between at least one of said cam follower rollers and a corresponding shaft so that said one follower roller is adjustable in position relative to said corresponding roller shaft by rotation of said bush.

4,943,075

PAIR OF WHEELED SKATE-SKIS WITH BRAKES USABLE ON MOST TERRAINS

Patrick G. Gates, 9716 122nd St. East, Puyallup, Wash. 98373

Filed Aug. 18, 1989, Ser. No. 395,881
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—842 **5 Claims**



1. A pair of wheeled skate-skis with hand operated brakes for use on most terrains, each of the wheeled skate-skis, comprising:
(a) a channel frame having a web and depending platform to receive a sportspersons foot already fitted into a selected sport shoe, and the outside surfaces of the depending flanges equipped with an adhered strip of one component of a "Velcro" or "Dual Lock" or like fastener, and having wheel receiving cutouts both fore and aft in the web to receive fore and aft wheels, and having transverse holes in the depending flanges by the cutouts to receive fore and aft transverse wheel axles, and having at one end of the web a vertical hole to receive a fastener used in mounting to the channel frame, a bicycle type spring return pivotal calipered braking unit;
(b) fore and aft wheels mounted on the fore and aft transverse wheel axles; and
(c) said bicycle type spring return pivotal calipered braking unit mounted at the end of the web, having a fastener extending through said verticle hole in the channel frame for and operating handle thereof, extendable from the braking unit up to the waist height locales of sportspersons, who will be using this pair of wheeled skate-skis having hand operated brakes.

4,943,076

SAFETY TRAILER STEP

Randall K. Tripke, Rte. 1, Box 62, Malone, Wis. 53049

Filed Sep. 14, 1988, Ser. No. 244,015
Int. Cl.[5] B60R *3/00*
U.S. Cl. 280—166 **6 Claims**

1. Safety apparatus for providing footing on a selected member comprising:
a. a platform having upper and lower surfaces;
b. a pair of side plates connected to and depending from the platform lower surface and generally perpendicular thereto, the side plates being spaced a predetermined distance apart to snugly fit over the selected member, the side plates having respective free ends that define at least one set of aligned holes therethrough;
c. bolt means for passing through the aligned holes in the side plates and adjacent the selected member to rigidly mount the safely apparatus to the selected member; and
d. at least one generally U-shaped spacer adapted to nest between the side plates and platform, the spacer having side legs that define holes that are aligned with the holes in the side plates when the spacer is nested between the side plates and the platform,
so that the safety apparatus can be rigidly mounted to selected members having a variety of widths.

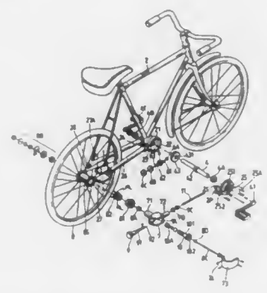
4,943,077

ENCLOSED SINGLE-AXLE DRIVING MECHANISM FOR BICYCLES

Chuan-Sheng Lin, and Wei Lil, both of Taichung, Taiwan, assignors to Yu-Fu Traffic Supplier Ltd., Co., Taichung, Taiwan

Filed Nov. 18, 1988, Ser. No. 273,041
Int. Cl.[5] B62M *1/06*
U.S. Cl. 280—260 **9 Claims**

1. An enclosed single axle driving mechanism for a bicycle having rotary pedal cranks rotatably attached to a frame comprising:
(a) a driving spindle;
(b) driving means connecting the pedal cranks to the driving spindle such that rotation of the pedal cranks causes rotation of the driving spindle;
(c) a wheel hub;
(d) driven means connecting the driving spindle to the wheel hub such that rotation of the driving spindle causes rotation of the wheel hub, the driven means comprising:
(i) a gear case;
(ii) a first driven gear;
(iii) means connecting the first driven gear to the driving spindle such that the position of the first driven gear may be axially adjustable with respect to the driving spindle;



(iv) an auxiliary driven gear rotatably mounted in the gear case so as to engage the first driven gear;
(v) mounting means rotatably mounting the first driven gear to the gear case such that the first driven gear is axially adjustable to enable the engagement between the first and auxiliary driven gears to be adjusted; and,
(vi) means connecting the auxiliary driven gear to the wheel hub; and,
(e) attaching means to removably attach the gear case to the frame such that the gear case, and the first and auxiliary driven gears may be attached and removed as a unit.

4,943,078

HEAVY DUTY TRANSPORT VEHICLE

James R. McGhie, 2970 S. Lexington, St. Paul, Minn. 55121, and Robert D. Dieleman, 6109 S. Industrial Rd., Las Vegas, Nev. 89118

Filed Apr. 28, 1988, Ser. No. 187,557
Int. Cl.[5] B62D *53/08*
U.S. Cl. 280—408 **13 Claims**



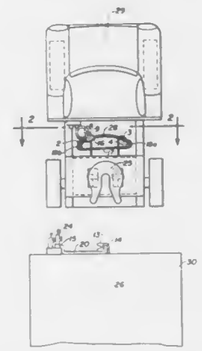
1. A load hauler for travelling on conventional road ways to move, for example heavy construction equipment such as cranes or the like from one work site to another, said hauler comprising:
(A) a front carriage comprising a rigid frame supported upon a multiplicity of hydraulically suspended, independent wheel and axle units, said wheel and axle units being spaced apart from one another longitudinally along and laterally across said frame; a first fifth wheel coupling at the leading end of such front carriage for connecting to the fifth wheel coupling of a tow vehicle, and a second fifth wheel coupling on said frame at a position spaced rearwardly from said first fifth wheel coupling;
(B) a rear carriage comprising a rigid frame supported upon a multiplicity of hydraulically suspended, independent wheel and axle units spaced apart from one another longitudinally along and laterally across said frame, said rear carriage having a third fifth wheel type or similar coupling thereon intermediate the leading and trailing end thereof;
(C) a load unit having detachably connected thereto a forwardly projecting and a rearwardly projecting pair of goosenecks, each of said goosenecks having a fifth wheel coupling with the one on the forwardly projecting gooseneck connected to the said second fifth wheel coupling on the front carriage and the other to said third fifth wheel type coupling on said rear carriage;
(D) valved hydraulic circuit means interconnecting the hydraulic suspensions of said wheel and axle units selectively to distribute the load equally amongst all of the wheel units and control stiffness of roll of the load about on axis lengthwise of the hauler;
(E) gas charged accumulator means associated with the hydraulic suspensions providing a spring suspension system; and
wherein at least some of the independent wheel and axle units are steerably mounted on the carriage associated therewith.

4,943,079

TEMPORARY TRAILER BRAKE RELEASE SYSTEM

Jay R. Harbold, York Springs, Pa., assignor to Harbold's Auto & Truck Inc., Camp Hill, Pa.

Filed Jul. 14, 1989, Ser. No. 379,875
Int. Cl.[5] B60D *1/62*; B62D *53/08*
U.S. Cl. 280—420 **9 Claims**



1. A system for temporarily releasing a spring actuated emergency brakes which are controlled by an air system on a semi-trailer without the operator leaving a cab of a tractor for towing a semi trailer so that it can be moved about in a freight marshalling yard, comprising an air injector probe means on the tractor for supplying air to the semi-trailer emergency air system; a valve means on the semi trailer for receiving the injected air supply coupled with an "or" valve to close a glad hand when air is injected; location means on the semi trailer for establishing an exact spatial relationship between said valve and a semi trailer king pin; an arcuate track means for positioning the injector probe means at an exact distance from a center of a tractor fifth wheel, said distance being the same as that between the semi trailer king pin and the air receiving valve means on the semi trailer; a trolley means for carrying the injector probe along the arcuate track means to achieve correct alignment between the injector probe means and the trailer air receiving valve means a drive means for providing trolley means movement along the track means; sensing means for sensing trolley travel limits and alignment between the air injector probe means and the air receiving valve means switch-

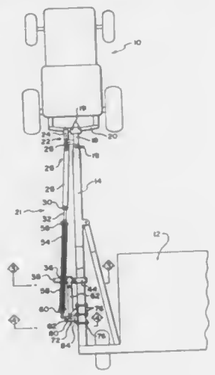
ing means for controlling electrical and pneumatic circuits of the system; and air injector probe means extension and retraction means for establishing connection between the air injector probe means and the air receiving valve means.

4,943,080

SWATHER HITCH DEVICE FOR PULL-TYPE IMPLEMENTS

Alden L. F. Reimer, Box 58, Neville, Saskatchewan, Canada S0N 1T0

Filed Aug. 18, 1989, Ser. No. 395,460
Claims priority, application Canada, Aug. 24, 1988, 575598
Int. Cl.[5] B60D 1/34
U.S. Cl. 280—455.1 13 Claims



1. A towed implement control device for an implement with an implement tongue at one side thereof, the tongue having a hitch for connection to the draw bar of a towing vehicle, said control device comprising:
- a strut pivotally mounted on the implement tongue and projecting laterally from the tongue to a side thereof opposite the implement;
- a control tongue extending along the side of the implement tongue opposite the implement and slideably connected to the strut;
- control hitch means pivotally connecting the control tongue to the towing vehicle at a position adjacent the draw bar hitch;
- spring means acting between the control tongue and the strut to resist relative sliding movement of the control tongue and the strut; and
- a beam pivotally connected to the strut and pivotally connected to the implement tongue, at a position further from the hitch than the strut.

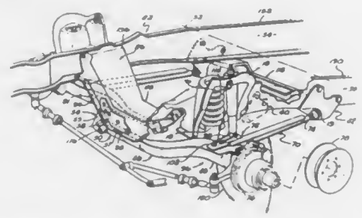
4,943,081

VEHICLE SUSPENSION ASSEMBLY

William Golpe, San Bernardino, Calif., assignor to Rancho Industries, Inc., Long Beach, Calif.

Filed Feb. 10, 1989, Ser. No. 309,460
Int. Cl.[5] B60G 3/00
U.S. Cl. 280—666 9 Claims

1. A suspension assembly for supporting a wheel of a motor vehicle having a chassis comprising a first longitudinal chassis member, a second longitudinal chassis member, each chassis member having a lower center portion, a raised end portion and a bend transition portion between the lower center portion and raised end portion, and a suspension cross member coupled between the raised end portions of the first and second longitudinal chassis members, the first longitudinal chassis member being nearest the wheel and having a suspension attachment site located along the lower center portion of the first longitudinal chassis member, the suspension assembly comprising:
- a suspension bracket mounted to the suspension cross member at a location remote from the first longitudinal chassis member;
- an axle beam having an outboard end and an inboard end, the inboard end movably mounted to the suspension bracket;



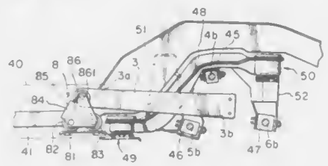
- a chassis bracket attached to the first longitudinal chassis member at the suspension attachment site; and
- an elongated radius arm having a rear end and a forward end, the forward end of the radius arm coupled to the axle beam at a location adjacent to the outboard end of the axle beam and the rear end of the radius arm movably mounted to the chassis bracket.

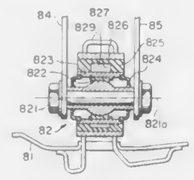
4,943,082

VEHICLE SUSPENSION MECHANISM

Takao Kijima; Takeshi Edahiro; Toshihide Koyama, and Haruyuki Taniguchi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 15, 1988, Ser. No. 244,848
Claims priority, application Japan, Sep. 19, 1987, 62-235778; Apr. 28, 1988, 63-105934
Int. Cl.[5] B60G 7/00
U.S. Cl. 280—673 7 Claims





1. In a vehicle suspension mechanism including
swing arm means extending in a longitudinal direction of a vehicle and swingably connected with a vehicle body,
means for connecting a plurality of lateral link means to extend in a transverse direction of the vehicle, and
supporting structure means for supporting a front end portion of the swing arm means,
the improvement comprising:

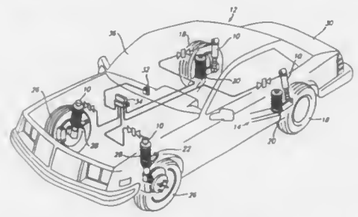
a pair of bracket members connected with said supporting structure means in a spaced relationship with each other in a transverse direction of the vehicle,
first supporting means provided in said supporting structure means and carried by said bracket members for vertically swingably mounting said swing arm means,
second supporting means provided in said supporting structure means for swingably carrying said bracket members about a longitudinal axis of the vehicle,
said second supporting means having a pair of bushing structures spaced from each other in the longitudinal direction of the vehicle,
each of said bushing structures being provided with a pillow-ball member having a spherical portion at a middle portion, said bushing structures extending in the transverse direction of the vehicle and joined with the bracket members at opposite ends, an inner tubular member arranged around the pillow-ball member for rotatably carrying the pillow-ball member, an outer tubular member provided around the inner tubular member through a rubber member, and a joint bracket member for connecting the outer tubular member with the vehicle body.

4,943,083

SIGNAL CONDITIONING CIRCUIT ASSEMBLY

Gary W. Groves, Monroe, Mich., and David L. Perry, Sylvania, Ohio, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 13, 1989, Ser. No. 322,543
Int. Cl.[5] B60G 17/08
U.S. Cl. 280—707 28 Claims



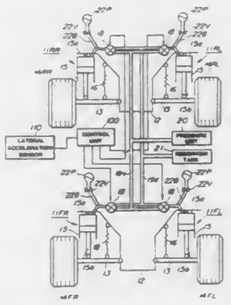
1. A shock absorber for damping the movement of the body of an automotive vehicle, said shock absorber comprising:
- a pressure cylinder;
- a piston disposed within said pressure cylinder operable to divide said pressure cylinder into first and second portions;
- a piston rod operable to support said piston in said pressure cylinder, said piston rod having first and second portions;
- a signal conditioning circuit assembly disposed within said first portion of said piston rod, said signal conditioning circuit assembly comprising:
  - (a) a first sensor means for generating a first output in response to the difference in pressure between the damping fluid in said first and second portions of said pressure cylinder, said first sensor means being disposed in a first portion of said piston rod;
  - (b) a header disposed within said first portion of said piston rod and being operable to support said first sensor means;
  - (c) a first signal conditioning circuit electrically communicating with said first sensor means, said first signal conditioning circuit operable to generate a second output in response to the first output of said first sensor means;
  - (d) a circuit mounting platform operable to support said first signal conditioning circuit, said header being operable to positionally secure said circuit mounting platform within said first portion of said piston rod;
- means for generating an electrical control signal in response to said second output of said first signal conditioning circuit; and
- electrical controllable flow means for regulating the flow of damping fluid between said first and second portions of said pressure cylinder, said electrical controllable flow means being disposed adjacent to at least part of second portion of said piston rod.

4,943,084

ACTIVELY CONTROLLED SUSPENSION SYSTEM FOR SUPPRESSING ATTITUDE CHANGE OF VEHICULAR BODY

Yukio Fukunaga; Naoto Fukushima; Yohsuke Akatsu; Sunao Hano, and Masaharu Satoh, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 11, 1988, Ser. No. 255,560
Claims priority, application Japan, Oct. 9, 1987, 62-255744
Int. Cl.[5] B60G 11/26
U.S. Cl. 280—707 11 Claims



1. A control system for an automotive suspension system for controlling vehicular attitude comprising:
- a suspension system disposed between a vehicle body and a suspension member which rotatably supports a vehicular wheel, said suspension system having a variable pressure chamber filled with a working fluid of controlled pressure
- a pressure adjusting means, associated with said variable pressure chamber, for adjusting the pressure of said working fluid in said pressure chamber
- a sensor means monitoring acceleration causing vehicular attitude chamber to produce a first sensor signal indicative of said measured acceleration
- a control unit receiving said first sensor signal, deriving suspension control signal value on the basis of said first sensor signal for suppressing attitude change, said control unit outputting a control signal to control said pressure adjusting means for adjusting suspension characteristics to suppress vehicular attitude change, said control unit being responsive to said first sensor signal representative of an acceleration greater than a predetermined value for deriving said suspension control signal to allow a given magnitude of attitude change wherein said control unit increases the magnitude of attitude change according to increasing of the accelerator when said acceleration is greater than said predetermined value.

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4,943,085

SIDE BAR ASSEMBLY FOR VEHICLES SUCH AS PICK-UP TRUCKS, OFF-ROAD VEHICLES AND THE LIKE

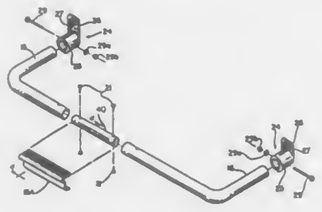
Michael J. Straka, Newburgh, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.

Filed Apr. 27, 1989, Ser. No. 344,125

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] B60R *3/00*

U.S. Cl. 280—770 10 Claims



1. A side-bar assembly for attachment to a chassis of a pick-up truck, off-road vehicle or the like capable of being mounted on such vehicles of a plurality of different sizes and configurations, the side bar assembly comprising a pair of substantially L-shaped tubular members forming half-bar tube sections to collectively form a generally U-shaped side bar to extend laterally from a side of the vehicle wherein the U-shaped side bar includes a pair of transverse parallel side-legs to project substantially perpendicular to the vehicle longitudinal axis and a connecting cross-leg to extend parallel to said axis, the L-shaped tubular members being of predetermined outer radius and each having a first straight tube leg to form one of the side-legs of the U-shaped side bar and having a second straight tube leg connected to the first tube leg by a curved substantially 90° bend to form the cross-leg of the side bar, a substantially semi-cylindrical connector sleeve defining a concave tube-gripping recess having a radius over a portion thereof corresponding substantially to said outer radius of said second tube legs to receive the latter therein in alignment with each other with the connector sleeve partially encircling and gripping adjacent portions of the second tube legs over more than half a circumferential extent of each, and mounting means for bolt securement to the vehicle chassis to receive and support end portions of the side-legs therein, said connector sleeve being an axially elongated cylindrically curved body having a partially encircling inwardly concave abutment surface to engage and conform to confronting exterior surfaces in the tube legs along the axial length of the sleeve for at least about a quarter of the circumference of the tube legs and having an uppermost part thereof shaped to define a step-on tread-forming portion to abut the tube legs along a longitudinal line at a tube leg location diametrically opposite portions of the tube leg engaged by part of said concave abutment surface.

4,943,086

GAS BAG INFLATOR WITH A TWO WELDED JOINT HOUSING

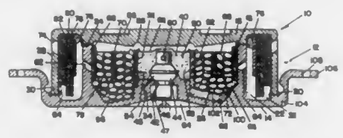
Donald J. Cunningham, North Ogden, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Jan. 30, 1989, Ser. No. 374,426

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—741 40 Claims

1. A vehicle inflatable crash protection bag inflator comprising first and second structural components, one of said first and second structural components including a first cylinder which is welded to a mating surface on the other of said structural components to define a first chamber, one of said first and second structural components including a second cylinder which is welded to a mating surface on the other of said structural components and which is concentric with and outwardly of said first cylinder to define a second chamber between said first and second cylinders, a solid gas generant composition disposed in said first chamber and operable upon ignition to produce gas, means including a perforated tubular member within said first chamber and igniter material within said tubular member for igniting said solid gas generant composition



which igniting means is free of attachment to one of said structural components, said first and second structural components connected by only two welded joints, aperture means in said first cylinder for directing gas produced in said first chamber into said second chamber, means in said second chamber for filtering the gas, and outlet port means in said second cylinder for flow of the gas out of the inflator.

4,943,087

WARNING DEVICE FOR PASSIVE SEAT BELT SYSTEM

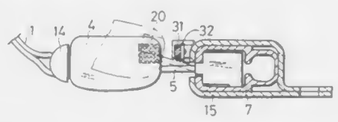
Takanobu Sasaki, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1989, Ser. No. 341,691

Claims priority, application Japan, Apr. 25, 1988, 63-55768[U]; Mar. 15, 1989, 1-29517[U]

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—804 9 Claims



1. A warning device for a passive seat belt system, comprising:

an emergency release buckle connected to a slider which moves along a slide rail arranged in a room of a vehicle;

a tongue carrying an occupant-restraining webbing fastened thereto;

a magnet displaceable between a first position and a second position, said magnet assuming the first position while the tongue and emergency release buckle are latched but a second position while the tongue and emergency release buckle are unlatched;

an anchor base member maintained in engagement with the slider while the slider is at an occupant-restraining position, whereby a tension applied to the webbing may be transmitted to a body of the vehicle; and

a magnetic flux sensor for detecting a magnetic flux from the magnet, said magnetic flux sensor being arranged between the anchor base member and the emergency release buckle.

4,943,088

PICTURE BOOK WITH A PEN CONTAINING WATER-SOLUBLE INK

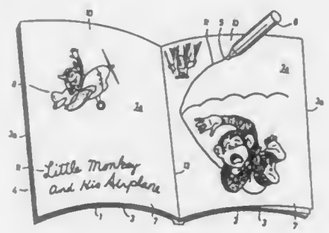
Yoshiomi Wada, 3-53-10, Higashi Oizumi-machi, Nerima-ku, Tokyo, Japan

Filed Sep. 6, 1988, Ser. No. 240,917

Claims priority, application Japan, Sep. 10, 1987, 62-137455

Int. Cl.[5] B42D *1/00, 1/06, 15/00;* **B42F** *3/00*

U.S. Cl. 281—39 6 Claims



1. A picture book, having front and back covers and intermediate leaves for use with a water-soluble ink pen comprising:

a base material on which images of pictures, words, numerals, figures or patterns or combinations thereof can be printed; and

a transparent and liquid-impermeable plastic coating attached to at least one side of the base material, whereby any images printed on the base material are visible through the transparent and liquid-impermeable plastic coating and from which the water-soluble ink, when applied via the removably attached pen to the transparent and liquid-impermeable plastic coating, is easily removed.

4,943,089

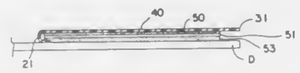
FINGERPRINT SENSITIVE PAD

David C. Reardon, 50 Nottingham, Springfield, Ill. 62704

Filed May 17, 1989, Ser. No. 352,888

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—81 5 Claims



1. A fingerprint sensitive pad for imprinting and storing a fingerprint image on a document, comprising:

a substrate sheet having a reflective surface and an opposing surface;

a layer of inkless imprinting material applied to said reflective surface of the substrate sheet to receive an imprint of a finger;

a flexible protective cover hingedly mounted along an edge of said substrate sheet to protect a latent fingerprint image from degradation and adulteration during storage; and

a layer of adhesive backing on said opposing surface of the substrate sheet to secure the fingerprint sensitive pad to a document, wherein the document in association with said fingerprint sensitive pad provides an identification records system for positively identifying a person involved in a transaction.

4,943,090

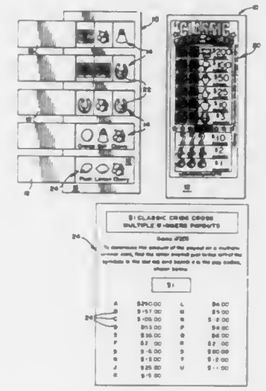
LOTTERY-TYPE GAMING APPARATUS

Debra Fleaberg, Chicago, Ill., assignor to Douglas Press, Inc., Bellwood, Ill.

Filed Apr. 10, 1989, Ser. No. 335,564

Int. Cl.[5] B42D *15/00;* **A63B** *71/00*

U.S. Cl. 273—139 6 Claims



1. A lottery-type gaming apparatus, comprising:

a plurality of playing cards, each of which can be purchased by game players for a predetermined price for each of said playing cards,

each of said playing cards having plurality of groups of game symbols displayed thereon, with each of said playing cards including selectively removable means for initially concealing the groups of game symbols displayed thereon prior to purchase of a playing card by a player, said means for concealing said game symbols being removed by the player after purchase,

at least some of said playing cards being in the form of winning playing cards by having at least one of said groups of gaming symbols displayed thereon corresponding to at least one of a plurality of predetermined winning groups of said game symbols, each of said predetermined winning groups corresponding to a predetermined award value awarded to the player,

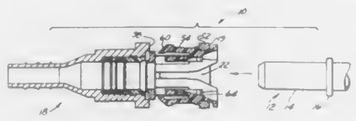
each of said playing cards having displayed thereon a listing of the various ones of the plurality of predetermined winning groups of said game symbols so that a player can determine the award value of any predetermined winning group of said game symbols displayed on the player's card,

at least some of said winning playing cards being in the form of multiple winner playing cards by having displayed thereon multiple ones of said predetermined winning groups of said game symbols, said multiple winning playing cards each further including, in addition to said multiple predetermined winning groups, one of a plurality of different multiple winner code designations displayed thereon and concealed by said means for concealing prior to purchase but visible upon removal of said concealing means, each said multiple winner code designation corresponding to a predetermined total of the plural award values of the multiple winner playing card on which the code designation is displayed; and

a multiple winner code key separate from each of said playing cards and having displayed thereon all of the plurality of different multiple winner code designations and all of the predetermined total of plural award values to which the code designations correspond, to thereby facilitate

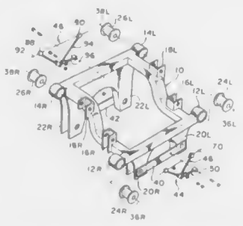
convenient determination of the total award values of one of said multiple winner playing cards.

4,943,091
QUICK CONNECTOR
Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.
Filed Apr. 7, 1988, Ser. No. 178,550
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—12 8 Claims



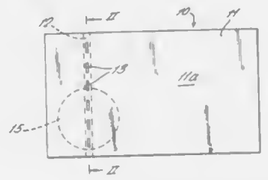
1. A connector assembly, comprising,
a tubular male member,
a tubular female member having an end portion configured to mate with said male member when inserted therewithin, and
a retainer member having a body preassemblcable with either of said male and female members and including first means for preselectively resisting assembly of said male member into said female member when said retainer member is preassembled into said female member and second means for preselectively resisting assembly of said male member into said female member when said retainer member is preassembled onto said male member.

4,943,092
STRUCTURE FOR MOUNTING SUSPENSION MEMBER BY LONGITUDINALLY ARRANGED ELASTIC BUSHES
Tetsunori Haraguchi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Apr. 17, 1989, Ser. No. 339,253
Claims priority, application Japan, Apr. 21, 1988, 63-98524
Int. Cl.[5] B62D *21/11*
U.S. Cl. 280—660 4 Claims



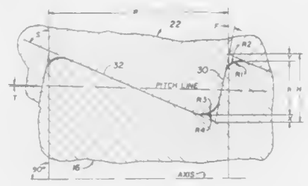
1. A structure for mounting a suspension member to a body of a vehicle, said suspension member supporting control arms at opposite sides of the vehicle, comprising: four substantially cylindrical elastic bushes disposed at four points of said suspension member spaced in the longitudinal and lateral directions of the vehicle, said bushes each being interposed between said suspension member and the vehicle body to extend in the longitudinal direction of the vehicle, and two assist links disposed at two points spaced in the longitudinal direction of the vehicle, said assist links each being engaged between said suspension member and the vehicle body to restrict lateral shiftings of said suspension member relative to said body.

4,943,093
SECURITY PAPER FOR BANK NOTES AND THE LIKE
Raymond J. Melling, Overton, and Malcolm R. M. Knight, Basingstoke, both of United Kingdom, assignors to Portals Limited, Basingstoke, United Kingdom
Filed Nov. 14, 1988, Ser. No. 270,066
Claims priority, application United Kingdom, Dec. 4, 1987, 8728390; Aug. 31, 1988, 8820535
Int. Cl.[5] B42D *15/00*; G09F *19/00, 19/12, 19/14*
U.S. Cl. 283—83 28 Claims



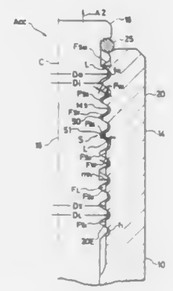
1. Security paper comprising opposed surfaces for the provision of printing to identify a document formed from the security paper, a security device positioned between the two surfaces of the security paper as a public security feature such that at least a portion of the said security device is totally imbedded within the security paper, said security device being of not more than 5 mm width, and comprising a flexible, water-impermeable substrate with a layer of metal on at least one side of the substrate, there being present on one side of the device a continuous metal path along its length, wherein said device has metal-free portions which transmit light of between 10% and 50% of the area of the device, said metal-free portions along the length of the device providing a repeating means of identification with at least some of the metal-free portions across the transverse direction of the device being wholly surrounded by metal.

4,943,094
THREADED PIN AND BOX CONSTRUCTION FOR COMPOSITE TUBULARS
Pat Simmons, Mineral Wells, Tex., assignor to Centron Corporation, Mineral Wells, Tex.
Filed Sep. 30, 1988, Ser. No. 251,679
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—333 1 Claim



1. An improved connector for nonmetallic resinous tubulars, fittings or the like comprising:
a pin and box construction for threaded engagement with both the pin end and box end having a thread tapered in the range of 1 to 1½ degrees, a frusto conical shaped tapered guide surface positioned on the pin end adjacent the terminal end of said thread which cooperates with the box construction to align the threads of the pin end and box end in order to minimize the possibility of cross-threading, said thread having a pitch of 0.250 inch, a stab flank angle in the range of 66 degrees to 67 degrees, a pressure angle in the range of 7.5 degrees to 20 degrees and a thread height of 0.075 inch.

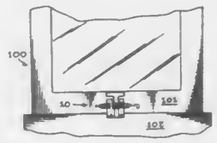
4,943,095
STEPPED THREAD AND CUTOFF THREAD JOINT EXHIBITING EXCELLENT FATIGUE RESISTANCE
Nobuyuki Sugimura, 308, Mabase, Shimizu-shi, Shizuoka-ken, Japan
Continuation of Ser. No. 276,623, Nov. 28, 1988, abandoned. This application Nov. 2, 1989, Ser. No. 431,675
Claims priority, application Japan, Mar. 4, 1988, 63-51316; Mar. 4, 1988, 63-51317
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—334 10 Claims



5. A stepped thread joint between a vessel main body and a vessel closure plate, said main body being subjected to varying internal pressures and therefore subjecting said joint to fluctuating loads, said joint comprising:
a first thread on said main body and a second thread on said closure plate, said first and second threads each having corresponding crests and roots, said crests of said first thread having surfaces for matably contacting corresponding crests of said second thread to join said main body and said closure plate,
wherein said first thread has a stabbed thread portion, an intermediate thread portion and a standard thread portion in succession along said first thread,
said first thread having its crest contact surfaces reduced such that a line connecting ends of each crest of said first thread is in stair-stepped form;
the diameter of each root of said first thread being equal;
such that the maximum bending moment per unit area generated at each root of said first thread is substantially uniform when said first thread is subjected to said fluctuating load.

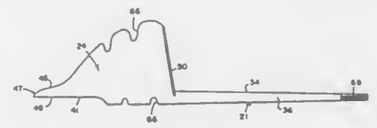
4,943,096
WINDOW LOCK APPARATUS
William C. Looper, 935 Highland Mist La., Charlotte, N.C. 28215
Filed Sep. 19, 1989, Ser. No. 409,911
Int. Cl.[5] F05C *3/04*
U.S. Cl. 292—213 3 Claims

1. A window lock apparatus for locking a lower window sash relative to a window sill wherein the apparatus comprises:
a pivoted bracket member having a base portion that is operatively engaged with one of said window sill and window sash; wherein, said base portion is pivotally attached to a pivoted bracket element provided with a latch element; wherein the pivoted bracket element has a generally T-shaped configuration including a relatively elongated stem and a cross-arm and a single latch element is formed on the stem of the pivoted bracket element;
a stationary a bracket member operatively engaged with the other of said window sash and window sill; wherein the stationary bracket member is provided with at least one latch element; and, wherein the latch elements on said pivoted and said stationary bracket members are adapted to be brought into alignment with one another; wherein the stationary bracket member comprises a rigid bracket element having a pair of spaced and aligned latch elements and a generally U-shaped face panel forming arms wherein each one of the pair of aligned latch elements are disposed on each one of the arms of the bracket element respectively; and, wherein said rigid bracket element is further provided with: a horizontal plate attached on one end to the bottom of the face panel; and, a vertical mounting flange attached to the other end of said horizontal plate; and,



an elongated bolt member dimensioned to be received in said latch elements in said stationary and pivoted bracket members to prevent relative movement between the window sill and the lower window sash; and, whereby the removal of said elongated bolt member from said latch elements allows the window sash to be raised relative to said window sill until such time that the cross arms on the T-shaped pivoted bracket element come into contact with the stationary bracket member such that the window sash may be raised in a releasable yet captive disposition relative to said window sill.

4,943,097
MANUALLY OPERABLE PERSONAL CONVENIENCE IMPLEMENT
Sampson D. Sanger, Liberty, N.Y., assignor to Yehuda Naim, Floral Park, N.Y.
Filed Jan. 17, 1989, Ser. No. 297,926
Int. Cl.[5] A47G *25/90*
U.S. Cl. 294—19.1 1 Claim



1. A manually operable, multi-functional personal convenience implement comprising a device having an elongated arm having a first end and a second end with a portion of a conical wedge section having two converging edges at said first end;
said wedge having concavities on the converging edges of said wedge with said concavities separated a spaced distance from one another, the spaced distance being greater than width of the concavity;
said wedge also having concavities on rear of said wedge, with said concavities separated a spaced distance from one another, the spaced distance being greater than the width of the concavity; and
a hook means on the second end of said elongated arm for grasping an article.

4,943,098

PARTS SUPPLYING APPARATUS

Yoshitaka Aoyama, 20-11, Makitsukadai 2-chome, Sakai-shi, Osaka 590-01, Japan

Filed Jun. 23, 1988, Ser. No. 210,490

Claims priority, application Japan, Jun. 26, 1987, 62-160477; Sep. 5, 1987, 62-222839; Oct. 9, 1987, 62-255567; Oct. 16, 1987, 62-262488

Int. Cl.[5] H02N *15/00*

U.S. Cl. 294—65.5 **3 Claims**



1. A parts supplying apparatus, comprising a single hollow outer cylindrical shaft; and an inner cylindrical shaft substantially inserted into said hollow outer shaft for slidably forming a supply rod; a magnet disposed at an end of at least one of said inner and outer shafts for attracting and holding a part; a first projection formed at said end of said at least one of said shafts for supporting said part; and a second single projection coupled to and perpendicularly extending from said shaft having said magnet disposed thereto, wherein said second projection and said shaft having said second projection, when descending, are stopped by a stopper member disposed outside of said inner and outer shafts to thereby permit said part to be forcibly pushed out by said end of said shaft having said first projection so as to overcome a retaining force of said magnet by relative displacement of said shafts near a place where said part is destined to be supplied.

4,943,099

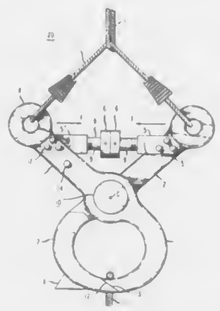
TONGS-LIKE CARGO HOOK DEVICE WITH AUTOMATIC LOADING AND UNLOADING CAPABILITY

Edwin Z. Gabriel, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756

Filed Oct. 24, 1988, Ser. No. 261,940

Int. Cl.[5] B66C *1/38*

U.S. Cl. 294—82.32 **11 Claims**



1. A cargo hook device for quickly scooping up and releasing suspended cargo remotely and automatically, comprising a tongs-like part A, having two elongated members, pivoted near their mid-section by a central pivot pin, and having hammerheads with exterior faces, for use with a load cable and hoist cables, each cable being adapted for attachment to said part A, said members having upper and lower portions, each said upper portions having a weight for automatically separating said portions upon touchdown of said cargo, said lower portions having complementary-shaped, sharp-edged beveled jaw ends having upper and lower surfaces, which close against each other end-to-end to form a smooth continuous contour between said engaging ends when supporting said load cable, because of the tension on said hoist cable; said upper portions having inside surfaces with a primary rod fastened horizontally to each of said inside surfaces, with said device in an upright position, and each rod having said hammerhead at one end and each said hammerhead extending inward and containing a permanent magnet, said magnet's exterior having the same polarity as the polarity of the magnet contained in the opposing hammerhead, so that the two magnets when coming together tend to repel with a force of sufficient intensity to assist in said ends separating from each other the moment said hoist cables slacken upon touchdown of said cargo; said magnets enabling said ends to disengage automatically with less magnitude of said weight, thereby reducing said device's weight; siad magnets also preventing said exterior faces when abutting from sticking together and hindering the separation of said jaw ends due to high compressive forces; said beveled ends, one beveled at its lower and the other at its upper surface, shaped so as to automatically scoop up a load cable lying between said ends, when said device is lifted.

4,943,100

DRAIN SUITED FOR INSTALLATION IN WOODEN FLOORS

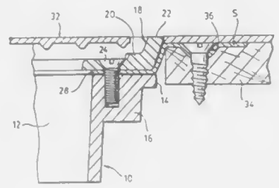
John E. Emberson, Markham, Canada, assignor to Enpoco Limited, Scarborough, Canada

Filed Jan. 9, 1989, Ser. No. 294,704

Claims priority, application Canada, Jan. 14, 1988, 556558

Int. Cl.[5] E30F *5/02*

U.S. Cl. 210—164 **4 Claims**



1. A floor drain comprising:

a tubular body;

a grate frame secured to one end of said body;

a grate positioned by said grate frame to overlie said one end and said grate frame;

securing means for securing said body to said grate frame;

means having upper and lower surfaces and allowing said body to be secured to said grate frame by said securing means, said means extending outwardly of said grate frame at a location so that said lower surface overlies a floor deck, and being dimensioned so that the upper surface thereof is substantially level with floor placed on said floor deck.

4,943,101

WHEEL UNIT

Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, N. Hollywood, Calif.

Filed Feb. 24, 1989, Ser. No. 314,947

Int. Cl.[5] B60B *19/02*

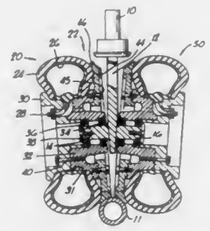
U.S. Cl. 295—8.5 **10 Claims**

10. A ground and track camera dolly wheel unit comprising:

a rotatable king pin having a king pin blade;

first and second axles joined to said blade, said axles having longitudinal axes mutually forming a dihedral angle therebetween;

first and second wheel assemblies each including a ground



wheel and a track wheel having a diameter less than that of said ground wheel;

said first and second ground wheel assemblies rotatably attached to said first and second axles respectively.

4,943,102

WINDSHIELD SUPPORTING STRUCTURE FOR A VEHICLE

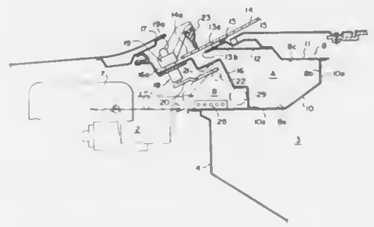
Masaya Hamamoto, and Keiichiro Shibata, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 25, 1989, Ser. No. 342,853

Claims priority, application Japan, Apr. 29, 1988, 63-106756

Int. Cl.[5] B62D *25/10*

U.S. Cl. 296—96.21 **19 Claims**



1. A windshield supporting structure, which is to be employed in combination with an open cowl structure having an opening which opens upward, includes a windshield supporting portion which is provided at the rear end portion of the opening to which the windshield is bonded, and is characterized in that said windshield supporting portion is positioned so that it supports the windshield at an intermediate portion thereof as viewed in the longitudinal direction of the vehicle body and so that the windshield extends forward and downward beyond the windshield supporting portion, said windshield supporting structure comprising a deformation control means which makes the part of the windshield extending forward and downward beyond the windshield supporting portion more bendable than the other part of the windshield.

4,943,103

REFLECTED GLARE-SHIELDING VEHICULAR APPARATUS

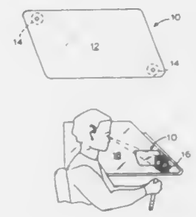
John B. Rosen, 2330 W. 27th, Eugene, Oreg. 97405

Filed Sep. 25, 1989, Ser. No. 412,176

Int. Cl.[5] G60J *3/00*

U.S. Cl. 296—97.1 **4 Claims**

3. Apparatus for shielding the eyes of a driver of vehicle from glare reflected from an exterior mirror of the vehicle in a reflected field of view along a line of sight between the driver and the mirror, wherein the reflected field of view defines a perimetral outline on a vehicle window, the apparatus comprising:



a reflected glare-attenuating expanse positionable along such line of sight, said expanse being substantially coextensive and shape-congruent with the perimetral outline on the vehicle window of the reflected field of view at a predetermined distance from the mirror and in a predetermined orientation relative thereto, and

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4,943,104

OPENING AND CLOSING CONTROLS OF ROOFS FOR VEHICLES

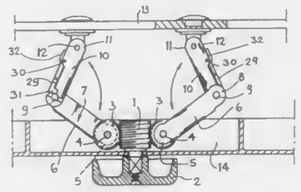
Bruno Zani, and Duilio Zani, both of Lumezzane, Italy, assignors to Zani S.r.l., Brescia, Italy

Filed Sep. 19, 1988, Ser. No. 246,515

Claims priority, application Italy, Sep. 25, 1987, 2935 A/87; Apr. 8, 1988, 2925 A/88

Int. Cl.[5] B60J *7/10*

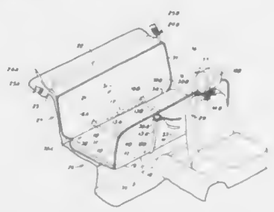
U.S. Cl. 296—223 **13 Claims**



1. A device for controlling the opening and closing of the roof (13) of a vehicle, said roof having first pins (12) fixed thereto, comprising a worm screw (1) having a vertical axis and two opposite sides, two helical gears (3), having parallel horizontal axes (4), and being coupled to said opposite sides of said worm screw, two primary levers (6,6'), each primary lever having one end in engagement with each gear, a second pin projecting at the other end of each primary lever, secondary levers (10,10') pivotally connected and supported at one end to said second pin, the other end of each of said secondary levers being connected to each of said first pin, said primary and secondary levers forming an articulated pantograph structure, said worm screw when rotating moving said structure and causing said primary levers to assume a horizontal position when said roof is closed and when said roof is completely opened, said primary and secondary levers are raised and aligned.

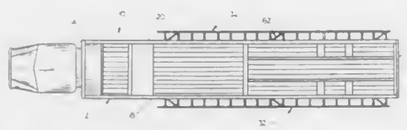
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4,943,105
AUTOMOBILE PET SEAT AND CARGO CARRIER
David J. Kacar, and Cynthia R. Kacar, both of 1509 King St., Alexandria, Va. 22314
Continuation-in-part of Ser. No. 329,259, Mar. 27, 1989, abandoned, and Ser. No. 347,011, Jun. 16, 1989, abandoned. This application Aug. 23, 1989, Ser. No. 397,285
Int. Cl.[5] B60R 21/04
U.S. Cl. 296—24.2 10 Claims



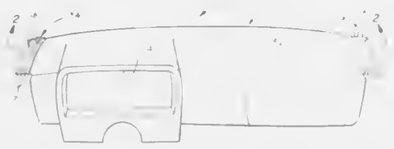
1. A device for supporting and protecting a pet or cargo in a back seat of a vehicle having a front seat defining a front seat, a back seat having a back upright portion and a back seat cushion having a slope and a back seat surface area, said vehicle further including a lower floor compartment behind the front seat, said device comprising:
bottom rigid panel means for effectively extending the back seat surface area giving a pet or cargo a wider surface for comfort and stability during vehicle movement,
front rigid panel means for preventing a pet or cargo from falling forward into the front seat area past the front seat and from falling forward into the lower floor compartment,
and back soft panel means for protecting the back upright portion of the back seat,
said device further comprising mounting means for fastening the device to specific attachment points of the vehicle,
said front rigid panel means, bottom rigid panel means, and back soft panel means substantially covering the entire back seat, the lower floor compartment, and a back portion of the front seat,
said bottom rigid panel means and said front rigid panels means each comprising a fabric pouch means substantially enclosing a panel of rigid material.

4,943,106
TRAILER HAVING SWING-OUT SIDE EXTENSIONS
William K. Hunt, Mitchell, S. Dak., assignor to Dakota Manufacturing Co., Inc., Mitchell, S. Dak.
Filed Jul. 24, 1939, Ser. No. 383,669
Int. Cl.[5] B62D 33/02
U.S. Cl. 296—26 3 Claims



1. A trailer, comprising,
a wheeled frame means having a forward end, a rearward end, and opposite sides,
said frame means including first and second longitudinally extending side frame members,
and first and second swing-out side extension assemblies secured to said first and second side frame members respectively,
each of said swing-out extension assemblies comprising a plurality of horizontally disposed and horizontally spaced-apart elongated supports having one end thereof pivotally secured to the associated side frame member, and a rail member pivotally secured to the other ends of said supports,
the pivotal connection of said supports to said side frame and said rail member permitting said rail member to be selectively moved from an "in" position adjacent the associated frame member, to an "out" position spaced outwardly of the associated frame member,
means for selectively maintaining said rail member in its "in" position,
and means for selectively maintaining said rail member in its "out" position,
said means for selectively maintaining said rail member in its "in" position comprising at least one loop member secured to the inner surface of said rail member and a spring-loaded locking device operatively secured to the associated frame member which is adapted to engage said loop member and to lock thereonto when said rail member is moved from its said "out" position to its "in" position.

4,943,107
VARIATIONS ADJUSTMENT MECHANISM FOR INSTRUMENT PANELS
Richard D. Rhodes, Jr., Somersworth, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Filed Jun. 30, 1989, Ser. No. 373,521
Int. Cl.[5] B62D 25/14
U.S. Cl. 296—70 15 Claims

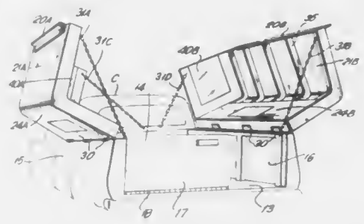


1. An instrument panel assembly for mounting between front support pillars of a vehicle, said assembly comprising:
a panel body with openings for supporting and displaying instruments and gages and extending transversely between two front support pillars of the vehicle, said panel body having first and second terminal ends;
said assembly characterized by said panel body including an adjustment means disposed on at least one of said terminal ends of said panel body for adjustment between extended and compressed positions to provide flush engagement with at least one of the front support pillars of the vehicle.

4,943,108
PICK-UP TRUCK CAP
Steven Turnbull, P.O. Box 392, Pleasantville, N.Y. 10570
Filed Oct. 25, 1988, Ser. No. 261,846
Int. Cl.[5] B60P 7/02
U.S. Cl. 296—100 2 Claims

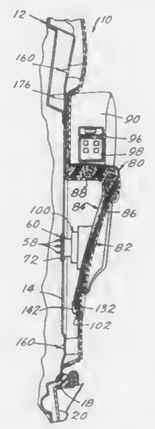
1. A cap for mounting on the load bed of a pick-up truck, the bed having a floor, a pair of laterally extending end walls and a pair of side walls extending longitudinally on each side of the long axis of the truck, said cap comprising a roof, a pair of walls depending therefrom and extending longitudinally substantially coextensive therewith and at least one end panel extending, when said cap is mounted on the load bed, substantially coextensive with the end walls of the load bed, said roof and said cap side walls extending, when said cap is mounted on the load bed, substantially coextensive with the floor and side walls respectively of the load bed, said roof being split centrally longitudinally to provide substantially equal split cap halves, means for releasably securing said split cap halves

along the central longitudinal split line, hinge means for pivotally mounting the split cap halves to the side walls of the truck load bed the arrangement, including the weight distribution in said split cap halves and the length, width and height thereof, being such that said split cap halves are manually, freely pivotable away from the longitudinal split line to an open position



and means are provided for limiting the extent said cap split halves may be pivoted away from the longitudinal split line, whereby the floor of said road bed constitutes a work area when said cap split halves are opened, access means for entering and exiting said work area at an end of said cap and of said load bed.

4,943,109
AUTOMOTIVE DOOR ASSEMBLY HAVING A PLUG-IN ELECTRIFIED INTERIOR PANEL
John R. Skrbina, Livonia, Mich.; Gregory A. Polityka, Oshawa, Canada, and Mark L. Smith, Livonia, Mich., assignors to Ford Motor Company, Newmarket, Mich. and Magna International, Inc., Ontario, Canada
Filed Aug. 9, 1988, Ser. No. 229,956
Int. Cl.[5] B60J 5/00; H01R 13/642
U.S. Cl. 296—146 8 Claims



1. An automotive door assembly comprising
a rigid frame structure defining the main body of the door assembly adapted to be mounted with respect to an automotive vehicle for movement between an open position and a closed position,
means including outer skin means fixed to an outer side of said rigid frame structure defining the exterior appearance of the door assembly,
means including panel means disposed on an opposite side of said rigid frame structure defining the interior appearance of the door assembly,
said rigid frame structure including a main sheet metal stamping providing a side wall portion disposed in spaced relation to said outer skin means, said side wall portion defining the opposite side of said rigid frame structure,
electrically operated means carried by said rigid frame structure between said exterior and interior appearance defining means,
said electrically operated means having current conductor means terminating in first current connector means,
means mounting said first current connector means in generally stationary relation with respect to said rigid frame structure,
said panel means being of substantial size and adapted to be moved into a predetermined operative position with respect to the opposite side of said rigid frame structure,
said panel means having opaque surface means so as to define the corresponding interior appearance of the door assembly,
said panel means comprising a molded laminate including a first layer containing said opaque surface means and a second layer of a rigid foamed plastic material,
electrical harness means carried by said panel means for transmitting electrical current sources from outside of said door assembly therethrough,
said electrical harness means terminating in second current connector means,
means mounting said second current connector means in generally stationary relation on said panel means,
said first and second current connector means including one of male elements and female elements adapted to be interengaged in response to the movement of said panel means into the operative position thereof,
said mounting means being operable with respect to at least one of the male and female elements of said first and second current connector means to accommodate limited relative movement between one of said male and female elements and said mounting means in a direction transverse to the longitudinal direction of the male of said elements so as to insure that the male and female elements of the first and second current connector means are interengaged during the movement of said panel into the operative position thereof,
said side wall portion of said rigid frame structure including first guide means,
said panel means having second guide means,
said first and second guide means being operable to interengage during the movement of said panel means into the operative position thereof with respect to the opposite side of said rigid frame structure so as to guide said panel means into said operative position during such movement, and
means for securing said panel means to said rigid frame structure in said operative position,
said first current connector means including a first current connector comprising a first body of molded plastic material containing one of said elements,
the mounting means for said first current connector comprising a connector opening in said side wall portion and integral surface means molded in an associated first body operable to grippingly engage the sheet metal of said side wall portion defining an associated connector opening when the associated first body is moved into an operative position within the associated first opening,
said second current connector means including a second current connector comprising a second body of molded plastic containing the associated interengaging element,
the mounting means for said second current connector comprising a connector fitment molded in embedded relation in the second layer of said panel means,
said connector fitment having a first mounting surface facing in a direction away from said opaque surface means, a second mounting surface parallel with and facing toward

said first mounting surface and stop surfaces extending transversely with respect to said first and second mounting surfaces,

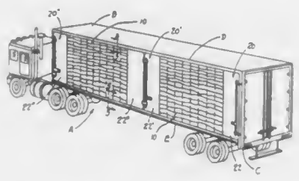
an associated second body being mounted within said fitment between said first and second mounting surfaces so that the movement of the associated second body with respect to said fitment is generally restricted to movement in the direction of the parallel extent of said second mounting surface and engagement of the stop surfaces of said fitment with the associated second body limits the amount of movement in the direction of parallel extent of said second mounting surface which can take place.

4,943,110

CURTAINSIDE TRUCK TRAILER ACCESS SYSTEM AND LOCK ASSEMBLY

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Continuation of Ser. No. 53,278, May 21, 1987, abandoned. This application Jan. 17, 1989, Ser. No. 298,787
Int. Cl.[5] B60J *5/06*
U.S. Cl. 296—181 **5 Claims**



1. A roller mechanism and rail combination of the type used to close a truck trailer opening, said roller mechanism comprising a plate for attachment to a closure panel, top and bottom roller members attached to said plate each rotating about a central axis extending at a right angle from the plate, a peripheral groove in each roller member to receive a rail attached to the truck trailer, said rail comprising a flange T-shaped in cross section extending between the top and bottom roller members and receivable within the peripheral groove of each said roller member and a flange L-shaped in cross section spaced from and parallel with the T-shaped flange and receivable within the peripheral groove of the bottom roller member.

2. A swivel mechanism of the type used to support a closure panel over a truck trailer opening and engaged with a rail member, said mechanism comprising:

a housing attached to the closure panel comprising an access aperture and a containment portion, and a longitudinal spring assembly comprising an elongated fastener and a surrounding compression spring;

a roller rotatable about a central axis at right angles with the housing;

means including an interconnecting member rotatably supporting the central axis of the roller and securing the roller to the housing and spring assembly for relative swivel movement and relative rectilinear movement of the housing and attached panel with respect to the roller and a rail member; and

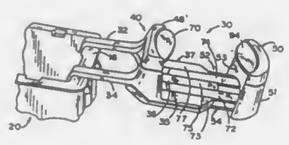
said fastener including a first end attached to the interconnecting member, a body portion extending through the access aperture to the containment portion and along the length of the compression spring located within the containment portion, and a second end spaced from the first end enlarged to confine the compression spring within the containment portion.

4,943,111

CONTAINER HOLDER FOR A VEHICLE

Kenneth J. VanderLaan, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jul. 26, 1988, Ser. No. 225,083
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—194 **21 Claims**



1. A vehicle armrest and container holder assembly comprising:

an armrest for mounting to a vehicle; and

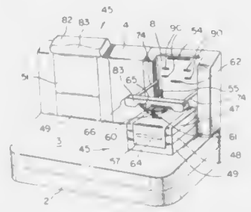
a container holder and means for mounting said holder to said armrest, said holder including a first container supporting member having a first vertical member and a first set of a plurality of arms extending in a generally horizontal plane in a direction away from said vertical member and from said armrest, said holder further including a second supporting member having a second vertical member and a second set of a plurality of arms extending in a direction away from said second vertical member and toward said armrest; said first and second set of arms being positioned and shaped to telescope one set with respect to the other so as to provide a plurality of spaced-apart positions of said first and second vertical members such that facing edges of each of said vertical members of said supporting members can be spaced apart a selectable distance for holding different sized containers; said first and second sets of telescoping arms defining a floor means for supporting a container.

4,943,112

CHILD'S COLLAPSIBLE CAR SEAT

Norman Law, 6 Galloway Road, Sherwood Park, Alberta, Canada T8A 3K8

Filed Aug. 1, 1989, Ser. No. 387,782
Claims priority, application Canada, Aug. 4, 1988, 573895
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—238 **9 Claims**



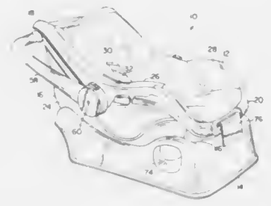
1. A collapsible child's seat device for use in a conventional automobile seat of the type including a seat portion and a backrest, said device comprising a plurality of panel means for defining a child's seat and a backrest; an elongated strip of fabric pivotally interconnecting said panel means in end-to-end relationship to each other in the stored position, in which said panel means are disposed in a recess in the automobile seat backrest and define a planar front portion of such backrest, one end of said strip being pivotal connected to the automobile seat at the junction between the seat portion and the backrest, whereby said panel means can be folded into overlapping relationship in the use position in which the panel means is folded onto the automobile seat portion to define a child's seat raised above the level of the automobile seat portion; first catch means on the top free end of said panel means and on the backrest for releasably retaining said panel means in the stored position; cover means attached at one end to the seat backrest for extending over said panel means in the use position; cover means and crotch strap means attached at one end to the seat backrest; said cover means and said crotch strap means being covered by said panel means in the stored position; and first connector means on said backrest releasably connecting the other end of each said cover means and crotch strap means to the backrest while in the stored position; in the use position said crotch strap means extending over said panel means beneath said cover means and through the cover means near the front thereof whereby the other end of the crotch strap may be connected to a conventional vehicle seat belt.

4,943,113

CHILD RESTRAINT SYSTEM WITH IMPROVED BASE

Paul K. Meeker, Aurora, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Feb. 24, 1989, Ser. No. 315,012
Int. Cl.[5] A47D *1/10*
U.S. Cl. 297—250 **7 Claims**



1. A restraining system for a child comprising in combination:

an infant carrier having a foot end and a head end and side edges therebetween, the carrier having finger receiving slots in its lower face;

a base having a foot end and a head end and side edges therebetween, and pivotable fingers extending upwardly from the upper surface of the base adjacent to the side edges thereof adapted to releasably receive in the slots for thereby coupling the carrier to the base; and

an inverted J-shaped hook in the base at the foot end for receiving the foot end of the carrier and cooperable with the fingers for securely holding the carrier with respect to the base at triangularly spaced points.

4,943,114

CHAIR BACKREST LINKAGE MECHANISM

Giancarlo Piretti, Via Trento e Trieste 2/2, Bologna, Italy

Filed Feb. 6, 1989, Ser. No. 307,005
Int. Cl.[5] A47C *1/032*
U.S. Cl. 297—301 **13 Claims**

1. A backrest linkage mechanism comprising:

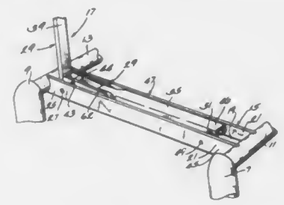
a. an elongated frame;

b. a backrest lever having a first end pivotally mounted to the frame and a second end;

c. a seat lever having a first end pivotally mounted to the frame and a second end;

d. an anti-friction sliding joint connecting the second ends of the backrest lever and the seat lever; and

e. spring means acting between the frame and at least one of the backrest lever and seat lever for biasing the backrest lever and seat lever to a normal configuration whereat the second end of at least one of the backrest lever and the seat lever is in abutting contact with the frame to locate the backrest lever and the seat lever in their respective normal configurations and whereat the seat lever and backrest lever are generally coplanar,



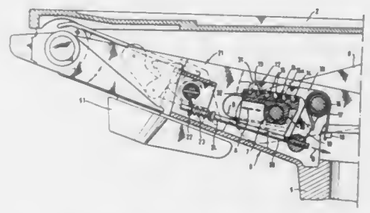
whereby exerting a force on the backrest lever against the spring means causes the backrest lever and the seat lever to pivot about the frame to a tilted configuration whereat the backrest lever and seat lever are non-coplanar.

4,943,115

SWIVEL CHAIR WITH ADJUSTABLE BACK REST

Felix Stacki, Thunstetten, Switzerland, assignor to Girsberger Holding AG, Bützberg, Switzerland

Continuation of Ser. No. 262,101, Oct. 18, 1988, abandoned, which is a continuation of Ser. No. 92,328, Sep. 2, 1987, abandoned. This application Aug. 29, 1989, Ser. No. 401,471
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1986, 3629882
Int. Cl.[5] A47C *1/032*
U.S. Cl. 297—301 **18 Claims**



1. A chair comprising a leg including a support having first and second carriers; a seat on said first carrier; a back rest on said second carrier; and means for movably coupling said carriers to each other, including a slotted portion provided on one of said carriers, a slide portion provided on the other of said carriers and movable in said slotted portion between a plurality of positions in and counter to a predetermined direction, and detent means including cooperating first and second detent elements which are movable relative to each other and are respectively provided on said slide portion and said one carrier and have means for releasably holding said slide portion in selected ones of said plurality of positions.

4,943,116

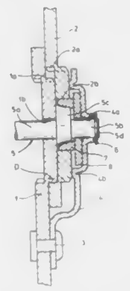
RECLINING ANGLE ADJUSTMENT DEVICE

Akira Ohwada; Masanori Sakai, and Yasuhisa Tsutsumi, all c/o Shiroki Kinzoku Kogyo Kabushiki Kaisha, 2 Kirihara-cho, Fujisawa-shi, Kanagawa-ken 252, Japan

Continuation of Ser. No. 138,083, Dec. 28, 1987, abandoned. This application Feb. 6, 1989, Ser. No. 307,165

Int. Cl.[5] B60N *2/02*

U.S. Cl. 297—362 **3 Claims**



1. A reclining angle adjustment device for a seat, comprising:

a shaft having a concentric portion and an eccentric portion and rotatable for adjusting the reclining angle of the seat;

a tapered bushing having a tapered inner peripheral surface engaging said eccentric portion of the shaft;

a gear train including an external gear and an internal gear meshing with said external gear, said internal gear having more teeth than said external gear;

a first arm having one of said external and internal gears, said one of the external and internal gears being rotatably fitted at its center over said concentric portion;

a second arm having the other of said external and internal gears, said other of the eternal and internal gears being rotatably fitted at its center over said tapered bushing; and

a resilient member engaging said tapered bushing for normally pressing the tapered bushing axially along said shaft in a direction to strengthen meshing engagement between said external and internal gears.

4,943,117

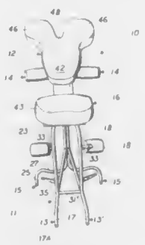
BODY WEIGHT DISTRIBUTION SUPPORT CHAIR

Shawn W. Brown, 11590 Lazy Valley Rd., Penn Valley, Calif. 95946

Filed Jul. 24, 1989, Ser. No. 383,545

Int. Cl.[5] A47C *1/10*

U.S. Cl. 297—392 **19 Claims**



1. A comfort chair for use at computer terminals, which chair has no back and which comprises:

a. a superstructure,

b. a seat portion,

c. a head-chest portion which is faced by a user, each of said seat portion and said head-chest portion being supported by the superstructure and each being spaced from the other portion on said superstructure,

said superstructure formed from a plurality of interconnected tubes comprising a pair of spaced front legs and a pair of spaced rear legs,

said front legs being connected to said rear legs by a pair of rearwardly converging upwardly directed connecting posts and by a pair of curved seat joiner tubes;

a pair of leg bars, one of which extends outwardly from each of said front legs, and

wherein the seat portion is mounted upon said seat joiner tubes and wherein the front legs each have a generally vertical base section and an upwardly inclined second section commencing therefrom, and a generally vertical third section, said second sections being joined by a horizontal bar, and the spacing between the two front legs is less than the spacing between the two rear legs at their locus of contact with the ground.

4,943,118

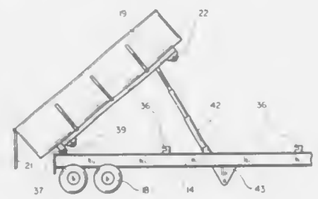
END DUMPING TRAILER

Louis Davis, 4501 North Washington, Turlock, Calif. 95380

Filed Mar. 7, 1989, Ser. No. 320,703

Int. Cl.[5] B60P *1/28*

U.S. Cl. 298—12 **12 Claims**



1. In an end dumping trailer: an elongated frame supported toward the rear by ground engaging wheels, a single nontelescoping bed substantially shorter than the frame mounted on the frame for movement between a travelling position in front of the wheels and a dumping position toward the rear of the frame, hook and pin means affixed to the rear portions of the bed and the frame for limiting rearward movement of the bed and providing a pivoting connection between the bed and the frame when the bed is in the dumping position, and means for tilting the bed about the pivoting connection for dumping to the rear of the frame when the bed is in the dumping position.

4,943,119

HEIGHT CONTROL DEVICE AND METHOD FOR A FIXTURE FOR MACHINING AN OBJECT ESSENTIALLY DEFINED BY A SINGLE PLANE

Martin Zarniko, Diez, and Willibald Sehr, Waldbrunn-Ellar, both of Fed. Rep. of Germany, assignors to MOBA - Electronic, Fed. Rep. of Germany

Filed Nov. 22, 1988, Ser. No. 274,831

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1988, 8810670[U]

Int. Cl.[5] E01C *23/08*; G01S *15/08, 15/88*

U.S. Cl. 299—1 **10 Claims**

1. A height control device for a fixture for machining an object essentially defined by a single plane by means of a machining tool for changing the level height of the plane, in particularly for a milling fixture for stripping road surfacing comprising:

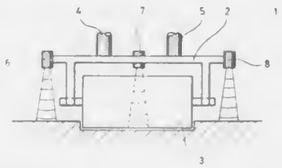
a first gauging device featuring a first ultrasonic transceiver for gauging the distance from the ultrasonic transceiver to the unmachined plane of the object,

a second gauging device featuring a second ultrasonic transceiver for gauging the distance from the second ultrasonic transceiver to the machined plane,

a signal generator connected to both gauging devices for generating a first signal representing the change in the level height due to machining from the quotient or difference of the distances measured by said first and second gauging devices, and

a control device for elevating or lowering the machining fixture so that the signal representing the change in the level height due to machining essentially corresponds to a setpoint value for changing the level height due to machining.

6. A method for providing a height control device for a fixture for machining an object essentially defined by a single



plane by means of a machining tool for changing the level height of the plane, in particularly for a milling fixture for stripping road surfacing comprising the steps of:

providing a first gauging device featuring a first ultrasonic transceiver for gauging the distance from the ultrasonic transceiver to the unmachined plane of the object;

providing a second gauging device featuring a second ultrasonic transceiver for gauging the distance irom the second ultrasonic transceiver to the machined plane;

providing a signal generator connected to both gauging devices for generating a first signal representing the change in the level height due to machining from the quotient or difference of the distances measured by said first and second gauging devices; and

providing a control device for elevating or lowering the machining fixture so that the signal representing the change in the level height due to machining essentially corresponds to a setpoint value for changing the level height due to machining.

4,943,120

FORCE TRANSMITTING HOUSING FOR LONGWALL MINING MACHINE

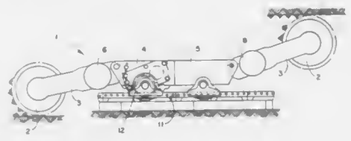
Hans Groger, Essen, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik u. EisengieBerei, Fed. Rep. of Germany

Filed May 27, 1988, Ser. No. 199,390

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1987, 3718442

Int. Cl.[5] E21C *29/22, 29/28*

U.S. Cl. 299—42 **12 Claims**



1. A drum-cutter mining machine for longwall mining operations in which the drum-cutter mining machine is translatable along a longwall conveyor, said mining machine including:

a machine body;

a capstan supported from said machine body, said capstan supporting internal drive motor means and said capstan forming a vertically extending sidewall positioned above the longwall conveyor;

a recessed area forming a cavity on said sidewall of the capstan;

an aperture extending through the recessed area of the sidewall for allowing an output shaft butt of the drive motor means to extend therethrough;

a housing removably positioned in the recessed area of the sidewall, said housing forming an enclosed area therein;

means for fastening the removable housing to the sidewall of the capstan in a plurality of desired orientations;

gear means positioned in said enclosed area connected with the output shaft butt of the drive motor means; and

drive wheel means connected with said gear means and positionable to engage a conveyance means to allow translation of the mining machine therealong.

4,943,121

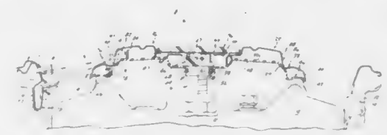
WHEEL TRIM

Heinrich J. Hempelmann, Livonia, Mich., assignor to Ni Industries, Inc., Novi, Mich.

Filed Jan. 19, 1988, Ser. No. 145,513

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—37 SS **17 Claims**



1. In a simulated wire wheel trim of the type including an outer annular ring assembly, a center hub assembly, and a plurality of generally radially extending spokes the inner and outer radial ends of each engaging a respective assembly, said center hub assembly comprising a rotatable retention member for engaging the vehicle wheel, an axially inner spoke retainer plate, an axially outer spoke retainer plate, and means for securing said spoke retainer plates together characterized in that said axially inner spoke retainer plate has integrally formed therewithin means engageable with said rotatable retention member for inhibiting rotation of said retention member relative to said vehicle wheel.

4,943,122

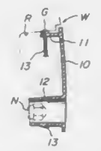
CENTER HUB CAP FOR VEHICLE WHEELS

Takao Nakamura, Yokohama, Japan, assignor to Hashimoto Forming Industry Co., Ltd., Yokohama, Japan

Filed Aug. 30, 1989, Ser. No. 400,687

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—108 A **7 Claims**



1. A center hub cap for use with a vehicle wheel which is to be secured to a hub of a vehicle, and which includes a center

portion recessed from an axially outer surface side of the wheel and defined by an inner peripheral wall, said center portion having a bottom wall with an axially inner surface to be brought into abutting engagement with an axially outer surface of said hub, said bottom wall of the wheel being adapted to be secured to said hub by a plurality of fastener elements through said wall; wherein said center hub cap is adapted to be engaged with said inner peripheral wall of the center portion of the wheel, and comprises:

[A] a substantially dish-like main body composed of a synthetic resin material, and having axially inner and outer surfaces;

[B] a plurality of hollow, substantially cylindrical projections formed integrally with said main body to protrude axially inwardly from said inner surface of the main body, and adapted to accommodate therein respective heads of said fastener elements;

[C] retainer means for retaining the hub cap in engagement with the wheel, including (i) a plurality of retainer legs which are formed integrally with said main body to protrude axially inwardly from the inner surface of said main body, and arranged between neighboring pair of said cylindrical projections, and (ii) an annular spring ring composed of a resilient material for resiliently urging said retainer legs radially outwardly of said main body toward said inner peripheral wall of the center portion of the wheel; and

[D] means for axially maintaining said spring ring in engagement with said retainer legs, including shoulder portions on those outer peripheral surface regions of respective projections which are arranged radially outwardly of said main body, each shoulder portion being adapted to radially support said spring ring between two neighboring retainer legs.

4,943,123

BRAKE CONTROL APPARATUS IN DIAGONAL BRAKING HYDRAULIC PRESSURE SUPPLY SYSTEM FOR USE IN MOTOR VEHICLES

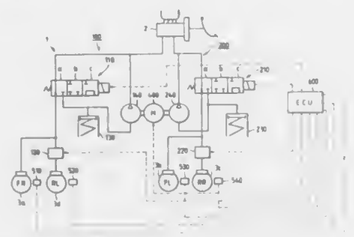
Kenji Takeda, Okazaki; Sigeru Kamiya, Aichi; Satosi Suzuki, and Yasuhisa Yoshino, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Oct. 7, 1988, Ser. No. 254,607

Claims priority, application Japan, Oct. 8, 1987, 62-254324

Int. Cl.[5] B60T *8/26, 8/32*

U.S. Cl. 303—111 9 Claims



1. A brake apparatus for use in a motor vehicle having at least one front-side wheel and at least one rear-side wheel, comprising:

hydraulic pressure supply passage means provided between a master cylinder of said vehicle which generates a hydraulic pressure in response to an operation of a braking pedal of said vehicle and wheel braking cylinders which apply braking forces to said front-side wheel and said rear-side wheel, said hydraulic pressure supply passage means including first to third hydraulic passages such that the hydraulic pressure from said master cylinder is supplied through said first hydraulic passage and then reaches said front-side wheel braking cylinder through said second hydraulic passage and reaches said rear-side wheel braking cylinder through said third hydraulic passage;

first speed sensor means for sensing a speed of said front-side wheel;

second speed sensor means for sensing a speed of said rear-side wheel;

hydraulic pressure adjusting means provided in said first hydraulic passage for adjusting the hydraulic pressure to be applied to said front-side and rear-side wheel braking cylinders in accordance with a brake control signal;

proportioning value means provided in said third hydraulic passage for controlling the hydraulic pressure to be applied to said rear-side wheel braking cylinder in accordance with a predetermined proportional characteristic of said proportioning valve means, said predetermined proportional characteristic being such that the hydraulic pressure applied to said wheel braking cylinder is approximately equal to the hydraulic pressure supplied from said hydraulic pressure adjusting means when the applied hydraulic pressure is below a predetermined pressure value, and the applied hydraulic pressure is less than the hydraulic pressure supplied from said hydraulic pressure adjusting means by a predetermined ratio when said applied hydraulic pressure exceeds said predetermined pressure value, said proportioning value means being adapted to vary said predetermined proportional characteristic to change said predetermined ratio in accordance with a ratio control signal such that said predetermined pressure value is reduced; and

electric control means for supplying said hydraulic pressure adjusting means with said brake control signal determined on the basis of the speeds of said front-side and rear-side wheels sensed by said first and second speed sensor means and supplying said proportioning valve means with said ratio control signal determined as a function of information representing an excessive degree of the hydraulic pressure to said rear-side wheel braking cylinder, said information being obtained on the basis of the speeds of said front-side and rear-side wheels sensed by said first and second speed sensor means;

wherein said proportioning valve means comprises:

a housing including therein a spool chamber, a first path connecting said spool chamber to the master cylinder side of said third passage, and a second path connecting said spool chamber to the wheel braking cylinder side of said third passage;

a spool slidably encased in said spool chamber, said spool being biased by spring means in one direction so that said first and second paths are communicated with each other; and

electromagnetic coil means responsive to said ratio control signal from said control means for moving said spool in the direction opposite to the biasing direction so as to allow cutting off the communication between said first and second paths.

4,943,124

ASHTRAY FOR VEHICLES

Günter Dietz; Volker Dabringhaus, and Peter Wegel, all of Wuppertal, Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jul. 31, 1989, Ser. No. 388,015

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1988, 3825828

Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—222 16 Claims

1. A container in the form of a drawer with an unlocking mechanism, comprising:

a housing having a front opening for receiving a drawer, and a drawer movable into and out of the front opening in the housing;

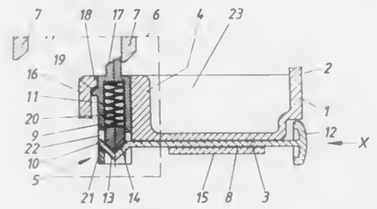
the drawer having a front wall facing out of the housing and having a rear wall spaced from the front wall and further in the housing, and the drawer having a bottom joining the front and rear walls thereof;

a stop in the housing extending in the housing toward the drawer;

an unlocking mechanism supported by the drawer operated in cooperation with the stop to prevent withdrawal of the drawer from the housing beyond a predetermined extent determined by the location of the stop and the unlocking mechanism being operable to permit withdrawal of the drawer from the housing beyond the predetermined extent; the unlocking mechanism comprising:

a slide supported by the drawer, the slide including a bolt operating portion extending rearwardly of the drawer, the slide being moveable forwardly and rearwardly with respect to the drawer and the housing;

a bolt supported on the drawer and being movable in a first direction into engagement with the stop on the housing



and being movable in an opposite second direction out of engagement with the stop on the housing; a push element connected with the bolt and movable into and out of engagement with the bolt operating portion of the slide; spring means between the push element and the bolt for urging the push element against the bolt operating portion of the slide, and the bolt and push element being so shaped and positioned that the push element presses upon the bolt operating portion of the slide at one side of the slide, while the bolt engages the bolt operating portion of the slide from the opposite side of the slide;

where the bolt engages the bolt operating portion of the slide, and where the push element, engages the bolt operating portion of the slide, being respectively so shaped that upon movement of the slide in one direction with respect to the drawer, the cooperation between the slide and the bolt moves the bolt in the one direction out of position to abut the housing stop while the slide engages the push element to push the push element in the opposite direction and further biases the spring means to urge the bolt toward the position where it would normally abut the housing stop.

4,943,125

SOLAR COLLECTOR

John W. Laundre', 2865 Janet, Pocatello, Id. 83201; Timothy D. Reynolds, 190N 680 W, Blackfoot, Id. 83221, and Mary B. Reynolds, 11372 W. Whispering Cliffs Dr., Chubbuck, Id. 83202

Filed Jan. 26, 1989, Ser. No. 301,877

Int. Cl.[5] G02B *6/00*

U.S. Cl. 350—96.1 8 Claims

1. An apparatus for the collection and transmission of incident electromagnetic energy, comprising:

a housing assembly;

said housing assembly including a curved structured with opposed interior and exterior surfaces;

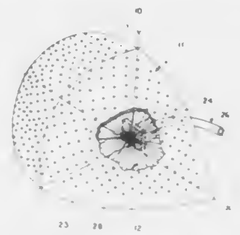
said housing assembly defining an interior cavity;

a plurality of optic fiber pores included in said exterior surface of said curved structure and disposed therethrough;

a plurality of optic fibers which extend from said exterior surface of said optic fiber pores to a central location within said interior cavity;

an assemblage of optic fiber segments within said interior cavity at said central location;

a means for providing an exit aperture at said assemblage of



said optic fiber segments for the collection and concentration of said optic fibers;

an optic fiber clamping means for the collection, gathering, and holding fixed said optic fibers;

an energy transmission means attached to said housing assembly;

a coupling means for the connection to said energy transmission means providing for the distribution of said incident electromagnetic radiation to predetermined application.

4,943,126

REPLICATION OF CARRIERS BEARING DIGITALLY RECORDED INFORMATION

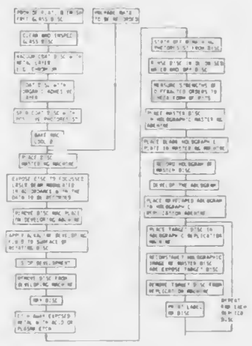
Anthony Lang, Surrey, England, and Paul Bloch, deceased, late of Oxfordshire, England (by Linda R. Bloch, legal representative), assignors to Thorn EMI plc, London, United Kingdom

Continuation of Ser. No. 129,553, Dec. 7, 1987, abandoned. This application Sep. 18, 1989, Ser. No. 408,947

Claims priority, application United Kingdom, Dec. 6, 1986, 8629223

Int. Cl.[5] G03H *1/22, 1/20; G11C 13/04*

U.S. Cl. 350—3.69 8 Claims



6. A method for the replication of carriers bearing digitally recorded information comprising:

(a) forming a transparency bearing a digital pattern representative of the digitally recorded information;

(b) illuminating said transparency so as to form a hologram

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recorded with a holographic representation of said digital pattern; and

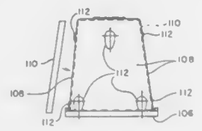
(c) illuminating said hologram so as to form a digital representation of said digitally recorded information on one or more photo-sensitive carriers.

4,943,127

MULTI-FACETED OPTICAL DEVICE FOR LASER SCANNER

William C. McRight, Round Rock, Tex., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Dec. 20, 1988, Ser. No. 287,095
Int. Cl.[5] G02B *26/10*
U.S. Cl. 350—6.8 **7 Claims**



1. A multi-faceted optical device for use in a laser scanner wherein the optical device is rotated about a central axis for rotational movement through a repetitive cycle to reflect and sweep a laser beam through a desired optical space, said multi-faceted optical device comprising:

a body member formed of plastic material, said body member being shaped to be rotated about said central axis and to define two or more mirror receiving faces;

two or more mirrors shaped to be received upon said mirror receiving faces of said body member;

pad means formed into said mirror receiving faces for locating said two or more mirrors upon said mirror receiving faces in a defined orientation relative to said central axis; and

fast setting adhesive securing said mirrors to said mirror receiving faces.

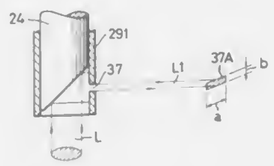
4,943,128

LIGHT SCANNING DEVICE

Hiromi Takada; Takami Suzuki, both of Yokohama; Toshio Shiina, Kawasaki; Keiji Okamoto; Takeshi Komurasaki, both of Yokohama; Satoru Yoshioka, Kamakura; Nobuo Sakuma, Inagi, and Tadashi Matsuura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 28, 1987, Ser. No. 113,668
Claims priority, application Japan, Oct. 28, 1986, 61-256133; Jun. 5, 1987, 62-141120; Jun. 5, 1987, 62-141121; Jun. 9, 1987, 62-143510; Jun. 10, 1987, 62-144588; Jun. 30, 1987, 62-163695; Aug. 7, 1987, 62-197338; Aug. 7, 1987, 62-197339
Int. Cl.[5] G02B *26/10*
U.S. Cl. 350—6.9 **16 Claims**

1. A light scanning device comprising a mirror surface inclined to an axis of rotation for deflecting and scanning an incident beam of a nearly elliptical cross-section applied across the axis of rotation over a scanning line in a main scanning direction in response to rotation of said mirror surface, and shaping means for shaping the nearly elliptical cross-section of said incident beam in order to prevent its direction from being changed on the scanning line irrespective of the rotation of said mirror surface, wherein said scanning line is applied to a photo-



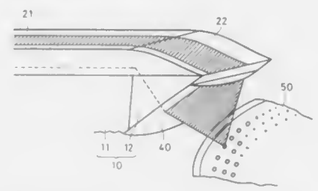
sensitive member and wherein a focusing lens is positioned between said shaping means and said photosensitive member.

4,943,129

TAPERED OPTICAL WAVEGUIDE, WAVEGUIDE TYPE OPTICAL HEAD USING SAME AND OPTICAL WAVEGUIDE

Tadashi Takeda, Komagane; Noboru Ueno, Suwa, and Yasumitsu Miyazaki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Mar. 30, 1989, Ser. No. 331,633
Claims priority, application Japan, Mar. 31, 1988, 63-79854; Mar. 31, 1988, 63-79855
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.12 **14 Claims**



7. A waveguide type optical head, comprising:

a substrate having a plane surface for forming a waveguide layer, whose refractive index is higher than that of said substrate, which substrate is transparent with respect to guided light, and

a waveguide layer formed on said plane surface of said substrate;

wherein said waveguide layer includes a uniform thickness waveguide layer having a uniform layer thickness and a tapered waveguide disposed contiguously to said uniform thickness waveguide layer, forming a joint portion therebetween, so that said guided light propagating in a propagation direction in said uniform thickness waveguide layer is emitted there towards said substrate, which tapered waveguided has the same layer thickness as said uniform thickness waveguide layer at said joint portion and has a thickness which decreases gradually with increasing distance from said joint portion;

wherein said waveguide layer is provided with a lens having a converging action in the width direction of said waveguide layer and constructed so as to converge the emitted light beam emitted by said tapered waveguide layer towards the substrate side to form a small spot on an optical disc; and

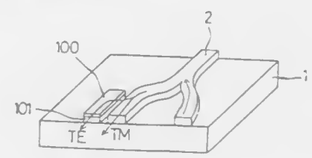
wherein said substrate includes a propagation substrate and an emission substrate each having thereon a portion of said plane surface for forming the waveguide layer, said propagation substrate and said emission substrate being disposed so as to be contiguous to each other in the propagation direction, said emission substrate having a refractive index greater than that of said propagation substrate, and a joint portion between said propagation substrate and said emission substrate being located so that it is close to an emission starting position determined by the refractive indices of said propagation substrate and said waveguide layer as well as the shape of said tapered optical waveguide and so that it is not beyond said emission starting position in the waveguide direction.

4,943,131

THIN-FILM OPTICAL FUNCTION ELEMENT, AND OPTICAL HEAD USING THE SAME

Kazunari Taki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 24, 1988, Ser. No. 261,232
Claims priority, application Japan, Oct. 30, 1987, 62-277009
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.12 **6 Claims**



1. A thin-film optical function element, comprising:

a substrate formed of a dielectric material;

a first optical waveguide consisting of a thin film of a dielectric material formed on said substrate, said first optical waveguide having a substantially same propagation constant with respect to two different modes which have field patterns whose vibrating directions are perpendicular to each other; and

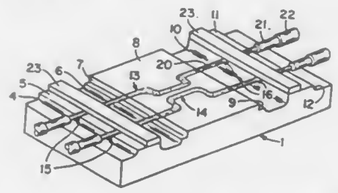
a second optical waveguide consisting of another thin film of another dielectric material formed on said substrate, said second optical waveguide being optically coupled to said first optical waveguide, and guiding therethrough only one of said two different modes.

4,943,130

INTEGRATED OPTICAL COMPONENT

Thierry L. Dannoux, 8 rue Saint Louis, 77300 Fontainebleau; Pierre J. Laroulandie, 70 rue Bernard Palissy, 77210 Avon, and Jean-Pierre Themont, 19, rue des Housseaux, 77690 Montigny-Sur-Loing, all of France

Filed Mar. 10, 1988, Ser. No. 166,388
Claims priority, application France, Mar. 12, 1987, 87 03385
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.12 **14 Claims**



1. An integrated optical component comprising a glass substrate with at least one ion diffused optical circuit path connected to at least one optical fiber and further comprising:

at least one transverse exit groove (6,10) forming a vertical lateral surface (7) at a termination of said optical circuit path, an endface of said optical fiber abutting said termination at said vertical lateral surface;

plateau support means (5,11) adjacent the side of said transverse exit groove opposite said optical circuit path, for supporting an uncoated portion of said optical fiber;

second support means (4,12) adjacent the side of said plateau support means opposite said optical circuit path, for supporting a coated or sheathed portion of said optical fiber; and,

first adhesive means for securing said optical fiber endface to said vertical lateral surface.

4,943,132

PASSIVE FIBER-OPTIC POLARIZATION CONTROL

Hung-chia Huang, Jiang Ning Road, 83 Lane, No. 4, Suite 404, Shanghai, China

Filed Feb. 16, 1989, Ser. No. 310,872
Claims priority, application China, Oct. 23, 1988, 88107389.X
Int. Cl.[5] G02F *1/19*
U.S. Cl. 350—96.13 **7 Claims**



1. A method of controlling, in a purely passive way, an unpredictable orientation of a linearly polarized light in a single mode optical fiber, comprising:

providing a media having two orthogonal preferred modes of polarization,

providing a coupling, between said modes of polarization, with variable strength along the transit path of light,

said coupling having a strong initial strength and gradually decreasing to zero along the transit path of light, so that initially the powers of the two modes undergo a fast oscillating process of conversions and reconversions, along the transit path of light, with almost equal amplitudes of the rises and falls of the mode powers from an average value, until gradually, because of decrease in coupling strength, these rises and falls subside to reach an eventual state of almost equal division of power between the polarization modes.

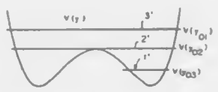
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4,943,133
LOW LOSS SEMICONDUCTOR OPTICAL PHASE MODULATOR
Robert J. Deri, Atlantic Highlands, and Elyahou Kapon, Old Bridge Township, Middlesex County, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.
Filed Aug. 8, 1988, Ser. No. 229,233
Int. Cl.[5] G02B 6/10; G02F 1/00
U.S. Cl. 350—96.14 16 Claims

11. A semiconductor waveguide modulator comprising a GaAs substrate having thereover sequential epitaxial layers comprising aluminum gallium arsenide and gallium arsenide including a first doped aluminum gallium arsenide electrode layer, a first effective intrinsic aluminum gallium arsenide confinement layer, an intrinsic gallium arsenide waveguide layer, a second effective intrinsic aluminum gallium arsenide confinement layer and a second doped aluminum gallium arsenide electrode layer wherein one of said electrode layers is doped with an n-type dopant, and the other with a p-type dopant, and wherein the index of refraction of the two confinement layers are significantly lower than the index of refraction of said waveguide layers and the index of refraction of said first electrode layer is higher than that of said first confinement layer, said layered structure being assymetric and wherein during operation the E-field of the guided wave is confined so as to essentially not overlap said electrode layers.

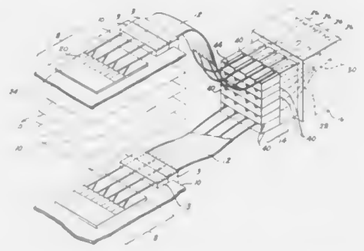
4,943,134
COUPLER
Brian P. Nelson, Woodbridge, England, assignor to British Telecommunications, Public Limited Company, London, England
PCT No. PCT/GB88/00154, § 371 Date Nov. 22, 1988, § 102(e) Date Nov. 22, 1988, PCT Pub. No. WO88/06747, PCT Pub. Date Sep. 7, 1988
PCT Filed Mar. 2, 1988, Ser. No. 278,439
Claims priority, application United Kingdom, Mar. 6, 1987, 8705272
Int. Cl.[5] G02B 6/26
U.S. Cl. 350—96.13 15 Claims





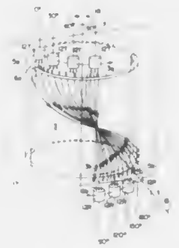
11. An optical coupler comprising:
an inner cylindrical waveguide portion comprising non-linear refractive index material supporting first mode fields,
said inner waveguide portion exhibiting a non-linear reaction with itself having a particular overlap integral value; and
an outer tubular cylindrical waveguide portion, coaxial with and enclosing said inner waveguide portion, said outer waveguide portion comprising non-linear refractive index material supporting second mode fields different from said first mode fields, said outer waveguide portion exhibiting a non-linear reaction with itself having a further particular overlap integral value,
wherein said inner waveguide portion and outer waveguide portion are dimensioned and/or composed such that said inner waveguide portion overlap integral value and said outer waveguide portion overlap integral value have a predetermined ratio which provides optimal critical power coupling characteristics between said inner and outer waveguide portions.

4,943,136
OPTICAL BACKPLANE INTERCONNECTION
Alexander A. Popoff, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 9, 1988, Ser. No. 282,379
Int. Cl.[5] G02B 6/28
U.S. Cl. 350—96.16 11 Claims



1. An optical backplane arrangement comprising:
M circuit boards, each of said circuit boards having an optoelectronic bus transceiver, said optoelectronic bus transceiver having n optical signal lines;
M optical cables having N optical signal lines, one of said optical cables being connected to the optoelectronic bus transceiver of a specific one of said circuit boards so that each of the N optical signal lines of said optoelectronic bus transceiver is connected to a specific one of the N optical signal lines of said optical cable;
a reflective star coupler array having N reflective star couplers, each of said reflective star couplers having M guide channels, M input ports and a mixer, each of said guide channels being connected to said mixer and to a respective one of said input ports, said mixer having a reflective surface arranged so that light propagating along any one of said guide channels is reflected by said reflective surface and distributed by said mixer to all of said M guide channels, said reflective star couplers being configured and oriented relative to one another so that said input ports have a predetermined arrangement; and
an alignment matrix for connecting said optical cables to said reflective star coupler array, said alignment matrix having M×N alignment apertures, said alignment apertures being disposed in said predetermined arrangment so that each aperture holds a specific one of said N optical signal lines in alignment with a specific one of the input ports of said reflective star couplers.

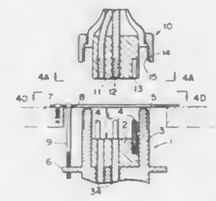
4,943,137
MULTI-CHANNEL, OFF-AXIS, BI-DIRECTIONAL FIBER OPTIC SLIPRING
J. Alexander Speer, Raleigh, N.C., assignor to KDI Electro-Tec Corporation, Blacksburg, Va.
Continuation-in-part of Ser. No. 7196, Jan. 27, 1987, abandoned. This application Oct. 3, 1988, Ser. No. 252,106
Int. Cl.[5] G02B 6/32
U.S. Cl. 350—96.18 6 Claims



1. Fiber optic slipring with an intermediate optical component adapted to rotate at ½ the angular velocity of the slipring rotor, comprising:
a rotor including a plurality of light transmitting elements mounted in spaced relationship in confronting relationship to an entrance face of said intermediate optical component;
a stator including a corresponding plurality of light receiving elements mounted in corresponding spaced relationship in confronting relationship to an exit face of said intermediate optical component;
said intermediate optical component comprising an image conduit, image transporter, or coherent optical fiber bundle of monofibers or multifibers for receiving light from each of said light transmitting elements across a gap between said entrance face and said light transmitting elements and transmitting light from said image conduit, image transporter, or coherent optical fiber bundle of monofibers or multifibers across a second gap between said exit face and said plurality of light receiving elements;
a convergent/divergent lens mounted on each of said plurality of light transmitting and receiving elements to provide collimated light to a plurality of bi-directional channels formed by said image conduit, image transporter or coherent optical fiber bundle; and
said image conduit, image transporter, or coherent optical fiber bundle of monofibers or multifibers having at least the entrance and exit faces of the fibers thereof related by a two-fold rotation axis substantially perpendicular to a mirror plane, which relates the entrance and exit face positions of each half of said intermediate optical component, extending through the rotation axis of the slipring and said two-fold rotation axis and said mirror plane also intersecting at the rotation axis of said slipring.

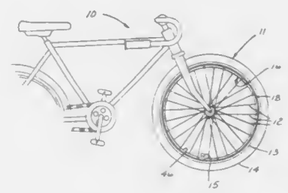
4,943,138
COMBINATION OF OPTICAL CONNECTORS AND OPTICAL TERMINAL COVERS
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed May 22, 1989, Ser. No. 355,598
Claims priority, application Japan, Nov. 9, 1988, 63-283097
Int. Cl.[5] G02B 6/36
U.S. Cl. 350—96.20 19 Claims

1. Connectors for connecting fiber optical cables comprising a first fiber optic cable having a light-emitting end portion which includes a plurality of first light guides each having a light-emitting end, a second fiber optic cable having a light-receiving end portion which includes a plurality of second light guides each having a light-receiving end, a first optical connector means and a second optical connector means, said first optical connector means comprising a first terminal holder having a front face, said first terminal holder having a plurality of spaced openings for receiving said first light guides such that said light-emitting ends are flush with said front face, said second optical connector means comprising a second terminal holder having a plurality of spaced openings for receiving said second light guides such that said light-receiving ends are flush with said front face of said second terminal holder, locating means on said first and second terminal holders for locating said first and second terminal holders in a coupling position in



which said light-emitting ends are aligned with respective light-receiving ends, said locating means comprising projection means on one of said first and second terminal holders and recess means in the other of said first and second terminal holders, said recess means receiving said projection means when said first and second terminal holders are in said coupling position, and connector ring means mounting each of said first and second terminal holders and operable to be detachably connected to thereby detachably retain said first and second terminal holders in said coupling position in which light rays are transmitted from said light-emitting ends of said first light guides to said aligned light-receiving ends of said second light guides.

4,943,139
SPOKED WHEEL REFLECTOR EMPLOYING ENCAPSULATED RETROREFLECTIVE TUBING
Chester A. Bacon, Jr., and James C. Coderre, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 19, 1988, Ser. No. 246,217
Int. Cl.[5] G02B 5/128; B60B 7/00
U.S. Cl. 350—105 12 Claims



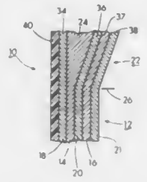
1. A retroreflective tubing, comprising a core material, a retroreflective material comprising glass microspheres attached to an outer surface of the core material, and an encapsulating material providing an airspace between outer surfaces of the microspheres and the inner surface of the encapsulating material; the tubing being sufficiently flexible to be intertwined among spokes of a wheel and to assume a portion of the circular shape of the wheel.

4,943,140

OPTICAL ELEMENT FOR A VEHICLE WINDSHIELD

Floyd E. Woodard, and Zane V. Zeable, both of Olivette, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 27, 1989, Ser. No. 385,350
Int. Cl.[5] G02B *5/28*
U.S. Cl. 350—164 **12 Claims**



1. An optical element for a motor vehicle windshield comprising, in combination:
(a) an interference filter which includes one or more light-reflecting metal layers and one or more reflection-suppressing layers for coacting with the one or more metal layers to minimize reflection and enhance transmission in the visible region;
(b) a gradient band continuation of said interference filter above the direct line of vision through a windshield when disposed in a motor vehicle, for reflective rejection of solar energy, said band including a light-reflecting metal layer gradually increasing in thickness toward a lateral edge of said band;
(c) an anti-glare backing behind said gradient band for suppressing luminous reflection from within said motor vehicle when said optical element is disposed in said windshield.

4,943,141

SOLAR RAY COLLECTING DEVICE

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Mar. 20, 1989, Ser. No. 325,701
Claims priority, application Japan, May 17, 1988, 63-120389
Int. Cl.[5] G02B *7/2*; F24J *2/08*; F21S *11/00*
U.S. Cl. 350—258 **2 Claims**



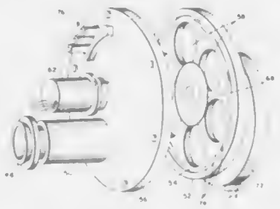
1. A solar ray collecting device comprising a solar ray collecting means comprising a plurality of solar ray collecting elements, each of said elements consisting of a lens for focusing solar rays and an optic fiber cable having a light-receiving end located at the focal point of said lens, a transparent dome for covering said solar ray collecting means, a base plate for supporting said dome, a first-revolution shaft for rotating said base plate, a support arm for supporting said first-revolution shaft and a second-revolution shaft for rotating said support arm around an axis which is perpendicular to the axis of the first-revolution shaft, wherein the first-revolution shaft and the second-revolution shaft are controlled in such a way as to direct the light-receiving surface of said lens toward the sun to introduce solar rays into the optic fiber cable in order to transmit said solar rays therethrough to any place where the light is needed, characterized in that each of said solar ray collecting elements is provided with a correct mounting means for setting said light-receiving surface of said lens at a right angle to the light that has passed through said dome.

4,943,142

IMAGING MICROSPECTROFLUORIMETER

Fredric S. Fay, Worcester; Kevin E. Fogarty, Worcester, and Cyril Rodgers, Paxton, all of Mass., assignors to University of Massachusetts Medical Center, Worcester, Mass.

Continuation of Ser. No. 204,931, May 31, 1988, Pat. No. 4,859,063, which is a continuation of Ser. No. 34,777, Apr. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 900,407, Aug. 26, 1986, Pat. No. 4,744,667, which is a continuation-in-part of Ser. No. 828,766, Feb. 11, 1986, abandoned. This application Jun. 13, 1989, Ser. No. 365,320
Int. Cl.[5] G02B *5/20*
U.S. Cl. 350—315 **12 Claims**



1. A filter accessory comprising:
an optical conduit between a light inlet and a light outlet;
an inlet connector at the inlet end of the optical conduit for coupling the conduit into a microscope system;
an outlet connector complementary to the inlet connector at the outlet end of the optical conduit for coupling the conduit into a microscope system;
a filter assembly eccentrically mounted relative to the optical conduit, the assembly including a filter housing and a filter disc within the filter housing, the filter disc having a plurality of removable filter elements circumferentially spaced about a filter axis offset from the optical conduit;
a filter drive for rotating the filter disc about the filter axis; and
means for sensing the position of the filter disc as each filter element is positioned between the light inlet and light outlet, the position being identified by optically coded marks on the filter disc which are associated with each filter element and which are radially displaced relative to each other for each filter element.

4,943,143

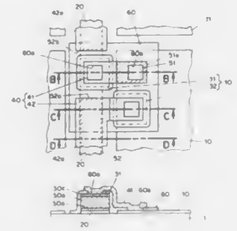
DISPLAY PANEL

Seisuke Yamashita, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 11, 1988, Ser. No. 192,540
Claims priority, application Japan, May 13, 1987, 61-116605
Int. Cl.[5] G02F *1/13*
U.S. Cl. 350—339 R **26 Claims**

1. A display panel comprising a substrate having a plurality of display elements disposed thereon, each display element comprising:
(a) a pixel electrode disposed on the substrate;
(b) a scan electrode disposed on the substrate separate from the pixel electrode;
(c) two display drive elements, one disposed over a first part of the pixel electrode and the other disposed over a first part of the scan electrode;
(d) an insulating layer extending over the two display drive elements and over at least a second part of the pixel electrode and having at least three openings formed therein, two of the openings being coincident with and exposing a portion of each of the display drive elements and a third opening being disposed so as to expose a portion of the second part of the pixel electrode;
(e) a first connecting layer disposed over the insulating layer, said first connecting layer formed by etching, and said first connecting layer forming an electrical connection through the openings in the insulating layer between the exposed portion of the display drive element disposed over the scan electrode and the exposed portion of the pixel electrode; and
(f) a second connecting layer disposed over the insulating layer, said second connecting layer formed by etching, and said second connecting layer forming an electrical connection between the portion of the display drive element disposed over the pixel electrode exposed through the opening in the insulating layer and an exposed part of the scan electrode.

14. A method for producing a display panel comprising a substrate having a plurality of display elements disposed thereon, comprising the steps of:



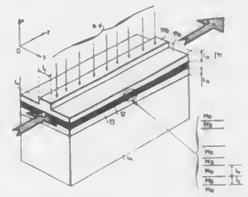
(a) forming a pixel electrode on the substrate;
(b) forming a scan electrode on the substrate separate from the pixel electrode;
(c) forming two display drive elements, one disposed over a first part of the pixel electrode and the other disposed over a first part of the scan electrode;
(d) forming an insulating layer which extends over the two display drive elements and over at least a second part of the pixel electrode and having at least three openings formed therein, two of the openings being coincident with and exposing a portion of each of the display drive elements and a third opening being disposed so as to expose a portion of the second part of the pixel electrode;
(e) forming a first connecting layer over the insulating layer by etching, such that said first connecting layer forms an electrical connection through the openings in the insulating layer between the exposed portion of the display drive element disposed over the scan electrode and the exposed portion of the pixel electrode; and
(f) forming a second connecting layer over the insulating layer by etching, such that said second connecting layer forms an electrical connection between the portion of the display drive element disposed over the pixel electrode exposed through the opening in the insulating layer and an exposed part of the scan electrode.

4,943,144

ELECTROMAGNETIC WAVE MODULATOR WITH QUANTUM WELL STRUCTURE AND ITS USE AS A POLARIZER

Dominique Delacourt, Paris; Michel Papuchon, Massy, and Jean Paul Pocholle, Arpajon, all of France, assignors to Thomson-CSF, Paris, France

Filed Aug. 30, 1988, Ser. No. 238,250
Claims priority, application France, Sep. 1, 1987, 87 12153
Int. Cl.[5] G02F *1/01*
U.S. Cl. 350—354 **5 Claims**



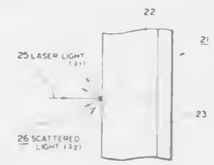
1. A modulator for electromagnetic waves to modulate a wave with a frequency ν_1, called a wave to be modulated, by a signal modulating the amplitude of a second wave with a frequency ν_2, called a control wave, said modulator comprising at least one first layer of semiconducting material of a first type, included between two layers of a semiconducting material of a second type, all the layers being crossed by the wave to be modulated and by the control wave; the two types of materials being such that there is a potential well in the conduction band and in the valence band of each first layer; the thickness of each first layer being such that the electrons of its conduction band possess at least two permitted, discrete energy levels, the energy difference between these two levels corresponding to a frequency close to the frequency ν_1 of the wave to be modulated and said thickness of each first layer being such that the holes of its valence band possess permitted energy levels such that the energy difference between the permitted fundamental level for the holes in the valence band and the permitted fundamental level for the electrons in the conduction band has a value close to that corresponding to the frequency of the control wave.

4,943,145

DISPLAY METHOD AND APPARATUS

Seizo Miyata, 3-18-26 Shimohoya, Hoya-shi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha and Seizo Miyata, both of Tokyo, Japan

Filed Jul. 12, 1988, Ser. No. 217,650
Claims priority, application Japan, Jul. 13, 1987, 175200
Int. Cl.[5] G02F *1/01*; H03F *7/00*; H04N *3/02*
U.S. Cl. 350—354 **25 Claims**



1. A display method, comprising the steps of:
providing a display medium having a display area capable of converting coherent light into light of a shorter wavelength through a nonlinear optical effect and converting the coherent light into scattered light, and

illuminating imagewise the display area with coherent light to form a display image with scattered light having a wavelength different from that of the coherent light at the illuminated part of the display area.

4,943,146

READING LENS SYSTEM

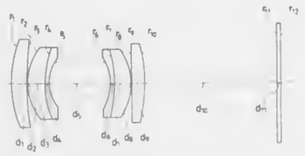
Takashi Iizuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1989, Ser. No. 420,497

Claims priority, application Japan, Oct. 12, 1988, 63-133113[U]; Sep. 14, 1989, 1-238741

Int. Cl.[5] G02B *9/36*

U.S. Cl. 350—471 **5 Claims**



1. A reading lens system comprising, in order from the object side, a positive meniscus first lens element having a convex surface directed toward the object, a positive meniscus second lens element having a convex surface directed toward the object, a negative meniscus third lens element having a convex surface directed toward the object, a negative meniscus fourth lens element having a concave surface directed toward the object, a positive meniscus fifth lens element having a concave surface directed toward the object, and a positive sixth lens element, said second and third lens elements being cemented and said fourth and fifth lens elements being also cemented to provide an overall system of a four-unit-six-element composition, the improvement wherein said lens system satisfies the following conditions:

(1) $0.28 < d_5 0.35$

$$0.28 < d_3 < 0.35 \quad (1)$$

$$1.10 < \frac{r_5 + |r_6|}{d_5} < 1.80 \quad (2)$$

$$0.80 < \frac{r_3 + |r_8|}{d_3 + d_4 + d_5 + d_6} < 1.40 \quad (3)$$

$$0.70 < \frac{r_3 + r_5}{r_4} < 1.50 \quad (4)$$

$$0.80 < \frac{|r_6| + |r_8|}{|r_7|} < 1.30 \quad (5)$$

where r_i is the radius of curvature of the ith surface, and d_i is the distance between the ith and the (i+1)th surfaces and f is the overall focal length of the system when f takes a value of 1 (one).

4,943,147

CHOPPING SECONDARY MIRROR SYSTEM

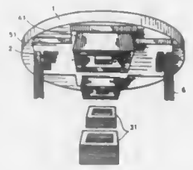
Shigeki Mizuno; Takaharu Ueda; Tetsu Yamamoto, and Takeshi Yumura, all of c/o Mitsubishi Denki Kabushiki Kaisha Oyokiki Kenkyusho, 1-1 Tsukaguchi Honmachi 8-chome, Amagasaki-shi, Japan

Filed Aug. 8, 1989, Ser. No. 390,900

Claims priority, application Japan, Aug. 20, 1988, 63-206823

Int. Cl.[5] G02B *26/08*

U.S. Cl. 350—486 **15 Claims**



1. A chopping secondary mirror system, comprising:
a secondary mirror;
driving motor means comprising magnetic circuits and coils, for causing said secondary mirror to chop about a rotation axis thereof;
driving motor mounting means for mounting said driving motor on said secondary mirror;
means for supporting said secondary mirror for rotation about said rotation axis;
said driving motor mounting means including a raised center portion on a side thereof facing said secondary mirror; and
said raised portion of said driving motor mounting means is secured to said secondary mirror at a center portion of said secondary mirror, whereby heat from said driving motor is substantially blocked from reaching said secondary mirror.

4,943,148

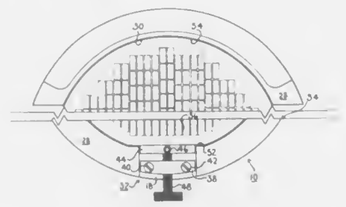
SILICON WAFER HOLDER

Carl W. Mondragon, and David A. Sperry, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Oct. 20, 1988, Ser. No. 260,468

Int. Cl.[5] G02B *21/34*

U.S. Cl. 350—529 **15 Claims**



1. A holder for microscopically observing a generally circular, planar wafer, comprising:
(a) a substantially circular platen having a planar surface adapted to receive said wafer and having a diameter greater than a diameter of said wafer;
(b) a circumferential rib extending around at least a portion of a periphery of said platen, said rib being raised above the planar surface of said platen;
(c) a radially aligned slot provided in the planar surface of said platen and diametrically opposed to said circumferential rib; and
(d) a bracket abutting against a major flat of the wafer and sliding radially within the radially aligned slot, such that a circumferential arc of the wafer is in substantially uniform contact with the circumferential rib.

4,943,149

TELESCOPE

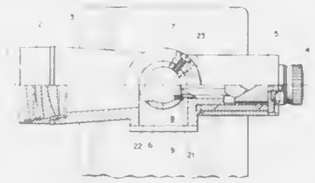
Erika Wahlen, Erlinsbach, Switzerland, and Dieter Hoffmann, Buchs, Fed. Rep. of Germany, assignors to Kern & Co. Ltd., Aarau, Switzerland

Filed Sep. 7, 1988, Ser. No. 241,249

Claims priority, application Switzerland, Sep. 8, 1987, 3451/87

Int. Cl.[5] G02B *23/16*

U.S. Cl. 350—568 **5 Claims**



1. A telescope comprising:
a telescope assembly having an object-side barrel with an objective lens and an eye-side barrel with an eyepiece each having an optical axis;
a bearing bush fixed between the object-side barrel and the eye-side barrel having its axis arranged substantially perpendicular to said optical axis to provide a tilting axis for said telescope, said bush having a first opening along its axis and directed sideways from the optical axes and having second and third apertures along the optical axes to pass the optical path of the telescope; and
an axle fitting into said first opening of said bearing bush in coaxial relation to said tilting axis.

4,943,150

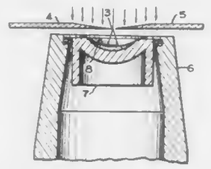
METHOD OF MAKING VARIABLE MODULUS LENSES

William G. Deichert, Macedon, and Richard J. Wrue, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 22, 1988, Ser. No. 171,585

Int. Cl.[5] G02C *7/04*; B29D *11/00*

U.S. Cl. 351—177 **5 Claims**



1. A method for forming a contact lens comprising:
subjecting a soft contact lens impregnated with a polymerizable liquid composition which may be polymerized in said lens to render said lens relatively rigid and which may be polymerized upon exposure to radiation with radiation in a selected manner so as to render selected portions of said lens relatively rigid.

4,943,151

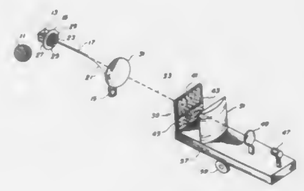
SCHEINER-PRINCIPLE VERNIER OPTOMETER

William B. Cushman, Pensacola, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1989, Ser. No. 370,521

Int. Cl.[5] A61B *3/10, 3/02*

U.S. Cl. 351—203 **20 Claims**



1. An optometer apparatus comprising:
a pinhole aperture plate having first and second horizontally positioned apertures disposed on opposite sides of a first optical axis;
first and second orthogonally oriented polarizing filters respectively covering said first and second horizontally positioned apertures;
a positive lens having an optical axis on said first optical axis and being positioned at a distance of approximately one focal length from said pinhole plate;
a slit aperture plate having a vertical slit;
third and fourth vertically positioned polarizing filters selectively disposed adjacent to said slit aperture plate to divide said slit vertically, said third and fourth polarizing filters being respectively oriented parallel to said first and second polarizing filters;
a cylinder lens; and
a monochromatic light source for emitting light at a first wavelength;
said slit aperture, said third and fourth polarizing filters, said cylinder lens and said monochromatic light source being fixedly positioned relative to one another by translatable along the optical axis of said positive lens.

4,943,152

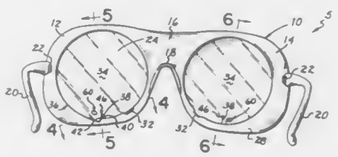
MANUALLY VARIABLE LIGHT FILTERING SUNGLASSES

Richard J. Whelen, 1103 Bandanna Dr., Cincinnati, Ohio 45238

Continuation-in-part of Ser. No. 99,107, Sep. 21, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 277,712

Int. Cl.[5] G02C *7/12*

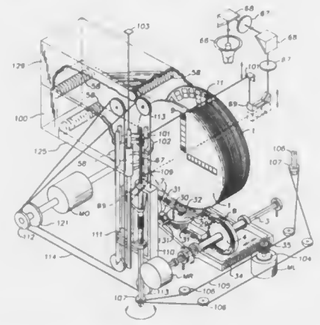
U.S. Cl. 351—49 **30 Claims**



1. An eyeglass frame for readily mounting and demounting a rotatable lens comprising:
at least one rim portion having exterior sidewalls defining a front and back to the eyeglass frame, the rim portion

having a lens-receiving hole situated between the front and back of the frame;
a groove formed about the lens-receiving hole and in the rim portion between the sidewalls;
an access channel in the rim portion extending between and to the groove and one of the sidewalls to define a thread plane for threadably receiving a rotatable lens into and out of the groove whereby the lens may be readily mounted to and demounted from the eyeglass frame by rotation thereof.

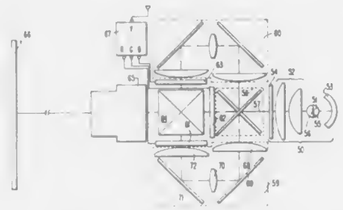
4,943,153
GUIDE MEANS FOR RANDOM ACCESS RETRIEVAL APPARATUS
John C. Nelson, 117 W. Park, Providence, R.I. 02908
Filed Sep. 9, 1988, Ser. No. 242,281
Int. Cl.[5] G03B *33/06*
U.S. Cl. 353—25 **17 Claims**



1. In an apparatus for random access retrieval of micrographic and data images stored along the radii of stacked windowed discs, a disc selection system and an optical system, said systems comprised of elements and including a first power means for moving elements of said disc selection system linearly and elements of said optical system rotationally, a second power means for moving elements of said disc selection system angularly and rotationally and a third power means for moving said optical system linearly and a plurality of bearing and guide means which transmit rotary and linear motion, each bearing and guide means comprised of a shaft transmitting rotary motion and means permitting linear sliding movement along said shaft, a carrying structure for said optical system slideably mounted on said shaft, means mounted on said carrying structure for rotation with said shaft, supporting structure for elements of said disc selection system slideable along an associated shaft to position the disc selection means adjacent a selected disc and a means rotatable with said shaft rotating the selected disc into a position whereby the optical system may scan the selected image.

4,943,154
PROJECTION DISPLAY APPARATUS
Yoshito Miyatake, and Yoshihiro Masumoto, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 23, 1989, Ser. No. 314,071
Claims priority, application Japan, Feb. 25, 1988, 63-42665; Mar. 8, 1988, 63-54234; Mar. 24, 1988, 63-70035; Mar. 24, 1988, 63-70036
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—31 **67 Claims**

1. A projection display apparatus comprising:
a light source for generating a light containing three primary color lights;
component color separating means for separating the light from the light source into the three primary color lights;
three light valves having formed therein optical images for respectively modulating the three primary color lights from the component color separating means;
driving means for driving the three light valves according to a video signal to form the optical images;
light combining means for combining modulated lights from the three light valves into a composite luminous flux;
projection means for projecting the composite luminous flux onto a screen upon to produce thereon an enlargement of the optical images; and
light transmitting means disposed on an optical path where a distance from the component color separator means to a corresponding light valve is at least two times a width of

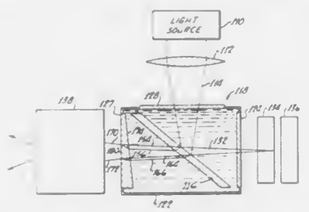


an effective light flux incident on the corresponding light valve for directing a light from the component color separator means to the corresponding light valve,
wherein said light transmitting means comprises:
an input side convergent lens disposed at an input end;
an output side convergent lens disposed at an output end; and
a central convergent lens disposed on an optical path between the input side and output side convergent lenses so that a real image of a luminous element in the light source is formed by the input side convergent lens at a position adjacent to the central convergent lens while a real image of an object positioned about the input side convergent lens is formed by the central convergent lens at a location adjacent to the output side convergent lens, said output side convergent lens permitting its output light to reach the projecting means.

4,943,155
COLOR PROJECTION SYSTEM WITH A COLOR CORRECTION WEDGE
Eugene W. Cross, Jr., Escondido, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 137,486, Dec. 22, 1987, Pat. No. 4,890,901.
This application Oct. 11, 1989, Ser. No. 419,985
Int. Cl.[5] G03B *21/00*; G02B *5/04*; G02F *1/13*
U.S. Cl. 353—33 **3 Claims**

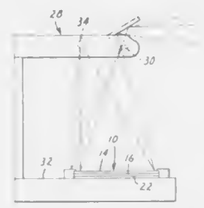
1. A color projection system comprising:
a light source,
a projection lens,
a liquid crystal light valve,
an image generator for modulating light transmitted to said liquid crystal light valve,
polarizing beamsplitter means interposed between said light source and said liquid crystal light valve and between said light valve and said projection lens for reflecting light from said light source to said liquid crystal light valve and for transmitting light reflected from said valve to said projection lens,
said polarizing beamsplitter means having an optical axis and comprising

a prism body of a fluid having a first index of refraction at a selected wavelength,
a parallel sided transparent plate suspended within said fluid for reflecting light from said light source to said light valve and for transmitting light from said light valve to said projection lens, said plate being formed of a solid material having a second index of refraction substantially equal to said first index of refraction at said selected wavelength, whereby light transmitted



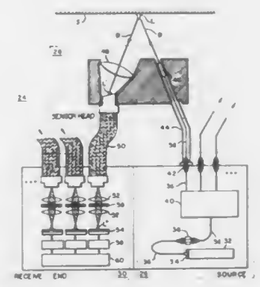
through said plate is subject to a complex lateral chromatic aberration that increases with increasing distance from the optical axis, and
a color correction wedge interposed between said plate and said projection lens in contact with said fluid for correcting light transmitted through said plate for said lateral chromatic aberration, said wedge being formed of a material having the same index of refraction as said plate over a band of wavelengths.

4,943,156
OFF AXIS FRESNEL REFLECTOR FOR LIQUID CRYSTAL DISPLAY
Dennis F. Vanderwetf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 12, 1988, Ser. No. 243,588
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—66 **4 Claims**



1. A liquid crystal display assembly for use with a reflective type overhead projector comprising:
a liquid crystal display including two transparent glass plates between which is disposed a liquid crystal imaging material;
a first-surface, variable groove with Fresnel reflector portion disposed adjacent one of said liquid crystal glass plates wherein said Fresnel reflector portion is a first-surface reflector portion in that said Fresnel reflector portion includes a reflective surface immediately adjacent said liquid crystal display, wherein said Fresnel reflector portion is a variable groove width Fresnel reflector portion in that the grooves of said reflective surface progressively decrease outwardly from the center of said Fresnel reflector portion, said first-surface reflective surface and said variable groove width combining to minimize the distance between said reflective surface and said liquid crystal imaging material to minimize double imaging of an image projected by said overhead projector and wherein said Fresnel reflector portion is off-axis in that the center of said reflector is not included in said Fresnel reflector portion so that a spurious bright spot coinciding in the projected image with the center of said Fresnel reflector is eliminated.

4,943,157
FIBER OPTIC TRIANGULATION GAGE
Bruce W. Reding, Elmira, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed May 18, 1989, Ser. No. 353,500
Int. Cl.[5] G01C *3/00, 5/00*
U.S. Cl. 356—1 **21 Claims**



1. A triangulation sensor comprising:
a source of light;
first fiber optic means, coupled to said source, for projecting a beam of said light toward an object surface to form a light spot on said surface;
a coherent bundle of optical fibers having an input face and an output face, disposed in operative relationship with said first fiber optic means and said object for receiving an image of said light spot from said object;
lens means for imaging said light spot onto said input face of said coherent bundle;
position detecting means comprising a detector array optically coupled to said coherent bundle at said output face, said array producing a plurality of signals indicative of the distance from the sensor to said object; and
means coupled to receive said signals from said array for determining said distance from said sensor and operatively associated with said coherent bundle for ranging said object proximate to said light spot by means of the position of said image on said position detecting means.

4,943,158
SENSOR CONTROLLED LEVELING DEVICE
Peter Pertl, Tulpenstr. 3, D-8200 Rosenheim, and Uwe Knauss, Prien, both of Fed. Rep. of Germany, assignors to Peter Pertl, Rosenheim, Fed. Rep. of Germany
Filed Nov. 20, 1987, Ser. No. 123,525
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1986, 3639770
Int. Cl.[5] G01C *3/08*; G01B *11/26*; E02F *3/76*
U.S. Cl. 356—4 **16 Claims**

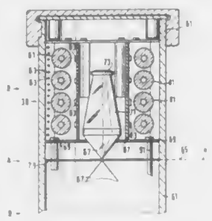
1. A sensor controlled leveling device comprising:
a laser sensor for detecting deviation of a datum plane defined by said sensor in relation to a reference plane swept by a laser beam;
processing electronic circuitry;
a servo drive adapted to respond to said circuitry and connected with said laser sensor to correct for any deviation of the attitude of the datum plane of the laser sensor rela-

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tive to the reference plane to return the datum plane of the laser sensor toward the reference plane;

said laser sensor including two solid, conical or polygonal tapered light guides converging towards each other with each guide having a tip and a base, said tips lying in opposition to and directly adjacent one another and on opposite sides of the datum plane;

photodetectors disposed adjacent said light guide bases



remote from the tips thereof for receiving light from said light guides and providing output signals of different magnitude in response thereto; and

a comparator forming part of said processing circuitry for operating said drive in response to said output signals to locate said sensor such that the datum plane and reference plane are substantially coincident and the reference plane lies substantially centrally located between the two converging tips of the tapering light guides.

4,943,159

METHOD AND APPARATUS FOR GUIDING AND COLLECTING LIGHT IN PHOTOMETRY OR THE LIKE

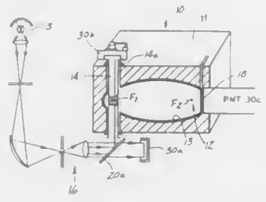
Hans Oetliker, Muri; Peter Winiger, Wohlen, and Sonja Stempfel, Zurich, all of Switzerland, assignors to Inotech AG, Wohlen, Switzerland

Continuation-in-part of Ser. No. 919,257, Oct. 15, 1986, which is a continuation of Ser. No. 731,868, May 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 684,482, Dec. 21, 1984, abandoned. This application Feb. 26, 1988, Ser. No. 160,534

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347080

Int. Cl.[5] G01N *21/49, 21/64, 21/59*

U.S. Cl. 356—73 **19 Claims**



1. A method for guiding and collecting light which issues from a light source and which is passed as an incident primary modulated or unmodulated beam to a specimen or like material to be measured comprising:

providing a measuring chamber defined by a first reflector body having a reflective surface of a desired shape and a longitudinal axis which defines a first axis of symmetry;

positioning a compartment containing said specimen within said chamber so that said specimen is disposed substantially at a first focus of the reflector body;

passing a primary light beam from said source through said compartment without said beam being reflected off said reflector body to generate at least two measuring beams; and

conducting said beams to at least one detector oriented at about 90° with respect to said axis with at least one of said beams being reflected at said reflective surface.

4,943,160

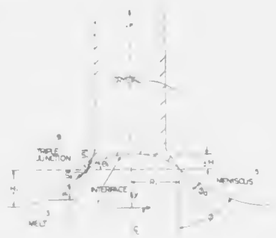
INTERFACE ANGLE ESTIMATION SYSTEM

Michael A. Gevelber, Newtonville, and Anthony T. Patera, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 25, 1988, Ser. No. 224,490

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—372 **18 Claims**



1. An interface angle estimation system comprising: thermal and surface imagers and means for determining an interface angle θ_i at an interface triple junction of a crystal growing from a melt material wherein the thermal imager provides temperature gradient data surface orientation data from the crystal and from a meniscus around the triple junction to the means and wherein the means determines the interface angle.

4,943,161

METHOD AND APPARATUS FOR THE DETECTION OF HYDROCARBONS DISSOLVED IN BODIES OF WATER

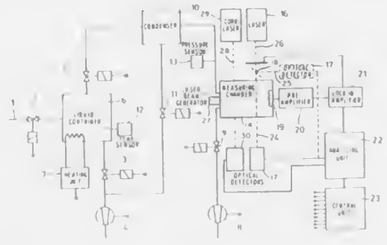
Walfried Michaelis, Seevetal, and Claus Weitkamp, Wentorf, both of Fed. Rep. of Germany, assignors to Gkss Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 573,876, Jan. 25, 1984, abandoned. This application Nov. 29, 1988, Ser. No. 277,183

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302656

Int. Cl.[5] G01N *21/00*

U.S. Cl. 356—437 **9 Claims**



1. A method for the detection and the measurement of hydrocarbons dissolved in bodies of water, comprising the steps of: introducing a water sample, without a loss of hydrocarbons

therefrom, into a sealed measuring system, driving any hydrocarbons out of solution in the water sample into a gaseous phase, directing a first laser beam of a wavelength selected so as to provide for at least partial overlapping with the absorption lines of said hydrocarbons through said gaseous phase for absorption therein by hydrocarbons, directing a correction laser beam of a wavelength at which such correction beam is not subject to absorption by the hydrocarbons through said gaseous phase so as to determine the contribution of gases other than hydrocarbons to the absorption of said first laser beam, determining the absorption of said first laser beam by said hydrocarbons, calculating the partial pressure of said hydrocarbons in said gaseous phase from the absorption of said first laser beam in said gaseous phase by the hydrocarbons, and determining the concentration of the hydrocarbons in the water sample from the partial pressure of the hydrocarbons in the gaseous phase on the basis of the distribution equilibrium of the hydrocarbons utilizing the given temperature and pressure conditions.

4,943,162

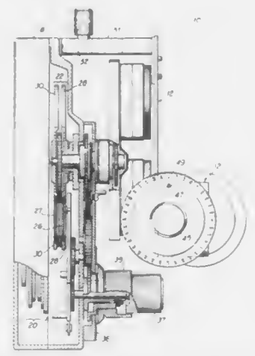
ASTIGMATIC SELF-REFRACTOR AND METHOD OF USE

Clinton N. Sims, 3949 Evans Ave., Fort Myers, Fla. 33901

Continuation-in-part of Ser. No. 116,322, Nov. 2, 1987, Pat. No. 4,840,479, which is a continuation-in-part of Ser. No. 23,980, Mar. 16, 1987, Pat. No. 4,820,040, which is a continuation of Ser. No. 670,398, Nov. 9, 1984, abandoned. This application Feb. 13, 1989, Ser. No. 310,334

Int. Cl.[5] A61B *3/02*

U.S. Cl. 351—235 **21 Claims**



1. A refractor comprising at least one variable crossed cylinder lens assembly comprising:

a. a sphere lens;

b. a first pair of identical cylinder lenses, each of which cylinder lens is of power equal to one-half the power of the sphere lens and of opposite sign, mounted in a means for rotating each cylinder lens in the direction opposite the other at the same rate relative to a first combined lens axis; and

c. a second pair of identical cylinder lenses, each of which cylinder lens is of power equal to one-half the power of the sphere lens and of opposite sign, mounted in a means for rotating each cylinder lens in the direction opposite the other at the same rate relative to a second combined lens axis, which axis is offset 45 degrees from the first combined lens axis.

4,943,163

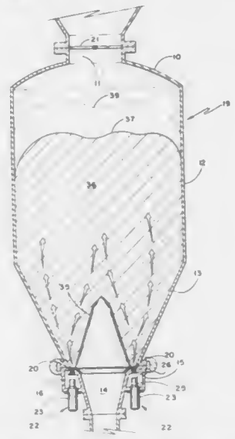
BLENDER FOR PNEUMATICALLY MIXING BATCHES OF DRY GRANULAR MATERIALS BY TUMBLING

James R. Steele, Stillwater, Minn., assignor to Dynamic Air Inc., St. Paul, Minn.

Filed Sep. 22, 1989, Ser. No. 411,107

Int. Cl.[5] B01F *13/02*

U.S. Cl. 366—106 **4 Claims**



1. In an air blender for pneumatically mixing together dry granular materials comprising a vertically oriented elongated container having an input opening at the top for inputting granular materials to be mixed, cylindrical side walls, a normally closed central discharge opening at the bottom, lower walls sloped inwardly from the bottom of the cylindrical walls to said discharge opening, and an air manifold surrounding said discharge opening having an inner air chamber containing pressurized air, the improvement comprising:

a series of air nozzles in the manifold equally spaced around the discharge opening for providing air communication between the inner air chamber of the manifold and the interior of the container, said nozzles oriented at an angle to direct the pressurized air generally parallel to the longitudinal axis of the container;

means for repeatedly opening and closing said nozzles;

a source of pressurized air;

conduit means for delivering pressurized air from said source of pressurized air to the inner chamber of the manifold; and

adjustable throttling valve means located in said conduit for controlling the air flow into the manifold inner chamber from said pressurized air source when said nozzles are opened.

4,943,164

MIXING APPARATUS FOR MIXING REAGENT FOR USE IN AUTOMATIC CHEMISTRY ANALYZER

Tadashi Ohishi, and Hiroshi Umetsu, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1989, Ser. No. 391,997

Claims priority, application Japan, Aug. 26, 1988, 63-210746

Int. Cl.[5] B01F *11/00, 15/06*

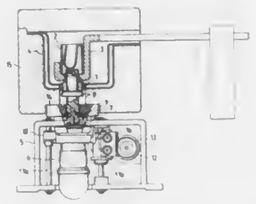
U.S. Cl. 366—149 **15 Claims**

1. A mixing apparatus for mixing a reagent for use in an automatic chemistry analyzer comprising a reagent refrigerator, a reagent table extending into said reagent refrigerator, a reagent vessel installed on said reagent table and received in said reagent refrigerator, and a mixing apparatus for mixing a solution in said reagent vessel in accordance with movement of said reagent vessel, said mixing apparatus having a rotor dis-

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posed in said reagent refrigerator and a rotor driving apparatus for rotating said rotor, wherein:

said reagent vessel is installed on said reagent table, said rotor is disposed in said reagent refrigerator and is moved in an up-and-down direction by moving means, said reagent vessel has a first engagement member at a bottom face of said reagent vessel, said rotor has a second engagement member at a top face of said rotor, said second engagement member of said rotor is engaged with or



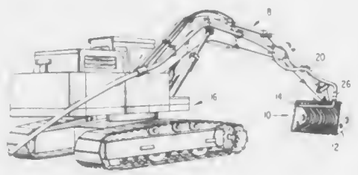
disengaged from said first engagement member of said reagent vessel, said rotor driving apparatus is installed outside said reagent refrigerator, a first sealing member for sealing cold air in said reagent refrigerator is fixed on a rotating shaft of said rotor at a lower face of said reagent refrigerator, and a second sealing member for preventing water droplets from falling down from said reagent refrigerator outside of said mixing apparatus is fixed on said rotating shaft of said rotor at a bottom portion of said reagent refrigerator.

4,943,165

SLUDGE STABILIZING METHOD AND APPARATUS

Bruce E. Boggs, Roswell, Ga., assignor to United States Pollution Control Company, Inc., Oklahoma City, Okla.

Filed Jun. 16, 1989, Ser. No. 366,993
Int. Cl.[5] B01F *15/00, 5/06*
U.S. Cl. 366—348 54 Claims



1. An apparatus for injecting and mixing a material into a liquid-containing sludge in a lagoon or the like, such apparatus comprising:

a bucket adapted to be attached to the articulated arm of a backhoe or like equipment, said bucket having a scoop opening, spaced sides and a generally C-shaped body portion extending between the sides of said bucket the body portion having a plurality of generally C-shaped tines spaced laterally along the width thereof between said sides providing slots therebetween so that sludge may pass through said bucket after entering through said scoop opening or said slots; and

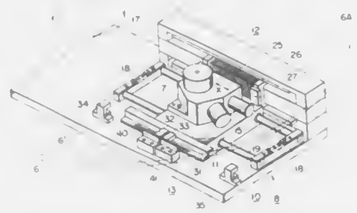
manifold means extending across the interior of said bucket between the sides thereof and having apertures therein for dispensing material into said bucket so that as sludge passes therethrough the dispensed material will be injected into the sludge.

4,943,166

DEVICE FOR DETECTING THE POSITION OF AN OPTICAL HEAD

Hiroshi Yamashita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 26, 1988, Ser. No. 148,694
Claims priority, application Japan, Jan. 27, 1987, 62-15136; Jan. 27, 1987, 62-15138
Int. Cl.[5] G11B *7/18*
U.S. Cl. 369—32 11 Claims



1. A position-detecting device for detecting a position of an optical head, the optical head having an optical axis and being mounted on a carrier movable in a predetermined direction perpendicular to the optical axis, comprising:

a fixed base;

a slit member movable with the carrier between a first position and a second position, the slit member having a first end and a second end opposite said first end and having a plurality of slits which are arranged in the predetermined direction;

emitting means, fixed on the base between the first and second positions, for emitting first and second light beams for illuminating the slit member;

first detecting means, fixed on the base, for detecting the first and second light beams passing through the slits of said slit member, to respectively generate first and second signals in accordance with the movement of said slit member, the first and second signals having a phase different of $\pi/2$; and

second detecting means, fixed on the base, for detecting the first end of the slit member when the slit member is in the first position, and for detecting the second end of the slit member when the slit member is in the second position.

4,943,167

PLASTIC BAG AND METHOD AND APPARATUS OF MANUFACTURE

Edward Gelbard, Monte Carlo, Monaco, assignor to Hilex Poly Company, Inc., Los Angeles, Calif.

Division of Ser. No. 801,752, Nov. 26, 1985. This application Jun. 12, 1987, Ser. No. 38,234
Int. Cl.[5] B65D *33/06*
U.S. Cl. 383—8 1 Claim

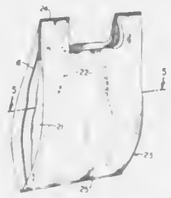
1. A plastic bag comprising:

a tube of thermoplastic film, having at least one longitudinal slit seal extending the length of the tube;

a pair of opposing gussets provided in said tube, each gusset having a central fold, said gussets oriented about said tube such that said longitudinal slit seal is not positioned at the central fold or external fold of either gusset;

transverse heat seals provided at the top and bottom of said bag, said bottom and top transverse heat seals intersecting said longitudinal slit seal; and

two opposing bag handles defined by cutting an opening in said bag at said top transverse heat seal, each handle including an uncut portion of said top transverse heat seal, and at least one handle including said longitudinal slit seal extending from said transverse bottom heat seal to the



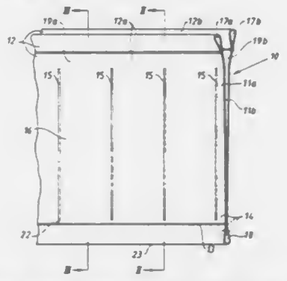
uncut portion of said top transverse heat seal in said handle.

4,943,168

PACKAGE BAND

Sven-Olof Berg, Haverdal, and Ingemar Broden, Halmstad, both of Sweden, assignors to Pronova AB, Halmstad, Sweden

Filed Jul. 12, 1988, Ser. No. 217,635
Claims priority, application Sweden, Jul. 13, 1987, 8702838
Int. Cl.[5] B65D *30/22*
U.S. Cl. 383—38 5 Claims



1. A package band comprising two walls of flexible material in adjoining relation, said walls having first and second edge regions extending longitudinally of the band, first connecting means joining said walls together at said second edge region to provide a longitudinal joint thereat, means providing a succession of transverse joints spaced longitudinally of the band at which the walls are joined together to form with said longitudinal joint a succession of storage pockets longitudinally of the band, said walls at said first edge region being disconnected to permit access to said storage pockets for goods to be inserted into and removed from said pockets, and second connecting means at said second edge region for forming a continuous opening extending longitudinally of the band externally of said longitudinal joint and said pockets, said walls each including at said first edge region a connection forming a tunnel extending longitudinally of the band.

4,943,169

THIN TYPE LINEAR MOTION ROLLING GUIDE UNIT WITH APPARATUS FOR PREVENTING DEVIATION OF HOLDER

Naomi Kasai, Tokyo, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1990, Ser. No. 480,798
Claims priority, application Japan, Aug. 14, 1989, 1-94355[U]
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—43 12 Claims

1. A thin type linear motion rolling guide unit with an apparatus for preventing a deviation of a holder, comprising:

a flat plate-shaped attaching member (1) having a pinion rod (11) which rotatably penetrates and extends the attaching member (1) in the vertical direction;

a long bed member (2) having a U-shaped cross section which is fixedly attached onto the upper surface of the attaching member (1) and has inner horizontal track grooves (21) for rolling members (5) on opposite inner wall surfaces of the bed member (2);

a long table member (3) having an inverse U-shaped cross section which has outer horizontal track grooves (31) for the rolling members (5) on outer wall surfaces of the table member (3) at the positions which face the inner horizontal track grooves (21) of the bed member (2) and is inserted into an inner cavity (20) of the bed member (2) so as to be away from the opposite inner wall surfaces of the bed member (2) with gaps and to be slidable in the longitudinal direction; and

a long holder (4) having a U-shaped cross section which is arranged between the inner wall surfaces of the bed member (2) and the opposite inner wall surfaces of the table member (3),

wherein a number of rolling member holding holes (41) for rotatably holding a number of rolling members (5) at regular intervals in horizontal lines between both of the opposite track grooves of the bed member (2) and of the table member (3) are formed in opposite walls of the holder (4), a center long hole (42) which extends in the longitudinal direction is formed in the bottom wall of the holder (4), a first rack (43) is formed on an edge surface of one side of the center long hole (42),

the upper portion of the pinion rod (11) is formed with a first

pinion (12) and a second pinion (14) which penetrate the bottom wall of the bed member (2) and the long hole (42) of the holder (4) and are projected from the long hole (42) and are come into engagement with the first rack (43), the first and second pinions (12, 14) are adjacently concentrically fitted and fixedly attached to the upper portion of the pinion rod (11),

a second rack member (32) having an almost J-shaped cross section which extends in the longitudinal direction is attached to the inner wall surface of the apex portion of the table member (3), a rack surface (33) is formed on the inner wall surface of the second rack member (32), in a state in which the second rack member (32) is attached to the inner wall surface of the table member (3), the rack surface (33) is come into engagement with the tooth train of the second pinion (14),

the teeth of the first and second pinions (12, 14) have a same shape, the number of teeth of the second pinion (14) is set to be twice as large as the number of teeth of the first pinion (12),

the rack surface (33) of the second rack member (32) is formed on the edge surface of an edge shelf-shaped portion (35) on the side a curved portion (34) of the J-shaped cross-sectional shape of the second rack member (32), and

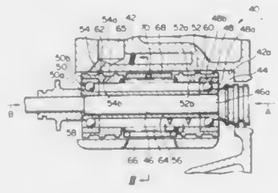
a slit (38) having a wedge-shaped cross section which extends substantially in parallel with the rack surface (33) in the longitudinal direction is formed in the shelf-shaped portion formed with the rack surface, thereby applying elastic deforming characteristics in the lateral direction to the shelf-shaped portion (35) formed with the rack surface.

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4,943,170
BEARING HOLDING ARRANGEMENT IN SUPERCHARGER

Masahiro Aida, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 20, 1989, Ser. No. 340,749
Claims priority, application Japan, Apr. 26, 1988, 63-55169
Int. Cl.[5] F16C *27/02*
U.S. Cl. 384—99 **9 Claims**

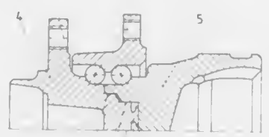


1. A bearing holding arrangement in a supercharger, comprising:
a bearing housing;
a pair of oil film dampers installed in a floating state in said bearing housing;
a pair of ball bearings installed on said oil film dampers;
a rotor shaft extending through said bearing housing and rotatably installed in same by way of said ball bearings and said oil film dampers;
a spring urging said oil film dampers away from each other;
a hollow, generally cylindrical thrust member disposed between said oil film dampers and abuttingly engageable with same selectively;
a tangetial groove formed in said thrust member;
a hole formed in said bearing housing and axially alignable with said groove when said thrust member is installed in place relative to said bearing housing; and
a pin fitted in said groove and said hole.

4,943,171
WELDED CONNECTION FOR WHEEL BEARING UNIT FOR MOTOR VEHICLES

Heinrich Hofmann, Schweinfurt, and Manfred Tröster, Bad Kissingen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jan. 5, 1990, Ser. No. 461,227
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1989, 3902142
Int. Cl.[5] F16C *13/00, 43/04;* **B21K** *1/40*
U.S. Cl. 384—537 **13 Claims**

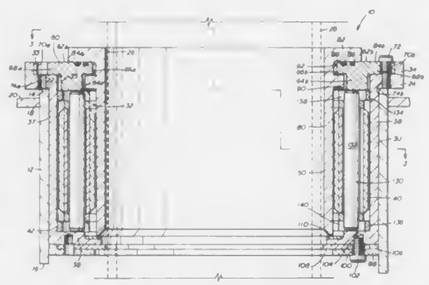


1. A wheel bearing unit for a motor vehicle, or the like, the bearing unit comprising:
an outer ring having an outer race for rolling elements, at least one row of anti-friction rolling elements for rolling about the race of the outer ring;
an axially more inward inner part; an axially more outward outer part, axially outward of the inner part;
a respective inner race defined on at least one of the inner part and the outer part for cooperating with the outer race on the outer ring and with the rolling elements supported thereby for defining the races for the rolling elements;
one of the inner part and the outer part having an axial projection thereon projecting axially toward the other of the inner part and the outer part, and the axial projection having an annular periphery with a plurality of different radius steps defined on it;
the other of the outer part and the inner part having an axially extending sleeve defined thereon axially extending toward the one of the inner part and the outer part, and the sleeve having an internal bore with a surface which is stepped complementary to the stepped periphery of the axial projection, such that with the outer part and the inner part pressed axially together, the complementary steps come into engagement and orient the inner part and the outer part with respect to each other;
the axial projection having an axially forward end toward the other of the inner part and the outer part; the sleeve bore having a bottom facing toward the axially forward end of the projection;
an axially directed forward projection extending from one of the inner part and the outer part toward the other, located in the bore of the sleeve and extending into engagement with the axial end of the other of the outer part and the inner part, and the axially directed forward projection being welded to the other of the outer part and the inner part in the bore.

4,943,172
DRILL DECK BUSHING

William N. Waldrep, Midland, Tex., assignor to Drilco Industrial, Inc., Midland, Tex.

Filed Mar. 30, 1989, Ser. No. 330,628
Int. Cl.[5] F16C *33/34, 31/00*
U.S. Cl. 384—565 **25 Claims**

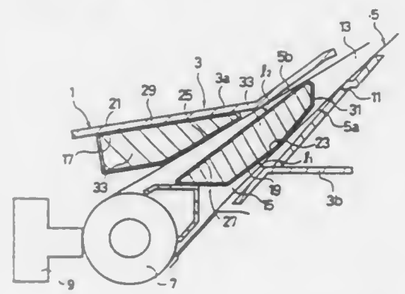


1. A shock absorbing guide bushing mountable in the drill deck of a drilling rig, comprising:
a generally tubular outer shell adapted to be nonrotatably mounted in the drill deck;
a generally tubular inner liner substantially coaxially and rotatably mounted within and spaced apart said outer shell forming an annular space therebetween, said inner liner having an inner bore adapted for receiving and guiding a drill string extending through the drill deck;
shock absorbing cushion roller means disposed in said annular space between said inner liner and said outer shell for cushioning and absorbing lateral impact loads imparted to said inner linear by the drill string; and
first retainer means disposed on said outer shell and engageable with second retainer means disposed on said inner liner for permitting said inner liner to rotate with respect to said outer shell while preventing axial separation of said outer shell and said inner liner.

4,943,173
SOUND DAMPENING IMPACT PRINTER

Yoji Okazaki, Yokohama; Yukami Nitta, Ohta, and Shigeyoshi Harada, Akishima, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 126,496, Nov. 30, 1987. This application Aug. 31, 1989, Ser. No. 401,513
Claims priority, application Japan, Nov. 29, 1986, 61-285066; Oct. 12, 1987, 62-254786
Int. Cl.[5] B41J *29/10*
U.S. Cl. 400—689 **8 Claims**



1. A printer having a printing head for printing on paper supplied through an opening to the printing head in which noise is emitted from the printing head to the opening, comprising:
a feed path for guiding the paper from the opening toward the printing head and subsequently guiding the printing paper from the printing head toward the opening; and
at least one Helmholtz resonator disposed in said feeding path for reducing the cross-sectional area of said feeding path to a minimum area through which the printing paper passes, said helmholtz resonator having a resonant chamber with at least one hole therein, through which the resonant chamber communicates with said feed path so as to attenuate the noise power level at the exciting frequency of the printing head, and at least one said hole being concentrated, at one point in the noise emitting direction;
wherein the resonant chamber is divided in a plurality of parts such that each divided part has a volume V and at least one of the holes has radius a and depth l, such as satisfy the following equations:

$$f = C/2\pi x\ G/V$$

$$G = (n\pi a^2)/(l + \pi a/2)$$

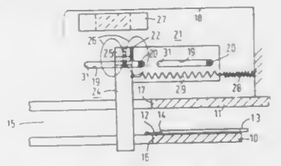
f: one of integer multiples of the exciting frequency of the printing head at which maximum sound power appears;
C: sound velocity;
G: conductivity of the hole of the resonant chamber.

4,943,174
ARRANGEMENT FOR POSITION INDICATION OF AN EDGE OF A SHEET-SHAPED DATA CARRIER

Helmut M. Eicher, Wenden, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1989, Ser. No. 349,729
Claims priority, application Fed. Rep. of Germany, May 13, 1988, 3816367
Int. Cl.[5] B41J *29/42, 29/46*
U.S. Cl. 400—703 **15 Claims**

1. An arrangement for position indication of an edge of a sheet-shaped data carrier, which is transportable in a transport direction in the space between two guide plates of a printing apparatus, said arrangement comprising:
a lever having a bearing end and means pivotally journalling said a bearing end for rotation generally in said transport direction;
a lever spring secured to the lever for opposing said rotation;
a sensor fixedly secured relative to the lever, said sensor and lever being arranged and aligned relative to one another such that the sensor is activated upon movement of the lever in response to the transport of the data carrier in said space;

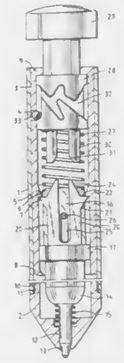


a carriage moveable parallel to the transport direction between start and end stop positions; and
a carriage spring for opposing the displacement of the carriage in the transport direction;
said springs being so dimensioned such that the lever in response to engagement with the data carrier is displaced with the carriage in the transport direction to said end stop position and then pivoted after the carriage reaches said end stop position, said lever and carriage being returned to the start position after said lever pivots.

4,943,175
FEED MECHANISM FOR A WRITING DEVICE

Otto Heim, Weigendorf, Fed. Rep. of Germany, assignor to A.W. Faber-Castell GmbH & Co., Stein, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 75,032
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1986, 3624152
Int. Cl.[5] B43K *24/08*
U.S. Cl. 401—111 **7 Claims**



1. Feed mechanism for a writing device comprising a writing medium carrier which is fixable in a housing in a front and rear position and is influenced by the action of a return spring, wherein an axially and radially movable switching element and an axially movable locking element are arranged between the writing medium carrier and a press button which projects out of the housing at the rear end, characterized in that the writing medium carrier (14) rests at the locking element (16) which is supported in an elongated hole (25) by means of a transverse pin (26) so as to be fixed relative to the housing (1) with respect

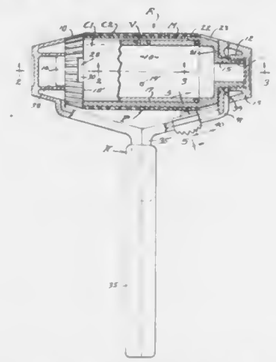
to rotation, but so as to be axially movable in the housing (1), comprises a pressing column (23) and a spring arm (20) with a stop bevel (21) and a supporting surface (22), which is swivelable in the area of a supporting collar (7) in the housing (1) and carries a pressure spring (27) which is supported at the switching element (28) which comprises a continuously circulating switching cam (32) at its circumference, which switching cam (32) extends substantially parallel to the central axis of the writing device from a catch depression (34) to a reversing depression (37) and passes, in each instance, into a diagonal rotation path (39); and in that a carrier ball (33), which is inserted in a ball pocket (4) so as to be rotatable and fixed in this location, engages in the switching cam (32); and in that the switching element (28) comprises the press button (29) at its rear end and carries a switching fork (30) at the opposite end.

4,943,176

BODY ROLLER LIQUID APPLICATOR

Claudia Baker, 4441 Pacific Coast Hwy., Torrance, Calif. 90505

Filed May 15, 1989, Ser. No. 352,152
Int. Cl.[5] B05C *17/02*
U.S. Cl. 401—197 **13 Claims**



1. A body roller liquid applicator for storage and controlled discharge of liquid from its peripheral surface, and including;
inner and outer cylinder sections and one rotatably engaged coextensively over the other,
the inner cylinder section having one end wall with a trunnion projecting therefrom on a turning axis and having a cylinder wall open at its other end,
the outer cylinder section having one end wall with a trunnion projecting therefrom on said turning axis and having a cylinder wall open at its other end and rotatably receiving the cylinder wall of the inner cylinder section,
a seal seated at said open other end of the inner cylinder section and at said one end wall of the outer cylinder section and confined therebetween establishing a closed storage chamber in the cylinder sections,
there being an opening in the cylinder wall of the inner cylinder section and rotatable into alignment with a port in the cylinder wall of the outer cylinder section for controlled discharge of liquid,
and a handle extension having bearings engaged over the trunnions with the cylinder sections rotatable therebetween.

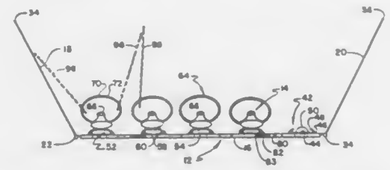
4,943,177

DOCUMENT ORGANIZER

Shelby A. Jordan, Corpus Christi, and John W. Apgar, Sr., Houston, both of Tex., assignors to Litigation Innovations, Inc., Houston, Tex.

Filed Nov. 4, 1988, Ser. No. 267,358
Int. Cl.[5] B42F *13/22*
U.S. Cl. 402—72 **11 Claims**

1. A document organizer comprising
a rigid backing member having plural parallel receivers for ring binder assemblies;
a front cover and a back cover pivotally connected to the backing member for movement about spaced first and second generally parallel axes; and
a plurality of ring binder assemblies including a rigid central



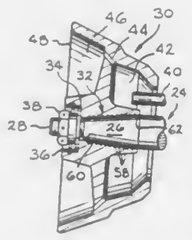
segment in the receivers, a plurality of separable ring sets and means for latching the ring sets closed, the ring binder assemblies being free from rigid front and back covers parallel to the backing member front and back covers.

4,943,178

MOUNTING STRUCTURE FOR ROTATING BODIES

Richard Weinstein, Toledo, Ohio, assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed May 8, 1986, Ser. No. 860,928
Int. Cl.[5] B05B *5/02*
U.S. Cl. 403—259 **12 Claims**



1. A mounting structure for securely and accurately positioning an object on a rotatable shaft comprising:
a rotatable shaft member having an axis and adapted to be connected to a rotating drive means, said shaft member provided with a first tapered mounting portion;
an object securely mounted on said shaft member for rotation therewith, said object provided with an internal bore having a second tapered mounting portion engageable with said first tapered portion and cooperating with said first tapered portion to align said object with respect to said shaft member;
one of said first and second tapered mounting portions including a plurality of axially spaced apart and generally annular grooves defining a plurality of spaced apart tapered land surface portions therebetween, the other one of said firs and second tapered mounting portions defining a tapered surface engageable with said tapered land surface portions for securely and accurately positioning said object on said shaft member;
said one of said first and second tapered mounting portions including said grooves being formed of a first material, and said other one of said first and second tapered mounting portions being formed of a second material, said second material being substantially harder than said first material such that said tapered mounting portion formed of said first material deforms during assembly of said first and second tapered mounting portions to provide substantial contact and more accurate alignment between said mounting portions.

4,943,179

PLATE MEMBER ARRANGEMENT

Yoshio Horiki, Matsusaka, and Hideo Ikeda, Tokyo, both of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jun. 24, 1987, Ser. No. 66,710
Claims priority, application Japan, Jun. 27, 1986, 61-97580[U]; Jun. 27, 1986, 61-97581[U]; Jun. 30, 1986, 61-99147[U]
Int. Cl.[5] B25G *3/34*
U.S. Cl. 403—269 **12 Claims**



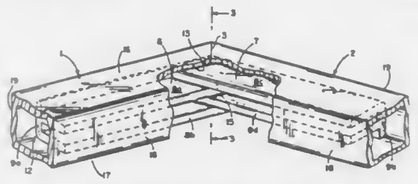
1. A plate member arrangement comprising:
a glass plate member;
a holder member contacting with said plate member to securely hold a peripheral part of said plate member, said holder member being made of plastic and being molded to cover said part of said plate member;
means for securely connecting said plate member with said holder member, said means including a projecting member which directly projects from said plate member outwardly into said holder member, said projecting member being independent from said holder member, said projecting member being integral with said part of said plate member and providing a hook-like connection with said holder member, said plate being integrally formed with a protruding part, said protruding part being integral with said projecting member.

4,943,180

INTERLOCKING CORNER PLUG SYSTEM

Paul P. Durhman, Winnebago, Minn., assignor to Advanced Fiber Products, Winnebago, Minn.

Filed Dec. 1, 1988, Ser. No. 278,557
Int. Cl.[5] F16B *7/00*
U.S. Cl. 403—295 **22 Claims**



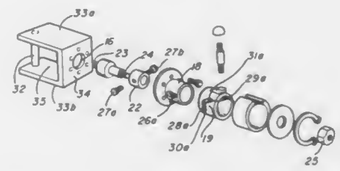
21. A structure for connecting a pair of adjacent end-to-end abutting tubular structural members, comprising:
a. a pair of elongated tubular members having abutting ends, each of said tubular members being disposed at an angle relative to the other of said tubular members;
b. a pair of elongated interengaging supporting connector inserts, each of which is constructed and arranged to be positioned within said abutting end of one of said tubular members, and to interengage with said other insert at a point adjacent said abutting ends of said tubular members, each of said inserts being configured cross-sectionally substantially identical to said other insert, said inserts interengaging whereby one of said inserts is invertedly disposed in relation to said other insert;
c. means for securing said inserts together in interengaging relation; and,
d. means for securing said tubular members together.

4,943,181

QUICK DISCONNECT WITH LOCKING FEATURE FOR PICK AND PLACE DEVICES

Patrick M. Murphy, Lake Orion, Mich., assignor to Mif-Sud Industries, Inc., Sterling Heights, Mich.

Filed Jul. 20, 1989, Ser. No. 383,403
Int. Cl.[5] G05G *5/06*
U.S. Cl. 403—324 **9 Claims**



1. A locking quick disconnect device for connecting and disconnecting structural members, said locking quick disconnect device comprising:
a first structural member;
a second structural member located in proximity to said first structural member; including a cam member rotatable relative to said first structural member cam means mounted to said first structural member, said cam member having at least one cam track, said at least one cam track having a lock position and a release position;
a slidable rod mounted adjacent said cam member, said slidable rod being operatively associated with said cam member;
lever means mounted to said cam member, said lever means operatively associated with said member; and
a detent located at said lock position of said at least one cam track, said detent locking said cam member in said lock position;
whereby said slidable rod engages said second structural member thereby connecting said first structural member with said second structural member when said lever means acts to traverse said cam member from said release position to said lock position, said cam member being locked in said lock position by said detent, and said slidable rod disengages said second structural member thereby disconnecting said first structural member from said second structural member when said lever means acts to traverse said cam member from said lock position to said release position, said cam member being consequently released from said detent in said released position.

4,943,182

RAPID FASTENER OF THE BAYONET TYPE

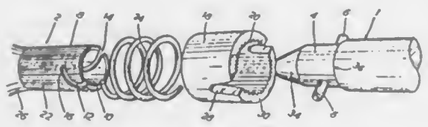
André Hoblingre, Valentigney, France, assignor to ECIA - Equipements Et Composants Pour L'Industrie Automobile, Audincourt, France

Filed Mar. 14, 1989, Ser. No. 323,590
Claims priority, application France, Mar. 14, 1988, 8803290
Int. Cl.[5] F16B *7/20*
U.S. Cl. 403—349 **7 Claims**

1. A rapid fastener of the bayonet type for connection of two elements, comprising a socket terminating the first element, a stem terminating the second element, the socket having an open end for receiving a stem, a laterally projecting pin on the outer surface of said stem, a slot in the socket, said slot having an open entrance end for the entrance of said projecting pin, guiding and locking means comprising a ring axially slidable

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along the socket but rotating with said socket, spring means for biasing said ring toward the open end of said socket, a longitudinal slot formed in said ring and having an open end toward the open end of the socket, and two lateral walls progressively diverging toward said open end of the longitudinal slot; said longitudinal slot open end being laterally offset relative to said open entrance end of the socket slot and having an end edge



which partly closes said entrance end of the socket slot and which is urged back by the pin as the stem penetrates in said socket, said socket slot having an helical shape which causes helical relative motion of said penetrating stem and said socket and guides the pin to the entrance end of the longitudinal slot so that the end edge of said longitudinal slot is released and the ring is biased to a locking position in which the pin is trapped by edges of the two slots.

4,943,183
WIRE CLAMP

Yoshihito Nakano, Kasugai, Japan, assignor to Kitagawa Industries, Co., Ltd., Aichi, Japan

Filed Jul. 13, 1989, Ser. No. 379,201
Claims priority, application Japan, Aug. 10, 1988, 63-106128[U]
Int. Cl.[5] F16L *3/08*
U.S. Cl. 403—406.1 **6 Claims**

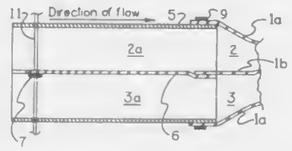


1. A wire clamp for holding a wire in place on a mounting board, comprising:
- a central support member having an anchoring member that extends from a support base of the central support member and that has resilient engaging members that pass through and spread out in a mounting hole in the mounting board;
- side support members on both sides of and parallel to the central support member and movable toward the central support member;
- a pair of transverse support members extending angularly from opposed sides of the support base of the central support member toward the resilient engaging members, each transverse support member being connected to one end of an associated one of the side support members;
- a wire-receiving means for receiving wire, the wire receiving means including two opposed portions, each portion connecting the other end of an associated one of the side support members with the central support member.

4,943,184
IRRIGATION DEVICE

Allan S. Humpherys, Kimberly, Id., and Elvert E. Oest, Fruita, Colo., assignors to The United State of America as represented by the Secretary of Agriculture, Washington, D.C. and Elvert Edgar Oest & Company, Fruita, Colo.

Filed Dec. 9, 1988, Ser. No. 281,733
Int. Cl.[5] E02B *13/00*
U.S. Cl. 405—39 **33 Claims**

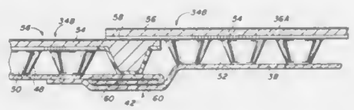


1. An apparatus comprising a segment of elongated layflat tubing fabricated from flexible sheet material which becomes inflated to a cylindrical shape when filled with fluid, said tubing including a longitudinal diaphragm within said tubing which defines two parallel, elongated channels therein; a rigid pipe detachably connected to the upstream end of said tubing so that said channels are in communication with the interior of said pipe, flow control means connected to said pipe to stop the flow of fluids to either one of said channels while still permitting flow to the other of said channels, wherein said pipe is not fabricated of flexible sheet material.

4,943,185
COMBINED DRAINAGE AND WATERPROOFING PANEL SYSTEM FOR SUBTERRANEAN WALLS

James P. McGuckin, 6032 E. Calle de Rosa, Scottsdale, Ariz. 85251; Dean L. Bradfield, 5104 Caroli La., La Canada, Calif. 91011; Raymond A. Foltz, 27137 Rio Bosque Dr., Valencia, Calif. 91355, and H. James Heldt, 2284 Waltonia Dr., #3, Montrose, Calif. 91020

Filed Mar. 3, 1989, Ser. No. 318,910
Int. Cl.[5] E02B *11/00*; **E02D** *19/00, 31/02*
U.S. Cl. 405—45 **18 Claims**



1. A combination drainage and waterproofing system for application to and protection of subterranean structures, such as walls, plaza decks or the like, the system comprising a plurality of composite panels, each of the plurality of composite panels further comprising:
- a drainage core, said drainage core having a front surface and a back surface and a plurality of edges thereof, said front surface having a plurality of protrusions thereon, each of said plurality of protrusions having an apex on a front surface thereof, said plurality of protrusions forming interstitial passageways therebetween for permitting transverse flow of water across said front surface of said drainage core;
- filter means for prevention of admission of earth particles into said interstitial passageways, said filter means being adhered to said apexes of said plurality of protrusions;
- means for waterproofing said back surface of said drainage core; and
- means for sealing at least one of said plurality of edges of said drainage core to an edge of a like adjacent drainage core, whereby a continuous waterproof surface is presented at said rear surface of a plurality of said drainage cores when said plurality of back surfaces of said drainage cores are placed adjacently against the subterranean structure, wherein said means for waterproofing said back surface of said drainage core comprises a flat peripheral flange formed on and as part of at least one edge of said drainage core, said flat peripheral flange being overlapped by a portion of an adjacent one of said drainage cores so that the front surface of said flat peripheral flange is brought into intimate contact with a portion of said back surface of said adjacent drainage core.

4,943,186
DEVICE FOR THE DISPLACEMENT OF SEDIMENT UNDER WATER AND PROCESS FOR THE USE OF SUCH A DEVICE

Reijer N. Van Weezenbeek, Torenweg 14, 3235 NS Rockanje, Netherlands

Continuation of Ser. No. 28,901, Mar. 23, 1987, abandoned. This application Mar. 29, 1989, Ser. No. 330,442
Claims priority, application Netherlands, Apr. 14, 1986, 8600941
Int. Cl.[5] E02B *3/02*
U.S. Cl. 405—73 **6 Claims**



1. A device for the displacement of sediment under water comprising a pipe having a longitudinal axis with outer ends thereon and a plurality of downwardly directed outflow openings spaced along said longitudinal axis, means for lowering said pipe under water to the bottom of said water having sediment to be acted upon, a source of pressurized water connected to said pipe thereby providing a flow of pressurized water out of said downwardly directed outflow openings which are in contact with said sediment on said bottom for liquefying said sediment, the improvement comprising:
- longitudinally directed outflow openings positioned in the outer ends of said pipe for directing water from opposite ends of said pipe substantially in the direction of said longitudinal axis, said longitudinally directed outflow openings are positioned in said pipe at a level above said downwardly directed outflow openings whereby water from the longitudinally directed outflow openings is useful in liquefying deposits of sediment around quay walls, pilings and similar structure in harbors.

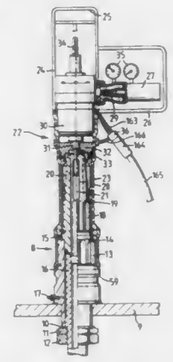
4,943,187
ROV INTERVENTION ON SUBSEA EQUIPMENT

Hans P. Hopper, Aberdeen, Scotland, assignor to British Petroleum Co. p.l.c., London, England

Filed Nov. 16, 1988, Ser. No. 272,192
Int. Cl.[5] F16L *29/00*
U.S. Cl. 405—190 **10 Claims**

1. An actuation point and ROV-operable tool for actuating equipment of a sub-sea module, comprising:
- (a) an actuation point which is a projection from a surface of the sub-sea module, said projection having two tool guidance surfaces of different external diameters, the larger diameter surface being nearer to the module than the smaller diameter surface,
- (b) a ROV-operable tool having a hollow interior adapted to fit over said projection and having two surfaces of different internal diameters, the larger diameter surface being at the end of the tool adjacent the module and adapted to fit closely over the larger diameter surface of the projection, and the smaller diameter surface being adapted to fit closely over the smaller diameter surface of the projection and,
- (c) means for actuating the equipment by action of the tool on the projection in which

the larger diameter surfaces of the tool and projection do not move and provide the means for holding the tool on the projection against the forces applied by the tool to the projection, and



the smaller diameter surfaces provide the means for actuating the equipment, said means being selected from
- a torque function, said smaller diameter surface of the projection being a rotatable spigot rotatable by rotation of the smaller diameter surface of the tool,
- a stab function, said smaller diameter surface enclosing a sleeve which is movable axially by axial movement of the smaller diameter surface of the tool, or
- both torque and stab functions, said smaller diameter surface of the tool having both a rotatable portion and an axially moveable sleeve, the smaller diameter surface of the tool being both rotatable and axially movable.

4,943,188
ROTATING LUG ANCHOR CONNECTOR

George W. Peppel, Arlington, Tex., assignor to Lockheed Corporation, Calabasas, Calif.

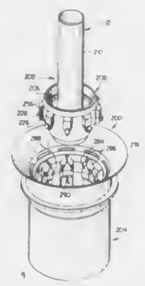
Continuation-in-part of Ser. No. 196,258, May 20, 1988. This application Feb. 6, 1989, Ser. No. 307,053
Int. Cl.[5] E02D *5/74*; **F16B** *1/04*
U.S. Cl. 405—224 **10 Claims**

1. A connector for releasably securing the tether of a tension leg platform to the sea floor, comprising:
- a first member secured to the sea floor;
- a second member secured to the lower end of the tether;
- a ring having a central vertical axis, said ring having at least one load lug and at least one actuation lug, each lug extending horizontally from the ring along a radius centered on the vertical axis;
- a cylindrical receptacle having a central vertical axis, said cylindrical receptacle having at least one load lug, at least a first and second upper guide and at least one lower guide, a vertical slot being formed between said upper and lower guides;
- the ring being attached to one of said members and the cylindrical receptacle attached to the other of said members, the attachment of a selected one of said ring and cylindrical receptacle to the associated member permit-

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ting rotation of said selected one about the vertical axis relative to the associated member; and

the lowering of the tether causing the actuation lug to contact the first upper guide, subsequent lowering of the tether causing the first upper guide to guide the actuation lug into and along the vertical slot and into contact with



the lower guide, the lower guide guiding the actuation lug to position the actuation lug under the second upper guide, upward movement of the tether engaging the actuation lug and second upper guide to guide the load lug on the ring under the load lug on the cylindrical receptacle to secure the tether to the sea floor.

4,943,189

METHOD OF CONTRUCTING A VERTICAL BARRIER WALL IN THE GROUND, AS WELL AS APPARATUS FOR APPLYING THIS METHOD

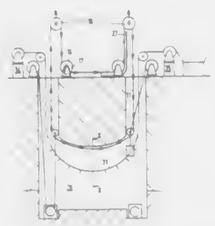
Alexander J. Verstraeten, Knokke-Heist, Belgium, assignor to Dutch Drilling B.V., Oostburg, Netherlands

Filed May 4, 1989, Ser. No. 347,462

Claims priority, application Netherlands, Mar. 6, 1989, 8900541

Int. Cl.[5] E02D *5/20*

U.S. Cl. 405—267 **11 Claims**



1. A method of constructing a vertical barrier wall in the ground, in which two spaced apart, deep wells are excavated in the ground, after which the soil material present between the two wells is removed, characterized by

excavating a substantially horizontal canal interconnecting the two wells near the bottom thereof,

installing in the two wells and the canal connecting said wells a looped, closed chain carrying excavators, the two ends of said chain being interconnected above ground level, and

driving the chain in a direction of circulation, while simultaneously moving the closed chain loop upwards and filling the trench formed thereby with a supporting fluid.

4,943,190

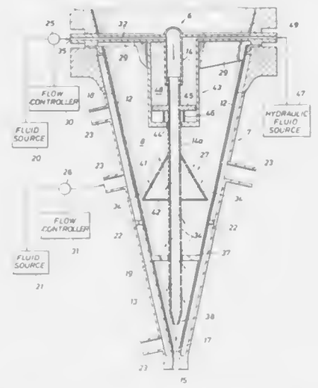
AERATION TUBE DISCHARGE CONTROL DEVICE WITH VARIABLE FLUIDIC VALVE

Thomas S. Dewitz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 21, 1988, Ser. No. 209,605

Int. Cl.[5] F23D *1/00*

U.S. Cl. 406—134 **20 Claims**



1. An apparatus for maintaining a uniform mass flow rate of a particulate solids and gas mixture discharged from a holding vessel to a receiving reactor, said apparatus comprising:

means for introducing said mixture into a containing means having a downwardly converging wall which forms at least one port at the apex thereof for discharging said mixture therefrom;

first tubing means movably secured within said containing means and in axial alignment with said discharge port;

second tubing means within said containing means slideably connected to said first tubing means such that the interior passages of said first and second tubing means are in fluid communication with each other;

means for selectively injecting gaseous fluid under pressure into said second tubing means;

a plurality of aeration ports selectively located in said first tubing means and communicating with the interior passageway therein for discharging said gaseous fluid into said particulate solids and gas mixture;

means for selectively moving said first tubing means in axial relation to said discharge port; and

means for discharging said particulate solids from said containing means.

4,943,191

DRILLING AND THREAD-MILLING TOOL AND METHOD

M. Norbert Schmitt, Schwalbenweg 3, D-8501 Feucht, Fed. Rep. of Germany

Filed Aug. 18, 1989, Ser. No. 396,449

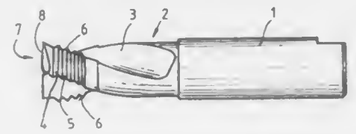
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1988, 3828780

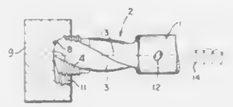
Int. Cl.[5] B23G *5/20*

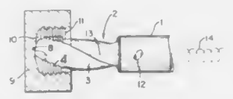
U.S. Cl. 408—1 R **3 Claims**

1. An axially extending drilling and thread-milling tool for forming a threaded bore and having a front end and a rear end spaced apart in the axial direction, an axially extending shank extending from the rear end toward the front end and arranged to be inserted into a driving means, at least one end cutting edge at the front end and extending perpendicularly of the tool axis and spaced from said shank, a milling region extending

axially between said shank and said end cutting edge, a plurality of lead free thread milling teeth formed in said milling region and spaced apart in the axial direction, said thread milling teeth arranged to form a helical thread in the bore, said end cutting edge having a radius extending outwardly from the axis of said tool, said thread milling teeth having a minor radius equal to or greater than the radius of said end cutting edge, the







number of said thread milling teeth being less than the number of thread turns to be formed, said driving means arranged to drive said drilling and thread milling tools so that the axis thereof moves axially, rotationally and along a helical path for forming the core diameter hole in threads inclined relative to the tool axis, the number of thread turns corresponds to the number of orbits traversed in the movement along the helical path.

4,943,192

DRILL BIT HAVING A SHANK WITH GROOVES

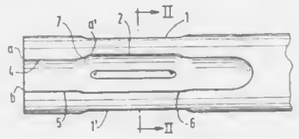
Jean-Jacques Lafforgue, Tournon, and Claude Schwartz, Gournay S/Marne, both of France, assignors to Societe de Prospection et D'Inventions Techniques (S.P.I.T.)

Filed Jul. 25, 1989, Ser. No. 384,369

Claims priority, application France, Aug. 5, 1988, 88 10616

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—226 **4 Claims**



1. A drill bit, comprising:

two diametrically opposed locking grooves;

a first driving groove disposed substantially diametrically opposite a third locking groove; and

a second driving groove superimposed upon, and angularly offset in a circumferential direction with respect to, said third locking groove such that a first lateral edge of said third locking groove projects beyond a first lateral edge of said second driving groove, in said circumferential direction, so as to define therebetween drill bit locking projections, while a second lateral edge of said third locking groove is substantially co-linear with a second lateral edge of said second driving groove so as to be substantially merged therewithin within a drill bit driving zone while simultaneously effectively extending a drill bit friction zone so as to increase the wear resistance thereof and thereby enhance the service life of said drill bit.

4,943,193

LOADING TRAILER

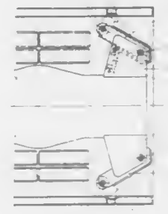
Matti Koskinen, Toijala, and Pekka Brostrom, Oulu, both of Finland, assignors to Rautaruukki Oy, Oulu, Finland

Filed Jul. 6, 1988, Ser. No. 215,615

Claims priority, application Finland, Jul. 8, 1987, 873025

Int. Cl.[5] B60P *1/00*

U.S. Cl. 410—69 **2 Claims**



1. A loading trailer for picking up a flatbed, comprising:

a rigid chassis;

means for raising and lowering said rigid chassis; and

a pair of aligning guides pivotally coupled to the rear of said chassis and being symmetrically arranged in relation to the center line of said chassis, said aligning guides being pivotal about a vertical pivot and including a pair of arms, said arms being extendable about said pivot from a position generally aligned with the side of said chassis to a position extending obliquely outward from said chassis, and extending beyond the width of the main part of the chassis.

4,943,194

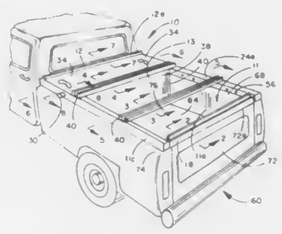
TRUCK CARGO SAFEGUARD

Alfonso Aguilar, 904 Bolivia, El Paso, Tex. 79903

Filed Aug. 31, 1988, Ser. No. 238,773

Int. Cl.[5] B60P *7/14*

U.S. Cl. 410—132 **1 Claim**



1. A modularized system for enclosing selected portions of a pickup truck bed, comprising:

at least one pair of vertical partition holders substantially

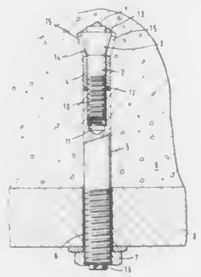
fixedly coupled to each interior side of the pickup bed selected equal distances from the front and gate of the pickup bed, the exterior surface of each holder defining a vertical slot therethrough on the interior side surface of the pickup bed, the vertical slots facing each other;
at least one vertical partition of height slightly less than the height of the pickup bed and of width such that the edges of the partition are slideably removably coupled within the vertical slots through opposing vertical partition holders;
a front frame substantially fixedly coupled along the entire front top edge of the pickup bed;
a pair of substantially symmetrical hollow receptacles, one fixedly coupled along the entire length of each top side of the pickup bed, the surface of each receptacle defining a plurality of identical dimension holes therethrough on the surface of each receptacle closest to the center of the pickup bed, the receptacles differing only in that one receptacle, called a locking receptacle has a locking spacer having surfaces defining locking holes, and the other receptacle, called the passive receptacle has a passive spacer having no holes;
a rear gate frame substantially fixedly coupled along substantially the entire width of the rear gate such as to form a rectangle with the front frame and the pair of locking receptacles when the gate is raised;
a sliding locking spacer disposed inside only the locking receptacle, the sliding locking spacer sliding between two positions, a locked position and an unlocked position, the locking spacer surface defining one hole therethrough for each hole through the locking receptacle and of substantially identical dimensions to the hole through the locking receptacle, the holes through the sliding locking spacer being disposed so as to form a straight line with pairs of holes through the receptacles when the locking spacer is in the unlocked position, and
a fixed locking spacer coupled within the locking receptacle.

4,943,195

EXPANSIBLE ANCHORING PLUG ASSEMBLY

Artur Fischer, Waldachtal, Fed. Rep. of Germany, assignor to Fischerwerke Artur Fischer GmbH & Co. KG, Tumlingen, Fed. Rep. of Germany

Filed Jun. 7, 1988, Ser. No. 203,734
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1987, 3719798
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—55 **12 Claims**



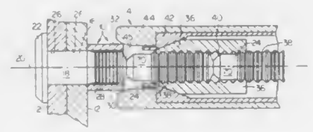
1. An anchoring plug assembly for anchoring an object in a hole having a widening undercut portion at a leading end thereof and pre-drilled in a supporting structure, comprising a bolt terminated with an expander cone which in an inserted position of the plug assembly acts on a bottom of said hole; an expansible sleeve having slots producing expansible sections over a part of a length of said sleeve, said sleeve surrounding said expander cone; and fixing means having a thread by which said fixing means is connected to said expander cone, said fixing means being rotated so that said expansible sleeve is pushed onto said expander cone whereby said expander cone acts on said expansible sections to expand them in said undercut portion, said expander cone having a leading end face and including at said end face at least one securing element which engages the in undercut portion of the hole to secure said expander cone against rotation.

4,943,196

SWAGED COLLAR FASTENER

Warren Dahl, Philadelphia, Pa., assignor to SPS Technologies, Inc., Newtown, Pa.

Filed Aug. 20, 1987, Ser. No. 87,374
Int. Cl.[5] F16B *19/00*
U.S. Cl. 411—361 **33 Claims**



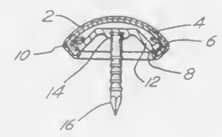
1. A fastener for securing a composite assembly of workpieces, comprising:
a fastener pin having a shank extending along a longitudinal axis of said fastener between a head and locking grooves about said axis; and
a fastener collar having a substantially cylindrical wall about said axis with at least one cavity disposed therein;
at least two workpieces being securable between said fastener pin head and said fastener collar with said fastener pin shank disposed through aligned holes in such work pieces and said fastener collar affixed to said fastener pin by radially compressing said cylindrical wall into said locking grooves, with each said cavity having a predetermined volume and being arranged on said fastener collar to receive material flowing from said cylindrical wall in non-radial directions throughout that compression operation and thereby establish a predetermined compression stress limit for that operation;
wherein at least one of said cavities penetrates through said cylindrical wall.

4,943,197

NON-PERFORATED NAIL BUTTON

Lenard Baritz, Highland Park, Ill., assignor to Handy Button Machine Company, Melrose Park, Ill.

Filed Aug. 25, 1989, Ser. No. 398,422
Int. Cl.[5] F16B *19/00, 33/00, 15/02*
U.S. Cl. 411—375 **2 Claims**



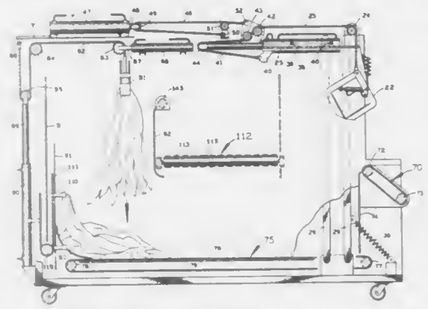
1. A nail button consisting of a metal button cap having an inward and downward slanting edge, a base assembly, and decorative material, the base assembly consisting of an attaching means having an outwardly tapered flat end, and a non-perforated metal collet having a lipped recess which retains the tapered flat end of the attaching means, the non-perforated metal collect further having an upwardly and outwardly slanting peripheral edge, the inwardly and downwardly slanting edge of the metal button cap being attached to said peripheral edge, the decorative material covering the metal button cap and being held between the peripheral slanting edge of the collet and edge of the metal button cap.

4,943,198

APPARATUS FOR SEPARATING LAUNDRY ARTICLES

Stanley G. McCabe, Lubbock, Tex., assignor to Jensen Corporation, Fort Lauderdale, Fla.

Filed Sep. 5, 1989, Ser. No. 403,301
Int. Cl.[5] B65G *47/12*
U.S. Cl. 414—13 **38 Claims**



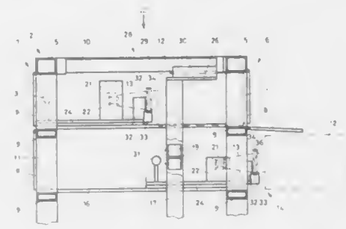
1. In an apparatus for separating laundry articles from a pile of such articles, the combination of:
a housing having an entry end;
an inlet conveyor at said entry end of the housing operable to carry laundry articles into the housing from outside said entry end;
an entry clamp having selectively operable means for grasping a pile of laundry articles and for releasing said laundry articles;
operating means for selectively lowering and raising said entry clamp and for moving said entry clamp between a position inside said housing adjacent said entry end and a position outside said housing at said entry end;
said operating means being operable:
(a) to move said entry clamp from a raised position inside said housing to a lowered position outside said housing for engaging a pile of laundry articles outside the housing at said entry end; and
(b) after said selectively operable means in said entry clamp has caused said clamp to grasp laundry articles in the pile, to move said entry clamp to a raised position inside said housing adjacent said entry end;
said inlet conveyor being operable to carry into the housing the lower portions of said laundry articles hanging down from said entry clamp as said entry clamp moves from said lowered position outside said housing to said raised position inside said housing:
said selectively operable means in said entry clamp being operable to cause said raised entry clamp inside said housing to release said laundry articles;
a lower conveyor inside the housing for carrying the laundry articles, said conveyor having an entry end adjacent said entry end of the housing and an opposite exit end;
means providing a baffle at said exit end of said lower conveyor against which the laundry articles pile up;
a separator clamp above said lower conveyor having selectively operable means for grasping laundry articles and for releasing said articles;
means for lowering said separator clamp into close proximity to said baffle and for raising said separator clamp and moving it away from said baffle above said lower conveyor toward said entry end of the lower conveyor;
said selectively operable means in said separator clamp being operable to cause it to grasp laundry articles when lowered into close proximity to said baffle and to release said laundry articles and drop them onto said lower conveyor when raised and moved away from said baffle toward said entry end of the lower conveyor;
endless flexible chain means extending up past said baffle;
drive means for moving said chain means up past said baffle;
a plurality of removal clamps carried by said chain means at intervals along its length and movable in succession into engagement with the laundry articles piled against said baffle;
means for holding open each of said removal of clamps when it reaches the laundry articles piled against the baffle;
and means for closing each of said removal clamps as it moves up past the baffle to grasp one of said laundry articles piled against the baffle.

4,943,199

MACHINE TOOL STORAGE APPARATUS

Gerhard Hillen, Rorschacherberg, Switzerland, assignor to Starrfrasmaschinen AG, Rorschacherberg, Switzerland

Continuation of Ser. No. 24,302, Mar. 10, 1987, abandoned. This application Mar. 3, 1989, Ser. No. 318,722
Int. Cl.[5] B65G *1/10*
U.S. Cl. 414—331 **5 Claims**



1. Machine tool storage apparatus comprising:
a modular tool magazine provided with a plurality of horizontally extending parallel separate compartments disposed vertically one above the other, said tool magazine being liftable and stackable on a like tool magazine;
a plurality of elongated tool units disposed in said compartments, each compartment containing a like number of said units, the units in each compartment being disposed in spaced side by side positions across the width of the compartment, each unit in any compartment being vertically aligned with the correspondingly positioned units in said vertically disposed compartments;
horizontally displaceable extracting means supporting each unit for enabling each unit to be rectilinearly separately moveable back and forth along the length of its compartment to either extend the unit out of its compartment into a position for subsequent transfer or to retract the corresponding unit back into its compartment, said extracting means including a like plurality of extracting devices, each extracting device being coupled to a corresponding unit via a corresponding retaining and positioning ring;
displacement means for selecting any one unit and moving said displaceable extracting means coupled to the selected unit to cause the selected unit either to be extended or to be retracted, said displacement means including a displacing mechanism coupled to said extracting means;
said displacement means including a plurality of horizontally spaced vertically extending arm means, each arm means being associated with a corresponding group of adjacent vertically and horizontally spaced tool units in all com-

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partments, each arm means being adapted to be detachably connected to any selected unit in the corresponding group and being rectilinearly moveable back and forth along the length of the compartments;

the displacement means further including a pneumatic cylinder and means for connecting said cylinder to all arm means for moving all arm means back and forth simultaneously;

said connecting means including a crosspiece connected to all of said arm means;

each arm means being provided with a plurality of detachable coupling devices, each coupling device being associated with a corresponding one of the tool units in the corresponding group;

each extracting device supporting thereon a coupling catch having a slot;

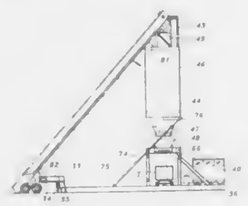
each coupling device including a drive means connectable to a pivotable coupling hook which can be locked in the slot of said coupling catch of a corresponding extracting device.

4,943,200

PORTABLE SELF-ERECTING ASPHALT STORAGE APPARATUS AND METHOD OF ERECTING SAME

M. Earl Edwards, Hixon, Tenn., and James G. May, Rising Fawn, Ga., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Filed Jan. 12, 1989, Ser. No. 296,492
Int. Cl.[5] B65G *69/00*
U.S. Cl. 414—332 **11 Claims**



1. A portable self-erecting storage apparatus for temporarily storing and dispensing asphaltic mix and the like and comprising:

a material conveying assembly comprising a supporting frame, an elongate material conveyor mounted to said frame and defining a material inlet and a material outlet end, wheeled ground engaging carriage means pivotally mounted to said frame adjacent said inlet end of said conveyor for permitting highway transport of said material conveying assembly and for permitting pivotal movement of said frame and said conveyor about a horizontal transverse first pivotal axis and such that said conveyor may be pivotally moved between an initial generally horizontal position and an upwardly inclined position wherein said outlet end is elevated,

a material storage assembly comprising an elongate main frame, wheeled ground engaging carriage means mounted to said main frame for permitting highway transport of said material storage assembly, a secondary frame including a forward end portion and an opposite rear end portion, with said rear end portion being pivotally mounted to said main frame for pivotal movement about a horizontal second pivotal axis, and a storage container mounted to said secondary frame and positioned between said forward and rear opposite end portions, and such that said secondary frame and said container may be pivoted about said second pivotal axis between an initial generally horizontal position and a vertical upright position, and lifting means mounted between said main frame and said secondary frame for pivoting said secondary frame and said container between said initial position and said upright position, and

interconnecting means for releasably and pivotally interconnecting said forward end portion of said secondary frame of said material storage assembly with said supporting frame of said material conveying assembly at a location adjacent said outlet end of said conveyor and while said material conveying assembly and said material storage assembly are each in their respective initial positions, and so as to permit relative pivotal movement about a horizontal third pivotal axis,

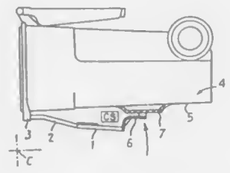
whereby the conveying assembly and the storage assembly may be longitudinally aligned with the outlet end of said conveyor being opposed to said forward end portion of said secondary frame, then interconnected by said interconnecting means for relative pivotal movement about said third pivotal axis, and with said first, second, and third pivotal axes being parallel to each other, and then collectively lifted by said lifting means to an operative position wherein said container is upright and said outlet end of said conveyor is elevated and disposed above said container.

4,943,201

MECHANISM FOR HANDLING GARBAGE PAILS

Jean Billon, Saint-Vallier, France, assignor to Compagnie Plastic Omnium, S.A., Lyons, France

Filed May 18, 1988, Ser. No. 195,619
Claims priority, application France, Apr. 15, 1987, 87 05394
Int. Cl.[5] B65F *3/04*
U.S. Cl. 414—408 **2 Claims**



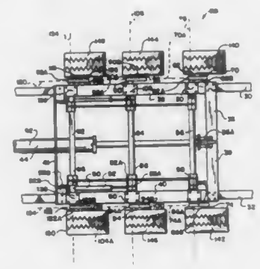
1. A gripping mechanism in a bin-dumping device for gripping portable waste bin bodies having planar frontal walls with collars at the upper end thereof to empty said bin bodies into a collection truck, said mechanism comprising a chassis connected to the dumping device, characterized by the fact that the chassis at upper portions thereof has at least one comb-shaped section adapted to be engaged under the collar provided at the upper end of the frontal wall of the bin body and the chassis having, at lower portion thereof, at least one suction cup support means adapted to contact the frontal face of a bin bodies; said one or more suction cup support means being controllable for being applied forcefully to the bin body during at least part of its displacement path during the operation of the dumping device; each support means being connected to a suction circuit including solenoid valves which place the one or more suction cup support means in communication with a vacuum pump adapted to be activated by a motor; said solenoid valves being controlled by contact switches, said contact switches being disposed in the displacement path of the dumping device; whereby said suction cup support means are controlled by said contact switches.

4,943,202

TILTING MOBILE PLATFORM

Donald Galloway, 7605 DeSoto Hwy., Bradenton, Fla. 33529

Filed Mar. 14, 1988, Ser. No. 167,846
Int. Cl.[5] B60P *1/18*
U.S. Cl. 414—475 **28 Claims**



23. A tilting mobile platform comprising:

a platform for supporting and carrying articles positioned thereon and having a first side, a second side, a first end and a second end;

an axle supporting frame having a first side and a second side with said first side being slidably secured to said platform first side and said second side being slidably secured to said second platform side such that said axle supporting frame slides between said first end and said second end of said platform;

a first axle having a first end and a second end with said first end of said axle being rotatably attached to said first side of said axle supporting frame and said second end of said first axle being rotatably attached to said second side of said axle supporting frame such that said axle is transversely mounted on said axle supporting frame relative to a path of movement of said axle supporting frame along said platform sides;

an axle supporting frame moving means for moving said axle supporting frame back and forth along said first and said platform sides between a first position wherein said axle supporting frame is positioned between said platform first end and said platform second end and a second position wherein said axle supporting frame is positioned proximate said platform first end;

first and second ground engaging wheels; and

means attached to said first and second axle ends for connecting said first and second ground engaging wheels respectively to said first and second axle ends, said attaching means including means for changing the distance between said platform and a center point of said ground engaging wheels.

4,943,203

RETRIEVER TRUCK

John Bohata, 25 Champlain St., Port Jefferson Station, N.Y. 11776

Filed Feb. 6, 1989, Ser. No. 306,420
Int. Cl.[5] B65G *67/02*; B60P *1/64*
U.S. Cl. 414—486 **7 Claims**

1. A vehicle having a flat bed for transporting a waste product container having fork receiving means which are normally located below said bed when container is at ground level comprising:

a. a groove formed in said bed extending along the central axis of said bed;

b. spaced tracks in the bottom of said groove extending the length of said groove;

c. carriage means mounted for travel on said tracks;

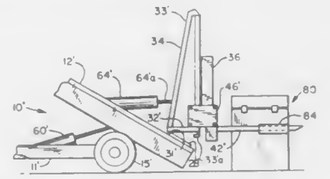
d. means for driving said carriage means along the length of said groove;

e. first vertically extending means mounted on said carriage means;

f. second vertically extending means located to the rear of and adjacent to said first vertically extending means, said second vertically extending means being movable vertically;

g. free floating means embracing both of said adjacent vertically extending means so that said vertically extending means remain adjacent each other and at the same time permit vertical movement of said second vertically extending means;

h. rearwardly extending fork means mounted on said second



vertically extending means capable of engaging said fork receiving means of said container;

i. means for actuating said second vertically extending means for vertical movement;

j. said second vertically extending means clearing the rear of said vehicle when said carriage means is moved to the rear of said vehicle, whereby said secodn vertically extending means can be lowered to engage a container at ground level, raise said container above the bed of said vehicle, and said carriage means can be moved toward the front of said vehicle so that said container can be lowered to rest completely on said bed; and

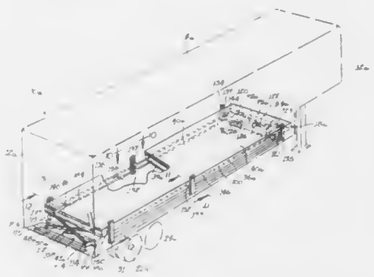
k. means for tilitng the bed of said vehicle to enable said fork means to engage said container at ground leverl without having to drop below the level of said bed.

4,943,204

DROP FRAME TRAILER CONSTRUCTION

Rodney P. Ehrlich, 1903 Tippecanoe Springs Rd., Monticello, Ind. 47960

Filed Nov. 30, 1988, Ser. No. 277,958
Int. Cl.[5] B60P *1/02*
U.S. Cl. 414—495 **11 Claims**



9. A vehicle comprising a mobile frame, side and top walls on said frame defining a cargo compartment of predetermined width and height, a floor assembly movable between a lowered positioned and a raised position for adjusting the height of said

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compartment, lifting means between said frame and said floor assembly for raising and lowering said floor assembly, and retractable support means for supporting said floor assembly in the raised position, said support means including a shaft rotatably carried on said floor assembly and a plurality of finger elements carried by said shaft and movable between extended supporting positions and retracted in operative positions upon rotating of said shaft.

4,943,205

EARTH MOVING MACHINE

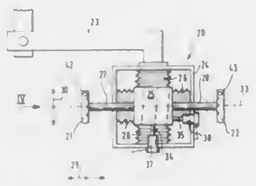
Heinz Schütt, Gelbelstrasse 5, 7430 Metzingen, Fed. Rep. of Germany

Filed Oct. 28, 1988, Ser. No. 264,329

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, 3738281

Int. Cl.[5] E02F *3/28*

U.S. Cl. 414—680 **8 Claims**



1. An earth moving machine, comprising an earth moving tool; a plurality of drive elements arranged to move said earth moving tool in different directions; and control means operative for actuating said drive elements, said control means including a single control member which is freely movable from an initial position toward all sides and additionally turnable about at least one turning axle, said control means being further provided with at least one handle which is fixedly connected with said control member, said control means also having electrical sensors which respond to the movements of said control member in three mutually perpendicular directions and to the turning of the control member, said sensors being associated with said drive elements so that each of said drive elements causes a movement of said earth moving tool in a direction-synchronous manner with the movements and turning of said control member, said control member having a cubic shape, said control means including a housing mountable on a chassis of the earth moving machine and a plurality of spring bellows arranged at all six sides of said control member so that said control member is floatingly supported between said spring bellows in said housing, and urged toward a center of said housing.

4,943,206

AUTOMATIC CARTON SUPPLY METHOD

Masao Watanabe, Hachioji; Shuri Mizoguchi, Kunitachi; Satoshi Kawai, Sagamihara; Kiyohiko Takahashi, Sagamiko, and Toyokiti Tanimura, Akishima, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 12, 1989, Ser. No. 364,272

Claims priority, application Japan, Jun. 16, 1988, 63-149487; Jun. 16, 1988, 63-149488

Int. Cl.[5] B65B *25/02*

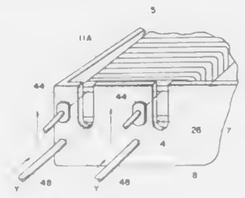
U.S. Cl. 414—786 **1 Claim**

1. The method of supplying a plurality of cartons to a carton-packaging machine, comprising the steps of

providing a plurality of flatened cartons stacked on edge in a line in a package so that two cutouts on each of said cartons are lined to form two grooves on two parallel sides of said stack;

inserting two bar-shaped means into said grooves respectively in the stacking direction of said cartons;

pressing said cartons to be together along the inserting direction of said bar-shaped means by a plurality of pressing means, being adjustable for different numbers of stacked cartons, so that the cartons are placed at the central portion of said bar-shaped means;



pulling out said cartons from said package with said bar-shaped means; and

supplying said cartons to said carton-packaging machine with said bar-shaped means.

4,943,207

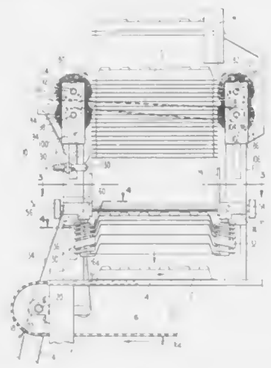
APPARATUS FOR DENESTING AND FEEDING CARTONS TO A CONVEYOR

Alexander R. Provan, Canandaigua, and David G. Vanderlee, Macedon, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 45,504, May 4, 1987, Pat. No. 4,867,632. This application May 22, 1989, Ser. No. 354,600

Int. Cl.[5] B65G *59/10*

U.S. Cl. 414—797.7 **1 Claim**



1. Apparatus for sequentially removing articles from a stack of nested articles and for controlling their movement to a location remote from the stack comprising:

(a) supporting means for supporting a plurality of the nested articles in a vertical stack; and

(b) denesting means positioned beneath said supporting means to receive the nested articles, said denesting means comprising a pair of feed screws positioned in spaced relation to receive opposite ends of the articles for support therebetween, each feed screw being of the opposite hand for counter rotation and provided with four different operating sections, the pitch in the first section of each feed screw matching the spacing of the nested articles, the length of the first section of each feed screw being sufficient to engage a plurality of the nested articles before any separation action of the feed screws begins so as to distribute the weight of the articles over a plurality of articles rather than only the bottom article of the stack thereby avoiding distortion of the articles and permitting the lead edge of the feed screws to enter the nested stack, each of said feed screws having a second section having an increased pitch for separating the bottommost article of the stack, each of said feed screws having a third section in which the groove pitch is zero for 120° of screw rotation, and each of said feed screws having a fourth section with a pitch approximately equal to the pitch of the first section, the axis of said feed screws being inclined with respect to the vertical axis of the stack so that the grooves in said first section are substantially horizontal whereby the articles ride substantially flat in the grooves.

4,943,208

MULTI-STAGE LATERAL CHANNEL COMPRESSOR

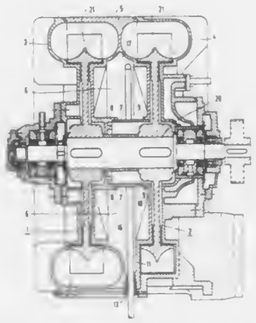
Siegfried Schoenwald, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 11, 1989, Ser. No. 350,718

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818374

Int. Cl.[5] F04B *5/00*

U.S. Cl. 415—175 **7 Claims**



1. A multi-stage lateral channel compressor comprising:

a plurality of compressor stages, each compressor stage including a housing comprising at least two housing shells and an impeller; the compressor stages being arranged axially one behind another and mechanically interconnected so as to form an interspace between the housings of the individual compressor stages;

a common driving shaft for driving the impellers of the individual compressor stages;

means for sealing the interspace both from the outside and also against the driving shaft;

a supply of coolant; and

an inlet orifice and an outlet orifice communicating the supply of coolant with the interspace, whereby coolant is supplied to the interspace via the inlet orifice, flows through the interspace and is evacuated via the outlet orifice.

4,943,209

HUB FOR A PLASTIC BLOWER IMPELLER

Richard F. Beehler, Franklin, Tenn., assignor to Heil-Quaker Corporation, Lavergne, Tenn.

Continuation of Ser. No. 217,402, Jul. 11, 1988, abandoned. This application Jan. 16, 1989, Ser. No. 464,561

Int. Cl.[5] F04D *29/20*

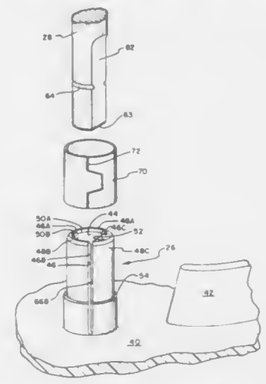
U.S. Cl. 416—204 R **11 Claims**

1. A combustion blower comprising:

a housing having first and second housing shell members secured together to define a housing cavity, said first housing shell member including an aperture;

a motor mounted on said first housing shell member, said motor including a rotatable driving shaft which extends into said housing cavity through said aperture in said first housing shell member, said driving shaft including an annular groove;

a rigid plastic blower impeller removably mounted on said driving shaft for rotation therewith, said blower impeller including a generally planar disk, a hub mounted on said



disk and having an end facing said first housing shell member, said hub including a bore in which said driving shaft is received, the wall of said bore including a rounded transverse ridge intermediate said disk and said hub end, said transverse ridge adapted to engage with said annular groove of said driving shaft, said hub including a plurality of axial slots, and a resilient expandable clamp surrounding and engaging said hub, whereby said driving shaft may be assembled into said bore while said clamp is engaged with said hub.

4,943,210

PUMP CONTROL SYSTEM, LEVEL SENSOR SWITCH AND SWITCH HOUSING

James R. Bailey, Jr., 2447 Lexington Rd., Lancaster, Ky. 40444, and Jean D. Ashcraft, 108 Robin Rd., Nicholasville, Ky.

Continuation-in-part of Ser. No. 252,764, Oct. 3, 1988, abandoned. This application Feb. 7, 1989, Ser. No. 308,934

Int. Cl.[5] F04B *49/00*

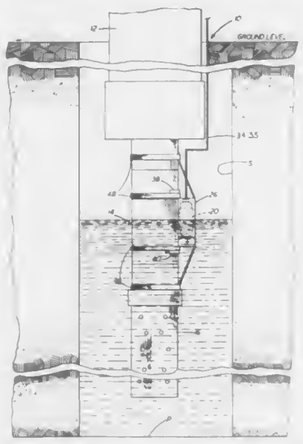
U.S. Cl. 417—12 **12 Claims**

1. A control system for a pump adapted for pumping liquid from an oil well shaft through a production string comprising:

a control circuit including timing means remotely located from said oil well shaft, said timing means maintaining operation of said pump for a predetermined period of time so as to pump a selected volume of liquid from said well and maintain substantially the same volume of liquid in said well at the end of each pumping cycle;

means for sensing the liquid level in said oil well shaft and

actuating said timing means in response to said liquid rising to a predetermined level; and



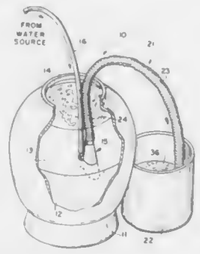
means for protecting said level sensing means from impact damage when said level sensing means is positioned in said oil well shaft.

4,943,211

SAND FILTER CLEANING SYSTEM

Alan D. V. Boegh, 201 Grace Blvd., Altamonte Springs, Fla. 32714

Filed Jan. 7, 1987, Ser. No. 1,043
Int. Cl.[5] F04F *5/44*
U.S. Cl. 417—131 **5 Claims**



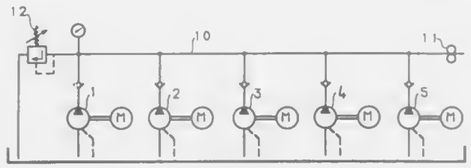
1. A sand filter cleaning system comprising in combination:
a suction head having an enlarged intake opening for sucking materials thereinto;
an exhaust hose connected to said suction head for receiving materials sucked through said suction head;
a water pressure hose connected between a water source under pressure and said suction head for directing water under pressure into said suction head;
said suction head having a jet nozzle positioned to direct water under pressure from said water pressure hose toward said exhaust hose to create a suction in said suction head opening, and said suction head having means to stir up material in the mouth of said suction head, said means having a second water pressure nozzle positioned to direct water under pressure in front of the opening of said suction head whereby sand and other materials can be removed from a sand filter with water under pressure; and
means for creating a siphon in said exhaust hose to increase the suction therein whereby the sand in the sand filter can be cleaned.

4,943,212

MEANS FOR FEEDING FLUID INTO A PRESSURE CONDUIT

Hubert Bernd; Pierre Heiby, both of Lohr/Main, and Alfred Sitter, Gemünden, all of Fed. Rep. of Germany, assignors to Mannesman Rexroth GmbH, Fed. Rep. of Germany

Filed Nov. 23, 1988, Ser. No. 275,438
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1987, 3740344
Int. Cl.[5] F04B *41/06*
U.S. Cl. 417—7 **15 Claims**



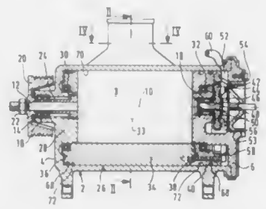
1. Means for feeding fluid into a pressure conduit while maintaining a substantially constant pressure independent of fluid throughput, the fluid feeding means comprising:
a master pump of variable delivery rate dischargeable into said pressure conduit, said master pump having an upper switching point and a lower switching point, both switching points predetermined between a minimum master pump delivery rate and a maximum master pump delivery rate; and
at least one variable displacement switching pump dischargeable into said pressure conduit, said at least one switching pump operable in either one of two switching pump end positions wherein the first end position corresponds to a minimum switching pump delivery rate of zero, and a second end position corresponds to a maximum switching pump delivery rate, said at least one switching pump switchable from one end position to another when a master pump delivery rate coincides with one of said switching points.

4,943,213

INTERNAL AXIS ROTARY PISTON MACHINE WITH MESHING ENGAGEMENT BETWEEN OUTER AND INNER ROTORS

Arno Förster, Worms; Gerhard Oberholz, Freinsheim, and Christiane Römuss, Beindersheim, all of Fed. Rep. of Germany, assignors to Aktiengesellschaft Kuehnle, Kopp & Kausch, Frankenthal, Fed. Rep. of Germany

Filed May 16, 1988, Ser. No. 194,545
Claims priority, application Fed. Rep. of Germany, May 14, 1987, 3716083
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—310 **10 Claims**



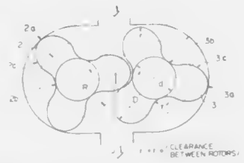
1. An internal axis rotary piston machine with meshing engagement between an outer rotor surrounded by a housing and having n+1 recesses arranged between engagement parts and an inner rotor with n engagement parts which rotate uniformly at a speed ratio of (n+1):n when there is tooth-flank type contact between inside faces of the outer rotor and outside faces of the inner rotor so that working spaces are formed in the recesses of the outer rotor and move past inlet and outlet orifices of the housing, wherein the housing (2) is constructed in one piece with a pot-shaped form having a bottom (4) on the drive side, wherein said bottom (4) comprises an outer face for a bearing (30) of the outer rotor (26), particularly on a ring (28) extending axially into the end of the outer rotor (26), wherein the outer rotor (26) carries a sealing ring (68) at each of its axial ends, and wherein an annular groove (72) is provided at each axial end of said outer rotor, each said annular groove being positioned axially between the working spaces of said machine and one of the sealing rings (68).

4,943,214

TWO-SHAFT TYPE ROTARY MACHINE HAVING A TIP CIRCLE DIAMETER TO SHAFT DIAMETER WITHIN A CERTAIN RANGE

Yoshihiro Niimura; Ritsuo Kikuta, and Katsuaki Usui, all of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 243,630, Sep. 13, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 449,420
Claims priority, application Japan, Sep. 19, 1987, 62-235274
Int. Cl.[5] F04C *18/18, 25/02*
U.S. Cl. 418—9 **2 Claims**



1. A two-shaft type rotary machine for use in producing vacuum comprises, a housing having a suction port, a delivery port, and a plurality of stages, each stage having two rotors in combination, said rotors being disposed within said housing and having respective shafts rotating in opposite directions to each other to deliver a gas from said suction port toward said delivery port:
wherein each of said rotors has tip and root portions defined by circular arcs, respectively, said tip and root portions being made smoothly continuous with each other through an involute curve, a clearance between said rotors being maintained at a substantially constant level, with the ratio D/d of the outer diameter D of the tip circle of each rotor to the shaft diameter d of the root circle being selected to fall within the range expressed as follows:

$$(n+1)/(n-1) \leqq D/d \leqq [1+\sin(180°/2n)]/[1-\sin(180°/2n)],$$

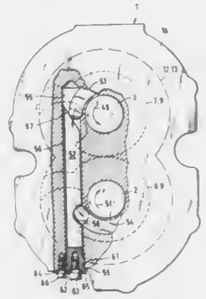
wherein n is the number of lobes of the rotor and $n \geqq 3$, said two shafts being elongated, and a plurality of rotors being provided on each of said shafts to constitute a plurality of stages.

4,943,215

MULTISTAGE VACUUM PUMP WITH BORE FOR FOULING REMOVAL

Hanns-Peter Berges, Cologne, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Feb. 17, 1989, Ser. No. 313,165
Claims priority, application European Pat. Off., Feb. 29, 1988, 88102986.2; Oct. 25, 1988, 88117706.7
Int. Cl.[5] F04C *18/18, 29/00*
U.S. Cl. 418—9 **9 Claims**



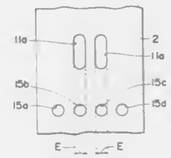
1. A multistage vacuum pump comprising:
a case;
at least two pump chambers in the case;
at least one passage in the case and connecting the pump chambers together;
a bore in the case leading outwards and including the passage; and
a plug for closing the bore, the plug including the longitudinal bore having an outer end, a tube section at the outer end of the bore, and a flange on the tube section.

4,943,216

SLIDING-VANE ROTARY COMPRESSOR

Masahiro Iio, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1989, Ser. No. 428,043
Claims priority, application Japan, Nov. 4, 1988, 63-278942
Int. Cl.[5] F04C *18/344*
U.S. Cl. 418—15 **6 Claims**



1. A sliding-vane rotary compressor comprising:
(a) a compressor body composed of a cylinder and a pair of side blocks attached to opposite ends of said cylinder;
(b) a rotor rotatably disposed in said compressor body and carrying thereon a plurality of radially movable sliding vanes, there being defined between said cylinder, rotor and vanes a plurality of compression chambers which vary in volume with each revolution of said rotor;
(c) a plurality of discharge holes formed in said cylinder and arranged in a direction parallel to a longitudinal axis of said cylinder;
(d) a plurality of discharge valves disposed on said cylinder and normally closing said discharge opening, respectively,

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said discharge valves being displaceable to open the corresponding discharge openings when they are forced to open by a compressed fluid, thereby permitting a compressed fluid to flow out from said compression chambers;

(e) first valve-opening limiting means for limiting the opening of at least two endmost ones of said discharge valves to a first predetermined value; and

(f) second valve-opening limiting means for limiting the opening of the remaining discharge valves to a second predetermined value larger than said first predetermined value.

4,943,217

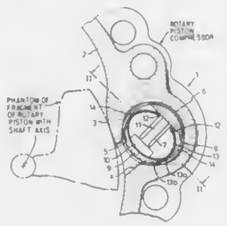
DELIVERY VALVE OF A ROTARY PISTON COMPRESSOR

Roland Nuber, Lindau, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 27, 1989, Ser. No. 303,542

Int. Cl.[5] F04C *29/08*

U.S. Cl. 418—270 **4 Claims**



1. In a pressurized gas delivery valve that includes a housing in the form of a cylindrical sleeve having valve slots that extend in a circumferential direction and in front of which are disposed cylindrically bent valve reeds that in an opening position rest against travel-receivers in an elliptically bent configuration, with said sleeve being disposed in a wall portion free of any screw fastening as fitted snugly directly of a rotary piston compressor for gaseous medium, said sleeve being disposed in said wall portion in a bore thereof that extends parallel to a shaft axis of said compressor, with said bore communicating with a respective delivery chamber of said compressor via delivery ports in said wall portion, and in the radial direction communicating on at least one side with a delivery line, comprising the improvement therewith wherein:

facing walls of said sleeve and said bore are recessed with milled cuts via a groove cutter in the vicinity of said valve reeds to form pockets to permit gaseous medium to flow about bulged-out portions of said valve reeds in said opening position thereof and to obtain a uniform transition of the walls of these pockets from inner surfaces of said sleeve.

4,943,218

GRANULATION CHAMBER FOR EXTRUDERS OF MATERIALS SUCH AS PLASTICS

Giuseppina Sabbioni, Santa Maria Maddalena, Italy, assignor to A. S. T. Automatismi Speciali Termoplastici S. r. l., Occhiobello, Italy

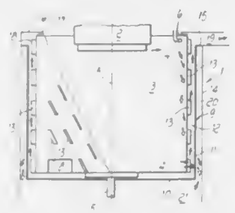
Filed Sep. 8, 1988, Ser. No. 241,726

Claims priority, application Italy, Sep. 23, 1987, 3616 A/87

Int. Cl.[5] B29B *9/16*

U.S. Cl. 425—10 **13 Claims**

3. A granulation chamber for a material extruder, a head of the material extruder rotating about a vertical axis and projecting a plurality of material granules outwardly therefrom due to centrifugal forces created by rotation thereof, said granulation chamber comprising a rotatable cylindrical drum and a fixed sieve-like container, said rotatable cylindrical drum being disposed inside said fixed sieve-like container to thereby define therebetween a first chamber, said rotatable cylindrical drum being arranged with respect to the material extruder such that the plurality of material granules projecting from the material extruder strikes an inner face of said rotatable cylindrical drum, said rotatable cylindrical drum being provided with water supply means, said water supply means supplying water to the inner face of said rotatable cylindrical drum so as to mix water with the plurality of material granules, at least one opening being provided downwardly on said rotatable cylindrical drum, elevating means being provided inside said first chamber for raising the plurality of material granules inside said first chamber, said fixed sieve-like container being adapted to act as a sieve to allow exit of water from said first chamber while retaining the plurality of material granules in said first chamber, removal path means communicating upwardly with said



first chamber being provided for removal therefrom of said plurality of material granules, whereby cooling water and the plurality of material granules are joined at the inner face of said rotatable circular drum, rotation of said rotatable circular drum causes retention of cooling water with the plurality of material granules on the inner face of said rotatable circular drum while gravity causes the cooling water with the plurality of material granules to descend downwardly on the inner face of said rotatable circular drum, said at least one opening allows for exiting of cooling water and the plurality of material granules from inside said rotatable cylindrical drum into said first chamber, said elevation means cause raising of said plurality of material granules inside said first chamber to said overlying duct while said fixed sieve-like container allows for exiting of cooling water through said sieve-like container from said first chamber.

4,943,219

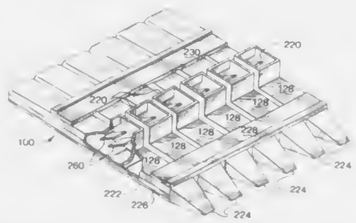
HOLLOW CORE CONCRETE EXTRUDER

Richard C. Nash, New Prague, Minn., assignor to Fabcon, Inc., Savage, Minn.

Filed Jul. 27, 1989, Ser. No. 385,785

Int. Cl.[5] B28B *1/14*

U.S. Cl. 425—64 **5 Claims**



1. In a slipform frame for use in forming concrete panels on a casting pallet which includes a floor and a pair of parallel side walls, said slipform frame having at least one slipform suspended therefrom above the floor and between the side walls of said casting pallet, each of said slipforms having a pair of side walls and a top surface, each of said slipforms having a core shaping material receiving port located in the top surface thereof between front and rear portions thereof, the front portion of each of said slipforms having a closed bottom, while the remainder of said slipform has an open bottom, said slipform also including a closed extreme front portion in which the side walls and top and bottom surfaces of said slipform are tapered inwardly to form a markedly reduced cross sectional closed end; the improvement comprising:

at least one baffle plate member fixedly positioned within each of said core shaping material receiving ports at an angle such that core material entering said port is deflected toward the rear of said slipform.

4,943,220

APPARATUS FOR COOLING MELT SPUN FILAMENT BUNDLES

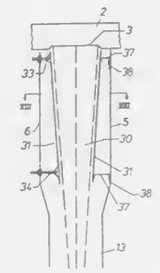
Franz Fourne, Alfter-Impekoven, Fed. Rep. of Germany, assignor to Fourne Maschinenbau GmbH, Bonn, Fed. Rep. of Germany

Filed Apr. 18, 1985, Ser. No. 724,560

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414602

Int. Cl.[5] D01D *5/092*

U.S. Cl. 425—66 **13 Claims**



1. Apparatus for cooling and solidifying a melt spun filament bundle, comprising:

a quench chamber having side walls;

a zone defined by the perimeter of a filament bundle to be quenched disposed between said walls;

an air rectifier positioned on one side of said zone and adapted to provide an air stream flowing across said zone;

each of said side walls being spaced at a constant distance of not more than 25 millimeters from the adjacent boundary of said zone and converging in the direction of air flow;

a pressure or plenum chamber located in front of said rectifier; and

an air permeable wall positioned on the side of said zone opposite said rectifier.

4,943,221

ROTATIONAL MOULDING MACHINE

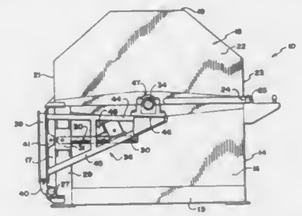
Peter Friesen, R.R.#1, Box 314, Group 24, Winkler, Manitoba, Canada (R0G 2X0)

Filed May 8, 1989, Ser. No. 349,359

Int. Cl.[5] B29C *41/06*

U.S. Cl. 425—73 **11 Claims**

1. A rotational moulding machine comprising a housing that encloses and defines a chamber for receiving and processing a mould, a spindle arm member having means thereon for attaching said mould thereto and being rotatable for rotatably moving said mould, support means for said spindle arm member and means mounted on said support means for driving said spindle arm member, and door means in said housing arranged for movement into an open position to allow access into said housing and into a closed position to fully close said housing for processing of said mould, said support means being



mounted to said door means for movement therewith such that movement of said door means into said open position cause the support means, the spindle arm member and the mould to be moved to a position exteriorly of the housing for loading and unloading the mould.

4,943,222

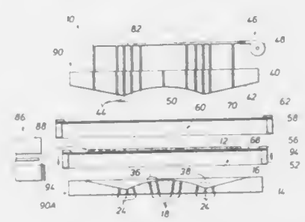
APPARATUS FOR FORMING PREFORMED MATERIAL

Nazim S. Nathoo, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 17, 1989, Ser. No. 338,683

Int. Cl.[5] B28B *21/38, 21/40*

U.S. Cl. 425—89 **2 Claims**



1. An apparatus for use in shaping fibrous preform material, said preform material coated with a sizing used to dimensionally stabilize said material after cooling of said sizing, said apparatus comprising;

a lower mold having non-planar lower mold surface, said non-planar lower mold surface having a first fluid lubrication opening defined therethrough placed in fluid communication with a first fluid lubrication means, said non-planar lower mold surface further including a vacuum/vent opening defined therethrough placed in fluid communication with vacuum/vent means, said non-planar lower mold surface having;

an upper edge section, and

a lower recessed section located at a lower elevation than said upper edge section, said first fluid lubrication opening defined through a portion of said upper section, said vacuum/vent opening defined through a portion of said lower recessed section,

an upper mold having a non-planar upper mold surface, said non-planar upper mold surface having a second fluid lubrication opening defined therethrough placed in fluid communication with a second fluid lubrication means, said non-planar upper mold surface further including a fluid vent opening defined therethrough,

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a lower sheet frame having a first opening defined upwardly therethrough and having first clamp means located about the upper periphery thereof,

an upper sheet frame having a second opening defined upwardly therethrough and having second clamp means located about the upper periphery thereof, the inner periphery of said upper sheet fame sized to fit in close spaced relationship adjacent the outer periphery of said lower sheet frame, the inner periphery of said lower sheet frame sized to fit in close spaced relationship adjacent the outer periphery of said lower mold,

first seal means operatively engaged between said lower mold and said lower sheet frame to form a fluid-tight seal therebetween,

second seal means operatively engaged between said lower sheet frame and said upper sheet frame to form a fluid-tight seal therebetween,

a lower elastomeric sheet clamped about the upper periphery of said lower sheet frame by said first clamp means, said lower sheet forming a fluid-tight seal across said first opening, said lower sheet supporting said preform material,

an upper elastomeric sheet clamped about the upper periphery of said upper sheet frame by said second clamp means, said upper sheet forming a fluid-tight seal across said second opening,

a fluid cavity defined between said upper and lower sheets, said fluid cavity placed in fluid communication with fluid removal means capable of establishing a vacuum between said sheets,

a first fluid chamber defined between said lower mold surface and said lower sheet, said first fluid chamber being selectively placed in fluid communication with said vacuum/vent means and said first fluid lubrication means, and

a second fluid chamber defined between said upper mold surface and said upper sheet, said second fluid chamber being selectively placed in fluid communication with said second fluid lubrication opening and said fluid vent opening, portions of said non-planar lower mold surface and said non-planar upper mold surface shaped to cooperatively engage about said upper elastomeric sheet and said lower elastomeric sheet and thereafter shape said fibrous preform material after said preform material is positioned between said sheets.

4,943,223

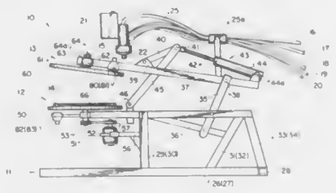
APPARATUS FOR MAKING FOAM PRODUCTS

Vincent E. Panaroni, 2330 Susan, Santa Anna, Calif. 92704

Division of Ser. No. 866,360, May 23, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 133,134

Int. Cl.[5] B29C *39/08*

U.S. Cl. 425—116 **9 Claims**



1. Apparatus for producing products using polyurethane foams comprising

a support base;

a distribution plate assembly carried by the support base, said distribution plate assembly including a disk having a central distribution plate with a top surface and a peripheral wall thereon;

a clamping plate assembly having a disk;

a mold having a first surface engaging the peripheral wall of the central distribution plate, a second surface above said top surface of the distribution plate and an opening into the mold between the said first and second surfaces and aligned with the top surface of the distribution plate;

means mounting the clamping plate assembly to move the disk thereof into and out of clamping engagement with the mold, said means comprising a pivoted support arm and pivot links interconnecting the support base and the pivoted support arm, and motor means for pivoting the pivoted support arm and clamping plate;

means mounting the disk of the distribution plate assembly to rotate about a central axis of said distribution plate disk;

means mounting the disk of the clamping plate to rotate about a central axis of said clamping plate disk;

means to rotate the disk of the distribution plate assembly about said central axis thereof and to thereby rotate the mold and the disk of the clamping plate assembly; and

means to supply resin components to the center of the central distribution plate, wherein rotation of the central distribution plate will evenly distribute the resin components to the opening of the mold.

4,943,224

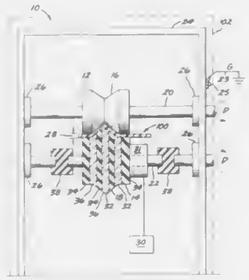
APPARATUS EMPLOYING INTEGRAL DIELECTRIC HEATER FOR ROLL FORMING THERMOPLASTIC MATERIAL

Herman F. Nied, Clifton Park, and Louis P. Inzinna, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 10, 1989, Ser. No. 308,495

Int. Cl.[5] B29C *35/14*

U.S. Cl. 425—174.8 R **9 Claims**



1. Apparatus for roll forming a thermoplastic material comprising:

a first rotatable roller having a forming surface, at least a portion of said first roller being electrically conductive;

a second rotatable roller having a forming surface, at least a portion of said second roller being electrically conductive, said second roller having a plurality of conductive disks spaced apart by a plurality of insulative disks, said first and second rollers being spaced apart and forming a gap therebetween, said first and second rollers being adapted to receive a thermoplastic material to be roll formed in said gap; and

a radio frequency generator means electrically connected to said second roller for application of a radio frequency electromagnetic field across said gap between said conductive portions of the first and second rollers for dielectric heating thermoplastic material exposed to said field between said rollers to a softening temperature.

4,943,225

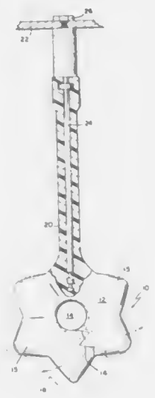
MANDREL FOR MAKING ELASTOMERIC ARTICLES

Ronald E. Prater, 2303 Sycamore Hills Dr., Fort Wayne, Ind. 46804

Continuation-in-part of Ser. No. 24,067, Mar. 10, 1987, Pat. No. 4,797,081. This application Jan. 3, 1989, Ser. No. 292,811

Int. Cl.[5] B29C *41/14*

U.S. Cl. 425—275 **53 Claims**



13. A mandrel for making a thin-walled elastomeric article by a dipping process, comprising:

a body portion formed of an elastically resilient material and having at least one through opening therein, and having a split extending from the opening through a first cross-section of the body portion, and having a cavity extending along a second cross-section of the body portion, wherein said cavity and said split are located on generally opposite sides of said through opening; and

means disposed in said cavity for exerting an outwardly directed force on a sidewall of the cavity, said force being directed against and transmitted into the body portion of the mandrel.

4,943,226

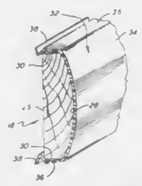
COVER FOR COLLAPSING BOARD

Earl T. Pottorff, 2436 Taylor Rd., Savannah, N.Y. 13146

Filed Sep. 19, 1988, Ser. No. 245,635

Int. Cl.[5] B29C *47/20*

U.S. Cl. 425—326.1 **6 Claims**



6. A collapsing board assembly of the type employed in the manufacture of polyethylene film comprising a frame; first and second arrays of collapsing boards the arrays facing one another and said boards being arrayed in parallel across a travel direction of the film to contact the latter and urge a tubular extrusion of the film to a flattened condition, each said collapsing board including an elongated rigid member of arcuate profile in cross section with top and bottom edges and a convex arcuate front face therebetween; each said collapsing board further comprising a cover in the form of an elongated channel of an extrudable plastic synthetic resin material filled with a lubricant agent, the channel having a convex arcuate web matching the arcuate front face of the associated collapsing board, upper and lower flanges at edges of said web matching the associated edges of the collapsing board, and lip members on free edges of said upper and lower flanges which snap-fit behind the collapsing board to retain the cover thereon.

4,943,227

COMPRESSING MACHINE FOR MAKING TABLETS

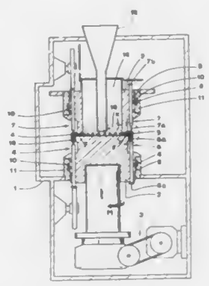
Libero Facchini, Bologna, Italy, assignor to I.M.A. Industria Macchine Automatiche S.p.A., Bologna, Italy

Filed Dec. 19, 1988, Ser. No. 286,160

Claims priority, application Italy, Dec. 30, 1987, 3746 A/87

Int. Cl.[5] B29C *39/08, 39/36*

U.S. Cl. 425—345 **5 Claims**

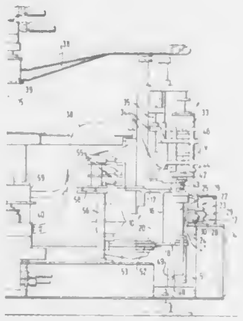


1. A compressing machine for the production of tablets, comprising: a base; a turret rotatable around its vertical axis mounted on said base, said turret defining a cylindrical chamber having a closed bottom coaxial with the axis of said turret; an annular cavity plate, fixed to said turret, with a plurality of holes through said annular cavity plate having axes parallel to the axis of said turret and spaced circularly in said annular cavity plate, said annular cavity plate defining means to expel the tablet; pairs of punches for each of said holes slidably mounted vertically on said turret, each of said pairs of punches comprising an upper and lower punch having a working head; guide means defined by said base for guiding the vertical sliding movement of said punches; said working head of each of said punches of each pair facing the working head of said other punch of said pair and positioned to fit simultaneously in said bole; an infeed device mounted on the base for introducing material in powder or granular form into said chamber; a radial channel defined by said turret and cavity plate extending from said chamber to each of said holes; and means to rotate the turret and thereby guide said punches of each pair, to allow the filling of a portion of each hole with material, the compressing of the material in each hole and the expelling of the tablet from the hole.

4,943,228
BLOW MOLDING MACHINE

Wolfgang Reymann; Heiko-Ulrich Gropp, both of Hamburg; Klaus Vogel, Barsbüttel, and Hartwig Müller, Lüdtjensee, all of Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenbau GmbH, Hamburg

Filed May 2, 1989, Ser. No. 346,524
Claims priority, application Fed. Rep. of Germany, May 4, 1988, 3815194
Int. Cl.[5] B29C *49/36, 49/64*
U.S. Cl. 425—526 13 Claims



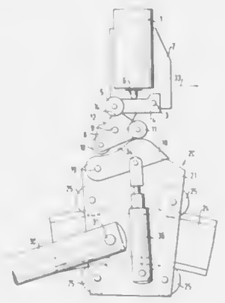
1. A blow molding machine comprising:
a rotatably driven blowing wheel having a vertical axis, a peripheral wheel ring having an outer periphery positioned a radial distance from said axis, and an interior elevated clearance radially positioned between said axis and said peripheral wheel ring,
a plurality of blow molding stations mounted on said peripheral wheel ring, each station of said plurality spaced a distance apart from each other and each station having a blow mandrel for carrying a parison made of thermo plastic material into a blow mold of said station for blowing a hollow article,
a peripheral bearing means stationarily positioned at a point immediately adjacent said outer periphery substantially adjacent a rotational path of said plurality of blow molding stations on said peripheral wheel ring, said peripheral bearing means for maintaining said rotational path and plurality of blow mold stations stable.

4,943,229
BLOW MOLDING MACHINE

Wolfgang Reymann; Heiko-Ulrich Gropp, both of Hamburg; Klaus Vogel, Barsbüttel; Hartwig Müller, Lüdtjensee, and Walter Wiedenfeld, Hamburg, all of Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenbau GmbH, Hamburg, Fed. Rep. of Germany

Filed May 2, 1989, Ser. No. 346,467
Claims priority, application Fed. Rep. of Germany, May 4, 1988, 3815192
Int. Cl.[5] B29C *49/36, 49/58*
U.S. Cl. 425—535 12 Claims

1. A blow molding machine comprising:
a wheel rotatably supported about a vertical axis,
a drive means for rotating said wheel,
a plurality of blow mold stations mounted on a periphery of the wheel, each station of said plurality of stations comprising a blow mold, a blowing mandrel carrying a parison made of thermo plastic material to be inserted into said blow mold and blown to a hollow article, and at least one valve having a plunger for supplying blowing fluid to said blow mold,
a plurality of carriages adjustably mounted on a stationary ring provided interior to the periphery of the wheel, and

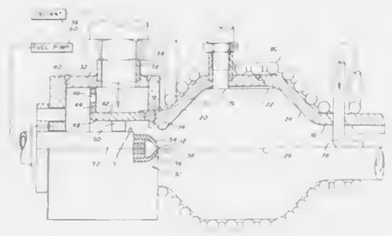


a cam adjustably mounted on each carriage of said plurality of carriages for actuating said at least one valve.

4,943,230
FUEL INJECTOR FOR ACHIEVING SMOKELESS COMBUSTION REACTIONS AT HIGH PRESSURE RATIOS

Jack R. Shekleton, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 11, 1988, Ser. No. 255,966
Int. Cl.[5] F23M *9/00*
U.S. Cl. 431—183 7 Claims

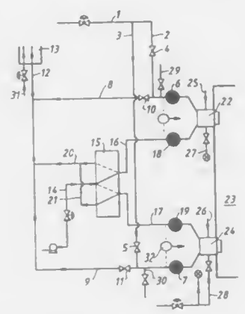


1. A hot gas generator comprising:
a housing including an interior combustion chamber having a diverging interior wall that is generally a surface of revolution;
an axially directed opening centered in said wall;
an outer, oxidant inlet in said opening and including swirler vanes for introducing into said chamber at said interior wall a swirling, hollow body of oxidant such that centrifugal force will create a diverging hollow body of swirling oxidant on said interior wall; and
a central liquid fuel inlet within said opening and said oxidant inlet and generally concentric therewith, said fuel inlet including means comprising swirler vanes for introducing a swirling hollow cone-like body of atomized liquid fuel into said chamber such that the outer surface of said cone-like body is on the inner surface of said diverging body from substantially the point of initiation of the latter to minimize mixing between said bodies.

4,943,231
REGENERATIVE BURNER SYSTEM

David P. Jenkins, Crynant, and James T. Edmundson, Seaness, both of United Kingdom, assignors to British Steel plc, London, England

Filed Dec. 12, 1988, Ser. No. 283,389
Claims priority, application United Kingdom, Dec. 24, 1987, 8730171
Int. Cl.[5] F23D *11/44*
U.S. Cl. 431—215 6 Claims

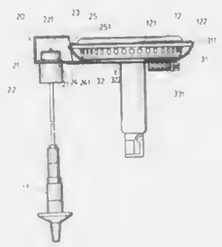


1. A regenerative burner system for a furnace comprising at least two burners alternatively fired and each having an air and gaseous fuel supply thereto traversing separate heat exchangers, the burners and heat exchangers being arranged such that the hot gases are exhausted from the furnace through the quiescent burner during firing of one burner, traverse the heat exchangers associated with the quiescent burner, relinquishing heat thereto during the firing cycle of the burner, wherein said gaseous fuel supply supplies gaseous fuel of low calorific value, essentially devoid of hydrocarbons, wherein alternating the firing by extinguishing one burner and firing the other burner is effected in dependence on the temperature of the gases exhausted through the heat exchanger associated with the quiescent burner immediately before such alternation and wherein any residual fuel in the supply lines and heat exchangers associated with the firing burner are purged through means for purging that burner by an inert gas supplied form a source of inert gas as it is extinguished.

4,943,232
IGNITION DEVICE FOR A GAS BURNER

Whang-Tung Lin, Fl. 2, No. 291-1, Pei-Tun Rd., Taichung City, Taiwan

Filed Jan. 24, 1990, Ser. No. 469,133
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 431—263 7 Claims



1. An improved ignition device for a gas burner having a burner casing with at least one flange member outwardly and radially extending from the burner casing and a plurality of flame holes below said flange member, said ignition device including an electrode, a spark generator for inducing a spark in said electrode, a housing for said electrode, a fastening means for fixing said housing to the gas burner, and improvements, wherein :
said housing includes a top plate, a bottom plate with a mounting hole for said electrode, and a pair of side plates on two opposing sides of said bottom plate, each of said side plates having an edge with a notch formed thereat, said notches of said side plates being adaptable to engage with the flange member.

4,943,233
USE OF DEWATERED OF DIGESTED SEWERAGE SLUDGE AS THE BLOATING AGENT

Manuel C. Diaz, Ontario, Calif., assignor to Recycled Energy, Inc., Los Angeles, Calif.

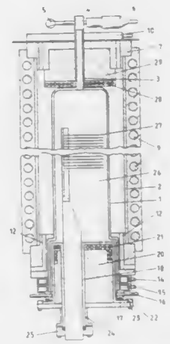
Filed Oct. 17, 1989, Ser. No. 422,623
Int. Cl.[5] C04B *18/00, 20/00, 24/00, 38/00*
U.S. Cl. 432—13 1 Claim

1. A process to produce light-weight expanded shale aggregates using basic ingredients of shale and dewatered digested sewerage sludge as a bloating agent and high-lime blast furnace slag as fluxing agent and also using refuse derived fuel as a main fuel in the kiln, comprising the steps of
Crushing, grinding and mixing said shale dewatered digested sewerage sludge and high-lime blast furnace slag in a conventional rock crusher and ball mill, producing a hydrated clay-like soil product,
Mixing said shale, dewatered digested sewerage sludge and high-like blast furnace slag in weight proportion, as follows:
60% dewatered digested sewerage sludge,
30% shale,
10% high-lime blast furnace slag,
Burning the hydrated clay-like soil product in a vertical kiln or rotary kiln at 2000° C. using refuse derived fuel and producing light-weight expanded shale aggregates.

4,943,234
PROCEDURE AND EQUIPMENT FOR THE THERMAL TREATMENT OF SEMICONDUCTOR MATERIALS

Heinrich Söhlbrand, Wirtsbauerastrasse 26,, D 8021 Neuried bei Mëchen, Fed. Rep. of Germany

Filed Feb. 23, 1989, Ser. No. 314,460
Int. Cl.[5] F27B *9/04*
U.S. Cl. 432—152 11 Claims

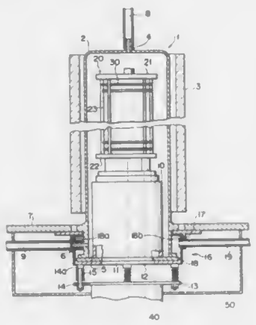


1. An apparatus for the thermal treatment of semiconductor materials in diffusion furnaces, in particular for low, middle

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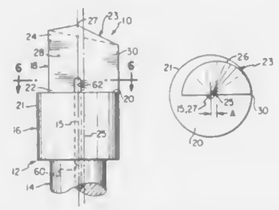
and high temperature treatment, including a double-walled process tube open on the loading side with a liquid rinsing system provided in an annulus formed between the tube walls, a cantilever construction for loading the semiconductor discs to be treated into the process tube and a process gas feeder at the rear end of the process tube with disposal of this gas on the loading side, comprising an isothermic process chamber (26), which is completely surrounded by heating elements (9, 20, 28), said heating elements including a heating cassette (9) which cylindrically surrounds an outer tube (1) and a heating element on a loading side (20) integrated into the cantilever system (18 to 25) and is moveable, and a second heating element (28) arranged in a first rear, stationary vestibule block (7), said vestibule block (7) housing both a gas drainage connection piece (3) and an insert gas rinsing system (10) with a crown of gas inlet nozzles (11) arranged in the space between the inner process tube (1) and the outer tube (2), and a second vestibule block (8) equipped with the moveable cantilever system (18–25) and a rinsing gas system (10–12) with a crown of outlet nozzles (12).

4,943,235
HEAT-TREATING APPARATUS
Ken Nakao, Sagamihara; Seishiro Sato, Machida, and Wataru Ohkase, Sagamihara, all of Japan, assignors to Tel Sagami Limited, Kanagawa, Japan
Filed Nov. 25, 1988, Ser. No. 275,966
Claims priority, application Japan, Nov. 27, 1987, 62-299228; Dec. 30, 1987, 62-334098
Int. Cl.[5] F27D *3/12*; F27B *5/04*
U.S. Cl. 432—205 **10 Claims**



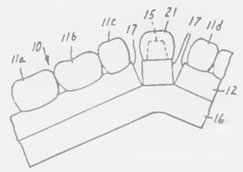
1. A heat-treating apparatus comprising:
a furnace, which includes a furnace body, for storing an object to be heat-treated, having an opening for allowing the object to be loaded therethrough, an inlet port for feeding a reaction gas, and an exhaust port for exhausting a waste gas, and heating means for heating the object;
capping means positionable for making tight contact with said furnace body at an area of contact for capping said opening, said capping means being separable from said opening for allowing the object to be loaded therethrough before heat treating;
sealing means forming an enclosed volume around said area of contact for preventing the waste gas leaking from between said furnace body and said capping means from being diffused around said furnace; and
gas exhaust means, coupled to said exhaust port, for introducing the waste gas including the waste gas leaked into said enclosed volume, outside said heat-treating apparatus.

4,943,236
ASYMMETRICAL BONE DRILL
Leonard I. Linkow, New York, N.Y.; Anthony W. Rinaldi, Philadelphia, Pa., and Michael Gambale, West Hanover, Mass., assignors to Vent-Plant Corporation, Inc., Philadelphia, Pa.
Filed Dec. 22, 1988, Ser. No. 289,853
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—165 **16 Claims**



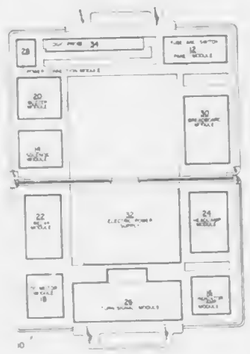
1. A drill for forming a hole in material comprising:
a shank having a longitudinal axis;
a cutting element having a body with a longitudinal center axis extending between first and second ends, said first end of the cutting element being eccentrically connected to said shank in such a manner that the longitudinal axis of the cutting element is positioned at a predetermined distance from the longitudinal axis of the shank, a drill point being located at said second end of the body, said drill point being concentric with the longitudinal axis of the shank, an outer surface of the body of said cutting element being defined by at least a front surface and a rear surface intersecting each other along at least a cutting edge, the rear surface being tapered toward the longitudinal axis of said shank such that during rotation of said shank in the material to form the hole, only the cutting edge and said drill point engage the material and a substantial open area exists between the outer surface of the cutting element and the hole.

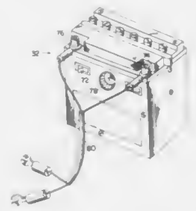
4,943,237
THERMOSET-THERMOPLASTIC MOLDED ARTICLE FOR DENTAL RESTORATION
Thomas T. Bryan, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 932,005, Nov. 18, 1986, Pat. No. 4,850,871. This application Jan. 26, 1989, Ser. No. 303,080
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—213 **2 Claims**



1. A hardenable model of an object useful for making a restoration for the object, said model having at least one surface portion of thermosetting resin which is not substantially thermoset, said model further comprising molten thermoplastic resin in contact with said thermosetting resin, said thermoplastic resin being cleanly breakable at room temperature upon hardening.

4,943,238
AUTOMOTIVE ELECTRONIC INSTRUCTIONAL AND DIAGNOSTIC TRAINING APPARATUS
Frank Gregorio, Ansonia, Conn., assignor to Interplex Electronics, Inc., New Haven, Conn.
Filed Dec. 14, 1988, Ser. No. 284,303
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—224 **4 Claims**

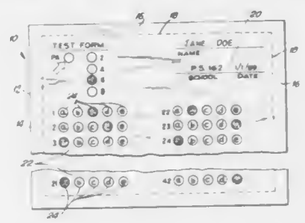




1. An automotive electronic instructional and diagnostic training apparatus comprising:
a group of electronic circuit modules, each module having at least one circuit path which simulates at least a portion of an automotive electronic circuit in a group of automotive electronic circuits;
electrical power supply means electrically connectable to said modules for providing electrical power to said modules to activate their respective circuit paths, said electrical power supply means comprising, means for selectively providing a voltage potential which corresponds to the normal voltage potential output of an automotive battery when the enging is off and an increased voltage potential which corresponds to the normal voltage potential output of the automotive battery when the engine is running; and
each module further including means for creating at least one fault condition representative of an electrical malfunction in said module.

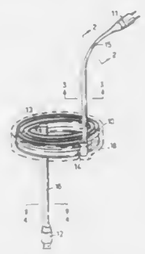
4,943,239
TEST ANSWER AND SCORE SHEET DEVICE
Betram L. Koslin, Yorktown Heights, N.Y., assignor to Touchstone Applied Science Associates, Inc., Brewster, N.Y.
Filed May 5, 1989, Ser. No. 347,998
Int. Cl.[5] G09B *3/08*
U.S. Cl. 434—353 **23 Claims**

1. An answer and score sheet device, comprising:
markable sheet means having at least one surface with answer mark guide indicia on said surface, for defining first positions on said at least one surface at which marks can be made selectively by a respondent in response to corresponding questions; and
said sheet means having a surface on which a number of discriminable flag indicia are formed at certain second



positions in determined orientations with respect to said first positions, each of said flag indicia being identifiable with one of at least two different test forms;
wherein the formation of said flag indicia corresponds to correct responses to said questions in accordance with a selected one of the different test forms.

4,943,240
ELECTRICAL CONNECTION
Leif E. Karlsson, Alingsas, Sweden, assignor to General Engineering (Netherlands) B.V., Netherlands
Filed Jul. 17, 1989, Ser. No. 380,443
Claims priority, application Sweden, Jul. 18, 1988, 8802665
Int. Cl.[5] H01R *35/04*
U.S. Cl. 439—15 **11 Claims**



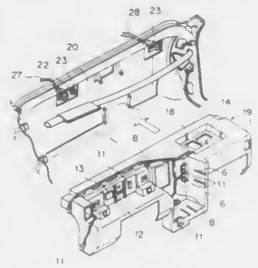
1. An electrical connector, said connector comprising a continous flat cable extending throughout the connector, said flat cable comprising conductors encased in a first insulative sheath having dimensions of width and thickness, with the width being greater than the thickness, a central portion of said flat cable being coiled into a plurality of turns which define a flat spiral, said cable being coiled so that said cable is place on edge the edges of said cable lying in two parallel planes, said cable having two end portions and two bent portions adjacent to said end portions, said bent portions being bent so that said end portions of said cable project outwardly from the spiral and substantially perpendicularly to said parallel planes, said end portions of said cable each being encased in a flexible one-pieces extra sheath which extends along the whole length of a respective one of said projecting end portions and which also extends past a respective one of said bent portions of the cable along part of said spiral.

4,943,241

APPARATUS FOR INSTALLING A WIRE HARNESS

Mitsugu Watanabe; Kazuhiko Kaneko, and Etsuji Matsumoto, all of Kosai, Japan, assignors to Yazaki Corporation, Japan

Division of Ser. No. 884,174, Jul. 9, 1986, Pat. No. 4,750,265.
This application Feb. 19, 1988, Ser. No. 158,324
Claims priority, application Japan, Feb. 18, 1986, 61-031910
Int. Cl.[5] H01R *33/00*
U.S. Cl. 439—34 **12 Claims**



1. An apparatus for installing a wire harness by securing the same within an automobile and connecting said wire harness to articles of electrical equipment of the automobile, said apparatus comprising:

a carrier panel adapted to be attached to a car body having wire harness means installed therein;

said wire harness fixed to said carrier panel and having a main portion and branch portions at respective ends of which a plurality of connectors are attached, said connectors including a first connector and a second connector, said first connector being fixed and positioned on said carrier panel for connection to said wire harness means of the car body;

means for installing articles of electrical equipment on said carrier panel; and

means for fixing and positioning said second connector on said carrier panel to face a first selected member of said articles of electrical equipment;

wherein said carrier panel has a car body side and a passenger room side, said wire harness being fixed to the carrier panel on the passenger room side thereof.

4,943,242

ZERO INSERTION FORCE HIGH DENSITY CONNECTOR SYSTEM

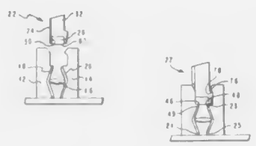
Richard F. Frankeny, Elgin; Javad Haj-ali-Ahmadi, Austin; Ronald L. Imken, Round Rock, and Rolf Wustran, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1989, Ser. No. 347,694
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—65 **24 Claims**

1. An electrical connector system for interconnecting a circuit package to a card comprising

a buckling beam strip means carrying a plurality of buckling beams for electrically connecting each of a plurality of first contacts on said package to a corresponding one of a plurality of second contacts on said card; and

a housing means retaining said buckling beam strip means for alternately establishing pre-buckling of said buckling



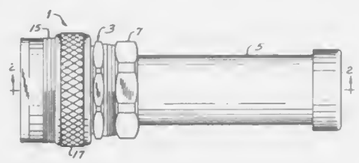
beam strip means and release of said pre-buckling of said buckling beam strip means.

4,943,243

WIRE CONNECTOR

Arthur I. Appleton, 22 Indian Creek Island, Miami Beach, Fla. 33154

Filed Oct. 21, 1988, Ser. No. 260,688
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—289 **7 Claims**



1. A connector for coupling multiple electrical terminals to one another, comprising:

(a) a first housing supporting a first terminal support consisting of a resilient material including portions defining a plurality of apertures;

(b) a second housing supporting a second terminal support consisting of a resilient material including portions defining a plurality of apertures.

(c) a first and second plurality of terminals being removably located in said apertures of said first and second terminal supports, respectively, said terminals having abutment means formed thereon such that said terminals can be removed from said apertures in a first direction but are prevented from being removed from said apertures in a second direction;

(d) means for securing said first housing to said second housing such that said first plurality of terminals contacts said second plurality of terminals to apply pressure to said terminals in said second direction to thereby compress the resilient material of said first and second terminal supports whereby a pressure connection is created between said first and second plurality of terminals.

4,943,244

GROUNDING ELECTRICAL CONNECTOR

Yap Y. Teck; Lim T. Wah; Anna T. K. Geok, and Chan H. Weng, all of Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 26, 1989, Ser. No. 456,765
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—567 **19 Claims**

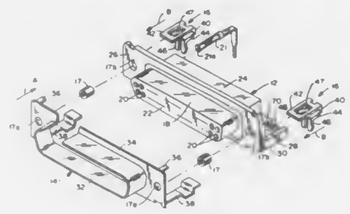
1. An electrical connector for mounting to a substrate such as a printed circuit board, comprising:

an insulative housing defining a front face, a rear portion and a base portion which is mountable to the printed circuit board;

a conductive shield positionable against the front face of the

housing and including a ground strap extending rearwardly beneath the base portion of the housing; and

a conductive board lock member positionable against the rear portion of the housing and including a commoning portion extending forwardly beneath the base portion of



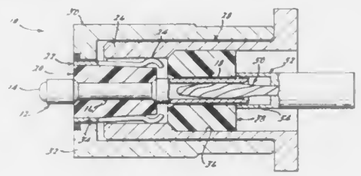
the housing in engagement with the ground strap of the conductive shield, the board lock member including leg means positionable through a locking hole in the printed circuit board and for commoning the conductive shield to a ground trace on the printed circuit board adjacent the hole.

4,943,245

COAXIAL ELECTRICAL CONNECTOR

Thomas C. Lincoln, South Pasadena, Calif., assignor to Microdot Inc., Chicago, Ill.

Filed Jul. 31, 1989, Ser. No. 386,694
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **2 Claims**



1. A matched impedance pin connector comprising

a tubular female contact having an open end,

a male contact acceptable in the open end of said female contact,

a male contact sleeve surrounding one end of said male contact in radially spaced relation to and electrically connected thereto,

a male contact housing disposed about said male contact sleeve in radially spaced co-axial relation thereto,

a first annular insulator disposed interiorly of said male contact housing in axially aligned relation to said male contact sleeve, said first annular insulator and male contact sleeve having substantially equal inside diameters for the telescopic acceptance of said female contact,

a female contact housing disposed about said female contact in radially spaced coaxial relation thereto and having an inside diameter substantially equal to the outside diameter of said male contact sleeve for the acceptance thereof in telescopic relationship, and

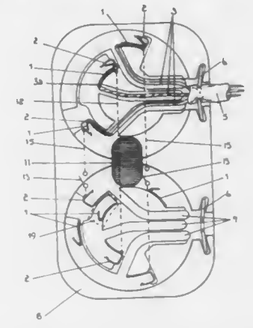
a second annular insulator interposed between said female contact and said female contact housing to maintain a constant radial spacing therebetween.

4,943,246

ELECTRICAL CONNECTOR FOR WIRE CONNECTION

Hugh H. Gilbert, 19 Thrifts Walk, High Street Chesterton, Cambridge, United Kingdom

Continuation of Ser. No. 151,477, Feb. 2, 1988, abandoned. This application Sep. 7, 1989, Ser. No. 369,727
Claims priority, application United Kingdom, Feb. 3, 1987, 8702409
Int. Cl.[5] H01R *11/09*
U.S. Cl. 439—656 **13 Claims**



3. An electrical connector which includes a two part body having one part turnable about a turning axis relative to the other part and in which an end of a length of insulation covered flexible wire is bared of insulation and brought into electrical connection with an electrically conducting terminal means in the body, said connector comprising a two component wire trap having a convex member and a concave member having one wall and a base, one of said members being supported by one part of the body and being electrically connected to said terminal means, one of the members being mounted on one body part to move along an arcuate path about the turning axis relative to the other member mounted on the other body part, whereby the wire trap can be moved between an open position in which said members are spaced apart from each other to a closed position in which the convex member is located in the concave member, a wire passage in the body which has an open end disposed between the members in the open position of the trap, whereby the bared end of said length of wire passed along said passage protrudes from said open end across said path and is bent into said path to be trapped between the said members and thus be placed in electrical connection with said one member as the concave member surrounds the convex member in the closed position of the trap, the wire thereby being bent to lie along said one wall and at least extend toward the base of the concave member.

4,943,247

ANNULAR ELECTRICAL TERMINAL

James H. Wise, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 31, 1989, Ser. No. 359,188
Int. Cl.[5] H01R *11/11*
U.S. Cl. 439—883 **15 Claims**

1. An improved electrical terminal suitable for use in connecting a first electrical article to a second electrical article comprising:

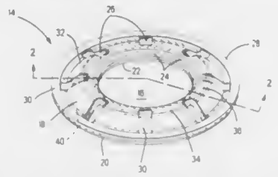
an annular member having opposed first and second major surfaces, said first and second major surfaces associated respectively with said first and second electrical articles for electrically interconnecting respective conductive surfaces of said first and second electrical articles;

said annular member having a centrally disposed fastener receiving aperture extending therethrough from said first

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major surface to said second major surface, said annular member having an inner edge adjacent said fastener receiving aperture and an outer edge extending circumferentially therearound;

said annular member further including a plurality of slots spaced therearound each extending between at least one integral strap section along one of said inner edge and said outer edge, said slots defining therebetween respective spring sections in an annular array, each of said spring sections at least include respective protrusions extending outwardly from one of said first and second major surfaces, each said respective protrusion having a crest portion, all of said respective crest portions being disposed substantially in a common plane and defining an array of first contact surfaces comprising a first contact interface for electrical engagement with said conductive surface of said first electrical article upon being fastened thereto by fastening means; and



the other of said first and second major surfaces at least including an array of surface portions disposed substantially in a common plane and defining an array of second contact surfaces comprising a second contact interface for electrical engagement with said conductive surface of said second electrical article, said first and second electrical articles being secured together and biasedly held against said respective connecting portions by said fastening means, thereby compressing said spring sections and establishing contact normal force between said first electrical article and said first contact surfaces and said second electrical article and said second contact surfaces; whereby

a plurality of electrical paths in parallel are generated between said first electrical article and said second electrical article upon said terminal being connected between said first and second electrical articles thereby minimizing the electrical resistance at the contact interfaces.

4,943,248

ELECTRICAL TERMINAL FOR BLADED FUSE

Stephen A. Colleran, Lisle; Robert J. Gugelmeyer, Aurora, and Bill B. Wilson, Montgomery, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 213,193, Jun. 29, 1988, abandoned. This application Sep. 25, 1989, Ser. No. 411,254

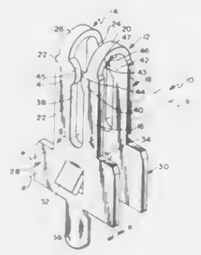
Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—850 5 Claims

1. An electrical connector for connecting an automotive fuse to another circuit member, said automotive fuse being of the type including an elongate dielectric fuse housing having a body portion with an edge and a pair of coplanarly aligned, spaced-apart, flat metallic contact blades extending from said edge, said electrical connector comprising:

a dielectric connector housing including a front end with at least one elongate opening and an opposed rear end with at least one pair of spaced and aligned openings, a fuse-receiving slot extending rearwardly from said elongate opening in the front end to a rear slot surface disposed intermediate the front end and the rear end of the housing, and at least one pair of spaced-apart terminal receiving cavities extending forwardly from said pair of rear end openings to said rear slot surface and communicating with said fuse-receiving slot; and

at least one pair of terminals stamped and formed from a unitary metal strip having a substantially uniform thickness, each terminal including first and second spaced apart bases and a pair of adjacent spaced apart U-shaped contact structures extending between and interconnecting the first and second bases and defining a blade-receiving contact slot therebetween, each said U-shaped contact structure including a first contact arm extending from said first base and a second contact arm extending from said second base and a connecting strip extending therebetween, said first contact arms and said second contact arms each being spaced apart a distance substantially larger than said strip thickness and having a generally convex arcuate contact edge portion extending into said blade-receiving contact slot such that the distance between opposing arcuate edge portions of said U-shaped contact structures is less than



the thickness of a said flat contact blade of an automotive fuse, each terminal being mounted in one of said terminal-receiving cavities so that the blade-receiving contact slot is aligned with the fuse-receiving slot and the bases are disposed adjacent the rear end of the housing, each terminal further including a second contact portion extending from one of said bases for electrically engaging said another circuit member,

whereby, insertion of an automotive fuse into said fuse-receiving slot so that the edge of the fuse housing generally abuts said rear slot surface and the flat blade contact portions are received in the blade receiving contact slots of the terminals causes the U-shaped contact structures of each terminal to be deflected away from one another generating four vibration-resistant points of electrical contact between each terminal and each fuse blade to securely, electrically and mechanically engage the automotive fuse in said connector.

4,943,249

LINE CUTTER FOR PROPELLERS

Donald T. Govan, Box 350246, Fort Lauderdale, Fla. 33335

Filed Aug. 11, 1989, Ser. No. 392,542

Int. Cl.[5] B63H *5/16*

U.S. Cl. 440—73 35 Claims

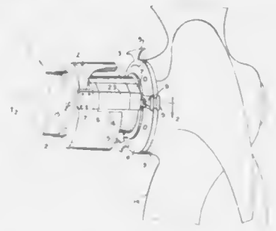
21. An apparatus that cuts foreign matter including lines, wires, nets and weeds of the type that may be encountered by propeller driven vessels when under way, said vessels of the type where the propeller is mounted to a rotatable propeller shaft that extends from a propeller shaft housing connected to the vessel's hull, said apparatus comprising:

(A) at least one first blade means having a first shearing plane, said first blade means arranged to rotate in conjunction with said propeller with said first shearing plane substantially perpendicular to the axis of said shaft;

(B) first support means for supporting said first blade means in position extending radially and beyond said first support means to engage said foreign matter, said first support means including means for fixedly attaching to at least one member of the pair consisting of said shaft and said propeller;

(C) at least one second blade means having a second shearing plane, said second blade means arranged with said second shearing plane substantially parallel to said first shearing plane of said first blade means;

(D) second support means for supporting said second blade means in a position extending radially parallel to said first blade means to engage said foreign matter for shearing said foreign matter between said first and second blade



means, said second support means for fixedly attaching to a non-rotating member of said hull;

(E) moving means incorporated in said second support means for moving said second blade means toward and away from said first blade means to maintain said first and second shearing planes in close proximity for shearing operation; and

(F) control means operatively connected to said moving means, said control means including sensing means for sensing the distance between said first and second shearing planes, said control means controlling said moving means to maintain a particular spacing between said shearing planes despite axial movement of said propeller.

4,943,250

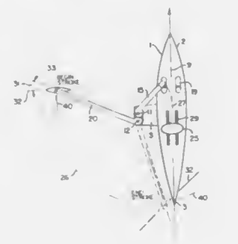
ARTICULATED HYDROFOIL OAR

Stephen DuPont, 24 N. Casey Key Rd., Osprey, Fla. 34229

Continuation-in-part of Ser. No. 252,651, Sep. 30, 1988, Pat. No. 4,867,718, which is a continuation-in-part of Ser. No. 10,585, Feb. 3, 1987, Pat. No. 4,770,821. This application Jun. 19, 1989, Ser. No. 367,778

Int. Cl.[5] B63B *16/04*

U.S. Cl. 440—101 22 Claims



1. A rowing apparatus comprising, in combination: a boat having a hull with fore and aft ends and having an outrigger projecting laterally outwards from each side of said hull, and at least two oar assemblies located one on each side of said hull, each of said oar assemblies comprising a handle loom having a generally athwartship position at mid-stroke and having an inboard end and an outboard end located at said outrigger, a blade loom extending outwardly from said outrigger and having an outer end and an inner end also located at said outrigger, an oarlock teeter hinge member mounted onto said outrigger and adapted to rotate about a substantially horizontal axis, a first sweep hinge member affixed to said outboard end of said handle loom, a second sweep hinge member affixed to said inner end of said blade loom, means for rotatably mounting said first and said second sweep hinge members onto said oarlock teeter hinge member, means associated with said first and second teeter hinge members for transferring the motion of said handle loom to said blade loom while at the same time reversing the direction thereof, and a blade having a hydrofoil shaped surface mounted to and below said outer end of said blade loom, said blade lying in a generally vertical plane and defining with said blade loom an angle of incidence therebetween, the arrangement being such that when said handle loom is rotated during the thrust stroke, said blade moves in a sweep arc through the water floating said hull in a direction opposite to the motion of said handle loom, said blade traveling in a substantially lateral direction with respect to said hull over a portion of said sweep arc, the angle of incidence between said blade and said blade loom being such that said blade acts as a laminar flow, unstalled hydrofoil having an angle of attack with respect to its movement through the water which will produce a thrust generally normal to the direction of motion of said hydrofoil surface during said lateral moving portion of said sweep arc.

4,943,251

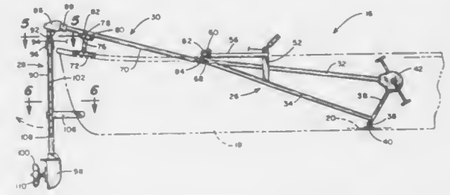
PEDAL OPERATED OUTBOARD MOTOR FOR WATERCRAFT

Thomas E. Lerach, Shoreview, Minn., and Abraham Meron, Hudson, Wis., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Aug. 2, 1989, Ser. No. 388,610

Int. Cl.[5] B63H *16/14*

U.S. Cl. 440—28 18 Claims



1. A pedal operated apparatus for propelling watercraft, comprising:

a main drive assembly including a main frame means removably fixed to a watercraft, a pedal and crank assembly supported rotatably on the main frame means near a forward end portion thereof, and a main drive means drivably engaged with said pedal and crank assembly and extended along said main frame means to a rearward end portion of the main frame means;

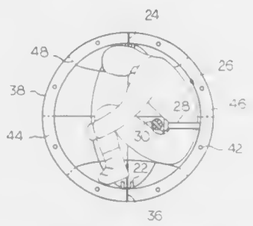
a propeller mounting assembly including an elongate and generally vertically disposed propeller carrying frame member outside of the watercraft and having upper and lower end regions respectively above and below the water level when the watercraft is afloat, a propeller mounted rotatably relative to said lower end region, and a propeller drive means extended along said propeller carrying frame member from the upper end region to the lower end region and drivably engaged with said propeller;

an intermediate coupling means for supporting said propeller assembly and for drivably engaging said main drive means and said propeller drive means; and

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a force transmitting member mounted to the propeller carrying frame member medially between said end regions and positioned to engage the watercraft at a predetermined exterior surface location to transmit the thrust of said propeller from the propeller carrying frame member to the watercraft at said predetermined location.

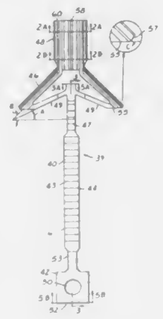
4,943,252
AVALANCHE FLOTATION BALL
Thomas J. Manix, 4021 Marquis Way, Anchorage, Ak. 99502
Filed Jun. 9, 1988, Ser. No. 204,271
Int. Cl.[5] B63C 9/06
U.S. Cl. 441—87 **4 Claims**

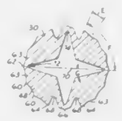


1. In survival equipment, a protective and buoyant device which is worn around the waist in a belt pack, in its uninflated condition, the belt pack having a detachably attached belt means and a cover means to hold ready the device prior to deployment, and which comprises a plurality of concentric spheres having a plurality of exit enclosure means, said concentric spheres including inner and outer sphere walls of flexibly impervious materials defining an inflatable and airtight space therebetween, partitioning means in said space limiting the separation of the inner sphere and outer sphere walls, said concentric spheres being so constructed and arranged to totally enclose and isolate an occupant upon inflation of the device from any environment outside the device, said belt means being fixedly attached to the inner sphere wall and also being removably connected to the user for securing his position relative to the spheres upon any acceleration or deceleration of the device, and pressure means operatively connected to said spheres for introducing a gas into said space under a pressure substantially in excess of ambient pressure whereby said spheres are forcefully expanded to a generally spherical configuration, said pressure also tending to maintain the generally spherical configuration against any deforming forces, whereby the user of the device is cushioned and protected while remaining buoyant.

4,943,253
AXIAL IMMOBILE FASTENER-RECEIVING MEMBER
Jon D. Smith, Fenton, Mich., assignor to Dry Dock Industries, Inc., Fenton, Mich.
Filed Mar. 23, 1989, Ser. No. 327,781
Int. Cl.[5] F16B 21/18
U.S. Cl. 411—342 **13 Claims**

1. A fastener-receiving member adapted to be disposed in a hole and to receive a fastener member, comprising:
- a nut section formed with a central aperture sized to receive a fastener member, said nut section being located at a first axial end of said receiving member;
- a locking section extending from said nut section and configured to secure the fastener-receiving member in a hole; and
- an extension section formed of two separate elongate opposed members that are integrally connected at a second axial end of said fastener-receiving member by an intermediate member, said intermediate member being axially immobile with respect to said opposed members, said extension section extending from said locking section and having a central aperture for passage of the fastener member, said extension section being formed such that it can be



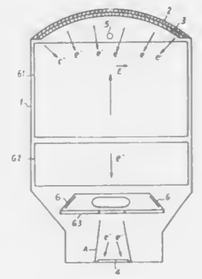




removed accurately at a desired incremented axial position.

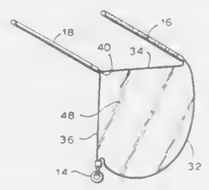
4,943,254
METHOD FOR THE FABRICATION OF AN IMPROVED X-RAY IMAGE INTENSIFIER TUBE, AND INTENSIFIER TUBE, AND INTENSIFIER TUBE OBTAINED THEREBY
Gérard Vieux, Grenoble; Francis Diaz, Moirans, and Paul de Groot, St-ismier, all of France, assignors to Thomson-CSF, Puteaux, France
Filed Jul. 6, 1989, Ser. No. 375,997
Claims priority, application France, Jul. 8, 1988, 88 09310
Int. Cl.[5] H01J 9/20; G21K 4/00
U.S. Cl. 445—28 **7 Claims**

1. A method for the fabrication of an improved X-ray image intensifier tube with, notably, a photocathode comprising an alkaline antimonide, several electrodes and an anode, wherein, prior to the fabrication of the cathode by means of a vapor deposition of antimony and alkaline metals, there is deposited, before introducing it into the tube, on at least a part of the electrode which is closest to the anode, a layer of a conductive material having the property of reacting with the above mentioned alkaline metals, said conductive material being chosen



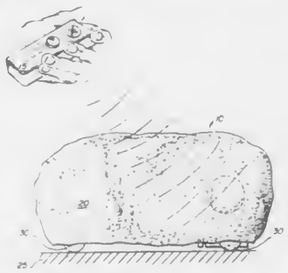
from the group consisting of electrically conductive organic polymers.

4,943,255
BUBBLE MAKING TOY WITH TWO WANDS AND A WICK COMPRISING THREE SEGMENTS
Kalvin K. Klundt, Lagrange, Ky., assignor to The Big Time Toy Co., Louisville, Ky.
Filed Dec. 2, 1987, Ser. No. 127,653
Int. Cl.[5] A63H 33/28
U.S. Cl. 446—15 **32 Claims**



1. An apparatus for forming and controlling bubbles formed from a bubble solution, comprising:
- (A) an operatively continuous wick means for storing and releasing quantities of a bubble solution, said wick means including in series a first elongate segment, a second elongate segment and a third elongate segment, said first and third segments defining a point therebetween, and said first segment being substantially equal in length to said second and third segments combined;
- (B) a control wand and a support wand for moving said wick means between a bubble-initiating position and a bubble-developing position, said control wand being fixedly secured during use to said wick means between said second and third segments, and said support wand being fixedly secured during use to said wick means between said first and second segments; and
- (C) means fixedly secured to said point between said first and third segments of said wick means for causing adjacent ends of said first and third segments at said point to be substantially flush against each other when in the bubble-initiating position to prevent a gap therebetween.

4,943,256
AMUSEMENT DEVICE PROPELLED BY AN ECCENTRIC APPARATUS
Robert W. Symons, Incline Village, Nev., assignor to PN International Corp., Mt. Kisco, N.Y.
Filed Jan. 11, 1988, Ser. No. 142,817
Int. Cl.[5] A63H 11/12, 17/25, 30/04, 17/00
U.S. Cl. 446—278 **12 Claims**

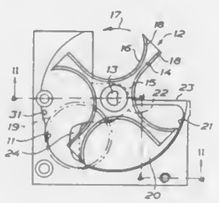


1. An amusement device, comprising:
- a base frame having a first end and a second end;
- at least one ratchet wheel assembly mounted to and supporting said second end of said base frame;
- a prime mover mounted within said base frame;
- a cam rotatably driven by said prime mover;
- a yoke assembly having a first yoke and a second yoke, said second yoke activated by said cam to cause said first yoke to move in a scissor like motion relative to said second yoke and said first end of said base frame;
- an elastic covering looking like a rock fixed to said base frame and said first yoke substantially covering from view said yoke assembly and said prime mover and being elastic enough to flex with said yoke assembly; and
- at least one ratchet wheel assembly mounted at said first yoke such that when said first yoke moves toward said second yoke, said ratchet wheel at said first yoke rotates while said ratchet wheel at said base is prevented from rotating and when said first yoke moves away from said second yoke said yoke ratchet wheel is prevented from rotating while said base ratchet wheel rotates resulting in movement of the device along a supporting surface.

4,943,257
COIN SORTING DEVICE WITH ANTICRAMPING MEANS
Bengt G. Nilsson, Oxie, and Bengt G. Lindahl, Lund, both of Sweden, assignors to Scan Coin AB, Malmo, Sweden
PCT No. PCT/SE87/00102, § 371 Date Sep. 9, 1988, § 102(e) Date Sep. 9, 1988, PCT Pub. No. WO87/05729, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 4, 1987, Ser. No. 246,299
Claims priority, application Sweden, Nov. 3, 1986, 8601117
Int. Cl.[5] G07D 1/00
U.S. Cl. 453—9 **3 Claims**

1. Coin assorting device comprising a disc mounted for rotation on a bottom plate, having a normal rotational direction and rotating below a coin supply tube for coins stacked therein, said disc having four wings separated by four recesses for receiving a coin from said coin supply tube in each recess, said bottom plate having a discharge opening for coins, the diameter of which is less than a predetermined maximum diameter of the coins supplied, characterized in that the discharge opening in the bottom plate is located beneath said coin supply

tube, and that the wings of the rotatable disc on the side thereof facing the normal rotational direction forms a blunt edge,



having a thickness which essentially corresponds to the thickness of the thinnest occurring coin.

4,943,258

OUTLET DEVICE FOR COIN PAYOUT HOPPERS

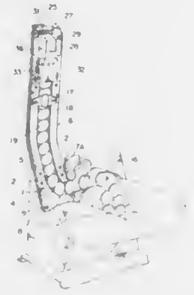
Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Japan

Filed Sep. 28, 1988, Ser. No. 250,092

Claims priority, application Japan, Oct. 3, 1987, 62-151784[U]

Int. Cl.[5] G07D *9/04*

U.S. Cl. 453—30 **5 Claims**



1. An outlet device for coin payout hoppers comprising: an outlet chute having a curved coin guiding passage for upwardly guiding coins pushed in a lower inlet in the horizontal direction towards an upper outlet and an escalator connected to the upper outlet of the outlet chute comprising front and back side plates and a pair of edge plates interposed between side edges of the side plates to define a coin guiding passage upwardly extending from the upper outlet of the curved guiding passage of the outlet chute, said escalator comprising means for holding coins including a ball retaining gutter having a sloped guide wall extending along the coin guiding passage at an acute angle such as 8°–15° with respect to the front side plate and a coin holding ball which is vertically movable in the ball retaining gutter and protrudes from an opening in the front side plate into the coin guiding passage so as to contact a side surface of the coin in the coin guiding passage, to thereby hold the coin by a wedging action of the ball moved downwardly in the sloped guide gutter when the coin tends to descend in the coin guiding passage.

4,943,259

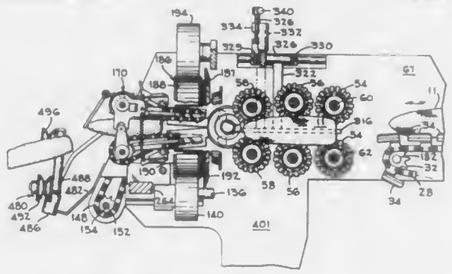
CORN CUTTER AND SYSTEM

Eugene F. Feistehausen, Hoopeston, Ill., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 21, 1988, Ser. No. 222,458

Int. Cl.[5] A01F *11/06*

U.S. Cl. 460—52 **3 Claims**



1. A corn cutter unit comprising:
- a rotating head;
- a plurality of knives arranged on said head;
- a plurality of feed rollers for propelling ears of corn toward said knives; and
- a cob puller having upper and lower chains formed of links; a sprocket for driving each chain and a guide for each chain having a height substantially equal to the length of said individual links.

4,943,260

WEED SEED HARVESTER

Arthur J. Fossum, 1034 N. 15th St., Fargo, N. Dak. 58102

Filed Oct. 5, 1988, Ser. No. 253,848

Int. Cl.[5] A01F *12/44*; B07B *1/30*

U.S. Cl. 460—96 **11 Claims**



8. Apparatus for collecting weed seeds from the discharge end of a grain combine that has a discharge of chaff at a rear end thereof, comprising:
- a frame;
- means to mount said frame for movement along the ground;
- means at a forward portion of said frame for attaching it to be towed by a combine in position below rear portions of such combine;
- means for receiving material from selected discharge points of such combine including a generally horizontal conveyor for receiving discharged chaff and conveying it rearwardly, and a shaker screening member that separates the chaff from small seed and particles positioned rearwardly of the conveyor for receiving material from the rear of the conveyor;
- means to collect said small seed and particles from the shaker screening member and convey them to a storage container; and
- means for permitting discharge of chaff collected back onto the ground.

4,943,261

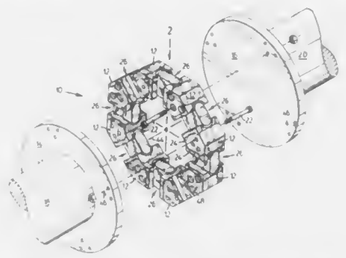
FLEXIBLE SHAFT COUPLING HAVING FLEXIBLE ELEMENTS INTERSPERSED BETWEEN ALTERNATING ATTACHMENT WEDGES

Roy E. Smith, Kingston, Canada, assignor to UTDC Inc., Kingston, Canada

Filed May 12, 1989, Ser. No. 350,805

Int. Cl.[5] F16D *3/78*

U.S. Cl. 464—76 **10 Claims**



1. A flexible drive coupling for transmitting rotational forces between a driving shaft and a driven shaft, said driving and driven shafts having respective attachment means for attachment of said coupling thereto, said flexible drive coupling comprising:
- a plurality of wedges for alternating attachment to said attachment means of said driving and driven shafts, each said wedge having end faces;
- a plurality of flexible elements interspersed between respective end faces of adjacent wedges, said flexible elements having:
- a link having two curved end surfaces;
- two end plates, each end plate having respective inner and outer surfaces, said inner surfaces being shaped so as to co-operate with a respective one of said curved end surfaces of said link;
- al elastomeric filler between each of said inner surfaces of said end plates and said curved end surfaces of said link so that each end plate may pivot with respect to said link by deforming said elastomeric filler; and
- said outer surfaces of said end plates and said end faces of said wedges have co-operating tabs and recesses to prevent relative radial and axial movement.

4,943,262

BEARING ASSEMBLY FOR THE CROSS MEMBER OF A UNIVERSAL JOINT

Jürgen Schultze, Essen, Fed. Rep. of Germany, assignor to GKN Cardantec International Gesellschaft für Antriebstechnik mbH, Essen, Fed. Rep. of Germany

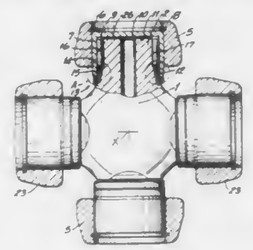
Filed Feb. 28, 1989, Ser. No. 316,868

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1988, 3806397

Int. Cl.[5] F16D *3/41*

U.S. Cl. 464—131 **5 Claims**

1. A bearing assembly for supporting arms of a cross member of a universal joint in associated joint yokes, comprising:
- axially fixed bearing bushes received in bores of the yokes and in each of which an arm is received with rolling members arranged therebetween, end faces of the arms being supported relative to a base of the bearing bushes, the bearing bush having an annular space towards an open end thereof;
- a seal for sealing the annular space between the inner wall of the bearing bush and the outer face of the arm; and
- a supporting disc provided so as to hold the rolling members, the supporting disc having a bore and being supported on a step of an associated arm of the cross member in the direction of its axis of rotation, and in a region adjoining the supporting disc, in the direction of the open end of the bearing bush, the seal is inserted into the annular space and



firmly seated, the step having a face conically increasing towards the open end of the bearing bush, and the supporting disc having a corresponding conical bore.

4,943,263

STRUCTURE FOR MOUNTING DAMPER ON ROTARY SHAFT

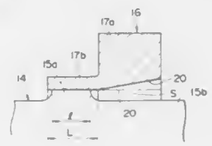
Masakazu Zyogahara; Shinichi Yokoyama, and Hisashi Yamanaka, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 23, 1989, Ser. No. 327,527

Claims priority, application Japan, Apr. 18, 1988, 63-51970[U]

Int. Cl.[5] F16F *15/10*

U.S. Cl. 464—180 **10 Claims**



1. A damper for mounting on a rotary shaft, the damper consisting of a plurality of damper pieces capable of being disposed in circumferentially adjacent relation around the rotary shaft and a plurality of connecting means for connecting circumferentially adjacent damper pieces with each other on said rotary shaft, wherein
- each of said damper pieces consists of a single piece of homogeneous material and is formed to have a mass portion that is out of contact with said rotary shaft and a mounting portion having rigidity less than that of the mass portion and in contact with said rotary shaft when the damper is mounted on the shaft.

4,943,264

CENTRIFUGAL CLUTCH WITH BELT TIGHTENING SPACER ASSEMBLY

Marvin E. Whiteman, Jr., 2254 Braniff St., Boise, Id. 83706

Continuation-in-part of Ser. No. 371,100, Jun. 26, 1989. This application Nov. 2, 1989, Ser. No. 430,256

Int. Cl.[5] F16H *11/06*

U.S. Cl. 474—13 **12 Claims**

1. A variable speed centrifugal clutch with belt tightening assembly for transmitting power equally to at least a pair of belts, comprising:
- (a) a spindle driven for rotation about a longitudinal axis, said spindle including a hollow cylindrical portion having

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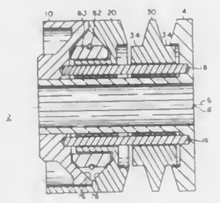
an axis corresponding with said longitudinal axis and an annular flange portion extending outwardly from one end of said cylindrical portion;

(b) a clutch plate connected with the other end of said spindle cylindrical portion for rotation therewith;

(c) means mounted on said spindle between said spindle flange portion and said clutch plate for transmitting rotational drive forces from said spindle to at least a pair of belts, said belt drive transmission means including:

(1) a clutch drum having a central longitudinal axis coinciding with the spindle longitudinal axis slidably mounted upon said spindle cylindrical portion for longitudinal displacement along said spindle cylindrical portion, said clutch drum further having a slide rail hole formed therethrough at a location displaced from but parallel to the clutch drum longitudinal axis for slidably receiving a slide rail;

(2) spacer means having a central longitudinal axis coinciding with the spindle longitudinal axis slidably



mounted upon said spindle cylindrical portion between the clutch drum and the spindle annular flange portion for longitudinal displacement along said spindle cylindrical portion, said spacer means further having one slide rail hole formed therethrough at a location in alignment with the slide rail hole of the clutch drum for slidably receiving a slide rail;

(3) a slide rail slidably inserted through the slide rail holes of the clutch drum and spacer means and connected at its ends to the clutch plate and the spindle annular flange so as to rotationally interlock the clutch plate, clutch drum, spacer means and spindle and allow for longitudinal displacement of the clutch drum and spacer means along the spindle cylindrical portion; and

(4) centrifugal force displacing means for displacing said clutch drum in the longitudinal direction toward said spacer means and said spindle flange portion to compress said spacer means evenly against the belts, whereby the rotation of said spindle is evenly transmitted to the belts to drive the belts at equal speeds.

4,943,265

DEVICE FOR TRANSMITTING AN ADJUSTABLE POSITION OF A DRIVEBELT PULLEY IN A CONTINUALLY VARIABLE TRANSMISSION

Holm Schmitt, Cologne; Fritz Henken, Langwedel; Hartmut Röper, Monheim, and Peter Heider, Euskirchen, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 17, 1989, Ser. No. 380,420

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1988, 3827543

Int. Cl.[5] F16H *9/00*

U.S. Cl. 474—25 **7 Claims**

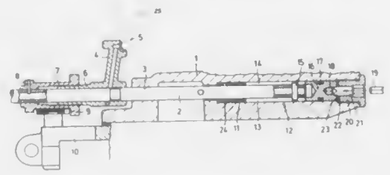
1. A device for adjusting the position of a system that transmits the position of a displaceable pulley located in an automatic transmission to a control element, comprising:

a control lever;

a guide rod supported for displacement along its axis and rotation about its axis;

a sensor supported on the guide rod for axial displacement, located for contact with the pulley;

a bushing having an surface adapted for contact with the control lever, connected to the guide rod for axial dis-



placement and rotation therewith, engaged with the sensor so that the position of the sensor changes as the guide rod rotates;

means for rotating the guide rod.

4,943,266

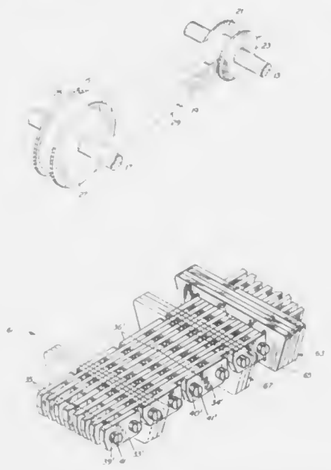
METAL CHAIN BELT

Philip J. Mott, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 676,143, Nov. 29, 1984, abandoned. This application Mar. 20, 1989, Ser. No. 326,464

Int. Cl.[5] F16G *5/18*

U.S. Cl. 474—201 **12 Claims**



1. An endless power transmission chain-belt comprising:

a carrier comprising a plurality of sets of links; each link defining a pair of spaced-apart pivot centers, the distance between adjacent pivot centers defining the pitch of a link, which links are arranged in sets, some sets of links having a first pitch and other sets of links having a second pitch longer than the first pitch;

means joining adjacent sets of links and permitting articulation of said carrier about said pivot centers; and,

a plurality of generally trapezoidal blocks, said blocks being secured transversely across the sets of links of said second pitch and said blocks being secured transversely across less than all of the sets of links of said first pitch.

4,943,267

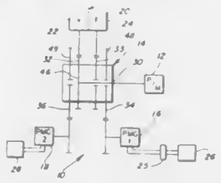
MECHANICAL DIFFERENTIAL

Kenneth B. Sugden, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 7, 1988, Ser. No. 280,955

Int. Cl.[5] F16H *37/06*

U.S. Cl. 475—6 **23 Claims**



1. A mechanical differential comprising:

first, second and third ring gears, each having inner and outer surfaces;

first and second planet gears rotatably disposed on first and second carrier rods, the first and second planet gears and said first and second carrier rods being disposed within said ring gears, said first and second planet gears being engaged with said inner surface of said first ring gear; and

two sets of planet gears, each of said sets including third and fourth planet gears, one of said sets being rotatably disposed on a third carrier rod and the other of said sets being rotatably disposed on a fourth carrier rod, said two sets of third and fourth planet gears being engaged respectively with said first and second planet gears, said two third planet gears being further engaged with said inner surface of said second ring gear and said two fourth planet gears being further engaged with said inner surface of said third ring gear.

4,943,268

AUTOMATIC TWO-SPEED TRANSMISSION FOR THE DRIVE OF AUXILIARY UNITS OF A MOTOR VEHICLE ENGINE

Siegfried A. Eisenmann, and Hermann Härle, both of Conchesstr. 23, D-7960 Aulendorf, Fed. Rep. of Germany

Filed Jun. 15, 1989, Ser. No. 366,791

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1988, 3822611

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—95 **26 Claims**



1. An automatic two-speed transmission for the drive of at least one auxiliary unit (dynamo, fan, etc.) of a motor vehicle internal-combustion engine by the latter comprising a gear set in which at least one gear of which the axis of rotation orbits about the axis of rotation of another gear concentric with the input shaft of the transmission is in engagement with said other gear, a control element which is formed as freewheel, and a further control element rotating with an input shaft and actuable by centrifugal force for retarding and releasing the relative rotation between the gears of the gear set, wherein

the transmission comprises a housing revolving concentrically to the input shaft and containing a fluid supply, at least two gears of the gear set cooperate in the manner of a hydrostatic pump and can be influenced with the fluid, and the centrifugal control element also revolving with the housing controls the influencing of the pump.

4,943,269

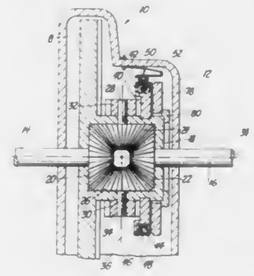
DIFFERENTIAL WITH LOCK-OUT MECHANISM

Roger R. Smith, 7261 Lyons Rd., Imlay City, Mich. 48444

Filed May 26, 1989, Ser. No. 358,735

Int. Cl.[5] F16H *1/38, 1/44, 1/445*

U.S. Cl. 475—231 **6 Claims**



1. A differential receiving rotary mechanical power from an input shaft and transmitting the rotary mechanical power to a pair of output shafts, the differential having a lock-out mechanism for compelling the output shafts to rotate at the same speed, the differential comprising:

a housing in which the input shaft and output shafts are journalled; the output shafts having a common axis;

a gear case rotatable in the housing on the common axis;

a transfer gear rotating the gear case in response to rotation of the input shaft;

an opposed gear coaxially fixed to each output shaft;

at least one orbital gear inside the case meshed with both of the opposed gears, whereby relative rotation between the opposed gears compels rotation of the orbital gear;

a pinion gear external to the gear case, the pinion gear rotating in concert with the orbital gear;

an annular gear member concentrically and rotatably mounted to the exterior of the gear case, the annular gear member having teeth on one axial side for meshing engagement with the pinion gear, whereby relative rotation between the opposed gears results in rotation of the annular gear member relative to the gear case;

a clutch mechanism surrounding the gear case at a position axially adjacent the annular gear member, the clutch mechanism having a clutch plate member rotationally fixed relative to the housing and axially translatable on the case along a path parallel to the common axis so that the clutch plate member can be frictionally engaged or disengaged from the annular gear member;

wherein the clutch mechanism further comprises a plurality of brackets disposed about an outer peripheral zone of the clutch plate member, each bracket having a first arm extending radially inwardly along one side of the outer peripheral zone of the clutch plate member and a second

arm extending radially inwardly along an opposite side of the outer peripheral zone of the clutch plate member, the axial distance between the arms being slightly greater than the axial width of the outer peripheral zone of the clutch plate member, a bridge portion of the bracket connecting the arms, the housing having an inner peripheral wall defining arcuate slots, the bridge portion of the brackets each defining a boss projecting into one of the slots, the slots being oblique to a plane passing through the housing perpendicular to the common axis, the brackets sliding along the arcuate slots while travelling in a curved path about the outer peripheral zone of the clutch plate member so that sliding the brackets along the slots results in angular movement of the brackets about the common axis and simultaneously results in translation of the brackets and the clutch plate member along the path parallel to the common axis;

holder means for fixing the positions of the brackets relative to one another;

means for biasing the brackets to a first angular position such that the clutch plate member is disengaged from the annular gear member;

means for moving the brackets to a second angular position such that the clutch plate member engages the annular gear member.

4,943,270

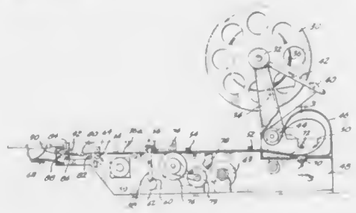
PHOTOGRAPHIC PRINT CUTTER

Allen E. Fleckenstein, Bellevue, Wash., assignor to CX Corporation, Seattle, Wash.

Continuation of Ser. No. 170,677, Mar. 18, 1988, abandoned, which is a continuation of Ser. No. 903,544, Sep. 2, 1986, abandoned. This application Oct. 24, 1989, Ser. No. 426,522

Int. Cl.[5] **B26D** *5/20*

U.S. Cl. 493—10 **6 Claims**



1. A print cutter for receiving a continuous web of photographic prints and cutting them into individual lengths comprising:

a base;

a track having a curved loop-forming portion mounted on said base, said web engaging said track and said loop-forming portion acting on said web to form said continuous web into a loop;

first drive means associated with said track for engaging said web and driving it in a first direction through said loop-forming portion;

second drive means associated with said track for driving said web in said first direction after it has passed through said loop-forming portion, said second drive means associated with said track operable independently of said first drive means;

cutter means mounted adjacent said track and spaced from said second drive means in said first direction;

a single sensor mounted adjacent said loop-forming portion for both sensing the passage of a leading end of said web through said loop-forming portion, and for detecting when the size of said loop of said web within said loop-forming portion is smaller than a predetermined size, said single sensor producing a stop drive signal when the leading end of the web is sensed to stop the first drive means when an end of said web reaches a first position, and said single sensor producing a start drive signal to start said first drive means when the size of said loop within said loop-forming portion is smaller than the predetermined size; and

control means for controlling said first drive means in response to said stop drive and start drive signals from said single sensor, said control means including a time delay means in communication with said sensor to receive said stop drive signal, and in communciation with said first drive means to stop said first drive means a predetermined time after receiving said stop drive signal.

4,943,271

APPARATUS FOR THE PRODUCTION OF (CIGARETTE) PACKS

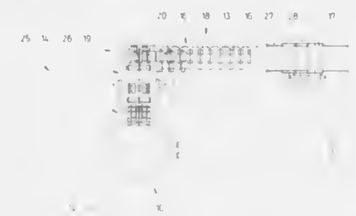
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Oct. 21, 1988, Ser. No. 261,042

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1987, 3735674

Int. Cl.[5] **B31B** *1/16, 3/32*

U.S. Cl. 493—24 **9 Claims**



1. In a longitudinally elongated apparatus for the production of hinge-lid cigarette packs from a moving continuous web of material, said apparatus having a vertical height and a longitudinally extending front side and a longitudinally extending rear side, severing means (19) for severing individual blanks (13) from the web of material (16), and means including a rotary folding turret (10) for receiving the severed blanks and folding the blanks in the formation of said hinge lid packs, the improvement comprising:

means for guiding the web of material (16) longitudinally along a longitudinal conveying track (18) which is located on the rear side (25) of the apparatus and which is essentially parallel to the longitudinal mid-plane of the apparatus;

said severing means (19) being located on said rear side (25) of said apparatus; and

means for conveying the severed blanks along a plank track (26) transversely relative to the conveying track (18), in a direction from said rear side (25) towards said front side, to said folding turret (10).

4,943,272

APPARATUS FOR MANUFACTURING CIGARETTE FILTER

Ichiro Hirose, Tokyo; Katsuo Kato, and Motonori Inamura, both of Hiratsuka, all of Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Feb. 21, 1989, Ser. No. 312,187

Claims priority, application Japan, Nov. 18, 1987, 62-289538

Int. Cl.[5] **A24C** *5/28*

U.S. Cl. 493—45 **7 Claims**

1. An apparatus for manufacturing a plurality of cigarette filter plugs by cutting a cigarette filter rod, comprising:

cutting means including:

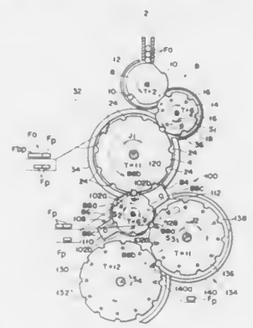
a cutting drum rotatable in one direction, said cutting drum having a plurality of transporting grooves adapted to receive filter rods therein and formed in a circumference of the cutting drum at regular intervals such that axes of the transporting grooves extend in the same direction as an axis of the cutting drum, said cutting drum also having one annular slit formed in the circumference of the cutting drum such that the annular slit extends across the transporting grooves; and

one rotatable circular cutting blade, said cutting blade having a circular edge extending into the annular slit;

filter rod-supplying means for supplying filter rods, each of which is a few times as long as the filter plug, from a supply position, defined with reference to a circumferential direction of the cutting drum, into every n-th transporting groove of the cutting drum (n: a predetermined natural number);

a plurality of stoppers located in the respective transporting grooves of the cutting drum and movable in unison in an axial direction of the transporting grooves;

adjusting means for adjusting the distance between each stopper and the annular slit to a distance corresponding to the length of one filter plug by moving all the stoppers together in the axial direction of the transporting grooves in association with one another, whereby the filter rod received in each transporting groove of the cutting drum



passes the cutting blade with the rotation of the cutting drum, so that the filter rod is cut into one filter plug and a multiple-length plug whose length is an integral multiple of that of the filter plug;

pushing means for pushing either the filter rod received in the transporting groove of the cutting drum or the multiple-length plug obtained by cutting the filter rod against the corresponding stopper along the transporting groove, at least when the filter rod or the multiple-length plug is transported from the supply position to the cutting blade;

receiving means for receiving the filter plug from the transporting groove of the cutting drum, said receiving means including:

a receiving drum which is arranged at a receiving position located away from the supply position in the circumferential direction of the cutting drum and is adapted to be in rolling contact with the cutting drum such that the receiving drum is rotatable in the opposite direction to that of the cutting drum, said receiving drum having a plurality of receiving grooves which are formed in the circumference of the receiving drum at regular intervals and adapted to receive filter plugs and which have axes extending in the same direction as an axis of the receiving drum; and

transfer means for transferring, at the receiving position, one or two filter plugs from the transporting groove of the cutting drum to the receiving groove of the receiving drum and for permitting the multiple-length plug to be held in the transporting groove of the cutting drum, in order for the multiple-length plug to be transported again to the cutting blade with the rotation of the cutting drum,

transport means for transporting either the one or two filter plugs received from the receiving groove of the receiving drum; and

filter plug-juxtaposing means for juxtaposing the filter plugs transported by the transport means, such that their axes are parallel to one another.

4,943,273

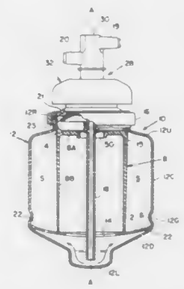
DISPOSABLE CENTRIFUGE BOWL FOR BLOOD PROCESSING

Etienne Pages, Divonne, France, assignor to Haemonetics Corporation, Braintree, Mass.

Continuation-in-part of Ser. No. 232,544, Aug. 15, 1988, which is a continuation of Ser. No. 888,764, Jul. 22, 1986. This application Jan. 5, 1989, Ser. No. 294,056

Int. Cl.[5] **B04B** *7/00*

U.S. Cl. 494—41 **10 Claims**



1. A disposable blood processing centrifuge rotor comprising:

(a) a rotatable bowl body having at least one straight section and upper and lower inclined diagonal sections connected to one of said straight sections; said body being rotatable about an axis and having a single aperture therein concentric with said axis through an outer wall of the bowl body; and

(b) a rotary seal assembly affixed to said bowl body and covering said aperture and having input and output ports for fluid communication with the interior of said bowl body;

(c) a core assembly comprising:

(i) a walled core body having a transverse ring portion which mates with the bowl body at the aperture thereof and a cylindrical portion longitudinally extending from said ring portion; and

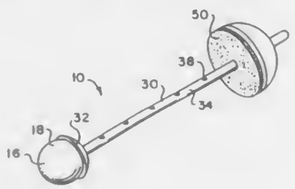
(ii) a diverter member having a donut-like shape with an inner opening coaxial to said axis and a diameter smaller than the outer diameter of said cylindrical portion and an outer apertured periphery with a diameter about equal to the inner diameter of said straight section and larger than the diameter of the bowl aperture and sufficiently non-rigid as to be capable of being inserted through said bowl aperture and be rigidly retained in a horizontal position against an inner wall of the bowl body by compression as the bottom of the cylindrical portion of said core body abuts the diverter member.

4,943,274

APPARATUS FOR APPLYING EARLOBE MEDICATION

Judy S. Edwards, 114 W. 14th St., Irving, Tex. 75060

Filed May 8, 1989, Ser. No. 349,320
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—2 3 Claims



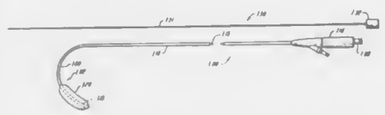
1. Apparatus for insertion through an aperture in an ear lobe, comprising:
a resilient housing having exterior and interior walls, said interior walls defining a reservoir for medicament, and said housing further having an opening through said exterior and interior walls defining an outlet;
a tubular conduit connected to and extending from said outlet in said housing, said conduit having inner and outer cylindrical longitudinal walls, with a plurality of radial cylindrical walls forming apertures between said inner and outer longitudinal walls;
said housing having a spherical exterior wall; and
said conduit having a semispherical collar attached to an end thereof and joined to a portion of said housing exterior wall.

4,943,275

INSERTABLE BALLOON WITH CURVED SUPPORT

Saul Stricker, Richmond Hill, Canada, assignor to Ablomed Limited Partnership, Danvers, Mass.

Filed Oct. 14, 1988, Ser. No. 257,752
Int. Cl.[5] A61M *29/00*
U.S. Cl. 600—18 18 Claims



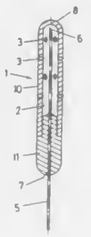
1. An insertable balloon assembly comprising
a balloon having first and second ends,
a balloon supporting structure extending between the first and second ends of the balloon which maintains the balloon longitudinally extended to prevent collapse of the balloon, and imparting a curvature to said balloon conforming to a curved arterial passage such that the balloon remains stably positioned when pumping in the curved passage,
an inflation catheter having a first end with a curvature matching said supporting structure connected to said balloon second end and extending to a handle assembly which is thereby interconnected with the balloon, said supporting structure defining an inner lumen extending in said catheter for receiving a straightening member inserted through said handle which straightens the balloon for insertion.

4,943,276

DEVICE FOR THE DISCHARGE OF INTESTINAL GASES

Dino Ghedina, Schillerstrabe 4, A-6020 Innsbruck, Austria

Continuation of Ser. No. 64,884, Jun. 22, 1987, abandoned. This application Jun. 13, 1989, Ser. No. 366,314
Claims priority, application Austria, Jul. 15, 1986, 1917/86
Int. Cl.[5] A61B *19/00*
U.S. Cl. 600—29 6 Claims



1. A device for the pressure-reduced discharge of intestinal gases consisting of:
two opposed end portions, both of which have rounded end portions and a middle cylindrical wall portion, one end insertion portion and the middle portion being a void hollow portion for collecting gas and is of flexible material, the middle portion having a plurality of gas intake openings, said rounded one end portion being impermeable to gas;
a second solid end portion securing a tube means;
said gas collecting void positioned within said hollow wall and end portions into which gas passes through said plurality of gas intake openings;
said tube means through which gas will exit the device located within said gas collecting void, the outside diameter of the tube means being substantially smaller than that of the gas collecting void and the tube means being of a sufficient length to extend from outside the second solid portion of the device into the interior of the gas collecting void to the area of the rounded gas-impermeable insertion end portion of the gas collecting void, said tube means being of a length which permits positioning of the second solid end portion beyond a sphincter muscle.

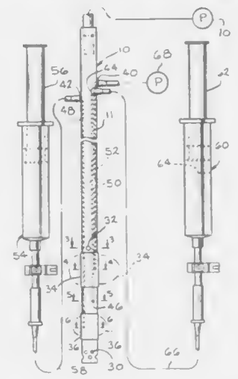
4,943,277

RETROGRADE CORONARY SINUS CARDIOPLEGIA CANNULA AND METHOD FOR USING SAME IN HEART SURGERY

Steven F. Bolling, 3456 Daleview Dr., Ann Arbor, Mich. 48105

Filed Mar. 24, 1989, Ser. No. 328,228
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 12 Claims

1. Cannula apparatus for delivering cardioplegia to the veins of the heart during cardiac surgery, said apparatus comprising a main tubular member adapted to be inserted into the right atrium cavity of the heart to a position extending into the inferior vena cava, said tubular member having spaced openings communicating with both the inferior and superior vena cavas, said openings being for the purpose of enabling blood to be oxygenated to enter the tubular member for transport to blood oxygenating apparatus, passage means operatively associated with said tubular member and having a discharge port located between said openings, said passage means having an inlet adapted to be connected to a source of cardioplegic solution, means forming a pair of fluid passages on said tubular member, a first inflatable seal member communicating with one of said fluid passages and being operable on inflation to block said inferior vena cavity around said tubular member, a second inflatable seal member communicating with the other one of said fluid passages and being operable on inflation to block the atrium cavity around said tubular member so as to form an isolated chamber around said tubular member and between said seal members communicating only with said discharge port for cardioplegic solution and the heart's coronary sinus thereby enabling a desired flow of cardioplegia to the coronary sinus from said isolated chamber so long as said seal members remain inflated.

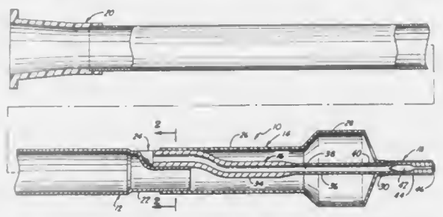


4,943,278

DILATATION BALLOON CATHETER

Charles L. Euteneuer, St. Michael; Richard C. Mattison, Mound; Daniel O. Adams, Blaine; Thomas R. Hektner, Minnetonka, and Peter T. Keith, Edina, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Feb. 29, 1988, Ser. No. 162,004
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 31 Claims



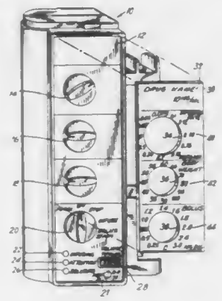
1. A catheter for use in angioplasty, the catheter comprising:
an elongate flexible tubular member having an interior passage extending from a proximal end to a distal end, the tubular member having a longitudinally extending bonding region formed in a portion of a side wall of the tubular member adjacent to its distal end;
a core member having a smaller outer diameter than the tubular member, the core member having a proximal end positioned in the bonding region and bonded to the tubular member and the core member extending distally beyond the distal end of the tubular member;
an inflatable balloon member having a first end bonded to the proximal end of the core member and to the distal end of the tubular member and having a second end connected to the core member, the balloon member extending around the core member and having an interior in fluid communication with the interior passage of the tubular member; and
wherein the core member has a vent passage which extends between a vent opening in communication with the interior of the balloon member and an exterior opening proximate the proximal end of the core member.

4,943,279

MEDICAL PUMP WITH INFUSION CONTROLLED BY A DETACHABLE CODED LABEL

Nicholas G. Samiotes, Westwood, and Paul Lucas, Groton, both of Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed Sep. 30, 1988, Ser. No. 251,563
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—151 16 Claims





1. An apparatus comprising:
pumping means;
means for controlling operation of said pumping means, including sensing means and manual controls for manually setting the desired operation of said pumping means; and
indicator means, separable from said means for controlling, which includes:
information in a pre-arranged configuration for a selected mode of pump operation; and
visual scales corresponding to said pre-arranged configuration, said visual scales indicating the desired setting for said manual controls when said indicator means is placed adjacent to said manual controls;
wherein said sensing means senses said pre-arranged configuration and is responsive thereto to alter calculations for controlling said pumping means in accordance with said pre-arranged configuration and with said visual scales when said indicator means is placed adjacent to said manual controls.

4,943,280

SELF-SEATING FLAPPER VALVE FOR AN INSUFFLATION CANNULA ASSEMBLY

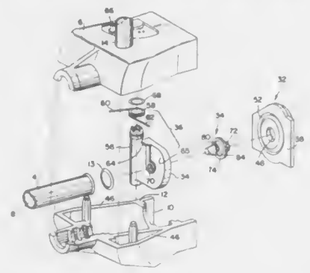
Jack R. Lander, Danbury, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 31, 1987, Ser. No. 140,025
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—169 12 Claims

12. An insufflation cannula assembly, which comprises:
a cannula having opposite end portions;

a housing mounted on one end of the cannula, said housing having an opening formed therein; and

a flapper valve mounted in the housing, said flapper valve including a valve seat disposed at the housing opening and having an opening formed therein to allow a surgical instrument to pass therethrough and into the cannula, said valve seat formed of a resilient material and having an annular portion of reduced thickness defining said opening, said annular portion being of greater flexibility than adjacent portions thereof due to said reduced thickness, a valve plug adapted to engage said valve seat at the opening thereof and to form a seal with said valve seat, and means for mounting said valve plug and for pivoting said valve plug into and out of engagement with said valve seat, said valve plug being movable on said plug mounting means so as to provide said valve plug with self-seating capability to allow said valve plug to automatically align itself with said valve seat opening when said plug and said valve seat are in engagement, whereby said self-seating capability of said valve plug combines with said resilient annular flexible portion of said valve seat to provide a substantially gas tight seal.



4,943,281

SYRINGE

Lutz Kothe, Bodmaner Str. 15, D-7760 Radolfzell 14, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 298,403

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1988, 8800767[U]; Apr. 7, 1988, 8804592[U]

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **22 Claims**



1. A syringe which comprises: a cannula having a cannula tip; a cylindrical tube connected to said cannula at a location spaced from said cannula tip; a cannula guard for said cannula; a protective bow of said cannula guard being displaceable inwardly towards the cylindrical tube to retract the cannula guard; and a recess of said bow embracing the cannula.

4,943,282

SHIELD FOR DEVICES CAPABLE OF PENETRATING SKIN

Mary J. Page, 4634 French Meadow, San Antonio, Tex. 78250; Benton W. Hamilton, 13403 Townwood, Houston, Tex. 77045; Bruce L. Skiles, 15 Charleston Park, No. 714, Houston, Tex. 77025, and Robert V. Reinhart, Jr., 2303 Moss Ter., San Antonio, Tex. 78232

Division of Ser. No. 181,387, Apr. 14, 1988, abandoned. This application Mar. 13, 1989, Ser. No. 311,044

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **3 Claims**



1. An apparatus for inhibiting accidental injury to a user of a device having a part thereof capable of penetrating skin of said user, said apparatus comprising a sleeve slidably and rotatably engaging a portion of said device adjacent to said penetrating part;

first means connected to said sleeve for retaining said sleeve at a first position on said portion of said device whereby the penetrating part is exposed, and

second means connected to said sleeve for retaining said sleeve at a second position on said portion of said device whereby a part of the sleeve substantially surrounds the penetrating part, the first and second sleeve retaining means comprising

at least one groove inscribed along an axial length of an inside surface of said sleeve, each groove being substantially circumferentially equidistant from any other groove,

at least one ridge carried on said adjacent portion of said device, each ridge slidably engaging one of the at least one grooves,

at least one slot along the axial length of said tube, each slot being substantially circumferentially equidistant from the at least one groove, and

at least one peg carried on said penetrating part adjacent portion of said device, each peg slidably engaging one of the at least one slots.

4,943,283

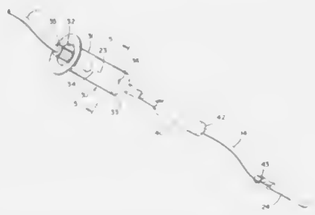
BLOOD COLLECTING APPARATUS WITH SHIELDED NEEDLES

J. Martin Hogan, Long Beach, Calif., assignor to City of Hope, Duarte, Calif.

Filed Jul. 20, 1988, Ser. No. 221,603

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **8 Claims**



2. In an apparatus for collecting blood or other body fluids, wherein a first length of tubing has a first needle on one end for insertion into the vein of a donor and a second needle on the other end for filling test tubes with blood for various screening tests, the improvement comprising:

a combination needle shield and test tube receptacle on the length of tubing in shielding relationship to the second needle to protect health workers against exposure to the sharpened point of the needle and to receive a test tube for operative association with the needle so that the test tube may be filled with blood or other body fluid,

said combination needle shield and test5 bue receptacle comprising part of a frangible needle seal for joining said first length of tubing with a second length of tubing, said frangible needle seal including a rigid frangible tube fixed at one end to one end of the shield and extending coaxially therewithin and over said needle, said frangible tube being fixed at its other end to the second length of tubing and being joined to said shield through a weakened area so that the tube may be broken from the shield and removed, to separate the second length of tubing from the first length of tubing and to expose the needle inside the shield.

4,943,284

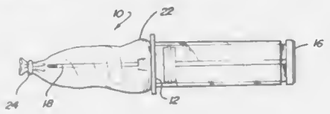
SHEATH FOR DEVICES FOR INJECTING OR WITHDRAWING BODY FLUIDS

Frederick L. Erlich, 29540 Meadowlane Dr., Southfield, Mich. 48076

Continuation of Ser. No. 23,813, Mar. 9, 1987, Pat. No. 4,772,275. This application Sep. 6, 1988, Ser. No. 240,268

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—263 **8 Claims**



1. A disposable medical device for use in a patient, the device protecting attendant personnel from contamination associated with the device after the device has been withdrawn from the patient, the device comprising:

(a) a hollow tubular apparatus having a body contact end and a non-body contact end, the apparatus having a tip disposed at the body contact end; and

(b) a flexible sheath being secured to the hollow tubular apparatus between the body contact end and the non-body contact end, the flexible sheath having a stowed-retracted position and an enveloping position, the flexible sheath being completely stowed when in the stowed-retracted position, the flexible sheath being unstowed and extended in the enveloping position, the length of the flexible sheath in the enveloping position being great enough to extend beyond the tip of the hollow tubular apparatus; and

wherein the flexible sheath is in the stowed-retracted position until after the body-contact end of the hollow tubular apparatus is removed from the circulatory system of the patient, at which time the flexible sheath is extended beyond the tip of the hollow tubular apparatus.

4,943,285

UNDULATING RECTAL SPECULUM

Robert A. Hawks, 3602 W. Danbury Dr., Glendale, Ariz. 85308

Filed Dec. 22, 1988, Ser. No. 289,566

Int. Cl.[5] A61M *3/02*

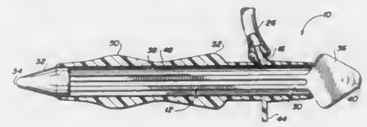
U.S. Cl. 604—275 **9 Claims**

1. A rectal speculum for use with a colonic lavage machine, said speculum comprising in combination:

(a) a hollow main tube, said main tube including a distal end for insertion into a patient's rectum and a proximal end for connection to a waste discharge hose;

(b) an axially undulating exterior surface having an annular depression intermediate a pair of annular expansions and disposed about at least an axial length of said main tube for circumscribingly receiving and being gripped by the rectal sphincter muscle of a patient undergoing clonic lavage, one of said pair of annular expansions extending posteriorly from the anterior end of said main tube and having an increasing rate of annular expansion to define a truncated cone with a concave surface extending posteriorly from the anterior end of said main tube to the approximate apex of said one annular expansion, said one annular expansion having a decreasing rate of annular contraction posteriorly from the approximate apex to define a truncated cone with a concave surface extending posteriorly from the approximate apex of said one annular expansion to the approximate midpoint of said annular depression, the other of said pair of annular expansions extending posteriorly from the approximate midpoint of said annular depression and having an increasing rate of annular expansion to define a truncated cone with a concave surface extending posteriorly from the approximate midpoint of said annular depression to the approximate apex of said other annular expansion; and

(c) an inlet tube intersecting with said main tube for directing fluids into said main tube, said inlet tube having a diameter less than the diameter of said main tube.



4,943,286

PATIENT UNDERPAD

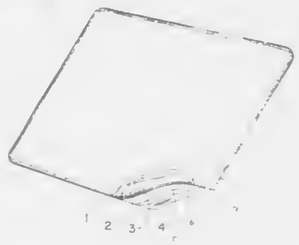
Kenneth W. Armstead, P.O. Box 598, Lebanon, Tenn. 37087

Filed Dec. 30, 1988, Ser. No. 292,092

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—558 **5 Claims**



1. An improved reusable patient underpad comprising:

(a) a top absorbent layer of heat-treated polyester rayon needle form non-woven fabric;

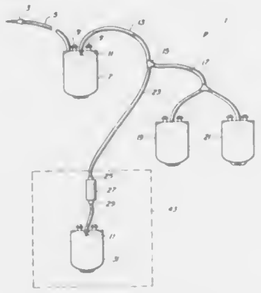
(b) a second layer of non-woven polyester;

(c) a third layer of water impervious synthetic material, bonded to said second layer; and

(d) a fourth layer of synthetic fleece warpknit fabric bonded to said third layer.

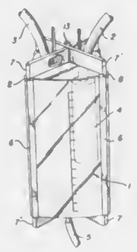
VOL 1116 ISS 4 JL 24 1990 UMI

4,943,287
RED BLOOD CELL STORAGE SYSTEM
Raleigh A. Carmen, Concord, Calif., assignor to Miles Inc., Elkhart, Ind.
Filed Jul. 17, 1989, Ser. No. 380,949
Int. Cl.[5] A61J *1/00*
U.S. Cl. 604—408 10 Claims



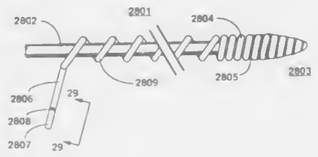
1. In a method of storing red blood cells which comprises mixing packed red blood cells and white blood cells with a storage solution and storing the mixture in a plastic blood bag for a prolonged period of time, the improvement which comprises removal of substantially all white blood cells from the mixture prior to placement of the mixture in the blood bag and then storing the red blood cells in a plasticized polyvinylchloride bag made with a plasticizer that releases less than 1 ppm plasticizer into the stored red blood cells at 42 days storage.

4,943,288
LIQUID REINFUSION BAG SYSTEM
Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch, Inc., Farmingdale, N.Y.
Continuation of Ser. No. 364,583, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 160,293, Feb. 25, 1988, abandoned. This application Oct. 13, 1989, Ser. No. 420,718
Int. Cl.[5] A61M *5/14*
U.S. Cl. 604—408 5 Claims



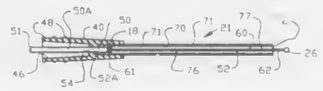
1. A reinfusion bag including a flexible container having a side wall and top and bottom end walls, an inlet tube in the top end wall, an outlet tube adapted to be connected to a suction source in the top end wall, a reinfusion tube in the bottom end wall, a plurality of relatively rigid frame members disposed around and connected to the side wall of the flexible container, and locking means releasably attached to said frame members and extending across the top and bottom end walls for retaining the end walls of the flexible container in an extended position so that the container is maintained in an open position.

4,943,289
APPARATUS FOR REMOVING AN ELONGATED STRUCTURE IMPLANTED IN BIOLOGICAL TISSUE
Louis Goode, Evans City, and Frederick J. Shipko, Spring Church, both of Pa., assignors to Cook Pacemaker Corporation, Leechburg, Pa.
Continuation-in-part of Ser. No. 347,217, May 3, 1989, which is a continuation-in-part of Ser. No. 295,100, Jan. 17, 1989, which is a continuation-in-part of Ser. No. 269,711, Nov. 9, 1988. This application Jun. 9, 1989, Ser. No. 363,960
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 10 Claims



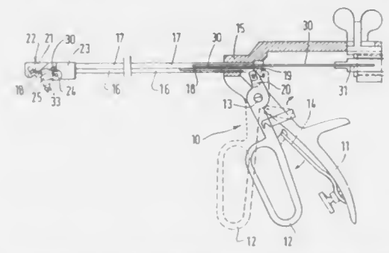
1. Apparatus for removing a pacemaker lead implanted in a heart, comprising:
stylet means insertable into a longitudinal passageway of said implanted lead for controlling movement of said lead;
coil means having a distal end attached about a distal end of said stylet means and operable for securing said distal end of said stylet means to said lead when said stylet means is inserted in said passageway; and
catch means attached to and extending from a proximal end of said coil means and having a segment folded back thereon for engaging said lead when said coil means is operated.

4,943,290
ELECTROLYTE PURGING ELECTRODE TIP
Frederick W. Rexroth, Dunedin, and F. Barry Bays, Seminole, both of Fla., assignors to Concept Inc.
Continuation of Ser. No. 65,823, Jun. 23, 1987. This application Apr. 27, 1989, Ser. No. 343,730
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—45 7 Claims



1. An electrolyte fluid purging electrosurgical device for use with an electrode holder connected to an electrical power source and with a source of non-electrically conductive fluid for enabling electrosurgery at a surgical site which is surrounded by an electrically conductive fluid, comprising:
an electrically conductive electrode shaft having a first electrode end and a second electrode end;
an insulating tubular duct defining a duct conduit extending between a first duct end and a second duct end;
said electrode shaft being disposed within said duct conduit with said first electrode end of said electrode shaft extending beyond said first duct end of said insulating tubular duct for defining an electrode shaft connecting means for connection to the electrode holder;
said second electrode end of said electrode shaft extending beyond said second duct end of said insulating tubular duct for defining an electrode tip to provide electrical current to the surgical site;
a plurality of support walls extending longitudinally within said duct conduit of said insulating tubular duct and disposed between said insulating tubular duct and said electrode shaft for supporting said electrode shaft within said duct conduit of said insulating tubular duct and for defining a plurality of conduit channels encompassing said electrode shaft; and
means for connecting said first duct end of said insulating tubular duct to the source of non-electrically conductive fluid for enabling non-electrically conductive fluid to flow through said plurality of conduit channels of said insulating tubular duct to deliver the electrically non-conductive fluid to an immediate area proximate said electrode tip to displace the electrically conductive fluid from the immediate area proximate the surgical site when said electrode tip is positioned at the surgical site to enable electrosurgical treatment thereat.

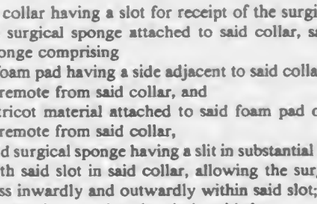
4,943,291
DRILLING FEELER, IN PARTICULAR FOR POSITIONING AND SECURING A MEDULLARY NAIL
Christian Tanguy, Choisy le Roi, France, assignor to Zimmer S.A., Vitry sur Seine Cedex, France
Filed Dec. 19, 1988, Ser. No. 286,681
Claims priority, application France, Dec. 18, 1987, 87 17716
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—64 5 Claims



1. Drilling feeler, in particular for positioning and fixing a medullary nail in which, through external gripping means, is introduced into the medullary nail and is placed in alignment with the axis of an inlet pin or screw hole of the wall of this nail, a drilling tool integral with a sliding block bearing means for positioning and blocking the said nail, this tool being mounted at the distal end of a driving rotating spindle, at least partially flexible, wherein the distal end of the spindle carrying the tool is housed in a bore of a sleeve protruding from a drilling head, said head being movable around an axle carried by the block sliding between a disengagement position allowing the sliding of the said head in the nail and an engagement position in which the sleeve is engaged in the inlet pin or screw hole, the feeler furthermore comprising a blocking wedge hinged to the end of a rod connected to the gripping means, this wedge being adapted to move closer to or away from the drilling head, in order to respectively maintain it in engagement position or allow its tilting towards disengagement position.

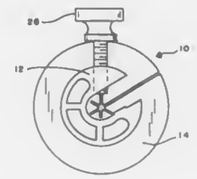
4,943,292
PLATE FOR BROKEN BONE FIXATION
Amnon Foux, Haifa, Israel, assignor to National Research Council of Canada, Ottawa, Canada
Filed Nov. 8, 1989, Ser. No. 433,144
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—70 13 Claims

1. A device adapted for placement in the body of a person to span a fracture in a bone and to be connected by means of screws to the bone on both sides of the fracture, comprising a plate, cushions, and screws, all constructed of biologically-compatible material, in which:
said plate is substantially rigid;
said plate is provided with a plurality of holes that enable passage of said screws through said plate such that the central axis of each of said screws lies approximately in a plane that contains the long axis of the bone and is nearly perpendicular to said long axis when the device is installed;
at least all those holes which are on one side of the fracture



when the device is installed are elongated in a direction substantially parallel to the long axis of the bone when the device is installed;
each hole which is an elongated hole is partially filled with a said cushion which is an elastic biologically-compatible material positioned with a snug fit in the portion of said elongated hole which is to be closer to the fracture when the device is installed, said cushion being of a shape and material that permits one of said screws to pass through the unfilled portion of said elongated hole for the purpose of fastening the device to the bone.

4,943,293
SURGICAL PIN SITE SHIELD
Harry E. Lee, Jr., Southaven, Miss., assignor to Engineering & Precision Machining, Inc., Memphis, Tenn.
Filed Sep. 21, 1989, Ser. No. 410,277
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—96 9 Claims



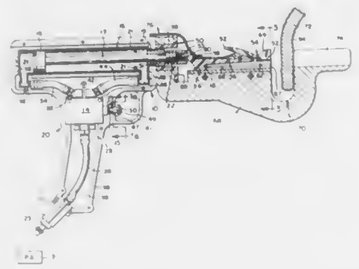
1. A pin site shield for attachment to a surgical pin, comprising:
(a) a collar having a slot for receipt of the surgical pin;
(b) a surgical sponge attached to said collar, said surgical sponge comprising
a foam pad having a side adjacent to said collar and a side remote from said collar, and
a tricot material attached to said foam pad on said side remote from said collar,
said surgical sponge having a slit in substantial registration with said slot in said collar, allowing the surgical pin to pass inwardly and outwardly within said slot; and,
(c) means for securing the pin in said slot.

4,943,294

POWER-DRIVEN APPLICATOR FOR TAGGING LIVESTOCK

Ronald K. Knapp, Cody, Wyo., assignor to Y-Tex Corporation, Cody, Wyo.

Filed Mar. 30, 1988, Ser. No. 175,493
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—117 **22 Claims**



1. A hand-portable livestock tagging device operable by a pressurized pneumatic fluid source comprising:
a casing holdable by one hand and having support means for positioning an object on livestock to be tagged;
a valve means located in said casing for controlling the direction of flow of pressurized pneumatic fluid;
manually actuable means mounted in said casing and connected to said valve means for controlling the position of said valve means;
a piston cylinder located within said casing;
a double-acting piston carried within said piston cylinder and driven fully and rapidly by the pressurized pneumatic fluid in a first direction and in a second opposite direction in accordance with the position of said valve means;
means for directing the pressurized fluid from said pneumatic fluid source to said valve means and from said valve means to said piston cylinder;
piercing means connected to and moving with said piston for penetrating the object to be tagged when driven by said piston in said first direction and for retracting from the object when driven by the piston in said second direction; and
means for attaching a tag having an anchor portion to said piercing means such that the anchor portion of the tag will be forced through the object to be tagged by said piercing means when the piercing means is driven fully and rapidly in said first direction.

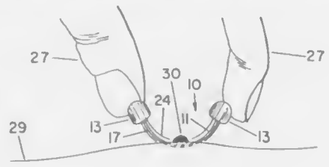
4,943,295

SURGICAL CUTTING TOOL

Thaddeus J. Hartlaub, 6765 Schroeder Rd.; Mark T. Hartlaub, 14 Celia Ct., both of Madison, Wis. 53711, and Paul P. Hartlaub, 1135 S. 23rd St., Milwaukee, Wis. 53204

Filed Jul. 13, 1988, Ser. No. 218,072
Int. Cl.[5] A61B *17/32, 19/00*
U.S. Cl. 606—131 **13 Claims**

8. A blade holder for safely forming a thin flexible blade with two side margins and a keen-edged front margin into a surgical cutting tool for removing portions of human skin by cutting below the surface of the skin, comprising: two finger grips for gripping by the fingers of a user, each finger grip being a body of material which includes an inwardly facing engagement surface which can be affixed to and extend along one blade side margin, and an outwardly facing gripping surface which is spaced laterally outwardly from the blade side margin when the finger grips are affixed to the blade, the gripping surface presenting a relatively large area for gripping compared to the area of the side margin of the blade so that the blade holder and blade can be controlled and held safely by finger engagement of the gripping surfaces so that the flexible blade may be readily bent in response to finger pressure applied to the relatively large surface areas of the gripping surfaces of



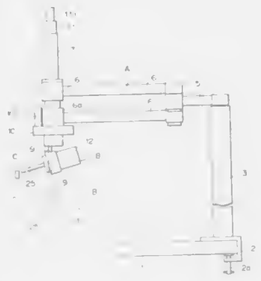
the two finger grips and the keen-edged front margin of the flexible blade presents a variable convex U-shaped cutting edge for cutting a selected depth beneath a limited area of skin surface and wherein each gripping surface has a rounded notch which conforms in approximate shape to a finger.

4,943,296

ROBOT FOR SURGICAL OPERATION

Hiroyasu Funakubo: Takeyoshi Dohi, both of Tokyo; Ichiro Sakuma, Akishima, and Takashi Komeda, Tokyo, all of Japan, assignors to Life Technology Research Foundation, Tokyo, Japan

Continuation of Ser. No. 35,661, Mar. 26, 1987, abandoned. This application Dec. 12, 1988, Ser. No. 285,341
Claims priority, application Japan, Mar. 28, 1986, 61-68424; Mar. 25, 1987, 62-69086
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **13 Claims**



1. A robot for surgical operation, comprising:
(a) two spaced vertical support means;
(b) two sets of articulated arm means, each said set of arm means being rotatably supported at one end thereof to one of said vertical support means and extending substantially horizontally, each set of said arm means consisting of a first elongate member and a second elongate member pivotally connected to each other to provide said articulation, said two sets of arm means being pivotally connected at the free or distal ends thereof to each other;
(c) head drive means mounted on an axis extending through said connected free or distal ends of said two sets of articulated arm means, for driving a vertically movable member into vertical translatory motion and into rotational motion about the longitudinal axis thereof; and
(d) a drive mechanism mounted to the lower end of said vertically movable member for controllably supporting and driving at an extended extremity thereof a hollow cylindrical head, said drive mechanism comprising

a moving pipe for supporting and rocking the head,
a rotary pipe slidably supported within the moving pipe, the head being attached swingably to the rotary pipe attached to controllably swing about the longitudinal axis of the rotary pipe such that rotation of said rotary pipe about the longitudinal axis thereof causes the head to swing about the longitudinal axis of the rotary pipe,
a hollow cylindrical treatment member rotatably supported by the head to provide a predetermined treatment at a treatment end thereof,
a rotary shaft slidably and rotatably supported within the rotary pipe and connected to the head to rotate a surface treatment member attached thereto, and
a link mechanism for connecting said moving pipe to said head so that longitudinal movement of the moving pipe relative to the rotary pipe causes said head to swing about an axis perpendicular to the longitudinal axis of said moving pipe.

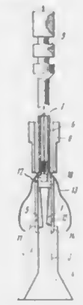
4,943,297

DEVICE FOR PREPARATION OF INTRAVENOUS FILTER FOR IMPLANTATION

Viktor S. Saveliev, ulitsa Donskaya, 27, kv. 29; Evgeny G. Yablokov, Rogozhsky val, 6, kv. 45; Vladimir I. Prokubovsky, Khoroshevskoe shosse, 66, kv. 71, all of Moscow; Stepan M. Kolody, korpus 505, kv. 28, Moskovskaya oblast, Zelenograd; Sergei V. Saveliev, ulitsa Bolshaya Bronnaya, 9/1, kv. 16, and Ary A. Smirnov, Leningradsky prospekt, 28, kv. 120, both of Moscow, all of U.S.S.R.

Filed Jan. 6, 1989, Ser. No. 294,468
Claims priority, application U.S.S.R., Jan. 2, 1988, 4351223
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—200 **1 Claim**

1. A device for preparation of an intravenous filter for implantation, comprising:
a guide element having a cylindrical and a conical portion;
an applicator, comprising:
a capsule which is detachably connected with said cylindrical portion of the guide element, said capsule carrying an intravenous filter and having a base;
a plurality of springs located at said base; each of said springs having one end contacting said base and the other end free; each of said springs curved in such a manner that said free end of said spring, together with the free ends of all of said springs define a pyriform body of revolution, which encompasses said capsule;
a conducting catheter connected to said capsule;
a sleeve installed on said catheter and traversable lengthwise said catheter during preparation for surgery in order to interact with said springs, thus urging said free ends of said springs to be brought together until they are in contact with said capsule;



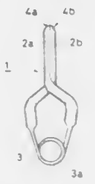
a stylet accommodated inside said catheter and said capsule and having a thread for holding said intravenous filter; and
a collet grip adapted to interact with said stylet.

4,943,298

CEREBRAL ANEURYSM CLIP

Shigekiyo Fujita, 8-22, kitashinzaike 1-Chome, Himeji, Hyogo; Toyokazu Kurushima, Aichi; Hiroaki Kuno, Aichi, and Hiromitsu Hiraiwa, Aichi, all of Japan, assignors to Inax Corporation, Tokoname and Shigekiyo Fujita, Himeji, both of, Japan

Filed Jun. 2, 1989, Ser. No. 360,588
Claims priority, application Japan, Jun. 9, 1988, 63-142634
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—158 **9 Claims**



1. A clip for cerebral aneurysm comprising a means which is made of a ceramic and which has a function of clipping a root part of a lump of cerebral aneurysm and a spring means which has a function of imparting a power for clipping said root part to said clipping means.

4,943,299

LEVELLING AGENTS FOR DISPERSE DYEING OF POLYESTER: ETHOXYLATE OR PROPOXYLATE OF SUBSTITUTED PHENOL, EMULSIFIER AND CARRIER

Hans Schulze, Cologne; Klaus Walz, Leverkusen; Frank Bartkowiak, Cologne, and Karlhans Jakobs, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 22, 1988, Ser. No. 247,796

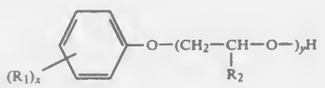
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1987, 3734159

Int. Cl.[5] D06P *1/65, 3/54*

U.S. Cl. 8—610 12 Claims

1. A levelling agent consisting essentially of

(I) a compound of the formula



in which

R_1 denotes C_1–C_3-alkyl, cyclohexyl, benzyl, phenyethyl or 2-phenylisopropyl, the rings of which are unsubstituted or substituted by C_1–C_4-alkyl,

R_2 denotes hydrogen or methyl,

x denotes 1, 2 or 3 and

y denotes 0 to 5, and

(II) an emulsifier, with or without (III) a carrier for the dyeing of polyesters,

wherein the emulsifier II comprises (a) 8 or more moles of ethylene oxide or propylene oxide reacted with (b) castor oil, soybean oil, a C_{18}–C_{22}-alkanol, a C_8–C_{12}-alkylphenol or a phenyl-C_1–C_3-alkylphenol, or alternatively the emulsifier II comprises an alkali metal, an alkaline earth metal or an ammonium salt of an aliphatic sulfonic acid having a total of at least 10 carbon atoms or of an aromatic sulfonic acid having a total of at least 10 carbon atoms, or mixtures thereof, wherein the emulsifier II serves to emulsify the compound I and optionally to emulsify the carrier III in water.

4,943,300

PROCESS FOR CONDITIONING COTTON

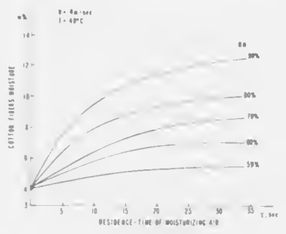
Lev Vinnikov, 2/8 Oswaldo Arenia, Beer-Sheva, Israel

Filed Jul. 28, 1988, Ser. No. 225,242

Claims priority, application Israel, Aug. 18, 1987, 83583

Int. Cl.[5] D01B *3/04*

U.S. Cl. 19—66 R 6 Claims



1. A process for moisturizing cleaned cotton to a moisture content between about 8 and about 9% comprising:

providing a stream of humid air having a predetermined relative humidity and a temperature between about 35 and about 95° C.;

contacting said cotton with said stream of humid air so that said cotton adsorbs water vapor from said humid air so as to provide a stream of reduced humidity air,

determining the relative humidity of said stream of reduced humidity air; and

controlling said predetermined relative humidity so that said stream of reduced humidity air has a relative humidity between about 65 and about 80%.

4,943,301

GRANULATION OF MAGNESIUM OXIDE PARTICLES

Dennis C. Nagle, Ellicott City, and Richard H. Van de Walle, Columbia, both of Md., assignors to Martin Marietta Magnesia Specialties Inc., Hunt Valley, Md.

Filed Aug. 1, 1988, Ser. No. 225,878

Int. Cl.[5] C04B *2/00;* C01F *5/02, 5/16*

U.S. Cl. 23—313 R 15 Claims

1. A method of granulating highly reactive, lightburned magnesia having a surface area of at least ten square meters per gram as measured by the B.E.T. nitrogen absorption method, said method consisting of adding to dry magnesia powder 20-35 percent by weight of the total mixture of liquid organic material selected from alcohols or ketones having the formulae, respectively:

wherein each R, independently, is an alkyl group having from 1 to 4 carbon atoms, and wherein said liquid organic material contains no more than about 20 percent by weight water, blending said materials to thereby form granules, and drying the granules to volatilize said liquid organic material.

4,943,302

FUEL COMPOSITION WITH A HIGH ENERGY CONTENT

Philip Eaton, Chicago, Ill.; Nereo Nodari, Spino D'Adda, Italy; Carlo Neri; Luigi Cassar, both of San Donato Milanese, Italy; Fabio Monti, Rome, Italy, and Fausto Alberici, Peschiera Borromeo, Italy, assignors to Enichem Synthesis S.p.A., Palermo and AGIP Petroli S.p.A., Rome, both of, Italy

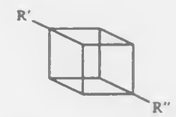
Filed Oct. 11, 1989, Ser. No. 420,050

Claims priority, application Italy, Oct. 14, 1988, 22296 A/88

Int. Cl.[5] C10L *1/16*

U.S. Cl. 44—56 2 Claims

1. Fuel composition for direct-ignition internal combustion engines, with a high energy content, containing a gasoline from petroleum and an amount of up to 90% by volume, as referred to the same fuel composition, of hydrocarbon "cubane" or of its mono-alkyl-or di-alkyl-derivatives, to be defined by means of the formula:



wherein R′ and R″ represent, independently from each other, a hydrogen atom or an alkyl radical containing from 1 to 3 carbon atoms.

4,943,303

CETANE IMPROVER

Joseph W. Pialet, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

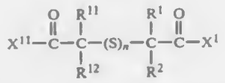
Filed Nov. 25, 1985, Ser. No. 801,528

Int. Cl.[5] C10L *1/10*

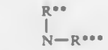
U.S. Cl. 44—57 13 Claims

1. A composition comprising a hydrocarbon diesel fuel and

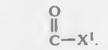
an ignition promoting amount of a sulfur containing compound having the formula:



wherein n is an integer from 1 to about 8; wherein R^2 and R^{12}, independently, are H or a hydrocarbyl having from 1 to 18 carbon atoms; wherein X^1 and X^{11}, independently, are H, an alkyl having from 1 to 20 carbon atoms, OH, OR^* where R^* is an alkyl having from 1 to about 22 carbon atoms, or



where R^{**} and R^{***}, are, independently, H or an alkyl having from 1 to about 20 carbon atoms; and wherein R^1 and R^{11}, independently, are H, a hydrocarbyl having from 1 to about 18 carbon atoms or



4,943,304

PROCESS FOR THE PURIFICATION OF BULK GASES USING CHABAZITE ADSORBENTS

Charles G. Coe, Macungie, and Thomas R. Gaffney, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Alleatown, Pa.

Filed Apr. 6, 1989, Ser. No. 334,668
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—66 **7 Claims**

1. In a process for the selective adsorption of one or more minor constituents from a bulk gas stream with a chabazite in which the bulk gas is size excluded from the pore structure of the chabazite or the minor constituted to be separated has a heat of adsorption greater than the bulk gas, the improvement which comprises separating the minor constituents utilizing a dehydrated calcium-exchanged chabazite having a Si/Al ratio of 1.9 to 2.3, a cation siting value f_s, of about 0.9 to 1, a cation distribution value, f_d, of about 0.74 to 1 and an adsorption capacity, C_n, of at least about 40 cc N_2/g at 30 ° C. and 1 atm under conditions such that the partial pressure of the minor constituent is in the linear low pressure region of the isotherm for the minor constituent.

4,943,305

AERATING APPARATUS FOR EXPELLING VOLATILE IMPURITIES FROM GROUND WATER

Bruno Bernhardt, Goerdelerstr. 2 W 113, D-7410 Reutlingen 11-Betzingen, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 359,096
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 8808089[U]
Int. Cl.[5] B01D *19/00*
U.S. Cl. 55—170 **3 Claims**

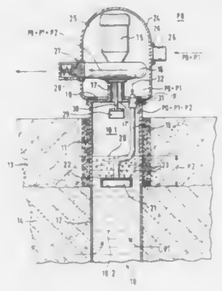
1. An aerating apparatus for expelling volatile impurities from ground water standing under a ground water pressure and from ground through which said ground water flows comprising:

an aeration shaft in said ground;

a vacuum generator mounted above said aeration shaft to generate a partial vacuum in said aeration shaft in the vicinity of said ground water to be purified;

a container including a pressurized receiving chamber mounted on an upper end of said aeration shaft, said vacuum generator forming said partial vacuum being located in said pressure receiving chamber;

means for feeding fresh air into said ground water collected in said aeration shaft below a water level of said ground water in said aeration shaft, wherein said means for feeding said fresh air comprises an air receiving space bounded by a screen wall located in said ground water and an air duct connecting said air receiving space with said pressurized receiving chamber and a float valve in said air duct leading to said air receiving space;



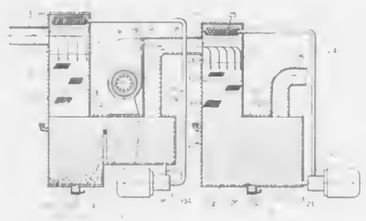
said fresh air being conductible to said pressurized receiving chamber at a fresh air pressure balancing said ground water pressure so that said volatile impurities expelled from said ground water in said aeration shaft are forced through said vacuum generator and out a second exhaust opening with accompanying air.

4,943,306

EXHAUST GAS PURIFYING SYSTEM

Ching-Chi Cho, No. 3, Lane 6, Ta-Chiao 2nd Street, Yung kang Hsiang, Tainan Hsien, Taiwan

Filed Aug. 25, 1989, Ser. No. 398,497
Int. Cl.[5] B01D *47/00*
U.S. Cl. 44—228 **1 Claim**



1. An exhaust gas purifying system comprising a first and a second purifiers side by side in combination,

the first purifier including a casing integrally formed with a water tank, having a perforated top and being divided into a first compartment having a bottom and a second compartment having a bottom extending downwardly from the bottom of the first compartment by means of a vertical strainer means and a chamber corresponding to an opening in the top, extending upwardly from the top and forming a vertical passage along the chamber downwardly in alignment with the first compartment, strainer means fitted in the chamber across the passage, means for leading exhaust gases into the chamber to flow along the passage through the strainer means, means for feeding clean water into the water tank, water spray means in the chamber over the strainer means for spraying water downwardly along the passage, means for supplying water from the water tank to the water spray means, means provided in the bottom of the first compartment for draining and means in the top of the water tank for discharging the exhaust gases;

the second purifier including a casing integrally formed with a second water tank, having a perforated top and bottom, and a second chamber corresponding to an opening in the top, extending upwardly from the top and forming a vertical passage along the second chamber, a second strainer means fitted in the second chamber across the passage thereof, means for leading exhaust gases from the first purifier into the second chamber to flow along the passage thereof though the second strainer means, means for feeding clean water or liquid chemical into the second water tank, a second water spray means in the second chamber over the second strainer means for spraying water or liquid chemical downwardly along the passage in the second chamber, means for supplying the water from the second water tank to the second water spray means, means provided in the bottom of the second water tank for draining and means in the top of the second water tank for discharging the exhaust gases into an open air; and

a blower means for feeding fresh air in mixture with the exhaust gases from the first purifier into the second purifier.

4,943,307

PLANT-PROTECTIVE PESTICIDAL COMPOSITION

Tamaás Detre, Nagymaros; Sándor Ángyán, Budapest; László Pap, Budapest; András Szego, Budapest; Zoltán Karádi, Budapest; Klára Bertus née Bende, Szodliget, and Katalin Mármarosi née Kellner, Biatorbágy, all of Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jul. 15, 1988, Ser. No. 220,018
Claims priority, application Hungary, Jul. 16, 1987, 22513245/87
Int. Cl.[5] A01N *25/02, 43/00;* **C07C** *65/12, 211/30*
U.S. Cl. 71—3 **10 Claims**

1. A plant-protective pesticidal solution containing 2.5 to 40% by weight of at least one water-insoluble plant-protective pesticidal ingredient, 20 to 71.5% by weight of dimethyl formamide and/or dimethyl sulfoxide, and/or acetone as water-miscible solvent, 10 to 71.5% by weight of furfural and/or furfuryl alcohol as partially water-miscible solvent, 1 to 15% by weight of anionic and/or nonionic surface active agents and macromolecules, wherein said plant-protective pesticidal solution upon addition to water being capable to form a suspension containing 0.2 to 10% by weight of said water-insoluble plant protective pesticidal ingredient having a particle size of 0.1 to 50 microns.

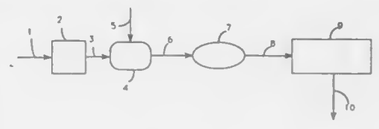
4,943,308

METHOD OF PRODUCING FERTILIZER GRANULES CONTAINING UREA AND AMMONIUM SULPHATE

Luc A. Vanmarcke, Lembeke, Belgium, and Walter E. Cardon, Sas van Gent, Netherlands, assignors to Hydro Agri Sluiskil B.V., Sluiskil, Netherlands

Continuation-in-part of Ser. No. 227,701, Aug. 3, 1988, abandoned, which is a continuation of Ser. No. 917,165, Oct. 9, 1986, abandoned. This application Dec. 28, 1988, Ser. No. 291,310
Claims priority, application Netherlands, Oct. 17, 1985, 8502838
Int. Cl.[5] C05C *3/00, 9/00*
U.S. Cl. 71—29 **6 Claims**

1. A method of producing fertilizer granules containing urea and ammonium sulphate with 15-30 wt.% of ammonium sulphate calculated on the amount of urea and ammonium sulphate by granulating a mixture containing urea, ammonium sulphate and water, characterized in that the ammonium sulphate is completely dissolved in an aqueous urea solution with a urea concentration of 75–85% by weight, the resulting solution is thickened to a dry content of 92–97% by weight, with a granulation additive for the urea being added in any stage of



the treatment, following which the thickened solution is granulated in a fluidized bed of urea and ammonium sulphate containing nuclei.

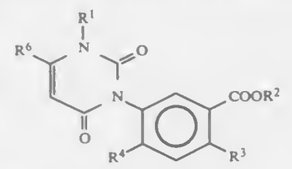
4,943,309

METHOD OF DEFOLEATING COTTON PLANTS EMPLOYING 3-CARBONYLPHENYL URACIL DERIVATIVES

Allyn R. Bell, Cheshire, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Sep. 6, 1988, Ser. No. 240,991
Int. Cl.[5] A01N *43/16, 43/18, 43/54, 43/48*
U.S. Cl. 71—74 **3 Claims**

1. A method of defoliating cotton plants, which method comprises applyiong to such plants a plant defoliatingly effective amount of a compound having the structural formula:



wherein:

R^1 is hydrogen or C_1–C_3 alkyl;

R^2 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_2–C_4 alkenyl and C_2–C_6 alkoxyalkyl;

R^3 is chloro or fluoro;

R^4 is selected from the group consisting of hydrogen, chloro and fluoro; and

R^6 is trifluoromethyl;

or agriculturally acceptable salts thereof.

4,943,310

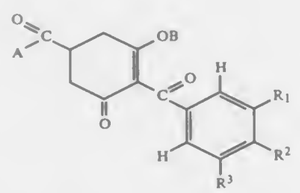
CYCLOHEXENECARBOXYLIC ACID DERIVATIVES AS PLANT GROWTH REGULANTS

Alfred Angermann; Helga Franke, and Gerhard Johann, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 16, 1988, Ser. No. 285,821
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3743695
Int. Cl.[5] A01N *43/00;* **C07C** *87/30;* **C07D** *265/32*
U.S. Cl. 71—88 **15 Claims**

1. 4-Benzoyl-3-hydroxy-5-oxo-3-cyclohexenecarboxylic acid derivative of formula I

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(I)

in which
A is OR^4 or OM,
B is hydrogen or a cation of the type M,
M is a cation from the group of lithium, sodium and potassium,
R^1, R^2 and R^3 independently of one another are hydrogen, halogen, or nitro, or a C_1–C_6-alkyl or C_1–C_{10}-alkoxy group, which groups are optionally substituted by at least one halogen, sulphinyl or C_1–C_4-alkylsulphonyl, or are C_1–C_{10}-alkylthio, or C_1–C_4-alkylsulphonyl,
R^4 is hydrogen or a C_1–C_{18}-alkyl group, which groups are optionally substituted by halogen or cyano or optionally interrupted one or more times by oxygen or sulphur, a C_3–C_6-cycloalkyl or C_3–C_6-cycloalkyl-C_1–C_2-alkyl group, which groups are optionally substituted by halogen or cyano, a phenyl or benzyl group, which groups are optionally substituted, one or more times, by halogen, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, nitro or trifluoromethyl, or is a 5 or 6-membered heterocyclic group,
R^5 and R^6 are the same or different and are hydrogen, or a C_1–C_{18}-alkyl, C_2–C_{12}-alkenyl, C_2–C_{12}-alkynyl group, which groups are optionally substituted by halogen or cyano or optionally interrupted one or more times by oxygen or sulphur, a phenyl or benzyl group, which groups are optionally substituted, one or more times, by C_1–C_6-alkyl, halogen, C_1–C_6-alkoxy or nitro, or
R^5 and R^6 together with the adjacent nitrogen atom form a morpholino, piperidino or pyrrolidino group, and
R^7, R^8, R^9 and R^{10} are the same or different and are hydrogen, or a C_1–C_6-alkyl, phenyl, benzyl or phenylethyl group, which groups are optionally substituted by halogen, hydroxy or C_1–C_6-alkoxy.

3. A method of regulating the growth of plants which comprises applying to the plants or their locus an effective regulating amount of a compound according to claim 1.

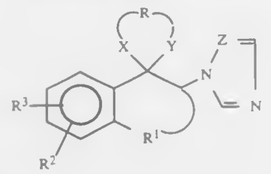
4,943,311

AZOLE DERIVATIVES OF SPIROHETEROCYCLES

Hoi K. Lai, Guelph, Canada; Robert A. Davis, and Allen R. Blem, both of Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn. and Uniroyal Chemical Ltd/Ltee, Don Mills, Canada

Filed May 9, 1988, Ser. No. 191,932
Int. Cl.[5] A01N *43/28;* **C07D** *405/14, 409/14. 411/14*
U.S. Cl. 71—90 **8 Claims**

1. A compound having the structural formula



where
R is C_2–C_8 alkylene having 2 to 4 carbon atoms linking X and Y;
R^1 is C_1–C_6 oxyalkylene or C_1–C_6 thioalkylene;
R^2 and R^3 are the same or different and are hydrogen, halogen, C_1–C_8 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulfonyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, cyano, nitro, —$OCOR_4$, —$COOR^5$, —CH_mQ_{3-m} or —OCH_mQ_{3-m};
R^4 is C_1–C_4 alkyl;
R^5 is hydrogen or C_1–C_4 alkyl;
Q is halogen;
X and Y are the same or different and are oxygen, sulfur, sulfinyl, sulfonyl or if one is NH, the other is sulfur;
Z is nitrogen or CH; and
m is 1, 2 or 3;
or physiologically acceptable salts thereof.

7. A fungicidal or plant growth regulant composition comprising a fungicidally or plant growth regulant effective amount of the compound of claim 1 and a carrier therefor.

4,943,312

HERBICIDAL THIAZOLE DERIVATIVES

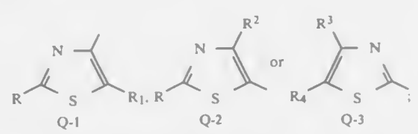
James V. Hay, Newark, Del., and Anthony D. Wolf, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 479,363, Apr. 4, 1983, abandoned. This application May 14, 1984, Ser. No. 609,695
Int. Cl.[5] C07D *417/12;* **A01N** *47/36*
U.S. Cl. 71—90 **12 Claims**

1. A compound of the formula:

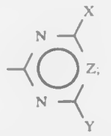
$QSO_2NHCONHA$

where
Q is



Q-1 Q-2 Q-3

R is H, C_1–C_3 alkyl or $CH_3C(O)NH$;
R_1 is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, or C_1–C_3 alkoxycarbonyl;
R_2 is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkoxycarbonyl, NO_2, Cl, Br or CF_3;
R_3 is H, Cl or CH_3;
R_4 is H, Cl or CH_3;
A is



X is CH_3, OCH_3, OCF_2H, OC_2H_5 or CH_2OCH_3;
Y is CH_3, OCH_3, or OCF_2H; and
Z is CH or;
provided that (i) R_3 and R_4 are not simultaneously Cl, and (ii) when either X or Y is OCF_2H, then Z is CH; and agriculturally suitable salts thereof.

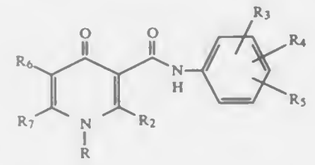
4,943,314

PYRIDINE-3-CARBOXAMIDE DERIVATIVES HAVING PLANT GROWTH INHIBITING ACTIVITY

Yukihisa Goto; Kazuhisa Masamoto; Hiroshi Yagihara, all of Himeji; Yasuo Morishima, Kobe, and Hirokazu Osabe, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 922,038, Oct. 20, 1986, Pat. No. 4,844,732. This application Mar. 3, 1989, Ser. No. 318,818
Claims priority, application Japan, Oct. 24, 1985, 60-238524
The portion of the term of this patent subsequent to Feb. 12, 2005, has been disclaimed.
Int. Cl.[5] C07D *211/84, 211/86, 211/90;* **A01N** *43/40*
U.S. Cl. 71—94 **12 Claims**

1. A compound of the formula:



wherein:
R is a group —$(CH_2)n$—R_1, wherein n is an integer from 1 to 3 and R_1 is hydrogen, hydroxy, lower alkoxy, mercapto, lower alkylthio, amino, di-lower alkylamino, C_{3-11} alkyl, lower alkenyl, lower alkynyl, C_{3-6} cycloalkyl or phenyl substituted by halogen, lower alkyl or lower alkoxy;
R_2 and R_7 are different and may each be hydrogen, C_{1-11} alkyl, lower alkenyl, lower alkynyl, cycloalkyl, phenyl, or phenyl substituted by halogen, lower alkyl, lower alkoxy, trihalomethyl, nitro or cyano;
R_3, R_4 and R_5 are, independently, hydrogen, halogen, cyano, nitro, amino, lower alkyl, lower haloalkyl, hydroxy, lower alkoxy, phenyloxy, carboxy or lower alkoxycarbonyl;
R_6 is hydrogen or halogen; and addition salts thereof with acids or bases.

12. A plant growth inhibitor composition wherein the active component consists essentially of an effective amount of the compound of claim 1 in admixture with an inert carrier.

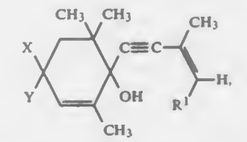
4,943,315

AGENTS FOR REDUCING TRANSPIRATION OF PLANTS

Guenter Schulz, Ludwigshafen; Joergen Schubert; Hubert Sauter, both of Mannheim; Klaus Grosmann, and Johann Jung, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

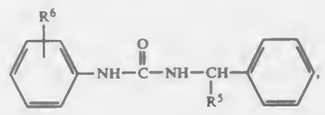
Filed Feb. 6, 1989, Ser. No. 306,560
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1988, 3803667
Int. Cl.[5] A01N *47/30, 31/00, 43/00*
U.S. Cl. 71—120 **11 Claims**

1. An agent for reducing transpiration in plants and for avoiding impairment to plants caused by heat and dry stress, comprising a synergistic mixture of at least one acetylene compound of the general formula I



(I)

where the substitutents have the following meanings
R_1 is $CH(OR^2)$ (OR^3) or CHXY,
wherein X and Y together are C_2- or C_3-alkylenedioxy which is unsubstituted or mono- or disubstituted by methyl or ethyl,
R^2, R^3 is C_1–C_4-alkyl
and at least one phenylbenzylurea of the general formula II



(II)

where the substituents have the following meanings
R^5 is hydrogen or methyl and R^6 is hydrogen, methyl or halogen, wherein an excess of compound II is employed.

4,943,316

RELATING TO THE FORMATION OF METAL ALKOXIDES AND METAL POWDERS BY THE USE OF MICROWAVE RADIATION

Reginald M. Taylor, Hawthorn, Australia, assignor to Hallsworth & Associates Pty. Limited, Keswick, Australia

PCT No. PCT/AU87/00443, § 371 Date Aug. 30, 1988, § 102(e) Date Aug. 30, 1988, PCT Pub. No. WO88/05035, PCT Pub. Date Jul. 14, 1988
PCT Filed Dec. 24, 1987, Ser. No. 266,634
Claims priority, application Australia, Dec. 30, 1986, PH9697
Int. Cl.[5] B22F *9/16*
U.S. Cl. 75—0.5 A **19 Claims**

1. A process for thermally decomposing a metallic compound using microwave energy, comprising:
(a) providing a metallic compound selected from the group consisting of a metallic oxide, metallic hydroxide, metallic oxydroxide and metallic oxy-salt, that is capable of thermally decomposing to form a fine-grained metal or metal alkoxide at a temperature below the lower of the boiling point and decomposition temperature of a given di-, tri- or polyhydric alochol;
(b) dissolving and/or suspending said metallic compound in an excess of said given di-, tri- or polyhydric alcohol;
(c) subjecting the solution and/or suspension thus formed to irradiation by microwave energy, whereby said metallic compound is reacted to form a fine-grained metal or metal alkoxide.

4,943,317

AGENT FOR DESULPHURIZING IRON MELTS, A PROCESS FOR THE PRODUCTION THEREOF AND A PROCESS FOR DESULPHURIZING IRON MELTS WITH THE USE OF SAID AGENT

Helmut Lischka, Trostberg; Werner Gmöhling, Hufschlag, and Gerd Hieber, Seeon, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Sep. 14, 1989, Ser. No. 407,422

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831831

Int. Cl.[5] C21C 7/02

U.S. Cl. 75—312 14 Claims

1. A composition for desulfurizing an iron melt, said composition consisting essentially of a mixture of discrete coated particles of calcium carbide and of a metallic element, where the ranges of the bulk densities and grain sizes of said particles in said mixture are substantially the same.

4,943,318

REMOVAL OF THORIUM FROM RAFFINATE

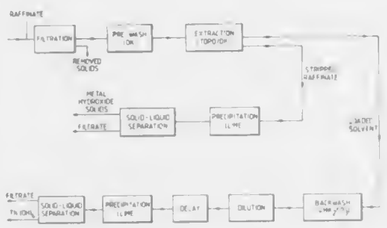
Alan Rushton, Preston, United Kingdom, assignor to British Nuclear Fuels PLC, Warrington, England

Filed Dec. 27, 1989, Ser. No. 458,088

Claims priority, application United Kingdom, Feb. 27, 1989, 8904433

Int. Cl.[5] C22B 3/00

U.S. Cl. 423—10 13 Claims



1. A solvent extraction process for the removal of thorium from raffinate effluent, the process comprising pre-washing the raffinate effluent with odourless kerosene, followed by stripping the pre-washed raffinate effluent by solvent extraction with tri-n-octylphosphine oxide/odourless kerosene solvent, the loaded solvent therefrom then being back-washed with an alkaline solution and the thorium therein precipitated with an alkaline hydroxide slurry.

4,943,319

PROCESS FOR PRODUCING HIGHLY FUNCTIONAL COMPOSITE MATERIAL AND COMPOSITE MATERIAL OBTAINED THEREBY

Masahiro Yanagawa; Mutsumi Abe; Kenichi Aota, all of Kobe, and Takashi Motoda, Hyogo, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

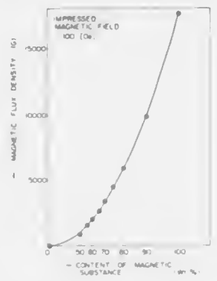
Filed Dec. 30, 1988, Ser. No. 292,312

Claims priority, application Japan, May 18, 1988, 63-121564; Aug. 26, 1988, 63-212910

Int. Cl.[5] B22F 1/00

U.S. Cl. 75—229 7 Claims

1. A process for producing a composite molding product which comprises: forming a mixture of ferromagnetic metal with a powder of matrix metal selected from the group consisting of aluminum, copper and alloys thereof; charging the mixture directly into a molding dye; applying cold compact molding under pressure of greater than 5 T/cm^2 of facial pressure



and applying a heat treatment for diffusion bonding at a temperature between about 300° C. to 800° C.

4,943,320

VAPOR PHASE REDISTRIBUTION IN MULTI-COMPONENT SYSTEMS

Alexander Pechnik, Woodland Hills, and M. Dean Matthews, Saratoga, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 15, 1988, Ser. No. 285,070

Int. Cl.[5] C22C 29/12

U.S. Cl. 75—235 28 Claims

1. A process for making a product of at least two materials, comprising a first material and a second material, comprising the steps of:

(a) preparing a mixture of said materials;

(b) isolating said mixture from the environment; and

(c) exposing said mixture to a temperature sufficient to enable at least said first material to redistribute within said mixture by means of vaporization and subsequent condensation.

4,943,321

SYNCHRONIZER RING IN SPEED VARIATOR MADE OF IRON-BASE SINTERED ALLOY

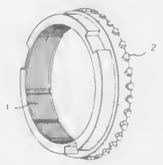
Hidetoshi Akutsu, Saitama, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1988, Ser. No. 164,534

Claims priority, application Japan, Mar. 13, 1987, 62-58415; Mar. 13, 1987, 62-58416; Mar. 13, 1987, 62-58417; Mar. 13, 1987, 62-58418; Mar. 17, 1987, 62-61783; Mar. 17, 1987, 62-61784

Int. Cl.[5] C22C 29/00

U.S. Cl. 75—243 26 Claims



1. A synchronizer ring having at least one surface to make sliding contact with a mating surface made of an sintered iron-base alloy having high strength, wear resistance and good compatibility with the mating surface, said sintered alloy consisting essentially of 0.1–0.9% C (all percents being on a weight basis), and at least one element selected from the group consisting of 0–6% of at least one of Mn, Cr and Mo, 0–6% of at least one of Ni and Cu, and 0–0.5% B, the balance being Fe and incidental impurities (Si, S and P as incidental impurities being present in a total amount not exceeding 0.5%), said sintered iron-base alloy having a porosity of 0.05–5 vol %.

4,943,322

SPHERICAL TITANIUM BASED POWDER PARTICLES

Preston B. Kemp, Jr., Athens, and Walter A. Johnson, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 904,317, Sep. 8, 1986, Pat. No. 4,783,216.

This application Nov. 16, 1987, Ser. No. 121,421

The portion of the term of this patent subsequent to Jun. 3, 2003, has been disclaimed.

Int. Cl.[5] B22F 9/02; C22C 14/00

U.S. Cl. 420—417 1 Claim

1. A powdered material consisting essentially of spherical particles of a titanium base material, said powdered material being essentially free of elliptical shaped material and being essentially free of elongated particles, said powdered material having a particle size of less than about 50 micrometers and produced by the process comprising

(a) mechanically reducing the size of a titanium based material to produce a finer powder;

(b) entraining said finer powder in a carrier gas and passing said powder through a high temperature zone at a temperature above the melting point of said finer powder, said temperature being from about 5500° C. to about 17,000° C., said temperature being created by a plasma jet, to melt at least about 50% by weight of said finer powder to form essentially spherical particles of said melted portion and

(c) rapidly and directly resolidifying the resulting high temperature treated material while said material is in flight.

4,943,323

PROCESSING ADDITIVES FOR BLENDED CEMENTS

Ellis M. Gartner, Silver Spring; David F. Myers, Columbia, and James M. Gaidis, Ellicott City, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Oct. 6, 1989, Ser. No. 418,437

Int. Cl.[5] C04B 24/00

U.S. Cl. 106—808 25 Claims

1. A strength enhanced blended cement comprising a mixture of clinker having at least 4% C_4AF, gypsum, 5% to 60% by weight filler or clinker substitute together with an effective amount of a strength enhancing additive to increase the 7 and 28-day strength, wherein the additive comprises triisopropanolamine.

4,943,324

HIGH PERFORMANCE PAPER FILLER AND METHOD OF PRODUCING SAME

Wayne M. Bundy, Lebanon; John A. Manasso, Belle Mead, and Joseph P. Berberich, Barnegat, all of N.J., assignors to Georgia Kaolin Company, Inc., Union, N.J.

Filed May 23, 1988, Ser. No. 197,357

Int. Cl.[5] C09C 1/28, 3/06

U.S. Cl. 106—486 20 Claims

1. A method for producing a high bulking uncalcined kaolin pigment exhibiting improved opacifying properties when incorporated as a filler in paper, said method comprising:

a. selecting a base kaolin clay to be processed, the selected base kaolin clay being a hydrated kaolin clay having a brightness of at least about 89;

b. dispersing the selected base kaolin clay in an aqueous suspension of a water soluble dispersing agent to form an aqueous clay slurry;

c. delaminating the selected base kaolin clay in said aqueous clay slurry;

d. removing a portion of the colloidal fines in said aqueous clay slurry by partially defining the delaminated kaolin clay in said aqueous clay slurry by separating the aqueous clay slurry into a first fraction and a second fraction, the second fraction having an average particle size finer than the first fraction, and discarding a first portion of the second fraction and admixing the remaining portion of the second fraction with the first fraction, said first portion of the second fraction comprising from about 25% to about 50% by weight of the second fraction of said aqueous clay slurry;

e. after said delamination and defining steps, surface treating the kaolin clay particles by admixing into said aqueous clay slurry a member from the group consisting of a water soluble amine, aluminum sulfate, and mixtures thereof while agitating said aqueous clay slurry;

f. after sufficient agitation, adjusting the pH of said aqueous clay slurry to about 3.0;

g. treating said aqueous clay slurry at a pH of 3.0 with a water soluble leaching agent;

h. adjusting the pH of said aqueous clay slurry after leaching to about 5.0; and

i. collecting the delaminated, defined and treated kaolin clay from said aqueous clay slurry as a product filter cake having a colloidal fines content less than about 20% by weight.

4,943,325

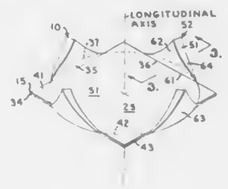
REFLECTOR ASSEMBLY

Sheldon L. Levy, Prairie Village, Kans., assignor to Black & Veatch, Engineers-Architects, Kansas City, Mo.

Filed Oct. 19, 1988, Ser. No. 260,231

Int. Cl.[5] H01L 31/04

U.S. Cl. 136—259 20 Claims



1. In combination with a primary light concentration having an axis and providing a light concentration and a generally planar receiver including a first portion located directly with in said light concentration and a second portion located outside of said direct light concentration, the improvement of a secondary reflector which comprises:

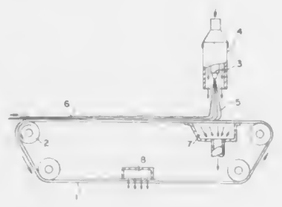
(a) reflector means positioned within said light concentration and oriented to deflect a portion of said light concentration outwardly to the second portion of said receiver outside of said direct light concentration, whereby said portions of said receiver both within and outside of said direct light concentration are illuminated.

4,943,326
ORNAMENT AND METHOD OF MANUFACTURING THE SAME
Kazuhiro Ozawa, Yokohama; Etsuo Nakajima, Nagoya, and Isao Yamaguchi, Mie, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Yamaguchi Pearl, Co., Ltd., Mie, both of, Japan
Filed Oct. 20, 1988, Ser. No. 260,030
Claims priority, application Japan, Oct. 23, 1987, 62-267959
Int. Cl.[5] C22F *1/10*
U.S. Cl. 148—11.5 N 5 Claims



1. An ornament comprising: a superelastic Austenite metallic alloy wire which has an Af point not higher than about 15° C., said wire overlapping on the ends forming a wound ring.

4,943,327
PROCEDURE TO FORM A NON-WOVEN CLOTH MADE OF SYNTHETIC FILAMENTS
Maurice Gauthier, Hiersac, France, assignor to Asten Group, Inc., Charleston, S.C.
Filed Feb. 26, 1988, Ser. No. 160,917
Claims priority, application France, Feb. 27, 1987, 87 02674
Int. Cl.[5] B32B *31/30*
U.S. Cl. 156—62.6 5 Claims

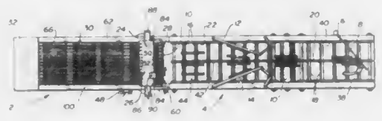


1. An improved procedure for forming a non-woven cloth (6) of synthetic filaments (5), having a melting point t_2 by extruding, stretching, cooling and projecting said synthetic filaments (5) onto a moving plastic forming fabric (1), the improvement characterized by providing a plastic forming fabric (1) having a melting point t_1 which is at least 80° above the melting point t_2 and cleaning the plastic forming fabric (1) by passing hot fluid, having a temperature t which is approximately

$$\frac{t_1 + t_2}{2},$$

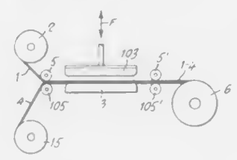
over the plastic forming fabric (1).

4,943,328
METHOD AND APPARATUS FOR SELECTING WOOD STOCK TO FORM PANELS OF PREDETERMINED SIZE
Bradley S. Quick, Rhinebeck, N.Y., assignor to James L. Taylor Manufacturing Company Inc., Poughkeepsie, N.Y.
Filed Feb. 18, 1988, Ser. No. 157,409
Int. Cl.[5] B65G *47/19*
U.S. Cl. 156—64 13 Claims



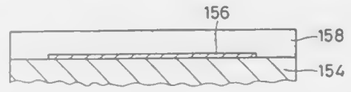
1. Apparatus for selecting at least two workpieces from among a number of work pieces to be combined together for further processing into a panel comprising:
infeed means for supporting and advancing a plurality of workpieces from a first station to a second station;
means at said second station for inspecting said plurality of workpieces and developing electrical signals indicative of the height of each of said workpieces;
means connected to receive said electrical signals for comparing said electrical signals with predetermined panel dimension requirements and for generating output signals as a result of said comparison;
selection means mounted in proximity to said workpieces and coupled to receive said output signals for selecting at least two of said workpieces to form a panel in accordance with said dimension requirements; and
conveying means mounted in proximity to said selection means for conveying said selected workpieces for panel formation.

4,943,329
METHOD FOR MANUFACTURING TIES FROM INTERWOVEN HARP AND WEFT TAPES
Carlo Fini, Bologna, Italy, assignor to A. Testoni S.p.A., Bologna, Italy
Filed Sep. 12, 1988, Ser. No. 242,769
Claims priority, application Italy, Sep. 10, 1987, 12536 A/87
Int. Cl.[5] A41D *25/00*; B32B *31/18, 31/20*
U.S. Cl. 156—88 6 Claims



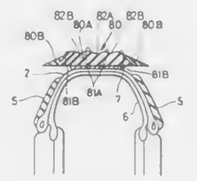
1. A method of manufacturing ties comprising the steps of
(a) forming a piece of composite fabric from interwoven warp and weft tapes each having a width of up to 10 mm, at least one of said weft tapes and said warp tapes having a visible satiny surface selectively appearing glossy and opaque, depending on incidence of light thereon;
(b) placing said piece of composite fabric on a piece of thin, flexible base web;
(c) bonding said composite fabric to said base web by means of a hot-melt adhesive;
(d) cutting laterally adjacent tie portions from said piece of composite fabric, said tie portions having a shape and width such that said tie portions are adapted to the attached to one another in proper succession to form a tie;
(e) providing said portions with peripheral selvedge seams prior to step (d), at least along tie portion cutting lines in said fabric; and
(f) sewing said cut tie portions together.

4,943,330
METHOD OF MANUFACTURING AN ELECTROCHEMICAL DEVICE
Atsushi Iino, Nagoya, and Nobuhide Kato, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Division of Ser. No. 26,433, Mar. 16, 1987, Pat. No. 4,824,548.
This application Feb. 17, 1989, Ser. No. 311,825
Claims priority, application Japan, Mar. 17, 1986, 61-58875
Int. Cl.[5] G01N *27/58*
U.S. Cl. 156—89 2 Claims



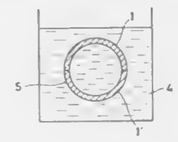
1. A method of producing an electrochemical sensing element, comprising the steps of:
preparing an unfired zirconia sheet, which is fired into a dense zirconia body, by a tape-forming method;
forming an unfired electrode layer, which is fired into an electrode, on one of opposite major surfaces of said unfired zirconia sheet;
preparing an unfired zirconia protective sheet which consists essentially of fully stabilized zirconia and partially stabilized zirconia and which is fired into a porous protective layer by a tape-forming method;
preparing an unfired laminar structure consisting of said unfired zirconia sheet, said unfired electrode layer and said unfired zirconia protective sheet, said unfired electrode layer being interposed between said unfired zirconia sheet and said unfired zirconia protective sheet to form said unfired laminar structure; and
firing said unfired laminar structure into the electrochemical sensing element.

4,943,331
METHOD OF MANUFACTURING PNEUMATIC TIRE
Misao Kawabata, Tokorazawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Nov. 16, 1988, Ser. No. 271,785
Claims priority, application Japan, Nov. 17, 1987, 62-288289
Int. Cl.[5] B60C *9/18*; B29D *30/20*
U.S. Cl. 156—129 12 Claims



1. A method of manufacturing a pneumatic tire, which comprises the following steps of:
(a) winding a carcass ply around a cylindrical former;
(b) adhering a pair of bead rings and a pair of bead filler rubbers on both side ends of the carcass ply;
(c) adhering a pair of side rubbers on the bead filler rubbers, while leaving a space at a central portion of the carcass ply;
(d) expanding with a bladder press the carcass ply on which bead rings, bead filler rubbers and said rubbers are arranged into a toroidal shape;
(e) adhering a belt layer on the carcass ply;
(f) preparing a tread rubber member whose outer surface is formed into a corrugated profile along a tire axial direction, in cross section, so that radially convex portions thereof are located under radially inward projections on the interior surface of a mold for vulcanization and radially concave portions thereof are located under flat portions of the interior surface of said mold for vulcanization when a green tire is placed in said mold;
(g) adhering the tread rubber member on to the belt layer;
(h) adhering both side ends of the tread rubber member to the side rubbers, respectively, with a stitching roller to obtain a green tire; and
(i) placing the green tire into said mold for vulcanization, and aligning said radially convex portions of the corrugated profile of the tread rubber member with projections formed in a mold for forming circumferential grooves of a tire tread whereby radially concave belt layer portions are formed under the tire circumferential grooves and radially convex belt layer portions are formed under the tire projections before the tire is inflated.

4,943,332
METHOD FOR PRODUCTION OF LIQUID CENTER BALL FOR GOLF BALL
Akihiro Sakaguchi, Kanagawa; Noriyuki Kaneko; Toshio Saruta, both of Tokyo, and Ryotaro Sawano, Kanagawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jan. 13, 1989, Ser. No. 297,225
Claims priority, application Japan, Mar. 7, 1988, 63-53125
Int. Cl.[5] A63B *37/08*; B29C *65/00*
U.S. Cl. 156—146 11 Claims



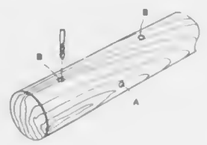
1. A method of producing a liquid center ball for a golf ball, comprising,
preparing a pair of bag rubber hemispheres,
applying an adhesive onto at least one edge surface of the bag rubber hemispheres and providing a substance into at least one of the bag rubber hemispheres, said substance being suspendable in a liquid material and selected from at least one of an inorganic compound, a clay mineral, a metal powder and a heavy ore powder,
dipping the bag rubber hemispheres with the substance therein into the liquid material,
connecting the bag rubber hemispheres together in the liquid material to form a sphere so that the liquid material and the substance are filled therein, and
vulcanizing the sphere so that the bag rubber hemispheres firmly stick together and the substance in the sphere is uniformly dispersed and suspended in the liquid material.

4,943,333

MANUFACTURING PROCESS FOR WOODEN CUES TO PROVIDE PERMANENT STRAIGHTNESS

Jung-Shih Chang, 28, Lane 25, Li-Min Str., Tail, Taichung 41215, Taiwan

Filed Jun. 6, 1988, Ser. No. 202,813
Claims priority, application Taiwan, May 6, 1988, 77101941
Int. Cl.[5] B29C *43/18, 67/14*
U.S. Cl. 156—153 9 Claims



1. A method for manufacturing a wooden cue comprising the steps of:

turning a wooden stick to obtain a wooden preliminary cue having a first predetermined diameter and having a longitudinal axis;

drilling a plurality of holes into the preliminary cue, said holes being nonparallel to the longitudinal axis of the preliminary cue, said holes destroying the composition of fibers in the wooden preliminary cue to thereby reduce reciprocal influence of the fibers to aid in maintaining straightness in the cue over an extended period of time;

coating the preliminary cue with an adhesive, said adhesive generally filling the plurality of holes in the preliminary cue;

covering the cue with a covering material to form a cue having a second predetermined diameter, said second diameter being greater than said first diameter, said covering material being one of a resin dipped cloth and a heat-resistant covering material;

pressing and drying the cue covered with the covering material;

cutting ends of the cue covered with the covering material to obtain a cue with a predetermined length; and

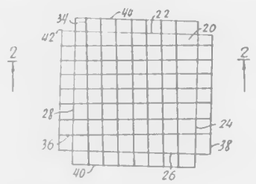
attaching a stopper to each end of the cut cue to form a water-proof wooden cue, said wooden cue generally maintaining the straightness thereof.

4,943,334

METHOD FOR MAKING REINFORCED PLASTIC LAMINATES FOR USE IN THE PRODUCTION OF CIRCUIT BOARDS

Jonas Medney, Rockville Center, and Fred E. Klimpl, Great Neck, both of N.Y., assignors to Compositech Ltd., Hauppauge, N.Y.

Filed Sep. 15, 1986, Ser. No. 907,863
Int. Cl.[5] B65H *81/00;* H05K *1/03*
U.S. Cl. 156—174 73 Claims



1. In a method for making a printed circuit board of a set of filament sections embedded in and bonded to a continuous phase of settable matrix material, the steps comprising, prior to setting or curing of such settable matrix material which holds the entire set of filament sections in fixed spatial relationship, forming at least one set of filament sections as a plurality of superposed layers of filament sections with the filament sections in each layer being arranged generally in the same direction and with the direction of the filament sections in at least one layer in such set being arranged at an angle to the direction of the filament sections in other layers in such set; and arranging said layers in mirror image relationship relative to a plane of symmetry parallel to the layers of the set, all of the filament sections aligned generally in the same direction being under the same tension; said filament sections being held on a form in fixed spatial relationship.

4,943,335

METHOD OF MANUFACTURING A PROFILED STRIP WITH SMOOTH REINFORCING INSERT

Franz Schröder, Hückswagen, and Gerd Strutz, Schwelm, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Division of Ser. No. 166,991, Mar. 11, 1988, Pat. No. 4,835,031.
This application Dec. 15, 1988, Ser. No. 285,195
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1987, 3708889
Int. Cl.[5] B29C *47/02*
U.S. Cl. 156—244.18 9 Claims



1. A method of producing a profiled strip, wherein the profiled strip is comprised of a non-metallic covering, and the profiled strip has at least one incorporated flexurally-elastic reinforcing insert in the form of a metal strip that is thin in thickness and that is deformable for profiling, the method comprising:

stamp cutting the metal insert strip for defining a continuous uncut web and for defining a plurality of rungs in the metal insert strip extending laterally away from the web, the stamp cutting defining the rungs alongside of and adjacent each other, without spacing between adjacent rungs which are stamp cut;

smoothing the metal insert strip such that all the rungs are in the plane of the metal insert strip and adjacent rungs are alongside of each other and are without separation along the length of the rungs;

deforming the metal insert strip for defining a predetermined profiled cross-section for the metal insert strip; and

applying a coating of a non-metallic material covering, to the metal insert strip for completing the profiled strip.

4,943,336

APPARATUS AND METHOD FOR FABRICATING COMPOSITE PANELS FOR USE IN CONCRETE BUILDINGS

Ernest Csont, 4133 Qnando Dr., Belle Isle, Fla. 32812

Filed Aug. 18, 1988, Ser. No. 212,014
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—280 13 Claims

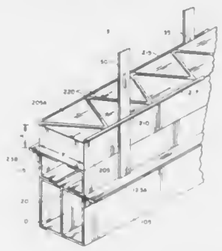
5. A method for fabricating a composite concrete panel in a fixture having a first row of spaced apart staves attached to a base member and a second row of spaced apart staves attached to said base member, said first row being substantially parallel with said second row, an insulative block receiving region being formed above said base member and between said first and second rows, said method comprising the steps of:

placing a block of insulative material in said block receiving region;

situating a truss in the block receiving region of said fixture above said block, said truss having parallel stringer members connected together by a plurality of cross members, the stringer members of said truss being situated outside of said first and second row of staves;

applying adhesive to said block;

repeating said placing, situating and applying steps until nearly the desired panel height is achieved;



placing a block of insulative material in said block receiving region to position the uppermost block of said panel and form the top of said panel, the bottom of said panel thus being formed at the lowermost block thereof, the panel thus formed including first and second opposed major surfaces; and

mounting first and second wire mesh sheets on the first and second major surfaces of said panel, respectively, one of said first and second wire mesh sheets being substantially flush with the bottom of said panel and extending beyond the top of said panel to permit overlap with other panels, said first and second wire mesh sheets being mounted to the stringer members of the trusses in said panel.

4,943,337

APPARATUS FOR ATTACHING A LABEL TO A SURFACE OF A PACKAGE

Pekka Turkki, Helsinki, Finland, assignor to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Nov. 25, 1987, Ser. No. 126,265
Claims priority, application Finland, Nov. 28, 1986, 864853
Int. Cl.[5] B65C *9/02, 9/14, 9/18, 9/30*
U.S. Cl. 156—384 8 Claims



1. An apparatus for attaching at least one of a plurality of labels to a surface of a package comprising:

a base;

a printer mounted on the base for printing the labels on a perforated and adhesive precoated label web;

means for activating adhesive on a surface of the label;

a swing arm pivotally mounted to said base;

a suction plate connected to a distal end of the swing arm at a predetermined obtuse angle joint with the swing arm, said label printed on the label web by the printer being introduced and latched onto said plate by vacuum;

means for rotating the swing arm to move the suction plate along a path between a position to receive the label thereon and a position to transfer the label from the suction plate to the surface of the package;

shearing means for separating the label at least partially from the label web;

a pressure roller positioned at the angle joint between the swing arm and the suction plate and onto which the label web can be aligned while the suction plate is at the position to receive the label; and

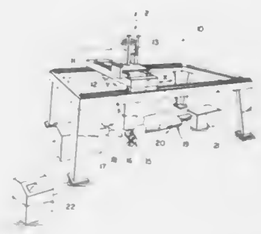
means for moving the package at the position to transfer the label from the suction plate to the package, so as to form a nip between the surface of the moving package and the pressure roller for effecting said transfer of said one of a plurality of labels from said suction plate to the package.

4,943,338

MULTI-TOW FIBER PLACEMENT MACHINE WITH FULL BAND WIDTH CLAMP, CUT, AND RESTART CAPABILITY

Jerry D. Wisbey, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 26, 1988, Ser. No. 248,702
Int. Cl.[5] B32B *31/00;* B65H *81/00*
U.S. Cl. 156—433 7 Claims



1. An improved head for use in a fiber placement machine having: a machine member for carrying a fiber placement head; an upstream fiber supply source; a downstream work laydown zone; means for providing relative movement between the machine member and the work laydown zone; and, wherein fiber tows run from the upstream source to the downstream laydown zone in accordance with relative control of the head with respect to the work laydown zone, wherein the improved head comprises:

bracket means affixed to said machine member;

presser means movably mounted to said bracket means for impressing said fiber tows in said work laydown zone;

fiber guide and spacing means movably mounted to said bracket means, said fiber guide and spacing means including means for permitting relatively free movement of said fiber tows with respect to said fiber guide and spacing means and means for clamping said fiber tows to said fiber guide and spacing means, and means for maintaining adjacent fiber tows separate from one another while in said fiber guide and spacing means, said means for maintaining being coextensive with said tows at all times of operation of said fiber guide and spacing means; and

drive means for relatively moving said fiber guide and spacing means bidirectionally with respect to said bracket

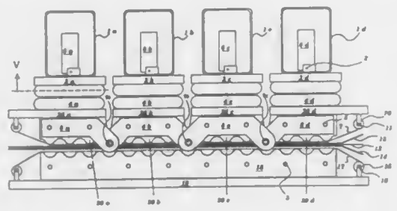
means, between an advanced position proximal said presser means, and a retracted position distal said presser means.

4,943,339

APPARATUS FOR MANUFACTURING CORRUGATED PLYWOOD COMPOSITES

Ethan Ernest, 257 W. 19th St., New York, N.Y. 10011

Division of Ser. No. 40,640, Apr. 27, 1987, Pat. No. 4,816,103.
This application Aug. 31, 1988, Ser. No. 238,409
Int. Cl.[5] B30B *7/04*
U.S. Cl. 156—443 **11 Claims**



1. A sequentially articulated molding apparatus for the fabrication of corrugated wood laminates comprising a frame, a lower mold half mounted on said frame and having an upwardly directed corrugated shaping surface, an upper mold assembly mounted on said frame and having a downwardly directed complemental corrugated shaping surface in opposed relation to said upwardly directed surface, said upper mold assembly being comprised of a plurality of at least three individual rockable mold sections disposed in side by side relation, hinge means interconnecting said mold sections for relative pivotal movement about pivot axes parallel to the longitudinal direction of said corrugations, and linear acting motor means, interposed between said frame and each of said sections and sequentially actuated whereby, upon actuation of the motor means of a given mold section, the respective section is swung pivotally in a first direction toward said lower mold half about a pivot axis defined by the hinged connection between said given section and the next successive adjacent section, and upon actuation of said motor means of said next successive adjacent section said given section is swung toward said lower mold half about the pivot axis between said given section and a prior adjacent section or if the given section is an end section then about its end in a direction opposite to said first direction.

4,943,340

APPARATUS FOR ATTACHING ELASTIC MEMBER TO WEARABLE ARTICLES

Hiroshi Ujimoto, Kawanoe; Hironori Nomura, Iyomishima, and Toshinori Yamamoto, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Jan. 12, 1989, Ser. No. 297,587
Claims priority, application Japan, Jan. 14, 1988, 63-7345
Int. Cl.[5] B32B *31/10*
U.S. Cl. 156—496 **4 Claims**

1. An apparatus for attaching an elastic member to a wearable article, which apparatus comprises:

a cutting station;

means for feeding a continuous elastic sheet of predetermined width from a supply to the cutting station and continuously applying an adhesive coating on one surface of the elastic sheet except adjacent longitudinal edge portions thereof;

cutting means at the cutting station for successively forming individual elastic members by repeatedly cutting the continuous elastic sheet along a severance axis extending in a transverse direction thereof;

transfer means for the elastic members;

feeding, spacing and stretching means for feeding the successively formed elastic members from the cutting means to the transfer means while spacing the elastic members a predetermined distance apart in the feeding direction thereof and stretching each elastic member to an extended condition in the transverse direction comprising:

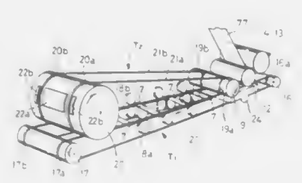
first and second pairs of rollers;

first and second pairs of endless belts mounted around the respective pairs of rollers for driven movement thereby;

the rollers of each pair being spaced apart in the feed direction and located adjacent the cutting means and the transfer means respectively;

means on the rollers to maintain the belts of each pair extending spaced apart in divergent relation as they extend in the feed direction from the cutting means to the transfer means with the belts of the first pair diverging at the same angle as the belts of the second pair;

the first and second pairs of rollers being driven respectively in opposite rotational senses and arranged with respective forwardly driven portions of the belts of the first pair of belts extending in the feed direction aligned with and adjacent forwardly driven portions of the respective belts



of the second pair so that respective belts of the first pair cooperate with respective belts of the second pair to grip between them the ends of the elastic members thereby to feed successive elastic members from the cutting station to the transfer means while progressively stretching the elastic members in the transverse direction during such feeding movement;

means for feeding a continuous web of article precursors in end-to-end relation past the transfer means;

the transfer means comprising:

a roller of the second pair of rollers, which roller is located adjacent the continuous web of article precursors and includes means to receive elastic members released from the belts and releasably to hold such elastic members in extended condition transversely of the continuous web of article precursors and to press the coated surfaces of the elastic members so held successively against the web at predetermined intervals in a longitudinal direction of the continuous web during the feeding of the web thereby to transfer and to attach each elastic member to the continuous web; and,

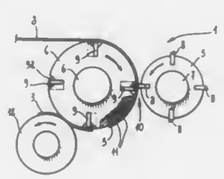
means for repeatedly severing the continuous web along a severance axis extending transversely of the web to separate successive individual articles from the web.

4,943,341

DEVICE WITH CONTRAROTATING KNIVES FOR SEVERING FILTER CIGARETTE UNITING BANDS FROM WEBS IN AUTOMATIC FILTER TIPPING MACHINES

Riccardo Mattei, Bologna, Italy, assignor to G. D. Societa Per Azioni, Bologna, Italy

Filed Jun. 22, 1983, Ser. No. 506,711
Claims priority, application Italy, Jul. 14, 1982, 3482 A/82; Mar. 25, 1983, 3377 A/83
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—517 **7 Claims**



1. An apparatus for cutting pieces from a web of flexible material which comprises:

a first drum provided with a cylindrical suction surface for drawing material of said web thereagainst but able to slide relative to said material while maintaining said material adherent thereto, said first drum being provided with an array of angularly equispaced knives having edges lying along a cylinder corresponding substantially to said surface of said drum and generally along respective generatrices thereof but with an inclination to a respective generatrix and adapted to lie in a tangent plane whereby one portion of each knife is located lower than another portion of the same knife edge, the one portion and the other portion of each knife edge being radially spaced equidistantly from the axis of said drum by a greater distance than a radial spacing of an intermediate portion of the respective knife edge from said axis;

a second drum juxtaposed with the first drum and provided with an array of knives angularly equispaced on said second drum and projecting outwardly beyond a surface of said second drum, the knives of said second drum lying generally along generatrices thereof with edges passing into said tangent plane, said drums having axes of rotation lying in a common axial plane perpendicular to said tangent plane said knives of said second drum having edges lying along another cylinder, said cylinders being tangent to one another; and

means for rotating said drums in opposite senses and said first drum with a greater peripheral speed than said second drum such that the knives of the two drums meet in a shearing action at said tangent plane to commence cutting said material at one side of said axial plane and continue cutting said material as the meeting knives pass through said axial plane, a cut piece of said material thus formed being retained by suction against the surface of said first drum while said surface slips relative to the remainder of said web, said intermediate portion of the respective knife edge of said first drum coincides with a tangential point of the edges of both arrays of knives in said tangent plane.

4,943,342

COMPONENT FEEDING DEVICE FOR CIRCUIT BOARD MOUNTING APPARATUS

Valia S. Golemon, 1004 State Park Rd., Lockhart, Tex. 78644

Filed Aug. 29, 1988, Ser. No. 237,883
Int. Cl.[5] B32B *31/16*
U.S. Cl. 156—584 **8 Claims**

4. In a component assemblying apparatus having means for intermittently feeding a component transport tape toward a component pickup station, said tape including a component carrier strip and a component retainer strip removably attached to said carrier strip;

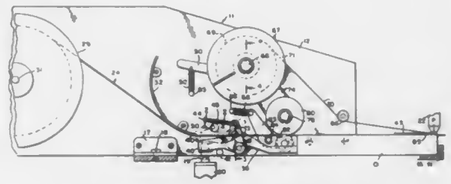
a device for stripping said retainer strip from said carrier strip

comprising

a takeup reel for said retainer strip,

a pulley connected to said reel,

a cog wheel,



mean for rotating said cog wheel,

a cog belt having a driving strand and a driven strand, said belt being loosely wrapped over said pulley and in driving connection with said cog wheel, and

a belt tensioning device for yieldably varying the tension in said driving strand whereby to vary the torque applied to said pulley by said belt in accordance with the drag imposed on said retainer strip upon stripping said retainer strip from said carrier strip.

4,943,343

SELF-ALIGNED GATE PROCESS FOR FABRICATING FIELD EMITTER ARRAYS

Zaher Bardai, 5229 Doris Way, Torrance, Calif. 90505; Randy K. Rolph, 1011 Avenue C, Redondo Beach, Calif. 90277; Arlene E. Lamb, 2010 Curtis Ave., Redondo Beach, Calif. 90278; Robert T. Longo, 734 Callita St., Arcadia, Calif. 91006; Arthur E. Manoly, 26630 Basswood Ave., Rancho Palos Verdes, Calif. 90274, and Ralph Forman, 21516 Hilliard Blvd., Rocky River, Ohio 44116

Filed Aug. 14, 1989, Ser. No. 393,199
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **13 Claims**

1. A process for fabricating a field emitter array, said process comprising the steps of;

forming substantially conical field emitter elements on a surface of a substrate;

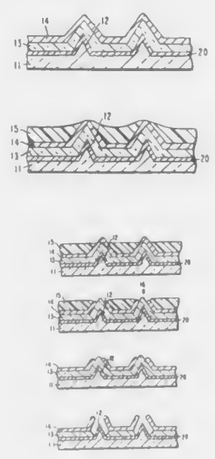
depositing a layer of oxide over said substrate surface and said field emitter elements;

depositing a layer of metal over said layer of oxide to form a gate metal layer;

depositing a layer of photoresist over said gate metal layer;

plasma etching said layer of photoresist in an oxygen atmosphere to cause portions of photoresist above respective field emitter elements to be removed and thereby expose respective portions of said gate metal layer above respective tip regions of said field emitter elements;

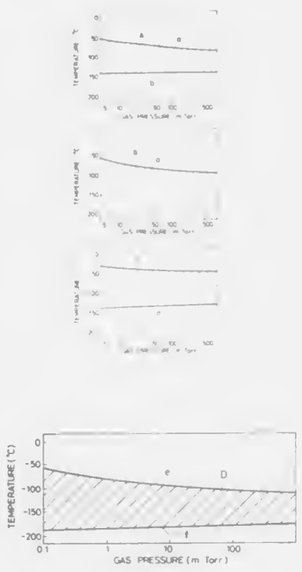
etching the exposed portions of said gate metal layer using said layer of photoresist as a mask;
removing said layer of photoresist; and



etching the exposed portions of said layer of oxide to expose said field emitter elements.

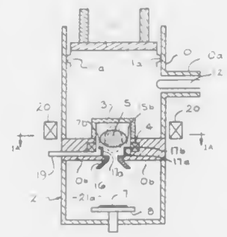
4,943,344
ETCHING METHOD
Shinichi Tachi, Sayama; Kazunori Tsujimoto, Higashiyamato; Sadayuki Okudaira, Ome, and Kiichiro Mukai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 112,144, Oct. 26, 1987, abandoned. This application Jun. 6, 1989, Ser. No. 362,099
Claims priority, application Japan, Oct. 29, 1986, 61-255648
Int. Cl.[5] H01L *21/308*; B44C *1/22*
U.S. Cl. 156—643 7 Claims

1. An etching method for etching a single crystal silicon substrate, comprising:
providing an organic film as an etching mask on the silicon substrate, having at least one opening which exposes at least one portion of the silicon substrate,
etching at least one exposed portion with a plasma of an etching gas and forming at least one trench on the silicon substrate by continued etching of the at least one exposed portion, wherein the etching gas contains neither carbon nor silicon but is sulphur hexafloride (SF_6), and wherein etching is carried out while the silicon substrate is maintained at a temperature lower than −100° C. so that the reaction probability between the fluorine which is contained in the plasma and the surface atoms of the silicon substrate is less than 1/10 of the reaction probability at 20° C., thereby achieving a high selection ratio of etching



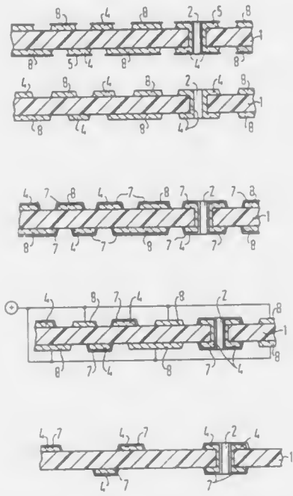
speed of said silicon substrate to etching speed of said organic resist film.

4,943,345
PLASMA REACTOR APPARATUS AND METHOD FOR TREATING A SUBSTRATE
Jes Asmussen, Okemos, and Donnie K. Reinhard, East Lansing, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed Mar. 23, 1989, Ser. No. 328,017
Int. Cl.[5] B44C *1/22*; B05D *3/02*
U.S. Cl. 156—643 38 Claims



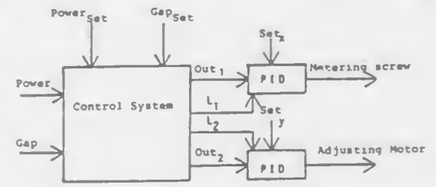
12. A method for exposing a substrate to excited species from an electrodeless plasma which comprises:
(a) providing an apparatus for exposing a substrate to excited species produced by a plasma which comprises: reaction chamber means surrounding and providing a confined space around the substrate which is in the reaction chamber means; radiofrequency wave generating means mounted on the reaction chamber means including a metallic coupler means with a hollow cavity or a waveguide for the radiofrequency waves and a tuning means, the coupler means having an opening defining a longitudinal axis directed at the substrate; plasma confining means having a space with a first cross-section between opposed ends in which the plasma is to be generated mounted in the coupler means around the longitudinal axis which is directed at the substrate with an inlet means into the confining means for a gas which is to be converted to a plasma; and aperture means having a second cross-section at one end of the confining means closest to the substrate which is smaller in cross-section than the first cross-section of the confining means and which restricts the flow of the excited species from the plasma into the reaction chamber means and onto the substrate wherein in operation of the apparatus the plasma is created in the space in the confining means and the excited species from the plasma pass through the aperture means into the chamber means and impinge on the substrate;
(b) providing a gaseous material in the confining means from the inlet means so as to form the plasma; and
(c) exposing the substrate to the excited species from the aperture means, wherein a plasma positioning means provided on the apparatus is used to position the plasma in the space in the confining means during operation of the apparatus.

4,943,346
METHOD FOR MANUFACTURING PRINTED CIRCUIT BOARDS
Antoon Mattelin, Oostkamp, Belgium, assignor to Siemens Aktiengesellschaft, Berlin and Munich
Filed Sep. 1, 1989, Ser. No. 401,834
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833094
Int. Cl.[5] B44C *1/22*; C23F *1/02*; C03C *15/00, 25/06*
U.S. Cl. 156—651 17 Claims



1. A method for manufacturing printed circuit boards, comprising the steps of:
generating a metal layer on an insulating substrate;
applying a first etch resist layer onto said metal layer;
selectively removing said etch resist layer so as to expose a first undesired region of said metal layer;
completely etching said first undesired region away leaving a second undesired region of said metal layer and a desired region of said metal layer;
applying a second etch resist layer onto said second undesired region and said desired region of said metal layer;
selectively removing said second etch resist layer from said second undesired region of said metal layer;
anodically contacting said second undesired region of said metal layer; and
completely electrolytically etching said second undesired region away so as to leave said desired region of said metal layer remaining.

4,943,347
METHOD OF REFINING FIBROUS MATERIAL BY CONTROLLING THE FEED RATE OF MATERIAL OR THE GAP DISTANCE BETWEEN DISCS
Mats Floden, Box 128, Taby, Sweden (S-18322)
Continuation of Ser. No. 306,231, Feb. 3, 1989, abandoned, which is a continuation of Ser. No. 60,052, Jun. 9, 1987, abandoned. This application Sep. 20, 1989, Ser. No. 410,023
Claims priority, application Sweden, Aug. 20, 1985, 8503882
Int. Cl.[5] D21D *5/20*; D21F *7/06*
U.S. Cl. 162—61 9 Claims



1. A method of refining fibrous material under predetermined operational conditions utilizing relatively rotating refining means which are driven by a driving motor, the material being introduced by a metering means and forced to pass through a gap between discs of the refining means and thereby being exposed to bending forces and axial forces with the flow of material being regulated by a positioning device for regulating the rate of feed of the metering means and a separate positioning device for regulating the gap between the discs of the refining means, comprising the steps of:
(a) monitoring at least two operational variables including the power to the driving motor and the gap distance between the discs of the refining means to determine a measured value for each operational variable;
(b) comparing said measured value of said at least two operational variables with each other and a predetermined set point value for each operational variable which are indicative of the setting for each operational variable when applied to refining conditions to determine if a disturbance exists relative to the predetermined operational conditions;
(c) determining based upon the comparisons which operational variable requires adjustment to eliminate the noted disturbance;
(d) emitting a control signal to independently operate one of said positioning devices so as to adjust either the rate of feed of the metering means or the gap distance between the discs to thereby reduce the disturbance and maintain the refining process within the predetermined conditions.

VOL 1116 ISS 4 JL 24 1990 UMI

4,943,349

PROCESS FOR PREPARING A SHEET MATERIAL WITH IMPROVED ON-MACHINE RETENTION

Daniel Gomez, Mimizan, France, assignor to Papeteries de Gascogne, Mimizan, France

Continuation of Ser. No. 594,440, Mar. 30, 1984, abandoned, which is a continuation of Ser. No. 312,946, Oct. 20, 1981, abandoned. This application Feb. 20, 1987, Ser. No. 18,754

Claims priority, application France, Oct. 21, 1980, 80 22501

Int. Cl.[5] **D21H** *3/02*

U.S. Cl. 162—158 11 Claims

1. A process using paper-making techniques for producing a fibrous sheet comprising fibers, an organic binder, a non-binding mineral filler and a flocculant, designed to improve the retention of the mineral filler in the sheet, sheet formation and the sheet's physical properties, which comprises the following steps in the following order:

dispersing a non-binding mineral filler in an aqueous medium at a concentration from 150 to 600 g/l,

mixing an anionic organic binder selected from the group consisting of native starches, chemically, enzymatically or thermally modified starches, dextrines, casein, animal glue, vegetable proteins, cellulose esters, alginates carboxylated or uncarboxylated styrene-butadiene latexes, acrylic latexes, styrene acrylics, vinyl acetates, neoprene latexes, acrylonitrile latexes and vinyl chloride latexes with the dispersed filler under agitation, continuously in a mixer in order to obtain an aqueous dispersion of mineral filler particles coated with binder which, after dilution, has a concentration from 50 to 200 g/l before flocculation;

carrying out continuously ionic destabilization of said aqueous dispersion of mineral filler particles coated with binder by means of a cationic flocculant selected from the group consisting of aqueous solutions of polyethylenimine, polyamido-amine, cross-linked polyalkylamine, modified polyacrylamides, polyaluminium chloride and quaternary ammonium compounds in order to obtain improved flocculation control and good uniformity of the floc particle size, which favors formation, appearance, uniformity of surface and dimensional stability of the sheet;

then continuously introducing the mineral filler/organic binder flocs in aqueous suspension into the refined pulp storage vat, conveying the mixture thus prepared to the head box and subsequently subjecting it to the draining, wet pressing and drying usual treatments of the paper manufacturing process for obtaining the fibrous sheet

wherein the amount of binder lies between 1 and 40 parts by weight per 100 parts by weight of fibers and filler.

4,943,350

CHEMICALLY TREATED PAPER PRODUCTS - TOWEL AND TISSUE

Larry Bogart, Penn Valley; James J. Hipkins, Prospect Park, and Nathan A. Edelson, Bala Cynwyd, all of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 82,103, Aug. 6, 1987, abandoned. This application Oct. 21, 1988, Ser. No. 261,941

Int. Cl.[5] **D21H** *17/10*

U.S. Cl. 162—158 9 Claims

1. A method of simultaneously absorbing water or aqueous body fluids from the human skin while imparting to the skin an emollient effect by wiping the skin with a web of cellulosic fibers treated with an emollient composition consisting essentially of a water-soluble emollient, said emollient comprising a triquaternary phospholipid complex derived from a fatty acid in an amount from 0.1 to 2% by weight of the web.

4,943,351

TRANSFER APPARATUS AND METHOD

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 23, 1988, Ser. No. 197,537

Int. Cl.[5] **D21F** *3/04*

U.S. Cl. 162—205 18 Claims



1. A transfer apparatus for transferring a web from a press nip to a dryer section, said apparatus comprising:

a backing roll;

a press member cooperating with said backing roll for defining therebetween the press nip;

a press blanket defining an endless loop, said press blanket extending through the press nip such that the web is disposed between said blanket and said backing roll during passage of the web through the press nip;

a backing drum disposed downstream relative to the press nip and inside said endless loop such that said blanket and the web extend contiguously relative to each other from the press nip to said backing drum;

a dryer felt and said blanket moving around and cooperating with a portion of the circumference of said backing drum such that the web is sandwiched between said blanket and said felt during passage of said blanket, web and felt around said portion of the circumference of said backing drum; and

transfer means disposed adjacent to said backing drum for transferring the web without open drawn from said blanket to said felt such that the web follows said felt through the dryer section.

4,943,352

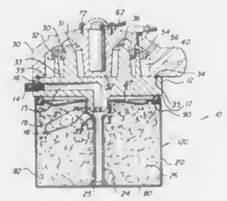
OIL RECLAMATION DEVICE

Byron Lefebvre, Lauderhill, and Jelle P. Schoen, Fort Lauderdale, both of Fla., assignors to Purifiner Manufacturing Company, Rosemont, Ill.

Continuation-in-part of Ser. No. 61,823, Jun. 15, 1987, abandoned. This application Jun. 6, 1988, Ser. No. 202,248

Int. Cl.[5] **B01D** *27/08, 35/18*

U.S. Cl. 196—46.1 17 Claims



1. A fluid reclamation device for filtering solid and liquid impurities from fluid comprising;

a removable filter assembly comprising a housing including a cylindrical body and a bottom wall secured to said cylindrical body, a fluid distribution tube mounted in said housing, a cover plate member with attachment means and fluid passageway means secured to said cylindrical body, and cotton fiber filter means contained in said cylindrical body positioned around said fluid distribution tube, said cotton fiber filter means including a plastic fiber containing an oxygen inhibitor, said plastic fiber breaking down at a predetermined temperature to release said oxygen inhibitor;

an evaporator plate mounted to said cover plate member attachment means, with opposing surfaces of said evaporator plate and mounted cover plate member forming an oil receiving chamber;

fluid inlet means including a throughgoing channel formed in the evaporator plate in fluid communication with the fluid distribution tube allowing fluid to be distributed into said filter body;

an evaporator head mounted to the evaporator plate by fastening means forming an evaporation chamber between the evaporator head and the evaporator plate for receiving fluid from the filter body through the fluid passageway means of the cover plate member into the oil receiving chamber and circulating the fluid in the evaporation chamber;

a heater means mounted in said evaporator head having a surface to surface engagement with the evaporator head for heating the fluid circulating in the evaporation chamber causing evaporation of liquid impurities in the fluid, vent means mounted to said evaporator head for discharging the evaporated impurities and a fluid outlet means leading from the evaporation chamber for discharging filtered fluid.

4,943,353

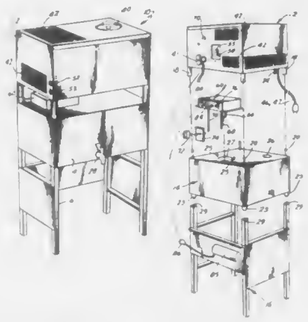
CONTROL FOR MODULAR WATER DISTILLER

David J. Shannon, Lincoln, Nebr., assignor to Pure Water, Inc., Lincoln, Nebr.

Filed Mar. 10, 1988, Ser. No. 166,509

Int. Cl.[5] **B01D** *3/42;* **F16K** *21/18*

U.S. Cl. 202—181 12 Claims



1. A water distillation apparatus comprising:

a stand-alone distillation unit adapted to semi-manual operation in which operation of the distillation unit is initiated to produce distilled water in response to the manual addition of raw water thereto and is terminated in response to said raw water being substantially converted to distilled water, said distillation unit having a steam generator including a boiling tank, means for manually adding water to said boiling tank, water level monitoring means for monitoring the level of water in said boiling tank and energizing means responsive to said monitoring means for energizing said steam generator when the level of water in said boiling tank is above a first predetermined level and deenergizing said steam generator when said level is below said first predetermined level, said distillation unit further including condensing means connected with said steam generator for condensing steam produced by said steam generator into distilled water;

a holding tank adapted to receive distilled water from said condensing means; and

an add-on control selectively connectable with said stand-alone distillation unit for converting said stand-alone distillation unit to an automatically controlled distillation apparatus, said add-on control including:

holding tank water level monitoring means for monitoring the level of water in said holding tank;

feedwater valve means configured to be connected to said steam generator and a source of water and operative for admitting feedwater to said steam generator; and

control means responsive to said energizing means and said holding tank water level monitoring means for operating said feedwater valve means only when said level of water in said holding tank is below a second predetermined level and said steam generator is not energized in order to automatically fill the boiling tank when the level of water therein drops below said first predetermined level provided that the level of water in said holding tank is not above said second predetermined level and to disable the distillation unit when the level of water in said holding tank is above said second predetermined level by withholding feedwater from the steam generator when the level in the holding tank is above said second predetermined level.

4,943,354

PROCESS FOR THE CONTINUOUS SEPARATION OF WATER FROM METHYL TERT-BUTYL ETHER MIXTURES

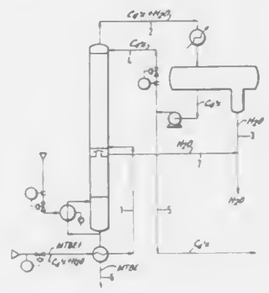
Günther Osterburg, Rheurdt, and Milan Prezelj, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 17,664, Feb. 24, 1987, abandoned. This application Mar. 17, 1989, Ser. No. 326,493

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1986, 3606121

Int. Cl.[5] **C07C** *41/42*

U.S. Cl. 203—14 1 Claim



1. In a process for the separation of methyl tert-butyl ether from a mixture comprising methyl tert-butyl ether, water and C_4 hydrocarbons by fractional distillation in a distillation column having means for vaporization of liquid at the base of the column and means for condensing vapors passing overhead therefrom and for returning a portion of the resultant condensate to the top of the column as reflux, the improvement which comprises:

(a) introducing a feed mixture comprising C_4 hydrocarbons and methyl tert-butyl ether containing dissolved water into the distillation column at a feed point intermediate the base and top of the column,

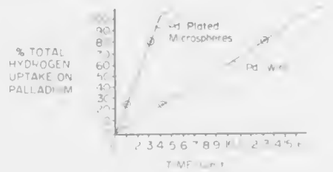
(b) distilling C_4 hydrocarbon overhead with entrained water vapor,
(c) condensing the distillate vapors with the formation of two immiscible liquid phases comprising a first water-rich phase and a C_4-rich phase,
(d) returning a portion of the C_4-rich phase to the top of the column as reflux,
(e) collecting a second water-rich phase and an immiscible methyl tert-butyl ether-rich phase at a point in the column below the feed point and above the base of the column,
(f) withdrawing the second water-rich phase from the distillation column, and
(g) recovering methyl tert-butyl ether substantially freed from dissolved water from the base of the column.

4,943,355

IMPROVED PROCESS FOR PRODUCING UNIFORMLY PLATED MICROSPHERES

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234

Filed May 16, 1989, Ser. No. 353,260
Int. Cl.[5] C25D *7/00*; C23C *18/18*
U.S. Cl. 204—20 **16 Claims**



1. A process for producing microspheres having uniformly thick metal plating comprising the steps of:
forming cross-linked polymer microspheres;
separating said microspheres into fractions of uniform size using sieves;
further separating each separated fraction into subfractions of uniform size and density using hydraulic separation in a cone;
removing separately from said cone each subfraction; and
plating a selected separated subfraction with metal to a desired thickness.

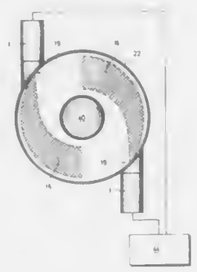
4,943,356

METHOD AND APPARATUS FOR CLEANING SULPHUR AND NITROGEN CONTAINING FLUE GASES BY REACTION UNDER THE ACTION OF ELECTRON BEAMS

Walter Dietrich, Hanau am Main, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau I, Fed. Rep. of Germany

Continuation of Ser. No. 818,777, Jan. 14, 1986, abandoned. This application Jul. 13, 1989, Ser. No. 379,484
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1985, 3501158
Int. Cl.[5] B01J *19/08*
U.S. Cl. 204—157.3 **18 Claims**

1. Method for cleaning flue gases containing sulfur and nitrogen, comprising the following steps:
adding a gaseous reagent tot he flue gases to form a mixture,
flowing the mixture at a pressure of between 1 and 5 bar through a reaction chamber having a cylindrical outer wall defining a substantially circular cross-section,
injecting a plurality of electron beams into the reaction chamber from beam sources having respective pressure step stages wherein the electron beams are unimpeded by solid matter, each said beam being injected along a path substantially parallel to a respective tangent to the circular cross-section and closer to said tangent than tot he center of the circular cross-section, each said beam diverging in said reaction chamber to form a profile.
6. Apparatus for cleaning flue gases containing sulfur and nitrogen, comprising
means for adding a reagent to said flue gases to form a mixture,
a reaction chamber of substantially circular cross-section through which said mixture is flowed,



a plurality of electron beam sources arranged about the reaction chamber, each beam source comprising a pressure step stage through which the beam is injected into the reaction chamber unimpeded by solid matter, each said beam source being arranged to inject the respective beam substantially parallel to a respective tangent to the circular cross-section and closer to said tangent than to the center of the circular cross-section.

4,943,357

PHOTODEGRADATION OF METAL CHELATE COMPLEXES

William P. Van Antwerp, Pacific Palisades, Calif.; Mark G. Steinmetz, Shorewood, and Paul R. Goudy, Jr., Bayside, both of Wis., assignors to Photo Redux Corp., Milwaukee, Wis.

Filed Jun. 27, 1988, Ser. No. 211,784
Int. Cl.[5] B01J *19/12*
U.S. Cl. 204—157.15 **12 Claims**

1. A method of photodegrading a metallic chelate complex comprising forming an aqueous solution of a metallic chelate and directing ultraviolet light into said solution to photodegrade the metallic chelate and isolate the metallic portion, said ultraviolet light having a wavelength of no greater than about 193 nm.

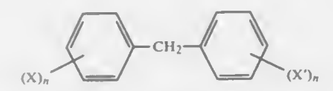
4,943,358

OXIDATION PROCESS

Kenneth M. Dear, Great Sutton, and Philip J. Turner, Widnes, both of England, assignors to Interox Chemicals Limited, London, United Kingdom

Filed Mar. 15, 1989, Ser. No. 323,976
Claims priority, application United Kingdom, Mar. 19, 1988, 8806583
Int. Cl.[5] B01J *19/08*
U.S. Cl. 204—157.93 **27 Claims**

1. A process for the oxidation of a diphenyl methane to the corresponding benzophenone in which process a diphenyl methane compound in a reaction medium which includes an organic phase comprising a hydrophobic organic solvent is reacted with bromine whilst irradiating with light of a sufficiently short wavelength to generate bromine radicals from the bromine, wherein
(a) the diphenyl methane compound is selected from compounds having the general formula:



in which each of X and X' represents independently a halogen or sulpho or nitro group or a phenyl group, and n and n' each is an integer from 0 to 3,
(b) the reaction medium comprises an aqueous phase in addition to the organic phase, said aqueous phase containing HBr and H_2O_2 at concentrations sufficient to react to generate bromine in solution in said aqueous phase,
(c) the amount of HBr present is greater than equimolar to the said diphenyl methane compound, and
(d) the total amount of hydrogen peroxide reacted in the reaction medium is at least approximately 1.5 moles per mole of the said diphenyl methane compound.

4,943,359

PROCESS FOR APPLYING AN AQUEOUS, HEAT-CURABLE COATING TO CANS

Hans-Peter Patzschke; Albrecht Lüttenberg, both of Wuppertal; Hans-Jürgen Schlinsog, Wülfrath, and Wolfgang Bogdan, Wuppertal, all of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschränkter Haftung, Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 5,689, Jan. 21, 1987, abandoned. This application Apr. 6, 1988, Ser. No. 180,595
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1986, 36015601
Int. Cl.[5] C08L *63/00*; C09D *5/44*
U.S. Cl. 204—181.6 **8 Claims**

1. A method for coating a beverage or food can with an anticorrosive protective layer, comprising applying to a surface of said can an aqueous, heat-curable coating mixture of 40–85 weight percent based on resin solids of a component A, and 0–25 weight percent based on resin solids of a component B, and 5–40 weight percent based on resin solids of a component C as crosslinking agent, together with up to 20 weight percent based on the total weight of the coating mixture of an organic solvent, with or without conventional lacquer additives, pigments, and/or fillers, wherein the said ingredients:
Component A is a mixture of (i) 40–90 weight percent based on the mixture of a fatty acid-free, acidic epoxide resin phosphate ester having an acid number of 10 to 150, prepared by reaction between (a) an acid and (b) an epoxide group-containing polyglycidyl ether and/or a polyglycidyl (meth)acrylate resin, having more than 1.3 epoxide groups per molecule, and having an epoxide equivalent weight of 180 to 5,000, and (ii) 10–60 weight percent based on the mixture of a phenol-modified, carbonyl group-containing, oil-free polyester having an acid number of 15 to 175 and an OH-number of 15 to 175 and prepared by reaction of (a) a polyester polyol or a hydroxyl group-containing precondensate of a polyester polyol, with a hydroxyl group-containing phenol ether, or (b) an oil-free polyester with a mononuclear or a polynuclear phenol and with aldehyde, or (c) a resol from a mono- and/or a polynuclear phenol with a carboxyl group-containing polyester;
component B is an epoxide graft copolymer having an acid number of 30 to 200 which is the reaction product of (i) a fatty acid-free polyglycidyl ether having more than 1.3 epoxide groups per molecule and an epoxide equivalent weight of 1,000 to 5,000, with (ii) an α,β-unsaturated monocarboxylic acid; and
component C is a fully etherified amine-formaldehyde condensation resin and/or a fully etherified phenol-formaldehyde condensation resin having, on the average, at least 2 reactive sites per molecule; and
curing the applied layer.

5. The method of claim 1, wherein said cans are coated by anodic electrode position.

4,943,360

PROCESS FOR RECOVERING NITRIC ACID AND HYDROFLUORIC ACID FROM WASTE PICKLE LIQUORS

Masanori Sugisawa; Takashi Sasaki, and Yoshihito Nishimoto, all of Hyogo, Japan, assignors to Shinko Pantec Company, Limited, Kobe, Japan

Filed Oct. 27, 1988, Ser. No. 263,353
Claims priority, application Japan, Nov. 18, 1987, 62-290875
Int. Cl.[5] C25D *13/00*
U.S. Cl. 204—182.3 **4 Claims**



1. A method for regenerating a waste liquor containing nitric acid and hydrofluoric acid to recover highly pure nitric and hydrofluoric acids therefrom which comprises:
adding hydrofluoric acid, or an acid mixture of nitric and hydrofluoric acids having a major content of the hydrofluoric acid, to a nitric acid and hydrofluoric acid waste liquor;
subjecting the resulting mixture to removal of the acids by dialysis with an ion-exchange electrodialyzer for acid recovery to recover the dialyzed acids; in such an amount that the solution obtained after the acid removal has a molar ratio of fluorine ions and nitrate ions of at least 1 or greater;
neutralizing the solution, from which the acids have been removed, with an alkali;
separating the resultant precipitate from the neutralized acid-removed solution;
subjecting the separated solution to an ion-exchange membrane electrodialyzer using a combination of a bipolar membrane, an anion-exchange membrane and a cation-exchange membrane for separation into the acids and the alkali; and
recovering the separated acids and alkali.

4,943,361

PLASMA TREATING METHOD AND APPARATUS THEREFOR

Yutaka Kakehi, Hikari; Yutaka Omoto, Kudamatsu, and Takeshi Harada, Chiyoda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

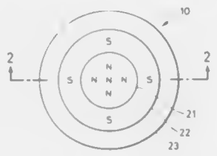
Continuation of Ser. No. 3,026, Jan. 13, 1987, abandoned. This application Dec. 27, 1988, Ser. No. 289,512
Claims priority, application Japan, Jan. 17, 1986, 61-6439; Sep. 5, 1986, 61-207881
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.32 **16 Claims**

1. A plasma treating method comprising a step of supplying a treating gas into a treating chamber and evacuating to a predetermined pressure, the treating chamber including parallel plate electrodes comprised of an anode and a cathode opposed to each other; a step of applying an electric power to the cathode as one of the parallel plate electrodes to thereby generate an electric field between said parallel plate electrodes; a step of generating a magnetic field by providing magnetic field generating means including a first magnetic pole which has substantially a shape of a disc, and a second magnetic pole which has a ring shape, which has a plurality opposite to that of said first magnetic pole and which surrounds an outer cir-

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cumference of said first magnetic pole, in proximity thereto, the first and second magnetic poles including N-poles and S-poles facing the cathode with the anode between the N-poles and S-poles and the cathode, the N-poles and S-poles being in proximity to each other such that the lengths of lines of magnetic force extending at right angles to the electric field, in proximity to the cathode, are relatively short as compared to that of lines of magnetic force extending substantially parallel to the electric field, so as to restrict cycloidal motion of electrons, and to cause mainly a cyclotronic motion of electrons toward said anode side to occur; and a step of treating a specimen arranged at said cathode by using plasma generated by the cyclotronic motion of electrons.

6. A plasma treating apparatus comprising a treating chamber, the treating chamber including parallel plate electrodes comprised of an anode and a cathode opposed to each other; a gas supplying means for supplying a treating gas into the treating chamber; an evacuating means for evacuating said treating chamber to a predetermined pressure; a power supply connected to said cathode, so as to generate an electric field between the anode and cathode; and a magnetic field generating means for generating a magnetic field starting from a surface of said anode toward said cathode and returning to said anode, wherein the magnetic field generating means includes a first magnetic pole which has substantially a shape of a disc, and a second magnetic pole, which has a ring shape, which has a polarity opposite to that of said first magnetic pole and which surrounds an outer circumference of said first magnetic pole, in proximity thereto, the magnetic field generating means including N-poles and S-poles facing the cathode with the anode between the N-poles and S-poles and the cathode, the N-poles and S-poles being arranged in proximity to each other such that lines of magnetic force extending at right angles to the electric field, in proximity to the cathode, are relatively short as compared to that of lines of magnetic force extending substantially parallel to the electric field, so as to restrict cycloidal motion of electrons and to cause mainly a cyclotronic motion of electrons toward said anode side to occur.



4,943,362

SPUTTERING TARGET FOR PRODUCING OPTICALLY TRANSPARENT LAYERS AND METHOD OF MANUFACTURING THESE TARGETS

Gnenther Schlamp, Steinbach; Klaus P. Gall; Adolf Langer, both of Rodenbach, and Georg Ptaschek, Rosbach, all of Fed. Rep. of Germany, assignors to Demetron Gesellschaft Fuer Elektronik-Werkstoffe m.b.H., Hanau, Fed. Rep. of Germany

Filed May 19, 1988, Ser. No. 195,845

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716852

Int. Cl.[5] C23C *14/34*; C03C *17/09*

U.S. Cl. 204—298.13 **12 Claims**

1. A sputter target for producing optically transparent surface layers which reflect heat, in combination with a layer of silver on a transparent substrate, said target consisting essentially of bismuth with 0.2 to 10% by weight manganese, characterized in that the manganese is present in the form of the intermetallic compound BiMn in even, finely dispersed particles distributed within a matrix of metallic bismuth particles.

4,943,363

CATHODE SPUTTERING SYSTEM

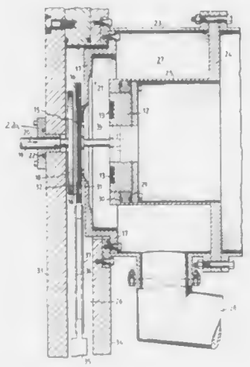
Jaroslav Zejda, Rodenbach, and Manfred Schuhmacher, Alzenau-Michelbach, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 10, 1989, Ser. No. 377,132

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912295

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.15 **18 Claims**



1. A cathode sputtering system for coating substrates in a vacuum chamber, comprising:

a rotating substrate carrier positioned within the chamber, the substrate carrier including at least one conveyor spoon that extends radially from a central axis of the chamber, the conveyor spoon including a substrate receptacle member positioned at a radial end of the spoon, the substrate receptacle member being axially movable along the axis of rotation;

a sputtering cathode station operatively attached to and in communication with the chamber;

a loading station operatively attached to and in communication with the chamber; and

an unloading station operatively attached to and in communication with the chamber.

4,943,364

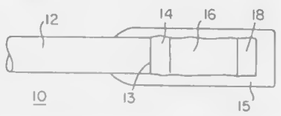
FIBER OPTIC CO_2 SENSOR

Mark Koch, Mt. Prospect, and Richard C. Murray, Jr., Palatine, both of Ill., assignors to Spectramed, Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 747,488, Jun. 21, 1985, abandoned. This application Jun. 23, 1986, Ser. No. 877,572

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—415 **9 Claims**



1. A fiber-optic probe for measuring the partial pressure of carbon dioxide in a medium, comprising:

a gas-permeable membrane;

a hydrolyzed hydrogel including a dye/bicarbonate/gel acrylic or ethylene oxide polymer within the gas/permeable membrane, the hydrogel having been prepared from a chemically and optically unstable dye/gel acrylic or ethylene oxide polymer which, prior to treatment, contains weakly bonded dye molecules and exhibits a substantial drift in measured pH with time accompanied by an increase in protonation constant, by a treatment comprising (1) contacting the unstable polymer with a dilute aqueous base solution for a period of time sufficient to remove weakly bonded dye molecules from the polymer (2) washing the base-treated polymer with water to remove substantially all the base, (3) contacting the washed polymer with a solvent having a high affinity for water to remove water from the polymer and give a polymer characterized by chemical and optical stability with respect to dye loss with time and a consistently repeatable protonation constant, and (4) conditioning the stable polymer by contacting it with a bicarbonate solution;

means for providing light to the hydrolyzed hydrogel, and means for transmitting absorbable light from the hydrolyzed hydrogel.

4,943,365

METHOD FOR THE PRODUCTION OF MODIFIED PITCHES AND THE FURTHER APPLICATION

Winfried Boenigk, Olfen; Maximilian Zander, Castrop-Rauxel, and Jürgen Stadelhofer, Bad Soden, all of Fed. Rep. of Germany, assignors to Rütgerswerke AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1987, Ser. No. 23,646

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1986, 3608130

Int. Cl.[5] G10C *1/20*

U.S. Cl. 208—44 **16 Claims**

1. A method for alkylation of pitches comprising

mixing 100 weight parts of a hydrocarbon pitch with from about 5 to 50 weight parts of a reactive alkyl compound having from 1 to 4 carbon atoms, where at least one hydrogen atom of the alkyl is substituted by an aromatic substituent and where the alkyl groups is selected from a member of the group consisting of alkyl groups having a multiple bond between two carbon atoms, alkyl groups having a substituent for hydrogen of the alkyl which substituent is selected from a member of the group consisting of hydroxy, expoxy, thiol, and mixtures thereof, and mixtures thereof to provide an active section to the alkyl for facilitating alkylation;

alkylating the hydrocarbon pitch with the reactive alkyl compound in a liquid phase at a pressure of less than about 1000 bar and at a temperature of from about 100 to 400 degrees centigrade.

4,943,366

PRODUCTION OF HIGH OCTANE GASOLINE

Ronald H. Fischer, Cherry Hill; Rene B. LaPierre, Medford; Peter J. Owens, Mantua, and Philip Varghese, Voorhees, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 940,382, Dec. 10, 1986, Pat. No. 4,738,766, which is a continuation-in-part of Ser. No. 825,294, Feb. 3, 1986, Pat. No. 4,676,887, which is a continuation-in-part of Ser. No. 740,677, Jun. 3, 1985, abandoned. This application Apr. 6, 1988, Ser. No. 178,157

The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.

Int. Cl.[5] C10G *47/18, 47/20, 69/04, 69/10*

U.S. Cl. 208—68 **21 Claims**

1. A process for producing a high octane gasoline, which comprises hydrocracking a highly aromatic, substantially dealkylated hydrocarbon feed having an initial boiling point of at least 300° F. and an end point of not more than 650° F., an aromatic content of at least 50 weight percent, an API gravity of not more than 25 and a hydrogen content not more than 12.5 weight percent at a hydrogen partial pressure of not more than 1000 psig and a conversion of greater than 50% and not more than 85% to gasoline boiling range products having an octane rating of at least 87 (RON+0), said hydrocracking taking place in the presence of a catalyst comprising a large pore size crystalline silicate zeolite and a matrix comprising silica.

4,943,367

PROCESS FOR THE PRODUCTION OF HIGH PURITY COKE FROM COAL

John C. Nixon; John A. Eady, and Christopher G. Goodes, all of Victoria, Australia, assignors to Comalco Aluminum Limited; Alcoa of Australia Limited, both of Melbourne and Alcan Australia Limited, Sydney, all of, Australia

Continuation of Ser. No. 173,047, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 906,519, Sep. 12, 1986, abandoned. This application Jun. 21, 1989, Ser. No. 370,166

Claims priority, application Australia, Sep. 12, 1985, PH2396

Int. Cl.[5] C10G *9/14*

U.S. Cl. 208—131 **4 Claims**



1. Process for the production of high purity coke from black coal, which comprises the following steps:

(a) beneficiating the coal to an ash content not exceeding 20%;

(b) air drying the product of step (a) to less than 10% moisture;

(c) crushing the product of step (b) to a particle size less than 0.18 mm;

(d) subjecting the product of step (c) to a flash pyrolysis in a fluidized bed reactor in which it is rapidly heated in an inert atmosphere to a temperature in the range 400° to 800° C. at atmospheric or near atmospheric pressure, whereby it decomposes into tar vapor, char and gas components;

(e) rapidly quenching the product of step (d) to condense liquid tar, filtering the liquid tar to remove char therefrom, and neutralizing acidic components of the said liquid tar;

(f) subjecting the liquid tar product of step (e) to delayed coking to produce coke and coker oils;

(g) dividing the coker oils from step (f) into light oils boiling below 300° C. and heavy oils boiling above 300° C., and recycling heavy oils to step (f); and

(h) calcining coke from step (f) to produce a high purity coke of volatile content less than 0.5%.

4,943,368

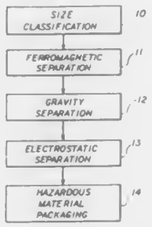
NONMETALLIC ABRASIVE BLASTING MATERIAL RECOVERY PROCESS INCLUDING AN ELECTROSTATIC SEPARATION STEP

Stanley R. Gilbert, Coraopolis, and Thomas E. Weyand, Beaver, both of Pa., assignors to Pittsburgh Mineral & Environmental Technology, Inc., Monaca, Pa.

Continuation-in-part of Ser. No. 271,608, Nov. 15, 1988, abandoned. This application Feb. 27, 1989, Ser. No. 316,085

Int. Cl.[5] B07B *13/00*; B24C *9/00*

U.S. Cl. 209—2 **7 Claims**



1. A dry abrasive blasting residue separation process wherein a nonmetallic abrasive blasting material is separated from the blasting residue comprising:

(a) a size classification step to eliminate large objects form the abrasive blasting residue and to concentrate the residue for further processing;

(b) a ferromagnetic separation step to remove ferrous objects from the blasting residue which would interfere with further processing of it;

(c) a gravity separation step to reclaim large particles of the nonmetallic abrasive blasting material from the blasting residue and to concentrate the fine blasting residue containing fine particles of the nonmetallic abrasive blasting material and nonconducting paint particles; and

(d) an electrostatic separation step to reclaim the fine particles of the nonmetallic abrasive blasting material and separate it from the fine nonconducting paint particles.

4,943,369

METHOD AND APPARATUS FOR COMBINING A PLURALITY OF SERIALLY SUPPLIED SHEETS

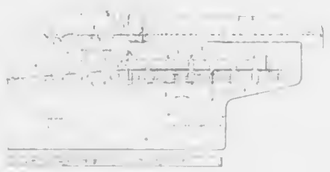
Jacobus F. Gombault, Drachten, Netherlands, assignor to HADWE B. V., Drachten, Netherlands

Filed Mar. 11, 1987, Ser. No. 24,566

Claims priority, application Netherlands, Mar. 11, 1986, 8600631

Int. Cl.[5] B07C *5/34*; G06K *9/00*

U.S. Cl. 209—583 **14 Claims**



1. A method of combining a plurality of serially supplied sheets into a set according to data carried by said sheets and read by a reader, and discharging the set to a further handling station, which comprises reading the data on a first sheet of the set, subsequently deflecting and displacing the remaining part of the sheet, out of its plane of transport into a new plane of transport, arresting said first sheet in a flat condition, reading the data from each subsequent sheet and similarly deflecting and displacing each subsequent sheet of a set into a position overlying the preceding sheet, and discharging the set in a predetermined direction depending upon the data read from the sheets after thus completing the set.

4,943,370

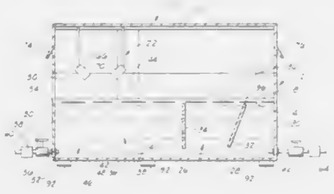
METHOD AND APPARATUS FOR MONITORING MATERIAL IN A LIQUID

Edmund P. Gortowski, Louth, England, assignor to Conoco Inc., Ponca City, Okla.

Filed May 16, 1988, Ser. No. 194,595

Int. Cl.[5] C02F *1/40*

U.S. Cl. 210—85 **7 Claims**



1. An apparatus for monitoring the presence in a liquid of a material which is at least partially immiscible in the liquid, comprising:

a slick inducing means for inducing the material to form a slick on the surface of the material which comprises:

a container for receiving the liquid which comprises:

a settling portion for reducing the turbulence of the liquid to be received;

a concentrating portion for concentrating said slick downstream of said settling portion; and

an intermediate constricting portion for gradually constricting said surface of the liquid;

overflow outlet means for allowing a surface layer of said liquid including said surface to flow out of said container;

means for detecting the presence of said slick on said surface of the liquid; wherein said settling portion comprises:

a settling base portion;

a wall extending upwardly from said settling base portion;

an adjustably angled baffle disposed in said settling portion; and

a second, fixed baffle disposed in said settling portion downstream of said adjustably angled baffle.

4,943,371

APPARATUS FOR REDUCING PITTING IN COPPER WATER PIPES

Ganev Tsviatko, Torbjrönsgatan 34, S-753 35 Uppsala, and Fallman Göran, Timmermansgatan 34, S-753 33 Uppsala, both of Sweden

PCT No. PCT/SE86/00145, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05772, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 27, 1986, Ser. No. 942,415

Claims priority, application Sweden, Mar. 27, 1985, 8501525

Int. Cl.[5] C02F *5/00*

U.S. Cl. 210—101 **6 Claims**

1. An apparatus for reducing pitting in copper water pipes, comprising:

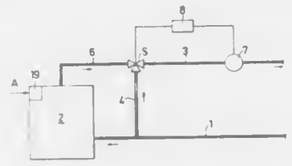
a regenerable softening filter, comprising a first inlet connection for accepting unsoftened water and a first outlet connection for discharging softened water;

a means for mixing softened and unsoftened water, located downstream from said first outlet connection, comprising a second and third inlet connection and a second outlet connection;

a first pipe means connected to said first inlet connection for introducing unsoftened water to said regenerable softening filter;

a second pipe means connected to said first outlet connection for conducting softened water from said regenerable softening filter to said second inlet connection of said means for mixing;

a third pipe means connected to said third inlet connection



of said means for mixing, for conducting unsoftened water from said first pipe means, to be blended with softened water from said second pipe means;

a fourth pipe means connected to said second outlet connection of said means for mixing, for conducting a mixed flow of softened and unsoftened water for final use; and

a regulating system, located downstream from said means for mixing in said fourth pipe means, for controlling the mixing of said softened and unsoftened water by a hardness degree in said means for mixing, and for controlling the regeneration of said regenerable softening filter.

4,943,372

METHOD AND APPARATUS OF DISCHARGING A DISC FILTER

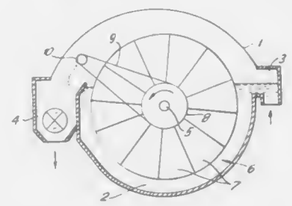
Raimo Kobonen, Savonlinna, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Nov. 1, 1988, Ser. No. 265,691

Claims priority, application Finland, Nov. 2, 1987, 874800

Int. Cl.[5] B01D *33/23*, *33/46*

U.S. Cl. 210—324 **4 Claims**



1. A discharge means for a disc filter used for treatment for fiber suspensions in the pulp industry, said disc filter comprising a plurality of disc elements (6) disposed adjacently on a common shaft (5), said disc elements comprising a plurality of sectors and filter surfaces arranged on top of said sectors, the discharge means comprising movable conveying means disposed between the disc elements (6) for transferring filter cakes detached from the filter surface to a discharge member (4) disposed outside the circumference of the filter disc elements, said conveying means including a belt conveyor (9), one sheave (8) disposed on the common shaft (5), and another sheave (10) arranged above the discharge member (4), the belt conveyor (9) being arranged so as to encompass both the one sheave and the another sheave.

4,943,373

HYDROPHILIC POROUS MEMBRANE OF POLYVINYLIDENE FLUORIDE AND METHOD FOR PRODUCTION THEREOF

Makoto Ouishi; Yukio Seita, and Noriyuki Koyama, all of Fuji, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

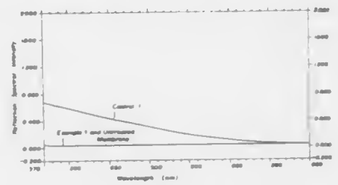
PCT No. PCT/JP88/00019, § 371 Date Jul. 12, 1989, § 102(e) Date Jul. 12, 1989, PCT Pub. No. WO88/05062, PCT Pub. Date Jul. 14, 1988

PCT Filed Jan. 11, 1988, Ser. No. 391,516

Claims priority, application Japan, Jan. 12, 1987, 62-4638

Int. Cl.[5] B01D *31/00*; C08J *9/26*

U.S. Cl. 210—500.42 **3 Claims**



1. A hydrophilic porous membrane of polyvinylidene fluoride having uniform hydrophilicity imparted to the surface of pores therein, which porous membrane is characterized by the fact that the reflection spectrum thereof in the visible zone is substantially unchanged from that which existed before the treatment for impartation of said hydrophilicity.

4,943,374

USE OF A MICROPOROUS MEMBRANE CONSTRUCTED OF POLYETHER SULFON AND HYDROPHILIZATION AGENT FOR THE FILTRATION OF BEER

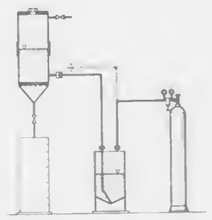
Hans-Ulrich Heininger, Aschau; Wilhelm Munninger, Rohrdorf-Thansau, and Ernst Pawlowsky, Bad Aibling, all of Fed. Rep. of Germany, assignors to Gessner & Co., GmbH, Fed. Rep. of Germany

Filed Apr. 25, 1988, Ser. No. 185,516

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1988, 3813488

Int. Cl.[5] B01D *13/00*

U.S. Cl. 210—651 **43 Claims**



1. A process for the separation of harmful germs, turbid substances and yeast from beer comprising filtering beer containing germs, turbid substances and/or yeast with a microporous membrane, constructed of polyether sulfone and a hydrophilization agent, having a pore size in the range of between 0.1 and 1.2 microns.

4,943,375

THE PROCESS OF SEPARATING A SELECTED ION FROM A PLURALITY OF OTHER IONS IN A MULTIPLE ION SOLUTION BY CONTACTING THE SOLUTION WITH A MACROCYCLIC LIGAND BONDED TO SILICA WHICH SELECTIVELY COMPLEXES WITH THE DESIRED ION

Jerald S. Bradshaw; Reed M. Izatt; Ronald L. Bruening, all of Provo, and James J. Christensen, deceased, late of Provo, all of Utah (by Virginia Christensen, successor in title), assignors to Brigham Young University, Provo, Utah

Continuation-in-part of Ser. No. 93,544, Sep. 4, 1987, abandoned. This application Sep. 6, 1988, Ser. No. 240,689

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—674 **14 Claims**



1. The process of separating a selected ion from a plurality of other ions in a multiple ion solution comprising by flowing the multiple ion solution through a column packed with a composition of matter comprising silica covalently bonded to a hydrocarbon chain covalently bonded to a macrocyclic compound having at least four A-C-C groups in which A is selected from O, O - CH_2, S, S - CH_2, N - R and N - (R) - CH_2 in which R is selected from H, methyl. alkyl and benzyl, and the hydrocarbon chain has an end group



which is covalently bonded to the silica and in which X is selected from lower alkyl, benzyl, phenyl, halogen, - O - CH_3, - O - C_2H_5 and - O - Silica.

4,943,376

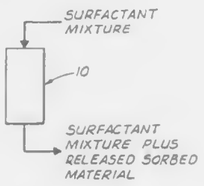
SURFACTANT ENHANCED REGENERATION OF HYDROPHOBIC MATERIALS

John F. Scamehorn, 701 Grill Ave., and Jeffrey H. Harwell, 331 Skyline, both of Norman, Okla. 73071

Filed Apr. 1, 1988, Ser. No. 176,616

Int. Cl.[5] B01D *15/06*

U.S. Cl. 210—674 **21 Claims**



1. A method for treating hydrophobic material having sorbed material sorbed thereon to remove sorbed material therefrom, comprising the step of:

contacting the hydrophobic material having sorbed material thereon with a surfactant solution consisting essentially of a surfactant and water with a surfactant concentration of at least a critical micelle concentration so at least a portion of the sorbed material is solubilized and thereby released from the hydrophobic material, thereby leaving the hydrophobic material containing less sorbed material and a mixture comprising the surfactant and a released sorbed material.

4,943,377

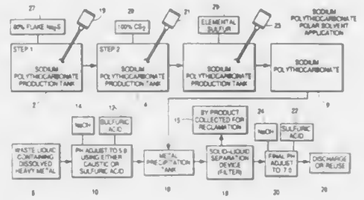
METHOD FOR REMOVING DISSOLVED HEAVY METALS FROM WASTE OILS, INDUSTRIAL WASTEWATERS, OR ANY POLAR SOLVENT

Thomas G. Legare, III, Lake Mary, Fla., assignor to Environmental Technology (U.S.), Inc., Sanford, Fla.

Filed May 6, 1988, Ser. No. 190,875

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—709 **3 Claims**



1. The method of treating liquids containing dissolved heavy metals comprising the steps of:

forming a solution of sodium polythiocarbonate by mixing sodium sulfide with water to completely dissolve said sodium sulfide;

mixing said dissolved sodium sulfide with carbon disulfide to form a solution of sodium trithiocarbonate;

adding sulfur to said solution and mixing at 50°–160° F. until completely reacted into a solution of sodium polythiocabonate;

adjusting the pH of said liquid to 5.0±0.5;

precipitating said dissolved heavy metals from said liquid by intermixing the sodium polythiocarbonate with said liquid until a one to two milligram per liter excess of sodium polythiocarbonate occurs to produce a liquid containing precipitated metallic solids including said heavy metals;

maintaining said excess of sodium polythiocarbonate for 10–20 minutes; and

separating said precipitated metallic solids from said liquid.

4,943,378

FLOCCULATION PROCESSES

Peter Flesher; David Farrar, and John R. Field, all of West Yorkshire, England, assignors to Allied Colloids Ltd., United Kingdom

Continuation of Ser. No. 145,622, Jan. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 855,509, Aug. 23, 1986, Pat. No. 4,720,346. This application Mar. 15, 1989, Ser. No. 325,093

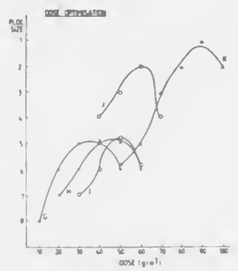
Claims priority, application United Kingdom, Aug. 25, 1986, 8510496; Oct. 29, 1986, 8526624

The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—734 **22 Claims**

1. A process for dewatering an aqueous suspension of suspended solids comprising adding to the suspension a flocculating amount of a synthetic polymeric flocculant material to form thereby an aqueous medium containing flocculated solids and dewatering the aqueous medium and in which the said polymeric material has a specific viscosity (measured by a capillary viscometer at 34° C. on 0.5% solution deionised water) above 10 and comprises, cross linked water insoluble



water swellable polymeric particles that have a dry size of below 10 μm, the polymeric material is added in a floc stabilising amount, and the dewatering is effected under shear by a process selected from centrifugation, belt pressing and piston pressing.

4,943,379

APPARATUS AND PROCESS FOR FILTERING FLUIDS

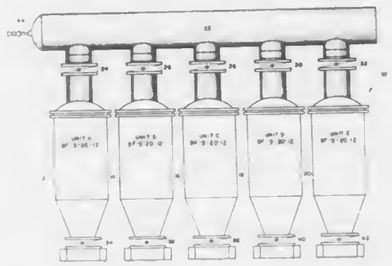
Ronald A. Boze, 19 Wisteria La., Covington, La. 70433, and Theodore A. Warning, 11227 Rippling Meadow, Houston, Tex. 77064

Continuation of Ser. No. 96,634, Sep. 14, 1987, Pat. No. 4,874,533. This application Jun. 5, 1989, Ser. No. 361,242

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.[5] B01D *37/02*

U.S. Cl. 210—778 **14 Claims**



1. A process of filtering a fluid having suspended contaminants, comprising the steps of:

providing a filtration vessel having at least one filter element mounted therein, the filter element having an interior and an exterior;

providing means for delivering the fluid to be filtered into the filtration vessel;

introducing a flow of the contaminated fluid into the filtration vessel;

forming a layer of filter media on the exterior side of the filter element;

removing filtrate from the interior of the filter element and delivering it outside of the filtration vessel;

detecting a pressure differential of a predetermined value across the filter element;

interrupting a flow of contaminated fluid into the filtration vessel and a flow of filtrate out of the vessel;

providing a backflushing reservoir containing a pressurized backflushing fluid;

providing a normally closed valve means preventing fluid communication between the filtration vessel and the backflushing reservoir during filtration process;

opening the valve means and allowing the pressurized backflushing fluid to enter the interior of the filter element;

backflushing the filter element by a fluid pressurized to a level at least slightly above a level of pressure differential across the filter element at a velocity sufficient to create a backflushing shock capable a dislodging the comtaminants which formed a layer on the exterior of the filter element; and

removing the dislodged contaminants from the filtration vessel.

4,943,380

ANTISTATIC RESIN COMPOSITION WITH TRANSPARENCY CONTAINING PHOSPHONIUM SULPHONATE

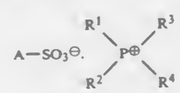
Masato Sugiura; Hideo Shimizu; Shigeru Imamura, and Fumitoshi Sugiura, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 98,534, Sep. 18, 1987, abandoned. This application Feb. 27, 1989, Ser. No. 316,603

Int. Cl.[5] C08K *5/50;* **C09K** *3/16;* **B05D** *7/02;* **B32B** *27/18*

U.S. Cl. 252—8.7 **1 Claim**

1. An antistatic resin composition with transparency characteristics comprising 90–99.9 wt % of a synthetic resin selected from polycarbonate or polymethyl methacrylate and 0.1–10 wt % of a heat-resistant antistat comprising phosphonium sulfonate shown by the general formula (I) below:



(I)

wherein A is alkyl group with 1–36 carbon atoms, alkenyl group with 4–24 carbon atoms, phenyl group, phenyl group substituted by alkyl group with 1–18 carbon atoms, naphthyl group or naphthyl group substituted by alkyl group with 1–18 carbon atoms, R^1, R^2 and R^3 are identical, each being an aliphatic hydrocarbon group with 1–8 carbon atoms or aromatic hydrocarbon group, and R^4 is a hydrocarbon group with 1–18 carbon atoms.

4,943,381

NITROGEN-CONTAINING ADDITIVES FOR NON-AQUEOUS FUNCTIONAL FLUIDS

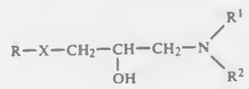
Emyr Phillips, Sale; Robert M. Neil, Boothstown, both of England, and Hermann O. Wirth, Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 195,553, May 18, 1988, Pat. No. 4,859,354, which is a division of Ser. No. 838,986, Mar. 12, 1986, Pat. No. 4,762,628. This application Jun. 14, 1989, Ser. No. 366,118

Int. Cl.[5] C10M *129/04*

U.S. Cl. 252—51.5 R **8 Claims**

1. A composition having corrosion inhibiting properties which comprises a non-aqueous functional liquid and an effective corrosion-inhibiting amount of at least one compound of formula I



(I)

wherein X is —O— R^1 is unsubstituted C_1–C_4alkyl or C_2–C_5alkyl substituted by one to three hydroxyl groups, R^2 is hydro-

gen, unsubstituted $C_1$14 C_4alkyl or C_4–C_6alkyl substituted by one to three hydroxyl groups, with the proviso that at least one of the residues R^1 or R^2 is hydroxy-substituted, and R is branched C_4–C_{20}alkyl, C_2–C_{18}alkenyl, C_2–C_3alkynyl or C_5–C_{12}cycloalkyl.

4,943,382

LACTONE MODIFIED DISPERSANT ADDITIVES USEFUL IN OLEAGINOUS COMPOSITIONS

Antonio Gutierrez, Mercerville, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 6, 1988, Ser. No. 178,100

Int. Cl.[5] **C10M** *149/12*

U.S. Cl. 252—51.5 A **74 Claims**

1. A lactone modified adduct of an aminated, hyrdocarbyl substituted C_4–C_{10} dicarboxylic acid producing material useful as an oil additive and formed by first reacting a non-polymerizable lactone selected from the group consisting of lactones and thiolactones having up to four carbon atoms in the lactone ring with an aminated, hyrdocarbyl substituted C_4–C_{10} dicarboxylic acid producing material to form an intermediate adduct, and then, in a separate step, reacting said intermediate adduct with a C_5–C_9 polymerizable lactone at a temperature of from about 30° to about 200° C. for a period sufficient to effect ring opening polymerization of said C_5–C_9 lactone to form the lactone modified adduct acid producing material being formed by reacting an olefin polymer of a C_2–C_{10} monoolefin having a number average molecular weight of about 700 to about 5,000 and a C_4–C_{10} monounsaturated dicarboxylic acid material, wherein there is an average of 0.7 to about 2.0 sicarboxylic producing moieties per molecule of said olefin polymer used in the reaction, said aminated hydrocarbyl substituted C_4–C_{10} dicarboxylic acid producing material having been aminated with a non-heterocyclic amine selected from the group consisting of polyamines of about 2 to 60 total carbon atoms and about 2 to 12 nitrogen atoms in the molecule, and said lactone modified adduct product containing the unit



wherein m represents the average degree of polymerization and has a average value of from 0.2 to about 100 and q is 4 to 8.

24. An oleaginous composition comprising an oleaginous lubricating oil and a poly lactone modified adduct material prepared by first reacting a non-heterocyclic polyamine with a hydrocarbyl substituted C_4–C_{10} dicarboxylic acid producing material to form a neutralized reaction product having at least one reactive amino group, then reacting said neutralized reaction product with a non-polymerizable lactone selected from the group consisting of lactones and thiolactones having up to four carbon atoms in the lactone ring to form an intermediate adduct, and then, in a separate step, reacting said intermediate adduct with a C_5–C_9 polymerizable lactone at a temperature of from about 30° to about 200° C. for a period sufficient to effect ring opening polymerization of said C_5–C_9 lactone, said hydrocarbyl substituted C_4–C_{10} dicarboxylic acid producing material being formed by reacting an olefin polymer of a C_2–C_{10} monolefin of 700 to about 5,000 M_n with a C_4–C_{10} monounsaturated dicarboxylic acid material, wherein there is an average of from about 0.7 to about 2.0 dicarboxylic acid producing moieties per molecule of said olefin polymer used in the reaction, and wherein said lactone modified adduct material contains the unit

where m represents the average degree of polymerization and is a number having an average value of from 0.2 to about 100 and q is 4 to 8, said lactone modified adduct material being useful as an oil additive.

4,943,383

NOVEL LUBRICANT EPOXIDES

Noyes L. Avery, Gwynedd Valey, Pa.; Andrew G. Horodysky, Cherry Hill, N.J.; Derek A. Law, Yardley, Pa., and Leslie R. Rudnick, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 23, 1988, Ser. No. 210,453

Int. Cl.[5] **C01M** *107/22, 145/00*

U.S. Cl. 252—52 A **29 Claims**

1. A product of reaction made by epoxidizing C_{30}+ polyalpha-olefin oligomeric hydrocarbon lubricant having a branch ratio of less than 0.19 and pour point below −15° C. in the presence of an epoxidizing amount of an epoxidizing agent wherein the product has a weight average molecular weight between 300 and 150,000 number average molecular weight between 300 and 30,000 and molecular weight distribution between 1 and 5.

4,943,384

CYCLOHEXANE DERIVATIVES

Wolfgang Sucrow, Paderborn; Herbert Wolter, Paderborn-Barkhausen, and Rudolf Eidenschink, Munster, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Nov. 21, 1986, Ser. No. 2,596

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510434; PCT Int'l Appl., Mar. 18, 1986, PCT/EP86/00156

Int. Cl.[5] **G02F** *1/13;* **C09K** *19/34, 19/30, 19/06*

U.S. Cl. 252—299.61 **16 Claims**

1. A liquid-crystal phase having at least two liquid crystal components, and comprising at least one transversely polarized 1,4-cyclohexylene compound of the formula I

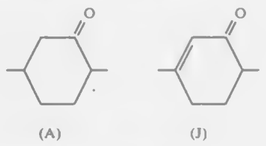
$$R^1—A^1—Z^1—A^2—R^2 \qquad I$$

wherein

R^1 and R^2 are independently H or an alkyl group which has 1–10 C atoms and in which one or two non-adjacent CH_2 groups can also be replaced by 0 atoms and/or —CO— groups and/or —CO—O— groups and/or —CH=CH— groups, or F, Cl, Br, CN or R^3—A^3—Z^2—,

A^1 is —A—, A^4—Z^0—A— or —A—Z^0—A^4—,

A is a group of formula (A) or (J):



(A) (J)

or the mirror image thereof,

A^2, A^3 and A^4 are each 1,4-phenylene which is unsubstituted or substituted by one or two F and/or Cl atoms and/or CH_3 groups and/or CN groups and in which one or two CH groups can also be replaced by M atoms and/or NO, or are 1,4-cyclohexylene wherein one or two non-adjacent CH_2 groups can also be replaced by 0 atoms, or are 1,3-dithiane-2,5-diyl, piperidine-1,4-diyl, 1,4-bicyclo-[2,2,2] octylene, decahydronaphthalene-2,6-diyl or 1,2,3,4-tetrahydronaphthalene-2,6-diyl groups or are —A—,

Z^0, Z^1 and Z^2 are each —CO—O—, —O—CO—, —CH_2C-H_2—, —OCH_2—, —CH_2O—, —CH_2CO—, —$COCH_2$—, —CH_2CHCN—, —$CHCNCH_2$— or a single bond, and

R^3 is H or an alkyl group which has 1–10 C atoms and in which one or two non-adjacent CH_2 groups can also be replaced by 0 atoms and/or —CO— groups and/or —CO—O— groups and/or —CH=CH— groups, or is F, Cl, Br or CN.

4,943,385

THIOETHER COMPOUND AND LIQUID CRYSTAL COMPOSITION

Hiromichi Inoue; Takashi Inukai; Shinichi Saito; Kazutoshi Miyazawa, and Kouji Ohno, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

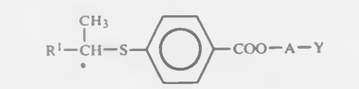
Filed Jun. 14, 1988, Ser. No. 206,372

Claims priority, application Japan, Jun. 15, 1987, 62-148427

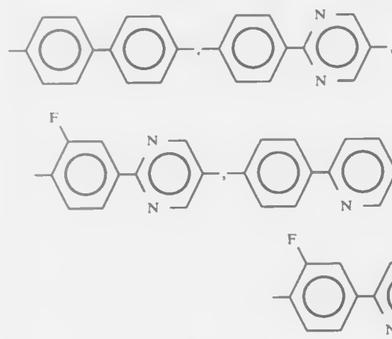
Int. Cl.[5] **C09K** *19/34, 19/12*

U.S. Cl. 252—299.61 **6 Claims**

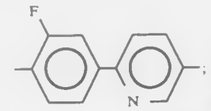
1. A thioether compound expressed by the formula



wherein R^1 represents an alkyl group of 2 to 10 carbon atoms; A represents a member selected from the group consisting of



and



Y represents an alkyl or alkoxy group each of 6 to 12 carbon atoms; and * indicates that the carbon atom having this symbol is optically active.

4,943,386

LIQUID CRYSTALLINE COMPOUNDS HAVING SUBSTITUENTS

Sadao Takehara, Yono; Toru Fujisawa, Kawaguchi; Yoshi Arai, Hasuda, and Jitsuo Kurokawa, Ohmiya, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of, Japan

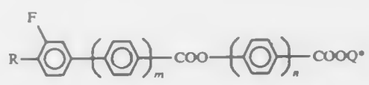
Division of Ser. No. 161,421, Feb. 23, 1988, Pat. No. 4,828,754, which is a continuation of Ser. No. 815,935, Jan. 3, 1986, abandoned. This application Oct. 4, 1988, Ser. No. 252,926

Claims priority, application Japan, Jan. 9, 1985, 60-1791; Apr. 4, 1985, 60-71628; Apr. 4, 1985, 60-71629; Apr. 17, 1985, 60-81688; Apr. 26, 1985, 60-90676

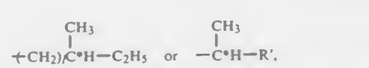
Int. Cl.[5] **C09K** *19/12*

U.S. Cl. 252—299.65 **19 Claims**

1. A liquid crystalline compound of the formula



wherein R denotes an alkyl or alkoxy group having 6 to 18 carbon atoms; m is 0 or 1; n is 2 when m is 0, or n is 1 when m is 1; and Q* denotes an optically active alkyl group having an asymmetric carbon atom selected from the group consisting of



in which l is an integer of 1–3, R′ denotes an alkyl group having 2 to 8 carbon atoms, and C* denotes an assymetrical carbon atom.

4,943,387

CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION

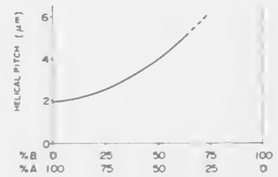
Kenji Furukawa, Yokosukashi, and Kanetsugu Terashima, Yokohamashi, both of Japan, assignors to Chisso Corporation, Osaka and Hitachi, Ltd., Tokyo, both of, Japan

Filed Sep. 28, 1984, Ser. No. 655,624

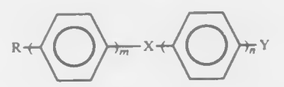
Claims priority, application Japan, Oct. 5, 1983, 58-186312

Int. Cl.[5] **C09K** *19/20, 19/52, 19/12;* **G02F** *1/13*

U.S. Cl. 252—299.67 **6 Claims**



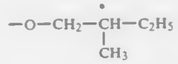
1. A ferroelectric chiral smectic liquid crystal composition comprising at least one first chiral smectic C liquid crystal compound having a twist sense of helix left handed and at least one second chiral smectic C liquid crystal compound having a twist sense of helix right-handed; said first compound being expressed by the general formula (I)



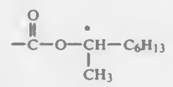
wherein R represents an alkyl or alkyloxy group of 4 to 14 carbon atoms; m and n each represent independently an integer of 1 or 2; X represents



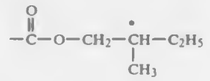
or a single bond; and Y represents



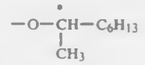
derived from (S)-2-methylbutanol or



derived from (S)-1-methylheptanol, and second compound being expressed by the above-described formula (I) wherein R, m, n and X each represent independently the same as described above; but Y represents



derived from (S)-2-methylbutanol or



derived from (S)-1-methylheptanol.

4,943,388

AZEOTROPE-LIKE COMPOSITIONS OF PENTAFLUOROETHANE; 1,1,1-TRIFLUOROETHANE; AND CHLORODIFLUOROMETHANE

Ian R. Shankland, Williamsville; Robert G. Richard, Cheektowaga, and Earl A. E. Lund, West Seneca, all of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jun. 28, 1989, Ser. No. 372,576
Int. Cl.[5] C11D *7/30, 7/50*
U.S. Cl. 252—69 **9 Claims**

1. Azeotrope-like compositions consisting essentially of from about 13 to about 86 weight percent pentafluoroethane; from about 7 to about 57 weight percent 1,1,1-trifluoroethane; and from about 7 to about 80 weight percent chlorodifluoromethane which have a vapor pressure of about 167 psia±about 10 psia at 70° F.

4,943,389

EMULSIFIER FOR WATER-IN-OIL EMULSIONS

John D. Weete, Opelika, Ala., and George L. Griffith, Bethlehem, Pa., assignors to Emulsion Technology, Inc., Parrish, Ala.

Filed Apr. 4, 1988, Ser. No. 177,956
Int. Cl.[5] B01F *17/14*
U.S. Cl. 252—308 **25 Claims**

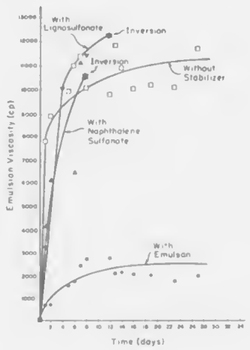
1. A water-in-oil emulsion comprised of
(i) a continuous oil phase,
(ii) a discontinuous aqueous phase, and
(iii) an emulsion stabilizing amount of a thermally altered lecithin composition which has been prepare by heating lecithin at a temperature in the range of from about 100° C. to about 250° C. for a period of time ranging from about 15 to about 480 minutes.

4,943,390

BIOEMULSIFIER-STABILIZED HYDROCARBOSOLS

Michael E. Hayes, Fernandina Beach; Kevin R. Hrebenar, Jacksonville; Patricia L. Murphy, Amelia Island; Laurence E. Fatch, Jr., Fernandina Beach; James F. Deal, III, Amelia Island, and Paul L. Bolden, Jr., Fernandina Beach, all of Fla., assignors to Petroleum Fermentations N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 780,774, Sep. 27, 1985, abandoned, which is a division of Ser. No. 653,808, Sep. 24, 1984, Pat. No. 4,684,372, which is a continuation-in-part of Ser. No. 547,892, Nov. 2, 1983, Pat. No. 4,618,348. This application Sep. 28, 1988, Ser. No. 251,071
Int. Cl.[5] B01F *17/16*; B01J *13/00*
U.S. Cl. 252—355 **51 Claims**



1. A surfactant package which comprises:
(a) at least one water-soluble surfactant, effective amount of which surfactant promotes emulsification of a hydrocarbon with API gravity of about 20° API or less, viscosity of about 100 centipoise or greater at 150 ° F., paraffin content of about 50% by weight or less and aromatic content of about 15% by weight or greater into an aqueous phase to form a hydrocarbon-in-water emulsion wherein the proportion of hydrocarbon to aqueous phase is about 90:10 by volume or less, the viscosity of which emulsion is reduced by at least a factor of about 10 compared to the viscosity of the hydrocarbon; and
(b) at least one water-soluble bioemulsifier produced by a bacterium of the genus Acinetobacter, an effective amount of which bioemulsifier stabilizes a hydrocarbon-in-water emulsion formed with a hydrocarbon as in (a) by maintaining viscosity reduced by at least a factor of about 10 for a period of at least about a day under static conditions.

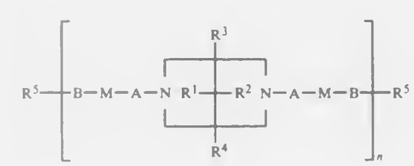
4,943,391

BICYCLO(3.3.1)NONANE DERIVATIVES AND USE IN STABILIZING ORGANIC MATERIALS

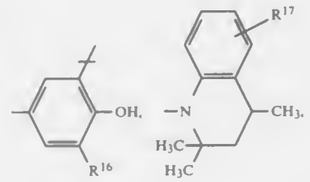
Alexander Aumueller, Deidesheim; Peter Neumann, Mannheim, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 10, 1988, Ser. No. 286,295
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1987, 3743279
Int. Cl.[5] C07D *471/08*; C09K *15/18*
U.S. Cl. 252—401 **13 Claims**

1. A heterocyclic bicyclo[3.3.1]nonane derivative of the formula (I)



(I)

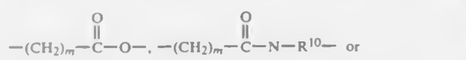


where
n is 1,
R^1 is hydrogen,
R^2 is hydrogen or hydroxyl, or the radical

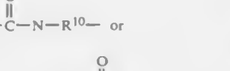


is

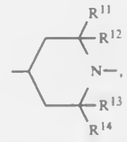
R^3 and R^4 are each independently of the other phenyl or 1- or 2-naphthyl, which phenyl or naphthyl may each be substituted by 1, 2 or 3 C_1–C_{12}-alkyls, C_1–C_{12}-alkoxys, chlorines, bromines, fluorines, trifluoromethyls or cyanos, in the case of 2 or 3 substituents these substituents being identical or different,
A and B are each independently of the other a chemical bond, C_1–C_{22}-alkylene, cycloalkylene



or

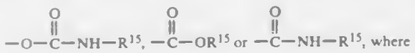


where
m and o are each from 1 to 20 and
R^{10} is hydrogen, C_1–C_{22}-alkyl, C_5–C_{12}-cycloalkyl, C_7–C_{18}-phenylalkyl, phenyl or C_2–C_{22}-cyanoalkyl,
M is a radical of the formula

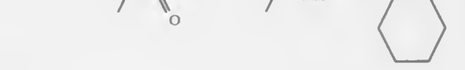


which may be bonded to A not only via the nitrogen atom: but also via the carbon atom, and
R^{11}, R^{12}, R^{13} and R^{14} are each independently of the others C_1–C_4-alkyl, or
R^{11} and R^{12}, R^{13} and R^{14} or R^{11} and R^{12} as well as R^{13} and R^{14} are each together tetramethylene or pentamethylene,
R^5 is hydrogen, cyano, hydroxyl,





where
R^{15} is hydrogen, C_1–C_{22}-alkyl, C_5–C_{12}-cycloalkyl, C_5–C_{16}-phenylalkyl or a 5- or 6-membered heterocycle, or —M—B—R^5 is a radical of the formula



where
R^{16} is C_1–C_4-alkyl,
R^{17} is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy and
R^{18} is hydrogen or C_1–C_{12}-alkyl.

4,943,392

CONTAINING BUTOXY-PROPANOL WITH LOW SECONDARY ISOMER CONTENT

Charlene M. Hastedt, Fairfield; Ralph F. Medcalf, Jr., West Chester, and Geneva G. Otten, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 202,732, Jun. 3, 1988, abandoned. This application May 5, 1989, Ser. No. 346,964
Int. Cl.[5] C11D *3/065, 3/44*
U.S. Cl. 252—539 **6 Claims**

1. An aqueous liquid detergent composition comprising:
(a) from about 0.1% to about 40% of detergent surfactant;
(b) from about 0.5% to about 25% of butoxy-propanol containing less than about 20% of secondary isomer;
(c) from 0% to about 30% of detergency builder; and
(d) at least about 50% water, said composition being packaged in a container that is not adapted to create a spray.

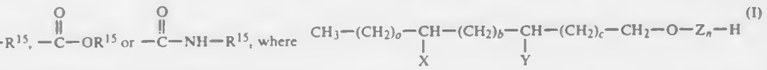
4,943,393

PROCESS FOR THE MANUFACTURE OF ESTER SULFONATE PASTES OF LOW VISCOSITY

Bernd Fabry, Korschenbroich, and Robert Piorr, Ratingen-Hoesel, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Feb. 13, 1989, Ser. No. 310,274
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1988, 3804609
Int. Cl.[5] C11D *1/28*
U.S. Cl. 252—554 **11 Claims**

1. A process for the preparation of an aqueous concentrate of an α-sulfonated fatty acid alkyl ester comprising the steps of: (a) sulfonating an alkyl fatty acid ester with a sulfonating agent to produce an α-sulfonated fatty acid alkyl ester; (b) adding to said α-sulfonated fatty acid alkyl ester from about 1 to about 10 mole percent of the total moles of said α-sulfonated fatty acid alkyl ester of at least one compound of the formula



(I)

wherein in the compound of formula I X and Y are different and are OH or SO_3M wherein M is selected from the group

consisting of hydrogen, an alkali metal ion, an alkaline earth metal ion, or NR_4 wherein R is hydrogen, an alkyl or hydroxy alkaly radical having from 1 to 4 carbon atoms; a and c are integers having a value of from 0 to 18; b is an integer having a value of from 0 to 2 such that the sum of a+b+c is from 12 to 18; Z is an oxyethylene, oxypropylene, or oxybutylene group; n is an integer having a value of from 0 to 30; and (c) neutralizing said α-sulfonated fatty acid alkyl ester with an aqueous alkaline solution.

4,943,394

METHOD OF STORING RADIOACTIVE WASTE WITHOUT RISK OF HYDROGEN ESCAPE

Herbert Lammertz, Jülich, and Kornelius Kroth, Linnich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jan. 25, 1989, Ser. No. 301,435

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1988, 3802755; European Pat. Off., Nov. 23, 1988, 88119450.0

Int. Cl.[5] G21F *9/16, 9/02;* **C01B** *1/26, 6/04*

U.S. Cl. 252—628 **11 Claims**

1. Method of storing radioactive waste material in which waste material is solidified or pressed and then sealed in a container, comprising the steps of:

introducing a content of potassium permanganate into a nonreducing packing and enveloping material for said waste material, said packing and enveloping material being composed of at least one material which is a member of the group consisting of cement and other concrete-forming materials and granular and pulverized aluminum oxide, grog, fire-clay and other ceramics, and thereby producing a permanganate-containing packing and enveloping material in which potassium permanganate is dispersed for eliminating hydrogen generated by said waste material during storage, and

enveloping said radioactive waste material in a mass of said permanganate-containing packing and enveloping material within a common long-term storage container.

4,943,395

PROCESS OF VITRIFYING RADIOACTIVE LIQUID WASTE WITH SUPPRESSED FORMATION OF GASEOUS RUTHENIUM

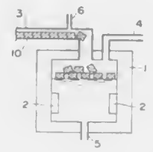
Noriaki Sasaki, Katsuta, and Kazuhisa Matsunaka, Naka, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,773

Claims priority, application Japan, Mar. 28, 1988, 63-73710

Int. Cl.[5] G21F *9/16, 9/08*

U.S. Cl. 252—629 **11 Claims**



8. A process of vitrifying a radioactive liquid waste by absorbing a radioactive liquid waste into a glass frit cartridge made of molded glass fibers and heat-melting said cartridge to vitrify said liquid waste, characterized in that a reducing agent in solid form is previously incorporated in said glass frit cartridge made of molded glass fibers, and a radioactive liquid waste containing ruthenium is then absorbed in to said glass frit cartridge containing said reducing agent, thereby suppressing the formation of gaseous ruthenium during the heat-melting.

4,943,396

PROCESS FOR PREPARING LINEAR ALPHA, OMEGA DIFUNCTIONAL MOLECULES

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

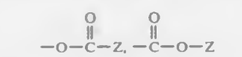
Filed Sep. 22, 1988, Ser. No. 247,476

Int. Cl.[5] C09F *5/00, 5/08*

U.S. Cl. 260—405.5 **5 Claims**

1. A process for preparing a mixture of difunctional molecules which process comprises:

(a) contacting an olefin having at least one terminal functional group wherein said terminal functional group is selected from groups having the formulas



and O- wherein Z is selected from a hydrocarbyl group having from 1 to about 20 carbon atoms, a hydrocarbyl oxy group having from 1 to about 20 carbon atoms and hydrogen, at isomerization conditions with an isomerization catalyst selected from the group consisting of alumina supported palladium, silica supported palladium, tantalum halide/oxide-metal oxide and niobium halide/oxide-metal oxide,

(b) contacting the product of a) at metathesis conditions with a metathesis catalyst selected from the group consisting of WCl_6/Me_4Sn and Re_2O_7/Al_2O_3- R_4Sn wherein R is an alkyl group, and

(c) recovering the product of step(b), and

(d) separating difunctional molecules from the product of step c).

4,943,397

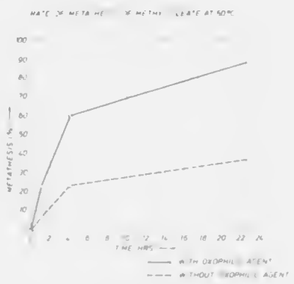
METATHESIS OF FUNCTIONAL OLEFINS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

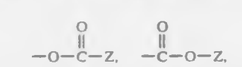
Filed Sep. 22, 1988, Ser. No. 247,478

Int. Cl.[5] C09F *5/00, 7/08*

U.S. Cl. 260—405.5 **10 Claims**



1. A process for metathesizing an olefin having at least one terminal functional group wherein said terminal functional group is selected from groups having the formulas



and O—Z wherein Z is selected from a hydrocarbyl group having from 1 to about 20 carbon atoms, a hydrocarbyloxy group having from 1 to about 20 carbon atoms and hydrogen, which comprises contacting said olefin at metathesis conditions with a catalyst comprising: (a) an oxide, chloride or bromide of a transition metal selected from tungsten, molybdenum and rhenium, (b) an organometallic compound based on an element selected from aluminum, tin, lead, magnesium and titanium, in combination with an alkyl group, and (c) an oxophilic agent having a metal-oxygen bond strength greater than the metal-oxygen bond strength of said transition metal and wherein said oxophilic agent is selected from compounds having a formula M—X wherein M is selected from zirconium, samarium, lanthanum and mixtures thereof, and X comprises one or more organic or inorganic species which in combination neutralize M.

4,943,398

METHOD FOR MANUFACTURING A FUSED CAST REFRACTORY

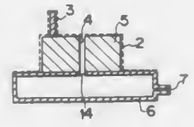
Shigeo Eado; Haruo Kawashima, both of Narita; Kimio Hirata, Katori; Yasuo Saito, Narita; Takao Uchiya, Sawara, and Hideo Yanagi, Kashiwa, all of Japan, assignors to Toshiba Monofrax Co., Ltd., Chiba, Japan

Continuation of Ser. No. 839,280, Mar. 13, 1986, abandoned. This application Nov. 12, 1987, Ser. No. 120,174

Claims priority, application Japan, Mar. 15, 1985, 60-50366; Apr. 8, 1985, 60-72569

Int. Cl.[5] B29C *33/38, 39/02*

U.S. Cl. 264—82 **13 Claims**



1. A method for manufacturing an electrofused cast refractory article, comprising the steps of:

in an oxidizing atmosphere, forming a casting mold having a mold cavity by outlining said cavity with a thermoplastic film and maintaining a casting sand surrounding said cavity by applying a negative pressure through said sand against said film, wherein said sand consists essentially of a silica sand or a Bayer-processed alumina, and wherein each individual sand particle is an aggregate of a large number of fine particles;

pouring molten refractory material into said mold cavity to produce a cast refractory article;

maintaining said negative pressure for a period of time following said pouring step while drawing an oxidizing atmosphere into the mold to keep said refractory material at a sufficiently oxidized state; and

cooling the cast refractory article by burying it in sand corresponding to said casting sand.

4,943,399

CONTINUOUS PREPARATION OF MOLDING MATERIALS BASED ON POLYPHENYLENE ETHERS AND NYLONS

Christof Taubitz, Wachenheim; Hermann Gausepohl, Mutterstadt; Erhard Seiler, Ludwigshafen; Klaus Boehlke, Heasbeim, and Lothar Schlemmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 146,182, Jan. 20, 1988, abandoned. This application May 8, 1989, Ser. No. 349,968

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1987, 3702582

Int. Cl.[5] B29B *7/84;* **C08L** *71/12, 77/00*

U.S. Cl. 264—101 **4 Claims**

1. A continuous process for the preparation of a thermoplastic molding material based on polyphenylene ethers (PPE) and nylons in an extruder, wherein

(I) in a first zone at from 240° to 350° C.,

(a_1) from 50 to 99.95% by weight of a polyphenylene ether,

(a_2) from 0 to 45% by weight of a vinylaromatic polymer,

(a_3) from 0.05 to 10% by weight of one or more monomers selected from the group consisting of

(a_{31}) α,β-unsaturated carboxylic acids or their derivatives of the general formula I



(I)

wherein R_1 and R_4 are each hydroxyl, aryloxy, alkoxy, artalkoxy, cycloalkoxy, each of not more than 12 carbon atoms, together form —O— or —NR_5—; R_2 and R_3 are each hydrogen, alkylo, cycloalkyl, each of not more than 12 carbon atoms, aryl, chlorine, or together form alkylene of 4 to 12 carbon atoms; the R^5 is hydrogen, the moiety of alkyl, cycloalkyl, aralkyl, aryl, each moiety being not more than 12 carbon atoms, or the moiety is substituted by C_1–C_4-alkyl or -alkoxy,

(a_{32}) monomers containing amide groups and a polymerizable double bond and

(a_{33}) monomers containing lactam groups and a polymerizable double bond,

(a_4) from 0 to 80% by weight of further graft monomers and

(a_5) from 0 to 20% by weight of a free radical initiator, the percentages in each case being based on the total weight of components a_1 to a_5, are reacted for from 0.1 to 15 minutes, and a modified polyphenylene ether A is prepared, and

(II) then, without cooling the modified polyphenylene ether, in one or more further zones of the extruder at from 250° to 350° C.,

(B) from 5 to 95% by weight of a nylon,

(C) from 0 to 90% by weight of a nonmodified polyphenylene ether,

(D) from 0 to 45% by weight of a vinylaromatic polymer,

(E) from 0 to 40% by weight of a rubber impact modifier and

(F) from 0 to 60% by weight of additives and processing assistants, the percentages being based on the total weight of components A-F, are added, and the resulting mixture is extruded.

4,943,400

METHOD OF MANUFACTURING PRINTING AND EMBOSSING TYPE ELEMENTS

Tadashi Hirano, Tokyo, Japan, assignor to Data Card Japan Ltd., Tokyo, Japan

Continuation of Ser. No. 97,218, Sep. 15, 1987, abandoned, which is a division of Ser. No. 894,565, Aug. 8, 1986, Pat. No. 4,781,479. This application Feb. 2, 1989, Ser. No. 306,236

Int. Cl.[5] B32B *31/20*

U.S. Cl. 264—113 **10 Claims**

1. A method of manufacturing type comprising the steps of: supplying a portion which will serve as a typeface with a prescribed amount of a granular heat-curable resin consisting of particles of a first size having a hardness capable

of withstanding pressure applied at printing and a particle size affording smoothness after molding;

supplying a portion which will serve as an impact face with a prescribed-curable resin brought into adhering contact with the granular heat-curable resin of the first size and consisting of particles of a second size larger than the first size and having a hardness capable of withstanding pressure applied at printing and an elasticity capable of withstanding and of absorbing impact sustained at printing after molding;

heating the granular heat-curable resins in superimposed form; and

applying predetermined amount of pressure at predetermined number of times on the granular heat-curable resins in superimposed form during said heating so that an intermediate joint layer made from a mixture of the granular heat-curable resins of the first and second size is created in enough thickness at a continuously and gradually changing mixing ratio, between the portion which will serve as a typeface and the portion which will serve as an impact face

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4,943,401

PROCESS FOR MAKING SILICON NITRIDE ARTICLES

James P. Edler, and Bohdan Lisowsky, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 21, 1987, Ser. No. 135,864
Int. Cl.[5] C04B *35/58*
U.S. Cl. 264—63 **9 Claims**

1. A process for making a silicon nitride article, said process including the steps of:

(a) providing a homogeneous slurry comprising a mixture of about 40–60 parts by weight silicon powder, about 60–40 parts by weight water, and from about 0.5 to about 3 parts by weight of at least one nitriding agent;

(b) comminuting the slurry of step (a) in a comminutation device to activate the silicon powder and enhance a chemical reaction between the silicon powder and the water;

(c) aging the activated silicon slurry of step (b) for a period of time effective to enable the chemical reaction between the silicon powder and the water to occur;

(d) processing the aged silicon slurry of step (c) to reduce the water content sufficiently to form the article;

(e) forming the processed slurry of step (d) into the article;

(f) heating the article of step (e) from ambient temperature to a temperature of about1000° C. in a hydrogen atmosphere at a rate non-damaging to the article whilst removing volatiles therefrom;

exposing the article of step (f) to gas;

(g) heating the article of step (f) from the temperature of step (f) to a temperature from about 1400° C. to about 1450° C. at a rate of from about 15° C. to about 25 ° C. per hour in said gas mixture of from about 40 parts to about 60 parts helium and from about 1 part to about 4 parts hydrogen and the balance nitrogen, whilst replenishing consumed nitrogen with fresh nitrogen so as to maintain a substantially constant nitriding gas composition while converting the silicon powder therein to silicon nitride; and

(h) cooling the article of step (g) to ambient temperature.

4,943,402

PROCESS FOR REMOVING CHLOROPRENE DIMERS FROM POLYCHLOROPRENE

Fred Y. Kafka, Louisville, Ky.; Archie R. Bice, Landenberg, Pa., and Donald K. Burchett, Louisville, Ky., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1989, Ser. No. 429,577
Int. Cl.[5] B29C *47/60, 47/76, 71/02*
U.S. Cl. 264—141 **6 Claims**

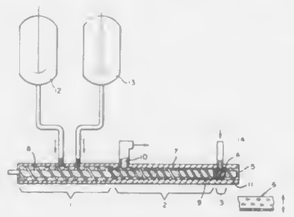
1. A process for removing chloroprene dimers from polychloroprene which comprises:

(a) feeding to a screw extruder a polychloroprene latex,

(b) coagulating the polychloroprene latex in the screw extruder,

(c) feeding the coagulated polychloroprene in the extruder into a dewatering zone,

(d) discharging the coagulated polychloroprene through a flow restriction which heats and pressurizes the polychloroprene to an area of reduced pressure thereby forming a porous polychloroprene crumb while, at the same time, said flow restriction applies back pressure sufficient that



water present in the coagulated polychloroprene is separated therefrom and forced out of a vent provided in the extruder upstream from the flow restriction,

(e) heating the porous polychloroprene crumb discharged from the extruder by passing a stream of gas substantially inert to the polychloroprene through the polychloroprene crumb at a temperature of at least about 100° C. for a time sufficient to strip from the polychloroprene by diffusion at least about 50% by weight chloroprene dimers.

4,943,403

METHOD FOR MOLDING A PULVERULENT MATERIAL

Tsuneo Miyashita; Hiroaki Nishio, and Michitaka Sato, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1986, Ser. No. 872,398
Claims priority, application Japan, Jun. 17, 1985, 60-129960
Int. Cl.[5] B22F *1/00;* B28B *11/22*
U.S. Cl. 264—233 **1 Claim**

1. A process for molding a pulverulent material characterized in that, from a molded product obtained by plasticizing-molding or casting-molding of metallic or ceramic powders, an organic dispersion medium used for molding selected from the group consisting of acetone, methyl alcohol, ethyl alcohol, n-propyl alcohol, i-propyl alcohol, n-butyl alcohol, i-butyl alcohol, sec-butyl alcohol and t-butyl alcohol is removed by extraction with liquid carbon dioxide at a temperature of lower than 31.1° C. and not lower than −30° C. and at a pressure now lower than 75.2 kg/cm^2 absolute.

4,943,404

PROCESS FOR PRODUCING A FIBER REINFORCED THERMOPLASTIC ARTICLE

Joe R. Waldrop, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 120,293, Nov. 13, 1987, abandoned. This application Aug. 30, 1988, Ser. No. 238,328
Int. Cl.[5] B29C *43/18, 43/20*
U.S. Cl. 264—257 **12 Claims**

1. A process comprising

(a) positioning a first thermoplastic tubular member reinforced with oriented filaments on a first mandrel and also a second thermoplastic tubular member reinforced with oriented filaments on a second mandrel by closely receiving an end portion of each mandrel in a borehole of its corresponding tubular member;

(b) positioning the first and second mandrels having the respective first and second tubular members thereon in a portion of a mold cavity so that the first tubular member is spaced from the second tubular member;

(c) filling the remainder of the mold cavity with fiber reinforced thermoplastic matrix;



(d) molding an article in the shape of the mold cavity having the first and second tubular members encapsulated therein;

(e) removing the article from the mold cavity;

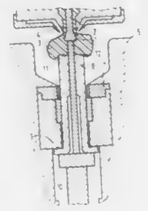
(f) removing the first and second mandrels from the respective boreholes of the first and second tubular members in the article.

4,943,405

METHOD AND APPARATUS FOR MANUFACTURING COMPRESSION MOLDED ARTICLES FROM THERMOPLASTIC MATERIAL

Gerhard Keller, Jougny, and Andreas Iseli, Ollon, both of Switzerland, assignors to AISA Automation Industrielle S.A., Vouvry, Switzerland

Filed Feb. 13, 1989, Ser. No. 310,354
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1988, 3804464
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—322 **7 Claims**



1. In a method for manufacturing compression molded articles from thermoplastic material wherein the material is heated, a blank is compression molded by means of a die, the blank is separated from the die and introduced in a mold which is then closed, the blank is then compression molded by the application of a compression molding pressure, and the molded article cooled at least partly under pressure, the improvement comprising:

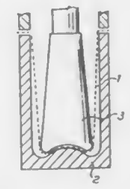
depositing the heated thermoplastic material forming the blank on the surface of an intermediate support which surface being a part of the closed compression molding mold and which extends beneath the die and is separated therefrom, and lowering the intermediate support as the mold closes.

4,943,406

METHOD FOR PRODUCTION OF CONTAINERS IN THERMOPLASTIC MATERIAL, IN PARTICULAR SHEETS OF POLYETHYLENE-TEREPHTHALATE

Luigi Bocchi, Via Dei Cignoli, 1 – 20151 Milano, Italy

Continuation-in-part of Ser. No. 76,062, Jul. 21, 1987, abandoned. This application Jun. 15, 1989, Ser. No. 366,688
Claims priority, application Italy, Jul. 31, 1986, 21353 A/86
Int. Cl.[5] B29C *51/04, 51/42*
U.S. Cl. 264—522 **3 Claims**



1. A method of production of a container of polyethyleneterephthalate stretched in the longitudinal and radial direction from a sheet of amorphous, polyethyleneterephthalate which consists of the following steps:

(a) preheating the sheet of amorphous, polyethyleneterephthalate to such a temperature that said sheet is preheated, softened and may be drawn;

(b) placing said sheet in a die having a female mold and a male plug, said male plug having a truncated cone shape with side surfaces upwardly converging; said female mold having a bottom and side walls;

(c) heating said female mold to a temperature of about 175°–180° C.;

(d) heating said male plug to a temperature of about 160°–166° C.;

(e) drawing said preheated sheet into contact with the bottom of said female mold by pressing with said male plug and longitudinally drawing the sheet whereby only the drawn bottom part crystallizes in contact with the bottom of said female mold;

(f) introducing compressed air or inert gas into the space between the female mold and said sheet, to cause said sheet to adhere to the male plug;

(g) introducing then compressed air or inert gas into the space between said male plug and said sheet, whereby said sheet separates from the sides of the male plug, comes in contact with the heated surface of the female mold, stretching in the radial direction occurs, the sheet crystallizes and the container of polyethyleneterephthalate stretched in the longitudinal and radial direction is obtained;

(h) cooling said container from step (g) and withdrawing it from the die.

4,943,407

METHOD OF AND APPARATUS FOR INJECTION MOLDING WITH PRESSURIZED FLUID ASSIST

James W. Hendry, Brooksville, Fla., assignor to Michael Ladney, Sterling Heights, Mich.

Continuation-in-part of Ser. No. 98,862, Sep. 21, 1987, Pat. No. 4,855,094. This application Aug. 25, 1988, Ser. No. 235,435
Int. Cl.[5] B29C *45/00, 45/34;* B29D *22/00*
U.S. Cl. 264—572 **55 Claims**

1. An apparatus for the injection molding of plastic articles comprising:

an injection molding machine for injecting molten plastic through a nozzle into a flow path at a nominal injection molding pressure;

a mold having a cavity defining the shape of the molded article and at least one plastic entry point coupled to the plastic flow path;

fluid charge means for pressurizing a charge of fluid at a predetermined level no greater than the nominal injection pressure; and

fluid circuit means, interconnecting the flow path and the fluid charge means, for communicating the charge of fluid to the flow path during plastic injection and responding to a pressure reduction in the flow path below the predetermined level of pressure to introduce the fluid charge into the flow path wherein the fluid circuit means interconnects the flow path downstream of the nozzle of the injection molding machine and proximate a mold sprue communicative with the flow path and wherein the machine nozzle communicates with a bushing in the sprue, and the fluid charge is communicated to an orifice in the sprue bushing.

16. A method for the injection molding of a plastic article in an injection molding system including a resin injection nozzle and a mold having an injection aperture for receiving molten resin from the nozzle at an upstream position, a mold cavity at a downstream position and a resin flow path for fluidly communicating the injection aperture and the mold cavity between the upstream and downstream positions, the method comprising the steps of:



pressurizing a charge of fluid at a predetermined pressure level;

injecting a quantity of molten plastic from the injection nozzle through the injection aperture and the flow path and into the mold cavity at a nominal plastic injection pressure;

communicating the charge of pressurized fluid to an orifice opening to the resin flow path in the mold between the upstream and downstream positions;

introducing the fluid charge into the flow path from the orifice to distribute the molten plastic within the mold cavity;

preventing the introduced fluid charge from traveling from the flow path, through the injection aperture and into the injection nozzle;

containing the fluid under pressure within the article until it has set up in the mold cavity; and

venting the fluid to ambient wherein the mold includes valve means movable between fluid open and fluid closed positions, the valve means allowing the fluid charge to travel through the orifice and into the flow path in the fluid open position and preventing the flow of the fluid charge through the orifice and into the flow path in the fluid closed position.

4,943,408

METHOD AND APPARATUS FOR OPERATING NUCLEAR ELECTRIC POWER GENERATING PLANTS

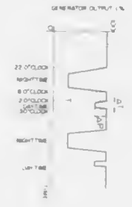
Fumiaki Yamamoto, Yokohama; Tsutomu Otsuka, Atsugi, and Yasuo Funo, Chiba, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 10, 1985, Ser. No. 754,144

Claims priority, application Japan, May 21, 1980, 55-67444

Int. Cl.[5] G21L *7/36*

U.S. Cl. 376—210 **6 Claims**



1. A method of load variation follow up running of a nuclear electric power generating plant connected to an electric power system including a hydroelectric power generating station and a steam electric power generating station, said power system further including at least said nuclear power generating plant connected thereto, said nuclear power generating plant including a nuclear reactor which is operated during first and second successive time intervals which together form a 24-hour day, said first interval including a period of a day when a demand load on said power system is at a highest demand load level during said 24-hour day and said second interval including a period of a day when a demand load on said power system is at a lowest demand load level during said 24-hour day, said method comprising the steps of:

(a) operating said nuclear reactor for driving said nuclear electric power generating plant at a first output level during a said first interval of a given 24-hour day;

(b) decreasing an output of said nuclear reactor from said first output level to a second output level during a said second interval of said given 24-hour day occurring during a period when there is a decrease in demand load on said power system from said highest demand load;

(c) increasing an output level of said nuclear reactor toward said first output level thereof during a said first interval of a next 24-hour day following said second interval of said given 24-hour day;

(d) temporarily decreasing an output of said nuclear reactor during a third interval of said given 24-hour day which is included within said first interval of said given 24-hour day, said third interval of said given 24-hour day occurring when a poisonous effect of fission products manifesting negative reactivity which is produced by a decreased output running of said nuclear reactor during step (b) becomes substantial; and

(e) increasing at least one of an amount and a duration of said decreased output running of said nuclear reactor during said second interval of said given 24-hour day in accordance with a decrease in an output of said nuclear reactor during an operation of said reactor during said third interval of said given 24-hour day.

4,943,409

REACTIVITY CONTROL IN NUCLEAR REACTORS

Donald Broadley, Warrington, United Kingdom, assignor to National Nuclear Corporation Limited, Knutsford, United Kingdom

Filed Feb. 29, 1988, Ser. No. 162,120

Claims priority, application United Kingdom, Mar. 31, 1987, 8707614

Int. Cl.[5] G21C *7/00, 9/00*

U.S. Cl. 376—212 **16 Claims**

1. A fuel sub-assembly for a nuclear reactor, said sub-assembly comprising an elongated tubular housing having, at or adjacent opposite ends thereof, coolant inlet means and coolant outlet means respectively, a coolant traversable fuel-bearing region enclosed within the housing between the inlet means and the outlet means, means comprising at least one elongate element located within, and extending generally longitudinally of, the housing for undergoing differential longitudinal thermal expansion relative to said housing as the temperature of the coolant increases, and radially extensible means coupled to said elongate element and to said housing and responsive to differential longitudinal thermal expansion of said element relative to said housing for projecting beyond the outer periphery of the housing so as to effect, in use, relative displacement between the sub-assembly and a neighbouring sub-assembly or sub-assemblies.

4,943,410

COMPACTION APPARATUS FOR SPENT NUCLEAR FUEL RODS

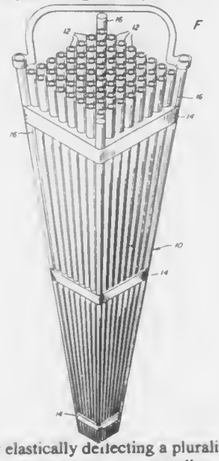
William J. Wachter, Glenshaw, Pa., assignor to U.S. Tool & Die, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 291,230, Aug. 15, 1981, Pat. No. 4,775,507. This application Sep. 16, 1987, Ser. No. 97,045

The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.

Int. Cl.[5] G21C *19/32*

U.S. Cl. 376—261 **15 Claims**



9. A method for elastically deflecting a plurality of fuel rods from a first, uncompacted array corresponding to the spacing of fuel rods in a fuel rod assembly to a second, compacted array, including the steps of:

removing the ends of the fuel rod assembly;

positioning an entry end of a fuel rod directing chamber at one end of the fuel rod assembly, said fuel rod directing chamber having a final consolidation section remote from said entry end, said final consolidation section comprising only a wall formed by an outer periphery of the fuel rod directing chamber;

drawing said fuel rods through a means forming a plurality of cavities extending through said fuel rod directing chamber to thereby deflect the fuel rods into said compacted array at said final consolidation section; and

storing said compacted array of fuel rods in a fuel rod storage canister.

4,943,411

PROCESS FOR TREATING MOLTEN IRON WITH MAGNESIUM ADDITIONS

Ivo Henych, Stettea, and Rudolf Pavlovsky, Schaffhausen, both of Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland

Continuation-in-part of Ser. No. 349,642, May 10, 1989, Pat. No. 4,897,242. This application Nov. 2, 1989, Ser. No. 430,803

Claims priority, application Switzerland, Nov. 4, 1988, 04090/88-9

Int. Cl.[5] C01G *3/00*

U.S. Cl. 423—566 **9 Claims**

1. A process for treating molten iron with magnesium comprising:

introducing a granular mixture into a holding vessel, said granular material comprising granular refractory material of controlled size and granular magnesium of controlled size wherein the granular size of said refractory material is controlled so that, but for the presence of said granular magnesium, said granular refractory material is prevented from rising in the melt due to its controlled size and the interfacial surface tension of the melt; and

feeding molten iron to said vessel in a controlled whirl-free manner whereby no significant eddies are produced whereby the granular magnesium exposed to said molten iron partially vaporizes and disturbs said interfacial surface tension of the melt thereby allowing said granular refractory material to rise in said melt so as to expose additional granular magnesium to said melt which in turn vaporizes thereby allowing for the controlled introduction of magnesium into said iron melt.

4,943,412

HIGH STRENGTH ALPHA-BETA TITANIUM-BASE ALLOY

Paul J. Bania, Boulder City, and Warren M. Parris, Las Vegas, both of Nev., assignors to Timet, Pittsburgh, Pa.

Filed May 1, 1989, Ser. No. 345,561

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—420 **2 Claims**

1. An alpha-beta titanium-base alloy comprising in weight percent, 6 aluminum, 4 vanadium, 0.04 to 0.10 silicon and 0.03 to 0.08 carbon, said alloy having an increase in strength over that of the alloy absent said silicon and carbon additions.

4,943,413

PROCESS FOR PRODUCING AN ALUMINUM/MAGNESIUM ALLOY

Eggert Tank, Wernau, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Feb. 2, 1989, Ser. No. 305,118

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 3807541

Int. Cl.[5] C22C *1/03*

U.S. Cl. 420—528 **5 Claims**

1. Process for producing an aluminum-containing alloy containing refractory material particles, comprising:

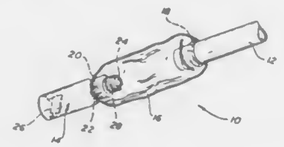
preparing a refractory material particles charge from any one of B_4C, Si_3N_4, SiC, Al_2O_3, 3 $Al_2O_32SiO_2$, Al_2O_3-MgO or ZrO_2 in the pure form or in the form of mixtures of various such refractory materials;

then heating said refractory material particles charge to between 680 to 800° C. in a mold completely filled with said refractory material particles charge;

then preparing a pre-alloy in the mold by filling the voids existing between particles of the refractory material particles charge with either hot molten magnesium, or a mag-

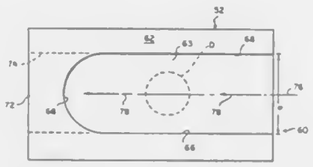
nesium/aluminum alloy with up to 32% by weight of aluminum, at 680 to 800° C.;
and then dissolving this void filled pre-alloy in either an aluminum melt, or alloy that does not exceed a magnesium content of 11% by weight, relative to the metal fraction in the resulting alloy.

4,943,414
METHOD FOR VAPOR STERILIZATON OF ARTICLES HAVING LUMENS
Paul T. Jacobs; Ronald F. Berry, both of Arlington, and Toby A. Soto, Fort Worth, all of Tex., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.
Filed Jul. 30, 1987, Ser. No. 79,550
Int. Cl.[5] A61L *2/20*
U.S. Cl. 422—28 10 Claims



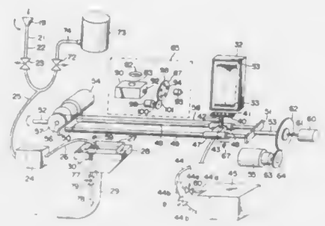
1. In a method for vapor sterilization of an article having a narrow lumen therein which comprises disposing the article within a chamber, evacuating the chamber, and introducing a first supply of antimicrobial vapor into said chamber to contact and sterilize said article, the improvement comprising connecting a vessel containing a second supply of antimicrobial solution to the lumen of said article prior to disposing the article in the chamber whereby antimicrobial vapor derived from said second supply of antimicrobial solution is introduced directly into said lumen of said article.

4,943,415
GROOVED COVER FOR TEST ELEMENTS
Catherine S. Przybylowicz, Rochester; Merrit N. Jacobs, Fairport, and Joseph S. Douglas, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 14, 1989, Ser. No. 380,839
Int. Cl.[5] G01N *35/00, 35/02*
U.S. Cl. 422—56 4 Claims



1. In a clinical analyzer for use with slide-like test elements spotted with a drop of patient sample, said analyzer including stations that follow a spotting station that places said drop onto each test element, at least some of said following stations including a cover having a surface in contact with each test element after it is spotted, and means for moving a test element a predetermined direction into each of said some stations from an exterior location to an interior location under said cover, said moving being done while the moved test element is in contact with said cover;
the improvement wherein at least one of said cover contact surfaces has a recessed groove extending from the cover edge adjacent to said exterior location, to said interior location, said groove (a) being closed at its end corresponding to said interior location, (b) having an orientation axis that parallels said predetermined movement direction, and (c) having a clearance and shape adequate to accommodate without contact any sample drop of a predetermined volume protruding from said test element, said groove being smaller in width than the width of a slide-like test element covered by said cover.

4,943,416
AUTOMATIC URINALYSIS SYSTEM
Makoto Kikuchi, Mitaka, and Manabu Harada, Tokyo, both of Japan, assignors to Kabushiki Kaisha Marukomu, Tokyo, Japan
Filed Sep. 23, 1987, Ser. No. 100,224
Int. Cl.[5] G01N *35/00*
U.S. Cl. 422—63 21 Claims

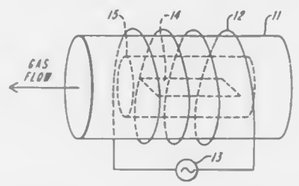


1. An automatic urinalysis system for use at an excretion site by a subject who desires to have their urine analyzed, comprising:
a sample collecting means for collecting a sample of urine directly from the subject during urination at an excretion site at which said automatic urinalysis system is installed and for taking the collected urine sample into said automatic urinalysis system;
a guiding means for receiving the urine sample directly from said sample collecting means and for introducing the urine sample into a testing area within a body of said automatic urinalysis system;
a urine testing element located within said body;
a contacting means for automatically contacting said urine testing element with the urine sample in the testing area;
a urine testing element measuring means for automatically measuring at least one parameter of said urine testing element contacted with the urine sample by said contacting means;
a display means for displaying test data from said urine testing element measuring means; and
a discharging means for discharging the urine sample to a discharge location after the urine sample has been contacted by said urine testing element;
said sample collecting means being provided within a urinal.

4,943,417
APPARATUS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS
Adir Jacob, 23 Juniper La., Framingham, Mass. 01701
Division of Ser. No. 19,134, Feb. 25, 1987, Pat. No. 4,801,427.
This application Nov. 22, 1988, Ser. No. 276,404
Int. Cl.[5] A61L *2/14*
U.S. Cl. 422—292 4 Claims

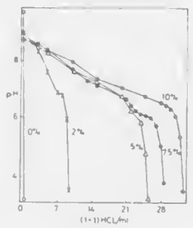
1. Apparatus for sterilization of medical devices and materials in a substantially continuous process in a gas plasma at or near atmospheric pressure comprising:

a first electrode suitable to form a corona discharge in a gas at or near atmospheric pressure,
a second generally planar electrode,
an RF power source connected between said first electrode and said planar electrode capable of producing a power density in ambient air of at least 5 Watts/cm^2, and
a conveyor means positioned in close contact with said



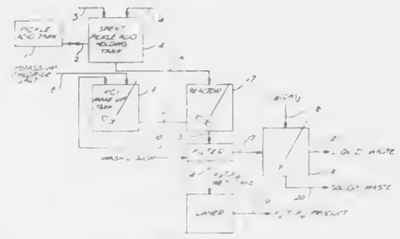
planar electrode for substantially continuously carrying said material to be treated through the discharge gap between the electrodes at or near atmospheric pressure,
said conveyor means including means for loading said material to be treated onto said conveyor means before it is carried through said discharge gap and for unloading said material from said conveyor means after it has been carried through said discharge gap.

4,943,418
METHOD OF PREPARING HIGH-PURITY MANGANESE COMPOUNDS
Koichi Kambe, Sakata; Kiyoshi Matsuura, Kiryu; Tatsuo Seino, Narashino; Yoshiyuki Kimura, Gunma; Hiroshi Kemmochi, Gunma; Koichi Yoshioka, Gunma, and Hideaki Hohnoki, Gunma, all of Japan, assignors to Japan Metals & Chemicals Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 137,333, Dec. 23, 1987, abandoned.
This application May 30, 1989, Ser. No. 361,757
Claims priority, application Japan, Mar. 10, 1987, 62-54872; Mar. 10, 1987, 62-54871
Int. Cl.[5] C01G *45/00*
U.S. Cl. 423—50 22 Claims



1. A method of preparing manganese compounds suitable as raw materials for ferrites, comprising adding at least one member selected from ferromanganeses and metallic manganeses to an aqueous buffered solution containing an electrolyte, dissolving said at least one member by the addition of an acid thereto while stirring and maintaining a pH 4 to 9 such that manganese is dissolved without substantial co-dissolution of an impurity selected from the group consisting of cobalt, calcium, chromium, mangesium, silicon, nickel, phosphorus, copper, and vanvadium, filtering said aqueous buffered solution to form a filtered aqueous solution, and then precipitating said manganese from said filtered aqueous solution.

4,943,419
PROCESS FOR RECOVERING ALKALI METAL TITANIUM FLUORIDE SALTS FROM TITANIUM PICKLE ACID BATHS
Joseph A. Megy, 3740 Chinquapin, Corvallis, Oreg. 97220
Continuation-in-part of Ser. No. 198,159, May 24, 1988, abandoned. This application Mar. 30, 1989, Ser. No. 331,583
Int. Cl.[5] C01G *23/02*
U.S. Cl. 423—72 59 Claims



1. A process for recovering a substantially pure alkali metal fluorotitanate salt containing at least 19.5% titanium of controlled particle size of from 60 to 325 mesh from tetravalent titanium containing spent pickle acid liquors containing titanium alloying metals by first making small sized crytals which are converted to larger size product crystals which comprises the steps of:
(a) adding fluorine ion to tetravalent titanium-containing spent pickle acid liquor containing titanium alloying metals to adjust the fluorine to titanium mole ratio in said liquor to a value of about 5.5 to about 6.2 to obtain a prepared titanium containing spent pickle acid liquor;
(b) adjusting the temperature of the prepared titanium containing spent pickle acid liquor to between about 22° C. and 28° C.;
(c) adding, with agitation, an excess of alkali metal salt to the prepared titanium-containing spent pickle acid liquor to produce an alkali metal fluorotitanate product salt containing at least 19.5% titanium.
(d) filtering the resulting alkali metal fluorotitanate product salt from the solution of step (c);
(e) adding the alkali metal fluorotitanate salt to an aging solution of water or weak hydrofluoric acid and aging the salt in the solution longer than 20 minutes to reduce the impurities in the salt and refine the particle size of the salt to a particle size of from about 60 mesh to about 325 mesh;
(f) filtering the aged alkali metal fluorotitanate salt from the aging solution; and
(g) drying the filtered, aged alkali metal fluorotitanate salt.

4,943,420
PROCESS FOR RECOVERING GALLIUM
Alfred Mitschker, Odenthal-Holz; Peter M. Lange, Leverkusen; Heiko Hoffmann, Bergisch Gladbach; Günter Loosmann, Bonn, all of Fed. Rep. of Germany; Andries P. van der Meer, Arnhem, and Cornelius J. Smit, Am Zevenaar, both of Netherlands, assignors to Bayer Aktiengesellschaft, Leverkusen and Ingal International Gallium GmbH, Schwandorf, both of, Fed. Rep. of Germany
Filed Apr. 13, 1989, Ser. No. 337,585
Claims priority, application Fed. Rep. of Germany, May 3, 1988, 3814916
Int. Cl.[5] C01G *15/00*
U.S. Cl. 423—112 7 Claims

1. In a process for recovering gallium from an aqueous alkaline solution by adsorption of the gallium onto a bead-polymerized synthetic resin impregnated with 7-(4-ethyl-1-methyloctyl)-8-hydroxyquinoline and elution thereof with an

aqueous solution of a mineral acid, the improvement which comprises (a) using as the synthetic resin a macroporous polydivinylbenzene polymer or a macroporous divinylbenzene copolymer, which polymer or copolymer has been obtained by bead polymerization of divinylbenzene or respectively of a mixture comprising two or three vinylbenzenes selected from the group consisting of aromatic mono-, di- and trivinylbenzene, containing at least 50% by weight of divinylbenzene, in the presence of a methyl C_2–C_6-alkyl ketone, (b) loading the polymer or copolymer with 160–190 g of 7-(4-ethyl-1-methyloctyl)-8-hydroxyquinoline per liter of (dry) resin; and (c), after the gallium has been eluted and the acid has been expelled from the resin bed by washing with water, washing the resin with an aqueous sodium hydroxide solution and only then beginning the next service cycle with the loading step.

4,943,421

METHOD OF REDUCING THE OXIDES OF NITROGEN IN FOSSIL FUELS COMBUSTION AND COMBUSTION EFFLUENTS USING AMINE COMPOUNDS

Otto C. Turchan, 458 El Camino Dr., Beverly Hills, Calif. 90212

Filed Mar. 16, 1989, Ser. No. 324,574
Int. Cl.[5] B01J *8/00*; C01B *21/00*
U.S. Cl. 423—235 **1 Claim**

1. A process for the reduction of oxides of nitrogen formed in the combustion of fossil fuels, within a fuel combustion reaction zone of a fossil fuels fired combustion apparatus or combustion device, the said oxides of nitrogen reduction process comprising: the step of interjecting an admixture of oxides of nitrogen reducing agents consisting essentially of methylamine, ethylamine, ethylenediamine, diethylenetriamine, aniline, monoethylaniline, toluidine and xylidine, interjected individually or in any combination into the said fuel combustion reaction zone containing combustion fuel, combustion air and products of fuel combustion, including said oxides of nitrogen generated in the combustion of said fossil fuels, wherein the said admixture of oxides of nitrogen reducing agents react with the said oxides of nitrogen generated within the said fuel combustion reaction zone, converting the oxides of nitrogen by the reduction process with said mixture of oxides of nitrogen reducing agents, to harmless molecular N_2 and H_2O in the fossil fuels combustion products effluents discharged to the ambient atmosphere from said fossil fuels fired combustion apparatus or combustion device and wherein a fossil fuels combustion apparatus or combustion device uses a liquid fossil fuel for combustion, and the said admixture of oxides of nitrogen reducing agents is blended into said liquid fossil fuels, wherein the resulting combination of said admixture of oxides of nitrogen reducing agents intermixed with said liquid fossil fuels is delivered into the combustion reaction zone of said combustion apparatus or combustion device, in combination with said liquid fossil fuels.

4,943,422

PROCESS FOR TREATMENT OF GASEOUS EFFLUENTS CONTAINING SULFUR DIOXIDE WITH OXYGEN

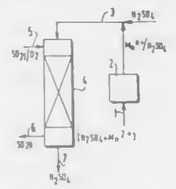
Henry Ledon, Lyons; Jean Louise, Villejuif, and Panayotis Cocolios, Limours, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

PCT No. PCT/FR88/00104, § 371 Date Sep. 12, 1988, § 102(e) Date Sep. 12, 1988, PCT Pub. No. WO88/06483, PCT Pub. Date Sep. 7, 1988
PCT Filed Feb. 24, 1988, Ser. No. 275,135
Claims priority, application France, Feb. 25, 1987, 87 02491
Int. Cl.[5] C01B *17/00*
U.S. Cl. 423—242 **6 Claims**

1. A process for treatment of gaseous effluents containing sulfur dioxide to provide improved purification efficiency comprising:

providing an oxidation zone impregnated with concentrated sulfuric acid containing a catalyst generated by electro-oxidation of manganese salts having a valence of +2;

selecting the amount of sulfur dioxide and manganese as a function of the sulfur dioxide content of the gaseous effluents to be treated; and



contacting said gaseous effluents with a sulfuric acid solution in the presence of oxygen containng a small amount of ozone and a catalytic base of manganese salts.

4,943,423

PROCESS FOR RECOVERING BORON TRIFLUORIDE FROM AN IMPURE GASEOUS BORON TRIFLUORIDE RESIDUE

Francis E. Evans, Hamburg, N.Y.; Kenneth H. Schroeder, Wilmington, Del., and William J. Wagner, Hamburg, N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 29, 1988, Ser. No. 277,153
Int. Cl.[5] C01B *35/06, 17/90*
U.S. Cl. 423—293 **8 Claims**

1. A method for removing sulfur dioxide from a boron trifluoride stream comprising the steps of:

(a) condensing a gaseous boron trifluoride stream;

(b) distilling said condensed boron trifluoride stream to yield pure boron trifluoride and a liquid boron trifluoride residue wherein said liquid boron trifluoride residue comprises by weight: about 40 to about 95% boron trifluoride, about 5 to about 30% sulfur dioxide, about 0 to 19% sulfur trioxide, about 0 to about 0.2% silicon fluoride, about 0 to about 1.0% arsenic fluoride, and about 0 to about 0.1% antimony fluoride;

(c) vaporizing said liquid boron trifluoride residue;

(d) feeding said gaseous boron trifluoride residue into a mixture of boric and sulfuric acids wherein said acid mixture comprises by weight about 1 to about 30% boric acid and about 70 to about 99% sulfuric acid and absorbs boron trifluoride from said gaseous boron trifluoride residue and only slightly absorbs sulfur dioxide from said gaseous boron trifluoride residue; and

(e) removing said unabsorbed sulfur dioxide from said acid mixture.

4,943,424

SYNTHESIS OF A CRYSTALLINE SILICOALUMINOPHOSPHATE

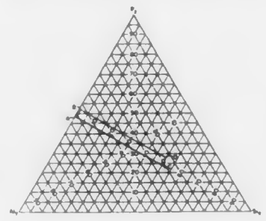
Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 12, 1988, Ser. No. 155,191
Int. Cl.[5] C01B *33/26*
U.S. Cl. 423—328 **19 Claims**

2. A crystalline silicoaluminophosphate molecular sieve having a composition in terms of mole ratios of oxides on an anhydrous basis expressed by the formula:

$$mR:Al_2O_3:nP_2O_5:qSiO_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present and has a value such that there are from 0.02 to 2 moles of R per mole of aluminum; n has a value of from 0.96 to 1.1, and q has a value of from 0.1 to 4, said silicoaluminophosphate having a characteristic X-ray powder diffraction pattern which contains at least the d-spacings of Table I, and wherein the P_2O_5 to alumina mole ratio of the surface of the silicoaluminophosphate is about 0.80 or less, the



P_2O_5 to alumina mole ratio of the bulk of the silicoaluminophosphate is 0.96 or greater, and the SiO_2 to alumina mole ratio at the surface of the silicoaluminophosphate is greater than the SiO_2 to alumina mole ratio in the bulk of the silicoaluminophosphate.

4,943,425

METHOD OF MAKING HIGH PURITY DENSE SILICA OF LARGE PARTICLE SIZE

Sophia R. Su, Weston, and Leo F. Fitzpatrick, Sandwich, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 1, 1988, Ser. No. 176,583
Int. Cl.[5] C01B *33/02*
U.S. Cl. 423—338 **9 Claims**

1. A method of making silica comprising the following steps:

Step 1—homogeneously mixing tetraalkylorthosilicate with a solvent to form a solution having a molar ratio of said tetraalkylorthosilicate to said solvent of about 1 to about 3;

Step 2—adding the product of step 1 to an acid solution said acid solution at a pH of approximately 2.25;

Step 3—digesting the product of step 2;

Step 4—adding ammonium hydroxide to the product of step 3 to form a gel containing water and said solvent;

Step 5—screening the product of step 4 to form a granulated gel containing water and said solvent;

Step 6—heating under vacuum the product of step 5 for a period sufficient to remove any contained water and said solvent from the product of step 5 to form a dehydrated product;

Step 7—heating the product of step 6 to form [a large particle size, high purity, dense] silica having a particle size from about 100 micrometers to about 420 micrometers and a surface area from about 0.088 to about 0.20 m^2/g, said silica having an impurity content of less than 1.5 ppm.

4,943,426

METHOD FOR REGULATING REACTION TEMPERATURE

LeRoy E. Dastolfo, Jr., Lower Burrell, and Vito Cedro, III., Export, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

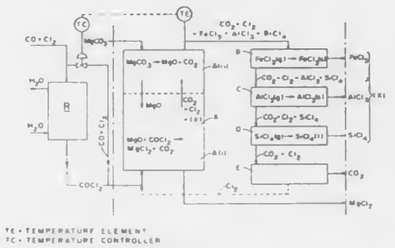
Filed Jun. 20, 1988, Ser. No. 208,657
Int. Cl.[5] C01F *5/32*
U.S. Cl. 423—497 **5 Claims**

1. A method for lowering the offgas temperature in a reactor for producing magnesium chloride from magnesium carbonate, carbon monoxide and chlorine, said method comprising:

(a) diverting at least some carbon monoxide and chlorine from the reactor to a continuously-cooled vessel;

(b) combining the carbon monoxide and chlorine in said vessel to exothermally produce phosgene;

(c) continuously cooling the vessel; and



(d) transferring phosgene from said vessel to the reactor containing magnesium carbonate.

4,943,427

DIAGNOSTIC AGENT FOR HEART DISEASE AND USE THEREOF

Yoshio Yazaki, Tokyo, and Masahito Sugi, Choshi, both of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Mar. 25, 1985, Ser. No. 715,815
Claims priority, application Japan, Mar. 27, 1984, 59-58767
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[5] A61K *43/00, 39/395, 49/02*; G01N *33/53*
U.S. Cl. 424—1.1 **8 Claims**

1. A diagnostic agent for heart disease comprising a radiolabeled monoclonal antibody having specificity to human cardiac myosin heavy chain or its active fragment.

4,943,428

STIMULATION OF SEROTONIN-1A RECEPTORS IN MAMMALS TO ALLEVIATE MOTION SICKNESS AND EMESIS INDUCED BY CHEMICAL AGENTS

James B. Lacot, Xenia, Ohio, and George H. Crampton, Oak Harbor, Wash., assignors to Wright State University, Dayton, Ohio

Continuation-in-part of Ser. No. 71,896, Jul. 10, 1987. This application Feb. 16, 1988, Ser. No. 156,527
Int. Cl.[5] A61K *27/00, 31/135*
U.S. Cl. 424—10 **13 Claims**

1. A method for the alleviation of motion sickness, which comprises administering a nontoxic, therapeutically effective dose of 8-hydroxy-2(di-n-propylamino)-tetralin to a mammal in need of such treatment.

4,943,429

DENTIFRICE GELS CONTAINING SODIUM BICARBONATE

Anthony E. Winston, East Brunswick, and Regina M. Miskewitz, Hillsborough, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 23, 1988, Ser. No. 197,218
Int. Cl.[5] A61K *7/16, 7/18*
U.S. Cl. 424—52 **12 Claims**

1. A dentifrice gel comprising a sodium bicarbonate abrasive in an aqueous carrier, the sodium bicarbonate having a median particle size range of from 10 to 200 microns and being incorporated in the gel in an amount of from 5 to 60% by weight of the gel, and the carrier incorporating a humectant selected from the group consisting of glycerin, sorbitol, a low molecular weight polyethylene glycol, propylene glycol, and mixtures

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thereof in an amount of from 15 to 60% by weight of the gel and in at least a 0.5:1 ratio relative to the water content thereof.

4,943,430

TREATMENT OF KERATINOUS FIBRES

Robert J. W. Hefford, and Andrew M. Murray, both of Cheshire, United Kingdom, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 74,838, Jul. 17, 1987, abandoned. This application May 30, 1989, Ser. No. 358,467

Claims priority, application United Kingdom, Jul. 30, 1986, 8618634

Int. Cl.[5] A61K *7/13, 7/06*

U.S. Cl. 424—70 **14 Claims**

1. An aqueous, substantially organic solvent-free single phase composition, suitable for use in the treatment of keratinous fibres, which comprises:

(i) from 0.1 to 10% by weight of a cationic polymer having a cationic charge density of at least 0.001 selected from the group consisting of:
poly (dimethyldiallylammonium chloride);
poly (dimethylbutanylammonium chloride)-60 , ω-bis (triethanolammonium chloride)
poly (dipropyldiallylammonium chloride);
poly (methyl-β-propaniodiallyl ammonium chloride);
poly (diallylpiperidinium chloride);
poly (vinylpyridinium chloride);
quaternised poly (vinyl alcohol);
quaternised (dimethylaminoethylmethacrylate);
poly (n-vinyl pyrrolidone);
poly (dimethylaminoethylmethacrylate);
Polyquaternium - 2;
poly (vinylpyridine);
poly (ethyleneimine);
and mixtures thereof;

(ii) from 0.01 to 10% by weight of an anionic monomer selected from the group consisting of anionic dyes, anionic sunscreen agents, and mixtures thereof;

(iii) from 0.1 to 20% by weight of amphoteric detergent active compound;

(iv) from 1 to 30% by weight of an inorganic electrolyte selected from the group consisting of alkali metal, alkaline earth metal, ammonium and substituted ammonium, -chlorides, -bromides, -nitrates, the composition having an anionic to cationic charge ratio of from 0.2 to 1.0.

4,943,431

EMULSIFIED HAIR COSMETIC

Masaki Awamura, Takatsuki; Kazushi Yamamoto, Osaka, and Masashi Nanjo, Kawanishi, all of Japan, assignors to Sunstar Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1988, Ser. No. 286,638

Claims priority, application Japan, Dec. 24, 1987, 62-329340

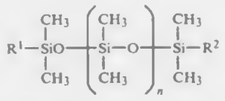
Int. Cl.[5] A61K *7/08, 7/06*

U.S. Cl. 424—70 **2 Claims**

1. An emulsified hair cosmetic which comprises

(i) a dimethylsilicone rubber of the formula:

[1]



wherein R^1 and R^2 are methyl or hydroxyl and n is an integer of 4000 to 9000;

(ii) one or more polyalcohols selected from the group consisting of propylene glycol, 1,3-butylene glycol and glycerin; and

(iii) one or more nonionic surfactants selected from the group consisting of polyoxyethylene oleyl ether, polyoxyethylene cetyl ether, ethylene glycol stearate, diethylene glycol stearate, polyethylene glycol stearate, polyethylene glycol distearate and glyceryl stearate, the total amount of (iii) being not more than 4 times the amount of (i) and not being less than 0.5 times the amount of (ii) and not more than twice the amount of (ii).

4,943,432

SALT MIXTURE FOR THE TREATMENT OF PSORIASIS

Hans F. Biener, Heilman Strasse 21, 8000 Munich 71, Fed. Rep. of Germany

Continuation of Ser. No. 916,279, Oct. 7, 1986, abandoned. This application Aug. 24, 1988, Ser. No. 236,513

Claims priority, application European Pat. Off., Oct. 8, 1985, 85112766.2

Int. Cl.[5] A61K *33/30*

U.S. Cl. 424—647 **16 Claims**

1. A composition for the treatment of psoriasis by application to the skin, said composition prepared by forming a mixture of salt components such that the salt components are present in the mixture in the following proportions, expressed as grams/kilogram of salt mixture in the ionic state:

Cations (g./kg salt mixture)		Anions (g./kg salt mixture)	
magnesium	55 to 108	chloride	340 to 550
sodium	51 to 126	bromide	1.5 to 15
calcium	19 to 36	sulfate	1.1 to 9
potassium	10 to 21	borate	0.4 to 3
strontium	0.2 to 2.0	silicate	0.1 to 2.9
iron	0.18 to 1.9	fluoride	0.1 to 2.2
aluminum	0.006 to 1.2	iodide	0.1 to 2.0
zinc	0.02 to 0.8	carbonate	0.01 to 1.0
lithium	0.004 to 0.7	hydrogen carbonate	0.01 to 1.0

said composition further characterized as being essentially free of organic impurities.

4,943,433

PHARMACOLOGICAL/COSMETIC PREPARATION

David Rudov, 6 Tracey Crescent, Brighton, Victoria, 3186, Australia

Filed Nov. 30, 1987, Ser. No. 126,603

Claims priority, application Australia, Dec. 3, 1986, PH9306; Sep. 23, 1987, PI4530

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **10 Claims**

1. A pharmacologically effective substance for external application, the substance including an extract consisting of a pharmaceutically acceptable and substantially bacteria-free liquid comprising water and substantially only water soluble components from a juice which has been freshly derived from plants at the unjointed stage of plant development, the plants being selected from barley, wheat, oats, rice, rye and other cereal plants,

(a) the extraction being by a squeezing, crushing and/or grinding process,

(b) the extraction being carried out under sterile conditions and/or the extract being treated to prevent or inhibit growth, reproduction or activity of contaminating micro-organisms,

(c) the extract being carried in a pharmaceutically acceptable base carrier or excipient, the carrier preserving the extract against deterioration and being capable of at least partial absorption by tissues so as to carry the extract to sub-surface tissues.

4,943,434

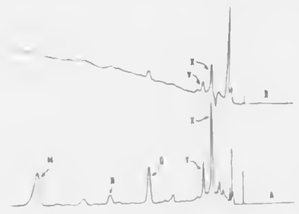
INSECTICIDAL HYDROGENATED NEEM EXTRACTS

Zev Lidert, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 106,755, Oct. 6, 1987, abandoned. This application Sep. 2, 1988, Ser. No. 240,790

Int. Cl.[5] A01N *65/00*

U.S. Cl. 424—195.1 **29 Claims**



1. Hydrogenated crude extract of seeds of the neem tree *Azadirachta indica.*

4,943,435

PROLONGED ACTIVITY NICOTINE PATCH

Richard W. Baker, Palo Alto; Frank Kochinke, Fremont, and Carl Huang, Palo Alto, all of Calif., assignors to Pharmetrix Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 105,549, Oct. 5, 1987, Pat. No. 4,839,174. This application Oct. 28, 1988, Ser. No. 264,397

Int. Cl.[5] A61L *15/00*

U.S. Cl. 424—448 **22 Claims**



1. A transdermal patch, comprising:

(a) A nicotine depot layer, having a skin-facing side and a skin-distal side, said depot layer containing a sufficient quantity of nicotine to maintain a useful flux of nicotine from said patch for a total time period of 12 hours or more;

(b) an occlusive backing layer in contact with and covering said depot layer on said skin-distal side; and

(c) rate-controlling means for controlling diffusion of nicotine from said skin-facing side at a first flux of greater than zero but less than 2 mg/cm^2 in any hour for a first time period of greater than zero but less than 5 hours, then at a second flux between 20 and 800 $\mu g/cm^2.h$ for a second time period of 7 hours or more.

4,943,436

BEER PRODUCTION

Ian E. Ogden, 53 Makara Road, Karori, Wellington, New Zealand

Continuation of Ser. No. 69,897, Jul. 6, 1987, abandoned, which is a continuation of Ser. No. 733,133, May 10, 1985, abandoned. This application Mar. 21, 1989, Ser. No. 326,470

Claims priority, application New Zealand, May 11, 1984, 208134

Int. Cl.[5] C12C *7/00, 11/04*

U.S. Cl. 426—16 **6 Claims**

1. In a process for the production of a low-alcohol beer wherein a wort is produced by the mashing of barley, said wort being combined with hops, additional carbohydrates and flavoring agents and subsequently fermented with yeast to obtain a beer, the improvement comprising subjecting the wort, prior to fermentation, to ultrafiltration through a membrane effective to permit passage of mono-, di-, and trisaccharides thereby producing (1) a retentate as a first product having a lower quantity of low molecular weight components than said wort prior to said ultrafiltration and (2) a permeate as a second product richer in fermentable low molecular weight components then said wort; and fermenting said first product to produce a low alcohol beer.

4,943,437

PROCESS FOR SUPPLY OF BIOLOGICALLY ACTIVE MATERIALS TO EASE MATERIALS

Endre Kvanta; Anders Pedersen, and Lars Alexandersson, all of Ängelholm, Sweden, assignors to AB Medipharm, Ängelholm, Sweden

Filed Apr. 6, 1987, Ser. No. 38,936

Claims priority, application Sweden, Apr. 7, 1986, 8601543

Int. Cl.[5] A23K *1/165*

U.S. Cl. 426—61 **12 Claims**

1. A process for supplying low concentrations, of the order of parts per million, of biologically active materials to base materials comprising: (a) forming a slurry of said biologically active material and an inert liquid carrier, said carrier being of opposite polarity to said biologically active material, (b) blending said slurry to form a homogeneous suspension in which said suspended biologically active material is evenly distributed throughout said carrier, and (c) applying said suspension to said base material by atomizing said suspension and supplying the thus atomized particles of the suspension to the base material so that the surface of said material is evenly coated by said suspension.

4,943,438

BREAD CRUMB COATING COMPOSITION AND PROCESS FOR IMPARTING FRIED-LIKE TEXTURE AND FLAVOR TO FOOD PRODUCTS

Sallie W. Rosenthal, Manchester, Mo., assignor to ConAgra, Inc., Omaha, Nebr.

Continuation of Ser. No. 882,236, Jul. 7, 1986, abandoned. This application Feb. 21, 1989, Ser. No. 314,224

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—92 **15 Claims**

1. A method of preparing food products which produces in said food products, when reheated by microwave or conventional baking, a flavor, texture, and appearance produced by frying said food products, comprising the steps of:

(a) coating an initial food product with a binding agent;

(b) breading the coated product with a breading crumb mixture comprising extruded flour dough breading crumbs, said flour dough breading crumbs being made from dough comprising 2–6% rice flour, 2–6% corn flour, 2–6% wheat flour and 2–6% malted barley extract, and said crumbs being formed by an extrusion process which removes most of the moisture from the dough;

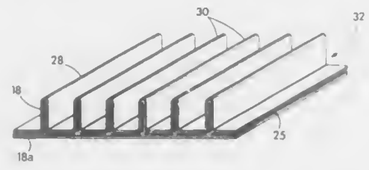
(c) baking the breaded product in a humidified oven;

(d) applying edible oil in atomized form to the surface of the baked product; and then

(e) exposing the baked product surface to high temperature heating, said oil and heating being supplied in amounts sufficient to provide a brown, crisp and fried-like appearance to the breaded product.

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4,943,439
MICROWAVE RECEPTIVE HEATING SHEETS AND PACKAGES CONTAINING THEM
David W. Andreas, Minneapolis, and David H. Cox, Robbinsdale, both of Minn., assignors to Golden Valley Microwave Foods Inc., Edina, Minn.
Filed Mar. 15, 1988, Ser. No. 169,215
Int. Cl.[5] A23L *1/025;* H05B *6/80;* B65D *81/34*
U.S. Cl. 426—107 12 Claims



1. A microwave heating package including an outer microwave transparent packaging enclosure, food pieces contained therein and an inner microwave receptive heating sheet for heating the food pieces, said sheet being located within the package and contained within the enclosure,
said sheet comprising a backing and a microwave receptive heating material associated therewith,
said sheet being formed into a plurality of longitudinally extending, laterally spaced apart heat emitting partitions separating food pieces and defining a honeycomb-like array comprising a plurality of food compartments, each of said compartments enclosing said food pieces on more than two sides of each piece with the microwave receptive sheet to heat adjacent surfaces of each food piece so as to toast, brown or crisp them when exposed to microwave energy within a microwave oven by transfer of heat from the microwave receptive sheet to the surfaces of the food pieces.

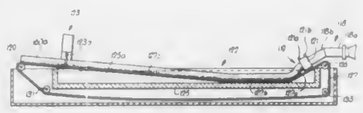
4,943,440
CONTROLLED ATMOSPHERE CUT VEGETABLE PRODUCE PACKAGE AND METHOD
Glenn S. Armstrong, Plymouth, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Continuation of Ser. No. 921,502, Oct. 22, 1986, abandoned. This application Feb. 28, 1989, Ser. No. 318,432
Int. Cl.[5] A23B *7/148;* B65D *81/20*
U.S. Cl. 426—118 20 Claims

1. A packaged food article for the extended refrigerated storage of cut fresh vegetable produce pieces, comprising;
A. a sealed imperforate container;
B. a quantity of a perishable fresh vegetable produce consisting essentially of a blend of ripe garden salad vegetables other than tomatoes, green peppers, red peppers, radishes, sprouts, mushrooms or cucumbers, in the form of cut pieces disposed within the container forming a produce bed having a bed depth ranging from about 1 to 6 inches,
wherein the produce pieces each range in weight from about 1 to 10 g,
said produce blend having at the time of packaging in said container an initial microbial load of less than about 1000 APC per gram of blend,
said produce blend being a mixture of a plurality of vegetable species,
wherein the container has an initial atmosphere at atmospheric pressure upon sealing within said container consisting essentially of
1. about 1.5% to 7% by volume oxygen,
2. about 8% to 15% by volume carbon dioxide, and
3. the balance being substantially all molecular nitrogen,
wherein the container has a portion fabricated from a gas permeable material sufficient to allow infusion into the package of about 18 to 32 cc of oxygen per day per ounce of the produce blend and wherein the container is substantially free of chemical agents capable of absorbing gases.
wherein the package is refrigerated,
said container and produce blend being selected such that the container has an equilibrium atmosphere within said container comprising
about 0.8% to 1.5% by volume oxygen,
about 8% to 12% by volume carbon dioxide, and the balance substantially all molecular nitrogen, said equilibrium atmosphere being obtained within one to five days of being sealed and refrigerated.

4,943,441
METHOD OF PRODUCING SIMULATED MEAT PRODUCT FROM WHOLE SOYBEANS
Edward M. McCabe, Marysville, Ohio, assignor to Nestec S. A., Vevey, Switzerland
Filed Mar. 3, 1989, Ser. No. 318,793
Int. Cl.[5] A23J *3/22*
U.S. Cl. 426—511 20 Claims

1. A method of processing whole soybeans to produce a textured soy protein product in the form of discrete chunks free from off-flavors and odors, which consists essentially of
hydrating and acidifying whole soybeans to a pH in the range of between about 4.5 to 6.5,
comminuting the hydrated and acidified whole soybeans to provide an aqueous dispersion of soybean particles having a pH in the range of between about 4.5 to 6.5,
introducing the aqueous dispersion having a solids content of between about 10% to 45% by weight and up to 45% protein on a moisture free basis into a confined treatment zone,
injecting pressurized steam into a confined stream of the aqueous dispersion in said treatment zone under conditions sufficient to rapidly denature soy protein in said dispersion and texturize the protein into discrete chunks of texturized soy protein, and
discharging the texturized protein from said treatment zone in the form of discrete, chunks which are free of off-flavors and odors.

4,943,442
METHOD AND APPARATUS FOR CRUST-FREEZING AND SLICING OF COMMINUTED MEAT PRODUCTS
Warren R. Schack, Leawood, and Richard G. Powers, Overland Park, both of Kans., assignors to Marlen Research Corporation, Overland Park, Kans.
Continuation-in-part of Ser. No. 180,309, Apr. 12, 1988, abandoned. This application Aug. 26, 1988, Ser. No. 236,831
Int. Cl.[5] A22C *7/00;* A23P *1/00*
U.S. Cl. 426—513 26 Claims



1. A method of forming a comminuted meat product without the use of a casing, said method comprising the steps of:
supplying an elongated, preformed body of comminuted meat in an uncased, peripherally unrestrained condition;
crust-freezing said meat body in said uncased, peripherally unrestrained condition to render the body substantially shape-retaining and to form a continuous, circumscribing frozen peripheral meat crust extending the full length of the body, and a non-frozen central meat portion,
said crust-freezing step including the step of causing direct contact between the outer surface of the meat body and a freezing fluid; and
substantially immediately subdividing said crust-frozen meat body before the body is allowed to substantially temper and while the body substantially retains said crust-frozen condition with said frozen crust and non-frozen central meat portion, said subdividing step comprising subdividing the body in a direction generally transverse to the longitudinal axis of the body and through said circumscribing frozen meat crust, to yield said meat product.

4,943,443
FOAMABLE ALCOHOL PRODUCT AND PROCESS OF PRODUCING A FOAMABLE ALCOHOL PRODUCT
Paulus H. J. M. Evers, Creytestraat 11, 5841 AL Oploo, Netherlands
Filed Apr. 18, 1988, Ser. No. 182,972
Claims priority, application Netherlands, Apr. 22, 1987, 8700955
Int. Cl.[5] A23L *1/19;* A23C *1/156*
U.S. Cl. 426—569 18 Claims

1. A foamable alcoholic product comprising an emulsified mixture of effective amounts of a calcium source, a fat, protein, an aqueous alcohol composition, and a foam stabilizing agent selected from the group consisting of polyphosphates, lactates and mixtures thereof, whereby the emulsified mixture may be foamed to produce a foamed alcoholic product.

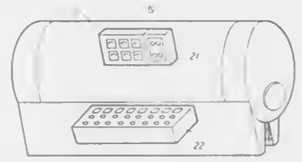
4,943,444
JELLY RESEMBLING THE FLESH OF FRUIT AND PROCESS FOR PRODUCING THE SAME
Hisashi Nozaki, and Seiya Sakurai, both of Saitama, Japan, assignors to Kabushikikaisha Kiban, Tokyo and Kabushikikaisha Kyowashokuhin, Saitama, both of, Japan
Filed Dec. 21, 1988, Ser. No. 287,868
Claims priority, application Japan, Dec. 22, 1987, 62-322808
Int. Cl.[5] A23L *1/072*
U.S. Cl. 426—573 15 Claims

1. A jelly having tissues having a mouth-feel that resembles that of a peach, which is produced by the steps of:
(a) mixing water, konjak flour and a basic amino acid, or a basic salt, or a mixture thereof to prepare a konjak paste;
(b) heating the konjak paste under alkaline conditions;
(c) cooling the heated paste quickly prior to setting to a gel to prepare a konjak jelly;
(d) adding the juice of fruit to the konjak jelly and stirring the ingredients to form a mixture;
(e) freezing the mixture; and
(f) thawing the frozen mixture.

4,943,445
EDIBLE DISPERSION
Ian T. Norton, Rushden, and Charles R. T. Brown, Bedford, both of Great Britain, assignors to Lever Brothers Company, New York, N.Y.
Filed Nov. 20, 1987, Ser. No. 123,438
Claims priority, application United Kingdom, Nov. 24, 1986, 8628069
Int. Cl.[5] A23D *3/00*
U.S. Cl. 426—573 14 Claims

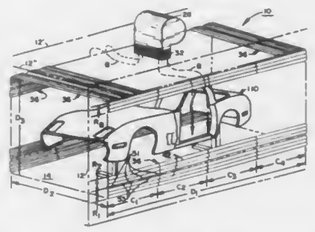
1. Edible dispersion which comprises 15–90 wt.% of a dispersed aqueous phase and 10–85 wt.% of a continuous fat phase, the composition constituting the aqueous phase being a gel-forming composition comprising carrageenan and containing a cation (A) selected from the group consisting of potassium, calcium, magnesium and mixtures thereof in a concentration effective to cause the gel-forming composition to have a transition midpoint temperature in the range of 10°–45° C., the carrageenan being selected from the group consisting of kappa-carrageenan, iota-carrageenan and a mixture thereof, said carrageenan present in the amount of 0.1–10 parts per 100 parts by weight of any water included within said dispersion, said gel-forming composition capable of forming a gel having a yield stress of at least 0.5 kN/m^2 at 5° C.

4,943,446
METALLIZATION OF SUBSTRATES
Harold Isherwood, Llangattock Powys, and Roy A. H. Iles, Crickhowell Powys, both of United Kingdom, assignors to Dennison Manufacturing Company, Framingham, Mass.
Filed Sep. 11, 1984, Ser. No. 649,385
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—9 2 Claims



1. The method of metallizing a longitudinally extending substrate which comprises the steps of:
(a) applying a metallic film to said substrate; and
(b) measuring said film thickness by inducing an eddy current in the film which is detected and used to provide an indication of said film thickness.

4,943,447
AUTOMOTIVE COATING TREATING PROCESS
James S. Nelson, Moundsview; Scott L. Angell, New Hope; Jack E. Mannerud, Plymouth, and Charles H. Bergman, Jr., New Brighton, all of Minn., assignors to BGK Finishing Systems, Inc., Blaine, Minn.
Division of Ser. No. 151,912, Feb. 3, 1988, Pat. No. 4,908,231, which is a division of Ser. No. 905,289, Sep. 19, 1986, Pat. No. 4,771,728. This application Sep. 6, 1989, Ser. No. 403,654
Int. Cl.[5] B05D *3/06, 1/36, 3/02;* F26B *3/28*
U.S. Cl. 427—55 7 Claims



1. A process for finishing an automobile body with an E-coat, a base coat and a clear coat with apparatus having radiant heating means for generating infrared radiation and convection heating means for generating a flow of heated air, said radiant heating means including a plurality of zones with an intensity of at least a given zone separately controllable from an intensity of other zones,
(a) applying an E-coat to said automotive body;
(b) setting said E-coat with said infrared radiation while separately controlling at least said given zone in response to a predetermined characteristic of said body within said given zone;
(c) curing said E-coat with said heated air;
(d) applying a base coat to said automotive body;
(e) setting said base coat with said infrared radiation while separately controlling said given zone in response to a

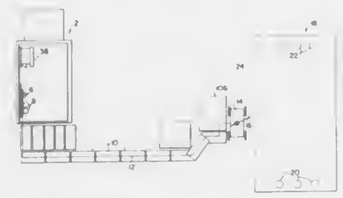
predetermined characteristic of said body within said given zone;
(f) drying said base coat with said heated air;
(g) applying a clear coat to said automotive body;
(h) setting said clear coat with said infrared radiation while separately controlling said given zone in response to a predetermined characteristic of said body within said given zone;
(i) curing said clear coat with said heated air.

4,943,448

COATING APPLICATION SYSTEM FOR HIGH VOLTAGE TERMINALS AND AREAS THEREAROUND AND METHOD

Robert C. Lacourciere, West Hartford, Conn., assignor to Leak-sealers, Inc., West Hartford, Conn.

Filed Oct. 14, 1988, Ser. No. 257,767
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—58 **22 Claims**



14. A method of selectively applying a coating material to surfaces situated adjacent to or on live, high voltage electric bus work and terminals, said method comprising;
providing a liquified coating material formed of a dielectric material having a polyester base mixed with an organic solvent;
storing said coating material within container means;
electrically isolating said container means having said coating material stored therein from potential ground source by providing a dielectric barrier;
providing applicator means and forming said applicator means from a dielectric material;
supporting said applicator means for movement relative to said surfaces;
providing pump means and electrically isolating it by supporting said pump means on a dielectric barrier;
providing conduit means formed from a dielectric material;
connecting said pump means with said applicator means using said conduit means;
providing an electrically nonconductive fluid drive source;
driving said pump means with said electrically nonconductive fluid drive source;
utilizing said pump means to transport said liquified coating material from said container means through said conduit means to said applicator means; and
applying said coating material to said surfaces using said applicator means.

4,943,449

MICROCAPSULES AND PROCESS FOR PRODUCING THEM

Shizuo Aishima; Yoshito Takahashi; Masaki Kosemura, and Masaaki Ohkawara, all of Yokohama, Japan, assignors to Ohkawara Kakohki Co., Ltd., Kanagawa, Japan

Filed Sep. 1, 1987, Ser. No. 91,793
Claims priority, application Japan, Dec. 15, 1986, 61-298366
Int. Cl.[5] B01J *13/02*
U.S. Cl. 427—213.3 **5 Claims**

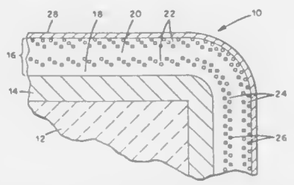
1. A process for producing microcapsules which comprises dissolving wax or a mixture of wax and protein in a mixed solvent consisting of 65 to 90% by volume of an organic solvent miscible with water, and water,
wetting, with the resulting solution, the surfaces of particles of a core substance at a temperature of 45° C. or below to selectively deposit the wax or the mixture of wax and protein on the surfaces of said particles and coat the surfaces of the particles by forming a slurry of the particles of the core substance in said solution; and
then subjecting the slurry containing the particles to a solvent removal treatment.

4,943,450

METHOD FOR DEPOSITING NITRIDE-BASED COMPOSITE COATINGS BY CVD

Vinod K. Sarin, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 206,399, Jun. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 5,003, Jun. 14, 1988, Pat. No. 4,751,109. This application Dec. 14, 1989, Ser. No. 453,235
Int. Cl.[5] C23C *16/34, 16/36*
U.S. Cl. 427—255.2 **11 Claims**



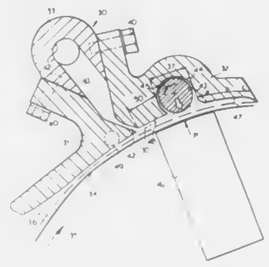
1. In a process for depositing a wear resistant refractory layer on a hard refractory substrate comprising the step of:
passing over the substrate a first gaseous mixture comprising a first halide vapor selected from the group consisting of halides of Si, B, Al, Y, Ti, Zr, Hf, V Nb, Ta, Mo and W, and one or more volatile nitriding gases, at a temperature between about 800° C. and a temperature detrimental to the service substrate properties, at a pressure between about 0.75 torr and about ambient pressure, and at partial pressure ratios, at a flow rate, and for a time sufficient to deposit a continuous, fully dense, adherent, wear resistant layer comprising at least one refractory, first phase nitride of Si, B, Al, Y, Ti, Zr, Hf, V, Nb, Ta, Mo, or W about 0.1–20microns thick on the substrate;
the improvement which comprises the step of:
mixing with the first gaseous mixture at least one additional vapor selected from the halides of Si B, Al, Y, Ti, Zr, Hf, V, Nb, Ta, Mo, and W to form a second gaseous mixture;
wherein the additional vapor is different from the first halide vapor, and is mixed at a partial pressure selected to form at least one discontinuous additional phase, dispersed as discrete particles within the continuous nitride layer, and comprising at least one refractory nitride of Si B, Al, Y, Ti, Zr, Hf, V, Nb, Ta, Mo, or W to form a fully dense, adherent, wear resistant, composite refractory layer on the substrate.

4,943,451

PROCESS AND DEVICE FOR APPLYING A FLOWABLE SUBSTANCE TO A SURFACE

Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria

PCT No. PCT/AT86/00040, § 371 Date Feb. 26, 1987, § 102(e) Date Feb. 26, 1987, PCT Pub. No. WO86/06656, PCT Pub. Date Nov. 20, 1986
PCT Filed May 6, 1986, Ser. No. 10,084
Claims priority, application Austria, May 8, 1985, 1390/85
Int. Cl.[5] B05D *3/12, 3/00; B05C 3/18*
U.S. Cl. 427—294 **17 Claims**



1. A process for applying a flowable substance to a surface, comprising the steps of:
(a) displacing a surface to which a flowable substance is to be applied in a predetermined direction;
(b) juxtaposing said surface with an applicator having a slot opening toward said surface, and a broad face confronting said surface and extending generally along said surface from an edge of said slot in said direction to a trailing end portion of said applicator;
(c) floatingly supporting said applicator relative to said surface so that hydrostatic pressure on said broad face tends to urge said applicator away from said surface, while biasing said applicator toward said surface, said surface and said broad face being so shaped that said trailing end portion can move toward said surface; and
(d) forcibly feeding said flowable substance through said slot onto said surface so that the amount of said substance applied to said surface is controlled only by the rate at which the substance is forced through said slot and the hydrostatic pressure of said substance between said face and said surface is sufficient to hold said applicator out of contact with said surface except for said trailing end portion which is supported by said surface.

9. An apparatus for applying a flowable substance to a surface, comprising:
means for displacing a surface to which a flowable substance is to be applied in a predetermined direction;
an applicator juxtaposed with said surface and formed with a slot opening toward said surface, and a broad face confronting said surface and extending generally along said surface from an edge of said slot in said direction to a trailing end portion of said applicator;
means for floatingly supporting said applicator relative to said surface so that hydrostatic pressure on said broad face tends to urge said applicator away from said surface, while biasing said applicator toward said surface; and
means for forcibly feeding said flowable substance through said slot onto said surface so that the amount of said substance applied to said surface is controlled only by the rate at which the substance is forced through said slot and the hydrostatic pressure of said substance between said face and said surface is sufficient to hold said applicator out of contact with said surface except for said trailing end portion which is supported by said surface, said means for floatingly supporting said applicator relative to said surface being so constructed and arranged that said applicator is biased by its own weight against said surface.

4,943,452

METHOD FOR IMPROVING COMPOSITE MATERIALS BY USE OF A SILANE COUPLING AGENT

Akinari Itagaki; Masaaki Yamaya, both of Gunma; Hiroshi Yoshioka, Tokyo; Akihiko Watanabe, and Keita Miyazato, both of Fukushima, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo and Nitto Roseki Co., Ltd., Fukushima, both of, Japan

Filed Aug. 15, 1988, Ser. No. 232,038
Claims priority, application Japan, Aug. 18, 1987, 62-204925
Int. Cl.[5] B05D *3/00, 1/36, 7/00*
U.S. Cl. 427—299 **11 Claims**

1. In a method for the preparatin of a composite material composed of an inorganic reinforcing material and a synthethic resin as the matrix, the improvement which comprises the steps of: prior to compounding of the inorganic reinforcing material and the synthetic resin, treating the inorganic reinforcing material with a treating agent comprising: (a) a solvent; and (b) a trialkoxysilyalkyl-substituted polymethylene diamine compound represented by the general formula

$$(R^1O)_3SiR^2NH(CH_2)_nNHCH_2C_6H_5$$

in which R^1 is a methyl group or an ethyl group, R^2 is a divalent hydrocarbon group having 1 to 6 carbon atoms and n is an integer in the range of 4 to 8, or a hydrochloride thereof, dissolved in the solvent, followed by drying, to deposit the trialkoxysilyalkyl-substituted polymethylene diamine compound or a hydrochloride thereof on the surface of the inorganic reinforcing material.

4,943,453

METHOD AND COLORATION OF PARTS TAKEN AMONG PARTS MADE OF ZINC, COATED WITH ZINC AND MADE OF ZINC CONTAINING ALLOY

Yves Baziard, Toulouse; Robert Brun, Bordeaux, and Annette P. Duprat, Dax, all of France, assignors to Societe Civile de Recherche D.B.B., Landes, France

Filed May 25, 1988, Ser. No. 198,241
Claims priority, application France, May 25, 1987, 87 07346
Int. Cl.[5] B05D *3/04*
U.S. Cl. 427—309 **10 Claims**

1. A method for coloration of parts taken among parts made of zinc, coated with zinc and made of zinc containing alloy, comprising the steps of subjecting each of said parts to action of an acid aqueous solution containing halogen ions, nitric acid and acetic acid for causing surface of the part to be porous over a layer of a thickness of zinc of the part, flushing the part, and causing the part to absorb at least one sealing material.

4,943,454

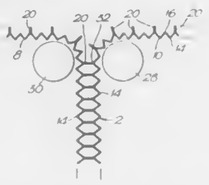
EXPANDABLE COLLAPSIBLE PRODUCT AND METHOD AND APPARATUS FOR ITS MANUFACTURE

Craig A. Neff, Golden, Colo., assignor to Hunter Douglas, Inc.

Continuation-in-part of Ser. No. 90,766, Aug. 28, 1987, Pat. No. 4,861,404. This application Aug. 5, 1988, Ser. No. 229,381
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—12 **5 Claims**

1. An expandable, collapsible product made by a method comprising the steps of folding a first and a second sheet of flexible material to provide a plurality of first transverse folds therein, said first folds projecting to one side of the first sheet and to one side of said second sheet respectively, folding the

first sheet and the second sheet to provide a plurality of second folds therein, each of said second folds projecting to the other side of said first sheet and said second sheet respectively between two of said first transverse folds, modifying at least certain of the second folds of the first sheet by securing parts of



said folded material together to form first legs, positioning said first and second sheets, so that the other side of said first sheet faces the other side of said second sheet, and combining said first and second sheets so that said first legs are each secured to a separate fold of said second sheet.

4,943,455

ARTIFICIAL FLOWER CONSTRUCTION

Paula D. Dixon, 1139 4th Ave., Los Angeles, Calif. 90019

Filed Feb. 27, 1989, Ser. No. 315,479

Int. Cl.[5] **A41G** *1/00*

U.S. Cl. 428—26 **1 Claim**



1. An artificial flower construction comprising:

an elongated, flexible semi-rigid support having opposite ends;

a bulbous form of teardrop-shape secured to one end of said support;

a plurality of shaped components attached to said bulbous form in a cluster outwardly extending from said one end of said support in substantially coaxial relationship therewith and with each other;

said components composed of an elastic material characterized as having normally constricting bias along edge marginal regions thereof cooperating to shape each component in a predetermined configuration;

said component composition is cured rubber latex;

a strip of material carried about said support along its length in a wound and wrapped mounting between said opposite ends;

decorative elements adhesively attached in a predetermined pattern on the exterior exposed surface of each of said components; and

each of said components is a representation of a portion of a flower bloom and collectively representing a full and complete flower bloom.

4,943,456

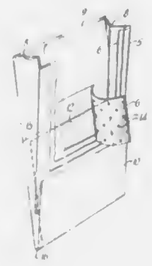
MICROWAVE REACTIVE HEATER

Kenneth A. Pollart, and Terrence P. Lafferty, both of Neenah, Wis., assignors to James River Corporation of Virginia, Richmond, Va.

Continuation-in-part of Ser. No. 239,544, Sep. 1, 1988. This application Aug. 30, 1989, Ser. No. 400,579

Int. Cl.[5] **H05B** *6/64;* **B65D** *81/34*

U.S. Cl. 428—34.3 **6 Claims**



1. In an article having a microwave reactive heater comprising a heat stable substrate with a microwave interactive surface coating thereon comprising finely divided carbon, a finely divided microwave reactive metal, clay, and a dielectric organic solid binder, the improvement which comprises laminating with an adhesive the microwave heater surface to a surface of the article to be heated.

4,943,457

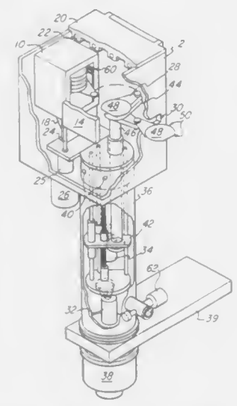
VACUUM SLICE CARRIER

Cecil J. Davis, Greenville, and Robert Matthews, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 60,991, Jun. 12, 1987, abandoned, which is a continuation of Ser. No. 790,918, Oct. 24, 1985, abandoned. This application Sep. 4, 1987, Ser. No. 96,216

Int. Cl.[5] **B32B** *3/00;* **B65D** *17/42*

U.S. Cl. 428—35.2 **7 Claims**



1. In an apparatus for storage and transport of wafers;

an evacuable and transportable housing for containing an array of wafers;

said housing having an access port therein for accessing the wafers contained within said housing;

closure means for closing and sealing said access port in said housing; and

means for producing a pressure differential between the pressure of the surrounds of said housing relative to the subatmospheric pressure contained within said housing to cause said closure means to be urged into gaseous sealing engagement with the evacuated housing by atmospheric pressure, whereby the wafers are contained in an evacuated transportable housing means for transport and storage at atmospheric pressure.

4,943,458

HOLLOW PLASTIC BODY HAVING A GLOSSY SURFACE

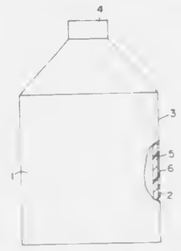
Herbert Buecheler, Erkrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 21, 1988, Ser. No. 287,965

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1987, 3744639

Int. Cl.[5] **B65D** *23/00;* **B32B** *27/32*

U.S. Cl. 428—35.7 **7 Claims**



1. A two layer hollow plastic body, having a glossy unpigmented polyethylene outer surface layer, formed from a two-layer parison by a blow molding process, wherein the two layer hollow plastic body consists essentially of a high-density polyethylene inner layer (5) and an unpigmented low density polyethylene outer layer (6) containing additives.

4,943,459

HEAT-RESISTANT COMPOSITE SHEET AND CONTAINER FORMED OF THE SAME

Shigeru Nedzu, Shizuoka, Japan, assignor to Polyplastics Co., Ltd., Osaka, Japan

Filed Jun. 7, 1989, Ser. No. 363,481

Claims priority, application Japan, Jun. 29, 1988, 63-161458

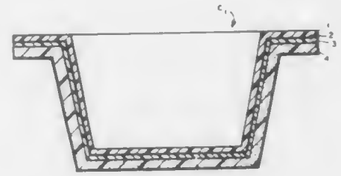
Int. Cl.[5] **B32B** *3/26*

U.S. Cl. 428—36.5 **4 Claims**

1. A heat-resistant composite sheet composed, as the main constituents, either of a foamed polystyrene sheet and a polybutylene terephthalate resin film, or of a foamed polystyrene sheet, a polystyrene resin film and a polybutylene terephthalate resin film, wherein the polybutylene terephthalate resin film layer is laminated to form both or one of the outer layers.

3. A heat-resistant container made of a heat-resistant composite sheet as set forth in claim 1 or 2, wherein the composite sheet is arranged so that the polybutylene terephthalate resin





film layer of the composite sheet is located on the inner side of the container.

4,943,460

PROCESS FOR COATING POLYMER SURFACES AND COATED PRODUCTS PRODUCED USING SUCH PROCESS

Richard A. Markle; Phyllis L. Brusky, both of Columbus, and John H. Baker, Strasburg, all of Ohio, assignors to Sayder Laboratories, Inc., Dover, Ohio

Continuation-in-part of Ser. No. 157,856, Feb. 19, 1988, abandoned. This application Feb. 13, 1989, Ser. No. 308,679

Int. Cl.[5] **B29D** *22/00*

U.S. Cl. 428—36.9 **16 Claims**

1. A process for treating a medical article or device having a polymeric surface to produce a smooth, durable, slippery coating comprising:

applying to the polymeric surface of the said article or device a primer coat;

applying to said surface a tie coat comprising a solution selected from aqueous solutions of polyacrylic acid, dimethyl formamide solutions of poly(methyl vinyl ether/-maleic anhydride), 1:1 methanol/isopropanol solutions of poly(methyl vinyl ether/maleic anhydride) and solutions of poly(methyl vinyl ether/maleic anhydride) in one or more alcohols selected from the group comprising the lower alcohols of methanol through pentanol or mixtures thereof in water; and

applying to said surface a slippery coating comprising a solution of polyvinylpyrrolidone.

4,943,461

RADIATION-CURABLE PRESSURE-SENSITIVE ADHESIVE HAVING IMPROVED ADHESION TO PLASTICIZED VINYL SUBSTRATES

Naimul Karim, Dormagen, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 1, 1989, Ser. No. 305,202

Int. Cl.[5] **C09J** *109/02, 133/08*

U.S. Cl. 428—40 **14 Claims**

1. A photopolymerized pressure-sensitive adhesive having outstanding ability to bond to plasticized vinyl substrates and to remain firmly bonded thereto even after remaining in contact therewith for extended periods of time, comprising:

(a) a copolymer of monomers consisting essentially of from about 60 to about 85 parts of acrylic acid ester of nonterti-

ary alcohol, the alkyl groups of which contain from about 4–14 carbon atoms, and from about 15 to about 40 parts of a polar nitrogen-containing vinyl monomer, and

(b) 1–10 parts of an acrylonitrile butadiene rubber, based on the weight of the copolymer.

4,943,462

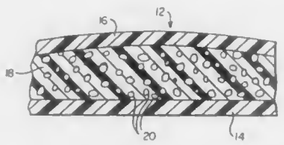
NAIL TREATMENT DEVICE

James Komerska, Chalfont; George Petito, Bethlehem, and Borys Rybalka, Philadelphia, all of Pa., assignors to Semex Medical, Inc., Malvern, Pa.

Filed Jan. 17, 1989, Ser. No. 297,576

Int. Cl.[5] B32B *9/02, 27/04, 27/08*

U.S. Cl. 428—42 12 Claims



1. A device for application to the surface of a fingernail or toenail, comprising:

a substrate sheet having an inner surface thereto;

an aqueous phospholipid composition affixed adjacent said inner surface of said substrate sheet; and

an adhesive layer comprising a pressure-sensitive adhesive layer affixed adjacent said inner surface of said substrate sheet; wherein said aqueous phospholipid composition is dispersed within said adhesive layer.

4,943,463

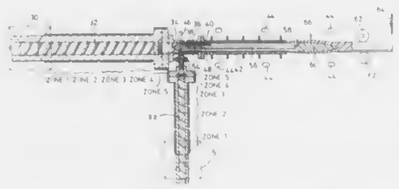
LARGE DIMENSIONAL THERMOPLASTIC ARTICLES

John T. Back, Vasa, Finland, assignor to Oy Wiik & Hoglund AB, Vasa, Finland

Division of Ser. No. 670,012, Nov. 9, 1984, Pat. No. 4,704,244. This application Aug. 21, 1987, Ser. No. 87,758

Int. Cl.[5] B29C *47/90*

U.S. Cl. 428—44 3 Claims



1. A rigid article composed of solid, non-foamed, thermoplastic material and having a uniform, non-hollow, continuous, void-free cross-section of predetermined dimensions of 50 millimeters to 300 millimeters produced by the steps of a continuous extrusion method;

said article having an intermediate configuration of a solid but flexible portion expanded larger than the predetermined cross-sectional dimension produced by the intermediate extrusion steps of extruding a first stream of molten thermoplastic material through a die to form a hollow profile; shaping and cooling said profile by a calibration jacket downstream from said die sufficiently to solidify the thermoplastic material; and feeding a second stream of molten thermoplastic material through a conduit extending along the hollow of said profile formed by said first stream and injecting said second stream into said hollow at a point down stream from said die, adjacent the downstream end of said calibration jacket, while exerting sufficient pressure on said second stream to force said thermoplastic material of said second stream into any void spaces in said hollow profile, and further to cause said hollow profile to expand larger than the predetermined dimension upon emerging from the downstream end of said calibration jacket;

and said article having a final configuration conforming to the predetermined dimension after said extruded hollow profile is allowed to return to the predetermined dimension of the calibration jacket when said second stream shrinks upon cooling.

4,943,464

ELECTRONIC COMPONENT SUPPORT FOR MEMORY CARD AND PRODUCT OBTAINED THEREBY

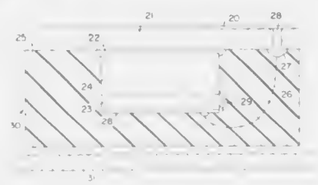
Jean-Pierre Gloton, Aix en Provence, and Philippe Peres, Gardanne, both of France, assignors to SGS-Thomson Microelectronics SA, Gentilly, France

Filed Dec. 1, 1988, Ser. No. 278,979

Claims priority, application France, Dec. 14, 1987, 87 17385

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—76 9 Claims



1. An electronic component support for a memory card which has a cavity to house said component, said support comprising a first silicon base of 50 to 100 microns thickness, one side of which is used as the substrate for the manufacture of the different elements of the electronic component, and comprising a second base of 100 to 300 microns thickness made of a harder material than silicon, and selecting from the group consisting of titanium, cobalt, vanadium, ceramic, and fiberglass-charged plastic, which is fixed to the other side of the first base, the second base being fixed to a film which acts as an element to close the cavity.

4,943,465

THERMAL INSULATING, HIGH TEMPERATURE RESISTANT COMPOSITE

Douglas J. Bailey, Snyder; Paul Boymel, Kenmore, and Juan M. Cerdan, Tonawanda, all of N.Y., assignors to The Carborundum Company, Cleveland, Ohio

Filed Oct. 24, 1988, Ser. No. 261,944

Int. Cl.[5] B32B *3/06, 31/20*

U.S. Cl. 428—102 22 Claims

1. A thermal insulation composite having improved structural integrity and suitable for use in high temperature environments, comprising:

(1) randomly laid and oriented heat resistant fibers having an average diameter of about 0.1 to 1.75 micron interlocked together into the form of a shape sustaining paper having two lateral surfaces, said paper having a thickness of from about 0.1 to 1.0 inch, a fiber index of more than 85%, and a density of about 5 pounds per cubic foot to about 15 pounds per cubic foot, said paper being compressed from about 20% to about 500% from its original thickness to make a paper having a density of about 6 to 30 pounds per cubic foot.

(2) a high temperature resistant, flexible, woven or non-woven scrim having a weight of from 0.5 to 10 oz./yd^2

disposed upon each of the lateral surfaces of the said paper; and

(3) a network of abrasion-resistant, high temperature-resistant threads stitched through said scrim and said paper in the form of stitching lines of a repeating pattern such that said scrim is mechanically locked to said paper by said threads;

whereby, the said network of threads and said scrim substantially retain the structural integrity of the said paper to maintain said paper in compression.

4,943,466

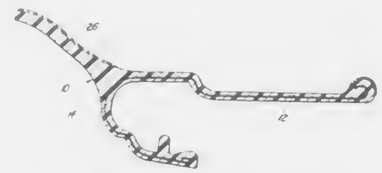
PLASTIC MOLDING

Gerry Bareich, Tecumseh, Canada, assignor to Automotive Moulding Company, Warren, Mich.

Filed Oct. 7, 1986, Ser. No. 916,359

Int. Cl.[5] E06B *7/16*

U.S. Cl. 428—122 2 Claims



1. In a vehicle, a window assembly comprising:

a glass member being a vehicle window movable between upper and lower positions;

a weather strip which provides a sliding contact surface for said glass member, said weather strip comprising a metal portion and a plastic portion bonded to said metal portion, said weather strip having a first face facing towards said glass member and a second face facing away from said glass member, said plastic portion including a thermoplastic material; and

coating means bonded to said first face of said plastic portion for providing sliding contact with said glass member;

said second face having a portion of bare metal.

4,943,467

PRINTING PLATES FOR CORRUGATED BOARD

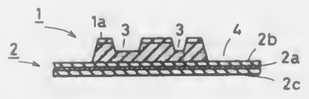
Inoue Shuji, Tsu, Japan, assignor to Kureha Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 23, 1988, Ser. No. 288,904

Claims priority, application Japan, Dec. 24, 1987, 62-1927238[U]; Apr. 11, 1988, 63-48700[U]

Int. Cl.[5] B41N *1/00*; B32B *3/30*

U.S. Cl. 428—159 18 Claims



7. A printing plate for corrugated paper board comprising:

a foam sheet having a skin layer with a thickness in the range of about 0.3 to 2 mm, the skin layer providing a printing surface of a selected smoothness and a SRIS(c) hardness in the range of about 35 to 55; the foam sheet further having a foam layer of a selected thickness greater than that of the skin layer;

a base cloth underlying the foam sheet and having a first surface facing the foam sheet and a second surface facing away from the foam sheet;

rubber cladding means comprising a rubber cladding disposed between the base cloth and foam sheet and being adhered to the foam sheet and adhesively secured with respect to the base cloth;

relatively shallow recesses sculpted into the foam sheet, the relatively shallow recesses having a depth at least as deep as the thickness of the surface skin layer of the foam sheet but not as deep as the thickness of the foam; and

relatively deep recesses having a depth at least as deep as the thickness of the foam layer and surface skin layer combined and extending no deeper than the base cloth,

wherein the relatively deep and relatively shallow recesses form a printing plate with surface relief having printing surfaces defined by those portions of the surface skin layer not deleted by the relatively shallow and relatively deep recesses.

4,943,468

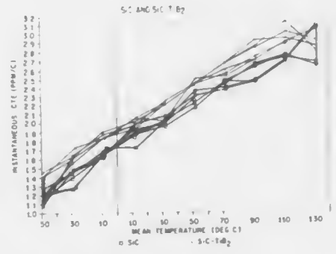
CERAMIC BASED SUBSTRATE FOR ELECTRONIC CIRCUIT SYSTEM MODULES

Robert J. Gordon, Coppell; Brian J. Love, Dallas; Robert K. Peterson, Garland, and Burhan Ozmat, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1988, Ser. No. 265,120

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—210 23 Claims



1. An electronic system comprising:

(a) a first printed wiring board;

(b) a first integrated circuit carrier disposed on and secured to said printed wiring board; and

(c) a substrate having a central portion formed of ceramic material, said central portion having a specific thermal conductivity greater than 15×10^{-6} Wm^2/g°C., said substrate including a fist surface, said printed wiring board being secured to and coplanar with said first surface.

4,943,469

CERAMIC, CIRCUIT SUBSTRATE AND ELECTRONIC CIRCUIT SUBSTRATE BY USE THEREOP AND PROCESS POR PRODUCING CERAMIC

Motoo Kumagai, Yokohama; Keiichi Kato, Tokyo; Masato Nagano, and Michiaki Sakaguchi, both of Iwamisawa, all of Japan, assignors to Canon Kabushiki Kaisha and Nippon Oil & Fats Co. Ltd., both of Tokyo, Japan

Filed Jul. 7, 1988, Ser. No. 216,233

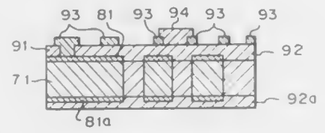
Claims priority, application Japan, Jul. 9, 1987, 62-172012

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—209 6 Claims

1. A ceramic comprising therein at least two dielectric regions including (a) a first region having (i) a principal composition consisting of from 49.50–54.00 mole percent of TiO_2 and from 50.50–46.00 mole percent of SrO, (ii) from 0.50–5.30 moles MnO_2 per 100 moles of the principal composition and (iii) from 0.02–0.40 moles Y_2O_3 per 100 moles of said principal composition; and (b) a second region having (i) a principal

composition consisting of from 49.50–54.00 mole percent of TiO_2 and from 50.50–46.00 mole percent oif SrO; (ii) from 0.50–5.30 moles MnO_2 per 100 moles of the principal composition; (iii) from 0.02–0.40 moles Y_2O_3 per 100 moles of the principal composition; (iv) from 0.40–5.00 moles MgO per 100



moles of said principal composition and (v) from 0.05 to 2 moles of SiO_2 per 100 moles of said principal composition.

3. The ceramic according to claim 1 further including at least one oxide selected from the group consisting of iron oxide, cobalt oxide, vanadium oxide, chromium oxide, lead oxide, copper oxide, bismuth oxide and sodium oxide.

4,943,470

CERAMIC SUBSTRATE FOR ELECTRICAL DEVICES

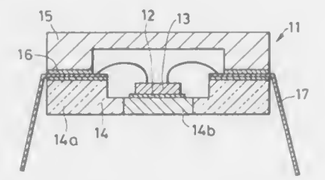
Hisaharu Shiromizu; Asao Morikawa; Tsuneyuki Sukegawa, and Kazuo Kondo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 817,686, Jan. 10, 1986, abandoned. This application Mar. 9, 1989, Ser. No. 320,796

Claims priority, application Japan, Jan. 11, 1985, 60-3759; Jan. 22, 1985, 60-9726; Feb. 26, 1985, 60-37157

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **14 Claims**



1. A multi-layer circuit device comprising:

a green sheet comprised of porous crystalline glass, an insulative portion comprised of a paste of insulating glass thickfilm printed on said green sheet, said paste containing insulating glass consisting essentially of 54 to 63% weight % SiO_2, 20 to 28 weight % Al_2O_3, 10 to 18 weight % MgO, 2 to 6 weight % ZnO, and 0.1 to 6 weight % of an additive component, said additive component being selected from the group consisting of B_2O_3 and P_2O_5, and a conductive portion comprised of an electrically conductive paste thick-film printed on said green sheet, said electrically conductive paste containing a metal selected from the group consisting of Au, Ag, Cu, Pd, Pt, and mixtures thereof, said green sheet and said thick-film printed pastes being subjected to elevated temperatures at which said electroconductive paste is not rendered discontinuous to form said multi-layer circuit device.

4,943,471

PATTERNED THIN FILM AND PROCESS FOR PREPARING THE SAME

Masakazu Uekita; Hiroshi Awaji; Makoto Murata, and Satoshi Mizunoma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

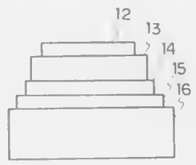
Continuation-in-part of Ser. No. 51,350, May 19, 1987, Pat. No. 4,839,219. This application Sep. 23, 1988, Ser. No. 248,683

Claims priority, application Japan, May 20, 1986, 61-116390; May 20, 1986, 61-116391; Sep. 25, 1987, 62-241640; Apr. 28, 1988, 63-106048

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] B32B *27/00, 27/34*

U.S. Cl. 428—220 **9 Claims**



1. A patterned, heat resistant thin film consisting essentially of a polymer having linear recurring units wherein an organic group R^1 having at least 2 carbon atoms and a valence of at least 3 is combined alternatively with an organic group R^2 having at least 2 carbon atoms and a valence of at least 2 through two bonding groups at least one of which has a 5-membered or 6-membered ring structure containing a hetero atom.

2. The patterned thin film of claim 1, having a thickness of not more than 1,000 Å and a dielectric strength of not less than 1×10^6 V/cm.

4,943,472

IMPROVED PREIMPREGNATED MATERIAL COMPRISING A PARTICULATE THERMOSETTING RESIN SUITABLE FOR USE IN THE FORMATION OF A SUBSTANTIALLY VOID-FREE FIBER-REINFORCED COMPOSITE ARTICLE

Robert Dyksterhouse; Joel A. Dyksterhouse, both of Marathon, Fla.; Alan C. Handermann, Matthews, N.C., and Edward D. Western, Fort Mill, S.C., assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 157,836, Mar. 3, 1988, Pat. No. 4,919,739, which is a continuation-in-part of Ser. No. 928,917, Nov. 7, 1986, abandoned. This application Oct. 25, 1989, Ser. No. 426,443

Int. Cl.[5] B32B *5/08, 5/26, 27/06, 27.12*

U.S. Cl. 428—240 **23 Claims**

1. An improved preimpregnated fibrous material suitable for the formation of a fiber-reinforced composite article, said preimpregnated fibrous material comprising (a) a plurality of adjoining substantially parallel reinforcing filaments and, substantially uniformly dispersed between adjoining filaments in the absence of fusion bonding, (b) an effective amount of a polymeric water-soluble binding agent, (c) aqueous medium, and (d) solid particles of thermosetting resin, said (b), (c) and (d) having been derived from a dispersion having a viscosity specifically selected to provide a preimpregnated fibrous material which inherently (1) is drapable and tacky at ambient conditions, (2) is handleable without segregation of said particles within the fibrous material and (3) capable upon the application of heat and pressure of being transformed into a substantially void-free composite article of a predetermined configuration wherein said thermosetting resin is substantially completely cured and forms the matrix phase.

4,943,473

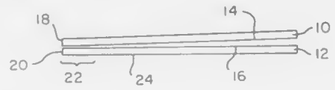
FLEXIBLE LAMINATED FLUOROPOLYMER-CONTAINING COMPOSITES

Ronald A. Sahatjian, Lexington, Mass.; Robert C. Ribbins, III, Amherst, and Mark G. Steckel, Manchester, both of N.H., assignors to Chemical Fabrics Corporation, Merrimack, N.H.

Continuation of Ser. No. 734,977, May 16, 1985, abandoned. This application Oct. 4, 1988, Ser. No. 253,255

Int. Cl.[5] B32B *7/12, 17/10, 27/08*

U.S. Cl. 428—245 **16 Claims**



1. A flexible chemically-resistant protective article having improved barrier properties made from a fluoropolymer laminate composite comprising a flexible fabric substrate and a protective coating lamintaed to at least one side of the said substrate with a melt-bondable fluoropolymer adhesive interlayer, said protective coating having a thickness of less than about 5 mil and comprising a fluoro polymer selected from the group consisting of polytetrafluoroethylene, fluorinated ethylene propylene copolymer, polychlorotrifluoroethylene, copolymers of chlorotrifluoroethylen and tetrafluoroethylene, copolymers of chlorotrifluoroethylene and vinylidene fluoride, copolymers of ethylene and tetrafluoroethylene, chlorotrifluoroethylene, perfluoroalkyl vinyl ethers, polyvinylidenefluoride and polyvinylfluoride.

4,943,474

UNSATURATED POLYESTER RESIN COMPOSITIONS AND ELECTRICAL LAMINATES MADE THEREFROM

Hidenari Tsunemi, Otsu; Yasuo Fushiki, Takatsuki; Asaichi Nishimura, and Yousuke Kawai, both of Otsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1989, Ser. No. 296,159

Int. Cl.[5] C08L *67/06*

U.S. Cl. 428—246 **15 Claims**

1. An unsaturated polyester resin composition comprising (a) an unsaturated polyester component which is a mixture of (i) a hard unsaturated polyester and (ii) a soft unsaturated polyester, said soft polyester containing a polyoxyalkylene segment having a molecular height from 600 to 6,000 in the backbone thereof, and said hard polyester being free from said polyoxyalkylene segment, (b) a cross-linking monomer and (c) a polyoxyalkylene alcohol which is a monoalcohol having an average molecular weight from 2,000 to 8,000 and about 40 to 100 mole % of the hydroxy group of which is esterified with a polymerizable unsaturated carboxylic acid.

4,943,475

MULTILAYER COMPOSITE PROTECTIVE FABRIC MATERIAL AND USE IN PROTECTIVE CLOTHING

Richard W. Baker, and Paul Shrock, both of Menlo Park, Calif., assignors to Membrane Technology & Research, Inc., Menlo Park, Calif.

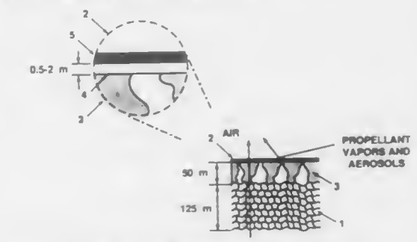
Filed Jul. 23, 1986, Ser. No. 890,378

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—246 **22 Claims**

1. Protective clothing, comprising at least one garment, said garment being fabricated from a composite material comprising:

a clothing fabric layer, coated with;



a microporous support membrane, coated with;

an ultrathin permselective membrane.

4,943,476

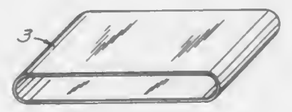
WATER REMOVAL ON PAPERMACHINE THROUGH RIBLET EFFECT

Jerry G. Sokaris, Troy, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Oct. 27, 1988, Ser. No. 263,592

Int. Cl.[5] D04H *1/08*

U.S. Cl. 428—280 **8 Claims**



1. A papermaker's felt for use in the wet press section of a papermachine comprising yarn whose surface is characterized by a plurality of lengthwise grooves.

4,943,477

CONDUCTIVE SHEET HAVING ELECTROMAGNETIC INTERFERENCE SHIELDING FUNCTION

Tomotsugu Kanamura; Toshihiko Shibata, and Yasuji Inoue, all of Aichi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1988, Ser. No. 249,932

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—286 **10 Claims**

1. A conductive sheet having an electromagnetic interference shielding function, which consists of a nonwoven fabric consisting of 40 to 90 wt% of a heat fusible fiber comprising a vinyl chloride/vinyl acetate copolymer and 10 to 60 wt% of a metal-plated fiber having a fiber diameter of 3 to 50 μm and an aspect ratio of 1,000 to 10,000, wherein said nonwoven fabric is hot-press molded and wherein said conductive sheet has a metal content of 2 to 30% by weight and a specific volume of at most 2 cm^3/g.

4,943,478

SEAT CUSHIONS

Francis P. McCullough, Jr., Lake Jackson, and R. Vernon Sneigrove, Damon, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 114,324, Oct. 28, 1987, Pat. No. 4,879,168. This application Jun. 14, 1988, Ser. No. 206,636

Int. Cl.[5] B32B *9/00;* **B27N** *9/00;* **D03D** *13/00*

U.S. Cl. 428—288 **13 Claims**

1. A non-woven fire retarding and fire blocking covering for a foam seat cushion structure comprising an intimate blend of a binder and 25–75% by weight of fibers comprising heat set

non-linear, non-graphitic carbonaceous fibers having a LOI value greater than 40, a reversible deflection ratio of greater than 1.2:1, and an aspect ratio greater than 10:1, said carbonaceous fibers being derived from heat treated stabilized polymeric fibers or pitch based fibers.

4,943,479

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Matoko Nagao, and Kazuhiko Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 179,803, Apr. 11, 1989, abandoned. This application Nov. 7, 1989, Ser. No. 433,399

Claims priority, application Japan, Apr. 10, 1987, 62-87196

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—331 **7 Claims**

1. A magnetic recording medium comprising a non-magnetic support and a thin ferromagnetic metal film prepared by vapor deposition or sputtering having provided between said support and said thin ferromagnetic metal film a non-magnetic undercoated layer comprising at least one binder and a dispersion of fine silica particles derived from silica sol having a diameter in the range from about 18 mμ to about 1000 mμ, wherein the silica fine particles are present in said non-magnetic undercoated layer, after drying, in an amount from about 0.01 wt % to about 20 wt %, based upon the total amount of binder in said layer and wherein at least about 45 wt % of the total amount of binder comprises at least one polymerizable (meth)acrylate compound having a triazine ring.

4,943,480

METHOD AND MEDIUM FOR THE COATING OF METALS WITH TIN

David Itzhak, Omer, Israel, assignor to Bromine Compounds Limited, Beer Sheva, Israel

Filed Feb. 24, 1989, Ser. No. 315,439

Claims priority, application Israel, Feb. 25, 1988, 85555

Int. Cl.[5] B32B *9/00, 15/04*

U.S. Cl. 428—332 **20 Claims**

1. A process for carrying out the coating of metals, comprising contacting the metal to be coated with a coating medium comprising an effective amount of a hot $ZnBr_2/CaBr_2$ heavy brine containing at least about 1 wt % of tin.

18. Coated metals, whenever coated by the process of claim 1.

19. Coated metals according to claim 18, having a mean coating thickness of between 0.25 and 1.2 μm.

4,943,481

POLYETHER IMIDE FIBERS

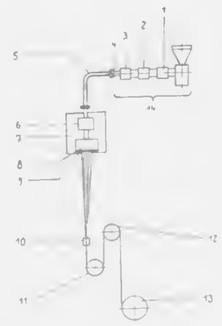
Diederich Schilo, Klingenberg-Rollfeld, and Willi Birkenfeld, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed May 23, 1988, Ser. No. 197,389

Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717055

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—373 **3 Claims**



1. A melt-spun fiber comprising polyether imide and at least one other melt-spinnable polymer selected from the group consisting of polyethylene terephthalate, polyamide, and mixtures thereof.

4,943,482

METALLIZED PARTICLES OF CROSSLINKED POLYMER, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATION IN THE MANUFACTURE OF ELECTRICALLY CONDUCTIVE MATERIALS

Dominique Charmot, and Jean-Francois Fiard, both of Paris, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 4, 1988, Ser. No. 252,924

Claims priority, application France, Oct. 5, 1987, 87 13712

Int. Cl.[5] B32B *15/08, 27/28*

U.S. Cl. 428—407 **6 Claims**

1. Metallized polymer particles comprising a crosslinked polymer with an insolubles content of at least 0.5% by weight, and bearing nucleophilic groups capable of complexing at least one salt of a metal with an oxidation-reduction potential higher than −0.8 V, and said particles having on their surface a metallic layer comprising at least one metal having an oxidation-reduction potential higher than −0.8 V and said metal being in the zero valency state.

4,943,483

PALLADIUM ALLOY CONTAINING GOLD, SILVER, GALLIUM, GERMANIUM AND/OR LITHIUM AND DENTAL RESTORATIONS UTILIZING SAME

Clyde E. Ingersoll, Tonawanda; Stephen P. Schaffer, Hamburg, and Patrick J. McCabe, Tonawanda, all of N.Y., assignors to Williams Dental Company, Inc., Buffalo, N.Y.

Filed Jan. 25, 1989, Ser. No. 301,139

Int. Cl.[5] B32B *15/04; C22C 5/04*

U.S. Cl. 428—433 **10 Claims**

7. A dental restoration comprising:

a. a casting of a dental alloy consisting essentially of

(i) 70–82 percent by weight palladium;

(ii) 5–8 percent by weight gold;

(iii) 6.5–8 percent by weight silver;

(iv) 5–9 percent by weight gallium;

(v) 4–8 percent by weight of a surface oxide producing modifier selected from the group consisting of indium, tin and mixtures thereof;

(vi) from about 0.01 up to about 2 percent by weight of an oxygen scavenging component which is a member selected from the group consisting of germanium, lithium, and mixtures thereof; and

(vii) up to 2 percent by weight of a grain refiner selected from the group consisting of ruthenium, rhenium, iridium, and mixtures thereof;

said alloy having a coefficient of thermal expansion of about $14.0–15\times10^{-6}$in/in/° C., a solidus temperature of at least 1100° C., a liquidus temperature of not more than 1400° C., Vickers hardness greater than 150, offset yield strength at 0.1 percent offset of greater than 40,000 p.s.i., and tensile elongation greater than 6 percent; and

b. a porcelain coating upon a portion of said casting, said coating being firmly bonded to said casting and being substantially free from discoloration.

4,943,484

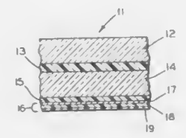
SOLAR CONTROL GLASS ASSEMBLY AND METHOD OF MAKING SAME

Ronald D. Goodman, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation of Ser. No. 898,098, Aug. 20, 1986, abandoned. This application Jul. 25, 1988, Ser. No. 223,681

Int. Cl.[5] B32B *17/06*

U.S. Cl. 428—441 **7 Claims**



1. A solar control glass assembly, comprising:

A) a glass substrate having a surface:

B) a first attaching layer adhered to the surface of the glass substrate, comprising a carrier layer of a plastic material coated on a first surface thereof with a pressure sensitive adhesive and on a second surface thereof with a water activated adhesive;

C) an induced transmission filter adhered to the attaching layer, comprising a first layer of a dielectric material, a second layer of a reflective material, third and fourth layers of a dielectric material, a fifth layer of a reflective material, and a sixth layer of a dielectric material;

D) a layer of polyester adhered to the induced transmission filter; and

E) a layer of an abrasion resistant material adhered to the layer of polyester.

4,943,485

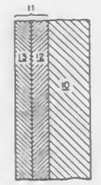
PROCESS FOR APPLYING HARD COATINGS AND THE LIKE TO METALS AND RESULTING PRODUCT

Ibrahim M. Allam, Dhahran, Saudi Arabia, and David J. Rowcliffe, Stockholm, Sweden, assignors to S R I International, Menlo Park, Calif.

Division of Ser. No. 111,202, Oct. 21, 1987, Pat. No. 4,857,116, which is a continuation-in-part of Ser. No. 325,504, Nov. 27, 1981, Pat. No. 4,483,720, and a continuation-in-part of Ser. No. 662,253, Oct. 17, 1984, abandoned, and a continuation-in-part of Ser. No. 662,252, Oct. 17, 1984, abandoned. This application Jul. 18, 1989, Ser. No. 381,508

Int. Cl.[5] B32B *15/04*

U.S. Cl. 428—457 **16 Claims**



1. A coated metal substrate comprising:

(a) a metal substrate and

(b) a coating on and adherent to at least one surface of the substrate, such coating being an alloy of M_1 and M_2 wherein M_1 is zirconium or titanium and M_2 is a more noble metal than M_1 and which forms a less thermodynamically stable compound than M_1 with the elements N, C, B and Si or forms no such compound, the metal M_1 being present in an amount not less than 50% by weight, M_2 being present in substantial amount not exceeding 50% by weight and sufficient to act as a binder for the nitride, carbide, boride or silicide of M_1 to the substrate

such coating being of a uniform, non-porous character such that, upon selective reaction of the coating with a reactive molecular species of such element to form such a compound of zirconium or titanium with N, C, B or Si, the resulting coating is uniform, dense and substantially free of porosity.

4,943,486

COATED ARTICLE AND METHOD OF PRODUCTION

Akira Uchiyama, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 176,124

Claims priority, application Japan, Apr. 1, 1987, 62-80615; Apr. 1, 1987, 62-80617

Int. Cl.[5] B23K *26/00; C23C 14/06, 16/34;* G04B *37/22*

U.S. Cl. 428—469 **21 Claims**

1. A coated article having a hard outer coating film on a substrate, comprising:

a metallic chromium layer disposed on the substrate; and

an outer layer of chromium nitride carbide on the metallic chromium layer to form the hard coating film.

4,943,487

CORROSION RESISTANT COATING FOR OXIDE DISPERSION STRENGTHENED ALLOYS

Raymond C. Benn; Gaylord D. Smith, both of Huntington, W. Va., and Donald H. Boone, Walnut Creek, Calif., assignors to INCO Alloys International, Inc., Huntington, W. Va.

Filed Jul. 18, 1988, Ser. No. 220,836

Int. Cl.[5] B22F *3/26*

U.S. Cl. 418—552 **20 Claims**

1. A high temperature, corrosion resistant article of manufacture, the article comprising a mechanically alloyed oxide

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dispersion strengthened metal alloy substrate, a duplex coating on the substrate, the duplex coating including an inner coating substantially free of oxide dispersoids disposed on the substrate, and a corrosion resistant outer coating disposed on the inner coating, the outer coating of the MCrAlY type, wherein M is selected from the group consisting of nickel, cobalt, iron, and mixtures thereof.

4,943,488

LOW PRESSURE BONDING OF PCD BODIES AND METHOD FOR DRILL BITS AND THE LIKE

Chien-Min Sung, Northboro, Mass.; Sy-Hwa Chen, Salt Lake City, Utah; Leo Merrill, Orem, Utah, and Louis K. Bigelow, Salt Lake City, Utah, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 95,054, Sep. 15, 1987, abandoned, and a continuation-in-part of Ser. No. 61,705, Jun. 11, 1987, abandoned, said Ser. No. 95,054, is a continuation-in-part of Ser. No. 921,364, Oct. 20, 1986, abandoned. This application Nov. 18, 1988, Ser. No. 273,405

Int. Cl.[5] B22F *7/02*

U.S. Cl. 428—552 **50 Claims**



1. An earth boring bit, comprising:

a matrix bit body,

at least one cutter element bonded to said matrix bit body,

said cutter element comprising at least one polycrystalline diamond element which is temperature stable to about 1;200° C. and a matrix carrier which is chemically bonded thereto,

said temperature stable diamond element having a carbide forming metal coating at least 5 microns thick on the surface thereof in contact with said matrix carrier, said metal being chosen from the group consisting of tungsten, tantalum, and molybdenum,

said metal coating comprising a carbide layer adjacent to said diamond element and a substantially metallic outer portion adjacent to said matrix carrier,

said diamond element being chemically bonded to said metal coating by means of said carbide layer, and said metallic outer portion being chemically bonded to said matrix carrier, said carbide layer bonding said diamond element to said matrix carrier with a bond strength in shear of at least 5,000 pounds per square inch.

4,943,489

COMPOSITE PIPE HAVING EXCELLENT CORROSION RESISTANCE AND MECHANICAL PROPERTIES TO WITHSTAND HIGH TEMPERATURES AND HIGH PRESSURES

Akio Kuhara; Akira Yoshitake; Takeshi Torigoe, and Shinji Amako, all of Hirakata, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed May 23, 1989, Ser. No. 355,584

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—586 **7 Claims**



1. A composite pipe having excellent corrosion resistance and mechanical properties to withstand high temperatures and high pressures, the composite pipe being characterized in that the pipe comprises an outer layer of a material consisting essentially of % by weight 0.05to 0.20% of C, up to 1.0% of Si, up to 2.0% of Mn, up to 1.0% of Cr, 0.2 to 2.0% of Ni, up to 1.0% of Mo, 0.05to 0.15% of V, up to 0.1% of Al, and the balance inevitable impurities and Fe, the material being up to 0.45% in carbon equivalent expressed by:

$$\text{carbon equivalent (\%)} = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni}{15},$$

an inner layer made of stainless steel, high alloy steel or like corrosion resistant alloy, and an intermediate layer substantially intermediate between the outer layer and the inner layer in composition and having a thickness of 10 to 100 μm, the intermediate layer providing a boundary between the outer and inner layers and being metallurgically joined to the outer layer and the inner layer integrally therewith.

4,943,490

CAST COMPOSITE MATERIAL HAVING A MATRIX CONTAINING A STABLE OXIDE-FORMING ELEMENT

Richard S. Bruski, Encinitas; Larry G. Hudson, Carlsbad, and Michael D. Skibo, Leucadia, all of Calif., assignors to Dural Aluminum Composites Corp., San Diego, Calif.

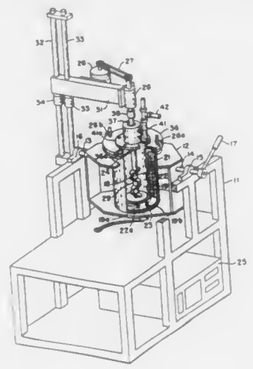
Filed Aug. 7, 1989, Ser. No. 391,087

Int. Cl.[5] C22C *21/00*

U.S. Cl. 428—614 **11 Claims**

1. A composite material, comprising:

a matrix of an aluminum-containing alloy, the matrix further containing from about 15 to about 130 parts per million by



weight of an oxide-forming element that forms an oxide more stable than magnesium oxide; and

a reinforcement material distributed through the matrix.

4,943,491

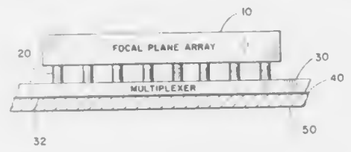
STRUCTURE FOR IMPROVING INTERCONNECT RELIABILITY OF FOCAL PLANE ARRAYS

Peter W. Norton, Littleton; James A. Stobie, Westford, and Peter H. Zimmermann, Lexington, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 20, 1989, Ser. No. 438,241

Int. Cl.[5] H01L *27/14*; G01J *1/00*

U.S. Cl. 428—620 **19 Claims**



1. An improved structure for interconnecting focal plane arrays comprising:

(a) a first body having a first coefficient of thermal expansion comprising a detector array;

(b) a second body having a second coefficient of thermal expansion comprising semiconductor electronics having a bottom surface;

(c) means for interconnecting the first and second bodies; and

(d) a layer of material bonded with adhesive to the second body's bottom surface wherein the bonded layer has a third coefficient of thermal expansion greater than the first and second coefficients of thermal expansion.

4,943,492

WELDING ALUMINIUM ALLOYS

Nigel J. H. Holroyd, Brackley, and Geoffrey M. Scamans, Banbury, both of England, assignors to Alcan International Limited, Montreal, Canada

Filed Feb. 26, 1988, Ser. No. 160,719

Int. Cl.[5] B32B *15/01, 15/20*

U.S. Cl. 428—654 **23 Claims**

1. A welded structure in which two Al alloy components are joined together by means of a weld bead which is at least partly covered by a surface layer of an Al alloy, wherein the surface layer has the composition in weight %:

Zn	0–7.0
Mn	0–5.0
In	0.02–0.4
Ga	0–0.2
Mg	0–6.0

balance Al of at least commercial purity, the In being present substantially in solid solution, with the proviso that, in the absence of added Mg or Mn, the In concentration is not more than 0.16%.

4,943,493

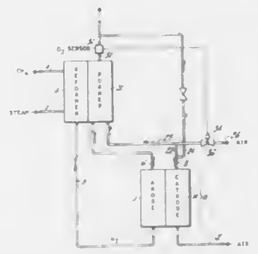
FUEL CELL POWER PLANT

George Vartanian, Ellington, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Apr. 21, 1989, Ser. No. 342,003

Int. Cl.[5] H01M *8/06*

U.S. Cl. 429—17 **5 Claims**



1. A fuel cell power plant, comprising:

a fuel cell, including an anode and a cathode for electrochemically reacting a fuel stream and a first oxidant stream to produce electricity, an anode exhaust stream and a cathode exhaust stream,

means for diluting an air stream with cathode exhaust to provide a second oxidant stream,

a burner for combusting a mixture of the anode exhaust stream and the second oxidant stream to produce heat and a burner exhaust stream, said burner exhaust stream having an oxygen content,

means for sensing the oxygen content of the burner exhaust stream, and

means, responsive to the sensing means, for controlling the mass flow rate of the air stream to maintain the oxygen content of the burner exhaust within a preselected range.

4,943,494

SOLID OXIDE FUEL CELL MATRIX AND MODULES

Brian Riley, Willimantic, Conn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 22, 1988, Ser. No. 184,918

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] H01M *8/10*

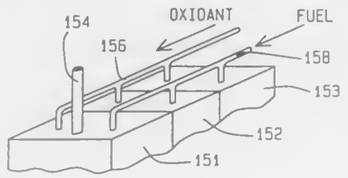
U.S. Cl. 429—30 **20 Claims**

1. A modular solid oxide fuel cell arrangement comprising:

a solid oxide fuel cell having an anode, a cathode and a solid electrolyte therebetween and responsive to an oxidant and a fuel gas provided thereto for converting chemical en-

ergy of said fuel gas to direct current electrical energy; and

block means coupled to said solid oxide fuel cell for providing support therefor, said block means including fuel and



oxidant delivery means for respectively providing fuel gas and oxidant to said fuel cell and further including exhaust means for removing exhaust gases from said solid oxide fuel cell.

4,943,495

FUEL CELL

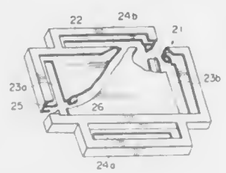
Tatsunori Okada; Masayuki Miyazaki; Toshihide Tanaka; Chiaki Hatoh, and Masahiro Mukai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 13, 1989, Ser. No. 379,227

Claims priority, application Japan, Sep. 9, 1988, 63-226948

Int. Cl.[5] H01M *8/02*

U.S. Cl. 429—35 8 Claims



1. A fuel cell comprising:

an electrolyte layer;

a pair of electrode reacting portions disposed on both sides of said electrolyte layer; and

a pair of gas separating plates laminated on the outer sides of said electrode reacting portions, respectively, said gas separating plates are provided so as to form gas flow passages through which different types of gas fluid are caused to flow so that they can be electrochemically reacted in said respective electrode reacting portions;

said fuel cell is fabricated by laminating said electrolyte layer, said electrode reacting portions and said gas separating plates;

sealed portions of each of said gas separating plates which are provided on the periphery of said gas flow passage having a U-shaped cross section with stems of the U extending substantially parallel to the layers of the lamination so that they may flex, and a filling member filled interior of said peripheral sealed portions.

4,943,496

FUEL CELL, ELECTRODE FOR THE CELL AND METHOD OF PREPARATION THEREOF

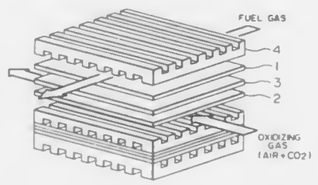
Hideo Okada; Toshikatsu Mori; Kouichi Mitsugi; Yoshio Iwase; Satoshi Kuroe, all of Hitachi; Masato Takeuchi, Katsuta, and Tomoichi Kamo, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,902

Claims priority, application Japan, Jan. 25, 1988, 63-12539

Int. Cl.[5] H01M *4/90*

U.S. Cl. 429—45 6 Claims



1. A molten carbonate type fuel cell which comprises two electrodes, an electrolytic plate and two separators having gas-passing channels in a single unit, each of said two electrodes comprising a porous plate of an electron conductive material containing ceramic particles uniformly dispersed therein except for a superficial thin portion having a thickness of 0.001 to 0.1 mm free of the ceramic particles on a surface of the plate facing one of said two separators, wherein said electron conductive material is comprised of at least one metal selected from nickel, cobalt, copper, chromium and iron, and mixtures and alloys thereof, and wherein said ceramic particles are formed from a ceramics-affording source which is at least one compound of a metal selected from magnesium, zirconium, aluminum, lanthanum, silicon and yttrium, and mixtures thereof.

4,943,497

CELL HAVING CURRENT CUTOFF VALVE

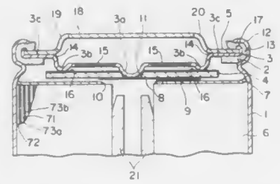
Shigeru Oishi; Takao Abe; Toru Nagaura, and Mochiyuki Watanabe, all of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1989, Ser. No. 424,696

Claims priority, application Japan, Oct. 21, 1988, 63-265783; Apr. 25, 1989, 1-105197; Apr. 26, 1989, 1-106584

Int. Cl.[5] H01M *2/12*

U.S. Cl. 429—53 5 Claims



1. A cell comprising:

a container having therein a generator unit formed of an anode, a cathode, a separator interposed between said anode and said cathode, and electrolyte;

an explosion proof valve sealing said container;

an electrical lead connected at one end to one of said anode or cathode and at the other end to said explosion proof valve; and a stripper element provided between said generator unit andd said explosion proof valve;

said explosion proof valve being deformable upon increase of inner pressure of said container and said stripper element bolding said electrical lead at a side of said generator unit to remove said electrical lead from said explosion proof valve upon deformation of said explosion proof valve.

4,943,498

BATTERY AND BATTERY RECEPTACLE ARRANGEMENT

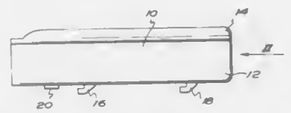
Robin A. Cooper, Surrey, and Barry J. Fazackerley, London, both of England, assignors to Hugh Steeper Limited, London, England

Filed Aug. 23, 1989, Ser. No. 397,735

Claims priority, application United Kingdom, Aug. 25, 1988, 8820230

Int. Cl.[5] H01M *2/10*

U.S. Cl. 429—97 13 Claims



1. A battery and battery receptacle arrangement, comprising (a) a battery as a first part of the arrangement, (b) a battery receptacle as a second part of the arrangement, (c) at least one formation provided on one of the parts, (c) a corresponding formation provided on the other part, which corresponding formation is engaged by the said at least one formation when the battery is inserted in the receptacle and moved transversely therewithin, thereby to retain the battery in the receptacle in a readily releasable manner.

4,943,499

CONDUCTOR POLYMERS USABLE IN THE CONSTRUCTION OF COMPLETELY DRY BATTERIES

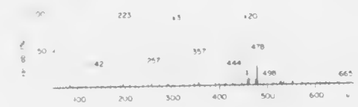
Giuseppe Cassalbore-Miceli; Giancarlo Beggiato, both of Bologna; Pier G. DiMarco, San Lazzaro di Savena, and Gabriele Giro, Forlimpopoli, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Jun. 16, 1989, Ser. No. 367,124

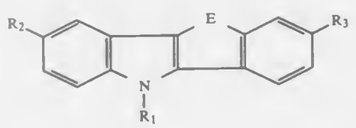
Claims priority, application Italy, Jun. 16, 1988, 20986 A/88

Int. Cl.[5] H01M *6/18*

U.S. Cl. 429—192 20 Claims



1. A conductor polymer usable in the construction of completely dry batteries and having a cross-linked structure with intermonomer bonds formed through a nitrogen-bonded vinyl group and/or an aromatic ring, and having delocalized positive charges in the polymer chain neutralized by a counter-ion comprising Cl^-, BF^-_4, ClO^-_4, PF^-_6, or mixtures thereof, prepared by anodic oxidation of a compound of general formula (I)



(I)

in which

E=O, S or Se;

R_1=H or a saturated or unsaturated alkyl radical with double bonds in the vinyl or allyl position with respect to the nitrogen;

R_2,R_3=H or a methyl radical.

4,943,500

SEALED ELECTROCHEMICAL CELL

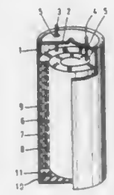
Johann R. G. C. M. Van Beek, Eindhoven, and Gerrit Frens, Eersel, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1989, Ser. No. 348,224

Claims priority, application Netherlands, May 11, 1988, 8801233

Int. Cl.[5] H01M *10/34*

U.S. Cl. 429—207 2 Claims



1. A sealed electrochemical cell comprising a negative electrode whose electrochemically active material includes an intermetallic compound which can form a hydride with hydrogen, the cell comprising an electrolyte of a solution of at least one alkali hydroxide in water, and the negative electrode having a discharge buffer, characterized in that the discharge buffer is formed by one of an alkali metal, an alkaline earth metal or aluminum in contact with the electrolyte.

4,943,501

PHOTOCONDUCTIVE MATERIAL CONTAINING ANTI-OXIDANT

Akira Kinoshita, Hino; Yumi Matsuzawa, Fuchu, and Hideo Yoshizawa, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

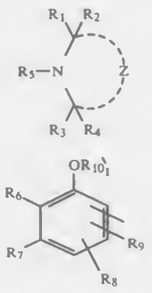
Continuation of Ser. No. 167,505, Mar. 14, 1988, abandoned. This application Sep. 28, 1989, Ser. No. 415,390

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—58 12 Claims



1. A photoconductive element comprising an electroconductive substrate and a photoconductive layer containing a photoconductive substance, said photoconductive layer containing a compound which has in its molecular structure a hindered amine structure unit represented by formula Ia and a hindered phenol structure unit represented by formula Ib;



[1a]

[1b]

wherein, R_1, R_2, R_3 and R_4 are independently a hydrogen atom, an alkyl group or an aryl group; Z represents a group of atoms necessary to complete a nitrogen-containing alicyclic group; R_5 represents an alkyl group;

R_6 is a branched alkyl group; R_7, R_8 and R_9 are independently a hydrogen atom, a hydroxy group, an alkyl group or an aryl group; and R_{10} is a hydrogen atom, an alkyl group or an alkenyl group; provided that said hindered amine structure unit is connected through one of R_1, R_2, R_3, R_4, R_5 and Z thereof, optionally through a divalent organic group and/or one of R_6, R_7, R_8, R_9 and R_{10}, with said hindered phenol structure unit, and that R_8 and R_9 may be connected with each other to form a ring.

2. The photoconductive element according to claim 1, wherein said photoconductive layer contains charge generating material and a charge transporting material.

4,943,502

PHOTOSENSITIVE RECORDING MATERIAL SUITED FOR USE IN ELECTROPHOTOGRAPHY CONTAINING DIHYDROQUINOLINE CHARGE TRANSPORT COMPOUNDS

David R. Terrell, Lint; Marcel J. Monbaliu, Mortsel, both of Belgium; Ulrich Grigo, Kempen, and Klaus Berg, Krefeld, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

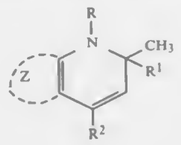
Filed Jun. 2, 1989, Ser. No. 360,303

Claims priority, application European Pat. Off., Jun. 23, 1988, 88201293.3

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—58 **12 Claims**

1. An electrophotographic recording material which comprises an electrically conductive support having thereon a charge generating layer in contiguous relationship with a charge transporting layer, wherein said charge transporting layer contains a 1,2-dihydroquinoline compound corresponding to the following general formula(I):



(I)

wherein:

R represents hydrogen or an aliphatic or cycloaliphatic group including these groups substituted by non-ionic substituents. each of R^1 and R^2 (same or different) represents a C_1–C_6 alkyl group or an aryl group, and

Z represents the atoms necessary to close an adjacent aromatic nucleus or aromatic ring system including such nucleus or ring system substituted with one or more substituents of non-ionic character.

4,943,503

AMORPHOUS SILICON PHOTORECEPTOR

Hideo Nojima; Yoshimi Kojima; Eiji Imada, all of Nara; Toshiro Matsuyama; Takashi Hayakawa, both of Tenri; Shiro Narikawa, Kashihara, and Shaw Ehara, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1984, Ser. No. 659,418

Claims priority, application Japan, Oct. 13, 1983, 58-192078

Int. Cl.[5] G03G *5/14, 5/082*

U.S. Cl. 430—66 **10 Claims**



1. A photoreceptor for electrophotograph comprising:

a substrate of an electrically conductive material;

a photoconductive layer formed on said substrate, the main component of said photoconductive layer being amorphous silicon (a-Si);

an intermediate layer formed on said photoconductive layer, said intermediate layer being made of amorphous silicon (a-Si) including nitrogen and boron; and

a surface layer formed on said intermediate layer, said surface layer being made of an amorphous material, and showing a large optical band gap, wherein the energy difference between the bottom of the conduction bands of said surface layer and said intermediate layer is less than 0.2 eV.

4,943,504

METHOD FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

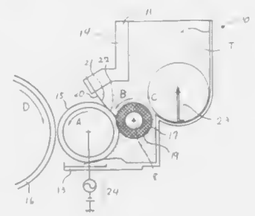
Shinya Tomura, Kanagawa, and Sachiko Yasuda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1989, Ser. No. 303,458

Claims priority, application Japan, Jan. 29, 1988, 63-18921

Int. Cl.[5] G03G *13/08*

U.S. Cl. 430—102 **3 Claims**



1. A method for developing an electrostatic latent image, comprising the steps of:

forming an electrostatic latent image on the surface of an image holding member; and

supplying one-component developer particles to said electrostatic latent image from a developer transferring member spaced from the image holding member, said one-component developer having an amount of triboelectric charge within the range of about 30–100 $\mu c/m^2$ and a true specific gravity of at least about 1.2.

4,943,505

DEVELOPER AND TONER COMPOSITION PRODUCED BY EMULSION POLYMERIZATION

Takayoshi Aoki; Yukihiro Ishii; Koichi Tanaka, and Shigeru Sadamatsu, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1985, Ser. No. 708,902

Claims priority, application Japan, Mar. 6, 1984, 59-41304; Mar. 6, 1984, 59-41312

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—109 **12 Claims**

1. A toner composition comprising a toner powder and a fine powder having a particle size of from 0.05 to 5 μm and which is smaller than that of the toner powder, wherein said fine powder is present in an amount of from 0.01 to 10 wt % of the toner powder and is made of a polymer obtained by emulsion polymerization of a hydrophilic monomer using a persulfate salt type initiator in the absence of an emulsifier wherein said hydrophilic monomer is selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, butyl acrylate, methyl methacrylate, ethyl methacrylate, propyl methacrylate, butyl methacrylate, acrylic acid, methacrylic acid, vinyl acetate, and acrylonitrile.

4,943,506

WHITE TONER COMPRISING TITANIUM OXIDE OF SPECIFIED SIZE

Ichiro Demizu; Mitsutoshi Nakamura, and Toshitaro Kohri, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1988, Ser. No. 259,749

Claims priority, application Japan, Oct. 19, 1987, 62-264214; Oct. 19, 1987, 62-264211; Oct. 19, 1987, 62-264213; Oct. 19, 1987, 62-264215

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—109 **7 Claims**

1. White toner for use in forming images by dry process comprising binder resin and titanium dioxide with 0.20–0.35 μm in mean particle size at the content of 15–60 parts by weight on the basis of 100 parts by weight of the binder resin; the luminous reflectance is at least 20% when the white toner is fixed on a black paper with 8% or less of reflectivity.

4,943,507

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGE WITH THE SAME

Jiro Takahashi; Kenzi Tsuzita; Hiroyuki Takagiwa; Kunio Shigeta, and Hiroya Masaki, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 22,777, Mar. 6, 1987, abandoned. This application Jan. 23, 1989, Ser. No. 300,734

Claims priority, application Japan, Mar. 11, 1986, 61-51330

Int. Cl.[5] G03G *13/09*

U.S. Cl. 430—120 **26 Claims**

1. A method of developing an electrostatic latent image comprising;

forming an electrostatic latent image with a negative polarity on an organic photoreceptor, and

developing said electrostatic latent image with a toner bearing a positive electric charge, said toner comprising

(a) a binder resin,

(b) a coloring agent,

(c) at least one oxide selected from the group consisting of hydrophobic aluminum oxide and hydrophobic titanium oxide,

(d) silica, and

(e) zinc stearate.

4,943,508

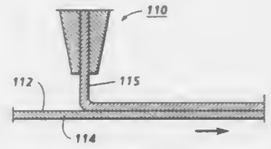
METHOD OF FABRICATING A LAYERED FLEXIBLE ELECTROPHOTOGRAPHIC IMAGING MEMBER

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

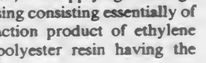
Filed Jul. 3, 1989, Ser. No. 375,423

Int. Cl.[5] G03G *5/04, 5/14*

U.S. Cl. 430—129 **20 Claims**



1. A process for fabricating an electrophotographic imaging member comprising providing an electrically conductive layer, forming a charge blocking layer comprising an aminosilane reaction product on said electrically conductive layer, extruding a ribbon of a solution comprising a copolyester resin dissolved in at least a first solvent on said electrically conductive layer to form a wet adhesive layer on said charge blocking layer, drying said wet adhesive layer to remove substantially all of said first solvent to form a dry continuous adhesive layer comprising said adhesive polymer having a thickness between about 0.08 micrometer and about 0.3 micrometer, applying to said dry continuous adhesive layer comprising said copolyester resin a mixture comprising charge generating particles dispersed in a solution of a film forming binder polymer dissolved in at least a second solvent to form a wet charge generating layer, said binder polymer being miscible with said copolyester resin, drying said wet charge generating layer to remove substantially all of said second solvent, and applying a charge transport layer, said copolyester resing consisting essentially of a linear saturated copolyester reaction product of ethylene glycol and four diacids, said copolyester resin having the following formula:



wherein said diol is ethylene glycol, said diacids are terephthalic acid, isophthalic acid, adipic acid and azelaic acid, the mole ratio of said terephthalic acid to said isophthalic acid to said adipic acid to said azelaic acid is between about 3.5 and about 4.5 for terephthalic acid: between about 3.5 and about 4.5 for isophthalic acid: between about 0.5 and about 1.5 for adipic acid: between about 0.5 and about 1.5 for azelaic acid, the total moles of diacid being in a mole ratio of diacid to ethylene glycol in the copolyester of about 1:1, n is a number between about 250 and about 400 and the T_g of said copolyester resin being between about 32° C. and about 50° C.

4,943,509

RECORDING SYSTEM HAVING A COATING DEVICE FOR COATING RECORDING MEDIUM OR PHOTOSENSITIVE MEDIUM WITH DEVELOPER MATERIAL REACTING WITH COLOR PRECURSOR

Jun Sakai; Shunichi Higashiyama, both of Nagoya; Koji Suzuki, Kasugai, and Mitsuru Ohta, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 24, 1988, Ser. No. 159,736

Claims priority, application Japan, Feb. 27, 1987, 62-45687; Feb. 27, 1987, 62-45690; Jun. 17, 1987, 62-150901; Aug. 6, 1987, 62-196669

Int. Cl.[5] G03C *1/40*

U.S. Cl. 430—138 **19 Claims**

1. A recording system, comprising:

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a pressure-sensitive photosensitive medium having a layer of microcapsules whose mechanical strength varies according to an amount of exposure to a radiation, each of said microcapsules containing a chromogenic material capable of chemically reacting with a developer material;

an exposing device operated according to source image information, for image-wise exposing said layer of microcapsules to said radiation to thereby form thereon latent images corresponding to said source image information, based on variations in said mechanical strength of said microcapsules;

a coating device for applying said developer material to a recording medium, to thereby prepare a developing sheet; and

a developing device for superposing said developing sheet on said pressure-sensitive photosensitive medium after said layer of microcapsules have been image-wise exposed, and for applying a pressure to the image-wise exposed layer of microcapsules in contact with said developing sheet, to thereby cause a chemical reaction of said chromogenic material with said developer material, for developing said latent images into visible images on said developing sheet.

4,943,510

POLYESTER FILM

Klaus Thoese, and Karl-Heinz Jung, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Fed. Rep. of Germany

Division of Ser. No. 133,486, Dec. 15, 1987, Pat. No. 4,876,155. This application Jul. 20, 1989, Ser. No. 382,308

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642848

Int. Cl.[5] G03C *1/52;* **B32B** *27/08, 27/36*

U.S. Cl. 430—160 **15 Claims**

1. A diazotype duplicating film comprising:

a base material comprising a biaxially stretch-oriented and heat-set polyester film;

a coating on a first surface of the polyester film comprising a copolyester, containing sulfonate groups, and an antistatically effective amount of at least one salt derived from an amino acid or a protein hydrolysate; and

a diazotype reproduction layer on the opposite surface of the film.

4,943,511

HIGH SENSITIVITY MID AND DEEP UV RESIST

Richard M. Lazarus, Mission Viejo; Edward J. Reardon, Laguna Niguel, and Sunit S. Dixit, Mission Viejo, all of Calif., assignors to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 229,088, Aug. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 175,706, Mar. 31, 1988, abandoned. This application Jul. 6, 1989, Ser. No. 376,971

Int. Cl.[5] G03C *1/60*

U.S. Cl. 430—192 **9 Claims**

1. A positive photosensitive composition comprising an admixture of a 1,2-naphthoquinonediazide photosensitizer and a bindingly effective amount of novolak resin wherein:

A. said photosensitizer comprises an admixture of 2,3,4-trihydroxybenzophenone-1,2-naphthoquinone-2-diazo-4-sulfonic acid triester; 2,3,4-trihydroxybenzophenone-1,2-naphthoquinone-2-diazo-4-sulfonic acid diester, and 2,3,4-trihydroxybenzophenone-1,2-naphthoquinone-2-diazo-4-sulfonic acid monoester in the following relative amounts:

triester—about 50 wt % to about 75 wt %

monoester and diester—balance, in a monoester/diester weight ratio of about $\frac{1}{3}$, said wt % being based on the total weight of the mono-, di, and triester; and

B. said novolak resin comprising a resin selected from the group consisting of:

1. a resin prepared by condensing an aliphatic aldehyde, aromatic aldehyde or mixture thereof with a phenolic component comprising a mixture of p-cresol and m-cresol containing at least about 60 weight percent p-cresol, based on the total weight of p-cresol and m-cresol, and a sufficient amount of m-cresol to render said novolak resin soluble in an aqueous, alkaline solution, said phenolic component being essentially free of o-cresol; and

2. a novolak resin which is the condensation product of (a) a mixture of m-cresol and p-cresol and (b) a mixture of formaldehyde or a formaldehyde precursor and a monohydroxy aromatic aldehyde selected from the group consisting of 2-hydroxybenzaldehyde, 3-hydroxybenzaldehyde and 4-hydroxybenzaldehyde

wherein the cresol and aldehyde components used to prepare said novolak resin B2 are used in the following amounts:

$$\frac{\text{moles total aldehyde component}}{\text{moles total cresol component}} \times 100 = \text{about 60\% to about 95\%}$$

$$\frac{\text{moles aromatic aldehyde}}{\text{moles total aldehyde}} \times 100 = \text{about 15\% to about 95\%.}$$

4,943,512

PHOTOCURABLE AND DYEABLE RESIN COMPOSITION WITH BISAZIDE AND DYEABLE ACRYLIC COPOLYMER

Hiroshi Kawabata; Katsuhiko Kobayashi, and Hideo Sato, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 4, 1988, Ser. No. 253,078

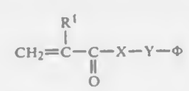
Claims priority, application Japan, Nov. 12, 1987, 62-286184

Int. Cl.[5] G03C *1/60, 1/71*

U.S. Cl. 430—197 **15 Claims**

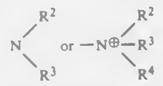
1. A photocurable, photosensitive and dyeable resin composition which comprises a mixture of

(A) a polymer which is obtained by a copolymerizable of a first monomer of the general formula [I]

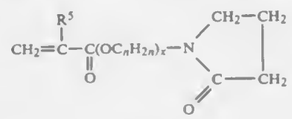


[I]

in which R^1 represents H, CH_3 or C_2H_5, X represents —O— or —NH—, Y represents a linear or branched hydrocarbon group having from 1 to 4 carbon atoms, and Φ represents



$Z^{\ominus}$, in which $Z^{\ominus}$ represents an anion, and R^2, R^3 and R^4 are independently an alkyl group having from 1 to 4 carbon atoms, and at least one other monomer of the general formula [II]



[II]

in which R^5 represents H, CH_3 or C_2H_5, and n and x are independently an integer of from 1 to 4; with

(B) a bisazide compound used as a photocross-linking agent for the polymer, the quantity of said bisazide compound being 1 to 10% by weight based on said polymer (A).

4,943,513

PHOTOIMAGEABLE COMPOSITION WITH REDUCED COLD FLOW DUE TO SALT-BRIDGING BY METAL IONS AND DRY FILM FORMED THEREFROM

Melvin A. Lipson, Newport Beach; Thomas P. Carter, Laguna Beach; James G. Shelnut, Lake Forest, and Leo Roos, Laguna Beach, all of Calif., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Oct. 7, 1988, Ser. No. 255,579

Int. Cl.[5] G03C *1/90, 1/68*

U.S. Cl. 430—260 **13 Claims**

1. A dry film comprising

a cover sheet having sufficient flexibility to be wound as a roll, and

a photoimageable composition layer on said cover sheet which is developable by alkaline aqueous or semiaqueous solutions, the solids of said photoimageable composition comprising between about 30 and about 80 wt. percent or a polymer containing carboxylic acid groups, between about 15 and about 65 wt. percent of a monomer or monomers capable of undergoing a photochemical reaction which cross-links said polymer and between about 0.0004 and about 5 wt. percent of a photoinitiator, the improvement comprising, said photoimageable composition containing metal ions of charge 2^+ or higher salt-bridging carboxylic acid groups of different polymer molecules, which salt-bridging reduces cold flow in the photoimageable composition layer.

4,943,514

NEGATIVE-WORKING DYEABLE PHOTORESIST

Raymond F. Reithel, and Richard C. Sutton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1988, Ser. No. 211,810

Int. Cl.[5] G03C *1/66*

U.S. Cl. 430—270 **4 Claims**

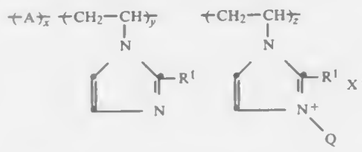
1. A negative-working dyeable photoresist composition comprising in admixture

(a) a poly(vinyl alcohol) binder,

(b) a radiation-sensitive dichromate, and

(c) a polymeric mordant comprising recurring units derived from a quaternized N-vinylimidazole

wherein said polymeric mordant contains recurring units:



wherein:

A is a unit derived from an ethylenically unsaturated monomer;

each R^1 is independently H or methyl;

Q is alkyl or aryl;

X—is an acid anion;

x is 0 to 65 mole percent;

y is 0 to 65 mole percent; and

z is 5 to 50 mole percent.

4,943,515

INFORMATION RECORDING MEDIUM

Masaki Okazaki, Minami-ashigara; Masao Yabe, Fujinomiya, and Ken Kawatta, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 134,058, Dec. 17, 1987, abandoned. This application Feb. 10, 1989, Ser. No. 310,023

Claims priority, application Japan, Dec. 17, 1986, 61-302100

Int. Cl.[5] G11B *7/24;* **G03C** *1/72, 5/16;* **B41M** *5/26*

U.S. Cl. 430—270 **12 Claims**

1. A method for recording information comprising irradiating a recording medium which comprises a substrate and a recording layer containing an organic solvent-soluble silver salt and a dye having at least one chromophore selected from the group consisting of an amidinium ion chromophore, a carboxyl ion chromophore and a dipolar amide chromophore, with a laser beam to form pits corresponding to the information in the recording layer.

4,943,516

PHOTOSENSITIVE THERMOSETTING RESIN COMPOSITION AND METHOD OF FORMING SOLDER RESIST PATTERN BY USE THEREOF

Yuichi Kamayachi; Kenji Sawazaki; Morio Sezaki, and Shoji Inagaki, all of Saitama, Japan, assignors to Taiyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1988, Ser. No. 274,966

Claims priority, application Japan, Nov. 30, 1987, 62-299967

Int. Cl.[5] G03F *7/027;* **G03C** *1/72*

U.S. Cl. 430—280 **28 Claims**

1. A photosensitive thermosetting-resin composition, comprising (A) a potosensitive prepolymer containing at least two ethylenically unsaturated bonds in the molecular unit thereof, (B) a photoinitiator, (C) a photopolymerizable vinyl monomer and/or an organic solvent as a diluent, and (D) a finely powdered epoxy compound containing at least two epoxy groups in the molecular unit thereof and exhibiting sparing solubility in the diluent to be used.

4,943,517

IMAGING SYSTEM

Stephen R. Powers; Peter J. Finn, both of Harlow, and Michael G. Fisher, Epping, all of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 37,953, Apr. 13, 1987. This application Sep. 30, 1988, Ser. No. 251,342

Claims priority, application United Kingdom, Apr. 15, 1986, 8609137

Int. Cl.[5] G03C *5/08, 5/16*

U.S. Cl. 430—301 **11 Claims**

1. An imaging process which comprises the steps of:

(i) providing a first radiation sensitive element comprising a transparent base having coated thereon only three imaging media, each of said three media being capable of forming a colour image upon imagewise exposure and processing, each of said imaging media being capable of forming a colour image and having a maximum sensitivity at a wavelength different from the wavelengths of the maximum sensitivity of the other imaging media being capable of forming a colour image and the wavelength of the maximum absorption of the colour image formed by each imaging medium differing from the wavelength of the maximum absorption of the colour image formed by the other imaging media by at least 40 nm;

(ii) obtaining colour separation information representative of the cyan, magenta, and yellow content of a colour original or electronically generated image,

(iii) exposing said first radiation sensitive element of step (i) to three independently modulated sources of radiation from 550 to 900 nm, each source being modulated by said colour separation information with respect to one colour and emitting radiation at a wavelength in the region of the

wavelength of maximum sensitivity of one of said imaging media capable of forming a colour image such that a latent image representative of at least the cyan, magenta, and yellow information of step (ii) is formed in individual colour forming media;

(iv) processing said exposed radiation sensitive element to produce a transparency comprising three colour images, a first colour image being representative of the colour separation information for cyan, a second colour image being representative of the colour separation information for magenta, and a third colour image being representative of the colour separation information for yellow,

(v) exposing a second radiation sensitive element comprising a base having at least one imaging medium coated thereon through said transparency produced in step (iv) to record on said second radiation sensitive element an image corresponding to one or more of the images of said imaging media of the transparency,

wherein each imaging medium of said three imaging media within said first element has a sensitivity at the wavelengths of maximum spectral sensitivity of the other imaging media which is not significant with respect to said sensitivity at the wavelength corresponding to the maximum spectral sensitivity of said other imaging media, and wherein exposing of said first radiation sensitive element comprises a false color address of a medium, and wherein said first radiation sensitive element comprises a transparent substrate bearing three separate imaging media coated thereon, said imaging media including:

(1) an imaging medium capable of forming a first colour image upon imagewise exposure and processing,

(2) an imaging medium capable of forming a second colour image upon imagewise exposure and processing, and

(3) an imaging medium capable of forming a third colour image upon imagewise exposure and processing,

each imaging medium having a maximum spectral sensitivity at a wavelength within the range 400 to 900 nm and different from that of the maximum sensitivity of the other imaging media by at least 20 nm, the exposure of step (iii) being conducted in half-tone.

4,943,518

DIRECT-POSITIVE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND METHOD OF PROCESSING IT

Tomomi Yoshizawa; Keiji Ogi, both of Tokyo; Yasuo Tosaka; Kazuya Kuramoto, both of Odawara, and Yoshiyuki Nonaka, Odawara, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 21, 1988, Ser. No. 288,022

Claims priority, application Japan, Dec. 23, 1987, 62-326066; Feb. 29, 1988, 63-47179

Int. Cl.[5] G03C *7/38, 7/30*

U.S. Cl. 430—378 **51 Claims**

22. A method for forming a direct positive image comprising

a step for imagewise exposing to light a silver halide photographic light-sensitive material which comprises a support having thereon a blue-sensitive emulsion layer containing a yellow color coupler, at least one green-sensitive emulsion layer and a red-sensitive emulsion layer containing a cyan color coupler, and

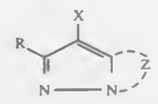
a step for developing said silver halide photographic light-sensitive material with a color developer in the presence of a fogging agent,

wherein the green-sensitive emulsion comprises

silver halide grains having at least two peaks on the size distribution curve thereof, where the grain size corresponding to the smallest grain size peak among said at least two peaks is not more than 0.3 μm; and

at least one of the magenta coupler represented by the following Formula (M-1);

Formula (M-I)



wherein Z represents a group of non-metal atoms necessary to complete a nitrogen containing heterocyclic ring which may have a substituent; X represents a hydrogen atom or a group capable of being split off upon reaction with the oxidized product of a color developing agent; and R represent a hydrogen atom or a substituent.

4,943,519

LIGHT SENSITIVE, STABILIZED PHOTOGRAPHIC RECORDING MATERIAL

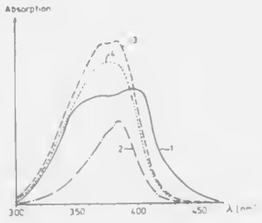
Günter Helling, Odenthal; Johannes Sobel, Leverkusen, and Hans Langen, Bonn, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1986, Ser. No. 816,746

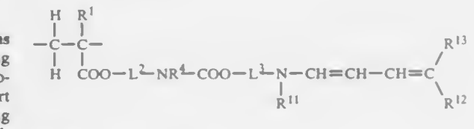
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501722

Int. Cl.[5] G03C *1/84*

U.S. Cl. 430—512 **2 Claims**



1. Fhotographic recording material having at least one light sensitive silver halide emulsion layer, and at least one UV-stabilizer present in a polymeric form, in an amount of 50 to 1000 mg/m^2 of recording material, characterized in that the Uv-stabilizer has recurrent structural units corresponding to the following formula



wherein

R^1 denotes H or CH_3

R^4 denotes H or CH_3,

L^2 and L^3, which may be identical or different, denote ethylene, propylene or butylene,

R^{11} denotes an unsubstituted or substituted alkyl group,

R^{12} denotes a cyano group or $-SO_2R^{14}$,

R^{13} denotes CN or $COOR^{15}$, and

R^{14}/R^{15}, which may be identical or different, denote an unsubstituted or substituted alkyl group having 1–20 carbon atoms or an unsubstituted or substituted aryl group having 6–20 carbon atoms.

4,943,520

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING ANTISTATIC AGENTS

Masakazu Yoneyama, and Yasuo Mukunoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1988, Ser. No. 185,224

Claims priority, application Japan, Apr. 24, 1987, 62-101455

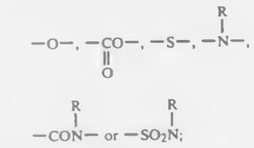
Int. Cl.[5] G03C *1/94*

U.S. Cl. 430—527 **8 Claims**

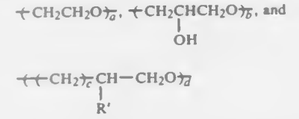
1. A silver halide photographic element comprising a support having thereon at least one hydrophilic colloid layer, at least one layer of which is a photosensitive silver halide emulsion layer, at least one hydrophilic colloid layer selected from a photosensitive silver halide emulsion layer, a surface protective layer, a backing layer, an interlayer and a subbing layer contains a compound represented by formula (I) in an amount of from about 0.0001 to about 2g/m^2 of the photographic element:

$$A—X—Y—B \qquad (I)$$

wherein A represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group or a substituted or unsubstituted aralkyl group, each having from 8 to 25 carbon atoms; X represents



R represents an alkyl group having from 1 to 10 carbon atoms or —Y—B; Y represents a group comprising units



wherein a is a number from 5 to 50; b is a number from 2 to 20; c is a number from 0 to 3; d is a number from 0 to 20; R′ represents a hydrogen atom, a method group or a phenyl group, with the proviso that, when R′ represents a methyl group or a phenyl group, c represents 0, and, when R′ represents a hydrogen atom, c represents a number from 1 to 3; and B represents a hydrogen atom, a substituted or unsubstituted alkyl group having up to 8 carbon atoms or a substituted or unsubstituted phenyl group.

4,943,521

METHOD FOR EVALUATING MUTAGENICITY

Gary R. Blackburn, Washington Crossing, Pa.; Carl R. Mackerer, Pennington, N.J., and Ceinwen A. Schreiner, Meadowbrook, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 24, 1987, Ser. No. 18,119

Int. Cl.[5] C12Q *1/68, 1/02, 1/18*

U.S. Cl. 435—6 **11 Claims**

1. A method for evaluating the relative mutagenic activity of a parent hydrocarbon mixture derived from petroleum, which method comprises:

contacting a sample of said hydrocarbon mixture with nitric acid under conditions effective to nitrate the mutagenic components thereof;

recovering from said nitric acid contacted hydrocarbon mixture a hydrocarbon mixture including nitrated mutagens;

incubating without addition of a liver metabolic activation system an inoculum of a histidine deficient strain of *Salmonella typhimurium* in the presence of said nitrated mutagens;

counting the number of revertant colonies so produced; and

comparing said number with those obtained by the same steps from a reference series of different petroleum derived hydrocarbon mixtures of known mutagenic potency to determine the mutagenic potency of said nitrated mutagens, wherein the mutagenic potency of said nitrated mutagens correlates with the mutagenic potency of said parent hydrocarbon mixture.

4,943,522

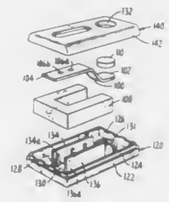
LATERAL FLOW, NON-BIBULOUS MEMBRANE ASSAY PROTOCOLS

Robert W. Eisinger; Mohammed H. Khalil, both of San Diego; David H. Katz, La Jolla, and Robert B. Sargeant, Ramona, all of Calif., assignors to Quidel, San Diego, Calif.

Continuation-in-part of Ser. No. 57,273, Jun. 1, 1987, abandoned, and a continuation-in-part of Ser. No. 57,271, Jun. 1, 1987, abandoned. This application Aug. 10, 1988, Ser. No. 230,642

Int. Cl.[5] G01N *33/53*

U.S. Cl. 435—7 **46 Claims**



4,943,523

DETECTABLE MOLECULES, METHOD OF PREPARATION AND USE

Jannis G. Stavrianopoulos, New York, N.Y., assignor to Eazo Biochem, Inc., New York, N.Y.

Division of Ser. No. 575,396, Jan. 30, 1984. This application Apr. 28, 1987, Ser. No. 43,670

Int. Cl.[5] G01N *33/53*

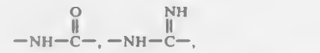
U.S. Cl. 435—7 **42 Claims**

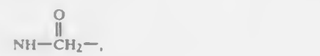
1. A detectable molecule of the formula $A^3—(X—R^1—E—Det^b)_m$ where A^3 is A^2, an oligo-or polysaccharide, an olgo- or polypeptide or a synthetic polymer, each of said oligo- or polysaccharide, oligo- or polypeptide or synthetic polymer having at least one modifiable reactive group consisting of amino, hydroxy, 1,2-cis diOH, halide aryl, imidazoyl, carbonyl, carboxyl, thiol or a residue comprising an activated carbon;

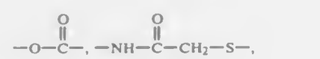
A^2 is a specific binding ligand other than an oligo- or polysaccharide, oligo- or polypeptide or an oligo- or polymucleotide and has a molecular weight of less than about 2,000;

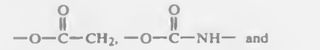
—X— is selected from the group consisting of

24. The method of claim 23 wherein the antigen is a soluble antigen.









and a C_1–C_{10} branched or unbranched alkyl or aralkyl, which may be substituted by —OH;

—Y— is a direct bond to —E—, or —Y— is —E—R^2— where -R^2— is a C_1–C_{10} branched or unbranched alkyl;

Z_a is chlorine, bromine or iodine;

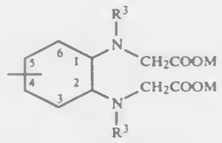
—E— is O, NH or an acyclic divalent sulfur atom;

Det^b is a chemical moiety capable of being detected, comprising biotin or a substituted or unsubstituted metal chelator or a compound capable of yielding a metal chelator; and

m is an integer from 1 to the total number of modified reactive groups on A^3.

2. A specific binding assay method for determining the presence or absence of an analyte in a sample, which method comprises

(a) contacting said sample with a composition comprising the molecule of claim 1 wherein A^3 is a specific binding partner for said analyte, and Det^b has the formula



wherein M is a radiometal;

(b) separating any complex formed between said detectable molecule and said analyte; and

(c) observing the amount of detectable complex so-formed.

4,943,524

ENZYME IMMUNOASSAY FOR CANCER PROCOAGULANT

Stuart G. Gordon, Denver, Colo., assignor to The University of Colorado Foundation, Inc., Boulder, Colo.

Continuation of Ser. No. 69,454, Jul. 2, 1987, abandoned, which is a continuation of Ser. No. 606,330, May 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 391,278, Jun. 23, 1982, Pat. No. 4,461,833. This application Feb. 17, 1989, Ser. No. 313,285

Int. Cl.[5] G01N *33/53, 33/531, 5/00;* C12P *21/00*

U.S. Cl. 435—7 **9 Claims**

2. A method for producing monoclonal antibody to cancer procoagulant comprising the steps of:

(a) immunizing an animal with cancer procoagulant antigen;

(b) fusing spleen cells from said immunized animal with myeloma cells to form hybrid cells;

(c) culturing said hybrid cells in a selective medium;

(d) testing for the presence of the desired antibody;

(e) cloning cells producing the desired antibody;

(f) subjecting medium from said cells producing the desired antibody to the step of dissociating said antibody from cancer procoagulant antigen produced by the hybrid cells used for the production of said antibody; and

(g) isolating the desired antibody.

4,943,525

SIMULTANEOUS IMMUNOASSAY FOR THE DETERMINATION OF ANTIGENS AND ANTIBODIES

Elliott Dawson, Bellbuckle, Tenn., assignor to BioVentures, Inc., Murfreesboro, Tenn.

Filed Nov. 2, 1987, Ser. No. 115,955

Int. Cl.[5] G01N *33/53, 33/536, 33/542;* C12Q *1/34*

U.S. Cl. 435—7 **21 Claims**

1. An immunochemical assay to determine the presence or concentration of an antigenic substance in a fluid, comprising:

(a) contacting with said fluid to form a complex with said antigenic substance if any said antigenic substance is present is said fluid:

(1) a first aliquot of an antibody or antibody fragment conjugated to a first label and capable of binding with said antigenic substance, and

(2) a second aliquot of the same antibody or antibody fragment conjugated to a second label;

(3) said first or second label capable of reacting with a substrate to produce a reaction product which can interact with said other first or second label to generate a signal, and

(b) detecting the presence or absence of a signal as a determination of the presence or concentration of said antigenic substance in said fluid.

4,943,526

GAMMA-GLUTAMYL-4-AZOANILIDES, PROCESS FOR THE PREPARATION THEREOF AND DIAGNOSTIC AGENTS CONTAINING THEM

Elli Rauscher, München, Fed. Rep. of Germany; John Griffiths, Garforth Leeds, and Leonard F. Dixon, W. Yorkshire, both of Great Britain, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

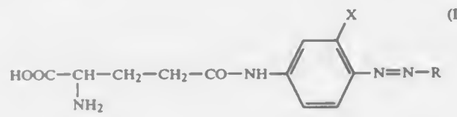
Division of Ser. No. 7,077, Jan. 27, 1987, Pat. No. 4,769,447. This application Aug. 11, 1988, Ser. No. 231,079

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602443

Int. Cl.[5] C12Q *1/48, 1/36*

U.S. Cl. 435—15 **7 Claims**

1. In a method for the determination of gamma-glutamyl transferase wherein the transferase liberates a colored product from a substrate in the presence of an amino acid or peptide acceptor, and the rate of release of the colored product is measured optically as a measure of the transferase activity, the improvement comprising using, as the substrate, the compound of the formula



(I)

wherein

X is C_1–C_7 alkyl, —$(CH_2)_m$—COOH or —O—$(CH_2)_n$—COOH wherein m is 0, 1, 2, 3 or 4 and n is 1, 2, 3 or 4;

R is p-nitrophenyl; p-nitrophenyl substituted one or more times by halogen, cyano, C_1–C_7 alkoxy, hydroxyl, C_1–C_7 alkyl, carboxy-C_1–C_7-alkyl, amino, C_1–C_7-alkyl-amino or di-C_1–C_7-alkyl-amino, the substituents being the same or different; or R is a thiophene, a thiophene substituted one or more times by cyano, nitro, C_1–C_7 alkyl or carboxy-C_1–C_7-alkyl, the substituents being the same or different; or R is a thiazole; a thiazole substituted one or more times by cyano, carboxyl or C_1–C_7 alkyl, the substituents being the same or different; or R is a benzothiazole, a benzothiazole substituted one or more times by C_1–C_7-alkoxy; or R is a benzoisothiazole; a benzoisothiazole which is substituted one or more times by nitro; or R is an N-C_1–C_7 alkyl-thiazole; a 1,3,5-thiodiazole or a 1,3,5-thiodazole which is substituted one or more times by C_1–C_7alkylthio; or

an alkali metal, alkaline earth metal or ammonium salt thereof.

4,943,527

MATURE APOAI PROTEIN PRODUCTION UNDER SERUM FREE CULTURING CONDITIONS

Andrew A. Protter, Palo Alto; Jean-Louis Vigne, San Francisco; Joanne B. Mallory, San Jose; Karen D. Talmadge, Palo Alto, and John P. Kane, Hillsborough, all of Calif., assignors to California Biotechnology Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 804,692, Dec. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 784,418, Oct. 4, 1985, abandoned. This application Feb. 27, 1986, Ser. No. 834,300

Int. Cl.[5] C12P *21/05, 21/02;* C12N *15/00*

U.S. Cl. 435—69.6 **4 Claims**

1. A method of producing purified human apoAI comprising:

providing a Chinese hamster ovary (CHO) cell transformed with an expression vector comprising a regulatable human metallothionein II gene promoter, and an expressible, heterologous gene coding for prepro apoAI,

culturing the cell in a serum-free medium under promoter-induction conditions wherein a mixture of extracellular proteins containing mature apoAI is produced,

forming a lipoprotein complex composed of endogenous CHO cell lipid particles and associated apoAI, and

separating the lipoprotein complex from nonlipid-binding proteins in the extracellular medium by floatation.

4,943,528

PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE (R)-(—)-3-HALO-1,2-PROPANEDIOL

Tetsuji Nakamura, and Ichiro Watanabe, both of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1989, Ser. No. 438,124

Claims priority, application Japan, Nov. 22, 1988, 63-293615; Apr. 21, 1989, 1-100173

Int. Cl.[5] C12P *7/18*

U.S. Cl. 435—158 **2 Claims**

1. A process for the production of an optically active (R)-(—)-3-Halo-1,2-propanediol which comprises contacting a 1,3-dihalo-2-propanol with a dehalogenase originating from a microorganism.

4,943,529

KLUYVEROMYCES AS A HOST STRAIN

Johan A. Van den Berg, Ad Reeuwijk; Albert J. J. Van Ooyen, AR Voorburg, and Krijn Rietveld, TL Vlaardingen, all of Netherlands, assignors to Gist-brocades NV, Delft, Netherlands

Continuation-in-part of Ser. No. 572,414, Jan. 19, 1984, Pat. No. 4,859,596. This application Jul. 28, 1987, Ser. No. 78,539

Int. Cl.[5] C12N *15/00, 1/20, 5/00*

U.S. Cl. 435—172.3 **16 Claims**

1. A method for transforming Kluyveromyces yeast cells which comprises:

pretreating said yeast cells with a chaotropic ion at a concentration of about 2 mM to about 1 M then treating said yeast cells with about 25–50% polyethylene glycol, wherein said pretreating and said treating is for about 5 to 120 minutes;

incubating said yeast cells with a DNA construct at about 20° C. to 35° C. for about 5 to 60 minutes;

heating said yeast cells with polyethylene glycol at about 35° C. to about 45° C. for about 1 to 10 minutes; and

growing said yeast cells.

4,943,530

LIQUID ENZYME PREPARATIONS

Juergen Christner, Bickenbach; Ernst Pfleiderer, Darmstadt-Arheilgen; Tilman Taeger, Seeheim-Jugenheim, and Ursula Bernschein, Gross-Gerau, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 152,020, Feb. 3, 1988. This application Oct. 16, 1989, Ser. No. 421,576

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704465

Int. Cl.[5] C12N *9/96, 9/50, 9/20*

U.S. Cl. 435—188 **6 Claims**

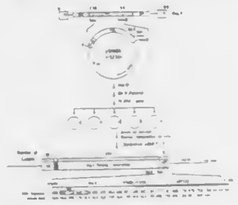
1. A liquid enzyme formulation comprising at least one enzyme dispersed in a substantially anhydrous 5- or 6-membered cyclic carbonate ester as a liquid carrier vehicle therefor together with from 0.1 to 6 percent, by weight of said organic liquid, of a finely divided solid inroganic dispersing agent.

4,943,531

EXPRESSION OF ENZYMATICALLY ACTIVE REVERSE TRANSCRIPTASE

Stephen P. Goff, Tenafly, N.J.; Naoko Tanese, New York, and Monica J. Roth, Bronx, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed May 6, 1985, Ser. No. 731,128
Int. Cl.[5] C12N *9/12, 1/20, 15/00*
U.S. Cl. 435—194 **3 Claims**



1. A plasmid designated pB6B15.23 having the restriction map shown in Fig. 2 and deposited in *Escherichia coli* HB101 under ATCC Accession No. 39939.

2. An Escherichia coli HB101 cell which contains the plasmid of claim 1 and which is deposited under ATCC Accession No. 39939.

3. A method for producing a polypeptide having reverse transcriptase activity which comprises growing the *Escherichia coli* HB101 cell of claim 2 under suitable conditions permitting production of the polypeptide and recovering the polypeptide so produced.

4,943,532

ALKALI-RESISTANT CELLULASES AND MICROORGANISMS CAPABLE OF PRODUCING SAME

Shuji Kawai, Utsunomiya; Kazushi Oshino, Koshigaya; Hiromi Okoshi, Utsunomiya; Hajime Mori, Utsunomiya; Katsutoshi Ara, Utsunomiya; Susumu Ito, Utsunomiya, and Kikuhiko Okamoto, Koshigaya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 30, 1987, Ser. No. 126,739
Claims priority, application Japan, Dec. 5, 1986, 61-289812; Dec. 8, 1986, 61-292156; Dec. 9, 1986, 61-293077; Dec. 9, 1986, 61-293078; Jan. 27, 1987, 62-16553; Jan. 27, 1987, 62-16551; Jan. 27, 1987, 62-16552; Aug. 3, 1987, 62-194141
Int. Cl.[5] C12N *9/42;* C12R *1/07*
U.S. Cl. 435—209 **20 Claims**

1. A substantially pure alkali-resistant cellulase enzyme (K-534) having the following enzymatic properties:

(1) action:

acting well on cellulosic materials including carboxymethyl cellulose, cellulose, filter paper and microcrystalline cellulose causing them to be destroyed, thereby forming reducing sugars;

(2) substrate specificity;

having activity on carboxymethyl cellulose, cellulose powder, microcrystalline cellulose, filter paper and p-nitrophenyl cellobioside;

(3) working pH and optimum pH:

a working pH range from 3 to 12.5 and an optimum pH of about 6.5 with a relative activity of not less than 50% of the activity at an optimum pH being shown in the range of 4.5 to 10.5 ;

(4) pH stability:

very stable and not inactivated at a pH of 5 to 11 with an activity of not less than about 50% being maintained at a pH of 4.5 to 12.5;

(5) optimum temperature:

working temperature in a wide range of 15° to 85° C and an optimum temperature of about 70° C, in the range of 45° to 75° C, the activity is not less than 50% of the activity at the optimum temperature;

(6) molecular weight:

peaks for the molecular weight are at about 15,000 and about 30,000 (when determined by gel filtration).

4,943,533

HYBRID CELL LINES THAT PRODUCE MONOCLONAL ANTIBODIES TO EPIDERMAL GROWTH FACTOR RECEPTOR

John Mendelsohn, La Jolla, Calif.; Tomoyuki Kawamoto, Hiroshima, Japan; Gordon Sato, Lake Placid, N.Y., and J. Denry Sato, Duarte, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 585,300, Mar. 1, 1984, abandoned. This application Mar. 9, 1987, Ser. No. 23,988
Int. Cl.[5] C12N *5/00;* C12R *1/91;* C07K *15/12;* A61K *39/395*
U.S. Cl. 435—240.27 **8 Claims**

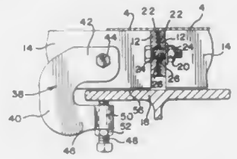
1. Hybridoma 579 that secretes monoclonal antibodies that inhibits epidermoid tumor cell growth, and on deposit with the American Type Culture Collection (ATCC) as CRL HB8506.

4,943,534

TRAY ASSEMBLY FOR GERMINATION FLOOR

Norman Andreasen, 1520 W. Norwood Ave., Itasca, Ill. 60143

Continuation of Ser. No. 248,312, Sep. 19, 1988, abandoned, which is a continuation of Ser. No. 103,593, Oct. 2, 1987, abandoned. This application Nov. 28, 1989, Ser. No. 442,450
Int. Cl.[5] C12C *1/06, 1/00*
U.S. Cl. 435—302 **10 Claims**



6. The tray assembly for the floor of a germination compartment comprising:

frame means having a top surface and a lowermost surface, said frame means including a pair of side members disposed in parallel relationship and a pair of cross members being respectively connected at each end to said pair of side members,

said frame means further including a plurality of spaced rib members extending parallel to said side members, said rib members being attached at each end to said cross members,

a perforated tray sheet being affixed to the top of said frame means,

a plurality of said frame means interconnected to form a germination floor, said frame means being adapted to be carried by a plurality of support beams,

bolt means extending through said cross members and through the cross members of an adjacent frame means to attach said frame means in an end to end relation,

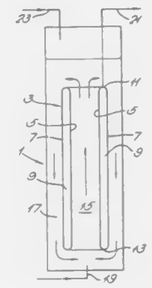
each of said frame means having a perforated tray sheet attached to said top of said frame means, said tray sheets of adjacent frame means having bent down edge portions being disposed between said cross members of adjacent frame means, said bolt means also extending through said edge portions of said bent down portion adjacent said frame means to secure said edge portions between said cross frame members of adjacent frame means.

4,943,535

ANTI-LIFT FERMENTER

Philip W. Thompson, and Lesley A. Wood, both of Slough, Great Britain, assignors to Celltech Limited, Slough, England

PCT No. PCT/GB86/00359, § 371 Date Apr. 6, 1987, § 102(e) Date Apr. 6, 1987, PCT Pub. No. WO86/07605, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 20, 1986, Ser. No. 47,917
Claims priority, application United Kingdom, Jun. 20, 1985, 8515629
Int. Cl.[5] C12M *1/12*
U.S. Cl. 435—311 **6 Claims**



1. A continuous air-lift fermenter vessel for receiving a suspension culture of cells, the vessel comprising:

air-lift means, in use for agitating a suspension culture received in the vessel and causing a gross flow movement of the suspension culture, an inlet for continuously supplying culture medium to the vessel, an outlet for removing culture supernatant, and a filter material between the outlet and the vessel to prevent removal of cells from the suspension culture wherein the filter material is located such that in use, the gross flow movement of the suspension culture inhibits clogging of the filter material by cells and/or cell debris, said the outlet comprising a conduit formed in a divider between a downcomer and a riser, the conduit communicating with the fermenter vessel via the filter material forming at least a part of the divider, the divider comprising a double-walled draught tube defining, between the double-walls, a conduit space communicating in use with the suspension culture through at least a portion of the draught tube comprising the filter material.

6. A continuous air-lift fermenter vessel for receiving a suspension culture of cells, said vessel comprising:

an inlet means for continuously supplying culture medium to said vessel;

a divider comprising a filter material and a double-walled draught tube having two concentric walls and a conduit space therebetween, said conduit space communicating with said vessel via said filter material;

a riser and a downcomer each having an upper and lower part and being separated from each other by said divider;

means for injecting a gas into said lower part of said riser for causing a gross flow movement of suspension culture in said vessel comprising an upward flow of suspension culture in said riser and a downward flow of suspension in said downcomer, said gross flow movement of suspension culture allowing culture supernatant to be drawn into said conduit space and inhibiting clogging of said filter material with cells from said suspension culture; and

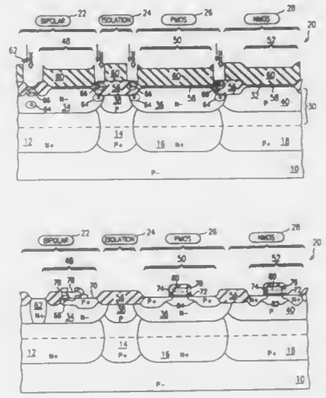
outlet means for removing culture supernatant from said conduit space.

4,943,536

TRANSISTOR ISOLATION

Robert H. Havemann, Garland, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed May 31, 1988, Ser. No. 200,395
Int. Cl.[5] H01L *21/265, 21/76*
U.S. Cl. 437—28 **19 Claims**



1. A method of manufacturing a semiconductor device in a substrate having semiconductor surface areas thereon, said method comprising the steps of:

forming a first well region of a first conductivity type in said substrate at one of said surface areas;

forming a second well region of a second conductivity type in said substrate at said one area, adjacent to said first well;

introducing a first dopant of said first conductivity type into said first and second well regions;

forming a field insulating region overlying first portions of said first and second well regions at said one area; and

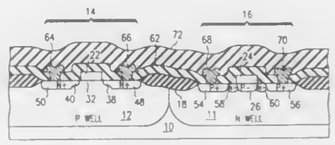
introducing a second dopant of said second conductivity type through said field insulating region into said first portion of said second well region.

4,943,537

CMOS INTEGRATED CIRCUIT WITH REDUCED SUSCEPTIBILITY TO PMOS PUNCHTHROUGH

Thomas E. Harrington, III, Carrollton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 210,242, Jun. 23, 1988, Pat. No. 4,906,588. This application Jun. 27, 1989, Ser. No. 372,077
Int. Cl.[5] H01L *21/265, 27/00*
U.S. Cl. 437—34 **19 Claims**



1. A method for fabricating a CMOS integrated circuit, comprising the steps of:

a. providing a semiconductor body which includes monocrystalline semiconductor well regions near the surface thereof, first ones of said well regions being predominantly doped P-type, and second ones of said well regions

being predominantly doped N-type, isolation regions being disposed to prevent conduction between ones of said well regions;

b. forming an insulated gate electrode in a predetermined pattern over said semiconductor body, some portions of said insulated gate electrode extending over portions of said first well regions to define NMOS channel regions therein, and other portions of said insulated gate electrode extending over portions of said second well regions to define PMOS channel regions therein;

c. introducing donor dopants into both said first and second well regions, to form N-type lateral field isolation regions near the surface of said second well regions adjacent to said PMOS channel regions therein;

d. introducing donor dopants into said first well regions only, to form lightly-doped-drain-extension regions near the surface of said first well regions adjacent to said NMOS channel regions therein;

e. forming N-type source/drain regions in said first well regions, to form NMOS transistors with said NMOS channel regions, ones of said respective NMOS channel regions being separated from respectively adjacent ones of said N-type source/drain regions by respective ones of said lightly-doped-drain extension regions; and

f. forming P-type source/drain regions in said second well regions, to from PMOS transistors with said PMOS channel regions, ones of said respective PMOS channel regions being separated from respectively adjacent ones of said P-type source/drain regions by respective ones of said lateral field isolation regions;

wherein said step (c) is performed before said step (f), and said step (d) is performed before said step (e).

4,943,538

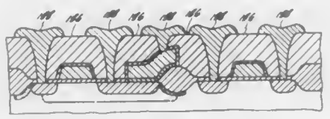
PROGRAMMABLE LOW IMPEDANCE ANTI-FUSE ELEMENT

Amr M. Mohsen, Saratoga; Esmat Z. Hamdy, Fremont, and John L. McCollum, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 861,519, May 9, 1986. This application Mar. 10, 1988, Ser. No. 166,324

Int. Cl.[5] H01L *21/22, 21/465*

U.S. Cl. 437—52 **6 Claims**



1. A method for manufacturing a programmable low impedance anti-fuse element on a substrate in a CMOS fabrication process including the steps of:

defining and doping with a first conductivity type, a first region in said substrate for forming the lower electrode of said programmable low impedance anti-fuse element simultaneously with a definition and doping of the source and drain regions in said substrate,

removing the initial gate oxide layer in said first region,

forming a dielectric layer for said programmable low impedance circuit interconnect element over said region, said dielectric layer including a first silicon dioxide portion, a second silicon nitride portion over said silicon dioxide portion, and a third silicon dioxide portion over said second silicon nitride portion,

forming a conductive layer to form the upper electrode for said programmable low impedance circuit interconnect element over said dielectric layer,

defining said conductive layer and said dielectric layer,

continuing said CMOS process sequence.

4,943,539

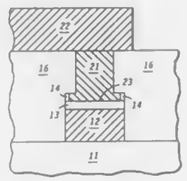
PROCESS FOR MAKING A MULTILAYER METALLIZATION STRUCTURE

Syd R. Wilson, Phoenix; James A. Sellers, and Robert J. Mattox, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1989, Ser. No. 350,665

Int. Cl.[5] H01L *21/90*

U.S. Cl. 437—195 **10 Claims**



1. A method for increasing contact area of a via metallization formed between metal interconnect layers of a multi-layer metallization comprising the steps of: providing a first metal layer; forming a sacrificial layer on the first metal layer, wherein the first metal layer serves as an etch stop for the sacrificial layer; forming an interlayer dielectric covering the sacrificial layer; etching a via in the interlayer dielectric; isotropically etching the sacrificial layer to expose an area of the first metal layer so that the exposed area of the first metal layer is larger than the area of the via; forming the via metallization on the exposed first metal layer filling the via and a void created by the isotropic etching of the sacrificial layer.

4,943,540

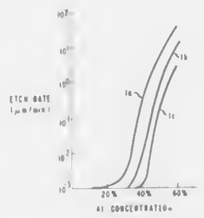
METHOD FOR SELECTIVELY WET ETCHING ALUMINUM GALLIUM ARSENIDE

Fan Ren, Dunellen Township, Middlesex County, and Nitin J. Shah, Scotch Plains, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1988, Ser. No. 290,774

Int. Cl.[5] H01L *21/00, 21/02, 21/208, 29/68*

U.S. Cl. 437—225 **14 Claims**



1. A method of manufacturing a semiconductor device, which includes etching AlGaAs on an wafer, CHARACTERIZED BY THE STEPS OF:

depositing a masking layer over the AlGaAs;

patterning the masking layer to expose regions of the AlGaAs to be etched;

cleaning the exposed AlGaAs regions with a solution of ammonium hydroxide (NH_4OH);

etching the AlGaAs regions with a solution of diluted hydrofluoric acid (HF) at a predetermined temperature or less;

wherein the predetermined temperature is approximately the boiling temperature of the diluted HF solution, the concentration of HF 48% or less, and the concentration of aluminum in the AlGaAs is 60% or less.

4,943,541

GLASS CERAMICS

Akira Watanabe, Okayama; Yoshimitsu Takeuchi; Seiji Kihara, both of Bizen, and Makoto Mitsudo, Okayama, all of Japan, assignors to Kyushu Refractories Co., Ltd., Okayama, Japan

Continuation of Ser. No. 893,571, Aug. 5, 1986, abandoned. This application May 13, 1988, Ser. No. 195,446

Claims priority, application Japan, Aug. 7, 1985, 60-174694

The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.

Int. Cl.[5] C03C *10/02*

U.S. Cl. 501—10 **2 Claims**

1. A $CaO—Al_2O_3—P_2O_5$ glass ceramics consisting essentially of 0.01 to 25 parts by weight of alkaline oxides selected from the group consisting of Li_2O, Rb_2O, and Ce_2O, in a 100 parts by weight of the crystalline glass composed of 10 to 60 weight % of CaO, 5 to 25 weight % of Al_2O_3, and 25 to 85 weight % of P_2O_5.

4,943,542

PROCESS FOR PRODUCING SILICA GLASS

Fusashi Hayashi; Kooichi Takei; Yooichi Matii; Toshikatsu Simazaki, all of Tsukuba; Akihito Imai, and Takao Nakada, both of Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Oct. 26, 1988, Ser. No. 262,803

Claims priority, application Japan, Oct. 31, 1987, 62-276455; Oct. 31, 1987, 62-276457; Oct. 31, 1987, 62-276459; Nov. 20, 1987, 62-294459

Int. Cl.[5] C03C *3/06*

U.S. Cl. 501—12 **13 Claims**

1. A process for producing a silica glass which comprises hydrolyzing at least one member selected from the group consisting of a silicon alkoxide of the formula:

$$Si(OR)_4$$

wherein R is an alkyl group, and a silicon alkoxide polycondensate of the formula:

$$(RO)_3Si\text{-}[OSi(OR)_2]_n\text{-}OSi(OR)_3$$

wherein R is an alkyl group; and n is zero or an integer of 1 to 8, to give a silica sol,

gelating the silica sol to give a silica gel,

drying the silica gel to give a dry gel, and

sintering the dry gel,

at least before the gelation, there being added to a hydrolyzing system at least one member selected from the group (A) including polyethylene glycols, polyethylene glycol ethers, hydroxyalkyl celluloses, and polyvinyl acetates.

4,943,543

SINTERED CERAMIC MATERIALS

Nils A. Ingelstrom, Bromma, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Continuation of Ser. No. 44,336, Apr. 30, 1987, abandoned. This application Dec. 7, 1988, Ser. No. 281,916

Int. Cl.[5] C04B *35/58, 35/10, 35/14*

U.S. Cl. 501—96 **16 Claims**

1. Sintered ceramic material based on silicon nitride, silicon oxide, aluminum nitride, aluminum oxide or mixtures thereof, in which the densification during sintering takes place with an intergranular liquid phase, said material comprising a core and a surface zone with a gradual transition in at least one of composition and crystal structure between said core and said surface zone.

4,943,544

HIGH STRENGTH, ABRASION RESISTANT REFRACTORY CASTABLE

Charles N. McGarry, Clarksville, Ind.; Clarence W. J. Miller, Louisville, Ky., and Thomas M. Weihrauberg, Jeffersonville, Ind., assignors to Corhart Refractories Corporation, Louisville, Ky.

Filed Oct. 10, 1989, Ser. No. 420,672

Int. Cl.[5] C04B *35/10, 14/04, 14/30*

U.S. Cl. 501—124 **30 Claims**

1. A refractory composition which consists essentially of by weight:

(a) 44 to 89 % of an abrasion-resistant refractory grain;

(b) 10 to 50 % of a hydraulic cement;

(c) 1 to 6 % of a filler consisting of very fine, substantially spherical particles of a material selected from the group consisting of Al_2O_3, Cr_2O_3, ZrO_2, TiO_2, clay minerals, carbon and fume SiO_2;

(d) 0.01 to 1%, based on the total weight of the constituents (a), (b) and (c), of additives selected from deflocculants and wetting agents.

4,943,545

ACTIVATION OF ZEOLITES

Clarence D. Chang, Princeton; Scott Han, and Bruce P. Pelrine, Lawrenceville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 60,542, Jun. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 59,368, Jun. 8, 1987, abandoned. This application Oct. 14, 1988, Ser. No. 258,090

Int. Cl.[5] B01J *29/38, 29/08, 29/28, 37/26*

U.S. Cl. 502—56 **15 Claims**

1. A method of activation a catalyst composition comprising a framework aluminum-deficient crystalline aluminosilicate zeolite containing non-framework aluminum which comprises

providing said aluminum-deficient zeolite, which as been deactivated by removal of aluminum from said framework, during exposure to at least one gas selected from the group consisting of oxygen and steam, under conditions effective to remove said aluminum from said framework

contacting said catalyst composition with a dilute aqueous fluoride solution of from about 0.001 to 0.1 N, wherein said solution is essentially free of zeolite framework substituting atoms at a temperature of about 20 to 100° C. for about 0.1 to 48 hours, wherein said fluoride solution is prepared from at least one fluoride reagent selected from the group consisting of, ammonium hydrogen fluoride and a mixture of ammonium fluoride and hydrogen fluoride converting said fluoride solution treated catalyst to its ammonium exchanged form, thereafter calcining said converted catalyst, wherein said catalyst composition treated by said method has been previously utilized in an organic compound conversion or contacted with steam, under conditions sufficient to deactivate said composition by removal of aluminum from said zeolite framework; and

recovering said zeolite which exhibits a hexane cracking activity greater than that of the aluminum-deficient zeolite.

4,943,546

NORMAL PARAFFIN ISOMERIZATION CATALYST COMPRISING A MORDENITE AND TITANIUM

Christine Travers, Rueil-Malmaison, and Jean-Pierre Franck, Bougival, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 3, 1988, Ser. No. 266,594

Claims priority, application France, Nov. 3, 1987, 87 15333

Int. Cl.[5] B01J *29/20*

U.S. Cl. 502—66 **7 Claims**

1. A catalyst consisting of, by weight:

(a) 10–99.98 % of a mordenite adsorbing molecules of a kinetic diameter higher than about 6.6 Angstroms, having

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a Si/Al atomic ratio from about 5 : 1 to 100: 1, a sodium content lower than 0.2 % by weight, in proportion to the total weight of dry mordenite, a mesh volume V of elementary mesh from 2.73 to 2.78 cubic nanometers, a benzene adsorption capacity higher than 5 % by weight in proportion to the dry mordenite weight, said mordenite being in major part shaped as needles,

(b) 0–89.98 % of a matrix selected from the group formed of alumina, silica, magnesia, natural clays, mixtures of these compounds and alumina-boron oxide combinations,

(c) 0.01–15 % of at least one group VIII metal, and

(d) 0.01–1 % of titanium.

4,943,547

METHOD OF PRESULFIDING A HYDROTREATING CATALYST

James D. Seamans, 1 Cormac Ct., Reisterstown, Md. 21136; James G. Welch, 107 Fireside Cir., Baltimore, Md. 21212, and Neal G. Ganser, 508 Windy Knoll Dr., Mt. Airy, Md. 21771

Filed Sep. 13, 1988, Ser. No. 243,687

Int. Cl.[5] B01J *27/051, 27/049, 27/047;* **K10G** *45/08*

U.S. Cl. 502—150 **18 Claims**

1. A method of presulfiding a hydrotreating metal oxide catalyst comprising the steps of:

(a) contacting said catalyst with powdered elemental sulfur at a temperature below the melting point of sulfur such that said elemental sulfur sublimes and is substantially incorporated in the pores of said catalyst, thereby forming a mixture, and

(b) heating said mixture in the presence of hydrogen to a temperature above the melting point of sulfur and below 390° F. for a timer period long enough for substantially all of the sulfur incorporated into the catalyst pores to have reacted to produce metal sulfides and hydrogen sulfides and to achieve a final sulfur level sufficient to sulfide active and promot metal in said catalyst.

18. A mixture comprising a metal oxide catalyst and a suspension, wherein said suspension comprises:

an amount of elemental sulfur sufficient to sulfide active and promoter metals in said catalyst upon exposure to hydrogen; and

an amount of a hydrocarbon solvent or high boiling oil which can be substantially incorporated into said catalyst.

4,943,548

METHOD OF PREPARING A CATALYST FOR THE HYDROCONVERSION OF ASPHALTENE-CONTAINING HYDROCARBONACEOUS CHARGE STOCKS

John G. Gatsis, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Filed Jun. 24, 1988, Ser. No. 210,943

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—173 **16 Claims**

1. A method for the preparation of a catalyst which method comprises the following steps:

(a) adding to an asphaltene-containing hydrocarbonaceous oil charge stock an oil-insoluble metal compound and a low molecular weight alcohol;

(b) converting said oil-insoluble metal compound within said charge stock by heating said oil to a temperature from about 120° F. (43° C.) to about 450° F. (232° C.) to produce an organometallic compound within said charge stock; and

(c) converting said organometallic compound within said charge stock by reacting under hydroconversion conditions including a temperature from about 650° F. (343° C.) to about 1000° F. (538° C.), a hydrogen partial pressure from about 500 psig (3448 kPa gauge) to about 5000 psig (36480 KPa gauge) and a space velocity from about 0.1 to about 10 volumes of oil feed per hour per volume of reactor to produce said catalyst.

4,943,549

SUPPORTED RUTHENIUM CATALYST, ITS PREPARATION AND ITS USE IN THE PREPARATION OF OPTIONALLY SUBSTITUTED CYCLOHEXYLAMINE AND OPTIONALLY SUBSTITUTED DICYCLOHEXYLAMINE

Otto Immel; Hans-Helmut Schwarz, and Reinhard Thiel, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 6, 1989, Ser. No. 376,109

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1988, 3824822

Int. Cl.[5] B01J *23/10, 23/34, 23/46*

U.S. Cl. 502—304 **9 Claims**

1. A ruthenium catalyst which is useful in the hydrogenation of anilines to cyclohexylamines and dicyclohexylamines wherein said catalyst is supported on Al_2O_3 and wherein said Al_2O_3 support contains at least one rare earth metal and manganese and said catalyst having a ruthenium content of 0.05–5% by weight, relative to the total weight of catalyst.

4,943,550

CATALYSTS FOR OXIDATION OF CARBON MONOXIDE

John H. Kolts, Ochelata; Scott H. Brown, Bartlesville, and Patricia A. Tooley, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 14, 1989, Ser. No. 366,946

Int. Cl.[5] B01J *21/04, 21/10, 23/89*

U.S. Cl. 502—327 **20 Claims**

1. In a process for preparing a composition of matter comprising (a) a support material selected from the group consisting of alumina, magnesium aluminate and mixtures thereof, (b) platinum metal, and (c) an iron component selected from the group consisting of iron oxides, iron metal and mixtures thereof, wherein said composition of matter has undergone a reducing treatment, the improvement which comprises:

(1) treating said composition of matter, which has undergone a reducing treatment, with an acidic liquid;

(2) heating the material obtained in step (1) under such conditions as to substantially remove said acidic liquid from said material obtained in step (1); and

(3) treating the material obtained in step (2) with a reducing gas under such conditions as to enhance the activity of said material for catalyzing the reaction of carbon monoxide with free oxygen to carbon dioxide.

4,943,551

CATALYST FOR SYNTHESIS OF MIXTURES OF METHANOL AND HIGHER ALCOHOLS

Bernard D. Dombek, Charleston, W. Va., assignor to Union Carbide Chemicals and Plastics Company, Inc., Danbury, Conn.

Filed Nov. 8, 1985, Ser. No. 796,411

Int. Cl.[5] B01J *21/06, 23/04, 23/12, 23/72*

U.S. Cl. 502—345 **7 Claims**

1. Catalyst composition for the production of methanol and higher saturated aliphatic alcohols from synthesis gas consisting essentially of:

(i) about 0.18 to about 0.81 mol fraction of copper;

(ii) about 0.045 to about 0.54 mol fraction of thorium;

(iii) up to about 0.54 mol fraction of zirconium; and

(iv) about 0.01 to about 0.2 mol fraction of an alkali metal.

4,943,552

PROCESS FOR PREPARING A GAS ABSORBENT

Yutaka Osajima; Katsumi Yamamura, both of Fukuoka, and Yoshio Unno, Nagoya, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1986, Ser. No. 864,468

Claims priority, application Japan, May 20, 1985, 60-107914

Int. Cl.[5] D01J *20/20, 20/04*

U.S. Cl. 502—417 **16 Claims**

1. A gas absorbent, prepared by adding sodium bromate to a mixture of sulfuric acid aqueous solution and active carbon, reacting them, separating solids from the reaction mixture, and drying said solids.

4,943,553

METHOD OF MAKING ETHYLBIPHENYLS

Kathuhiko Sakura, Tokyo; Genki Takeuchi, Kitakyushu, and Naoko Takeshita, Yukuhashi, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 210,964, Jun. 24, 1988, abandoned. This application Nov. 2, 1989, Ser. No. 432,416

Int. Cl.[5] C07C *15/12*

U.S. Cl. 585—471 **16 Claims**

1. A method of making ethylbiphenyls which comprises the step of reacting a mixture consisting essentially of polyethylbenzenes with a reactant consisting essentially of biphenyl in the presence of a solid acid catalyst which is at least one member selected from the group consisting silica-alumina and Y zeolite.

4,943,554

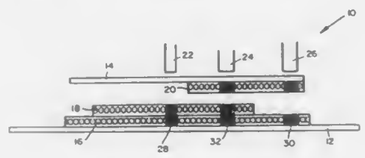
CARBONLESS COPYING SYSTEM AND METHOD OF PRODUCING MULTIPLE COLORED COPY IMAGES THEREWITH

Norman Macaulay, Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 24, 1988, Ser. No. 198,070

Int. Cl.[5] B41M *5/22*

U.S. Cl. 503—201 **12 Claims**



9. A method of producing copy images having a plurality of different colors, comprising

applying a first image-forming component to a recording substrate;

applying at least one of a plurality of complementary image-forming components to a selected portion of a transfer substrate, each of said plurality of complementary image-forming components being encapsulated in microcapsules and being capable of forming a different colored reaction product when reacting with said first image-forming component;

applying at least one other of said plurality of complementary image-forming components to a selected portion of said recording substrate over said first image-forming component;

positioning said recording substrate and said transfer substrate whereby said first and said plurality of complementary image-forming components are arranged in juxtaposed contact with one another;

applying pressure to selected locations of said transfer substrate to rupture the microcapsules of at least one of said plurality of complementary image-forming components whereby said component comes into contact with said first image-forming component on said recording substrate to form selected colored reaction products on the corresponding locations on said recording substrate.

4,943,555

IMAGE-RECEIVING SHEET

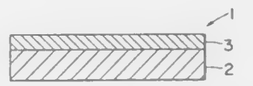
Mitsuharu Nakamoto; Kazuhiko Sano, and Takashi Kawasawa, all of Kyoto, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Nov. 1, 1988, Ser. No. 265,502

Claims priority, application Japan, Apr. 21, 1987, 62-98214

Int. Cl.[5] B41M *5/18*

U.S. Cl. 503—227 **3 Claims**



1. An image-receiving sheet which is used in combination with a heat transfer sheet having a dye layer containing a dye transferable through melting or sublimiation with heat, said image-receiving sheet having a receiving layer for receiving the dye transferred from said heat transfer sheet on one surface of a sheet substrate, said receiving layer comprising a synthetic resin and the weight of the solvent in said receiving layer being 0.75% or less of the weight of the solvent soluble components forming the receiving layer.

4,943,556

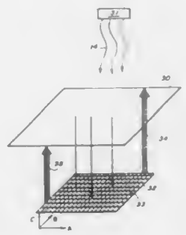
SUPERCONDUCTING NEURAL NETWORK COMPUTER AND SENSOR ARRAY

Harold H. Sza, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1988, Ser. No. 252,486

Int. Cl.[5] G06C *7/00*

U.S. Cl. 505—1 **7 Claims**



1. A parallel processing computer apparatus formed by an array of triodes comprising:

a first group of N parallel filaments of a opto-electric light sensitive material, where N is an integer from 1 to 10,000, wherein each filament carries a current flow;

a second group of M parallel filaments of a opto-electric light sensitive material, where M is an integer from 1 to 10,000, wherein each filament carries a current flow and is positioned perpendicular to and under a filament from the first group of filaments, in physical but not electric contact with the filaments from the said first group of filaments, collectively forming an array of M×N triodes at filament crossing nodes;

a light-supplying control means above the array for focusing particular intensities of light in a fixed pattern to points

perpendicular to the filaments of the first group of parallel filaments just beyond the individual nodes such that the light impinges only on filaments of the first group of parallel filaments and not on the second group of parallel filaments;

a means of receiving output signals from one group of filaments and feeding the signals into the light-supplying control means to adjust the pattern of the light, thereby providing iterative convergence toward a solution matrix based on the initialization and the input.

4,943,557

METHOD OF MAKING A HIGH DENSITY YBA CU_3O_x SUPERCONDUCTOR MATERIAL

Hung C. Ling, Belle Mead, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 15, 1988, Ser. No. 232,418

Int. Cl.[5] **C01B** *13/00;* **C01F** *17/00;* **C01G** *3/02;* **C04B** *35/00*

U.S. Cl. 505—1 **5 Claims**

1. A method of making a superconductor composition of $YBa_2Cu_3O_x$ comprising the steps of: mixing together a compound of yttrium, barium carbonate, and a compound of copper selected from the group consisting of cupric carbonate and cupric oxalate; calcining the mixture by heating it to a temperature of 850 to 950 degrees C.; milling the calcined material; pressing the milled and calcined material to a solid structure; sintering the solid structure in an oxygen-containing atmosphere at a temperature of 960 to 990 degrees C. for at least two hours; annealing the sintered structure at 400 to 600 degrees C. for a period of time from two hours to two days, thereby to obtain a structure of $YBa_2Cu_3O_x$ which has a density of a least 90 .

4,943,558

PREPARATION OF SUPERCONDUCTING OXIDE FILMS USING A PRE-OXYGEN NITROGEN ANNEAL

Richard E. Soltis, Redford; Eleftherios M. Logothetis, Birmingham, and Mohammad Aslam, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 15, 1988, Ser. No. 182,261

Int. Cl.[5] **B05D** *5/12*

U.S. Cl. 505—1 **11 Claims**

1. A method of making a superconducting metal oxide film on a substrate, said method comprising:

depositing a thin film of a superconducting metal oxide precursor consisting .essentially of R, Ba, Cu, and O onto said substrate in a thickness between about 0.1 and 3 μm to form a film/substrate composite, wherein R is selected from the group consisting of rare earth elements and yttrium, which precursor film can be annealed in an oxygen atmosphere to yield a superconducting metal oxide film;

then heating said film/substrate composite to a first temperature between about 400° and 950° C. in less than about 10 seconds;

then maintaining said composite at said first temperature in an oxygen free nitrogen atmosphere between about 5 and

then bringing said film/substrate composite to a second temperature between about 800° C. and 950° in an oxygen atmosphere in less than about 10 seconds;

then maintaining said film/substrate composite at said temperature in the oxygen atmosphere for between about 5 and 30 seconds to anneal said film; and

then cooling said film/substrate composite to less than 300° C. in less than about 3 minutes.

4,943,559

DEVICE COMPRISING A TEMPERATURE SENSOR

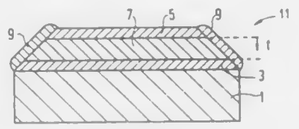
Jan W. Severin, and Gijsbertus De With, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1989, Ser. No. 316,394

Claims priority, application Netherlands, Mar. 7, 1988, 8800556

Int. Cl.[5] **G10K** *7/00;* **G01N** *25/20*

U.S. Cl. 505—1 **3 Claims**



1. A device comprising a sensor (11) for producing a temperature dependent electric signal wherein the sensor (11) comprises a thin layer of a material (7), the composition of which layer (7) varies gradually over the layer thickness, provided on a substrate (1), which layer is superconductive below a critical temperature the value of which depends on the composition of the material, and which layer is connected electrically by means of electrodes (9) to an electronic circuit for supplying current to the sensor and processing the signal produced by the sensor and wherein said electronic circuit comprises a current course (21) as well as a measuring circuit (23) for measuring the electric voltage between the sensor electrodes (9) and for supplying a control signal to a heating circuit which comprises a heating element (25) which is accommodated together with the sensor (11) in a cooled space (13) and which heats said cooled space (13) when supplied with said electric current, which control signal ensures that an electric current is supplied to the heating element when the measured voltage is equal to zero and that the heating element is switched off when the measured voltage exceed zero.

4,943,560

SOLVENT SYSTEM FOR CHRONIC VASCULAR INFUSION OF HYDROPHOBIC DRUGS

Bruce D. Wigness, and Thomas D. Rohde, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 6, 1988, Ser. No. 178,139

Int. Cl.[5] **A61K** *37/00, 31/045*

U.S. Cl. 514—11 **3 Claims**

1. A liquid infusate for the chronic vascular infusion of a hydrophobic biologically-active compound comprising a solution of therapeutically-effective amount of a cyclosporin in a solvent consisting essentially of about 10–80% glycerol and about 90–20% ethanol, by volume.

4,943,561

GASTRIN RELEASING PEPTIDE ANTAGONIST

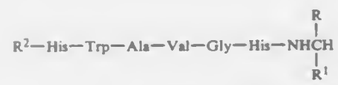
David C. Heimbrook, Ringoes, N.J.; Mark W. Riemen, Doylestown, Pa.; Allen Oliff, Gwynedd Valley, Pa., and Walfred S. Saari, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 28, 1988, Ser. No. 276,985

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/06*

U.S. Cl. 514—17 **8 Claims**

1. A compound having the formula



wherein R^2 is alkylacyl, alkylsulfonyl or alkoxy carbonyl, R and R^1 are the same or independently an alkyl or alkenyl group of from 1 to 8 carbon atoms, or an aryl alkyl group, wherein the alkyl, alkenyl and aromatic groups are optionally substituted with alkyl of from 1 to 3 carbon atoms, wherein the carbon containing R and R^1 is in either the R or S configuration and wherein any one optically active amino acid may be substituted by its D-isomer, or glycine may be substituted by Ala or D-Ala.

4,943,562

TETRA- AND PENTAPEPTIDES CONTAINING THE LYSYL-ARGINYL-ASPARTYL SEQUENCE AND THEIR APPLICATIONS AS MEDICINES, PARTICULARLY ANTI-THROMBOTIC MEDICINES

Pierre Jolles, Paris; Anne-Marie Fiat, Le Vesinet; Claudine Soria, Taverny; Levy-Toledano Sylviane, Paris, all of France; Sanghamitra Raha, Calcutta, India; Elisabeth Mazoyer, Paris, and Ludovic Drouet, Bourg-la-Reine, both of France, assignors to Institut des Vaisseaux et du Sang and Centre National de la Recherche Scientifique, both of Paris, France

Filed Oct. 28, 1988, Ser. No. 263,859

Claims priority, application France, Oct. 30, 1987, 87 15061

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/06*

U.S. Cl. 514—18 **14 Claims**

1. A peptide of the formula I:

Z-Lys-Arg-Asp-X-Y (I)

wherein:

X is the residue of an amino acid in the L-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp and Tyr,

Y is hydroxyl or the C-terminal residue of an amino acid in the L-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr and Val,

Z is acetyl, hydrogen or the N-terminal residue of an amino acid in the L-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr and Val, N-acetylated or not N-acetylated;

with the provisos that:

when Y is the C-terminal residue of an amino acid in the L-configuration, Z is acetyl or hydrogen, and

X can in all cases be different from Y and from Z.

4,943,563

2,3,4-TRIACYLHEXOSE INSECT REPELLANTS

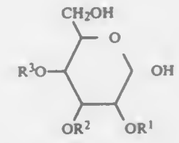
Martha A. Mutschler, and John C. Steffens, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 3, 1988, Ser. No. 252,769

Int. Cl.[5] **A01N** *43/00*

U.S. Cl. 514—23 **22 Claims**

1. A method of repelling insects from the surfaces of a plant which comprises applying thereto an insect repellent amount of a 2,3,4-tri-O-acylhexose of the formula:



wherein the hexose is a hexose selected from the group composed of glucose, mannose, galactose, allose, altrose, gulose, idose, and talose;

the anomeric (C-1) substituent is either alpha or beta; and R^1, R^2, and R^3 are each acyl groups derived from fatty acids containing from about 3 to about 30 carbon atoms;

in combination with an inert solid or liquid carrier.

4,943,564

INTRAARTERIAL INJECTION PHARMACEUTICALS OF 5-FLUORO-2'-DEOXYURIDINE ESTERS

Masahiro Nakano; Shoji Fukushima, both of Kumamoto; Takeo Kawaguchi, and Yoshiki Suzuki, both of Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP86/00071, § 371 Date Oct. 16, 1986, § 102(e) Date Oct. 16, 1986, PCT Pub. No. WO86/04816, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 17, 1986, Ser. No. 928,226

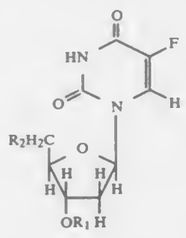
Claims priority, application Japan, Feb. 18, 1985, 60-28431

Int. Cl.[5] **A61K** *31/70*

U.S. Cl. 514—50 **3 Claims**

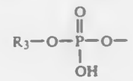
1. A pharmaceutical composition for intraarterial administration comprising:

(a) at least one 5-fluoro-2'-deoxyuridine ester represented by formula



(I)

wherein R_1 represents a C_8–C_{12} alkyl acyl group and R_2 represents a C_8–C_{12} alkyl acyloxy group or



in which R_3 represents a C_5–C_{26} alkyl group, or a pharmaceutically acceptable salt thereof, and

(b) at least one oleaginous base.

4,943,565

ANALGESIC TABLET OF ASPIRIN AND CAFFEINE CONTAINING LOW-SUBSTITUTED HYDROXYPROPYL CELLULOSE

Thomas M. Teacza, Wallington, and Chung-Bin Kim, Livingston, both of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 132,717, Dec. 11, 1987, abandoned, which is a continuation of Ser. No. 907,697, Sep. 15, 1986, abandoned. This application Dec. 2, 1988, Ser. No. 282,983

Int. Cl.[5] **A61K** *31/16, 31/52, 31/62*

U.S. Cl. 514—161 **10 Claims**

1. In a tablet containing by weight of the tablet about 22–75% aspirin, about 22–75% acetaminophen and about 4–19% caffeine, said tablet dissolving in a predetermined period of time, the improvement comprising incorporating into said tablet a dissolution enhancing amount of a hydroxypropyl cellulose ether nonionic polymer which has a hydroxypropyl content of from about 10% to about 16% by weight of the polymer, whereby said polymer-containing tablet dissolves in less than said predetermined period of time.

4,943,566

NOVEL 17-ARYL-STEROIDS

Lucien Nedelec, Le Raincy; Francois Nique, Pavillons-Sous-Bois; Daniel Philibert, La Varenne Saint-Hilaire; Martine Moguilewsky, and Marie-Madeleine Bouton, both of Paris, all of France, assignors to Roussel Uclafi

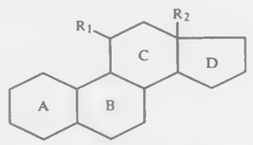
Filed Jul. 28, 1988, Ser. No. 225,305

Claims priority, application France, Jul. 30, 1987, 87 10794

Int. Cl.[5] **A61K** *31/56, 31/58;* **C07J** *1/00, 71/00*

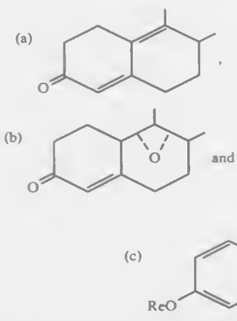
U.S. Cl. 514—179 **15 Claims**

1. A compound selected from the group consisting of compounds of the formula

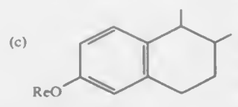


I

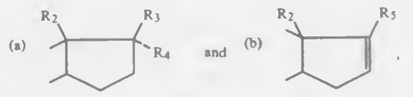
wherein R_1 is an organo of 1 to 18 carbon atoms optionally containing at least one heteroatom connected to the C ring by a carbon atom, R_2 is methyl or ethyl, the A and B rings are selected from the group consisting of



and

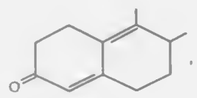


Re is selected from the group consisting of hydrogen, optionally substituted alkyl of 1 to 6 carbon atoms and acyl and the D ring is selected from the group consisting of

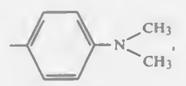


and

one of R_3 and R_4 is selected from the group consisting of hydroxy, protected hydroxy, acyl and alkoxy and the other is an optionally substituted aryl, R_5 is an optionally substituted aryl and their non-toxic, pharmaceutically acceptable salts with acids and bases with the proviso that when the A and B rings are



R_1 is



R_2 is methyl, R_3 is —OH and R_4 is phenyl.

4,943,567

CEPHALOSPORIN COMPOUND AND PHARMACEUTICAL COMPOSITION THEREOF

Susumu Nishizawa, Kyoto; Hiroyuki Muro, Higashiazai; Masayasu Kasai; Satoru Hatano, both of Kameoka; Syouzi Kamiya, Kyoto; Nobuharu Kakeya, Nagaokakyo, and Kazuhiko Kitao, Kyoto, all of Japan, assignors to Kyoto Pharmaceutical Industries, Ltd., Kyoto, Japan

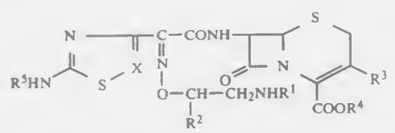
Filed May 27, 1988, Ser. No. 228,714

Claims priority, application Japan, May 30, 1987, 62-136647

Int. Cl.[5] **A61K** *31/545;* **C07D** *501/20*

U.S. Cl. 514—203 **15 Claims**

1. A Cephalosporin compound represented by formula (I):



(I)

wherein R^1 and R^5 independently represent a hydrogen atom or an amino-protective group; R^2 represents a lower alkyl group or a cycloalkyl group with from 3 to 6 ring members; R^3 represents a hydrogen atom, a lower alkenyl group, a lower alkanoyloxymethyl group, a carbamoyloxymethyl group, a heterocyclic thiomethyl group or a heterocyclic methyl group; R^4 represents a hydrogen atom or an ester residue; a X represents CH or a nitrogen atom; each heterocyclic group is a 5- or 6-membered heterocyclic group; each hetero ring member is a nitrogen atom, a sulfur atom or an oxygen atom, each heterocyclic group has from 1 to 4 ring nitrogen atoms and is optionally substituted, and any substituent of a heterocyclic group is a member selected from the group consisting of an oxo group, a lower alkyl group, $—(CH_2)_xR^a$ (wherein R^a is a hydroxyl group, methoxy group, a carbamoyl group, a carboxyl group, a dimethylamino group, a sulfonic acid group, or an unsubstituted heterocyclic group, as previously defined, an x is an integer from 0 to 2), $—(CH_2)_2—$ and $—(CH_2)_3—$; or a pharmacologically-acceptable addition salt thereof.

15. A method of treating a host afflicted with a bacterial infection caused by Gram-positive bacteria, Gram-negative bacteria or Pseudomonas bacteria, which comprises administering to the host an effective amount of compound of claim 1 or of a pharmacologically acceptable addition salt thereof.

4,943,568

CEPHALOSPORINS

Michael Boberg; Rolf Angerbauer; Karl G. Metzger, all of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

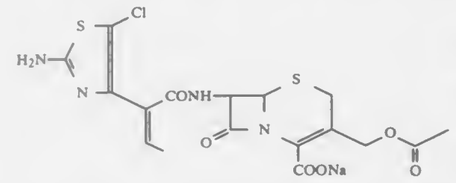
Filed Nov. 21, 1986, Ser. No. 933,729

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1985, 3541095

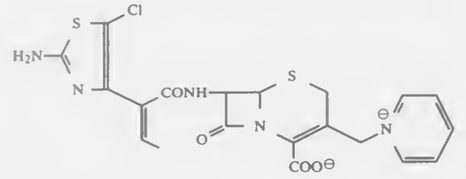
Int. Cl.[5] **C07D** *501/46;* **A61K** *31/545*

U.S. Cl. 514—206 **6 Claims**

1. A compound selected from the group consisting of sodium Z-7-[2-(2-amino-5-chlorothiazol-4-yl)but-2-enoyl]-amino-3-acetoxymethyl-3-cephem-4-carboxylate of the formula



and Z-7-[2-(2-amino-5-chlorothiazol-4-yl)but-2-enoyl]-amino-3-pyridinium-methyl-3-cephem-4-carboxylate of the formula



4,943,569

B-LACTAM COMPOUNDS

Makoto Sunagawa, Osaka, Japan, assignor to Sumitomo Pharmaceuticals Co., Ltd., Osaka, Japan

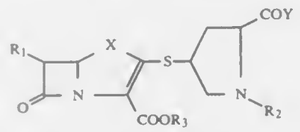
Continuation of Ser. No. 608,618, May 9, 1984, abandoned. This application Oct. 8, 1987, Ser. No. 106,036

Claims priority, application Japan, May 9, 1983, 58-081443; Jun. 15, 1983, 58-108472; Jul. 12, 1983, 58-127485; Sep. 9, 1983, 58-166938; Nov. 11, 1983, 58-212857; Feb. 10, 1984, 59-023497

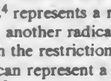
Int. Cl.[5] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **39 Claims**

1. A β-lactam compound represented by the formula:



wherein R_1 represents a 1-hydroxyethyl group or a 1-hydroxyethyl group in which the hydroxy group is protected with a protecting group for a hydroxy group; R_2 represents a hydrogen atom or a protecting group for an amino group; R_3 represents a hydrogen atom or a protecting group for a carboxyl group; X represents an unsubstituted methylene group and Y represents a group of the formula (2):



(2)

wherein R_5 and R_6, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 3 to 4 carbon atoms, an aralkyl group having 1 to 3 carbon atoms in the alkyl moiety thereof, a substituted alkyl group having 1 to 4 carbon atoms wherein said substituent is selected from the group consisting of hydroxyl, di-(C_1–C_3)-alkylamino or carbamoyl, or R_5 and R_6 are taken together to represent an alkylene chain or an alkylene chain via an oxygen atom, a sulfur atom or a (C_1–C_3)alkyl-substituted nitrogen atom to form, together with the adjacent nitrogen atom, a 4- to 7-membered cyclic amino group, and a pharmaceutically acceptable salt thereof.

4,943,570

BENZIMIDAZOLESULFONAMIDES AND IMIDAZOPYRIDINESULFONAMIDES, AND THEIR APPLICATION AS DRUGS

Jordi F. Constanso; Juan P. Coromines, and Augusto C. Pinol, all of Barcelone, Spain, assignors to Laboratorios Del Dr. Esteve, S.A., Spain

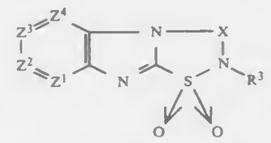
Division of Ser. No. 38,874, Apr. 15, 1987. This application Apr. 28, 1989, Ser. No. 344,966

Claims priority, application France, Apr. 21, 1986, 8605721

Int. Cl.[5] **A61K** *31/54, 31/55;* **C07D** *417/14, 513/04*

U.S. Cl. 514—222.8 **4 Claims**

1. A compound corresponding to the general formula Ib:



Ib

in which:

Z^1 represents a nitrogen atom or a carbon atom bonded to another radical R^4 (C—R^4);

z^2 represents a nitrogen atom or a carbon atom bonded to another radical R^5 (C—R^5);

Z^3 represents a nitrogen atom or a carbon atom bonded to another radical R^6 (C—R^6);

Z^4 represents a nitrogen atom or a carbon atom bonded to another radical R^7 (C—R^7);

with the restriction that only one of the groups Z^1, Z^2, Z^3, or Z^4 can represent a nitrogen atom;

R^3 represents a radical selected from the group consisting of a hydrogen atom, a linear or branched alkyl radical, an aryl radical, a heteroaryl radical, an alkylaryl radical, an alkylheteroaryl radical, a mono-, bi- or tri- cycloalkyl radical, an alkylamino radical, an N,N-dialkyl-alkylamino radical, an N-alkyl-alkylamino radical, an alkylcarboxyalkyl radical, an acyl radical, an alkylthioalkyl radical, an alkylsulfinylalkyl radical, an alkylsulfonylalkyl radical, an alkylthioaryl radical, an alkylsulfinylaryl radical, an alkylsulfonylaryl radical, an alkylthioheteroaryl radical, an alkylsulfinylheteroaryl radical, an alkylsulfonylheteroaryl radical, an alkylthioalkylaryl radical, an alkylsulfinylalkylaryl radical, an alkylsulfonylalkylaryl radical, an alkylthioalkylheteroaryl radical, an alkylsulfinylalkylheteroaryl radical, an alkylsulfonylalkylheteroaryl radical, a haloalkyl radical, a cyanoalkyl radical, an N-alkylarylalkylamino radical, an N-alkyl-N-alkylaryl-alkylamino radical, a hydroxyalkyl radical, an alkylpiperazinyl radi-

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cal, an alkylpiperidinyl radical, and an alkylmorpholinyl radical;

R^4 and R^7 independently represent a hydrogen atom, a halogen atom, a nitro radical, an amino radical or an acylamino radical;

R^5 and R^6 independently represent a radical selected from the group consisting of a hydrogen atom, a halogen atom, an amino radical, a nitro radical, a lower alkyl radical, a trifluoromethyl radical, an alkoxy radical, an aryloxy radical, a mercapto radical, an alkylthio radical, an alkylsulfonyl radical, an alkylsulfonyl radical, a sulfamoyl radical, an isothiocyanate radical, an alkylcarbonyl radical, an arylcarbonyl radical, an acylamino radical, a cyano radical, a carboxyl group, a carboxamido group, and a carboxyalkyl group wherein the alkyl group in said alkyl and alkyl-containing radical is a C_1–C_6 alkyl group, and said acyl radical is a C_1–C_6 group; wherein said aryl radical is a C_6–C_{12} carbocyclic aromatic radical; and said heteroaryl radical is a single five- to six-membered heterocyclic ring selected from the group consisting of pyridyl, isoxazolyl and morpholino radicals; with the provisos that:

(a) when R^1, R^2, R^4, R^5, R^6 and R^7 are hydrogen, R^3 is not a radical selected from the group consisting of hydrogen, phenyl, m-chlorophenyl, m-tolyl, methyl, ethyl, and n-propyl;

(b) when R^1, R^4, R^5, R^6 and R^7 are hydrogen, R^3 is not phenyl when R^2 is methyl or carboxyethyl, R^3 is not methyl when R^2 is methyl, and R^2 and R^3 do not form a morpholine ring; and

(c) when R^1, R^4, R^6 and R^7 are hydrogen and R^5 is methyl, R^3 is not phenyl when R^2 is hydrogen, and R^2 and R^3 do not form a morpholine ring;

X represents $-(CHR^8)_n-(CHR^9)_m-$ or $-CR^8=CR^9-$;

n represents 1, 2, 3 or 4;

m represents 0 or 1 with the proviso that if n = 1, m is not 0; and

R^8 and R^9 independently represent a hydrogen atom, a lower alkyl radical, an aryl radical or a heteroaryl radical wherein the alkyl group in said alkyl and alkyl-containing radical is a C_1–C_6 group.

4. A method of treating a patient having a gastrointestinal disease which comprises administering to said patient an effective amount of a compound of the formula of claim 3 or a physiologically acceptable salt thereof.

4,943,571

AMINOALKYLTHIODIBENZOXEPINS AND PHARMACEUTICAL USE

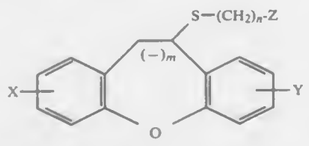
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 738,507, May 28, 1985, Pat. No. 4,837,227, which is a continuation of Ser. No. 330,257, Dec. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 226,045, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 29,462, Apr. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 860,083, Dec. 13, 1977, abandoned. This application Apr. 10, 1989, Ser. No. 335,354

Int. Cl.[5] H61K *31/35, 31/585;* **C07D** *311/80, 413/12*

U.S. Cl. 514—232.8 **39 Claims**

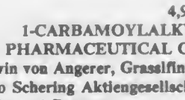
1. A compound of the formula



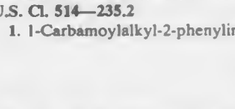
wherein X and Y are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkoxy, loweralkyl, loweralkylthio, loweralkylsulfonyl, loweralkylsulfinyl, amino, or nitro; Z is



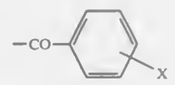
R^1 is hydrogen, straight or branched chain loweralkyl, cyano, cycloalkylloweralkyl wherein the cycloalkyl ring contains from 3 to 6 carbon atoms, phenoxycarbonyl of the formula



where X is defined as above, alkoxycarbonyl, loweralkenyl or loweralkynyl; R^2 is straight or branched chain loweralkyl or cycloalkylloweralkyl wherein the cycloalkyl ring contains from 3 to 6 carbon atoms, phenylethyl of the formula



wherein X is defined as above, loweralkenyl or loweralkynyl; and where R^1 and R^2 are taken together with the nitrogen atom to which they are attached, the group R^1—N—R^2 forms a heterocycle which is morpholino, piperidino, 4-substituted piperidino in which the 4-substituent is benzoyl of the formula



wherein X is defined as above, pyrrolidinyl, piperazinyl or N-substituted piperazinyl in which the N-substituent is loweralkyl; m is the integer 0; and n is an integer of from 2 to 4; and physiologically tolerable acid addition salts thereof.

32. A method of treating depression which comprises administering to a patient a pharmaceutically effective amount of a compound defined in claim 1.

33. A method of treating pain which comprises administering to a patient a pharmaceutically effective amount of a compound defined in claim 1.

34. A method of treating convulsions which comprises administering to a patient a pharmaceutically effective amount of a compound defined in claim 1.

4,943,572

1-CARBAMOYLALKYL-2-PHENYLINDOLES, PHARMACEUTICAL COMPOSITIONS AND USE

Erwin von Angerer, Grassiffing, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

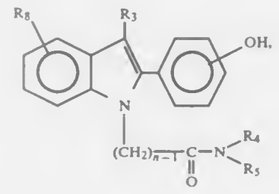
Filed Jun. 23, 1989, Ser. No. 370,509

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821148

Int. Cl.[5] A61K *31/405, 31/535;* **C07D** *209/12, 295/192*

U.S. Cl. 514—235.2 **6 Claims**

1. 1-Carbamoylalkyl-2-phenylindoles of formula IIIb



(III b)

4,943,574

(1H-AZOL-1-YLMETHYL) SUBSTITUTED BENZOTRIAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

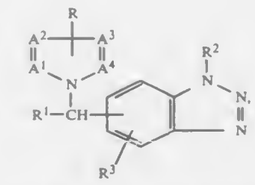
Alfons H. M. Raeymaekers, Beerse; Eddy J. E. Freyne, Rumst; Josephus L. H. Van Gelder, Kasterlee, all of Belgium, and Marc G. Venet, Paris, France, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 223,486, Jul. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 194,775, May 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 56,021, Jun. 1, 1987, abandoned. This application Sep. 28, 1989, Ser. No. 415,440

Int. Cl.[5] A61K *31/44, 31/41;* **C07D** *401/14, 401/02*

U.S. Cl. 514—338 **11 Claims**

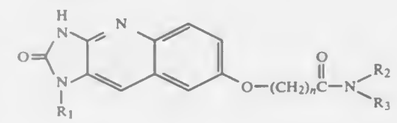
1. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof, wherein:

$-A^1=A^2-A^3=A^4-$ is a bivalent group of the formula:



—CH=N—CH=CH— (a-1),

—CH=N—CH=N— (a-2), or

—CH=N—N=CH— (a-3);

R is hydrogen or C_{1-6}alkyl;

R^1 is hydrogen, C_{1-6}alkyl optionally substituted with phenyl or substituted phenyl, phenyl, substituted phenyl, C_{3-7}cycloalkyl, pyridinyl, naphthalenyl, thienyl, furanyl, imidazolyl, triazolyl, C_{2-6}alkenyl, or C_{2-6}alkynyl;

R^2 is hydrogen; C_{1-6}alkyl optionally substituted with phenyl, substituted phenyl, C_{3-7}cycloalkyl, naphthalenyl, hydroxy, or C_{1-4}alkyloxy; phenyl: substituted phenyl; C_{2-6}alkenyl; C_{2-6}alkynyl; C_{3-7}cycloalkyl; bicyclo[2.2.1]heptan-2-yl; 2,3-dihydro-1H-indenyl, 1,2,3,4-tetrahydronaphthalenyl; hydroxy; C_{2-6}alkenyloxy optionally substituted with phenyl or substituted phenyl; C_{2-6}alkynyloxy; di(phenyl)methoxy; or C_{1-6}alkyloxy optionally substituted with halo, hydroxy, amino, mono- and di(C_{1-4}alkyl)amino, trifluoromethyl, carboxyl, C_{1-6}alkyloxycarbonyl, phenyl, substituted phenyl, phenoxy, phenylthio, C_{3-7}cycloalkyl, or (1,1'-biphenyl)-4-yl; and

R^3 is hydrogen or nitro,

wherein substituted phenyl is phenyl substituted with up to three substituents each independently selected from halo, hydroxy, hydroxymethyl, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkyloxycarbonyl, carboxyl, formyl, (hydroxyimino)-methyl, nitrile, amino, mono- and di(C_{1-6}alkyl)amino, and nitro.

wherein

n is 3 to 5;

R_1 is alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen:

R_3 is 1-piperidinylethyl, 1-benzylpiperidin-4-yl, 4-(1-piperidinyl)piperidine, (1-alkyl-2pyrrolidinyl)alkyl where alkyl is 1 to 4 carbon atoms, 3-quinuclidinyl:

R_2 and R_3 together with the nitrogen atom to which they are attached form 4-R_4-piperazin-1-yl wherein

R_4 is alkyl of 1 to 7 carbon atoms, alkoxyethyl of 3 to 7 carbon atoms, pyridinyl, pyrimidinyl, tetrahydropyranylmethyl, thienylmethyl, cycloalkyl$(CH_2)_m$ where m is zero or one and cycloalkyl is 5 to 7 carbon atoms except m is zero when cycloalkyl is 7 carbon atoms, benzyl, 4-fluorobenzyl, 3-trifluoromethylbenzyl, 4-alkoxybenzyl where alkoxy is 1 to 4 carbon atoms:

or a pharmaceutically acceptable salt thereof.

32. A method for inhibiting cyclic AMP phosphodiesterase in a mammal which comprises administering a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

33. A method for increasing heart inotropic activity which comprises administering to a warm blooded animal, in need of such treatment a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

35. A method for inhibiting blood platelet aggregation in a mammal which comprises administering a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

4,943,575

PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF GENETICALLY CAUSED DEGENERATIVE RETINA DISEASES AND A PROCESS FOR THE PREPARATION THEREOF

Gertrud Cremer, Münster, Fed. Rep. of Germany, assignor to Pharm-Allergan GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 12, 1988, Ser. No. 155,400

Claims priority, application European Pat. Off., Feb. 13, 1987, 87102094.7

Int. Cl.[5] **A61K** *31/50*

U.S. Cl. 514—249 **7 Claims**

1. A method for treatment of retinopathia pigmentosa comprising administering a therapeutically effective amount of a pteridine to a subject afflicted with retinopathia pigmentosa.

4,943,576

SUBSTITUTED QUINOXALYL-IMIDAZOLIDINE-2,4-DIONES, PROCESSES FOR THEIR PREPARATION, THEIR USE AS MEDICAMENTS AND PHARMACEUTICAL PREPARATIONS

Heiner Glombik, Hofheim am Taunus; Roland Utz, Messel; Hans-Jochen Lang, Hofheim am Taunus; Karl Geisen, Frankfurt am Main, and Friedrich E. Beyhl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

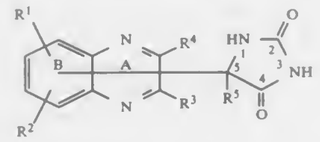
Filed Apr. 22, 1988, Ser. No. 184,965

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1987, 3713872

Int. Cl.[5] **A61K** *31/495*; **C07D** *401/02, 401/04, 401/14*

U.S. Cl. 514—249 **5 Claims**

1. A 5-quinoxalyl-imidazolidine-2,4-dione of the formula I



I

in which

the quinoxaline ring system is bonded to the imidazolidinedione via position 2',3',5',6',7' or 8',

R^1 R^2 are identical or different and are hydrogen, (C_1–C_6)-alkyl, (C_5–C_7)-cycloalkyl, phenyl-(C_1–C_4)-alkyl, naphthyl-(C_1–C_4)-alkyl, naphthyl, biphenyl, phenyl, pyridyl, furyl, thienyl, benzofuryl, (C_1–C_4)-alkoxy, halogen, halogeno-(C_1C_4)-alkyl, nitro, amino or hydroxyl;

R^3 and R^4 are identical or different and are hydrogen (C_1–C_6)-alkyl, (C_5–C_7)-cycloalkyl, phenyl-(C_1–C_4)-alkyl, naphthyl-(C_1–C_4)-alkyl, naphthyl, biphenyl, phenyl, pyridyl, furyl, thienyl, benzofuryl, (C_1–C_4)-alkoxy, halogen, halogeno-(C_1C_4)-alkyl, nitro, amino or hydroxyl;

R^5 is a hydrogen atom, (C_1–C_6)-alkyl, (C_5–C_7)-cycloalkyl, phenyl-(C_1–C_4)-alkyl, naphthyl-(C_1–C_4)-alkyl, naphthyl, biphenyl or phenyl,

with the exception of the compound wherein at the same time R^1, and R^2 and R^5 are each hydrogen, R^3 and R^4 are each methyl, and the quinoxaline ring system is bonded to the imidazolidinedione via position 6;

or a physiologically tolerated salt thereof.

4,943,577

PIPERAZINYLALKYLPIPERAZINEDIONE COMPOUNDS

Gilbert Lavielle, La Celle St-Cloud, and Jean C. Poignant, Bures S/Yvette, both of France, assignors to Adir Et Cie, Neuilly-sur-Seine, France

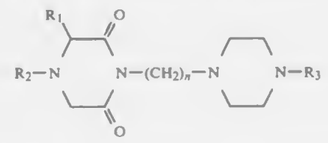
Division of Ser. No. 206,512, Jun. 14, 1988, Pat. No. 4,877,788. This application Jul. 19, 1989, Ser. No. 382,252

Claims priority, application France, Jun. 15, 1987, 87 08263

Int. Cl.[5] **C07D** *471/22;* **A61K** *31/495, 31/505*

U.S. Cl. 514—250 **5 Claims**

1. A compound selected from those of formula I:



(I)

in which

R_1 and R_2 form together and with the piperazine-2,6-dione radical to which they are attached a hexahydropyrazino-β-carbolinedione radical,

R_3 denotes pyrimidinyl radical or a phenyl radical optionally substituted by an alkyl radical of 1 to 4 carbon atoms or a trifluoromethyl radical,

n is an integer of 2 to 4, inclusive, and addition salts thereof with a pharmaceutically acceptable inorganic or organic acid.

4,943,578

PIPERAZINE COMPOUNDS

Alan Naylor; Duncan B. Judd, both of Ware, and Dearg S. Brown, Middlesex, all of England, assignors to Glaxo Group Limited, London, United Kingdom

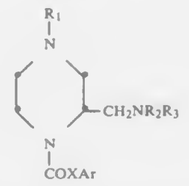
Filed May 23, 1989, Ser. No. 355,335

Claims priority, application United Kingdom, May 23, 1988, 8812179; Sep. 5, 1988, 8820845

Int. Cl.[5] **A61K** *31/495;* **C07D** *401/06, 403/06*

U.S. Cl. 514—252 **10 Claims**

1. A compound of formula (I)



(I)

wherein

R_1 represents —COR_4, —CO_2R_4 or —$COCO_2R_4$ (where R_4 represents a hydrogen atom or a C_{1-6} alkyl or c_{2-6} alkenyl group;

R_2 and R_3 are the same or different and are C_{1-6} alkyl or C_{3-6} alkenyl; or —NR_2R_3 forms a 5-membered (optionally containing an oxygen atom adjacent to the nitrogen) or 6-membered ring, which ring optionally contains one unit of unsaturation and which is unsubstituted or substituted by methylidene optionally substituted by a group selected from nitrile, phenyl, carboxyl, amido, C_{1-6} alkyl, phen(C_{1-6})alkyl, C_{1-6} hydroxyalkyl, C_{1-6} carboxyalkyl and C_{1-6} amidoalkyl, —COR_5 (where R_5 represents C_{1-6} alkyl, —OR_6 or —NHR_6 and R_6 represents hydrogen, C_{1-6} alkyl, phenyl, or phen(C_{1-6})alkyl or =NOR_7 (where R_7 represents C_{1-6} alkyl);

X represents a direct bond, —CH_2— or —CH_2O—;

Ar represents a phenyl moity substituted by one or more groups or atoms selected from halogen atoms, C_{1-6} alkyl, —CF_3 and NO_2 groups, or by two substituents which form a second ring; or a physiologically acceptable salt thereof.

7. A compound selected from

4-Acetyl-1-[(3,4-dichlorophenyl)acetyl]-2-(1-pyrrolidinylmethyl)piperazine;

1-[(3,4-Dichlorophenyl)acetyl]-4-(1-oxo-2-propenyl)-2-(1-pyrrolidinylmethyl)piperazine;

1-[(3,4-Dichlorophenyl)acetyl]-4-(1-oxopropyl)-2-(1-pyrrolidinylmethyl)piperazine;

4-Acetyl-1-[(3,4-dichlorophenyl)acetyl]-2-(1,2,3,6-tetrahydro-1-pyridinylmethyl)piperazine;

Ethyl 4-[(3,4-dichlorophenyl)acetyl]-3-(1-pyrrolidinylmethyl)-1-piperazinecarboxylate;

Methyl 4-[(3,4-dichlorophenyl)acetyl]-3-(1,2,3,6-tetrahydro-1-pyridinylmethyl)-1-piperazinecarboxylate;

or a physiologically acceptable salt thereof.

8. Methyl 4-[(3,4-dichlorophenyl)acetyl]-3-(1-pyrrolidinylmethyl)-1-piperazinecarboxylate or a physiologically acceptable salt thereof.

4,943,579

WATER SOLUBLE PRODRUGS OF CAMPTOTHECIN

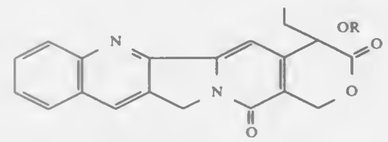
B. Rao Vishnuvajjala, Rockville, Md., and Aaron Garzon-Aburbeh, St. Louis Park, Minn., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Oct. 6, 1987, Ser. No. 104,894

Int. Cl.[5] **A61K** *31/47;* **C07D** *491/22*

U.S. Cl. 514—283 **3 Claims**

1. A compound of the formula:



(3)

wherein R is selected from the group consisting of:

R = CO Ch_2 NH_2.HCl

R = CO CH_2NHCH_3.HCl

R = CO $CH_2NHC_2H_5$.HCl

R = CO CH_2 $N(C_2H_5)_2$.HCl

R = CO $CH(NH_2)$ $CH_2CH_2CH_2CH_2CH_2NH_2$.2HCl

R = CO $CH(NH_2)$ CH_2CH_2COOH. HCl

R = CO $CH_2CH2.COO^-$ Na^+.

3. A method of treating cancers which can be treated by administering camptothecin comprising administering to a patient with cancer an aqueous solution of a compound of claim 1 in sufficient quantity to provide from about 5 to about 10.0 mg/kg of body weight of camptothecin.

4,943,580

ANTI-HISTAMINIC BENZIMIDAZOLE, IMIDAZOPYRIDINE AND PURINE DERIVATIVES

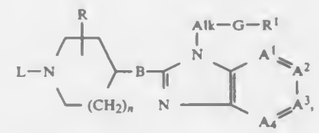
Frans E. Janssens, Bonheiden; Gaston S. M. Diels, Ravels; Joseph L. G. Torremans, Beerse, and Francois M. Sommen, Wortel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 155,465, Feb. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 23,739, Mar. 9, 1987, abandoned. This application Feb. 6, 1989, Ser. No. 307,712

Int. Cl.[5] **A61K** *31/44;* **C07D** *471/04*

U.S. Cl. 514—303 **14 Claims**

1. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof.

wherein:

—A^1=A^2—A^3=A^4— represents a bivalent radical of the formula:

—CH=CH—CH=CH— (a-1),

—N=CH—CH=CH— (a-2),

—CH=N—CH=CH— (a-3),

—CH=CH—N=CH— (a-4),

—CH=CH—CH=N— (a-5),

—N=CH—N=CH— (a-6), or

—CH=N—CH=N— (a-7);

wherein one or two hydrogen atoms in said radicals (a-1)–(a-7) may, each independently from each other, be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, trifluoromethyl, or hydroxy;

R^1 represents hydrogen; C_{2-6}alkenyl optionally substituted with Ar^2, C_{3-6}alkynyl, Ar^1, or C_{1-6}alkyl optionally substituted with Ar^1, hydroxy; C_{1-6}alkyloxy; carboxyl; C_{1-6}alkyloxycarbonyl; Ar^2-oxycarbonyl; or Ar^2-C_{1-6}alkyloxycarbonyl;

wherein Ar^1 represents a member selected from the group consisting of phenyl being optionally substituted with up to three substituents each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-4}alkylthio, mercapto, amino, mono- and di-(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl, and C_{1-6}alkylcarbonyl; thienyl; halothienyl; furanyl; C_{1-6}alkyl-substituted furanyl; pyridinyl; pyrimidinyl; pyrazinyl; thiazolyl; and imidazolyl optionally substituted with C_{1-6}alkyl, and

wherein Ar^2 represents a member selected from the group consisting of phenyl being optionally substituted with up to three substituents each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl, and C_{1-6}alkylcarbonyl;

G represents O, S, or NR^2, wherein R^2 represents hydrogen, C_{1-6}alkyl, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl, or Ar^2-C_{1-6}alkyl wherein Ar^2 is as defined above;

B represents NR^3, CH_2, O, S, SO, or SO_2, wherein R^3 represents hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl, or Ar^2-C_{1-6}alkyl wherein Ar^2 is as defined above;

R represents hydrogen or C_{1-6}alkyl;

n represents a number having a value of 0, 1, or 2;

Alk represents C_{1-6}alkanediyl; and

L represents hydrogen, C_{1-6}alkylcarbonyl, C_{1-6}alkylsulfonyl, C_{1-6}alkyloxycarbonyl, Ar^2-C_{1-6}alkyloxycarbonyl, Ar^2-carbonyl, Ar^2-sulfonyl, C_{3-6}cycloalkyl, C_{2-6}alkenyl optionally substituted with Ar^2 wherein each said Ar^2 is as defined above, C_{1-12}alkyl, or a radical of the formula:

—Alk—R^4 (b-1);

—Alk—Y—R^5 (b-2);

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—Alk—Z^1—(C=X)—Z^2—R^6 (b-3); or

—CH_2—CHOH—CH_2—O—R^7 (b-4).

wherein:

each Alk independently is as defined above;

R^4 represents Ar^2, Het, cyano, isocyanato, isothiocyanato, Ar^2-sulfonyl, or halo, wherein Ar^2 is as defined above;

R^5 represents hydrogen, Ar^2, Het, or C_{1-6}alkyl optionally substituted with halo, Ar^2, or Het, wherein Ar^2 is as defined above;

R^6 represents hydrogen, Ar^2, Het, or C_{1-6}alkyl optionally substituted with halo, Ar^2, or Het, wherein Ar^2 is as defined above;

R^7 represents Ar^2 or naphthalenyl wherein Ar^2 is as defined above;

Y represents O, S, or NR^8, wherein R^8 represents hydrogen, C_{1-6}alkyl, C_{1-6}alkylcarbonyl, or Ar^1-carbonyl wherein Ar^1 is as defined above;

Z^1 and Z^2 each independently represent O, S, NR^9, or a direct bond, wherein R^9 represents hydrogen or C_{1-6}alkyl; and

X represents O, S, or NR^{10}, wherein R^{10} represents hydrogen, C_{1-6}alkyl, or cyano,

wherein Het represents:

(i) an optionally substituted five- or six-membered heterocyclic ring containing 1, 2, 3, or 4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, provided that no more than two oxygens or sulfurs are present; or

(ii) an optionally substituted five- or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, being ortho-condensed with an optionally substituted five- or six-membered ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing in the remainder of the condensed ring only carbon atoms; or

(iii) an optionally substituted five- or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, being ortho-condensed with an optionally substituted five- or six-membered heterocyclic ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing in the remainder of the condensed ring 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen,

when said Het represents a monocyclic ring system it may optionally be substituted with up to 3 substituents, and when said Het represents a bicyclic ring system it may be substituted with up to 6 substituents, wherein said substituents of Het are selected from the group consisting of a bivalent radical of the formula =X wherein X is as defined above, or a monovalent radical selected from the group consisting of halo, isocyanato, isothiocyanato, nitro, cyano, trifluoromethyl, a radical of the formula —A, a radical of the formula —Y—A, and a radical of the formula —Z^1—C(=X)—Z^2—A, wherein each A independently represents hydrogen, Ar^2, or C_{1-6}alkyl being optionally substituted with Ar^2, C_{1-6}alkoxy, Ar^2—O, hydroxy, or C_{1-6}alkyloxycarbonyl wherein Ar^2 is as defined above, and Y, Z^1, and Z^2 each independently are as defined above, provided that when in the radical —Z^1—C(=X)—Z^2—A, A represents hydrogen and Z^1 represents NR^9, O, or S, then Z^2 is other than O or S,

provided that when (i) L is hydrogen, C_{1-6}alkyl, or benzyl, and (ii) R^1—G—Alk is C_{1-6}alkyloxyethyl, C_{2-6}alkenyloxyethyl, C_{3-6}alkynyloxyethyl, or phenoxyethyl, then —A^1=A^2—A^3=A^4— is other than a bivalent radical of formula (a-1).

4,943,581

ISOQUINOLINESULFONAMIDES

Hiroyoshi Hidaka, 799-75 Kannonjicho; Toshio Tanaka, both of Tsushi; Yasuo Itoh, Katsuyamashi; Hideo Kato, Fukuishi; Eiichi Koshinaka, Katsuyamashi; Kazuya Mitani, Fukuishi, and Shunichiro Sakurai, Katsuyamashi, all of Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyamashi and Hiroyoshi Hidaka, Tsushi Mie, both of, Japan

Filed Jun. 26, 1989, Ser. No. 371,392

Claims priority, application Japan, Jul. 4, 1988, 63-165050

Int. Cl.[5] **A61K** *31/47;* **C07D** *217/22*

U.S. Cl. 514—307 **4 Claims**

1. An isoquinolinesulfonamide selected from: the compound N-(2-aminoethyl)-5-chloroisoquinoline-8-sulfonamide and pharmacologically-acceptable acid addition salts thereof.

4. A method for the treatment of a subject afflicted with a circulatory ailment, comprising the step of administering to the said subject an amount of a compound of claim 1 which is effective for alleviation of said ailment.

4,943,582

ACTIVE COMPOUNDS

John M. Evans; Geoffrey Stemp; Gordon Burrell, and Frederick Cassidy, all of Harlow, England, assignors to Beecham Group p.l.c., England

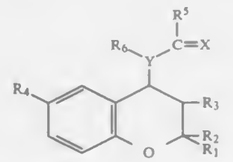
Filed May 1, 1987, Ser. No. 45,626

Claims priority, application United Kingdom, May 3, 1986, 8610911; Oct. 3, 1986, 8623768

Int. Cl.[5] **A61K** *31/40, 31/35;* **C07D** *405/04*

U.S. Cl. 514—320 **9 Claims**

1. A compound of formula (I) or, when the compound of formula (I) contains a salifiable group, a pharmaceutically acceptable salt thereof:



(I)

wherein:

Y is N;

one of R_1 and R_2 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_1 and R_2 together are C_{2-5}-polymethylene;

R_3 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} unsubstituted carboxylic acyloxy;

R_4 is a C_{3-8} cycloalkyl group, a C_{1-6} alkyl group or a C_{1-6} alkyl group substituted by amino;

R_5 and R_6 together are —CH_2—$(CH_2)_n$—Z—$(CH_2)_m$— wherein m and n are 0 to 2 such that m+n is 1 or 2 and Z is CH_2;

X is oxygen or sulphur; and

the nitrogen-containing group in the 4-position being trans to the R_3 group when R_3 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy.

9. A method of treatment of hypertension in mammals which comprises the administration to the mammal in need of such treatment, an antihypertensive effective amount of a compound according to claim 1.

4,943,583

HETEROCYCLIC COMPOUNDS

Christoph Lüthy, Schwerzenbach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

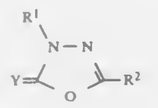
Filed Dec. 1, 1987, Ser. No. 126,804

Claims priority, application Switzerland, Dec. 1, 1986, 4785/86; Sep. 16, 1987, 3571/87

Int. Cl.[5] **C07D** *271/113;* **A01N** *43/82*

U.S. Cl. 514—364 **9 Claims**

1. Compounds of the formula



I

wherein

R^1 is phenyl, pyridyl, phenyl substituted with up to 5 substituents selected from the group consisting of halo, C_{1-4} alkyl, halomethyl, C_{1-3}-alkoxy, C_{1-2}-alkylthio, C_{1-3}-haloalkoxy, C_{1-2}-haloalkylthio and cyano, of which no more than 4 are halo, 3 are alkyl, 2 are halomethyl or 1 is alkoxy, alkylthio, haloalkoxy, haloalkylthio or cyano, or pyridyl substituted with 1 or 2 halogen atoms, 1 or 2 methyl groups or a halomethyl group;

R^2 is phenyl substituted with up to 3 substituents selected from the group consisting of halo, methyl, halomethyl and methoxy, of which no more than 2 are methoxy or 1 is methyl or halomethyl, with at least one of the two o-positions being occupied;

Y is oxygen or sulfur; and

R^3 is methyl, halomethyl or 2-propynyl.

4,943,584

(P-PHENOXYPHENOXY)-METHYL-FIVE-MEMBERED HETARYLS

Hans Theobald, Limburgerhof; Christoph Kuenast, Otterstadt; Peter Hofmeister, Neustadt; Hans-Juergen Neubauer, Mannheim; Thomas Kuekenhoehner, Frankenthal; Wolfgang Krieg, Weingarten; Joachim Leyendecker, Mannheim, and Uwe Kardorff, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

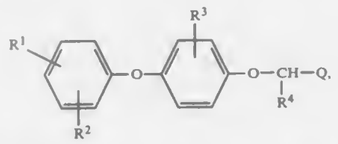
Filed Apr. 20, 1988, Ser. No. 184,122

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1987, 3713337; Feb. 8, 1988, 3803703

Int. Cl.[5] **A01N** *43/80, 43/76;* **C07D** *261/08, 261/12*

U.S. Cl. 514—380 **6 Claims**

1. (p-Phenoxyphenoxy)-methyl-five-membered hetaryls of the formula I



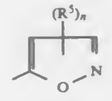
(I)

where the substituents have the following meanings:

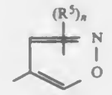
R^1, R^2, R^3 hydrogen, halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_3–C_{10}-cycloalkyl, nitro or cyano,

R^4 hydrogen or C_1–C_4-alkyl,

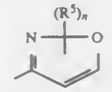
Q a five-membered hetaryl radical of the formulae II.31 to II.33



(II.31)



(II.32)



(II.33)

where

R^5 is halogen, C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_1–C_8-alkoxy, C_2–C_8-alkoxyalkyl, C_3–C_{10}-cycloalkyl, phenyl or C_7–C_{20}-phenylalkyl, the phenyl and C_7–C_{20}-phenylalkyl being unsubstituted or monosubstituted, disubstituted or trisubstituted in the aryl moiety by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy or cyano or monosubstituted or disubstituted by nitro, and

n is 0, 1, 2 or 3.

4,943,585

N-SUBSTITUTED AZOLES AND INSECTICIDE, ARACHNICIDE, AND NEMATOCIDE COMPOSITIONS THEREOF

Rainer Buerstinghaus, Telgte; Hans-Juergen Neubauer, Mannheim; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Joachim Leyendecker, Mannheim, and Uwe Kardorff, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

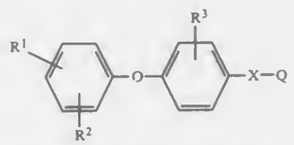
Filed Apr. 22, 1988, Ser. No. 184,804

Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714709; Jan. 23, 1988, 3801919

Int. Cl.[5] **C07D** *233/74, 233/54, 233/56;* **A01N** *43/50*

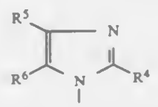
U.S. Cl. 514—398 **3 Claims**

1. An N-substituted azole of the formula I:



(I)

where R^1, R^2 and R^3 are each hydrogen, halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_3–C_{10}-cycloalkyl, nitro or cyano, Q is an unsubstituted or substituted azole group of the formula:



(IIa)

wherein R^4, R^5 and R^6 are hydrogen, halogen, C_1–C_8-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_3–C_{10}-cycloalkyl or hydrocarbyl aryl which is unsubstituted or mono-, di- or trisubstituted by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl

or C_1–C_4-haloalkoxy, and X is —$O(CH_2)_n$—, and n is an integer from 1–3.

2. An insecticide, arachnicide or nematocide composition, comprising an insectidically, arachnicidally or nematocidally effective amount of the N-substituted azole of claim 1 and an insectidically, arachnicidally or nematocidally acceptable carrier.

4,943,586

PYRAZOLE-CONTAINING JUVENILE HORMONE MIMICS FOR PEST CONTROL, COMPOSITIONS AND USE

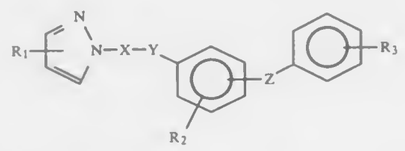
William S. Bowers, Tucson, Ariz., and Takeyoshi Sugiyama, Sendai, Japan, assignors to Arizona Board of Regents for the University of Arizona, Tucson, Ariz.

Filed Dec. 14, 1988, Ser. No. 284,394

Int. Cl.[5] **A01N** *43/56;* **C07D** *231/12, 405/06*

U.S. Cl. 514—406 **17 Claims**

1. A compound having pesticidal activity and which has the following general formula:



wherein:

R_1 is selected from hydrogen, $C_{1\text{-}6}$ alkyl, halogen, $C_{1\text{-}6}$ alkoxy, $C_{2\text{-}6}$ alkoxycarbonyl, amino, nitro, CF_3, and $C_{1\text{-}5}$-(alkyl and dialkyl)-amino;

X is a divalent hydrocarbon radical having 1 to 8 carbon atoms in its backbone, which may be interrupted by 1 or 2 of O or S, and which may be substituted by 1 or OH groups, CF_3 groups halogens, $C_{1\text{-}4}$ alkyl groups or $C_{1\text{-}4}$ alkoxy groups;

Y is O, S, SO, or SO_2;

Z is O, S, SO, or SO_2;

R_2 is selected from hydrogen, halogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy and $C_{2\text{-}6}$ alkoxycarbonyl; and

R_3 is selected from hydrogen, halogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy and $C_{2\text{-}6}$ alkoxycarbonyl.

10. A composition having pesticidal activity containing the compound of claim 1

in combination with a carrier material.

4,943,587

HYDROXAMATE DERIVATIVES OF SELECTED NONSTEROIDAL ANTIINFLAMMATORY ACYL RESIDUES AND THEIR USE FOR CYCLOOXYGENASE AND 5-LIPOXYGENASE INHIBITION

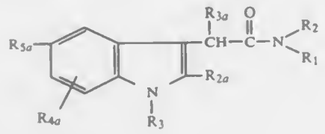
Wiaczeslaw A. Cetenko; David T. Connor; Daniel L. Flynn, and Jagadish C. Sircar, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 19, 1988, Ser. No. 196,584

Int. Cl.[5] **C07D** *209/28, 413/02, 403/02;* **A61K** *31/405*

U.S. Cl. 514—415 **11 Claims**

1. A compound of the formula (Ia)



Ia

and pharmaceutically acceptable cid addition or base salt thereof in which

(i) R_1 is hydrogen, lower alkyl or acyl;

(ii) R_2 is H, lower alkyl, cycloalkyl of from three to twelve carbon atoms of which from three to seven carbons are ring carbons, aryl arylalkyl or heteroaryl with the overall proviso that R_1 and R_2 cannot both be hydrogen; and

(iii) R_3 is hydrogen, phenylmethyl, allyl, vinyl, isopropenyl or



in which

R_{1a} is selected from the group consisting of benzene, naphthalene, biphenyl and substituted benzene, naphthalene and biphenyl radicals in which said substituent is selected from the group consisting of halogen, lower alkyl, lower alkylthio, lower alkoxy, trifluoromethyl, phenoxy, lower alkyl phenoxy, lower alkoxy phenoxy, halogenophenoxy, trifluoroacetyl, difluoroacetyl, monofluoroacetyl, di-lower alkyl sulfamyl, lower alkanyl, di-lower alkyl carboxamido, cyano, carb-lower alkoxy, trifluoromethylthio, lower alkyl sulfinyl, lower alkylsulfonyl, benzylthio, lower alkylbenzylthio, lower alkoxybenzylthio, halogenobenzylthio, mercapto, nitro, amino, di-(lower alkyl)amino, lower alkylamino, lower alkanoylamino, hydroxy, lower alkanoyloxy, trifluoroacetoxy, difluoroacetoxy, monofluoroacetoxy, benzyloxy, lower alkylbenzyloxy, lower alkoxybenzyloxy, and halogenobenzyloxy;

R_{2a} is selected from the group consisting of hydrogen, lower alkenyl and lower alkyl;

R_{3a} is selected from the group consisting of hydrogen and lower alkyl;

R_{4a} is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, fluorine and trifluoromethyl;

R_{5a} is selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkoxy, nitro, amino, lower alkylamino, di(lower alkyl) amino, lower alkanoylamino, lower alkanoyl, lower alkylamino, bis(hydroxy lower alkyl)amino, 1-pyrrolidino, 4-methyl-1-piperazinyl, 4-morpholinyl, cyano, amino lower alkyl, mono-lower alkylamino lower alkyl, di-lower alkyl amino lower alkyl, trifluoromethyl, halogen, di(lower alkyl)sulfamyl, benzylthio, lower alkylbenzylthio, lower alkoxybenzylthio, halogenobenzylthio, benzyloxy, lower alkylbenzyloxy, lower alkoxybenzyloxy, halogenobenzyloxy, lower alkenyl, lower alkenyloxy, 1-azacyclopropyl, cyclopropyl (lower alkoxy) methoxy, and cyclobutyl(lower alkoxy) methoxy.

11. A method of treating a condition advantageously affected by inhibtion of 5-lipoxygenase and cyclooxygenase in a human suffering therefrom comprising administering a compound of the formula Ia of claim 1 in unit dosage form.

4,943,588

PRODRUGS OF ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

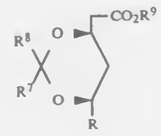
Wasyl Halczenko, Hatfield; Steven M. Pitzenberger, and George Hartman, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 902,894, Sep. 2, 1986, Pat. No. 4,837,205. This application Feb. 1, 1989, Ser. No. 305,060

Int. Cl.[5] **A61K** *31/335, 31/70;* **C07D** *319/06;* **C07H** *15/26*

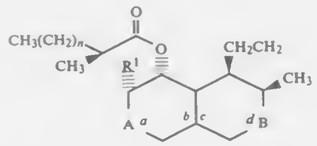
U.S. Cl. 514—452 **6 Claims**

1. A compound represented by the general structural formula (I):



wherein:

R is (a)

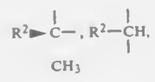


wherein:

n is 1 to 5;

R^1 is hydrogen or methyl;

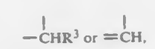
A is



in which

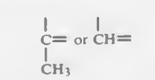
R^2 is hydrogen or hydroxyl;

B is

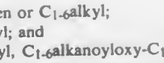


in which R_3 is hydrogen or hydroxyl;

a, b, c and d represent single bonds, one and only one of a, b, c and d represents a double bond or both a and c only or both b and d only represent double bonds, provided that when a is a double bond, A is



and when d is a double bond, B is



R^7 is hydrogen or $C_{1\text{-}6}$alkyl;

R^8 is $C_{1\text{-}6}$alkyl; and

R^9 is $C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$alkanoyloxy-$C_{1\text{-}6}$alkyl or $C_{1\text{-}6}$alkoxy carbonyloxy-$C_{1\text{-}6}$alkyl or a group selected from

(1) (5-(1,1-dimethylethyl)-2-oxo-1,3-dioxol-4-yl)methyl; or

(2) 2(β-D-galactosidyl)ethyl.

4,943,589

ANTHELMINTIC DYSININS OF MARINE ORIGIN

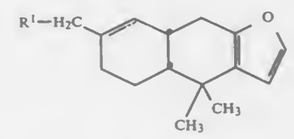
Phillip Crews, Santa Cruz; Thomas R. Matthews, Los Gatos, and Paul Horton, Santa Cruz, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto and The Regents of the Univ. of California, Berkeley, both of, Calif.

Filed Oct. 27, 1988, Ser. No. 263,261

Int. Cl.[5] **A61K** *31/34;* **C07D** *407/12*

U.S. Cl. 514—468 **13 Claims**

1. A method for treating helminthiasis which method comprises administering to an animal in need thereof an anthelmintically effective amount of a single enantiomer or a mixture of enantiomers of a compound of the Formula (I):



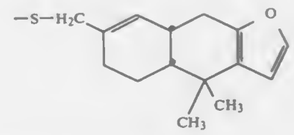
(I)

wherein

R^1 is hydrogen or —SR^2,

where

R^2 is hydrogen, —C(O)—CH_3, or



or a pharmaceutically acceptable salt thereof.

4,943,590

PHARMACEUTICALLY USEFUL (+)-1-(3-DIMETHYLAMINOPROPYL)-1-(4'-FLUOROPHENYL)-1,3-DIHYDROSOBENZOFURAN-5-CARBONITRILE AND NON-TOXIC ACID ADDITION SALTS THEREOF

Klaus P. Boegesoe, Lyngby, and Jens Perregaard, Jaegerspris, both of Denmark, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

Filed Jun. 8, 1989, Ser. No. 363,589

Claims priority, application United Kingdom, Jun. 14, 1988, 8814057

Int. Cl.[5] **A61K** *31/34;* **C07D** *307/87*

U.S. Cl. 514—469 **12 Claims**

1. A compound selected from substantially pure (+)-1-(3-Dimethylaminopropyl)-1-(4'-fluorophenyl)-1,3-dihydroisobenzofuran-5-carbonitrile and non-toxic acid addition salts thereof.

4,943,591

DICHLOROANILINE DERIVATIVES

Ian F. Skidmore, Welwyn; Lawrence H. C. Lants, Broxbourne; Harry Finch, Hitchin; Alan Naylor, Royston, and Ian B. Campbell, The Blanes, all of England, assignors to Glaxo Group Limited, London, England

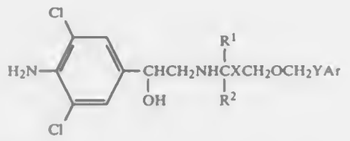
Continuation-in-part of Ser. No. 788,122, Oct. 16, 1985, abandoned. This application Oct. 14, 1986, Ser. No. 918,317

Claims priority, application United Kingdom, Oct. 17, 1984, 8426191; Oct. 15, 1985, 8525321

Int. Cl.[5] **A61K** *31/13*

U.S. Cl. 514—539 **8 Claims**

1. A compound of formula (I)



(I)

wherein

R^1 and R^2 each represent a hydrogen atom or a C_{1-3} alkyl group with the proviso that the sum total of carbon atoms in R^1 and R^2 is not more than 4;

X represents a C_{1-6} alkylene, C_{2-6} alkenylene or C_{2-6} alkynylene chain;

Y represents a bond, or a C_{1-4} alkylene, C_{2-4} alkenylene or C_{2-4} alknylene chain with the proviso that the sum total of carbon atoms in X and Y is not more than 8;

Ar represents a phenyl gronp substituted by a group $—NR^5COR^6$, where R^5 represents a hydrogen atom or a C_{1-4}alkyl group and R^6 represents a hydrogen atom or a C_{1-4}alkyl, C_{1-4}alkoxy or $—NR^3R^4$ group where R^3 and R^4 each represent a hydrogen atom, or a C_{1-4}alkyl group or Ar is a phenyl group substituted by a group $—(CH_2)_rR^7$ where r is 0 cr 1 and R^7 is $—COR^9$ where R^9 represents hydroxy, C_{1-4}alkoxy or a group $—NR^3R^4$;

and their physiologically acceptable salts and solvates thereof.

4,943,593

INHIBITORS OF LYSYL OXIDASE

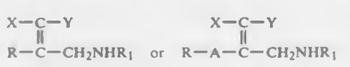
Michael G. Palfreyman, Cincinnati; Ian A. McDonald, Loveland, and Philippe Bey, Cincinnati, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 160,364, Feb. 25, 1988, abandoned. This application Sep. 19, 1989, Ser. No. 409,195

Int. Cl.[5] A61K *31/135, 31/15*

U.S. Cl. 514—649 **7 Claims**

1. A method of treating diseases and conditions associated with the abnormal deposition of collagen in a patient in need thereof which comprises administering to the patient a therapeutically effective amount of a compound of the formula

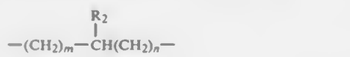


wherein

X and Y are identical and are each either a fluoro, chloro, or bromo group or one of X and Y is a hydrogen and the other is a fluoro, chloro, or bromo group;

R_1 is a hydrogen or a $(C_1–C_4)$alkyl group;

A is a divalent radical group selected from



wherein

R_2 is hydrogen, methyl, or ethyl, and m and n, independently, are an integer from 0 to 16, provided that m+n cannot be greater than 17;

$—(CH_2)_p—D—(CH_2)_q—$

wherein

D is oxygen or sulfur, p is an integer of from 0 to 16, and q is an integer of from 1 to 16, provided that m+n cannot be greater than 17; and

$—(CH_2)_r—CH=CH—(CH_2)_s—$

wherein

s is an integer of from 1 to 16 and r is an integer of from 0 to 16, provided that r+s cannot be greater than 16; and

R is a methyl group, a phenyl, or a phenyl substituted with one or two members of the group $(C_1–C_5)$alkyl, $(C_1–C_5$-)alkoxy, hydroxy, chloro, bromo, fluoro, iodo, trifluoromethyl, nitro, $(C_1–C_5)$alkylcarbonyl, benzoyl, or phenyl;

or a pharmaceutically acceptable salt thereof.

4,943,594

POLYIMIDE FOAM

Hiroshi Ezawa; Toshiyuki Nakakura; Takayuki Watanabe, and Hiroaki Tsushima, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

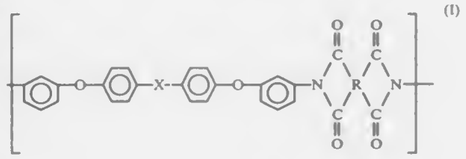
Filed Dec. 19, 1989, Ser. No. 454,061

Claims priority, application Japan, Dec. 28, 1988, 63-334660

Int. Cl.[5] C08J *9/06, 9/14*

U.S. Cl. 521—79 **7 Claims**

1. A process for the production of a thermoplastic polyimide foam comprising conducting extrusion foaming of a thermoplastic polyimide essentially consisting of recurring units represented by the formula (I):



(I)

wherein X is a radical selected from the group consisting of a direct bond, divalent hydrocabon having from 1 to 10 carbon atoms, hexafluorinated isopropylidene, carbonyl, thio, or a sulfonyl, and R is a tetravalent radical selected from the group consisting of an aliphatic radical having two or more carbon atoms, cycloaliphatic radical, monoaromatic radical, condensed polyaromatic radical, and non condensed polyaromatic radical wherein aromatic radicals are mutually connected with a direct bond or a crosslinking function, in the presence of a foaming agent selected from the group consisting of a sublimate substance, chemical foaming agent causing decomposition in the vicinity of 200° C., low boiling point organic compound and a hydrate dissociating water at a temperature of 200° C. or more.

4,943,595

PERFLUOROCHEMICALS AND PROCESS FOR PREPARING THE SAME

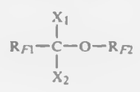
Kirby V. Scherer, Jr., Santamonica, Calif.; Kouichi Yamanouchi, Sakai, Japan; Kazumasa Yokoyama, Toyonaka, Japan, and Ryoichi Naito, deceased, late of Ibaragi, Japan (by Kimie Naito, executor), assignors to The Green Cross Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 300,273, Sep. 8, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 582,448

Int. Cl.[5] A61K *31/08; C07C 43/12*

U.S. Cl. 514—722 **16 Claims**

1. A perfluoroether derivative suitable for use in a blood substitute and of the formula



[II]

wherein:

R_{F1} is a $C_3–C_7$ perfluoroalkyl group,

X_1 is a fluorine atom or a $C_1–C_3$ perfluoroalkyl group and X_2 is a $C_1–C_3$ perfluoroalkyl group,

and RF_2 is a perfluoro $C_2–C_5$-alkyl group,

the total number of the carbon atoms contained in the perfluoroalkyl ether derivative being 10 to 11, inclusive, with the proviso that there is at least one branched chain perfluoroalkyl group in the molecule.

4,943,596

HIGH STRENGTH SILICONE FOAM, AND METHODS FOR MAKING

David C. Gross, Schenectady, N.Y.; Connie L. Haig, Evansville, Ind., and Jonathan D. Rich, Rexford, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 189,082, May 2, 1988, Pat. No. 4,810,728. This application Nov. 21, 1988, Ser. No. 274,536

Int. Cl.[5] C08J *9/06*

U.S. Cl. 521—82 **2 Claims**

1. A method for making a high strength silicone foam, which comprises mixing a siloxane hydride with a mixture comprising a vinyl-containing siloxane, a hydroxy source material, an effective amount of a platinum catalyst, and a silicone polyimide block copolymer having from 1 to 75% by weight of chemically combined organovinylsiloxy units based on the weight of the silicone polyimide block copolymer.

4,943,597

POLYETHER POLYOL FORMULATIONS FOR HARD CFC REPLACEMENT BY WATER BLOWING IN RIGID POLYURETHANE FOAMS

Henri J. M. Grünbauer, Oostburg, Sweden; Johan A. Thoen, Dommerstraat, Netherlands, and Guido F. Smits, Wijnegem, Belgium, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 7, 1988, Ser. No. 280,860

Int. Cl.[5] C08G *18/14, 18/48*

U.S. Cl. 521—167 **14 Claims**

1. A process for preparing a rigid closed-cell polyisocyanate-based polymer having an average density of from about 6 to about 150 kg/m^3, which comprises reacting a polyol composition with an organic polyisocyanate in the presence of catalyst and a blowing agent containing water sufficient to provide from about 50 to about 80 theoretical mole percent carbon dioxide of the total gases present in the cells of the resulting polymer, said polyol composition comprising at least 50 percent by total weight of said polyol composition, a polyol having a hydroxyl number of from about 100 to about 500 and an average functionality of at least four, characterized in that the said polyol is the product of reacting a carbohydrate, or carbohydrate mixture additionally consisting of a member selected from the group consisting of water, glycerine, trimethylolpropane and mixtures thereof, with an alkylene oxide, in that the said polyol composition has an average hydroxyl number of from about 100 to about 500; and in that said polyisocyanate is used in an amount to provide from about 1.0 to about 1.5 isocyanate groups per active hydrogen including those of water present in the reacting system.

4,943,598

RECURABLE AND CURED CELLULAR MATERIALS

Gregory A. Ferro, Hoffman Estates, Ill., assignor to Imi-Tech Corporation, Elk Grove, Ill.

Division of Ser. No. 240,802, Sep. 6, 1988. This application Aug. 7, 1989, Ser. No. 389,983

Int. Cl.[5] C08J *9/36*

U.S. Cl. 521—184 **4 Claims**

1. A process which comprises (i) exposing cured polyimide foam which is composed of a polyimide of at least one aromatic tetracarboxylic acid or derivative thereof and at least one aromatic or heterocyclic primary amine to an atmosphere of steam at elevated temperature and pressure for a period of time sufficient to convert said foam into a non-flexible, non-resilient recurable cellular material, (ii) shaping or contouring said cellular material, and (iii) heating to recure the shaped or contoured cellular material in the absence of steam into a shaped or contoured cured polyimide foam.

4,943,599

RECURABLE AND CURED CELLULAR MATERIALS

Gregory A. Ferro, Hoffman Estates, Ill., assignor to Imi-Tech Corporation, Elk Grove, Ill.

Division of Ser. No. 240,802, Sep. 6, 1988. This application Aug. 7, 1989, Ser. No. 390,070

Int. Cl.[5] C08J *9/36*

U.S. Cl. 521—184 **7 Claims**

1. A process which comprises (i) exposing cured polyimide foam to an atmosphere of steam at elevated temperature and pressure for a period of time sufficient to convert said foam into a non-flexible, non-resilient recurable cellular material, (ii) shaping or contouring said cellular material, and (iii) heating to recure the shaped or contoured cellular material in the absence of steam into a shaped or contoured cured polyimide foam.

4,943,600

PHOTOCURABLE POLYAMINE-ENE COMPOSITIONS HAVING IMPROVED CURE SPEED

Gerry K. Noren, Hoffman Estates, and Edward J. Murphy, Arlington Heights, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 10, 1989, Ser. No. 321,148

Int. Cl.[5] C08F *32/06, 232/06*

U.S. Cl. 522—106 **3 Claims**

1. A photocurable ethylenically unsaturated liquid coating composition consisting essentially of from about 20 to 30 weight percent of a tertiary amine-functional acrylic resin, from about 10 to 20 weight percent of an allyl-terminated polyester resin and from about 50 to 60 weight percent of an unsaturated maleate-functional polyester.

4,943,601

COATING WITH IMPROVED ADHESION

Anthony J. Dinallo, Sr., Mechanicville, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 3, 1989, Ser. No. 332,820

Int. Cl.[5] C08K *5/24*

U.S. Cl. 524—265 **9 Claims**

1. A latent curable electronic coating composition stabilized against premature gelation comprising:

a. an olefinorganopolysiloxane having units of the structural formula:

$R_aR^1{}_bSiO_{(4-a-b)/2}$

b. an organohydrogenpolysiloxane having units of the structural formula:

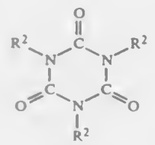
$R_aSiH_bSiO_{(4-a-b)/2}$

wherein R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, a cyanoalkyl radical and mixtures thereof, R^1 is an olefinic hydrocarbon radical, wherein a has a value of from 0 to 3, inclusive, b has a value of from 0.005 to 2.0 inclusive, and the sum of a and b is equal to from 0.8 to 3, inclusive,

c. a sufficient amount of a platinum catalyst to cause the co-reaction of (a) and (b);

d. a combination of inhibiting agents comprised of (i) an ethylenically unsaturated isocyanurate corresponding to the structural formula:

(III)



wherein R^2 is the same or different and is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl polynuclear aryl, heteroaryl, monofunctional lower-alkenyl and the non-interfering substituted derivatives thereof with the proviso that at least one R^2 is lower-alkyl and (ii) a dialkylacetylenedicarboxylate having the structural formula:

ROOCC≡CCOOR

wherein R is as described above and wherein said combination of ethylenically unsaturated isocyanurate and said dialkylacetylenedicarboxylate is present in an amount sufficient to inhibit premature gelation but insufficient to prevent cure at elevated temperature; and

e. a silanol-containing dimethylsiloxane hydrolyzate having a silanol content from about 0.5% to about 1.5% and a viscosity from about 4 centipoise to about 40 centipoise at 25° C.

4,943,602

PREPARATION OF AQUEOUS POLYESTER DISPERSIONS AND USE THEREOF

Ralf Brueckmann, Goennheim; Heinz Leitner, Ladenburg, and Holger Schoepke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 320,963

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3808882

Int. Cl.[5] **C08J** *3/00*

U.S. Cl. 524—600 **3 Claims**

1. A process for preparing an aqueous polyester dispersion, which comprises

(a) condensing an aromatic dicarboxylic acid or ester with at least one diol to give a prepolymer having an acid number of from 2 to 8,

(b) reacting the prepolymer with at least one molecular weight enhancer compound selected from the group consisting of tricarboxylic acids, esters of tricarboxylic acids and carboxylic anhydrides having at least one free carboxyl group to give a polyester having an acid number of from 40 to 60, and

(c) dispersing the polyester in an aqueous medium to form an aqueous dispersion by adding an aqueous mixture of ammonia and an amine in a molar ratio of from 10:1 to 1:10 to a melt of the polyester which has a temperature within the range from 150° to 230° C.

4,943,603

REINFORCED POLYMER COMPOSITIONS HAVING EXCELLENT DISTINCTNESS OF IMAGE

Eloy C. Martinez, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 182,548, Apr. 18, 1988, Pat. No. 4,871,789. This application Aug. 30, 1989, Ser. No. 400,422

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] **C08K** *7/00, 3/34*

U.S. Cl. 523—220 **12 Claims**

1. A filled polymer composition comprising a polyurethane and/or polyurea matrix having dispersed therein a filler mixture comprising

(A) a reinforcing filler having particles of an average aspect ratio of at least 4 and an average particle length of at least about 20μ, except the average particle length is at least about 40μ when the reinforcing filler is wollastonite, and

(b) a supplementary filler comprising a wollastonite having an aspect ratio of 7 or less and a particle length of about 35μ or less or an inorganic compound other than wollastonite having an average aspect ratio of about 4 or less and a median particle size of about 10μ or less wherein the composition contains from about 5 to about 50weight percent of said reinforcing filler, and about 1 to about 20 weight percent of said supplementary filler, based on the weight of the polyurethane and/or polyurea matrix.

4,943,604

STRUCTURAL ADHESIVE HAVING EXCELLENT ANTI-CORROSION PROPERTIES

Yasuhiro Okuri, Mino, and Toshimori Sakakibara, Shiga, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Takatsuki, Japan

Filed Nov. 29, 1988, Ser. No. 277,345

Claims priority, application Japan, Nov. 30, 1987, 62-301681

Int. Cl.[5] **C08K** *5/52, 3/38, 3/26, 3/22*

U.S. Cl. 523—428 **5 Claims**

1. A structural adhesive having excellent anticorrosion properties which comprises:

(A) a rubber modified epoxy resin prepared by reaction of a bisphenol epoxy resin and a butadienacrylonitrile-(meth)acrylic acid copolymer,

(B) an urethane modified epoxy resin,

(C) a latent curing agent, and

(D) a rust inhibiting pigment selected from the group consisting of:

(i) a rust inhibiting pigment comprising aluminum orthophosphate and a zinc compound,

(ii) a rust inhibiting pigment comprising aluminum metaphosphate, a zinc compound and/or an alkaline earth metal compound, and

(iii) a rust inhibiting pigment comprising aluminum metaphosphate and a boric acid compound and optionally an alkaline earth metal compound,

wherein the adhesive contains said rubber modified epoxy resin (A) and said urethane modified epoxy resin (B) in a weight ratio of 1:9 to 3:1, and said latent curing agent (C) and said rust inhibiting pigment (D) at 0.1 to 30% by weight and at 5 to 50% by weight respectively based on a total amount of both modified epoxy resins (A) and (B).

4,943,605

END DAM NOSING MATERIAL

John D. Nicholas, Lawrenceville, Ga., assignor to MM Systems Corporation, Tucker, Ga.

Filed Feb. 29, 1988, Ser. No. 162,167

Int. Cl.[5] **C08L** *63/00, 27/06*

U.S. Cl. 523—438 **4 Claims**

1. An end dam nosing material consisting essentially of an epoxy resin, a liquid depolymerized elastomer, polyvinyl chloride pellets and an amount of curing agent effective to cure the epoxy resin and generate sufficient heat to cure the liquid depolymerized elastomer.

4,943,606

RESIN COMPOSITION FOR PRINTED CIRCUIT BOARD

Masakazu Inoue, Shiga; Kuniaki Asai, Tondabayashi; Kazuo Hieda, Nishinomiya, and Tadayasu Kobayashi, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 26, 1988, Ser. No. 236,721

Claims priority, application Japan, Sep. 1, 1987, 62-218610

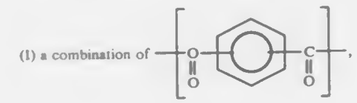
Int. Cl.[5] **C08K** *3/26, 7/02;* **C08L** *67/03*

U.S. Cl. 523—457 **8 Claims**

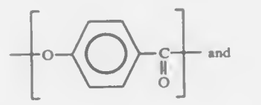
1. A resin composition for printed circuit board comprising:

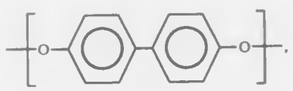
(A) 30–90% by weight of a liquid crystal polyester having one of the following combinations of repeating units:

(I) a combination of

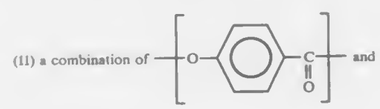


and

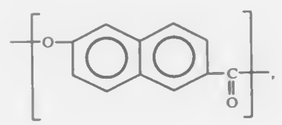




(II) a combination of



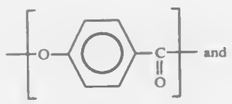
and

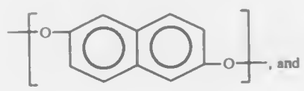


(III) a combination of



and



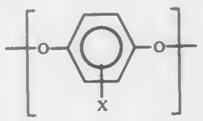


(IV) a combination of



and

-continued



wherein X is alkyl, halogen or aryl,

(B) 3–50% by weight of an inorganic fibrous or acicular material having an average diameter of 15 μm or below and an average length of 200 μm or below, and

(C) 3–30% by weight of an alkaline earth metal carbonate.

8. A composition according to claim 1 further comprising at least one member selected from the group consisting of an antioxidant, a heat stabilizer, an ultraviolet absorber, a lubricant, a releasing agent, a dye, a pigment, a flame retardant, a flame-retarding aid, an antistatic agent, thermoplastic resins consisting of a polyamide, a polyester, a polyphenylene sulfide, a polyetherketone, a polycarbonate, a modified polyphenylene oxide, a polysulfone, a polyetherimide and a polyamideimide, and thermosetting resins consisting of a phenolic resin, an epoxy resin and a polyimide resin.

4,943,607

FIBER-REINFORCED UNSATURATED POLYESTER

Hiroka Tanisake; Hiroyuki Okumura, both of Hiratsuka; Akira Namikawa, Fujisawa; Masato Ishikawa, Hiratsuka, and Toshiaki Abe, Yokohama, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 26, 1988, Ser. No. 237,229

Claims priority, application Japan, Aug. 31, 1987, 62-215492

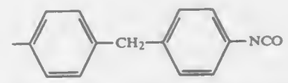
Int. Cl.[5] **C08K** *7/02*

U.S. Cl. 523—500 **5 Claims**

1. A fiber-reinforced unsaturated polyester resin composition comprising, as main components, an unsaturated polyester (A), a polyhydric alcohol (E), a polyisocyanate compound (B), a polymerizable vinyl monomer (C) and a fiber (D),

1 the unsaturated polyester (A) being obtained from a dicarboxylic acid or an anhydride thereof containing 40 to 100 mole % of an unsaturated dicarboxylic acid or its anhydride and a polyhydric alcohol having a primary hydroxyl group, and having a hydroxyl value of 115 to 210 mgKOH/g and acid value of not more than 5 mgKOH/g,

2 the polyisocyanate compound (B) having its terminal group of



and a viscosity, at 25° C., of 10 to 2,000 cps and being in the liquid state,

3 the polyhydric alcohol (E) having at least 2 hydroxyl group in the molecule and having a hydroxyl value of 35 to 1,100 mgKOH/g, and further, said composition satisfying the following conditions (i), (ii), (iii) and (iv);

(i) the proportion of (E) is 10 to 50% by weight of the total weight of (A) and (E),

(ii) the total weight of (A) and (E) is in the range of 50 to 85% by weight of the total weitht of (A), (E) and (C),

(iii) the molar ratio of the isocyanate group of (B) to the hydroxyl group of (A) and (E) is 0.75 to 1.2, and

(iv) the proportion of (D) is 50 to 70% by weight of the total weight of (A), (B), (C), (D) and (E).

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4,943,608

ROSIN EMULSION SIZING AGENT

Mizunori Takahashi, Ichihara; Tsuyoshi Ikeda, and Yoshiharu Yamaguchi, both of Chiba, all of Japan, assignors to Dic-Hercules Chemicals, Inc., Tokyo, Japan

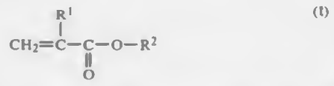
Filed Oct. 29, 1987, Ser. No. 113,907
Claims priority, application Japan, Nov. 5, 1986, 61-261942
Int. Cl.[5] C08L *93/04*
U.S. Cl. 524—272 **16 Claims**

1. A rosin emulsion sizing agent consisting essentially of, by weight,

(1) from 20 to 50% of a fortified rosin,

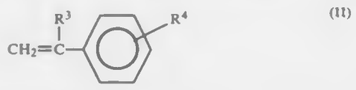
(2) from 1 to 30% of a partially or totally quaternized, cationized product of a copolymer consisting essentially of:

a. from 20 to 80% by weight of (a.1) a (meth)acrylic acid alkyl ester monomer of the general formula (I):



(I)

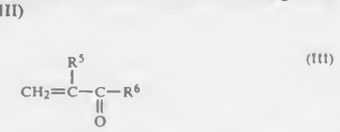
wherein R^1 is H or CH_3, and R^2 is one member selected from the group consisting of C_{1-18} alkyls, or of (a.2) a styrene monomer of the general formula (II):



(II)

wherein R^3 is H or CH_3, and R^4 is H or C_{1-4} alkyls, or of (a.3) both said (meth)acrylic acid alkyl ester monomer of general formula (I) and said styrene monomer of general formula (II); and

b. from 20 to 80% by weight of a (meth)acrylic acid alkylaminoalkyl ester or amide monomer of the general formula (III)



(III)

wherein R^5 is H or CH_3, and R^6 is mono- or di-lower-alkylamino-lower alkoxy or mono- or di-lower-alkylamino-lower alkylamino; said copolymer having a number average molecular weight of from 1,000 to 500,000; and

(3) the balance being water.

4,943,609

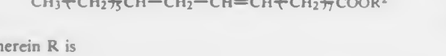
CURABLE RUBBER BLADDER STOCKS HAVING REDUCED VISCOSITY

Terrence M. Stuhldreher, Smyrna, Tenn., assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Apr. 17, 1989, Ser. No. 338,679
Int. Cl.[5] C08K *5/11, 9/00*
U.S. Cl. 524—314 **7 Claims**

1. A cured tire curing bladder, comprising:

the cured tire bladder made from a curable bladder rubber and an effective amount of a derivative of ricinoleic acid, said derivative of ricinoleic acid having the formula



wherein R is

where R^1 is an aliphatic having from 1 to 12 carbon atoms, and wherein R^2 is an aliphatic having from 1 to 12 carbon atoms.

4,943,610

NON-SHRINKING, DIMENSIONALLY-STABLE MODIFIED EPOXY RESINS

David C. Sayles, P.O. Box 4741, Huntsville, Ala. 35815

Filed Nov. 30, 1987, Ser. No. 173,604
Int. Cl.[5] C08G *59/40, 59/62*
U.S. Cl. 525—415 **2 Claims**

1. A non-shrinking, dimensionally-stable modified epoxy resin produced by combining and reacting the first component and the second component as defined under (A) (i) and (A) (ii) hereinbelow and an unmodified epoxy resin combined with said non-shrinking, dimensionally-stable modified epoxy resin and further reacted as defined under (B) hereinbelow to produce a matrix resin composition having controlled shrinkage and comporising:

(A) (i) the reaction product of an amount of a diglycidyl ether of Bisphenol A with an amount of a compound selected from 6-hexanolactone and 5-norbornene-2,2-dimethanol to produce a reaction product as a first component, said first component being utilized in an amount of about 100 parts by weight with a second component;

(A) (ii) said second component being a curing agent of hexahydrophthalic acid which is blended with said first component in an amount of about 40 parts by weight; said first and said second component reacted together at about 150° C. for about 2 hours to yield said non-shrinking, dimensionally-stable modified epoxy resin having a volume change on polymerization of not more than 0.03 percent which is blended with a third component which is the unmodified epoxy resin diglycidyl ether of Bisphenol A; and,

(B) said third component consisting of an additional amount from about 1 to 2 parts of said unmodified epoxy resin of diglycidyl ether of Bisphenol A which is blended with each part of said non-shrinking, dimensionally-stable modified epoxy resin and subsequently further cured at 375° F. for about 2½ hours to yield a matrix resin composition having a controlled shrinkage of about 1.4 to about 2.4 volume percent.

4,943,611

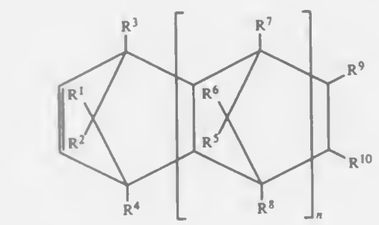
RESIN COMPOSITION FOR SPACERS OF INFORMATION RECORDING DISC

Akira Todo; Toshio Kimura; Takeshi Minoda, and Masayoshi Kurisu, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 27, 1988, Ser. No. 224,685
Claims priority, application Japan, Jul. 27, 1987, 62-187250
Int. Cl.[5] C08G *59/50, 59/22*
U.S. Cl. 524—493 **3 Claims**

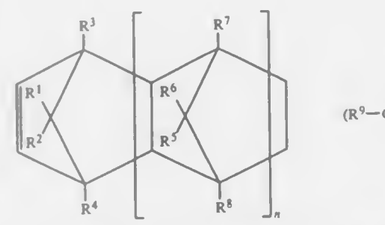
1. A resin composition for spacers of an information recording disc which comprises:

(A) a random copolymer of ethylene and at least one cycloolefin represented by the formula



(I)

or



(II)

wherein n and m each represents 0 or a positive integer,

l is an integer of at least 3, and

R^1 to R^{10} independently represent a hydrogen atom, a halogen atom or a hydrocarbon group, and having an intrinsic viscosity [η] of from 0.05 to 10 dl/g, as measured in decalin at a temperature of 135° C., and

(B) from 0.01 to 5 parts by weight, based on 100 parts by weight of said copolymer (A), of at least one inorganic material selected from the group consisting of titanium oxide and silica having a particle size of not more than 300 μm.

4,943,612

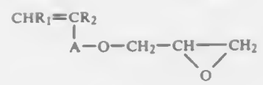
ULTRA-FINE PARTICULATED POLYMER LATEX AND COMPOSITION CONTAINING THE SAME

Hiroshi Morita, Chiba; Eiichi Hirota, Funabashi, and Yasuo Ishizaki, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

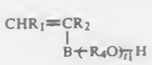
Filed Dec. 3, 1987, Ser. No. 128,657
Claims priority, application Japan, Dec. 6, 1986, 61-290839; Dec. 6, 1986, 61-290840; Dec. 6, 1986, 61-290841; Dec. 6, 1986, 61-290842; Dec. 6, 1986, 61-290843; Dec. 6, 1986, 61-290844; Dec. 6, 1986, 61-290845; Dec. 6, 1986, 61-290846; Mar. 31, 1987, 62-76037; Apr. 24, 1987, 62-102731; Apr. 24, 1987, 62-102732; Apr. 24, 1987, 62-102733; Apr. 24, 1987, 62-102734; Apr. 24, 1987, 62-102735; Apr. 24, 1987, 62-102736; Apr. 24, 1987, 62-102737; Jun. 15, 1987, 62-149980; Jun. 15, 1987, 62-149982; Jun. 15, 1987, 62-149983
Int. Cl.[5] C08F *2/16, 2/24, 20/18*
U.S. Cl. 524—714 **4 Claims**

1. An aqueous polymer latex having an average particle size of 100 nm or less, a crosslinked structure, and a measured glass transition temperature which is lower, by 3° C. or more, than its glass transition temperature when calculated by a weight fraction method, wherein said aqueous latex is derived from the emulsion copolymerization of (i) at least one unsaturated monomer selected from the group consisting of methacrylates, lower fatty acid vinyl esters, styrenes, vinyls, dienes, and vinyl pyridine and (ii) a comonmomer selected from the group consisting of copolymerizable unsaturated monomers having the formulae:

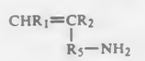




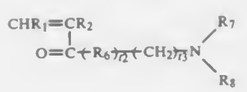
(II)



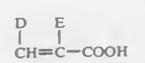
(III)



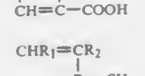
(IV)



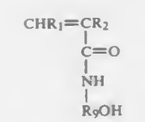
(V)



(VI)



(VII)



(VIII)

wherein R_1, R_2, R_4, R_5, R_6, R_7, R_8, R_9, B, D, E, t_1, t_2 and t_3 have the following meanings:

R_1, R_2: hydrogen or methyl;

R_4: alkylene having 2 to 4 carbon atoms;

R_5: direct bond, alkylene having 1 to 3 carbon atoms, phenylene or substituted phenylene;

R_6: oxygen or —NH—;

R_7: hydrogen, alkylol having 1 to 5 carbon atoms;

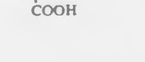
R8: hydrogen, alkylol having 1 to 5 carbon atoms or alkyl having 1 to 5 carbon atoms;

R_9: alkylene having 1 to 4 carbon atoms;

A: methylene or carbonyl;

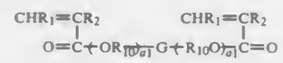
B: $—CH_2O—$ or carboxyl;

D: hydrogen alkyl having 1 to 3 carbon atoms, carboxyl,

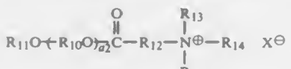


or —CONHCONH2;

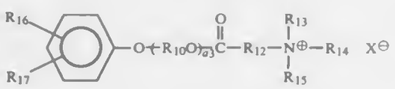
E: hydrogen atom, alkyl having 1 to 3 carbon atoms or $-CH_2COOH$;
t_1: real number of 1 to 20;
t_2: integer of 0 to 1; and
t_3: integer of 0 to 10;
in the presence of at least one emulsifying agent selected from the group consisting of emulsifiers having the formulae:



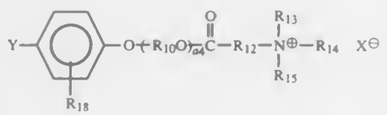
(IX)



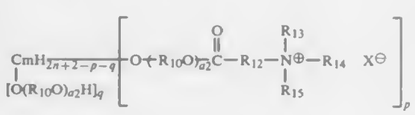
(X)



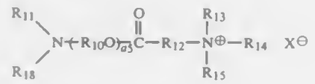
(XI)



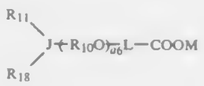
(XII)



(XIII)



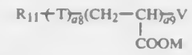
(XIV)



(XV)

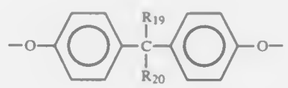


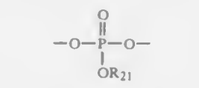
(XVI)

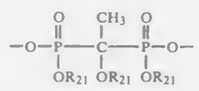


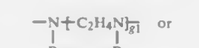
(XVII)

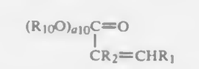
wherein R_1, R_2, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}, G, J, L, M, T, X, Y and V have the following meanings:
R_1, R_2: hydrogen or methyl;
R_{10}: alklene having 2 to 4 carbon atoms;
R_{11}: alkyl or alkenyl having 8 to 30 carbon atoms, which are either straight or branched, preferably one having 8 to 18 carbon atoms;
R_{12}: alkylene having 1 to 5 carbon atoms;
R_{13}, R_{14}, R_{15}: alkyl having 1 to 3 carbon atoms or $-C_2H_4OH$, and the respective groups may be either the same or different;
R_{16}, R_{17}: alkyl having 6 to 20 carbon atoms or hydrogen, of which at least one is alkyl having 6 to 20 carbon atoms;
R_{18}: hydrogen, alkyl or alkenyl having 1 to 30 carbon atoms;
a_1, a_2, a_3, a_4, a_5, a_6, a_7: each represent average moles added,
a_1: real number of 1 to 50, and preferable the more number of alkylene oxide added in the molecule is 8 or more;
a_2: real number of 0 to 20;
a_3: real number of 0 to 20 when either one of R_{16} and R_{17} is alkyl, and a real number of 1 to 30 when both R_{16} and R_{17} are alkyls;
a_4: real number of 1 to 30;
a_5: real number of 0 to 20;
a_6: real number of 0 to 20;
a_7: real number of 0 to 20;
a_8: integer of 0 or 1;
a_9: real number of 2 to 20;
p: integer of 2 to 5;
q: integer of 0 to 3;
G:



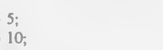




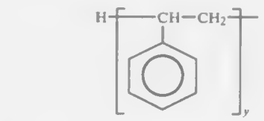


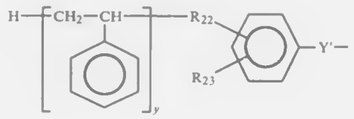


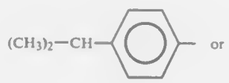
R_{19}, R_{20}: hydrogen or alkyl having 1 to 2 carbon atoms;
R_{21}: hydrogen or $-R_{10}O-a_{10}H$ or



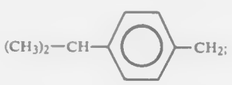
g_1: integer of 0 to 5;
g_2: integer of 0 to 10;
n: integer of 1 to 10;
a_{10}: real number of 1 to 50;
Y:







or



L: alkylene having 1 to 5 carbon atoms or

T: direct bond, oxygen sulfur;
M: hydrogen or inorganic anion;
X: inorganic anion or organic anion;
V: hydrogen or halogen.

and y is a real number of 1 to 5;
R_{22}, R_{23}: hydrogen or alkyl having 1 to 20 carbon atoms;
y': alkylene having 3 to 8 carbon atoms, oxygen or carbonyl;
J: nitrogen,



4,943,613

PHOTOCURABLE ORGANOPOLYSILOXANE COMPOSITION

Masatoshi Arai; Kazutoshi Fujioka, both of Annaka, and Masaharu Satou, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 26, 1989, Ser. No. 357,977
Claims priority, application Japan, May 31, 1988, 63-133856
Int. Cl.[5] C08K *5/09*
U.S. Cl. 524—773 **4 Claims**

1. A photocurable organopolysiloxane composition which comprises, in admixture:
(a) 100 parts by weight of an organopolysiloxane having, in a molecule, at least one acryloxy-functional group represented by the general formula

$$[CH_2{=}CR^1{-}CO{-}O{-}(CH_2)_a{-}SiR_{2-b}O{-}]_b(R)_{3-b}Si{-}R^2{-},$$

in which R^1 is a hydrogen atom or a methyl group, each R is a monovalent hydrocarbon group independently from the others, R^2 is an oxygen atom or a divalent hydrocarbon group and each of the subscripts a and b is 1, 2 or 3;
(b) from 0.01 to 10 parts by weight of an acryloxy-containing trialkoxy silane represented by the general formula

$$(R^3O)_3Si{-}R^4{-}(NH{-}CO{-}O{-}R^4)_c{-}O{-}CO{-}CR^1{=}CH_2,$$

in which each R is a monovalent hydrocarbon group having 1 to 8 carbon atoms, each R^1 is a divalent hydrocarbon group having 1 to 20 carbon atoms independently from the others, R^1 has the same meaning as defined above and the subscript c is zero or 1;
(c) from 0.01 to 10 parts by weight of a carboxylic acid represented by the general formula

$$R^5{-}CO{-}OH,$$

in which R^5 is a monovalent hydrocarbon group having 1 to 20 carbon atoms; and
(d) from 0.01 to 10 parts by weight of a photosensitizer.

4,943,614

COATING COMPOSITION

Nobuyuki Miyazaki; Masao Unoki, both of Yokohama, and Seiji Munekata, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 20, 1988, Ser. No. 260,040
Claims priority, application Japan, Oct. 20, 1987, 62-262753
Int. Cl.[5] C08F *8/32*
U.S. Cl. 525—117 **17 Claims**

1. A coating composition comprising of fluorine-containing copolymer obtained by copolymerizing a fluoroolefin having from 2 to 4 carbon atoms, an N-vinyl-lactam, a monomer having a functional group which is cross-linkable with a curing agent selected from the group consisting of an aminoplast, a multivalent isocyanate, an epoxy group-containing compound, a polybasic acid or its anhydride, a metal oxide or derivative thereof capable of cross-linking said copolymers, and other monomers copolymerizable therewith in a proportion of from 30 to 70 mol %, from 5 to 68 mol %, from 2 to 40 mol % and from 0 to 63 mol %, respectively.

4,943,615

OLEFIN COPOLYMER COMPOSITION

Takashi Yamawaki, Ichihara, Japan, assignor to Idemitsu Petrochemical Company Limited, Tokyo, Japan and Neste Oy, Keilaniemi, Finland

Filed Aug. 26, 1988, Ser. No. 236,958
Claims priority, application Japan, Aug. 29, 1987, 62-215846
Int. Cl.[5] C08L *23/20, 23/08*
U.S. Cl. 525—240 **14 Claims**

1. An olefin copolymer composition, which olefin copolymer composition contains (A) 25 to 97 wt. % of a propylene copolymer, and (B) 75 to 3 wt. % of a butene-1 copolymer having a content of propylene unit of 1 to 35 mol %, an intrinsic viscosity of 0.9 to 7.2 dl/g measured in decalin heated to 150° C., a value of weight-average molecular weight/number-average molecular weight of 4 to 15, a temperature difference of 2° to 40° C. between the highest value and the lowest value of the melting point measured by the differential scanning calorimetric analysis, and a propylene block property of 0.01 or lower measured by the nuclear magnetic resonance spectral analysis.

4,943,616

LIVING CATIONIC POLYMERIZATION PROCESS

Munmaya K. Mishra, Hudson, Ohio, and Akhtar Osman, Clearwater, Canada, assignors to Polysar Limited, Sarnia, Canada

Continuation of Ser. No. 333,024, Apr. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 224,370, Jul. 26, 1988, Pat. No. 4,908,421. This application Dec. 4, 1989, Ser. No. 445,170
Int. Cl.[5] C08F *4/14, 4/34, 10/10*
U.S. Cl. 525—264 **37 Claims**

1. A living cationic polymerization process for producing a terminally functional polymer which comprises introducing a monomer charge, a Lewis acid and an organic peroxy compound selected from the group consisting of organic peroxide, organic hydroperoxide, peroxy carbonate, azo peroxy compound and peroxy esters into a suitable reaction vessel and polymerizing the monomer charge at a temperature of from about 0 degrees to about −80 degrees centigrade to form said terminally functional polymer, wherein said monomer charge comprises the sequential addition of isobutylene and a second monomer selected from the group consisting of conjugated diolefins and vinylidene aromatic monomers and said organic peroxy compound is charged in an amount of from 10^{-4} to about 10^{-1} moles per mole of said isobutylene.

4,943,617

LIQUID CRYSTALLINE COPOLYMER

Karl-Heinz Etzbach, Frankenthal, and Bernd Hingen, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

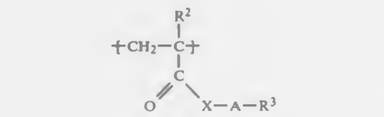
Filed Sep. 1, 1987, Ser. No. 91,667

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1986, 3631841

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—329.9 **11 Claims**

1. A liquid crystalline copolymer which contains, as copolymerized units, a comonomer of the formula:

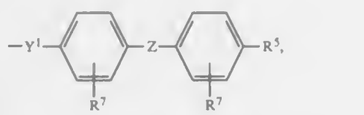


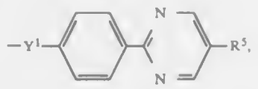
where X is a chemical bond, —O— or

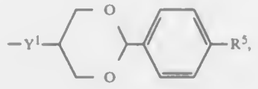


wherein R^1 is hydrogen or C_1–C_4-alkyl, Y is a chemical bond or —CO—, A is a linear or branched C_2–C_{20}-alkylene group where the carbon chain of the alkylene group can be interrupted by —O— or

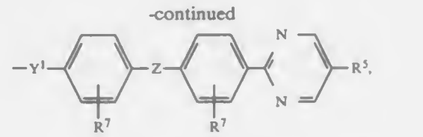
R^2 is hydrogen, methyl or chlorine and R^3 is a mesogenic group of the formula:

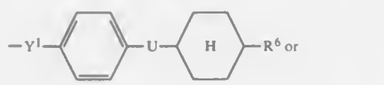


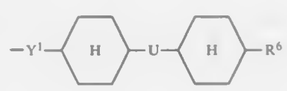




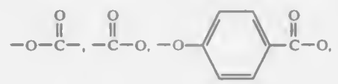
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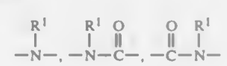




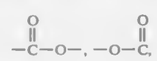


in which Y^1 is —O—,

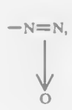




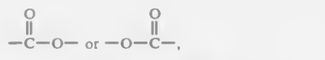
or —S—, Z is a chemical bond or a radical of the formula



—CH=CH—, —N=N,



—N=CH— or —CH=N—, U is a chemical bond or radical of the formula:



R^5 is hydrogen, C_1–C_{12}-alkyl, C_5–C_7-cycloalkyl, C_1–C_{12}-alkoxy, C_4–C_{12}-alkoxycarbonyl, C_1–C_{12}-alkanoyloxy, fluorine, chlorine, bromine, cyano, phenyl, 4-cyanophenyl or nitro, R^6 is hydrogen, C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy or C_1–C_{12}-alkoxycarbonyl and R^7 is methyl, ethyl, methoxy, ethoxy or chlorine.

4,943,618

METHOD FOR PREPARING POLYACRYLONITRILE COPOLYMERS BY HETEROGENEOUS REACTION OF POLYACRYLONITRILE AQUAGEL

Vladimir A. Stoy; George P. Stoy, and Jan Lovy, all of Princeton, N.J., assignors to Kingston Technologies Limited Partnership, Dayton, N.J.

Filed Dec. 18, 1987, Ser. No. 135,070

Int. Cl.[5] C08F *8/40*

U.S. Cl. 525—340 **68 Claims**

1. A method for preparing polyacrylonitrile copolymers comprising:

combining at least one polyacrylonitrile polymer in an aquagel state with a fluid reagent which reacts with nitrile groups of the polyacrylonitrile, said at least one polyacrylonitrile polymer is maintained undissolved in the aquagel state throughout the reaction to yield said polyacrylonitrile copolymers.

4,943,619

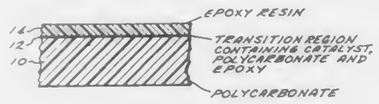
POLYCARBONATE-EPOXY POLYMER

James P. Bell, Storrs, Conn., and Yunzhao Yu, Beijing, China, assignors to The University of Connecticut, Storrs, Conn.

Filed Dec. 19, 1988, Ser. No. 286,529

Int. Cl.[5] C08F *283/02*

U.S. Cl. 525—463 **26 Claims**



1. A method of making a polymer by reacting, in the presence of a catalyst, epoxide groups of an epoxy resin with in-chain carbonate groups of polycarbonate or polycarbonate oligomers to chemically bond said epoxide groups to said carbonate groups to produce a polycarbonate-epoxy polymer, said catalyst being catalytically effective to promote chemical bonding between said epoxide groups and said in-chain carbonate groups to produce said polycarbonate-epoxy polymer.

4,943,620

METHOD FOR THE PREPARATION OF A SILICONE-BASED PRESSURE-SENSITIVE ADHESIVE

Shiro Gomyo, and Takahide Kobori, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1989, Ser. No. 297,874

Claims priority, application Japan, Jan. 20, 1988, 63-10314

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—474 **12 Claims**

1. A method for the preparation of a silicone-based pressure-sensitive adhesive which comprises the steps of:

(a) adding ammonia water to a mixture of a first organopolysiloxane having a substantially linear molecular structure represented by the average unit formula $R^1{}_mSiO_{(4-m)/2}$, in which R^1 is a substituted or unsubstituted monovalent hydrocarbon group and m is a positive number in the range from 1.8 to 2.1, at least 90% by moles of the organosiloxane units being diorganosiloxane units of the formula $R^1{}_2SiO$, and a second organopolysiloxane composed mainly of monofunctional siloxane units of the formula $R^2{}_3SiO_{0.5}$, in which R^2 is a substituted or unsubstituted monovalent hydrocarbon group, and tetrafunctional siloxane units of the formula SiO_2, the molar ratio of the monofunctional siloxane units to the tetrafunctional siloxane units being in the range from 0.4 to 2.0, to form a reaction mixture;

(b) agitating the reaction mixture to effect the siloxane rearrangement reaction between the first and the second organopolysiloxanes; and

(c) removing the ammonia water from the reaction mixture.

4,943,621

STORAGE STABLE COMPONENTS OF REACTIVE FORMULATIONS FOR BULK POLYMERIZATION OF CYCLOOLEFIN MONOMERS

Dennis J. Janda, Parma; Paul T. Stricharczuk, Twinsburg, and Robert J. Minchak, Parma Heights, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 4, 1988, Ser. No. 228,033

Int. Cl.[5] C08F *4/32, 4/52*

U.S. Cl. 526—127 **24 Claims**

1. A method for producing a storage stable cocatalyst component of a reactive formulation, wherein said reactive formulation comprises one or more cycloolefin monomers having a norbornene moiety together with a ring-opening metathesis catalyst system in sufficient quantity to polymerize these cycloolefin monomers in bulk,

said cocatalyst component comprising one or more cycloolefin monomers having a norbornene moiety combined with a halometal activated cocatalyst,

said method comprising the following sequential steps:

first, forming a mixture comprised of one or more cycloolefin monomers and a cocatalyst, said cocatalyst being the reaction product of an alkyl aluminum or alkyl aluminum halide with an active hydroxy-containing compound, and

second, adding a halometal activator to said mixture.

4,943,622

PROCESS FOR PRODUCING PEROXIDE-VULCANIZABLE, FLUORINE-CONTAINING ELASTOMER

Akihiro Naraki; Masatoshi Abe; Shin Okamoto, and Jun Okabe, all of Kitaibaraki, Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

Filed May 17, 1988, Ser. No. 194,941

Int. Cl.[5] C08F *2/38*

U.S. Cl. 526—206 **5 Claims**

1. A process for producing a peroxide-vulcanizable, fluorine-containing elastomer, which comprises homopolymerizing or copolymerizing a fluorine-containing olefin having 2 to 8 carbon atoms in the presence of an iodine and bromine-containing compound represented by the general formula:

RBrn Im

where R is a fluorohydrocarbon group, a chlorofluorohydrocarbon group, a chlorohydrocarbon group or a hydrocarbon group, and n and m are integers of 1 and 2, and 1,1-difluoro-2-bromoethylene.

4,943,623

PROCESS FOR THE PRODUCTION OF POLYESTERS AND THEIR USE AS BINDER OR BINDER COMPONENT IN POWDER LACQUERS

Wolfgang Ebert; Rolf-Volker Meyer, and Hans-Joachim Kreuder, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Nov. 21, 1988, Ser. No. 273,949

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1987, 3740932

Int. Cl.[5] C08G *63/02*

U.S. Cl. 528—272 **7 Claims**

1. In an improved powder lacquer containing a binder, the improvement which comprises said binder or a component of said binder being a polyester containing hydroxyls, carboxyls or both and having an acid value of up to 50 and a hydroxyl value of up to 200, wherein the sum of the hydroxyl value and the acid value is from 20 to 200, which polyester has been produced by reacting

(a) an acid component which is at least 50% by weight of terephthalic acid

with

(b) a polyol component which is at least one polyhydric alcohol having a molecular weight in the range from 62 to 250,

while maintaining an equivalent ratio of carboxyl groups to hydroxyl groups of from 0 65:1 to 1.5:1, with the proviso that component (b) is used in a quantity of at least 30% by weight, based on the weight of component (a), and the reaction is carried out in the presence of

(c) at least 5% by weight, based on the weight of components (a) and (b), of a solvent containing amide groups,

lactam groups, or both and said solvent is free from any nitrogen-hydrogen bonds.

4,943,624

SUPRAMOLECULAR SURFACTANTS: AMPHIPHILIC POLYMERS DESIGNED TO DISRUPT LIPID MEMBRANES

Steven L. Regen, Bethlehem, Pa., assignor to Lehigh University, Bethlehem, Pa.

Filed Oct. 28, 1988, Ser. No. 263,871

Int. Cl.[5] **C07C** *69/34;* **C08G** *63/66;* **A61K** *31/745, 7/00*

U.S. Cl. 528—301 **7 Claims**

1. An amphiphilic polymer, having the monomer unit structure A:

$$\left[\begin{matrix}O\\\|\\C(CHR)_mCO((CH_2)_kO)_n\end{matrix}\right]_x \quad (A)$$

wherein R is at least one of H and C_{1-6} alkyl, k=1–4, m=10–30, n=12–50 and x=2–500.

4,943,625

ADHESIVE COPOLYAMIDE COMPOSITION BASED ON PHENYLENE CONTAINING DIAMINE

Manfred Hewel, Bonaduz, Switzerland; Annette Lavalette, Richmond, England, and Frank Annighofer, Heidenrod, Fed. Rep. of Germany, assignors to Ems-Inventa AG, Domat/Ems, Switzerland

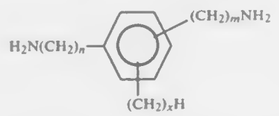
Filed Sep. 7, 1988, Ser. No. 241,406

Claims priority, application Switzerland, Sep. 9, 1987, 03472/87

Int. Cl.[5] **C08G** *69/14*

U.S. Cl. 528—324 **23 Claims**

1. An adhesive copolyamide composition based on at least one first polyamide-forming component selected from the group consisting of aromatic diamines having 6 to 22 carbon atoms of the formula



wherein

n=0 to 6, m=0 to 6, and x=0 to 4, and salts thereof;

at least one second polyamide-forming component selected from the group consisting of aliphatic dicarboxylic acids having 6 to 12 carbon atoms and aliphatic diamines having 6 to 12 carbon atoms and;

at least one aromatic dicarboxylic acid having 8 to 10 carbon atoms;

said composition having:

(a) a dry powder differential scanning calorimetry (DSC) melting point of at least 100° C., measured at a heating rate of 20° C. per minute,

(b) a dry powder glass transition temperature not exceeding 60° C.,

(c) a dry powder softening point, measured by the Kofler-Bank method, of at least 100° C., and

(d) a Kofler-Bank wet softening point, measured on dampened powder, of less than 100° C.,

whereby a bond formed from said composition in the presence of moisture is heat-resistant to at least 100° C.

4,943,626

PRIMARY POLYETHER ACTIVE HYDROGEN COMPOUNDS WHICH ARE PREPARED FROM LINKED, PROTECTIVELY INITIATED POLYALKYLENEOXIDES

James E. McGrath; Youngtai Yoo, both of Blacksburg, Va.; Robert B. Turner, and Diane M. Lewis, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1988, Ser. No. 226,302

Int. Cl.[5] **C08G** *81/00, 65/30, 65/32*

U.S. Cl. 528—408 **30 Claims**

1. A process for producing a polyether active hydrogen compound having at least two active hydrogen groups on primary carbon atoms per molecule comprising (a) forming polyoxyalkylene molecules each having at least one active hydrogen precursor group, by exposing a reaction mixture containing at least one 1,2-epoxyalkane and at least one protective initiator to conditions effective for the polymerization of the 1,2-epoxyalkane; (b) linking at least two of the polyoxyalkylene molecules using a linking agent to form a linked molecule having at least two termini each having an active hydrogen precursor group thereon; and (c) cleaving or transforming the active hydrogen precursor groups at said termini of the linked molecule to form active hydrogen groups on primary carbon atoms by means of reduction, hydrogenation, acidification, hydrogenolysis, hydrolysis, or oxidation.

24. A process for producing a polyether active hydrogen compound having at least two terminal active hydrogen groups on primary carbon atoms per molecule comprising (a) forming polyoxyalkylene molecules each having at least one active hydrogen precursor group, by exposing a reaction mixture comprising at least one substituted alkylene oxide and at least one intramolecular protective initiator having a functional group convertible into an active hydrogen group on a primary carbon atom to conditions effective for the polymerization of the substituted alkylene oxide; (b) linking at least two of the polyoxyalkylene molecules using a linking agent to form a linked molecule having at least two termini each having an active hydrogen precursor group thereon; and (c) cleaving or transforming the active hydrogen precursor groups at said termini of the linked molecule to form active hydrogen groups on primary carbon atoms by means of reduction, hydrogenation, acidification, hydrogenolysis, hydrolysis, or oxidation.

4,943,627

PEPTIDES INVOLVED IN THE PATHOGENESIS OF HIV INFECTION

Walter Gilbert, Cambridge; Richard A. Fisher, Brookline; Vicki L. Sato, Cambridge, and Johann J. Leban, Sommerville, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Continuation of Ser. No. 873,621, Jun. 12, 1986, abandoned.

This application Aug. 16, 1988, Ser. No. 234,009

Int. Cl.[5] **C07K** *7/08, 7/10*

U.S. Cl. 530—324 **3 Claims**

1. A peptide involved in the pathogenesis of the HIV virus selected from the group consisting of peptides consisting of amino acid sequences of the formulae: PWNASWSNKSLEQIWNN and LLELDKWASLWNWF.

4,943,628

HIV PEPTIDE-INDUCTED T CELL STIMULATION

Jonathan I. Rosen, and John F. Warner, both of San Diego, Calif., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

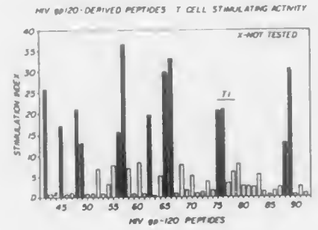
Filed Jun. 13, 1988, Ser. No. 205,983

Int. Cl.[5] **C07K** *7/08*

U.S. Cl. 530—326 **1 Claim**

1. A peptide selected from the group consisting of:
HGIRPVVSTQLLLNG,
SLAEEEVVIRSANFT,
DNAKTIIVQLNQSVE,
IIVQLNQSVEINCTR,

GRAFVTIGKIGNMRQ,
TIGKIGNMRQAHCNI,
GNMRQAHCNISRAKW,
LREQFGNNKTIIFKQ,
SSGGDPEIVTHSFNC



PEIVTHSFNCGGEFF,
ITLPCRIKQIINMWQ,
RIKQIINMWQEVGKA,
WRSELYKYKVVKIEP, and
YKYKVVKIEPLGVAP.

4,943,629

ANTIDIABETIC ALPHA-SUBSTITUTED PHOSPHONATES

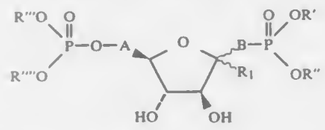
Vern G. DeVries, Ridgewood; Thomas H. Claus, Montvale, both of N.J.; Middleton B. Floyd, Jr., Suffern, and Semiramis Ayral-Kaloustian, Tarrytown, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 12, 1988, Ser. No. 232,331

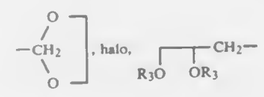
Int. Cl.[5] **C07H** *11/04*

U.S. Cl. 536—117 **29 Claims**

1. A compound selected from those of the formula:



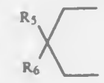
wherein A is selected from the group consisting of C_1–C_4 alkylene and C_2 to C_4 hydroxyalkylene; B is selected from the group consisting of C_1 to C_4 alkylene and C_2 to C_4 hydroxyalkylene in which the carbon atom of the alkylene moiety or the hydroxyalkylene moiety which is adjacent to the phosphorous atom is mono- or disubstituted with a substituent selected from the group consisting of halogen, hydroxy, and C_1 to C_4 alkoxy; R_1 is selected from the group consisting of hydrogen, C_1 to C_4 alkyl, C_1 to C_4 hydroxyalkyl, C_2 to C_4 dihydroxyalkyl, C_3 or C_4 trihydroxyalkyl and C_4 tetrahydroxyalkyl; R′, R″, R‴ and R⁗ are selected independently from the group consisting of hydrogen, C_1 to C_{18} alkyl, C_3 to C_6 cycloalkyl, phenyl, C_3 to C_8 isoalkyl, Cl_3CCH_2—, $CH_2CH{=}CH_2$—, ZCH_2CHh_2— [where Z is SO_2R_2, SR_2, OR_2, or $Si(R_2)_3$, and R_2 is $C_1$to C_3 alkyl],



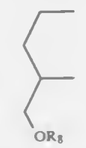
[where R_3 is C_1 to C_3 alkyl and R_3–R_3 is alkylene or acetal],



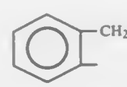
(where R_4 is hydrogen or methyl),



[where, when $R_5{=}R_6$, they are both hydrogen, fluoro or C_1–C_4 alkyl, R_5 is hydrogen, R_6 is fluoro, oxy or OR_7 [where R_7 is C_1 to C_6 alkyl, C_3 to C_6 cycloalkyl or aryl]],



[where R_8 is hydrogen or C_1 to C_{18} alkyl],



phenylmethyl, substituted phenylmethyl wherein the substituents are selected from C_1 to C_{18} alkyl, C_1 to C_6 alkoxy, NO_2 and halogen, and mono- and disubstituted phenyl wherein the substituents are selected from C_1 to C_{18} alkyl, C_1 to C_6 alkoxy, NO_2 and halogen; and, when any one or more of R′, R″, R‴ or R⁗ are hydrogen, the pharmacologically acceptable salts thereof.

4,943,630

METHOD FOR CARRYING OUT THE ORGANIC SYNTHESIS OF OLIGOSACCHARIDES CONTAINING GALACTOSAMINE-URONIC ACID PATTERNS, NEW OLIGOSACCHARIDES OBTAINED AND BIOLOGICAL APPLICATIONS THEREOF

Jean-Claude Jacquinet, Orleans-La Source; Maurice Petitou, Paris; Pierre Sina , Orleans, and Jean Choay, Paris, all of France, assignors to Choay, S.A., Paris, France

Continuation of Ser. No. 624,628, Jun. 26, 1984, abandoned.

This application Apr. 21, 1986, Ser. No. 856,855

Claims priority, application France, Oct. 27, 1982, 82 18003

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[5] **A61K** *31/70;* **C07H** *5/06*

U.S. Cl. 536—123 **53 Claims**

1. A process for synthesizing an acid mucopolysaccharide condensation product having from 2–12 saccharides which process comprises condensing a first saccharide with a second saccharide to form a condensation product having a 1–4 beta linkage between the first saccharide and the second saccharide, wherein the first saccharide is selected from the group consisting of a protected D-galactosamine unit and an oligosaccharide comprised of alternating protected D-galactosamine and protected uronic acid units linked in the manner found in chondroitin sulfate and dermatan sulfate and having a terminal D-galactosamine at the reducing end, and

wherein the second saccharide is selected from the group consisting of a uronic acid unit and an oligosaccharide comprised of alternating protected D-galactosamine and protected uronic acid units linked in the manner found in chondroitin sulfate and dermatan sulfate and having a terminal uronic acid at the now reducing end, further

wherein any uronic acid unit is selected from the group consisting of D-glucuronic acid and L-iduronic acid and further

wherein any D-galactosamine units have nitrogen containing groups at carbon 2, which nitrogen containing groups can be treated to form an amine.

4,943,631

PROCESS FOR CEPHEM COMPOUNDS

Brian E. Looker, Greenford, England, assignor to Glaxo Group Limited, London, England

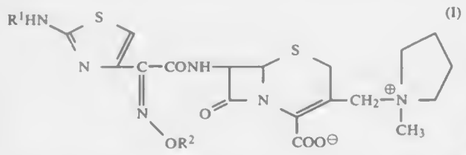
Continuation-in-part of Ser. No. 781,744, Sep. 30, 1985, abandoned. This application Jan. 6, 1988, Ser. No. 141,192

Claims priority, application United Kingdom, Oct. 1, 1984, 8424692

Int. Cl.[5] C07D *501/04*

U.S. Cl. 540—222 **6 Claims**

1. A process for the preparation of a compound of formula (I)

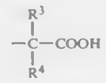


(I)

wherein

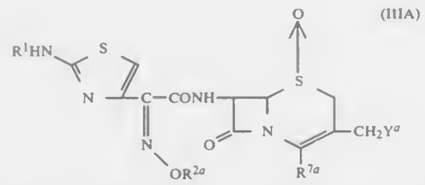
R^1 is a hydrogen atom or an amino-protecting group; and

R^2 is a straight or branched chain C_{1-4} alkyl group, an allyl, but-2-enyl or but-3-enyl group, or is a group of formula



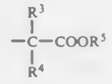
wherein each of R^3 and R^4 is independently a hydrogen atom or a methyl or ethyl group, or R^3 and R^4 taken together with the carbon atom to which they are attached may be a C_{3-5} cycloalkylidene group, or a non-toxic pharmaceutically acceptable salt or a metabolically labile ester thereof or a solvate of such a compound,

which process comprises reducing a compound of formula (IIIA)



(IIIA)

wherein R^1 is a hydrogen atom or an amino protective group; R^{2a} is a straight or branched chain C_{1-4} alkyl group, an allyl, but-2-enyl, or but-3-enyl group, or is a group of formula



wherein each of R^3 and R^4 is independently a hydrogen atom or a methyl or ethyl group, or R^3 and R^4 taken together with a carbon atom to which they are attached may be a C_{3-5} cycloalkylidene group, and R^5 is a hydrogen atom or carboxyl blocking group;

Y^a is a 1-pyrrolidino or 1-methyl-1-pyrrolidinium group, and R^{7a} represents the group —$COOR^6$, where R^6 is a hydrogen atom or a carboxyl blocking group, or when Y^a represents 1-methyl-1-pyrrolidinum, R^{7a} may additionally represent the group —COO,

or a salt thereof to form the corresponding sulphide compound; and if necessary or desired:

(a) methylation of a 3-(1-pyrrolidino)methyl compound to form the corresponding 3-(1-methyl-1-pyrrolidinium)-methyl compound;

(b) formation of a non-toxic salt or a non-toxic metabolically labile ester; and

(c) removal of any carboxyl blocking and amino protecting groups.

4,943,632

CEFTAZIDIME DIHYDROCHLORIDE FORMIC ACID SOLVATES

Colin Robinson, Ulverston, England, assignor to Glaxo Group Limited, London, United Kingdom

Filed Feb. 3, 1989, Ser. No. 305,541

Claims priority, application United Kingdom, Feb. 5, 1988, 8802622

Int. Cl.[5] C07D *501/46*

U.S. Cl. 540—225 **10 Claims**

1. (6R,7R)-7-[(Z)-2-(2-Aminothiazol-4-yl)-2-(2-carboxyprop-2-oxyimino)acetamido]-3-(1-pyridiniummethyl)ceph-3-em-4-carboxylate dihydrochloride (ceftazidime dihydrochloride) in the form of a crystalline formic acid solvate.

4,943,633

CATALYTIC PREPARATION OF CYANOALKYL LACTAMS

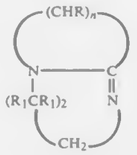
Richard V. C. Carr, Allentown, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 22, 1988, Ser. No. 209,733

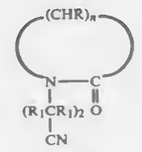
Int. Cl.[5] C07D *201/08, 471/02*

U.S. Cl. 540—531 **8 Claims**

1. In a process for the preparation of a diazabicycloalkene of the formula:



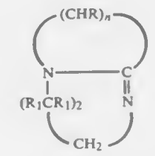
wherein R is H, or methyl, R_1 is H, methyl or ethyl, and n is a number ranging from 2–11 by reacting a lactam with an alpha-beta unsaturated nitrile having from 3–6 carbon atoms under conditions for producing a cyanoalkyl-lactam of the formula:



wherein R is H, or methyl, R_1 is H, methyl or ethyl, and n is a number ranging from 2–11; and then,

hydrogenating the cyanoalkyl-lactam under conditions for reducing the nitrile group to the amine intermediate N-amino alkyl lactam and effecting dehydration and cyclization of the N-amino alkyl lactam and thereby forming said diazabicycloalkene, the improvement which comprises:

reacting said lactam with said alpha-beta unsaturated nitrile having from 3–6 carbon atoms in the presence of a catalyst consisting essentially of a diazabicycloalkene of the formula:



wherein, R, R_1, and n have the above meaning; and without effecting separation of the cyanoalkyl-lactam reaction product prior to effecting hydrogenation.

4,943,634

N-HETEROCYCLIC BENZAMIDES

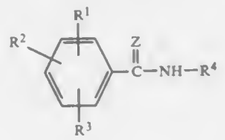
Kenneth W. Burow, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 805,020, Dec. 5, 1985, Pat. No. 4,801,718, which is a division of Ser. No. 685,922, Dec. 24, 1984, Pat. No. 4,636,243, which is a division of Ser. No. 510,699, Jul. 5, 1983, Pat. No. 4,515,625, which is a division of Ser. No. 302,323, Sep. 14, 1981, Pat. No. 4,416,683, which is a continuation-in-part of Ser. No. 187,675, Sep. 16, 1980, abandoned. This application Nov. 14, 1988, Ser. No. 270,907

Int. Cl.[5] C07D *237/20;* A01N *43/58*

U.S. Cl. 544—224 **26 Claims**

1. An N-aryl benzamide of the formula



wherein:

Z is oxygen or sulfur;

R^1 is hydrogen, and

R^2 and R^3 independently are C_1–C_4 alkyl, C_1–C_4 alkylthio, or C_1–C_4 alkoxy;

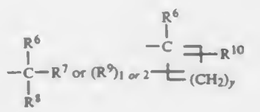
R^4 is



in which:

R is hydrogen or C_1–C_4 alkyl;

R^5 is

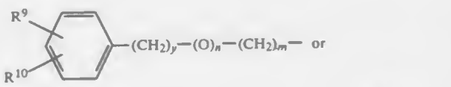


wherein:

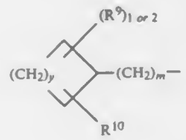
R^6 is hydrogen, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_6 alkoxy, or C_1–C_6 alkylthio;

y is an integer from 0 to 5;

R^7 and R^8 independently are hydrogen, C_1–C_{13} alkyl, halo-C_1–C_{13} alkyl, C_2–C_{13} alkenyl, C_2–C_{13} alkynyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_4 alkoxy-C_1–C_6 alkyl, C_1–C_4 alkylthio-C_1–C_6 alkyl, C_2–C_4 alkanoyloxy-C_1–C_6 alkyl,



or



wherein:

m is an integer from 0 to 4;

n is zero or 1;

R^9 and R^{10} independently are hydrogen, halogen, C_1–C_4 alkyl, or C_2–C_4 alkenyl;

and the agronomically acceptable salts thereof.

4,943,635

ENANTIOSELECTIVE REDUCTION OF KETONES

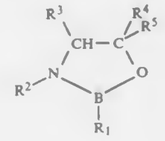
Elias J. Corey, Cambridge, Mass., assignor to President & Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 90,196, Aug. 27, 1987, abandoned. This application Jul. 29, 1988, Ser. No. 224,697

Int. Cl.[5] C07B *53/00;* C07F *5/02*

U.S. Cl. 546—13 **30 Claims**

1. A chiral 1,3,2-oxazaborolidine of the formula:



in which:

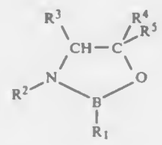
R_1 is lower alkyl or aralkyl;

R_2 is hydrogen, methyl, or ethyl;

R_3 is alkyl, aryl, or aralkyl; or R_2 and R_3, taken together with that part of the oxazaborolidine ring to which they are attached, form a 4-, 5-, or 6-membered ring, carbocyclic except for the oxazaborolidine nitrogen; and

R_4 and R_5 are independently alkyl, aryl, or aralkyl; or R_2 and R_4, taken together with that part of the oxazaborolidine ring to which they are attached, form a 5- or 6-membered ring, carbocyclic except for the oxazaborolidine nitrogen, and R_5 is hydrogen, or R_2, R_3, and R_4, taken together with that part of the oxazaborolidine ring to which they are attached, form two 5-membered ring, carbocyclic except for the oxazaborolidine nitrogen, cis-fused at the CH—R_3 bond.

11. A chiral 1,3,2-oxazaborolidine of the formula:



in which:

R_1 is hydrogen, lower alkyl. or aralkyl; and either:

(1) R_2 and R_3, taken together with that part of the oxazaborolidine ring to which they are attached, form a 4-, 5-, or 6-membered ring, carbocyclic except for the oxazaborolidine nitrogen; and R_4 and R_5 are independently alkyl, aryl, or aralkyl, or

(2) R_2 and R_4, taken together with that part of the oxazaborolidine ring to which they are attached, form a 5- or 6-membered ring, carbocyclic except for the oxazaborolidine nitrogen; R_3 is alkyl, aryl, or aralkyl; and R_5 is hydrogen, or

(3) R_2, R_3, and R_4, taken together with that part of the oxazaborolidine ring to which they are attached, form two 5-membered rings, carbocyclic except for the oxazaborolidine nitrogen, cis-fused at the CH—R_3 bond; and R_5 is alkyl, aryl, or aralkyl.

4,943,636

CERTAIN PYRIDYL-DI-SULFIDE-ALKYLENECARBONXYLATE-ORTHO-NITRO-PHENYLSULFONIC ACID ESTERS USEFUL FOR COUPLING BIOLOGICAL MATERIALS

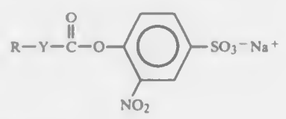
Danute E. Nitecki, Berkeley, and Lois Aldwin, San Mateo, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 839,447, Mar. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 637,905, Aug. 9, 1984, abandoned. This application Sep. 10, 1987, Ser. No. 95,387

Int. Cl.[5] C07D *213/34*

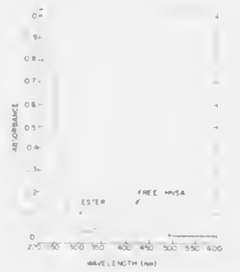
U.S. Cl. 546—294 **5 Claims**

1. A water-soluble ester useful for coupling biological materials, said ester being of the formula:

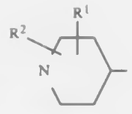


wherein R is

wherein Q is selected from the group consisting of



and



wherein R^1 and R^2 are independently selected from the group consisting of H, NO_2 and COOH, and Y is a divalent space moiety covalently linking R to the carboxyl carbon of the ester, and selected from the group consisting of acylic saturated linear alkylene having 1–10 carbon atoms, branched alkylene having 1–10 carbon atoms and cycloalkylene having 5 to 8 carbon atoms in their cyclic rings.

4,943,637

METHOD FOR PREPARING 2-PHENYLBENZOTRIAZOLES

Shuichi Seino, Kobe, and Tomizo Fujino, Akashi, both of Japan, assignors to Chemipro Kasei Kaisha, Ltd., Hyogo, Japan

Continuation of Ser. No. 932,457, Nov. 18, 1986, abandoned. This application Aug. 12, 1988, Ser. No. 232,567

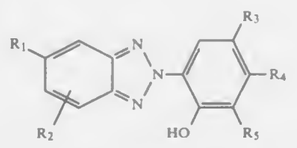
Claims priority, application Japan, Sep. 16, 1986, 61-218864; Sep. 16, 1986, 61-218865

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.[5] C07D *249/20*

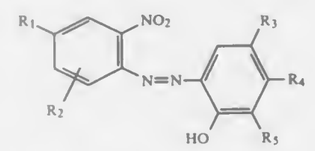
U.S. Cl. 548—260 **18 Claims**

1. A method for preparing a 2-phenyl-benzotriazole of formula I,



(I)

wherein R_1 represents hydrogen, chlorine, a lower alkyl group having a carbon number of 1 to 4, a lower alkoxy group having a carbon number of 1 to 4, carboxyl group or a sulfonic acid group; R_2 represents hydrogen, chlorine, a lower alkyl group having a carbon number of 1 to 4, or a lower alkoxy group having a carbon number of 1 to 4; R_3 represents hydrogen, chlorine, an alkyl group having a carbon number of 1 to 12, a lower alkoxy group having a carbon number of 1 to 4, a phenyl group, a phenyl group substituted with an alkyl group which has a carbon number of 1 to 8, a phenoxy group or a phenylalkyl group, the alkyl portion of which having a carbon number of 1 to 4; R_4 represents hydrogen, chlorine, hydroxy group, or a lower alkoxy group having a carbon number of 1 to 4; and R_5 represents hydrogen, an alkyl group having a carbon number of 1 to 12, or a phenylalkyl group, the alkyl part of which having a carbon number of 1 to 4 comprising: reducing an o-nitroazobenzene of formula III,



(III)

wherein R_1, R_2, R_3, R_4 and R_5 are as defined above with an alcohol reducing agent of at least one selected from the group consisting of primary and secondary alcohol reducing agents, said primary alcohol reducing agent used in an amount of 0.9 to 1.3 mole primary alcohol reducing agent to each mole of o-nitroazobenzene and said secondary alcohol reducing agent used in an amount of 1.8 to 2.6 mole secondary alcohol reducing agent to each mole of o-nitroazobenzene, said reducing step carried out in the presence of an aromatic ketone catalyst, selected from the group consisting of benzanthrone and 9-fluorenone and a base to form said 2-phenylbenzotriazole by reaction of the compound of formula III with said alcohol reducing agent.

4,943,638

DYES SUITABLE FOR SENSITIZATION OF PHOTOCONDUCTIVE SYSTEMS

David E. Brown, St. Paul, and Louis M. Leichter, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 196,739, May 20, 1988, Pat. No. 4,853,310. This application Jul. 24, 1989, Ser. No. 383,977

Int. Cl.[5] C07D *209/02*

U.S. Cl. 548—455 **4 Claims**

1. A cyanine dye having at least 7 carbon atoms in a polymethine chain characterised in that it is in the form of a triiodide salt.

4,943,639

(S)-ALPHA-ETHYL-2-OXO-1-PYRROLIDINEACETAMIDE

Jean Gobert, Brussels; Jean-Pierre Geerts, Leglise, and Guy Bodson, Bellefontaine, all of Belgium, assignors to U C B Societe Anonyme, Brussels, Belgium

Division of Ser. No. 25,277, Mar. 12, 1987, Pat. No. 4,837,223, which is a division of Ser. No. 733,790, May 24, 1985, Pat. No. 4,696,943. This application Feb. 16, 1989, Ser. No. 311,631

Claims priority, application United Kingdom, May 15, 1984, 8412357

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.[5] C07D *207/277*

U.S. Cl. 548—550 **2 Claims**

1. (S)-alpha-ethyl-2-oxo-1-pyrrolidineacetamide substantially free of (R)-alpha-ethyl-2-oxo-1-pyrrolidineacetamide.

2. (S)-alpha-ethyl-2-oxo-1-pyrrolidineacetamide substantially free of (R)-alpha-ethyl-2-oxo-1-pyrrolidineacetamide, prepared by the process which comprises reacting (S)-alpha-ethyl-2-oxo-1-pyrrolidineacetic acid successively with (1) an alkyl haloformate of the formula HalCOOZ in which Hal represents a halogen atom and Z represents an alkyl radical having 1 to 4 carbon atoms, and with (2) ammonia.

4,943,640

PREPARATION OF 5-(1-ALKYL-CARBONYLOXY)ALKYLPYRROLIDIN-2-ONE

Edmund P. Woo, and Michael J. Mullins, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 542,293, Oct. 14, 1983, abandoned. This application Mar. 18, 1988, Ser. No. 169,691

Int. Cl.[5] C07D *207/277*

U.S. Cl. 548—551 **19 Claims**

1. A process for the preparation of a 5-(1-alkylcarbonyloxy)alkylpyrrolidin-2-one which comprises contacting a N-alkylcarbonyl-5-alkylcarbonylpyrrolidin-2-one with hydrogen in the presence of a catalytic amount of a hydrogenation catalyst under conditions such that a 5-(1-alkylcarbonyloxy)alkylpyrrolidin-2-one is prepared.

4,943,641

3-AMINOAZETIDINE, ITS SALTS, PROCESS FOR THEIR PREPARATION AND INTERMEDIATES OF SYNTHESIS

Dino Nisato, Pavia, and Marco Frigerio, Mantova, both of Italy, assignors to Sanofi, Paris, France

Division of Ser. No. 703,828, Feb. 21, 1985, Pat. No. 4,822,895. This application Feb. 17, 1989, Ser. No. 311,868

Claims priority, application France, Feb. 27, 1984, 84 02951

Int. Cl.[5] C07D *205/04*

U.S. Cl. 548—953 **7 Claims**

1. A process for the preparation of 3-aminoazetidine and its salts, which comprises:

(a) treating a 1-protected 3-sulfonyloxyazetidine, of formula



(II)

wherein R represents an alkyl group of from 1 to 4 carbon atoms, a phenyl group or a tolyl group and X represents the protecting group, with an alkali metal phthalimide;

(b) submitting the 1-protected 3-phthalimidoazetidine thus obtained to two subsequent reactions of hydrolysis with a 60–90% aqueous solution of hydrazine and of catalytic hydrogenation or, when the 1-protecting group is trityl, to two subsequent reactions of hydrolysis with a 60–90% aqueous solution of hydrazine and an acid hydrolysis under mild acid conditions;

(c) isolating the 3-aminoazetidine base thus obtained or converting the compound thus obtained into its addition salts with inorganic or organic acids.

4,943,642

HALO-OXYDIPHTHALIC ANHYDRIDES

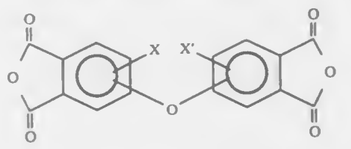
Jeffrey S. Stults, and Willis T. Schwartz, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 15, 1989, Ser. No. 352,070

Int. Cl.[5] C07D *307/89, 319/24*

U.S. Cl. 549—241 **7 Claims**

1. An oxydiphthalic anhydride compound of the formula



where X is F, Cl, Br, or I; X' is H, F, Cl, Br, or I.

4,943,643

MOLTEN SALT CATALYZED OXIDATION OF ALKANES OR OLEFINS USING LOWER TEMPERTURE NITRATE SALTS

B. Timothy Pennington, Sulphur, and Michael C. Fullington, Lake Charles, both of La., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 7, 1989, Ser. No. 362,711
The portion of the term of this patent subsequent to Nov. 22, 2006, has been disclaimed.
Int. Cl.[5] C07D 301/06
U.S. Cl. 549—532 11 Claims

1. A process for producing an alkylene oxide comprising reacting an olefin having from 3 to 22 carbon atoms per molecule, or mixture thereof, with oxygen or an oxygen-containing gas, said olefin and said oxygen or oxygen-containing gas being gaseous reactants, by contacting said gaseous reactants with a bath, stream, spray or mist of at least one molten nitrate salt catalyst comprising lithium nitrate, said catalyst being present in an amount sufficient to absorb any heat generated during said reaction while maintaining an essentially constant reaction temperature, said reaction being conducted at a reaction temperature of between about 180° C. and about 250° C. and a reaction pressure of between about 1 and about 50 atmospheres to produce an alkylene oxide and a mixture of aldehyde by-products, the molar selectivity of said olefin to form said alkylene oxide being greater than about 50% and the molar selectivity of said olefin to form said aldehyde by-products being less than 16%.

4,943,644

OLEFIN AND ALKANE OXIDATIONS, RUTHENIUM CARBOXYLATE CATALYST THEREFOR AND METHOD OF PREPARATION THEREOF

Russell S. Drago, and Shannon Davis, both of Gainesville, Fla., assignors to The University of Florida, Gainesville, Fla.

Division of Ser. No. 147,302, Jan. 22, 1988, Pat. No. 4,885,377. This application Nov. 23, 1988, Ser. No. 274,837
Int. Cl.[5] C07D 301/06
U.S. Cl. 549—533 1 Claim

1. In a method of oxidizing olefins or alkanes wherein said olefin is contacted with oxygen in the presence of a catalyst for a time sufficient to oxidize said olefin or alkane, the improvement comprising conducting said oxidation in the presence of a catalyst consisting essentially of a complex of the formula:

$$Ru_3O[OCO(CF_2)_yCF_3]_6L_x^{x+}$$

wherein: Ru are reuthenium atoms having a formal oxidation state of +2 or +3,
L is a neutral or anionic ligand,
y is an integer from 0 to 6, and
x is an integer from 1 to 3; and an anion.

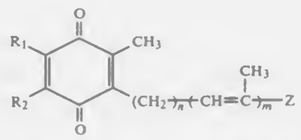
4,943,645

BENZOQUINONE DERIVATIVES AND PRODUCTION THEREOF

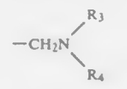
Shinji Terao, Toyonaka; Hisayoshi Okazaki, Kyoto, and Isuke Imada, Izumi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 268,495, Nov. 8, 1988, which is a division of Ser. No. 168,321, Mar. 18, 1988, Pat. No. 4,808,339, which is a division of Ser. No. 717,098, Mar. 28, 1988, Pat. No. 4,751,303, which is a division of Ser. No. 484,232, Apr. 12, 1983, Pat. No. 4,526,719. This application Aug. 8, 1989, Ser. No. 390,871
Claims priority, application Japan, Apr. 13, 1982, 57-62224
Int. Cl.[5] C07C 50/2, 50/38
U.S. Cl. 552—309 7 Claims

1. A compound of the formula



wherein R_1 and R_2 are the same or different and each is methyl or methoxy; n is an integer of 0 to 21; m is 0 or 1, and Z is a group of the formula:



wherein R_3 and R_4 are the same or different and each is hydrogen or an alkyl group which may optionally be substituted.

4,943,646

GALLIUM COMPLEXES AND SOLVENT EXTRACTION OF GALLIUM

James P. Coleman, Maryland Heights; Charles R. Graham, St. Charles, and Bruce F. Monzyk, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 937,849, Dec. 4, 1986. This application Nov. 23, 1987, Ser. No. 125,822
Int. Cl.[5] C07F 5/00
U.S. Cl. 556—1 7 Claims

1. A gallium (III) complex of N-alkyl alkanohydroxamic acid, wherein the alkano group has at least 8 carbon atoms, wherein said complex has a hydrocarbon solvent solubility of at least 2 percent by weight, wherein gallium can be stripped from said complex by a strong acid solution in the pH range of 1.2–1.6 and wherein said N-alkyl alkanohydroxamic acid is sufficiently stable in such acid solution that less than 1% of it is hydrolyzed during stripping of gallium.

4,943,647

PREPARATION OF HEXAALKYLDISILTHIANE

Elliot I. Band, North Tarrytown, N.Y., and Suzanne T. Eberhart, New Haven, Conn., assignors to Akzo America Inc., New York, N.Y.

Filed Mar. 30, 1989, Ser. No. 330,575
Int. Cl.[5] C07F 7/08
U.S. Cl. 556—426 7 Claims

1. A process for preparing a product which is predominantly hexaalkyldisilthiane which comprises the reaction of dilithium sulfide and halotrialkylsilane in a non-oxygenated solvent.

4,943,648

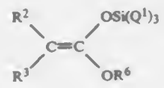
INITIATORS FOR GROUP TRANFER POLYMERIZATION

Ira B. Dicker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1988, Ser. No. 176,807
Int. Cl.[5] C07F 7/08, 7/10, 7/18
U.S. Cl. 556—470 21 Claims

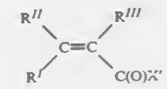
1. Process for preparing a silyl ketene acetal adduct, the process comprising contacting and reacting a silyl ketene acetal and an α,β-unsaturated compound in the presence of a mercury- or Lewis acid-containing catalyst,

A. the silyl ketene acetal being of the formula



wherein:
R^6 is
(a) a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphaticaromatic radical containing up to 20 carbon atoms;
(b) a polymeric radical containing at least 20 carbon atoms;
(c) a radical of (a) or (b) containing one or more ether oxygen atoms within aliphatic segments thereof; or
(d) a radical of (a), (b), or (c) containing one or more functional substituents that are unreactive under the process conditions;
each of R^2 and R^3 is independently selected from —H and hydrocarbyl, defined as for R^6 above, subparagraphs (a) to (d);
each Q^1, independently, is R^1 or OR^1;
each R^1, independently, is a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms or —H, provided that at least one R^1 group is not —H;

B. the α,β-unsaturated compound being of the formula



wherein:
each of R^I and R^{II}, independently, is as defined for R^2 and R^3 above;
R^{III} is $—CH_3$, —CN or $—CO_2R$;
X' is $—OSi(R^1)_3$, —R, —OR or —NR'R";
R is
(a) a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphaticaromatic radical containing up to 20 carbon atoms;
(b) a polymeric radical containing at least 20 carbon atoms;
(c) a radical of (a) or (b) containing one or more ether oxygen atoms within aliphatic segments thereof;
(d) a radical of (a), (b) or (c) containing one or more functional substituents that are unreactive under the process conditions;
(e) a radical of (a), (b), (c) or (d) containing one or more reactive substituents of the formula —O(O)C—C-(Y^1)=CH_2 wherein Y^1 is —H or $—CH_3$; or
(f) a radical of (a), (b), (c), (d), or (e) wherein at least some of the hydrogen atoms are replaced with fluorine atoms; and
each of R' and R" is independently selected from C_{1-4} alkyl; and

C. the catalyst consists essentially of either:
(a) (i) about 0.5–100 mole % of a mercury compound selected from R^7HgI and $Hg(L)_2$ wherein:
R^7 is a hydrocarbyl radical of 1 to 10 carbon atoms; and
L is an anion; and
(ii) 0 to about 99.5 mole % of a silane of the formula $(R^1)_3SiZ^2$ wherein R^1 is defined as above and Z^2 is a weakly basic radical; or
(b) (i) about 0.5–90 mole % of a Lewis acid selected from zinc iodide, zinc chloride, zinc bromide, boron trifluoride, alkyl-aluminum oxide, alkyl-aluminum chloride, cadmium iodide, ferric chloride and stannous chloride; and
(ii) about 10–99.5 mole % of a silane of the formula $(R^1)_3SiZ^2$ wherein R^1 is defined as above and Z^2 is a weakly basic radical; provided, however:
(1) when the catalyst contains 100% of (a)(i), the mercury compound is selected from R^7HgI, HgI_2 and $Hg(ClO_4)_2$;
(2) when the catalyst is (a), at least one of L and Z^2 must be I; and
(3) when the catalyst is (a) and Z^2 is not I, L is I or ClO_4.

4,943,649

POLYOLS, USE AND METHOD OF PREPARATION

George Magnus, Arlington Heights, and Brian Kelley, Round Lake Beach, both of Ill., assignors to Polyactane, Inc., Milwaukee, Wis.

Filed Nov. 1, 1988, Ser. No. 266,471
Int. Cl.[5] C07H 3/10; C08B 11/145, 11/155; C08G 18/12
U.S. Cl. 536—124 30 Claims

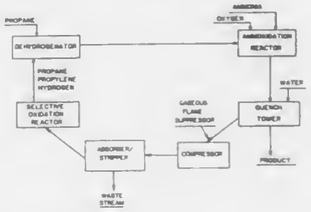
1. A method of producing an alkoxylated polyol comprising:
(a) dispersing a urea reactant in a liquid dispersing media comprised of a polyether polyol, a polyester polyol and mixtures thereof and a chemical moiety capable of being alkoxylated and being characterized by at least the following characteristics:
(1) being selected from the group consisting essentially of carbohydrates, triazines, derivatives and sources thereof and mixtures thereof;
(2) being dispersible in said dispersing media at a temperature below about 130° C.; and
(3) having at least two reactive hydrogen atoms therein; and
(b) reacting the resultant dispersion with a C_2–C_6 epoxide under alkoxylation conditions for a period of time sufficient to obtain an alkoxylated polyol having a hydroxyl number below about 600.

4,943,650

PROCESS FOR THE PRODUCTION OF NITRILES

Ramakrishnan Ramachandran, Allendale; Mark J. Andrecovich, Somerville; Donald L. MacLean, Anandale, and Donald P. Satchell, Jr., Summit, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jan. 30, 1989, Ser. No. 304,055
Int. Cl.[5] C07C 253/24, 253/26, 253/34
U.S. Cl. 558—319 20 Claims



1. A process for the production of alpha, beta olefinically unsaturated nitriles comprising:
(a) forming an alkene from a gaseous alkane in a catalytic dehydrogenator;
(b) introducing a gaseous stream comprising said alkene, pure oxygen, air or a gas-enriched in oxygen relative to air and ammonia into a reactor and reacting them in the presence of a suitable catalyst to produce a gaseous effluent containing said nitrile or oxide;
(c) quenching said effluent in a liquid to form a liquid phase containing said nitrile or oxide and a gaseous phase;
(d) recovering said nitrile or oxide from said liquid phase;
(e) raising the pressure of the gaseous phase and introducing it into an absorber/stripper unit to thereby form a recycle gaseous stream comprising said unreacted alkane and alkene, a minor amount of oxygen and nitrogen when air

or oxygen-enriched air is introduced into the reactor in step (b), and a waste stream comprising the remainder of said gaseous effluent;

(f) introducing the recycle stream into a catalytic selective oxidation unit to remove the remaining oxygen in said stream; and

(g) introducing the recycle effluent from the selective oxidation unit into the dehydrogenator, wherein the nonflammability index of the waste stream formed in step (e), determined according to the expression

$$\text{Nonflammability Index} = \frac{\text{Percent Total Hydrocarbons}}{(\text{Pressure-psia})^{0.65}\,(\text{Percent Oxygen})^{1.94}}$$

is between about 0.005 and 10.0.

4,943,651

NOVEL SUBSTITUED NAPHTHALENE COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

Shinichi Nishiyama; Hideo Yamaoka; Tooru Yamanaka, and Tohru Yamada, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 318,560

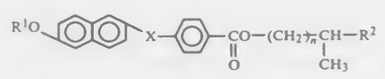
Claims priority, application Japan, Mar. 7, 1988, 63-54430; Mar. 7, 1988, 63-54431

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—56 **4 Claims**

1. A substituted naphthalene compound having the following formula [I].

[I]



wherein R^1 represents alkyl of 1–18 carbon atoms, R^2 represents alkyl of 1–18 carbon atoms, X is a group represented by $-OCH_2-$ or $-CH_2CH_2-$, and n is 0 or 1.

4,943,652

PROCESS FOR ASYMMETRICALLY REDUCING CARBONYL COMPOUNDS

Masanobu Yatagai, and Takashi Ohnuki, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 270,514

Claims priority, application Japan, Nov. 11, 1987, 62-284987; Apr. 19, 1988, 63-95900

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—60 **9 Claims**

1. A process for asymmetrically reducing a ketone containing a heteroatom or atoms on at least one of the α- and β-carbon atoms of at least one of the two groups attached to the carbonyl group of the ketone, which comprises reducing the ketone by the use of a reducing agent comprising (i) an optically active tartaric acid or ester thereof and (ii) a metal borohydride, thereby producing an optically active alcohol.

4,943,653

NOVEL FLUORINE-CONTAINING ACRYLIC ACID DERIVATIVE AND POLYMER THEREOF

Shigeru Morita, Osaka, and Masahiko Oka, Shiga, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation of Ser. No. 751,724, Jul. 3, 1985, abandoned. This application Feb. 26, 1987, Ser. No. 20,133

Claims priority, application Japan, Jul. 9, 1984, 59-142986

Int. Cl.[5] C07C *69/62*

U.S. Cl. 560—219 **8 Claims**

6. A fluorine-containing acrylic acid derivative of the formula:

$$[(CH_2{=}CF{-}CO){-}(O{-}CH_2{-}\underset{\displaystyle OH}{\underset{|}{CH}}{-}CH_2)_n]_p{-}A$$

wherein p is an integer corresponding to the valance of A, n is 0 or 1, and A is a residue derived by removing at least two active hydrogen atoms from a phenolic hydroxyl group.

4,943,654

PROCESS FOR PREPARATION OF α-ACETOXY-α-METHYL-N,N'-DIACETYL MALONAMIDE

Bernard Dubreux, Francheville Le Haut, and Charles Laviron, Lyons, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 728,446, May 1, 1985, abandoned, Continuation of Ser. No. 459,100, Jan. 19, 1983, abandoned. This application Jan. 15, 1986, Ser. No. 819,985

Claims priority, application France, Feb. 2, 1982, 82 01624

Int. Cl.[5] C07C *231/06, 235/88*

U.S. Cl. 560—251 **5 Claims**

1. A process for the preparation of α-acetoxy-α-methyl-N,N'-diacetylmalonamide in which hydrocyanic acid or cyanide is reacted with acetic anhydride in a first step and then the mixture so obtained is treated with acetic acid in the presence of an acid catalyst in the second step, wherein the first step is carried out with the acetic anhydride in the presence of an anion exchange resin catalyst, wherein the functional groups are the acetate form of quaternary ammonium or tertiary amine groups and the molar ratio of anhydride to hydrocyanic acid or cyanide is at least one.

4,943,655

SALT OF 5-ACETYL-2-ALKYLBENZENESULFONIC ACID

Kunioki Kato; Masao Kawamura, both of Akashi; Hiroshi Goda, Himeji; Kiyoshi Sawada, Hyogo, and Kazuhiro Hamatani, Kakogawa, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Japan

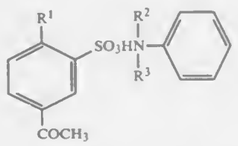
Division of Ser. No. 178,833, Mar. 25, 1988, Pat. No. 4,853,158, which is a continuation of Ser. No. 20,242, Mar. 2, 1987, abandoned, which is a continuation of Ser. No. 733,832, May 14, 1985, abandoned. This application Mar. 24, 1989, Ser. No. 328,388

Claims priority, application Japan, May 15, 1984, 59-98327; May 15, 1984, 59-98328; Sep. 18, 1984, 59-196470; Apr. 3, 1985, 60-71624

Int. Cl.[4] C07C *143/28, 143/38, 143.78*

U.S. Cl. 562—46 **2 Claims**

1. N,N-Dialkylaniline salt of 5-acetyl-2-alkylbenzenesulfonic acid represented by the general formula (5),



wherein R^1 is an alkyl group having 1 to 5 carbon atoms and R^2 and R^3 are the same or different and are each an alkyl group having 1 to 5 carbon atoms.

4,943,656

PROCESS FOR THE PRODUCTION OF POLYALKYLAROMATIC POLYSULFONIC ACIDS AND RECOVERY BY HEAVY PHASE SEPARATION

Lawrence V. Gallacher, East Norwalk, and Harry N. Condos, Stamford, both of Conn., assignors to King Industries, Inc., Norwalk, Conn.

Filed Jul. 19, 1984, Ser. No. 632,528

Int. Cl.[5] C07C *143/24*

U.S. Cl. 562—90 **40 Claims**

1. A process for the production of a polyalkylaromatic polysulfonic acid comprising:

(a) agitating a mixture of at least one polyalkylaromatic compound, sulfuric acid and a water immiscible, inert diluent having a specific gravity of less than about 1.0;

(b) stratifying said mixture and withdrawing any spent acid layer therefrom;

(c) adding water to the remaining layer in an amount sufficient to form three layers, the bottom layer comprising substantially polyalkylaromatic polysulfonic acid and water; and

(d) separating said bottom layer.

4,943,657

UNSYMMETRICAL ORGANIC DISULFIDE COMPOUNDS USEFUL AS ANTIRADIATION AGENTS

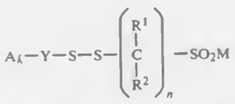
Lamar Field, Nashville, Tenn.; Hikmat A. Musallam, Damascus, Md.; Jeffrey D. Macke, Ft. Mitchell, Ky., and Pramod K. Srivastava, Varanasi, India, assignors to Vanderbilt University, Nashville, Tenn.

Division of Ser. No. 228,010, Aug. 3, 1988, Pat. No. 4,883,890, which is a division of Ser. No. 907,882, Sep. 16, 1986, abandoned. This application Jun. 14, 1989, Ser. No. 365,891

Int. Cl.[5] C07C *145/00*

U.S. Cl. 562—125 **2 Claims**

1. The compound of the formula



wherein A is OH, k is an integer of one to two, Y is a straight chain alkyl having from two to eight carbon atoms which may have an S—S group interposed therebetween, R^1 and R^2 are hydrogen or cycloalkyl, n is an integer from two through five, M is hydrogen, alkali metal or a straight chain alkyl having up to four carbon atoms.

4,943,658

LIQUID OXIDATIVELY MODIFIED ETHYLENIC RANDOM COPOLYMER, PROCESS OF MAKING AND USE

Tatsuo Kinoshita, Yamaguchi; Shuji Minami, Hiroshima; Kinya Mizui, and Ryousuke Kaneshige, both of Chiba, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 173,102

Claims priority, application Japan, Mar. 26, 1987, 62-70216

Int. Cl.[5] C07C *27/10*

U.S. Cl. 562—572.2 **14 Claims**

1. A liquid oxidatively modified ethylenic random copolymer, which is an oxidatively modified product of a liquid ethylenic random copolymer comprising 20 to 80 mol % of ethylene and 80 to 20 mol % of α-olefin, and having

(i) a number average molecular weight (Mn) in the range of from 200 to 10,000 as measured by a vapor pressure osmometer(VPO),

(ii) a molecular weight distribution ($\overline{M}w/\overline{M}n$) given as weight average molecular weight ($\overline{M}w$) divided by number average molecular weight ($\overline{M}n$) in the range of up to 4 as measured by gel permeation chromatography, and

(iii) an oxygen content in the range of from 0.1 to 20 % by weight, an acid value in the range of from 0.1 to 50, and a saponification value in the range of from 0.1 to 100.

4,943,659

PROCESS FOR PREPARATION OF ALPHA, BETA-UNSATURATED ACIDS

Gary P. Hagen, Glen Ellyn, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 785,326, Oct. 7, 1985, abandoned, which is a continuation of Ser. No. 632,018, Jul. 18, 1984, abandoned, which is a continuation of Ser. No. 412,914, Aug. 30, 1982, abandoned. This application Dec. 29, 1986, Ser. No. 946,986

Int. Cl.[5] C07C *51/353, 57/04, 57/26, 57/42*

U.S. Cl. 562—599 **18 Claims**

1. A process for preparation of alpha, beta-unsaturated acids by reaction at a temperature within the range from about 250° C. to 400° C. between formaldehyde and a carboxylic acid of formula RCH_2COOH wherein R is selected from the class consisting of —H, -alkyl, -aryl, -aralkyl, and -cycloalkyl radicals in the presence of a catalyst composition comprising a Group IA alkali metla component and a silica component, wherein said Group IA alkaly metla component is present in an amount in the range from about 200 parts per million to about 15,000 parts per million by weight measured as sodium or sodium mol equivalents, and wherein said silica component is prepared by precipitating a colloidal silica from aqueous solution in the presence of hydrogen ions and thereupon dried, crushed, and calcined such that said silica component has a surface area of 50–500 m^2/g, a pore volume of 0.5–3.5 cc/g and average pore diameter of 80–600 Å, and contains between zero and about 500 parts per million by weight individually of aluminum, zirconium, titanium, or iron.

4,943,660

PROCESS FOR THE PRODUCTION OF THIOCARBOHYDRAZIDE

Dennis E. Jackman, Prairie Village, Kans.; Gary W. Combs, Blue Springs, Mo., and Dietmar B. Westphal, Remscheid, Fed. Rep. of Germany, assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1989, Ser. No. 324,836

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

Int. Cl.[5] C07C *337/06*

U.S. Cl. 564—18 **8 Claims**

1. A process for the production of TCH comprising reacting hydrazine and carbon disulfide in the presence of a mercaptan or a mercaptan-forming compound at a temperature of from 20° to 85° C.

4,943,661

PROCESS FOR PREPARING THIOUREA DIOXIDE DERIVATIVES

Hirohisa Nitoh; Osami Ohura, and Morio Suzuki, all of Shizuoka, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 323,495

Claims priority, application Japan, Sep. 30, 1988, 63-243896

Int. Cl.[5] C07C *335/08, 335/12, 335/16*

U.S. Cl. 564—26 **5 Claims**

1. A process for preparing an amine-substituted thiourea dioxide, comprising reacting thiourea dioxide and an aliphatic or aromatic primary amine in a neutral or acidic pH range.

4,943,662

PROCESS FOR PREPARATION OF DITHIOLS

Emmanuel Arretz, Pau, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Dec. 22, 1988, Ser. No. 288,438

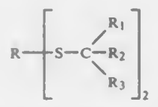
Claims priority, application France, Feb. 17, 1988, 88 01881

Int. Cl.[5] C07C *148/00*

U.S. Cl. 568—66 **20 Claims**

1. A process for the preparation of dithiols comprising reacting hydrogen sulphide in the presence of a solid acid catalyst with a di-(tertiary-alkylthio) alkane of general formula:

(I)



in which R is an alkylene radical having 5 to 20 carbon atoms, and the symbols R_1, R_2 and R_3 are identical or different and are each an alkyl radical having 1 to 15 carbon atoms and wherein the reaction temperature is within the range of ambient temperature to 250° C.

4,943,663

PROCESS FOR THE PREPARATION OF α-ALKYLACROLEINS

Gerhard Diekhaus, and Harald Kappesser, both of Oberhausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

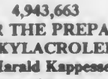
Filed Nov. 22, 1988, Ser. No. 274,829

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1987, 3740293

Int. Cl.[5] C07C *45/00*

U.S. Cl. 568—461 **19 Claims**

1. A process for the preparation of alpha-alkylacrolein comprising a reaction of formaldehyde with a starting aldehyde of the formula



wherein R is a straight or branched chain alkyl having 1 to 10 carbon atoms, in the presence of, per mol of said starting aldehyde, 0.02 to 0.05 moles of at least one secondary amine selected from the group consisting of dipropylamine, methylbutylamine, ethylbutylamine, di-n-butylamine and di-n-octylamine and;

a total of 0.02 to 0.065 moles of a carboxylic acid having 1 to 5 carbon atoms, at a temperature of 70° to 120° C. and under a pressure of 0.2 to 1.0 MPa, the molar ratio of said amine to said acid being 1:0.8 to 1:1.3,

carrying out said reaction in a first step in a mixture of said formaldehyde, said starting aldehyde, said amine, and 25 to 75 mol % of said total of said acid and, as a second stage, adding the rest of said acid to said mixture to complete said reaction.

4,943,664

SURFACTANT PRODUCTS CONTAINING 1,3,4-BUTANETRIOL

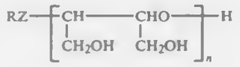
Lowell R. Anderson, Morristown; Mohamed M. Hashem, Wayne, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Princeton, N.J.

Filed Sep. 22, 1989, Ser. No. 410,783

Int. Cl.[5] C07C *43/10*

U.S. Cl. 568—623 **3 Claims**

1. A surfactant product having the formula:



where

R is C_8–C_{24} alkyl;

Z is —O—; and

n is greater than 1 and up to 4,

which is prepared by reaction of 2,3-epoxy-1,4-butanediol with ROM, where M is an alkali metal.

4,943,665

MODIFIED BISPHENOLS CONTAINING ARYLCYCLOBUTENEALKYL ETHERS AND CURED COMPOSITIONS THEREFROM

Pui-Kwan Wong, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 9, 1989, Ser. No. 349,546

Int. Cl.[5] C08G *59/00*

U.S. Cl. 568—633 **18 Claims**

1. A di(arylcyclobutenealkyl) ether of a di(hydroxyphenyl) compound of up to 30 carbon atoms and from 1 to 2 aromatic rings, inclusive.

4,943,666

PROCESS FOR PRODUCING NITROPHENOL COMPOUND

Taiiti Okada, Kyoto, and Toru Ishida, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1989, Ser. No. 337,886

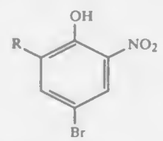
Claims priority, application Japan, Apr. 27, 1988, 63-106147

Int. Cl.[5] C07C *79/32, 79/02*

U.S. Cl. 568—709 **7 Claims**

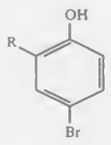
1. A process for producing a compound of the formula:

(II)



wherein R is an alkyl group having 1 to 4 carbon atoms which comprises reacting a compound of the formula:

(I)



wherein R is as defined above with nitrous acid at −10° to 100° C. in a mixed solvent of water and a water-insoluble or slightly soluble organic solvent having a water solubility of not more than 10% by weight.

4,943,667

PREPARATION OF PHENYLETHANOLS

Wolfgang Hoelderich, Frankenthal; Norbert Goetz, Worms, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 13, 1989, Ser. No. 296,766

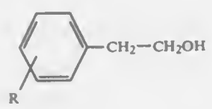
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1988, 3801106

Int. Cl.[5] C07C *29/15, 29/132*

U.S. Cl. 568—814 **8 Claims**

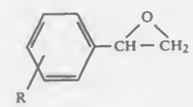
1. A process for preparing a phenylethanol of the formula (I)

(I)



where R is hydrogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms-, fluorine, trifluoromethyl or trifluoromethoxy, which consisting essentially of reacting an epoxy of formula (II)

(II)



where R is as defined above, in the gas phase at from 100° to 500° in the presence of hydrogen over a zeolite or phosphate doped with a hydrogenating metal as a catalyst.

4,943,668

ALKYLATION OF META-XYLENE WITH ALPHA-OLEFINS

Michael S. Matson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1988, Ser. No. 237,818

Int. Cl.[5] C07C *2/66, 2/70*

U.S. Cl. 585—456 **29 Claims**

1. A process for producing an alkylated aromatic product consisting essentially of a C_{13}–C_{20} mono-alkylated meta-xylene wherein the 1,3,5 isomer predominates the 1,2,4 isomer, said process comprising gradually adding a C_{13} to C_{20} α-olefinic compound to a mixture of meta-xylene and a catalyst system while allowing the reaction temperature to rise to a level in the range of about 40° C. to about 80° C., then maintaining a reaction temperature in the range of 40° C. to about 80° C. for a suitable period of time after the addition of the olefinic compound has been completed, wherein said catalyst system comprises elemental iodine and AlX_3 wherein each X is independently selected from the halogens.

4,943,669

METHOD ACCORDING TO THE INVENTION IS NOTABLY APPLIED TO THE SELECTIVE DIMERIZATION OF PROPYLENE INTO METHYL-4-PENTENE-1

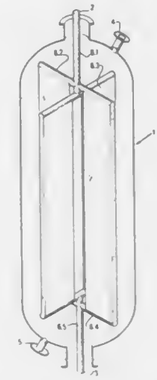
Quang Dang Vu, Neuilly, and Yves Chauvin, Le Pecq, both of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jun. 23, 1989, Ser. No. 370,530

Claims priority, application France, Jun. 24, 1988, 88 08633

Int. Cl.[5] C07C *2/00, 2/08*

U.S. Cl. 585—503 **6 Claims**



1. A catalytic method for dimerizing or codimerizing or oligomerizing olefins, carried out under pressure, in the presence of a solid catalyst, in a reaction zone defined by a substantially cylindrical enclosure whose section is substantially circular, said enclosure containing a catalyst bed in which a plurality of hollow internal spaces having a substantially parallelepipedic shape is disposed, through which flows a thermoregulation fluid, at a pressure substantially equal to the pressure to which the reaction mixture is subjected, in which method:

a fresh liquid charge, containing at least one olefin, mixed with a recycled charge defined below, is introduced into said hollow internal spaces defined by walls, the weight ratio between the recycled charge and the fresh charge being between 1 and 500, the fresh charge-recycled charge mixture forming the thermoregulation fluid;

the thermoregulation fluid is drawn off from said internal spaces and this fluid is separated into two portions called hereafter recycled charge and make-up charge, the weight ratio between said recycled charge and said make-up charge being between 1 and 500;

said recycled charge is fed into said internal spaces as a thermoregulation fluid component;

said make-up charge is fed into said catalyst bed; and

a reaction effluent is drawn off from said catalyst bed.

4,943,670

PREPARATION OF CONJUGATED DIENES

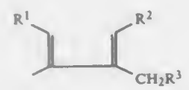
Brian L. Goodall, Akron, Ohio; Willem Terlouw, and Jacob C. van der Sar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 22, 1989, Ser. No. 441,124

Int. Cl.[5] C07C *2/76, 1/20*

U.S. Cl. 585—601 **15 Claims**

1. A process for the preparation of a compound of general formula



(I)

in which R^1 represents a hydrogen atom or a methyl group, one of R^2 and R^3 represents a hydrogen atom and the other of R^2 and R^3 is the same as R^1, which process comprises reacting a compound of general formula

$$R^1CH=C=CH_2 \quad (II)$$

with a salt of formic acid in the presence of a catalyst system comprising a palladium salt and a phosphorus compound of general formula

$$P(OX)_n(X)_{3-n} \quad (III)$$

in which n is 0, 1, 2, or 3 and each X independently represents an alkyl, alkenyl, aryl, aralkyl, alkaryl or cycloalkyl group, and recovering the desired compound of formula (I).

4,943,671

REDUCTIVE DEHALOGENATION OF ORGANIC HALOGEN COMPOUNDS

Toni Dockner, Meckenheim; Manfred Sauerwald, Roedersheim-Gronau; Herbert Krug, Ludwigshafen, and Matthias Irgang, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 2, 1988, Ser. No. 189,362

Claims priority, application Fed. Rep. of Germany, May 12, 1987, 3715751

Int. Cl.[5] C07C *1/00, 1/30*

U.S. Cl. 585—642 **14 Claims**

1. A process for the reductive dehalogenation of an organic halogen compound in which one or more halogen atoms selected from the group containing of iodine, bromine and chlorine are covalently bonded to the carbon, which process comprises:

reacting said organic halogen compound with a hydrocarbon in the presence of carbon at a temperature of from 100° to 450° C. for dehalogenation with formation of a hydrogen halide, and carrying out the dehalogenation in the presence of iron powder or an iron compound as a cocatalyst.

4,943,672

PROCESS FOR THE HYDROISOMERIZATION OF FISCHER-TROPSCH WAX TO PRODUCE LUBRICATING OIL (OP-3403)

Glen P. Hamner, deceased, late of Baton Rouge, La. (by Annabelle Hamner, executrix); Heather A. Boucher, Point Edward, Canada, and William A. Wachter, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 134,797, Dec. 18, 1987, abandoned. This application Dec. 13, 1988, Ser. No. 283,643

Int. Cl.[5] C07C *5/13*

U.S. Cl. 585—737 **14 Claims**

1. A process for producing a lubricating oil having a high viscosity index and a low pour point from a Fischer-Tropsch wax, which process comprises:

(a) contacting the Fischer-Tropsch wax with hydrogen and a hydrotreating catalyst comprising Co, Ni, Mo or W or any mixture of two or more of said metals to reduce the oxygenate and trace metal levels of the wax and to partially hydrocrack and isomerize the wax;

(b) contacting the hydrotreated Fischer-Tropsch wax from step (a) with hydrogen in a hydrosiomerization zone in the presence of a fluorided Group VIII metal-on-alumina catalyst having (i) a bulk fluoride concentration ranging from about 2 to about 10 weight percent, wherein the fluoride concentration is less than about 3.0 weight percent at the outer surface layer to a depth less than one one hundredth of an inch, provided the surface fluoride concentration is less than a bulk fluoride concentration, (ii) an aluminum fluoride hydroxide hydrate level greater than 60 where an aluminum fluoride hydrate level of 100 corresponds to the X-ray diffraction peak height of 5.66Å for a Reference Standard, and (iii) a N/Al ratio less than about 0.005;

(c) fractionating the effluent from step (b) to produce a lubricating oil fraction boiling above about 640° F. at atmospheric pressure; and

(d) dewaxing the lubricating oil fraction from step (c) to produce a dewaxed lubricating oil having a viscosity index of at least 130 and a pour point less than about 0° F.

4,943,673

NOVEL METAL-DIKETONE ABSORBENTS FOR OLEFINS

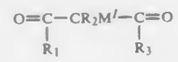
John A. T. Norman, Whitehall, and Robert E. Stevens, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 167,605, Mar. 14, 1988, Pat. No. 4,845,254, which is a division of Ser. No. 83,742, Aug. 7, 1987, abandoned. This application Oct. 17, 1988, Ser. No. 258,737

Int. Cl.[5] C07C *7/11*

U.S. Cl. 585—845 **9 Claims**

I. A process for removing an unsaturated hydrocarbon containing at least one non-aromatic unsaturated bond from a feedstream containing said unsaturated hydrocarbon and saturated hydrocarbons, said process comprising contacting said feedstream with a mixture consisting essentially of an organic solvent or diluent and a compound of the formula:



wherein R_1 is trichloromethyl or R_F; R_F is C_nF_{2n+1} and n is 1–8; R_2 is H or hydrocarbyl of 2–20 carbon atoms having at least one olefinic unsaturated bond; R_3 is hydrocarbyl of 2–20 carbon atoms having at least one olefinic unsaturated bond and M^I is Cu^I or Ag^I, whereby said compound selectively absorbs the unsaturated hydrocarbon.

4,943,674

FRUIT SPECIFIC TRANSCRIPTIONAL FACTORS

Catherine M. Houck, Vacaville, and Julie R. Pear, Davis, both of Calif., assignors to Calgene, Inc., Davis, Calif.

Filed May 26, 1987, Ser. No. 54,369

Int. Cl.[5] A01H *1/04;* **C12N** *15/00, 5/00;* **C07H** *15/12*

U.S. Cl. 800—205 **14 Claims**

13. A tomato plant comprising:

a DNA construct comprising in the direction of transcription, a tomato 2All transcriptional initiation region joined to a DNA sequence of interest, wherein said DNA sequence is other than the wild-type sequence and is under the transcriptional regulation of said 2All initiation region, and a transcriptional termination region.

4,943,675

ANILINOPYRIMIDINE DERIVATIVES

Takahiro Kimoto, Fuji; Hideo Ohi, Shizuoka; Toshihisa Watanabe, Fuji, and Tadashi Nakayama, Shizuoka, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1989, Ser. No. 366,459

Claims priority, application Japan, Jun. 24, 1988, 63-156069

Int. Cl.[5] C07D *239/00, 239/42*

U.S. Cl. 544—330 **2 Claims**

1. The compound, 2-anilino-4-methyl-6-acetonylpyrimidine.

2. The compound, 2-anilino-4-methyl-6-(2-chloropropen-1-yl)pyrimidine.

4,943,676

THERMOLYSIS OF POLY(N-VINYLFORMAMIDE) TO POLY(N-VINYLAMINE)

Robert K. Pinschmidt, Jr., Allentown, Pa., and Ta-Wang Lai, Novato, Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 12, 1989, Ser. No. 378,731

Int. Cl.[5] C08F *8/12*

U.S. Cl. 525—383 **6 Claims**

1. In a method for preparing a vinylamine-containing polymer from a vinylamide-containing polymer, the improvement which comprises heating a vinylformamide-containing polymer in the absence of a base or an acid to a temperature sufficient to effect thermodecarbonylation.

4,943,677

MAKING POLY(ALKYLENE CARBONATES) OF CONTROLLED MOLECULAR WEIGHT

Andrzej Rokicki, Aiburtis, Pa., assignor to Air Products and Chemicals, Inc., Allentown; Arco Chemical Company, Newtown Square, both of, Pa. and Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 8, 1989, Ser. No. 363,579

Int. Cl.[5] C08G *64/02, 64/34*

U.S. Cl. 528—405 **14 Claims**

1. A process for making a poly(alkylene carbonate) having a desired molecular weight which comprises contacting under copolymerization conditions carbon dioxide and one or more oxirane compounds in the presence of a catalytic amount of a zinc polycarboxylate catalyst and an amount of sterically hindered organic proton donor sufficient to reduce the molecular weight of the poly(alkylene carbonate) from that which would have been formed without said proton donor being present, but insufficient to reduce significantly the productivity of said catalyst over the course of the reaction, said proton donor having an acidity of 3 to 20 pK_a and a steric parameter (E_s) of −0.38 or less.

4,943,678

PESTICIDAL COMPOSITION

Sandor Angyan, Budaors; Gyula Oros; Istvan Racz, both of Budapest, and Tamas Detre, Nagymaros, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

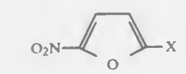
Filed Jun. 25, 1985, Ser. No. 748,740

Claims priority, application Hungary, Jun. 25, 1984, 2454/84

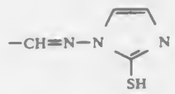
Int. Cl.[5] A01N *43/82, 43/76*

U.S. Cl. 514—374 **6 Claims**

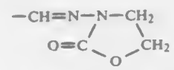
1. A method of combating phytopathogenic bacteria selected from the group consisting of Agrobacteria, Erwinia, Xanthomonas, Pseudomonas, and Corynebacterium, which comprises the step of applying onto a plant, the soil, or the environment thereof, an antibacterial composition, comprising a phytopathogenic bactericidally effective amount of the compound of the Formula (I)



wherein X is the group of the Formula (a)



or the Formula (b)



in combination with an agriculturally acceptable inert carrier.

4,943,679

PROCESS FOR THE N-ω-TRIFLUOROACETYLATION OF SATURATED ALIPHATIC MONOCARBOXYLIC α,ω-DIAMINO ACIDS

Paul Aviron-Violet, Saint-Genis, and Christian Gervais, Villeurbanne, both of France, assignors to Rhone Poulenc Chimie, Courbevoie, France

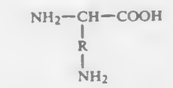
Filed Jan. 25, 1988, Ser. No. 147,531

Claims priority, application France, Jan. 26, 1987, 87 01031

Int. Cl.[5] C07C *103/48*

U.S. Cl. 562—561 **16 Claims**

1. A process for the for the N-ω-trifluoroacetylation of a saturated aliphatic monocarboxylic α,ω-diamino acid, comprising the step of contacting in an alcoholic medium a saturated aliphatic monocarboxylic α,ω-diamino acid of the formula:



wherein R represents a straight-chain or branched-chain C_1–C_6 alkylene radical, with a C_1–C_4 straight-chain or branched-chain alkyl trifluoroacetate in the absence of a base for a time sufficient to N-ω-trifluoroacetylate said α,ω-diamino acid.

4,943,680

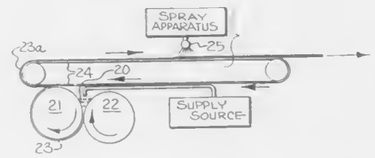
METHOD OF MAKING A DECORATIVE SHEET MATERIAL SIMULATING THE APPEARANCE OF A BASE COAT/CLEAR COAT PAINT FINISH

Thomas M. Ellison, and Robert A. Winton, both of Charlotte, N.C., assignors to Rexham Corporation, New York, N.Y.

Division of Ser. No. 241,856, Sep. 18, 1988, which is a continuation-in-part of Ser. No. 924,299, Oct. 28, 1986, Pat. No. 4,810,540. This application Jan. 8, 1990, Ser. No. 461,662

Int. Cl.[5] B05D *3/02;* **B65B** *33/00*

U.S. Cl. 427—154 **10 Claims**



4. A method for making a flexible decorative sheet material for use in surfacing automobile body panels and the like, said sheet material being characterized by having the appearance of

a glossy, base coat/clear coat automotive paint finish, and comprising the steps of

(a) casting onto a smooth surfaced carrier an optically clear weatherable liquid polymer,

(b) hardening the liquid polymer to form a flexible, optically clear film on the carrier having a smooth surface in contact with the carrier with a distinctness of image value of 65 percent or greater,

(c) applying to the exposed surface of the thus formed film a thin coating of a flexible polymer with pigments distributed therein, and drying the thin coating to thereby form a flexible decorative sheet material having the appearance of a glossy base coat/clear coat automotive paint finish when viewing the outer surface thereof, and

(d) removing said coated film from said carrier to expose the glossy smooth outer surface thereof.

4,943,681

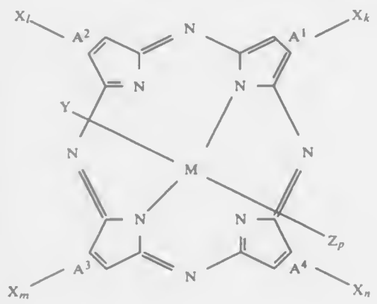
OPTICAL RECORDING MEDIUM AND PROCESS FOR THE PRODUCTION THEREOF

Takeshi Sato; Shuji Miyazaki; Makoto Sakamoto, and Motonori Ando, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1989, Ser. No. 454,953
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—495 **18 Claims**

1. An optical recording medium which comprises an organic thin film layer containing at least one of phthalocyanine compounds represented by the following general formula (I)

General formula (I)



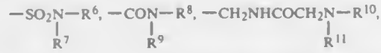
wherein

rings A^1 to A^4 each independently represent a benzene ring, naphthalene ring or anthracene ring,

M represents Al, Ga, In, Si, Ge or Sn,

X's may be identical or different, and each represents an alkyl group which may have a substituent, an aryl group which may have a substituent, a heteroring moiety which may have a substituent, a phthalimidomethyl group which may have a substituent, a halogen atom, a nitro group, a cyano group, a sulfonic acid group, $-OR^1$, $-SR^2$, $-COOR^3$,

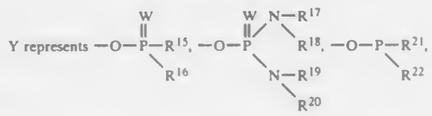




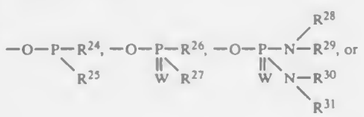
$-NHCOR^{12}$, $-N{=}NR^{13}$, or $-N{=}CHR^{14}$,

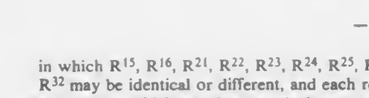
in which

R^1 to R^{11} may be identical or different, and each represents a hydrogen atom, an alkyl group which may have a substituent, an aryl group which may have a substituent, an acyl group which may have a substituent, a cycloalkyl group which may have a substituent, or a polyether group which may have a substituent, or R^6 and R^7, R^8 and R^9 or R^{10} and R^{11} may form a four to seven-membered heteroring, and these four to seven-membered ring may further contain a nitrogen atom, oxygen atom or sulfur atom, and R^{12}, R^{13} and R^{14} may be identical or different, and each represents an alkyl group which may have a substituent, a cylcoalky group which may have a substituent, or an aryl group which may have a substituent,



—O—Se—R^{23}, and Z represents hydrogen, a halogen atom, a hydroxyl group, an alkyl group which may have a substitutent,





—O—Se—R^{32},

in which R^{15}, R^{16}, R^{21}, R^{22}, R^{23}, R^{24}, R^{25}, R^{26}, R^{27} and R^{32} may be identical or different, and each represents an alkyl group which may have a substituent, an aryl group which may have a substituent, an acyl group which may have a substituent, a cycloalkyl group which may have a substituent, an alkoxy group which may have a substituent, an aryloxy group which may have a substituent, a polyether group which may have a substituent, a hydroxyl group, or a halogen atom, and in which R^{17}, R^{18}, R^{19}, R^{20}, R^{28}, R^{29}, R^{30} and R^{31} may be identical or different, and each represents an alkyl group which may have a substituent, an aryl group which may have a substituent, an acyl group which may have a substituent, a cycloalkyl group which may have a substituent, an alkoxy group which may have a substituent, an aryloxy group which may have a substituent, a polyether group which may have a substituent, a hydroxyl group, a halogen atom or a hydrogen atom, and W represents O, S, Se or Te,

k, l, m and n each independently represent an integer of 0 to 8, and

p represents 0 or 1.

4,943,682

PRODUCTION OF PARTICULATE POLYIMIDE POLYMERS

W. Dirk Klobucar; Allan A. Eisenbraun, and Ronald C. Zumstein, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 15, 1988, Ser. No. 284,674
Int. Cl.[5] C08G *69/26*
U.S. Cl. 528—353 **29 Claims**

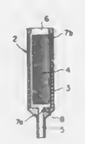
1. A process for the production, in particulate form, of aromatic polyimides derived from a 2,2-bis[4-(aminophenoxy)-phenyl]-hexafluoropropane as the sole or predominant aromatic primary diamine component thereof, which process comprises forming, heating and agitating in a medium composed of dipolar aprotic solvent and liquid aromatic hydrocarbon solvent, a homogeneous solution of a polyamic acid derived from a substantially equimolar mixture of (i) an aromatic tetracarboxylic dianhydride and (ii) a 2,2-bis[4-(aminophenoxy)phenyl]hexafluoropropane such that (a) said solution contains at least 50 percent by weight of the liquid aromatic hydrocarbon based on total solution, and (b) a separate phase of particulate aromatic polyimide is formed in said medium.

4,943,683

ANOMALY DIAGNOSIS SYSTEM FOR A NUCLEAR REACTOR CORE

Kazuhiro Utsunomiya; Nobumi Ooyama, and Hideo Sakaba, all of Ibaraki, Japan, assignors to Power Reactor and Nuclear Fuel Development Corporation, Tokyo, Japan

Filed Aug. 11, 1988, Ser. No. 231,088
Claims priority, application Japan, Aug. 17, 1987, 62-203070
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—245 **6 Claims**



1. In combination, a nuclear reactor having a reactor core with at least one fuel assembly, and an anomaly diagnosis system, said system comprising:

at least one anomaly detecting means including an oscillating circuit and responsive to a radio wave for generating an echo signal which varies in response to an anomaly in the nuclear reactor core, said anomaly detecting means including sensors for sensing the condition of the nuclear reactor core, said anomaly detecting means being incorperated into said fuel assembly; and

a transmitter-receiver means for transmitting said radio wave to the anomaly detecting means to make the anomaly detecting means generate the echo signal and for receiving the echo signal generated by the anomaly detecting means, said transmitter-receiver means including means for examining the echo signal, and means for determining that an anomaly has occurred in the nuclear reactor core and for giving an anomaly detection signal to a plant protection system upon the detection of a deviation of the echo signal from a reference signal mode.

4,943,684

CERAMIC ARTICLE, PROCESS FOR IMPRINTING CERAMIC ARTICLES AND APPARATUS

Karl H. Kramer, South Bellmore, N.Y., assignor to First Eastern Equities, Inc., Ontario, Canada

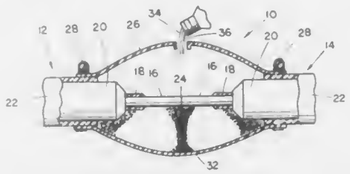
Continuation of Ser. No. 175,648, Mar. 21, 1988, abandoned, which is a continuation of Ser. No. 25,701, Mar. 13, 1987, abandoned. This application Aug. 8, 1989, Ser. No. 391,669
Int. Cl.[5] B65D *25/34*; B41M *3/12*
U.S. Cl. 428—34.4 **8 Claims**



1. A ceramic article having a substantially cylindrical shape and a protruding handle member, the article having at least one curved surface for receiving a sublimation heat transfer image, said curved surface being coated to a predetermined thickness with a polymeric coating, said coating being capable of permanently bonding with the ceramic article and being substantive to sublimation heat transfer dyes.

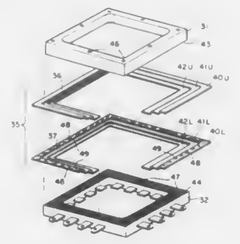
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4,943,685
CABLE SPLICING AND TERMINATION SYSTEM
Edward A. Reynaert, Sanford, Mich., assignor to Commu-Tec, Inc., Marion, N.C.
Filed Mar. 17, 1989, Ser. No. 324,699
Int. Cl.[5] H02G *15/22, 15/24*
U.S. Cl. 174—19 8 Claims



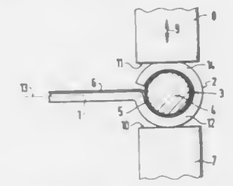
1. A cable system comprising: at least one conductor, means for environmentally protecting a portion of said conductor including a housing enclosing said portion of said conductor to be protected and defining a space within said housing around said conductor, and a gel substantially completely filling said space, said gel being formed of an imbibitive lightly cross-linked polymer having a fluid entrapped in the polymer network thereof, said polymer being an alkylstyrene polymer.

4,943,686
SEAL FRAME AND METHOD OF USE
Andrzej Kucharek, 555 W. Middlefield Rd., Suite A 310, Mountain View, Calif. 94043
Filed Apr. 18, 1988, Ser. No. 182,626
Int. Cl.[5] H05K *5/06*
U.S. Cl. 174—52 F 2 Claims



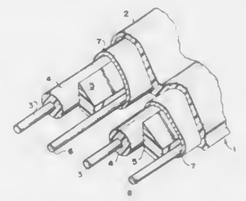
1. A sealed assembly, comprising:
(a) a first body having a surface;
(b) a second body having a surface for mating with the first body surface;
(c) a sealing frame arrangement for sealing the first body surface to the mating second body surface, comprising first and second frames having outer surfaces of configuration matched to the configuration of, respectively, the first and second body surfaces, and having mating facing inner surfaces;
said first frame being sealed to the first body surface at a first location defined along the outer surface of said first frame; the second frame being sealed to the second body surface at a second location defined along the outer surface thereof of said second frame; and the first and second frames being sealed at a third location defined along the facing inner surfaces thereof;
said frames extending outside the first and second body surfaces such that the third seal is spaced from the first and second body surfaces thereby defining a first space for severing said frames inside the third seal and for resealing the frame inside said severed location; and
wherein the frames are of stepped configuration and the third seal is formed in mating steps thereof.

4,943,687
CURRENT COLLECTING UNIT
Franz Armbruster; Carsten Bauer, both of Stuttgart, and Friedhelm Meyer, Illingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 23, 1988, Ser. No. 289,199
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 8800341[U]
Int. Cl.[5] H01R *4/02*
U.S. Cl. 174—94 R 8 Claims



1. A current collecting unit, comprising a current collecting rail having a longitudinal axis and provided with a sleeve having an inner surface; a connecting member mounted in said sleeve, said sleeve having one curved portion located above said longitudinal axis and another curved portion located below said longitudinal axis and forming electrode supports, said rail and said connecting member being formed of materials having a predetermined melting temperature; a metal coating provided on said inner surface of said sleeve and having a melting temperature which is lower than the melting temperature of said rail and said connecting member, so that during welding of said sleeve with said connecting member by applying pressure and heat said portions of said sleeve are compressed and said portions of said sleeve obtain flattenings which transfer the pressure and heat to said connecting member, and said metal coating becomes melt flowable so that available gaps between said sleeve and said connecting member are filled with said metal coating.

4,943,688
RIBBON COAXIAL CABLE WITH OFFSET DRAIN WIRES
Herbert VanDeusen, Bear, and John A. Voltz, Newark, both of Del., assignors to W. L. Gore & Assocites, Inc., Newark, Del.
Filed Nov. 4, 1988, Ser. No. 267,140
Int. Cl.[5] H01B *7/18*
U.S. Cl. 174—103 9 Claims



1. A ribbon coaxial cable comprising:
(a) a plurality of elongated and conductive center conductors;
(b) a plurality of elongated and insulative spacers parallel with said center conductors;
(c) a plurality of elongated and conductive drain conductors

parallel with said insulative spacers and said center conductors and arranged such that a drain conductor is adjacent each center conductor and a spacer is located between each center conductor and its drain conductor, each center conductor being surrounded concentrically by a separate layer of dielectric insulation, each center conductor and its adjacent associated spacer and drain conductor surrounded as a unit by a conductive outer shielding in contact with said drain conductor; and

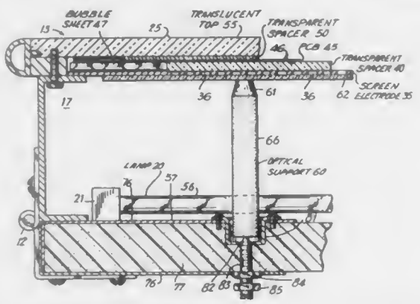
(d) a thermoplastic outer dielectric jacket surrounding said outer conductive shielding, said center conductors, said spacers, and said drain conductors to hold said center conductors and said drain conductors in mutually evenly spaced-apart parallel configuration.

4,943,689

BACKLIT DIGITIZER TABLET

David A. Siefer, Orange, and Alexander M. Purcell, Guilford, both of Conn., assignors to Summagraphics Corporation, Seymour, Conn.

Filed Jun. 23, 1989, Ser. No. 370,913
Int. Cl.[5] G08C *21/00*; G09F *13/04*
U.S. Cl. 178—18 **15 Claims**



1. A backlit digitizer tablet comprising:

(a) a housing having a base member and a top member mounted on and overlying said base member and defining therewith an intermediate space,

(b) said top member comprising:

i. an electrode array for generating electromagnetic or electrostatic fields when energized,

ii. an apertured shielding electrode extending underneath and spaced from the electrode array for directing the fields upwardly,

iii. an optically translucent member extending over the electrode array,

(c) means within the intermediate space for providing additional support for the top member, said means comprising a plurality of spaced, optically transparent posts distributed within the intermediate space and extending between and supporting the top member over the base member,

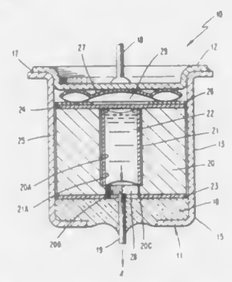
(d) means within the intermediate space for generating light that is directed upwardly through the shielding electrode and the electrode array for substantially uniformly illuminating the surface of the translucent member, said means comprising a plurality of fluorescent lamps mounted in spaced relation on the base member and on opposite sides of the posts of the additional support means.

4,943,690

POSITION INSENSITIVE SHOCK SENSOR WITH CLOSURE DELAY

Sheldon S. Bitko, E. Brunswick, N.J., assignor to Fifth Dimension, Inc., Trenton, N.J.

Filed Mar. 6, 1989, Ser. No. 319,289
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.47 **25 Claims**



1. A shock sensor for sensing shocks, comprising:

a housing;

a container disposed in said housing and having an inner surface;

said inner surface of said container defining an axially extended chamber for containing an electrically conductive fluid;

gas passage means disposed at one end of said chamber, said gas passage means being gas permeable and conductive fluid-non-permeable;

said inner surface of said container including first and second axially adjacent zones, said second zone disposed between said first zone and said gas passage means, said first zone being conductive fluid-wettable and said second zone being conductive fluid-non-wettable, whereby said conductive fluid is normally contained in said first zone when said sensor is free of shocks;

at least one electrically conductive contact terminal disposed in said chamber and arranged to be contacted by said conductive fluid in response to said housing being acted upon by a shock at or above a threshold value, said terminal being spaced axially from said first zone whereby said second zone provides means for delaying contact closure by said conductive fluid.

4,943,691

LOW-VOLTAGE LIMITING CIRCUIT BREAKER WITH LEAKTIGHT EXTINGUISHING CHAMBER

Jean-Luc Mertz, Grenoble; Hubert Gaerin, Meylan; Michel Perrot, Quaix en Chartreuse, and Patrick De Robertis, Vizille, all of France, assignors to Merlin Gerin, France

Filed Jun. 12, 1989, Ser. No. 364,102
Claims priority, application France, Jun. 10, 1988, 88 07891
Int. Cl.[5] H01H *33/06*
U.S. Cl. 200—151 **10 Claims**

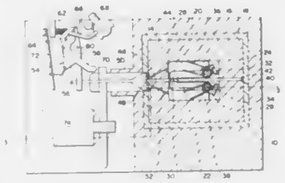
1. A limiting device of an electric current, comprising:

a leaktight extinguishing chamber,

a pair of separable contacts housed in said extinguishing chamber,

an insulating shield slidingly mounted in said extinguishing chamber between two end positions, one active position in which said shield is inserted between said separable contacts in open position and subdividing said extinguishing chamber into two independent parts each of which containing one of said contacts, and the other inactive end position of retreat of the shield allowing the closing of said contacts and a communication between said two parts of the extinguishing chamber,

a piston securedly united to said shield having a face subjected to the action of pressure in said extinguishing chamber to move the shield to the active position when said pressure increases due to the action of an arc drawn when said contacts separate, the volume of said extinguishing chamber substantially corresponding to the dimensions of said contacts in separated position in order to reduce to a minimum the gas volume contained in said chamber and to obtain a fast pressure increase of this gas due to the arc action.

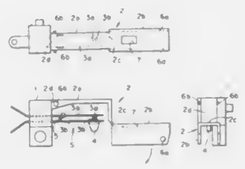


4,943,692

COVER INTEGRATED LEAF SWITCH

Muneyoshi Miyata, Tokyo, Japan, assignor to Mitsuku Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1989, Ser. No. 329,569
Int. Cl.[5] H01H *1/24*
U.S. Cl. 200—283 **8 Claims**



1. A leaf switch having an integral cover comprising:

an insulating base;

a plurality of leaf spring elements embedded in the base;

a cover integrally connected to said insulating base and which comprises a first and a second interengageable cover part longitudinally connected to each other through a longitudinally transversely oriented hinge portion; said first and second cover parts having a first and a second engagement member, respectively, and being pivotable about the hinge portion from an open position to a closed position for forming the cover and to envelop the leaf spring elements; the base and cover being formed from a plastic material by concurrent integral molding.

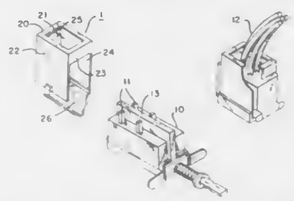
4,943,693

BARRIER DEVICE FOR AN ELECTRICAL SWITCH

David Wang, and Chyi-Song Chen, both of Taipei, Taiwan, assignors to Acer Incorporated, China

Filed Oct. 31, 1988, Ser. No. 265,032
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—304 **6 Claims**

1. A barrier device for an electrical switch, the electrical switch having at least one connecting point, said barrier device having: a rectangular base with an opening through which access to the or each connecting point of the switch can be gained; first, second, third, and fourth side walls depending from respective sides of said base, each of said side walls having an upper edge joined to said base and a lower edge, each of said side walls lying in a single plane generally normal to said base, said first and third side walls mutually opposing each other, said second and fourth side walls mutually opposing each other, said first and third side walls being longer than said second and fourth side walls and defining a slot for receiving the switch between said first and third side walls; and a clip member pivotally connected to the lower edge of said third side wall for movement into engagement with said first side wall so as to span the slot between said first and third side walls for preventing the removal of the switch from the slot in a direction normal to said base, said clip member having means for retaining said member in engagement with said first side wall.

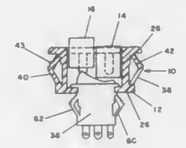


4,943,694

PUSH-BUTTON COVER ASSEMBLY

Neil Kroth, 4901 Kundinger Ct., Raleigh, N.C. 27606

Filed May 1, 1989, Ser. No. 345,290
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—332.1 **3 Claims**



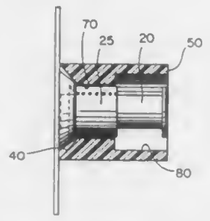
1. The combination of an electric switch cover assembly and an electric switch, the electric switch cover assembly comprising a housing, a first push-button and a second push-button; the cover assembly being positioned over the electric switch; the housing including a first side, a second side and a base portion; the first side including a first channel and a second channel; the second side including a third channel and a fourth channel; the first channel being positioned in spaced parallel relation to the third channel; the second channel being positioned in spaced parallel relation to the fourth channel; the first and second push-buttons being adapted to engage the channels; the base portion being integrally formed with the first and second side; the base portion including a central through hole and an inner lip.

4,943,695

METHOD OF AND APPARATUS FOR PROTECTING A PUSH BUTTON ON A NEWSPAPER VENDING MACHINE

Johnnie J. Valis, Shiner, Tex., assignor to Gannett Co., Inc., Arlington, Va.

Filed Jan. 5, 1988, Ser. No. 141,083
Int. Cl.[5] H01H *13/00*
U.S. Cl. 200—345 **3 Claims**



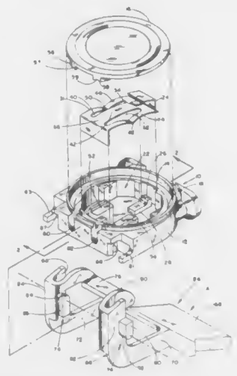
1. A vending machine comprising:
a push button protruding a first distance from an outer surface of the vending machine and adapted to actuate a mechanism such as a coin-release mechanism when depressed;
a bushing arranged around a base of the push button; and
a push button guard being defined by a body, said body including an inner face at one end of the body and an outer face at an opposite end of the body, said inner face communicating with said outer face through a stepped bore that extends through the body, said stepped bore including a narrower portion and a wider portion, said narrower portion being adapted to tightly surround the bushing and said narrower portion having a length as measured along its longitudinal axis that is less than said first distance so that when said narrower portion of said body is positioned around said bushing, the push button extends through the narrower portion of the stepped bore and into the wider portion of the stepped bore.

4,943,696

DIAPHRAGM TYPE SWITCH

Paul R. Staples, Cub Run, Ky., assignor to E. M. B. Corporation, Elizabethtown, Ky.

Filed Jan. 30, 1989, Ser. No. 302,927
Int. Cl.[5] H01H *5/20*
U.S. Cl. 200—407 **6 Claims**



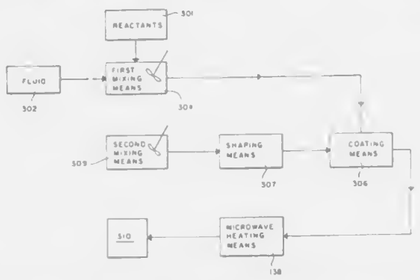
1. A switch comprising:
a cup shaped housing having an open end and a flexible diaphragm closing said open end, lugs extending from said flexible diaphragm, and slots in said cup shaped housing receiving said lugs to which together form apertures through said housing through which lead wires for said switch can be fed,
a fixed electrical terminal blade having an electrical contact and carried in said cup shaped housing,
a movable electrical contact blade having an electrical contact carried in said cup shaped housing opposite said fixed electrical terminal blade and in working relation therewith,
said movable terminal blade including a body portion, two opposed slots running lengthwise in said body portion providing a centrally disposed reactor member and a pair of outer reaction members,
a pair of oppositely disposed seats carried in said cup shaped housing against which said reaction members are biased.

4,943,697

MICROWAVE APPARATUS FOR BAKING AND BROWNING FOODSTUFF

Lawrence L. Buckholz, Jr., Middletown; Brian Byrne, East Brunswick, and Marion A. Sadol, Boonton, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 356,503, May 25, 1989, Pat. No. 4,904,490, which is a continuation-in-part of Ser. No. 295,450, Jan. 10, 1989, Pat. No. 4,882,184. This application Nov. 24, 1989, Ser. No. 440,794
Int. Cl.[5] H05B *6/68*
U.S. Cl. ?19—10.55 B **1 Claim**



1. Apparatus useful in enabling the making of a cooked baked goods foodstuff and in enabling a process to be carried out comprising the steps of:
(a) providing an uncooked baked goods composition having a continuous surface;
(b) providing a mixture of precursors of a Maillard or Amadori reaction product in a solvent which is capable of raising the dielectric constant of the surface of the foodstuff to be cooked whereby the foodstuff to be cooked is completely cooked in a period of time under 120 seconds;
(c) coating the mixture of (b) onto the surface of the uncooked foodstuff provided in (a); and
(d) exposing the thus coated uncooked foodstuff to microwave radiation for a period of time between 40 seconds and 120 seconds
said apparatus comprising:
(i) first mixing means for mixing a fluid carrier and Maillard or Amadori reactants;
(ii) second mixing means separate from said first mixing means for mixing dough;
(iii) shaping means downstream from said second mixing means for shaping the mixed dough;
(iv) coating means for coating the composition prepared using said first mixing means onto said shaped dough produced according to said shaping means;
(v) microwave cooking means downstream from said coating means to cook the coated shaped dough in less than 120 seconds; and
(vi) means for controlling said microwave cooking means to determine the cooking time according to the following mathematical equations and to stop the microwave cooking at the expiration of the cooking time:

$$\frac{dQ}{d\theta} = \left\{ \frac{R}{k} + \frac{\mu}{\lambda_1 C_p \rho^2 R^2 (T_2 - T_1)} + \frac{1}{h_A} + \lambda_3 \left[\frac{T_2 - T_1}{T_2^4 - T_1^4} \right] \right\} E^2 \nu \epsilon^1$$

and

$$\Delta\theta(\text{Time}) = \frac{\text{Total Microwave Energy Input, } \Delta Q}{\left\{ \frac{R}{k} + \frac{\mu}{\lambda_1 C_p \rho^2 R^2 (T_2 - T_1)} + \frac{1}{h_A} + \lambda_2 \left[\frac{T_2 - T_1}{T_2^4 - T_1^4} \right] \right\} E^2 \nu \epsilon^1}$$

wherein the terms:
ΔQ
is the total microwave energy input during the process;
$dQ/d\theta$
is the rate of heat input equivalent to the rate of energy use by the microwave cooking means;
R
is the effective radius of the food article being cooked;
K
is the heat transfer coefficient of the food article being cooked;
μ
is the viscosity of the coating immediately prior to cooking;
λ_1
is a proportionality constant which is a function of the coating thickness immediately prior to cooking and geometry of the article being cooked as well as the geometry of the microwave cooking means;
C_p
is the heat capacity of the coating immediately prior to cooking;
ρ
is the density of the liquid coating immediately prior to cooking;
T_1
is the temperature at the center of the food article being cooked;
T_2
is the temperature at the outer surface of the food article being cooked;
h_A
is the convection heat transfer coefficient for the air layer surrounding the food article being cooked;
λ_2
is a proportionality constant for the radiation term for concentric spheres, the coating surrounding the uncooked food;
E
is the electric field strength;
ν
is the frequency;
ϵ^1
is the relative dielectric constant of the coating material; and
$\Delta\theta$
is the time of microwave cooking.

4,943,698

HARDFACING POWDERS

Keith E. Mengel, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 31, 1985, Ser. No. 815,335
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.47 **7 Claims**

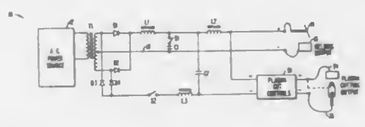
1. A plasma arc hardfacing powder consisting essentially of a hardfacing powder and a powdered, porosity reducing agent that is at least one member selected from the group consisting of aluminum, manganese, titanium, silicon, zirconium, vanadium, lithium, hafnium, yttrium, sodium, calcium, rare earths, and master alloys thereof.

4,943,699

SYSTEM FOR SUPPLYING POWER

James M. Thommes, Escondido, Calif., assignor to PowCon Inc., San Diego, Calif.

Division of Ser. No. 204,640, Jun. 9, 1988. This application Nov. 30, 1989, Ser. No. 443,888
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.57 **4 Claims**



1. An apparatus for supplying power to a plasma cutting torch, said apparatus comprising:
a D.C. power source;
an A.C. power source for supplying a high frequency signal to the torch for initiating an arc at the torch;
inductor means for connecting the D.C. power source to the torch, wherein said D.C. power source supplies a voltage to the inductor means for passing a current through the inductor means to sustain the arc after initiation, said inductor means for stabilizing the arc; and
a circuit path connecting the D.C. power source to the torch in parallel to the inductor means for supplying current to the torch immediately after arc initiation in addition to the current supplied by the inductor means to the torch, so that the voltage applied by the D.C. power source to the inductor means required for sustaining the arc is reduced.

4,943,700

LASER SAWMILL

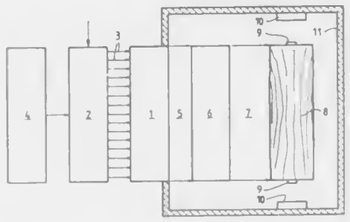
John L. Hughes, Melbourne, and Paul Lastavec, Narooma, both of Australia, assignors to Austral Asian Lasers Pty. Ltd., Melbourne, Australia, a part interest

Filed Oct. 31, 1988, Ser. No. 265,228
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 **8 Claims**

1. A laser sawmill system for cutting and surface sealing wood, rock, plastic and ceramic objects comprising a powerful laser beam generator with a rectangularly shaped output aperture which can emit a single laser beam of rectangular cross-section or a sequence of laser beams of circular cross-section, laser beam guiding optics of rectangular cross-section, laser beam focussing optics of rectangular cross-section, said laser output aperture, beam guiding and focussing optics being enclosed within a safety enclosure which can be partially evacuated to prevent laser beam ionization of the atmosphere, the object to be cut being placed within said enclosure via an array of rollers and hydraulic arms which allow for the alignment of said object to be cut relative to the path of said fo-

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cussed laser beam using an electro-optic alignment system which allows the laser beam to cut the object in a predeter-



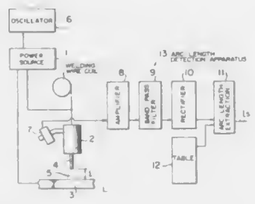
mined pattern stored in a computer which also provides the control of the said system as a whole.

4,943,701

APPARATUS FOR AND METHOD OF DETECTING ARC LENGTH, APPARATUS FOR AND METHOD OF CONTROLLING WELDING TORCH HEIGHT, AND AUTOMATIC WELDER AND AUTOMATIC WELDING METHOD

Jun Nakajima, Chiba; Takeshi Araya, Higashikureme, and Susumu Hioki, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1989, Ser. No. 324,555
Claims priority, application Japan, Mar. 18, 1988, 63-63378
Int. Cl.[5] B23K *9/095*
U.S. Cl. 219—124.02 **24 Claims**



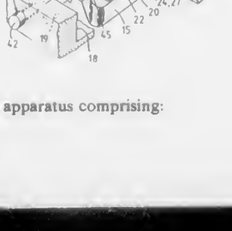
1. An apparatus comprising:
oscillation means for superposing a predetermined signal on a welding arc;
arc sound detecting means for detecting the welding arc sound generated by said arc with said predetermined signal superposed thereon;
sound pressure level extraction means for extracting and outputting, from the output of said arc sound detecting means, an arc sound pressure level signal having a frequency corresponding to the frequency of said predetermined signal; and
arc length determination means for determining the value of the length of said welding arc in response to the arc sound pressure level signal in accordance with a previously stored relationship between the arc length and the arc sound pressure level, and providing an output signal indicative thereof.

4,943,702

APPARATUS AND METHODS FOR CONTROLLING A WELDING PROCESS

Richard W. Richardson, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Division of Ser. No. 853,233, Apr. 17, 1986, which is a division of Ser. No. 436,026, Oct. 22, 1982, Pat. No. 4,532,408, Ser. No. 456,278, Jan. 6, 1983, abandoned, and Ser. No. 603,296, Apr. 23, 1984, Pat. No. 4,595,820. This application Oct. 29, 1987, Ser. No. 114,289
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—124.34 **6 Claims**



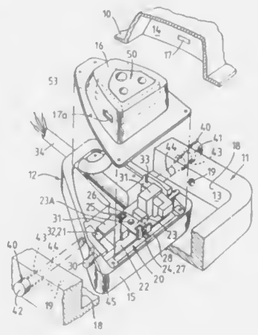
1. A method for illuminating a weld line to enable locating the weld line by an electronic video image detector, the method comprising:
disposing a welding electrode adjacent a weld joint preparation, said weld joint preparation comprising two metal portions disposed adjacent one another so as to define said weld line therebetween; and
directing a beam of light onto said electrode so as to cause part of said beam to be reflected from said electrode onto said weld joint preparation, whereby an illuminated area is formed on said weld joint preparation, said illuminated area traversing said weld line and having an irregularity where said illuminated area crosses said weld line.

4,943,703

APPLIANCE STAND HAVING AN ELECTRICAL CONNECTOR

Eric Duxbury, Walsall, England, assignor to D.H. Haden Ltd., England

Filed Feb. 6, 1989, Ser. No. 307,320
Claims priority, application United Kingdom, Feb. 6, 1988, 8802739
Int. Cl.[5] H01R *13/703*
U.S. Cl. 219—247 **11 Claims**



1. Electrical apparatus comprising:

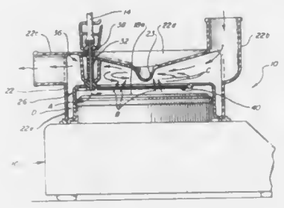
(a) a stand, an appliance supportable by the stand, and an electrical connector device located between said stand and said appliance;
(b) electrical socket means in said connector device;
(c) electrical plug means on said appliance and releasably engaged in said socket means;
(d) first detent means to mechanically couple said stand to said electrical connector device, second detent means to mechanically couple said connector device to said appliance;
(e) a bistable mechanism operative to actuate said first and second detent means; and
(f) manually actuable means at a location separate from said electrical connector device operative to switch the bistable mechanism between a first state in which the first detent means couples said stand to said device and the second detent means does no coupling, and a second state in which the second detent means couples said device to said appliance and the first detent means does no coupling.

4,943,704

HUMIDIFIER APPARATUS

Richard Rabenau, Arab; Rowland W. Kanner, and Joseph J. Cerola, both of Guntersville, all of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Feb. 6, 1989, Ser. No. 307,261
Int. Cl.[5] F22B *1/28*
U.S. Cl. 219—275 **34 Claims**



1. A humidifier apparatus for admixture of heated water vapor into a gaseous stream, comprising:
(a) a heating structure including a heating means for generating heated vapor from water;
(b) an upper housing and chamber having a flow passageway for said gaseous stream formed in said housing secured to said heating structure and within which said heating means is exposed, including:
(1) intake and effluent conduits for flow passage of said gaseous stream through said chamber flow passageway; and
(2) a water intake conduit extending through said housing and entirely through said chamber flow passageway, and directing discharge of said water against said heating means.

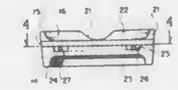
4,943,705

TISSUE WARMING APPARATUS

Michael R. Halloran, 37627 Duffle St., Palmdale, Calif. 93550

Filed May 1, 1989, Ser. No. 345,845
Int. Cl.[5] H05B *3/26*
U.S. Cl. 219—385 **2 Claims**

1. A tissue warming apparatus comprising:
a storage container for releasably holding a plurality of pre-moistened wipes;
a warmer having a peripheral upright wall defining a receptacle for insertably receiving said storage container;
resistance heater means included in said warmer having a integral thermostat for maintaining said heater means at a constant 100 degrees Fahrenheit;
said warmer being characterized as composed of water and fire-resistant composition;
said upright wall is a first circular wall extending from outside of said warmer; and



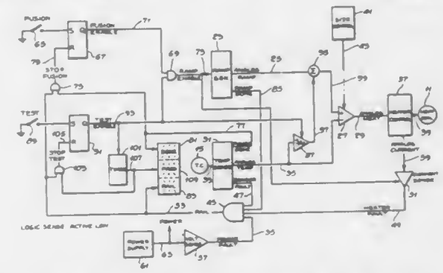
a second raised circular wall of larger diameter than said first wall carried on the opposite side of said warmer.

4,943,706

METHOD AND APPARATUS FOR FUSING THERMOPLASTIC MATERIALS

Lucian H. Lyall, Woodland Hills, and Karol Z. Renau, Calabasas, both of Calif., assignors to R. W. Lyall & Company, Inc., Santa Fe Springs, Calif.

Filed Apr. 18, 1988, Ser. No. 182,406
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—494 **11 Claims**



1. A pipeline forming system, comprising in combination:
lengths of thermoplastic pipe having ends of uniform size;
a thermoplastic collar containing a heating element responsive to a control signal therein and sized to receive the ends of two abutting lengths of pipe;
sensor means operative to provide a sensed temperature signal corresponding to the temperature at the pipe/collar interface;
generator means operative to provide a desired temperature signal non-repetitiously increasing at a preselected rate from what corresponds to a sub-ambient temperature up to a temperature sufficient to fuse the pipe and collar together;
differential means operative to provide a control signal for said heating element corresponding to the magnitude of desired temperature signal over the magnitude of said sensed temperature signal whereby heat is gradually applied to such interface so as to raise its temperature uniformly.

4,943,707

TRANSACTION APPROVAL SYSTEM

Elvis W. Boggan, Concord, Calif., assignor to Visa International Service Association, San Mateo, Calif.

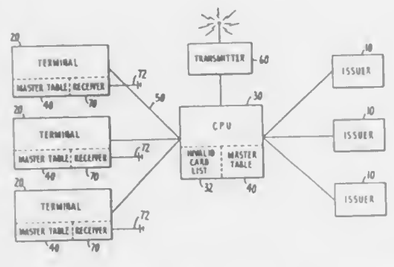
Continuation-in-part of Ser. No. 596, Jan. 6, 1987, Pat. No. 4,822,985. This application Jan. 10, 1989, Ser. No. 295,548
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 **9 Claims**

4. A method of operating an apparatus for facilitating the off

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line approval of transactions based upon the use of transaction cards each having an account number, said apparatus having a means for storing information relating to account numbers of said cards, comprising the steps of:

comparing the account number of the card presented for a transaction with the stored information about account numbers;



generating an output signal based upon the outcome of the comparison; and

storing information about the account number of the card presented for the transaction if such information had not previously existed such that a subsequent use of the card will be detected during said comparison step.

4,943,708

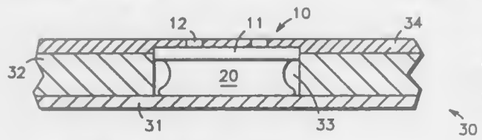
DATA DEVICE MODULE HAVING LOCKING GROOVE

Marion I. Simmons, Tempe, and Harry J. Geyer, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1988, Ser. No. 150,811

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 **14 Claims**



1. A data device module comprising:

a contact carrier having a first surface and a second surface opposite said first surface;

an integrated circuit coupled to said second surface of said contact carrier;

contact means for providing contact between said integrated circuit and a device external to said data device module, said contact means being coupled to said integrated circuit and at least partially disposed in said contact carrier;

a base having a side wall and being coupled to said second surface of said contact carrier and disposed about said integrated circuit; and

locking means for securing said data device module to a data device, said locking means being disposed about said side wall of said base, wherein said locking means comprises a groove disposed in said side wall of said base.

4,943,709

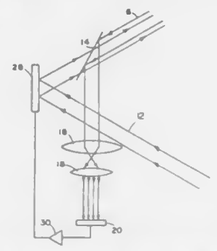
LIQUID CRYSTAL ADAPTIVE OPTICS SYSTEM

Jan Grinberg, Los Angeles; Thomas R. O'Meara, Jr., Malibu, and Murray S. Welkowsky, Chatsworth, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 11, 1989, Ser. No. 350,353

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.9 **11 Claims**



1. An adaptive optics system, comprising:

means for detecting the spatial phase pattern of an input beam,

means for directing an input beam which has phase distortions onto said detecting means,

a spatial phase adjustment means separate from said detecting means for adjusting the spatial phase pattern of an incident transmission beam,

means for providing said incident transmission beam to said spatial phase adjustment means, and

means responsive to said detecting means for setting said phase adjustment means to compensate for detected phase distortions in said input beam, comprising a data processor having a memory means for storing phase compensation information for a plurality of different wavelengths, said memory means providing phase adjustment information for each of said wavelengths in response to the input beam.

4,943,710

IMAGE SENSOR AND MANUFACTURING METHOD FOR THE SAME

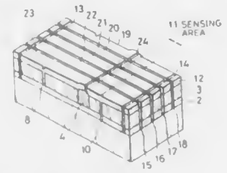
Mitsunori Sakama, Hiratsuka; Takeshi Fukada, Ebina; Naoya Sakamoto, Atsugi; Nobumitsu Amachi, Asugi; Shigenori Hayashi, Atsugi, and Takashi Inushima, Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Jun. 22, 1988, Ser. No. 211,225

Claims priority, application Japan, Jun. 25, 1987, 62-158334; Jun. 30, 1987, 62-162925

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **6 Claims**



1. A image sensor comprising:

a plurality of photosensitive elements;

a plurality of resistance each of which is connected to corresponding one of said elements in series;

a voltage source for producing a voltage across each series connection comprising of said element and said resistance; and

a means for detecting the voltage levels at the connecting points of said element with the corresponding resistance,

wherein the value of said resistance is selected to make maximum the differential voltage at the connecting point between the voltage when this sensor is exposed to illumination and the voltage when this sensor is not exposed to illumination.

4,943,711

IMAGE INTENSIFIER TUBE WITH INPUT SCREEN HAVING A PROFILE WHICH SATISFIES A HIGHER DEGREE POLYNOMIAL

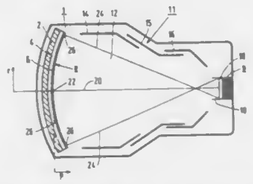
Gerardus Van Aller, and Jan Wieldraaijer, both of Heerlen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1989, Ser. No. 330,233

Claims priority, application Netherlands, Apr. 22, 1988, 8801050

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—213 VT **6 Claims**



1. An image intensifier tube having a curved input screen (1), an output screen (8) and an electron-optical system (11) for imaging photo-electrons emanating from the photocathode on the output screen, characterized in that on a side supporting the photocathode the input screen has a profile with a rise of arc (P) which expressed in a radius (r) take radially from a screen centre (22) satisfies a third or higher degree polynomial without constant and first order term.

4,943,712

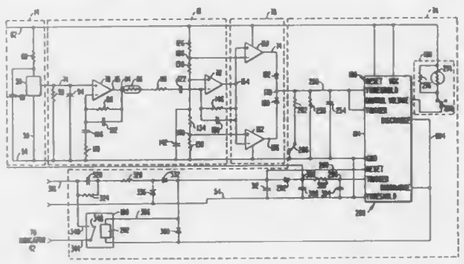
MOTION DETECTOR

Richard L. Wilder, Sparks, Nev., assignor to Tahoe Products Incorporated, Sparks, Nev.

Filed Dec. 7, 1988, Ser. No. 281,160

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **19 Claims**



1. A motion detecting circuit comprising:

motion detecting means for detecting a moving infrared energy source and for generating a motion detected signal in response thereto;

first current flowing means, coupled to the motion detecting means, for flowing a first current in response to the motion detected signal;

a first capacitance, coupled to the current flowing means, for providing a voltage in response to the current flowing from the current flowing means;

first voltage detecting means, coupled to the first capacitance, for detecting a first voltage value;

second voltage detecting means, coupled to the first capacitance, for detecting a second voltage value that is higher than the first voltage value;

second current flowing means, coupled to the first voltage detecting means and to the second voltage detecting means, for flowing a second current when the voltage provided by the first capacitance is above the second voltage value and for inhibiting the second current flow when the voltage provided by the first capacitance is below the first voltage value: and

motion indicating means, coupled to the second current flowing means, for providing a sensory stimulus in response to the second current.

4,943,713

BOTTLE BOTTOM INSPECTION APPARATUS

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Nov. 22, 1988, Ser. No. 274,929

Claims priority, application Japan, Nov. 27, 1987, 62-299417; Nov. 27, 1987, 62-299418

Int. Cl.[5] G01N *21/90*

U.S. Cl. 250—223 B **15 Claims**



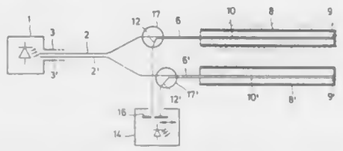
1. A bottle bottom inspection apparatus in which an image sensor is located above a mouth of a bottle made of a transparent material and whose bottom is to be inspected and said bottle bottom is irradiated upwardly by a light source exterior of said bottle and said bottle is picked up by said image sensor via said bottle mouth thereby to inspect said bottle bottom, comprising: optical means disposed between said light source and said bottle bottom, wherein said optical prevents light from said light source from being perpendicularly introduced onto said bottle bottom and causes said light to be projected upwardly onto said bottle bottom at a predetermined incident angle from a position outside the perimeter of said bottle bottom to said bottle bottom.

4,943,714

METHOD OF CONTINUOUS MEASUREMENT OF DAMPING IN AN ELONGATED LIGHT WAVE CONDUCTOR-SENSOR HAVING ONLY ONE ACCESSIBLE END

Friedrich K. Levacher, Braxweiler; Helmut Federmann; Georg Noack, both of Bergisch Gladbach, and Anton Kraus, Overath-Steinenbrück, all of Fed. Rep. of Germany, assignors to Felten & Guilleaume Energietechnik AG, Cologne, Fed. Rep. of Germany

Filed Feb. 10, 1989, Ser. No. 309,802
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1988, 3804135
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.16 1 Claim



1. A method of continuous measurement of damping of a light beam in a light wave conductor (LWC)-sensor, comprising the steps of continuously emitting from a light transmitter a measuring light beam and guiding the same in a first direction through a beam divider in which it is split into two partial light beams; guiding a first partial light beam in the first direction through an elongated LWC-sensor whose damping properties is to be measured; reflecting at the free end of said LWC-sensor said first partial light beam by 180° to propagate in a reverse second direction against said beam divider; deflecting said first partial light beam at said beam divider by 90° and guiding the same in the deflected third direction into a light receiving and evaluating unit; emitting from said light transmitter a reference light beam which is equal to said measuring light beam; guiding said measuring light beam via a light wave conductor through a first Y-beam divider; guiding said first partial light beam via a light wave conductor from said first Y-beam divider into said LWC-sensor which is fixed to a structural part to be monitored; guiding via a light wave conductor said deflected portion of said first partial light beam into an input opening of said light receiving and evaluating unit; and, in the same manner, guiding said reference light beam through a light wave conductor which corresponds in thermal properties to the first mentioned light wave conductor, into a second Y-beam divider, guiding a reference partial light beam from said second Y-beam divider into a reference LWC-sensor which is equal to said fixed LWC-sensor and being arranged in close proximity thereto; and guiding deflected portions of said reference partial light beam against a shiftable diaphragm arranged in said input opening of the light receiving and evaluating unit; and operating said shiftable diaphragm to pass said reference partial light beam into said unit before the passage of said measuring partial light beam into said measuring unit to act as a measuring standard.

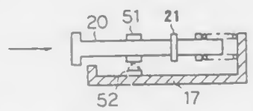
4,943,715

LIMIT SWITCH HAVING MEANS TO EVALUATE ITS ACTUATING STROKE

Keisuke Konishi, Takatsuki, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 20, 1989, Ser. No. 326,008
Claims priority, application Japan, Mar. 18, 1988, 63-66822
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—229 7 Claims

1. A limit switch for detecting presence of an article as it passes by said limit switch, comprising:
a fixed casing;
an actuating part supported by said casing so as to be moveable over a certain maximum operation range and is adapted to be actuated by said passing article;
a first contact set which is adapted to produce a first switch output when displacement of said actuating part is smaller than a certain minimum operation stroke and a second switch output when displacement of said actuating part is larger than said minimum operation stroke;
a second contact set which is adapted to produce a first stroke indicating output when displacement of said actuating part is smaller than a certain minimum acceptable stroke which is larger than said minimum operation value and a second stroke indicating output when displacement of said actuating part is larger than said minimum acceptable stroke;



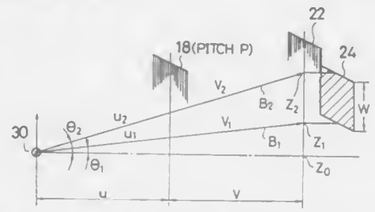
stroke evaluation means for evaluating the magnitude of the stroke of said actuation part according to a result of logical operation on outputs from said first and second contact sets.

4,943,716

DIFFRACTION-TYPE OPTICAL ENCODER WITH IMPROVED DETECTION SIGNAL INSENSITIVITY TO OPTICAL GRATING GAP VARIATIONS

Souji Ichikawa, Sagamihara; Hideki Oka, Kawasaki; Naoyoshi Terao, Urawa, and Seiji Sakagami, Kawasaki, all of Japan, assignors to Mitutoyo Corporation, Minato, Japan

Filed Jan. 18, 1989, Ser. No. 298,430
Claims priority, application Japan, Jan. 22, 1988, 63-12143; Feb. 25, 1988, 63-42626
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.16 2 Claims



1. An optical encoder comprising:
a coherent diffusive light source having an effective wave length λ;
a main scale provided at a position spaced apart u from the diffusive light source and formed with a first grating of a pitch P;
an index scale provided at a position spaced apart v from the first grating and formed with a second grating; and
a light-receiving element for photoelectrically transducing a light emitted from the diffusive light source and filtered through the first and second gratings: wherein a detection signal periodically variable in accordance with a relative displacement between the main scale and the index scale is produced,
characterized in that the light-receiving element is adopted to receive two rays satisfying the relationship between the following equations in order to remove a component of fluctuations due to the grating gap v of a geometric image of the first grating in the detection signal,

$$\{u_2 v_2/(u_2 + v_2)\} - \{u_1 v_1/(u_1 + v_1)\} \simeq mP^2/\lambda$$

$$W \simeq n\{(u_2 + v_2)\sin\theta_2 - (u_1 + v_1)\sin\theta_1\}$$

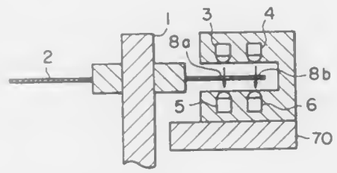
where m and n are integers, u1 and u2 are lengths of light paths of the rays between the diffusive light source and the first grating, v1 and v2 are lengths of light paths of the rays between the first and second gratings, W is a center interval between the rays on the second grating, θ1 and θ2 are angles made by a perpendicular line drawn from the diffusive light source to the gratings with the rays.

4,943,717

ANGLE MEASURING DEVICE HAVING SPECIFIC SIGNAL PROCESSING ARRANGEMENT

Masayuki Ikeuchi, and Kouichi Okamura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,644
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.17 4 Claims



1. A angle measuring device comprising:
a rotating disc which is adapted to rotate in synchronization with a crankshaft and which has a plurality of slits formed along the circumference thereof;
a light-emitting means arranged in the vicinity of said rotating disc;
a light-receiving means adapted to receive light emitted from said light-emitting means through the slits of said rotating disc; and
a signal processing circuit adapted to process signals output from said light-receiving means and including: a semiconductor substrate, a plurality of islands formed on the surface of said semiconductor substrate from diffusion layers, a protective-resistor element formed in one of said islands and connected to said light-emitting means, and separation layers separating the island on which said protective-resistor element is formed from the other islands, no other elements being formed on the island on which said protective-resistor element is formed.

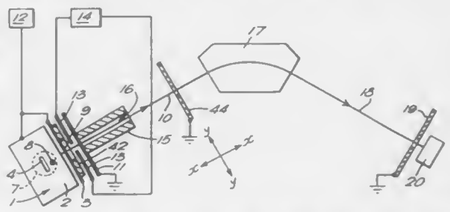
4,943,718

MASS SPECTROMETER

Raymond C. Haines, Keisall, and Patrick J. Turner, Wilmslow, both of United Kingdom, assignors to VG Instruments Group Limited, Crawley, England

Filed Feb. 17, 1989, Ser. No. 312,632
Claims priority, application United Kingdom, Feb. 18, 1988, 8803837
Int. Cl.[5] H01J 49/14
U.S. Cl. 250—288 20 Claims

1. A mass spectrometer comprising:
(a) an ion source for producing a beam of ions, the ion beam having an ion-optical axis, said ion source being provided with an electron emission source and magnet means which are cooperable to produce an electron beam within said ion source, the electron beam having an axis;
(b) a mass analyzer;
(c) first and second electrode means disposed about the ion-optical axis between said electron beam axis and said mass analyzer and cooperable to limit the angular divergence of the ion beam produced by said ion source; and



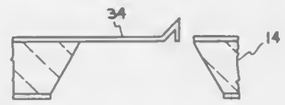
(d) magnetic field screening means disposed to reduce substantially the magnetic field due to said magnet means along at least a part of the ion-optical axis between said first and said second electrode means.

4,943,719

MICROMINIATURE CANTILEVER STYLUS

Shinya Akamine; Thomas R. Albrecht, both of Stanford, and Thomas E. Carver, Mountain View, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Filed Jan. 17, 1989, Ser. No. 297,770
Int. Cl.[5] G01B 5/28; G01C 7/00; H01J 37/26; H01L 21/306
U.S. Cl. 250—306 19 Claims



13. A microminiature cantilever stylus, comprising:
a thin-film cantilever arm member; and
a projecting tip fixed to said cantilever arm member, said tip formed from a (100) silicon wafer and having a base formed in the (100) plane and fixed to said cantilever arm, said tip having three side surfaces which meet at a point, wherein first and second perpendicular side surfaces extend perpendicularly from the (100) plane of said base, said tip having a third oblique side formed in the (111) plane and extending from said base.

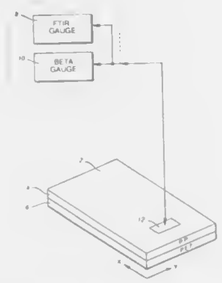
VOL 1116 ISS 4 JL 24 1990 UMI

4,943,720
ELECTRONIC PROBE
Barbara L. Jones, 80 Chisbury Place, Forest Park, Bracknell RG 123 TX, England
Filed Aug. 2, 1989, Ser. No. 389,056
Claims priority, application United Kingdom, Aug. 3, 1988, 8818445
Int. Cl.[5] H02J *37/26*
U.S. Cl. 250—306 **8 Claims**



1. An electronic probe comprising an electrically conductive base and a fine pointed tip, made of a semi-conducting diamond material, in electrical contact with the base.

4,943,721
METHOD OF OBTAINING ACCURATE COMPOSITIONAL INFORMATION OF MULTI-LAYER COMPOSITIONS
Warren D. Vidrine, Jr., San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.
Filed Jun. 22, 1989, Ser. No. 370,420
Int. Cl.[5] G01N *23/02, 21/35*
U.S. Cl. 250—308 **22 Claims**



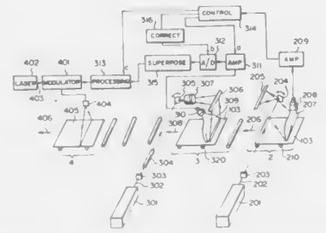
1. Process for measuring the composite thickness of a multi-layer composition which comprises the steps of:
obtaining a known absorption coefficient and a known density for each material forming a layer of the composition;
measuring the fractional composition of each layer forming the multi-layer composition with a first non-contact gauge;
determining a nominal composite absorption coefficient for the multi-layer composition using the absorption coefficient of each layer and the fractional composition of each layer;
measuring the multi-layer composition with a beta gauge to produce an output;
determining a composite mass of the multi-layer composition using the nominal composite absorption coefficient and the beta gauge output;
determining a composite density of the multi-layer composition using the fractional composition of each layer and the known density of each layer; and,
determining the composite thickness of the multi-layer composition using the composite mass and the composite density.

4,943,722
CHARGED PARTICLE BEAM SCANNING APPARATUS
Bernard C. Breton, Great Shelford; John T. L. Thong, Leckampton, and William C. Nixon, Cambridge, all of United Kingdom, assignors to Trialsite Limited, United Kingdom
Filed Sep. 24, 1987, Ser. No. 100,751
Claims priority, application United Kingdom, Sep. 24, 1986, 8622976
Int. Cl.[5] H01J *37/28*
U.S. Cl. 250—310 **21 Claims**



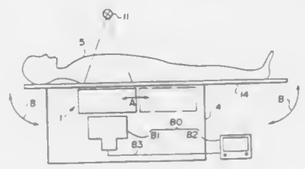
1. Scanning beam apparatus adapted to display two views of a surface for stereoscopic viewing, wherein two series of electrical signals are obtained by scanning the surface with a beam first with the beam axis at one angle to the surface and then with the beam axis at a different angle or direction from the first, characterized by a frame store to which the two series of electrical signals are supplied, the frame store including a feedback loop and input and feedback multiplying means and forming a recursive filter, and signal converter means including an red/green/blue look-up table memory means for generating red, green and blue signals for display by a color monitor.

4,943,723
RADIATION IMAGE READ-OUT METHOD
Yuuma Adachi, and Nobuyoshi Nakajima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 776,185, Sep. 13, 1985. This application Jul. 11, 1988, Ser. No. 217,022
Claims priority, application Japan, Sep. 13, 1984, 59-192097
The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.
Int. Cl.[5] G03C *5/16*
U.S. Cl. 250—327.2 **3 Claims**



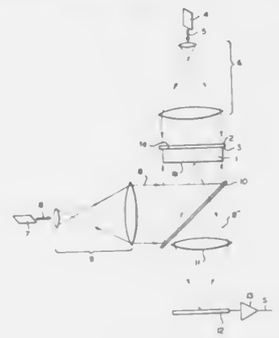
1. A radiation image read-out method in which, prior to final read-out for exposing a stimulable phosphor sheet carrying a radiation image of an object stored therein to stimulating rays which cause the stimulable phosphor sheet to emit light in proportion to the stored radiation energy, detecting the emitted light by use of a photoelectric read-out means to obtain an electric image signal for reproducing a visible image, preliminary read-out is conducted by use of stimulating rays of a level lower than the level of stimulating rays used in the final read-out, read-out conditions in the final read-out and/or image processing conditions are adjusted on the basis of image input information on the stimulable phosphor sheet obtained by the preliminary read-out, and the final read-out is conducted by use of the adjusted conditions,
wherein the improvement comprises the steps of:
(i) when the image read-out is conducted for a plurality of the stimulable phosphor sheets carrying a radiation image of the same object recorded thereon by combination image recording, conducting said preliminary read-out and said final read-out only for the first stimulable phosphor sheet which is first subjected to the image read-out, and
(ii) conducting only said final read-out for the other stimulable phosphor sheets by use of the read-out conditions and/or image processing conditions adjusted on the basis of the image input information obtained by said preliminary read-out of said first stimulable phosphor sheet.

4,943,724
RADIATION IMAGE RECORDING AND READ-OUT APPARATUS
Shigeru Saotome, and Masamitsu Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 18, 1988, Ser. No. 182,678
Claims priority, application Japan, Apr. 17, 1987, 62-94546; Apr. 17, 1987, 62-94549
Int. Cl.[5] G01N *23/04*
U.S. Cl. 250—327.2 **5 Claims**



1. A radiation image recording and read-out apparatus which comprises:
(i) a recording and read-out unit provided with:
(a) a case for housing therein a stimulable phosphor sheet and having longitudinal and transverse dimensions approximately equal to the longitudinal and transverse dimensions of a single image recording area on said stimulable phosphor sheet,
(b) an image recording section for holding said stimulable phosphor sheet in said case, and having a radiation image of an object stored on said stimulable phosphor sheet,
(c) an image read-out section provided in said case for exposing said stimulable phosphor sheet carrying said radiation image stored thereon to stimulating rays which cause said stimulable phosphor sheet to emit light in proportion to the stored radiation energy, and photoelectrically detecting the emitted light to obtain image signals, and
(d) an erasing section provided in said case for releasing the radiation energy remaining on said stimulable phosphor sheet, for which the detection of said emitted light has been carried out, before the image recording is carried out on said stimulable phosphor sheet,
(ii) a unit movement means for moving said recording and read-out unit so that said recording and read-out unit takes a first position at which said stimulable phosphor sheet held at said image recording section is disposed at an image recording position exposed to radiation passing through said object, and a second position retracted from said first position, and
(iii) a fluoroscopic means for receiving the radiation passing through said object at the time said recording and read-out unit is present at said second position, and converting the radiation into signals for a visible image.

4,943,725
RADIATION IMAGE READ-OUT APPARATUS
Shuji Ono, and Tsutomu Kimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 17, 1988, Ser. No. 259,064
Claims priority, application Japan, Oct. 16, 1987, 62-261040
Int. Cl.[5] G03G *5/16*
U.S. Cl. 250—327.2 **5 Claims**



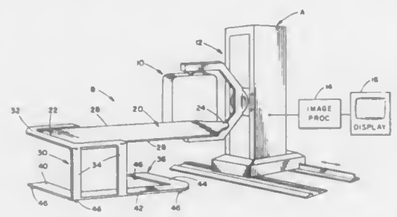
1. A radiation image read-out apparatus, comprising:
(i) a microchannel spacial light modulator positioned such that a stimulable phosphor sheet carrying a radiation image stored thereon is less than a predetermined distance from a front surface of said microchannel spacial light modulator,
(ii) a stimulating ray source comprising means for irradiating approximately uniform stimulating rays simultaneously to the overall surface of said stimulable phosphor sheet from the side opposite to said microchannel spacial light modulator with said stimulable phosphor sheet intervening between said stimulating ray source and said microchannel spacial light modulator,
(iii) a reading light source comprising means for irradiating approximately uniform reading light simultaneously to the overall area of a rear surface of said microchannel spacial light modulator after said stimulating rays produced by said stimulating ray source have been irradiated to said stimulable phosphor sheet to cause said stimulable phosphor sheet to emit light in proportion to the stored radiation energy and the light emitted by said stimulable phosphor sheet has been detected by said microchannel spacial light modulator, and
(iv) a two-dimensional photodetector comprising means for detecting said reading light produced by said reading light source, irradiated to the rear surface of said microchannel spacial light modulator, and reflected and subjected to spacial modulation in accordance with said radiation image by said microchannel spacial light modulator.

4,943,726

TOMOGRAPHIC AND WHOLE BODY IMAGING TABLE

Steven J. Plummer, Hudson, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio

Filed Sep. 20, 1988, Ser. No. 246,774
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.02 11 Claims



1. A scanning nuclear camera apparatus comprising:
a camera head for converting radiation from a subject into output signals indicative thereof;
a subject supporting top having a head end, a foot end, and first and second sides;
a gantry means for supporting and selectively moving the camera head (1) longitudinally along upper and lower surfaces of the top, and (2) peripherally around a central portion and the head end of the top; and,
an undercarriage for supporting the top without interfering with the movement of the camera head and without interfering with reception by the camera head of radiation events emanating from the supported subject during the peripheral movement of the camera head, the undercarriage including:
a top retaining portion disposed only adjacent the foot end of the top such that the head end and the central portion are free of the top retaining portion such that the top retaining portion is not juxtaposed between the support subject and the camera head as the camera head moves peripherally around the central portion and the head end of the top,
a support portion extending from the top retaining portion adjacent an intersection of the first side and the foot end of the top to a floor engaging portion such that the head end and the second side are cantilevered from the support portion to provide free access for the camera head to move without interference from the support portion during both the longitudinal movement along the top lower surface and the peripheral movement around the central portion; and,
an image means for constructing an image representation from the output signals.

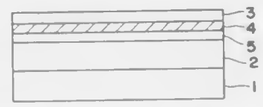
4,943,727

RADIOGRAPHIC INTENSIFYING SCREEN

Akira Kitada, Odawara; Kikuo Yamazaki; Terumi Matsuda, both of Minami-ashigara, and Jun Kawagoe, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 21, 1988, Ser. No. 146,694
Claims priority, application Japan, Jan. 21, 1987, 62-11902
Int. Cl.[5] G21K *4/00*
U.S. Cl. 250—483.1 7 Claims

1. A radiographic intensifying screen comprising a support, a phosphor layer which comprises a binder and a phosphor dispersed therein and a protective film, superposed in order, wherein a deposited metal film is provided on one or both surfaces of said protective film, said deposited metal film having a light transmittance ranging from 10% to 90% at the peak wavelength of the emission of the phosphor and a thickness ranging from 10 to 1000 angstroms whereby the surface of the



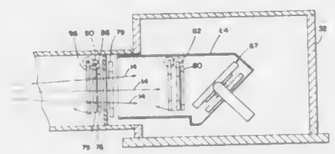
screen is essentially prevented from being electrostatically charged.

4,943,728

BEAM PATTERN CONTROL SYSTEM FOR AN ION IMPLANTER

Jerald P. Dykstra, and Andrew M. Ray, both of Austin, Tex., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1989, Ser. No. 317,225
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.3 12 Claims



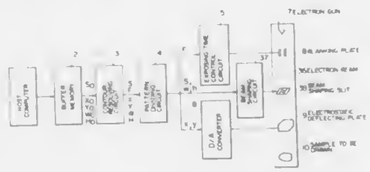
1. In an ion implanter comprising a vacuum chamber, wafer-receiving support means within said vacuum chamber, means for directing an ion beam onto a wafer received on said support means, and a first aperture plate having a beam defining aperture formed therein positioned to intercept the beam upstream of said support means; the improvement wherein the aperture formed in said aperture plate is elliptical.

4,943,729

ELECTRON BEAM LITHOGRAPHY SYSTEM

Kimiaki Ando, Nishitama; Mitsuo Ooyama, Hachioji, and Norio Saitou, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1988, Ser. No. 284,733
Claims priority, application Japan, Dec. 18, 1987, 62-318808
Int. Cl.[5] H01J *37/30*
U.S. Cl. 250—492.3 5 Claims



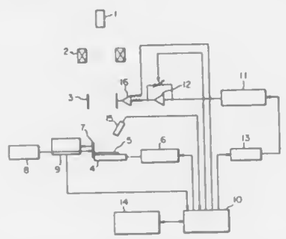
1. An electron beam lithography system comprising contour resolving circuit means for resolving an input original pattern data into contour portion pattern data and inner portion pattern data in accordance with a designated dimension, flag means for adding flag data to the resolved pattern data to distinguish the contour portion pattern data from the inner portion pattern data, and means for outputting the resolved pattern data with the flag data.

4,943,730

CHARGED PARTICLE BEAM LITHOGRAPHY METHOD

Hitoshi Takemura; Nobuo Gotoh, and Moriyuki Isobe, all of Tokyo, Japan, assignors to JEOL Ltd., Tokyo, Japan

Filed Sep. 15, 1989, Ser. No. 407,576
Claims priority, application Japan, Sep. 19, 1988, 63-234254; Sep. 19, 1988, 63-234255
Int. Cl.[5] H01J *37/302*
U.S. Cl. 250—492.3 7 Claims



1. In a charged particle beam lithography method wherein the workpiece material is mounted upon a stage the position of which is detected by a laser interferometer for positioning a writing field of the workpiece under the particle beam and wherein a particle beam deflection system directs the beam over the frame to write patterns upon each writing field of the workpiece, said deflection system comprising an amplifier for amplifying a deflection signal applied to deflector means, the movement of the stage to present new writing fields to the particle beam being controlled by digital writing field data stored in the memory of a controller and the patterns to be written to each writing field by deflection of the charged particle beam being controlled by pattern data stored in the memory of a controller, the improvement for permitting expanding or reducing the size of patterns according to a scaling factor comprising the steps for:
(a) changing the gain of the deflection system amplifier for sending the deflection signal to the charged beam deflector according to the scaling factor,
(b) converting the writing field data that represents the intended movement amount of the stage required for the shift of the writing field into a signal according to the scaling factor,
(c) moving the stage by one writing field on the converted data signal,
(d) comparing a count signal from the laser interferometer representing the position of the stage with said converted data signal to obtain a position error signal,
(e) writing patterns in the field by deflecting the charged particle beam in accordance with digital pattern data signals converted into analog signals applied to the deflection system amplifier and correcting said deflection of the charged particle beam in accordance with the error signal, and
(f) repeating the steps (c), (d) and (e).

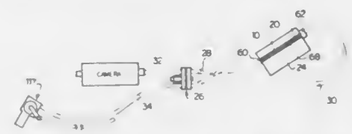
4,943,731

APPARATUS FOR HANDLING SOURCE CAPSULE ASSEMBLIES

Glen A. Brown, 36 Hester Street, Dartmouth, Nova Scotia, Canada (B3A 1K2)

Filed Oct. 18, 1989, Ser. No. 423,231
Claims priority, application United Kingdom, Oct. 19, 1988, 8824452
Int. Cl.[5] G21F *5/02*
U.S. Cl. 250—497.1 21 Claims

1. An apparatus for inserting a radioactive source assembly into a container comprising:
an insertion tube having an inlet end and an outlet end;
first coupling means for coupling the outlet end of the insertion tube to the container for transferring the source assembly from the tube to the container;
source inserter means including first and second ports, means for receiving the source assembly and means for aligning the source assembly with the first and second ports;
cable means including a flexible drive cable and means for advancing and retracting the cable;



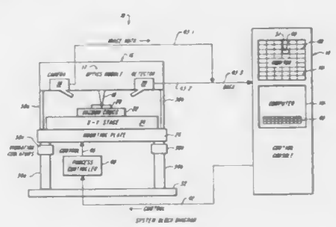
second coupling means connecting one of the ports of the inserter means to the inlet end of the insertion tube and connecting the other of the ports of the insertion means to the cable means for receiving the flexible drive cable therefrom whereby the source assembly may be placed in the inserter means, aligned with the first and second ports and driven from the inserter means through the insertion tube into the container by the flexible drive cable of the cable means.

4,943,732

METHOD AND APPARATUS FOR DEFECT DETECTION AND LOCATION

Nicholas P. Economou, Lexington, Mass., assignor to Micrion Corporation, Peabody, Mass.

Filed Aug. 16, 1989, Ser. No. 394,674
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—572 22 Claims



1. Apparatus for locating defects in a substantially planar liquid crystal display (LCD) panel, the apparatus comprising
light source means for generating an interrogating light beam to impinge upon the LCD panel,
scanning means for introducing relative motion between said interrogating light beam and the LCD panel to scan said interrogating light beam in a predetermined pattern about the LCD panel,
position signalling means for generating a position signal having an instantaneous value representative of an instantaneous position of said interrogating light beam with respect to the LCD panel,
photodetector means for
detecting any of reflected, refracted, scattered or transmitted light resulting from impingement of said interrogating light beam upon the LCD panel, and
generating in response thereto a detector signal having an instantaneous value representative of detected magnitude of said reflected, refracted, scattered or transmitted light,

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each said instantaneous detector signal value corresponding with the instantaneous position of said interrogating light beam with respect to the LCD panel, and

discontinuity detection means, responsive to said detector signal, for detecting discontinuities in the value of said detector signal, said discontinuities being representative of defects in the LCD panel, said discontinuity detection means including

location means, responsive to said detector signal and said position signal, for correlating each said discontinuity in the value of said detector signal with a corresponding location on the LCD panel to assign a location to each detected defect on the LCD panel.

4,943,733

PROJECTION OPTICAL APPARATUS CAPABLE OF MEASUREMENT AND COMPENSATION OF DISTORTION AFFECTING RETICLE/WAFER ALIGNMENT

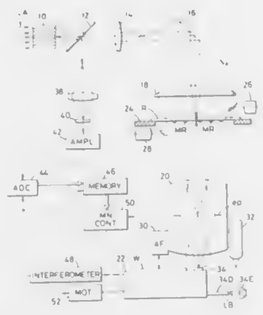
Susumu Mori, Tama, and Masato Shibuya, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 192,766, May 10, 1988, abandoned. This application Nov. 15, 1989, Ser. No. 436,745

Claims priority, application Japan, May 15, 1987, 62-117167; May 18, 1987, 62-119081; May 18, 1987, 62-119082

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 **21 Claims**



1. A projection optical apparatus for illuminating a reticle, on which a desired pattern is formed by a light-transmitting member and a light-intercepting member, by illuminating light from an illuminating optical system, and forming the image of said pattern on a predetermined imaging plane through a projection optical system, including:

stage means movable along the imaging plane of said projection optical system;

first position detecting means for outputting a position signal corresponding to the position of said stage means;

light-emitting means provided on said stage means and having a light-emitting surface of predetermined shape for emitting light to said projecting optical system;

photoelectric detector means for receiving light from the light-emitting surface of said light-emitting means through said projection optical system and said reticle, respectively; and

second position detecting means for controlling said stage means so that a projected image of said light-emitting surface moves relative to said reticle, and detecting the positional relation between the projected image of said light-emitting surface and said reticle on the basis of the output from said photoelectric detector means and the output from said first position detecting means during said movement;

the numerical aperture of the light-receiving surface of said photoelectric detector means relative to said reticle being set substantially equal to the numerical aperture of said illuminating light relative to said reticle, and the numerical aperture of said light-emitting means relative to said imaging plane being set greater than the numerical aperture of said projection optical system relative to said imaging plane.

4,943,734

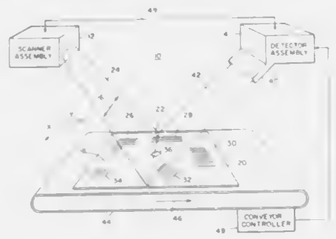
INSPECTION APPARATUS AND METHOD FOR DETECTING FLAWS ON A DIFFRACTIVE SURFACE

Carl E. A. Johnson, Merrimack; Jay L. Ormsby, Salem, both of N.H.; Eric T. Chase, Andover; George S. Quackenbos, Newburyport; Sergey V. Broude, Acton, and Abdu Bou dour, West Newton, all of Mass., assignors to QC Optics, Inc., Burlington, Mass.

Filed Jun. 30, 1989, Ser. No. 373,914

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—572 **16 Claims**



1. An optical inspection system for detecting flaws on a diffractive surface, comprising:

means for illuminating a surface to be inspected to generate a first scattered energy angular distribution in response to a flaw on the surface, or a second scattered energy angular distribution in response to an unflawed surface;

means for sensing said first and second energy distributions;

means, responsive to the means for sensing, for establishing the minimum detected energy level within said angular distribution;

means, for detecting whether said minimum detected energy level is in a first predetermined energy range or a second predetermined energy range; and

means, responsive to said means for determining, for indicating that no flaw is present when said minimum energy detection level is in said first range and a flaw is present when said minimum detected energy level is in said second range.

4,943,735

APPARATUS FOR MEASURING CONCENTRATION OF LIQUID DEVELOPER

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Continuation-in-part of Ser. No. 828,234, Feb. 11, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 204,494

Claims priority, application Japan, Feb. 18, 1985, 60-031201

Int. Cl.[5] G01N *21/01*

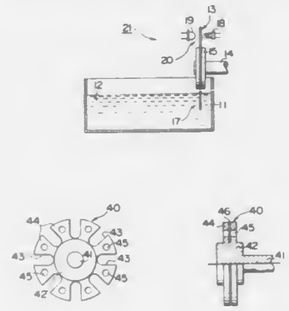
U.S. Cl. 250—573 **5 Claims**

1. An apparatus for measuring the concentration of a colored component dispersed in a liquid, said apparatus comprising:

a vessel for containing a liquid having a colored component dispersed therein;

a holding member having a thickness T and a substantially circular opening formed therein, said opening being adapted to retain a sample of said liquid, said opening having a diameter D, wherein $D \leqq T + 1/T$;

means for moving said holding member in such a manner that said opening moves between a supply station where it is immersed into said vessel to receive and retain said liquid sample and a measuring station where a measurement of said liquid sample in said opening takes place; and



photoelectric detector means for measuring the light transmitted through said liquid sample at said measuring station.

4,943,736

WAVEFORM CONVERTING APPARATUS

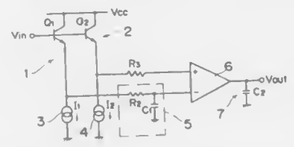
Seiichiro Kihara, Nara, and Naonori Okabayashi, Sakurai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1989, Ser. No. 301,581

Claims priority, application Japan, Jan. 26, 1988, 63-15450

Int. Cl.[5] H03K *5/00*; G06G *7/10*; G05F *3/16*

U.S. Cl. 307—261 **8 Claims**



1. A waveform converting device comprising:

first and second emitter follower circuits for independently converting the impedance of an input signal;

said first emitter follower circuit including a first transistor;

said second emitter follower circuit including a second transistor;

first constant current supply means operatively connected to an emitter of said first transistor provided in said first emitter follower circuit, for supplying a first constant current means of a first value,

second constant current supply means operatively connected to an emitter of said second transistor provided in said second emitter follower circuit, for supplying a second constant current which is greater than said first value, the ratio between said first and second constant currents being a set constant,

a first integrating circuit for integrating an output voltage of said first emitter follower circuit,

a comparator for comparing the output voltage of said first integrating circuit with an output voltage of said second emitter follower circuit, and

a second integrating circuit for integrating an output voltage of said comparator.

4,943,737

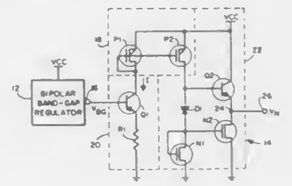
BICMOS REGULATOR WHICH CONTROLS MOS TRANSISTOR CURRENT

Tzen-Wen Guo, Milpitas, and Jonathan J. Stinebelfiner, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 12, 1989, Ser. No. 421,230

Int. Cl.[5] G05F *3/16*

U.S. Cl. 307—296.7 **11 Claims**



1. A bipolar/CMOS regulator circuit for generating a CMOS gate-controlling voltage, which varies favorably with temperature, power supply voltage and process corners so as to yield a well-controlled CMOS current, said regulator circuit comprising:

a current mirror section (**18**) including a first P-channel MOS transistor (P1) and a second P-channel MOS transistor (P2), said first P-channel transistor (P1) having its source connected to a supply potential (VCC) and its gate and drain connected together, said second P-channel transistor (P2) having its source also connected to the supply potential (VCC) and its gate connected to the gate of said first P15 channel transistor (P1);

a current source section (**20**) formed of a first bipolar transistor (Q1) and an emitter resistor (R1), said first bipolar transistor (Q1) having its collector connected to the drain of said first P-channel transistor (P1), its base connected to receive a regulated reference voltage, and its emitter connected to one end of the emitter resistor (R1), the other end of the emitter resistor (R1) being connected to a ground potential;

an output section (**22**) formed of a diode (D1), a first N-channel MOS transistor (N1), a second bipolar transistor (Q2), and a second N-channel MOS transistor (N2), said diode (D1) having its anode connected to the drain of said second P-channel transistor (P2) and its cathode connected to the gate and drain of said first N-channel transistor (N1), said first N-channel transistor (N1) having its source connected to the ground potential; and

said second bipolar transistor (Q2) having its collector connected to the supply potential (VCC), its base connected to the anode of the diode (D1), and its emitter connected to the drain of said second N-channel transistor (N2) and to an output node for generating a CMOS gate-controlling voltage (V_R), said second N-channel transistor (N2) having its gate connected to the cathode of said diode (D1) and its source connected also to the ground potential.

4,943,738

DIGITAL SIGNAL INPUT BUFFER CIRCUIT HAVING A SIMPLE CONSTRUCTION AND CAPABLE OF RETAINING DATA

Katsuji Hoshi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 29, 1988, Ser. No. 291,886

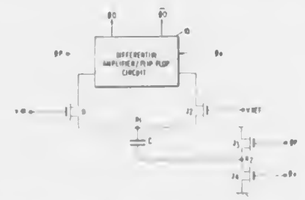
Claims priority, application Japan, Dec. 29, 1987, 62-332299

Int. Cl.[5] H03K *03/356, 5/24*

U.S. Cl. 307—362 **5 Claims**

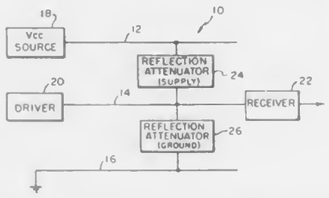
1. An input buffer circuit which includes a flipflop circuit and which receives an input voltage signal and a reference

voltage to amplify a difference between the input voltage signal and the reference voltage in response to an activation signal, comprising first and second transistors having their sources commonly connected to a first node and their drains coupled to a pair of inputs of the flipflop circuit, respectively, a gate of the first transistor being connected to receive the input voltage signal and a gate of the second transistor being connected to receive the reference voltage; a capacitor connected as its one end to the first node and at its other end to a



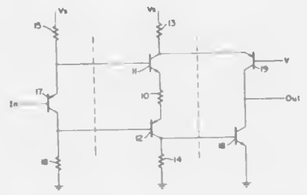
second node; and a bias control circuit having an output connected to the second node and operating to respond to a precharge signal so as to bring the second node to a first level and to respond to the activation signal so as to bring the second node to a second level lower than the first level, so that the potential of the first node is consequentially lowered when the input buffer circuit executes the comparison operation in response to the activation signal and a current flowing through the first and second transistors is blocked by the capacitor.

4,943,739
NON-REFLECTING TRANSMISSION LINE TERMINATION
Grimes G. Slaughter, 240 N. Purdue Ave., Apt. 211, Oak Ridge, Tenn. 37830
Filed Dec. 19, 1988, Ser. No. 286,622
Int. Cl.[5] H03K *17/16, 3/01;* **H01P** *1/22, 1/26*
U.S. Cl. 307—443 **18 Claims**



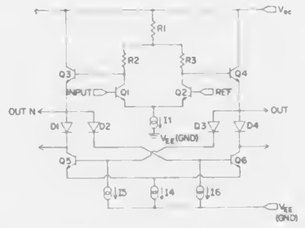
1. A transmission line that receives digital signals from a driver and transmits said digital signals to a receiver comprising:
- a signal line for carrying said digital signals adaptable to be connected at one end to said driver and at an opposite end to said receiver;
- a first line for receiving a first potential;
- a second line for receiving a second potential, said first and second potentials defining a predetermined potential range; and
- means for clamping said digital signals on said signal line to a signal voltage at or near said first potential or said second potential to substantially prevent the signal from moving outside the predetermined potential range said clamping means comprising:
  - a first bipolar junction transistor having an emitter connected to said signal line and a base, through a first base resistor, connected to said ground line, and
  - a second bipolar junction transistor having an emitter connected to said signal line and a base, through a second base resistor, connected to said supply line.

4,943,740
ULTRA FAST LOGIC
Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890
Filed Apr. 12, 1988, Ser. No. 180,431
Int. Cl.[5] H03K *19/096, 19/088*
U.S. Cl. 307—454 **21 Claims**



1. Logic apparatus providing differential binary output signal in response to differential binary input signal, comprising:
- a pair of input terminals with the differential binary input signal applied thereacross;
- a pair of output terminals with the differential binary output signal appearing thereacross;
- a pair of transistors of opposite conductivity types, each having a base, emitter and collector electrodes,
- wherein the base electrodes are separately coupled to the inputs, one emitter electrode provides a signal to the other emitter electrode in the absence of an input or output taken therefrom and the collector electrodes are separately coupled to the outputs; and
- a pair of means for biasing the transistors, separately coupled to the collector electrodes thereof.

4,943,741
ECL/CML EMITTER FOLLOWER CURRENT SWITCH CIRCUIT
Julio R. Estrada, South Portland, and Roy L. Yarbrough, Hiram, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed May 24, 1989, Ser. No. 356,785
Int. Cl.[5] H03K *19/086, 3/284*
U.S. Cl. 307—455 **9 Claims**

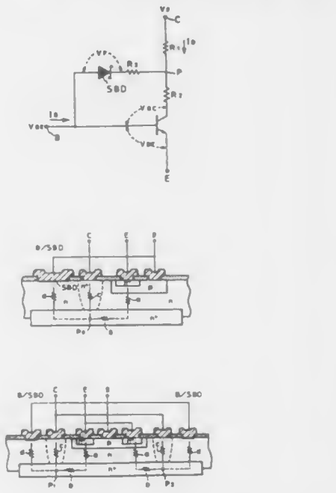


1. An improved emitter coupled logic or current mode logic (ECL/CML) circuit having a first active switching node providing true output signals of high and low potential, first emitter follower transistor means coupled to the first active switching node for sourcing said true output signals to a first output,

a second active switching node providing complementary output signals of low and high potential, second emitter follower transistor means coupled to the second active switching node for sourcing said complementary output signals to a second output, and output current sink means operatively coupled for sinking current from the first and second outputs and first and second emitter follower transistor means, the improvement comprising:
- an emitter follower current switch circuit comprising a first current switch transistor element operatively coupled between the first emitter follower transistor means and the output current sink means and a second current switch transistor element operatively coupled between the second emitter follower transistor means and said output current sink means;
- a first control circuit arranged and coupled for controlling the conducting state of the first current switch transistor element so that it is on and off for true output signals of low and high potential respectively, said first emitter follower transistor means and output thereby being substantially disconnected from the output current sink means when the first output is at high potential;
- a second control circuit arranged and coupled for controlling the conducting state of the second current switch transistor element so that it is on and off (non conducting) for true output signals of high and low potential respectively, said second emitter follower transistor means and second output thereby being substantially disconnected from the output current sink means when the second output is at high potential;
- said first control circuit comprising a first potential difference circuit element operatively coupled between the emitter node of the second emitter follower transistor means and the base node of the first current switch transistor element and said second control circuit comprising a second potential difference circuit element operatively coupled between the emitter node of the first emitter follower transistor means and the base node of the second current switch transistor element.

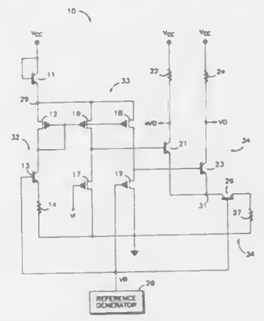
4,943,742
SCHOTTKY BARRIER DIODE CLAMP TRANSISTOR
Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 66,746, Jun. 3, 1987, abandoned. This application Apr. 4, 1989, Ser. No. 333,756
Claims priority, application Japan, Oct. 3, 1985, 60-219171
Int. Cl.[5] H03K *19/013, 19/088, 19/092, 19/084*
U.S. Cl. 307—458 **5 Claims**

1. A semiconductor device used for a logic circuit including a Schottky.barrier.diode clamping transistor, comprising:
- a buried layer of a first conductivity type having a first impurity concentration;
- a collector layer of the first conductivity type on said buried layer, said collector layer having a second impurity concentration which is lower than the first impurity concentration, said collector layer further having a doped contact region of a third impurity concentration higher than the second impurity concentration, said doped contact region being formed between said buried layer and the surface of said collector layer;
- a base region of a second conductivity type which is opposite to the first conductivity type, said base region being formed at the surface of said collector layer;
- an emitter region of the first conductivity type formed in the base region;
- an emitter electrode formed on said emitter region;
- a base electrode formed on said base region;
- a collector electrode formed on said doped contact region of said collector layer; and
- a Schottky contact formed on a portion of said collector layer having the second impurity concentration, said Schottky contact being coupled to said base electrode, a third resistance extending from said Schottky contact through said collector layer, a first resistance extending from said collector contact through said doped contact region to a point in said buried layer, and a second resistance extending from a PN junction between said base



region and said collector layer under said emitter region through the collector layer to the point in said buried layer, said first resistance being smaller than said second resistance.

4,943,743
TTL TO ECL INPUT BUFFER
Perry H. Pelley, III, and Raey J. Yu, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 24, 1988, Ser. No. 172,515
Int. Cl.[5] H03K *19/092, 19/02, 3/01*
U.S. Cl. 307—475 **13 Claims**



1. An input buffer comprising:
- a first transistor having a first current electrode coupled to a first power supply terminal, a control electrode for receiving an input signal, and a second current electrode;
- a second transistor having a first current electrode coupled to the first power supply terminal, a control electrode for

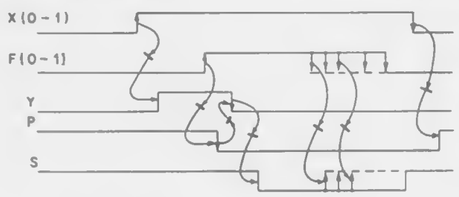
receiving a reference voltage, and a second current electrode;
a current reference generator for generating a reference current and providing a load signal indicative of the reference current;
a first load transistor having a first current electrode coupled to the second current electrode of the first transistor, a control electrode for receiving the load signal, and a second current electrode coupled to a second power supply terminal;
a second load transistor having a first current electrode coupled to the second current electrode of the second transistor, a control electrode for receiving the load signal, and a second current electrode coupled to the second power supply terminal; and
a differential amplifier having a first input coupled to the second current electrode of the first transistor, a second input coupled to the second current electrode of the second transistor, and first and second outputs representative of a voltage differential between the first and second inputs.

4,943,744

DIFFERENTIATING LOGICAL CIRCUIT FOR ASYNCHRONOUS SYSTEMS

Angelo Beltramini, Galliate, Italy, assignor to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 370,155, Jun. 22, 1989, abandoned, which is a continuation of Ser. No. 165,908, Mar. 9, 1988, abandoned. This application Dec. 14, 1989, Ser. No. 449,428
Claims priority, application Italy, Mar. 11, 1987, 19648 A/87
Int. Cl.[5] H03K *17/04*
U.S. Cl. 307—480 **48 Claims**



1. A digital logic circuit comprising:
means for receiving at least one input signal X;
means connected to said receiving means and responsive to a change of logic level of said at least one input signal X to produce a change of logic level in an output signal Y from a rest logic level to another logic level;
means for receiving at least one feedback signal F from a circuit utilizing said output signal Y; and
means connected to said feedback signal receiving means and responsive to a change of logic level in said feedback signal F to return said output signal Y back to said rest logic level.

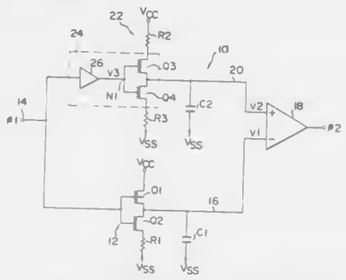
4,943,745

DELAY CIRCUIT FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Yohji Watanabe, Kawasaki, and Takashi Ohsawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 275,386, Nov. 23, 1988, abandoned. This application Nov. 16, 1989, Ser. No. 437,294
Claims priority, application Japan, Nov. 25, 1987, 62-296816
Int. Cl.[5] H03K *5/159*
U.S. Cl. 307—603 **28 Claims**

1. A delay circuit for a semiconductor integrated circuit device, comprising:
(a) first circuit means for receiving an input signal and for selectively executing charging/discharging in response to said input signal to thereby produce a variable output voltage;
(b) second circuit means for receiving a source voltage of said device and for dividing said source voltage to thereby produce a voltage having a predetermined constant potential as a reference voltage;
(c) third circuit means, having first and second inputs respectively coupled to said first and second circuit means, for



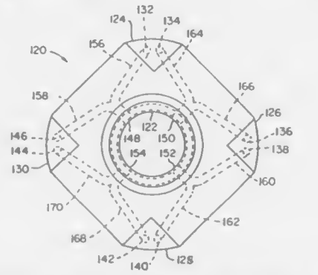
comparing said output voltage of said first circuit means with said reference voltage;
(d) fourth circuit means for receiving said input signal and performing a switching operation in response to said input signal to electrically disconnect said second input of said third circuit means from said second circuit means; and
(e) fifth circuit means for maintaining said reference voltage at said second input of said third circuit means while said third circuit means is being disconnected from said second circuit means.

4,943,746

LIQUID COOLED SALIENT POLE ROTOR SUPPORT WEDGES

William M. Scherzinger, Brick; Tsuwei Chu, Oceanport, and Leon M. Kasdan, West Long Beach, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Mar. 20, 1989, Ser. No. 326,149
Int. Cl.[5] H02K *1/32*
U.S. Cl. 310—61 **25 Claims**



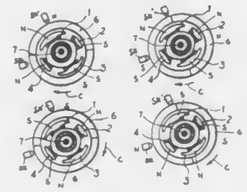
19. A method for dissipating heat in a generator having an axially bored shaft, a rotor mounted on the bored shaft having a plurality of poles, and a plurality of support wedges positioned between each of the plurality of poles, at least two of the plurality of support wedges having a bore, comprising the steps of:
transferring a cooling medium through the shaft;
transferring the cooling medium from the shaft through the bore in at least one of the plurality of support wedges having the bore:
circulating the cooling medium from each of the plurality of support wedges receiving the cooling medium from the shaft to at least one other of said plurality of support wedges; and
returning the cooling medium to the shaft.

4,943,747

BRUSHLESS UNEQUAL POLES CONTROLLED ELECTRIC MOTOR

Jong-Seob Lee, Jinju Apartment No. 5-1305, Gazoa-dong 30-2, Seo-ku, InChon, Rep. of Korea, assignor to Woo-Jin Kim, Seoul and Jong-Seob Lee, Inchon, both of, Rep. of Korea

Filed May 5, 1989, Ser. No. 347,999
Claims priority, application Rep. of Korea, Sep. 12, 1988, 11757/1988[U]; Sep. 12, 1988, 11758/1988[U]
Int. Cl.[5] H02K *29/08, 3/18;* H02P *1/22*
U.S. Cl. 310—67 R **11 Claims**



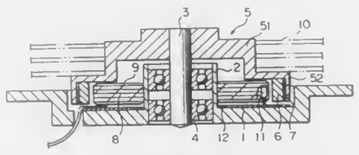
1. A brushless unequal-pole electric motor comprising:
a hollow cylindrical rotor rotatably mounted within a casing and including a permanent magnet having at least two magnetic pole;
a plurality of field magnetic cores provided with field coils and located arcuately within and fixedly attached to said casing for generating magnetic fields of different magnitudes between adjacent ones of said field magnetic cores, and for generating magnetic fields of the same magnitude between oppositely located ones of said field magnetic cores;
magnetic sensors located within said casing, each said sensor being arcuately spaced from a longitudinal axis of an adjacent one of said field magnetic cores for detecting the positions of the magnetic poles of said permanent magnet of said rotor; and
a driving circuit connected to said magnetic sensors and to said field coils for reversing the magnetic polarity of said field magnetic cores in response to said magnetic sensors which detect the magnetic position of said permanent magnet of said rotor.

4,943,748

MOTOR WITH CUP-SHAPED ROTOR HAVING CYLINDRICAL PORTIONS OF DIFFERENT DIAMETER

Shinichi Shiozawa, Komagane, Japan, assignor to Yugen Kaisha Chubuseimitsu, Nagano, Japan

Filed Jun. 22, 1989, Ser. No. 369,990
Claims priority, application Japan, Jul. 16, 1988, 63-176245
Int. Cl.[5] H02K *21/24;* G11B *5/012*
U.S. Cl. 310—67 R **14 Claims**



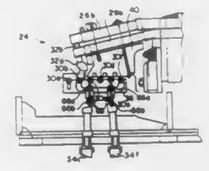
1. A motor structure comprising a frame wall and a hollow holding cylinder extending generally perpendicular from said frame wall, a rotor shaft coaxially disposed in said hollow holding cylinder, said rotor shaft having an axis of rotation which is vertically disposed, bearing means mounted on said hollow holding cylinder for rotatably supporting said rotor shaft, said holding cylinder having an outer part, coil means mounted on said outer part of said holding cylinder, a cup-shaped rotor means mounted on said rotor shaft, said cup-shaped rotor means having an end wall, a first cylindrical portion extending coaxially from said end wall, an intermediate wall extending radially outwardly from said first cylindrical portion, and a second cylindrical portion extending axially from said intermediate wall such that said first cylindrical portion has a diameter which is less than the diameter of said second cylindrical portion, said coil means being generally axially aligned with and being disposed radially inwardly of said second cylindrical portion, said coil means having an outer diameter greater than the diameter of said first cylindrical portion such that said coil means generally underlies said first cylindrical portion, and magnet means mounted on said second cylindrical portion radially outwardly of said coil means.

4,943,749

METHOD AND APPARATUS FOR CONDUCTING CURRENT FROM A DYNAMOELECTRIC MACHINE

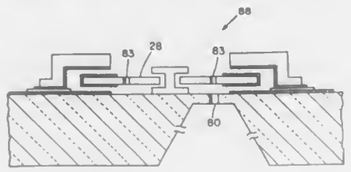
Hector O. Ponce, Pensacola, and Aleksandar Prole, Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1988, Ser. No. 288,369
Int. Cl.[5] H02K *3/50, 1/18*
U.S. Cl. 310—260 **16 Claims**



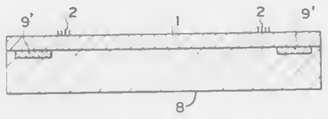
1. A dynamoelectric machine, comprising:
a cylindrical stator core;
a casing structure surrounding said stator core, said casing structure having an opening of predetermined size at an axial end of said stator core;
a stator winding wound upon said stator core, said stator winding including a plurality of coils with each said coil having two terminating ends and means for circulating a fluid coolant therethrough;
means for supporting said stator winding at said terminating ends, said supporting means being mountable to said stator core at said axial end;
a plurality of conducting rings, mounted radially outward from said terminating ends upon said supporting means, each said conducting ring having means for circulating said fluid coolant therethrough and tab means for conducting current therefrom;
phase lead extension means for electrically coupling said terminating ends to said conducting rings;
a plurality of main leads for conducting current externally from the dynamoelectric machine; and
main lead extension means for electrically coupling each said main lead to a preselected one of said tab means;
wherein said conducting rings mounted upon said supporting means are insertable in the dynamoelectric machine through said opening in said casing structure.

4,943,750
ELECTROSTATIC MICROMOTOR
Roger T. Howe, Belmont; Jeffrey H. Lang, Waltham; Martin F. Schlecht, Lexington; Martin A. Schmidt, Brookline, and Stephen D. Senturia, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 52,725, May 20, 1987, abandoned. This application Jul. 3, 1989, Ser. No. 376,208
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—309 27 Claims



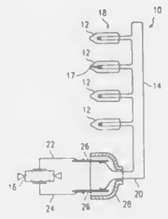
1. An electrostatic machine comprising:
a stator formed by surface micromachining sacrificial layers on a substrate surface;
a moveable member positioned for movement relative to the stator free of contact thereto, the moveable member formed and positioned with respect to the substrate surface during the surface micromachining that formed the stator;
means for generating and sustaining an electrostatic field about the moveable member across a gaseous gap between the stator and moveable member, facing surfaces of the surface micromachined stator and moveable member across the gaseous gap being free of contact with each other and sufficiently smooth to support a field strength above about 10^8V/m without electrostatic breakdown, the distance between the stator and moveable member across the gaseous gap being about 5 micrometers or less.

4,943,751
SURFACE ACOUSTIC WAVE ELEMENT
Syuichi Mitsutsuka, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed Jun. 20, 1989, Ser. No. 368,787
Claims priority, application Japan, Jun. 28, 1988, 63-162250
Int. Cl.[5] H04L *41/08*
U.S. Cl. 310—313 D 5 Claims



1. A surface acoustic wave element comprising:
a first conductivity type semiconductor substrate;
a piezoelectric layer formed on said semiconductor substrate;
at least one interdigital electrode disposed on said piezoelectric layer; and
a second conductivity type semiconductor region disposed at a position on the side of the end surface of said substrate, viewed from said interdigital electrode, in the upper surface portion just below said piezoelectric layer.

4,943,752
PIEZOELECTRIC INCANDESCENT LAMP TEST DEVICE
Philip A. Todd, 11456 Dumbarton Dr., Dallas, Tex. 75228, and Bobby R. Walker, 1300 Lansdowne Dr., Arlington, Tex. 76012
Filed Sep. 8, 1988, Ser. No. 241,882
Int. Cl.[5] H01L *41/08*; G01R *31/22*
U.S. Cl. 310—339 2 Claims



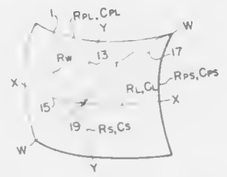
1. A piezoelectric incandescent lamp test device, the incandescent lamp being tested having a filament, comprising:
a piezoelectric electric crystal;
means for electrically connecting the piezoelectric crystal to the incandescent lamp under test to conduct a voltage generated at the piezoelectric crystal to the incandescent lamp, a break in the continuity of the filament in a lamp causing an arc across a broken filament in a lamp to provide a visual indication of the broke filament.

4,943,753
MAGNETIC SHUNT FOR DEFLECTION YOKES
Joseph F. Hevesi, West Hurley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 84,949, Aug. 13, 1987, abandoned. This application Oct. 31, 1988, Ser. No. 265,115
Int. Cl.[5] H01J *29/70*; H01H *5/00*
U.S. Cl. 313—440 11 Claims



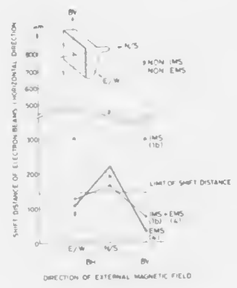
1. In a cathode ray tube display device having a screen for viewing, means for producing a charged particle beam directed at said screen from the rear thereof and aligned with a central axis and a deflection coil yoke having a magnetic component from axially aligned wired segments and a magnetic component from circumferentially aligned wire segments relative to said axis and ferrite core about said deflection coil, giving rise to a desired deflection field for deflecting said beam and an undesirable net distributed magnetic far field radiation outside said device which resembles a vertically oriented dipole field whose mathematical center lines on the central axis slightly ahead of the yoke, apparatus for reducing said net distributed magnetic far field radiation in front of said screen and all about said device, while minimizing the effect within said tube, comprising:
a substantially complete ring of magnetically permeable material with at most only narrow non-magnetic gaps, said ring substantially centered on said central axis totally disposed between end turns of said coil and said screen, said ring positioned near and spaced from said end turns of said coil with the thickness, internal diameter and outer diameter, permeability and separation between the coil yoke and ring being determined to minimize said undesirable net distributed magnetic far field radiation in front of said screen and all about the outside of said device while having minimum effect within the tube.

4,943,754
COLOR PICTURE TUBE WITH FLAT APPEARING FACE PLATE
Ryoji Hirai; Mitsuru Yoshizawa, and Hiroyuki Ikeda, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 30, 1988, Ser. No. 277,946
Claims priority, application Japan, Dec. 2, 1987, 62-303105
Int. Cl.[5] H01J *31/00*
U.S. Cl. 313—477 R 2 Claims



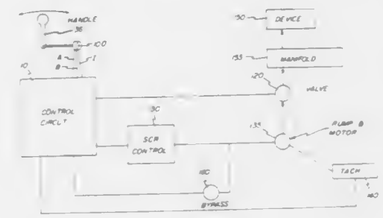
1. A color picture tube of the shadow mask type comprising a rectangular faceplate panel constituted by a rectangular faceplate which has an outward convex central portion, an outer periphery and curvatures C_L and C_S along major and minor axes of said rectangular faceplate, said rectangular faceplate being formed so that at least in the periphery of said rectangular faceplate, a curvature C_{PL} at a long side peripheral portion is made larger than a curvature C_{PS} at a short side peripheral portion by a value within a range of 10% to 100%.

4,943,755
MAGNETIC SHIELDING WITH CONSTANT-CURRENT COILS FOR CRT
Masayuki Toshiyasu; Kazuhiro Chihara, and Yasuo Iwasaki, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 19, 1986, Ser. No. 864,659
Claims priority, application Japan, May 20, 1985, 60-107294; Jun. 17, 1985, 60-133758
Int. Cl.[5] H04N *9/29*; H01J *29/06*
U.S. Cl. 315—8 10 Claims



1. A magnetic shield apparatus for use in shielding a cathode ray tube of a television receiver, said cathode ray tube having a funnel part and a panel part at a viewing side of said cathode ray tube with substantially flat sides, said apparatus comprising:
an external magnetic shielding case substantially enclosing said funnel and major side portions of said panel part of said cathode ray tube;
a toroidal magnetic cancelling coil applied with a constant current for cancelling an external magnetic field along a central axis of said cathode ray tube, wherein said toroidal magnetic cancelling coil is wound around said cathode ray tube; and
a pair of magnetic cancelling coils applied with a constant current for cancelling an external magnetic field along major side portions of said panel part, being positioned on opposed sides of said cathode ray tube, and being arranged between said cathode ray tube and said external magnetic shielding case.

4,943,756
CONTROL OF HYDRAULIC SYSTEMS
Walter Conley, III, and Kim A. Klopfleisch, both of St. Marys, Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio
Filed Dec. 5, 1989, Ser. No. 446,274
Int. Cl.[5] G05B *11/01*; H02P *7/00*
U.S. Cl. 318—671 13 Claims



1. In an apparatus for supplying a controlled hydraulic pressure and flow to a utilization device, said apparatus includes
a control handle moveable through a predetermined distance,
a hydraulic pump, an electric motor for driving said pump to supply hydraulic fluid under pressure, and a hydraulic valve responsive to the position of said control handle for controlling the flow of hydraulic fluid to the utilization device, the improvement comprising
means for sensing the position of said control handle,
means responsive to said sensing means for controlling the speed of said pump motor, said controlling means including
means for establishing and maintaining a minimum pump motor speed, and
circuit means for controlling said pump motor speed as said control handle is operated in an intermediate position.

7. A method for controlling the application of hydraulic pressure and flow from a motor driven pump through a hydraulic control valve to a utilization device in response to the position of a control handle, said method including the steps of
establishing and maintaining a minimum pump motor speed,
controlling said hydraulic control valve through which hydraulic pressure and flow is supplied to the utilization device by means of said handle wherein, as said handle is moved from an off to an intermediate position, said valve will progress from a fully closed position to a fully open position, and
controlling said pump motor speed further to control hydraulic flow in response to movement of said handle from

an intermediate position, prior to said valve becoming fully open, to an on position.

4,943,757

SAFETY APPARATUS FOR A MOTOR DRIVEN WINDOW

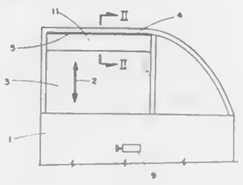
Siegfried Richter, Eckental-Eckenhaid; Friedrich Schauer, Heroldsberg, and Peter Bauernfeind, Nuremberg, all of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed May 23, 1989, Ser. No. 355,471

Claims priority, application Fed. Rep. of Germany, May 31, 1988, 3818456

Int. Cl.[5] E05F *15/08*; H02P *1/22*

U.S. Cl. 318—468 **2 Claims**



1. Safety apparatus for a motor driven window of an automotive vehicle, comprising:

A vehicle outer wall including a window aperture;

a motor driven window slidably positioned within said outer wall and movable in a first direction toward a first side of said window aperture to assume a closed position, and movable in a second opposite direction to assume an open position;

a piezoelectric cable extending substantially across the width of said window aperture for generating electrical pulses upon an obstruction extending through said window aperture being pushed against said piezoelectric cable; and

an electric motor coupled to said motor driven window for movement in said first direction upon rotation of said electric motor in a first direction, and movement in said second opposite direction upon the reversal of direction of rotation of said electric motor, said electric motor being connected to said piezoelectric cable so as to be responsive to an electrical pulse generated thereby for reversing the direction of rotation of said electric motor upon said obstruction being pushed against said piezoelectric cable.

4,943,758

STEERING CONTROL APPARATUS FOR A MOTOR VEHICLE WITH STEERABLE FRONT AND REAR WHEELS

Osamu Tsurumiya, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1988, Ser. No. 246,412

Claims priority, application Japan, Sep. 17, 1987, 62-232969

Int. Cl.[5] H02P *7/14*; B62D *5/04*

U.S. Cl. 318—504 **7 Claims**

1. A steering control apparatus for a motor vehicle with steerable front and rear road wheels, comprising:

a steering mechanism for turning the rear road wheels as well as the front road wheels in response to the turning of a steering wheel;

a battery mounted on the motor vehicle;

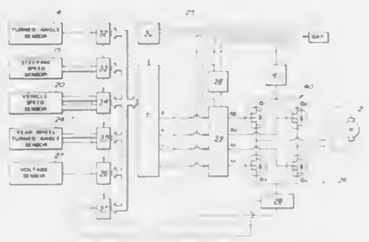
an electric motor energizable by electric power supplied from said battery for applying power output to said steering mechanisms;

detecting means for detecting the voltage of said battery; and

a motor control unit for controlling operation of said electric motor, said motor control unit comprising:

determining means for determining a control signal for said electric motor;

correcting means for correcting said control signal with a battery voltage detected by said detecting means such that



the power output of said electric motor will be maintained at a desired level despite variations in the battery voltage; and

driver means for energizing said electric motor by supplying the electric motor with the electric power from the battery based on said corrected control signal.

4,943,759

MULTIPLE-ARTICULATED ROBOT CONTROL APPARATUS

Keiji Sakamoto, Hachioji, and Osamu Yoshida, Oshino, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

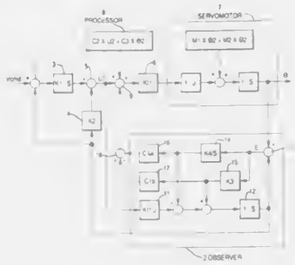
PCT No. PCT/JP88/00604, § 371 Date Jan. 27, 1989, § 102(e) Date Jan. 27, 1989, PCT Pub. No. WO88/10452, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 17, 1988, Ser. No. 305,869

Claims priority, application Japan, Jun. 18, 1987, 62-150205

Int. Cl.[5] G05B *5/00*

U.S. Cl. 318—568.11 **2 Claims**



1. A control apparatus for a multiple-articulated robot in which each arm is independently driven by a feedback-controlled joint driving servomotor, comprising:

arithmetic means for computing mutual interference torque values for respective ones of the arms;

status observing means for reproducing a status variable from a torque command and actual velocity of each servomotor, said status observing means including:

constant term means for receiving an acceleration value and converting it to a constant term;

integration means, connected to said converting means, for receiving and converting the constant term value to a velocity value;

a first adder, connected to the servometer and said integration means, for calculating an error having a steady component and a non-steady component;

error elimination means, connected to said first adder, for eliminating the steady error component; and

torque means, connected to said error elimination means, for providing corrective torque to the non-steady error component from said error elimination means;

a second adder, connected to said corrective means, for adding the outputs from said torque means;

conversion means, connected to said status observing means, for receiving the velocity value from said integration means and for converting an output of the status observing means into a corrective value of torque produced by disturbance acting upon the servomotor; and

correcting means, connected to said conversion means and said second adder, for receiving the output from said second adder and the corrective value and for correcting an error signal of the torque command of the servomotor by the converted corrective value and said interference torque value.

4,943,760

CONTROL SYSTEMS FOR VARIABLE RELUCTANCE ELECTRICAL MACHINES

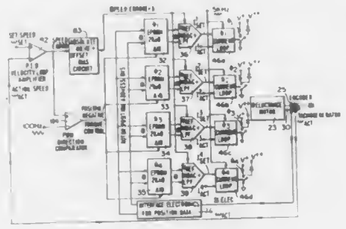
John V. Byrne, Dalkey; Francis McMullin, Ennis; Francis Devitt, Glasnevin; Jeremiah O'Dwyer, Naas; John Murphy, Bishopstown; Michael Egan, Wilton; Michael Brosnan, Ennis, and James Lawton, Midleton, all of Ireland, assignors to Kollmorgen Corporation, Simsbury, Conn.

Continuation of Ser. No. 788,856, Oct. 18, 1985, abandoned. This application Nov. 2, 1988, Ser. No. 266,482

Claims priority, application Ireland, Oct. 19, 1984, 2697/84; Oct. 19, 1984, 2698/84; Oct. 19, 1984, 2699/84; Apr. 16, 1985, 957/85

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—701 **7 Claims**



1. A control system for a variable reluctance electrical motor having a driving member and a driven member displacable relative to the driving member, said driving member having a plurality of poles and each of said plurality of poles having a winding, the control system comprising

(a) power supply means,

(b) driven member position-sensing means, and

(c) means for producing a demand signal indicative of a desired level of a parameter of motor performance;

said driven member position-sensing means generating at least one signal having an instantaneous value providing an instantaneous indication of driven member position relative to an origin position for each of a multiplicity of successive positions of the driven member relative to the driving member;

the power supply system including voltage source means and current regulating means;

said current regulating means being responsive to said at least one driven member position-sensing means signal to connect said driving member pole windings across said voltage source means in a predetermined sequence during displacement of the driven member and to connect each of said driving member pole winnings across said voltage source means for unidirectional current flow therethrough for a predetermined increment of driven member displacement, said predetermined increment of driven member displacement corresponding to a displacement of the driven member relative to the driving member between a position of maximum reluctance for at least one driven member pole and a cooperating driving member pole and an aligned position of minimum reluctance of said at least one driven member pole and said cooperating driving member pole and comprising a plurality of said multiplicity of successive positions of the driven member relative to the driving member;

said current-regulating means including means for generating a relative current magnitude signal and means for forcing current in a driving pole winding connected to said voltage source means to track said relative current magnitude signal;

said means for generating a relative current magnitude signal being responsive to said at least one driven member position-sensing means signal to generate an instantaneous value of said relative current magnitude signal for each of said plurality of said multiplicity of successive positions of the driven member within said predetermined increment of driven member displacement;

and said current-forcing means being responsive to both said relative current magnitude signal and to said demand signal;

said current-forcing means being responsive to said relative current magnitude signal to regulate the instantaneous magnitude of said current in a driving member pole winding connected to said voltage source means so that the instantaneous value of said current at any one of said plurality of said multiplicity of successive positions of the driven member within said predetermined increment of driven member displacement relative to its value at any other of said plurality of said multiplicity of successive positions is substantially determined by said instantaneous value of said current magnitude signal corresponding to the instantaneous position of the driven member within said predetermined increment;

and said current-forcing means being responsive to said demand signal to regulate the instantaneous magnitude of said current so that the absolute value of said current at each of said plurality of said multiplicity of successive positions of the driven member within said predetermined increment of driven member displacement is substantially determined by the value of said demand signal.

4,943,761

CURRENT LIMITED DC POWER CONTROLLER

David A. Fox, and William W. Billings, both of Lima, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 6, 1988, Ser. No. 215,694

Int. Cl.[5] G05F *1/56*

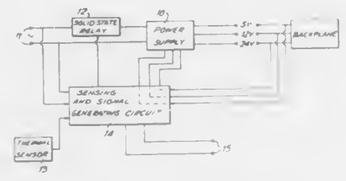
U.S. Cl. 323—283 **7 Claims**



1. A current limited DC power controller comprising:

an output circuit stage having a controllable solid state switching device for conducting current between a pair of output terminals;
a drive circuit for controlling said solid state switching device in response to a control signal;
a programmable current source for producing a reference current signal in response to a command signal;
a first resistor for connection in series between a line voltage source and said programmable current source for producing a reference voltage signal, having a magnitude proportional to said command signal;
means for clamping said reference voltage to a preselected magnitude when the power controller is off;
means for producing a second voltage signal, having a magnitude proportional to current flowing through said output circuit stage;
means for combining said reference voltage signal and said second voltage signal to produce a difference signal; and
means for producing said control signal in response to said difference signal.

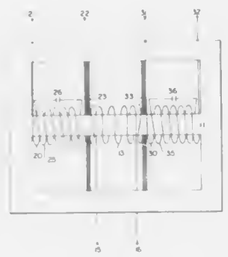
4,943,762
POWER SUPPLY SYSTEM
W. Carroll Campbell; Michael W. Evans, both of Longmont; Edward A. Browning, Jr., Louisville, and Robert J. Stone, Longmont, all of Colo., assignors to Codar Technology, Inc., Longmont, Colo.
Filed Jan. 27, 1988, Ser. No. 149,116
Int. Cl.[5] G05F *1/56*
U.S. Cl. 323—284 **15 Claims**



1. A sensing system for producing an output signal responsive to the drop of the amplitude of a cyclic voltage below a determined level, comprising a source of a cyclic signal, a timing circuit having an input circuit and an output terminal, a threshold circuit, means coupling said output terminal and said source to said threshold circuit as first and second inputs thereto, said threshold circuit being responsive to the sum of the voltage at said output terminal and the instantaneous voltage of said source above a first predetermined level for applying triggering signals to said input circuit of said timing circuit, said timing circuit comprising means responsive to said triggering signal for maintaining said output terminal at a level exceeding a second predetermined level for a predetermined time, whereby in the absence of the occurrence of a peak of said cyclic voltage exceeding a third predetermined level for said predetermined time the voltage at said output terminal assumes a level less than said second predetermined level.

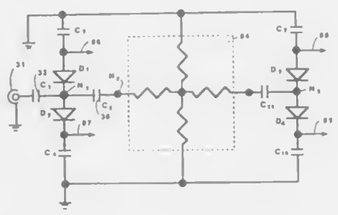
4,943,763
FERRORESONANT TRANSFORMER WITH DUAL OUTPUTS
Howard H. Bobry, Edmonds, Wash., assignor to Albar, Inc., Lynnwood, Wash.
Filed Sep. 8, 1988, Ser. No. 241,889
Int. Cl.[5] G05F *3/06*; H01F *21/08*
U.S. Cl. 323—309 **1 Claim**

1. In a ferroresonant transformer having a core and a primary winding on said core adapted to be connected to a source of alternating current, the improvement which comprises:
a first secondary winding section on said core coupled to a first load;
first magnetic shunt means disposed between said primary winding and said first secondary winding section;
a first resonant winding connected to a ferrocapacitor and coupled to said first secondary winding section to regulate the voltage level supplied to said first load;
a second secondary winding section on said core coupled to a second load;



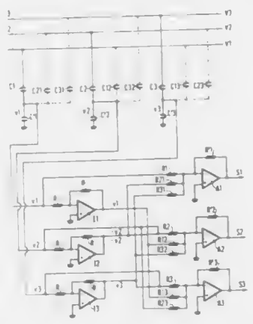
second magnetic shunt means disposed between said primary winding and said second secondary winding section; and
a second resonant winding connected to a ferrocapacitor and coupled to said secondary winding section to regulate the voltage level supplied to said second load;
whereby said first load is electrically and magnetically isolated from said second load.

4,943,764
WIDE DYNAMIC RANGE RADIO-FREQUENCY POWER SENSOR
Pedro A. Szente, Los Altos, and Russell B. Riley, Portola Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 11, 1987, Ser. No. 131,867
Int. Cl.[5] G01R *15/10, 21/04*
U.S. Cl. 324—95 **32 Claims**



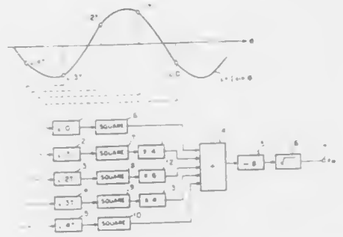
24. A wide dynamic range radio-frequency power sensor comprising:
an input port having one side grounded;
a first coupling capacitor connected to said input port;
a low power diode sensor portion connected to said first coupling capacitor through said first node;
a second node connected to said second coupling capacitor;
a high power diode sensor portion connected to said second coupling capacitor; and
first and second pairs of output members; said low power diode sensor portion comprising identical first and second diodes, both connected through said first node to said first coupling capacitor, said first diode being connected to ground through a third, grounded capacitor and to a first output member of said first pair, said second diode being connected to ground through a fourth grounded capacitor and to a second output member of said first pair, said high power diode sensor comprising identical third and fourth diodes connected to a third node, said third node being connected to said second node through a fifth capacitor and a resistive attenuator, said third diode being connected to grounded sixth capacitor and a first output member of said second pair, said fourth diode being connected to grounded seventh capacitor and to a second output-member of said second pair.

4,943,765
CIRCUIT FOR MEASURING VOLTAGES IN A THREE-PHASE INSTALLATION, IN PARTICULAR AN INSTALLATION OF THE METALCLAD TYPE
Jean-Pierre Dupraz, Lyons, and Jean-Paul Moncorge, Vaux En Velin, both of France, assignors to GEC Alsthom SA, Paris, France
Filed Aug. 31, 1989, Ser. No. 401,375
Claims priority, application France, Sep. 9, 1988, 88 11793
Int. Cl.[5] G01R *1/00*; H02H *3/00*
U.S. Cl. 324—107 **4 Claims**



1. A circuit for measuring voltages in a three-phase installation, in particular an installation of the metalclad type, the circuit comprising for each of the phase conductors: a capacitive divider comprising a first capacitor connected firstly to, said conductor and secondly to a second capacitor (C'1, C'2, C'3) connected to ground, the circuit being characterized in that the voltage (v1, v2, v3) of each of the second capacitors (C'1, C'2, C'3) of the dividers is respectively applied firstly to the input of an inverter (I1, I2, I3) and secondly via a first resistance (R1, R2, R3) to the negative input of an operational amplifier (A1, A2, A3) which is also connected via second and third resistances (R21, R12, R13, and R31, R32, R23) respectively to the outputs of the inverters on the other two phases, with the resistances being selected in such a manner that when only one of the phases is under tension, then the output voltages from the operational amplifiers corresponding to the other phases are zero, with the output voltages from the amplifiers (A1, A2, A3) being, after said adjustment, respectively proportional to the voltages of the conductors.

4,943,766
ELECTRIC QUANTITY DETECTING METHOD
Sunao Suzuki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1989, Ser. No. 363,166
Claims priority, application Japan, Nov. 16, 1988, 63-290701
Int. Cl.[5] G01R *29/00*; H02H *3/00*
U.S. Cl. 324—132 **3 Claims**



1. An electric quantity detecting method comprising the steps of:
sampling an AC electric quantity of an electric system at a period T equal to ¼ of the period of the rated frequency of said AC electric quantity and obtaining a sampling value;
converting said sampling value from an analog value into a digital value; and
performing operation processing based on the digitized sampling value and detecting the amplitude value of the AC electric quantity of said electric power system,
wherein said sampling values are given as y(t), y(t−T), y(t−2T), y(t−3T), y(t−4T) obtained in said sampling step at times t−nT (n=0, 1, 2, 3, 4) apart from the present sampling time t by the prescribed sampling number n, and the operation processing in the operation processing step is performed in accordance with the following formula

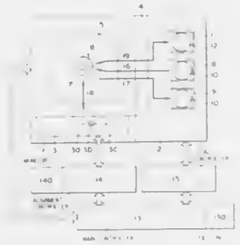
$$Y=[\tfrac{1}{4}\cdot\{y(0)^2+4\cdot\{y(T)^2+y(3T)^2\}+6\cdot y(2T)^2+y(4T)^2\}]^{\frac{1}{2}}$$

and the amplitude value Y of the AC electric quantity is detected.

4,943,767
AUTOMATIC WAFER POSITION ALIGNING METHOD FOR WAFER PROBER
Kelichi Yokota, Nirasaki, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Filed Feb. 27, 1989, Ser. No. 316,142
Claims priority, application Japan, Aug. 21, 1986, 61-193967
Int. Cl.[5] G01R *31/02*; H64N *7/18*
U.S. Cl. 324—158 F **5 Claims**

5. An automatic alignment method for a probe, comprising the steps of:
performing θ alignment of a new type of object to be tested, on an alignment portion, bringing a probe tip of a probe card into contact with a pad of said object, and detecting a mark made by said probe tip, thereby to ascertain the position of said probe tip, and designating data related to the ascertained position as standard probe tip position data corresponding to the type of object tested;
determining the amount of correction between a test position of said object and the position of said probe tip, determining at least two coordinates pertaining to the test position of said object, and determining the coordinates as data representing the position of said probe tip for θ alignment of the probe card; and
filing, as data corresponding to the type of the object tested,

said standard probe tip position data, said probe tip position correction amount data, said probe tip position data



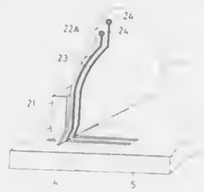
used for performing θ alignment of said probe card, and necessary parameters associated therewith.

4,943,768

TESTING DEVICE FOR ELECTRICAL CIRCUIT BOARDS

Kenichi Niki; Tohru Kokogawa; Akira Ishizu, and Hayato Takasago, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 117,616, Nov. 6, 1987, Pat. No. 4,887,030. This application Jun. 21, 1989, Ser. No. 369,142
Claims priority, application Japan, Dec. 12, 1986, 61-297073
The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.
Int. Cl.[5] G01R *31/22, 1/06*
U.S. Cl. 324—158 F **2 Claims**



1. A testing device for testing an electric circuit board having test terminals thereon parallel to each other, the testing device comprising:

a resilient wedge-shaped pressing member having first and second opposite facing planar sides, and a pressing edge formed at the tapered termination of said first and second opposite planar sides of said pressing member,

a flexible, insulative base sheet including a first face region having conductor strips etched thereon in pattern corresponding to the test terminals on said electric circuit board,

said first face region being in contact with said pressing edge of said pressing member for effecting contact between said conductor strips on said first face region and said test terminals,

said flexible sheet having a second face region in contact with said first planar side of said pressing member,

said first face region being continuous with said second face region,

said conductor strips extending to outer peripheral edge on said second face region of said base sheet.

4,943,769

APPARATUS AND METHOD FOR OPENS/SHORTS TESTING OF CAPACITIVELY COUPLED NETWORKS IN SUBSTRATES USING ELECTRON BEAMS

Steven D. Golladay, Hopewell Junction; Fritz J. Hohn, Somers; David J. Hutson, Apalachin; William D. Meisburger, San Jose, and Juergen Rasch, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1989, Ser. No. 326,772
Int. Cl.[5] G01R *31/28;* **H01J** *37/26*
U.S. Cl. 324—158 R **5 Claims**



1. An electron beam testing system including:

(a) means for directing an electron beam at a sample having a conductive element thereon,

(b) charging means for electrically charging said conductive element on said sample,

(c) grid means for developing a positive charge for accelerating secondary electrons from said sample, said grid means comprising:

(1) lateral grid means located laterally with respect to said beam and said sample, and

(2) extractor grid means located above said sample;

(d) electrostatic deflection means located above said sample comprising elements for developing a negative charge for generating an electric field above said sample adjacent to said lateral grid means for deflecting secondary electrons generated on said sample laterally away from said beam and away from said sample and towards said lateral grid means.

4,943,770

DEVICE FOR ACCURATELY DETECTING THE POSITION OF A FERROMAGNETIC MATERIAL INSIDE BIOLOGICAL TISSUE

Charles Ashley-Rollman; Miles C. O'Donnell, both of Andover, and William McCormick, Carlisle, all of Mass., assignors to McCormick Laboratories, Inc., North Chelmsford, Mass.

Continuation of Ser. No. 40,614, Apr. 21, 1987, abandoned. This application Mar. 24, 1989, Ser. No. 328,443
Int. Cl.[5] G01B *7/14;* **G01V** *3/10;* **A61B** *5/06;* **G01N** *27/72*
U.S. Cl. 324—207.17 **21 Claims**

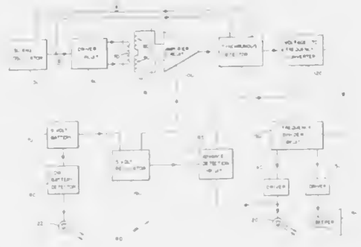
1. A device for accurately detecting at a specific limited distance the position of an object having ferromagnetic properties inside biological tissue, while being relatively insensitive to changes in external temperature and the like, comprising:

a probe having a primary winding and at least two secondary windings,

a means for producing an alternating output to activate said primary winding, said primary winding, when activated, generating a limited field which induces a.c. voltages in said secondary windings, said voltages in said secondary windings being approximately equal and cancelling each other so that said probe has an approximately zero output voltage when the object to be detected is outside a specific limited distance from one of said secondary windings, but creating unequal voltages in said secondary windings which do not cancel each other so that said probe has a net alternating voltage when the object is within a specific limited distance from one of said secondary windings,

a detection means connected to said secondary windings for detecting any net alternating voltage from said probe, said detection means comprising a means for amplifying any such net alternating voltage from said probe, and a means for converting any such net alternating voltage as amplified by said means for amplifying to a d.c. voltage, the magnitude of which reflects the proximity of the object to one of said secondary windings,

a conversion means for converting the d.c. voltage from said means for converting, said conversion means comprising a voltage to frequency converter having a threshold voltage means which sets a level that must be exceeded by the d.c. voltage from said means for converting in order to produce an output signal from said conversion means thereby limiting the detection distance and providing insensitivity to external temperature,



said voltage to frequency converter including an error amplifier connected to an oscillator circuit having a pair of outputs, said outputs of said oscillator circuit being complementary and respectively connected to a pair of analog switches which form a servo loop with an input of said error amplifier so that said error amplifier compares each output of said oscillator circuit with the input received by said error amplifier from said means for converting,

one of said oscillator circuit outputs providing the output signal from said conversion means,

said means for converting further comprising a synchronous converter, said synchronous converter having first and second analog switches, each said switch being alternately triggered by a different, complementary output from said means for producing, said synchronous converter also having a first capacitor, said first capacitor being charged with the low voltage from any amplified net alternating output from said means for amplifying when said first analog switch is activated by a first output from said means for producing,

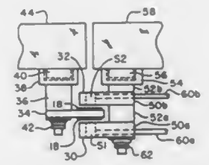
an alarm means which is activated by the output signal from said conversion means and a power source, said power source connected to said means for producing, said detection means and said conversion means.

4,943,771

DIFFERENTIAL EDDY CURRENT SENSOR MEASURING APPARATUS FOR USE WITH MOVABLE MIRROR SEGMENTS

Anthony N. Fuschetto, W. Redding, Conn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1989, Ser. No. 353,992
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.18 **6 Claims**



1. A differential eddy current sensor apparatus comprising in combination:

means for oscillating, said oscillating means providing an exciting signal,

means for measuring, said measuring means receiving said exciting signal,

means for sensing, said sensing means operatively connected to said measuring means and comprising a first sensing coil and a second sensing coil, said first and second sensing coils being arranged in a parallel configuration and positioned a predetermined distance part, said target being positioned between said first and second sensing coils and spaced an equal distance away therefrom,

a target operatively arranged with said sensing means to establish an impedance level which may be sensed by said sensing means, said impedance level being balanced when said sensing means is in a predetermined alignment with said target, said sensing means providing a differential signal to said measuring means when said alignment between said target and said sensing means is disturbed, a first means for supporting said target, said first supporting means operatively attached to a first mirror segment, and a second means for supporting said first and second sensing coils, said second supporting means operatively connected to a second mirror segment.

and means for demodulating, said demodulating means operatively connected to said measuring means to receive said differential signal, said demodulating means amplifying and demodulating said differential signal to provide an analog output signal representative of the relative position of said mirror segments.

4,943,772

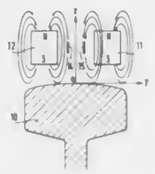
HALL EFFECT POSITION SENSOR FOR A RAILWAY VEHICLE AXLE

Jean-Louis Maupu; Hugues Chollet; Pierre Caroff, all of Arcueil, and Denis Dubot, Paris, all of France, assignors to Alshtom, Paris and Institut National de Recherche sur les Transports et Leur Securite, Arcueil, both of, France

Filed Apr. 18, 1989, Ser. No. 339,761
Claims priority, application France, Apr. 18, 1988, 88 05078
Int. Cl.[5] G01B *7/14;* **H01L** *43/06*
U.S. Cl. 324—207.2 **5 Claims**

1. A position sensor for measuring the separation, in a given direction, between a movable first part such as a datum element of a railway vehicle axle and a fixed second part such as a rail on which said axle runs, said sensor including first means for producing a magnetic field above second part having lines of the field substantially perpendicular to said direction when said separation is zero and penetrating said second part, said sensor being characterized in that it includes two Hall effect

probes (14, 15) secured to said first part proximate to said magnetic field producing means with their planes perpendicular to said direction (Oy) at a fixed distance (d) from each other an at the same height (ho) with respect to said second part, and carrying identical control currents, said sensor also including a circuit producing a signal



$$Sl = (V1 + V2)/(V1 - V2)$$

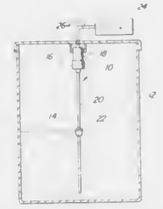
where V1 and V2 are the respective Hall voltages of said probes, said signal S1 being proportional to said separation.

4,943,773

MAGNETOSTRICTIVE LINEAR DISPLACEMENT TRANSDUCER HAVING PRESELECTED ZERO CROSSING DETECTOR

Richard D. Koski; William C. Kosco, both of Troy, and Arthur Dumais, Rochester, all of Mich., assignors to MagneTek Controls, Clawson, Mich.

Continuation of Ser. No. 100,535, Sep. 24, 1987, Pat. No. 4,839,590. This application Apr. 3, 1989, Ser. No. 332,771
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] G01B 7/14; G01F 23/30
U.S. Cl. 324—207.13 **4 Claims**



1. In a position transducer having a housing, a magnetostrictive wire disposed within the housing and mechanically anchored at opposite head and foot ends to define a position measurement range therebetween, a pulse generator for generating an actuation signal, an actuator connected to said pulse generator for imparting a torsional strain to the head end of the wire in response to said actuation signal, and a magnet disposed slidably mounted on the housing for linear displacement along said wire within said position measurement range thereby to produce an induced voltage in the wire upon the arrival of said torsional strain by propagation along said wire at the position of said magnet, the improvement comprising:

a circuit for producing a signal which is time positioned relative to the application of said actuation signal to the actuator according to the linear position of the magnet along the wire, said circuit including means responsive to said actuation signal to initiate a position measurement interval,

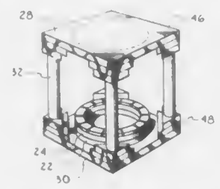
and means responsive to said induced voltage to terminate the interval upon a preselected zero crossing of said induced voltage.

4,943,774

MAGNETIC FIELD CONTROL APPARATUS

Bruce C. Breneman, San Diego; J. Wesley Parker, Escondido, and Raymond E. Sarwinski, San Diego, all of Calif., assignors to General Atomics, San Diego, Calif.

Filed Jun. 1, 1989, Ser. No. 360,028
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—318 **29 Claims**



1. A magnetic field control apparatus for use in magnetic resonance imaging, comprising:

a frame having a first end plate, a second end plate facing said first end plate, and means for connecting said first end plate to said second end plate;

a pair of opposed, magnetic poles each mounted to facing surfaces of said first and second plates, respectively, and spaced apart to form a magnetic field therebetween;

a pair of substantially flat, parallel pole faces attached to the facing surface of each of said pair of opposed magnetic poles to form an air gap between said pole faces for establishing a flux field in said air gap; and

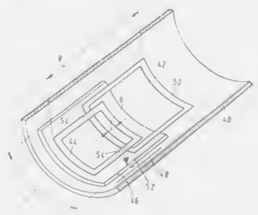
a plurality of segments movably mounted on the periphery of said pole face for adjustably controlling said flux field.

4,943,775

MAGNETIC RESONANCE APPARATUS WITH UNCOUPLED RF COILS

Eddy B. Boskamp, Shelton, Conn., and Wilhelmus R. M. Mens, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 117,003, Nov. 14, 1987, Pat. No. 4,859,947. This application Apr. 14, 1989, Ser. No. 339,030
Claims priority, application Netherlands, Nov. 27, 1986, 8603006; Apr. 20, 1988, 8801018
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—322 **21 Claims**



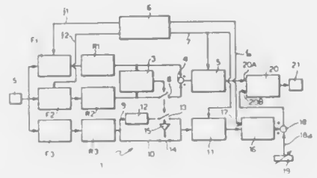
1. A magnetic resonance apparatus comprising a magnet system for generating a steady magnetic field, coil system for generating a gradient field, an rf transmitter coil and an rf coil system having coils overlapping each other partly for detection of magnetic resonance signals generated in an object, characterized in that successive detection coils overlap each other over such an area that mutual inductance between over lapping coils is reduced to a non-disturbing minimum.

4,943,776

DEVICE AND A METHOD FOR THE DETECTION OF PINKING IN OTTO ENGINES

Gino Polito, Voghera, and Franco Maloberti, Torre D'Isola, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Jun. 29, 1989, Ser. No. 372,968
Claims priority, application Italy, Sep. 15, 1988, 67819 A/88
Int. Cl.[5] F02P 17/00
U.S. Cl. 324—391 **22 Claims**



1. A device for detecting pinking in an internal combustion engine, which is intended to be connected to a sensor associated with the engine, the sensor generating a signal with a noise component and a useful signal component whose spectrum may have peaks indicative of the presence of pinking in a plurality of frequency ranges, including:

first and second monitoring means which are sensitive to the useful signal component in at least a first and a second of the frequency ranges and can generate first and second monitoring signals,

first comparator means which can compare the first and second monitoring signals and generate a logic signal which assumes a first value or a second value when the second monitoring signal reaches a given level relative to the first monitoring signal or is below the given level, respectively,

adding means which can be supplied with the first and second monitoring signals,

multiplier means which can be supplied with the noise component of the signal from the sensor,

second comparator means which have a first input and a second input and can generate a signal indicative of the presence of pinking when the signal at the first input exceeds the signal at the second input by a given factor and

switching means which are controlled by the logic signal an can assume a first operating position or a second operating position when the logic signal assumes the first value or the second value respectively, the switching means connecting:

the first and second monitoring signals to the adding means, the adding means to the first input of the second comparator means, the noise component to the multiplier means and the output of the multiplier means to the second input of the second comparator means in the first operating position, and

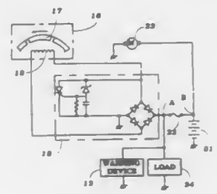
only the first monitoring signal to the first input of the second comparator means and the noise component to the second input of the second comparator means, in the second operating position.

4,943,777

BATTERY VOLTAGE WARNING DEVICE

Kazuhiro Nakamura; Tatsuya Yoshioka, both of Hamamatsu; Ryoji Sawada, Iwata, and Tomoji Nakamura, Iwata, all of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 262,528, Oct. 25, 1988, abandoned. This application Dec. 2, 1989, Ser. No. 445,895
Claims priority, application Japan, Oct. 26, 1987, 62-259841
Int. Cl.[5] G01N 27/46
U.S. Cl. 324—433 **6 Claims**



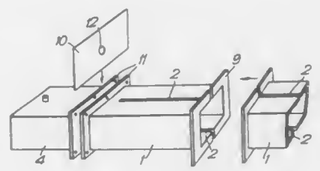
1. In a system for determining the condition of a battery in circuit with an internal combustion engine having a starter motor operated by the battery and generating means driven by the engine for maintaining a charge in the battery during the operation of said engine comprising first means for sequentially reading the voltage at first relatively short time periods, second means for sequentially reading the voltage at second relatively long time periods, and warning means for providing a battery condition warning signal in the event the first means senses a voltage below a first value during successive sampling cycles of the relatively short time period or in the event the second means senses a voltage below a second value which is higher than the first value during successive sampling cycles of the relatively long time period.

4,943,778

INSTRUMENT FOR MEASURING HIGH FREQUENCY CHARACTERISTICS OF SHEET-LIKE MATERIALS

Shigeyoshi Osaki, Takarazuka, Japan, assignor to Kanzaki Paper Manufacturing Co., Ltd., Japan

Filed Dec. 20, 1988, Ser. No. 287,442
Claims priority, application Japan, Dec. 21, 1987, 324980
Int. Cl.[5] G01N 22/00
U.S. Cl. 324—636 **5 Claims**



1. An instrument for measuring the high frequency characteristics of a sheet-like material comprising:

a pair of opposed slits formed in a pair of opposed tube walls of a cavity resonator having an optional cross-sectional shape, said slits extending parallel to a longitudinal tube axis and enabling a sheet-like material to be inserted such that it extends across said cavity resonator;

a driving section disposed at one end of said cavity resonator and having a driving conductor for producing microwaves for driving said cavity resonator to form an electric

field which is perpendicular to the tube wall surfaces formed with said pair of slits;

a detecting section disposed at the other end of said cavity resonator and having a probe conductor for receiving said microwaves;

a controlling and calculating device for detecting the resonant frequency or attenuation of received microwaves and calculating the high frequency characteristics of the sample from the detection result; and

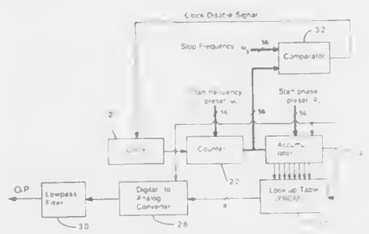
wherein the cavity section of said cavity resonator is bisected at a halfway cross-section into two subsections, said slits are made in the form of longitudinal grooves extending from said subsections' bisected ends, and said subsections can be separated axially one from the other.

4,943,779

DIGITAL SWEEP GENERATOR

Peder C. Pedersen, Holden, and Thomas J. Green, Jr., Woburn, both of Mass., assignors to Worcester Polytechnic Institute, Worcester, Mass.

Filed May 19, 1988, Ser. No. 195,790
Int. Cl.[5] H03B *19/00*; H03K *17/00*
U.S. Cl. 328—14 **10 Claims**



1. A digital sweep generator for synthesizing a sweep signal of a predetermined periodic waveform swept through a range of frequencies, the generator comprising:

a counter for counting clock signals and providing a clock signal count;

means for setting the count from the counter to a value representative of an initial frequency of the sweep signal;

means for stopping the sweep signal after the clock signal count reaches a value representative of a predetermined stop frequency of the sweep signal;

a digital accumulator which sums successive clock signal counts from the counter for accumulating a count of clock signals as phase angle values of a sweep signal output as any of different selected sets of multiple bits;

a look-up table memory for receiving a selected set of multiple bits output from the accumulator and having stored therein values of a single cycle of the periodic waveform as a function of phase angle within a single cycle and responding to different selected sets of multiple bits output from the accumulator to vary sweep frequency of the sweep signal; and

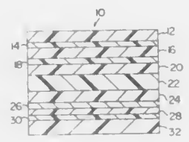
a digital-to-analog converter coupled to receive and to convert to analog form stored values from the memory through successive cycles of the waveform.

4,943,780

MULTI-LAYER SHEET STRUCTURE, METHOD OF MAKING SAME AND CONTAINERS MADE THEREFROM

Dwight D. Redding, Appleton, Wis., assignor to American National Can Company, Chicago, Ill.

Division of Ser. No. 657,003, Oct. 2, 1984, Pat. No. 4,659,408, which is a continuation-in-part of Ser. No. 614,878, May 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 482,350, Apr. 5, 1983, abandoned. This application Apr. 15, 1987, Ser. No. 38,605
Int. Cl.[5] B32B *1/08, 15/08*
U.S. Cl. 428—35.9 **33 Claims**



1. A paperless multi-layer sheet structure having two exterior heat sealable layers, comprising, in order:

(a) a first heat sealable layer on one of said exterior surfaces;

(b) a first adhesive layer;

(c) a layer of metal foil;

(d) a second adhesive layer;

(e) a layer of polyethylene or ethylene copolymer;

(f) a layer of uniaxially oriented polymer selected from the group, consisting of polypropylene, polyethylene, ethylene copolymer, polyethylene-polypropylene blend, nylon and polyester having an orientation ratio of about 2/1 to about 6/1; and

(g) a second heat sealable layer on the second of said exterior surfaces;

wherein said oriented polymer layer is disposed from about 0.2 to about 4.0 mils from said second exterior surface.

4,943,781

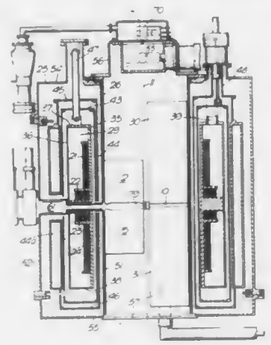
CYCLOTRON WITH YOKELESS SUPERCONDUCTING MAGNET

Martin N. Wilson, Abingdon, and Martin F. Finlan, Aylesbury, both of Great Britain, assignors to Oxford Instruments, Ltd., Oxford and Amersham International PLC, Little Chalfont, both of, Great Britain

Continuation of Ser. No. 80,470, Jul. 28, 1987, abandoned. This application Jul. 18, 1989, Ser. No. 382,035
Claims priority, application United Kingdom, May 21, 1985, 8512804
Int. Cl.[5] H05H *13/00, 13/06*
U.S. Cl. 328—234 **12 Claims**

1. A cyclotron comprising a superconducting magnet having at least one cylindrical magnet coil arranged in a cryostat to provide a magnetic field extending axially of said coil, said cryostat defining an axial chamber having a substantially circular cross-section and containing said magnetic field, wherein said superconducting magnet provides yokeless means for generating said magnetic field, wherein interacting means are disposed in said chamber and arranged to interact with said magnetic field to provide a 'flutter' or variation of the axial magnetic field in the azimuthal direction in relation to said axis and to provide an isochronous variation of said axial magnetic field in the radial direction from said axis, wherein resonant cavity means are disposed in said chamber and arranged to provide an accelerating field for a beam of ionized particles, said interacting means and said resonant cavity means together defining a beam space disposed in the radial direction from said

axis in which said beam of ionized particles is accelerated, and wherein each said at least one cylindrical magnet coil defines



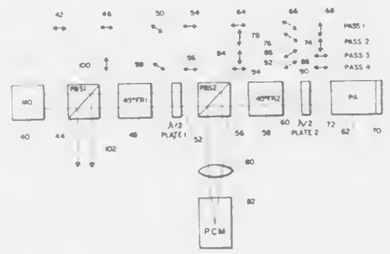
an internal radius greater than the radius defined by said beam space.

4,943,782

FOUR-PASS PHASE CONJUGATE OPTICAL AMPLIFIER SYSTEM AND METHOD

Ronald R. Stepbens, Westlake Village; Richard R. Craig, Los Angeles; Huan W. Yen, Westlake, and Richard C. Lind, Woodland Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1988, Ser. No. 170,957
Int. Cl.[5] H01S *3/98*
U.S. Cl. 330—4.3 **39 Claims**



1. A four-pass phase conjugate optical power amplifier system, comprising:

a polarized optical beam source,

a bidirectional power amplifier for an optical beam emitted from the optical beam source, wherein said power amplifier comprises a diode laser structure,

a phase conjugate mirror (PCM), and

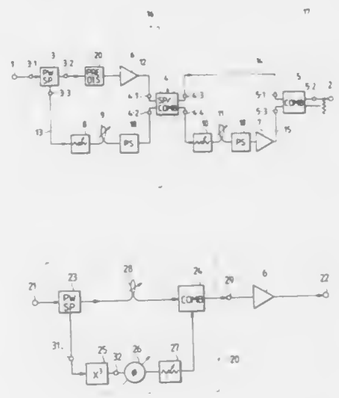
optical means for directing a polarized optical beam from the beam source in sequence through first and second passes through the power amplifier, to the PCM for phase conjugation thereby, and through third and fourth passes through the power amplifier, said optical means maintaining the beam's polarization substantially the same during said first and second amplifier passes, and substantially the same during said third and fourth amplifier passes.

4,943,783

FEED FORWARD DISTORTION CORRECTION CIRCUIT

Toshio Nojima, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 31, 1989, Ser. No. 387,256
Int. Cl.[5] H03F *1/32*
U.S. Cl. 330—149 **6 Claims**



1. A feed forward type distortion correction circuit comprising

a distortion detecting loop including:

(a) a first power splitting means for splitting an input signal into two signals, and for delivering said two signals to a signal amplifying path and a first linear signal path, respectively;

(b) a main amplifier means in said signal amplifying path for amplifying one of said two split signals;

(c) a predistortion correction means in said signal amplifying path at the input side of said main amplifier means, for reducing the level of a distortion component which is produced by said main amplifier means;

(d) a first level control means in at least one of said signal amplifying path and said first linear signal path, for controlling the level of the signal passing therethrough so that the levels of said two signals are substantially equal in absolute value to each other when they are output from said signal amplifying path and said first linear signal path, respectively;

(e) first phase inverting means in at least one of said signal amplifying path and said first linear signal path, for shifting the phase of the signal passing therethrough so that said two signals are opposite in phase when they are output from said signal amplifying path and said first linear signal path; and

(f) a power splitting/combining means formed by a directional coupler which has first and second ports connected to the outputs of said signal amplifying path and said first linear signal path, respectively, said power splitting/combining means also having third and fourth ports and being operative to combine a signal split from the output of said signal amplifying path and a signal split from the output of said first linear signal path to remove the fundamental wave component of said input signal to detect a distortion component in the output of said main amplifying means and to deliver the detected distortion to said fourth port and to deliver the output of said signal amplifying path to said third port without substantial loss; and

VOL 1116 ISS 4 JL 24 1990 UMI

said feed forward type distortion correction circuit further having a distortion removing loop including:

(g) a distortion injection path connected to said fourth port of said power splitting/combining means;

(h) a second linear signal path connected to said third port of said power splitting/combining means;

(i) an auxiliary amplifier means in said distortion injection path, for amplifying said detected distortion component;

(j) a second phase inverting means in at least one of said distortion injection path and said second linear signal path, for shifting the phase of one of said amplified distortion component and the distortion component in the signal passing through said second linear path so that the two distortion components are opposite in phase when they are output from said distortion injection path and said second linear signal path, respectively;

(k) second level control means in at least one of said distortion injection path and said second linear signal path, for controlling the level of the signal passing therethrough so that the levels of said two distortion components are substantially equal in absolute value to each other when they are output from said distortion injection path and said second linear signal path, respectively; and

(l) power combining means connected to the outputs of said distortion injection path and said second linear signal path, for combining the signals output from said distortion injection path and said second linear signal path thereby to reduce distortion in the signal output from said power combining means;

said predistortion correction means including:

(m) a second power splitting means for splitting a signal delivered from said first power splitting means into two signals and for delivering them to a third linear signal path and a distortion generating path, respectively;

(n) a distortion generating means provided in said distortion generating path, for generating a distortion component corresponding to said signal delivered from said second power splitting means;

(o) a second power combining means for combining said outputs of said third linear signal path and said distortion generating path and supplying said combined output to said main amplifier means;

(p) a third level control means provided in at least one of said third linear signal path and said distortion generating path; and

(q) a phase shifting means for controlling the phase of the signal passing therethrough so that said distortion component produced by said main amplifier means and said distortion component generated by said distortion generating means are opposite in phase in said second power combining means.

4,943,784

FREQUENCY STABLE DIGITALLY CONTROLLED DRIVER CIRCUIT

Mathew A. Rybicki, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1989, Ser. No. 319,002

Int. Cl.[5] H03F *3/26, 3/16*

U.S. Cl. 330—264 **10 Claims**

1. A digitally controlled driver circuit comprising:

an output stage having first and second transistors coupled in series between first and second power supply voltage terminals and providing an output signal;

control means coupled to the output stage, said control means making the first and second transistor alternately conductive in response to at least one control signal coupled to the control means; and

means coupled to the output stage and the control means for providing a negative feedback path from the output signal to an input of the control means for use in alternately



making the first and second transistors conductive and for controlling a gain of the driver circuit.

4,943,785

CONTROLLABLE AC VOLTAGE AMPLIFIER

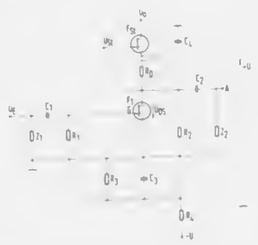
Paul Benz, Stuttgart, and Günther Lippold, Ostfildern, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 19, 1989, Ser. No. 340,336

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3814041

Int. Cl.[5] H03G *3/30;* **H03F** *3/14*

U.S. Cl. 330—277 **11 Claims**



1. A broadband amplifier for amplifying AC voltage, comprising:

a single-gate field-effect transistor, connected in a common source configuration, having a gate terminal, a source terminal and a drain terminal, the input voltage to be amplified being applied to the gate terminal and the source terminal of the single-gate field-effect transistor being directly connected to ground;

first means including a resistance-capacitance combination for connecting a first voltage source to the gate terminal of the single-gate field-effect transistor; and

second means for connecting a variable second voltage source, opposite in sign to the first voltage, to the drain terminal of the single-gate field-effect transistor; wherein the gain of the single-gate field-effect transistor is controllable through the variable second voltage.

4,943,786

DIGITAL CONTROL OF PHASE LOCKED LOOPS

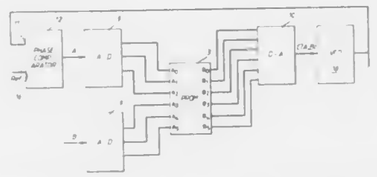
Brian Cordwell, and Paul M. Hayes, both of Dorset, Great Britain, assignors to Plessey Overseas Limited, Essex, England

Continuation-in-part of Ser. No. 87,071, Oct. 23, 1987, abandoned, which is a division of Ser. No. 807,629, Dec. 11, 1985, Pat. No. 4,692,713. This application Sep. 1, 1988, Ser. No. 240,425

Claims priority, application United Kingdom, Dec. 21, 1984, 8432552

Int. Cl.[5] H03L *7/08;* **H03M** *1/70*

U.S. Cl. 331—1 A **7 Claims**



1. A phase locked loop circuit, the circuit including a phase comparator having first and second inputs and an output, a voltage controlled oscillator, having an input and output, and a control circuit having input means and output means, the first input of the phase comparator being coupled to a reference source, the second input of the phase comparator being coupled to the output of the voltage controlled oscillator, the output of the phase comparator being coupled to said input means of the control circuit, and the output means of the control circuit being coupled to the input of the voltage controlled oscillator;

the control circuit comprising a signal translating device, the device having n binary signals inputs and a predetermined number of binary signal outputs;

the signal inputs comprising first and second address groups, first and second signal means for applying first (A) and second (B) binary signals to the inputs of the respective first and second address groups;

the signal translating device providing a signal translating function such that said binary signal output are provided which are a predetermined function (C) of the first and second signals (A, B).

4,943,787

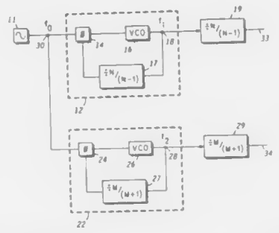
DIGITAL TIME BASE GENERATOR WITH ADJUSTABLE DELAY BETWEEN TWO OUTPUTS

Mavin C. Swapp, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1989, Ser. No. 403,271

Int. Cl.[5] H03K *5/15;* **H03L** *7/07*

U.S. Cl. 331—2 **15 Claims**



7. A method for producing two reference signals of the same frequency which are out of phase by a fixed time separation Δt comprising the steps of: providing a frequency f_0; multiplying f_0 by a first integer N to produce a frequency f_1; multiplying f_0 by a second integer M to produce a frequency f_2; dividing f_1 by N to produce the first reference signal; dividing f_2 by M to produce the second reference signal; dividing f_1 by an integer other than N for at least one cycle of the first reference signal and/or dividing f_2 by an integer other than M for at least one cycle, thereby shifting the first reference signal with respect to the second reference signal by Δt.

4,943,788

BROAD BAND VCO CONTROL SYSTEM FOR CLOCK RECOVERY

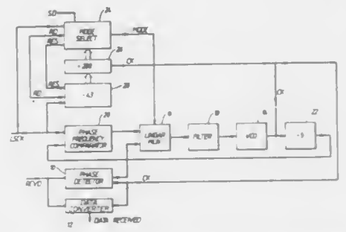
Peter G. Laws, and Graham J. Fletcher, both of Wiltshire, United Kingdom, assignors to Plessey Overseas Limited, Ilford, United Kingdom

Filed Mar. 28, 1989, Ser. No. 329,719

Claims priority, application United Kingdom, Mar. 28, 1988, 8807320

Int. Cl.[5] H03L *7/087, 7/095*

U.S. Cl. 331—11 **10 Claims**



4. In a data receiver circuit for receiving a data signal which includes transitions between upper and lower voltage levels, a clock circuit for providing a clock signal locked in phase to the data signal, the clock circuit comprising:

a phase locked loop having a voltage controlled oscillator providing said clock signal;

a first phase detection means responsive to said clock signal and to the incoming data signal for providing a first phase error signal;

a reference clock source providing a reference clock signal,

a second phase detection means for comparing the reference clock signal with said clock signal for providing a second phase error signal;

selection means for selecting either the first or second phase error signal for control of the voltage controlled oscillator;

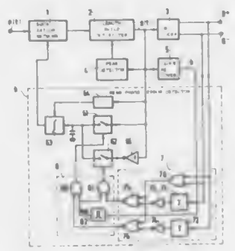
and a digital counting system for control of the selection means, the digital counting system comprising a reference period means responsive to the reference clock signal for defining a reference period;

a counting means for counting the number of pulses of said clock signal occurring during said reference period,

the counting means including output means for providing output signals in dependence on whether said number of pulses fall within predetermined limits;

said selection means being coupled to receive the output signals of said counting means for controlling the operation of the selection means for permitting control of the voltage controlled oscillator by the first phase error signal or the second phase error signal.

4,943,789
AUTOMATIC EQUALIZER FOR DIGITAL TRANSMISSION
Serge Surie, L'Hay les Roses, France, assignor to Societe Anonyme dite Alcatel CIT, Paris, France
Filed Mar. 30, 1988, Ser. No. 175,421
Claims priority, application France, Mar. 31, 1987, 87 04477
Int. Cl.[5] H04B 3/14
U.S. Cl. 333—18 **7 Claims**



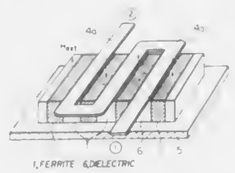
1. An automatic equalizer for synchronous digital transmission, said equalizer having an input for receiving a digital transmission signal occupying a frequency range including a Baud frequency and a half Baud frequency and having an output for providing an equalized digital transmission signal having a peak amplitude, said equalized digital transmission signal characterized by a succession of Baud intervals some of which are occupied by pulses and others of which are empty of pulses, with at least some of the Baud intervals which are empty of pulses being occupied by pulse skirts having zero crossings nominally appearing at middles of said Baud intervals occupied by pulse skirts, said equalizer comprising:

a variable equalization network having a network input coupled to said equalizer input for receiving said digital transmission signal and a network output coupled to said equalizer output for providing said equalized digital transmission signal, said network characterized by a gain transfer characteristic with a slope over a given frequency range and being responsive to a control signal for modifying said slope of said gain transfer characteristic in said frequency range occupied by said received digital transmission signal without modifying the value of the gain at said half Baud frequency of said digital transmission signal, said variable equalization network comprising a half-T filter cell having a cell input coupled to said network input and a cell output coupled to said network output and having a first branch in series between said cell input and output and a second branch connected between said cell output and a reference level, said first branch including a variable resistance and said second branch including an oscillator circuit comprising a parallel-connected inductance and capacitance, said oscillator circuit being tuned to a frequency lying between said Baud frequency and said half Baud frequency;

mean phase error detection means having an input responsive to said equalized digital transmission signal for detecting a mean phase error in said zero crossings in the equalized digital signal relative to the middles of said Baud intervals in the equalized digital transmission signal, said detection means having an output coupled to said variable equalization network for providing said control signal to said variable equalization network to increase said slope of said gain transfer characteristic when said detection means detects a phase delay and to reduce said slope when said detection means detects a phase advance; and

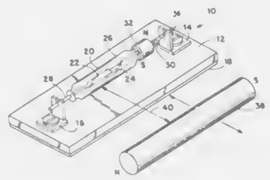
an automatic gain control circuit responsive to said digital transmission signal for maintaining said peak amplitude at a substantially constant value.

4,943,790
RESONANCE ABSORPTION-TYPE MICROSTRIP LINE ISOLATOR
Shigeru Takeda, Kumagaya, and Takashi Tsuboi, Tottori, both of Japan, assignors to Hitachi Metals, Ltd, Japan
Filed Jan. 19, 1989, Ser. No. 299,182
Claims priority, application Japan, Jan. 20, 1988, 63-9940
Int. Cl.[5] H01P 1/365
U.S. Cl. 333—24.2 **10 Claims**



1. A resonance absorption-type microstrip line isolator comprising a ground conductor; a microwave ferrite member provided on said ground conductor; a central conductor provided on said microwave ferrite member; and a pair of permanent magnets disposed on both sides of said central conductor with the opposite magnetic poles of said permanent magnets facing said microwave ferrite member, wherein portions of said microwave ferrite member on both sides of said central conductor are vertically magnetized in opposite directions, so that a microwave propagating in one direction is absorbed by resonance and a microwave propagating in an opposite direction is not absorbed.

4,943,791
WIDE GAP MAGNETIC REED SWITCH AND METHOD FOR MANUFACTURE OF SAME
Thomas J. Holce, and Keith E. Flint, both of Portland, Oreg., assignors to Sentrol, Inc., Portland, Oreg.
Filed Jan. 25, 1989, Ser. No. 301,803
Int. Cl.[5] H01H 1/66
U.S. Cl. 335—153 **8 Claims**



1. A switch device for controlling an electrical circuit in response to the presence of a magnetic field of predetermined strength, said switch device comprising:

(a) a reed switch having a pair of contacts including at least one magnetic reed contained within an elongate capsule having a reed axis, said contacts being movable relative to one another from an unactuated state to a magnetically actuated state in response to the presence of a magnetic field of at least a predetermined minimum flux density;

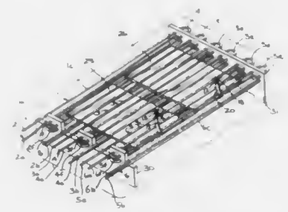
(b) a magnetic lead extending outwardly from said capsule and connected electrically with one of said contacts and having a portion thereof aligned coaxially with said reed axis;

(c) permanent magnet means having an axis of polarity and associated with said magnetic lead, for providing a predetermined portion of said predetermined minimum flux density, said predetermined portion being less than a latching flux density required to retain said contacts in said magnetically actuated state;

(d) said permanent magnet means being located adjacent said magnetic lead so as to provide said predetermined portion of said predetermined magnetic field strength such that said axis of polarity is substantially parallel to said reed axis and said permanent magnet means is located adjacent an end of said elongate capsule; and

(e) a portion of said magnetic lead extending beyond said permanent magnet means and thence being doubled back alongside and outside said capsule and extending to a position alongside at least a portion of said magnetic reed.

4,943,792
SUPERCONDUCTING SWITCH PACK
Vishnu C. Srivastava, and John J. Wollan, both of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.
Filed Feb. 25, 1988, Ser. No. 160,387
Int. Cl.[5] H01F 7/72
U.S. Cl. 335—216 **12 Claims**



1. A superconducting switch pack, comprising:

at least one switch element, said switch element including a length of superconductive wire having a switching portion and two lead portions, said switching portion being between said lead portions;

means for supporting said switching portion in a plane in a common mold;

hardened resin means encapsulating said switching portion in said plane in a solid body;

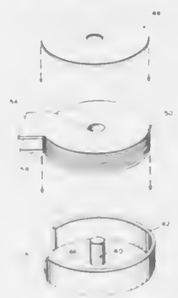
wherein the solid body has an exterior surface which is planar and substantially parallel with and spaced apart from the plane in which said switching portion is positioned, said exterior surface being exposed to the exterior of the switch pack and the resin means filling the space between the exterior surface and the plane of said switching portion so as to provide uninterrupted thermal communication between the plane of said switching portion and the exterior of the switch pack; and

a heater element in thermal contact with said switching portion, said heater element being disposed along a side of said plane of the switching portion which is opposite from the exterior surface of the solid body.

4,943,793
DUAL-PERMEABILITY CORE STRUCTURE FOR USE IN HIGH-FREQUENCY MAGNETIC COMPONENTS
Khai D. T. Ngo, Gainesville, Fla., and Richard J. Charles, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 27, 1988, Ser. No. 290,078
Int. Cl.[5] H01F 27/24
U.S. Cl. 336—83 **30 Claims**

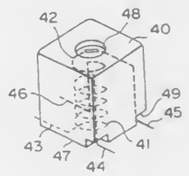
1. A dual-permeability magnetic core for use in high-frequency inductors and transformers, comprising:

a housing of magnetic material having a winding window formed in the interior thereof for containing a plurality of planar conductors, said housing forming a closed-loop magnetic core comprising sections of low-permeability magnetic material and sections of high-permeability magnetic material, said low-permeability sections alternating with said high-permeability sections, said magnetic sections providing walls for substantially completely enclosing the planar conductors, said magnetic sections further being arranged so that said low-permeability sections



provide a magnetic flux path substantially parallel to said low-permeability sections and said high-permeability sections provide a magnetic flux path substantially perpendicular to said low-permeability sections.

4,943,794
MOLDED COIL AND MANUFACTURING METHOD THEREOF
Masato Suzuki, and Tomio Mizutani, both of Tsurugashima-Machi, Japan, assignors to Toko Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 21, 1989, Ser. No. 383,089
Claims priority, application Japan, Jul. 27, 1988, 63-187276
Int. Cl.[5] H01F 15/10, 27/30
U.S. Cl. 336—192 **4 Claims**



1. A molded coil comprising:

a coil arranged along at least one vertical direction in which the coil is extending and buried in a synthetic resin body,

an end part of the coil bent in the resin body in a horizontal direction so as to be orthogonal with the vertical direction and exposed to the outside of the resin body, and

the other end part of the coil exposed to the outside of the resin body parallel to the vertical direction and bent outside of the resin body in the horizontal direction, to form a face-to-face connection terminal, respectively.

4,943,795

OXIDE RESISTOR

Takeo Yamazaki; Satoru Ogihara, both of Hitachi; Tetsuo Kosugi, Ibaraki; Shingo Shirakawa, Hitachi, and Shinichi Owada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 748,166, Jun. 24, 1985, Pat. No. 4,736,183. This application Mar. 14, 1988, Ser. No. 168,136

Claims priority, application Japan, Jun. 22, 1984, 59-127474; May 10, 1985, 60-97805

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.[5] H01C *7/10*

U.S. Cl. 338—21 34 Claims



1. A composite sintered oxide resistor which is obtained by sintering a powdery oxide mixture containing zinc oxide, magnesium oxide, aluminum oxide, and silicon oxide, free of bismuth oxide, and having crystal grains of zinc oxide.

4,943,796

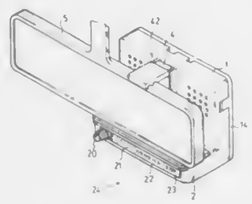
REAR VIEW MIRROR MOUNTED REVERSING DISTANCE SENSOR

Y. C. Lee, 8F-1, No. 23, Sec. 1, Hang Chou S. Rd., Taipei, Taiwan

Filed Jun. 9, 1989, Ser. No. 363,724

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—435 3 Claims



1. A structure of a rear view mirror mounted reversing distance sensor for automobiles comprising a housing, a cover, a spring and a retaining bracket;

said housing and said cover together forming a hollow, substantially L-shaped structure when assembled by a plurality of screws; said housing being composed of an upright part and a base;

a channel being formed on a central portion of a lateral surface of said upright part, opposite and parallel to said cover; said channel receiving said retaining bracket at an uppermost portion thereof, and a first pad;

a second pad being disposed over an entire top surface of said base; and

said retaining bracket being a flat sheet of metal bent to form an L-shape; a first leg of said retaining bracket being parallel to said cover and having a tab formed thereon with a first hole therethrough for securing of an end of a spring; a second hole provided on a lowermost portion of said channel to receive another end of said spring; said tab extending outwardly and perpendicularly from said lateral surface of said first leg when said retaining bracket is received in said channel; a second leg of said retaining bracket being perpendicular to said cover and having a third pad disposed thereon; a lower surface of said third pad being formed a set of serrations for gripping a rear view mirror when said reversing distance sensor is mounted on said rear view mirror.

4,943,797

DEVICE FOR TEMPORARILY BLOCKING THE RE-MEASUREMENT OF AN ELECTRIC OIL LEVEL MEASUREMENT OF A MACHINE, PARTICULARLY AN INTERNAL COMBUSTION ENGINE

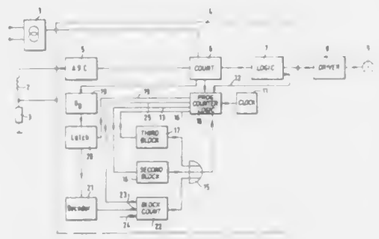
Ulrich Steffenhagen, Liederbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 139,611, Dec. 30, 1987, abandoned, which is a division of Ser. No. 762,939, Aug. 6, 1985, Pat. No. 4,739,301. This application Sep. 5, 1989, Ser. No. 403,000

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1984, 3428908

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—450.3 6 Claims



1. In a device for temporarily blocking re-measurement of an electric oil measurement of a machine, having a measurement probe which is heated by a constant current during a connect time which is commenced by a switch for placing the machine in operation, means for comparing an initial voltage on the measurement probe at a start of the connect time with a later measurement voltage at the end of the connect time of a measurement period, a signaling logic controllable as a function of the result of the comparison in order to signal the oil level, and a blocking-time transmitter which, in combination with a control logic, blocks repeated measurement for at least a predetermined period of time after the machine is turned off or again turned on, the improvement wherein said device further comprises

electric circuit means interconnecting said probe with said blocking-time transmitter, said circuit means being driven by said control logic to transmit said initial voltage from said probe to said blocking-time transmitter, said initial voltage being a measure of temperature of the oil, there being a single probe providing both said initial voltage and said later measurement voltage; and wherein

said blocking-time transmitter produces a variable blocking time as a function of said initial voltage such that the blocking time decreases with an increase in temperature of the oil;

said comparing means includes a counter, there being an analog-to-digital converter interconnecting said counter and said probe for converting analog voltage of said probe to a digital number for said counter, both said initial voltage and said later measurement voltage being converted to digital numbers for said counter; and

said counter and said signaling logic is responsive to both said initial voltage at the start of said connect time and said later measurement voltage at the end of said connect time,

under control of the combination of said control logic and said blocking-time transmitter, to output an oil-level measurement.

4,943,798

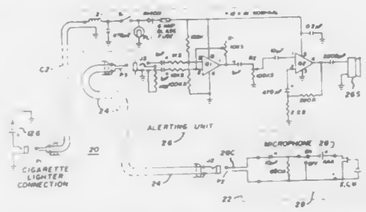
LARGE TRUCK REMOTE WHEEL TROUBLE WARNING SYSTEM

Wayman Wayne, 1890 Union St., Lake Station, Ind. 46405

Filed Aug. 26, 1989, Ser. No. 398,776

Int. Cl.[5] B60C *23/00*

U.S. Cl. 340—443 4 Claims



1. In a tractor semitrailer rig having a closed cab from which a driver may operate the rig and at least one trailer, which trailer has an underside and wheels monunted at the underside of that trailer, at least some of which wheels are mounted remote from the cab and on opposite sides of the trailer, the improvement comprising:

only one conventional sound sensitive microphone for picking up airborne sound waves in the range of human hearing;

mounting means for said microphone for mounting it to the underside of the trailer at only one location and in such a manner so as to allow said microphone to be able to pick up sound carried by the air from the remote wheels of the trailer from either opposite side of the trailer and from other equipment mounted to the trailer in the vicinity of the remote wheels, said mounting means including means for substantially damping out mechanical vibrations received from said trailer;

communication means connected to said microphone and secured to said trailer, said communication means serving to connect signals developed by said microphone to said cab; and

means mounted inside the enclosed cab for receiving signals from said communication means, and responsive to those signals received from said communication means for alerting the driver to unusual airborne sounds picked up by said microphone, and wherein said alerting means mounted inside the enclosed cab includes a conventional speaker for substantially reproducing the airborne sound waves within the range of human hearing which are picked up by said microphone mounted to the underside of the trailer.

4,943,799

PORTABLE ALARM SYSTEM WITH SEALED ENCLOSURE

Robert Papineau, 8467 Place Choquette, St-Leonard P.Q., Canada

Filed Mar. 3, 1989, Ser. No. 319,176

Int. Cl.[5] G08B *19/00;* H04M *11/00*

U.S. Cl. 340—521 10 Claims

1. A portable alarm system comprising a compact portable sealed housing, an electronic alarm control circuit secured inside said housing, a power supply transformer in said housing connected between said control circuit and an AC terminal connector secured to said housing, a telephone jack secured to said housing and to a dialer circuit of said control circuit and to a telephone line jack, an auxiliary DC supply in said housing with an automatic switching device connected thereto to supply said control circuit upon detecting a predetermined supply condition, a digital key pad secured to said housing and having a plurality of switches actuable exteriorly of said housing for programming said control circuit which is contained within said sealed housing and unaccessible from the outside of said housing, and for actuating or deactuating said control circuit, a receiver circuit in said housing and connected to said control circuit, one or more wireless infrared detectors for detecting moving objects and removably secured to said housing; said



detectors having infrared transmitters, of different frequencies from one another, to transmit to said receiver circuits alarm signals; said receiver having a first channel responsive to a first of said detectors and being connected to said control circuit through a delay circuit means so that said control circuit only switches to an alarm state to generate an alarm code on said telephone line after a predetermined time delay, the others of said detectors being directly connected to said control circuit, and a siren secured to said control circuit to generate an audible local alarm upon actuation of said control circuit to said alarm state.

4,943,800

INTRUSION DETECTION SYSTEM USING THREE PYROELECTRIC SENSORS

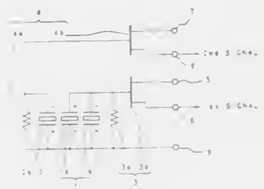
Masami Ikeda, Higashi; Yasuhiro Yamada, Neyagawa; Mahito Tuji, Yahata; Akimasa Tamano, Osaka, and Yasunari Mizoguchi, Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 17, 1988, Ser. No. 207,983

Claims priority, application Japan, Jun. 19, 1987, 62-153766; Sep. 16, 1987, 62-231570; Sep. 18, 1987, 62-143448

Int. Cl.[5] G08B *13/18*

U.S. Cl. 340—567 11 Claims



1. An intrusion detection system comprising:

an infrared sensor in which three pyroelectric detectors, each having a pair of electrodes, are disposed in line with an interval and an adjoining two of said three pyroelectric detectors are electrically connected to cancel electrical charges generated by each said pyroelectric detector, said sensor outputting a first signal and a second signal on the basis of outputs of said adjoining two and the remaining one of said three pyroelectric detectors, respectively; and

an intrusion detector which detects an infrared ray radiating object based on said first and second signals outputted from said infrared sensor.

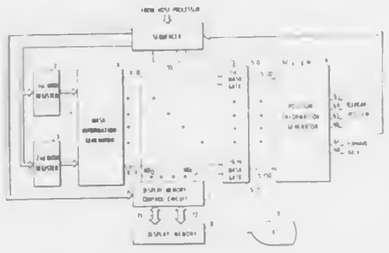
VOL 1116 ISS 4 JL 24 1990 UMI

4,943,801

GRAPHICS DISPLAY CONTROLLER EQUIPPED WITH BOUNDARY SEARCHING CIRCUIT

Tetsuji Oguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 29, 1988, Ser. No. 161,690
Claims priority, application Japan, Feb. 27, 1987, 62-44840
Int. Cl.[5] G09G *1/00*
U.S. Cl. 340—723 **8 Claims**



1. A graphics display controller for searching a boundary of a desired display area stored in a display memory, said boundary of said desired display area being defined by a plurality of bits each having display data of a first logic level and all bits within said desired display area having display data of a second logic level, said controller comprising means for accessing said display memory to produce display data consisting of N bits in parallel, said N being an integer more than one, means for temporarily storing control data, means coupled to said storing means and responsive to said control data for generating mask information consisting of said N bits in which M bits take mask data and the remaining bit or bits take non-mask data, said M being an integer from 0 to N−1, means coupled to said accessing means and said generating means to receive said display data and said mask information for outputting intermediate data consisting of said N bits in parallel, each bit of said intermediate data taking the same data as data of the associated bit of said display data when the associated bit of said mask information takes said non-mask data and taking said second logic level irrespective of data of the associated bit of said display data when the associated bit of said mask information takes said mask data, and means coupled to said outputting means to receive said intermediate data for producing first output information representative of the absence of said boundary when all the bits of said intermediate data take said second logic level and for producing second output information representative of the presence of said boundary when at least one bit of said intermediate data takes said first logic level, said second output information including bit position information relative to a position of a bit that takes said first logic level and is closest to one of the least and most significant bit positions of said intermediate data.

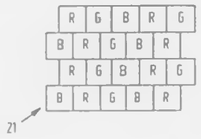
4,943,802

DISPLAY DEVICE

Karel E. Kuijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 208,185, Jun. 16, 1988. This application Mar. 3, 1989, Ser. No. 319,004
Claims priority, application Netherlands, Dec. 7, 1988, 8802997
Int. Cl.[5] G09G *3/00*
U.S. Cl. 340—784 **5 Claims**

1. A display device comprising an electro-optical display medium between two supporting plates, a system of pixels arranged in rows and columns, with each pixel being formed by picture electrodes arranged on the facing surfaces of the supporting plates, and a system of row and column electrodes for presenting selection and data signals across the pixels for the purpose of picture display, characterized in that the picture electrode on one of the supporting plates is connected in an electrically conducting manner to the common point of two non-linear switching units which are arranged in series between a column electrode for data signals and an auxiliary



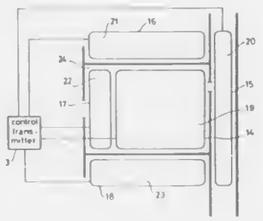
electrode for applying, prior to selection, an auxiliary voltage across the pixels beyond or on the limit of the voltage range to be used for picture display in that the column and the auxiliary electrodes are in a straight track and in that the other supporting plate is provided with row electrodes which follow a meandering path.

4,943,803

PAGING SYSTEM WITH PAGING RECEIVERS CONTROLLED DEPENDING ON LOCATION

Marcel J. G. Vrijkorte, Emmen, Netherlands, assignor to Ericsson Paging Systems B.V., Emmen, Netherlands

Filed Nov. 30, 1988, Ser. No. 277,879
Claims priority, application Netherlands, Dec. 1, 1987, 8702885
Int. Cl.[5] H04Q *7/00*; H04B *7/00*
U.S. Cl. 340—825.490 **8 Claims**



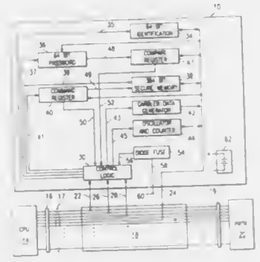
1. A paging system comprising a call transmitter for transmitting a call transmission signal modulated in accordance with a selectable address code, and at least one portable paging receiver with a call receiving part for receiving the call transmission signal and for separating from it the call address code transmitted therewith, a memory for the storage of a call address code allocated to the receiver, a comparator for comparison of the call address codes received and allocated, and a signalling member for generating a signal for a user of the paging receiver depending on the result of the comparison, comprising a control transmission system which has a number of transmission loops encompassing essentially adjacent zones for the transmission of control transmission signals which have the same carrier wave frequencies, and which are angle modulated in accordance with control commands selected for the transmission loops, and in that a paging receiver has a control part for receiving a control transmission signal, for separating from the control transmission signal received the control command transmitted therewith, and for putting and maintaining the paging receiver in a certain state depending on the control command which has been separated from the control transmission signal.

4,943,804

ELECTRONIC KEY LOCKING CIRCUITRY

Robert D. Lee, Denton, and Donald R. Dias, Carrollton, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 163,281, Mar. 2, 1988, Pat. No. 4,870,401. This application Sep. 26, 1989, Ser. No. 412,767
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.
Int. Cl.[5] H04Q *1/00*; H01H *47/00*
U.S. Cl. 340—825.310 **5 Claims**



1. An electronic key, comprising:
a fuse;
a counter, connected to count accesses to said electronic key;
control logic, including a latch which can be set by receipt of a predetermined external command;
said control logic being configured so that
at least some commands are accepted before said fuse has been blown but are not accepted after said fuse is blown;
at least some other commands are accepted after said fuse has been blown and before said latch has been set, but are not accepted after said latch has been set; and
at least some other commands are accepted after said latch has been set and before said counter counts off a predetermined number of accesses, but are not accepted after said counter has counted said predetermined number of accesses;
wherein said latch cannot be reset after said fuse has been blown;
and wherein said control logic and said counter are configured so that, if power is restored after said fuse has already been blown, said counter will immediately provide an output indicating that said predetermined number of accesses has already occurred.

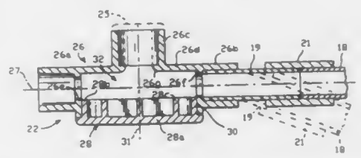
4,943,805

CONDUIT-ENCLOSED INDUCTION LOOP FOR A VEHICLE DETECTOR

James L. Dennison, 213 Tait Ave., Los Gatos, Calif. 95030

Filed Nov. 13, 1986, Ser. No. 930,726
Int. Cl.[5] G08G *1/01*
U.S. Cl. 340—933 **14 Claims**

1. In an inductive loop vehicle detector having a conductor extending in a loop-shaped conduit:
a conductor-surrounding filler within said conduit; and
a conduit coupling assembly joining sections of the conduit comprising:
a body defining (a) a passageway extending through said body sized to receive at each end of said passageway an end of a section of conduit, and (b) an opening externally exposing a portion of said passageway intermediate its ends, said opening being defined by a wall portion extending continuously about said opening; and
a lid sized to completely cover said opening and having a continuous loop-forming extension matingly engaging said continuous wall portion when said lid is covering said opening; and
said continuous extension and wall portion being mutually adherable for sealing said opening;



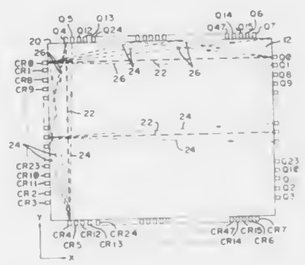
said conductor-surrounding filler filling said coupling assembly; and
an adhesive adhering said continuous extension and said wall portion together.

4,943,806

TOUCH INPUT DEVICE HAVING DIGITAL AMBIENT LIGHT SAMPLING

Timothy E. Masters, Champaign; Paul B. Lucas, Urbana; James E. Garrett, Champaign, and John K. Carstedt, Round Rock, all of Ill., assignors to Carroll Touch Inc., Round Rock, Tex.

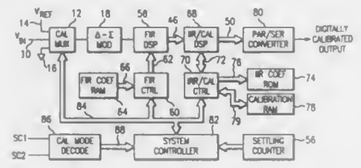
Continuation of Ser. No. 621,585, Jun. 18, 1984, abandoned. This application Dec. 6, 1988, Ser. No. 394,261
Int. Cl.[5] H03K *17/78*; G09G *1/00*
U.S. Cl. 341—31 **5 Claims**



1. A touch input device, comprising:
a four-sided frame;
optical emitters disposed in two adjacent sides of said frame and connected to means for intermittently energizing said optical emitters;
optical detectors disposed in the two sides of said frame opposite said emitters;
sampling means for sequentially sampling the light received by said detectors;
converter means for converting the response of the detectors due to the light received by said detectors to a digital value corresponding to the intensity of the light received by the detectors;
processor means connected to said converter means for digitally comparing the output of each said detector during energization of a corresponding emitter with the output of the same detector when the corresponding emitter is not energized, to derive a signal manifesting the interruption or noninterruption of light produced by said emitter and introduced to said detector regardless of ambient light, wherein the processor means includes means for determining if each detector is saturated by digitally comparing the output of each said detector during energization of a corresponding emitter with the output of the

same detector when the corresponding emitter is not energized.

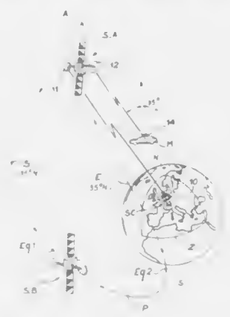
4,943,807
DIGITALLY CALIBRATED DELTA-SIGMA ANALOG-TO-DIGITAL CONVERTER
Adrian B. Early, Buda; Larry L. Harris, and Michael J. Callahan, Jr., both of Austin, all of Tex., assignors to Crystal Semiconductor, Austin, Tex.
Filed Apr. 13, 1988, Ser. No. 180,889
Int. Cl.[5] H03M *1/10*
U.S. Cl. 341—120 **34 Claims**



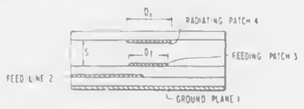
1. A self-calibrating analog-to-digital converter, comprising:
an oversampled analog modulator for receiving said analog input signal and outputting a digital signal that is proportional to said analog input signal;
a digital filter for filtering out noise on the digital output of said analog modulator;
storage means for a storing digital calibration parameters;
output compensation means for compensating the digital output of said digital filter in accordance with a predetermined compensation algorithm that is a function of said digital calibration parameters; and
calibration means for generating said calibration parameter for storing in said storage means in response to a calibration control signal, said calibration means including:
means for inputting at least one predetermined analog value to the input of said oversampled analog modulator,
means for comparing the digital value output by said digital filter to a predetermined expected value when said one predetermined analog value is input thereto and determining if there is a difference therebetween, and
generating said calibration parameters such that said generated calibration parameters are used in conjunction with said predetermined compensation algorithm will result in a predetermined digital value being output from said output compensation means when an analog input signal equal to said one predetermined analog value is input to said oversampled analog modulator.

4,943,808
COMMUNICATIONS SYSTEM WITH MOVING BODIES WITH THE AID OF SATELLITES
Jean-Francois Dulck, Ramonville St Agne, and Denis Rouffet, Boulogne, both of France, assignors to Centre National D'Etudes Spatiales, Paris, France
Filed Feb. 14, 1989, Ser. No. 309,888
Claims priority, application France, Mar. 2, 1988, 88 02632
Int. Cl.[5] H04B *7/19, 7/185*
U.S. Cl. 342—356 **6 Claims**

1. A voice communications system for providing continuous communication between a ground communications network and a plurality of moving bodies in a coverage area, said system comprises:
at least one central station located on the ground at a place close to the centre of said coverage area said coverage area having a substantially triangular geographical shape, said station being connected to said ground communications network, said station having an antenna;
at least n geosynchronous satellites, where n is an integer greater than one, said satellites having elliptical orbits with similar ground tracks over said coverage area, said satellites having longitudes of ascending nodes displaced by 2 π/n degrees, each said satellite including transmission-reception means, responsive to start up and shut down commands from said central station, connected to at least one antenna for communication with the central station on the ground for the complete time during which the satellite passes over said ground coverage area; and
each of said moving bodies including a receiver means including a high gain antenna.

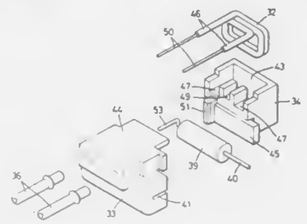


4,943,809
ELECTROMAGNETICALLY COUPLED MICROSTRIP ANTENNAS HAVING FEEDING PATCHES CAPACITIVELY COUPLED TO FEEDLINES
Amir I. Zaghloul, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Continuation of Ser. No. 748,637, Jun. 25, 1985, Pat. No. 4,761,654. This application Apr. 25, 1988, Ser. No. 185,229
Int. Cl.[5] H01Q *00/00*
U.S. Cl. 343—700 MS **23 Claims**



6. A microstrip antenna, comprising:
a plurality of feedlines;
a plurality of feeding patches, each coupled in a contactless manner to at least a respective one of said plurality of feedlines, said feeding patches being impedance matches to respective ones of said feedlines; and
a plurality of radiating patches, each coupled in a contactless manner to a respective one of said plurality of feeding patches, said radiating patches being impedance matches to respective ones of said feeding patches, wherein said feedlines are capacitively coupled to said feeding patches and said feeding patches are capacitively coupled to said radiating patches.

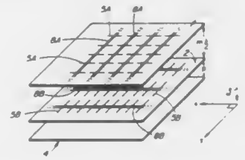
4,943,810
ANTENNA COIL WITH INTEGRAL HOUSING
Katsuo Ito; Eiichi Hibino; Masahiro Nishimura; Kazunori Kinoshita, and Shigeki Takase, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 240,615, Sep. 6, 1988, abandoned. This application May 30, 1989, Ser. No. 358,524
Int. Cl.[5] H01Q *1/24*
U.S. Cl. 343—702 **4 Claims**



1. An antenna device for introducing an antenna output to a UHF tuner of a television receiver, comprising:
an insulator body having an open top coil receiving recess therein partly defined by a forwardly facing side wall, said side wall having a top edge having there side by side forwardly extending grooves therein;
an antenna coil formed of a single covered wire and fitted into said recess and having two forwardly extending parallel lead portions extending therefrom, said lead portions being fitted into two of said grooves;
a terminal member having a pair of parallel antenna terminals for receiving said parallel lead portions therein and having a cover integral with said terminal member and extending over the open top of said coil receiving recess when said terminal member is abutted against said insulator body with said lead portions in said antenna terminals, said cover having an elongated projection on the under surface thereof fitted into the remaining one of said grooves, said terminal member further having a rearwardly open resistor containing recess for containing a generally cylindrical shaped resistor and having the length dimension of said resistor containing recess extending transverse to said lead terminals and spaced from and crossing said lead terminals;
said insulator body having a resistor containing recess cover thereon fitting over said laterally open resistor containing recess when said terminal member is abutted against said insulator body.

4,943,811
DUAL POLARIZATION ELECTROMAGNETIC POWER RECEPTION AND CONVERSION SYSTEM
Adrian W. Alden, Masham North; George W. Jull, Nepean, and Tom T. Ohno, Carp, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Nov. 23, 1987, Ser. No. 124,159
Int. Cl.[5] H01Q *21/12*
U.S. Cl. 343—814 **11 Claims**

1. An antenna aray for receiving a beam of dual polarized electromagnetic waves, comprised of:
(a) a first rectenna formed from a first plurality of dipole antenna elements connected to a first plurality of transmission lines orthogonal to said antenna elements, for receiving and carrying a first polarization component of said electromagnetic waves, said first plurality of transmission lines being characterized by a predetermined inductive reactance,
(b) a second rectenna parallel to said first rectenna and formed from a second plurality of dipole antenna elements oriented orthogonally to said first plurality of antenna elements, and connected to a second plurality of transmission lines orthogonal to said second plurality of antenna elements, for receiving and carrying a second polarization component of said electromagnetic waves orthogonal to said first component, said second plurality of transmission lines also being characterized by said predetermined inductive reactance.
(c) a reflector plane parallel to said second rectenna for reflecting incident electromagnetic waves transmitted through said first and second rectennae back to said first and second rectennae for reception thereby,
(d) said first and second rectenna being separated by a first predetermined distance given by $m\lambda/2$, where m is a whole number and λ is the wavelength of said electromagnetic wave,
(e) said second rectenna and reflector plane being separated by a second predetermined distance sufficient for causing the capacitive reactance of free space between said second rectenna and said reflector plane to be equal and opposite to said predetermined inductive reactance of said first and second pluralities of transmission lines, and
(f) said first and second pluralities of dipole antenna elements and transmission lines conforming to a predetermined



alignment with respect to each other wherein respective first lines disposed mid-point between respective rows of said transmission lines of the first rectenna are colinear when viewed along said beam with respective dipole antenna elements on said second rectenna, and further lines disposed orthogonal to said first lines and passing midway between successive ones of said dipole antennae of the first rectenna, and further lines disposed orthogonal to said first lines and passing midway between successive ones of said dipole antenna of the first rectenna are parallel to and midway between respective rows of transmission lines of said second rectenna when viewed along said beam, whereby said first and further lines intersect to form a plurality of independent transmission line cells enclosing respective pairs of said dipole antennae of said first rectenna, such that the effect of said predetermined inductive reactance due to said second and first pluralities of transmission lines is compensated for, and the directivity of said array is characterized by the directivity of each of said cells, thereby resulting in high efficiency reception of said beam of dual polarized electromagnetic waves over a wide range of angles of incidence of said beam on said array.

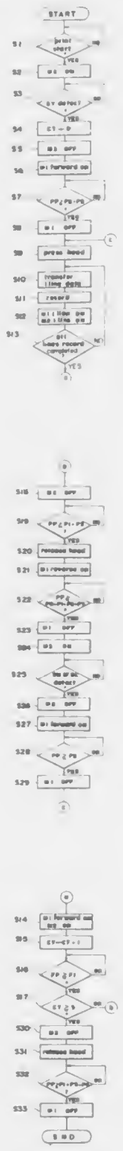
4,943,812
THERMAL TRANSFER TYPE COLOR RECORDING METHOD AND APPARATUS THEREFOR
Takayuki Yokoyama, and Yasuhiro Kyoden, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 4, 1988, Ser. No. 267,536
Claims priority, application Japan, Nov. 7, 1987, 62-280308; Nov. 7, 1987, 62-280309
Int. Cl.[5] G01D *9/00, 15/10, 15/04*
U.S. Cl. 346—1.1 **12 Claims**

1. A thermal transfer color recording method of recording a color image on a transfer paper by successively transferring

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inks of different colors from an ink film to the transfer paper at a recording station, the method comprising:

a first step of transferring an ink of one color from the ink film to the transfer paper based on an image to be recorded, while transporting the ink film and the transfer paper through the recording station in the forward direction in intimate contact with each other and taking up the ink film past the recording station;



a second step of transporting the transfer paper in intimate contact with the ink film in the forward direction with the ink film not taken up to thereby slacken the ink film;

a third step of transporting the transfer paper in the reverse direction to position the leading end of a recorded area of the transfer paper at the recording station;

a fourth step of transporting the ink film in the forward direction to position an ink of another color at the recording station; and

a fifth step of transferring an ink of another color from the ink film to the transfer paper from the leading end of the recorded area thereof based on the image to be recorded, while transporting the ink film and the transfer paper through the recording station in the forward direction in intimate contact with each other and taking up the ink film past the recording station.

4. A thermal transfer color recording apparatus for recording a color image on a transfer paper by successively transferring inks of different colors from an ink film to the transfer paper at a recording station, the apparatus comprising:

ink film supply means for supplying the ink film past the recording station;

ink film take-up means for taking up the ink film supplied by said supply means;

a platen located at the recording station;

a thermal head located adjacent said platen;

paper transport means for transporting the transfer paper in forward and reverse directions through the recording station between said thermal head and said platen; and

control means for controlling said ink film take-up means and paper transport means, after completion of recording with an ink of one color, so as to move the transfer paper in intimate contact with the ink film in the forward direction with the ink film take-up means turned off to thereby slacken the ink film, and thereafter to move the transfer paper in the reverse direction to position the leading end of a recorded area of the transfer paper at the recording station.

4,943,813

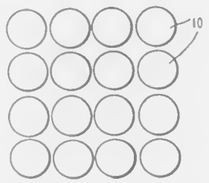
METHOD OF GENERATING OVERHEAD TRANSPARENCY PROJECTING USING AN INK-JET DEVICE

Donald J. Palmer, San Diego, and Peter C. Morris, El Cajon, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 244,545, Sep. 13, 1988, abandoned, which is a continuation of Ser. No. 57,132, Jun. 1, 1987, abandoned. This application Sep. 25, 1989, Ser. No. 412,581

Int. Cl.[5] B41J *2/01*

U.S. Cl. 346—1.1 **14 Claims**



1. A method of printing at least two dots of ink sequentially at a particular location to form a spot on an ink-receptive transparent medium by an ink-jet printer comprising printing a first dot of ink at said location during a first scan of a line, delaying by a time sufficiently long to allow the first dot of ink to absorb into said ink-receptive medium, and printing a second dot of ink at said location over said first dot of ink during a second scan of said line, said dot separated from an adjacent dot by a dot-to-dot spacing as measured by the number of dots per unit length, wherein an amount of ink which is required to generate a printed spot of diameter ϕ meets the condition $\phi \leqq 1/D$, where D is the number of dots per unit length.

4,943,814

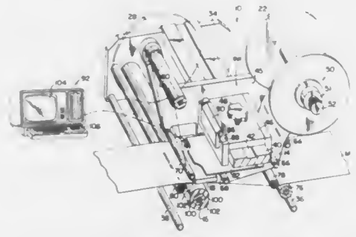
COMPUTER CONTROLLABLE MULTI-PURPOSE PLATEN THERMAL PRINTER

Neal M. Otto, Woodstock, Conn., assignor to Columbia Research and Manufacturing Company, Danielson, Conn.

Filed Mar. 23, 1989, Ser. No. 327,560

Int. Cl.[5] G01D *15/10;* **B41J** *11/02*

U.S. Cl. 346—1.1 **16 Claims**



1. A printing apparatus for printing on a web of material comprising:

means defining a feed path along which the web of material is advanced in a printing operation, the material having one side and an opposite side;

a printhead mounted at a printing station along the feed path adjacent said one side of the web of material for generating printed information on a surface of the web as the web of material passes along the feed path past the printhead;

a roller platen mounted along the feed path at the printing station and adjacent said opposite side of the web of material and having an axis of rotation extending transversely of the feed path and parallel to said opposite side of the material, the roller platen having at least one outer arcuate surface spaced from the axis of rotation by a given amount selected to press said one side of the web of material under pressure against the printhead during a printing operation, the roller platen also having another outer surface located closer to the axis of rotation than the arcuate surface to provide a gap between the roller platen and the printhead for free movement of the web of material along the feed path when the platen is rotated to position said other surface adjacent the material; and

drive means connected in driving relationship with the roller platen for rotating the platen about the axis and serving as the controlling driver for advancing the web of material past the printhead when the arcuate surface presses the material under pressure against the head during a printing operation.

4,943,815

LASER PRINTER WITH LIGHT-EXPOSURE PREVENTION

Charles S. Aldrich; James A. Craft; James P. Harden; Steven R. Komplin; William S. Rousey; Praful M. Shah; Earl D. Ward II; Bernard L. Wilzbach, all of Lexington, and Terry L. King, Versailles, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1989, Ser. No. 373,767

Int. Cl.[5] G01D *15/14;* **G02B** *26/02*

U.S. Cl. 346—108 **8 Claims**

1. A printer comprising a source of high-energy light, cartridge receiving means to receive a replaceable cartridge containing a drum responsive to said light to form a transferable image, means to transfer said image to a paper or other thin substrate, and means to deliver said paper or other substrate for removal from said printer, said printer preventing human exposure to said light during normal use and maintenance by said light source being enclosed in a housing substantially opaque to said light having a normally-closed shutter in optical communication with said drum and having a control member positioned to be pushed to the shutter-open position when said cartridge is in place, said housing carrying a switch element



and being mounted on a pivotable top frame of said printer which is pivoted away from said cartridge receiving means for access during maintenance, a switch normally deactivating power to said light source, said switch element being moveable and being moveable to a position activating said switch by said cartridge to activate said power when said cartridge is in said cartridge receiving means and said top frame is pivoted to the position for normal use of said printer.

4,943,816

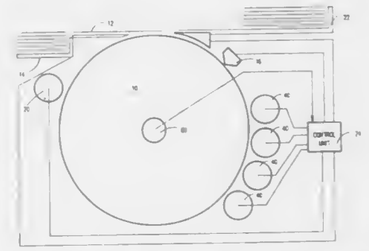
HIGH QUALITY THERMAL JET PRINTER CONFIGURATION SUITABLE FOR PRODUCING COLOR IMAGES

Alfred H. Sporer, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1989, Ser. No. 366,109

Int. Cl.[5] B41J *2/05, 27/14*

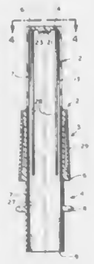
U.S. Cl. 346—25 **18 Claims**



1. A printer suitable for producing color images comprising:

an ink jet printhead for selectively producing drops of a dyeless marking fluid consisting essentially of a mixture of water and a glycol ether;
an image receiving substrate;
means for controlling said ink jet printhead to selectively eject said dyeless marking fluid to produce a fluid image of a desired pattern upon said substrate;
a plurality of roll developing means for developing said fluid image on said substrate while still moist to produce a visible image on said substrate; and
means for fixing said developed image to said substrate to produce a permanent image of the desired pattern on said substrate.

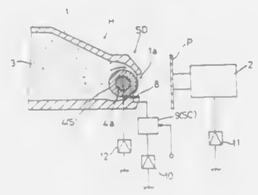
4,943,817
ADAPTOR FOR UNIVERSAL X-Y PLOTTER PEN
Jerald C. Raahange, San Jose, Calif., assignor to Sumner & Taylor, Inc., San Jose, Calif.
Filed Nov. 14, 1988, Ser. No. 270,837
Int. Cl.[5] G01D *15/16;* **B23B** *5/22;* **B43L** *13/00*
U.S. Cl. 346—140 A **17 Claims**



1. An adaptor for receiving and operationally mounting in the plotter pen head assembly of an X-Y plotter a plotter pen having an elongated tubular body forming a reservoir for marking fluid and having a marking nib on one end thereof communicating with said marking fluid reservoir and a closed end opposite said marking nib, said adaptor comprising:
(a) an elongated tubular sleeve closed at one end and open at the opposite end, and having an inner periphery devoid of threads and configured to snugly receive and frictionally removably retain a plotter pen when inserted within said sleeve; and
(b) means on the exterior surface of said elongated tubular sleeve configured to operationally cooperate with a plotter pen head assembly when said adaptor is mounted thereon whereby said adaptor with a plotter pen inserted therein may be selectively and detachably mounted on said plotter pen head assembly for placement of the marking nib of the plotter pen in a position of use.

4,943,818
INK JET PRINTER
Hideo Hotomi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 7, 1989, Ser. No. 307,747
Claims priority, application Japan, Feb. 9, 1988, 63-28149
Int. Cl.[5] B41J *2/06, 2/175*
U.S. Cl. 346—140 R **34 Claims**

1. An ink jet printer using thermally fusible ink for ejecting the ink in the form of drops, comprising:
an ink nozzle defining a feed passage for feeding the thermally fusible ink and orifice means for ejecting the ink;
ink feed means rotatably disposed adjacent to said orifice means for forcibly feeding the ink to said orifice means;
heating means disposed in said feed passage upstream of the ink feed means for heating and fusing the ink before the ink is fed to the orifice means;
ejecting means downstream of said ink feed means for ejecting the ink fused by said heating means to a recording

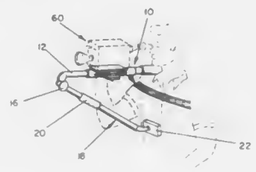


medium through said orifice means by electrostatic force, said recording medium set at a distance from said orifice means; and
ejection control means for operating said ejecting means in accordance with an image signal.

4,943,819
IMAGE HOLDING MEMBER AND IMAGE FORMING DEVICE
Hitoshi Toma, Kawasaki; Masafumi Hisamura, Toride, and Shigemori Tanaka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 18, 1989, Ser. No. 408,232
Claims priority, application Japan, Sep. 20, 1988, 63-233471; Sep. 20, 1988, 63-233472; Sep. 20, 1988, 63-233474
Int. Cl.[5] G03G *13/22, 5/04*
U.S. Cl. 346—160.1 **14 Claims**

9. An image forming device for adsorbing granular dry process developer onto an image holding member through electrical adsorption force comprising:
an image holding member comprising from a side for holding the dry process developer, a dielectric layer and a diffusion reflection layer having reflective fine particles dispersed in a resin, with said dielectric layer being made to have a ten-point average roughness of 0.1 μm to 5.0 μm;
moving means for moving said image holding member;
recording electrodes arranged in a direction crossing a moving direction of said image holding member;
means for feeding an electroconductive developer disposed between said image holding member and said recording electrodes; and
means for applying signal voltages to said recording electrodes.

4,943,820
PORTABLE CAMERA SUPPORT
Warren D. Larock, 4526 Valley Park, S.W., Albuquerque, N. Mex. 87105
Filed Oct. 13, 1989, Ser. No. 420,918
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—82 **19 Claims**



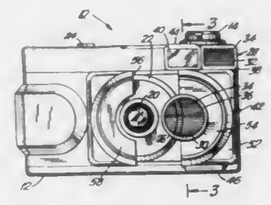
1. A portable camera support comprising:
a tubular shoulder support member having an open distal end and a proximal end, an extension tube having proximal and distal ends, said proximal end of said extension tube being telescopically slidably engaged in said open distal end of said tubular support member such that said distal end of said extension tube extends from said distal end of said shoulder support member, said proximal end of said shoulder support member being adapted to rest upon a user's shoulder, and said shoulder support member further comprising means for supporting a camera thereon; and
a torso engaging support member having a proximal end and a distal end, said distal end of said torso engaging support member being pivotably connected to said distal end of said extension tube extending from said shoulder support member.

4,943,821
TOPOLOGICAL PANORAMA CAMERA
Janet L. Gelphman, 9337 Lenel Pl., Dallas, Tex. 75220, and Kurt R. Mottweiler, Austin, Tex., assignors to Janet Louise Gelphman, Dallas, Tex.
Filed Jan. 23, 1989, Ser. No. 300,780
Int. Cl.[5] G03B *37/00*
U.S. Cl. 354—99 **32 Claims**



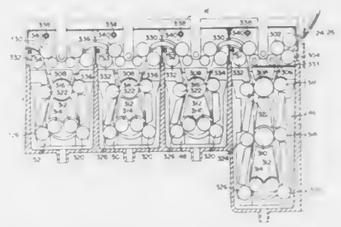
1. Apparatus for recording an image of a subject comprising:
transport apparatus operable to define a predetermined path which is wholly or partially non-rotational; and
a camera connected to said transport apparatus comprising:
a lens for receiving the image;
a recording medium for recording the image; and
an exposure plate having a slit formed therein for communicating a portion of the image to the recording medium.

4,943,822
CAMERA FOR PHOTOGRAPHING SIMULATED X-RAY IMAGES
Harold von Braunhut, c/o Transcience Corporation, P.O. Box 809, Bryans Road, Md. 20616
Filed Feb. 7, 1989, Ser. No. 307,406
Int. Cl.[5] G03B *13/02, 17/18*
U.S. Cl. 354—219 **20 Claims**



1. A camera comprising an eyepiece and a lens each having the same general field of view, two optical devices each having means for simulating an X-ray image of an object viewed through the device, and means carried by said camera for enabling each one of said optical devices to be simultaneously brought completely out of optical registry with a respective one of said eyepiece and lens to enable a user to view a real image of an object and, if desired, to take a photograph of said real image or into optical registry with a respective one of said eyepiece and lens to enable a user to view a simulated X-ray image of the same object and if desired, to take a photograph of the simulated X-ray image of said object.

4,943,823
STRUCTURE OF WASHING CONVEYANCE ROLLER FOR PHOTOSENSITIVE MATERIAL PROCESSING MACHINE
Kaoru Uchiyama, and Tetuya Ishizuka, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 11, 1988, Ser. No. 230,948
Claims priority, application Japan, Aug. 26, 1987, 62-212292
Int. Cl.[5] G03D *3/02, 3/08*
U.S. Cl. 354—322 **20 Claims**



1. A photosensitive material treatment device for developing an exposed photosensitive material comprising:
(a) treatment chambers each filled with a treatment liquid for treating a photosensitive material;
(b) means for holding and conveying said photosensitive material in said treatment chambers;
(c) means for wiping said treatment liquid remaining on said photosensitive material which has been drawn out from said treatment liquid after said treating in each of said treatment chambers each time said photosensitive material is treated in said treatment chambers; and
(d) means for supplying washing water to said wiping means

after each time said photosensitive material has been drawn out from said treatment chambers, and for washing water to said means, and for subsequently providing said washing water to said treatment chambers after washing said photosensitive material,

whereby said wiping means is maintained clean, said treatment liquid is prevented from being carried to an ensuing process, and a constant level of said treatment liquid in said treatment chambers is maintained.

4,943,824

DEVICE FOR MEASURING OBJECT DISTANCE USED FOR CAMERA

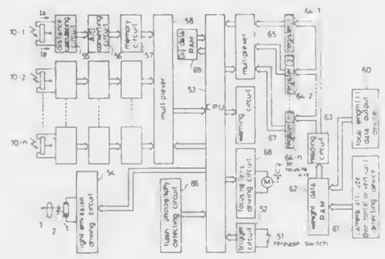
Takayuki Nabeshima; Toru Matsui, and Yukio Maekawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1988, Ser. No. 269,598

Claims priority, application Japan, Nov. 12, 1987, 62-286964; Nov. 12, 1987, 62-286965; Nov. 12, 1987, 62-286966; Nov. 12, 1987, 62-286967; Nov. 12, 1987, 62-286968

Int. Cl.[5] G03B *3/00*; G01C *3/08*

U.S. Cl. 354—400 **15 Claims**



1. In a device for measuring object distance or in-focus position used for a camera in which object distances or focus adjustment states are measured in a plurality of distance measuring areas in the photographing scene, said device comprising:

calculating means having a plurality of weight data predetermined in correspondence with the position of each distance measuring area in the photographing scene and the object distance, for calculating a weight value by reading the weight data of each distance measuring area in correspondence with the position of an object in the photographing scene and the measured object distance, and

means for judging to be a main object, an object in the distance measuring area of which the weight value calculated by the calculating means is the largest.

4,943,825

PHOTOGRAPHIC CAMERA

Noboyuki Taniguchi; Yoshiaki Hata, both of Nishinomiya; Yoshinobu Kudo, Sakai; Manabu Inoue, Kobe; Takeo Hoda, Kawachinagano, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

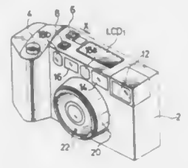
Division of Ser. No. 895,826, Aug. 12, 1986, Pat. No. 4,780,735.

This application Jun. 16, 1988, Ser. No. 207,330

Claims priority, application Japan, Aug. 29, 1985, 60-190520; Aug. 29, 1985, 60-190521; Aug. 29, 1985, 60-190522; Aug. 29, 1985, 60-190523; Aug. 30, 1985, 60-192621; Sep. 10, 1985, 60-201095; Sep. 10, 1985, 60-201096; Nov. 14, 1985, 60-255550; Dec. 19, 1985, 60-286732

Int. Cl.[5] G03B *7/12, 17/24*

U.S. Cl. 354—481 **2 Claims**



1. A photographic camera having a photographic lens, comprising:

means for selecting a real focal length photographing mode in which a normal range in a frame of a film will be printed on a photographing paper and a pseudo focal length photographing mode in which a range smaller than the normal range in a frame of the film will be printed on a photographing paper;

means for measuring light from a predetermined range corresponding to an angle smaller than an angle of view of the photographic lens, the predetermined range being unchangeable irrespective of the selection of the photographing mode and approximately corresponding to a photographing range in an object field when the pseudo focal length photographing mode is selected; and

means for controlling exposure of the photographic camera in accordance with the measured result.

4,943,826

IMAGE FORMING DEVICE WITH SUPPLEMENTARY EXPOSURE DEVICE

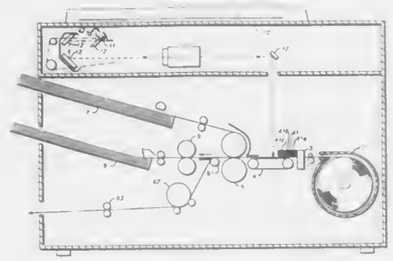
Kunio Ohashi, and Shoichi Nagata, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1988, Ser. No. 252,678

Claims priority, application Japan, Oct. 23, 1987, 62-268794

Int. Cl.[5] G03B *27/32*

U.S. Cl. 355—27 **11 Claims**



1. In an image forming apparatus having a supplementary exposure device for supplementarily exposing a light receiving sheet to light in a wavelength range to which said light receiving sheet is sensitive, the improvement wherein said image forming apparatus further comprises

an input means for specifying and outputting a command signal indicative of whether or not said light receiving sheet should be supplementarily exposed to light from said supplementary exposure device and

a driving means for driving or not driving said supplementary exposure device according to said command signal from said input means,

said input means including a detector for detecting the density of a document to be copied and a command transmitting means for transmitting a command to have or not to have said sheet supplementarily exposed to light from said supplementary exposure device, depending on whether of not the density detected by said detector is greater than a predefined reference value.

4,943,828

REPLACEMENT OF A CARTRIDGE USABLE WITH IMAGE FORMING EQUIPMENT

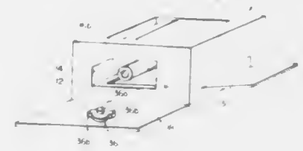
Yoshiharu Manabe, Kawasaki, and Koji Sakamoto, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1989, Ser. No. 359,644

Claims priority, application Japan, May 31, 1988, 63-70990[U]; May 31, 1988, 63-70991[U]

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **7 Claims**



1. An apparatus for replacing a cartridge for use with image forming equipment which has a housing, a cover openably mounted on said housing, and an image carrier rotatably mounted on a shaft and having an end portion which is uncovered when said cover is opened, said apparatus comprising:

a box-like cartridge accommodating at least one of a plurality of image forming process units which are to be positioned around and in a predetermined relative position to the image carrier, said cartridge being selectively coupled over and uncoupled from the image carrier; and

positioning member provided on the cover for, when the cover is closed, engaging with the image carrier and said cartridge to position said image carrier and said cartridge such that the predetermined relative position is maintained.

4,943,827

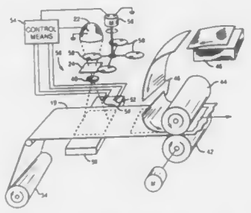
METHOD AND APPARATUS FOR CONTROLLING EXPOSURE OF AN IMAGING SHEET

William G. Good, and Mark E. Holycross, both of Centerville, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 27, 1989, Ser. No. 344,185

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—30 **29 Claims**



1. An apparatus for producing images from an imaging sheet including a substrate having provided on one of its surfaces a layer of microcapsules containing an image-forming agent and a photohardenable composition, said apparatus comprising:

means for supporting said substrate at an exposure station;

a radiation source operable to provide one or more bands of actinic radiation for exposing said substrate to said one or more bands;

an optical system for focussing said one or more bands of actinic radiation onto said substrate at said exposure station to form a latent image on said substrate;

a developing device for developing the latent image into a visible image onto said substrate or onto a receiver substrate;

environmental sensor means for sensing at least one environmental condition within said exposure station prior to exposure; and

exposure control means responsive to said environmental sensor means for controlling the amount of actinic radiation received by said substrate during said exposure at least partially as a function of said environmental condition.

4,943,829

IMAGE FORMING APPARATUS

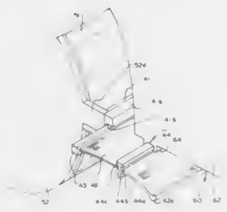
Kenji Sasaki, Takarazuka; Mitsuo Matsushita, Higashiosaka; Kenzo Ono, Osaka; Akihiro Horiwaki; Katsunori Fujii, both of Higashiosaka, and Hiroyuki Hatano, Nishinomiya, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 29, 1989, Ser. No. 400,206

Claims priority, application Japan, Aug. 31, 1988, 63-114390[U]; Aug. 31, 1988, 63-114391[U]; Oct. 28, 1988, 63-141468[U]

Int. Cl.[5] B60B *21/00*

U.S. Cl. 355—215 11 Claims



1. An image forming apparatus for forming an image by developing a latent image on a photoconductor drum with developer delivered from a developer unit disposed facing the photoconductor drum, comprising a developer collecting member that is integrally molded with a pair of photoconductor drum supporting side plates which rotatably support the photoconductor drum, and that is disposed between the photoconductor drum supporting side plates so as to collect the developer falling from between the photoconductor drum and the developer unit.

4,943,830

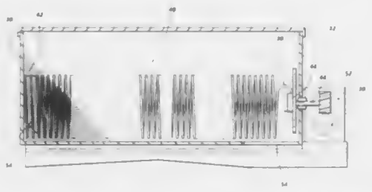
DEVELOPER DISPENSING APPARATUS WITH A SPRING ELEMENT HOLD DOWN SHOE MECHANISM

Timothy J. Sulenski, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 7, 1989, Ser. No. 320,183

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 3 Claims



1. A developer dispensing apparatus including an elongated container enclosed at both ends having a substantially circular cross section capable of containing a given quantity of developer, said container having a dispensing opening adjacent one end and containing an integral developer transport mixing member rotatably supported at the opposite end of said container and unsupported at said one end, said mixing member comprising a coiled spring element adapted to rotate in a direction so as to transport developer along its length toward said dispensing opening, said dispensing apparatus characterized by further including a hold down shoe mechanism fixedly attached to the container end associated with the unsupported end of said spring element, at least a portion of said spring element rotatably encircling said hold down mechanism whereby any vertical movement of the unsupported end of said mixing member during rotation is restrained by the mechanical contact with the adjacent surface of said hold down mechanism.

4,943,831

FIXING DEVICE FOR FIXING A POWDER IMAGE ON A RECEIVING SHEET

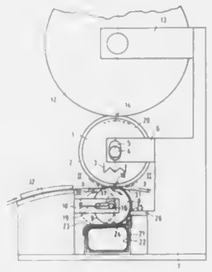
Jacques J. M. Geraets, Velden; Julius V. C. Graswinckel, Arcen, and Martin L. van der Sterren, Roermond, all of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Oct. 26, 1989, Ser. No. 427,827

Claims priority, application Netherlands, Oct. 27, 1988, 8802644

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 8 Claims



1. In fixing device for fixing a powder image on a receiving sheet in which a fixing roller and a pressure roller together form a first zone which defines a fixing nip, and a biasing member which presses against the pressure roller in a second zone of said pressure roller located substantially opposite to said fixing nip for tangentially directing a frictional force on said pressure roller in at least one of said zones on rotation of the rollers, the improvement in combination therewith comprising deflection-limiting means to limit deflection of said pressure roller in the direction of said frictional force and said pressure roller having a flexural stiffness much less than the flexural stiffness of said fixing roller such that at said frictional force said pressure roller deflects in the direction in which the frictional force acts.

4,943,832

IMAGE FORMING APPARATUS

Kiyoshi Emori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1989, Ser. No. 362,576

Claims priority, application Japan, Jun. 9, 1988, 63-142084; Jun. 9, 1988, 63-142085

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—313 38 Claims

1. An image forming apparatus, comprising:

an image forming means for forming images on a sheet being transported;

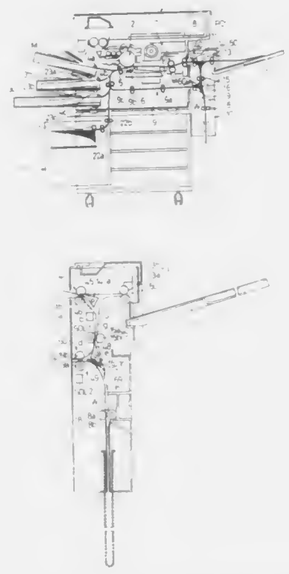
a sheet feeding means for feeding a sheet one by one;

a sheet transporting means for transporting a sheet being fed by the sheet feeding means for image formation, which includes a sheet re-feeding path capable of transporting the sheet to the image forming means against for further image formation by successively receiving the sheet which completed an image forming operation;

a first transport path switching means for selectively guiding a sheet after image formation either to the sheet re-feeding path or to the outside of the apparatus;

a sheet turning over means provided in the sheet re-feeding path for turning over the sheet being refed;

an image forming mode selecting means for selecting either a composite image forming mode in which plural numbers of image forming operations are performed on the same surface of the sheet or a both-surface image forming mode wherein image forming operations are carried out on both surfaces of the sheet;



a second transport path switching means for selectively guiding a sheet being directed to the sheet re-feeding path to pass through the sheet turning over means or not therethrough in accordance with the mode selected; and

a controlling means for controlling the maximum number of sheets present in said sheet transporting means simultaneously in accordance with the mode selected by said image forming selecting means.

4,943,833

COLOR COPYING APPARATUS AND METHOD

Shigenobu Fukushima, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 20, 1989, Ser. No. 369,058

Claims priority, application Japan, Jun. 21, 1988, 63-152632; Jun. 21, 1988, 63-152633

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 7 Claims

1. A copying apparatus, comprising:

a table for mounting an original;

a photoreceptor;

first latent electrostatic image forming means for forming a first latent electrostatic image on said photoreceptor based on a image of said original;

means for supplying electric signal indicative of additional information;

second latent electrostatic image forming means for forming a second latent electrostatic image on said photoreceptor based on said electric signal;

a plurality of developing means containing toners of different colors for turning said latent electrostatic images formed on said photoreceptor into toner images;

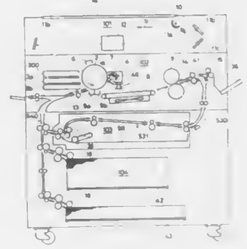
first designating means for designating a color of a toner by which the first latent electrostatic image formed by said first latent electrostatic image forming means is to be developed;

second designating means for designating a color of a toner by which the second latent electrostatic image formed by said second latent electrostatic image forming means is to be developed;

transferring means for transferring the toner images on said photoreceptor onto a sheet of copy paper at a transferring position;

paper re-feeding means for feeding again the sheet of paper on which the toner images have been transferred to said transferring position;

means for determining whether or not said color of the toner designated by said first designating means is the same as said color of the toner designated by the second designating means;



first controlling means controlling the copying apparatus such that said first and second latent electrostatic images are simultaneously formed by said first and second latent electrostatic image forming means on said photoreceptor, developed by the toner of said designated color to be transferred onto said sheet of copy paper, when the colors of the toners designated by said first and second designated means are the same; and

second controlling means for controlling the copying apparatus such that said latent electrostatic image is formed by either one of said first and second latent electrostatic image forming means, developed by the toner of said designated color to be transferred onto said sheet of copy paper, thereafter said sheet of copy paper is again fed to the transferring position by said paper re-feeding means, and the latent electrostatic image is formed by the other one of said latent electrostatic image forming means, developed by the toner of said designated color to be transferred onto said sheet of paper fed again to said transferring position, when the colors of the toners designated by said first and second designating means are different from each other.

4,943,834

IMAGE FORMING APPARATUS CAPABLE OF DETECTING, ANALYZING AND DISPLAYING AN ORIGINALS SPECTROSCOPIC COLOR DATA

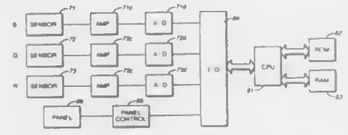
Yasutaka Maeda, Nara; Tsuyochi Miyamoto, Osaka; Yukihiko Ueno, Osaka, and Hiromi Washio, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1988, Ser. No. 239,446

Claims priority, application Japan, Sep. 30, 1987, 62-248971; Sep. 30, 1987, 62-248972

Int. Cl.[5] G03G *15/01, 21/00*

U.S. Cl. 355—327 **7 Claims**



1. In a color copier which includes a photoreceptor, separates colors of reflected light from an original and forms a color toner image by toner of complementary colors, the improvement wherein said color copier comprises

optical sensor means for analyzing colors of said reflected light from said original and detecting spectroscopic color data of said reflected light,

a control panel, and

control means for causing said detected spectroscopic color data to be display on said control panel and operating said color copier under conditions inputted through said control panel.

4,943,835

SEMICONDUCTOR DEVICE INCLUDING PROTECTING MOS TRANSISTOR

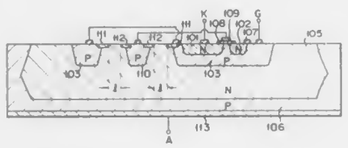
Shigenori Yakushiji, Yokohama, and Kouji Jitsukata, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 927,114, Nov. 5, 1986, abandoned. This application Sep. 29, 1988, Ser. No. 253,364

Claims priority, application Japan, Nov. 22, 1985, 60-261274

Int. Cl.[5] H01L *29/78, 29/74*

U.S. Cl. 357—23.13 **4 Claims**



1. A semiconductor device including a protecting MOS transistor comprising:

a first semiconductor region of a first conductivity type connected to a first voltage supply source;

a second semiconductor region of a second conductivity type which has a main surface and whose surface except for said main surface contacts said first semiconductor region;

a third semiconductor region of the first conductivity type formed in said second semiconductor region and connected to a second voltage supply source, said second semiconductor region having an island region surrounded by said third semiconductor region;

a fourth semiconductor region of the second conductivity type formed in said third semiconductor region and connected to a third voltage supply source;

a fifth semiconductor region of the second conductivity type formed in said third semiconductor region and short-circuited to said third semiconductor region;

a gate insulating layer continuously provided on one surface portion of said fourth semiconductor region, one surface portion of said fifth semiconductor region and the surface portion of the third semiconductor region between said fourth and fifth semiconductor regions;

a gate control electrode provided on said gate insulating layer;

a sixth semiconductor region of the first conductivity type formed in said island region and connected to said gate control electrode to apply a voltage appearing on said sixth semiconductor region thereto, with a surface junction between said sixth semiconductor region and said island region;

a first diffusion region of the first conductivity type having a depth less than that of said third semiconductor region, said first diffusion region being continuously formed in one portion of said island region and in one portion of said third semiconductor region and contacting at least one portion of the surface junction between said third semiconductor region and said island region of said second semiconductor region; and

a second diffusion region of the first conductivity type having a depth less than that of said sixth semiconductor region and facing said first diffusion region, said second diffusion region being continuously formed in one portion of said island region and in one portion of said sixth semiconductor region and contacting at least one portion of the surface junction between said sixth semiconductor region and said island region; and

a distance between said first diffusion region and said second diffusion region sufficient for providing that the voltage applied to the gate control electrode from the sixth semiconductor region is less than a breakdown voltage of the gate insulating layer.

4,943,836

ULTRAVIOLET ERASABLE NONVOLATILE SEMICONDUCTOR DEVICE

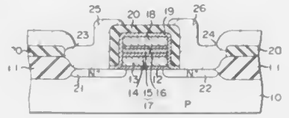
Seiichi Mori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1988, Ser. No. 224,026

Claims priority, application Japan, Jul. 30, 1987, 62-190863

Int. Cl.[5] H01L *49/02, 29/78, 29/34*

U.S. Cl. 357—23.5 **3 Claims**



1. An ultraviolet erasable nonvolatile semiconductor device comprising:

a first conductivity-type semiconductor substrate;

source and drain regions formed in a surface of said substrate;

a first gate insulating layer consisting of a single silicon oxide layer formed on a portion of said surface between said source and drain regions;

a floating gate provided on said silicon oxide layer;

a second gate insulating layer formed on said floating gate, said second gate insulating layer consisting of a first silicon oxide layer, a silicon nitride layer formed on said first silicon oxide layer, and a second silicon oxide layer having a thickness of 30 Å or less formed on said silicon nitride layer; and

a control gate provided on said gate insulating layer.

4,943,837

THIN FILM SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME

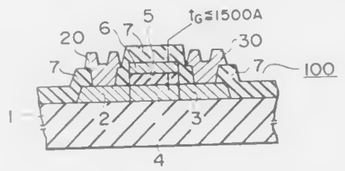
Nobutake Konishi, Hitachiota; Kikuo Ono, Hitachi; Takaya Suzuki, and Kenji Miyata, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1988, Ser. No. 166,518

Claims priority, application Japan, Mar. 11, 1987, 62-54044

Int. Cl.[5] H01L *29/78, 29/167*

U.S. Cl. 357—23.7 **11 Claims**



1. A thin film semiconductor device which includes a silicon layer formed on an insulating substrate and made of one of amorphous silicon and polycrystalline silicon, a gate electrode formed over the silicon layer through an insulating film and made of one of amorphous silicon and polycrystalline silicon, source and drain regions formed in the silicon layer so that the projection of the gate electrode onto the silicon layer is interposed between the source and drain regions, a channel region beneath the gate electrode and the insulating film, and source and drain electrodes kept in ohmic contact with the source and drain regions, respectively, wherein the thickness of the gate electrode is made less than or equal to 1,500 Å, whereby an active element for passivation can penetrate through the gate electrode into a surface layer of the entire channel region, which surface layer has a substantially uniform thickness, so that a passivated surface layer of the channel region, having a substantially uniform thickness for the entire channel region, can be achieved, and wherein the device further includes said passivated surface layer, having said active element for passivation therein so as to provide said passivated surface layer, having the substantially uniform thickness, for the entire channel region.

4,943,838

THIN FILM TRANSISTOR AND METHOD OF MAKING THE SAME

Yasuhiro Ukai, Kobe, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jan. 4, 1988, Ser. No. 140,688

Claims priority, application Japan, Jan. 16, 1987, 62-7657

Int. Cl.[5] H01L *29/78, 27/12, 49/02*

U.S. Cl. 357—23.7 **7 Claims**

1. A thin film transistor comprising:

a source electrode and a drain electrode disposed in spaced relation to one another on an insulating substrate;

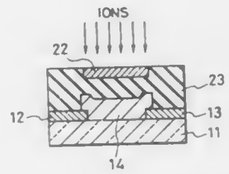
a semiconductor layer on the substrate between the source and drain electrodes;

a gate insulating film in contact with the semiconductor layer;

a gate electrode in contact with the gate insulating film;

the gate insulating film being an insulating organic molecular film;

the gate electrode being formed in a selected region of the gate insulating film and being a conductive layer containing free carbon; and said gate electrode being formed on a



side of said gate insulating film and being separated from the semiconductor layer.

4,943,839

CONTACT TYPE IMAGE SENSOR

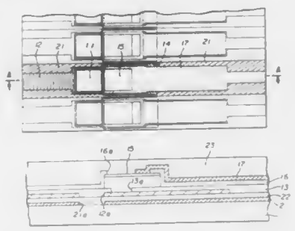
Masafumi Kumano, Sendai, and Kenji Yamamoto, Miyagi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics, Natori, both of, Japan

Filed Aug. 18, 1988, Ser. No. 233,364

Claims priority, application Japan, Aug. 19, 1987, 62-205979

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 357—30 **16 Claims**



1. A contact type image sensor comprising:

a transparent dielectric substrate;

an upper transparent electrode;

a lower electrode provided on said transparent dielectric substrate;

a semiconductor thin film sandwiched between said upper transparent electrode and said lower electrode and constituting a photoelectric conversion part;

a transparent dielectric layer formed on a plane on which said lower electrode is provided; and

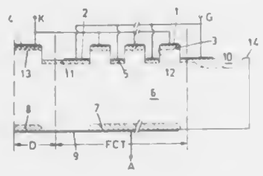
an upper electrode formed on said transparent dielectric layer and connected to said upper transparent electrode,

said transparent dielectric layer covering all exposed surfaces of said semiconductor thin film excluding surfaces which make contact with said upper transparent electrode and said lower electrode,

said upper electrode, said transparent dielectric layer and said lower electrode forming a capacitor structure.

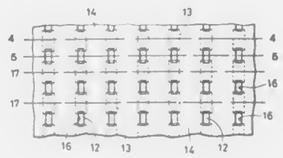
VOL
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4,943,840
REVERSE-CONDUCTING THYRISTOR
Peter Roggwiller, Riedt-Neerach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Continuation of Ser. No. 930,454, Nov. 14, 1986, abandoned. This application Mar. 18, 1988, Ser. No. 171,190
Claims priority, application Switzerland, Nov. 29, 1985, 5095/85
Int. Cl.[5] H01L *29/747*
U.S. Cl. 357—39 **7 Claims**



1. A reverse-conducting thyristor having a center, a thyristor section and an antiparallel connected diode section integrated on a common substrate, wherein the thyristor section comprises a field-controlled thyristor (FCT), said reverse-conducting thyristor having opposed cathode and anode sides, said field-controlled thyristor (FCT) comprising a p^+-doped FCT anode layer on the anode side, an n^--doped channel layer lying above the anode layer in a direction towards the cathode side, and, on the cathode side, a plurality of alternately arranged n^+-doped cathode regions and p-doped gate regions, the cathode regions being separated from each other at the cathode side by troughs having side walls and a bottom, said side walls extending from said bottom in the direction towards the cathode side, the gate regions extending across the bottoms of the troughs and defining thereby an interdigitated gate/-cathode structure, the cathode regions having top portions on which are provided FCT cathode contacts and the gate regions having portions on which are provided gate contacts in a gate plane;
said diode section arranged in the center of the reverse-conducting thyristor;
the FCT anode layer restricted to a region of the field-controlled thyristor (FCT) on the anode side outside said center;
an n^+ emitter layer diffused into the diode section at the anode side;
a p^+-doped diode-anode of the diode section layer arranged at the cathode side, wherein the $p^=$-doped anode and the n^--doped channel form a diode pn-junction, said p^+-doped diode-anode layer together with the channel layer extending through the diode section and with said $n^=$ emitter layer forming a diode;
said p^+-doped diode-anode layer electrically connected to the FCT cathode contact via an applied diode-anode contact;
a common anode contact provided at the anode side and extending over the field-controlled thyristor (FCT) and the diode section; and
a gate separation zone including a separating p-doped gate region contacted by a gate contact provided on the cathode side between the field-controlled thyristor (FCT) and the diode section so that the field-controlled thyristor and diode section are decoupled from each other, said gate separation zone having a width at least equal to the thickness of the field-controlled thyristor.

4,943,841
WIRING STRUCTURE FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Toshihiko Yahara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 103,643, Oct. 2, 1987, abandoned. This application Oct. 6, 1988, Ser. No. 256,087
Claims priority, application Japan, Oct. 20, 1986, 63-250104
Int. Cl.[5] H01L *27/10, 27/15, 23/48, 29/54*
U.S. Cl. 357—45 **7 Claims**



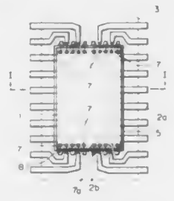
1. A semiconductor integrated circuit structure comprising:
a semiconductor substrate (11);
a first insulating layer (12) provided on said substrate;
a first wiring layer (13) disposed on said first insulating layer, said first wiring layer including a plurality of electrically isolated conductive segments each having a first end and a second end;
a second insulating layer (14) disposed on said first wiring layer, said second insulating layer including means for defining plural openings each dimensioned and positioned so as to simultaneously contain a first end of one of said plurality of conductive segments and a second end of a further one of said plurality of conductive segments; and
a second wiring layer (15) formed on said second insulating layer, said second wiring layer including plural planar conductors disposed on said second insulating layer and further including conductive material disposed within selected ones of said openings and not connected to any of said upper wiring layer conductors, said conductive material establishing an electrical connection between ends of different ones of said first wiring layer segments.

4,943,842
SEMICONDUCTOR DEVICE WITH FUSE FUNCTION
Naomasa Sugita, Yokohama; Yoshiharu Yotumoto, Kimitsu; Kouji Moriguchi, Kimitsu, and Toshinobu Sekiba, Kimitsu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 9, 1988, Ser. No. 166,002
Claims priority, application Japan, Mar. 11, 1987, 62-54098
Int. Cl.[5] H01L *27/02, 23/48, 23/26, 23/02*
U.S. Cl. 357—51 **20 Claims**



1. A semiconductor device comprising:
a semiconductor element;
a hollow fuse comprising a fuse material coupled to said semiconductor element;
a casing for enclosing said semiconductor element and said hollow fuse; and
insulating means disposed in said casing and in intimate physical contact with said hollow fuse, said hollow fuse defining a hollow portion therein to accommodate molten fuse material when the fuse material is melted.

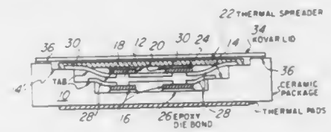
4,943,843
SEMICONDUCTOR DEVICE
Takayuki Okinaga, Akishima; Hiroshi Tachi, Ohme; Hiroshi Ozaki, Kokubunji; Kanji Otsuka, Higashiyamato; Michiaki Furukawa, Fucyu, and Yasuyuki Yamazaki, Kodaira, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan
Continuation of Ser. No. 240,605, Sep. 6, 1988, abandoned, which is a continuation of Ser. No. 845,332, Mar. 21, 1986, abandoned. This application Dec. 8, 1989, Ser. No. 445,942
Claims priority, application Japan, Mar. 25, 1985, 60-58407
Int. Cl.[5] H01L *23/48, 23/50, 23/12*
U.S. Cl. 357—70 **38 Claims**



1. A semiconductor device comprising:
(a) a plurality of leads, each lead having an inner portion and an outer portion, the inner portions of said leads extending substantially on one plane;
(b) a semiconductor pellet having first and second major surfaces being arranged opposed from each other, at least one electronic device being formed on said first major surface, inner portions of a first group of the plurality of leads extending along said second major surface and arranged so that tips of said inner portions of said first group of leads protrude from a side of the pellet to provide bonding points.
(c) a set of bonding pads disposed on said first major surface along opposite sides of said pellet;
(d) an insulating sheet inserted between and bonded to the inner portions of the first group of leads and the second major surface for providing electrical insulation;
(e) a plurality of bonding wires electrically connected between tips of said inner portions of the plurality of leads and said bonding pads;
(f) a resin sealing body sealing the pellet; the bonding pads, the insulating sheet, the bonding wires and the inner portions of the plurality of leads;
wherein the plurality of leads further includes a second group of leads, said inner portions of the first group of leads being bent to support said pellet thereon, each inner portion of said first group of leads extending from a non-bonding pad-forming side to a bonding pad-forming side of said pellet and inner portions of said second group of leads being disposed along an end of the pellet without supporting the pellet thereon; and
wherein the pellet is supported only by said inner portions of said first group of leads.

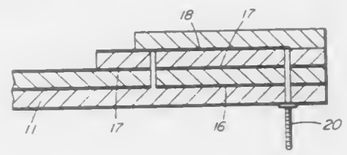
4,943,844
HIGH-DENSITY PACKAGE
Alex A. Oscilowski, Charles E. Williams, Gary L. Beene and Peter Zogas, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 22, 1985, Ser. No. 801,029
Int. Cl.[5] H01L *23/04, 23/36, 23/12*
U.S. Cl. 357—74 **36 Claims**

1. A chip carrier comprising:
a chip carrier body having a cavity therein, and a lower mounting space, on the bottom of said cavity, for mounting at least one integrated circuit chip;
at least one bonding ledge having contact pads thereon in proximity to said mounting space inside said cavity;
at least one heat plate mounted above said lower mounting space within said cavity;
said heat plate being attached with low thermal resistance to said body of said chip carrier, said heat plate having a second mounting surface thereon for mounting at least one integrated circuit chip thereon;
at least one integrated circuit chip mounted on said lower mounting space, and at least one integrated circuit chip mounted on said second mounting surface;



a plurality of connecting leads linking contact pads on said integrated circuits to selected contact pads on said bonding ledges; and
a lid hermetically sealed to said body of said chip cavity, said lid and said chip cavity enclosing therebetween said lower mounting space, said heat plate, and said chips mounted to said space and said heat plate;
wherein said heat plate comprises openings to expose plural ones of said contact pads on said bonding ledges.

4,943,845
THICK FILM PACKAGES WITH COMMON WAFER APERTURE PLACEMENT
John L. Wilby, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Aug. 2, 1988, Ser. No. 227,543
Int. Cl.[5] H01L *23/12, 23/14, 23/08*
U.S. Cl. 357—74 **6 Claims**



1. A multilayer thick film package for housing a microchip, the package being formed from a series of insulating wafers of corresponding external profile, an outer layer of the package being defined by a wafer in a first form having a first series of apertures therein adapted to be filled with electrically conductive material for connecting with pins adapted to extend from the package, each inner layer of the package being defined by a wafer in a second form having a second series of apertures therein adapted to be filled with electrically conductive material and corresponding in number and position with the apertures on each other inner layer, the second series of apertures comprising a series of apertures corresponding to the first series of apertures in number and position and also comprising a third series of apertures lacking such correspondence, electrical connections from the microchip to the package pins being adapted to be made by selective patterning of an electrically conductive coating on the first and second forms of wafer, whereby the packages for a variety of microchips can be prepared by utilizing a common first form of wafer and a common second form of wafer by varying the pattern of the electrically conductive coating on those wafers.

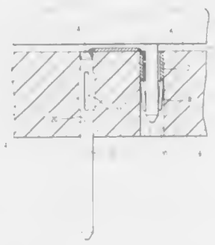
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4,943,846

PIN GRID ARRAY HAVING SEPERATE POSTS AND SOCKET CONTACTS

David J. Shirling, Waterbury, Conn., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 9, 1989, Ser. No. 433,830
Int. Cl.[5] H01L *23/14, 23/12, 23/54*
U.S. Cl. 357—80 **7 Claims**



1. A pin grid array comprising a monolithic insulating support having oppositely facing first and second major surfaces, a first plurality of holes extending entirely through the support from the first surface to the second surface, the first holes being located on a first square grid, contact sockets in the first holes which are dimensioned to receive leads which extend from a component, and contact pins in the support extending from the second surface, each of the contact pins being electrically connected to an associated contact socket, the pin grid array being characterized in that:

a second plurality of holes are provided in the support, the second holes being located on a second square grid which is identical to the first grid and is offset, relative to the first grid, in the X and Y directions by amounts equal to one half of the grid spacing so that the second holes are offset from the first holes, each of the contact pins being mounted in one of the second holes, and

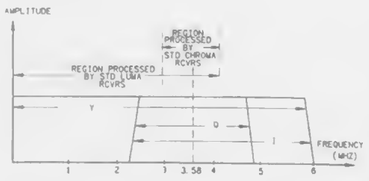
surface conductors on one of the surfaces, each conductor extending from one of the first holes to an associated second hole, the conductors serving to connect each of the socket contacts to its associated pin contact.

4,943,847

EXTENDED DEFINITION TELEVISION

Ron D. Katznelson, San Diego, Calif., assignor to M/A-COM Government Systems, Inc. and Cable/Home Communication Corp., both of San Diego, Calif.

Filed Sep. 19, 1986, Ser. No. 909,508
Int. Cl.[5] H04N *11/14*
U.S. Cl. 358—12 **10 Claims**



1. An NTSC-compatible television system in which wideband and narrowband chrominance components of a video signal are modulated in quadrature by a 3.58 MHz subcarrier, comprising

an encoder, including

means for filtering the wideband chrominance component over a first predetermined baseband bandwidth;

means for filtering the narrowband chrominance component over a second predetermined baseband bandwidth that is less than said first predetermined bandwidth;

means for modulating the filtered wideband chrominance component with a 3.58 MHz subcarrier;

means for modulating the filtered narrowband chrominance component in quadrature with subcarrier; and

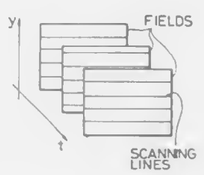
means for antisymmetrically filtering the modulated wideband chrominance component over an antisymmetrical bandwidth that extends above the subcarrier frequency by said first predetermined bandwidth and extends below said subcarrier frequency by said second predetermined bandwidth.

4,943,848

TELEVISION SIGNAL TRANSMISSION SYSTEM

Takahiko Fukinuki, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 26,281, Mar. 16, 1987, Pat. No. 4,745,460, which is a division of Ser. No. 578,528, Feb. 9, 1984, Pat. No. 4,660,072. This application Apr. 25, 1988, Ser. No. 186,033
Claims priority, application Japan, Mar. 18, 1983, 58-44238
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[5] H04N *11/00*
U.S. Cl. 358—12 **11 Claims**



1. A color television signal transmission system having at least one of a transmission part for converting progressive scanning signals into interlaced scanning signals and a reception part for converting interlaced scanning signals into progressive scanning signals comprising:

(a) first means including means for obtaining a NTSC signal having a frequency lower than a predetermined frequency from a video signal; means for obtaining an information signal having a frequency higher than the predetermined frequency from the video signal, means for shifting the information signal into a band of the NTSC signal so that the information signal exists in the first and third quadrants of temporal and vertical frequency coordinates while the color signals of the NTSC signal exists in the second and fourth quadrants of the temporal and vertical frequency coordinates, and means for producing an extended-NTSC signal by combining the NTSC signal and the shifted information signal; and

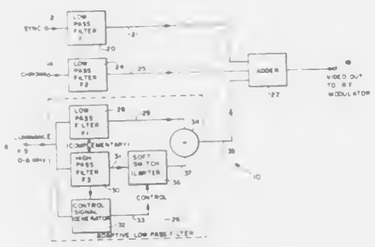
(b) second means including means for separating the NTSC signal and the shifted information signal from the extended-NTSC signal, means for inserting the shifted information signal in a band of the information signal, and means for reproducing the video signal by adding the separated NTSC signal and the information signal.

4,943,849

TELEVISION TRANSMISSION SYSTEM HAVING IMPROVED SEPARATION OF AUDIO AND VIDEO SPECTRA

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos, Calif. 94402, and Jack J. Campbell, 1161 De Haro St., San Francisco, Calif. 94110

Filed Sep. 1, 1988, Ser. No. 239,298
Int. Cl.[5] H04N *7/04*
U.S. Cl. 358—12 **34 Claims**



1. A method for providing improved separation of audio and video spectra carried upon spectrally separated audio and video carriers within a television transmission channel leading to a television receiver, said method comprising the transmission steps of:

a. obtaining a high frequency luminance component at the vicinity of the audio carrier offset from the video carrier from a full bandwidth baseband luminance signal received from a video source;

b. limiting the amplitude of luminance energy groups within the high frequency component to be below a predetermined amplitude level;

c. combining the amplitude limited high frequency component into the full bandwidth luminance signal in a manner which provides a composite luminance signal having amplitude limited high frequency energy groups at the vicinity of the audio carrier;

d. adding video synchronizing information to the composite luminance signal to provide a single video modulation signal;

e. modulating said video carrier with said single video modulation signal;

f. combining said video carrier with said audio carrier into a resultant television composite; and,

g. passing the resultant television composite through said television transmission channel to the television receiver.

4,943,850

APPARATUS FOR LIMITING THE OUTPUT SIGNAL FREQUENCY BAND OF AN OPTICAL SENSOR

Takashi Asaida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,558
Claims priority, application Japan, Oct. 23, 1987, 62-267860
Int. Cl.[5] H04N *9/097*
U.S. Cl. 358—55 **10 Claims**

1. Apparatus comprising:

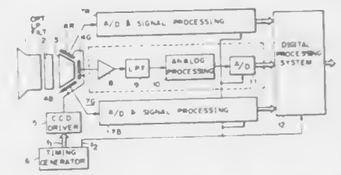
an optical low-pass filter;

solid-state image sensing means for receiving an image obtained through said optical low-pass filter;

signal processing means connected to said solid-state image sensing means and including an analog-to-digital converter and an electrical low-pass filter;

digital signal processing means connected to said signal processing means for digitally processing an image signal output from said signal processing an image signal output from said signal processing means and;

a pulse signal generator for generating a first pulse signal having a frequency f1 for driving said solid-state image sensing means and a second pulse signal having a frequency f2 for driving said digital signal processing circuit, f1 being greater than f2, and said optical low-pass filter having a frequency characteristic to depress a frequency



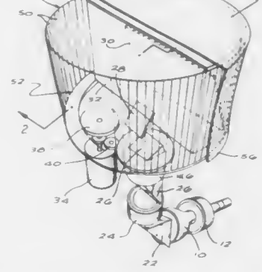
component of the image signal located between a frequency of f1–½ f2 and the frequency of f1, and said electrical low-pass filter having a frequency characteristic to depress a frequency component of the image signal greater than ½ f2.

4,943,851

360 DEGREE VIEWING SYSTEM HAVING A LIQUID CRYSTAL DISPLAY SCREEN ENCIRCLING A ROTATABLE PROJECTION SCREEN

Paul W. Lang, and Franklin C. Gribshaw, both of Orange, Calif., assignors to Gold Stake; C. Allen Jensen and Gregory D. Levy, all of Pasadena, Calif.

Filed Mar. 7, 1989, Ser. No. 320,289
Int. Cl.[5] H04N *9/16*
U.S. Cl. 358—87 **41 Claims**



1. A 360° viewing apparatus, comprising:

a projection screen;

means for rotating the projection screen;

an optical system for continuously projecting an image onto the projection screen;

a liquid crystal display (LCD) screen encircling the projection screen, the LCD screen defining a viewing window through which the image on the projection screen can be viewed, wherein the viewing window is continuously redefined about the LCD screen in synchronization with rotation of the projection screen such that the viewing window is continually aligned with the projection screen; and

means for synchronizing the continuous redefinition of the viewing window around the LCD screen with the rotation of the projection screen.

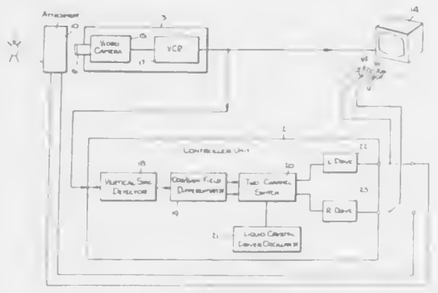
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4,943,852

STEREOSCOPIC CONVERTER ASSEMBLY FOR CLOSED CIRCUIT 2-D TELEVISION SYSTEM

Philip A. Femano, Nutley, and Michael F. Zanakis, Livingston, both of N.J., assignors to Eclectica, Inc., Nutley, N.J.

Filed Oct. 6, 1988, Ser. No. 254,166
Int. Cl.[5] H04N *13/00*
U.S. Cl. 358—88 9 Claims



1. A stereoscopic converter assembly usable in conjunction with a 2-D TV system constituted by a video camera section having a monocular lens to yield a composite video signal representing an image of a scene viewed by the lens, a video cassette recorder section operable in a recording mode to record the composite video signal yielded by the camera section and in a playback mode to feed this signal to a TV monitor on whose screen the recorded image is exhibited, said video camera section and said recorder section being unified to form a battery-powered camcorder usable at a site remote from the monitor and being provided with a camera section output and a recorder section output, said converter comprising:

(a) a self-sufficient optical attachment joinable to said camcorder for placement in front of the lens of the video camera section and provided with left and right eye voltage-activated light shutters which when alternately activated present to the lens alternate left and right eye images of a scene, said camcorder and said attachment being detachably supported in operative relation on a mount;

(b) an electro-optical viewer provided with left and right eye voltage-activated light valves through which the images exhibited on the screen of the monitor are viewed by an observer;

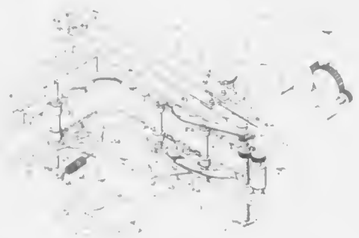
(c) a self-sufficient battery-powered controller unit usable at said site selectively coupled either to the optical attachment or to the electro-optical viewer, the unit in said recording mode being coupled to the output of the video camera section and being responsive to the composite video signal yielded thereby to apply activating voltages alternately to said right and left shutters of the attachment whereby there is then recorded in the recorder section left and right eye images of the scene, the unit in said playback mode in which the recorded left and right eye images are exhibited on the screen being coupled to the output of the recorder section and then being responsive to the composite video signal yielded by the recorder section to apply activating voltages alternately to the left and right eye valves of the viewer to present the left and right eye images on the screen alternately to the left and right eyes of an observer, the corresponding screen images, thereby affording stereoscopic vision, whereby when the converter is combined with said camcorder, the combination functions as a 3-D TV system, and when said converter is removed from the camcorder, the system reverts to a 2-D TV system.

4,943,853

TV VIEWER

Tahei Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1988, Ser. No. 210,552
Claims priority, application Japan, Jun. 26, 1987, 62-159010; Jul. 10, 1987, 62-172447; Jul. 10, 1987, 62-172448; Jul. 15, 1987, 62-176628; Jul. 15, 1987, 62-176629
Int. Cl.[5] H04N *5/253*
U.S. Cl. 358—102 25 Claims



1. A TV viewer comprising a light source and an image pick-up device which is spaced from the light source by a predetermined distance, a film holding plane and a slide holding plane which are spaced from one another along an optical axis direction of the image pick-up device, said planes being located between the light source and the image pick-up device, a film feeding device for feeding film to the film holding plane, and a slide feeding device for feeding at least one slide to the slide holding plane.

4,943,854

VIDEO SURVEILLANCE SYSTEM FOR SELECTIVELY SELECTING PROCESSING AND DISPLAYING THE OUTPUTS OF A PLURALITY OF TV CAMERAS

Tsuneo Shiota, and Soji Takeuchi, both of Hachioji, Japan, assignors to Chuo Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 86,248, Aug. 13, 1987, abandoned, which is a continuation of Ser. No. 873,744, Jun. 12, 1986, abandoned. This application Nov. 17, 1985, Ser. No. 273,119
Claims priority, application Japan, Jul. 26, 1985, 60-139750
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—108 7 Claims



1. A multi-video surveillance system for the surveillance of a plurality of positions, comprising:

a plurality of TV cameras for producing a plurality of first video signals corresponding to scenes of said positions;

control means for sequentially selecting the outputs of said TV cameras to produce a single video output signal, said control means comprising means for controlling the relative information content of each of said first video signals presents in said second video output signal;

sensing means for producing output signals in response to the determination of the occurrence of non-occurence of a predetermined physical event at least one of said positions;

data processing means responsive to said input signals of said sensing means to provide output signals for controlling said means for controlling the relative information content to change the relative information content of said first video signals present in said second video output signal;

said means for controlling said relative information content being responsive to said output signals of said data processing means for sequentially selecting relative numbers of field, frame or multiple frame video signal outputs of each of said TV cameras in a first predetermined proportion, means for producing first time-division multiplex signals therefrom in which the relative information content from each of said TV cameras is a function of said first predetermined proportion, and means responsive to the output of said sensing means for changing the relative numbers of field, frame or multiple frame video signal outputs;

said means for producing first time-division multiplex signals further comprising means for adding control signals to said first time-division multiplex signals to produce second time-division multiplex signals, said control signals comprising signals associated with the fields for identifying the respective TV cameras, relative information content of the first video signals and information corresponding to the output signals of said sensing means, whereby said second time-division multiplex signals are comprised of sequential field, frame or integral number of frame signals each derived from the respective TV cameras in a proportion controlled by said means for controlling said relative information content;

video recording means for recording said second time-division multiplex signals;

selection means for producing second selection signals corresponding to desired surveillance information;

means for reproducing signals corresponding to still scenes or series of continuous still scenes, said reproducing means comprising means for comparing said second selection signals with control signals on said second time-division multiplex signals for selecting desired scene signals from said second time-division multiplex signals; and

display means for displaying scenes corresponding to the signals reproduced by the reproducing means;

said reproducing means comprising an input selection circuit, said input selection circuit comprising means for selectively applying the output of said means for adding control signals or the output of said video recording means to said reproducing means, whereby the display means can selectively display current scenes or scenes recorded by said video recording means.

4,943,855

PROGRESSIVE SUB-BAND IMAGE CODING SYSTEM

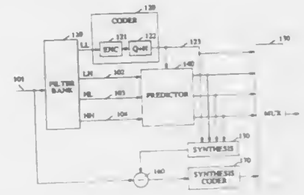
Hemant Bheda, Freehold, and Adrianus Ligtenberg, Oceanport, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 22, 1988, Ser. No. 222,987
Int. Cl.[5] H04N *7/13*
U.S. Cl. 358—133 13 Claims

1. An image encoder comprising:

filter bank means responsive to an applied image signal for developing a plurality of sub-band image signals;

coder means responsive to a selected one of said sub-band image signals for encoding said selected sub-band image signal to reduce data redundancy contained in said selected sub-band image signal; and



prediction means responsive to other ones of said sub-band image signals and to said means for encoding for developing predictive signals corresponding to said other sub-band image signals.

4,943,856

METHOD AND APPARATUS FOR INTRODUCING A PAN AND SCAN FEATURE TO HIGH DEFINITION TELEVISION SYSTEMS

Michael Bakhmutsky, Spring Valley; Alan P. Cavallerano, Ossining; Mikhail Tsinberg, Bronx, and Carlo Basile, Flushing, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 199,962, May 27, 1988, abandoned, and a continuation-in-part of Ser. No. 57,847, Jun. 2, 1987, Ser. No. 57,848, Jun. 2, 1987, and Ser. No. 57,849, Jun. 2, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 330,941
Int. Cl.[5] H04N *7/04, 11/06*
U.S. Cl. 358—141 12 Claims



1. A method for encoding a high definition television (HDTV) picture to comprise a plurality of scan lines divided into a plurality of components of variable proportions each having a plurality of pixels in order to provide a pan and scan capability to a system for transmitting and receiving an HDTV signal, said method comprising the steps of:

(a) generating a plurality of data words representing the proportional relationship between said components;

(b) multiplying the pixels of said HDTV picture by a plurality of respective attenuation factors ranging in magnitude from zero to one inclusive, under the control of said data words so as to generate a coefficient-multiplied video signal representing a center portion and a plurality of panels of varying dimensions corresponding to the proportions of said components; and

(c) combining said coefficient-multiplied video signal with said plurality of data words to form said HDTV signal.

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4,943,857

SYNCHRONIZING CIRCUIT FOR AN EXTERNAL SIGNAL AND AN INTERNAL SAMPLING CLOCK SIGNAL

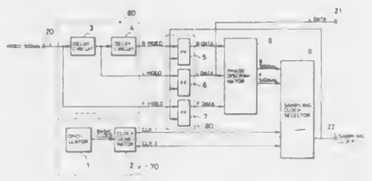
Nobuaki Izuno; Yasuo Kurosu, both of Yokohama; Koichi Okazawa, Tokyo; Yoshihiro Yokoyama, and Kensuke Ooyu, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,394

Claims priority, application Japan, Apr. 24, 1987, 62-102625; Nov. 13, 1987, 62-286738

Int. Cl.[5] H04N *5/04*

U.S. Cl. 358—148 **5 Claims**



1. A synchronizing circuit for synchronizing an input video signal with a sampling clock signal, comprising:

delay means for delaying the input video signal by a plurality of delay amounts to produce a plurality of delayed video signals, each having the same waveform as said input video signal;

detecting means connected to said delay means for detecting phase relations between the sampling clock signal and each of said delayed video signals;

phase discriminating means connected to said detecting means for outputting an output signal representing said phase relations detected by said detecting means;

means for supplying two kinds of clock signals having the same frequency and a phase difference of 180 degrees; and

selecting means for selecting one of said two clock signals and for outputting the selected clock signal as the sampling clock signal, said selecting means either converting the sampling clock signal to the non-selected clock signal at the trailing edge of the non-selected clock signal or converting the sampling clock signal to the non-selected clock signal at the trailing edge of the selected clock signal in response to the output signal outputted by said phase discriminating means.

4,943,858

TV SIGNAL RECORDING AND REPRODUCING APPARATUS EMPLOYING A DIGITAL INTERFACE AND INCLUDING SIGNAL DROP-OUT COMPENSATION

Hiromo Kitaura, Osakasayama; Yuichi Ninomiya; Yoshimichi Ohtsuka, both of Kawasaki, and Yoshinori Izumi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1989, Ser. No. 314,089

Int. Cl.[5] H04N *5/213, 9/88, 5/94*

U.S. Cl. 358—167 **3 Claims**

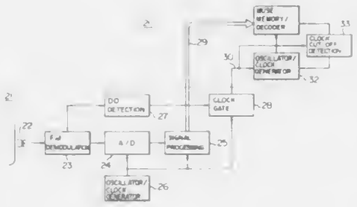
1. A drop-out compensation apparatus for a recording and reproduction system comprising:

a receiver for receiving digital image data from said recording and reproducing system, said receiver comprising means for decoding received image data and a reference oscillator clock generator for controlling said decoding means;

means for supplying said receiver with a clock signal and a set of digital image data for an image signal reproduced and processed by said recording and reproducing system, said clock signal being supplied to said reference oscillator clock generator to control the phase and frequency thereof and said image data being supplied to said decoding means;

means for interrupting the supply of said clock signal to said reference oscillator clock generator for the period of a drop-out, if any, in the recording and reproducing system;

said receiver further comprising means for detecting an interruption in the supply of said clock signal to said



reference oscillator clock generator for causing said decoding means to compensate for said drop-out by using previously stored image data and for causing said reference oscillator clock generator to hold a frequency and phase determining control signal to the value thereof immediately preceding the interruption in the supply of said clock signal.

4,943,859

CIRCUIT FOR PRODUCING CLAMP PULSE HAVING PULSE WIDTH RESPONSE TO THE FREQUENCY OF A SYNCHRONIZING SIGNAL

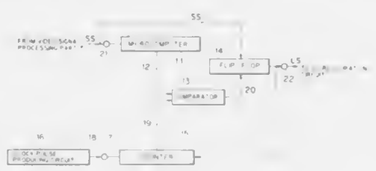
Noriaki Matsuo, Asahi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1989, Ser. No. 341,628

Claims priority, application Japan, Jul. 27, 1988, 63-185448

Int. Cl.[5] H04N *5/16, 5/18, 9/72*

U.S. Cl. 358—172 **8 Claims**



1. A clamp pulse producing circuit contained in DC restoration means for produce a clamp pulse for use in restoring a DC component lost from a video signal, comprising:

a first input means for receiving a synchronizing signal included in said video signal;

pulse width data output means connected to said first input means for outputting pulse width data responsive to a frequency of said synchronizing signal;

a flip-flop having first and second output states, which is connected to said first input means to enter the first output state in response to a trailing edge of said synchronizing signal;

measuring means connected to said flip-flop for measurinig a period of said first output state of said flip-flop to output a result of measurement; and

judging means connected to said pulse width data output means, said measuring means and said flip-flop for judging whether or not said pulse width data coincides with said result of measurement to output a first signal for bringing said flip-flop into said second output state upon a judgement on coincidence.

4,943,860

THREE-DIMENSIONAL PHOTOGRAPHING AND THREE-DIMENSIONAL PLAYBACK DEVICE BY SPATIAL TIME-SHARING METHOD

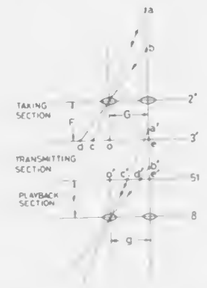
Tomohiko Hattori, 6-12, Daikou-cho 3-chome, Higashi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 28, 1989, Ser. No. 329,824

Claims priority, application Japan, Apr. 1, 1988, 63-81480

Int. Cl.[5] H04N *13/00*

U.S. Cl. 358—88 **4 Claims**



1. A three-dimensional photographing and three-dimensional playback device by spatial time sharing method comprising:

a taking section composed of a convex lens, an image pickup screen and a pin hole movable on a surface or through an inner part of said convex lens, the distance between said convex lens and said image pickup screen being equal to the focal length of said convex lens; and

a playback section composed of a lens member selected out of a cylindrical lens and a convex lens, an image output screen and a narrow opening member selected out of a vertical slit and a pin hole, which is movable on a surface or through an inner part of said lens member, the distance between said lens member and said image output screen being equal to the focal length of said lens member:

said pin hole in said taking section and said narrow opening member in said playback section being scanned in synchronization.

4,943,861

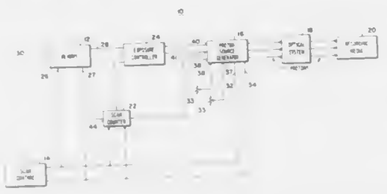
APPARATUS AND METHOD FOR EXPOSING PHOTOSENSITIVE RECORDING MEDIA WITH DIGITAL IMAGE DATA

Thomas W. Lambert, Dousman, Wis., assignor to Analogic Corporation, Peabody, Mass.

Filed Mar. 3, 1987, Ser. No. 21,308

Int. Cl.[5] H04N *5/84;* **G11B** *7/00*

U.S. Cl. 358—244 **13 Claims**



1. Apparatus for recording an image on photon sensitive recording media, comprising:

a source of image pixel data in digital form having a multiplicity of possible intensity values which multiplicity of intensity values are multiples of a lowest intensity value greater than zero;

photon generator means for exposing the photon sensitive recording media at a first fixed intensity level corresponding to the lowest intensity value greater than zero, of the pixel data, and at a second fixed intensity level which is a multiple of the first fixed intensity level; and

means for controlling the amount of time of exposure of the recording media at the first and second intensity levels in correspondence with the pixel data intensity values from the source.

4,943,862

CATHODE-RAY TUBE WITH MULTI-LAYER RESIN COATING ON FACEPLATE PROVIDING IMPLOSION PROTECTION

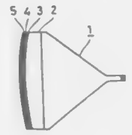
Kazuo Uesaka; Akira Yamada; Kazuyoshi Teramoto; Itsuo Nishiyama, and Kousuke Haraga, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1988, Ser. No. 155,597

Claims priority, application Japan, Feb. 12, 1987, 62-30026

Int. Cl.[5] H01J *29/87;* **H04N** *5/64*

U.S. Cl. 358—245 **12 Claims**



1. An implosion protected cathode ray tube which comprises a glass envelope having a faceplate; and a layered protective structure deposited over and positioned frontwardly of the faceplate, said layered protective structure including a first resin-coated layer held in contact with the faceplate, a hard coated layer for protecting the first resin-coated layer and a second resin-coated layer formed between the first resin-coated layer and the hard coated layer, said first resin-coated layer having a hardness which corresponds to 1H or lower of hardness of drafting pencil lead, and an elongation at breakage within the range of 65 to 85%, said first resin-coated layer also having a break strength of 3.5 kilograms per square millimeter or greater, said hard coated layer having a hardness which corresponds to 5H or higher of hardness of drafting pencil lead, and an elongation of 3% or smaller at breakage, and said second resin-coated layer having a hardness generally intermediate between the hardness of the first resin-coated layer and that of the hard coated layer and also an elongation at breakage generally intermediate between the elongation of the first resin-coated layer at breakage and that of the hard coated layer at breakage.

4,943,863

ELECTROPHOTOGRAPHIC PRINTER

Masayuki Ainoya, Katsuta, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,623

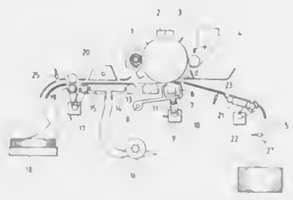
Claims priority, application Japan, Sep. 2, 1988, 63-220745

Int. Cl.[5] G03G *15/14, 21/00*

U.S. Cl. 355—271 **6 Claims**

1. In an electrographic printer for printing an image on a continuous printing sheet having a leading edge and a tail edge, the printer including a photosensitive drum which provides a toner image on its surface, a tractor for feeding the continuous printing sheet to the photosensitive drum the tractor having a given sheet feeding speed, a guide member positioned at an

image transfer position and disposed movable toward and away from the photosensitive drum for providing an intimate contact of the printing sheet with the photosensitive drum so as to transfer the toner image to the printing sheet, a gap being defined between the guide member and the photosensitive drum and toner image transfer section being defined between the photosensitive drum and the guide member, a fixing section for fixing a transferred toner image on the printing sheet, a



sheet stacker and a feed roller for feeding an image fixed sheet to the sheet stacker; the improvement comprising:

means for changing the gap between the guide member and the photosensitive drum, the changing means enlarging the gap until the leading edge of the printing sheet passes through the feed roller, and reducing the gap after the leading edge passes through the feed roller, whereby printing to the leading edge portion is performed.

4,943,864

CLOSED CIRCUIT TELEVISION APPARATUS FOR SUPERVISORY SYSTEM

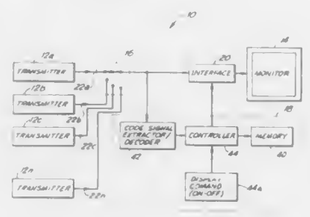
David Elberbaum, Tokyo, Japan, assignor to Elbex Video, Ltd., Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 270,579

Claims priority, application Japan, Feb. 25, 1988, 63-40617

Int. Cl.[5] H04N *7/18, 5/268, 7/10*

U.S. Cl. 358—108 **7 Claims**



1. A closed circuit television apparatus comprising:

a plurality of transmitting means for generating video signals;

a receiving means for receiving said video signals;

a switching means for selectively connecting said transmitting means to the receiving means;

each of said transmitting means including a television camera to which a specific code is allotted, a circuit for generating code signals corresponding to said specific code, and a circuit for generating composite signals wherein the code signals are injected into the video signals; and

said receiving means including a circuit for receiving said composite signals, for extracting said code signals from the received composite signals and for generating display signals identifying the television camera corresponding to the extracted code signals, and a receiver for displaying visually information corresponding to said display signals together with reproduced images or pictures corresponding to said video signals.

4,943,865

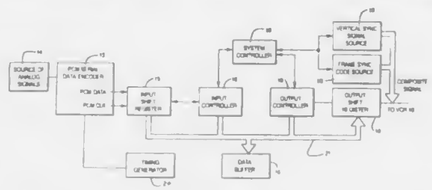
METHOD AND SYSTEM FOR RECORDING STANDARD PULSE CODE MODULATED SERIAL DATA USING VIDEO SIGNAL RECORDERS

John C. Hales, Renton, and Everett J. Nelson, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 8, 1987, Ser. No. 105,574

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—335 **13 Claims**



1. A method of recording on a video signal recorder a serialized stream of pulse code modulated digital data bits, the video signal recorder having multiple record/playback heads and being of the type normally adapted to record video signals such as television signals under the control of vertical and horizontal synchronizing signals included in the video signals, said method comprising the steps of:

successively applying data frames having a predetermined number of data bits of the serialized stream of pulse code modulated digital data bits at a given frequency to a data buffer;

increasing the frequency of the data bits of the data frames outputted from the data buffer thereby compressing in time the data frames;

developing buffer zones of filler bits providing predetermined periods of time between successive data frames;

inserting in the buffer zones vertical and horizontal synchronizing signals for controlling the timing of switching events between recording heads to occur within the predetermined periods of time and frame synchronizing codes of a predetermined number of bits for locating the data frames during playback wherein the serialized data stream can be recreated; and

applying as a composite signal successive buffer zones, including the inserted vertical and horizontal synchronizing signals and frame synchronizing codes, and the compressed data frames to a video signal recorder for recording thereby.

4,943,866

VIDEO COMPOSITION METHOD AND APPARATUS EMPLOYING SMOOTH SCROLLING

Ronald C. Barker, Weston; Chester L. Schuler, Sudbury; Kenneth C. Kiesel, Wayland, and Edwin C. Moxon, Boxboro, all of Mass., assignors to Lex Computer and Management Corporation, New York, N.Y.

Continuation of Ser. No. 556,537, Dec. 2, 1983. This application Jun. 16, 1989, Ser. No. 367,767

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **9 Claims**

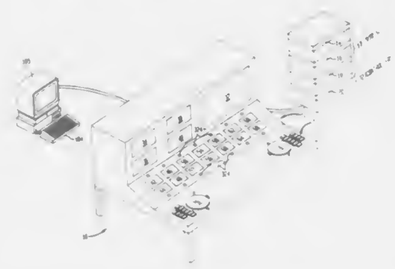
1. Apparatus for composing image source material stored on at least one image storage medium, said source material being composed of a sequence of stored frames representing a time sequential visual image, sequences of said frames being associated to form a video segment, said composing apparatus comprising:

a plurality of pictorial display means arranged in an ordered array, each display means providing a visual presentation of a video label selected from a sequence of labels, said label sequence representing a sequence of said video segments, each said selected label identifying one said video segment;

an operator control means;

a composing control means operative with said medium and said operator control means, said composing control means comprising;

means for selectively supplying each said pictorial display means with electrical data signals representing a selected one of said sequence of labels;



means responsive to said operator control means for changing the labels displayed by said plurality of pictorial display means; and

said supplying means further having means responsive to said changing means for smoothly scrolling said labels across said ordered array of display means, wherein said smoothly scrolling refers to that motion wherein it appears as though said labels were frames of a continuous imaginary film strip which was moved at a constant rate behind openings corresponding to said ordered array of said plurality of pictorial display means.

4,943,867

ELECTRONIC STILL CAMERA

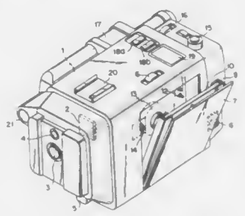
Hiroyuki Suetaka, Higashimurayama, and Shigeki Kurahashi, Akishima, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 131,662, Dec. 11, 1987, abandoned. This application Sep. 26, 1989, Ser. No. 413,438

Claims priority, application Japan, Dec. 18, 1986, 61-193677; Dec. 18, 1986, 61-299976

Int. Cl.[5] H04N *5/781*

U.S. Cl. 358—342 **15 Claims**



1. An electronic still camera comprising:

(a) optical means for forming an optical image;

(b) image sensing means for converting the optical image into an electronic signal;

(c) recording medium housing means for housing a recording medium having a number of recording areas on which still image data is recorded;

(d) designating means for designating one of the recording areas of said recording medium;

(e) area data memory means for storing area data representing a recording area designated by said designating means;

(f) recording control means for converting the electronic signal obtained from said image sensing means into still image data and recording the still image data in the recording area designated by said designating means;

(g) first operating switch means for causing the recording control means to record the still image data in only one of the recording areas;

(h) second operating switch means for sequentially updating the recording area designated by said designating means at predetermined time intervals and causing said recording control means to sequentially record the still image data in the updated recording area;

(i) reproducing control means for reproducing the still image data recorded on the recording area designated by said designating means;

(j) third operating switch means for causing said reproducing control means to reproduce the still image data from only one of the recording areas; and

(k) fourth operating switch means for sequentially updating the recording areas designated by said designating means at the same time intervals as said predetermined time intervals and causing said reproducing control means to reproduce the still image data from the update of the recording area to the next update thereof.

4,943,868

HANDY IMAGE DATA FILING APPARATUS

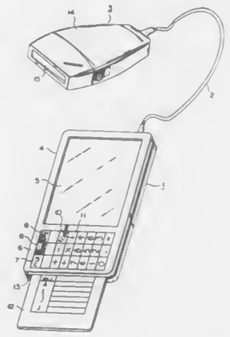
Yoshio Yoshinaga, Mitaka; Wataru Shimizu, Kodaira, and Toshio Obara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 23, 1989, Ser. No. 314,170

Claims priority, application Japan, Mar. 1, 1988, 63-48290; Mar. 1, 1988, 63-48291

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—403 **19 Claims**



1. A handy image data filing apparatus comprising:

image data reading means for reading image data on an object;

entry means for entering retrieval data which identifying the image data;

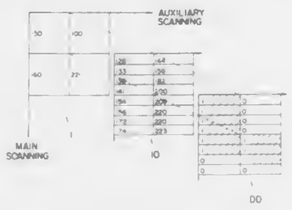
IC memory means, removably set to the apparatus, for storing the image data;

storage control means for storing into said IC memory means the image data read by said image data reading means together with the retrieval data entered by said entry means;

read control means for reading out the image data from said

IC memory means according to said retrieval data entered from said entry means;
display means for displaying the image data read out by said read control means; and
portable housing means for containing said entry means, said storage control means, said read control means, and said display means.

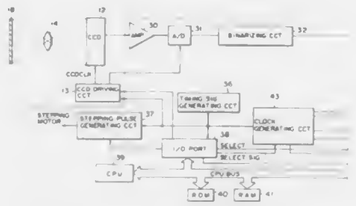
4,943,869
COMPRESSION METHOD FOR DOT IMAGE DATA
Hiroshi Horikawa; Hitoshi Urabe, and Katsutoshi Yako, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 4, 1988, Ser. No. 190,189
Claims priority, application Japan, May 6, 1987, 62-110331; May 6, 1987, 62-110332
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 **14 Claims**



1. A compression method for dot image data of the type wherein an image signal is comprised of a plurality of pixel density levels, each corresponding to a density level of a different pixel, said method comprising the steps of:
providing a threshold matrix means having n (where n is an integer value) threshold matrix values associated with each pixel, said threshold matrix means for converting said image signal to digital dot data by comparing each said pixel density level to said n threshold matrix values associated with that pixel, to produce, for each pixel, n bits of digital dot data which are re-arranged for each respective said pixel in accordance with a predetermined reference obtained from threshold matrix values of the respective said pixel,
compressing said digtial dot data by counting data having the same continuous logical values, from at least one of a top and an end of the dot data thus obtained, in increments of a predetermined unit so as to produce compression data corresponding to a number of units from the at least one of a top and end thereof, and
leaving digital dot data which are not compressed in said compressing step in un-encoded form.

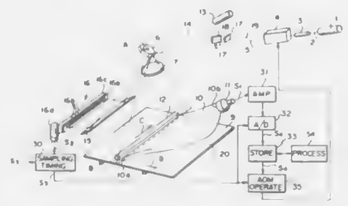
4,943,870
IMAGE MAGNIFY/REDUCE APPARATUS
Kiyohisa Sugishima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 116,255, Nov. 3, 1987, abandoned. This application Oct. 30, 1989, Ser. No. 428,415
Claims priority, application Japan, Nov. 10, 1986, 61-265651
Int. Cl.[5] H04N *1/04, 1/17*
U.S. Cl. 358—451 **19 Claims**

1. An image magnifying and/or image reducing apparatus comprising:
image signal generating means for generating an image signal in units of a line; and
processing means for processing an image signal generated in units of a line by said image signal generating means,
wherein said processing means includes at least one of (1) means for magnifying and (2) means for reducing an image signal generated in units of a line, to output a variably-magnified or variably-reduced signal, respectively, and said magnifying means or reducing means, respectively, is



capable of changing a magnifying or reducing factor, respectively, by gradation for each N lines, N being a positive integer.

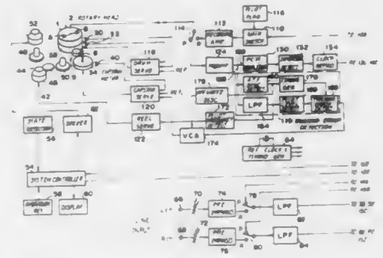
4,943,871
IMAGE READ-OUT AND REPRODUCING APPARATUS
Ichirou Miyagawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 17, 1989, Ser. No. 324,882
Claims priority, application Japan, Mar. 19, 1988, 63-66749
Int. Cl.[5] H04N *1/12*
U.S. Cl. 358—496 **6 Claims**



1. An image read-out and reproducing apparatus comprising:
(i) a read-out means for scanning a recording medium, on which image information has been recorded, in a main scanning direction with reading light which has impinged from a first direction upon a light deflector and been reflected and deflected thereby, the main scanning being carried out a large number of times, moving said recording medium in a sub-scanning direction, which is approximately normal to the main scanning direction, with respect to said reading light, and obtaining an image signal representing the image information by detecting light which is emitted by said recording medium in response to the reading light during the main scanning and the sub-scanning,
(ii) a reproducing means for scanning a recording sheet, which is capable of reproducing image information thereon, in the main scanning direction with reproducing light which has impinged from a second direction different from said first direction upon said light deflector and been reflected and deflected thereby, the main scanning being carried out a large number of times, moving said recording sheet in the sub-scanning direction with respect to said reproducing light, and reproducing an image on said recording sheet by using said image signal, and
(iii) a monitor light detector extending in a direction corresponding to the main scanning direction in order to monitor positions of said reading light and said reproducing light on main scanning lines of the recording medium and the recording sheet, respectively, by being exposed to monitor light which has impinged from a third direction different from said first and second directions upon said light deflector and been reflected and deflected thereby, and detecting said monitor light,
wherein read out in each main scanning is started when said monitor light is irradiated onto a first position on said monitor light detector, and
reproduction in each main scanning is started when said monitor light is irradiated onto a second position on said monitor light detector,
so that a position at which read out is started in each main scanning with said reading light and a position at which reproduction is started in each main scanning with said reproducing light approximately coincide with each other in the main scanning direction.

4. An image read-out and reproducing apparatus comprising:
(i) a read-out means for scanning a recording medium, on which image information has been recorded, in a main scanning direction with reading light which has impinged from a first direction upon a light deflector and been reflected and deflected thereby, the main scanning being carried out a large number of times, moving said recording medium in a sub-scanning direction, which is approximately normal to the main scanning direction, with respect to said reading light, and obtaining an image signal representing the image information by detecting light which is emitted by said recording medium in response to the reading light during the main scanning and the sub-scanning,
(ii) a reproducing means for scanning a recording sheet, which is capable of reproducing image information thereon, in the main scanning direction with reproducing light which has impinged from a second direction different from said first direction upon said light deflector and been reflected and deflected thereby, the main scanning being carried out a large number of times, moving said recording sheet in the sub-scanning direction with respect to said reproducing light, and reproducing an image on said recording sheet by using said image signal, and
(iii) a monitor light detector extending in a direction corresponding to the main scanning direction in order to monitor positions of said reading light and said reproducing light on main scanning lines of the recording medium and the recording sheet, respectively, by being exposed to monitor light which has impinged from a third direction different from said first and second directions upon said light deflector and been reflected and deflected thereby, and detecting said monitor light,
wherein a main-scanning start edge detector is located prior to points at which each main scanning with said reading light on a main scanning line and each main scanning with said reproducing light on a main scanning line are started.
read out in each main scanning is started a first predetermined time after said reading light is irradiated onto said main-scanning start edge detector, and
reproduction in each main scanning is started a second predetermined time after said reproducing light is irradiated onto said main-scanning start edge detector,
so that a position at which read out is started in each main scanning with said reading light and a position at which reproduction is started in each main scanning with said reproducing light approximately coincide with each other in the main scanning direction.

4,943,872
SYSTEM OF FAST REPRODUCTION AT NON-INTEGRAL MULTIPLE OF NORMAL PLAYBACK SPEED
Shohei Yamazaki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Continuation of Ser. No. 151,257, Feb. 1, 1988, abandoned. This application Aug. 18, 1989, Ser. No. 396,736
Claims priority, application Japan, Feb. 4, 1987, 62-24273
Int. Cl.[5] G11B *5/00, 5/09*
U.S. Cl. 360—8 **4 Claims**



1. A magnetic recording and reproducing device, comprising:
a rotary head incorporating plural heads having different azimuths for recording and reproducing an input signal by tracing a magnetic tape, the recorded magnetic tape including predetermined portions containing sub-code information separate from other information;
processing means for separating the sub-code information from the other information during reproduction from the magnetic tape; and
tape feeding drive means for feeding the magnetic tape during an increased speed reproduction with a substantially constant tape feeding speed within a range of about $N + \frac{1}{4}$ to about $N + \frac{3}{4}$ (where N is an integer not including zero) times a tape feeding speed during a normal speed reproduction, whereby sub-code information recorded in sub-code regions of the magnetic tape can be reproduced substantially in real-time.

4,943,873
ROTARY HEAD TYPE DIGITAL-AUDIO REPRODUCING DEVICE WITH IMPROVED TRACK-DEVIATION DETECTING SYSTEM
Ken-ichiro Kawasaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 21, 1987, Ser. No. 98,826
Claims priority, application Japan, Sep. 20, 1986, 61-220837
Int. Cl.[5] G11B *5/584*
U.S. Cl. 360—77.15 **23 Claims**

1. In a rotary head type digital-audio reproducing system comprising means for reading a plurality of signals, including digital signals, tracking pilot signals (f_1) and SYNC signals (f_2, f_3) said plurality of signals being recorded on each of at least first, second and third adjacent, oblique tracks in a longitudinal direction on a recording medium, said tracking pilot signals and said SYNC signals being recorded, in each of a plurality of recording regions, at various predetermined locations along said tracks and in a predetermined pattern with respect to said recording regions, said recording regions being independent of each other with respect to the longitudinal direction, and said second adjacent rack being provided in between said first and third adjacent tracks, said means for reading including two rotary heads (A, B) each being provided for reading said plurality of signals, within a predetermined width, recorded on

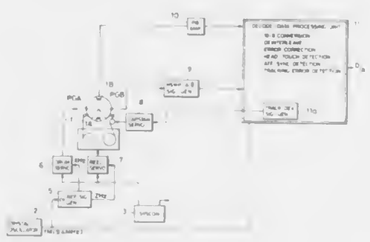
VOL 1116 ISS 4 JL 24 1990 UMI

said recording medium, and providing an output including a reproduction of one of said adjacent tracks, said predetermined width being larger than a width of at least said second adjacent track,

wherein the locations of the recording patterns of said pilot signals and said SYNC signals recorded on said first, second and third adjacent tracks differ from each other, cross talk of said pilot signals on said first and third tracks is present in said output of each of said rotary heads, and a servo means is provided for controlling each of said rotary heads to operate on-track track in response to a level of a difference of said cross talk of said pilot signals on said first and third adjacent tracks,

the improvement comprising:

pilot signal detecting means for detecting a rise in said pilot signals from said output of a respective one of said rotary heads;



holding means for sampling and holding a level of said cross talk of said pilot signals on said first adjacent track in response to sampling signals; and

means responsive to an output from said pilot signal detecting means for generating said sampling signals after a predetermined period has passed from detection of said rise in said pilot signals by said pilot signal detecting means.

wherein said servo means is controlled by generating a signal exhibiting a quantity of track-deviation from a track being read by one of said rotary heads, said track being read corresponding to said second track, said quantity of track-deviation corresponding to the level held by said holding means and a level of said cross talk of said pilot signals on said third adjacent track after an elapsed time which is measured from said sampling and becomes equal to said predetermined period.

4,943,874

TAPE TENSION CONTROLLER FOR A CASSETTE RECORDING/PLAYBACK APPARATUS

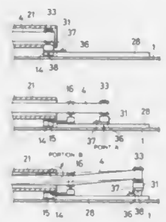
Hidekazu Takeda, Katuta; Kyuichirou Nagai, Fujisawa; Kenji Ogiro, Yokohama; Mitsuji Aman, Mito, and Kouhei Takita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 930,353, Nov. 13, 1986, abandoned. This application Oct. 12, 1988, Ser. No. 258,103
Claims priority, application Japan, Nov. 13, 1985, 60-252874
Int. Cl.[5] G11B *15/32*
U.S. Cl. 360—85 **7 Claims**

1. A magnetic tape recording/reproducing apparatus adapted for receiving a tape cassette wherein the cassette has upper and lower walls and an opening for withdrawing the tape from the cassette, the upper and lower walls having inner surfaces adjacent the tape, and wherein the tape is contained on a supplying reel having a reel base supported for rotation between the walls, comprising:

a chassis and a head cylinder having a cylindrical wall mounted on said chassis for recording and/or reproducing signals on the tape, said cylinder wall having a tape path that changes the height of the tape transverse to the direction of travel of the tape as the tape travels around the cylinder wall;

tape loading means for withdrawing the tape from the cassette from the cassette opening and guiding the tape toward the head cylinder and for winding the tape onto the cylindrical wall so that an edge of the tape adjacent



one of said upper and lower cassette walls is wound onto the cylindrical wall of the head cylinder at a point that differs in height from the corresponding inner surface of said one cassette wall; and

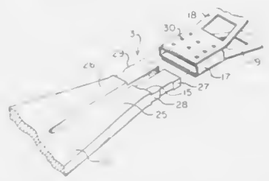
means mounted on said chassis between the opening of the cassette and the head cylinder for preventing engagement of said edge of the tape with the inner surface of said one cassette wall.

4,943,875

MAGNETIC DISK FILE HEAD SUSPENSION ASSEMBLY MOUNTING MEANS

John R. Reidenbach, and Robert E. Schopp, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1988, Ser. No. 257,256
Int. Cl.[5] G11B *5/49, 21/16*
U.S. Cl. 360—104 **24 Claims**



5. The disk file of claim 3 wherein said head-suspension means comprises a relatively thin and flexible metallic member operable to compliantly support said transducing head relative to the recording surface of said disk, and wherein said actuator-arm means comprises a relatively thick and rigid metallic member operable to noncompliantly support said subassembly.

4,943,876

MAGNETIC HEAD POSITIONING APPARATUS FOR FLOPPY DISK DRIVE

Tutomu Kawahara, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

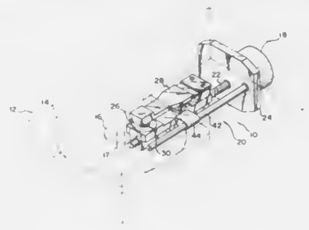
Continuation of Ser. No. 126,230, Nov. 27, 1987, abandoned. This application Nov. 2, 1989, Ser. No. 430,930
Claims priority, application Japan, Nov. 29, 1986, 61-284558
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 **3 Claims**

1. A magnetic head positioning apparatus for floppy disk drives for moving a first magnetic head along a destination track of a floppy disk which is supported and rotated by a drive

shaft, said first magnetic head being moved in a radial direction of the floppy disk, and said drive shaft extending from a base of the floppy disk drive coaxial with an axis of rotation of the floppy disk, said apparatus comprising:

a carriage including a carriage body which as a central axis extending in parallel to a surface of the floppy disk, and a carriage arm opposed to the carriage body and having a central axis, said first magnetic head being fixed to the carriage body;

a lead screw engaging the carriage and having an axis parallel to the central axis of the carriage body, said axis of the lead screw being located in a plane which includes the central axis of the carriage body, the central axis of the



carriage arm, and a center of gravity of the carriage, and which perpendicularly intersects a plane including the surface of the floppy disk, said lead screw having a first end portion located between the base and the floppy disk and close to the drive shaft, and a second end portion located outside of a periphery of the floppy disk;

drive means for rotating the lead screw around the lead screw axis;

conversion means for converting rotation of the lead screw into a linear motion of the carriage along the lead screw axis; and

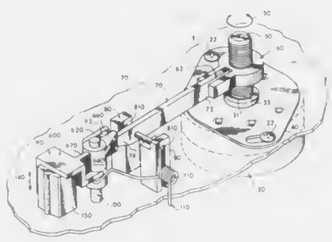
rotation preventing means for preventing the carriage from rotating around the lead screw axis.

4,943,877

FINE HEAD POSITIONING SYSTEM FOR A TAPE BACKUP DEVICE

Thomas G. Cannon, Loveland; Bruce D. Roemmich, Fort Collins, and Terry A. Precht, Loveland, all of Colo., assignors to Colorado Memory Systems, Inc., Loveland, Colo.

Continuation of Ser. No. 280,507, Dec. 6, 1988, Pat. No. 4,858,047. This application Jul. 11, 1989, Ser. No. 378,013
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—106 **16 Claims**



1. A fine tape head positioning system in a tape cartridge drive back-up system for positioning a magnetic tape head, said system comprising:

an elongated rotating lead screw providing rotational bi-directional movement,

a follower nut threadingly engaging said elongated rotating lead screw,

an elongated lever arm, said elongated lever arm having a first end engaging said follower nut to cause said follower nut to move upwardly or downwardly along said elongated rotating lead screw depending upon the direction said elongated rotating lead screw rotates and whereby said first end of said elongated lever arm moves upwardly and downwardly as said follower nut moves upwardly and downwardly,

means connected to said elongated lever arm for pivoting said elongated lever arm at a first predetermined distance from said first end,

a head mounting assembly, said head mounting assembly comprising:

(a) said magnetic tape head being mounted to a first portion of said head mounting assembly, and

the second end of said elongated lever arm engaging a second portion of said head mounting assembly at a second predetermined distance from said pivoting means,

means oriented in the same direction as and parallel to said elongated rotating lead screw and engaging said head mounting assembly for slidably engaging said mounting assembly, so that as said elongated rotating lead screw rotates to move said first end of said elongated lever arm upwardly said second end of said elongated lever arm moves said mounting assembly downwardly along said engaging means, and so that as said elongated rotating lead screw rotates to move said first end of said elongated lever arm downwardly said second end of said elongated lever arm moves said mounting assembly upwardly along said engaging means and said engaging means and said pivoting means operating on said elongated lever arm so as to maintain said follower nut in a fixed relationship to said elongated lever arm, and

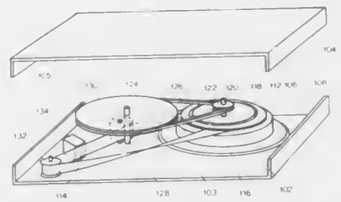
means abutting said head mounting assembly for biasing said head assembly in a direction which causes said first end of said elongated lever arm to firmly engage said follower nut so that as said follower nut moves upwardly and downwardly along said lead screw, said elongated lever arm pivots about said pivoting means to correspondingly move downwardly and upwardly along said engaging means.

4,943,878

ULTRA-COMPACT RECORDER

Yong-En Lin, 64-41 Saunder St., #610, Rego Park, N.Y. 11374

Continuation-in-part of Ser. No. 166,561, Mar. 9, 1988. This application Feb. 28, 1989, Ser. No. 314,775
Claims priority, application China, Jun. 16, 1987, 87104137
Int. Cl.[5] G11B *15/26, 23/087*
U.S. Cl. 360—90 **19 Claims**



1. An apparatus for recording and reproducing signals on a tape medium wherein the drive system comprises a tape reel with a central aperture, a flat disc shaped motor mounted coaxially within the central aperture of the tape reel.

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4,943,879

THIN FILM MAGNETIC HEAD INCLUDING MAGNETIC LAYERS HAVING HIGH SATURATION MAGNETIC FLUX DENSITY AND METAL FILM FOR AVOIDING DETERIORATION DURING MANUFACTURING

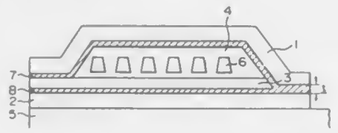
Hisashi Takano, Kokubunji; Yoshihiro Hamakawa, Koganei; Kazuo Shiiki, Kanagawa; Shigekazu Otomo, Sayama, and Noriyuki Kumasaka, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1987, Ser. No. 85,719

Claims priority, application Japan, Aug. 22, 1986, 61-195383; Jan. 14, 1987, 62-4820

Int. Cl.[5] G11B *5/147*

U.S. Cl. 360—126 **17 Claims**



1. A thin film magnetic head having a head gap end and a back end comprising:

first and second magnetic layers magnetically coupled at said back end of the magnetic head to form a magnetic core, each of said magnetic layers being of a material having a saturation magnetic flux density greater than that of a Ni-Fe alloy, said second magnetic layer being supported by a base layer;

a non-magnetic material layer interposed between said first and second magnetic layers for forming a gap of the magnetic head at said head gap end;

an electrically insulating layer made of an organic material provided between said first magnetic layer and said non-magnetic layer so that turns of coil wound about said magnetic core are partly formed in electrically insulated relation within said electrically insulating layer; and

a metal film formed on a portion of said non-magnetic material layer and extending on said electrically insulating layer so that said electrically insulating layer does not contact with said first magnetic layer thereby suppressing reaction between said electrically insulating layer and said first magnetic layer.

4,943,880

DISK LOCKING MECHANISM FOR DISK CARTRIDGE

Robert A. Muehlhausen, May Township, Washington County, and John F. Fairchild, Hugo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

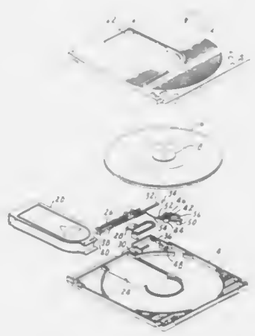
Filed Nov. 14, 1988, Ser. No. 270,359

Int. Cl.[5] G11B *23/03*

U.S. Cl. 360—133 **3 Claims**

1. A locking mechanism for a disc cartridge including a housing enclosing a recording disc for rotation within said housing and shutter means movable between a closed position preventing access to the disc through said housing and an open position providing access to the disc through the housing, said locking mechanism comprising:

a locking lever pivotally mounted to said housing and having a first end for contact with said disc and a second end disposed opposite the pivotal mounting of said locking lever for contact with said shutter means when said shutter means is in said closed position so that said first end of



said locking lever is forced into contact with said disc when said shutter means is in said closed position.

4,943,881

HEAD SUPPORTING STRUCTURE IN DISK DRIVE SYSTEM FOR DOUBLE SIDED FLEXIBLE DISK

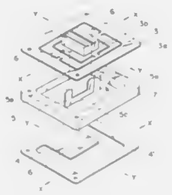
Shin Isozaki, Kamakura, and Michio Yagi, Hachioji, both of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 19, 1988, Ser. No. 221,224

Claims priority, application Japan, Jul. 29, 1987, 62-187834

Int. Cl.[5] G11B *5/48*

U.S. Cl. 360—104 **7 Claims**



1. A supporting structure for a dual magnetic head for use with a disk drive system for a double sided flexible disk (10) having:

a. a first magnetic core head (1') and a second magnetic core head (1), said first head (1') being disposed on a first side (1'') of said flexible disk (10) and said second head (1) being disposed on a second side (0'') of said flexible disk (10), said first side (1'') comprising a first data storage surface and said second side (0'') comprising a second data storage surface;

b. a first leaf spring gimbal (3') for supporting said first magnetic core head (1') said first leaf spring gimbal (3') allowing said first magnetic core head (1') to pitch and to roll as well as to move normally to said first data storage surface;

c. a second leaf spring gimbal (3) for supporting said second magnetic core head (1), said second leaf spring gimbal (3) allowing said second magnetic core head (1) to pitch and to move normally to said second data storage surface (0''), and

d. a cantilever leaf spring (4) connected to said second leaf spring gimbal (3), said cantilever leaf spring (4) preventing rolling of said second magnetic core head (1),

wherein a first end of said cantilever leaf spring is fixed at places placed apart in a radial direction with respect to said disk (10), said cantilever leaf spring provided with a second end, remote from said first end, slidably connected to a central portion (3*b*) of said second leaf spring gimbal (3) to form slidable joints.

4,943,882

THIN-FILM, PERPENDICULAR MAGNETIC RECORDING AND REPRODUCING HEAD

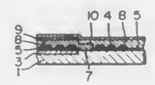
Toshiaki Wada, and Akio Murata, both of Mishima-gun, Japan

Continuation-in-part of Ser. No. 42,250, Apr. 24, 1987, abandoned. This application Dec. 23, 1988, Ser. No. 289,422

Claims priority, application Japan, Feb. 9, 1987, 62-28695

Int. Cl.[5] G11B *5/147*

U.S. Cl. 360—126 **18 Claims**



1. A thin-film, perpendicular magnetic recording and reproducing head comprising:

a magnetic substrate which has a mechanochemically polished principal surface, said magnetic substrate being formed of a magnetic material having a principal surface and a nonmagnetic material located in a plurality of grooves in said principal surface;

a thin-film conductor coil located on said polished principal surface of said magnetic substrate;

a first insulating layer of an inorganic oxide covering said magnetic substrate and said conductor coil, said first insulating layer having a thickness of 0.3 to 3.0 μm and including a via hole formed therein which extends to said principal surface of said magnetic substrate and exposes a surface portion thereof;

a first main pole located on the surface of said first insulating layer and said exposed surface portion of said magnetic substrate;

a second insulating layer of an inorganic oxide covering said first main pole and said first insulating layer and being polished to flatten the surface of said second insulating layer to remove its uneveness and leave an exposed finely polished surface portion of said first main pole;

a flat second main pole provided on said finely polished exposed surface portion of said first main pole and polished surface of said second insulating layer, said second main pole having a small thickness; and

a protective overcoat covering said second main pole and said second insulating layer;

an exposed end face of the thin-film magnetic head opposite a magnetic recording medium being composed of the magnetic substrate, the nonmagnetic material in the grooves in said magnetic substrate, the first insulating layer which covers the conductor coil, the second insulating layer, the second main pole and the protective overcoat.

4,943,883

QUARTERNARY AMORPHOUS MAGNETIC ALLOY THIN FILM AND MAGNETIC HEAD INCLUDING SAME

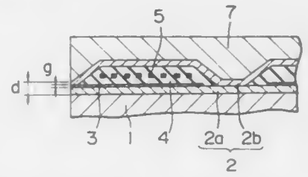
Masaaki Sano; Takao Imagawa; Kouichi Nishioka, all of Hitachi; Shinji Narishige; Masanobu Hanazono, both of Mito; Takashi Ouishi, Hiratsuka, and Toshihiro Yoshida, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1988, Ser. No. 266,080

Claims priority, application Japan, Nov. 9, 1987, 62-282850

Int. Cl.[5] G11B *5/147*

U.S. Cl. 360—126 **12 Claims**



1. A thin film magnetic head comprising:

a first and a second thin film made of a magnetic material, disposed so as to form a closed magnetic circuit; and

an intermediate film made of a non-magnetic material, disposed between said first and said second thin films so as to form a magnetic gap at a part of said magnetic circuit;

wherein at least one of said first and said second thin films is made of a quaternary amorphous magnetic alloy, whose principal component is cobalt and which contains hafnium, tantalum and palladium.

4,943,884

SERIES-EXCITED PARALLEL-LOADED RESONANT CIRCUIT

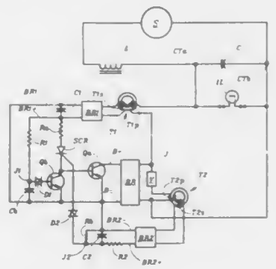
Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Filed Jan. 23, 1985, Ser. No. 693,880

The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.

Int. Cl.[5] H02H *3/12*

U.S. Cl. 361—15 **13 Claims**



1. An arrangement operable to power a load from a source of AC voltage, comprising:

an L-C circuit operable to be series-connected across said source, said L-C circuit being resonant at or near the frequency of said AC voltage and having a tank-inductor and a tank-capacitor;

connect means operable to connect said load in parallel-circuit with said tank-capacitor;

voltage-limiting means connected in parallel-circuit with said tank-capacitor, said voltage-limiting means being operative to conduct current, but only when said load is

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inoperative to keep the magnitude of the voltage across said tank-capacitor below a certain level; and

control means operative to substantially cause a short circuit to be applied across the tank-capacitor in case current flows through said voltage-limiting means for more than a brief period.

4,943,885

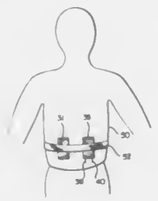
REMOTELY ACTIVATED, NONOBVIOUS PRISONER CONTROL APPARATUS

Brian D. Willoughby, 7407 Berkshire Dr., Clinton, Md. 20735, and Carl W. Roy, II, 9655 Ridgeview Dr., Owings, Md. 20736

Filed Feb. 16, 1988, Ser. No. 155,736

Int. Cl.[5] H01T *23/00*

U.S. Cl. 361—232 **5 Claims**



1. Apparatus for control of a dangerous prisoner to prevent unpredictable dangerous actions by said dangerous prisoner while in social context situations while nevertheless concealing such apparatus from public view, comprising:

incapacitant delivery means,

torso mounting means comprising a belt of sufficient extent to encircle a prisoner's torso and means for securing said incapacitant delivery means in contact with said prisoner's torso,

said mounting means being adapted for concealment beneath garments ordinarily worn by ordinary persons in said social context to prevent said prisoner from being marked by observers in said social context as a person under restraint,

said incapacitant delivery means being powered to deliver an incapacitating electrical shock to said prisoner,

said mounting means further including means for receiving a remotely activated signal, and

means in said mounting means responsive to said signal for delivering said incapacitating electrical shock to said prisoner.

4,943,886

CIRCUITRY FOR LIMITING CURRENT BETWEEN POWER INVERTER OUTPUT TERMINALS AND GROUND

Fazle S. Quazi, Boulder, Colo., assignor to Etta Industries, Inc., Boulder, Colo.

Filed Feb. 10, 1989, Ser. No. 308,515

Int. Cl.[5] H05B *41/29*

U.S. Cl. 361—42 **17 Claims**

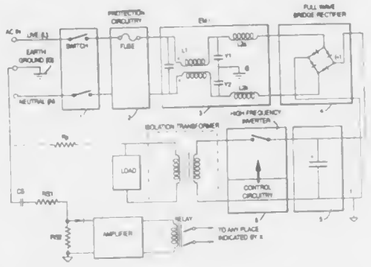
1. Circuitry for limiting a high frequency current through a load comprising:

a DC voltage source having at least two output terminals where the DC voltage occurs at a first of the terminals and the second of the output terminals is connected to a circuit ground;

inverter means for converting the DC voltage to said high frequency current, the inverter means having at least two output terminals where one of said output terminals is connected to said circuit ground;

a chassis containing said voltage source and said inverter means where the chassis is connected to an earth ground and where said earth ground and said circuit ground are at different electric potentials;

sensing means connected between said earth ground and one of said two output terminals of the voltage source to establish a current path from the earth ground to said one output terminal of the voltage source to thus monitor any



high frequency current which may flow through a resistance connected between one of the output terminals of the inverter means and said earth ground; and

limiting means responsive to said sensing means for limiting the high frequency current through the resistance in response to the current through the resistance exceeding a predetermined limit.

4,943,887

FREQUENCY-DEPENDENT OVERVOLTAGE PROTECTIVE DEVICE FOR HIGH VOLTAGE APPLIANCES

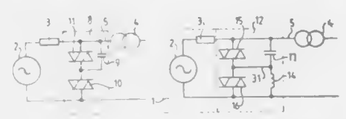
Ajit K. Bose, Nijmegen, Netherlands, assignor to Smit Transformation B.V.

Filed May 20, 1988, Ser. No. 196,564

Claims priority, application Netherlands, May 22, 1987, 8701238

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 **20 Claims**



1. Apparatus for protecting an electrical appliance against supply overvoltage and against internal resonance overvoltage phenomena which comprises an asymmetrical impedance/-capacitive electrical circuit which comprises a first conductor extending from a supply voltage network and the electrical appliance and a second conductor extending from the electrical appliance back to the supply voltage network, a series connection of two voltage-dependent impedance means connected across the first and second conductors for establishing a safety voltage level to protect the electrical appliance against said supply overvoltage and defining a junction between such two voltage-dependent impedance means, and capacitor means connected in parallel with only one of said voltage-dependent impedance means for protecting, in conjunction with the other of said voltage-dependent impedance means, against said internal resonance overvoltage phenomena.

4,943,888

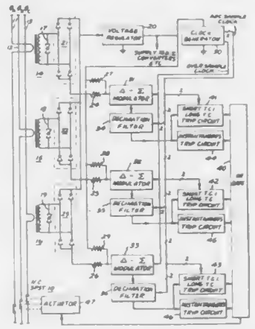
ELECTRONIC CIRCUIT BREAKER USING DIGITAL CIRCUITRY HAVING INSTANTANEOUS TRIP CAPABILITY

Philippe L. Jacob; Sharbel E. Noujaim, both of Clifton Park; Glenn A. Forman, Schenectady, all of N.Y., and John A. Mallick, Bridgeport, Conn., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 10, 1989, Ser. No. 377,373

Int. Cl.[5] H02H *2/08*

U.S. Cl. 361—96 **18 Claims**



11. An electronic circuit breaker for an n-conductor power line, n being an integer at least one, said electronic circuit breaker comprising:

respective means for providing an analog indication of the amplitude of current flow in each of the n conductors of said power line;

a respective delta-sigma modulator of the oversampled type for converting each of said analog indications into a respective succession of bits indicative of the amplitude of current flow in each of the n conductors in said power line;

means, responding to said successions of bits indicative of the amplitudes of current flow in each of the n conductors in said power line being indicative that any of said current flows is excessive, for generating an actuating signal; and

means responsive to said actuating signal for interrupting conduction through said n-conductor line.

4,943,889

ELECTROSTATIC CAPACITOR TYPE SENSING DEVICE

Naoyuki Ohmatoi, 10-12, 2-chome, Kugenuma, Matsugaoka, Fujisawa-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 201,786, Jun. 3, 1988, abandoned. This application Aug. 18, 1989, Ser. No. 396,248

Claims priority, application Japan, Jul. 3, 1989, 1-171731

Int. Cl.[5] H01G *7/00*

U.S. Cl. 361—284 **6 Claims**

1. An electrostatic capacitance type sensing device comprising:

a first electrode to be placed in the proximity of an object to be measured;

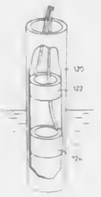
a second electrode placed in the proximity of said first electrode;

a film like dielectric spacer means interposed between said first and said second electrodes;

a first resistor, one end of which is connected to one end of said first electrode;

a second resistor, one end of which is connected to one end of said second electrode;

an a.c. signal generator connected to the other ends of said first and the second resistors and to the ground; and



a phase difference detecting means connected to said first and the second electrodes.

4,943,890

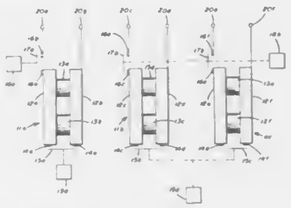
SOLID STATE MOTOR STARTER

Robert W. Schaltenbrand; Brian Seman, both of Allison Park, and Donald Shepherd, Saxonburg, all of Pa., assignors to Benshaw, Inc., Glenshaw, Pa.

Filed Jul. 19, 1989, Ser. No. 382,727

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—388 **42 Claims**



1. A starter control assembly comprising:

at least two electrically conducting heat sink members in spaced relation from each other;

at least one solid state control device being physically and electrically connected intermediate said heat sink members;

at least one of said heat sink members being a line heat sink;

connector means for receiving a source of electrical power;

at least one of said heat sink members being a load heat sink having means for delivering electrical power to a load;

at least one stationary contact mounted on one of said heat sinks; and

at least one movable contact means selectively engaging said stationary contact and establishing electrical current path between at least one of a shunting path between said line and load heat sinks, and an incoming path between said connector means and said line heat sink.

4,943,891

MICROELEMENT AND BASE ASSEMBLY

Alan Ouellette, 17 Graham Rd., East Hartford, Conn. 06118

Continuation-in-part of Ser. No. 252,032, Sep. 28, 1988, abandoned, and a continuation-in-part of Ser. No. 122,505, Dec. 17, 1985, abandoned. This application Jul. 11, 1989, Ser. No. 378,409

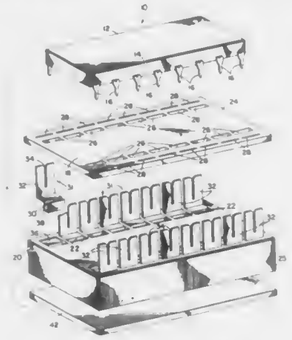
Int. Cl.[5] H05K *7/00*

U.S. Cl. 361—392 **8 Claims**

1. An assembly comprising an electronic circuit microelement having a body of insulating material which houses active circuit elements and also having a plurality of similar electrically conductive terminals which extend from opposite sides of

VOL 1116 ISS 4 JL 24 1990 UMI

the body, each of said terminals being bent so that the terminals project in two spaced apart parallel series in the same direction, and each terminal having a free end portion adapted to make electrical contact, a base for mounting the microelement for selective external electrical connection and for electrical interconnection of its terminals, said base being of insulating material and having two spaced apart parallel series of upwardly open recesses its top surface, an associated plurality of electrically conductive connectors each with a free end portion projecting upwardly from the top surface of the base and



with a lower end portion, said lower end portion being received respectively in an upwardly open recess in the base, the bottom surface of said base being substantially flat and continuous, and said connectors being engageable in electrically conductive contact respectively with said free end portions of said terminals when the microelement is positioned on said top surface of the base with the terminals projecting downwardly into said recesses in the base, and said upwardly projecting free end portions of said connectors being of sufficient length as to be readily accessible for electrical connection above the top surface of the microelement mounted on the base.

4,943,892

SOLID ELECTROLYTIC CAPACITOR AND METHOD FOR MANUFACTURING THE SAME

Sohji Tsuchiya, Kanagawa; Yasuo Kudoh, Yokohama; Toshikuni Kojima, Kawasaki; Masao Fukuyama, and Susumu Yoshimura, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1989, Ser. No. 331,204

Claims priority, application Japan, Mar. 31, 1988, 63-80770; Jun. 9, 1988, 63-142136; Jun. 9, 1988, 63-142137; Sep. 9, 1988, 63-227022; Feb. 20, 1989, 1-39910

Int. Cl.[5] H01G *9/00*; B01J *17/00*

U.S. Cl. 361—525 **25 Claims**



1. A solid electrolytic capacitor which comprises a capacitor element including a valve metal member capable of forming a dielectric oxide film thereon, a dielectric oxide film formed on the valve metal member, a manganese dioxide layer formed on the dielectric oxide film, a conductive polymer film formed on the manganese dioxide layer by electrolytic polymerization, and terminals formed on the valve metal member and the conductive polymer film, respectively.

4,943,893

AUTOMOTIVE ILLUMINATION SYSTEM

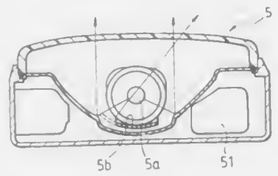
Hiroki Shibata; Kazuki Takahashi; Keiichi Tajima; Takashi Kurita; Kiyoshi Wada, and Kiyoshi Yamashita, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1988, Ser. No. 245,188

Claims priority, application Japan, Sep. 16, 1987, 62-229874

Int. Cl.[5] B60Q *1/12*

U.S. Cl. 362—37 **8 Claims**



1. An illumination system for a vehicle, comprising: four headlamps provided on a front portion of said vehicle, two of said headlamps producing illuminating beams having a direction of illumination fixed in substantially the same as the straight-ahead direction of said vehicle, and the other two of said headlamps each comprising a bulb, a fixed main reflector having a pair of main reflecting surfaces, a rotatable auxiliary reflector, and means for continuously changing a rotational position of said rotatable reflector in conjunction with the steering of said vehicle, said rotatable reflector being positioned behind said bulb between main reflecting surfaces of said main reflector, said rotatable reflector having a range of rotation outside a light path between said bulb and said main reflecting surfaces so that an illumination pattern in said straight ahead direction produced by said main reflecting surfaces is substantially unaffected by rotation of said auxiliary reflector.

4,943,894

PROJECTOR-TYPE HEAD LAMP FOR VEHICLES

Yutaka Nakata, Isehara, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,574

Claims priority, application Japan, Jun. 14, 1988, 63-144676

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 362—61 **7 Claims**



1. A projector-type head lamp for vehicles, comprising a

reflector having an optical axis, a lamp bulb operable as a light source, having a filament horizontally disposed in a direction perpendicular to said optical axis, a shade having an optically effective cut-off edge which blocks a part of the rays of light emitted from said light source and reflected at said reflector to shape a bright-dark boundary, and a convex lens disposed in an area defined by the light beam shaped by said shade and having a focus near the upper center of the cut-off edge of said shade,

the inner reflecting surface of said reflector having a main reflecting area including a part of a spheroid having a first focus near the center of said filament and a second focus near the center of said cut-off edge, at least parts of said main reflecting area being located above or below the horizontal plane in which said optical axis lies and which define multiple largely slanted filament images on the screen being formed as sub reflecting areas having such reflecting characteristics as to shift said filament images horizontally.

4,943,895

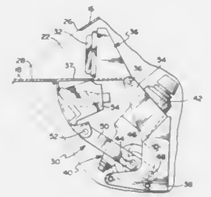
RETRACTABLE HEADLAMP ASSEMBLY

Darrell L. Brandenburg, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 24, 1989, Ser. No. 342,206

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 362—66 **3 Claims**



1. In combination with a motor vehicle the front end of which is provided with an opening for a lamp, a support housing mounted to the rear of said opening for pivotal movement about a horizontal axis, a first lamp for projecting a beam of high intensity light forwardly of the vehicle mounted on said support housing, a second lamp for projecting a beam of low intensity light forwardly of the vehicle mounted on said support housing, and actuator means carried by the vehicle and connected to said support housing for selectively pivoting said support housing about said horizontal axis between a first position wherein said first lamp is located in said opening and the second lamp is concealed by a first portion of said front end of the vehicle and a second position wherein said second lamp is located in said opening and said first lamp is concealed by a second portion of said front end of the vehicle.

4,943,896

PRODUCTION OF IMPROVED INFANT CARE ARTICLES

Tony Johnson, Rte. 4, Box 4471, Bullard, Tex. 75757

Filed Nov. 21, 1988, Ser. No. 273,904

Int. Cl.[5] F21V *9/16*

U.S. Cl. 362—84 **19 Claims**

1. A process for producing infant care articles having one or more components formed of a plastic material by molding or extrusion, so that at least one of such components has the property of phosphorescent emission of light radiation visible to the human eye in a darkened environment, comprising the steps of

selecting a non-toxic, non-irritating phosphorescent pigment material for addition to the plastic material from which one or more components of the infant care article is to be formed, such phosphorescent pigment material having a thermal decomposition point above the melting point of the plastic material and not being subject to chemical degradation by the plastic material;

then mixing a predetermined quantity of said phosphorescent pigment material with a predetermined quantity of said plastic material in a ratio selected to provide the desired intensity of phosphorescently emitted light;

then forming one or more components of the infant care article to be produced from said plastic material containing said phosphorescent pigment material by molding or extrusion;

then forming a transparent coating, of a non-toxic nonphosphorescent material, on the surface of said one or more components of the infant care article produced from said plastic material containing said phosphorescent pigment material, so as to provide a barrier between the phosphorescent pigment material and the user of the infant care article and prevent direct contact with said phosphorescent pigment material;

forming any remaining components of the infant care article to be produced; and

then assembling all components of the infant care article to produce the finished article with one or more components having the property of phosphorescent emission of visible light.



4,943,897

ASSEMBLY OF A LIGHT HOUSING AND AN ELECTRIC LAMP

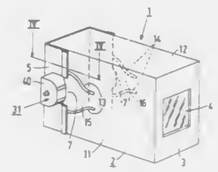
Johannes A. A. M. Van Heeswijk, and Hearicus M. C. Van Gestel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 7, 1989, Ser. No. 377,366

Claims priority, application Netherlands, Dec. 23, 1988, 8803150

Int. Cl.[5] F21S *3/00*

U.S. Cl. 362—223 **30 Claims**



1. An assembly of a light housing and an electric lamp comprising

a light housing (1) provided with walls (3, 5, 11, 12) and a light-emanating window (4),

a resilient holding device (7, 7', 8) for an electric lamp (31), which holding device has a first holding member (7, 7') with contact regions (9) formed on the limbs of a V and a second holding member (8) facing the first member and cooperating therewith,

an electric lamp (31) provided with
a lamp vessel (32) having a longitudinal direction (33) and two ends (34, 35) sealed in a vacuum-tight manner,
a light source (36) in the lamp vessel extending in the longitudinal direction (33) of the lamp vessel (32),
current supply conductors (37) extending through a respective end (34, 35) of the lamp vessel (32) to the light source (36),
the ends (34, 35) of the lamp vessel (32) being fixed in a first (40) and a second lamp cap (41), respectively, whose surface is cylindrically curved about an axis (43) extending substantially in the longitudinal direction (33) of the lamp vessel (32) and provided with an electric contact member (44, 45), to which the current supply conductor (37) is connected,
characterized in that
the first holding member (7, 7') is rigidly connected to the light housing (1) and is subdivided, a first part (7) with contact regions (9) formed on the limbs of a V engaging a cylindrically curved surface (42) of a first lamp cap (40) and a second part (7') of similar shape engaging a cylindrically curved surface (42) of the second lamp cap (41) of the electric lamp (31),
the lamp vessel (32) of the electric lamp (31) is fixed with its ends (34, 35) in a respective lamp cap (40, 41), the light source (36) being aligned with respect to the first holding member (7, 7'), and
means are provided by which rotation of the lamp vessel (32) about its longitudinal direction is limited.

4,943,898

ELECTRIC LAMP HAVING A LAMP CAP OF SYNTHETIC MATERIAL

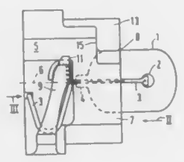
Leon P. Weenink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1988, Ser. No. 263,100

Claims priority, application Netherlands, Nov. 20, 1987, 8702780

Int. Cl.[5] H01R *33/00*

U.S. Cl. 362—226 **9 Claims**



1. An electric lamp assembly, comprising:
an electric lamp, said electric lamp comprising a translucent lamp vessel, an electric element disposed in the lamp vessel, and current conductors extending from the electric element through a first end of the lamp vessel to the exterior; and
a lamp cap of synthetic material, said lamp cap comprising a sleeve-shaped portion defining a longitudinal axis and having an opening for receiving said first end of said lamp vessel,
a pair of elongate cantilevered tongues, said tongues extending freely in the circumferential and longitudinal direction of said sleeve-shaped portion, each tongue having a first contact surface resiliently displaceable in the longitudinal direction, and
a pair of projections extending from said sleeve-shaped portion each with a second contact surface transverse to the longitudinal axis, said second contact surfaces facing said first contact surfaces and being longitudinally spaced at a predetermined distance therefrom,
the first end of the lamp vessel being secured in said lamp cap opening and the current conductors extending over a respective one of said first contact surfaces or said second contact surfaces.

4,943,899

SOCKET AND BULB SNAP FASTENER FOR CHRISTMAS LIGHT STRINGS

Jeou N. Tseng, No. 17, Alley 53, Lane 167, Tung Nan St., Hsin Chu City, Taiwan

Filed Dec. 6, 1989, Ser. No. 446,936

Int. Cl.[5] H01R *33/00*

U.S. Cl. 362—226 **2 Claims**



1. A socket and bulb snap fastener for Christmas light strings, comprising a socket and a bulb, said bulb comprising a lighting element and an insert having two leads mounted thereon which are electrically connected to said lighting element, a hole being centrally formed on said socket for receiving said insert, said socket and bulb snap fastener being characterized in that said socket and bulb snap fastener further comprises:
at least one T-shaped male member having a snapping head being formed on an upper margin of a periphery of said socket;
a corresponding number of tongues of insulating material being formed, relative to each said T-shaped male member, in the vicinity of an upper margin of said insert, a substantially rectangular slot having a width slightly less than a maximum width of said snapping head of said T-shaped male member being formed on each said tongue adjacent to a free end of each said tongue, a V-shaped groove being formed on a lower side of each said tongue at an end opposite to said free end and extending transversely to a length of each said tongue, each said slot being engageable with each corresponding said T-shaped male member by bending said tongue downwardly about said V-shaped groove and pushing each said tongue against each corresponding said T-shaped male member such that each respective said snapping head is forced through each corresponding said slot.

4,943,900

LIGHTING FIXTURE

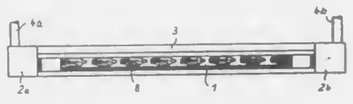
Klaus Gärtner, Karl-Marx-Str. 80, D-1000 Berlin 44, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 229,949

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1987, 8711021

Int. Cl.[5] F21S *3/00*

U.S. Cl. 362—227 **10 Claims**



1. A lighting fixture comprising:

(a) two opposing holding heads;
(b) a female electrical connector disposed in the interior of each of the holding heads, the holding heads being positioned such that said female connectors face one another;
(c) a rigid lighting tube containing a plurality of series-connected miniature light bulbs, said lighting tube being disposed between said respective holding heads;
(d) a male electrical connector disposed on respective terminal ends of said lighting tube, each of said male connectors being electrically connected to one of said female connectors; and
(e) a profiled connecting member having an arc-shaped cross-section and a gap, said profiled connecting member being disposed on each of said respective holding heads in a form-locking manner coaxially on the lighting tube, the profiled connecting member being rotatable about said lighting tube relative to said holding heads, whereby light only emits from the lighting fixture through the gap in the profiled connection member and the rotation of the profiled connection member controls the angle of illumination from the lighting fixture.

4,943,901

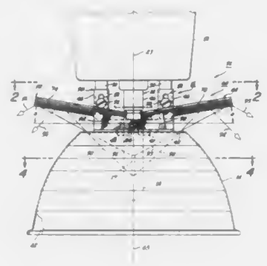
LUMINAIRE WITH AUXILIARY REFLECTING MEANS

Samuel L. Baldwin, E. Flat Rock, and Mitchell M. Osteen, Zirconia, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 11, 1989, Ser. No. 378,348

Int. Cl.[5] F21V *7/02*

U.S. Cl. 362—277 **24 Claims**



1. A luminaire comprising:
A generally dome-shaped main reflector having a wall extending about an axis and defining a bottom opening and a top opening in said main reflector that are located on said axis,
a lamp within said main reflector extending substantially along said axis and defining a light source located in a position between said top and bottom openings,
said main reflector being adapted by support and adjustable means to be positioned relative to said light source, said main reflector being further adapted by said support and adjustable means to be mounted with said axis extending substantially vertically in a location above a warehouse aisle for illuminating stacked material along both edges of the aisle with light passing through said bottom opening, and
auxiliary reflectors positioned above said top opening by said support and adjustable means for receiving light from said source passing through said top opening and for reflecting said latter light to the edges of said aisle onto regions of said stacked material that are poorly illuminated by light passing through said bottom opening
said support and adjustable means serving as means for adjusting the position of said main reflector with respect to said light source while at the same time maintaining the positioning of said auxiliary reflector above said opening, said adjustment of said position of said reflector relative to said light source controlling the photometric distribution along said aisle while at the same time directly affecting the illumination onto regions of said stacked material that are poorly illuminated.

4,943,902

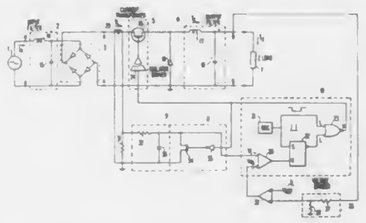
AC TO DC POWER CONVERTER AND METHOD WITH INTEGRATED LINE CURRENT CONTROL FOR IMPROVING POWER FACTOR

Alex J. Severinsky, Silver Spring, Md., assignor to Vlteq Corporation, Lanham, Md.

Continuation of Ser. No. 247,626, Sep. 22, 1988, abandoned, which is a continuation of Ser. No. 123,720, Nov. 23, 1987, Pat. No. 4,816,982. This application Sep. 25, 1989, Ser. No. 411,261

Int. Cl.[5] H02M *7/04*

U.S. Cl. 363—80 **10 Claims**



1. A power converter for converting alternating line current provided at an input to direct current delivered at an output of the power converter comprising
filtering means for filtering the input alternating line current,
rectifying means responsive to the input current filtering means for rectifying the filtered input line current,
direct current control means, operated at a substantially higher frequency than the frequency of the input alternating line current, for controlling the direct current delivered to the output of the power converter, the direct current control means particularly comprising current switching means for switching the filtered and rectified line current at high frequency and a control circuit for providing a control signal output for controlling the current switching means and an integrating means,
line current sensing means, responsive to an output of the current rectifying means, for sensing the filtered and rectified line current and
the integrating means responsive to the line current sensing means and to the control signal output of the control circuit of the direct current control means for integrating the sensed line current and for providing a first control signal input to the control circuit of the direct current control means.

4,943,903

POWER SUPPLY IN WHICH REGULATION IS ACHIEVED BY PROCESSING A SMALL PORTION OF APPLIED POWER THROUGH A SWITCHING REGULATOR

Gilbert I. Cardwell, Jr., 27601 Eastvale Rd., Palos Verdes Peninsula, Calif. 90274

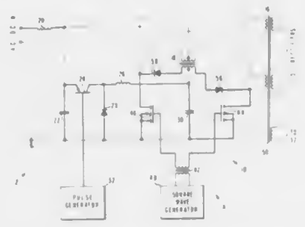
Filed Mar. 14, 1989, Ser. No. 322,836

Int. Cl.[5] H02M *3/337*

U.S. Cl. 363—97 **16 Claims**

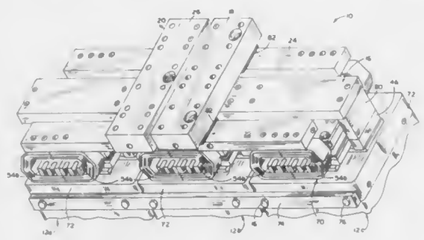
1. Voltage regulation means for generating a regulated output by processing a small portion of an applied unregulated input voltage through a switching regulator, said voltage regulation means comprising:

first transformer means for providing a regulated output voltage from the voltage regulation means;
second transformer means coupled to the first transformer means for coupling a regulating voltage to the first transformer means that regulates the output voltage;
switch means coupled to the unregulated input voltage source and to the second transformer means for coupling the unregulated portion of the input voltage to the second transformer means;



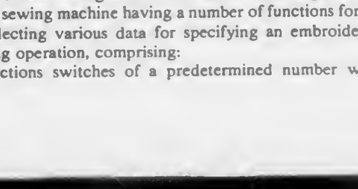
square wave inverter means coupled to the first and second transformer means for providing an alternating current square wave voltage thereto; and
pulse width modulation means coupled to the switch means for modulating the duty cycle of the switch means to modulate the voltage applied to the second transformer means, and hence regulate the output voltage of the voltage regulation means.

4,943,904
D.C. POWER UNIT ASSEMBLY INCLUDING UNITIZED SINGLE-PHASE D.C. POWER UNITS
Stanley R. Van Antwerp, Hudsonville, and Mark B. Siehling, Allendale, both of Mich., assignors to Conrac Corporation, Hudsonville, Mich.
Filed Jan. 24, 1989, Ser. No. 301,311
Int. Cl.[5] H02M *1/00*; B23K *11/24*
U.S. Cl. 363—144 **16 Claims**



1. A D.C. power unit assembly comprising:
a plurality of D.C. power units each including a rectified pad having first and second opposite ends, said first ends being generally linearly aligned with one another, said second ends being generally linearly aligned with one another, each D.C. power unit further having a common terminal;
a first elongated rectified bus aligned with said first pad ends;
a second elongated rectified bus aligned with said second pad ends;
an elongated common bus directly between said first and second rectified buses and equidistant from each of said first and second rectified buses at any point along said common bus, whereby said common bus is coaxial with said two rectified buses together;
first means for interconnecting said first pad ends to said first rectified bus;
second means for interconnecting said second pad ends to said second rectified bus; and
third means for connecting said common terminals to said common bus.

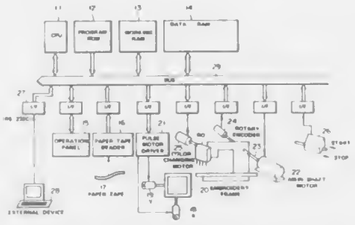
4,943,905
INTERFACING METHOD IN A NUMERICAL CONTROL APPARATUS
Takashi Iwagaya, Hachioji, and Tomomi Nakazato, Kawasaki, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP88/00178, § 371 Date Aug. 11, 1988, § 102(e) Date Aug. 11, 1988, PCT Pub. No. WO88/06309, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 19, 1988, Ser. No. 245,320
Claims priority, application Japan, Feb. 21, 1987, 62-36888
Int. Cl.[5] G05B *19/18*
U.S. Cl. 364—136 **3 Claims**



1. An interfacing method in a numerical control apparatus, wherein signal transfer between a numerical control section for executing a numerical control program block by block and a programmable sequence control section is effected by means of an interface circuit disposed between these sections, said interfacing method comprising the steps of:
(a) operating said numerical control section so as to deliver a particular command to said interface circuit and to invert a logic level of a first predetermined status signal stored in a first storage means of said interface circuit, when said numerical control section reads said particular command from the numerical control program;
(b) operating said sequence control section so as to invert a logic level of a second predetermined status signal stored in a second storage means of said interface circuit, when said sequence control section completes sequence control associated with said particular command; and
(c) operating said numerical control section so as to start processing associated with a next block of the numerical control program, when a predetermined relation is fulfilled between said first and second predetermined status signals.

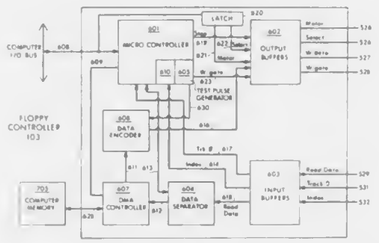
4,943,906
DATA SETTING DEVICE FOR AN EMBROIDERING MACHINE
Ikuo Tajima, and Hideo Hasegawa, both of Kasugai, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan
Filed Jul. 12, 1988, Ser. No. 217,838
Claims priority, application Japan, Jul. 14, 1987, 62-173805; Dec. 23, 1987, 62-323868; Jun. 3, 1988, 63-135642
Int. Cl.[5] D05B *3/02*; G06F *15/46*
U.S. Cl. 364—188 **10 Claims**

1. A data setting device for an embroidering machine or other sewing machine having a number of functions for setting or selecting various data for specifying an embroidering or sewing operation, comprising:
functions switches of a predetermined number which is smaller than the number of functions for setting or selecting various data;
switching means for switching a setting or selection function to be assigned to each of the function switches in response to operation thereof, wherein said switching means is one of said function switches;
function assignment means for assigning a predetermined setting or selection function to each of the function switches in accordance with the operation of said switching means;



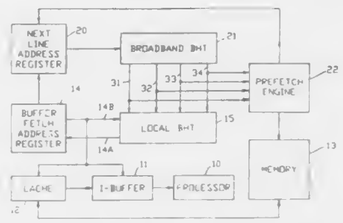
function display means for displaying, in accordance with the assignment by the function assignment means, a setting or selection function which is currently assigned to each of the function switches; and
means for designating, in response to operation of one of said function switches, a processing corresponding to a setting or selection function which is currently assigned to said one of the function switches.

4,943,907
SPEED CONTROLLER FOR RECORDING AND PLAYBACK APPARATUS
Kurt E. Godwin, Loveland, Colo., assignor to Colorado Memory Systems, Inc., Loveland, Colo.
Filed May 8, 1987, Ser. No. 48,022
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—200 **28 Claims**



1. In a computer controlled data processing system having a controller and a drive operating at any one of a predetermined plurality of different data rates and connected to said controller for exchanging data between said controller and said drive, a method of controlling the operational data rate of said drive to provide data rate compatibility between said drive and said controller, said method comprising the steps of:
transmitting a first command from said computer to said drive for operating said drive to generate a firs signal representing a high operational data rate of said drive,
transmitting said first signal from said drive to said controller,
generating a second signal in said controller in response to the reception of said first signal by said controller with said second signal representing a data rate at which said controller can operate,
operating said controller to compare said first and second signals to determine whether the data rate represented by said first signal exceeds the data rate represented by said second signal,
transmitting an output signal from said controller to said computer in response to said determination indicating whether the data rate represented by said first signal exceeds the data rate represented by said second signal,
transmitting a second command from said computer to said drive to set the operational data rate of said drive at the data rate represented by said first signal if said output signal of said controller indicates that the data rate represented by said first signal does not exceed the data rate represented by said second signal, and
generating an error signal in said controller to select a lower one of said predetermined plurality of data rates of said drive if said output signal indicates that said data rate represented by said first signal exceeds the data rate represented by said second signal.

4,943,908
MULTIPLE BRANCH ANALYZER FOR PREFETCHING CACHE LINES
Philip G. Emma, Danbury, Conn.; Joshua W. Knight, III, Mohegan Lake; James H. Pomerene, Chappaqua; Rudolph N. Rechtschaffen, Scarsdale, all of N.Y., and Frank J. Sparacio, North Bergen, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 2, 1987, Ser. No. 128,008
Int. Cl.[5] G06F *9/30, 12/12*
U.S. Cl. 364—200 **9 Claims**



1. In a computer with a processor, a main memory, said main memory storing a plurality of lines of instructions, and a cache, said cache temporarily storing instruction lines received from said main memory, apparatus for prefetching instruction lines from said main memory to said cache, comprising:
a branch history table having a plurality of entries, each said entry corresponding to an instruction line in said main memory and comprising addresses of all branches predicted as taken in said corresponding line;
means connected to said branch history table for determining from the branch history table entry for a current instruction line in use by, or in queue for use by, the processor and from an address of an entry point into said current line by the processor, a next instruction line to be used by the processor and an entry point into said next line; and
means responsive to said determination of the next instruction line for prefetching said next line from said main memory into said cache in the event said next line is not already in said cache;
said determining means comprising:
entry register means for receiving and storing initially the entry point address for said current line;
map table means receiving the current address stored in said entry register means and the taken branch addresses from

the branch history table entry for said current line, and outputting

(a) in the event there is no taken branch in said current line following the address stored in said entry register means, the address of the next sequential instruction line in said main memory, and

(b) in the event the taken branch that follows the address stored in said entry register means has a target address in said current line, the address of the next taken branch that will be encountered in said current line after taking said taken branch which follows said stored address, or the address of the next sequential instruction line in said main memory if no other taken branches will be encountered in said current line after taking said taken branch which follows said stored address, and

(c) in the event the taken branch that follows the address stored in said entry register means has a target address outside said current line, said target address; and

means for updating the address stored in said entry register means in the event that said map table means outputs a next taken branch address.

4,943,909

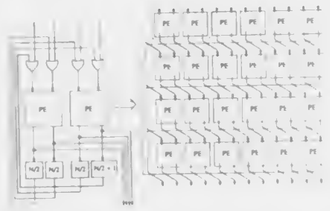
COMPUTATIONAL ORIGAMI

Alan Huang, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 8, 1987, Ser. No. 71,105

Int. Cl.[5] **G06F** *15/16, 13/00*

U.S. Cl. 364—200 **19 Claims**



9. Processing apparatus comprising a plurality of processing elements arranged in rows and columns characterized in that:

some of said processing elements are main-stream processing elements, at least one of said processing elements is a feedback-supplying processing element, and at least one of said processing elements is a fedback receiving processing element;

each main-stream processing element in a given row and a given column sends output signals to a processing element in a row succeeding said given row and in said given column, and to a processing element in said succeeding row and in a column succeeding said given column;

each feedback-supplying processing element sends output signals to one of said feedback-receiving processing elements in a row preceding the row of said feedback-supplying processing element;

each of said processing elements in a given row and a given column is, at most, connected to one of said processing elements in subsequent row and said column and to one of said processing elements in an adjacent column; and

each of said processing elements performs a selected processing operation independent of the processing operations selected for being performed by other processing elements in said processing apparatus.

4,943,910

MEMORY SYSTEM COMPATIBLE WITH A CONVENTIONAL EXPANDED MEMORY

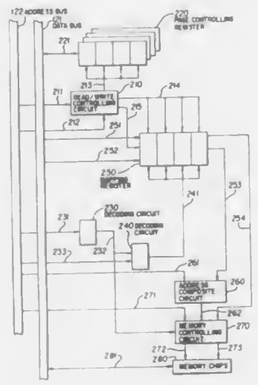
Nobutaka Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 14, 1988, Ser. No. 181,373

Claims priority, application Japan, Apr. 14, 1987, 62-89708; Apr. 14, 1987, 62-89709

Int. Cl.[5] **G06F** *12/00*

U.S. Cl. 364—200 **3 Claims**



1. An information processing apparatus defining a window in a portion of an address space of a CPU and accessing a memory area, comprising:

a memory section including a plurality of memory blocks, each of the plurality of memory blocks having a set number, each of the memory blocks including a plurality of memory areas, each of the plurality of memory areas having a page number;

a page control means, connected to the CPU, for storing mapping information which is supplied from the CPU and which represents a page number of a memory area in which data is stored;

a mapping register, connected to the CPU and the page control means, for storing mapping information including set information indicating a set number of a memory block in which the data supplied from the CPU is stored; and

a memory control means, connected to the CPU, the page control means, the mapping register and the memory section, for accessing the memory section in accordance with the mapping information stored in the mapping register and the page control means.

4,943,911

SYSTEM FOR LOADING INITIAL PROGRAM LOADER ROUTINE INTO SECONDARY COMPUTER WITHOUT BOOTSTRAP ROM

Dieter Kopp, Hemmingen; Thomas Hörmann, Grossbottwar-WZH, and Uwe Ackermann, Freiberg, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Nov. 20, 1987, Ser. No. 123,390

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 3639571

Int. Cl.[5] **G06F** *9/24, 9/30, 13/14*

U.S. Cl. 364—200 **1 Claim**

1. Circuit apparatus for executing an initial program loader routine from a secondary computer connected via a shared random-access volatile memory to a primary computer, comprising:

first means for storing the initial program loader routine in the mass memory of the primary computer;

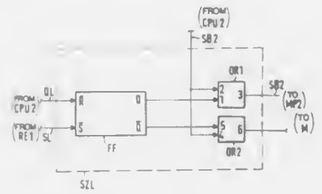
second means for copying the initial program loader routine from said mass memory into said volatile shared memory;

third means for sending a restart instruction from the primary computer to a central processing unit of the secondary computer after the initial program loader has been stored in said volatile shared memory;

fourth means, responsive to said restart instruction, for initially routing all program memory access instructions coming from the central processing unit of the secondary computer to the portion of the shared memory containing the initial program loader routine;

fifth means for sending an acknowledge signal from the central processing unit of the secondary computer when said central processing unit has read the last instruction of the initial program loader routine out of the shared memory;

a control bus linking the secondary computer central processing unit and the secondary computer program memory;



a control line connecting the primary computer to the secondary computer central processing unit for applying said restart instruction;

an acknowledgement line connected to the secondary computer central processing unit for providing said acknowledgement signal; and

memory access logic circuit connected into the control bus at a point intermediate the central processing unit and the program memory, said memory access logic circuit further comprising

a flip flop having a first input connected to said control line, a second input, a noninverting output and an inverting output, and

first and second OR gates each having a pair of inputs and an output, the noninverting output and the inverting output of the flip-flop being respectively coupled to a first input of the first OR gate and to a first input of the second OR gate, the second inputs being connected to the portion of the control bus coming from the secondary computer central processing unit, the first OR gate being connected to the portion of the control bus leading to the program memory, and the output of the second OR gate being connected to the shared memory.

4,943,912

PARALLEL PROCESSOR SYSTEM HAVING CONTROL PROCESSOR AND ARRAY CONTROL APPARATUS FOR SELECTIVELY ACTIVATING DIFFERENT PROCESSORS

Tomoo Aoyama, and Hiroshi Murayama, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of, Japan

Filed Oct. 13, 1987, Ser. No. 106,864

Int. Cl.[5] **G06F** *15/16, 9/00*

U.S. Cl. 364—200 **2 Claims**

1. A parallel processing system having a plurality of processor elements comprising:

a main storage;

a processor array control means connected to said main storage for controlling execution of a processing;

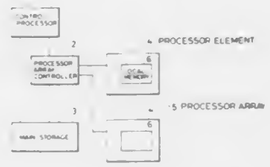
a control processor which is connected to said main storage and to said processor array control means for reading an instruction from said main storage, and for requesting said processor array control means to execute a processing in accordance with a procedure start instruction; and

a plurality of processor elements each including a local memory and wherein each processor element is connected to said processor array control means;

wherein said processor array control means comprises

means for responding to a request from said control processor to transfer a program from said main storage to each of the local memories of said plurality of processor elements,

a plurality of first registers corresponding to said processor elements for holding patterns of tasks, said first registers being reset when corresponding processor elements turn into an idle state, each pattern being relevant to an argument address of a memory area of the main memory used by a task to be performed,



a plurality of comparators corresponding to the first registers for comparing patterns held by the corresponding first registers with a pattern designated by the control processor, wherein when a pattern held by a first register is coincident with said pattern designated by said control processor, the coincident state indicates that an argument address corresponding to the pattern designated by the control processor is being used by a processor element corresponding to said register,

a plurality of second registers corresponding to said processor elements for holding states of said processor elements representing whether the processor elements are busy or not, said second registers being reset when corresponding processor elements turn into an idle state,

means for selecting a processor element that is to be activated based upon a result of said comparison performed by said plurality of comparators and the content of the second registers, and

means for storing said pattern designated by said control processor in a first register corresponding to said selected processor and setting to a busy state a second register corresponding to the selected processor.

4,943,913

OPERATING SYSTEM ACCESSING CONTROL BLOCKS BY USING HOME ADDRESS SPACE SEGMENT TABLE TO CONTROL INSTRUCTION AND OPERAND FETCH AND STORE OPERATIONS

Carl E. Clark, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 10, 1988, Ser. No. 154,780

Int. Cl.[5] **G06F** *9/46, 9/34, 9/44, 12/10*

U.S. Cl. 364—200 **5 Claims**

1. In a data processing system having a CPU, a dynamic address translation facility, a system storage including address spaces and an operating system including a dispatcher, said CPU further including a multi-field program status word and a plurality of control registers which store segment table designators containing pointers to segment tables used by said dynamic address translation facility for translating virtual addresses in at least one of said address spaces in said system

storage accessible to said CPU, a method for providing an improved and efficient way for said operating system to access control blocks, instructions and data in a multiple address space environment, said method comprising the steps of:

a. dispatching, via said dispatcher, an address space having the highest priority with a dispatchable unit of work as a home address space which contains control blocks for defining said dispatchable unit of work;

b. loading a pointer to a segment table for said home address space in one of said control registers to provide virtual address translation in said home address space;

c. setting, via a CPU instruction, address space control bits



in a field of said program status word in said CPU thereby identifying a home mode and causing said home address space segment table to be the one to be used by said dynamic address translation facility to translate virtual addresses in said home address space; and then

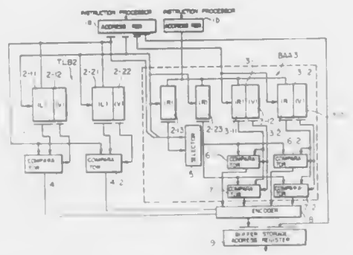
d. accessing said control blocks by said operating system using said home address space segment table to predictably control instruction and operand fetch and store operations from and to said home address space for said dispatchable unit of work in said home address space accessible to said CPU when said program status word in said CPU is set to home mode, without further modification of any other segment table designators.

4,943,914

STORAGE CONTROL SYSTEM IN WHICH REAL ADDRESS PORTION OF TLB IS ON SAME CHIP AS BAA

Kanji Kubo, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1987, Ser. No. 110,425
Claims priority, application Japan, Oct. 20, 1986, 61-247414
Int. Cl.[5] G06F *12/10, 13/00*
U.S. Cl. 364—200 17 Claims



1. A storage control system, comprising:

an address translation buffer storing translation pairs of a virtual address and a real address for translating a virtual address into a real address;

a buffer address array storing a real address of data stored in a buffer storage;

register means holding address for accessing the address translation buffer and the buffer address array and for loading an address to be registered into the address translation buffer and the buffer address array;

said address translation buffer being divided into a first part storing virtual addresses and a second part forming a first memory for holding real addresses corresponding to virtual addresses stored in said first part, and said buffer address array forming a second memory for holding said real addresses of data stored in said buffer storage; and

comparator means connected to said first and second memories for comparing an output from said first memory with an output from said second memory;

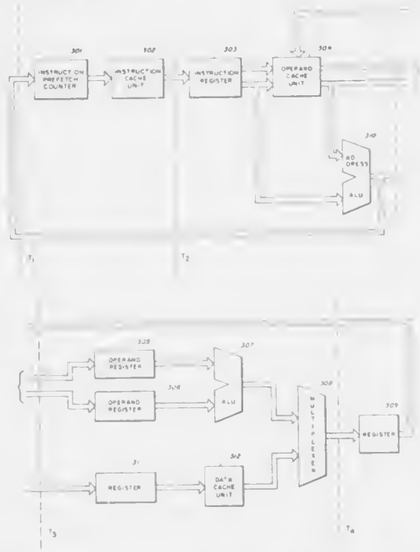
said first memory, second memory and comparator means being formed together in an integrated circuit chip, separate from said first part of said address translation buffer.

4,943,915

APPARATUS AND METHOD FOR SYNCHRONIZATION OF A COPROCESSOR UNIT IN A PIPELINED CENTRAL PROCESSING UNIT

Neil C. Wilhelm, Menlo Park, Calif., and Judson S. Leonard, Waban, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 29, 1987, Ser. No. 101,984
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 21 Claims



1. A pipelined central processing unit capable of executing a first set of instructions and a plurality of special instructions, said central processing unit comprising:

an instruction cache memory unit for storing instructions to be executed;

an instruction register for processing an executing instruction from said instruction cache memory unit, said executing instruction being a next instruction to be executed by said central processing unit, said instruction register including means for determining when an executing instruction is a special instruction;

an operand cache memory unit for storing operands to be processed;

at least one operand register for storing an operand to be processed in response to said executing instruction, wherein said operand to be processed is transferred from said operand cache memory unit to said operand register in response to said executing instruction;

an arithmetic logic unit coupled to said instruction register and to said operand register for performing an operation on said operand to be processed in a manner determined by said executing instruction when said executing instruction is selected from said first set of instructions;

a coprocessor unit coupled to said instruction register and to said operand register for performing an operation on said operand to be processed in a manner determined by said executing instruction when said executing instruction is a one of said special instructions;

storage means coupled to said coprocessor unit for storing a resulting operand provided by said coprocessor unit;

first means coupled to said storage means and responsive to a presence of said resulting operand stored in said storage means for applying a first signal to said instruction register; and

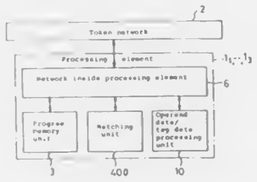
second means coupled to said instruction register and responsive to said first signal for preventing processing of an executing instruction when said executing instruction is a special instruction until said first signal is present.

4,943,916

INFORMATION PROCESSING APPARATUS FOR A DATA FLOW COMPUTER

Hajime Asano, Toyonaka; Hiroaki Terada, Suita; Katsuhiko Asada, Amagasaki; Hiroaki Nishikawa, Suita; Masahisa Shimizu, Kadoma; Hiroki Miura, Hirakata; Kenji Shima, Nishinomiya; Shinji Komori, Itami; Souichi Miyata, and Satoshi Matsumoto, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma; Sanyo Electric Co., Ltd., Moriguchi; Mitsubishi Denki Kabushiki Kaisha, Tokyo and Sharp Corporation, Osaka, all of, Japan

Continuation of Ser. No. 868,706, May 30, 1986, abandoned.
This application Jan. 1, 1989, Ser. No. 361,701
Claims priority, application Japan, May 31, 1985, 60-119035
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 19 Claims



1. In a data flow computer wherein operand data and tag data are carried on tokens flowing in a token network, an information processing apparatus having an input port and an output port comprising:

at least one processing component connected with said token network, wherein tokens each of which has tag data determined according to a predetermined numerical sequence are input in said input port of said information processing apparatus sequentially in time and instructions are executed with respect to said tokens when operand data are in a state of readiness,

said information processing component comprising:

a program memory unit connected with said token network for storing a data flow program including execution instructions embodied therein,

a matching unit connected with said memory unit in which operand data are matched,

an operand data processing unit connected with said matching unit wherein instructions fetched from said program memory are executed using those operand data matched by said matching unit, and

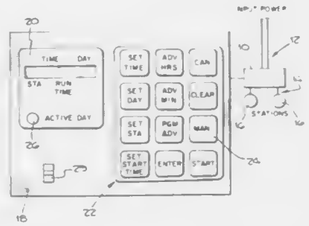
a tag data renewing unit connected to said operand data processing unit for renewing tag data of predecessor tokens having been operated on, to the same values as those of tag data of successor tokens input after those predecessor tokens.

4,943,917

IRRIGATION CONTROLLER HAVING MULTIPLE CANCEL MODES INVOKED BY DEPRESSING SINGLE KEY

John M. Mylne, III, Riverside, Calif., assignor to The Toro Company, Riverside, Calif.

Division of Ser. No. 237,658, Aug. 25, 1988, Pat. No. 4,852,051, which is a continuation of Ser. No. 888,621, Jul. 18, 1986, abandoned, which is a continuation of Ser. No. 581,030, Feb. 17, 1984, abandoned. This application Jul. 10, 1989, Ser. No. 350,450
Int. Cl.[5] G06F *15/56*
U.S. Cl. 364—420 3 Claims



1. An improved irrigation controller for individually and automatically controlling water flow to a plurality of individual watering stations in accordance with a programmed watering schedule over a period of days, said controller including a single mechanically-operated key for cancelling all scheduled watering if said key is activated twice while no watering is taking place, for cancelling just the watering scheduled to take place on a particular day, but not the watering scheduled to take place on any subsequent day, if said key is activated once on that particular day while no watering is taking place and, for cancelling just the watering taking place on a particular day, but not the watering scheduled to thereafter take place on that or any subsequent day, if said key is actuated once on that particular day while watering is taking place.

4,943,918

SEISMIC DATA PROCESSING METHOD

Roger A. Young, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

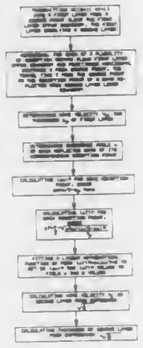
Filed Jan. 9, 1985, Ser. No. 690,086
Int. Cl.[5] B01V *1/00, 1/20;* G06F *15/20*
U.S. Cl. 364—421 3 Claims

1. A method of collecting and processing seismic data with respect to a first layer of the earth and a second layer of the earth having different seismic wave transmission velocity characteristics than said first layer, each layer having an upper boundary and a lower boundary, wherein the first layer overlies the second layer such that each layer has a common boundary, the common boundary being the lower boundary of the first layer and the upper boundary of the second layer, said method comprising the steps of:

(a) transmitting a plurality of seismic waves into the first layer from a source point located along the first layer upper boundary;

(b) selecting a plurality of reception points along the first layer upper boundary, wherein each reception point is

positioned at a different horizontal distance x from the source point;
(c) measuring, for each reception point, the travel time T from the source point to the reception point of a wave reflected by the second layer lower boundary;
(d) determining the wave velocity V_p and the thickness z_p with respect to the first layer;



(e) determining the emergence angle e of each said reflected wave at its corresponding reception point;
(f) determining a parameter Δx for each reception point, wherein;

$\Delta x = x/2 - z_p \tan e$;

(g) determining a parameter ΔT for each reception point, wherein

$$\Delta T = \frac{T}{2} - \frac{\sqrt{z_p^2 + (x/2 - \Delta x)^2}}{V_p};$$

(h) determining $(\Delta x)^2$ and $(\Delta T)^2$ for each reception point, thereby yielding a set of data pairs, each data pair comprising a $(\Delta x)^2$ value and a $(\Delta T)^2$ pl value; pl (i) fitting a linear mathematical function of the form $(\Delta T)^2 = m(\Delta x)^2 + b$ to said data pairs so as to yield a slope (m) value and an intercept (b) value;
(j) determining the wave velocity V_l in the second layer from the expression

$$\sqrt{\frac{1}{m}};$$

and
(k) determining the thickness of the second layer from the expression

$$\sqrt{\frac{b}{m}}$$

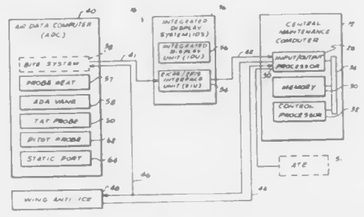
4,943,919

CENTRAL MAINTENANCE COMPUTER SYSTEM AND FAULT DATA HANDLING METHOD

Matthew J. Aslin, Bothell, and Gary J. Patton, Langley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 17, 1988, Ser. No. 260,985
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.03 **18 Claims**

1. An onboard central maintenance computer system for an aircraft system, the aircraft system including: (a) a plurality of LRUs; (b) communication means through which the LRUs can transmit LRU fault data and receive test initiation commands; and (c) an operator interface device including (i) presentation means for presenting maintenance information generated by the central maintenance computer system, (ii) input means for receiving input commands, and (iii) interface communication means for transmitting the input commands and receiving the maintenance information, the central maintenance computer system comprising:
(a) data transfer means for transferring data within said central maintenance computer system;
(b) input/output means coupled to the data transfer means, and coupled to the communication means and to the interface communication means for receiving and transmitting data therebetween;
(c) memory means coupled to said data transfer means for storing data including a plurality of preestablished maintenance messages; and,



(d) control processing means coupled to said data transfer means for controlling the transfer and processing of data within said central maintenance computer system and for controlling the operations of said input/output means and said memory means, said control processing means including:
a collection module for causing said input/output means to collect the LRU fault data via the communication means; and
a consolidation module for generating an active maintenance message from the LRU fault data by screening out cascaded faults and consolidating multiple faults to produce an isolated fault, associating said isolated fault with one of said maintenance messages, termed active maintenance message, in said memory means, and causing said active maintenance message to be identified in said memory means.

4,943,920

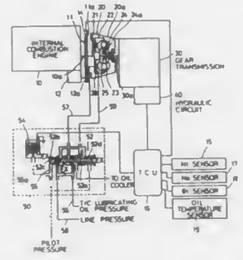
OPERATION CONTROL METHOD FOR A FRICTIONAL ENGAGEMENT ELEMENT

Takeo Hiramatsu, Nagaokakyo; Tetsuo Ozaki, Gamagoori, and Kenjiro Fujita, Kusatsu, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1988, Ser. No. 182,101
Claims priority, application Japan, Apr. 20, 1987, 62-97023
Int. Cl.[5] B60K *41/18, 41/02*; F16H *5/40*
U.S. Cl. 364—424.1 **8 Claims**

1. An operation control method for a frictional engagement element which includes engaging means and piston means for urging said engaging means to engage, the operation of said piston means being controlled by means of pressurized oil supplied through a hydraulic control device operated in accordance with a control signal to produce an oil pressure of a level corresponding to a value of the control signal input thereto, said piston means having an ineffective stroke section between a first position reached when said pressurized oil is not supplied from said hydraulic control device and a second position just before said engaging means starts to engage,
said method comprising:

previously storing data representing a relationship between the value of the control signal input to said hydraulic control device and the stroke speed of said piston means;
detecting value of the control signals input to said hydraulic control device while said piston means travels through said ineffective stroke section, and detecting drive periods corresponding individually to said values of the control signals;
obtaining stroke speeds corresponding individually to the detected values of the control signals, based on the previously stored data representing said relationship;
calculating products of the obtained stroke speeds and the detected drive periods corresponding thereto;
calculating an ineffective stroke amount of said piston means



from the sum total of the products of the obtained stroke speeds and the detected drive periods corresponding thereto;
storing the calculated ineffective stroke amount as a new ineffective stroke amount, each time said piston means travels through said ineffective stroke section;
and
obtaining a drive period of said piston means in accordance with the stored new ineffective stroke amount and the value of a desired control signal to be input to said hydraulic control device, and supplying the value of said desired control signal over the obtained drive period, when said piston means is moved through said ineffective stroke section, thereby causing said piston means to reach said second position.

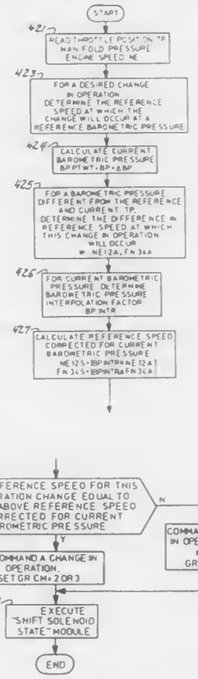
4,943,921

AUTOMATIC TRANSMISSION ELECTRONIC GEARSHIFT CONTROL HAVING ALTITUDE CORRECTED SHIFT CRITERIA

Paul A. Baltusis, Northville; Thomas L. Greene, Plymouth, and Bruce J. Palansky, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 24, 1988, Ser. No. 261,538
Int. Cl.[5] B60K *41/18*; G06F *15/20*
U.S. Cl. 364—424.1 **9 Claims**

1. A method for controlling gearshifts in an automatic transmission of a motor vehicle having an engine, electronic computer, electronic memory accessible to the computer, comprising:
generating an engine speed signal;
storing in memory engine speeds corresponding to a wide open throttle condition at which gearshifts are scheduled to occur at a reference barometric pressure;
calculating a engine speed barometric pressure correction to account for a difference between reference barometric pressure and current ambient barometric pressure;
generating, in response to the engine speed barometric pressure correction, an altitude corrected engine speed signal representing engine speed corresponding to a wide open throttle condition at which gearshifts are to occur at current ambient barometric pressure;
comparing the current engine speed signal to the barometric pressure corrected engine speed signal; and



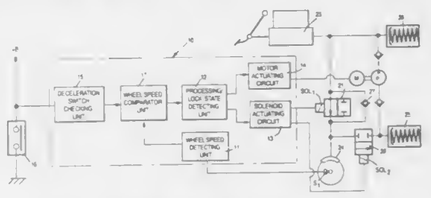
producing a gearshift when the comparison indicates current engine speed exceeds the barometric pressure corrected engine speed.

4,943,922

ANTILOCK CONTROL ASSEMBLY

Hirohisa Tanaka, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1988, Ser. No. 277,196
Claims priority, application Japan, Nov. 30, 1987, 62-304141
Int. Cl.[5] B60T *8/76*
U.S. Cl. 364—426.02 **3 Claims**



1. An antilock control assembly for use in a four-wheel drive vehicle having two front wheels and two rear wheels, said antilock control assembly comprising: a processing/lock-state detecting means for executing arithmetic operations on the basis of wheel speed signals received from wheel speed sensor means to determine whether each of the two front wheels and

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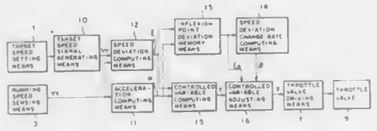
two rear wheels are tending to lock or recovering from a locked state and for issuing one of a pressure increase command and a pressure decrease command to increase and decrease a braking fluid pressure on at least one of the two front wheels and two rear wheels; solenoid actuating means for actuating solenoids of pressure control valves in a braking fluid pressure circuit in response to the pressure increase command and the pressure decrease command issued by said processing-/lock-state detecting means; and a pressure reduction command means for calculating a difference between an average wheel speed of the two front wheels and an average wheel speed of the two rear wheels, and for comparing said difference with a preset value, and for issuing a pressure reduction command to at least one of the two front wheels or to at least one of the two rear wheels, the average wheel speed of which is smaller than the other, if said difference is larger than said preset value.

4,943,923

CONSTANT-SPEED RUNNING CONTROL DEVICE FOR VEHICLES

Yasuo Naito, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP87/00514, § 371 Date Mar. 9, 1988, § 102(e) Date Mar. 9, 1988
PCT Filed Jul. 15, 1987, Ser. No. 177,661
Claims priority, application Japan, Jul. 18, 1986, 61-170149
Int. Cl.[5] B60K *31/04*
U.S. Cl. 364—426.04 **3 Claims**



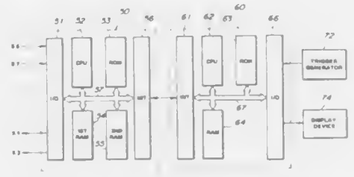
1. A constant-speed running control device for vehicles, comprising:
- a running speed sensing means which senses the running speed of a vehicle and produces a running speed signal;
- an acceleration computing means for determining acceleration of the vehicle over selected time periods from changes in said running speed signal produced by said running speed sensing means and for generating an acceleration signal;
- a target speed setting means for setting a target speed of the vehicle;
- a target speed signal generating means for generating a target speed signal as a function of a signal from said target speed setting means;
- a speed deviation computing means for determining speed deviation between said target speed signal generated by said target speed signal generating means and said running speed signal and for generating a speed deviation signal;
- a driving force control means for controlling a driving force of the vehicle;
- a controlled variable computing means for inputting said acceleration signal and said speed deviation signal and computing a controlled variable which controls the driving force of the vehicle such that the target speed signal and the running speed signal agree;
- an inflexion point deviation memory means for storing said speed deviation signal at the time of inversion of codes of said acceleration signal;
- a speed deviation change rate computing means for measuring a time between consecutive inflexion point deviations stored by said inflexion point deviation memory means, and determining a rate of change of inflexion point deviation; and
- a controlled variable adjusting means for adjusting said controlled variable responsive to said speed deviation change rate and said rate of change of inflexion point deviation, and outputting said controlled variable to said driving force control means.

4,943,924

TROUBLE CHECKING APPARATUS

Hidetoshi Kanegae, Tokyo; Minoru Tomikashi, Zushi; Akira Hino, and Takashi Ueno, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 26, 1987, Ser. No. 66,620
Claims priority, application Japan, Jun. 27, 1986, 61-149807; Sep. 24, 1986, 61-0223802
Int. Cl.[5] F02B *3/00*
U.S. Cl. 364—431.12 **16 Claims**



1. An apparatus for use with a device having at least one means for controlling the device, the apparatus comprising:
- sensor means sensitive to operating conditions of the device for generating sensor signals indicative of sensed device operating conditions;
- a control unit including a first control memory, means responsive to the sensor signals for generating existing values of the sensor signals, means for calculating a value corresponding to a setting of the means for controlling the device from a relationship between the generated existing sensor signal values and the means for controlling the device, the calculating being performed repetitively at uniform intervals, means for converting the calculated value into a setting of the means for controlling the device, means for storing the generated existing sensor signal values in time sequence into the first control memory to provide input data representing variations of the respective sensor signals with time, and means for storing the calculated value in time sequence into the first control memory to provide output data representing variations of the setting of the means for controlling the device with time; and
- an analyzing unit including a first analyzer memory, means for manually generating a command signal, means responsive to the command signal for transferring the input and output data from the first control memory to the first analyzer memory, and means for analyzing the input and output data transferred to the first analyzer memory to find a cause of a trouble in the operation of the device.

4,943,925

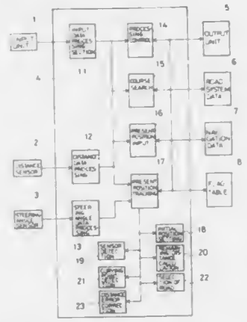
NAVIGATION APPARATUS BASED ON PRESENT POSITION CALCULATING SYSTEM

Shuzo Moroto; Koji Sumiya; Shouji Yokoyama; Mitsuhiro Nimura, and Akimasa Nanba, all of Anjo, Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed Oct. 20, 1988, Ser. No. 260,213
Claims priority, application Japan, Oct. 30, 1987, 62-275095; Aug. 11, 1988, 63-202474
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **11 Claims**

10. A navigation apparatus having a present vehicle position locating and tracking system comprising:
- storage means for storing road system data including information about terminal intersections and roads between said terminal intersections,

- input means for inputting a destination point,
- output means for outputting guidance information,
- navigation means connected to said storage means and said input means for, setting a course to said destination point at any of said terminal intersections from said road system data, selecting a road to said destination point, and providing guidance information to said output means, said navigation means including:
- guide means for providing said guidance information to said output means at each said terminal intersection while traveling to said destination point,



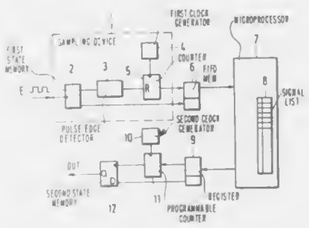
- tracking means for tracking said present vehicle position on said selected road and for detecting a terminal intersection of said selected road, and
- road recognition means for recognizing a road in a direction to said destination point from said terminal intersection of said selected road, and
- means for performing course guidance when said terminal intersection along said selected road is detected, selecting another road to said destination point at said terminal intersection, providing guidance information corresponding to a terminal intersection of said another selected road, and repeating said course guidance for each subsequent terminal intersection up to said destination point.

4,943,926

METHOD FOR THE ANALYSIS AND SYNTHESIS OF BINARY SIGNALS

Jorge Guzman-Edery, Heddesheim; Wolfgang Steiger, Lampertheim, and Michael Böer, Mannheim, all of Fed. Rep. of Germany, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Oct. 9, 1986, Ser. No. 916,820
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1985, 3536031
Int. Cl.[5] H04L *1/20, 25/04; G06F 15/20*
U.S. Cl. 364—486 **6 Claims**



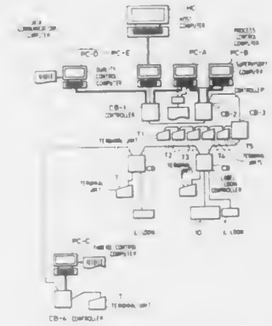
1. A method for analysis of binary signal pulses having respective pulse durations and pulse states, which comprises the steps of: measuring the duration of each signal pulse by counting units of time in a counter while receiving the pulses; determining the pulse state by means of a state memory; resetting the counter at each pulse state change transferring as signal bytes the counter-reading and respective pulse state reached into a fifo memory at a further pulse state change; resetting and restarting the counter; transferring the signal bytes to a signal list in a microprocessor; taking the signal bytes from the signal list for retransmission of signals and loading the signal bytes into a register; controlling a programmable counter on the basis of the counter-reading of the signal bytes; determining the respective duration of the signal pulses to be retransmitted on the basis of the respective counter-reading; determining the state of the respective pulses to be retransmitted by means of the state bit of the respective signal bytes; forming distortion tables in an associate memory; addressing the distortion tables by means of the counter information of the signal bytes deposited in the signal list; and reading the signal distortion values from said distortion tables.

4,943,927

CONTROLLING AND SUPERVISING SYSTEM FOR LOOM

Takao Yarita, Chiba; Yutaka Moro, Kanagawa; Kazuyasu Takeishi, Kanagawa, and Shinichi Ohashi, Kanagawa, all of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Japan

Filed Jul. 22, 1988, Ser. No. 223,137
Claims priority, application Japan, Aug. 5, 1987, 62-194319
Int. Cl.[5] G06F *15/46; D03D 51/00*
U.S. Cl. 364—470 **2 Claims**



1. A controlling and supervising system for a loom, comprising:
- a network means for interconnecting computers connected to said network means;
- a host computer connected to said network having data files containing dispatching data and production instructions for various units and devices also connected to said network means;
- a data-communication personal computer connected to said network means for receiving data transmitted from said host computer in file and for loading the received data into said various units and devices via said network means;
- a plurality of supervisory personal computers for storing the data from said data-communication personal computer and further for downloading said data with the addition of operating data, and also for supervising with signals received from said loom;
- and a controller installed between said loom and said plurality of supervisory personal computers for operating and controlling said loom based on data from said supervisory personal computer and controlling access to input to

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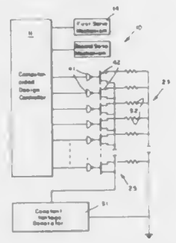
signals from said loom and operation and control data for operating and controlling such equipment and loading the same into said supervisory personal computer, wherein said loom comprises an automatic cop-replacing apparatus for replacing a cop of weft accommodated in a shuttle and tying a new weft and an existing weft.

4,943,928

ELONGATED CARRIER WITH A PLURALITY OF SPOT-SOURCES OF HEAT FOR USE WITH STEREOLITHOGRAPHIC SYSTEM

Albert E. Campbell, 275 W. Lemon, Arcadia, Calif. 91104; William F. Hug, 2239 E. Paloma St., Pasadena, Calif. 91006, and Ray D. Reid, 921 Eaglewild, Glendora, Calif. 91740

Filed Sep. 19, 1988, Ser. No. 246,503
Int. Cl.[5] **G06F** *15/46;* **B29C** *35/08*
U.S. Cl. 364—477 **4 Claims**



1. An improvement for use in a stereolithographic system for producing a three-dimensional object from a heat curable fluid medium which is capable of solidification when subjected to heat, the stereolithographic system including:

a. a computer-aided design controller which generates a plurality of sets of output signals each set of which corresponds to one of a plurality of successive cross-sectional laminae of a three-dimensional object;

b. a container which has a front wall, a rear wall and two side walls and which is filled with the heat curable fluid medium the surface of which provides a designated working surface;

c. an elevator platform which is movably coupled to the container and which is disposed in the heat curable fluid medium; and

d. a servo mechanism which incrementally drives the elevator platform in response to the output signals, said improvement comprising:

a. an elongated carrier which has a bottom surface and which is disposed perpendicular to the two side walls and parallel to the front and rear walls of the container;

b. driving means for incrementally driving said elongated carrier along the two side walls of the container in response to the output signals;

c. a plurality of spot-sources of heat, each of said spot-sources of heat being individually switched on and serially disposed on and fixedly coupled to said bottom surface of said elongated carrier adjacent to the designated working surface; and

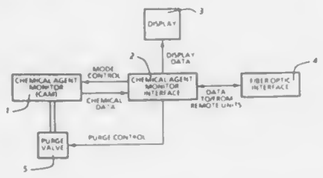
d. switching means for individually switching on each of said spot-sources of heat in response to each set of output signals whereby said bottom surface of said elongated carrier travels across the plane of the designated working surface in order to produce a cross-sectional lamina and when the cross-sectional lamina has been produced the elevator platform moves incrementally down the thickness of one of the cross-sectional laminae in order to produce the next cross-sectional laminae.

4,943,929

CHEMICAL AGENT MONITOR AND CONTROL INTERFACE

Adam J. Simonoff, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1988, Ser. No. 267,152
Int. Cl.[5] **G06F** *15/46;* **G01N** *31/00*
U.S. Cl. 364—496 **5 Claims**



1. A chemical agent monitor control interface system comprising:

a chemical agent monitor;

means for inputting serial data from said chemical agent monitor;

means for outputting electrical control signals to said chemical agent monitor;

means for fiber optically linking control and status signals within the system;

a purge valve connected to said chemical agent monitor for purging said chemical agent monitor whereby said monitor can be purged remotely by manual or automatic control;

means for processing to provide programmed control of said chemical agent monitor and said purge valve; and

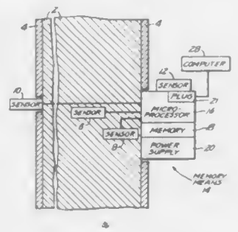
means for outputting display data from said means for processing whereby operators can discern the system status and any chemical hazard detected by said chemical agent monitor.

4,943,930

METHOD AND APPARATUS FOR NON-DESTRUCTIVE EVALUATION OF CONCRETE

Farrokh F. Radjy, Gateway Twrs. 18L, Pittsburgh, Pa. 15222

Continuation of Ser. No. 853,682, Apr. 18, 1986, abandoned. This application Nov. 8, 1989, Ser. No. 434,564
Int. Cl.[5] **G01N** *3/26*
U.S. Cl. 364—506 **17 Claims**



10. An apparatus for non-destructive strength evaluation of a concrete mass comprising:

(a) an internal temperature sensor for implanting in said concrete mass;

(b) a reference temperature sensor for attaching externally to said concrete mass;

(c) a microprocessor connected to said internal temperature sensor and said reference temperature sensor, said microprocessor for recording signals from said internal temperature sensor and said reference temperature sensor;

(d) a computer for evaluating signals from said microprocessor; and

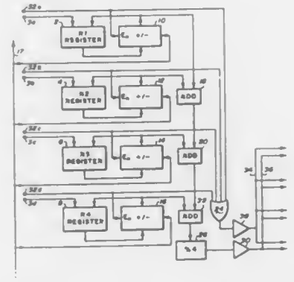
(e) means for transferring from said microprocessor said signals from said internal temperature sensor and said reference temperature sensor to said computer such that said computer can determine the strength of said concrete mass.

4,943,931

DIGITAL ARTIFICIAL NEURAL PROCESSOR

Reginald A. Allen, Vista, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 2, 1988, Ser. No. 189,438
Int. Cl.[5] **G06F** *15/18*
U.S. Cl. 364—513 **6 Claims**



6. In an artificial neural system containing a plurality of digital artificial neural processors, the improvement wherein each of said digital artificial neural processors comprise:

a plurality of primary binary registers for receiving and storing binary numbers and a corresponding plurality of buffer registers, with one buffer register in said plurality being associated with a corresponding one of said primary registers; each said buffer registers being of the incrementing and decrementing type and being coupled to an associated primary register for initially receiving and storing a copy of the binary number contained in said associated primary register; means for applying a first type signal and a second type signal to each of said buffer registers to selectively increment or decrement the number stored in said buffer register responsive to said first type signal during the presence of said second type signal; means for resetting said primary registers subsequent to incrementing or decrementing the number stored in the associated buffer register; and means for processing the numbers stored in said buffer registers to provide at an output a number representing the average of the numbers stored in said plurality of buffer registers.

4,943,932

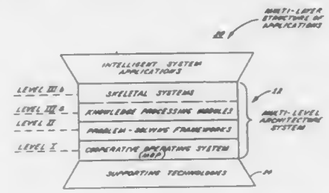
ARCHITECTURE FOR COMPOSING COMPUTATIONAL MODULES UNIFORMLY ACROSS DIVERSE DEVELOPMENTAL FRAMEWORKS

Jay S. Lark, Mountain View; Lee D. Erman, Palo Alto; Michael Fehling, Mountain View, and Frederick Hayes-Roth, Atherton, all of Calif., assignors to Cimflex Teknowledge Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 934,649, Nov. 25, 1986, abandoned. This application Apr. 15, 1987, Ser. No. 38,872
Int. Cl.[5] **G06F** *15/20, 15/18*
U.S. Cl. 364—513 **84 Claims**

1. A flexible computing system for developing application-specific computer systems, said flexible computing system comprising:

module production means for generating functioning modules by interpreting preselected descriptions of the functional characteristics of modules to be included in a desired application-specific computing system, and



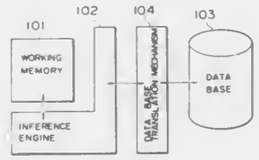
module assembly means for generating said application-specific system by combining message passing means for intermodule communication along with the functioning modules generated by said module production means.

4,943,933

METHOD FOR TRANSLATING DATA BASE TO KNOWLEDGE AND APPARATUS THEREFOR

Hironori Miyamoto, Yokohama; Hidefumi Kondo, Yamato; Hirohide Haga, and Rinichi Takashi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1988, Ser. No. 272,727
Claims priority, application Japan, Nov. 20, 1987, 62-292176
Int. Cl.[5] **G06F** *15/18*
U.S. Cl. 364—513 **5 Claims**



1. A method for translating data in a data base to knowledge in an expert system, the expert system drawing inferences based on the knowledge, the method comprising the steps of:

preparing a correspondence relation table defining a correspondence relation between the knowledge and the data base;

reading data from the data base each time knowledge related to the data base is referenced by the correspondence relation table during an inference by the expert system and translating the data to knowledge; and

translating knowledge related to the data base prepared by the correspondence relation table during the inference into data of the data base using the correspondence relation table, and storing the translated knowledge in the data base,

whereby data of the data base can be accessed from said expert system in a knowledge form.

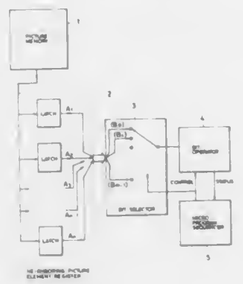
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4,943,934

PICTURE OPERATION UNIT FOR PERFORMING OPERATIONS ON INTENSITY DATA OF NEIGHBORING PICTURE ELEMENTS

Makoto Hosoda, and Toshio Shiomi, both of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 3, 1987, Ser. No. 128,187
Int. Cl.[5] G06F *15/66*
U.S. Cl. 364—518 1 Claim



1. A neighboring picture operation unit for carrying out data operations on data for a plurality of picture elements stored in a picture memory, comprising:

a register means for storing a predetermined amount of data corresponding to intensity information of the picture elements stored in the picture memory;

a bit selector for reading out data from said register means for each of the plurality of picture elements according to a selected bit position of the data in the picture memory; and

a bit operator for performing the data operations on the data corresponding to the selected bit position including

a programmable logic array for performing binomial operations in parallel on said data corresponding to the selected bit position, said programmable logic array having an output, a first input and a second input, said first input connected to the output of said bit selector,

a pattern generating read only memory for generating a sequence of bits and for applying the bits generated to said second input of the programmable logic array,

a look-up table for detecting a condition at the output of said programmable logic array and generating a value corresponding to the detected condition, and

an arithmetic and logic unit for comparing said value generated by said look-up table to a value corresponding to the result of the operation performed on the plurality of picture elements stored in said register means,

said bit operator performing said operations on said data corresponding to said selected bit position in accordance with data corresponding to other bit positions of the stored data in said register means.

4,943,935

APPARATUS AND METHOD FOR PLOTTING CURVED FIGURES REPRESENTED BY HIGH ORDER FUNCTIONS IN A BIT MAP

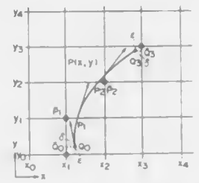
Fumitaka Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1988, Ser. No. 248,450
Claims priority, application Japan, Sep. 25, 1987, 62-241434
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—518 16 Claims

1. An apparatus for plotting a curved figure defined by loci of first and second functions having a common variable, the first and second functions being nth order functions (where n is an integer greater than two), comprising:

bit map memory means for storing dots representing the curved figure, a previous dot of the dots being stored at a coordinate point designated by first and second previous coordinate values;

coordinate value determining means for determining a current value of the variable in accordance with a previous value of the variable, a predetermined integer and a slope



of the first function at the previous value of the variable, determining a first current coordinate value by adding the predetermined integer to the first previous coordinate value, and determining a second current coordinate value in accordance with a current function value of the second function at the current value of the variable; and

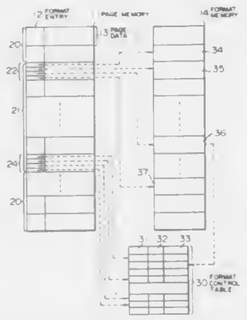
plot means for plotting a current dot in said bit map memory means at a coordinate point designated by the first and second current coordinate values.

4,943,936

PRINT CONTROL APPARATUS CONTROLLING UTILIZATION STATE OF PLURAL FORMAT BLOCKS

Kenshi Hirai; Hiromichi Murakami, both of Hadano, and Kikuo Hatazawa, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1988, Ser. No. 143,090
Claims priority, application Japan, Jan. 29, 1987, 62-17165
Int. Cl.[5] G06F *3/12*
U.S. Cl. 364—519 6 Claims



1. A print control apparatus comprising:

a format memory for storing a plurality of format data entries supplied from a host computer, said format memory being subdivided into a plurality of blocks;

a page memory for storing a plurality of print data items and corresponding first information items, said first information items representing, for each print data item, one of said format data entries stored in said format memory to be overlayed with the corresponding print data items, said print data items and first information items being supplied form said host computer;

printing means connected to said format memory and said page memory for overlaying and printing the print data items according to the format data entry represented by said first information items associated with the print data items; and

a format control table connected to said format memory for storing a plurality of second information items corresponding to the blocks in said format memory, each of said second information items indicating the status of a format data entry stored in the corresponding block;

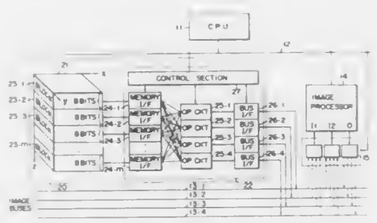
wherein said host computer stores new format data entries into said blocks in the format memory in accordance with the status of said block indicated by the corresponding second information items stored by said format control table.

4,943,937

APPARATUS FOR PROCESSING IMAGES HAVING DESIRED GRAY LEVELS INCLUDING A THREE-DIMENSIONAL FRAME MEMORY

Akira Kasano, and Yoichi Inoue, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1988, Ser. No. 173,752
Claims priority, application Japan, Mar. 31, 1987, 62-78590
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—521 12 Claims



1. An image processing apparatus comprising:

three-dimensional frame memory means for storing image data, and comprising a plurality of memory planes logically stacked in the depth direction;

memory control means, connected to said frame memory means, for independently accessing a plurality of desired memory areas of said frame memory means, each of said desired memory areas located in any desired position in the depth direction of said frame memory means and having a desired number of bits in the depth direction;

a plurality of image bus means, connected to said memory control means, for transferring image data;

image processor means, connected to said plurality of image bus means, for receiving the image data from at least one of said plurality of image bus means and performing logical operations on the image data nd for outputting the result of the performed operations to at least one of the other plurality of image bus means; and

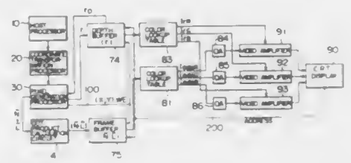
control means connected to said memory control means and said image processor means, said control means designating access areas of said frame memory means which are to be accessed by said memory control means and the type of access to be performed in respect of each access area, and said control means allocating said plurality of image bus means to said memory control means and said image processor means for each access area.

4,943,938

SYSTEM FOR DISPLAYING SHADED IMAGE OF THREE-DIMENSIONAL OBJECT

Toshihisa Aoshima, Tokyo; Seiichi Kanema, Yokohama, and Takeshi Kato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,335
Claims priority, application Japan, Oct. 11, 1985, 60-224716
Int. Cl.[5] G06F *15/72*
U.S. Cl. 364—522 4 Claims



1. A display system for displaying a two-dimensional graphic obtained when a three-dimensional graphic to be displayed is projected on a two-dimensional screen, said display system comprising:

display means including a scanned display screen having a plurality of display pixels thereon;

first means for producing a depth value signal and a normal direction signal for each of those display pixels included in the two-dimensional graphic from among said plurality of display pixels, the depth value signal indicating the distance from a predetermined hypothetical viewing point to the point on the three-dimensional graphic corresponding to the position of each display pixel, the normal direction signal indicating the normal direction to the surface of the three-dimensional graphic at said corresponding point for each display pixel;

second means connected to said first means and responsive to each of the depth value signals for producing a first reflection light intensity signal for each display signal, the first reflection light intensity signal indicating the portion of the entire reflection light intensity at said corresponding point resulting from the depth value signal for each display pixel when said corresponding point is viewed from said hypothetical viewing point as the three dimensional graphic is illuminated by a hypothetical light source, said second means including:

(a) first frame buffer means having a memory region corresponding to each display pixel of an image to be displayed on said display means, for storing the depth value signal for said corresponding point and outputting the stored depth value signal in synchronism with scanning of said display means, and

(b) first-reflection-light control means connected to said first frame buffer means and responsive to a depth value signal from said first frame buffer means for producing a first reflection light intensity signal for the associated display pixel;

third means connected to said first means and responsive to each of the normal direction signals for producing a second reflection light intensity signal for each display pixel, the second reflection light intensity signal indicating the portion of the entire reflection light intensity at said corresponding point resulting from the normal direction for each display pixel; and

fourth means, connected to said display means, said second means and said third means and responsive to said first and second reflection light intensity signal for each display pixel for controlling a reflection light intensity signal to be sent to said display means for each of said plurality of display pixels;

said first means including means connected to said first frame buffer means for producing a depth value signal

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associated with a point on the three-dimensional graphic to be displayed on said display means and determining whether the produced depth value signal represents a depth value smaller than the depth value represented by the depth value signal already stored in said first frame buffer means for the display pixel associated with the point to be displayed; and means for inhibiting display of the point when the determination is that the produced depth value signal represents a smaller depth value than that represented by the already stored depth value signal.

4,943,939

SURGICAL INSTRUMENT ACCOUNTING APPARATUS AND METHOD

Rocklin Hoover, Rte. 3, Box 314x-4, Sumter, S.C. 29154

Filed Aug. 29, 1988, Ser. No. 237,730

Int. Cl.[5] G06F *15/20*; G01N *15/00*; G06M *7/00*; B65D *83/10*

U.S. Cl. 364—555 **24 Claims**



1. An apparatus for accounting for standard surgical instruments used during surgery, such as clamps, hemostats and the like, dispensed into and removed for storage out of an operating environment to avoid leaving surgical instruments in said operating environment, said apparatus comprising:

a means for dispensing surgical instruments into said operating environment, said dispensing means having a first signalling means for signalling dispensing of one of said surgical instruments;

a means for storing surgical instruments withdrawn from said operating environment, said storing means having a second signalling means for signalling a storing of one of said surgical instruments; and

a computer means connected to said dispensing and said storing means for receiving said signaled dispensing and said signaled storing of said surgical instruments, for computing a first number and a second number of said surgical instruments dispensed into and received for storing out of said operating environment, respectively, and for subtracting said second number from said first number to determine a third number of said surgical instruments that have been dispensed by said dispensing means into said surgical environment but are not being stored by said storing means out of said surgical environment.

4,943,940

FLOATING POINT ADD/SUBTRACT AND MULTIPLYING ASSEMBLIES SHARING COMMON NORMALIZATION, ROUNDING AND EXPONENTIAL APPARATUS

Bernard J. New, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1984, Ser. No. 655,482

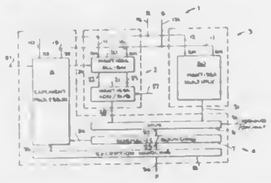
Int. Cl.[5] G06F *7/48*

U.S. Cl. 364—748 **9 Claims**

1. A fully combinatorial arithmetic apparatus for operating on a first and a second number, each of said numbers having a mantissa and an exponential component, comprising:

means for processing the exponential components of said first and said second numbers;

means coupled in parallel with said processing means and responsive to a control signal therefrom for aligning said mantissa of one of said numbers with said mantissa of the other of said numbers;



means serially coupled to said aligning means for selectively adding or subtracting said mantissas of said first and said second numbers after they are aligned;

means coupled in parallel with said processing means and said aligning and adding or subtracting means for multiplying said mantissas of said first and said second numbers;

means for normalizing and rounding a mantissa, said normalizing and rounding means having an output coupled to said processing means for controlling the magnitude of an exponent from said processing means; and

multiplexer means which is responsive to a control signal for selectively coupling outputs from said aligning and adding or subtracting means or said multiplying means to said normalizing and rounding means.

4,943,941

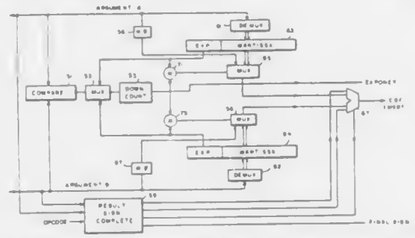
FLOATING POINT PROCESSOR EMPLOYING COUNTER CONTROLLED SHIFTING

Edward S. Harriman, Jr., Billerica, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jan. 13, 1989, Ser. No. 296,617

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **6 Claims**



1. Apparatus for performing floating point addition or subtraction on a pair of binary arguments, each of which includes an exponent portion and a mantissa portion, said apparatus comprising:

means for examining said arguments thereby to determine which argument is the larger;

counter means;

means for loading a value corresponding to the exponent portion of the larger argument into said counter;

arithmetic circuit means for generating carry save form result exponent and mantissa portions from corresponding portions of a pair of arguments presented to said arithmetic circuit means;

respective means for selectively transferring at least parts of each of the mantissas into said arithmetic circuit means, most significant bits being transferred first;

means for comparing each of the exponents with the current value held by said counter;

control means for stepping said counter and for controlling said respective transferring means in response to said comparing means to initiate transferring of each mantissa when the value held by said counter corresponds to the respective exponent.

4,943,942

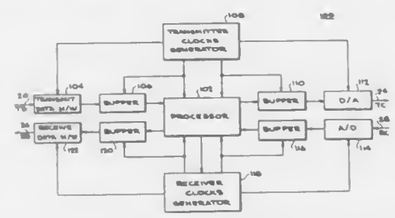
FULL-DUPLEX MODEM USING A SINGLE PROCESSOR

Dermot Dunnion, Santa Clara, Calif., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Sep. 19, 1986, Ser. No. 910,111

Int. Cl.[5] H04J *3/12*

U.S. Cl. 364—900 **1 Claim**



1. A full-duplex modem receiving digital data (TD) signals to be transmitted as analog data signals (TC) and receiving analog data signals (RC) to be converted to received digital data signals (RD), said modem receiving a transmit-enable signal and a receive-enable signal, said modem comprising:

means for generating a plurality of transmitter clock signals;

means for generating a plurality of receiver clock signals;

means responsive to one of said transmitter clock signals, for receiving said TD signals and synchronously generating therefrom signals at a predetermined rate Tx1;

first means for temporarily storing a predetermined number (N_T) of said synchronous signals generated from said TD signals;

means responsive to one of said receiver clock signals, for receiving said RC signals and synchronously generating therefrom digital signals at a predetermined multiple (N_R) of a predetermined rate Rx1;

second means for temporarily storing said predetermined multiple N_R of said synchronous signals generated from said RC signals;

memory means for storing programs and data;

programmable digital processor means, operably connected to said memory means, responsive to said transmit- and receive-enable signals and responsive to at least one of said transmitter clock signals, and to at least one of said receiver clock signals, for sampling said temporarily-stored signals generated from said TD signals, for executing a transmit-side signal processing procedure thereon and for generating therefrom digitized transmit signals, for sampling said temporarily-stored signals generated from said RC signals, for executing a receive-side signal processing procedure thereon and for generating therefrom digitized receive signals;

third means reponsive to one of said transmitter clock signals for temporarily storing said digitized transmit signals;

means responsive to one of said transmitter clock signals for converting said temporarily-stored digitized transmit signals to said analog data signals (TC);

fourth means responsive to one of said receiver clock signals for temporarily storing said digitized receive signals; and

means responsive to one of said receiver clock signals for receiving said temporarily-stored digitized receive signals and synchronously generating therefrom said received digital data signals (RD) at said predetermined rate Rx1;

wherein said processor means have a maximum, minimum, respectively, delay between reception of said transmit-enable signal and beginning execution of said transmit-side processing procedures of Δ_T, Δ_T, respectively, and has a maximum, minimum, respectively, delay between reception of said receive-enable signal and beginning execution of said receive-side processing procedures of Δ_R, Δ_R, respectively, wherein said third means temporarily stores $N_T+N_T\cdot(Tx1)\cdot(\Delta_T-\Delta_T)$ digitized transmit signals and wherein said second means temporarily stores $N_R+N_R\cdot(Rx1)\cdot(\Delta_R-\Delta_R)$ of said RC signals whereby said programmable digital processor means executes said transmit-side and said receive-side signal-processing procedures in time according to a predetermined schedule.

4,943,943

READ-OUT CIRCUIT FOR SEMICONDUCTOR NONVOLATILE MEMORY

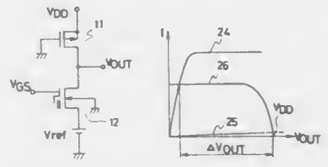
Yutaka Hayashi, 1-4, 1-chome, Umezono, Szkuramura, Nilkarigun, Ibarakiken; Yoshikazu Kojima, 31-1, Kameido 6-chome, Koto-ku, Tokyo; Masaaki Kamiya, 31-1, Kameido 6-chome, Koto-ku, Tokyo, and Kojiro Tanaka, 31-1, Kameido 6-chome, Koto-ku, Tokyo, all of Japan

Filed Jul. 24, 1984, Ser. No. 633,863

Claims priority, application Japan, Aug. 11, 1983, 58-147105

Int. Cl.[5] G11C *7/00*; H01L *29/78*

U.S. Cl. 365—185 **8 Claims**



1. A read-out circuit for a non-volatile semiconductor memory comprising: a semiconductor substrate; a first region and a second region disposed in spaced-apart isolation from one another adjacent to the surface of said semiconductor substrate; a first gate insulating layer on said second region; a channel extending between said first region and said second region, the channel having a first channel region and a second channel region in contact with one another, the second channel region being in contact with the second region; a second gate insulating layer on said first channel region; a third gate insulating layer on said second channel region; a floating gate electrode on said first and third gate insulating layers for inverting said second channel region in response to a charged state thereof and capacitively coupled to said second region; a select gate electrode on said second gate insulating layer; means for keeping the voltage of said second region constant relative to said semiconductor substrate in order to keep the voltage of said floating gate electrode constant by the capacitance coupling between said second region and said floating gate electrode; and means for applying a voltage to said select gate electrode for inverting said first channel region in order to read out the charged state of said floating gate electrode by an output voltage at the first region induced by the current flowing between said first region and said second region.

4,943,944

SEMICONDUCTOR MEMORY USING DYNAMIC RAM CELLS

Koji Sakui; Tsuneaki Fuse, both of Tokyo, and Fujio Masuoka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 23, 1988, Ser. No. 275,501

Claims priority, application Japan, Nov. 25, 1987, 62-296813; Nov. 25, 1987, 62-296814; Nov. 25, 1987, 62-296815; Nov. 25, 1987, 62-296822; Nov. 25, 1987, 62-296823

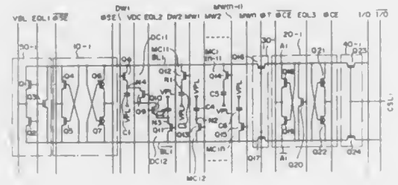
Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.05 **21 Claims**

1. A semiconductor memory device comprising:

a plurality of bit lines and a plurality of word lines disposed perpendicular to one another on a semiconductor substrate;

a plurality of dynamic memory cells disposed at intersections of said bit lines and said word lines;
equalizer means connected to said bit lines;
sense amplifier means connected to said bit lines;
latch means connected to said bit lines; and



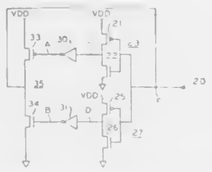
means, for, when a row address strobe signal for loading a row address into the memory device is active during a read cycle, selecting a word line, causing said latch means to latch data read from memory cells connected to the selected word line, then ceasing the selection of said word line, and causing said equalizer means to preset a level of the bit lines.

4,943,945

REFERENCE VOLTAGE GENERATOR FOR PRECHARGING BIT LINES OF A TRANSISTOR MEMORY

Fang-shi Lai, Baldwin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1989, Ser. No. 365,579
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.09 **6 Claims**



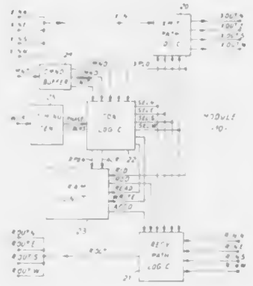
1. In a solid state memory device, a threshold generator for generating a reference potential for precharging bit lines of said memory comprising:
a first inverter circuit having a threshold voltage below said reference potential;
a second inverter circuit having a threshold voltage above said reference voltage, said first and second inverters having a common input connection;
voltage drive means to supply a current from a voltage source VDD, in response to an output signal of said first inverter circuit, and for discharging a current from said bit line in response to an output signal of said second inverter circuit; and,
a bit line driving connection connecting said voltage drive means and inverter circuit common input connection, said inverter circuits supplying a charging current and discharging current to and from said bit line to maintain a voltage on said bit line driving connection within a range defined by said threshold voltages.

4,943,946

CONTROL SYSTEM FOR CHAINED CIRCUIT MODULES

Michael Brent, London, England, assignor to Anamartic Limited, Milton, Mass.

PCT No. PCT/GB86/00401, § 371 Date Mar. 12, 1987, § 102(e) Date Mar. 12, 1987, PCT Pub. No. WO87/00675, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 11, 1986, Ser. No. 27,167
Claims priority, application United Kingdom, Jul. 12, 1985, 8517699
Int. Cl.[5] G11C *7/00*; G06F *1/00*
U.S. Cl. 365—189.12 **21 Claims**



1. A system of circuit modules connected in a chain, each module having an input terminal and an output terminal connected to said input terminal of the next module in the chain, each module including a function unit for operating on data and control means for causing the module to execute selected ones of a repertoire of commands, said control means of each module including serial logic connected from said input terminal to said output terminal of said module, for passing digital signals from module to module, said control means of each module comprising a shift register arrangement comprising a series of shift register stages, at least one of which is included within said serial logic and said system comprising a source of clock pulses distributed to all said shift register arrangements for clocking digital signals therethrough, a power supply source connected to all modules, means for launching a token consisting of at least one bit into said chain to be clocked by said clock pulses along said serial logic of said modules in sequence, a global command line extended to said control means of all said modules for the application of global command signals substantially simultaneously to all said control means, and means for applying a first command signal to said global command line at a predetermined time after said token was launched and, when said token is present in said serial logic of a selected module, said control means being responsive to receipt of said first command signal coincidentally with the presence of said token to execute a first selected one of said repertoire of commands.

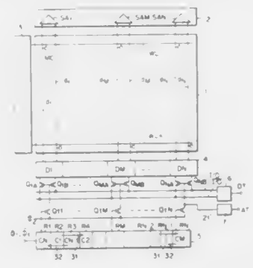
4,943,947

SEMICONDUCTOR MEMORY DEVICE WITH AN IMPROVED SERIAL ADDRESSING STRUCTURE

Yasuaki Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 9, 1988, Ser. No. 242,446
Claims priority, application Japan, Sep. 9, 1987, 62-227178
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.12 **6 Claims**

1. A semiconductor memory comprising; first to M-th data holding circuits arranged in a first direction, each of said data holding circuits storing digital information, a common data line, first to M-th selection circuits coupled between said plurality of data holding circuits and said common data line, respectively, an output circuit having an input end coupled to said common data line, a serial addressing circuit for serially applying a selection signal to said selection circuits, said serial addressing circuit including a shift register having first to M-th (M being a positive integer more than 2) shift stages arranged in said first direction, said first to M-th shift stages being alternately classified into first and second groups, the shift stages of said first group being electrically connected in cascade for



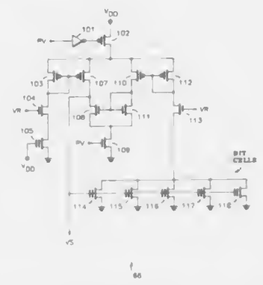
operation in such manner that said selection signal is consecutively shifted towards said M-th shift stage in said first direction only through the shift stages of said first group, the shift stages of said second group being electrically connected in cascade for operation in such manner that said selection signal is consecutively shifted from said M-th shift stage towards said first stage only through the shift stages of said second group in a second direction opposite to said first direction, and means for transferring said selection signal from one of said first and second shift stages to the other of said first and second stages.

4,943,948

PROGRAM CHECK FOR A NON-VOLATILE MEMORY

Bruce L. Morton, Round Rock; Bruce E. Engles, Austin, and Michael H. Chaddock, Round Rock, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1986, Ser. No. 871,214
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **5 Claims**



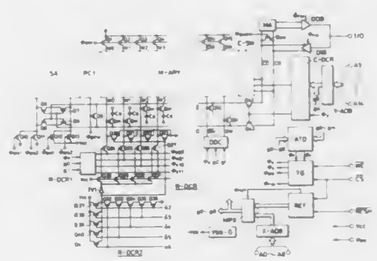
1. In a memory having an array of non-volatile memory cells which are in either a programmed or unprogrammed state, wherein a memory cell in the programmed state has a conductivity on one side of a first magnitude and a memory cell in the unprogrammed state has a conductivity on the other side of the first magnitude, a circuit comprising:
reference means for selectively providing a reference at a conductivity of a second magnitude or a conductivity of a third magnitude;
sense amplifier means, coupled to the reference means, for determining if a selected cell is in the programmed or unprogrammed state when the reference means provides the reference at a conductivity of the second magnitude and for determining if a selected cell has a conductivity less than a fourth magnitude when said reference means provides the reference at a conductivity of the third magnitude, said fourth magnitude being on said one side of said first magnitude.

4,943,949

SEMICONDUCTOR MEMORY INCLUDING MEANS FOR NOISE SUPPRESSION

Yasunori Yamaguchi, Tachikawa; Kanji Oishi, Koganei, and Kazuyuki Miyazawa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1985, Ser. No. 802,197
Claims priority, application Japan, Nov. 26, 1984, 59-248105
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—206 **20 Claims**



1. A semiconductor memory comprising:
a reference potential generating circuit;
a first data line adapted to be supplied with a reference potential from said reference potential generating circuit;
a second data line paired with said first data line and adapted to be supplied with said reference potential from said reference potential generating circuit;
a word line adapted to be fed with a selection signal;
a dummy word line adapted to be fed with a drive signal which is synchronized with said selection signal;
a dynamic memory cell coupled to said word line and to said first data line, and including an address selecting MOSFET and an information storing capacitor, wherein said dynamic memory cell sets the potential of said first data line at a higher or lower level than the reference potential at said second data line when said dynamic memory cell is selected by said selection signal being fed to said word line;
a sense amplifier for amplifying a level difference which occurs between said first data line and said second data line when said dynamic memory cell is selected; and
a dummy capacitor which is coupled between one of said second or first data lines and said dummy word line and which imparts noise to said one of said second or first data line in response to said drive signal being fed to said dummy word line to reduce noise between said first and second data lines which is caused by operation of said address selecting MOSFET when said dynamic memory cell is selected.
wherein said dummy capacitor comprises a MOS capacitor,
wherein said MOS capacitor comprises a MOSFET having a gate electrode coupled to said dummy word line and a current carrying electrode coupled to said second or first data line, and

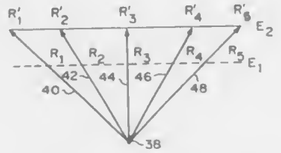
wherein the MOSFET acting as said MOS capacitor is a depletion mode MOSFET.

4,943,950

METHOD FOR MIGRATING SEISMIC DATA

Craig J. Beasley; Walter S. Lynn, and Ronald E. Chambers, all of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed May 26, 1989, Ser. No. 363,666
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—50 11 Claims



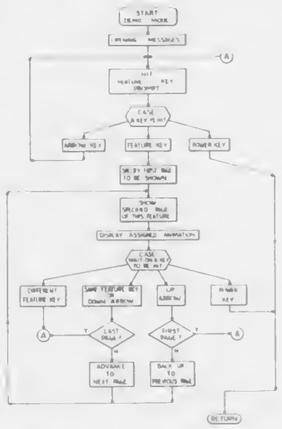
1. An improved method for migrating seismic data, comprising the steps of:
(a) time-shifting the seismic data from a surface elevation to a datum elevation;
(b) migrating the seismic data between the datum elevation and the surface elevation with a migration velocity substantially equal to zero; and
(c) migrating the seismic data below the surafce elevation with a true migration velocity.

4,943,951

DEPTH FINDER WITH TUTORIAL

David R. Leavell, Columbus, Ga.; Earl W. Spencer, Jr., Montgomery, Ala., and Bruce L. Bacon, Columbus, Ga., assignors to Microsonics, Inc., Columbus, Ga.

Filed Jul. 17, 1989, Ser. No. 380,796
Int. Cl.[5] G01S *15/96*
U.S. Cl. 367—111 10 Claims



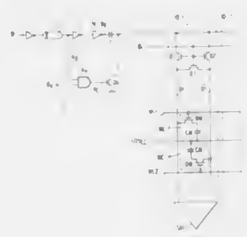
1. A depth finder for use on a boat to locate underwater structure and fish using reflected sonic energy comprising:
(a) transmitter means for generating repetitive signals;
(b) transducer means for converting said signals into sonic energy and directing said energy into a body of water such that reflected sonic energy incident on said transducer means is converted into a reflected energy signal;
(c) receiver means for receiving said reflected energy signal;
(d) programmable computer means operatively connected to said transmitter means and said receiver means to receive electronic information therefrom and to provide control signals thereto in accordance with a plurality of operating modes programmed within said programmable computer means;
(e) display means operatively connected to said programmable computer means for displaying visual graphic representations corresponding to said reflected energy signal;
(f) manually operable input means for providing command signals to said programmable computer means; and
(g) means associated with said programmable computer means for providing a tutorial display on said display means to explain the proper operation of said depth finder, said means being interactive with said input means and said programmable computer means to display instructional information stored therein responsive to manual operation of said input means.

4,943,952

SEMICONDUCTOR MEMORY CIRCUIT WITH IMPROVED BIT LANE PRECHARGE CIRCUIT

Kazuyoshi Terayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1988, Ser. No. 290,007
Claims priority, application Japan, Dec. 25, 1987, 62-331814
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—207 7 Claims



1. A semiconductor memory circuit comprising: a pair of bit lines, a plurality of word lines intersecting with said pair of bit lines, a plurality of dynamic type memory cells coupled to said word lines and said bit lines, a sense amplifier coupled to said pair of bit lines for operatively amplifying one of said pair of bit lines to a first voltage and the other of said pair of bit lines to a second voltage lower than said first voltage, a pair of first switch elements having current paths connected between said pair of bit lines and a common node, respectively, a capacitor having a first end coupled to said common node and a second end, means for enabling said first switch elements simultaneously in response to a first control signal which is activated after said pair of bit lines are amplified by said sense amplifier thereby to place said pair of bit lines at a third voltage between said first and second voltages, a second switch element having a current path connected between said common node and a voltage terminal set approximately at said second voltage, a first delay circuit, means for applying a second control signal to an input end of said first delay circuit, said second control signal being opposite to said first control signal, a second delay circuit having an output end connected to said second end of said capacitor, means for connecting an output end of said first delay circuit to an input end of said second delay circuit, and gate means having a first input end coupled to the output end of said first delay circuit and a second input end receiving a third control signal, said third control signal being activated

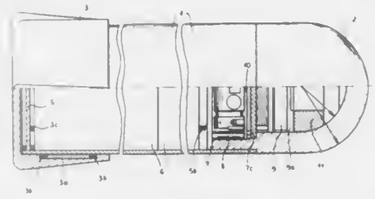
when said pair of bit lines are amplified, said gate means rendering said second switch element conductive when both of said first and second input ends of said gate means are activated.

4,943,953

DEVICE FOR DRIVING RODENTS FROM SUBTERRANEAN BURROWS

Foroud Kafi, Felix-Dahn-Str.64, 1190 Vienna, Austria

Filed Jun. 12, 1984, Ser. No. 597,447
Claims priority, application Austria, Apr. 6, 1983, 1212/83
Int. Cl.[5] H04B *1/02*
U.S. Cl. 367—139 9 Claims



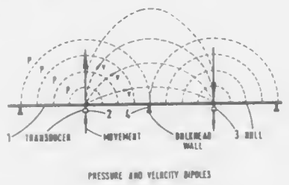
1. A device for driving rodents from burrows in a ground site which comprises:
an elongated housing having at least a thin wall portion and a construction enabling said housing to be driven into the ground;
a shock generator in said housing for generating nonaudible damped vibration compression waves at spaced-apart intervals and transmitting same to a wall of said housing;
means for controlling said shock generator in said housing, said housing having the configuration of a cylinder and is provided with a shell at the end thereof adapted to be driven into the ground, said shock generator being provided in this shell at said end; and
an electric current source in said housing connected to said shock generator.

4,943,954

METHOD AND A SYSTEM FOR COUNTERACTING MARINE BIOLOGIC FOULING OF A HULL OR A SUBMERGED CONSTRUCTION

Lars S. Ostlie, Sandnes, Norway, assignor to Infrawave A/S, Sandnes, Norway

Filed May 26, 1989, Ser. No. 357,398
Int. Cl.[5] H04B *11/00*; B63B *59/00*
U.S. Cl. 367—191 10 Claims



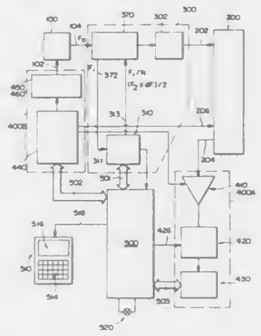
1. Method for combating marine fouling on the outside of a construction submerged in water including a ship hull in which method is utilized a number of electro-mechanical vibration transducers (2, 3) mounted on the inside of such structure (1), said transducers (2, 3) applying mechanical, low frequency vibrations to the structure (1) itself when electrical drive energy is applied to said transducers, and in which method a subsystem generates and feeds electrical drive voltages to said transducers, characterized in that said transducers (2, 3), being arranged in pairs in such a manner that each transducer in one pair is situated at a predetermined distance from and on respective sides of a fixed nodal line (4) on said structure (1), are supplied with drive voltages having such a variation over time that a particle velocity vector field is imparted to the water outside such structure in which the vector field is parallel to the surface of the structure immediately outside said nodal line and has a maximized numerical value in the same area.

4,943,955

ATOMIC CLOCK

Jean Rabian, Sainte Luce/Loire; Jean-Claude Potet, Sucé/Erdre, and Michel Buchon, St. Mars Du Desert, all of France, assignors to Societe D'Etudes, Recherches et Constructions Electroniques - Sercel, Carquefou, France

Filed Mar. 2, 1989, Ser. No. 317,962
Claims priority, application France, Mar. 3, 1988, 88 02706
Int. Cl.[5] G04C *15/00*; H03L *7/26*
U.S. Cl. 368—156 32 Claims



1. An atomic clock of the type comprising:
a quartz oscillator,
a tube containing a material, the atoms of which have a hyperfine spectral transition;
control means capable of generating, from the quartz oscillator, a control signal of a frequency that corresponds to the hyperfine spectral transition, and of applying this control signal to the tube to cause interaction between this signal and the atoms of the material contained in the tube; and
feedback means that are sensitive for the response of the tube and are adapted to modifying the frequency of the quartz oscillator so as to substantially center the frequency of the control signal on the frequency of the hyperfine spectral transition,
wherein the control means are adapted for cyclically generating test signals, the controlled frequency of which is located outside the Ramsey peak.

4,943,956

DRIVING APPARATUS

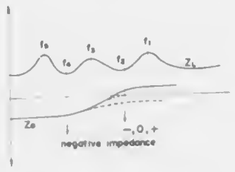
Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Apr. 19, 1989, Ser. No. 340,553
Claims priority, application Japan, Apr. 25, 1988, 63-100215; Apr. 25, 1988, 63-100216; May 25, 1988, 63-125638
Int. Cl.[5] H04R *3/00*
U.S. Cl. 367—137 19 Claims

9. A combined speaker and amplifier system comprising:
a speaker including a cabinet having an outer wall and an internal volume, a partition dividing the internal volume

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into at least first and second chambers, the partition having an opening, a first opening in the cabinet outer wall communicating with the first chamber, a second opening in the cabinet wall communicating with the second chamber, and a vibrator located in the opening of the partition, the chambers defining first and second resonators both of



which are driven by the vibrator, the speaker including a plurality of resonance points; and

an amplifier providing a drive signal for driving the speaker, the amplifier having an output impedance which is negative at at least one of the resonance points and having different values of output impedance at at least two of of the resonance points.

4,943,957

HIGH-DENSITY INFORMATION RECORDING CARRIER

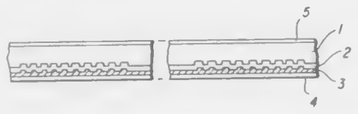
Masaru Sato, and Nagayoshi Tsukane, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 874,963, Jun. 16, 1986, abandoned. This application Oct. 17, 1988, Ser. No. 259,495

Claims priority, application Japan, Jun. 18, 1985, 60-132146; Jun. 18, 1985, 60-132147; Jun. 18, 1985, 60-132148

Int. Cl.[5] G11B *5/66*

U.S. Cl. 428—694 **5 Claims**



1. An optical information recording carrier comprising a transparent plastic substrate, an information recording layer formed on the substrate, and a layer of inorganic glass interposed between the substrate and the recording layer; the recording layer being a magneto-optical rare earth-transition metal amorphous alloy, and said layer of inorganic glass having a thickness of from 100 to 2000 Angstroms and being a glass comprising oxides and having an alkali metal content of less than 1 wt% in terms of alkali metal oxides and a coefficient of linear expansion of 40 to 70×10^{-7}/° C., and containing from 20 wt% to 35 wt% of alkaline earth metals in terms of alkaline earth metal oxides.

4,943,958

ISDN INTERFACE TRUNK CIRCUIT

John S. Young, Scottsdale; Peter Kruis, Glendale, and William D. Blewitt, Phoenix, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed May 1, 1987, Ser. No. 44,858

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—77 **20 Claims**

1. An interface trunk circuit for use in receiving and transmitting data between T-carrier facilities and ISDN systems, said interface trunk circuit being connected between said T-carrier facilities and said ISDN systems, said interface trunk circuit comprising:

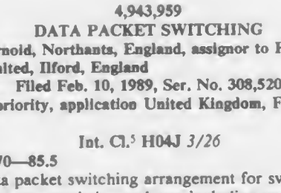
first means for receiving data connected to said ISDN system, said first means for receiving being operated in response to a first serial input data stream received via a data input lead to produce a first parallel data stream;

memory means connected to said first means for receiving and being operated to store said first parallel data stream;

processor means connected to said memory means, said processor means being operated in response to said first parallel data stream to convert logic zero data streams of a predetermined length into logic non-zero data streams of said predetermined length;

first means for transmitting data connected to said memory means, said first means for transmitting being operated in response to said previously stored logic non-zero data stream to convert said non-zero data stream to a first serial output data stream and to transmit said first serial output data stream via said T-carrier facilities;

second means for receiving data connected to said T-carrier facilities, said second means for receiving being operated



in response to a second serial input data stream of said T-carrier facilities to receive said second serial input data stream and to convert said second serial input data stream to a second parallel data stream;

said memory means being connected to said second means for receiving and being operated in response to a receive timing signal of said second means for receiving to store said second parallel data stream simultaneously with said storage of said first parallel data stream and simultaneously with said transmission of said logic non-zero data stream;

said processor means being further operated in response to said second parallel data stream to convert logic non-zero data streams of said second parallel data stream to logic zero data streams for storage in said memory means; and

second means for transmitting data connected to said memory means and to said ISDN systems, said second means for transmitting being operated to convert said second parallel data stream having said logic zero data streams to a second serial output data stream and to transmit said second serial output data stream to said ISDN systems via a data output lead.

4,943,959

DATA PACKET SWITCHING

John S. Arnold, Northants, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 10, 1989, Ser. No. 308,520

Claims priority, application United Kingdom, Feb. 10, 1988, 8802999

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—85.5 **5 Claims**

1. A data packet switching arrangement for switching data pockets into a transmission pathway including means arranged to determine data packet priority in each of a plurality of contending input ports and assign priority tokens indicative of the data packet's relative priority, each contending input port being coupled to other contending input ports to form a contention path, said contention path being arranged to allow said priority tokens to be looped through each of said contending input ports, there being a distinctive priority token indicative of each relative level of priority, said distinctive priority token being seized and held by one contending input port when said one contending input port contains a data packets of said level of priority awaiting transmission, said distinctive priority tokens of higher level being arranged to be seized when these



higher priority level tokens have been looped around said contention path and held when the data packet is transmitted and where tokens of lower priority which may arrive before completion in any transmission sequence and after the first token is seized, are also seized and held and where, on completion, all tokens held are released together.

4,943,960

SELF-REFRESHING OF DYNAMIC RANDOM ACCESS MEMORY DEVICE AND OPERATING METHOD THEREFOR

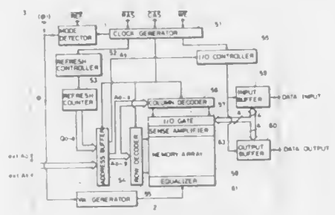
Takahiro Komatsu; Masaki Kumanoya; Katsumi Dosaka, and Yasuhiro Konishi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 337,976

Claims priority, application Japan, Jul. 19, 1988, 63-179890

Int. Cl.[5] G11C *8/00, 11/24*

U.S. Cl. 365—222 **10 Claims**



1. A dynamic random access memory device having normal read, write and refresh modes of operation and an additional self-controlled periodic refresh mode of operation comprising:

a pair of first and second bit lines;

at least one memory cell connected to said first bit line, said memory cell having a capacitor element for storing a data signal, the voltage level of said data signal stored in said capacitor element having a tendency to change toward a ground potential;

input means for receiving externally applied mode select signal for selecting one of said normal operating modes or said additional self-controlled refresh mode;

precharge voltage generator means for generating a first level voltage between a supply voltage and a ground potential for precharging said bit line pair;

equalizing means connected to said precharge voltage generating means for equalizing said bit line pair to said first level voltage in response to said mode select signal applied to said input means for selecting one of said normal operating modes;

said precharge voltage generator means generating a second level voltage between said first level voltage and said ground potential for precharging said bit line pair,

said equalizing means equalizing said bit line pair to said second level voltage in response to said mode select signal applied to said input means for selecting said additional self-controlled mode of operation,

means for receiving an address signal for designating said memory cell;

said memory cell further including means for transferring the data signal stored in said capacitor element in said memory cell to said first bit line in response to the address signal applied to said address signal receiving means; and

sense amplifier means connected between said first and second bit lines for amplifying a potential difference therebetween.

4,943,961

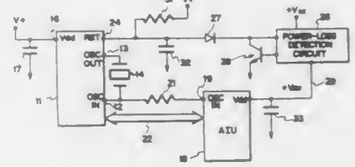
MEMORY RETENTION SYSTEM FOR VOLATILE MEMORY DEVICES

Bradley A. Sparks, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed May 5, 1988, Ser. No. 190,437

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—228 **11 Claims**



3. A memory retention system for an electronic apparatus including first and second logic devices clocked by a common oscillator integrally associated with one of said logic devices, each of said logic devices including an oscillator input terminal having a high impedance when said logic devices receive a biasing voltage and a low impedance when said biasing voltage falls below an acceptable level, at least one of said logic devices including a memory, the memory of said first logic device being volatile whereby stored data is lost when said biasing voltage falls below said acceptable level, said memory retention system including:

charge storage means responsive to said biasing voltage and associated with said first logic device which includes said volatile memory, for retaining a voltage on said volatile memory for a preselected time after said biasing voltage falls below said acceptable level; and

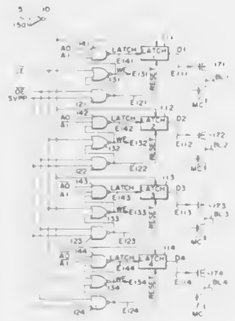
means for coupling together said oscillator input terminals of said logic devices, said oscillator being stopped by said oscillator input terminal of said second logic device exhibiting said low impedance when said biasing voltage falls below said acceptable level.

4,943,962

NONVOLATILE SEMICONDUCTOR MEMORY HAVING PAGE MODE PROGRAMMING FUNCTION

Kenji Imamiya, Yokohama; Sumio Tanaka, Oomorinishi; Junichi Miyamoto, Yokohama; Shigeru Atsumi, Tokyo; Nobuaki Ohtsuka, and Shinji Saito, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 28, 1988, Ser. No. 263,752
Claims priority, application Japan, Oct. 30, 1987, 62-275462
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—230.08 19 Claims



1. A nonvolatile semiconductor memory having programming control transistors for controlling data programming into memory cells and receiving input data, address input, chip enable signal, output enable signal, and programming power source voltage, comprising:

set signal generating means for generating set signals in response to the chip enable signal set to be active and the address input when the programming power source voltage is at a preset programming voltage and the output enable signal is inactive; and

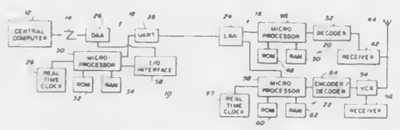
latch circuit means, coupled to said set signal generating means, for latching, in response to the set signal, the input data and at the same time supply the latched data to said programming control transistors corresponding to the address input, thus programming the latched data into said memory cells corresponding to the address input.

4,943,963

DATA COLLECTION AND TRANSMISSION SYSTEM WITH REAL TIME CLOCK

Jerome R. Waechter, Clearwater; James T. Patten, St. Petersburg, and Paul C. Kempter, Palm Harbor, all of Fla., assignors to A. C. Nielsen Company, Northbrook, Ill.

Filed Jan. 19, 1988, Ser. No. 145,259
Int. Cl.[5] H04H *9/00*
U.S. Cl. 370—94.1 42 Claims



1. A data collection and transmission system comprising:

at least one remotely located monitoring station for collecting and storing predetermined operational data;

a central computer arranged for bidirectional communication with said monitoring station and for processing said stored predetermined operational data;

said at least one remotely located monitoring station including a storage and forward unit for communicating with said central computer and having a real time clock, at least one sensor unit for monitoring and storing predetermined operational data and a local area network connecting said storage and forward unit and each of said sensor units; and

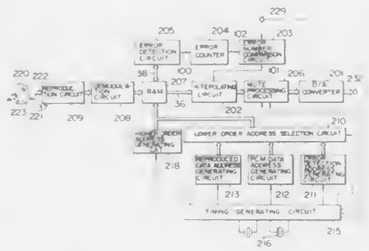
said at least one sensor unit including means for receiving a real time coded message from said storage and forward unit, and means responsive to said received real time coded message for determining a current time value, said current time value determining means including means for identifying a transmission time delay over said local area network, and means responsive to said identified transmission time delay for adjusting said real time coded message.

4,943,964

PCM SIGNAL REPRODUCING DEVICE

Yuji Hatanaka; Hiroo Okamoto, both of Yokohama; Shin-ichi Wakumura; Ichiro Miyake, both of Tokorozawa, and Shunichiro Sakamoto, Kawagoe, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electric Corporation, both of Tokyo, Japan

Filed Aug. 5, 1988, Ser. No. 228,415
Claims priority, application Japan, Aug. 12, 1987, 62-199870; Aug. 20, 1987, 62-205041
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—31 13 Claims



1. A PCM signal reproducing device for reproducing a recording medium having reproduction heads and a plurality of tracks, at least a set of a first and a second track forming one frame, on which PCM data of a first and a second channel respectively divided into odd number data and even number data are recorded, said device comprising:

a signal processing circuit including:

a memory circuit for storing the PCM data reproduced from the reproduction heads;

an error detection circuit for detecting errors of the PCM data stored by said memory circuit;

an error count circuit for counting the number of errors detected by said error detection circuit;

an error comparison circuit for comparing the errors of the odd number data and the even number data of the first and second channels; and

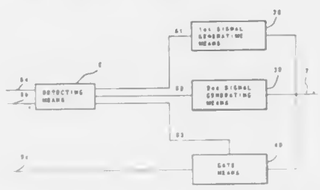
an interpolating circuit connected to receive the PCM data from said memory circuit and replacing with interpolating data the data which is decided to have a larger number of errors in accordance with the comparison.

4,943,965

DIGITAL SIGNAL DECODING METHOD AND CIRCUIT THEREFOR

Hirohisa Machida, and Takeo Nakabayashi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1988, Ser. No. 217,585
Claims priority, application Japan, Dec. 22, 1987, 62-324408
Int. Cl.[5] G06F *11/16*
U.S. Cl. 371—36 7 Claims



1. A method for decoding an encoded 3-bit digital data signal to a 1-bit digital data signal, comprising the steps of:

receiving the encoded 3-bit digital data signal from an external source;

determining whether a first bit of the 3-bit digital data signal is a logical "1";

determining whether a second bit of the 3-bit digital data signal is a logical "1";

setting the 1-bit digital data signal to a "1" if said first bit and said second bit are both a logical "1";

setting the 1-bit digital data signal to a "0" if said first bit and said second bit are both a logical "0";

decoding a third bit of the 3-bit digital data signal directly if said first bit and said second bit are not both a logical "1" or a logical "0"; and

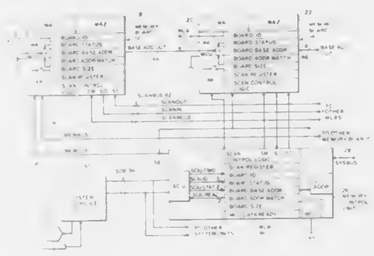
transmitting the 1-bit digital data signal to an external destination.

4,943,966

MEMORY DIAGNOSTIC APPARATUS AND METHOD

Richard F. Giunta, Beverly; Robert D. Becker, Shirley; Martin J. Schwartz, Worcester; Richard W. Coyle, Dunstable, and Kevin H. Curcuru, Pepperell, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Apr. 8, 1988, Ser. No. 179,162
Int. Cl.[5] G11C *13/00*; G06F *11/00*
U.S. Cl. 371—11.1 31 Claims



1. Apparatus for allocating memory address base addresses among a plurality of memory units, each of the memory units defining a predefined range of memory addresses, each of the range of memory addresses being contiguous one with the other, comprising for each of the memory units;

means for defining a total number of data storage memory addresses represented by a memory unit, said total number defining means having a first output;

means for defining a portion or portions of said total number of memory unit memory addresses which are disabled from the storage of data therein, said portion defining means having a second output;

means for defining a memory address base address for said memory unit, said base address defining means having a third output;

means for combining said first, said second and said third outputs to produce a fourth output, said fourth output being substantially equal to the sum of said first and said third outputs minus said second output; and

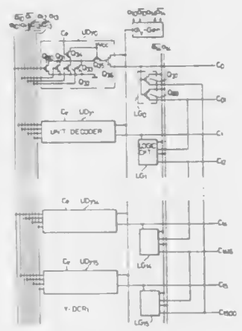
means for outputting said fourth output to another memory unit for defining a memory address base address for the other memory unit.

4,943,967

SEMICONDUCTOR MEMORY WITH AN IMPROVED DUMMY CELL ARRANGEMENT AND WITH A BUILT-IN ERROR CORRECTION CODE CIRCUIT

Takashi Shinoda, and Osamu Sakai, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 37,048, Apr. 10, 1987, Pat. No. 4,817,052, which is a continuation of Ser. No. 466,483, Feb. 15, 1983, Pat. No. 4,703,453. This application Mar. 21, 1989, Ser. No. 326,653
Claims priority, application Japan, Feb. 15, 1982, 57-21130
Int. Cl.[5] G06F *11/10*; G11C *29/00*
U.S. Cl. 371—2.2 13 Claims



1. A semiconductor memory comprising:

a plurality of memory cells arranged in a matrix form in one semiconductor chip for storing data;

a selecting circuit coupled to said plurality of memory cells for selecting a plurality of predetermined ones of said plurality of memory cells at a time in response to address signals for reading out a predetermined set of data having check bits from said predetermined ones of said plurality of memory cells; and

an error correcting code circuit formed in said semiconductor chip and coupled to said selecting circuit to receive said predetermined set of data having check bits from said selecting circuit,

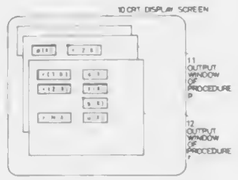
wherein said predetermined ones of the memory cells, for delivering said predetermined set of data having check bits, are located at said semiconductor chip so as to be spaced from each other by a distance of at least one of said memory cells.

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4,943,968
METHOD OF DISPLAYING EXECUTION TRACE IN A LOGIC PROGRAMMING LANGUAGE PROCESSING SYSTEM

Tadashi Hirose, Komae; Kazuo Nakao, Sagamihara, and Keiko Shinada, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1988, Ser. No. 156,459
Claims priority, application Japan, Mar. 4, 1987, 62-47535; Mar. 20, 1987, 62-63993
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—19 7 Claims

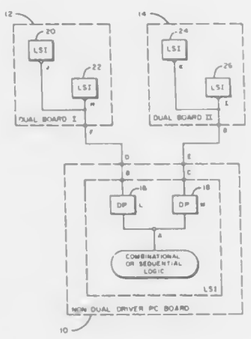


1. A method for displaying an execution trace of a program described in a logic programming language, said program including at least one procedure, the method comprising the steps of:
executing the program in a data processing apparatus;
displaying terms of a program source list of the procedure that is called; and
graphically displaying a present point of execution on the displayed program source list during the execution of the program.

4,943,969
ISOLATION FOR FAILURES OF INPUT SIGNALS SUPPLIED TO DUAL MODULES WHICH ARE CHECKED BY COMPARISON

Peter B. Criswell, Bethel, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 28, 1988, Ser. No. 277,074
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—68.1 4 Claims

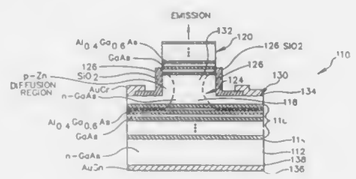


1. A system for detecting and isolating failures of input signals that are supplied to a plurality of identical electronic module means, each of which receives said input signals from a common input means, wherein said module means each comprise
clock means for supplying capture clock phase signals comprising a plurality of capture clock phase signals including a predetermined capture clock phase signal,
a plurality of functional means coupled to said clock means each of which, upon the occurrence of said predetermined capture clock phase signal, captures a functional signal that is derived from an associated input signal,
a plurality of link means coupled to said clock means each of which, upon the occurrence of said predetermined capture clock phase signal which resulted in the capture of an associated functional signal by an associated functional means, captures an input signal from which an associated functional signal was derived and provides a link output signal,
encoding means coupled to said clock means and to a plurality of said link means which, upon the occurrence of one of said capture clock phase signals, provides an encoded signal representative of said link output signal; and
wherein comparison means are coupled to said module means for receiving and for comparing said encoded signals of said plurality of module means and for producing an error signal when said encoded signals of said plurality of module means do not compare.

4,943,970
SURFACE EMITTING LASER

Eric M. Bradley, Escondido, Calif., assignor to General Dynamics Corporation, Electronics Division, San Diego, Calif.

Division of Ser. No. 261,413, Oct. 24, 1988, Pat. No. 4,901,327.
This application Sep. 21, 1989, Ser. No. 410,342
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 14 Claims

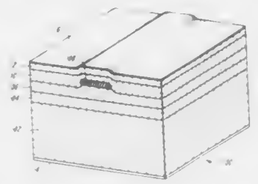


1. A surface emitting laser diode comprising:
a semiconductor substrate having top and bottom surfaces;
a first plurality of alternating semiconductor mirror layers of differing refractive indicies formed upon said substrate;
a semiconductor active layer formed upon said first plurality of semiconductor layers, said active layer having a central region and a surrounding outer region, said active layer central region being of greater thickness than said active layer outer region, wherein said active layer central region has a top and a side surface and said active layer outer region has a top surface intersecting said active layer central region side;
a second plurality of said alternating semiconductor mirror layers formed upon said active central region top surface;
a current confinement layer formed upon said active layer central region side surface and a portion of said active layer outer region top surface immediate said active layer central region side surface;
first and second contacts respectively formed upon said substrate bottom surface and said active layer outer region top surface remote from said active layer central region side surface.

4,943,971
LOW TUNING RATE SINGLE MODE PBTE/PBEUSETE BURIED HETEROSTRUCTURE TUNABLE DIODE LASERS AND ARRAYS

Zeev Fiet, Brookline; Douglas Kostyk, Billerica, and Robert J. Woods, Burlington, all of Mass., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Feb. 24, 1989, Ser. No. 314,977
Int. Cl.[5] H01S *3/29*
U.S. Cl. 372—46 6 Claims

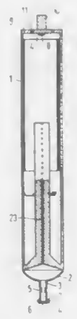


1. A buried heterostructure tunable diode laser comprising:
first and second ohmic contacts, and
a resonant cavity comprising first and second parallel faces located between said first and second ohmic contacts and built upon a lead salt substrate, said resonant cavity further comprising a semiconductor monocrystalline lead salt active region layer containing europium and selenium and having a given energy band gap, index of refraction, crystal structure and lattice constant, buried between two semiconductor monocrystalline lead salt layers of mutually opposite conductivity type and having an energy band gap greater than, an index of refraction smaller than, and a lattice constant substantially equal to those of said active region layer.

4,943,972
LASER TUBE

Hans Krueger, Munich, and Wolfgang Welsch, Baldham, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 2, 1988, Ser. No. 265,932
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3737626
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—107 9 Claims

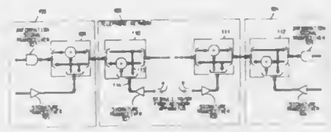


1. A laser tube, comprising:
a tubular housing;
at least one metallic mirror mount composed of an material having a first coefficient of thermal expansion and positioned at an end of said tubular housing;
an integrated mirror on said at least one mirror mount, said integrated mirror having a second coefficient of thermal expansion different than said first coefficient of thermal expansion;
and
a soft solder securing said mirror on said at least one mirror mount.

4,943,973
SPREAD-SPECTRUM IDENTIFICATION SIGNAL FOR COMMUNICATIONS SYSTEM

Jean-Jacques Werner, Holmdel, N.J., assignor to AT&T Company, Murray Hill, N.J.

Filed Mar. 31, 1989, Ser. No. 331,933
Int. Cl.[5] H04K *9/00*
U.S. Cl. 375—1 23 Claims

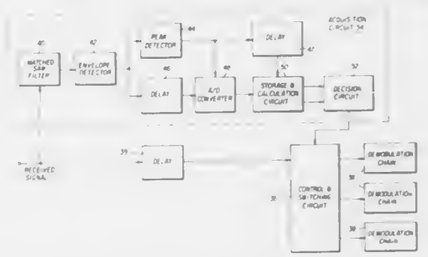


1. A communications system comprising
means for transmitting a spread-spectrum signature signal superimposed upon an associated nonspread-spectrum information signal, said spread-spectrum signal conveying information which identifies the associated information signal;
means for receiving said information signal and superimposed spread-spectrum signature signal; and
means responsive to the received spread-spectrum signature signal for recovering the identifying information.

4,943,974
DETECTION OF BURST SIGNAL TRANSMISSIONS

Masoud Motamedi, Gaithersburg, Md., assignor to Geostar Corporation, Washington, D.C.

Filed Oct. 21, 1988, Ser. No. 260,614
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 68 Claims

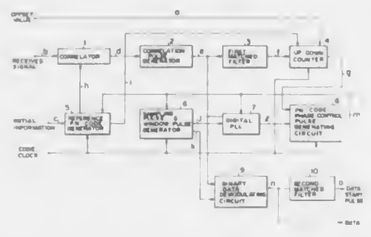


1. A method for detecting a burst signal transmission containing a sequence of N acquisition codes occurring at known time intervals, comprising:
receiving said burst signal transmission and comparing successively received portions thereof to a stored acquisition code pattern;
generating a time-varying correlation output having a magnitude proportional to the similarity between the successively received portions of the burst signal transmission and the stored acquisition code pattern;
detecting and measuring peaks in the magnitude of said correlation output;
forming a group of N peak magnitudes occurring at time intervals corresponding to said known time intervals;

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computing values proportional to the mean value and variance, respectively, of the group of N peak magnitudes;
comparing the computed values proportional to the mean value and variance to predetermined minimum and maximum values, respectively; and
indicating the presence of a burst signal transmission when the computed value proportional to the mean value exceeds said minimum value and the computed value proportional to the variance is less than said maximum value.

4,943,975
SPREAD SPECTRUM COMMUNICATION RECEIVER
Takao Kurihara; Masahiro Hamatsu, and Masaharu Mori, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Oct. 7, 1988, Ser. No. 256,394
Claims priority, application Japan, Oct. 9, 1987, 62-255693; Oct. 9, 1987, 62-255694; Oct. 9, 1987, 62-255695; Oct. 30, 1987, 62-275073; Nov. 11, 1987, 62-283056; Nov. 11, 1987, 62-283055
Int. Cl.[5] H04K *1/04*
U.S. Cl. 375—1 **11 Claims**



1. A spread spectrum communication receiver comprising:
correlating means for correlating a received PN code contained in a received signal with a reference PN code contained in a reference signal;
correlation pulse generating means for generating a series of correlation pulses, corresponding to the polarity of a correlation spike outputted by said correlating means;
reference signal generating means for generating said reference signal;
means for generating sampling pulses before and after said correlation pulse in time and extracting a correlation pulse from said series of correlation pulses by using those sampling pulses;
digital phase lock means for holding the synchronization between said received PN code and said reference PN code;
phase control means for controlling the phase of said reference PN code, responding to the output of said digital phase lock means; and
data demodulation means for demodulating said received signal to obtain data by extracting a correlation pulse from said series of correlation pulses by using a window pulse having a time interval between said sampling pulses generated before and after said correlation pulse in time.

4,943,976
SPREAD SPECTRUM COMMUNICATION SYSTEM
Yukinobu Ishigaki, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Sep. 13, 1989, Ser. No. 406,408
Claims priority, application Japan, Sep. 16, 1988, 63-233302
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **5 Claims**

5. A spread spectrum communication system comprising a transmitter and a receiver, the transmitter including:
means for modulating a first carrier with an information signal to generate a first primary modulation signal;
means for adding the first primary modulation signal and a second carrier to generate an addition signal;
means for generating a first spread code and a second spread code in response to a clock signal, the second spread code being equal to the first spread code delayed by a predetermined time;
means for multiplying the addition signal and the first spread code to spread a spectrum of the addition signal with the first spread code to generate a first spread spectrum signal;
means for shifting a phase of the first carrier by a predetermined angle to generate a third carrier;
means for multiplying the third carrier and the second spread code to spread a spectrum of the third carrier with the second spread code to generate a second spread spectrum signal; and
means for adding the first spread spectrum signal and the second spread spectrum signal to generate a composite spread spectrum signal;
the receiver including:
means for separating the composite spread spectrum signal into a third spread spectrum signal and a fourth spread spectrum signal related to a frequency of the first carrier and a frequency of the second carrier respectively;

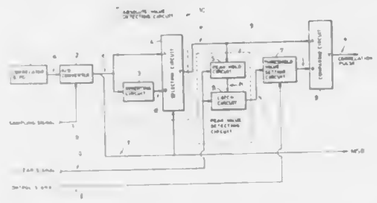


means for multiplying the third spread spectrum signal and the fourth spread spectrum signal to generate a first despread spectrum signal;
means for delaying the fourth spread spectrum signal by a predetermined time to generate a fifth spread spectrum signal;
means for multiplying the third spread spectrum signal and the fifth spread spectrum signal to generate a second despread spectrum signal;
a first band pass filter filtering the first despread spectrum signal to demodulate a second primary modulation signal, corresponding to the first primary modulation signal, from the first despread spectrum signal;
a second band pass filter filtering the second despread spectrum signal;
means for deriving a carrier component from an output signal of the second band pass filter, the carrier component being synchronous with the second primary modulation signal; and
means for mixing the second primary modulation signal and the carrier component to perform sync demodulation to demodulate the information signal from the second primary modulation signal.

4,943,977
CORRELATION PULSE GENERATING CIRCUIT IN A SPREAD SPECTRUM RECEIVER
Yoshitaka Uchida, and Kouichi Kato, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Jul. 7, 1989, Ser. No. 376,860
Claims priority, application Japan, Jul. 12, 1988, 63-174224
Int. Cl.[5] H01K *1/04*; H04L *9/00*
U.S. Cl. 375—1 **3 Claims**

1. A spread spectrum receiver comprising:
a correlator for generating a correlation spike by correlating a received signal with a reference signal; and
a correlation pulse generating circuit for generating a correlation pulse, responding to said reference signal, including
an A/D converting circuit which A/D-converts said correlation spike;
an absolute value detecting circuit for detecting the absolute value of the output of said A/D converting circuit;

a peak value detecting circuit for detecting the value corresponding to a peak of the output of said absolute value detecting circuit;
a threshold value setting circuit for generating a threshold



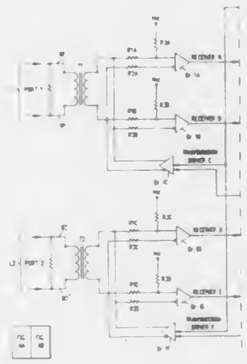
signal based on the output of said peak value detecting circuit; and
a comparing circuit for comparing the output of the absolute value detecting circuit with said threshold signal to generate the correlation pulse.

4,943,978
DIGITAL INTERFACE UNIT
Thomas B. Rice, Laguna Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 81,561, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 802,786, Nov. 27, 1985, abandoned.
This application Jan. 17, 1989, Ser. No. 298,293
Int. Cl.[5] H04K *1/102*
U.S. Cl. 375—1 **18 Claims**



6. Digital communication apparatus for use with secure, jam-resistant digital communication equipment, said digital communication equipment having a message protocol which includes a free text message protocol, said digital communication apparatus allowing transfer of data, over said digital communication equipment, between digital communications terminals of a predetermined type having a fixed format message protocol which is incompatible with the message protocol of said digital communication equipment, said digital communication apparatus comprising:
first means, adapted to receive fixed format digital messages having a fixed format message protocol compatible with said communications terminals, for packing said fixed format digital message into free text digital messages having a free text message protocol compatible with the free text message protocol of said jam-resistant digital communication equipment; and
second means adapted to receive free text digital messages compatible with said communication terminal and having a fixed format digital message contained therein, for unpacking said fixed format digital message from said free text digital message to provide said fixed format digital messages for use with said communication terminals.

4,943,979
LOCAL ACCESS NETWORK SIGNAL REGNERATOR
Harold H. Webber, Jr., Berkeley, Calif., assignor to Farallon Computing Corporation, Emeryville, Calif.
Filed May 12, 1988, Ser. No. 193,854
Int. Cl.[5] H03K *11/00*; H04L *25/60*
U.S. Cl. 375—4 **5 Claims**



1. In a local access network for facilitating communication between computer products, where the network uses two unshielded wires as a signal line to transport messages between the computer products, a multiport signal regenerator that comprises:
a plurality of substantially identical transformers, with one transformer being associated with and connected to each computer product, with each transformer having two primary terminals and two secondary terminals, with the two primary terminals being connected by two wires of a signal line to the associated computer product in the network;
a transceiver circuit connected to the two secondary terminals of each transformer, to receive a message from a source computer product in the network, to transmit a copy of this message to all other computer products in the network, to lock out all other messages received from other computer products while the current message is being received and processed by the circuit, to sense the end of the message being currently received by the circuit, and to re-arm the circuit to receive and process another incoming message at a predetermined idle time interval after the end of the current message is received, where the predetermined idle time is determined by the circuit itself; and
a timing circuit connected to the transceiver circuit, to receive a copy of the current message, to measure the temporal length Δt_m of the current message, to issue a disable command to the transceiver circuit that commands the transceiver circuit to ignore or lock out the remainder of the current message and any subsequent messages received from the source computer product for a predetermined punishment time interval Δt_2 thereafter, if Δt_m exceeds a predetermined protocol time interval Δt_1.

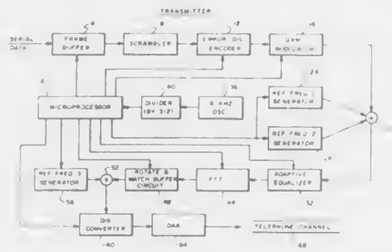
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4,943,980

MULTI-CARRIER HIGH SPEED MODEM

W. Kurt Dobson, Salt Lake City, and Donald L. Chaffee, Park City, both of Utah, assignors to Intelligent Modem Corporation, Midvale, Utah

Filed May 2, 1989, Ser. No. 346,069
Int. Cl.[5] H04B *15/00*
U.S. Cl. 375—42 **8 Claims**



1. A modem system for transmitting digital data information over a telephone channel or the like comprising

means for successively generating sets of carrier signals, each carrier signal of a set having a frequency different from the frequency of every other carrier signal of the set and therefore a frequency spacing therebetween,

means for modulating each carrier signal of a set with a different portion of the digital data, all such portions which are used to modulate a set of carrier signals comprising a frame of digital data,

means for successively combining together the modulated carrier signals of each set to produce a frame waveform,

means for successively transforming each waveform, pursuant to an inverse Fast Fourier Transform function, from a frequency domain signal to a time domain signal,

means for rotating each transformed waveform so that its beginning point and slope substantially matches the ending point and slope of the immediately preceding transformed waveform,

means for successively and continuously transmitting the transformed, rotated waveforms from a transmitting station to a receiving station,

means for receiving the transmitted waveforms,

means for rerotating each received waveform substantially to its original condition before rotating,

means for transforming each received, rerotated waveform, pursuant to a Fast Fourier Transform function, from a time domain signal to a frequency domain signal, and

means for demodulating each received and rerotated waveform to recover the digital data information.

4,943,981

DIVIDING MECHANISMS FOR FREQUENCY SYNTHESIZERS

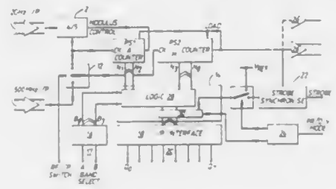
Nicholas P. Cowley, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Mar. 30, 1989, Ser. No. 330,710
Claims priority, application United Kingdom, Mar. 30, 1988, 8727951
Int. Cl.[5] H03K *21/02*
U.S. Cl. 377—47 **6 Claims**

1. A dividing mechanism, comprising:

A two modulus divider system having a first and second counter for providing respective programmable count totals A, M, and first counter being coupled to a dual modulus device providing moduli of n and n+1 whereby the two modulus divider system provides a division ratio of (Mn+A) for incoming signals;

first and second input means for receiving first and second programming number signals N, Q, synchronisation means for receiving a strobe signal from a further counter which provides a count total P, and logic interface means responsive to said first and second input means and said synchronisation means to provide programming number



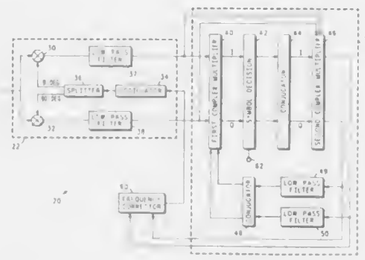
signals, A, M to said two modulus divider system, the logic interface means being such that in the absence of said strobe signal the two modulus divider system provides a count total $C_1=f(N)$, and following the reception of the strobe signal the two modulus divider system provides at least one count cycles with a count total $C_2=f(N,Q)$, whereby if the output of the two modulus divider system is coupled to said external counter, said dividing mechanism provides a count total $C_3=f(P,N,Q)$.

4,943,982

BASEBAND CARRIER PHASE CORRECTOR

Vernon P. O'Neil, II, Tempe, and Jesus A. Navarro, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1989, Ser. No. 345,744
Int. Cl.[5] H03D *3/20*; H04L *27/06*
U.S. Cl. 375—81 **6 Claims**



1. A carrier phase corrector circuit comprising:

baseband input means for supplying in-phase (I) and quadrature (Q) baseband modulated signals from an input signal having a given frequency and phase;

said I and Q baseband modulated signals each including a respective phase error;

first multiplier means, said first multiplier means coupled to said baseband input means to receive said I and Q baseband modulated signals;

said first multiplier means outputting phase adjusted I and Q baseband signals;

symbol decision means coupled to said first multiplier means to receive said phase adjusted baseband I and Q signals from said first multiplier;

said symbol decision means for estimating digital I and Q signals corresponding to phase adjusted I and Q baseband signals;

second multiplier means coupled to said symbol decision means to receive said digital I and Q signals, and further coupled to said baseband input means to receive said I and Q baseband modulated signals;

said second multiplier means for generating a conjugated phase error from said digital I and Q signals and said I and Q baseband modulated signals;

said first multiplier means coupled to said second multiplier means to receive said conjugated phase error;

said first multiplier means for adjusting the phase error of said I and Q baseband modulated signals by said conjugated phase error multiplying with said I and Q baseband modulated signals;

output means coupled to said symbol decision means; and

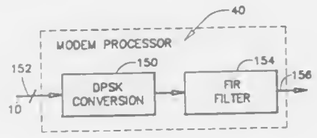
said output means for outputting said digital I and Q signals when the carrier phase corrector circuit has locked onto said phase of said input signal.

4,943,983

SUBSCRIBER UNIT FOR WIRELESS DIGITAL TELEPHONE SYSTEM

David N. Critchlow, San Diego, Calif., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Continuation of Ser. No. 893,916, Aug. 7, 1986, Pat. No. 4,825,448. This application Oct. 12, 1988, Ser. No. 256,580
Int. Cl.[5] H04L *27/18*
U.S. Cl. 375—84 **1 Claim**



1. A modem comprising

a modem processor including a DPSK converter coupled to a filter;

said converter having a digital bit input and comprising an inverse Gray coding function whose output is applied to a phase quantizer for determining the absolute value of the current symbol, said quantizer being coupled to a differential encoder for providing a differentially encoded phase value that represents the modulo sum of the current differential phase and the prior absolute phase, said modulo sum being directly applied to form the I and Q of the current symbol; and

said filter being adapted to create an oversampled PSK waveform from said I and Q components that provide a time division multiplexed signal.

4,943,984

DATA PROCESSING SYSTEM PARALLEL DATA BUS HAVING A SINGLE OSCILLATOR CLOCKING APPARATUS

Gerald G. Pechanek; David J. Shippy, both of Endwell; Mark C. Snedaker, Vestal, and Sandra S. Woodward, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1988, Ser. No. 211,032
Int. Cl.[5] H04L *7/00*; G06F *1/04*; H04Q *9/04*
U.S. Cl. 375—109 **22 Claims**

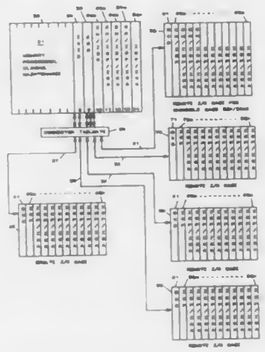
1. A clock system including a parallel data bus suitable for use in the transfer of data among units of a data processing system comprising:

a. a source of clock pulses in a first of said units;

b. parallel data bus means connecting said first unit with other of said units;

c. first data transfer logic in said first unit connected to said source of clock pulses and said data bus for transferring data and said clock pulses to said other units; and

d. second transfer logic in each of said other units for receiving said transferred data and clock pulses and for transferring data and said received clock pulses to said first unit whereby said source of clock pulses is used to control the transmission of data at said first unit and said other units.

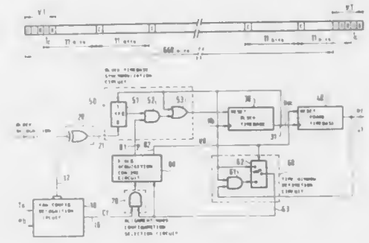


4,943,985

FRAME SYNCHRONIZATION DEVICE FOR A SYNCHRONOUS DIGITAL BIT STREAM DIVIDED INTO BLOCKS BY MEANS OF A BLOCK CODE AND STRUCTURED IN FRAMES

Bernard Gherardi, Lisses, France, assignor to Societe Anonyme dite: Alcatel CIT, Paris, France

Filed May 17, 1989, Ser. No. 353,367
Claims priority, application France, May 18, 1988, 88 06642
Int. Cl.[5] H04L *7/08*
U.S. Cl. 375—111 **2 Claims**



1. A frame synchronization device for a synchronous digital bit stream divided into data blocks at a block timing rate by means of a block code and structured in frames occurring at a frame timing rate marked by alignment words having a predetermined configuration, said device comprising:

an alignment word configuration recognition circuit for detecting said predetermined configuration in said digital bit stream and for generating a configuration recognition signal each time said predetermined configuration is detected,

a frame timebase for delivering a clock signal at the frame timing rate,

a block recognition circuit for generating block recognition signals corresponding to possible locations in the digital bit stream of transitions between data blocks,

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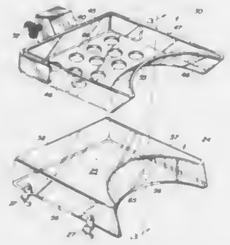
a block timebase for delivering a block clock signal at the block timing rate,
a synchronizing circuit responsive to said block recognition signals for synchronizing said block timebase,
a time window definition circuit responsive to signals from said block timebase and said frame timebase for producing time window signals defining alignment word configuration search time windows occupying positions relative to said blocks which correspond to the position of a configuration recognition signal sent by said configuration recognition circuit upon detecting an alignment word,
an alignment word configuration selection circuit responsive to configuration signals from said alignment word configuration recognition circuit and responsive to said time window signals for selecting configuration recognition signals coinciding with said configuration search time windows, and
an alignment word acquisition control circuit responsive to an output of said configuration selection circuit for causing said time window definition circuit to generate time windows at the block clock timing rate in the absence of selection signal output over multiple consecutive frames, and which, upon the occurrence of a selection signal output synchronizes said frame timebase to the occurrence of the selected configuration and commands said time window definition circuit to generate time window signals at the frame clock timing rate.

4,943,986

MAMMOGRAPHY COMPRESSION APPARATUS FOR PROSTHETICALLY AUGMENTED BREAST

Leonard Barbarisi, 2034 E. Sourthern, Ste. D, Tempe, Ariz. 85282

Filed Oct. 27, 1988, Ser. No. 263,520
Int. Cl.[5] A61B *6/04*
U.S. Cl. 378—37 12 Claims



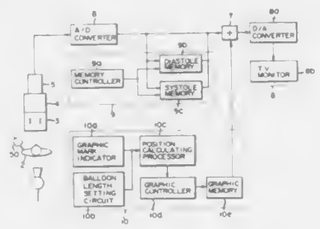
1. In a mammographic device for examination of a patient having an augmentation prosthesis, said device having an X-ray source for emitting X-ray radiation along a predetermined path to expose an X-ray film and including a breast-support table positioned in said path, the improvement comprising a first compression plate disposed in said X-ray path above said support table and selectively movable relative to said support table to compress the breast during examination, said compression plate having a first generally planar compression surface adapted to engage the breast with an anterior edge of the plate positioned adjacent the patient, said anterior edge defining a relieved area generally shaped and adapted to compress substantially only breast tissue and to exclude the said prosthesis during compression and examination.

4,943,987

METHOD AND SYSTEM FOR DISPLAYING X-RAY IMAGES OF BLOOD-VESSEL STRUCTURE PARTS OF SUBJECT

Hiroshi Asahina, Tochigi, and Ichiro Ogura, Ootawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 228,157, Aug. 4, 1988, abandoned. This application Nov. 1, 1989, Ser. No. 430,964
Claims priority, application Japan, Aug. 7, 1987, 62-198422; Aug. 7, 1987, 62-198423
Int. Cl.[5] H04N *5/32*
U.S. Cl. 378—99 9 Claims



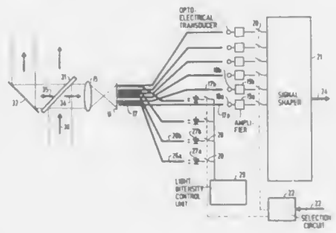
1. A method for generating and displaying X-ray images of a region of interest of a subject, the method comprising the steps of:
injecting a contrast media into the subject;
acquiring X-ray contrast images of the region of interest of the subject after the contrast media reaches the region of interest of the subject;
generating graphic line data representing a locus of changing position of the region of interest by using the X-ray contrast images;
acquiring X-ray images in the region of interest of the subject;
superimposing the graphic line data on X-ray images to obtain X-ray superimposition images; and
displaying the X-ray superimposition images.

4,943,988

X-RAY DIAGNOSTICS INSTALLATION HAVING AN IMAGE INTENSIFIER VIDEO CHAIN

Hans-Juergen Gerlach, Erlangen, and Horst Aichinger, Fuerth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 426,977
Claims priority, application European Pat. Off., Dec. 2, 1988, 88120176.8
Int. Cl.[5] H05G *1/44*
U.S. Cl. 378—108 2 Claims



1. An x-ray diagnostics installation comprising:

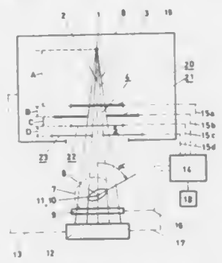
means adapted for exposing an examination subject to a dose of x-radiation;
an x-ray image intensifier having an input screen on which x-radiation attenuated by said examination subject is incident and an output screen which generates a light image in a light beam path corresponding to the incident x-radiation;
video pick-up means disposed in said light beam path for converting said light images into electrical signals;
video processing and display means connected to said video pick-up means for generating a video image from said electrical signals corresponding to said light image;
first fiber optics consisting of a plurality of light waveguides having an input end disposed for receiving light in said light beam path, and having an output end;
a plurality of opto-electrical transducers disposed at said output end of said first fiber optics and respectively associated with said light waveguides;
switching means for selectively activating said plurality of opto-electrical transducers in a pattern corresponding to a region of primary medical interest within said light image for obtaining a signal corresponding to the average brightness in said region of primary medical interest;
means for controlling the dose of x-radiation from said means for exposing based on said average image brightness;
a plurality of electro-optical transducers also selectively activated by said switching means in said pattern, so that said electro-optical transducers in combination form a light image of said region of primary medical interest; and
second fiber optics in optical communication with said electro-optical transducers for back-projecting said light image of said region of primary medical interest into said light beam path for inclusion in said video image.

4,943,989

X-RAY TUBE WITH LIQUID COOLED HEAT RECEPTOR

Brian D. Lounsberry, Brookfield, and Krystyna Truszkowska, Shorewood, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 2, 1988, Ser. No. 227,280
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—130 1 Claim



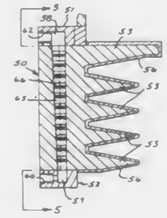
1. In an x-ray tube having an envelope which contains a cathode that emits electrons, and a rotating anode which includes a target surface against which the electrons impinge to produce x-rays, the improvement therein comprising:
an emissive anode surface formed on the exterior of the rotating anode to enhance the radiation of thermal energy therefrom;
a stationary receptor mounted to the envelope and having an emission receptor surface which is positioned in facing relation and in close proximity to the emissive anode surface on the exterior of the rotating anode; and
a fluid chamber formed in the stationary receptor for receiving a cooling fluid that removes heat from the stationary receptor;
the stationary receptor including a plurality of pins which are formed of a heat conductive material and which extend across the fluid chamber and in the path of the cooling fluid.

4,943,990

THERAPY SIMULATOR

Hugo Schär, Fisach, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Dec. 6, 1988, Ser. No. 280,499
Claims priority, application Switzerland, Dec. 11, 1987, 4846/87
Int. Cl.[5] G21K *1/03*
U.S. Cl. 378—152 6 Claims



1. A therapy simulator comprising:
a radiator head having a radiation source,
an image acquisition unit connected to said radiator head having means for swiveling said image acquisition unit along with said radiator head around a swivel axis,
an adjustable patient's couch movable between said radiator head and said image acquisition unit,
first and second diaphragm systems arranged in said radiator head such that said first and second diaphragm systems are offset in the direction of a principal axis of said radiation source, said first and second diaphragm systems having actuating elements capable of moving said first and second diaphragm systems at substantially the same speed, wherein
at least one of said first and second diaphragm systems is comprised of at least four diaphragms situated opposite each other to form two diaphragm pairs,
each of said two diaphragm pairs being arranged at substantially a 90° angle with respect to each other and in substantially adjacent planes,
said first diaphragm system having at least one diaphragm linkable to at least one diaphragm of said second diaphragm system, and
said linked diaphragms jointly movable in the same direction,
each of said four diaphragms being movable by means of at least two corresponding driving spindles, each of said at least two spindles being threadably engaged in a diaphragm holder, each of said at least two spindles having a thread pitch that is proportional to the distance of the corresponding diaphragm from said radiation source, and
each of said four diaphragms being provided with said at least two driving spindles such that at least four driving spindles are provided for each diaphragm pair, said at least four driving spindles being positioned parallel to one another in a plane, and each of said four diaphragms having at least two diaphragm holders being guided by said at least two driving spindles.

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4,943,991

CONTOURED IMAGING SYSTEM

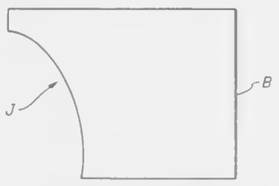
Richard A. Mosby, 3622 S. Braeswood, Houston, Tex. 77025

Continuation-in-part of Ser. No. 155,708, Feb. 16, 1988. This application May 9, 1988, Ser. No. 191,903

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] G03B *42/04*

U.S. Cl. 378—182 11 Claims



1. An X-ray imaging system comprising,

a source means for generating X-rays for examination of the interior of objects and spaced from the object to be examined, and

an X-ray film cassette positioned on the other side of the object to be examined for detection of X-rays transmitted from said source means through the object to be examined,

said cassette being a box of a material permitting transmission of X-rays from said source means,

said box having an edge wall portion with a concave contour for receiving an image fixing medium having the same concave contour,

an X-ray film positioned removably inside said box having a contour fitting the inside of said contoured edge wall,

said contoured edge of said box being shaped to fit around the surface of an object adjacent to the portion of the object to be subjected to detectable energy to position the image fixing medium therein more closely in line with the energy being transmitted thereto, and

said source means including means to contour an X-ray beam therefrom to pass only through the portion of the object being examined to reach said image fixing medium adjacent to the contoured edge thereof.

4,943,992

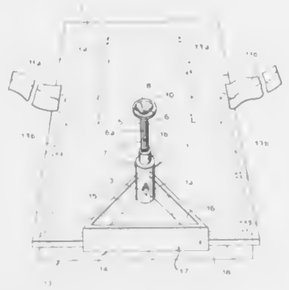
PEDIATRIC X-RAY POST

Joseph F. Caccavo, 31 West Boulevard, East Rockaway, N.Y. 11518

Filed Aug. 18, 1988, Ser. No. 233,223

Int. Cl.[5] H05G *1/00*

U.S. Cl. 378—208 7 Claims



1. Apparatus for immobilizing and protecting a child during an X-ray examination comprising (a) a horizontal flat platform to support said child, said platform being made of an X-ray transparent material and having a frame extending beneath its lower surface to retain an X-ray film cassette, (b) a pediatric post for straddling by said child, said post being securely held normal to the upper surface of said platform and (c) a lead shield supported by an arm extending laterally from said post, said arm having a longitudinal slot and being held at the upper end of said post by a threaded fastener extending through said for positioning said shield between a source of X-ray radiation and the gonads of said child.

4,943,993

CABLE PAIR TESTER

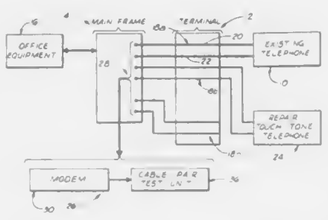
Don C. Fore, 324 N. Brown, Vinita, Okla. 74301

Continuation of Ser. No. 156,909, Feb. 17, 1988, Pat. No. 4,864,597. This application Sep. 5, 1989, Ser. No. 403,294

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] H04M *1/24, 3/46*

U.S. Cl. 379—6 8 Claims



1. An apparatus adapted for use with a plurality of cable pairs for placing a test condition of connecting an existing telephone number to a selected cable pair, comprising:

a cable pair tester having a portion connected to each of the plurality of cable pairs with electrical continuity being interrupted between the cable pairs and the cable pair tester, the cable pair tester establishing electrical continuity between a selected one of the cable pairs and the cable pair tester in response to receiving a cable pair command code uniquely identifying the selected cable pair, and the cable pair tester placing the test condition on the selected cable pair in response to receiving the test condition command code comprising:

an auxiliary telephone network adapted to connect an existing telephone number to the selected cable pair in response to receiving the test condition command code uniquely identifying the test condition of connecting the existing telephone number to the selected cable pair, the existing telephone number being connected to the selected cable pair in response to receiving the test condition command code uniquely identifying the test condition of connecting the existing telephone number to the selected cable pair; and

means remote from the cable pair tester for supplying the cable pair command code and the test condition command code.

4,943,994

STILL PICTURE PICTUREPHONE COMMUNICATIONS SYSTEM

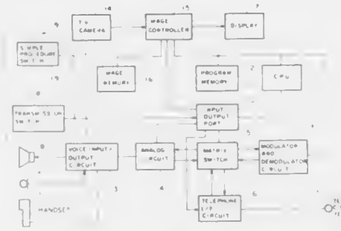
Hiroshi Ohtsuka, and Yutaka Ueno, both of Kanagawa, Japan, Lawrence D. Emmons; James S. Mackley, both of Grass Valley City, Calif., assignors to Luma Telecom Incorporated, Santa Clara, Calif. and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1988, Ser. No. 263,892

Claims priority, application Japan, Oct. 30, 1987, 62-274819; Oct. 30, 1987, 62-274820; Oct. 30, 1987, 62-274821; Oct. 30, 1987, 62-274822; Nov. 6, 1987, 62-280542

Int. Cl.[5] H04N *7/14*

U.S. Cl. 379—53 8 Claims



1. A method of operating a still picture picturephone communication system for transmitting and receiving a still picture over a telephone circuit including a handshaking process wherein prior to still picture transmission, identification code data indicating a function of picturephone sets and including a divided number of pixels per one frame of a still picture is sent and received, matching of the function of equipment of a calling party with the function of equipment of a called party is achieved, and decision is made as to whether the still picture is being transmitted or not, comprising

forming desired response waiting time data within said identification code data; and

in said handshaking process, sending out response data including identification code data or still picture data delayed by a period of time corresponding to said response waiting time data within the identification code data received from the called party.

4,943,995

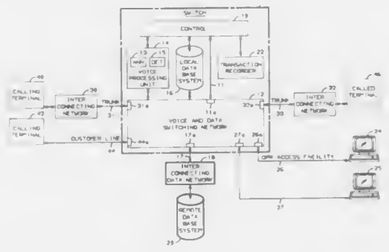
SEMI-AUTOMATED CUSTOMER INFORMATION SYSTEM

Abraham N. Daudelin, Colts Neck; Ronald J. Hartnett, Middletown, and William A. O'Connell, Bricktown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 8, 1986, Ser. No. 916,614

Int. Cl.[5] H04M *3/58, 3/50*

U.S. Cl. 379—67 14 Claims



1. A method of providing information to a telecommunications customer at a customer station in a telecommunications system comprising a switch including a voice processing unit, said voice processing unit also adapted to detect signals keyed on a customer station, comprising the steps of:

dialing a directory number from a customer station, said directory number used for accessing attendants;

setting up a first call connection from said customer station to a first attendant position selected from a first group of attendant positions;

responsive to an information request received over said first call connection, selecting one of a plurality of prerecorded messages, at least one of said plurality of messages comprising a prompting message specifying a customer command to be generated at said customer station;

transmitting said selected prerecorded message to said customer station;

the method CHARACTERIZED IN THAT it includes the additional steps of:

after the beginning of the transmitting step detecting a customer command transmitted from said customer station, by said voice processing unit, wherein said customer commands comprise spoken commands and signals keyed on a customer station;

in response to detection of a first customer command, setting up a second call connection in said switch between said customer station and a telecommunications terminal serving a vendor, and billing said vendor for said second call connection.

4,943,996

SHARED ACCESS TO VOICE AND INFORMATION

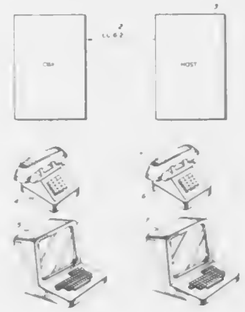
William T. Baker, Jr., Palo Alto; Charles M. Buffum, San Jose; Charles H. Jolissaint, Sunnyvale, and Gregg W. Kerlin, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1989, Ser. No. 294,454

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

Int. Cl.[5] H04M *3/56, 11/06*

U.S. Cl. 379—96 29 Claims



1. Method for conferencing a phone call and information associated with the phone call to a plurality of participants in a system having a plurality of phones managed by a digital switch, a plurality of display terminals, a host processor, and memory means for storing programs and data structures, the digital switch including memory means for storing programs and a data structure for uniquely identifying each phone by an extension, control means for attaching said plurality of phones and communication means for communicating with the host processor, the host processor having memory means for storing a communication manager, data structures and applications programs and communication means for communicating with

the digital switch and the plurality of display terminals, said method comprising the steps of:

(a) sending the host processor a communication in response to a call processing event, said communication containing a source phone extension and a plurality of destination phone extensions;

(b) receiving said communication by the communication manager of the host processor;

(c) processing said communication and determining an associated application program and an associated display terminal to link with each of said plurality of destination phone extensions; and

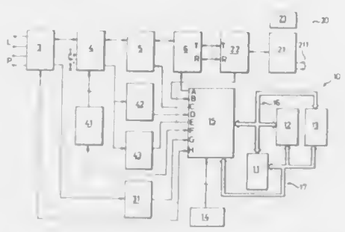
(d) invoking said associated application program to communicate with said associated display terminals to display information associated with the call processing event.

4,943,997

DEVICE FOR COMMUNICATING A DOORSIDE INTERCOM SET WITH A REMOTE TELEPHONE

Mei-Yin Chang, 9 Fl., No. 303, Fu Hsing N. Rd., Taipei, Taiwan

Filed Apr. 14, 1989, Ser. No. 338,215
Int. Cl.[5] H04M *1/26, 11/02*
U.S. Cl. 379—160 **4 Claims**



1. A device for communicating a doorside intercom set having a push button of an intercom system with a selected remote telephone via a cable, comprising a microprocessor with a software and memory means, an input means for inputting the phone number of said selected remote telephone into said memory means, and detecting means to detect the state of said selected remote telephone;

said software being so programmed that when said push button is pushed, said microprocessor will read the phone number from said memory means and send out a corresponding signal via said cable to give a call to said selected remote telephone to build up the communication between said doorside intercom set and said selected remote telephone when said selected remote telephone is detected by said detecting means as not busy, said device further comprising a number changing means for changing the number of said selected remote telephone stored in said memory means, said number changing means being only actuated to receive a new telephone number inputted by dialing from any remote telephone via said cable to said device after a specific password code is inputted by dialing said any remote telephone via said cable to said device.

4,943,998

INTERMESHED COMMUNICATION NETWORK

Uwe Bauer, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Apr. 21, 1989, Ser. No. 342,256
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1988, 3813581
Int. Cl.[5] H04M *7/00*
U.S. Cl. 379—220 **3 Claims**

1. In a communication network of the type comprising a plurality of exchanges, groups of communication lines with each group of communication lines connecting a respective pair of the exchanges for providing communication channels between subscribes at different exchanges, and wherein connection between subscribes at different exchanges is established by forward messages transmitted over all possible groups of communication lines, the improvement comprising:

each of said exchanges comprising a terminal module for storing statistical data about the traffic load of the groups



of lines connected to the respective exchange and operating data of the exchange;

the respective terminal module of each of said exchanges are callable and capable of calling like a subscriber through said exchanges and communication lines of the communication network; and

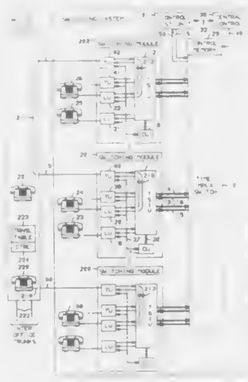
each of said exchanges comprise an interface for external connection to the terminal module of said exchange.

4,943,999

SWITCHING SYSTEM RELIABILITY

Menachem T. Ardon, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 24, 1989, Ser. No. 356,807
Int. Cl.[5] H04M *7/14*
U.S. Cl. 379—221 **16 Claims**



1. In combination:

a first telecommunication switching system comprising a plurality of lines and a plurality of trunks and a central connection arrangement for selectively interconnecting said lines and said trunks;

a second telecommunication switching system connected to said first telecommunication system by a first and a second one of said trunks;

means at said first telecommunication switching system for receiving first call signaling information defining a call destination on said first telecommunication system;

control means in said first switching system and responsive to said first call signaling information for transmitting second call signaling information defining said call destination to said second telecommunication switching system; and

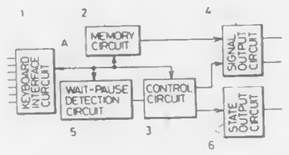
said second telecommunication switching system comprises means responsive to said second call signaling information for connecting said first one of said plurality of trunks to said second one of said plurality of trunks.

4,944,000

SEMICONDUCTOR INTEGRATED CIRCUIT FOR A TELEPHONE DIALER INCLUDING A WAIT-PAUSE CIRCUIT

Yuji Hishiki, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Dec. 12, 1988, Ser. No. 283,162
Claims priority, application Japan, Dec. 15, 1987, 62-316481
Int. Cl.[5] H04M *1/274*
U.S. Cl. 379—359 **7 Claims**



1. A semiconductor integrated circuit for a telephone, comprising:

a keyboard interface circuit for inputting a sequence of telephone directory number data, wait-pause data and additional information number data;

a memory circuit for registering the sequence of data and for outputting the registered sequence of data in response to an operating command inputted through the keyboard interface circuit;

a wait-pause detecting circuit for detecting the wait-pause data included in the outputted sequence of data and producing a corresponding detection signal;

a signal output circuit for sending out an electrical signal corresponding to the retrieved sequence of data;

a control circuit responsive to the operating command to control the signal output circuit to transmit a part of the electrical signal corresponding to the telephone directory number data, responsive to the detection signal to stop sending of the remaining part of the electrical signal, and responsive to a release command inputted manually through the keyboard interface circuit upon confirmation of connection to thereby restart sending of the remaining part of the electrical signal corresponding to the retrieved additional information number data;

and a status output circuit connected to the control circuit for indicating when the sending of the electrical signal is temporarily stopped.

4,944,001

ROTARY DIAL PULSE RECEIVER

Brent L. Kizuik, and Richard D. Gurevich, both of Winnipeg, Canada, assignors to Comcheq Services Limited, Winnipeg, Canada

Filed Jun. 6, 1988, Ser. No. 202,633
Claims priority, application Canada, Jun. 19, 1987, 540151
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—386 **23 Claims**



21. A rotary dial pulse receiver comprising:

detection means for detecting each burst of line current activity exceeding a threshold voltage, said bursts being of the kind produced by rotary dial action in dialing a sequence of digits from a handset, said sequence including a predetermined test digit at a predetermined location in the sequence of digits dialed;

counting means connected to the detection means for providing an output count of the number of detected bursts of line current activity associated with each digit dialed; and

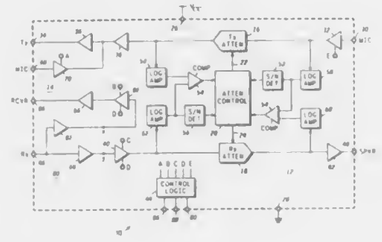
conversion means connected to the counting means and arranged to compare said output count associated with the predetermined test digit to the numerical value of said predetermined digit dialed and arranged to use such comparison to select from among a plurality of mathematical formulae one which, when applied to said output count, converts this output count to the numerical value of said test digit, and responsive to the detection of other of said bursts exceeding said threshold voltage and which correspond to other digits in said sequence of digits dialed from the handset for applying said one mathematical formula to convert the output count associated with each other digit to its respective numerical value.

4,944,002

CURRENT SWITCH FOR USE IN TELEPHONY SYSTEMS OR THE LIKE

Scott K. Bader, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1989, Ser. No. 348,459
Int. Cl.[5] H04M 9/08
U.S. Cl. 379—388 9 Claims



1. A current switch for supplying an alternating current (ac) signal received at an input to either a first or second output thereof responsive to the level state of a plurality of switching control signals applied to the current switch, the current switch comprising:

a first switchable current mirror having an input, and output and a common terminal, said input being coupled to the input of the current switch and said output being coupled to the first output of the current switch;

a second switchable current mirror having an input, an output an a common terminal, said input being coupled to the input of the current switch and said output being coupled to the second output of the current switch;

first and second switching means coupled respectively to said common terminals of said first and second switchable current mirrors and receiving first and second ones of the plurality of switching control signals;

said first switchable current mirror being rendered operative in response to said first switching control signal supplied thereto being in a first level state and being rendered non-operative when said first switching control is in a second level state;

said second switchable current mirror being rendered operative in response to said second switching control signal supplied thereto being in a first level state and being rendered non-operative when said second switching control is in a second level state;

first clamp means coupled to said input of said second switchable current mirror and being responsive both to said first switching control signal being in said first level state and a third switching control signal for maintaining the direct current voltage level at said input of said second switchable current mirror while the latter is non-operative substantially the same as when the latter is operative; and

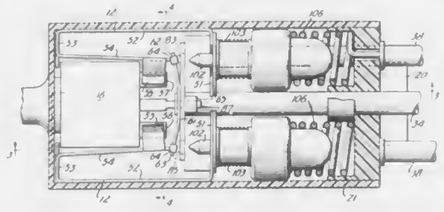
second clamp means coupled to said input of said first switchable current mirror and being responsive both to said second switching control signal being in said first level state and said third switching control signal for maintaining the direct current voltage level at said input of said first switchable current mirror while the latter is non-operative substantially the same as when the latter is operative.

4,944,003

SOLID STATE TELEPHONE PROTECTOR MODULE

Carl Meyerhoefer, Dix Hills; Helmuth Neuwirth, Garden City, and Peter Visconti, Baldwin, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 28, 1989, Ser. No. 413,689
Int. Cl.[5] H02H 3/22
U.S. Cl. 379—412 3 Claims



1. An improved subscriber circuit protector module comprising: an outer housing including mating base and shell elements and having an inner surface defining a cavity; a solid state integrated circuit protector chip element having a synthetic resinous casing, and having tip, ring, and ground contacts extending outwardly therefrom; a pair of elongated test point contact elements each having a clip at one end thereof engaging one of said tip and ring contacts on said chip element, and an intermediary segment having a surface forming a test point contact accessible through an opening in said housing, and a second contact extending transversely of said cavity; a fail-safe contact including an end wall, first and second resilient members extending therefrom and having free ends each having a fusable insulated sleeve thereon, each end resiliently contacting a conductor leading to one of a tip and ring contact on said chip element, said end wall having a longitudinally extending resilient grounding tab, and an opening for engagement with a ground pin on said housing; a pair of U-shaped long contact elements each having a first orificed end interconnected by an elongated segment; a ground contact element including a ground plane member having resilient tabs extending longitudinally therefrom, an elongated segment extending longitudinally therefrom in an opposite direction from that of said tab, and a transversely oriented end wall, said ground contact element partially surrounding said chip element; said first and second mentioned tabs resiliently contacting said ground contact on said chip element; a plurality of heat coil assemblies, each having a resiliently urged ground pin member for engaging said ground plane member, each of said second orificed terminals of said test point contact elements surrounding a respective ground pin member, said first orificed end of each of said long contacts also surrounding a respective ground pin member, each of said second orificed ends thereof communicating with one of a plurality of tip out pins extending outwardly of said housing; said chip element providing momentary current surge protection to a protected circuit, said heat coil assemblies providing continuous excess current protection, and said fail-safe contact providing tertiary protection in the event of heat coil assembly failure.

4,944,004

INTERFACE CIRCUIT WITH TRANSIENT EVENT TOLERANCE

Robert S. Morley, Ottawa, and Edward C. Carew, Carleton Place, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 16, 1989, Ser. No. 324,116
Int. Cl.[5] H02H 9/06; H04M 19/00
U.S. Cl. 379—412 5 Claims

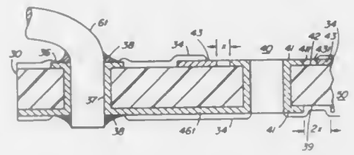
1. An interface circuit, for coupling communications signals between a conductor of a transmission path and a terminating facility, and for coupling some electrical energies, as may be

associated with transient electrical event occurrences along the transmission path, from said transmission path conductor to an earth ground, comprising:

a plurality of electrical components;

a plurality of electrical conductors each being bounded by a peripheral edge, the peripheral edges being spaced apart from each other by at least a predetermined amount, some of said conductors connecting the electrical components of the interface circuit in a workable arrangement, whereby said communications signals may be coupled;

a sheet of electrically insulating material having first and second surfaces and an opening being defined by a wall



traversing the insulating material between the first and second surfaces, the electrical components and the plurality of electrical conductors being fixed to at least one of the surfaces;

a first electrical conductor being for connection with the earth ground, said first conductor being carried by the first surface, surrounding the opening and being spaced apart therefrom; and

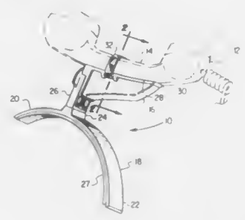
a second electrical conductor being for connection to the conductor of the transmission path, said second conductor being carried by said wall and protruding from the opening and being separated from said first electrical conductor by a distance of less than the predetermined amount.

4,944,005

ADJUSTABLE STRAP FOR TELEPHONE HANDSET SUPPORT

Lyle H. Van Dyke, P.O. Box 14841, Portland, Oreg. 97214

Continuation of Ser. No. 154,443, Feb. 5, 1988, abandoned, which is a continuation of Ser. No. 765,695, Aug. 15, 1985, abandoned. This application Aug. 17, 1989, Ser. No. 395,181
Int. Cl.[5] H04M 1/04; B65D 63/00
U.S. Cl. 379—449 1 Claim



1. Apparatus for securing a telephone handset support to a telephone handset, said apparatus comprising:

a handset attachment member;

an arced shoulder rest having an inner concave side and an outer convex side, with a soft cushioning material affixed to said inner concave side;

an intermediary attachment member for joining said attachment member to said arced shoulder rest;

means for securing said attachment member to said telephone handset;

said intermediary attachment member for joining said attachment member to said arced shoulder rest comprising a square node mounted on the convex side of said arced shoulder rest, and said intermediary attachment member being attached to said node, said intermediary attachment member also being perpendicularly attached to said attachment member;

said attachment member comprising a concave, arcuate upper surface coextensively covered by a pad of cushioning material and having a substantially rectangular cross-section, said crosssection defining a hollow region therein, said cross-section further defining an integral recessed post;

said securing means also comprising a first flexible strap member adapted to pass around and conform to a portion of said telephone handset, said first flexible strap being formed of flexible metal ribbon, and having a series of female interlocking means equidistantly dispersed along the length thereof, said female interlocking means being oriented with their longer dimensions lengthwise of said first flexible strap member, with one end of said first flexible strap member projecting perpendicularly away from said flexible strap, said end having an eyelet therein for receiving a screw;

said securing means further comprising a second flexible strap member made of flexible metal ribbon having an integral tab end with a narrowed neck for engaging said female interlocking means located on said first flexible strap member with one end projecting at an obtuse angle away from said second flexible strap member, said end having a hole therein that is passed over said post on said attachment member for attaching said second flexible strap member to said attachment member; and

a screw associated with said securing means for tightening said first and second flexible straps around said telephone handset;

said first and second flexible strap members being adapted, when secured together, to surround said telephone handset portion to secure said telephone handset to said attachment member; and

said equidistantly dispersed series of female interlocking means in said first flexible strap member permitting adjustment to accommodate a variety of telephone handset sizes and shapes.

4,944,006

SECURE DATA PACKET TRANSMISSION SYSTEM AND METHOD

Richard W. Citta, Oak Park; Paul M. Goec, Buffalo Grove; Dennis M. Mutzabaugh, and Gary J. Sgrigonoli, both of Mt. Prospect, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Division of Ser. No. 221,166, Jul. 19, 1988, Pat. No. 4,876,718, which is a division of Ser. No. 25,236, Mar. 12, 1987, Pat. No. 4,771,458. This application Apr. 25, 1989, Ser. No. 343,103
The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.
Int. Cl.[5] H04N 7/167; H04L 9/02
U.S. Cl. 380—20 9 Claims

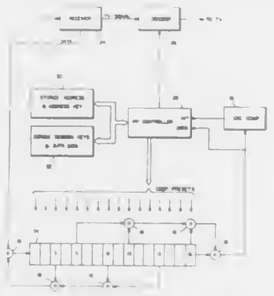
1. In a data packet communication system having messages comprising a first data packet encrypted with a global encryption key and a second addressed data packet containing the binary address of a subscriber terminal and encrypted with an address encryption key;

a plurality of subscriber terminals each including memory means for storing a plurality of global decryption keys, an address decryption key and a binary address, the address decryption key and binary address uniquely identifying the individual subscriber terminal;

means at each subscriber terminal for attempting to decrypt said second addressed data packet with said stored address decryption key; and

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means responsive to decryption of said second addressed data packet for comparing the binary address in said sec-



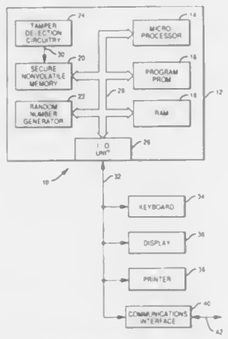
ond addressed data packet with said binary address stored at said subscriber terminal.

4,944,007

PUBLIC KEY DIVERSIFICATION METHOD

Jeffrey R. Austin, Hindhead, England, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 12, 1989, Ser. No. 364,949
Claims priority, application United Kingdom, Aug. 19, 1988, 8819767
Int. Cl.[5] H04L 9/08, 9/30
U.S. Cl. 380—21 **8 Claims**



1. A method of generating key values for use in public key cryptography by a requesting entity, including the step of generating at a parent entity, public key values N, e, where N is the product of first and second prime numbers P,Q and e is a corresponding public key integer value, comprising:

selecting, at said parent entity, third and fourth prime numbers R,S;

transmitting to said requesting entity a first value N_{mi} and a second value $\Phi(N_{mi})$ where said first value $N_{mi}=N\cdot R\cdot S$ and where said second value $\Phi(N_{mi})=\Phi(N)\cdot(R-1)\cdot(S-1)$, wherein the symbol Φ represents Euler's totient function;

selecting, at said requesting entity, fifth and sixth prime numbers, T,U; and

computing, at said requesting entity, a third value N_m and a fourth value d_m, where $N_m=N_{mi}\cdot T\cdot U$, and where $d_m=[1+K\ \Phi(N_m)]/e$;

wherein $\Phi(N_m)=\Phi(N_{mi})\cdot(T-1)\cdot(U-1)$; and

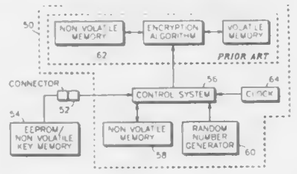
wherein K and d_m are integers, whereby d_m is adapted to be used by said requesting entity as a secret key counterpart of the public key value e with respect to N_m.

4,944,008

ELECTRONIC KEYING SCHEME FOR LOCKING DATA

Gerald V. Piosenka, Scottsdale; William R. Worger, Mesa, and Michael A. Savage, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 18, 1988, Ser. No. 157,002
Int. Cl.[5] H03K 1/02
U.S. Cl. 380—46 **15 Claims**



1. In a digital processing system for providing security of data stored in the system, apparatus for protecting data in a memory of the system comprising:

key means for storing a psuedorandom combination number, said key means corresponding to a key holder;

first memory means for storing encrypted data;

second memory means for storing decrypted data, corresponding to said encrypted data;

decryption/encryption means connected between said first memory means and said second memory means, said decryption/encryption means operating to encrypt data for storage in said first memory means and further operating to decrypt data for storage in said second memory means;

control means connected to said key means and to said decryption/encryption means, said control means operating in response to said pseudorandom combination number of said key means to produce a key variable to allow said decryption of data of said first memory means for access by said key holder to said second memory means; and

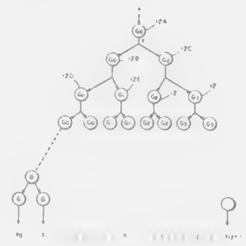
said control means further operating to write a second psuedorandom combination number in said key means for subsequent accesses by said key holder.

4,944,009

PSEUDO-RANDOM SEQUENCE GENERATOR

Silvio Micali, Cambridge, Mass., and Claus Schnorr, Bad Nauheim, Fed. Rep. of Germany, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 25, 1988, Ser. No. 160,354
Int. Cl.[5] H04L 9/02
U.S. Cl. 380—46 **60 Claims**



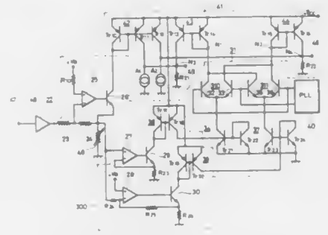
1. A random sequence generator for generating a random sequence from a seed random sequence of substantially shorter length, the generator performing a tree operation by extending, at each node of a tree structure, a node input random sequence into a longer node output random sequence, a plurality of node output random sequences of the tree structure together comprising a final random output sequence.

4,944,010

STEREO DEMODULATOR AND A DEMODULATING METHOD THEREOF

Kazuhiro Ishiguro, and Mikio Yamagishi, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 10, 1988, Ser. No. 269,903
Claims priority, application Japan, Nov. 19, 1987, 62-292440
Int. Cl.[5] H04H 5/00
U.S. Cl. 381—4 **10 Claims**



1. A stereo demodulator for demodulating right and left stereophonic signals from an FM-detected stereophonic composite signal, said stereophonic composite signal including, in a frequency divisionally multiplexed form, a main channel of a sum signal obtained by addition of said right and left stereophonic signals and a subchannel of a carrier-suppressed modulated difference signal obtained by subtraction of said right and left stereophonic signals, said stereo demodulator comprising:

sum signal generating means (22) for generating the sum signal of said main channel after having performed negative feedback amplification of said FM detected stereophonic composite signal and outputting the generated sum signal in the form of a current signal,

subchannel detecting means (300) for detecting said subchannel signal after said negative feedback amplification means has performed negative feedback amplification of said FM-detected stereophonic composite signal and for thereafter outputting the detected subchannel signal in the form of a current signal,

difference signal demodulating means (31) for demodulating said difference signal of said detected subchannel signal received from said subchannel detecting means and for thereafter outputting the demodulated difference signal in the form of a current signal, and

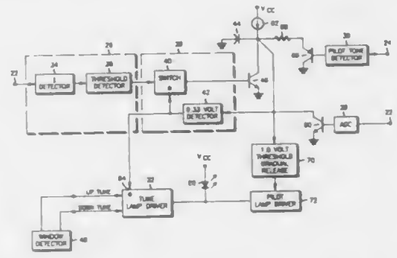
matrix means (41) for receiving said sum signal from said sum signal generating means and said demodulated, difference signal from said difference signal demodulating means to perform matrix processing of the received sum signal and difference signal and for thereby reproducing said right and left stereophonic signals to output the reproduced right and left stereophonic signals in the form of voltage signals.

4,944,011

CIRCUIT FOR CONTROLLING OPERATOR INDICATORS IN AN AM STEREO RECEIVER

Lawrence M. Eckhard, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 21, 1987, Ser. No. 87,839
Int. Cl.[5] H04H 5/00
U.S. Cl. 381—15 **16 Claims**



1. In an AM stereo radio receiving an AM input signal, a circuit for controlling a stereo indicator, comprising:

detection means for detecting that the input signal is a stereo signal; and

driving means, responsive to the detection means, for gradually activating the visual stereo indicator,

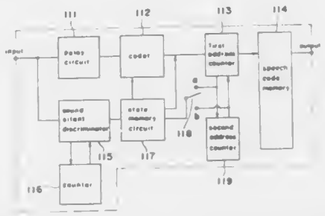
wherein the driving means includes a low gain amplifier which generates a gradually increasing signal in response to the detection means so as to prevent sudden power drains from affecting the circuit.

4,944,012

SPEECH ANALYZING AND SYNTHESIZING APPARATUS UTILIZING DIFFERENTIAL VALUE-BASED VARIABLE CODE LENGTH CODING AND COMPRESSION OF SOUNDLESS PORTIONS

Tomokazu Morio; Yoshiji Fujimoto, both of Nara, and Atsunori Kitoh, Yamatotakada, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1988, Ser. No. 144,478
Claims priority, application Japan, Jan. 16, 1987, 62-8783; Jan. 17, 1987, 62-8806
Int. Cl.[5] G10L 7/02; H04B 14/06
U.S. Cl. 381—30 **11 Claims**



2. An apparatus for storing coded sounded portions of an input speed signal while compressing soundless portions of said input speech signal in substantially real time, the apparatus comprising:

input means for inputting said speech signal;

delay means, operatively connected to said input means, for delaying said input speech signal for a predetermined time period (τ);

sound discriminating means, operatively connected to said input means, for receiving said input speech signal simultaneously to said delay means, and for judging said input speech signal at a real-time (τ) to be in a soundless state or a sounded state;

encoder means, operatively connected to said delay means, for sequentially coding said input speech signal at a delayed time ($t-\tau$);

first address means, operatively connected to said encoder means, for sequentially counting at $t-\tau$ to designate an address location of a speech code memory means at which said coded input speech signal is stored;

speech code memory means, operatively connected to said first address means, for sequentially storing said coded input speech signal at an address sequentially designated by said first address means;

state memory means, operatively connected to said sound discriminating means and said encoder means, for starting said encoder means to code said input speech signal, upon receiving a judgment from said sound discriminating means indicating input speech signal is in a sounded state, and store said input speech signal in a sounded stated at sequentially designated address locations of said speech code memory means, designated by said first address means, wherein said judgment occurs at time t and said encoding occurs at delayed time $t-\tau$ thereby allowing for a smooth transition in coding the beginning and ending of said sounded state of said input speech signal;

said sound discriminating means, upon judging said input speech signal to be in a soundless state, for a first predetermined period of time (ta), sending said judgment to said state memory means;

said first address means, upon receiving the judgment of a soundless state of said input speech signal from said state memory means, storing its address count as a startup count in a second address means;

said second address means, operatively connected to said state memory means and said first address means, for sequentially counting address locations starting from said startup count;

said state memory means, upon receiving a signal from said sound discriminating means, indicating a judgment that said input speech signal has remained in a soundless state for a second predetermined period (tb), stopping said encoder means and initiating a transfer of the address count in the second address means to the first address means, wherein said input speech signal in a soundless state is compressed in substantially real-time and only said input speech signal in a sounded state has thus been coded and stored in said speech code memory means.

4,944,013

MULTI-PULSE SPEECH CODER

Nikolaos Gouvianakis, and Costas Xydeas, both of Loughborough, England, assignors to British Telecommunications public limited company, United Kingdom

Filed Apr. 1, 1986, Ser. No. 846,854

Claims priority, application United Kingdom, Apr. 3, 1985, 8508669; Jun. 19, 1985, 8515501

Int. Cl.[5] G10L *7/02*

U.S. Cl. 381—38 **18 Claims**

13. An apparatus for speech coding comprising: means for receiving speech samples;

means for processing the speech samples to derive parameters representing a response of a synthesis filter;

means for deriving, from the parameters and the speech samples, pulse position and amplitude information defining an excitation consisting, within each of successive time frames corresponding to a plurality n of said speech samples, of a pulse sequence containing a smaller plurality k of pulses;

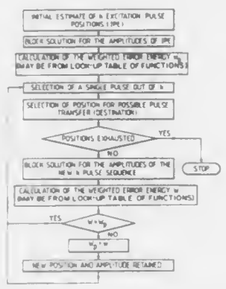
wherein the means for deriving pulse position and amplitude information of the k pulses includes:

(1) further means for deriving an initial estimate of the positions and amplitudes of the k pulses, and

(2) means for carrying out an iterative adjustment process by:

(a) selecting individual ones of the k pulses according to predetermined criteria, and

(b) substituting for each such selected pulse a pulse in an



alternative position whenever a computed error signal is thereby reduced, said error signal being obtained by means for comparing speech samples with the response of a filter having said parameters to an excitation which includes said selected pulse and others of said pulses, said substituted alternative position thereby being obtained as a function of the position and amplitudes of said other pulses.

4,944,014

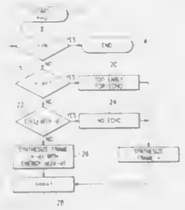
METHOD FOR SYNTHESIZING ECHO EFFECT FROM DIGITAL SPEECH DATA

Michel G. Stella, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1988, Ser. No. 287,830

Int. Cl.[5] G10L *5/02;* **H03G** *3/00*

U.S. Cl. 381—51 **11 Claims**



1. A method for synthesizing an echo effect from an encoded digital speech signal, said method comprising:

providing a plurality of consecutive speech data frames of digital speech data as coded speech parameters including an energy parameter for each frame in a sequential speech data frame sequence of frames of similar duration and representative of spoken speech;

providing a predetermined delay period as an integer multiple of a number of speech data frame durations;

sequentially comparing the integer multiple of the predetermined delay period with each number corresponding to consecutively numbered frames in the speech data frame sequence;

providing the energy parameter of the current speech data frame and the energy parameter of an earlier speech data frame when the number of the current speech data frame

is greater by an integer value than the integer multiple of the predetermined delay period;

multiplying the energy parameter of the earlier speech data frame by a constant attenuation factor to provide an attenuated energy parameter;

comparing the energy parameter of the current speech data frame with the attenuated energy parameter of the earlier speech data frame;

replacing the current speech data frame in a speech data frame output sequence corresponding to the original order of the speech data frames in the speech data frame sequence with a new replacement speech data frame having the speech parameters of the earlier speech data frame and the attenuated energy parameter provided that the attenuated energy parameter is greater than the energy parameter of the current speech data frame;

transmitting the speech data frame output sequence including the replacement speech data frame to a speech synthesizer;

generating an analog audio speech signal from the speech synthesizer in response to the speech data frame output sequence transmitted thereto; and

producing audible synthesized speech having an echo effect provided therein from the analog audio speech signal generated by said speech synthesizer.

4,944,015

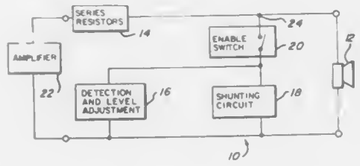
AUDIO COMPRESSION CIRCUIT FOR TELEVISION AUDIO SIGNALS

Ronald A. Juve, 4527 Patton Ave., Boise, Id. 83704, and George S. Kaufman, 456 Tenth St., Del Mar, Calif. 92014

Filed Apr. 29, 1988, Ser. No. 187,733

Int. Cl.[5] H03G *11/00*

U.S. Cl. 381—55 **29 Claims**



1. An audio compression circuit for processing an audio signal comprising in combination:

amplifier means for supplying the audio signal at a source voltage;

resistance means connected in series to said amplifier means for providing a minimum resistance to said amplifier means and creating a voltage drop of said source voltage to establish a supply voltage;

detection means connected to said resistance means for increasing the supply voltage to a reference voltage;

level adjustment means connected to said detection means for processing the reference voltage into a continuously variable control voltage;

shunting means connected to said level adjustment means and said resistance means, said shunting means operative by said control voltage for changing the resistance of said shunting means in a continuous manner in response to said control voltage to establish a maximum output voltage; and

loudspeaker means connected in parallel to said amplifier means for receiving an output voltage from the circuit and producing an audio sound.

4,944,016

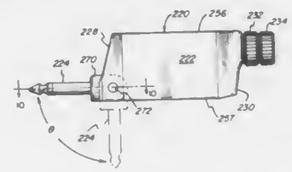
PORTABLE MUSICAL INSTRUMENT AMPLIFIER

David E. Christian, Danbury, Conn., assignor to CB Labs, Inc., Norwalk, Conn.

Continuation of Ser. No. 121,166, Nov. 16, 1987, abandoned. This application Nov. 18, 1988, Ser. No. 273,415

Int. Cl.[5] H04R *1/10*

U.S. Cl. 381—74 **15 Claims**



1. A portable musical instrument amplifier comprising:

an electronic amplifying and signal processing system;

a body containing said electronic amplifying and signal processing system;

an input plug projecting from and directly, pivotally attached to said body without an interconnection cable so that said input plug pivots with respect to said body, said input plug being electrically coupled to said electronic amplifying and signal processing system; and

headphone connection means in said rigid body adapted to connect physically and electrically said electronic amplifying and signal processing system to headphones, whereby, when said input plug is inserted into a musical instrument output jack, said electronic amplifying and signal processing system produces an amplified signal from the instrument capable of being heard with headphones.

4,944,017

ELECTROACOUSTIC INSERT WITH ADDED COIL

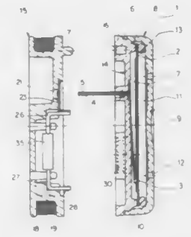
Christian Cognasse; Peter Graham; Bernard Maury, and Jean-Claude Walter, all of Bonneville, France, assignors to Horlogerie Photographique Francaise, Bonneville, France

Filed Mar. 23, 1989, Ser. No. 327,736

Claims priority, application France, Apr. 1, 1988, 88 04733

Int. Cl.[5] H04B *5/00*

U.S. Cl. 381—79 **10 Claims**



1. An electroacoustic transducer, comprising a telephone receiver insert formed of a membrane transforming into sound vibrations the electric signals conveyed to axial input connectors by a supply line, said membrane being inserted in a case formed of a base body and a cover, the transducer further comprising an auxiliary device formed of an electric coil, fed by the electric signals of the supply line, and producing an auxiliary magnetic field modulated by these signals and able to be picked up by a hearing aid for the hard of hearing, the coil

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being contained in a coil body forming a separate assembly from the insert and which can be fitted and fixed to the case of the insert, the coil body comprising two axial passages into which the axial input connectors penetrate, wherein:

said insert case comprises a rear face with means for fitting the coil body,

the coil body comprises means for fixing to the rear face of the insert case,

resilient conductors disposed in the axial passages of the coil body and connected electrically to the coil winding remain in resilient abutment on the insert connectors when the coil body is fitted to the rear face of the insert case,

said axial input connectors have a length greater than the thickness of said coil body, so that their ends project from the rear face of the coil body and remain accessible for the electric connection of the assembly when the coil body is fitted to the rear face of said insert case.

4,944,018

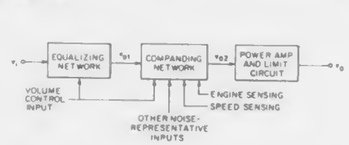
SPEED CONTROLLED AMPLIFYING

Amar G. Bose, Wayland, and Joseph L. Veranth, Southborough, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Continuation of Ser. No. 177,443, Apr. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 465,818, Feb. 14, 1983, abandoned. This application Jul. 18, 1989, Ser. No. 383,295

Int. Cl.[5] H03G *3/20*

U.S. Cl. 381—86 **12 Claims**



1. In a vehicle having an engine for powering the vehicle and a sound amplifying system characterized by a frequency response including a signal source and having a manually operable sound level setting control means for establishing the sound level of a desired signal in said vehicle, a power amplifier and electroacoustical transducing means, the improvement comprising,

a source of an engine signal representative of the on and off condition of said engine,

variable gain means associated with said sound level setting control means responsive to an input electrical audio signal to be amplified by said system for providing a signal of controlled amplitude,

wherein said manually operable sound level setting control means comprises a manual control and, dynamic equalization circuit means for providing a predetermined equalization over the bases frequency range depending on the sound level setting of said manual control.

said variable gain means being responsive to said engine signal for controlling the gain of said system to increase and decrease in response to said engine being on and off respectively,

said manually operable sound level setting control means including means for changing the frequency response of said system when altering the gain of said system much more significantly than when said variable gain means alters said gain such that said frequency response with the engine being on is always different from said frequency with the engine being off.

4,944,019

LOW SOUND REGION REPRODUCING SPEAKER SYSTEM

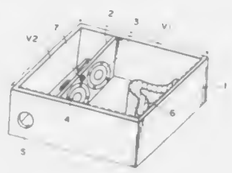
Hiroshi Watanabe, Hachioji, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 317,404

Claims priority, application Japan, Mar. 1, 1988, 63-26009[U]

Int. Cl.[5] H04R *1/02*

U.S. Cl. 381—90 **5 Claims**



1. A low sound region reproducing speaker system comprising a box closed on all its sides and having at least one sidewall, a partition wall separating the internal space of the box into two spatial portions, a pair of speakers attached to the partition wall where one of the speakers is responsive to a right stereophonic channel signal and the other speaker is responsive to a left stereo-phonic channel signal, one of said spatial portions having no aperture open to space external to the box and an aperture being formed in said one side wall of the box through which the other of the spatial portions communicates with the space external to the box whereby right and left stereo-phonic channel signals are reproduced individually as sounds through the pair of speakers, the sounds are mixed acoustically within the box, a sound region other than a low sound region of the mixed sounds and of a predetermined band width is attenuated by two resonant systems defined by the two spatial portions and the aperture and different in resonant frequency and only the low sound region is emitted into the external space, characterized in that the partition wall has therein a communication hole for communicating the two spatial portions therethrough with each other so that a bass reflex operation is performed by the acoustic action of the communication hole and the spatial portion with no aperture open to the external space.

4,944,020

TEMPERATURE COMPENSATION CIRCUIT FOR NEGATIVE IMPEDANCE DRIVING APPARATUS

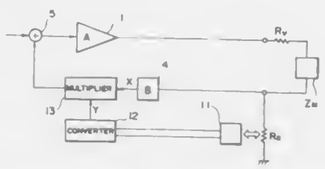
Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed May 26, 1989, Ser. No. 357,701

Claims priority, application Japan, May 31, 1988, 63-133389; Jun. 29, 1988, 63-161992

Int. Cl.[5] H04R *3/00*

U.S. Cl. 381—96 **2 Claims**



1. An amplifier for driving a speaker as a load, comprising:

current detection means inserted in series with said speaker;

feed back means for positively feeding back a detection output of said current detection means for generating a negative resistance component in an output impedance, thereby equivalently eliminating or invalidating a DC resistance component of voice coil of said speaker;

said current detection means being formed of a member which has a heat radiation resistance and a thermal time constant for setting an increase in temperature of the member to be almost equivalent to that of voice coil material of said speaker; and

temperature sensitive means which has a predetermined temperature coefficient and is thermally coupled to the current detection means;

a feedback amount of said detection output being controlled by an electrical change amount corresponding to temperature of said temperature sensitive means.

4,944,021

IDENTIFICATION SYSTEM EMPLOYING VERIFICATION OF FINGERPRINTS

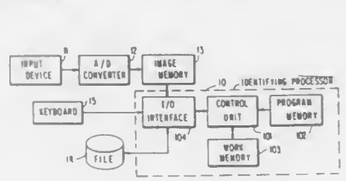
Yukio Hoshino, and Ko Asai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 134,554, Dec. 16, 1987, abandoned, which is a continuation of Ser. No. 724,232, Apr. 17, 1985, abandoned. This application Oct. 6, 1989, Ser. No. 418,990

Claims priority, application Japan, Apr. 18, 1984, 59-78155; Apr. 18, 1984, 59-78156; Apr. 18, 1984, 59-78157; Apr. 18, 1984, 59-78158; Apr. 18, 1984, 59-78159

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—5 **13 Claims**



1. An identification system comprising:

input means for collecting a streaked pattern of a fingerprint from a surface of a finger to store a streaked pattern image;

storing means for storing a plurality of pattern features of a plurality of registered fingerprints, each of said pattern features including at least information identifying within a coordinate system the positions of first and second registered feature points and a registered number of streaks of said registered fingerprints existing between said first and second registered feature points;

selecting means for selecting one of said pattern features as a reference pattern feature from said storing means; and

identifying means for verifying correspondence between said streaked pattern image and said reference pattern feature, said identifying means determining at least on the basis of coordinate values first and second objective areas in said streaked pattern image at positions corresponding to said positions of said first and second registered feature points of said reference pattern feature, respectively, scanning said first and second objective areas in order to detect first and second candidate feature points, respectively, counting a number of streaks of said streaked pattern image existing between said first and second candidate feature points to generate a count value, and comparing said count value with said registered number.

4,944,022

METHOD OF CREATING DICTIONARY FOR CHARACTER RECOGNITION

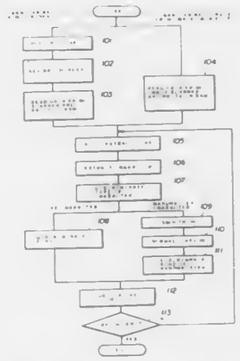
Kenji Yasujima, Yokohama, and Masao Hashimoto, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 17, 1987, Ser. No. 134,165

Claims priority, application Japan, Dec. 19, 1986, 61-302900

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—14 **19 Claims**



1. A method of creating a dictionary for character recognition, comprising the steps of:

optically scanning a sheet having a character line having a plurality of identical characters aligned in a scanning direction, a mark defining a size of said character line being provided in the vicinity of said character line;

generating image data of each of said identical characters within said character line having the size defined by said mark, said image data of each of said identical characters forming an individual dot pattern;

carrying out a predetermined image processing for said individual dot patterns of said identical characters to thereby generate a single dot pattern serving as a reference dot pattern of said identical characters;

inputting a character code corresponding to said single dot pattern; and

registering said single dot pattern and said character code in a storage region of a dictionary file for character recognition.

4,944,023

METHOD OF DESCRIBING IMAGE INFORMATION

Kaoru Imao, Yokohama, and Hideyuki Watanabe, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed May 18, 1988, Ser. No. 195,266

Claims priority, application Japan, May 19, 1987, 62-120027; May 19, 1987, 62-120028; May 20, 1987, 62-121080; May 25, 1987, 62-125976

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—37 **16 Claims**

1. A method of describing an image made up of a plurality of kinds of regions in an n-dimensional space by a tree structure, said method comprising:

a first step of recursively and equally dividing said image in the n-dimensional space into 2^n regions until each of the 2^n regions include two or less kinds of regions, thereby making a first level of said tree structure having a root node corresponding to said image in its entirety, L nodes connected to said root node and each corresponding to a region with three or more kinds of regions and M leaves connected to said root node or a node and each corresponding to a region with two or less kinds of regions,

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where L=0, 1, 2, . . . , n, M1, 2, 3, . . . , n and L+M=n, each of said nodes having branches branching out therefrom and connecting to a filial node or leaf thereof; and

a second step of recursively and equally subdividing each of said 2^n regions in the n-dimensional space into 2^n subregions until each subregion includes only one kind of region and for describing only one of two kinds of regions by a tree structure in which each node which degree is one and only having one branch is integrated into a filial node or leaf thereof, thereby making a second level of said tree structure, each node in the second level of said tree



structure being added with first division information described by sequential data of 2^n kinds of codes corresponding to position information of each node with respect to a parent node thereof, each leaf in the second level of said tree structure being added with second division information, said second division information describing at least a least significant code of said first division information by 2^n or more kinds of codes which are pattern information of each leaf with respect to a parent node thereof,

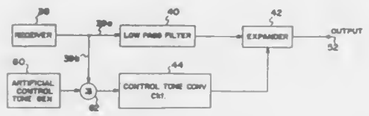
said tree structure describing said image in the first and second levels thereof.

4,944,024

METHOD AND APPARATUS FOR REDUCING NOISE IN A LINKED COMPRESSOR-EXPANDER TELECOMMUNICATIONS SYSTEM

James H. Leveque, Ellicott City, Md., assignor to AMAF Industries, Inc., Columbia, Md.

Filed Feb. 2, 1989, Ser. No. 305,402
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—35 **16 Claims**



1. In a linked compressor expander (Lincompex) communications system transmitting a communication signal comprising a compressed complex waveform and a control tone signal having a frequency representative of the amount of attenuation of said compressed complex waveform over a transmission medium to a receiving station, the method of reducing random noise level generation at a demodulator in the absence of communication signal transmission, comprising the steps of:

determining a threshold level below which Lincompex demodulation is found not to occur;

developing an artificial control tone signal having a level substantially at said threshold level and having a frequency effective to bias random noise level generation at said to a demodulator substantially constant minimum level; and

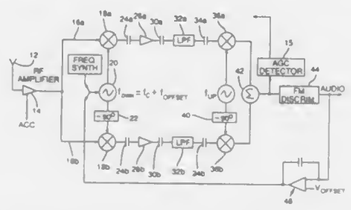
injecting said artificial control tone signal into said demodulator to produce said substantially constant minimum level at an output thereof in the absence of communication signal transmission.

4,944,025

DIRECT CONVERSION FM RECEIVER WITH OFFSET

Mark R. Gehring, Portland; Richard R. Suter, Beaverton, both of Oreg., and Lawrence H. Ragan, Richardson, Tex., assignors to AT&E Corporation, San Francisco, Calif.

Filed Aug. 9, 1988, Ser. No. 229,976
Int. Cl.[5] H04B *1/16*; H03D *3/18*
U.S. Cl. 455—207 **10 Claims**



1. A direct conversion receiver for processing frequency modulated radio signals that are centered about a carrier frequency, the frequency modulation extending a first sideband bandwidth above and below the carrier frequency, the receiver comprising:

means for receiving the radio signals, said receiving means having an output;

a pair of signal paths each having an input coupled to the output of the receiving means;

a local oscillator tuned to a local oscillator frequency and having an output;

each of said signal paths including a first mixer serially coupled therein, each of said first mixers having a local oscillator input coupled to the local oscillator output;

each of said signal paths further including an AC coupling means serially coupled therein, each of said AC coupling means producing a notch centered at DC in a frequency response of each of said signal paths, said notch extending a second sideband bandwidth above and below DC;

wherein the local oscillator frequency is set equal to the carrier frequency plus an offset frequency, said offset frequency being greater than or equal to the sum of the first and second sideband bandwidths.

4,944,026

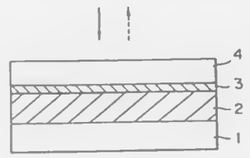
RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa, Minami-ashigara; Kenji Takahashi, Odawara, and Yuichi Hosoi, Chigasaki, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 5,666, Jan. 21, 1987, abandoned. This application Jul. 26, 1988, Ser. No. 225,668
Claims priority, application Japan, Jan. 21, 1986, 61-11296; Jan. 22, 1986, 61-11558; Jan. 22, 1986, 61-11559; Jan. 22, 1986, 61-11560; Jan. 22, 1986, 61-11561; Jan. 22, 1986, 61-11562; Dec. 27, 1986, 61-309759
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] G03B *42/00*
U.S. Cl. 250—484.1 **15 Claims**

1. A radiation image storage panel comprising a phosphor layer which contains a stimulable phosphor, characterized in that one surface of said phosphor layer is provided with a multi-layer optical filter (1) which has a transmittance of not

less than 70% for the light of the stimulation wavelength of said stimulable phosphor and at an incident angle in the range of 0°–5° and has a reflectance of not less than 60% for the light of said stimulation wavelength and at an incident angle of not smaller than 30°, and the other surface of said phosphor layer



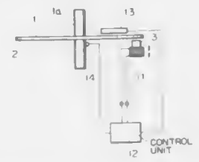
is provided with a multi-layer optical filter (2) which has a reflectance of not less than 60% for the light of said stimulation wavelength and a transmittance of not less than 60% for the light of the wavelength of the stimulated emission of the stimulable phosphor.

4,944,028

NON-CONTACT TYPE PATTERN SENSOR WITH VARIABLE CLEARANCE COMPENSATION

Kenzaburou Iijima; Yoshinori Hayashi, both of Hamamatsu, and Kazuo Kurahashi, Hamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Continuation of Ser. No. 946,321, Dec. 24, 1986, abandoned.
This application Nov. 10, 1988, Ser. No. 271,388
Claims priority, application Japan, Dec. 28, 1985, 60-299415; Mar. 5, 1986, 61-47761; May 23, 1986, 61-119838; May 26, 1986, 61-120579
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.12 **2 Claims**



1. An improved non-contact type pattern sensor, comprising:

a magnetic resistor element arranged facing a pattern track on a recording medium having a magnetized pattern in said pattern track and having a resistance which varies as a function of a magnetic field of a facing portion of said pattern track;

a clearance sensor arranged near said recording medium and generating a detection signal indicative of the distance between said clearance sensor and said recording medium;

a control unit connected to said clearance sensor and generating an output signal in response to said detection signal; and

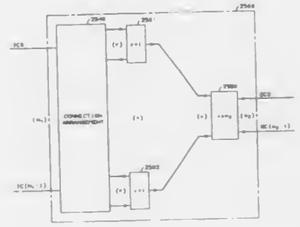
a piezo-electric element connected to said control unit and holding said magnetic resistor element, said piezo-electric element moving said magnetic resistor element towards and away from said magnetized pattern on said recording medium as a function of said output voltage.

4,944,029

REARRANGEABLE MULTICONNECTION SWITCHING NETWORKS CONSTRUCTED USING COMBINATORIAL DESIGNS

Frank K. Hwang, Warren, N.J., and Gaylord W. Richards, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 946,431, Dec. 23, 1986, Pat. No. 4,887,079. This application Jul. 19, 1989, Ser. No. 382,501
Int. Cl.[5] H04Q *3/62*; H04M *3/00*
U.S. Cl. 340—825.800 **6 Claims**



1. A switching network for selectively connecting N_1 input channels to n_2 output channels such that none of said n_2 output channels is connected to more than one of said N_1 input channels at any time, N_1 and n_2 being positive integers each greater than one, n_2 being at most equal to N_1, said switching network comprising

a partial concentrator having N_1 columns each connected to a different one of said N_1 input channels, and v rows, said partial concentrator comprising means for selectively connecting ones of said columns to ones of said rows, v being a positive integer at least equal to n_2, and

a switch having n_2 outlets each connected to a different one of said output channels and v inlets each connected to a different one of said rows, said switch comprising means for selectively connecting said outlets to said inlets,

said partial concentrator being derivable from a partial concentrator having ur columns and Mu rows and having each of said Mu rows incident to ones of said ur columns defined by a corresponding row of a Mu×r connection matrix, where a row is said to be incident to a column if there is a crosspoint at the intersection, where each of said ur columns has a unique column designation, where said matrix has Mu rows comprising M sets, $s_0, s_1, \ldots s_{M-1}$, each having u rows, where the column designation of each of said ur columns occurs exactly once in set s_0, where for any integer i,

$1 \leqq i \leqq M-1$, for any integer j,

$0 \leqq j \leqq r-1$, and for M−1 (u,r,w) difference sets

$D_i=(a_0^j, \ldots a_{r-1}^j)$, column j of set s_i is obtained by rotating column j of set s_0 by a_j^j positions, where w is a positive integer, where M, r and u are positive integers each greater than one, where ur is at least equal to N_1, and where Mu is at least equal to v.

4,944,030

LENS SHUTTER CAMERA INCLUDING ZOOM LENS

Keisuke Haraguchi; Shinsuke Kohmoto; Takeo Kobayashi; Shigeru Koudoh; Hideki Ohkubo; Norio Numako; Saburo Sugawara; Sosuo Nakamura; Hirofumi Matsuo; Katsuhiko Nomura; Etsuro Nishio, and Haruo Ishii, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

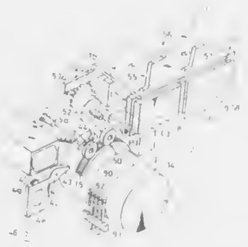
PCT No. PCT/JP87/00293, § 371 Date Jan. 7, 1988, § 102(e) Date Jan. 7, 1988, PCT Pub. No. WO87/07038, PCT Pub. Date Nov. 19, 1987

PCT Filed May 12, 1987, Ser. No. 144,030

Claims priority, application Japan, May 12, 1986, 61-108278; May 12, 1986, 61-108279; May 28, 1986, 61-80861; Jun. 2, 1986, 61-127496; Jun. 2, 1986, 61-83932; Jun. 21, 1986, 61-145470; Jun. 26, 1986, 61-150995; Aug. 15, 1986, 61-125045; Aug. 22, 1986, 61-196911; Aug. 29, 1986, 61-132661; Aug. 29, 1986, 61-132658; Aug. 29, 1986, 61-132659; Aug. 29, 1986, 61-132660; May 28, 1987, 61-80862

Int. Cl.[5] G03B *3/00, 5/00, 15/03, 13/12*

U.S. Cl. 354—403 111 Claims



1. A camera having a finder optical assembly and a photographic optical assembly with different optical axes, said photographic optical assembly including a movable zoom lens, said camera further comprising a strobe assembly, and means for driving said zoom lens, for driving said finder optical assembly in association with zooming movement of said zoom lens in order to vary the field of view through said finder optical assembly and for driving said strobe assembly in association with zooming movement of said zoom lens, said means for driving said zoom lens said finder optical assembly and said strobe assembly including at least one gear positioned about at least a portion of said zoom lens, said gear being rotatable in association with linear movement of said zoom lens along said photographic optical axis.

4,944,031

OPERATIONAL CONDITION SETTING DEVICE FOR AN OFFICE MACHINE

Hirobumi Yoshioo, Tokyo; Takashige Ito, Yokohama; Junichi Kawase, Kawasaki, and Hiroyuki Maeda, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 28, 1989, Ser. No. 329,805

Claims priority, application Japan, Mar. 29, 1988, 63-75262; Mar. 29, 1988, 63-75263; Mar. 29, 1988, 63-75265

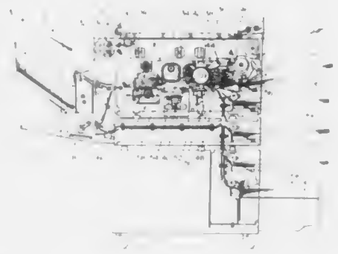
Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—206 15 Claims

1. An apparatus for setting operational conditions of an office machine which performs a recording operation by using a menu sheet having a predetermined format and provided with an area for writing information, comprising:

reading means for reading the information written in said area of said menu sheet; and

mode setting means for setting operational modes of said office machine on the basis of the information read by said reading means and for ignoring any information read by said reading means which is representative of an operation condition which is not available with said office machine and further for causing said machine to start a recording



operation automatically when the operational conditions are fully set up.

4,944,032

MULTIPLEX SIGNAL PROCESSING APPARATUS

Sadashi Kageyama, Hirakata; Yoshio Abe, Ibaraki; Yoshio Yasumoto, Nara; Shuji Inoue, Neyagewa; Hitoshi Takai, Hirakata; Mitsujiro Matsumoto, Shijyonawate; Kouji Aono, Saijyo; Kiyoshi Uchimura, Hirakata, and Iwasaki Eiji, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

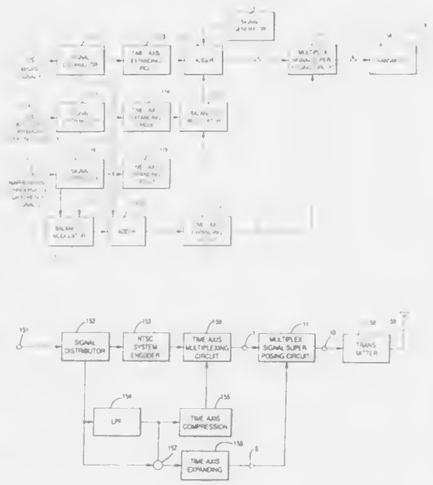
Division of Ser. No. 70,804, Jul. 7, 1987, Pat. No. 4,882,614.

This application May 1, 1989, Ser. No. 345,712

Claims priority, application Japan, Jul. 14, 1986, 61-164915; Jul. 31, 1986, 61-180338; Jul. 31, 1986, 61-180333; Sep. 30, 1986, 61-231666; Oct. 23, 1986, 61-252225

Int. Cl.[5] H04N *11/00, 7/00, 7/093, 7/12*

U.S. Cl. 358—12 5 Claims



1. An apparatus for transmitting a wide aspect ratio television signal corresponding to an image displayed on a television screen having a wider aspect ratio than 4:3, comprising:

a first time-axis expanding means for expanding on time-axis a first part of said wide aspect ratio television signal corresponding to the aspect ratio of 4:3 to obtain a first television signal;

a second time-axis expanding means for expanding on time-axis a second part which is the remaining part other than the first part of said wide aspect ratio television signal to obtain a second television signal;

a quadrature modulation means for quadrature modulating said first and second television signal to obtain a multiplexed television signal; and

a mean for transmitting said multiplexed television signal.

3. An apparatus for transmitting a wide aspect ratio television signal corresponding to an image displayed on a television screen having a wider aspect ratio than 4:3, comprising:

a first time-axis expanding means for expanding on time-axis a first part of said wide aspect ratio television signal corresponding to the aspect ratio of 4:3 to obtain a first television signal;

a signal separating means for separating the remaining part other than the first part of said wide aspect television signal into second and third parts;

a time-axis compressing means for compressing on time-axis said second part to obtain a second television signal;

a second time-axis expanding means for expanding on time-axis said third part to obtain a multiplex signal;

a time-axis multiplexing means for multiplexing on time-axis said first and second television signal to obtain a main television signal;

a quadrature modulation means for quadrature modulating said main television signal and said multiplex signal to obtain a multiplexed television signal; and

a means for transmitting said multiplexed television signal.

4,944,033

COMMUNICATIONS SYSTEM FOR AN INSTALLATION AND METHOD OF CONTROLLING SUCH INSTALLATION

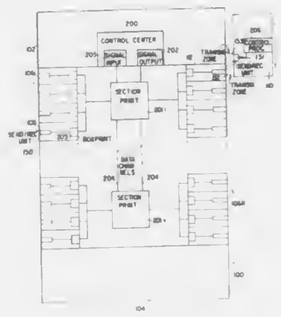
Markus Erni, Winterthur, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed May 19, 1988, Ser. No. 195,857

Claims priority, application Switzerland, May 20, 1987, 01933/87

Int. Cl.[5] G06K *17/00*; G06F *15/46*

U.S. Cl. 364—470 11 Claims



1. An installation comprising:

a number of material-processing stations each having an at least partly independently operating control means;

means for transmitting information between said at least partly independently operating control means of said number of material-processing stations;

at least one tender for making predeterminate interventions at individual ones of said material-processing stations;

said at least one tender and said number of material-processing stations being relatively movable with respect to one another; and

means for exchanging information between said at least one tender and the at least partly independently operating control means at said individual ones of said material-processing stations when said at least one tender and said individual ones of said material-processing stations are in a predetermined relationship to one another, in order to thereby make said predeterminate interventions by said at least one tender at said individual ones of said material-processing stations.

4,944,034

GEOMETRIC PROCESSING SYSTEM

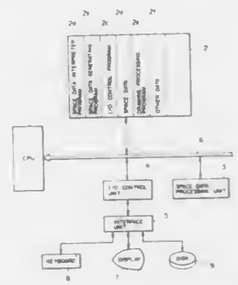
Akira Ohsawa, Higashimurayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1986, Ser. No. 867,154

Claims priority, application Japan, May 24, 1985, 60-110346; Jun. 5, 1985, 60-120401; Jun. 28, 1985, 60-140301

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—522 29 Claims



12. A drawing processing system comprising:

data holding means for holding space data which identifies partial spaces inside and outside of a plurality of figures within a geometric space which is divided into said plurality of partial spaces by imaginary division lines passing through characteristic points of said figures, said space data having characteristic point information corresponding to each characteristic point, said characteristic point information being formed as a set of two characteristic points, each characteristic point being used in common to identify partial spaces which are adjacent to each other; and

means, which is coupled to said holding means and which responds to operator input, for accessing said holding means to obtain a portion of said space data and for performing draw processings on said portions of said space data.

4,944,035

MEASUREMENT OF THERMAL CONDUCTIVITY AND SPECIFIC HEAT

Aagardl Roger L., Prior Lake; Ulrich Bonne, Hopkins, and Robert J. Matthys, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 24, 1988, Ser. No. 210,892

Int. Cl.[5] G06F *15/20*; G01K *17/08*

U.S. Cl. 364—556 28 Claims

1. Apparatus for determining thermal conductivity, k, and specific heat, c_p, of a fluid of interest comprising;

heater means;

thermal sensor means in proximate position to said heater means and in thermal communication therewith through

the fluid of interest, said sensor means being one having a temperature dependent output;

adjustable energizing means connected to said heater means for energizing said heater means on a pulsed time-variable basis in a manner to induce both transient and substantially steady-state elevated temperature condition intervals in said thermal sensor means;

first output means for providing first output signal indicative of the temperature of said thermal sensor means;



means for determining the rate of change of temperature of said temperature sensor during a transient temperature interval based on time variation of said first output signal;

means for detemining k of the fluid of interest based upon the first output signal at steady-state elevated sensor temperature; and

means for determining C_p, of the fluid of interest based on k and the rate of change of the first output during a transient temperature condition.

4,944,036

SIGNATURE FILTER SYSTEM

Gilbert P. Hyatt, 7841 Jennifer Circle, La Palma, Calif. 90623

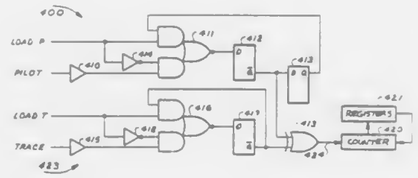
Continuation-in-part of Ser. No. 425,131, Sep. 27, 1982, Pat. No. 4,686,655, which is a continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, and a continuation-in-part of Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, and a continuation-in-part of Ser. No. 134,958, Apr. 19, 1971, and a continuation-in-part of Ser. No. 135,040, Apr. 19, 1971, and a continuation-in-part of Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, and a continuation-in-part of Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, and a continuation-in-part of Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, and a continuation-in-part of Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, and a continuation-in-part of Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, and a continuation-in-part of Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, and a continuation-in-part of Ser. No. 302,771, Nov. 1, 1972, and a continuation-in-part of Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, and a continuation-in-part of Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, and a continuation-in-part of Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, and a continuation-in-part of Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, and a continuation-in-part of Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, and a continuation-in-part of Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, and a continuation-in-part of Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, and a continuation-in-part of Ser. No. 727,330, Sep. 27, 1976, abandoned, and a continuation-in-part of Ser. No. 730,756, Oct. 7, 1976, abandoned, and a continuation-in-part of Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, and a continuation-in-part of Ser. No. 752,240, Dec. 20, 1976, abandoned, and a continuation-in-part of Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, and a continuation-in-part of Ser. No. 812,285, Jun. 1, 1977, Pat. No. 4,371,953, and a continuation-in-part of Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, and a continuation-in-part of Ser. No. 849,812, Nov. 9, 1977, and a continuation-in-part of Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Aug. 10, 1987, Ser. No. 84,718

The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.

Int. Cl.[5] G01V *1/00*; G06J *1/00*

U.S. Cl. 367—43 **47 Claims**





4. A filtering system comprising:

a plurality of signature signal generators each generating a signature signal having a signature that is different from the signature of the signature signal of each of the other signature signal generators;

a combiner coupled to said plurality of signature signal generators and generating a combined signature signal by combining the signature signals generated by said plurality of signature signal generators;

a transmitter coupled to said combiner and transmitting the combined signature signal through a propagation medium; and

a signature signal processor being spaced apart from said transmitter and generating output signal samples by processing the combined signature signal transmitted by said transmitter, said signature signal processor including

(a) a receiver generating single bit resolution input signature signal samples in response to receiving the combined signature signal transmitted by said transmitter,

(b) a plurality of single bit resolution reference signal generators each corresponding to one of said signature signal generators included in said plurality of signature signal generators and each generating single bit resolution reference signal samples having a signature that is different from the signature of the single bit resolution reference signal samples generated by each of the other single bit resolution reference signal generators and having a signature that is the same as the signature of one of the signature signals generated by the corresponding one of said plurality of signature signal generators, and

(c) a plurality of filter processors each coupled to said receiver and each corresponding to and coupled to the corresponding one of said single bit resolution reference signal generators and each generating output signal samples by filter processing the single bit resolution input signature signal samples in response to the single bit resolution reference signal samples generated by the corresponding one of the single bit resolution reference signal generators.

4,944,037

OPTICAL SYSTEM FOR RECORDING INFORMATION IN ERASABLE AND NON-ERASABLE MODES

Hideo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 819,706, Jan. 17, 1986, abandoned. This application Nov. 25, 1987, Ser. No. 125,815

Claims priority, application Japan, Jan. 18, 1985, 60-6757; Mar. 8, 1985, 60-46019; Mar. 27, 1985, 60-62324

Int. Cl.[5] G11B *13/04, 11/12*

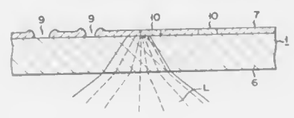
U.S. Cl. 369—13 **9 Claims**

1. An optical system for recording information on an erasable recording medium, comprising:

a laser diode for selectively emitting first, second and third light beams having different first, second and third intensity levels;

means for directing the light beams from said laser diode toward said recording medium; and

means for selectively generating first, second and third energizing current signals having different levels, to energize said laser diode, which includes a current source, first, second and third switching elements connected between said laser diode and the current source, and resistors connected to the second and third switching elements, the first, second and third switching elements being selectively closed to supply one of the first, second and third energizing current signals to said laser diode the first energizing current signal being supplied to said laser diode to cause said laser diode to emit the first beam so as to form a permanent recording region on said recording medium, the second energizing current signal being supplied to said laser diode to cause said laser diode to emit the second light beam so as to form an erasable recording region, and the third energizing current signal being supplied to said laser diode to cause said laser diode to emit the third light beam so as to retrieve information from the permanent recording region and the erasable recording region.



4,944,038

METHOD AND APPARATUS FOR UTILIZATION OF DUAL LATENCY STATIONS FOR PERFORMANCE IMPROVEMENT OF TOKEN RING NETWORKS

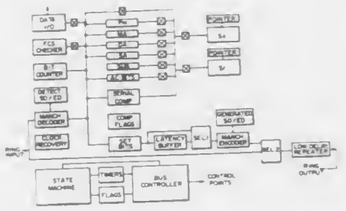
R.H. Stephen Hardy, North Vancouver, and Ian R. Radziejewski, Coquitlam, both of Canada, assignors to Simon Fraser University, Burnaby, Canada

Filed May 31, 1988, Ser. No. 201,073

Claims priority, application Canada, Jun. 1, 1987, 538535

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—85.5 **6 Claims**



1. A method of reducing station latency in a token ring network having a bus for sequentially transmitting encoded, addressable tokens between a plurality of individually addressable network stations connected to said bus, said method comprising performing, upon receipt of a token at any of said stations, the steps of:

(a) determining whether said receiving station has a message waiting for transmission on said bus;

(b) if said receiving station does have a message waiting for transmission on said bus, decoding said received token for use by said receiving station; and,

(c) if said receiving station does not have a message waiting for transmission on said bus, recoupling said received token onto said bus for transmission to the next sequential network station;

wherein said received token includes one or more flags for indicating the availability of said token for message transmission, said method further comprising, in step (c), prior to recoupling of said token onto said bus, clearing said flags.

VOL
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DESIGN PATENTS

GRANTED JUL. 24, 1990

ERRATA

For CLASS	See PATENT NO.
D06-390	309,422
D15-133	309,466
D23-209	309,487
D21-075	309,501
D28-016	309,510
D28-133	309,511

VOL
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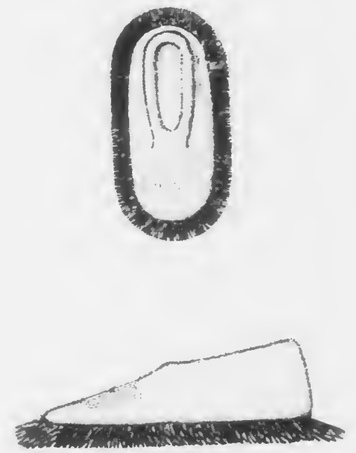
309,365
TACO HOLDER
Wallace C. Keene, One Beach Dr. SE., Ste. 2312, St. Petersburg, Fla. 33701
Filed Mar. 11, 1987, Ser. No. 24,400
Term of patent 14 years
U.S. Cl. D7—504



309,366
SANDWICH COOKIE
Juan F. Concepcion, Brooklyn, N.Y.; Michael P. Lucas, Ridgewood, N.J.; Robert Tabor, New York, N.Y., and Richard B. Gerstman, Tenafly, N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.
Division of Ser. No. 731,491, May 7, 1985, Pat. No. Des. 298,280. This application Jun. 20, 1988, Ser. No. 208,632
Term of patent 14 years
U.S. Cl. D1—106



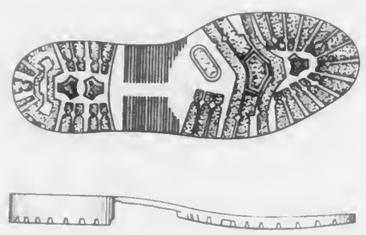
309,367
SLIPPER
Earl F. Bayer, 23 Dahlia Rd., Somerset, N.J. 08873
Filed May 20, 1987, Ser. No. 51,821
Term of patent 14 years
U.S. Cl. D2—304



309,368
SHOE SOLE
Shigeyuki Mitsui, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Jul. 15, 1988, Ser. No. 219,134
Claims priority, application Japan, Jan. 16, 1988, 63-1312
Term of patent 14 years
U.S. Cl. D2—317



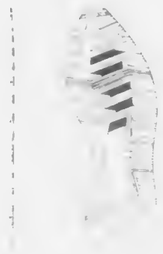
309,369
SHOE SOLE
James E. Issler, Westport, Conn., assignor to H. H. Brown Shoe Company, Inc., New York, N.Y.
Filed Mar. 18, 1988, Ser. No. 170,412
Term of patent 14 years
U.S. Cl. D2—320



309,370
SHOE SOLE
Terushige Nagai, Kako, and Shinsuke Inoue, Kobe, both of Japan, assignors to Asics Corporation, Kobe, Japan
Filed Jul. 15, 1988, Ser. No. 219,135
Claims priority, application Japan, Jan. 16, 1988, 63-1313
Term of patent 14 years
U.S. Cl. D2—320



309,371
SHOE SOLE
Toshikazu Kayano, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Sep. 26, 1988, Ser. No. 249,090
Claims priority, application Japan, Mar. 30, 1988, 63-12873
Term of patent 14 years
U.S. Cl. D2—320



309,372
UMBRELLA HANDLE
Ann S. Cain, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed Jul. 5, 1988, Ser. No. 215,887
Term of patent 14 years
U.S. Cl. D3—12







309,373
RETRACTABLE KEY HOLDER
Paul Appelbaum, Box 27006, Denver, Colo. 80227
Filed Mar. 14, 1989, Ser. No. 323,558
Term of patent 14 years
U.S. Cl. D3—61





309,374
GUN AND HANDCUFF HOLSTER
Charles R. Lightfoot, 584 Myrtle Ave., Brooklyn, N.Y. 11216
Filed Oct. 31, 1988, Ser. No. 264,673
Term of patent 14 years
U.S. Cl. D3—101

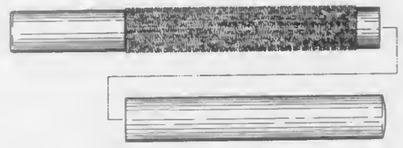




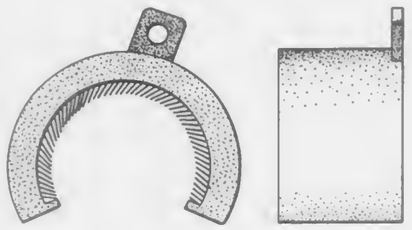
309,375
TOOTHBRUSH
Tom E. T. Ahlstroem, and Hans O. G. Ehrich, both of Stockholm, Sweden, assignors to Colgate-Palmolive Company, Piscataway, N.J.
Filed Mar. 24, 1988, Ser. No. 172,920
Term of patent 14 years
U.S. Cl. D4—104



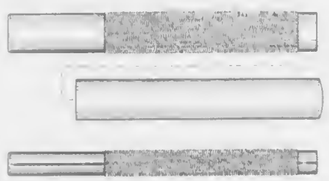
309,376
BRUSH FOR REMOVING LINT
Larry J. Kiesz, 12700 SE. Hubbard Rd., Clackamas, Oreg. 97015
Filed Jun. 8, 1987, Ser. No. 59,389
Term of patent 14 years
U.S. Cl. D4—128



309,377
HAND HELD FLEXIBLE BRUSH FOR CLEANING ELECTRICAL TERMINALS OF VARYING SIZE
Carl J. Taylor, and Robert L. Whaley, both of Cincinnati, Ohio, assignors to Bardes Corporation, Cincinnati, Ohio
Filed May 15, 1987, Ser. No. 49,784
Term of patent 14 years
U.S. Cl. D4—130



309,378
BRUSH FOR REMOVING LINT
Larry J. Kiesz, 12700 SE. Hubbard Rd., Clackamas, Oreg. 97015
Filed Jun. 8, 1987, Ser. No. 59,388
Term of patent 14 years
U.S. Cl. D4—128



309,379
HANDLE FOR UTILITY BRUSHES
Robert Dawes, Brisbane, Australia, assignor to Trevor John Turner and Kaylene Gail Turner, Granville, Australia
Filed Jun. 26, 1987, Ser. No. 66,643
Claims priority, application Australia, Apr. 28, 1987, 1437/87
Term of patent 14 years
U.S. Cl. D4—138



309,380
CAMOUFLAGE PATTERN
Marc A. Barger, 2904 6th Ave., and Jason Dannenberg, 3226 Laurel Ave., both of Sioux City, Iowa 51106
Filed Jun. 20, 1988, Ser. No. 209,023
Term of patent 14 years
U.S. Cl. D5—62



309,381
SWIVEL CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Allsteel Inc., Aurora, Ill.
Filed Apr. 23, 1987, Ser. No. 43,260
Term of patent 14 years
U.S. Cl. D6—360



309,382
SWIVEL ARM CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Allsteel Inc., Aurora, Ill.
Filed Apr. 23, 1987, Ser. No. 42,872
Term of patent 14 years
U.S. Cl. D6—360



309,383
CHAIR SEAT
Wolfgang Muller-Deisig, Natzungen, Fed. Rep. of Germany; David C. Jenkins; Terry D. West, both of Grand Rapids, Mich., and Zooey C. Chu, Holland, Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 818,678, Jan. 14, 1986. This application May 15, 1986, Ser. No. 864,960
Term of patent 14 years
U.S. Cl. D6—366





309,384
SEAT
Randall P. Buhk, Wyoming, Mich., assignor to Allsteel Inc., Aurora, Ill.
Filed Apr. 23, 1987, Ser. No. 41,748
Term of patent 14 years
U.S. Cl. D6—366



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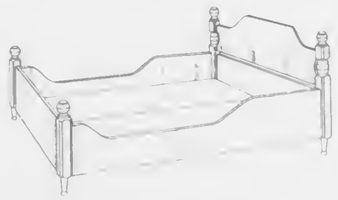
309,385
SEAT
Randall P. Buhk, Wyoming, Mich., assignor to Allsteel Inc., Aurora, Ill.
Filed Apr. 23, 1987, Ser. No. 42,967
Term of patent 14 years
U.S. Cl. D6—366



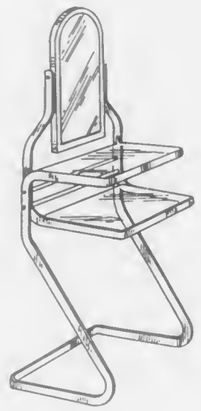
309,386
ARM CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Allsteel Inc., Aurora, Ill.
Filed Apr. 23, 1987, Ser. No. 42,871
Term of patent 14 years
U.S. Cl. D6—379



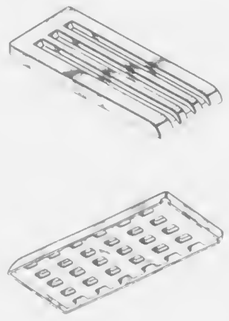
309,387
CHILD'S BED
Donald F. Marshall, P.O. Box 234, No. Bridgton, Me. 04057
Filed Oct. 24, 1986, Ser. No. 923,651
Term of patent 14 years
U.S. Cl. D6—394



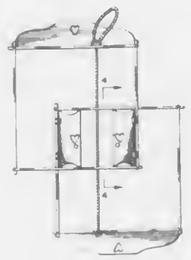
309,388
VANITY TABLE
Peter M. Yau Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Mar. 10, 1989, Ser. No. 322,223
Term of patent 14 years
U.S. Cl. D6—397



309,389
STORAGE SHELF
Jack K. Hockenberry, Owatonna, Minn., assignor to Wenger Corporation, Owatonna, Minn.
Filed Jul. 16, 1987, Ser. No. 74,434
Term of patent 14 years
U.S. Cl. D6—511



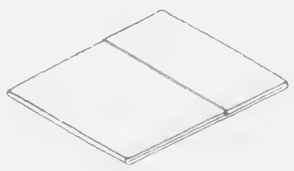
309,390
HANGING DISPLAY SHELF
Henry L. Smith, Klondike Resort, Rte. 8, Otis, Mass. 01253
Filed Jun. 6, 1988, Ser. No. 202,995
Term of patent 14 years
U.S. Cl. D6—571



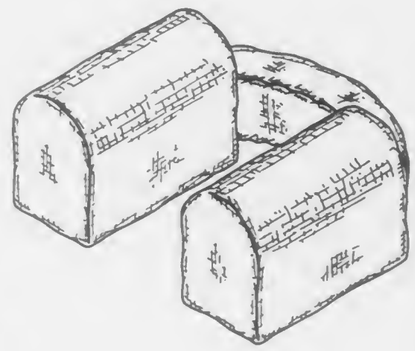
309,391
PILLOWCASE
Robert O. King, and Glenn E. Collins, both of Mechanicsville, Va., assignors to Today's Child, Inc., Mechanicsville, Va.
Filed Mar. 28, 1988, Ser. No. 174,025
Term of patent 14 years
U.S. Cl. D6—601



309,392
COVER FOR AN INFLATABLE BEACH PILLOW
Philip A. Hafvenstein, 5609 27th Ave. S., Minneapolis, Minn. 55417, and Paul C. Heeren, 17130 Franchise Way, Farmington, Minn. 55024
Filed Dec. 12, 1986, Ser. No. 941,291
Term of patent 14 years
U.S. Cl. D6—601



309,393
CAR SEAT PILLOW
Margie C. Talangon, 615 Solano Ave., Sonoma, Calif. 95476
Filed May 5, 1988, Ser. No. 190,515
Term of patent 14 years
U.S. Cl. D6—601



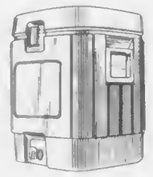
309,394
THERMALIZED CHILDREN'S CAR SEAT CUSHION
Suzanne P. Morris, 3402-C Prince David Dr., Richmond, Va. 23223
Filed Dec. 3, 1987, Ser. No. 128,508
Term of patent 14 years
U.S. Cl. D6—611



309,395
JUICE DISPENSER
George L. Thompson, Snellville; Kenneth G. Smazik, and Jonathan Kirschner, both of Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Oct. 29, 1986, Ser. No. 924,532
Term of patent 14 years
U.S. Cl. D7—311



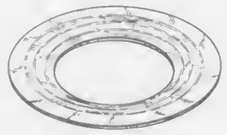
309,396
COOLER
Gene Lundblade, Valley Center, and Robert Deines, Wichita, both of Kans., assignors to Coleman Outdoor Products, Inc., Wichita, Kans.
Filed Aug. 12, 1987, Ser. No. 84,121
Term of patent 14 years
U.S. Cl. D7—313



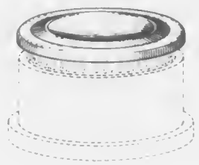




309,397
PIZZA GRIDDLE
Everett D. Strand, 4317 Dupont Ave. S., Minneapolis, Minn. 55409
Filed Mar. 19, 1987, Ser. No. 27,671
Term of patent 14 years
U.S. Cl. D7—354



309,398
CAP FOR A GAS BURNER
Lyle B. Lund, Geneva, Ill., assignor to Harper-Wyman Company, Lisle, Ill.
Filed Jan. 21, 1988, Ser. No. 146,358
Term of patent 14 years
U.S. Cl. D7—407



309,399
AGITATOR FOR A FOOD MIXER
John K. Barnard, Bay Village, and David A. Brown, Rocky River, both of Ohio, assignors to Vita-Mix Corporation and Flurry International, Inc., both of Cleveland, Ohio
Filed May 21, 1987, Ser. No. 52,764
Term of patent 14 years
U.S. Cl. D7—412

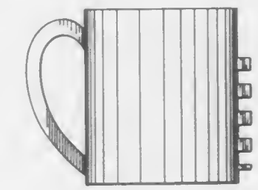




309,400
ICE CREAM AGITATOR
John K. Barnard, Bay Village, Ohio, assignor to Vita-Mix Corporation, Cleveland, Ohio
Filed Jun. 27, 1988, Ser. No. 211,668
Term of patent 14 years
U.S. Cl. D7—412



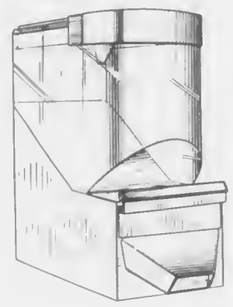
309,401
CUP WITH SPOON HOLDER
Marie Lombardi, 816 NW. 28th St., Wilton Manors, Fla. 33311
Filed Jan. 29, 1988, Ser. No. 150,329
Term of patent 14 years
U.S. Cl. D7—507



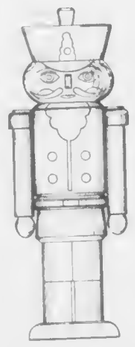




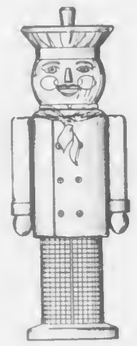
309,402
BEAN DISPENSER
Lester Morrow, Ossining, N.Y., assignor to Marlboro Marketing, Inc., New York, N.Y.
Filed Jun. 3, 1988, Ser. No. 202,181
Term of patent 14 years
U.S. Cl. D7—589



309,403
COMBINED PEPPER MILL AND SALT SHAKER
John W. Pierotti, Smethport, Pa., assignor to Chef Specialities Company, Inc., Smethport, Pa.
Filed Mar. 31, 1988, Ser. No. 175,729
Term of patent 14 years
U.S. Cl. D7—594



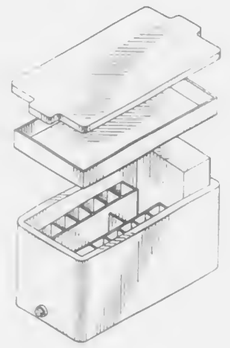
309,404
COMBINED PEPPER MILL AND SALT SHAKER
John W. Pierotti, Smethport, Pa., assignor to Chef Specialities Company, Inc., Smethport, Pa.
Filed Mar. 31, 1988, Ser. No. 175,730
Term of patent 14 years
U.S. Cl. D7—594



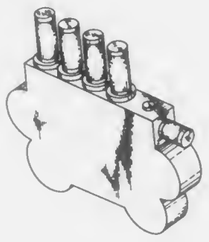
309,405
COMBINED PEPPER MILL AND SALT SHAKER
John W. Pierotti, Smethport, Pa., assignor to Chef Specialities Company, Inc., Smethport, Pa.
Filed Mar. 31, 1988, Ser. No. 175,733
Term of patent 14 years
U.S. Cl. D7—594



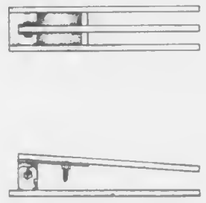
309,406
OFF ROAD VEHICLE ICE CHEST
Lee J. Ridings, 712 Flamingo Dr., Apollo Beach, Fla. 33570
Filed Sep. 30, 1987, Ser. No. 102,898
Term of patent 14 years
U.S. Cl. D7—605



309,407
COMBINED CHOPPING BLOCK WITH KNIVES, STORAGE, AND LOCKING SYSTEM
Joyce R. May, P.O. Box 30504, Lafayette, La. 70503
Filed Jul. 7, 1987, Ser. No. 70,507
Term of patent 14 years
U.S. Cl. D7—638



309,408
OYSTER OPENER
Donald J. Bell, Pahokee, Fla., assignor to Don Bell Enterprises, Inc., Wellington, Fla.
Filed Nov. 28, 1986, Ser. No. 936,030
Term of patent 14 years
U.S. Cl. D7—693



309,409
PAIR OF TOOL HANDLES
Vincent J. Kiernan, Hudson, Ohio, assignor to Bares Group, Chagrin Falls, Ohio
Filed Mar. 28, 1988, Ser. No. 174,017
Term of patent 14 years
U.S. Cl. D8—4



309,410
SAFETY ALIGNING PIN
Samuel Albert, 637 Adams Ave., Philadelphia, Pa. 19120
Filed Aug. 27, 1987, Ser. No. 90,773
Term of patent 14 years
U.S. Cl. D8—14

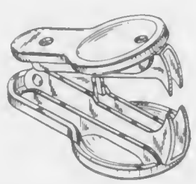


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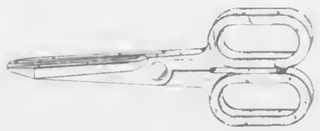
309,411
OPEN-ENDED WRENCH
Bruce L. Strock, 3046 Camino Graciosa St., Thousand Oaks, Calif. 91360
Filed Mar. 10, 1987, Ser. No. 27,024
Term of patent 14 years
U.S. Cl. D8—17



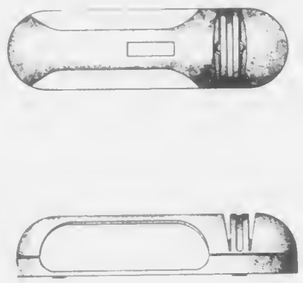
309,412
STAPLE REMOVER
Jane Ancona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jan. 27, 1989, Ser. No. 303,560
Term of patent 14 years
U.S. Cl. D8—48



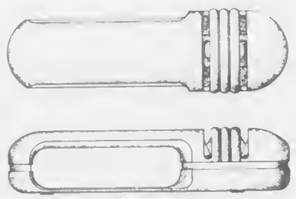
309,413
SCISSORS
Jane Ancona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jan. 27, 1989, Ser. No. 303,559
Term of patent 14 years
U.S. Cl. D8—57



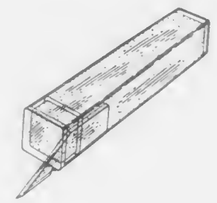
309,414
KNIFE SHARPENER
Kiyoshi Shimizu, 3-7-75, Suehiro, Miki-city Hyogo, Japan
Filed Apr. 11, 1988, Ser. No. 180,017
Claims priority, application Japan, Oct. 29, 1987, 62-44294
Term of patent 14 years
U.S. Cl. D8—93

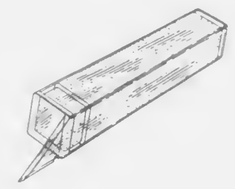


309,415
KNIFE SHARPENER
Kiyoshi Shimizu, 3-7-75, Snehiro, Miki-city Hyogo, Japan
Filed Apr. 11, 1988, Ser. No. 180,018
Claims priority, application Japan, Oct. 29, 1987, 62-44293
Term of patent 14 years
U.S. Cl. D8—93

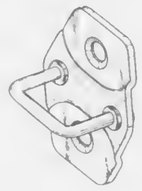


309,416
COMBINED CONTAINER WITH MINERALS AND LETTER OPENER
Gordon D. Britz, 2518 Kilpatrick Ct., San Ramon, Calif. 94853
Filed Nov. 25, 1987, Ser. No. 125,072
Term of patent 14 years
U.S. Cl. D8—104

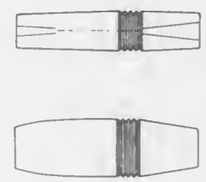




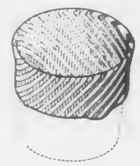
309,417
STRIKER PLATE FOR AN AUTOMOBILE DOOR LOCK
Shinjiro Yamada, Utsunomiya, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1988, Ser. No. 253,429
Claims priority, application Japan, Apr. 7, 1988, 63-13998
Term of patent 14 years
U.S. Cl. D8—345



309,418
SPRAY DISPENSER
Reinold Geiger, St. Germain En Laye, France, assignor to A.M.S. Packaging, Saint-Ouen-L'Aumone, France
Filed Sep. 30, 1987, Ser. No. 103,103
Term of patent 14 years
U.S. Cl. D9—300



309,419
BAG
Catherine L. Berg, 9131 Emerson St., Thornton, Colo. 80229
Filed Sep. 12, 1986, Ser. No. 906,785
Term of patent 14 years
U.S. Cl. D9—305



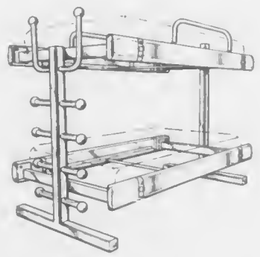
309,420
BOTTLE
Theodore L. Beaver, Roselle, Ill., assignor to The Clorox Company, Oakland, Calif.
Filed Oct. 7, 1986, Ser. No. 916,670
Term of patent 14 years
U.S. Cl. D9—376



309,421
BOTTLE
Thomas B. Aldrich, III, Spring Valley, N.Y., assignor to Bristol-Myers Canada Inc., Toronto, Canada
Filed Aug. 12, 1987, Ser. No. 85,091
Claims priority, application Canada, Feb. 26, 1987, 2602872
Term of patent 14 years
U.S. Cl. D9—376



309,422
BUNK BED
Brent W. Zitting, 4271 S. Charles Dr., West Valley City, Utah 84120
Filed Feb. 2, 1987, Ser. No. 9,906
Term of patent 14 years
U.S. Cl. D6—390



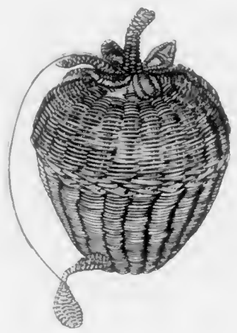
309,423
BOTTLE AND CAP
Michel Alizard, Orgeval, France, assignor to Colgate-Palmolive Company, Piscataway, N.J.
Filed Sep. 9, 1988, Ser. No. 244,451
Term of patent 14 years
U.S. Cl. D9—404



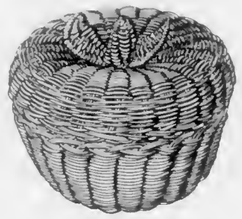
309,424
WICKER CONTAINER
Barbara A. Grimm, Baguio Villa, Block 26, 25 Floor, Flat C, 555 Victoria Road, Hong Kong, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,685
Term of patent 14 years
U.S. Cl. D9—414



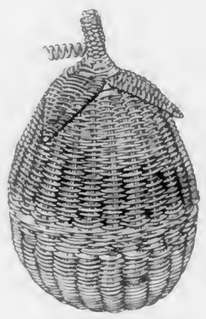
309,425
WICKER CONTAINER
Barbara A. Grimm, Baguio Villa, Block 26, 25 Floor, Flat C, 555 Victoria Road, Hong Kong, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,686
Term of patent 14 years
U.S. Cl. D9—414



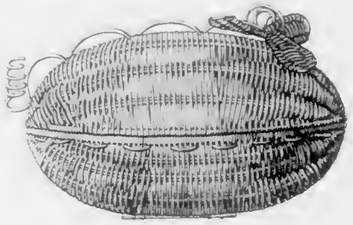
309,426
WICKER CONTAINER
Barbara A. Grimm, Block 26, 25 Floor, Flat C, 555 Victoria Road, Baguio Villa, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,687
Term of patent 14 years
U.S. Cl. D9—414



309,427
WICKER CONTAINER
Barbara A. Grimm, Block 26, 25 Floor, Flat C, 555 Victoria Road, Baguio Villa, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,688
Term of patent 14 years
U.S. Cl. D9—414



309,428
WICKER CONTAINER
Barbara A. Grimm, Block 26, 25 Floor, Flat C, 555 Victoria Road, Baguio Villa, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,690
Term of patent 14 years
U.S. Cl. D9—414

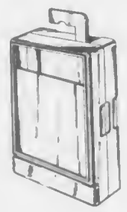


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309,429
WICKER CONTAINER
Barbara A. Grimm, Block 26, 25 Floor, Flat C, 555 Victoria Road, Baguio Villa, Hong Kong
Filed Jun. 27, 1988, Ser. No. 211,689
Term of patent 14 years
U.S. Cl. D9—414



309,430
CONTAINER
Ronald G. Cramer, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Mar. 24, 1988, Ser. No. 172,746
Term of patent 14 years
U.S. Cl. D9—415



309,431
CANDY BOX AND THE LIKE
Timothy K. Sheehan, Smyrna, Ga., assignor to Amoco Corporation, Chicago, Ill.
Filed Aug. 14, 1987, Ser. No. 85,605
Term of patent 14 years
U.S. Cl. D9—424



309,432
CONTAINER
Derek V. Mancini, Uxbridge, Canada, assignor to Twinpak, Inc., Dorval, Canada
Filed Sep. 3, 1987, Ser. No. 92,705
Term of patent 14 years
U.S. Cl. D9—424



309,433
CONTAINER FOR PLATES
Furio Minuti, Macerata, Italy, assignor to Fratelli Guzzini, S.p.A., Recanati, Italy
Filed Aug. 3, 1987, Ser. No. 80,705
Claims priority, application Italy, Feb. 4, 1987, 20733 B/87
Term of patent 14 years
U.S. Cl. D9—424



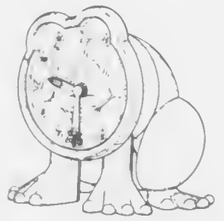
309,434
BLANK FOR A CONTAINER
Neil V. H. Goldman, London, England, assignor to Frank Coleman (Luton) Limited, Flitwick, England
Filed Apr. 8, 1988, Ser. No. 179,133
Claims priority, application United Kingdom, Oct. 12, 1987, 87/1045542
Term of patent 14 years
U.S. Cl. D9—433



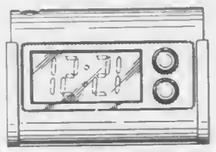
309,435
CAP FOR AN AEROSOL CONTAINER
Kenneth T. Sharman, and Bruce H. Dawson, both of Ajax, Canada, assignors to PVC (Canada), Ltd., Ajax and CCL Industries, Inc., Toronto, both of, Canada
Filed Feb. 9, 1987, Ser. No. 12,199
Term of patent 14 years
U.S. Cl. D9—435



309,436
COMBINED CLOCK AND BANK
Hans K. Zeisel, Waiblinger Strasse 25, D-7054 Korb, Fed. Rep. of Germany
Filed May 21, 1987, Ser. No. 52,746
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1986, 61-1107
Term of patent 14 years
U.S. Cl. D10—2



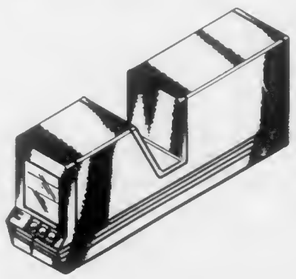
309,437
COMBINED CLOCK AND FLASHLIGHT
Kam W. Ng, Kowloon, Hong Kong, assignor to Silcon Electronics Company Limited, Hong Kong, Hong Kong
Filed Sep. 9, 1986, Ser. No. 905,948
Claims priority, application United Kingdom, Mar. 17, 1986, 1032877
Term of patent 14 years
U.S. Cl. D10—5



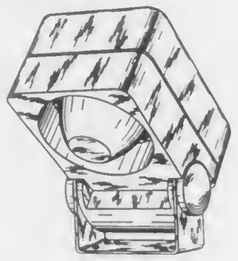
309,438
WRISTWATCH
Hans Saurer, Lugano, Switzerland, assignor to Christian Dior, S.A., Paris, France
Filed May 14, 1987, Ser. No. 50,211
Term of patent 14 years
U.S. Cl. D10—39



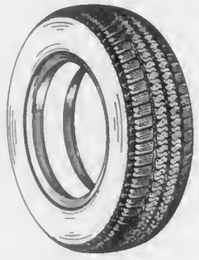
309,439
NON-CONTACT OPTICAL GAUGE
Kurt Goszyk, Washington Crossing, Pa., assignor to Contrologic, Inc., Norristown, Pa.
Filed Jul. 18, 1988, Ser. No. 220,829
Term of patent 14 years
U.S. Cl. D10—46



309,440
SIREN FOR AUTOMOBILES AND THE LIKE
Giovanni Arduini; Lorenzo Bonfanti, and Gianfranco Salvemini, all of Milan, Italy, assignors to Delta Elettronica S.p.A., Varese, Italy
Filed Sep. 30, 1987, Ser. No. 103,265
Claims priority, application Italy, May 18, 1987, 60920 B/87
Term of patent 14 years
U.S. Cl. D10—120



309,441
AUTOMOBILE TIRE
Hiroaki Sakuno, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Nov. 16, 1987, Ser. No. 120,810
Claims priority, application Japan, May 15, 1987, 62-19214
Term of patent 14 years
U.S. Cl. D12—147



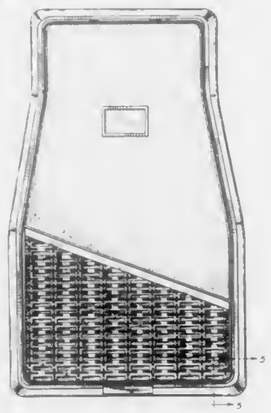
309,442
VEHICLE TIRE
Kenichi Okada, Hyogo, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Izumi-Ohtsu, Japan
Filed Dec. 22, 1987, Ser. No. 136,873
Claims priority, application Japan, Jul. 2, 1987, 62-27099
Term of patent 14 years
U.S. Cl. D12—147



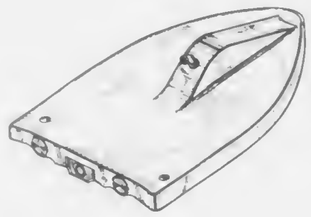
309,443
VEHICLE TIRE
Masaaki Minamitani, Osaka, Japan, assignor to The Ohtsu Tire and Rubber Co., Ltd., Osaka, Japan
Filed Aug. 11, 1987, Ser. No. 83,998
Claims priority, application Japan, Mar. 13, 1987, 62-9676[U]
Term of patent 14 years
U.S. Cl. D12—151



309,444
AUTOMOBILE FLOOR MAT
Pierre Charet, 12490 SW. 95 Ter., Miami, Fla. 33186, and Duke Kraai, 10055 SW. 213 Ter., Miami, Fla. 33189
Filed Dec. 23, 1987, Ser. No. 137,851
Term of patent 14 years
U.S. Cl. D12—203



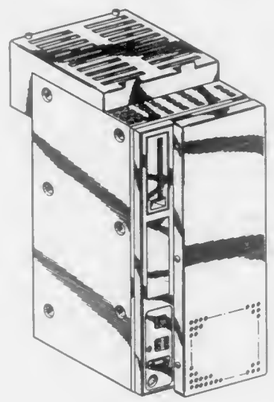
309,445
WATER VEHICLE
Howard C. Hornsby, Jr., 1221 Wynnedale Rd., West Palm Beach, Fla. 33417, and Robert J. Murphy, 1916 Pleasant Dr., Juno, Fla.
Filed Jan. 22, 1988, Ser. No. 146,796
Term of patent 14 years
U.S. Cl. D12—307



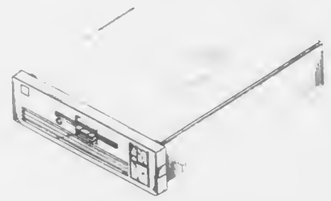
309,447
SWITCH HOUSING
Ardeshir Bandari, Brantford, Canada, assignor to Westcon Electrical Manufacturing Inc., Brantford, Canada
Filed Dec. 19, 1986, Ser. No. 943,963
Claims priority, application Canada, Jun. 19, 1986, 19-06-86-1
Term of patent 14 years
U.S. Cl. D13—158



309,446
MINI PROGRAMMABLE LOGIC CONTROLLER
Walter M. Russell, Houston, Tex., assignor to Square D Company, Palatine, Ill.
Filed Apr. 8, 1988, Ser. No. 179,008
Term of patent 14 years
U.S. Cl. D13—162



309,448
DISK DRIVE
Wayne L. Aderman, Zumbro Falls, Minn.; Willis Y. Jordan, Birmingham, Ala.; Timothy J. Rodd, Lyndhurst, England, and Robert P. Teanant, Endicott, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Mar. 28, 1988, Ser. No. 174,479
Term of patent 14 years
U.S. Cl. D14—109

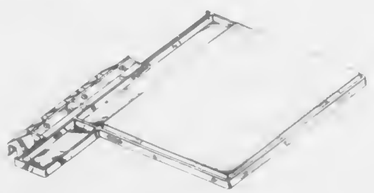


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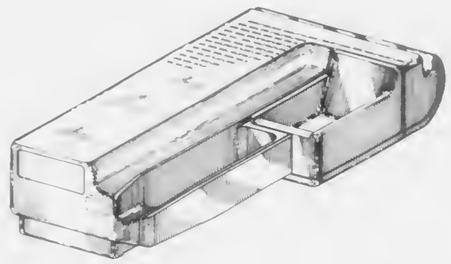
309,449
CURSOR CONTROL FOR A DIGITIZING TABLE
Lindsay W. MacDonald, Bedfordshire; Robert G. Buxton, Knutsford, and Peter Grayson, Manchester, all of England, assignors to Crosfield Electronics Limited, London, United Kingdom
Filed Jul. 22, 1988, Ser. No. 223,197
Claims priority, application United Kingdom, Jan. 22, 1988, 1047863
Term of patent 14 years
U.S. Cl. D14—114



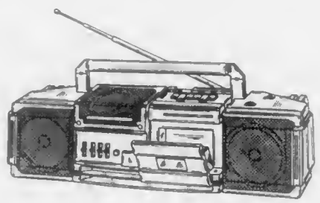
309,450
COMPUTER MOUSE PAD
H. Charles Hassel, Los Angeles; Kenneth Geist, Beverely Hills, and Gregory Du Vall, Santa Monica, all of Calif., assignors to MicroComputer Accessories, Inc., Los Angeles, Calif.
Filed Jul. 27, 1988, Ser. No. 224,861
Term of patent 14 years
U.S. Cl. D14—114



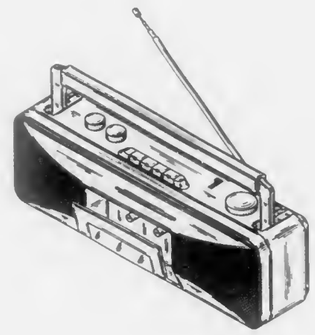
309,451
PORTABLE RADIOTELEPHONE OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 15, 1988, Ser. No. 146,143
Term of patent 14 years
U.S. Cl. D14—137



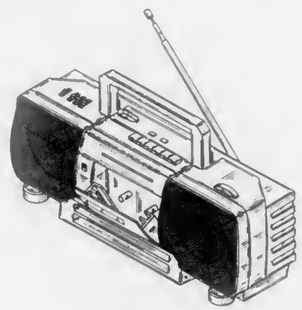
309,452
COMBINED TAPE RECORDER AND RADIO
Mitsutaka Fuke, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 22, 1988, Ser. No. 171,531
Claims priority, application Japan, Sep. 28, 1987, 62-39871
Term of patent 14 years
U.S. Cl. D14—163



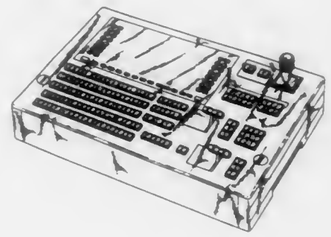
309,453
COMBINED TAPE RECORDER AND RADIO
Tatsuo Mori, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 12, 1988, Ser. No. 180,807
Claims priority, application Japan, Oct. 30, 1987, 62-44575
Term of patent 14 years
U.S. Cl. D14—163



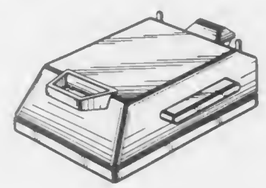
309,454
COMBINED TAPE RECORDER AND RADIO
Tatsuo Mori, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jun. 8, 1988, Ser. No. 204,183
Claims priority, application Japan, Dec. 11, 1987, 62-50841
Term of patent 14 years
U.S. Cl. D14—163

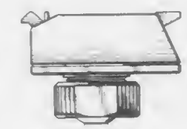


309,455
VIDEO SWITCHER
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 5, 1987, Ser. No. 117,729
Term of patent 14 years
U.S. Cl. D14—239



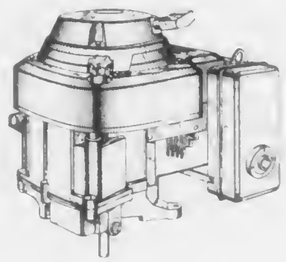
309,456
POSITIVE LOCK HANGER FOR A TELEPHONE HANDSET
Richard Culbertson, Lynchburg, Va., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.
Filed Aug. 22, 1988, Ser. No. 234,835
Term of patent 14 years
U.S. Cl. D14—253



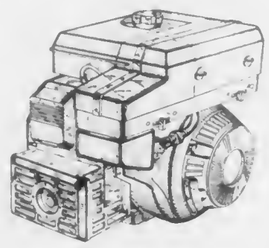


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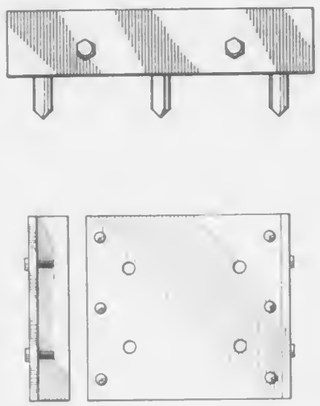
309,457
INTERNAL COMBUSTION ENGINE
Glen C. Eifert, Hartford, and Thomas J. Green, West Bend, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Apr. 18, 1988, Ser. No. 182,744
Term of patent 14 years
U.S. Cl. D15—1



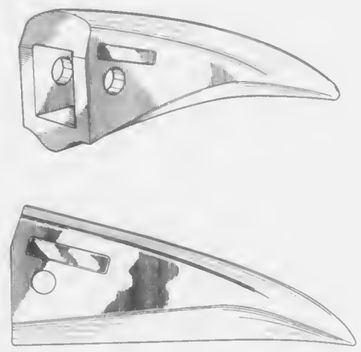
309,458
INTERNAL COMBUSTION ENGINE
Gary S. Johnson, Racine, and Thomas J. Green, West Bend, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Apr. 18, 1988, Ser. No. 182,743
Term of patent 14 years
U.S. Cl. D15—1



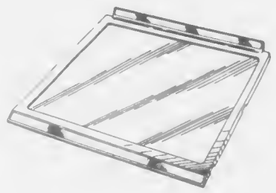
309,459
EARTH MOVING OUTRIGGER SHOE FOR FROST, ROCKS OR THE LIKE
George E. Journey, 1361 Skelp Level Rd., Downingtown, Pa. 19335
Filed Jul. 7, 1988, Ser. No. 216,260
Term of patent 14 years
U.S. Cl. D15—28



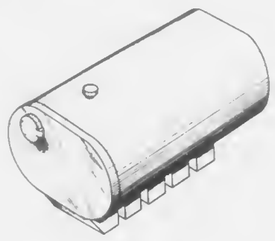
309,460
TILLAGE POINT TOOTH
Dennis M. Gross, 1702 Cleveland, Caldwell, Id. 83605
Filed May 6, 1987, Ser. No. 47,055
Term of pateot 14 years
U.S. Cl. D15—29



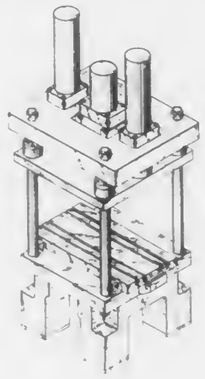
309,461
REFRIGERATOR SHELF
Marc R. Bussan, Evansville; Charles G. Fellwock, Scott Township, Vanderburgh County, both of Ind., and Jeffrey A. DeBoer, Ann Arbor, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 7, 1988, Ser. No. 267,764
Term of patent 14 years
U.S. Cl. D15—89



309,462
PORTABLE REFRIGERATED BEVERAGE DISPENSER
Algernon P. Russell, 1212 N. Robertson St., New Orleans, La. 70116
Filed May 21, 1986, Ser. No. 865,606
Term of patent 14 years
U.S. Cl. D15—90



309,463
FORGING PRESS
Richard A. McDannel, McKean, and George M. Dudick, North East, both of Pa., assignors to Efco, Inc., Erie, Pa.
Filed Mar. 28, 1988, Ser. No. 174,330
Term of patent 14 years
U.S. Cl. D15—123



309,464
TELESCOPIC BLADE GUIDE
Krister Salomonsson, Sjölyckevägen 1, S-342 00 Alvesta, Sweden
Filed Dec. 28, 1987, Ser. No. 138,021
Claims priority, application Sweden, Jun. 25, 1987, 87-1473
Term of patent 14 years
U.S. Cl. D15—133

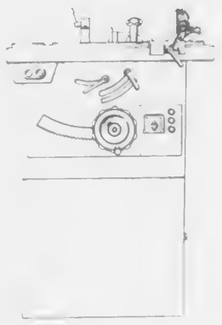


309,465
EYE SHIELD
John P. Russell, 1000 Main St., Gardendale, Ala. 35071
Filed Jul. 28, 1987, Ser. No. 78,544
Term of patent 14 years
U.S. Cl. D16—107



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309,466
TABLE SAW
Marc Wodli, Bischheim, France, assignor to Electroli, S.A., Bischwiller, France
Filed May 4, 1988, Ser. No. 196,091
Term of patent 14 years
U.S. Cl. D15—133



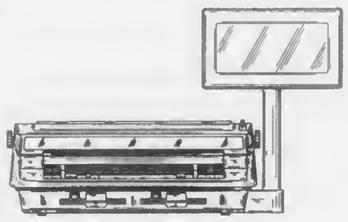
309,467
COLLAPSIBLE HAND-HELD PERISCOPE
George E. Miller, Burlingame; Robert D. Brunner, Palo Alto, and Kenneth D. Wood, Menlo Park, all of Calif., assignors to Carolina Pacific, Inc., Burlingame, Calif.
Filed Oct. 12, 1988, Ser. No. 256,892
Term of patent 14 years
U.S. Cl. D16—132



309,468
ELECTRIC GUITAR
Kent T. Everett, 2735 Tallulah Dr., Atlanta, Ga. 30319
Filed Nov. 9, 1987, Ser. No. 118,631
Term of patent 14 years
U.S. Cl. D17—14



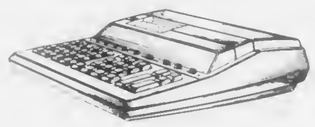
309,469
TYPEWRITER
Kuniyasu Matsumoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed May 29, 1987, Ser. No. 55,775
Claims priority, application Japan, Dec. 1, 1986, 61-47704
Term of patent 14 years
U.S. Cl. D18—2



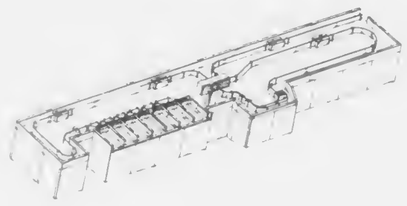
309,470
ELECTRONIC CALCULATOR WITH PRINTER
Hiroshi Sakaguchi, and Tadahiko Saimen, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 28, 1987, Ser. No. 138,690
Claims priority, application Japan, Jul. 2, 1987, 62-27320
Term of patent 14 years
U.S. Cl. D18—7



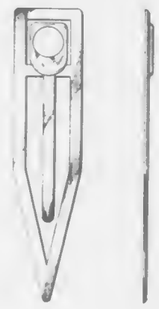
309,471
CALCULATOR CASE
Thomas Perelli, and Joseph C. Sereika, both of Stanhope, N.J., assignors to Monroe Systems for Business, Inc.
Filed Oct. 13, 1987, Ser. No. 108,306
Term of patent 14 years
U.S. Cl. D18—11



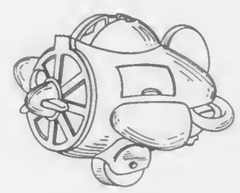
309,472
MAIL REARRANGING/STAMPING MACHINE
Yoshiaki Nishida, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 29, 1986, Ser. No. 868,346
Term of patent 14 years
U.S. Cl. D18—99



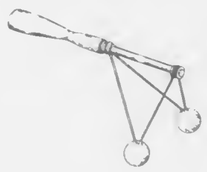
309,473
BOOKMARK
Sylvia S. Toy, P.O. Box 1125, Paradise, Calif. 95967
Filed Jul. 22, 1988, Ser. No. 223,174
Term of patent 14 years
U.S. Cl. D19—34



309,474
COMBINED PLURAL DESK ARTICLE UNIT AND HOLDER THEREFOR
Seishiro Murai, Tokyo, Japan, assignor to Kabushiki Kaisha Beetland, Japan
Filed Jul. 14, 1987, Ser. No. 73,416
Term of patent 14 years
U.S. Cl. D19—75



309,475
COLLIDING BALL TOY
Nasser Salehzadeh, and Dana L. Salehzadeh, both of 155 Bellvue Loop, Fayetteville, Ga. 30214
Filed Jul. 17, 1989, Ser. No. 380,276
Term of patent 14 years
U.S. Cl. D21—62

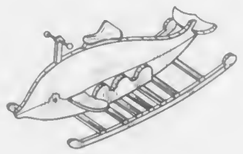


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309,476
SIMULATIVE ROCKER
John G. Freiberger, Jr., 4722 Trade Winds Dr. S., Gulfport, Fla. 33711, and Kelly M. Allen, 2825 53rd St. S., Gulfport, Fla. 33707
Filed Sep. 7, 1988, Ser. No. 241,136
Term of patent 14 years
U.S. Cl. D21—69



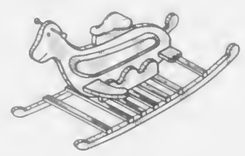
309,477
SIMULATIVE ROCKER
John G. Freiberger, Jr., 4722 Trade Winds Dr. S., Gulfport, Fla. 33711, and Kelly M. Allen, 2825 53rd St. S., Gulfport, Fla. 33707
Filed Sep. 7, 1988, Ser. No. 241,146
Term of patent 14 years
U.S. Cl. D21—69



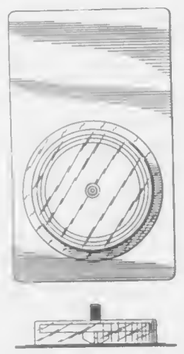
309,478
SIMULATIVE ROCKER
John G. Freiberger, Jr., 4722 Trade Winds Dr. S., Gulfport, Fla. 33711, and Kelly M. Allen, 2825 53rd St. S., Gulfport, Fla. 33707
Filed Sep. 7, 1988, Ser. No. 241,147
Term of patent 14 years
U.S. Cl. D21—69



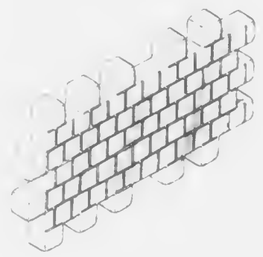
309,479
SIMULATIVE ROCKER
John G. Freiberger, Jr., 4722 Trade Winds Dr. S., Gulfport, Fla. 33711, and Kelly M. Allen, 2825 53rd St. S., Gulfport, Fla. 33707
Filed Sep. 7, 1988, Ser. No. 241,148
Term of patent 14 years
U.S. Cl. D21—69



309,480
COMBINED SPINNING TOY AND PACKAGE
Donald Olney, Rochester, N.Y., assignor to Brimms Inc., Tonawanda, N.Y.
Filed Feb. 1, 1988, Ser. No. 150,710
Term of patent 14 years
U.S. Cl. D21—92



309,481
CONSTRUCTION TOY ROOF BLOCK
Thomas E. Fish, Jr., Wickliffe, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Sep. 1, 1988, Ser. No. 240,556
Term of patent 14 years
U.S. Cl. D21—108



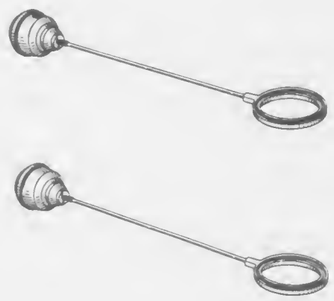
309,482
TOY HYPODERMIC SPRAYER
Richard M. Sternbach, 18408 Hatteras, No. 7,, Tarzana, Calif. 91356
Filed Sep. 23, 1987, Ser. No. 100,142
Term of patent 14 years
U.S. Cl. D21—109



309,483
DOLL
Theresa M. Leva, 582 Reynolds St., Whitby, Ontario, Canada (L1N 6H5)
Filed Jun. 18, 1987, Ser. No. 63,566
Claims priority, application Canada, Jan. 7, 1987, 07-01-87-3
Term of patent 14 years
U.S. Cl. D21—166



309,484
SKIPPING TOY
Avi Arad, Westport, Conn., and Melvin R. Kennedy, New York, N.Y., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Aug. 14, 1989, Ser. No. 393,471
Term of patent 14 years
U.S. Cl. D21—191

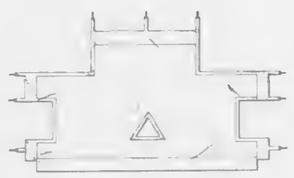


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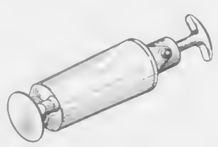
309,485
EXERCISE CYCLE
Curt G. Bingham, and William T. Dalebout, both of Logan, Utah, assignors to Weslo, Inc., Logan, Utah
Filed Dec. 21, 1988, Ser. No. 287,732
Term of patent 14 years
U.S. Cl. D21—194



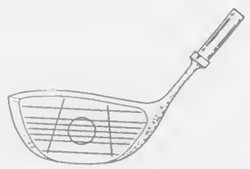
309,486
PRACTICE HOCKEY NET ATTACHMENT
Lauren D. Gnenette, 7 Lynnview Court SE., Calgary, Alberta, Canada (T2C 3A4), and Gregg A. Nybo, Box 18, Site 12, S. S. 3, Calgary, Alberta, Canada (T3C 3N9)
Filed Apr. 28, 1987, Ser. No. 43,586
Claims priority, application Canada, Nov. 6, 1986, 06-11-86-4
Term of patent 14 years
U.S. Cl. D21—200



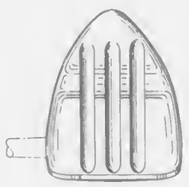
309,487
PORTABLE WATER FILTER
James L. Lieberman, 1720 S. Marshall Rd., #25, Boulder, Colo. 80302
Filed Nov. 4, 1988, Ser. No. 266,991
Term of patent 14 years
U.S. Cl. D23—209



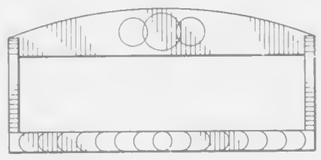
309,488
GOLF CLUB HEAD
H. Edward Langert, 5145 Avenida Encinas, Suite B, Carlsbad, Calif. 92008
Filed Jul. 17, 1987, Ser. No. 74,515
Term of patent 14 years
U.S. Cl. D21—214



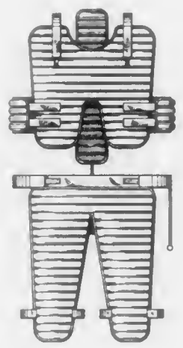
309,489
GOLF CLUB HEAD
Max W. Rome, 2597 Albany Ave., West Hartford, Conn. 06117, assignor to Robert Kay; Vl Hvasta and Max W. Rome, all of West Hartford, Conn.
Filed Nov. 16, 1987, Ser. No. 120,807
Term of patent 14 years
U.S. Cl. D21—217



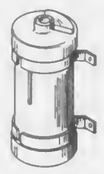
309,490
BALL RACK
Thomas O. Davis, and Karen J. Davis, both of 4613 S. Fuller, Independence, Mo. 64055
Filed Nov. 6, 1987, Ser. No. 117,655
Term of patent 14 years
U.S. Cl. D21—223



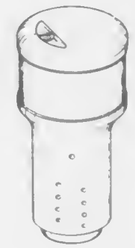
309,491
LIFE PRESERVER
Lawrence R. Martin, 1207 Ramsgate Rd., Flint, Mich. 48532
Filed Mar. 31, 1988, Ser. No. 176,406
Term of patent 14 years
U.S. Cl. D21—238



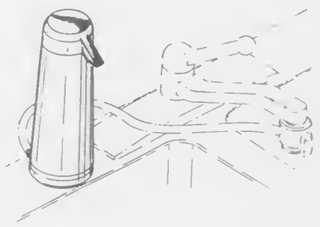
309,492
IN-LINE WATER FILTER
Ulrich K. Boehnke, Fort Myers, Fla., assignor to Diemold Machine Company, Inc., Fort Myers, Fla.
Filed Apr. 30, 1987, Ser. No. 44,137
Term of patent 14 years
U.S. Cl. D23—209



309,493
CHLORINE DISPENSER FOR SWIMMING POOLS
John M. Casberg, Cheshire, Conn., assignor to Olin Corporation, Cheshire, Conn.
Filed Sep. 16, 1988, Ser. No. 245,093
Term of patent 14 years
U.S. Cl. D23—208



309,494
WATER FILTER HOUSING
William S. Riley, Sulphur Springs, Tex., assignor to Silent Sentry, Inc., Tyler, Tex.
Filed Nov. 14, 1988, Ser. No. 271,072
Term of patent 14 years
U.S. Cl. D23—209

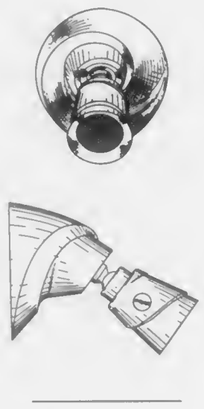


309,495
COMBINED HAND SHOWER AND SUPPORT
Roger H. Ramsey, Copley, and Mitchell L. Wilgus, Akron, both of Ohio, assignors to Stanadyne, Inc., Windsor, Conn.
Filed Jan. 13, 1987, Ser. No. 3,309
Term of patent 14 years
U.S. Cl. D23—223



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309,496
COMBINED SHOWER HEAD AND ESCUTCHEON
Roger H. Ramsey, Copley, and Mitchell L. Wilgus, Akron, both of Ohio, assignors to Stanadyne, Inc., Windsor, Conn.
Filed Jan. 13, 1987, Ser. No. 3,302
Term of patent 14 years
U.S. Cl. D23—230



309,497
CABINET AIR-FRESHENER
Thom Kearnes, Akron, Ohio, assignor to The State Chemical Manufacturing Company, Cleveland, Ohio
Filed Aug. 26, 1988, Ser. No. 237,564
Term of patent 14 years
U.S. Cl. D23—366

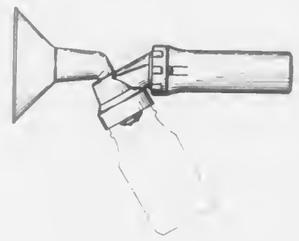


309,498
CHROMATOGRAPHY COLUMN CLOSURE OR SIMILAR ARTICLE
Arthur E. Colvin, Jr., Mount Airy, Md., assignor to Cerex Corporation, Gaithersburg, Md.
Filed Aug. 20, 1987, Ser. No. 87,908
Term of patent 14 years
U.S. Cl. D24—8



309,499
LIGAMENT GRAFT PASSER OR SIMILAR ARTICLE
Jerald A. Bowman, Warsaw, and Richard E. Hobbs, Huntington, both of Ind., assignors to DePuy, Division of Boehringer Mannheim, Indianapolis, Ind.
Filed Dec. 30, 1987, Ser. No. 139,365
Term of patent 14 years
U.S. Cl. D24—26

309,500
BREAST PUMP
Arthur H. Yuan, Hudson, Ohio, and Michael S. Joos, Chicago, Ill., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Apr. 11, 1988, Ser. No. 180,857
Term of patent 14 years
U.S. Cl. D24—51



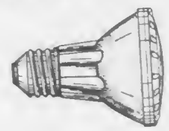
309,501
STICK PONY TOY
Patricia G. Wilson, 1217 Kittery Dr., Virginia Beach, Va. 23464
Filed Mar. 6, 1989, Ser. No. 318,940
Term of patent 14 years
U.S. Cl. D21—75



309,502
HINGE FOR LADDERS AND THE LIKE
Harold R. Wing, Springville, and Kenneth C. Cluff, Orem, both of Utah, assignors to Wing Enterprises, Inc., Springville, Utah
Filed Sep. 23, 1988, Ser. No. 248,471
Term of patent 14 years
U.S. Cl. D25—68



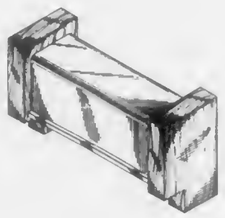
309,503
REFLECTOR-TYPE ELECTRIC LAMP OR THE LIKE
Timothy A. Benson, Winchester, and Peter R. Gagnon, Georgetown, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.
Division of Ser. No. 810,951, Dec. 19, 1985, Pat. No. Des. 301,069. This application Dec. 21, 1988, Ser. No. 287,756
The portion of the term of this patent subsequent to May 9, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—2





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309,504
DECK LIGHT
Mark L. Hanson, Golden Valley, Minn., assignor to MinnFac, Inc., Golden Valley, Minn.
Filed Nov. 4, 1987, Ser. No. 116,542
Term of patent 14 years
U.S. Cl. D26—68



309,505
COMPRESSED POWDER TABLET
Steven F. Colton, Long Beach, N.Y., assignor to Vitarine Pharmaceuticals, Inc., Springfield Gardens, N.Y.
Filed Aug. 8, 1988, Ser. No. 229,275
Term of patent 14 years
U.S. Cl. D28—2



309,506
TABLET
Daniel Shurkus, Raleigh, N.C., assignor to Glaxo Inc., Research Triangle Park, N.C.
Filed Sep. 27, 1988, Ser. No. 250,132
Term of patent 14 years
U.S. Cl. D28—2



309,507
FREE STANDING TWEEZER
Grace C. Shafir, 36 Jane Dr., Englewood Cliffs, N.J. 07632
Filed Jul. 26, 1988, Ser. No. 224,132
Term of patent 14 years
U.S. Cl. D28—55



309,508
DIVING MASK
Taizo Sugita, Ichikawa, Japan, assignor to Kinugawa Pacific Co., Ltd., Tokyo, Japan
Filed Sep. 21, 1988, Ser. No. 247,308
Claims priority, application Japan, Aug. 16, 1988, 63-32607
Term of patent 14 years
U.S. Cl. D29—9



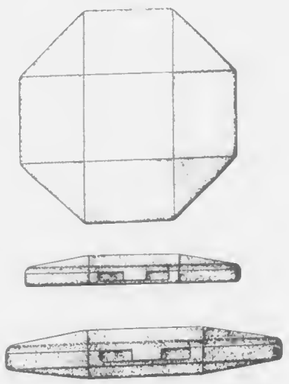
309,509
HELMET
William R. Mast, 18850 E. 114th St. S., Broken Arrow, Okla. 74011
Filed May 20, 1987, Ser. No. 51,820
Term of patent 14 years
U.S. Cl. D29—12



309,510
HAIR DRIER
Keiko Matoba, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 21, 1988, Ser. No. 184,151
Claims priority, application Japan, Oct. 30, 1987, 62-44585
Term of patent 14 years
U.S. Cl. D28—16



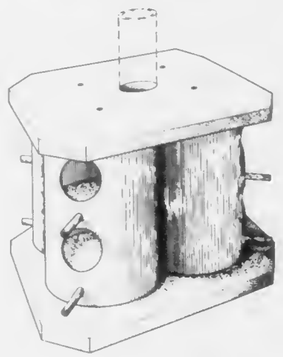
309,511
COSMETIC COMPACT
Bryan Bertlin, Leatherhead; Colin J. Enskat, Harrow-on-the-Hill, and Reginald W. Breese, Harrow, all of England, assignors to Toly Products (UK) Limited, Wembley, England
Filed Nov. 6, 1987, Ser. No. 118,348
Claims priority, application United Kingdom, May 11, 1987, 1042080
Term of patent 14 years
U.S. Cl. D28—78



309,512
CHEEK FLAP FOR A HELMET
Robert W. Crow, Suite 3010, 105 Collier Rd., Atlanta, Ga. 30309
Continuation-in-part of Ser. No. 755,308, Jul. 15, 1985, abandoned. This application Jun. 25, 1987, Ser. No. 66,414
Term of patent 14 years
U.S. Cl. D29—16

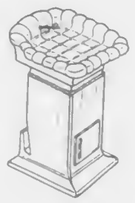


309,513
BIRDHOUSE
Wallace E. Lockyer, Jr., P.O. Box 334, Engelhard, N.C. 27824
Filed Jun. 2, 1988, Ser. No. 201,126
Term of patent 14 years
U.S. Cl. D30—110

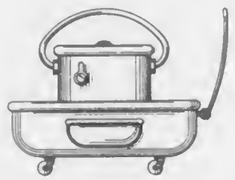


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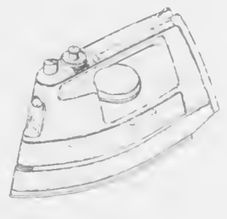
309,514
CAR SEAT FOR SMALL DOGS
Kathleen M. Marcus, and Steven A. Shubin, both of 29215 Laro Dr., Agoura, Calif. 91301
Filed Apr. 14, 1987, Ser. No. 38,347
Term of patent 14 years
U.S. Cl. D30—118



309,515
MOBILE STORAGE UNIT FOR CLOTHES AND LAUNDERING AIDS
Lenonda M. Robinson, 1931 Rodeo Rd. #1, Los Angeles, Calif. 90018
Filed Nov. 6, 1987, Ser. No. 117,658
Term of patent 14 years
U.S. Cl. D32—35



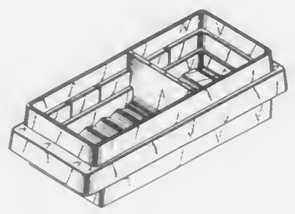
309,516
ELECTRIC IRON
Jan Klok, Hoogezand, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 24, 1988, Ser. No. 160,566
Claims priority, application United Kingdom, Sep. 2, 1987, 1044545; Sep. 2, 1987, 1044546
Term of patent 14 years
U.S. Cl. D32—70



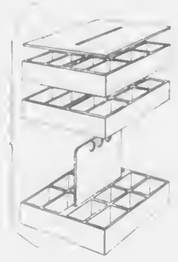
309,517
MOTORIZED CARRYING CART
Junior F. Hawkins, 3120 W. 16th, Wichita, Kans. 67203-1742
Filed Aug. 18, 1986, Ser. No. 897,099
Term of patent 14 years
U.S. Cl. D34—17



309,518
STORAGE BOX
Ake E. Viklund, Säffle, Sweden, assignor to Electrolux Constructor Aktiebolag, Saffle, Sweden
Filed Mar. 16, 1988, Ser. No. 168,738
Claims priority, application Sweden, Sep. 18, 1987, 87-2069
Term of patent 14 years
U.S. Cl. D34—40



309,519
STACKABLE MODULAR TRAYS
John P. Remler, 117 Duncan Rd., North Augusta, S.C. 29841
Filed Feb. 2, 1987, Ser. No. 10,155
Term of patent 14 years
U.S. Cl. D34—46



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Hirano, Tadashi, to Data Card Japan Ltd. Method of manufacturing printing and embossing type elements. 4,943,400, Cl. 264-113.000.
Hiraoka, Eiichi; Akagi, Toshio; Yano, Kiyotaka; and Onaka, Junji, to Sumitomo Heavy Industries, Ltd. Pressure vessel. 4,942,972, Cl. 220-3.000.
Hirata, Kenji: *See—*
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Hirata, Kimio: *See—*
Endo, Shigeo; Kawashima, Haruo; Hirata, Kimio; Saito, Yasuo; Uchiya, Takao; and Yanagi, Hideo, 4,943,398, Cl. 264-82.000.
Hirayama, Katsuhisa: *See—*
Okamoto, Kaizo; Ichihara, Akira; Sato, Akimune; Hirata, Kenji; Hirayama, Katsuhisa; Hina, Eiji; Nakaji, Shigeru; Sakamoto, Minoru; Tanaka, Takashi; and Shimizu, Keizo, 4,942,773, Cl. 73-864.450.
Hiro, Toshiaki: *See—*
Shirai, Hiroshi; Tatsumi, Takashi; Kanda, Hisashi; Fukuo, Koichi; Motsumoto, Masahiko; and Hiro, Toshiaki, 4,942,854, Cl. 123-90.170.
Hirose, Ichiro; Kato, Katsuo; and Inamura, Motonori, to Japan Tobacco Inc. Apparatus for manufacturing cigarette filter. 4,943,272, Cl. 493-45.000.
Hirose, Tadashi; Nakao, Kazuo; and Shinada, Keiko, to Hitachi, Ltd. Method of displaying execution trace in a logic programming language processing system. 4,943,968, Cl. 371-19.000.
Hirota, Eiichi: *See—*
Morita, Hiroshi; Hirota, Eiichi; and Ishizaki, Yasuo, 4,943,612, Cl. 524-714.000.
Hisamura, Masafumi: *See—*
Toma, Hitoshi; Hisamura, Masafumi; and Tanaka, Shigemori, 4,943,819, Cl. 346-160.100.
Hisgen, Bernd: *See—*
Etzbach, Karl-Heinz; and Hisgen, Bernd, 4,943,617, Cl. 525-329.900.
Hishiki, Yuji, to Seiko Instruments Inc. Semiconductor integrated circuit for a telephone dialer including a wait-pause circuit. 4,944,000, Cl. 379-359.000.
Hitachi Chemical Company, Ltd.: *See—*
Hayashi, Fusashi; Takei, Kooichi; Matii, Yooichi; Simazaki, Toshikatsu; Imai, Akihito; and Nakada, Takao, 4,943,542, Cl. 501-12.000.
Hitachi Computer Engineering Co., Ltd.: *See—*
Aoyama, Tomoo; and Murayama, Hiroshi, 4,943,912, Cl. 364-200.000.
Hitachi Construction Machinery Co., Ltd.: *See—*
Nozawa, Yusaku; Yuasa, Kazumasa; Ootu, Wataru; and Takahashi, Kinya, 4,942,900, Cl. 137-490.000.
Tatsumi, Akira, 4,942,737, Cl. 60-431.000.
Hitachi Koki Co., Ltd.: *See—*
Ainoya, Masayuki, 4,943,863, Cl. 355-271.000.
Hitachi, Ltd.: *See—*
Ando, Kimiaki; Ooyama, Mitsuo; and Saitou, Norio, 4,943,729, Cl. 250-492.300.
Aoshima, Toshihisa; Kanema, Seiichi; and Kato, Takeshi, 4,943,938, Cl. 364-522.000.
Aoyama, Tomoo; and Murayama, Hiroshi, 4,943,912, Cl. 364-200.000.
Fukinuki, Takahiko, 4,943,848, Cl. 358-12.000.
Furukawa, Kenji; and Terashima, Kanetsugu, 4,943,387, Cl. 252-299.670.
Hatanaka, Yuji; Okamoto, Hiroo; Wakumura, Shin-ichi; Miyake, Ichiro; and Sakamoto, Shunichiro, 4,943,964, Cl. 371-31.000.
Hirai, Kenshi; Murakami, Hiromichi; and Hatazawa, Kikuo, 4,943,936, Cl. 364-519.000.
Hirai, Ryoji; Yoshizawa, Mitsuru; and Ikeda, Hiroyuki, 4,943,754, Cl. 313-477.00R.
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Izuno, Nobuaki; Kurosu, Yasuo; Okazawa, Koichi; Yokoyama, Yoshihiro; and Ooyu, Kensuke, 4,943,857, Cl. 358-148.000.
Kakehi, Yutaka; Omoto, Yutaka; and Harada, Takeshi, 4,943,361, Cl. 204-192.320.
Konishi, Nobutake; Ono, Kikuo; Suzuki, Takaya; and Miyata, Kenji, 4,943,837, Cl. 357-23.700.
Kubo, Kanji, 4,943,914, Cl. 364-200.000.
Miyamoto, Hironori; Kondo, Hidefumi; Haga, Hirohide; and Takashi, Rinichi, 4,943,933, Cl. 364-513.000.
Nakajima, Jun; Araya, Takeshi; and Hioki, Susumu, 4,943,701, Cl. 219-124.020.
Ohishi, Tadashi; and Umetsu, Hiroshi, 4,943,164, Cl. 366-149.000.
Ohsawa, Akira, 4,944,034, Cl. 364-522.000.
Okada, Hideo; Mori, Toshikatsu; Mitsugi, Kouichi; Iwase, Yoshio; Kuroe, Satoshi; Takeuchi, Masato; and Kamo, Tomoichi, 4,943,496, Cl. 429-45.000.
Okinaga, Takayuki; Tachi, Hiroshi; Ozaki, Hiroshi; Otsuka, Kanji; Furukawa, Michiaki; and Yamasaki, Yasuyuki, 4,943,843, Cl. 357-70.000.
Sano, Masaaki; Imagawa, Takao; Nishioka, Kouichi; Narishige, Shinji; Hanazono, Masanobu; Onishi, Takashi; and Yoshida, Toshihiro, 4,943,883, Cl. 360-126.000.
Shinoda, Takashi; and Sakai, Osamu, 4,943,967, Cl. 371-2.200.
Tachi, Shinichi; Tsujimoto, Kazunori; Okudaira, Sadayuki; and Mukai, Kiichiro, 4,943,344, Cl. 156-643.000.
Takano, Hisashi; Hamakawa, Yoshihiro; Shiiki, Kazuo; Otomo, Shigekazu; and Kumasaka, Noriyuki, 4,943,879, Cl. 360-126.000.
Takeda, Hidekazu; Nagai, Kyuichirou; Ogiro, Kenji; Aman, Mitsuji; and Takita, Kouhei, 4,943,874, Cl. 360-85.000.
Yamaguchi, Yasunori; Oishi, Kanji; and Miyazawa, Kazuyuki, 4,943,949, Cl. 365-206.000.
Yamazaki, Takeo; Ogihara, Satoru; Kosugi, Tetsuo; Shirakawa, Shingo; and Owada, Shinichi, 4,943,795, Cl. 338-21.000.
Hitachi Metals, Ltd: *See—*
Takeda, Shigeru; and Tsuboi, Takashi, 4,943,790, Cl. 333-24.200.
Hitachi VLSI Engineering Corp.: *See—*
Okinaga, Takayuki; Tachi, Hiroshi; Ozaki, Hiroshi; Otsuka, Kanji; Furukawa, Michiaki; and Yamasaki, Yasuyuki, 4,943,843, Cl. 357-70.000.
Hitomi, Nobuteru: *See—*
Sugimoto, Masaki; Morikawa, Kunihiko; Hitomi, Nobuteru; Ikeura, Kenji; Kitahara, Hisashi; Hirano, Hiroyuki; and Takatori, Kazuhiro, 4,942,771, Cl. 73-862.360.
Hlavacek, Robert A.; Dumican, Barry L.; and McCusker, Edward J., to American Cyanamid Company. Surgical repair device having absorbable and nonabsorbable components. 4,942,875, Cl. 606-230.000.
Hoberman, Charles. Reversibly expandable doubly-curved truss structure. 4,942,700, Cl. 52-81.000.
Hoblingre, Andre , to ECIA - Equipments et Composants pour l'Industrie Automobile. Rapid fastener of the bayonet type. 4,943,182, Cl. 403-349.000.
Hoda, Takeo: *See—*
Taniguchi, Nobuyuki; Hata, Yoshiaki; Kudo, Yoshinobu; Inoue, Manabu; Hoda, Takeo; and Ueda, Hiroshi, 4,943,825, Cl. 354-481.000.
Hoechst Aktiengesellschaft: *See—*
Diekhaus, Gerhard; and Kappesser, Harald, 4,943,663, Cl. 568-461.000.
Glombik, Heiner; Utz, Roland; Lang, Hans-Jochen; Geisen, Karl; and Beyhl, Friedrich E., 4,943,576, Cl. 514-249.000.
Thoese, Klaus; and Jung, Karl-Heinz, 4,943,510, Cl. 430-160.000.

Hoechst-Roussel Phamraceuticals Inc.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,943,571, Cl. 514-232.800.

Hoelderich, Wolfgang; Goetz, Norbert; and Hupfer, Leopold, to BASF Aktiengesellschaft. Preparation of phenylethanols. 4,943,667, Cl. 568-814.000.

Hoffa, Jack L.; and Nazerian, Greg, to Eubanks Engineering Co. Apparatus for step stripping wire means. 4,942,789, Cl. 81-9.510.

Hoffman, Eldon P.: *See—*
Van Horne, Arthur C.; Hoffman, Eldon P.; and Bakke, Paul D., 4,943,045, Cl. 271-277.000.

Hoffmann, Dieter: *See—*
Wahlen, Erika; and Hoffmann, Dieter, 4,943,149, Cl. 350-568.000.

Hoffmann, Heiko: *See—*
Mitschker, Alfred; Lange, Peter M.; Hoffmann, Heiko; Lossmann, Gunter; van der Meer, Andries P.; and Smit, Cornelius J., 4,943,420, Cl. 423-112.000.

Hoffmann-La Roche Inc.: *See—*
Luthy, Christoph, 4,943,583, Cl. 514-364.000.

Hoffmann, Martin; Schittenheim, Helge; Wierschem, Franz-Rudolf; and Eichhorn, Horst, to Porsche AO. Steering column fastening arrangement for motor vehicles with a deformation element. 4,943,028, Cl. 248-548.000.

Hoffmeister, Lothar: *See—*
Radovan, Giuseppe; Blaseck, Klaus; Hoffmeister, Lothar; Westendorf, Helmut; Sandling, Michael J.; and Davidson, James W., 4,942,897, Cl. 137-454.200.

Hofmann, Heinrich; and Troster, Manfred, to FAG Kugelfischer Georg Schafer (KGaA). Welded connection for wheel bearing unit for motor vehicles. 4,943,171, Cl. 384-537.000.

Hofmeister, Peter: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 4,943,585, Cl. 514-398.000.
Theobald, Hans; Kuenast, Christoph; Hofmeister, Peter; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Krieg, Wolfgang; Leyendecker, Joachim; and Kardorff, Uwe, 4,943,584, Cl. 514-380.000.

Hogan, J. Martin, to City of Hope. Blood collecting apparatus with shielded needles. 4,943,283, Cl. 604-198.000.

Hoger, Ernst; and Obenauf, Eberhard, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Apparatus for performing the remotely-manipulated installation and removal of detachable conduit units. 4,942,661, Cl. 29-723.000.

Hohn, Fritz J.: *See—*
Golladay, Steven D.; Hohn, Fritz J.; Hutson, David J.; Meisburger, William D.; and Rasch, Juergen, 4,943,769, Cl. 324-158.00R.

Hohnoki, Hideaki: *See—*
Kambe, Koichi; Matsuura, Kiyoshi; Seino, Tatsuo; Kimura, Yoshiyuki; Kemmochi, Hiroshi; Yoshioka, Koichi; and Hohnoki, Hideaki, 4,943,418, Cl. 423-50.000.

Hokuriku Pharmaceutical Co., Ltd.: *See—*
Hidaka, Hiroyoshi; Tanaka, Toshio; Itoh, Yasuo; Kato, Hideo; Koshinaka, Eiichi; Mitani, Kazuya; and Sakurai, Shunichiro, 4,943,581, Cl. 514-307.000.

Holce, Thomas J.; and Flint, Keith E., to Sentrol, Inc. Wide gap magnetic reed switch and method for manufacture of same. 4,943,791, Cl. 335-153.000.

Holroyd, Nigel J. H.; and Scamans, Geoffrey M., to Alcan International Limited. Welding aluminium alloys. 4,943,492, Cl. 428-654.000.

Holscher, Richard: *See—*
Hellmann, Jens-Holger; Holscher, Richard; Janssen, Hermann J.; Kleemann, Alfred; Rupp, Karl-Heinz; Schwarz, Joachim; Varges, Gunter; and Waas, Heinrich, 4,942,837, Cl. 114-40.000.

Holycross, Mark E.: *See—*
Good, William G.; and Holycross, Mark E., 4,943,827, Cl. 355-30.000.

Homeier, Ronald F.: *See—*
Anthony, James R.; Merrick, David; Homeier, Ronald F.; and Lortz, Allan R., 4,942,649, Cl. 24-637.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Aoki, Takashi; Terayama, Satoshi; Iwaki, Yoshihisa; Sekine, Noboru; Shimada, Hiroyuki; Takemasa, Nobuo; and Miyake, Junichi, 4,942,787, Cl. 74-867.000.
Konno, Tsuneo, 4,942,853, Cl. 123-90.160.
Shirai, Hiroshi; Tatsumi, Takashi; Kanda, Hisashi; Fukuo, Koichi; Motsumoto, Masahiko; and Hiro, Toshiaki, 4,942,854, Cl. 123-90.170.
Tsurumiya, Osamu, 4,943,758, Cl. 318-504.000.

Honeywell Inc.: *See—*
Aagardl, Roger L.; Bonne, Ulrich; and Matthys, Robert J., 4,944,035, Cl. 364-556.000.
Norton, Peter W.; Stobie, James A.; and Zimmermann, Peter H., 4,943,491, Cl. 428-620.000.
Shireman, Mark J.; and Benson, Florence G., 4,942,843, Cl. 118-74.000.

Honshu Seishi Kabushiki Kaisha: *See—*
Osajima, Yutaka; Yamamura, Katsumi; and Unno, Yoshio, 4,943,552, Cl. 502-417.000.

Hoover, Rocklin. Surgical instrument accounting apparatus and method. 4,943,939, Cl. 364-555.000.

Hopper, Hans P., to British Petroleum Co. p.l.c. ROV intervention on subsea equipment. 4,943,187, Cl. 405-190.000.

Hori, Kouhei, to Kabushiki Kaisha Toshiba. Differential planet gear unit. 4,942,781, Cl. 475-342.000.

Horikawa, Hiroshi; Urabe, Hitoshi; and Yako, Katsutoshi, to Fuji Photo Film Co., Ltd. Compression method for dot image data. 4,943,869, Cl. 358-426.000.

Horiki, Yoshio; and Ikeda, Hideo, to Central Glass Company, Limited. Plate member arrangement. 4,943,179, Cl. 403-269.000.

Horiwaki, Akihiro: *See—*
Sasaki, Kenji; Matsushita, Mitsuo; Ono, Kenzo; Horiwaki, Akihiro; Fujii, Katsunori; and Hatano, Hiroyuki, 4,943,829, Cl. 355-215.000.

Horlogerie Photographique Francaise: *See—*
Cognasse, Christian; Graham, Peter; Maury, Bernard; and Walter, Jean-Claude, 4,944,017, Cl. 381-79.000.

Hormann, Thomas: *See—*
Kopp, Dieter; Hormann, Thomas; and Ackermann, Uwe, 4,943,911, Cl. 364-200.000.

Horodysky, Andrew G.: *See—*
Avery, Noyes L.; Horodysky, Andrew G.; Law, Derek A.; and Rudnick, Leslie R., 4,943,383, Cl. 252-52.00A.

Hort, Roger V.: *See—*
Haessig, David L.; Hamidi, Jamshid; and Hort, Roger V., 4,942,921, Cl. 165-16.000.

Horton, Paul: *See—*
Crews, Phillip; Matthews, Thomas R.; and Horton, Paul, 4,943,589, Cl. 514-468.000.

Horvath, Bruce B.; Hurlbut, Raymond A.; DiFranco, A. Thomas; and Williams, Bruce R. Apparatus and process for automatically dispensing metal alloy paste material for joining metal components. 4,942,998, Cl. 228-102.000.

Hosford, Gregory S., to Sundstrand Corporation. Hot gas generator system. 4,942,733, Cl. 60-267.000.

Hoshi, Katsuji, to NEC Corporation. Digital signal input buffer circuit having a simple construction and capable of retaining data. 4,943,738, Cl. 307-362.000.

Hoshino, Yukio; and Asai, Ko, to NEC Corporation. Identification system employing verification of fingerprints. 4,944,021, Cl 382-5.000.

Hosiden Electronics Co., Ltd.: *See—*
Ukai, Yasuhiro, 4,943,838, Cl. 357-23.700.

Hosoda, Makoto; and Shiomi, Toshio, to Hamamatsu Photonics Kabushiki Kaisha. Picture operation unit for performing operations on intensity data of neighboring picture elements. 4,943,934, Cl. 364-518.000.

Hosoi, Yuichi: *See—*
Arakawa, Satoshi; Takahashi, Kenji; and Hosoi, Yuichi, 4,944,026, Cl. 250-484.100.

Hotomi, Hideo, to Minolta Camera Kabushiki Kaisha. Ink jet printer. 4,943,818, Cl. 346-140.00R.

Houck, Catherine M.; and Pear, Julie R., to Calgene, Inc. Fruit specific transcriptional factors. 4,943,674, Cl. 800-205.000.

Howard, Frank C.: *See—*
Wolfberg, Robert L.; Golsch, Rudolph A. M.; and Howard, Frank C., 4,942,996, Cl. 227-136.000.

Howarth, Richard F. Fluid actuated method and means for controlling a tool slide. 4,942,650, Cl. 29-38.00B.

Howe, Roger T.; Lang, Jeffrey H.; Schlecht, Martin F.; Schmidt, Martin A.; and Senturia, Stephen D., to Massachusetts Institute of Technology. Electrostatic micromotor. 4,943,750, Cl. 310-309.000.

Hrebenar, Kevin R.: *See—*
Hayes, Michael E.; Hrebenar, Kevin R.; Murphy, Patricia L.; Futch, Laurence E., Jr.; Deal, James F., III; and Bolden, Paul L., Jr., 4,943,390, Cl. 252-355.000.

Hsu, Pi-Chen, to Shirley S. Lan. Storing box for booster cable 4,942,964, Cl. 206-334.000.

Huang, Alan, to AT&T Bell Laboratories. Computational origami 4,943,909, Cl. 364-200.000.

Huang, Carl: *See—*
Baker, Richard W.; Kochinke, Frank; and Huang, Carl, 4,943,435, Cl. 424-448.000.

Huang, Hung-chia. Passive fiber-optic polarization control. 4,943,132, Cl. 350-96.130.

Hudson, Larry G.: *See—*
Bruski, Richard S.; Hudson, Larry G.; and Skibo, Michael D., 4,943,490, Cl. 428-614.000.

Huettemann, Erik W. Load-bearing roof or ceiling assembly made up of insulated concrete panels. 4,942,707, Cl. 52-259.000.

Hug, William F.: *See—*
Campbell, Albert E.; Hug, William F.; and Reid, Ray D., 4,943,928, Cl. 364-477.000.

Huggins, Orville C.; and Mistyurik, John D., to Monarch Marking Systems, Inc. Stacker. 4,943,043, Cl. 271-212.000.

Hugh Steeper Limited: *See—*
Cooper, Robin A.; and Fazackerley, Barry J., 4,943,498, Cl. 429-97.000.

Hughes Aircraft Company: *See—*
Cross, Eugene W., Jr., 4,943,155, Cl. 353-33.000.
Grinberg, Jan; O'Meara, Thomas R., Jr.; and Welkowsky, Murray S., 4,943,709, Cl. 250-201.900.
Rice, Thomas B., 4,943,978, Cl. 375-1.000.
Stephens, Ronald R.; Craig, Richard R.; Yen, Huan W.; and Lind, Richard C., 4,943,782, Cl. 330-4.300.

Hughes, John L.; and Lastavec, Paul, to Austral Asian Lasers Pty. Ltd., a part interest. Laser sawmill. 4,943,700, Cl. 219-121.670.

Huhta-Koivisto, Esko: *See—*
Santasalo, Lauri; and Huhta-Koivisto, Esko, 4,942,847, Cl. 122-35.000.

Humpherys, Allan S.; and Oest, Elvert E., to United States of America, Agriculture; and Elvert Edgar Oest & Company. Irrigation device. 4,943,184, Cl. 405-39.000.

Hunt, William K., to Dakota Manufacturing Co., Inc. Trailer having swing-out side extensions. 4,943,106, Cl. 296-26.000.

Hunter Douglas, Inc.: *See—*
Neff, Craig A., 4,943,454, Cl. 428-12.000.

Hupfer, Leopold: *See—*
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Hurlbut, Raymond A.: *See—*
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Hury, Shlomo: *See—*
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Hutson, David J.: *See—*
Golladay, Steven D.; Hohn, Fritz J.; Hutson, David J.; Meisburger, William D.; and Rasch, Juergen, 4,943,769, Cl. 324-158.00R.

Hwang, Feng-Lin, to Tech Zeal Industrial C., Ltd. Vehicular internal air exhausting device. 4,942,806, Cl. 98-2.020.

Hwang, Frank K.; and Richards, Gaylord W., to AT&T Bell Laboratories. Rearrangeable multiconnection switching networks constructed using combinatorial designs. 4,944,029, Cl. 340-825.800.

Hwang, Jin-Tsair. Fishline storing box. 4,942,691, Cl. 43-54.100.

Hyatt, Gilbert P. Signature filter system. 4,944,036, Cl. 367-43.000.

Hydro Agri Sluiskil B.V.: *See—*
Vanmarcke, Luc A.; and Cardon, Walter E., 4,943,308, Cl. 71-29.000.

Hyodo, Yoshihiko: *See—*
Chujo, Yoshiki; Inoue, Tokuta; Konomi, Toshiaki; and Hyodo, Yoshihiko, 4,942,860, Cl. 123-571.000.

I.M.A. Industria Macchine Automatiche S.p.A.: *See—*
Facchini, Libero, 4,943,227, Cl. 425-345.000.

Ichihara, Akira: *See—*
Okamoto, Kaizo; Ichihara, Akira; Sato, Akimune; Hirata, Kenji; Hirayama, Katsuhisa; Hina, Eiji; Nakaji, Shigeru; Sakamoto, Minoru; Tanaka, Takashi; and Shimizu, Keizo, 4,942,773, Cl. 73-864.450.

Ichikawa, Souji; Oka, Hideki; Terao, Naoyoshi; and Sakagami, Seiji, to Mitutoyo Corporation. Diffraction-type optical encoder with improved detection signal insensitivity to optical grating gap variations. 4,943,716, Cl. 250-231.160.

Ichikawa Woolen Textile Co., Ltd.: *See—*
Yarita, Takao; Moro, Yutaka; Takeishi, Kazuvasu; and Ohashi, Shinichi, 4,943,927, Cl. 364-470.000.

Ichikoh Industries, Ltd.: *See—*
Nakata, Yutaka, 4,943,894, Cl. 362-61.000.

Ichinomiya, Tsutomu; Kami, Tomohiro; Kitagawa, Fumio; Wada, Sumio; Abe, Hideaki; Ise, Youichi; and Kusunoki, Toshio, to Matsushita Electric Works, Ltd. Portable battery powered electromagnetic therapy application. 4,942,884, Cl. 128-804.000.

Idemitsu Petrochemical Company Limited: *See—*
Yamawaki, Takashi, 4,943,615, Cl. 525-240.000.

Igarashi, Ichiro; and Nishimura, Kazuhiko, to Tokai Rubber Industries, Ltd. Rubber hose. 4,942,906, Cl. 138-126.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Kimoto, Takahiro; Ohi, Hideo; Watanabe, Toshihisa; and Nakayama, Tadashi, 4,943,675, Cl. 544-330.000.

Iijima, Kenzaburou; Hayashi, Yoshinori; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Non-contact type pattern sensor with variable clearance compensation. 4,944,028, Cl. 324-207.120.

Iino, Atsushi; and Kato, Nobuhide, to NGK Insulators, Ltd. Method of manufacturing an electrochemical device. 4,943,330, Cl. 156-89.000.

Iio, Masahiro, to Diesel Kiki Co., Ltd. Sliding-vane rotary compressor. 4,943,216, Cl. 418-15.000.

Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reading lens system. 4,943,146, Cl. 350-471.000.

Ikeda, Hideo: *See—*
Horiki, Yoshio; and Ikeda, Hideo, 4,943,179, Cl. 403-269.000.

Ikeda, Hiroyuki: *See—*
Hirai, Ryoji; Yoshizawa, Mitsuru; and Ikeda, Hiroyuki, 4,943,754, Cl. 313-477.00R.

Ikeda, Masami; Yamada, Yasuhiro; Tuji, Mahito; Tamano, Akimasa; and Mizoguchi, Yasunari, to Sanyo Electric Co., Ltd. Intrusion detection system using three pyroelectric sensors. 4,943,800, Cl. 340-567.000.

Ikeda, Tsuyoshi: *See—*
Takahashi, Mizunori; Ikeda, Tsuyoshi; and Yamaguchi, Yoshiharu, 4,943,608, Cl. 524-272.000.

Ikeda, Yoshiyuki; and Ariki, Toshinori, to Nippon Kayaku Kabushiki Kaisha. Explosive cartridge and paper polyethylene laminated on both the sides used therefor. 4,942,817, Cl. 102-331.000.

Ikeuchi, Masayuki; and Okamura, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Angle measuring device having specific signal processing arrangement. 4,943,717, Cl. 250-231.170.

Ikeura, Kenji: *See—*
Sugimoto, Masaki; Morikawa, Kunihiko; Hitomi, Nobuteru; Ikeura, Kenji; Kitahara, Hisashi; Hirano, Hiroyuki; and Takatori, Kazuhiro, 4,942,771, Cl. 73-862.360.

Iles, Roy A. H.: *See—*
Isherwood, Harold; and Iles, Roy A. H., 4,943,446, Cl. 427-9.000.

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Lai, Fang-shi, to International Business Machines Corporation. Reference voltage generator for precharging bit lines of a transistor memory. 4,943,945, Cl. 365-189.090.

Lai, Hoi K.; Davis, Robert A.; and Blem, Allen R., to Uniroyal Chemical Company, Inc.; and Uniroyal Chemical Ltd/Ltee. Azole derivatives of spiroheterocycles. 4,943,311, Cl. 71-90.000.

Lai, Ming-Der. Multi purpose cartridge type handle assembly and tools. 4,942,894, Cl. 132-323.000.

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Eisinger, Robert W.; Khalil, Mohammed H.; Katz, David H.; and Sargeant, Robert B., 4,943,522, Cl. 435-7.000.

Quirk, Michael J.; Drake, Timothy E.; and Zarycki, John E., to Renold, Inc. Non-metallic gear shaker. 4,942,776, Cl. 74-61.000.

R. J. Reynolds Tobacco Company: *See—*
Montoya, Maria T.; Norman, Alan B.; Sanders, Norman C., Jr.; and Creamer, Glenn E., 4,942,888, Cl. 131-359.000.

R. W. Lyall & Company, Inc.: *See—*
Lyall, Lucian H.; and Renau, Karol Z., 4,943,706, Cl. 219-494.000.

Raahauge, Jerald C., to Sumner & Taylor, Inc. Adaptor for universal X-Y plotter pen. 4,943,817, Cl. 346-140.00A.

Rabe, William T.; and Gilbert, Wendell L., to TRW Inc. Steering gear with pressure-balanced valve. 4,942,803, Cl. 91-370.000.

Rabenau, Richard; Kanner, Rowland W.; and Cerola, Joseph J., to Ryder International Corporation. Humidifier apparatus. 4,943,704, Cl. 219-275.000.

Rabian, Jean; Potet, Jean-Claude; and Buchon, Michel, to Societe d'Etudes, Recherches et Constructions Electroniques - Sercel. Atomic clock. 4,943,955, Cl. 368-156.000.

Rabinow, Jacob. Interchangeable key lock with rolling tumblers. 4,942,749, Cl. 70-495.000.

Racz, Istvan: *See—*
Angyan, Sandor; Oros, Gyula; Racz, Istvan; and Detre, Tamas, 4,943,678, Cl. 514-374.000.

Radcliffe, Allan F. Adjustable arcuate razor head. 4,942,662, Cl. 30-49.000.

Radisch, Herbert R., Jr.: *See—*
Farr, Andrew F.; and Radisch, Herbert R., Jr., 4,942,788, Cl. 76-115.000.

Radjy, Farrokh F. Method and apparatus for non-destructive evaluation of concrete. 4,943,930, Cl. 364-506.000.

Radovan, Giuseppe; Blaseck, Klaus; Hoffmeister, Lothar; Westendorf, Helmut; Sandling, Michael J.; and Davidson, James W., to Xomox Limited; and Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Remote control and remote handling accessory, especially for the hot zone of radioactive plants. 4,942,897, Cl. 137-454.200.

Radziejewski, Ian R.: *See—*
Hardy, R. H. Stephen; and Radziejewski, Ian R., 4,944,038, Cl. 370-85.500.

Racymaekers, Alfons H. M.; Freyne, Eddy J. E.; Van Gelder, Josephu L. H.; and Venet, Marc G., to Janssen Pharmaceutica N.V. (1H-azol-1-ylmethyl) substituted benzotriazole derivatives and pharmaceutical compositions containing them. 4,943,574, Cl. 514-338.000.

Ragan, Lawrence H.: *See—*
Gehring, Mark R.; Suter, Richard R.; and Ragan, Lawrence H., 4,944,025, Cl. 455-207.000.

Raha, Sanghamitra: *See—*
Jolles, Pierre; Fiat, Anne-Marie; Soria, Claudine; Levy-Toledano Sylviane; Raha, Sanghamitra; Mazoyer, Elisabeth; and Drouet, Ludovic, 4,943,562, Cl. 514-18.000.

Ramachandran, Ramakrishnan; Andrecovich, Mark J.; MacLean, Donald L.; and Satchell, Donald P., Jr., to BOC Group, Inc., The. Process for the production of nitriles. 4,943,650, Cl. 558-319.000.

Rancho Industries, Inc.: *See—*
Golpe, William, 4,943,081, Cl. 280-666.000.

Rasch, Juergen: *See—*
Golladay, Steven D.; Hohn, Fritz J.; Hutson, David J.; Meisburger, William D.; and Rasch, Juergen, 4,943,769, Cl. 324-158.00R.

Rauscher, Elli; Griffiths, John; and Dixon, Leonard F., to Boehringer Mannheim GmbH. Gamma-glutamyl-4-azoanilides, process for the preparation thereof and diagnostic agents containing them. 4,943,526, Cl. 435-15.000.

Rautaruukki Oy: *See—*
Koskinen, Matti; and Brostrom, Pekka, 4,943,193, Cl. 410-69.000.

Ray, Andrew M.: *See—*
Dykstra, Jerald P.; and Ray, Andrew M., 4,943,728, Cl. 250-492.300.

Ray, Edward D., Sr. Sheath. 4,942,663, Cl. 30-151.000.

Raymond Engineering Inc.: *See—*
Snyder, Robert F.; and Ferguson, John H., 4,942,794, Cl. 81-57.220.

Raynaud, Guy-Michel; Realis, Louis; and Constant, Didier, to Cegedur Societe de Transformation de l'Aluminum Pechiney. Method of brazing aluminum alloys without filler metal. 4,943,000, Cl. 228-193.000.

RCA Licensing Corporation: *See—*
Sparks, Bradley A., 4,943,961, Cl. 365-228.000.

Realis, Louis: *See—*
Raynaud, Guy-Michel; Realis, Louis; and Constant, Didier, 4,943,000, Cl. 228-193.000.
Reardon, David C. Fingerprint sensitive pad. 4,943,089, Cl. 283-81.000.
Reardon, Edward J.: *See—*
Lazarus, Richard M.; Reardon, Edward J.; and Dixit, Sunit S., 4,943,511, Cl. 430-192.000.
Rechtschaffen, Rudolph N.: *See—*
Emma, Philip G.; Knight, Joshua W., III; Pomerene, James H.; Rechtschaffen, Rudolph N.; and Sparacio, Frank J., 4,943,908, Cl. 364-200.000.
Recycled Energy, Inc.: *See—*
Diaz, Manuel C., 4,943,233, Cl. 432-13.000.
Redding, Dwight D., to American National Can Company. Multi-layer sheet structure, method of making same and containers made therefrom. 4,943,780, Cl. 428-35.900.
Reding, Bruce W., to Corning Incorporated. Fiber optic triangulation gage. 4,943,157, Cl. 356-1.000.
Redmerski, Lawrence S.; Pinnow, Kenneth E.; and Eckenrod, John J., to Crucible Materials Corporation. Welded corrosion-resistant ferritic stainless steel tubing having high resistance to hydrogen embrittlement and a cathodically protected heat exchanger containing the same. 4,942,922, Cl. 165-134.100.
Reed Tool Company, Ltd.: *See—*
Barr, John D.; and Wardley, Michael T., 4,942,933, Cl. 175-329.000.
Regen, Steven L., to Lehigh University. Supramolecular surfactants: amphiphilic polymers designed to disrupt lipid membranes. 4,943,624, Cl. 528-301.000.
Rego, Donovan N.: *See—*
Lewis, Thomas W.; Hamill, Paul E., Jr.; Ozgu, Mustafa R.; Padfield, Ralph C.; Rego, Donovan N.; and Brita, Guido P., 4,942,986, Cl. 222-590.000.
Reid, Ray D.: *See—*
Campbell, Albert E.; Hug, William F.; and Reid, Ray D., 4,943,928, Cl. 364-477.000.
Reidenbach, John R.; and Schopp, Robert E., to International Business Machines Corporation. Magnetic disk file head suspension assembly mounting means. 4,943,875, Cl. 360-104.000.
Reimer, Alden L. F. Swather hitch device for pull-type implements. 4,943,080, Cl. 280-455.100.
Reimers Getriebe AG: *See—*
Dittrich, Otto, 4,942,786, Cl. 74-867.000.
Reinhard, Donnie K.: *See—*
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Reinhart, Robert V., Jr.: *See—*
Page, Mary J.; Hamilton, Benton W.; Skiles, Bruce L.; and Reinhart, Robert V., Jr., 4,943,282, Cl. 604-198.000.
Reinhold, John E.; and Wilsman, James F. Portable headcatch support and animal restraining mechanism. 4,942,846, Cl. 119-103.000.
Reithel, Raymond F.; and Sutton, Richard C., to Eastman Kodak Company. Negative-working dyeable photoresist. 4,943,514, Cl. 430-270.000.
Ren, Fan; and Shah, Nitin J., to AT&T Bell Laboratories. Method for selectively wet etching aluminum gallium arsenide. 4,943,540, Cl. 437-225.000.
Renau, Karol Z.: *See—*
Lyall, Lucian H.; and Renau, Karol Z., 4,943,706, Cl. 219-494.000.
Renold, Inc.: *See—*
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Research & Development of North Carolina: *See—*
Lathim, Delbert L.; Liu, Ting; and Foley, Charles F., 4,943,066, Cl. 273-415.000.
Rest, Hartmut: *See—*
Kacza, Martin; Rest, Hartmut; and Born, Eberhard, 4,942,904, Cl. 138-89.000.
Revelj, Ellen J.: *See—*
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Rexham Corporation: *See—*
Ellison, Thomas M.; and Winton, Robert A., 4,943,680, Cl. 427-154.000.
Rexroth, Frederick W.; and Bays, F. Barry, to Concept Inc. Electrolyte purging electrode tip. 4,943,290, Cl. 606-45.000.
Reymann, Wolfgang; Gropp, Heiko-Ulrich; Vogel, Klaus; and Muller, Hartwig, to Krupp Corpoplast Maschinenbau GmbH. Blow molding machine. 4,943,228, Cl. 425-526.000.
Reymann, Wolfgang; Gropp, Heiko-Ulrich; Vogel, Klaus; Muller, Hartwig; and Wiedenfeld, Walter, to Krupp Corpoplast Maschinenbau GmbH. Blow molding machine. 4,943,229, Cl. 425-535.000.
Reynaert, Edward A., to Commu-Tec, Inc. Cable splicing and termination system. 4,943,685, Cl. 174-19.000.
Reynaud, Jean-Claude: *See—*
Beaucoup, Louis; Boncompain, Jean; and Reynaud, Jean-Claude, 4,943,020, Cl. 248-124.000.
Reynolds, Mary B.: *See—*
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Reynolds, Timothy D.: *See—*
Laundre', John W.; Reynolds, Timothy D.; and Reynolds, Mary B., 4,943,125, Cl. 350-96.100.
Rhodes, R. Gale, Jr.: *See—*
Fuchs, Francis J., Jr., 4,942,751, Cl. 72-68.000.
Rhodes, Richard D., Jr., to Davidson Textron Inc. Variations adjustment mechanism for instrument panels. 4,943,107, Cl. 296-70.000.
Rhone-Poulenc Chimie: *See—*
Aviron-Violet, Paul; and Gervals, Christian, 4,943,679, Cl. 562-561.000.
Charmot, Dominique; and Fiard, Jean-Francois, 4,943,482, Cl. 428-407.000.
Rhone-Poulenc Industries: *See—*
Khaladji, Jean; and Peltier, Marcel, 4,942,697, Cl. 51-283.00R.
Ribbins, Robert C., III: *See—*
Sahatjian, Ronald A.; Ribbins, Robert C., III; and Steckel, Mark G., 4,943,473, Cl. 428-245.000.
Rice, Thomas B., to Hughes Aircraft Company. Digital interface unit. 4,943,978, Cl. 375-1.000.
Rich, Jonathan D.: *See—*
Gross, David C.; Haig, Connie L.; and Rich, Jonathan D., 4,943,596, Cl. 521-82.000.
Richard, Robert G.: *See—*
Shankland, Ian R.; Richard, Robert G.; and Lund, Earl A. E., 4,943,388, Cl. 252-69.000.
Richards, Gaylord W.: *See—*
Hwang, Frank K.; and Richards, Gaylord W., 4,944,029, Cl. 340-825.800.
Richardson, Richard W., to Ohio State University, The. Apparatus and methods for controlling a welding process. 4,943,702, Cl. 219-124.340.
Richardson, Russell D.: *See—*
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Richeson, William E.; and Erickson, Frederick L., to Magnavox Government and Industrial Electronics Company. Electro-pneumatic actuator. 4,942,852, Cl. 123-90.140.
Richter, Siegfried; Schauer, Friedrich; and Bauernfeind, Peter, to Kabelmetal Electro GmbH. Safety apparatus for a motor driven window. 4,943,757, Cl. 318-468.000.
Rick, Bernard J.: *See—*
Nesser, Thomas A.; Nesser, Deborah L.; Luckower, Herbert; Barczak, John P.; Joslyn, Edward P.; and Rick, Bernard J., 4,942,954, Cl. 194-351.000.
Ricoh Company, Ltd.: *See—*
Imao, Kaoru; and Watanabe, Hideyuki, 4,944,023, Cl. 382-37.000.
Kumano, Masafumi; and Yamamoto, Kenji, 4,943,839, Cl. 357-30.000.
Manabe, Yoshiharu; and Sakamoto, Koji, 4,943,828, Cl. 355-200.000.
Takada, Hiromi; Suzuki, Takami; Shiina, Toshio; Okamoto, Keiji; Komurasaki, Takeshi; Yoshioka, Satoru; Sakuma, Nobuo; and Matsuura, Tadashi, 4,943,128, Cl. 350-6.900.
Yasujima, Kenji; and Hashimoto, Masao, 4,944,022, Cl. 382-14.000.
Yoshino, Hirobumi; Ito, Takashige; Kawase, Junichi; and Maeda, Hiroyuki, 4,944,031, Cl. 355-206.000.
Ricoh Research Institute of General Electronics: *See—*
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Riemen, Mark W.: *See—*
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Rietveld, Krijn: *See—*
Van den Berg, Johan A.; Van Ooyen, Albert J. J.; and Rietveld, Krijn, 4,943,529, Cl. 435-172.300.
Riley, Brian, to United States of America, Energy. Solid oxide fuel cell matrix and modules. 4,943,494, Cl. 429-30.000.
Riley, Russell B.: *See—*
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Riley, William M.: *See—*
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Rinaldi, Anthony W.: *See—*
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Rinderer, Eric R., to B-Line Systems, Inc. Bracket for mounting an electrical box on a wall stud. 4,943,022, Cl. 248-205.100.
Ritter, Rodney L.: *See—*
Sinkunas, Peter J.; Ritter, Rodney L.; and Altpeter, James E., 4,942,997, Cl. 228-56.100.
Robbins, Gregory M.: *See—*
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Robert Bosch GmbH: *See—*
Armbruster, Franz; Bauer, Carsten; and Meyer, Friedhelm, 4,943,687, Cl. 174-94.00R.
Jaki, Friedrich; and Brammer, Hartmut, 4,942,856, Cl. 123-146.50A.
Robinson, Colin, to Glaxo Group Limited. Ceftazidime dihydrochloride formic acid solvates. 4,943,632, Cl. 540-225.000.
Rocholl, Hans; and Klein, Horst, to Bergische Stahl-Industrie. Brake cylinder. 4,942,945, Cl. 188-202.000.
Rockwell International Corporation: *See—*
Hawkinson, Elden L., 4,942,653, Cl. 29-890.010.
Rodgers, Cyril: *See—*
Fay, Fredric S.; Fogarty, Kevin E.; and Rodgers, Cyril, 4,943,142, Cl. 350-315.000.
Roemmich, Bruce D.: *See—*
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Roggwiller, Peter, to BBC Brown, Boveri & Company, Limited. Reverse-conducting thyristor. 4,943,840, Cl. 357-39.000.

Rohde, Thomas D.: *See—*
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Rohm GmbH: *See—*
Christner, Juergen; Pfleiderer, Ernst; Taeger, Tilman; and Bernschein, Ursula, 4,943,530, Cl. 435-188.000.
Rohm and Haas Company: *See—*
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ROJ Electrotex S.p.A.: *See—*
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Rokicki, Andrzej, to Air Products and Chemicals, Inc.; Arco Chemical Company; and Mitsui Petrochemical Industries, Ltd. Making poly-(alkylene carbonates) of controlled molecular weight. 4,943,677, Cl. 528-405.000.
Rolph, Randy K.: *See—*
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Romein, Daniel C. Light-weight folding massage table. 4,943,041, Cl. 269-322.000.
Rommi, Heikki P. J.: *See—*
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Romuss, Christiane: *See—*
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Roper, Hartmut: *See—*
Schmitt, Holm; Henken, Fritz; Roper, Hartmut; and Heider, Peter, 4,943,265, Cl. 474-25.000.
Rosa, Rudy, to Barry Robertson; and Rosa, Rudy. Hand sanitizing station. 4,942,631, Cl. 4-623.000.
Roscart, Charles W. Rails of an inserter machine. 4,943,044, Cl. 271-248.000.
Rosen, John B. Reflected glare-shielding vehicular apparatus. 4,943,103, Cl. 296-97.100.
Rosen, Jonathan I.; and Warner, John F., to Ortho Pharmaceutical Corporation. HIV peptide-inducted T cell stimulation. 4,943,628, Cl. 530-326.000.
Rosenthal, Sallie W., to ConAgra, Inc. Bread crumb coating composition and process for imparting fried-like texture and flavor to food products. 4,943,438, Cl. 426-92.000.
Rossanigo, Cesare, to So.Re.Ma. Operatrici Ferroviarie Snc di Cesare Rossanigo & C. Tamping machine, particularly for railroad ballasts. 4,942,821, Cl. 104-12.000.
Roth, Monica J.: *See—*
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Rouffet, Denis: *See—*
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Rowley, William W. Strap hanger. 4,942,644, Cl. 24-16.0PB.
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Ruder, Fred A., Sr. Horizontal cutting machine. 4,942,725, Cl. 56-16.900.
Rudnick, Leslie R.: *See—*
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Rudolf, Karl: *See—*
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Rudov, David. Pharmacological/cosmetic preparation. 4,943,433, Cl. 424-195.100.
Rumsey, Roger L., to Balco International, Inc. Fire-rated expansion joint having three degrees of freedom. 4,942,710, Cl. 52-396.000.
Rupp, Karl-Heinz: *See—*
Hellmann, Jens-Holger; Holscher, Richard; Janssen, Hermann J.; Kleemann, Alfred; Rupp, Karl-Heinz; Schwarz, Joachim; Varges, Gunter; and Waas, Heinrich, 4,942,837, Cl. 114-40.000.
Rushton, Alan, to British Nuclear Fuels PLC. Removal of thorium from raffinate. 4,943,318, Cl. 423-10.000.
Rutgerswerke AG: *See—*
Boenigk, Winfried; Zander, Maximilian; and Stadelhofer, Jurgen, 4,943,365, Cl. 208-44.000.
Ryan, Hunter D., Jr.: *See—*
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Rybalka, Borys: *See—*
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Rybicki, Mathew A., to Motorola, Inc. Frequency stable digitally controlled driver circuit. 4,943,784, Cl. 330-264.000.
Ryder International Corporation: *See—*
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Ryobi Ltd.: *See—*
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Sabbioni, Giuseppina, to A. S. T. Automatismi Speciali Termoplastici S.r.l. Granulation chamber for extruders of materials such as plastics. 4,943,218, Cl. 425-10.000.
Sadamatsu, Shigeru: *See—*
Aoki, Takayoshi; Ishii, Yukihiro; Tanaka, Koichi; and Sadamatsu, Shigeru, 4,943,505, Cl. 430-109.000.
Sahatjian, Ronald A.; Ribbins, Robert C., III; and Steckel, Mark G., to Chemical Fabrics Corporation. Flexible laminated fluoropolymer-containing composites. 4,943,473, Cl. 428-245.000.
Saito, Shinichi: *See—*
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Saito, Shinji: *See—*
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Saitou, Norio: *See—*
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Sakaba, Hideo: *See—*
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Sakagami, Seiji: *See—*
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Sakaguchi, Akihiro; Kaneko, Noriyuki; Saruta, Toshio; and Sawano, Ryotaro, to Bridgestone Corporation. Method for production of liquid center ball for golf ball. 4,943,332, Cl. 156-146.000.
Sakaguchi, Michiaki: *See—*
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Sakai, Jun; Higashiyama, Shunichi; Suzuki, Koji; and Ohta, Mitsuru, to Brother Kogyo Kabushiki Kaisha. Recording system having a coating device for coating recording medium or photosensitive medium with developer material reacting with color precursor. 4,943,509, Cl. 430-138.000.
Sakai, Masanori: *See—*
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Sakai, Osamu: *See—*
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Sakai, Shoji: *See—*
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Sakai, Takao; and Hamaguri, Kenji, to Minolta Camera Kabushiki Kaisha. Device for measuring oxygen saturation degree in arterial blood. 4,942,877, Cl. 128-633.000.
Sakakibara, Toshimori: *See—*
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Sakama, Mitsunori; Fukada, Takeshi; Sakamoto, Naoya; Amachi, Nobumitsu; Hayashi, Shigenori; and Inushima, Takashi, to Semiconductor Energy Laboratory Co., Ltd. Image sensor and manufacturing method for the same. 4,943,710, Cl. 250-208.100.
Sakamoto, Keiji; and Yoshida, Osamu, to Fanuc Ltd. Multiple-articulated robot control apparatus. 4,943,759, Cl. 318-568.110.
Sakamoto, Koji: *See—*
Manabe, Yoshiharu; and Sakamoto, Koji, 4,943,828, Cl. 355-200.000.
Sakamoto, Makoto: *See—*
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Komerska, James; Petito, George; and Rybalka, Borys, 4,943,462, Cl. 428-42.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Sakama, Mitsunori; Fukada, Takeshi; Sakamoto, Naoya; Amachi, Nobumitsu; Hayashi, Shigenori; and Inushima, Takashi, 4,943,710, Cl. 250-208.100.
Senk, Gerald B., Jr.: *See*—
Hale, Roger W.; and Senk, Gerald B., Jr., 4,942,916, Cl. 164-186.000.
Sentrol, Inc.: *See*—
Holce, Thomas J.; and Flint, Keith E., 4,943,791, Cl. 335-153.000.
Senturia, Stephen D.: *See*—
Haritonidis, Joseph H.; Senturia, Stephen D.; Warkentin, David J.; and Mehregany, Mehran, 4,942,767, Cl. 73-705.000.
Howe, Roger T.; Lang, Jeffrey H.; Schlecht, Martin F.; Schmidt, Martin A.; and Senturia, Stephen D., 4,943,750, Cl. 310-309.000.
Seto, Yoshiki: *See*—
Sato, Hiroki; and Seto, Yoshiki, 4,943,036, Cl. 266-104.000.
Severin, Jan W.; and De With, Gijsbertus, to U.S. Philips Corporation. Device comprising a temperature sensor. 4,943,559, Cl. 505-1.000.
Severinsky, Alex J., to Viteq Corporation. AC to DC power converter and method with integrated line current control for improving power factor. 4,943,902, Cl. 363-80.000.
Sexton, Robert A.: *See*—
Greer, Larry J.; and Sexton, Robert A., 4,942,815, Cl. 101-352.000.
Sgrigonoli, Gary J.: *See*—
Citta, Richard W.; Gosc, Paul M.; Mutzabaugh, Dennis M.; and Sgrigonoli, Gary J., 4,944,006, Cl. 380-20.000.
SGS-Thomson Microelectronics SA: *See*—
Gloton, Jean-Pierre; and Peres, Philippe, 4,943,464, Cl. 428-76.000.
Shah, Nitin J.: *See*—
Ren, Fan; and Shah, Nitin J., 4,943,540, Cl. 437-225.000.
Shah, Praful M.: *See*—
Aldrich, Charles S.; Craft, James A.; Harden, James P.; Komplin, Steven R.; Rousey, William S.; Shah, Praful M.; Ward II, Earl D.; Wilzbach, Bernard L.; and King, Terry L., 4,943,815, Cl. 346-108.000.
Shankland, Ian R.; Richard, Robert G.; and Lund, Earl A. E., to Allied-Signal Inc. Azeotrope-like compositions of pentafluoroethane; 1,1,1-trifluoroethane; and chlorodifluoromethane. 4,943,388, Cl. 252-69.000.
Shannon, David J., to Pure Water, Inc. Control for modular water distiller. 4,943,353, Cl. 202-181.000.
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Asano, Hajime; Terada, Hiroaki; Asada, Katsuhiko; Nishikawa, Hiroaki; Shimizu, Masahisa; Miura, Hiroki; Shima, Kenji; Komori, Shinji; Miyata, Souichi; and Matsumoto, Satoshi, 4,943,916, Cl. 364-200.000.
Sharp Kabushiki Kaisha: *See*—
Kihara, Seiichiro; and Okabayashi, Naonori, 4,943,736, Cl. 307-261.000.
Maeda, Yasutaka; Miyamoto, Tsuyochi; Ueno, Yukihiko; and Washio, Hiromi, 4,943,834, Cl. 355-327.000.
Morio, Tomokazu; Fujimoto, Yoshiji; and Kitoh, Atsunori, 4,944,012, Cl. 381-30.000.
Nojima, Hideo; Kojima, Yoshimi; Imada, Eiji; Matsuyama, Toshiro; Hayakawa, Takashi; Narikawa, Shiro; and Ehara, Shaw, 4,943,503, Cl. 430-66.000.
Ohashi, Kunio; and Nagata, Shoichi, 4,943,826, Cl. 355-27.000.
Shaw, Allan; Luxton, Russell E.; and Luxton, Russell E., to Shaw, Allan; Luxton, Russell Estcourt; and Luminis Pty. Ltd. Air conditioning and method of dehumidifier control. 4,942,740, Cl. 62-93.000.
Shekleton, Jack R., to Sundstrand Corporation. Fuel injector for achieving smokeless combustion reactions at high pressure ratios. 4,943,230, Cl. 431-183.000.
Shell Oil Company: *See*—
Dewitz, Thomas S., 4,943,190, Cl. 406-134.000.
Goodall, Brian L.; Terlouw, Willem; and van der Sar, Jacob C., 4,943,670, Cl. 585-601.000.
Johnson, Thomas H., 4,943,396, Cl. 260-405.500.
Johnson, Thomas H., 4,943,397, Cl. 260-405.500.
Nathoo, Nazim S., 4,943,222, Cl. 425-89.000.
Wong, Pui-Kwan, 4,943,665, Cl. 568-633.000.
Shelnut, James G.: *See*—
Lipson, Melvin A.; Carter, Thomas P.; Shelnut, James G.; and Roos, Leo, 4,943,513, Cl. 430-260.000.
Shelton, Vernon E. Fail-safe coolant thermostat system for an internal combustion engine. 4,942,849, Cl. 123-41.100.
Shepherd, Donald: *See*—
Schaltenbrand, Robert W.; Seman, Brian; and Shepherd, Donald, 4,943,890, Cl. 361-388.000.
Shibata, Hiroki; Takahashi, Kazuki; Tajima, Keiichi; Kurita, Takashi; Wada, Kiyoshi; and Yamashita, Kiyoshi, to Koito Manufacturing Co., Ltd. Automotive illumination system. 4,943,893, Cl. 362-37.000.
Shibata, Keiichiro: *See*—
Hamamoto, Masaya; and Shibata, Keiichiro, 4,943,102, Cl. 296-96.210.
Shibata, Toshihiko: *See*—
Kanamura, Tomotsugu; Shibata, Toshihiko; and Inoue, Yasuji, 4,943,477, Cl. 428-286.000.
Shibuya, Masato: *See*—
Mori, Susumu; and Shibuya, Masato, 4,943,733, Cl. 250-548.000.
Shigematsu, Takashi: *See*—
Watanabe, Tomoyuki; Tokoro, Setsuo; Hayashi, Takashi; and Shigematsu, Takashi, 4,942,950, Cl. 192-0.096.
Shigeta, Kunio: *See*—
Takahashi, Jiro; Tsuzita, Kenzi; Takagiwa, Hiroyuki; Shigeta, Kunio; and Masaki, Hiroya, 4,943,507, Cl. 430-120.000.
Shiiki, Kazuo: *See*—
Takano, Hisashi; Hamakawa, Yoshihiro; Shiiki, Kazuo; Otomo, Shigekazu; and Kumasaka, Noriyuki, 4,943,879, Cl. 360-126.000.
Shiina, Toshio: *See*—
Takada, Hiromi; Suzuki, Takami; Shiina, Toshio; Okamoto, Keiji; Komurasaki, Takeshi; Yoshioka, Satoru; Sakuma, Nobuo; and Matsuura, Tadashi, 4,943,128, Cl. 350-6.900.
Shima, Kenji: *See*—
Asano, Hajime; Terada, Hiroaki; Asada, Katsuhiko; Nishikawa, Hiroaki; Shimizu, Masahisa; Miura, Hiroki; Shima, Kenji; Komori, Shinji; Miyata, Souichi; and Matsumoto, Satoshi, 4,943,916, Cl. 364-200.000.
Shimada, Hiroyuki: *See*—
Aoki, Takashi; Terayama, Satoshi; Iwaki, Yoshihisa; Sekine, Noboru; Shimada, Hiroyuki; Takemasa, Nobuo; and Miyake, Junichi, 4,942,787, Cl. 74-867.000.
Shimizu Construction Co., Ltd.: *See*—
Kumagai, Takenori, 4,942,698, Cl. 52-6.000.
Shimizu, Hideo: *See*—
Sugiura, Masato; Shimizu, Hideo; Imamura, Shigeru; and Sugiura, Fumitoshi, 4,943,380, Cl. 252-8.700.
Shimizu, Keizo: *See*—
Okamoto, Kaizo; Ichihara, Akira; Sato, Akimune; Hirata, Kenji; Hirayama, Katsuhisa; Hina, Eiji; Nakaji, Shigeru; Sakamoto, Minoru; Tanaka, Takashi; and Shimizu, Keizo, 4,942,773, Cl. 73-864.450.
Shimizu, Masahisa: *See*—
Asano, Hajime; Terada, Hiroaki; Asada, Katsuhiko; Nishikawa, Hiroaki; Shimizu, Masahisa; Miura, Hiroki; Shima, Kenji; Komori, Shinji; Miyata, Souichi; and Matsumoto, Satoshi, 4,943,916, Cl. 364-200.000.
Shimizu, Mitsuo; Maehara, Kazuo; Shinohara, Hidenobu; and Kojima, Hideo, to Sanden Corporation. Control device for heat pump with hot-water supply facility. 4,943,003, Cl. 237-2.00B.
Shimizu, Wataru: *See*—
Yoshinaga, Yoshio; Shimizu, Wataru; and Obara, Toshio, 4,943,868, Cl. 358-403.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Arai, Masatoshi; Fujioka, Kazutoshi; and Satou, Masaharu, 4,943,613, Cl. 524-773.000.
Gomyo, Shiro; and Kobori, Takahide, 4,943,620, Cl. 525-474.000.
Itagaki, Akinari; Yamaya, Masaaki; Yoshioka, Hiroshi; Watanabe, Akihiko; and Miyazato, Keita, 4,943,452, Cl. 427-299.000.
Shinada, Keiko: *See*—
Hirose, Tadashi; Nakao, Kazuo; and Shinada, Keiko, 4,943,968, Cl. 371-19.000.
Shinko Pantec Company, Limited: *See*—
Sugisawa, Masanori; Sasaki, Takashi; and Nishimoto, Yoshihito, 4,943,360, Cl. 204-182.300.
Shinoda, Takashi; and Sakai, Osamu, to Hitachi, Ltd. Semiconductor memory with an improved dummy cell arrangement and with a built-in error correction code circuit. 4,943,967, Cl. 371-2.200.
Shinohara, Hidenobu: *See*—
Shimizu, Mitsuo; Maehara, Kazuo; Shinohara, Hidenobu; and Kojima, Hideo, 4,943,003, Cl. 237-2.00B.
Shinohara Machinery Co., Ltd.: *See*—
Sugiyama, Osamu, 4,942,814, Cl. 101-232.000.
Shiomi, Toshio: *See*—
Hosoda, Makoto; and Shiomi, Toshio, 4,943,934, Cl. 364-518.000.
Shiota, Tsuneo; and Takeuchi, Soji, to Chuo Electronics Co., Ltd. Video surveillance system for selectively selecting processing and displaying the outputs of a plurality of TV cameras. 4,943,854, Cl. 358-108.000.
Shiozawa, Shinichi, to Yugen Kaisha Chubuseimitsu. Motor with cup-shaped rotor having cylindrical portions of different diameter. 4,943,748, Cl. 310-67.00R.
Shipko, Frederick J.: *See*—
Goode, Louis; and Shipko, Frederick J., 4,943,289, Cl. 606-1.000.

Shippy, David J.: *See*—
Pechanek, Gerald G.; Shippy, David J.; Snedaker, Mark C.; and Woodward, Sandra S., 4,943,984, Cl. 375-109.000.
Shirai, Hiroshi; Tatsumi, Takashi; Kanda, Hisashi; Fukuo, Koichi; Motsumoto, Masahiko; and Hiro, Toshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve operating device for use in internal combustion engine. 4,942,854, Cl. 123-90.170.
Shirakawa, Shingo: *See*—
Yamazaki, Takeo; Ogihara, Satoru; Kosugi, Tetsuo; Shirakawa, Shingo; and Owada, Shinichi, 4,943,795, Cl. 338-21.000.
Shireman, Mark J.; and Benson, Florence G., to Honeywell Inc. Automated lead wire tinning apparatus mechanical adjustments and improvements. 4,942,843, Cl. 118-74.000.
Shirley S. Lan: *See*—
Hsu, Pi-Chen, 4,942,964, Cl. 206-334.000.
Shirling, David J., to AMP Incorporsted. Pin grid array having seperate posts and socket contacts. 4,943,846, Cl. 357-80.000.
Shiromizu, Hisaharu; Morikawa, Asao; Sukegawa, Tsuneyuki; and Kondo, Kazuo, to NGK Spark Plug Co., Ltd. Ceramic substrate for electrical devices. 4,943,470, Cl. 428-209.000.
Shishido, Osamu; Noguchi, Satoru; and Seino, Seiji, to Amano Corporation. Bulky dust sweeper. 4,942,639, Cl. 15-83.000.
Shkornik, Alexander: *See*—
Boroduliu, German; Shkornik, Alexander; Persidsky, Maxim D.; and Narayan, Perinchery, 4,942,869, Cl. 128-43.000.
Shriver, Frank L.; and Schultz, Robert H., to Adolph Coors Company. Container transfer system. 4,942,955, Cl. 198-471.100.
Shrock, Paul: *See*—
Baker, Richard W.; and Shrock, Paul, 4,943,475, Cl. 428-246.000.
Shtarkman, Emil M., to TRW Inc. Rotary shock absorber with a controlled damping rate. 4,942,947, Cl. 188-267.000.
Shuji, Inoue, to Kureha Rubber Industry Co., Ltd. Printing plates for corrugated board. 4,943,467, Cl. 428-159.000.
Sibold, Josie. Plant supporting umbrella. 4,942,693, Cl. 47-44.000.
Siefer, David A.; and Purcell, Alexander M., to Summagraphics Corporation. Backlit digitizer tablet. 4,943,689, Cl. 178-18.000.
Siegenthaler, Peter; and Zwahlen, Andreas, to Seewer AG. Apparatus for coating sheets of dough with fat. 4,942,842, Cl. 118-24.000.
Siehling, Mark B.: *See*—
Van Antwerp, Stanley R.; and Siehling, Mark B., 4,943,904, Cl. 363-144.000.
Siemens Aktiengesellschaft: *See*—
Gerlach, Hans-Juergen; and Aichinger, Horst, 4,943,988, Cl. 378-108.000.
Krueger, Hans; and Welsch, Wolfgang, 4,943,972, Cl. 372-107.000.
Mattelin, Antoon, 4,943,346, Cl. 156-651.000.
Schoenwald, Siegfried, 4,943,208, Cl. 415-175.000.
Siewert, Robert L.: *See*—
Erickson, Warren R.; and Siewert, Robert L., 4,942,826, Cl. 105-178.000.
Simazaki, Toshikatsu: *See*—
Hayashi, Fusashi; Takei, Kooichi; Matii, Yooichi; Simazaki, Toshikatsu; Imai, Akihito; and Nakada, Takao, 4,943,542, Cl. 501-12.000.
Simmons, Elsie A. Cooking jacket. 4,942,809, Cl. 99-426.000.
Simmons, Kelvin A.: *See*—
Davis, Anton; Simmons, Kelvin A.; and Blair, Richard, 4,942,885, Cl. 128-842.000.
Simmons, Marion I.; and Geyer, Harry J., to Motorola, Inc. Data device module having locking groove. 4,943,708, Cl. 235-492.000.
Simmons, Pat, to Centron Corporation. Threaded pin and box construction for composite tubulars. 4,943,094, Cl. 285-333.000.
Simon Fraser University: *See*—
Hardy, R. H. Stephen; and Radziejewski, Ian R., 4,944,038, Cl. 370-85.500.
Simoncelli, Philippe, to Ferco International Usine de Ferrures de Batiment. Fittings for doors, windows or the like. 4,942,694, Cl. 49-192.000.
Simonoff, Adam J., to United States of America, Navy. Chemical agent monitor and control interface. 4,943,929, Cl. 364-496.000.
Sims, Clinton N. Astigmatic self-refractor and method of use. 4,943,162, Cl. 351-235.000.
Sims, Richard M.: *See*—
Langley, Marshall E., Jr.; Sims, Robert C.; Sims, Richard M.; and Turek, James N., 4,942,714, Cl. 52-687.000.
Sims, Robert C.: *See*—
Langley, Marshall E., Jr.; Sims, Robert C.; Sims, Richard M.; and Turek, James N., 4,942,714, Cl. 52-687.000.
Sinay, Pierre: *See*—
Jacquinet, Jean-Claude; Petitou, Maurice; Sinay, Pierre; and Choay, Jean, 4,943,630, Cl. 536-123.000.
Sinkunas, Peter J.; Ritter, Rodney L.; and Altpeter, James E., to Ford Motor Company. Solder flow well for reflowing solder of multipin components. 4,942,997, Cl. 228-56.100.
Sircar, Jagadish C.: *See*—
Cetenko, Wiaczeslaw A.; Connor, David T.; Flynn, Daniel L.; and Sircar, Jagadish C., 4,943,587, Cl. 514-415.000.
Sitter, Alfred: *See*—
Bernd, Hubert; Heiby, Pierre; and Sitter, Alfred, 4,943,212, Cl. 417-7.000.
Skibo, Michael D.: *See*—
Bruski, Richard S.; Hudson, Larry G.; and Skibo, Michael D., 4,943,490, Cl. 428-614.000.
Skidmore, Ian F.; Lunts, Lawrence H. C.; Finch, Harry; Naylor, Alan; and Campbell, Ian B., to Glaxo Group Limited. Dichloroaniline derivatives. 4,943,591, Cl. 514-539.000.
Skiles, Bruce L.: *See*—
Page, Mary J.; Hamilton, Benton W.; Skiles, Bruce L.; and Reinhart, Robert V., Jr., 4,943,282, Cl. 604-198.000.
Skrbina, John R.; Polityka, Gregory A.; and Smith, Mark L., to Ford Motor Company; and Magna International, Inc. Automotive door assembly having a plug-in electrified interior panel. 4,943,109, Cl. 296-146.000.
SKW Trostberg Aktiengesellschaft: *See*—
Lischka, Helmut; Gmohling, Werner; and Hieber, Gerd, 4,943,317, Cl. 75-312.000.
Slaughter, Grimes G. Non-reflecting transmission line termination. 4,943,739, Cl. 307-443.000.
Slovak, Petr, to Ceske vysoke uceni technicke v Praze. Method for non-invasive electric diagnosis and therapy in hemodialysis and general medicine. 4,942,880, Cl. 128-734.000.
Slusser, J. Michael, to Production Diagnostics, Inc. Valve assembly for showers. 4,942,896, Cl. 137-360.000.
Smirnov, Ary A.: *See*—
Saveliev, Viktor S.; Yablokov, Evgeny G.; Prokubovsky, Vladimir I.; Kolody, Stepan M.; Saveliev, Sergei V.; and Smirnov, Ary A., 4,943,297, Cl. 606-200.000.
Smit, Cornelius J.: *See*—
Mitschker, Alfred; Lange, Peter M.; Hoffmann, Heiko; Lossmann, Gunter; van der Meer, Andries P.; and Smit, Cornelius J., 4,943,420, Cl. 423-112.000.
Smit Transformation B.V.: *See*—
Bose, Ajit K., 4,943,887, Cl. 361-56.000.
Smith, Gaylord D.: *See*—
Benn, Raymond C.; Smith, Gaylord D.; and Boone, Donald H., 4,943,487, Cl. 418-552.000.
Smith, Harry C., Jr. Dunk tank seat release mechanism. 4,943,064, Cl. 273-384.000.
Smith, Jon D., to Dry Dock Industries, Inc. Axial immobile fastener-receiving member. 4,943,253, Cl. 411-342.000.
Smith, Mark L.: *See*—
Skrbina, John R.; Polityka, Gregory A.; and Smith, Mark L., 4,943,109, Cl. 296-146.000.
Smith, Robert S. One leg exerciser. 4,943,050, Cl. 272-70.000.
Smith, Roger R. Differential with lock-out mechanism. 4,943,269, Cl. 475-231.000.
Smith, Roy E., to UTDC Inc. Flexible shaft coupling having flexible elements interspersed between alternating attachment wedges. 4,943,261, Cl. 464-76.000.
Smith, Stephen H. Post-operative knee rehabilitative dynamometer. 4,943,053, Cl. 272-135.000.
Smits, Guido F.: *See*—
Grunbauer, Henri J. M.; Thoen, Johan A.; and Smits, Guido F., 4,943,597, Cl. 521-167.000.
Smrt, Thomas J., to Fox Valley Systems, Inc. Chassis assembly for spraying apparatus. 4,943,008, Cl. 239-754.000.
SMS Concast, Inc.: *See*—
Poran, Michael; Langner, Carl; and Hury, Shlomo, 4,942,919, Cl. 164-420.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Patzelt, Ulrich, 4,942,754, Cl. 72-247.000.
Snedaker, Mark C.: *See*—
Pechanek, Gerald G.; Shippy, David J.; Snedaker, Mark C.; and Woodward, Sandra S., 4,943,984, Cl. 375-109.000.
Snelgrove, R. Vernon: *See*—
McCullough, Francis P., Jr.; and Snelgrove, R. Vernon, 4,943,478, Cl. 428-288.000.
Snyder, George K.: *See*—
Wright, William D.; and Snyder, George K., 4,942,654, Cl. 29-890.035.
Snyder Laboratories, Inc.: *See*—
Markle, Richard A.; Brusky, Phyllis L.; and Baker, John H., 4,943,460, Cl. 428-36.900.
Snyder, Robert F.; and Ferguson, John H., to Raymond Engineering Inc. Torque tool. 4,942,794, Cl. 81-57.220.
So.Re.Ma. Operatrici Ferroviarie Snc di Cesare Rossanigo & C.: *See*—
Rossanigo, Cesare, 4,942,821, Cl. 104-12.000.
Sobel, Johannes: *See*—
Helling, Gunter; Sobel, Johannes; and Langen, Hans, 4,943,519, Cl. 430-512.000.
Societe Anonyme dite: Alcatel CIT: *See*—
Gherardi, Bernard, 4,943,985, Cl. 375-111.000.
Surie, Serge, 4,943,789, Cl. 333-18.000.
Societe Anonyme dite: Alsthom: *See*—
Cros, Michel, 4,942,824, Cl. 105-4.300.
S.A. Srebort: *See*—
Srebot, Robert; and Berthoud, Bernard, 4,943,071, Cl. 279-43.000.
Societe Civile de Recherche D.B.B.: *See*—
Baziard, Yves; Brun, Robert; and Duprat, Annette P., 4,943,453, Cl. 427-309.000.
Societe de Prospection et d'Inventions Techniques (S.P.I.T.): *See*—
Lafforgue, Jean-Jacques; and Schwartz, Claude, 4,943,192, Cl. 408-226.000.
Societe d'Etudes, Recherches et Constructions Electroniques - Sercel: *See*—
Rabian, Jean; Potet, Jean-Claude; and Buchon, Michel, 4,943,955, Cl. 368-156.000.
Societe Nationale d'Etude et de Construction de Moteurs d-Aviation (SNECMA): *See*—
Kapala, Patrick; and Mareix, Jean-Pierre, 4,943,013, Cl. 244-54.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Arretz, Emmanuel, 4,943,662, Cl. 568-66.000.

Sohlbrand, Heinrich. Procedure and equipment for the thermal treatment of semiconductor materials. 4,943,234, Cl. 432-152.000.
Sokaris, Jerry G., to Albany International Corp. Water removal on papermachine through riblet effect. 4,943,476, Cl. 428-280.000.
Soltis, Richard E.; Logothetis, Eleftherios M.; and Aslam, Mohammad, to Ford Motor Company. Preparation of superconducting oxide films using a pre-oxygen nitrogen anneal. 4,943,558, Cl. 505-1.000.
Soltninasab, Sohrab: *See—*
Hargest, Thomas S.; Soltninasab, Sohrab; and Novack, Robert C., 4,942,635, Cl. 5-453.000.
Soma, Takao: *See—*
Oda, Isao; Soma, Takao; Tsuno, Nobuo; Ando, Takashi; and Nakasuji, Yoshizumi, 4,942,999, Cl. 228-124.000.
Sommen, Francois M.: *See—*
Janssens, Frans E.; Diels, Gaston S. M.; Torremans, Joseph L. G.; and Sommen, Francois M., 4,943,580, Cl. 514-303.000.
Sony Corporation: *See—*
Asaida, Takashi, 4,943,850, Cl. 358-55.000.
Oishi, Shigeru; Abe, Takao; Nagaura, Toru; and Watanabe, Mochiyuki, 4,943,497, Cl. 429-53.000.
Soria, Claudine: *See—*
Jolles, Pierre; Fiat, Anne-Marie; Soria, Claudine; Levy-Toledano Sylviane; Raha, Sanghamitra; Mazoyer, Elisabeth; and Drouet, Ludovic, 4,943,562, Cl. 514-18.000.
Soto, Toby A.: *See—*
Jacobs, Paul T.; Berry, Ronald F.; and Soto, Toby A., 4,943,414, Cl. 422-28.000.
Space Industries Partnership, L.P.: *See—*
Ferree, Herbert E.; and Revelj, Ellen J., 4,942,793, Cl. 81-54.000.
Spalding & Evenflo Companies, Inc.: *See—*
Meeker, Paul K., 4,943,113, Cl. 297-250.000.
Sparacio, Frank J.: *See—*
Emma, Philip G.; Knight, Joshua W., III; Pomerene, James H.; Rechtschaffen, Rudolph N.; and Sparacio, Frank J., 4,943,908, Cl. 364-200.000.
Sparkomatic Corporation: *See—*
Straka, Michael J., 4,943,085, Cl. 280-770.000.
Sparks, Bradley A., to RCA Licensing Corporation. Memory retention system for volatile memory devices. 4,943,961, Cl. 365-228.000.
Spectra-Physics, Inc.: *See—*
Fiet, Zeev; Kostyk, Douglas; and Woods, Robert J., 4,943,971, Cl. 372-46.000.
McRight, William C., 4,943,127, Cl. 350-6.800.
Spectramed, Inc.: *See—*
Koch, Mark; and Murray, Richard C., Jr., 4,943,364, Cl. 204-415.000.
Speer, J. Alexander, to KDI Electro-Tec Corporation. Multi-channel, off-axis, bi-directional fiber optic slipring. 4,943,137, Cl. 350-96.180.
Spencer, Earl W., Jr.: *See—*
Leavell, David R.; Spencer, Earl W., Jr.; and Bacon, Bruce L., 4,943,951, Cl. 367-111.000.
Spencer, Steven R., to Tapour, Inc. Container closure with spigot valve. 4,942,976, Cl. 220-254.000.
Sperry, David A.: *See—*
Mondragon, Carl W.; and Sperry, David A., 4,943,148, Cl. 350-529.000.
Spinelli, Larry J., to Benjamin Obdyke Incorporated. Venting of roofs. 4,942,699, Cl. 52-57.000.
Spiragaine S.A.: *See—*
Chefson, Patrice, 4,942,953, Cl. 193-25.00C.
Sporer, Alfred H., to International Business Machines Corporation. High quality thermal jet printer configuration suitable for producing color images. 4,943,816, Cl. 346-25.000.
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SSMC Inc.: *See—*
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Stackhouse, Mildred K., to Stack Holding Inc. Method of folding sterile surgical garments before and after sterilization. 4,942,987, Cl. 223-37.000.
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Izuno, Nobuaki; Kurosu, Yasuo; Okazawa, Koichi; Yokoyama, Yoshihiro; and Ooyu, Kensuke, 4,943,857, Cl. 358-148.000.
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Yoneyama, Masakazu; and Mukunoki, Yasuo, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing antistatic agents. 4,943,520, Cl. 430-527.000.
Yonezawa, Shigeki: *See—*
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Yoshinaga, Yoshio; Shimizu, Wataru; and Obara, Toshio, to Kabushiki Kaisha Toshiba. Handy image data filing apparatus. 4,943,868, Cl. 358-403.000.
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Young, Roger A., to Phillips Petroleum Company. Seismic data processing method. 4,943,918, Cl. 364-421.000.
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Yu, Robert C. U., to Xerox Corporation. Method of fabricating a layered flexible electrophotographic imaging member. 4,943,508, Cl. 430-129.000.
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Pelley, Perry H., III; and Yu, Ruey J., 4,943,743, Cl. 307-475.000.
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Boenigk, Winfried; Zander, Maximilian; and Stadelhofer, Jurgen, 4,943,365, Cl. 208-44.000.
Zani, Bruno; and Zani, Duilio, to Zani S.r.l. Opening and closing controls of roofs for vehicles. 4,943,104, Cl. 296-223.000.
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Zarniko, Martin; and Sehr, Willibald, to MOBA - Electronic. Height control device and method for a fixture for machining an object essentially defined by a single plane. 4,943,119, Cl. 299-1.000.
Zarycki, John E.: *See—*
Quirk, Michael J.; Drake, Timothy E.; and Zarycki, John E., 4,942,776, Cl. 74-61.000.
Zatulovsky, Leonid, to Allegretti & Company. String trimmer with automatic feed. 4,942,664, Cl. 30-276.000.
Zdeblick, Mark, to Stanford University. Integrated, microminiature electric to fluidic valve and pressure/flow regulator. 4,943,032, Cl. 251-11.000.
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Zejda, Jaroslav; and Schuhmacher, Manfred, to Leybold Aktiengesellschaft. Cathode sputtering system. 4,943,363, Cl. 204-298.150.
Zenith Electronics Corporation: *See*—
Citta, Richard W.; Gosc, Paul M.; Mutzabaugh, Dennis M.; and Sgrigonoli, Gary J., 4,944,006, Cl. 380-20.000.
Zimmer, Johannes. Process and device for applying a flowable substance to a surface. 4,943,451, Cl. 427-294.000.
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Zimmermann, Peter H.: *See*—
Norton, Peter W.; Stobie, James A.; and Zimmermann, Peter H., 4,943,491, Cl. 428-620.000.
Zinser Textilmaschinen GmbH: *See*—
Guttler, Hermann; and Mark, Karl-Heinz, 4,942,729, Cl. 57-261.000.
Zircon International, Inc.: *See*—
Franklin, Robert C., 4,942,668, Cl. 33-366.000.
Zittel, David R.; and Robbins, Gregory M., to Lyco Manufacturing, Inc. Water seal blancher. 4,942,810, Cl. 99-477.000.
Zogas, Peter, to Texas Instruments Incorporated. High-density package. 4,943,844, Cl. 357-74.000.
Zumstein, Ronald C.: *See*—
Klobucar, W. Dirk; Eisenbraun, Allan A.; and Zumstein, Ronald C., 4,943,682, Cl. 528-353.000.
Zwahlen, Andreas: *See*—
Siegenthaler, Peter; and Zwahlen, Andreas, 4,942,842, Cl. 118-24.000.
Zyogahara, Masakazu; Yokoyama, Shinichi; and Yamanaka, Hisashi, to Toyota Jidosha Kabushiki Kaisha. Structure for mounting damper on rotary shaft. 4,943,263, Cl. 464-180.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JULY, 1990

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barkhimer, Robert L.: *See*—
Beck, Niels J.; Calkins, Michael A.; Weseloh, William E.; and Barkhimer, Robert L., Re. 33,270, Cl. 123-447.000.
Beck, Niels J.; Calkins, Michael A.; Weseloh, William E.; and Barkhimer, Robert L., to BKM, Inc. Pressure-controlled fuel injection for internal combustion engines. Re. 33,270, Cl. 123-447.000.
BKM, Inc.: *See*—
Beck, Niels J.; Calkins, Michael A.; Weseloh, William E.; and Barkhimer, Robert L., Re. 33,270, Cl. 123-447.000.
Burnham, Robert D.; and Johnson, Noble M., to Xerox Corporation. Selective disordering of well structures by laser annealing. Re. 33,274, Cl. 437-174.000.
Calkins, Michael A.: *See*—
Beck, Niels J.; Calkins, Michael A.; Weseloh, William E.; and Barkhimer, Robert L., Re. 33,270, Cl. 123-447.000.
Coxon, Peter A.: *See*—
Wardell, Ian R. M.; and Coxon, Peter A., Re. 33,275, Cl. 250-305.000.
Georgia Tech Research Corporation: *See*—
Speaker, Lois M., Re. 33,273, Cl. 210-639.000.
Ishikawa, Norio; and Omaki, Takanobu, to Minolta Camera Kabushiki Kaisha. Automatic focusing device for use in a camera. Re. 33,277, Cl. 354-402.000.
Johnson, Noble M.: *See*—
Burnham, Robert D.; and Johnson, Noble M., Re. 33,274, Cl. 437-174.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ishikawa, Norio; and Omaki, Takanobu, Re. 33,277, Cl. 354-402.000.
Omaki, Takanobu: *See*—
Ishikawa, Norio; and Omaki, Takanobu, Re. 33,277, Cl. 354-402.000.
Presholdt, Ogden L. Method and apparatus for separately controlling sky wave and ground wave radiation from a medium wave antenna. Re. 33,276, Cl. 343-725.000.
Shoher, Itzhak; and Whiteman, Aharon. Dental jacket crown, coping and method of construction. Re. 33,271, Cl. 433-222.100.
Speaker, Lois M., to Georgia Tech Research Corporation. Materials having improved nonfouling characteristics and method of making same. Re. 33,273, Cl. 210-639.000.
Turck, Ernst. Filter cartridge for filtering apparatuses. Re. 33,272, Cl. 55-500.000.
VG Instruments Group, Limited: *See*—
Wardell, Ian R. M.; and Coxon, Peter A., Re. 33,275, Cl. 250-305.000.
Wardell, Ian R. M.; and Coxon, Peter A., to VG Instruments Group, Limited. Electron Spectrometer. Re. 33,275, Cl. 250-305.000.
Weseloh, William E.: *See*—
Beck, Niels J.; Calkins, Michael A.; Weseloh, William E.; and Barkhimer, Robert L., Re. 33,270, Cl. 123-447.000.
Whiteman, Aharon: *See*—
Shoher, Itzhak; and Whiteman, Aharon, Re. 33,271, Cl. 433-222.100.
Xerox Corporation: *See*—
Burnham, Robert D.; and Johnson, Noble M., Re. 33,274, Cl. 437-174.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Adams Industries Inc.: *See*—
Howard, H. Keith; and Sherrill, Jimmy L., B1 4,692,599, Cl. 219-532.000.
Baer, Thomas M.; and Keirstead, Mark S., to Spectra-Physics, Inc. ND-YAG Laser. B1 4,653,056, 7-24-90, Cl. 372-75.000.
Bennett, Edward D. Apparatus for producing a blank from stock material. B1 4,267,753, 7-24-90, Cl. 83-124.000.
Canon Kabushiki Kaisha: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, B1 4,481,273, Cl. 430-59.000.
Great Lakes Chemical Corp.: *See*—
Sergent, Rodney H.; and Thanstrom, Kenneth N., B1 4,637,865, Cl. 204-111.000.
Howard, H. Keith; and Sherrill, Jimmy L., to Adams Industries Inc. Coil support insulator for electric heater. B1 4,692,599, 7-24-90, Cl. 219-532.000.
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and preparation thereof. B1 4,481,273, 7-24-90, Cl. 430-59.000.
Keirstead, Mark S.: *See*—
Baer, Thomas M.; and Keirstead, Mark S., B1 4,653,056, Cl. 372-75.000.
Oguchi, Yoshihiro: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, B1 4,481,273, Cl. 430-59.000.
Rodriguez, Jorge M., to W. R. Grace & Co. Closed cell foam printing blanket. B1 4,303,721, 7-24-90, Cl. 428-213.000.
Sergent, Rodney H.; and Thanstrom, Kenneth N., to Great Lakes Chemical Corp. Process for metal recovery and compositions useful therein. B1 4,637,865, 7-24-90, Cl. 204-111.000.
Sherrill, Jimmy L.: *See*—
Howard, H. Keith; and Sherrill, Jimmy L., B1 4,692,599, Cl. 219-532.000.
Spectra-Physics, Inc.: *See*—
Baer, Thomas M.; and Keirstead, Mark S., B1 4,653,056, Cl. 372-75.000.
Takasu, Yoshio: *See*—
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Ahlstroem, Tom E. T.; and Ehrich, Hans O. G., to Colgate-Palmolive Company. Toothbrush. 309,375, 7-24-90, Cl. D4-104.000.
Albert, Samuel. Safety aligning pin. 309,410, 7-24-90, Cl. D8-14.000.
Aldrich, Thomas B., III, to Bristol-Myers Canada Inc. Bottle. 309,421, 7-24-90, Cl. D9-376.000.
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Appelbaum, Paul. Retractable key holder. 309,373, 7-24-90, Cl. D3-61.000.
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Bayer, Earl F. Slipper. 309,367, 7-24-90, Cl. D2-304.000.
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Benson, Timothy A.; and Gagnon, Peter R., to GTE Products Corporation. Reflector-type electric lamp or the like. 309,503, 7-24-90, Cl. D26-2.000.
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Buhk, Randall P., to Allsteel Inc. Seat. 309,385, 7-24-90, Cl. D6-366.000.
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Toy, Sylvia S. Bookmark. 309,473, 7-24-90, Cl. D19-34.000.
Turner, Kaylene Gail: *See—*
Dawes, Robert, 309,379, Cl. D4-138.000.
Turner, Trevor John: *See—*
Dawes, Robert, 309,379, Cl. D4-138.000.
Twinpak, Inc.: *See—*
Mancini, Derek V., 309,432, Cl. D9-424.000.
U.S. Philips Corporation: *See—*
Klok, Jan, 309,516, Cl. D32-70.000.
Viklund, Ake E., to Electrolux Constructor Aktiebolag. Storage box. 309,518, 7-24-90, Cl. D34-40.000.
Vita-Mix Corporation: *See—*
Barnard, John K.; and Brown, David A., 309,399, Cl. D7-412.000.
Barnard, John K., 309,400, Cl. D7-412.000.
Vitarine Pharmaceuticals, Inc.: *See—*
Colton, Steven F., 309,505, Cl. D28-2.000.
Wenger Corporation: *See—*
Hockenberry, Jack K., 309,389, Cl. D6-511.000.
Weslo, Inc.: *See—*
Bingham, Curt G.; and Dalebout, William T., 309,485, Cl. D21-194.000.
West, Terry D.: *See—*
Muller-Deisig, Wolfgang; Jenkins, David C.; West, Terry D.; and Chu, Zooey C., 309,383, Cl. D6-366.000.
Westcan Electrical Manufacturing Inc.: *See—*
Bandari, Ardeshir, 309,447, Cl. D13-158.000.
Whaley, Robert L.: *See—*
Taylor, Carl J.; and Whaley, Robert L., 309,377, Cl. D4-130.000.
Whirlpool Corporation: *See—*
Bussan, Marc R.; Fellwock, Charles G.; and DeBoer, Jeffrey A., 309,461, Cl. D15-89.000.
Wilgus, Mitchell L.: *See—*
Ramsey, Roger H.; and Wilgus, Mitchell L., 309,495, Cl. D23-223.000.
Ramsey, Roger H.; and Wilgus, Mitchell L., 309,496, Cl. D23-230.000.
Wilson, Patricia G. Stick pony toy. 309,501, 7-24-90, Cl. D21-75.000.
Wing Enterprises, Inc.: *See—*
Wing, Harold R.; and Cluff, Kenneth C., 309,502, Cl. D25-68.000.
Wing, Harold R.; and Cluff, Kenneth C., to Wing Enterprises, Inc. Hinge for ladders and the like. 309,502, 7-24-90, Cl. D25-68.000.
Wodli, Marc, to Electroli, S.A. Table saw. 309,466, 7-24-90, Cl. D15-133.000.
Wood, Kenneth D.: *See—*
Miller, George E.; Brunner, Robert D.; and Wood, Kenneth D., 309,467, Cl. D16-132.000.
Yamada, Shinjiro, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Striker plate for an automobile door lock. 309,417, 7-24-90, Cl. D8-345.000.
Yau Kee, Peter M., to Rosalco, Inc. Vanity table. 309,388, 7-24-90, Cl. D6-397.000.
Yuan, Arthur H.; and Joss, Michael S., to Spalding & Evenflo Companies, Inc. Breast pump. 309,500, 7-24-90, Cl. D24-51.000.
Zeisel, Hans K. Combined clock and bank. 309,436, 7-24-90, Cl. D10-2.000.
Zitting, Brent W. Bunk bed. 309,422, 7-24-90, Cl. D6-390.000.

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LIST OF PLANT PATENTEES

Conard-Pyle Company, The: *See*—
Meilland, Alain A., 7,276, Cl. 8.000.
Meilland, Marie-Louise, 7,278, Cl. 14.000.
Meilland, Marie-Louise, deceased, 7,277, Cl. 9.000.
Hetherington, Ernest, to Stewart Orchids. Blc. Mem. Ralph Placentia C.V. Toreador. 7,280, 7-24-90, Cl. 68.000.
le Naour, Jean-Pierre, legal representative: *See*—
Meilland, Marie-Louise, deceased, 7,277, Cl. 9.000.
Meilland, Alain A., to Conard-Pyle Company, The. Rose plant — Meizogrel variety. 7,276, 7-24-90, Cl. 8.000.
Meilland, Marie-Louise, to Conard-Pyle Company, The. Rose plant — Meimafris variety. 7,278, 7-24-90, Cl. 14.000.
Meilland, Marie-Louise, deceased (by le Naour, Jean-Pierre, legal representative), to Conard-Pyle Company, The. Rose plant-Meitonje variety. 7,277, 7-24-90, Cl. 9.000.
New Plants: *See*—
Zampini, James W., 7,279, Cl. 51.000.
Segers, Th. A., to Twyford Plant Laboratories, Inc. Sardis. 7,281, 7-24-90, Cl. 68.000.
Stewart Orchids: *See*—
Hetherington, Ernest, 7,280, Cl. 68.000.
Twyford Plant Laboratories, Inc.: *See*—
Segers, Th. A., 7,281, Cl. 68.000.
Zampini, James W., to New Plants. Seedless hybrid maple tree named Celzam. 7,279, 7-24-90, Cl. 51.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 24, 1990

NOTE.—First number, class; second number, subclass; third number, patent number

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73 4,942,625
161 R 4,942,626
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435 4,942,629

CLASS 4
542 4,942,630
623 4,942,631
661 4,942,632

CLASS 5
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450 4,942,634
453 4,942,635
475 4,942,636

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527.6 4,942,656
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701 4,942,660
705 4,942,659
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890.035 4,942,654
898.067 4,942,652

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151 4,942,663
276 4,942,664
4,942,665

CLASS 33
203.18 4,942,666
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366 4,942,668
494 4,942,670
559 4,942,671
725 4,942,669
832 4,942,672

CLASS 34
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4,942,681

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102.91 4,942,683

CLASS 40
152 4,942,684
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234 4,942,706
259 4,942,707
263 4,942,708
285 4,942,709
396 4,942,710
397 4,942,711
506 4,942,712
584 4,942,713
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426 4,942,716
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435 4,942,718
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10.4 4,942,724
10.6 4,942,723
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431 4,942,737
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82.1 4,942,769
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705 4,942,767
795 4,942,768
862.36 4,942,771
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864.34 4,942,770
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CLASS 92
212 4,942,804

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235 4,942,816
331 4,942,817
444 4,942,818
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486 4,943,324
808 4,943,323

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111 4,942,830

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121 4,942,833

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90.14 4,942,852
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660.03 4,942,878
684 4,942,879
734 4,942,880
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124.34 4,943,702
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385 4,943,705
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109 4,943,060
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455.1 4,943,080
660 4,943,092
666 4,943,081
673 4,943,082
707 4,943,083
4,943,084
741 4,943,086
770 4,943,085
804 4,943,087
842 4,943,075

CLASS 281
39 4,943,088

CLASS 283
81 4,943,089
83 4,943,093

CLASS 285
12 4,943,091
333 4,943,094
334 4,943,095

CLASS 292
213 4,943,096

CLASS 294
19.1 4,943,097
65.5 4,943,098
82.32 4,943,099

CLASS 295
8.5 4,943,101

CLASS 296
24.2 4,943,105
26 4,943,106
70 4,943,107
96.21 4,943,102
97.1 4,943,103
100 4,943,108
146 4,943,109
181 4,943,110
223 4,943,104

CLASS 297
194 4,943,111
238 4,943,112
250 4,943,113
301 4,943,114
4,943,115
362 4,943,116
392 4,943,117

CLASS 298
12 4,943,118

CLASS 299
1 4,943,119
42 4,943,120

CLASS 301
37 SS 4,943,121
108 A 4,943,122

CLASS 303
111 4,943,123

CLASS 307
261 4,943,736
296.7 4,943,737
362 4,943,738
443 4,943,739
454 4,943,740
455 4,943,741
458 4,943,742
475 4,943,743
480 4,943,744
603 4,943,745

CLASS 310
61 4,943,746
67 R 4,943,747
4,943,748
260 4,943,749
309 4,943,750
313 D 4,943,751
339 4,943,752

CLASS 312
222 4,943,124

CLASS 313
440 4,943,753
477 R 4,943,754

CLASS 315
8 4,943,755

CLASS 318
468 4,943,757
504 4,943,758
568.11 4,943,759
671 4,943,756
701 4,943,760

CLASS 323
283 4,943,761
284 4,943,762
309 4,943,763

CLASS 324
95 4,943,764
107 4,943,765
132 4,943,766
158 F 4,943,767
4,943,768
158 R 4,943,769
207.12 4,944,028
207.13 4,943,773
207.17 4,943,770
207.18 4,943,771
207.2 4,943,772
318 4,943,774
322 4,943,775
391 4,943,776
433 4,943,777
636 4,943,778

CLASS 328
14 4,943,779
234 4,943,781

CLASS 330
4.3 4,943,782
149 4,943,783
264 4,943,784
277 4,943,785

CLASS 331
1 A 4,943,786
2 4,943,787
11 4,943,788

CLASS 333
18 4,943,789
24.2 4,943,790

CLASS 335
153 4,943,791
216 4,943,792

CLASS 336
83 4,943,793
192 4,943,794

CLASS 338
21 4,943,795

CLASS 340
435 4,943,796
443 4,943,798
450.3 4,943,797
521 4,943,799
567 4,943,800
723 4,943,801
784 4,943,802
825.310 4,943,804
825.490 4,943,803
825.800 4,944,029
933 4,943,805

CLASS 341
31 4,943,806
120 4,943,807

CLASS 342
356 4,943,808

CLASS 343
700 MS 4,943,809
702 4,943,810
725 Re.33,276
814 4,943,811

CLASS 346
1.1 4,943,812
4,943,813
4,943,814
25 4,943,816
108 4,943,815
140 A 4,943,817
140 R 4,943,818
160.1 4,943,819

CLASS 350
3.69 4,943,126
6.8 4,943,127
6.9 4,943,128
96.1 4,943,125
96.12 4,943,129
4,943,130
96.13 4,943,131
4,943,132
4,943,134
96.14 4,943,133
96.16 4,943,136
96.18 4,943,137
96.20 4,943,138
105 4,943,139
164 4,943,140
258 4,943,141
315 4,943,142
339 R 4,943,143
354 4,943,144
4,943,145
471 4,943,146
486 4,943,147
529 4,943,148
568 4,943,149

CLASS 351
49 4,943,152
177 4,943,150
203 4,943,151
235 4,943,162

CLASS 353
25 4,943,153
31 4,943,154
33 4,943,155
66 4,943,156

CLASS 354
82 4,943,820
99 4,943,821
219 4,943,822
322 4,943,823
400 4,943,824
402 Re.33,277
403 4,944,030
481 4,943,825

CLASS 355
27 4,943,826
30 4,943,827
200 4,943,828
206 4,944,031
215 4,943,829
245 4,943,830
271 4,943,863
290 4,943,831
313 4,943,832
326 4,943,833
327 4,943,834

CLASS 356
1 4,943,157
4 4,943,158
73 4,943,159
372 4,943,160
437 4,943,161

CLASS 357
23.13 4,943,835
23.5 4,943,836
23.7 4,943,837
4,943,838
30 4,943,839
39 4,943,840
45 4,943,841
51 4,943,842
70 4,943,843
74 4,943,844
4,943,845
80 4,943,846

CLASS 358
12 4,943,847
4,943,848
4,943,849
4,944,032
55 4,943,850
87 4,943,851
88 4,943,852
4,943,860
102 4,943,853
108 4,943,854
4,943,864
133 4,943,855
141 4,943,856
148 4,943,857
167 4,943,858
172 4,943,859
244 4,943,861
245 4,943,862
335 4,943,865
4,943,866
342 4,943,867
403 4,943,868
426 4,943,869
451 4,943,870
496 4,943,871

CLASS 360
8 4,943,872
77.15 4,943,873
85 4,943,874
90 4,943,878
104 4,943,875
4,943,881

106 4,943,876
4,943,877
126 4,943,879
4,943,882
4,943,883
133 4,943,880

CLASS 361
15 4,943,884
42 4,943,886
56 4,943,887
96 4,943,888
232 4,943,885
284 4,943,889
388 4,943,890
392 4,943,891
525 4,943,892

CLASS 362
37 4,943,893
61 4,943,894
66 4,943,895
84 4,943,896
223 4,943,897
226 4,943,898
4,943,899
227 4,943,900
277 4,943,901

CLASS 363
80 4,943,902
97 4,943,903
144 4,943,904

CLASS 364
136 4,943,905
188 4,943,906
200 4,943,907
4,943,908
4,943,909
4,943,910
4,943,911
4,943,912
4,943,913
4,943,914
4,943,915
4,943,916
420 4,943,917
421 4,943,918
424.03 4,943,919
424.1 4,943,920
4,943,921
426.02 4,943,922
426.04 4,943,923
431.12 4,943,924
449 4,943,925
470 4,943,927
4,944,033
477 4,943,928
486 4,943,926
496 4,943,929
506 4,943,930
513 4,943,931
4,943,932
4,943,933
518 4,943,934
4,943,935
519 4,943,936
521 4,943,937
522 4,943,938
4,944,034
555 4,943,939
556 4,944,035
748 4,943,940
4,943,941
900 4,943,942

CLASS 365
185 4,943,943
189.05 4,943,944
189.09 4,943,945
189.12 4,943,946
4,943,947
201 4,943,948
206 4,943,949
207 4,943,952
222 4,943,960
228 4,943,961
230.08 4,943,962

CLASS 366
106 4,943,163
149 4,943,164
348 4,943,165

CLASS 367
43 4,944,036
50 4,943,950
111 4,943,951
137 4,943,956
139 4,943,953
191 4,943,954

CLASS 368
156 4,943,955

CLASS 369
13 4,944,037
32 4,943,166

CLASS 370
77 4,943,958
85.5 4,943,959
4,944,038
94.1 4,943,963

CLASS 371
2.2 4,943,967
11.1 4,943,966
19 4,943,968
31 4,943,964
36 4,943,965
68.1 4,943,969

CLASS 372
45 4,943,970
46 4,943,971
75 B1 4,653,056
107 4,943,972

CLASS 375
1 4,943,973
4,943,974
4,943,975
4,943,976
4,943,977
4,943,978
4 4,943,979
42 4,943,980
81 4,943,982
84 4,943,983
109 4,943,984
111 4,943,985

CLASS 376
210 4,943,408
212 4,943,409
245 4,943,683
261 4,943,410

CLASS 377
47 4,943,981

CLASS 378
37 4,943,986
99 4,943,987
108 4,943,988
130 4,943,989
152 4,943,990
182 4,943,991
208 4,943,992

CLASS 379
6 4,943,993
53 4,943,994
67 4,943,995
96 4,943,996
160 4,943,997
220 4,943,998
221 4,943,999
359 4,944,000
386 4,944,001
388 4,944,002
412 4,944,003
4,944,004
449 4,944,005

CLASS 380
20 4,944,006
21 4,944,007
46 4,944,008
4,944,009

CLASS 381
4 4,944,010
15 4,944,011
30 4,944,012
38 4,944,013
51 4,944,014
55 4,944,015
74 4,944,016
79 4,944,017
86 4,944,018
90 4,944,019
96 4,944,020

CLASS 382
5 4,944,021
14 4,944,022
37 4,944,023

CLASS 383
8 4,943,167
38 4,943,168

CLASS 384
43 4,943,169
99 4,943,170
537 4,943,171
565 4,943,172

CLASS 400
689 4,943,173
703 4,943,174

CLASS 401
111 4,943,175
197 4,943,176

CLASS 402
72 4,943,177

CLASS 403
259 4,943,178
269 4,943,179
295 4,943,180
324 4,943,181
349 4,943,182
406.1 4,943,183

CLASS 405
39 4,943,184
45 4,943,185
73 4,943,186
190 4,943,187
224 4,943,188
267 4,943,189

CLASS 406
134 4,943,190

CLASS 408
1 R 4,943,191
226 4,943,192

CLASS 410
69 4,943,193
132 4,943,194

CLASS 411
55 4,943,195
342 4,943,253
361 4,943,196
375 4,943,197

CLASS 414
13 4,943,198
331 4,943,199
332 4,943,200
408 4,943,201
475 4,943,202
486 4,943,203
495 4,943,204
680 4,943,205
786 4,943,206
797.7 4,943,207

CLASS 415
175 4,943,208

CLASS 416
204 R 4,943,209

CLASS 417
7 4,943,212
12 4,943,210
131 4,943,211
310 4,943,213

CLASS 418
9 4,943,214
4,943,215
15 4,943,216
270 4,943,217
552 4,943,487

CLASS 420
417 4,943,322
420 4,943,412
528 4,943,413

CLASS 422
28 4,943,414
56 4,943,415
63 4,943,416
292 4,943,417

CLASS 423
10 4,943,318
50 4,943,418
72 4,943,419
112 4,943,420
235 4,943,421
242 4,943,422
293 4,943,423
328 4,943,424
338 4,943,425
497 4,943,426
566 4,943,411

CLASS 424
1.1 4,943,427
10 4,943,428
52 4,943,429
70 4,943,430
4,943,431
195.1 4,943,433
4,943,434
448 4,943,435
647 4,943,432

CLASS 425
10 4,943,218
64 4,943,219
66 4,943,220
73 4,943,221
89 4,943,222
116 4,943,223
174.8 R 4,943,224
275 4,943,225
326.1 4,943,226
345 4,943,227
526 4,943,228
535 4,943,229

CLASS 426
16 4,943,436
61 4,943,437
92 4,943,438
107 4,943,439
118 4,943,440
511 4,943,441
513 4,943,442
569 4,943,443
573 4,943,444
4,943,445

CLASS 427
9 4,943,446
55 4,943,447
58 4,943,448
154 4,943,680
213.3 4,943,449
255.2 4,943,450
294 4,943,451
299 4,943,452
309 4,943,453

CLASS 428
12 4,943,454
26 4,943,455
34.3 4,943,456
34.4 4,943,684
35.2 4,943,457
35.7 4,943,458
35.9 4,943,780
36.5 4,943,459
36.9 4,943,460
40 4,943,461
42 4,943,462
44 4,943,463
76 4,943,464
102 4,943,465
122 4,943,466
159 4,943,467
209 4,943,469
4,943,470
210 4,943,468
213 B1 4,303,721
220 4,943,471
240 4,943,472
245 4,943,473
246 4,943,474
4,943,475
280 4,943,476
286 4,943,477
288 4,943,478
331 4,943,479
332 4,943,480
373 4,943,481
407 4,943,482
433 4,943,483
441 4,943,484
457 4,943,485
469 4,943,486
552 4,943,488
386 4,943,489
614 4,943,490
620 4,943,491
654 4,943,492
694 4,943,957

CLASS 429
17 4,943,493
30 4,943,494
35 4,943,495
45 4,943,496
53 4,943,497
97 4,943,498
192 4,943,499
207 4,943,500

CLASS 430
58 4,943,501
4,943,502
59 B1 4,481,273
66 4,943,503
102 4,943,504
109 4,943,505
4,943,506
120 4,943,507
129 4,943,508
138 4,943,509
160 4,943,510
192 4,943,511
197 4,943,512
260 4,943,513
270 4,943,514
4,943,515
280 4,943,516
301 4,943,517
378 4,943,518
495 4,943,681
512 4,943,519
527 4,943,520

CLASS 431
183 4,943,230
215 4,943,231
263 4,943,232

CLASS 432
13 4,943,233
152 4,943,234
205 4,943,235

CLASS 433
165 4,943,236
213 4,943,237
222.1 Re.33,271

CLASS 434
224 4,943,238
353 4,943,239

CLASS 438
6 4,943,521
7 4,943,522
4,943,523
4,943,524
4,943,525
15 4,943,526
69.6 4,943,527
158 4,943,528
172.3 4,943,529
188 4,943,530
194 4,943,531
209 4,943,532
240.27 4,943,533
302 4,943,534
311 4,943,535

CLASS 437
28 4,943,536
34 4,943,537
52 4,943,538
174 Re.33,274
195 4,943,539
225 4,943,540

CLASS 439
15 4,943,240
34 4,943,241
65 4,943,242
289 4,943,243
567 4,943,244
578 4,943,245
656 4,943,246
850 4,943,248
883 4,943,247

CLASS 440
28 4,943,251
73 4,943,249
101 4,943,250

CLASS 441
87 4,943,252

CLASS 445
28 4,943,254

CLASS 446
15 4,943,255
278 4,943,256

CLASS 453
9 4,943,257
30 4,943,258

CLASS 455
35 4,944,024
207 4,944,025

CLASS 460
32 4,943,259
96 4,943,260

CLASS 464
76 4,943,261
131 4,943,262
180 4,943,263

CLASS 474
59 4,943,264
13 4,943,265
25 4,943,266
201 4,943,266

CLASS 475
6 4,943,267
39 4,942,779
83 4,942,780
95 4,943,268
231 4,943,269
342 4,942,781

CLASS 493
10 4,943,270
24 4,943,271
45 4,943,272

CLASS 494
41 4,943,273

CLASS 501
10 4,943,541
12 4,943,542
96 4,943,543
124 4,943,544

CLASS 502
56 4,943,545
66 4,943,546
150 4,943,547
173 4,943,548
304 4,943,549
327 4,943,550
345 4,943,551
417 4,943,552

CLASS 503
201 4,943,554
227 4,943,555

CLASS 505
1 4,943,556
4,943,557
4,943,558
4,943,559

CLASS 514
11 4,943,560
17 4,943,561
18 4,943,562
23 4,943,563
50 4,943,564
161 4,943,565
179 4,943,566
203 4,943,567
206 4,943,568
210 4,943,569
222.8 4,943,570
232.8 4,943,571
235.2 4,943,572
249 4,943,575
4,943,576
250 4,943,577
252 4,943,578
253 4,943,573
283 4,943,579
303 4,943,580
307 4,943,581
320 4,943,582
338 4,943,574
364 4,943,583
374 4,943,678
380 4,943,584
398 4,943,585
406 4,943,586
415 4,943,587
452 4,943,588
468 4,943,589
469 4,943,590
539 4,943,591
649 4,943,593
722 4,943,595

CLASS 521
79 4,943,594
82 4,943,596
167 4,943,597
184 4,943,598
4,943,599

CLASS 522
106 4,943,600

CLASS 523
220 4,943,603
428 4,943,604
438 4,943,605
457 4,943,606
500 4,943,607

CLASS 524
265 4,943,601
272 4,943,608
314 4,943,609
493 4,943,611
600 4,943,602
714 4,943,612
773 4,943,613

CLASS 525
117 4,943,614
240 4,943,615
264 4,943,616
329.9 4,943,617
340 4,943,618
383 4,943,676
415 4,943,610
463 4,943,619
474 4,943,620

CLASS 526
127 4,943,621
206 4,943,622

CLASS 528		531	4,943,633	533	4,943,644	90	4,943,656	503	4,943,669	408	4,943,287
272	4,943,623	**CLASS 544**		**CLASS 552**		125	4,943,657	601	4,943,670		4,943,288
301	4,943,624	224	4,943,634	309	4,943,645	561	4,943,679	642	4,943,671	558	4,943,286
324	4,943,625	330	4,943,675	**CLASS 556**		572.2	4,943,658	737	4,943,672	**CLASS 606**	
353	4,943,682	**CLASS 546**		1	4,943,646	599	4,943,659	845	4,943,673	1	4,943,289
405	4,943,677	13	4,943,635	426	4,943,647	**CLASS 564**		**CLASS 600**		45	4,943,290
408	4,943,626	294	4,943,636	470	4,943,648	18	4,943,660	18	4,943,275	57	4,942,872
CLASS 530		**CLASS 548**		**CLASS 558**		26	4,943,661	29	4,943,276	64	4,943,291
324	4,943,627	260	4,943,637	319	4,943,650	**CLASS 568**		**CLASS 604**		70	4,943,292
326	4,943,628	455	4,943,638	**CLASS 560**		66	4,943,662	2	4,943,274	96	4,943,293
CLASS 536		550	4,943,639	56	4,943,651	461	4,943,663	96	4,943,277	117	4,943,294
117	4,943,629	551	4,943,640	60	4,943,652	623	4,943,664		4,943,278	131	4,943,295
123	4,943,630	953	4,943,641	219	4,943,653	633	4,943,665	151	4,943,279	158	4,943,298
124	4,943,649	**CLASS 549**		251	4,943,654	709	4,943,666	169	4,943,280	166	4,943,296
CLASS 540		241	4,943,642	**CLASS 562**		814	4,943,667	192	4,943,281	200	4,943,297
222	4,943,631	532	4,943,643	46	4,943,655	**CLASS 585**		198	4,943,282	230	4,942,875
225	4,943,632			456	4,943,668	263	4,943,284		4,943,283	**CLASS 800**	
				471	4,943,553	275	4,943,285			205	4,943,674

CLASSIFICATION OF DESIGNS

D1—	106	309,366		601	309,391		104	309,416		151	309,443	D18—	2	309,469
D2—	304	309,367			309,392		345	309,417		203	309,444		7	309,470
	317	309,368			309,393	D9—	300	309,418		307	309,445		11	309,471
	320	309,369		611	309,394		305	309,419	D13—	158	309,447		99	309,472
		309,370	D7—	311	309,395		376	309,420		162	309,446	D19—	34	309,473
		309,371		313	309,396			309,421	D14—	109	309,448		75	309,474
D3—	12	309,372		354	309,397		404	309,423		114	309,449	D21—	62	309,475
	61	309,373		407	309,398		414	309,424			309,450		69	309,476
	101	309,374		412	309,399			309,425		137	309,451			309,477
D4—	104	309,375			309,400			309,426		163	309,452			309,478
	128	309,376		504	309,365			309,427			309,453			309,479
		309,378		507	309,401			309,428			309,454		75	309,501
	130	309,377		589	309,402			309,429		239	309,455		92	309,480
	138	309,379		594	309,403		415	309,430		253	309,456		108	309,481
D5—	62	309,380			309,404		424	309,431	D15—	1	309,457		109	309,482
D6—	360	309,381			309,405			309,432			309,458		166	309,483
		309,382		605	309,406			309,433		28	309,459		191	309,484
	366	309,383		638	309,407		433	309,434		29	309,460		194	309,485
		309,384		693	309,408		435	309,435		89	309,461		200	309,486
		309,385	D8—	4	309,409	D10—	2	309,436		90	309,462		214	309,488
	379	309,386		14	309,410		5	309,437		123	309,463		217	309,489
	390	309,422		17	309,411		39	309,438		133	309,464		223	309,490
	394	309,387		48	309,412		46	309,439			309,466		238	309,491
	397	309,388		57	309,413		120	309,440	D16—	107	309,465	D23—	208	309,493
	511	309,389		93	309,414	D12—	147	309,441		132	309,467		209	309,487
	571	309,390			309,415			309,442	D17—	14	309,468			309,492

			309,494	D24—	8	309,498	D30—	110	309,513	D34—	17	309,517	
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	230	309,496		51	309,500	D32—	35	309,515		46	309,519		
	366	309,497	D25—	68	309,502		70	309,516					
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	68	309,504											
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	16	309,510											
	55	309,507											
	78	309,511											
D29—	9	309,508											
	12	309,509											
	16	309,512											

CLASSIFICATION OF PLANTS

P.—	8	7,276	9	7,277	14	7,278	51	7,279	68	7,280	7,281

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	4,943,057	4,943,014		4,943,816	10 :	4,943,312		4,942,728		4,943,961			
	4,943,389	4,943,021		4,943,817		4,943,648		4,942,733	19 :	4,942,934			
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1109 O.G. 3 on Dec. 5, 1989.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 5 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of March 1, 1990, and was announced in the *Official Gazette* at 1111 O.G. 24 on Feb. 20, 1990.

International PCT fees were changed on June 1, 1989 due to a difference in the exchange rate of the U.S. dollar in relaton to the Swiss Franc and were announced in the *Official Gazette* at 1102 O.G. 90 on May 30, 1989.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1242.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA.	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	436.00
Basic Supplemental fee (for each page over 30)	9.00
Designation fee per country or region for the first 10 national or regional offices	106.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	134.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT 1112 OG 2 Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Apr. 30, 1990, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of June 29, 1990.

Chemical Discipline - August 8, 1989
Mechanical Discipline - December 1, 1988
Electrical Discipline - January 11, 1989

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of June 29, 1990.

Chemical - March 1, 1989
Electrical - June 15, 1989
Mechanical - September 1, 1989

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of June 1990.

Affirmed....203
Affirmed-in-Part....46
Reversed....129
Total Decided....378

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on July 28, 1987, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,682,371 through 4,683,591
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 26, 1983 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,394,781 through 4,395,780
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Apr. 17, 1989, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant....$245.00"

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))....$245.00
By other than a small entity....$490.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))....$495.00
By other than a small enttity....$990.00"

The amounts of the surcharges as amended effective Apr. 17, 1989, are set forth in 37 CFR 1.20 (k), (l) and (m) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f))....$60.00
By other than a small entity....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 20, 1990
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,329,787	06/258,391	5/18/82
4,329,808	06/227,570	5/18/82
4,329,828	06/231,578	5/18/82
4,329,937	06/244,870	5/18/82
4,329,984	06/224,758	5/18/82
4,329,989	06/237,219	5/18/82
4,330,046	06/277,676	5/18/82
4,330,268	06/235,411	5/18/82
4,330,269	06/225,146	5/18/82
4,330,304	06/263,219	5/18/82
4,330,342	06/238,329	5/18/82
4,330,344	06/221,060	5/18/82
4,330,353	06/236,535	5/18/82
4,330,355	06/222,387	5/18/82
4,330,372	06/268,253	5/18/82
4,330,379	06/231,477	5/18/82
4,330,386	06/222,275	5/18/82
4,330,400	06/230,006	5/18/82
4,330,403	06/249,426	5/18/82
4,330,415	06/267,897	5/18/82
4,330,425	06/231,773	5/18/82
4,330,466	06/217,187	5/18/82
4,330,482	06/218,394	5/18/82
4,330,489	06/233,161	5/18/82
4,330,512	06/215,875	5/18/82
4,330,515	06/217,631	5/18/82
4,330,532	06/222,765	5/18/82
4,330,547	06/217,948	5/18/82
4,330,603	06/229,360	5/18/82
4,589,146	06/668,010	5/20/86
4,589,148	06/678,182	5/20/86
4,589,153	06/597,072	5/20/86
4,589,181	06/441,321	5/20/86
4,589,186	06/730,436	5/20/86
4,589,201	06/724,362	5/20/86
4,589,206	06/653,207	5/20/86
4,589,207	06/633,868	2/50/86
4,589,209	06/586,674	5/20/86
4,589,222	06/319,906	5/20/86
4,589,229	06/223,145	5/20/86
4,589,241	06/537,286	5/20/86
4,589,248	06/636,622	5/20/86
4,589,250	06/678,169	5/20/86
4,589,264	06/690,368	5/20/86
4,589,266	06/627,510	5/20/86
4,589,269	06/617,625	5/20/86
4,589,271	06/585,840	5/20/86
4,589,276	06/680,865	5/20/86
4,589,278	06/615,993	5/20/86
4,589,283	06/632,126	5/20/86
4,589,292	06/678,241	5/20/86
4,589,307	06/650,259	5/20/86
4,589,320	06/692,558	5/20/86
4,589,333	06/727,442	5/20/86
4,589,334	06/512,691	5/20/86
4,589,337	06/770,176	5/20/86
4,589,339	06/649,899	5/20/86
4,589,340	06/573,343	5/20/86
4,589,351	06/664,022	5/20/86
4,589,353	06/696,176	5/20/86
4,589,354	06/683,375	5/20/86
4,589,365	06/665,949	5/20/86

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Patent Number	Serial Number	Issue Date
4,589,376	06/661,065	5/20/86
4,589,381	06/654,456	5/20/86
4,589,383	06/502,574	5/20/86
4,589,385	06/710,712	5/20/86
4,589,398	06/583,694	5/20/86
4,589,399	06/712,535	5/20/86
4,589,405	06/660,216	5/20/86
4,589,406	06/521,990	5/20/86
4,589,409	06/546,652	5/20/86
4,589,410	06/754,969	5/20/86
4,589,419	06/667,130	5/20/86
4,589,427	06/681,363	5/20/86
4,589,429	06/668,554	5/20/86
4,589,445	06/574,762	5/20/86
4,589,450	06/731,505	5/20/86
4,589,463	06/655,517	5/20/86
4,589,487	06/642,029	5/20/86
4,589,496	06/605,035	5/20/86
4,589,504	06/634,956	5/20/86
4,589,519	06/784,205	5/20/86
4,589,520	06/456,313	5/20/86
4,589,521	06/769,507	5/20/86
4,589,522	06/757,535	5/20/86
4,589,525	06/610,600	5/20/86
4,589,529	06/698,077	5/20/86
4,589,530	06/749,094	5/20/86
4,589,531	06/607,660	5/20/86
4,589,544	06/596,408	5/20/86
4,589,547	06/458,072	5/20/86
4,589,548	06/679,208	5/20/86
4,589,554	06/523,040	5/20/86
4,589,557	06/627,910	5/20/86
4,589,571	06/633,401	5/20/86
4,589,573	06/417,876	5/20/86
4,589,577	06/568,186	5/20/86
4,589,578	06/587,078	5/20/86
4,589,586	06/770,568	5/20/86
4,589,587	06/567,401	5/20/86
4,589,600	06/771,135	5/20/86
4,589,608	06/717,569	5/20/86
4,589,617	06/689,519	5/20/86
4,589,624	06/612,726	5/20/86
4,589,626	06/711,184	5/20/86
4,589,627	06/695,266	5/20/86
4,589,633	06/573,961	5/20/86
4,589,634	06/476,073	5/20/86
4,589,635	06/613,260	5/20/86
4,589,636	06/666,220	5/20/86
4,589,643	06/606,694	5/20/86
4,589,646	06/672,663	5/20/86
4,589,660	06/745,313	5/20/86
4,589,666	06/758,713	5/20/86
4,589,668	06/572,559	5/20/86
4,589,669	06/664,452	5/20/86
4,589,677	06/651,322	5/20/86
4,589,681	06/549,774	5/20/86
4,589,699	06/614,744	5/20/86
4,589,705	06/662,095	5/20/86
4,589,708	06/462,986	5/20/86
4,589,722	06/606,400	5/20/86
4,589,733	06/626,133	5/20/86
4,589,741	06/685,007	5/20/86
4,589,743	06/709,963	5/20/86
4,589,792	06/465,929	5/20/86
4,589,802	06/450,991	5/20/86
4,589,806	06/710,854	5/20/86
4,589,808	06/671,924	5/20/86
4,589,814	06/637,292	5/20/86
4,589,830	06/724,049	5/20/86
4,589,832	06/705,798	5/20/86
4,589,845	06/694,248	5/20/86
4,589,846	06/427,850	5/20/86
4,589,853	06/666,087	5/20/86
4,589,854	06/671,992	5/20/86
4,589,858	06/586,682	5/20/86
4,589,869	06/552,133	5/20/86
4,589,887	06/728,583	5/20/86
4,589,889	06/739,625	5/20/86
4,589,898	06/682,400	5/20/86
4,589,906	06/479,772	5/20/86
4,589,913	06/715,790	5/20/86
4,589,914	06/594,012	5/20/86
4,589,915	06/703,164	5/20/86
4,589,926	06/613,597	5/20/86
4,589,927	06/615,026	5/20/86
4,589,929	06/578,547	5/20/86
4,589,930	06/584,821	5/20/86
4,589,933	06/744,431	5/20/86
4,589,938	06/631,359	5/20/86
4,589,947	06/591,522	5/20/86
4,589,955	06/520,798	5/20/86
4,589,971	06/615,049	5/20/86
4,589,973	06/754,938	5/20/86
4,589,981	06/560,730	5/20/86
4,589,984	06/642,374	5/20/86
4,589,992	06/661,624	5/20/86
4,589,999	06/687,361	5/20/86
4,590,009	06/728,699	5/20/86
4,590,024	06/594,456	5/20/86
4,590,037	06/707,578	5/20/86
4,590,041	06/674,102	5/20/86
4,590,042	06/685,650	5/20/86
4,590,078	06/502,508	5/20/86
4,590,082	06/768,706	5/20/86
4,590,105	06/667,585	5/20/86
4,590,108	06/629,624	5/20/86
4,590,112	06/696,447	5/20/86
4,590,136	06/718,063	5/20/86
4,590,148	06/710,892	5/20/86
4,590,159	06/523,904	5/20/86
4,590,164	06/593,127	5/20/86
4,590,166	06/477,479	5/20/86
4,590,180	06/487,645	5/20/86
4,590,183	06/725,447	5/20/86
4,590,192	06/537,048	5/20/86
4,590,198	06/578,048	5/20/86
4,590,204	06/596,981	5/20/86
4,590,211	06/615,661	5/20/86
4,590,214	06/277,174	5/20/86
4,590,245	06/591,591	5/20/86
4,590,251	06/682,487	5/20/89
4,590,260	06/709,586	5/20/86
4,590,261	06/680,665	5/20/86
4,590,264	06/522,270	5/20/86
4,590,269	06/594,508	5/20/86
4,590,272	06/657,323	5/20/86
4,590,273	06/594,366	5/20/86
4,590,280	06/712,307	5/20/86
4,590,282	06/653,277	5/20/86
4,590,301	06/664,282	5/20/86
4,590,305	06/587,651	5/20/86
4,590,306	06/702,662	5/20/86
4,590,309	06/727,621	5/20/86
4,590,328	06/588,150	5/20/86
4,590,330	06/667,215	5/20/86
4,590,332	06/653,781	5/20/86
4,590,335	06/665,459	5/20/86
4,590,345	06/643,796	5/20/86
4,590,361	06/739,303	5/20/86
4,590,366	06/625,467	5/20/86
4,590,374	06/656,044	5/20/86
4,590,378	06/616,998	5/20/86
4,590,381	06/744,269	5/20/86
4,590,409	06/629,756	5/20/86
4,590,416	06/670,163	5/20/86
4,590,419	06/668,428	5/20/86
4,590,427	06/479,581	5/20/86
4,590,447	06/521,239	5/20/86
4,590,449	06/639,704	5/20/86
4,590,459	06/733,878	5/20/86
4,590,471	06/566,351	5/20/86
4,590,475	06/544,937	5/20/86
4,590,481	06/523,014	5/20/86
4,590,505	06/569,639	5/20/86
4,590,536	06/747,039	5/20/86
4,590,543	06/668,153	5/20/86

Patent Number	Serial Number	Issue Date
4,590,548	06/597,787	5/20/86
4,590,554	06/443,937	5/20/86
4,590,591	06/515,831	5/20/86
4,590,594	06/554,729	5/20/86
4,590,609	06/498,570	5/20/86
4,590,612	06/488,098	5/20/86
4,590,619	06/607,813	5/20/86

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,740,498, Re. S. N. 07/514,053, Filed April 24, 1990, Cl. 514/8, FIBRONECTION PREPARATIONS, Yutaka Hirao, et al., Owner of Record: *Green Cross Corp., Osaka-Shi, Japan*, Attorney or Agent: Louis Gubinsky, Ex. Gp.: 186

4,741,547, Re. S. N. 07/518,176, Filed May 3, 1990, Cl. 280/250.1, FOLDING WHEELCHAIR, Alan L. Tholkes, Owner of Record: *Inventor*, Attorney or Agent: Douglas L. Tschida, Ex. Gp.: 316

4,747,451, Re. S. N. 07/505,346, Filed April 5, 1990, Cl. 166/53, LEVEL SENSOR, Harold P. Adams, et al., Owner of Record: *Oil Well Automation, Inc., Seneca, Pa.*, Attorney or Agent: David C. Hanson, Ex. Gp.: 356

4,751,668, Re. S. N. 07/537,494, Filed June 12, 1990, Cl. 364/900, PORTABLE ELECTRONIC MEMORANDUM DEVICE, Fumiaka Aihara, Owner of Record: *Casio Computer Co., Ltd., Tokyo, Japan*, Attorney or Agent: Thomas Langer, Ex. Gp.: 236

4,793,387, Re. S. N. 07/536,310, Filed June 11, 1990, Cl. 141/86, OVERFILL SPILLAGE PROTECTION DEVICE, Leo J. LeBlanc, et al., Owner of Record: *Enterprise Brass Works, Inc., Muskegon, Mich.*, Attorney or Agent: Andrew R. Basile, Ex. Gp.: 243

4,817,921, Re. S. N. 07/536,697, Filed June 12, 1990, Cl. 267/33, COMPOSITE SPRING, Andrew Stevenson, Owner of Record: *The Paton Corp., Seattle, Wash.*, Attorney or Agent: Robert J. Gayhrick, Ex. Gp.: 313

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,228,225, 90/002,056, Requested June 18, 1990, Cl. 429/147, BATTERY SEPERATOR, Dennis D. O'Rell, et al., Owner of Record: *W. R. Grace & Co., Lexington, Mass.*, Attorney or Agent: Gary Levin, Ex. Gp.: 112, Requester: Owner

4,430,343, 90/002,059, Requested June 18, 1990, Cl. 424/250, BENZIMIDAZOLE DERIVATIVES, PROCESS FOR THE PREPARATION THEREOF, AND PHARMECEUTICAL COMPOSITION CONTAINING THE SAME, Ryuichi Iemura, et al., Owner of Record: *Kanebo, Ltd., Tokyo-To, Japan*, Attorney or Agent: Wegner & Bretschneider, Washington, D. C., Ex. Gp.: 122, Requester: Owner

4,648,907, 90/002,054, Requested June 12, 1990, Cl. 106/030, HIGH COLOR STRENGTH DIARYLIDE YELLOW PIGMENT COMPOSITIONS, Byron G. Hays, et al., Owner of Record: *BASF Corp., A Corp. of De., Cliftan, N. J.*, Attorney or Agent: E. Richard Skula, Ex. Gp.: 157, Requester: Ciba-Geigy Corp., Hawthorne, N. Y.

4,731,335, 90/002,057, Requested June 18, 1990, Cl. 436/180, METHOD FOR TREATING THIN SAMPLES ON A SURFACE EMPLOYING CAPILLARY FLOW, David J. Brigati, Owner of Record: *Fisher Scientific Co., A Corp., of De., Pittsburgh, Pa.*, Attorney or Agent: Alan M. Doemberg, Ex. Gp.: 181, Requester: Owner

4,738,713, 90/002,055, Requested June 15, 1990, Cl. 075/010.180, METHOD FOR INDUCTION MELTING REACTIVE METALS AND ALLOYS, Donald L. Stickle, et al., Owner of Record: *Duriron Co., Inc., Dayton, Ohio*, Attorney or Agent: W. J. Speranza, Ex. Gp.: 111, Requester: Retech, Inc., Ukiah, Calif

4,745,768, 90/002,058, Requested June 18, 1990, Cl. 358/084, SYSTEM FOR EVALUATION AND RECORDING OF RESPONSES TO BROADCAST TRANSMISSIONS, Henry Von Kohorn, Owner of Record: *Inventor, Stamford, Conn.*, Attorney or Agent: Marty R. Perman, Perman & Green, Ex. Gp.: 261, Requester: J. Ernest Kenny, Bacon & Thomas, Alexandria, Va.

COMMISIONER ORDERED REEXAMINATION

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefore established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

4,807,108, 90/002,060, Requested June 22, 1990, Cl. 364/148, PRODUCT REALIZATION METHOD, David Ben-Arieh, et al., Owner of Record: *AT & T, Bell Labs, A Corp. of N Y., Murray Hill, N. J.*, Attorney or Agent: John P. McDonald, Ex. Gp.: 236, Requester: CODR

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Megahaus Corp., San Diego, Calif., Reg. No. 1,441,922 for the mark "FIRST IMPRESSION", Canc. No. 18,624.

JEAN BROWN
Administrator of the
Trademark Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

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Status of PTO Services

The following is an update of the status of PTO services for June 1990:

Service Item	FY 1990 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:		
Patents	22	16
Trademarks	30	61
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	16 Hours
Window Coupons	5	2
Mail Coupons	12	6
Letter Orders	16	16
Electronic Ordering Service (EOS)	11	3
Certified Copies:		
Trademark Registrations	21	14
Applications-As-Filed	17	10
File-Wrapper/Contents	N/A	14
Walk-up Certification	1	1
Patent Application Expedited	5	6
Trademark Search Library:		
Filing Pending Marks	23	41
Filing Reg. Certificates	Issue Date+2 days	+ 1 Day
Filing Temp. Drawings	8	18
Assignments:		
Recording Patent-New Applications	20**	14
Recording Patent-Mail Room Recpts.	20	15
Receipt Date of Bulk Pat. Docs. Returned by End of Month	20	May 11-18, 1990 21
Recording Trademarks		
Receipt Date of Bulk Trademarks Documents Returned by end of Month		May 11-18, 1990
Avg. Days from Issue Fee Payment to Issue Date	90-100	93
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On Time
Patent Copies Available	95% on Issue Date	+11 Days
Trademark Copies Available	95% on Issue Date	99% on Issue Date

* Unless otherwise noted.
** Recalibrated to reflect goal of 20 days to record after the date the filing receipt is mailed.

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•Filing of Assignments - Submission of Multiple Copies• The Office is now filming all papers received with a request to record an assignment. This includes the actual assignment document, any cover letters, and attachments. The Assignment Branch frequently receives multiple copies of papers submitted with assignment requests. In order to reduce the stamping and filming of multiple copies of documents, please do not send additional copies of the assignment itself or any attachment to it. Only one copy of the transmittal or cover letter should be submitted with the exception that when fees are to be charged to a deposit account, three copies should be provided to expedite processing.

July 5, 1990

THERESA A. BRELSFORD
Assistant Commissioner for Administration

PATENT NOTICES

Certificates of Correction For Week of July 31, 1990

D. 301,898	4,807,242	4,847,392	4,858,748
4,158,957	4,810,451	4,847,565	4,858,841
4,504,306	4,810,920	4,847,591	4,859,105
4,629,753	4,812,245	4,847,604	4,859,319
4,635,296	4,813,268	4,847,649	4,859,331
4,655,547	4,813,982	4,847,928	4,859,383
4,678,991	4,814,039	4,849,134	4,859,666
4,987,998	4,814,197	4,849,230	4,859,807
4,707,388	4,814,421	4,849,770	4,859,977
4,727,362	4,814,842	4,849,921	4,860,113
4,729,111	4,815,893	4,850,439	4,860,118
4,730,416	4,817,131	4,850,488	4,860,151
4,731,164	4,817,776	4,850,716	4,860,571
4,733,940	4,818,306	4,850,751	4,860,968
4,734,546	4,821,627	4,851,101	4,861,494
4,735,914	4,823,263	4,851,345	4,861,956
4,748,125	4,826,736	4,851,465	4,862,060
4,753,673	4,826,795	4,851,621	4,862,362
4,754,803	4,826,853	4,852,344	4,862,427
4,759,414	4,827,057	4,852,845	4,862,511
4,762,655	4,828,344	4,853,386	4,862,550
4,767,434	4,828,678	4,853,423	4,862,765
4,767,438	4,829,850	4,853,539	4,862,847
4,771,456	4,829,999	4,853,562	4,863,623
4,774,418	4,830,438	4,853,599	4,863,984
4,775,501	4,831,305	4,853,659	4,963,988
4,778,541	4,832,110	4,853,861	4,865,167
4,781,316	4,832,464	4,853,907	4,865,533
4,781,833	4,833,278	4,853,919	4,866,021
4,786,614	4,833,701	4,854,527	4,866,195
4,788,263	4,833,995	4,854,578	4,866,528
4,788,276	4,834,982	4,854,636	4,867,401
4,790,495	4,835,549	4,854,768	4,867,510
4,790,954	4,835,788	4,855,411	4,867,653
4,791,196	4,836,414	4,855,433	4,867,895
4,797,734	4,837,110	4,855,544	4,869,706
4,798,740	4,837,293	4,855,934	4,870,847
4,801,583	4,837,520	4,856,399	4,871,573
4,801,787	4,838,524	4,856,502	4,873,605
4,801,844	4,838,919	4,856,642	4,877,517
4,802,021	4,840,802	4,857,054	4,894,610
4,803,249	4,842,720	4,857,179	4,915,390
4,803,325	4,845,100	4,857,405	4,932,111
4,803,516	4,845,609	4,858,307	
4,803,928	4,846,457	4,858,434	
4,806,694	4,846,559	4,858,480	

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SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent application *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.
Box Assignments	All assignment documents except those filed in new patent applications.
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	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-58 ,3
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8874
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF June 16, 1990

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director.	7-7-87
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	10-18-88
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	5-12-88
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-20-88
BIOTECHNOLOGY, GROUP 180—J. E. KITTLE, Director	1-28-87
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—D. G. Kelly, Director	10-15-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—ROBERT E. GARRETT, Director	2-27-87
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—G. GOLDBERG, Director	3-8-88
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-9-88
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director.	3-31-88
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP— 260 STEWART LEVY, Acting Director	4-22-88
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	2-6-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-24-89
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Acting Director	6-23-88
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	10-25-88
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—C. CROYLE, Acting Director	2-26-88
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	5-5-89

Expiration of patents: The patents within the range of numbers indicated below expire during June 1990 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,736,595 to 3,742,517 inclusive
Plant Patents ..... 3,350 to 3,369 inclusive

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REEXAMINATIONS

JULY 31, 1990

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,495,293 (1335th)
FLUOROMETRIC ASSAY

Mark R. Shaffar, Vernon Hills, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Reexamination Request No. 90/001,697, Jan. 23, 1989.
Reexamination Certificate for Patent No. 4,495,293, issued Jan. 22, 1985, Ser. No. 469,323, Feb. 24, 1983.
Int. Cl.[5] **G01N** *21/17, 21/25*
U.S. Cl. **436—172**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

7. An improved fluorimetric assay method for determining a ligand in an assay solution containing a sample suspected of containing the ligand, and an effective amount of reagent system which in the presence of the ligand is capable of providing a change in the transmittive properties of the assay solution within a wavelength band, said improvement comprising adding to the assay solution an effective amount of a fluorescer wherein the fluorescer does not react either chemically or immunologically with the ligand or the reagent system, and wherein the excitation and/or emission wavelength band of the fluorescer overlaps the wavelength band associated with the change in the transmittive properties of the assay solution; irradiating the assay solution with light having a wavelength within the excitation wavelength band of the fluorescer; and then measuring the intensity of the fluorescer emitted by the assay solution as a measure of the concentration of the ligand in the sample.

B1 4,785,035 (1336th)
CURING COMPOSITION

August L. L. Palluel, Windsor; Stephen P. Davis, High Wycombe Bucks, and Angela C. Fletcher, London, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Reexamination Request No. 90/001,926, Dec. 29, 1989.
Reexamination Certificate for Patent No. 4,785,035, issued Nov. 15, 1988, Ser. No. 114,735, Oct. 30, 1987.
Filed Dec. 29, 1989, Ser. No. 114,735
Claims priority, application United Kingdom, Nov. 14, 1986, 8627314
Int. Cl.[5] **C08L** *75/00*
U.S. Cl. **524—101**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

New claim **10** is added and determined to be patentable.

1. A curing composition comprising a polymer component and a compatible oligomeric component, the polymer component being a co-polymer of functional silyl group-containing units derived from monomers of Formula (I):

$$CH_2{=}CR^1CO_2(CH_2)_aL \qquad \text{Formula (I)}$$

where a is 2 to 6
R^1 is hydrogen or methyl and
L is a group of Formula (II):



Formula (I)

where R^2 is C_{1-4} alkoxy, C_{2-4} alkoxy—C_{2-4} alkoxy, C_{1-4} alkanoyl, enolate or oximate, and R^3 and R^4 are C_{1-4} alkoxy, C_{2-4} alkoxy—C_{2-4} alkoxy, C_{1-4} alkanoyl, enolate, oximate or C_{1-6} alkyl; and structural units derived from polymerisable ethylenically unsaturated monomers such that each molecule of the polymer component contains at least two silyl groups of Formula (II); the oligomeric component being a compound of Formula (III):

$$E(GKL)_b \qquad \text{Formula (III)}$$

where b is 3 to 6; E is derived from a biuret or isocyanurate oligomer of a di-functional isocyanate, the isocyanate being a C_{4-15} aliphatic, cycloaliphatic or aromatic diisocyanate optionally substituted with one or more C_{1-6} alkyl groups or is derived from an adduct of C_{2-6} aliphatic diol, triol or tetraol and a poly functional isocyanate, the poly functional isocyanate being either a di-functional isocyanate as previously defined or being itself the adduct of an aliphatic triol and a di-functional isocyanate as previously defined, G is

$$—[O(CH_2)_5CO]_c[O(CH_2)_dOCO(CH_2)_2]—$$

in which c is 0 to 2, d is 2 to 4; K is

$$—[NR^5(CH_2)_m]—$$

in which m is 1 to 6, and R^5 is hydrogen, methyl, $—(CH_2)_nR^6$, or $—CH_2CHOH(CH_2)_n—R^6$ in which R^6 is the group L as defined with reference to Formula (I) and n is 1 to 4.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,278

CONTINUOUSLY VARIABLE TRANSMISSION AND TORQUE RETAINING DIFFERENTIAL

Edward W. Johnshoy, R.R. #1, Box 258A, Mentor, Minn. 56736

Original No. 4,784,017, dated Nov. 15, 1988, Ser. No. 27,215, Mar. 17, 1987. Continuation-in-part of Ser. No. 881,827, Jul. 3, 1986. Application for reissue Dec. 30, 1988, Ser. No. 295,289

Int. Cl.[5] **F16H** *37/06, 1/40*

U.S. Cl. 475—6 **13 Claims**

1. A variable ratio transmission comprising:

first and second gear clusters;

means to rotatably mount the gear clusters about separate, parallel mounting axes for independent rotation relative to each other;

each of said gear clusters comprising a plurality of rotatable gears including an input gear rotatable about an axis coincident with its respective mounting axis, an output shaft, output gear means for driving the output shaft, and control gear means to effect a driving connection between the input gear and the output shaft through the output gear means;

means for simultaneously driving the input gears of both gear clusters; and

means for selectively and simultaneously controlling rotation of both of the gear clusters to simultaneously vary the effective ratio of rotation between the input gear and output shafts of both clusters through the output gear means of the clusters.

Re. 33,279

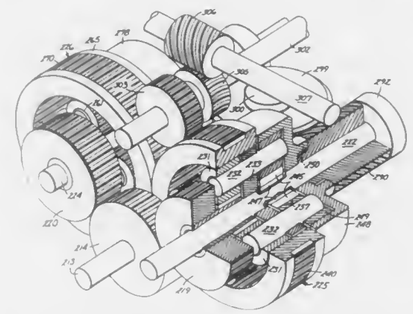
METHOD FOR RAPID ACQUISITION OF NMR DATA

Felix W. Wehrli, Shorewood, Wis., assignor to General Electric Company, Milwaukee, Wis.

Original No. 4,587,489, dated May 6, 1986, Ser. No. 539,780, Oct. 7, 1983. Continuation of Ser. No. 190,182, May 4, 1988, abandoned. Application for reissue Feb. 27, 1989, Ser. No. 315,242

Int. Cl.[5] **G01R** *33/20*

U.S. Cl. 324—309 **23 Claims**



21. A method for shortening total NMR data acquisition time, comprising the steps of:

(a) positioning an NMR sample in a homogeneous magnetic field to create in at least a portion thereof a net longitudinal magnetization in a first direction of said homogeneous field, said net longitudinal magnetization having a magnitude M_z;

(b) irradiating said sample with an RF pulse to convert a fraction but not all, of said net longitudinal magnetization to transverse magnetization;

(c) reversing the direction of dephasing of said transverse magnetization to produce at least one echo signal; and

(d) sampling said echo signal to derive, upon analysis, NMR data from said sample.

Re. 33,280

SEMICONDUCTOR MEMORY DEVICE

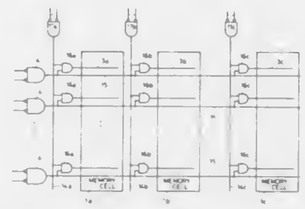
Masahiko Yoshimoto; Tsutomu Yoshihara; Kenji Anami, and Hirofumi Shinohara, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,554,646, dated Nov. 19, 1985, Ser. No. 542,388, Oct. 17, 1983. Application for reissue Nov. 19, 1987, Ser. No. 123,106

Claims priority, application Japan, Oct. 18, 1982, 57-184362; Oct. 20, 1982, 57-185817

Int. Cl.[5] **G11C** *11/40*

U.S. Cl. 365—189.01 **14 Claims**



1. A semiconductor memory device including a matrix of memory cells arranged in rows and columns, said semiconductor memory device comprising:

a plurality of groups of memory cells divided by segmenting said matrix in the direction of the columns;

memory cell group selection lines for every one of said groups for selecting any one of said plurality of the groups of said memory cells;

row decoders for every one of said rows for decoding of row address information for a particular memory cell to be accessed;

preceding word lines each connected to the output of each of said row decoders;

[AND gates each provided for providing a logical product of a group enable signal carried on said memory cell group selection line and a row enable signal from said row decoders on said preceding word lines;]

group word lines each provided per group and per row [for receiving the logical product output from each of said AND gates]; *and*

means for selectively activating said group word lines including selector means providing a memory cell group selecting signal to at least one said memory cell group selection line and means responsive to said memory cell group selecting signal carried on said memory cell group selection line and a row enable signal from said row decoders on one of the preceding word lines for driving a selected group word line;

wherein said particular memory cell is accessed [with the logical product output from the corresponding one of said group word lines].

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Re. 33,281

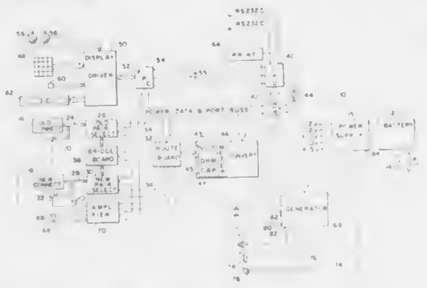
CABLE ANALYZER WITH D.C. FUNCTIONS

Jimmy C. Ray, and H. Wayne Matthews, both of Dennison, Tex., assignors to Communications Technology Corporation, Dallas, Tex.

Original No. 4,611,099, dated Sep. 9, 1986, Ser. No. 666,836, Oct. 31, 1984. Application for reissue Nov. 23, 1988, Ser. No. 276,426

Int. Cl.[5] **H04B** *3/46*

U.S. Cl. 379—25 **16 Claims**



1. A telphone cable analyzer comprising:

a. at least one plug connector whereby a plurality of telephone wires in pars may be attached by the plug to the analyzer,

b. a routing circuit,

c. at least one pair selector interconnecting the plug and routing circuit,

d. said pair selector including means for attaching any pair of wires to the routing circuit,

e. a converter connected to the routing circuit,

f. said converter including means for converting analog signals to binary digital signals,

g. said routing circuit including means for routing a pair of wires to said converter, and

h. a central processing unit connected to the pair selector, routing circuit, and converter,

i. said central processing unit including means for controlling the pair selector, the routing circuit, and converter, **[**and**]**

j. said central processing unit including means for analyzing, storing, and transmitting data from the converter, routing circuit, and pair selector,

k. means for transmitting data from the central processing unit to remote locations in RS232C format, and

l. means for receiving instruction in RS232C format from remote locations and controlling the central processing unit therewith.

Re. 33,282

LIQUID GAS-OPERATED LIGHTER

Friedrich Schächter, Vienna, Austria, assignor to BIC Corporation, Milford, Conn.

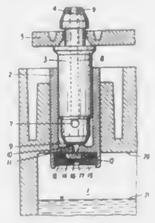
Original No. 4,560,345, dated Dec. 24, 1985, Ser. No. 403,499, Nov. 23, 1981. Application for reissue Dec. 21, 1987, Ser. No. 136,594

Claims priority, application Austria, Nov. 24, 1980, 5726/80

Int. Cl.[5] **F23D** *13/04*

U.S. Cl. 431—344 **42 Claims**

22. Liquid gas-operated lighter, such as a pocket lighter, comprising a burner tip, a fuel tank and, arranged therebetween, a valve assembly serving as the only means of communication between said fuel tank and said burner tip, an annular flange formed at an end face of said valve assembly facing said fuel tank, said flange defining a recess, said valve assembly including a valve bore opening to said recess and communicating with said valve, a control device for the flame height which device is non-alterable by the user of the lighter, said control device received in said recess and including a fuel-permeable proportioning disk, said proportioning disk tightly braced in its border region toward said end face by means of a bracing member so that gas is enabled to flow only through said proportioning disk, the border region formed between said end face and said bracing member is rendered permanently gas-tight, said bracing member secured in its position by securing means formed on said flange and provided with passage means for the fuel, said proportioning disk on the side facing said burner tip directly facing a hollow space in the absence of a gas permeable structural component, the cross-sectional area of said hollow space perpendicularly to the axis of said proportioning disk determining the position and size of the surface of said proportioning disk which



permits passage of fuel therethrough, characterized in that said proportioning disk is a flexible microporous film having slot-shaped pores oriented in the direction perpendicular to the surface of said disk, said slot-shaped pores directing said gas into said hollow space which space comprises means for passage of said gas into said valve bore, and that said bracing member together with said flange forms the conclusion of the lower end of said control device and, in the vertical position of use of said lighter, said lower end is always spoced at a distance above the liquid phase of the liquid gas, and that the space between said lower end and the liquid level is free from structurol components, so that said lower end of said control device is exposed exclusively to the gaseous phase of the fuel in the vertical position of use of the lighter.

Re. 33,283

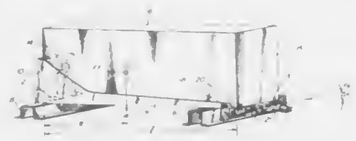
PIVOTABLE EXTRACTOR HOLD DOWN APPARATUS

Robert A. Hollingsead, La Habra, and Clyde R. Pryor, Anaheim, both of Calif., assignors to Hollingsead International, Inc., Santa Fe Springs, Calif.

Original No. 4,018,091, dated Apr. 19, 1977, Ser. No. 608,565, Aug. 28, 1975. Continuation of Ser. No. 297,766, Aug. 31, 1981, abandoned, which is a continuation of Ser. No. 360,113, May 14, 1973, abandoned. Application for reissue Feb. 25, 1983, Ser. No. 469,768

Int. Cl.[5] **H01R** *13/00*

U.S. Cl. 439—296 **8 Claims**



7. In an insertion, holddown and extraction apparatus for inserting an electronic unit in and removing it from a substantially horizontal supporting surface in which the electronic unit has the first half of a cable connector mounted at the back end thereof above the supporting surface and the supporting structure has a second half of said connector mounted thereon in a mating position with respect to the first half of the connector, the mating and unmating of the connector halves being accomplished by applying forces to the front end of the unit to slide the unit along the supporting surface, the combination which comprises:

means mounted to the supporting structure below the supporting surface thereof ond being arranged to be removably attached to the front end of the unit for applying insertion ond extraction forces to slide the unit along the supporting surface and mate and unmate the connector halves, respectively, the insertion forces having a vertical component directed downwardly toward the supporting surface and a horizontal component directed towards the rear end of the unit to cause the connector halves to mate; and

means for controlling the angle of opplication of said extraction forces so that the apparatus exerts a horizontal component away from the rear of the unit and substontially no vertical upward component and absorbs upward forces tending to lift the front of the unit off the supporting surface for the duration of the extraction of said first and second halves of the connector whereby the front of the electronic unit is prevented from moving upwardly while the connector halves are being unmated.

Re. 33,284

METHOD FOR THE POLYMERIZATION OF VINYL CHLORIDE MONOMER IN AN AQEOUS MEDIUM

Kenichi Itoh, Clute, Tex.; Genji Noguki, Yamaguchi, Japan; Motoaki Tanaka; Hitoshi Ohba, both of Saitama, Japan, and Masahiko Watase, Tokyo, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Original No. 4,694,053, dated Sep. 15, 1987, Ser. No. 748,433, Jun. 25, 1985. Application for reissue Nov. 30, 1987, Ser. No. 126,907

Claims priority, application Japan, Jun. 29, 1984, 59-134177

The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.

Int. Cl.[5] **C08F** *2/00*

U.S. Cl. 526—74 **4 Claims**

1. In a method for the suspension polymerization of vinyl chloride monomer or a monomer mixture mainly composed of vinyl chloride in an aqueous medium in the presence of a monomer-soluble polymerization intiator, an improvement which comprises admixing the aqueous medium with:

(a) a water-soluble crosslinked copolymer of 100 parts by weight of acrylic acid and from 0.05 to 10 parts by weight of **[**bisallyl ether or**]** bismethallyl ether of diethyleneglycol; and

(b) a non-ionic surface active agent.

Re. 33,285

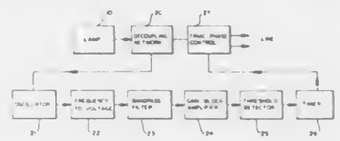
TOUCH CONTROLLED SWITCH FOR A LAMP OR THE LIKE

Scott M. Kunen, 2091-A Wantagh Ave., Wantagh, N.Y. 11793

Original No. 4,668,877, dated May 26, 1987, Ser. No. 754,245, Jul. 12, 1985. Continuation-in-part of Ser. No. 620,070, Jun. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 590,185, Mar. 16, 1984, abandoned. Application for reissue May 17, 1989, Ser. No. 352,865

Int. Cl.[5] **H05B** *37/02*

U.S. Cl. 307—116 **16 Claims**



1. An electronic control module to control the power to a lamp from an AC power source, the control module having a means to control the power to the lamp, said lamp having an external conductive surface and a two-conductor power cord within the lamp, said power to be controlled by touching said external conductive surface; characterized in that said control module removably plugs into said power source and the control module is not physically connected to the lamp except by the power cord, said power cord is removably insertable into the control module so that any lamp with a conductive external surface may be thus controlled, wherein the only connection between the lamp and control module is the said power cord and the only communication path between the lamp structure and the said power cord is the distributed capacitance existing between them; said control module including a high-frequency oscillator **[**having an operating frequency above the commercial AM broadcast band**]** and inductor means to electrically decouple the lamp power cord from the power source at said oscillator frequency, the said oscillator responding to touch to the lamp external conductive surface, such touching of said external conductive surface increasing the lamp capacitance, which change of capacitance is communicated to the oscillator through the power cord, and the oscillator being controlled by the combined capacitance of the lamp and power cord.

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PLANT PATENTS

GRANTED JULY 31, 1990

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,282
GROUNDCOVER ROSE PLANT NAMED 'FLOWER CARPET'
Werner Noack, Guetersloh, Fed. Rep. of Germany, assignor to Pan-Am Northwest, Inc., Surrey, Canada
Filed May 2, 1989, Ser. No. 346,393
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of groundcover rose plant, substantially as shown and described, characterized particularly by low, spreading, dense growth habit and deep pink flowers.

7,283
PRIMOCANE RASPBERRY NAMED "PER HUB"
Tony Huber, Laval, Canada, assignor to W. H. Perron et Cie. LTEE, Quebec, Canada
Filed Apr. 6, 1988, Ser. No. 178,432
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct cultivar of *Rubus idaeus* var. strigosus, named Per Hub, as herein shown and described, characterized particularly as to uniqueness by the combined characteristics of primocane fruiting, vigorous canes and growth, good size and taste of fruit, hardiness, adaptation and good resistance to diseases and insects, producing conical berries approximately 35 mm in length and 25 mm in diameter.

7,284
KALANCHOE PLANT NAMED BASHFUL
Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Mar. 2, 1989, Ser. No. 318,057
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Bashful, as illustrated and described.

7,285
BEGONIA PLANT NAMED CAMELOT
Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Jun. 2, 1989, Ser. No. 360,423
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct Begonia plant named Camelot, as illustrated and described.

7,286
KALANCHOE PLANT NAMED PASSIONATE
Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Mar. 2, 1989, Ser. No. 318,056
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Passionate, as illustrated and described.

7,287
CHRYSANTHEMUM PLANT NAMED SIGLO
Keith G. Lintott, Sussex, England, assignor to Framptons Nurseries Ltd., West Sussex, England
Filed Mar. 4, 1988, Ser. No. 164,344
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey of the pink spray type substantially as herein shown and described, characterized particularly as to novelty by year-round flowering, vigorous growth, and good flower size.

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ERRATA

For CLASS	See PATENT NO.
137-015	4,944,101
042-071	4,944,109
051-363	4,944,128
134-167	4,944,258
227-176	4,944,295
443-028	4,944,410
224-042	4,944,434
296-188	4,944,553
296-039	4,944,612
116-173	4,944,656
446-074	4,944,704
440-061	4,944,705
420-469	4,944,797
420-085	4,944,798
148-108	4,944,805
434-073	4,944,939
523-179	4,945,015
524-081	4,945,016
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313-105	4,945,286
250-236	4,945,287
313-025	4,945,288
174-113	4,945,342
372-013	4,945,539
378-130	4,945,562

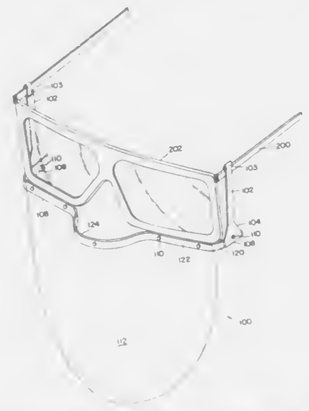
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GRANTED JULY 31, 1990

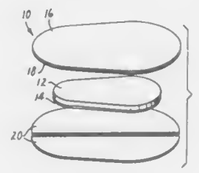
GENERAL AND MECHANICAL

4,944,039
PROTECTIVE MASK
Ursula Dietrich, 1588 Wedgewood, Hillsborough, Calif. 94010
Filed May 26, 1989, Ser. No. 357,525
Int. Cl.[5] A61F *9/00*
U.S. Cl. 2—13 14 Claims



1. A protective face mask attachable t glasses said mask comprising:
a thin frame generally formed to cross transversely over the bridge of the nose, below the eyes and across the cheeks of the user;
a protective cover attached to said frame and extending freely therefrom to hand in front of the nose and mouth of the user; and
attachment means for attaching said frame to said glasses, said attachment means being arms, each arm having a first end and a second end, said first end being rotatably attached to said frame, said second end being attachable by hooking to said glasses.

4,944,040
LIGHT OCCLUSIVE EYE PATCH
John E. Riedel, White Bear Lake, and Frederick O. Olsen, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 878,995, Jun. 26, 1986, Pat. No. 4,793,003. This application Dec. 19, 1988, Ser. No. 286,532
Int. Cl.[5] A61F *9/04*
U.S. Cl. 2—15 11 Claims



10. A self adherent eye patch comprising:
an absorbent pad shaped to fit over the eye having a nonadherent lower surface for contacting the eye and an opposing upper surface;
a backing having a lower face adhered to said upper surface of said absorbent pad and extending outward from the periphery thereof;
pressure sensitive adhesive coating on the lower surface of said backing for adhering the eye patch to the eye socket; said adhesive being capable of blocking at least 95 percent of the light of a preselected wavelength impinging thereon; and
a removable protective liner covering said nonadherent lower surface of said absorbent pad and the exposed portion of said pressure sensitive adhesive.

4,944,041
CUFF CONSTRUCTIONS
Anne M. Buenos, 424 Habersham St., Savannah, Ga. 31401; Jane M. Buenos, 425 Riverside Dr., New York, N.Y. 10025, and Leroy M. Sylvest, 910 Riverside Dr., Apt. 4G, New York, N.Y. 10032
Division of Ser. No. 860,403, May 7, 1986, Pat. No. 4,756,027. This application Jun. 24, 1988, Ser. No. 211,009
Int. Cl.[5] A41D *27/18*
U.S. Cl. 2—84 10 Claims



1. A cuff construction for an article of clothing, comprising:
an opening formed at a neck portion in the article of clothing;
a cuff having an inner surface and an outer surface formed about the opening and having a distal end;
a panel having a distal end and two adjacent sides secured to the distal end of the cuff, the panel having a first side extending for at least a portion of the perimeter of the distal ends of the cuff at the opening forming a fold line and the first side of the panel secured to the cuff at the opening and the two adjacent sides of the panel secured to the cuff for forming a pocket access facing away from the opening to define a first open position, the panel adapted to be folded about a fold line from the first open position to a second closed position, the first open position allowing the head and neck of a wearer to pass through the opening in the article of clothing and in the second closed position the panel folded over the opening to form a covering for at least a portion of the wearer's head.

5. A cuff construction for an article of clothing, comprising:
an opening formed at a neck portion in the article of clothing;
a cuff formed about the opening and having a distal end; and
a panel integrally formed at the distal end of the cuff extending around the perimeter of the distal end of the cuff to form a fold line, the panel adapted to be folded about the fold line from a first open position to a second closed position, the first open position allowing the head of a wearer to pass through the opening in the article of clothing, and in the second closed position the panel folded over the opening to form a covering for the wearer's head.

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4,944,042

ARTICLE WITH CONTAINER-FORMING PORTION

Thomas E. DeWan, 5945 Carrier St., St. Petersburg, Fla. 33714

Filed Mar. 17, 1989, Ser. No. 325,518
Int. Cl.[5] A41D *3/02*
U.S. Cl. 2—94 26 Claims



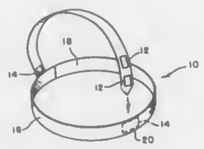
1. An article of flexible material having a tubular portion which is functional during normal use of the article and which is adapted to form a container for the article when the article is not in use, said tubular portion constituting a container-forming portion having first and second opposite open ends, at least one open end defining a mouth through which the article, when not in use, may be stuffed into said container-forming portion, first means carried by the article for at least partially closing the first open end of the container-forming portion, and second means carried by the article for at least partially closing the second open end of the container-forming portion whereby, with the article stuffed in said container-forming portion and both open ends of the container-forming portion at least partially closed, the article is releasably held in said container-forming portion.

4,944,043

TEAM DESIGNATOR BELTS

Janet Bush, 15 Orchard Rd., Castleton, N.Y. 12033

Filed Mar. 28, 1988, Ser. No. 173,885
Int. Cl.[5] A41F *19/00, 15/00*
U.S. Cl. 2—308 8 Claims



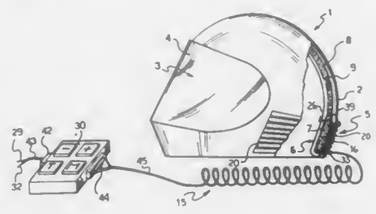
4. An athletic team indentification belt system comprising:
two belts, each belt having coacting fasteners, one of said fasteners located toward one end of said belt the other fastener located toward the other end of said belt, one of said coating fasteners extending further along the belt than the other fastener, said coacting fastener secured on opposite sides of said belt; and
a strip of the same type as one of said coacting fasteners on the inside of each said belt secured on the inside surface substantially equidistant between the ends of said belt whereby one belt may be worn around the waist and the other belt may be worn over the shoulder, said waist belt secured by the coacting fasteners toward either end of the belt and said shoulder belt being secured at one end to the fastener substantially equidistant between the belt ends and the other end of said shoulder belt being secured to one of the coacting fasteners located toward the other end of the waist belts.

4,944,044

PADDING ELEMENT FOR PROTECTION AGAINST SHOCKS, PARTICULARLY FOR A CRASH HELMET

Claudio Zarotti, Milan, Italy, assignor to VELA S.r.l., Milan, Italy

Filed Mar. 14, 1989, Ser. No. 323,592
Claims priority, application Italy, Mar. 14, 1988, 19757 A/88
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—413 18 Claims



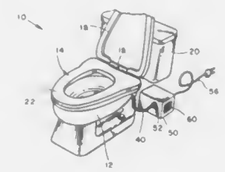
1. A padding element for protection against shocks, particularly useful with a crash helmet, being of a type which comprises at least one deformable vesicle containing a fluid which, in use of the padding element, is in a saturated vapor state, characterized in that it comprises a temperature adjuster means connected to a power supply and associated with said at least one vesicle to vary the vesicle internal pressure by developing or absorbing heat.

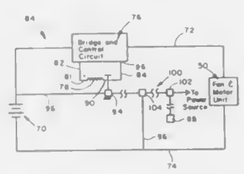
4,944,045

CONDITION-SPECIFIC TOILET VENTILATION SYSTEM

Dionisios Agelatos, and Sortirios Agelatos, both of 3883 Franklin Ave., Seaford, N.Y. 11783

Filed Dec. 7, 1989, Ser. No. 447,546
Int. Cl.[5] E03D *13/00, 9/04;* A47K *13/00*
U.S. Cl. 4—213 1 Claim





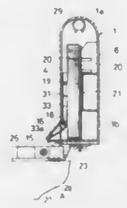
1. A condition-specific toilet ventilation system comprising:
(A) an inlet unit mounted on a bottom surface of a toilet seat, said inlet unit including
(1) a flexible annular hollow housing having a multiplicity of inlet openings defined therethrough, and
(2) a coupling element mounted on said housing;
(B) a flexible hose fluidically connected at an inlet end thereof to said inlet unit coupling element and having an outlet end;
(C) a fan and motor unit which includes
(1) an inlet fluidically coupled to said flexible hose outlet end, and
(2) an outlet;
(D) a power source;
(E) a control unit mounted in said flexible hose for electrically connecting said fan and motor unit to said power source and including
(1) a Wheatstone bridge circuit which connects said fan and motor unit to said power source when said Wheatstone bridge circuit is unbalanced and which disconnects said fan and motor unit from said power source when said Wheatstone bridge circuit is balanced,
(2) a resistor which will unbalance said Wheatstone bridge circuit when it is connected into said Wheatstone bridge circuit,
(3) a switch unit for connecting said resistor into said Wheatstone bridge circuit when a predetermined quantity of methane gas is present in a bowl of a toilet and for disconnecting said resistor from said Wheatstone bridge circuit when less than said predetermined quantity of methane gas is present in the bowl, said switch unit including
(a) a first line conductor connecting one side of said resistor to said Wheatstone bridge circuit,
(b) a second line conductor connected at one end thereof to said Wheatstone bridge circuit and having a second end spaced from a second side of said resistor,
(c) an electrically conductive element which is movable between a first position electrically connecting said second line conductor second end to said resistor second side to connect said resistor into said Wheatstone bridge circuit and a second position spaced from said second line conductor second end and spaced from said resistor second side to disconnect said resistor from said Wheatstone bridge circuit,
(d) a solenoid connected to said electrically conductive element to move said electrically conductive element into said first position to connect said resistor to said Wheatstone bridge circuit when activated, and to move said electrically conductive element into said second position when deactivated to disconnect said resistor from said Wheatstone bridge circuit when de-activated,
(e) solenoid activating unit for connecting said solenoid to said power source to activate said solenoid when said predetermined quantity of methane gas is present in the bowl of the toilet, said solenoid activating unit including
(i) a chemically sensitive electronic transducer mounted on said inlet unit hollow housing in the bowl of the toilet near a rear section of the toilet, said chemically sensitive electronic transducer generating a signal when sensing menthane gas in said predetermined quantity and failing to generate a signal when sensing methane gas in quantities less than said predetermined quantity,
(ii) a control element connected to said chemically sensitive electronic transducer to adjust the sensitivity of said chemically sensitive electronic transducer, and
(iii) a switch connected to said chemically sensitive electronic transducer to receive said signal therefrom and connected to said solenoid to connect said solenoid to said power source to activate said solenoid when said switch is receiving said signal from said chemically sensitive electronic transducer and disconnecting said solenoid from said power source to de-activate said solenoid when failing to receive said signal from said chemically sensitive electronic transducer.

4,944,046

COVER SHEET APPARATUS FOR TOILET SEAT

Phil-yool Huh, 1-5-8, Nakamachi, Musashino-shi, Tokyo, Japan, and Yoshihiro Sakurai, 2-4-10, Naki, Shinjuku-ku, Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 253,460
Claims priority, application Japan, Oct. 14, 1987, 62-257249
Int. Cl.[5] A47K *13/14*
U.S. Cl. 4—243 5 Claims



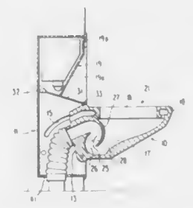
1. A cover sheet apparatus for a toilet seat comprising a case having one part thereof arranged to be opened and closed for containing a stack of cover sheets, a fixed member, and an outlet at its lower front portion, said one part of the case including a movable member comprising a top portion having an arch shape in longitudinal section, a front plate having a lower portion with a cutaway portion extending along the widthwise direction, and left and right outer side plates, said case being mounted upright on a rear portion of a toilet, said stack of cover sheets comprising a plurality of cover sheets folded and stacked in a depth direction with a front-positioned cover sheet and a rear-positioned cover sheet in engagement with each other whereby when the front-positioned cover sheet is pulled and taken out of the case through the outlet, the next rear-positioned cover sheet is automatically pulled out through the outlet, a pushing means in said case for resiliently pushing the stack of cover sheets forward at all times, and a pair of horizontal, parallel rotary shafts rotatably mounted in said case forwardly of said pushing means and in engagement with said front-positioned cover sheet so as to ease pulling out of said front-positioned cover sheet.

4,944,047

ROTATING HIDEAWAY SANITARY FIXTURE

Vitaliano Gagliano, Passignano Sul Trasimeno, Italy, assignor to A. T. Avanzata Tecnologia S.R.L., Italy

PCT No. PCT/EP87/00406, § 371 Date Mar. 22, 1989, § 102(e) Date Mar. 22, 1989, PCT Pub. No. WO88/00993, PCT Pub. Date Feb. 11, 1988
PCT Filed Jul. 28, 1987, Ser. No. 328,039
Claims priority, application Italy, Jul. 29, 1986, 22674/86[U]
Int. Cl.[5] E03D *11/12*
U.S. Cl. 4—312 12 Claims



1. A sanitary rotating fixture (**10**, **10***a*), rotatably mounted in a niche (**11**) adapted to be set in a structural wall on which the

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fixture is fitted, said niche defined by top, bottom, side and back walls and an open front wall, said fixture comprising a flush receptacle substantially triangular in shape when viewed from the side, with a rear wall (13, 13*a*), an upper portion (21, 21*a*), sidewalls (16, 16*a*) and a sloping bottom (17, 17*a*); said receptacle including flush means in communication therewith through said rear wall for flushing said receptacle; hinge means horizontally disposed between said niche side walls for permitting rotation of said receptacle into and out of said niche open front wall through an angle of less than 90° and preferably an angle of about 60°; and a plastic sheet (31) fixed along one edge thereof to a support (32) secured to the niche back wall and along an opposite edge thereof to a top rear edge (33) of the receptacle, said sheet extending between said niche side walls and being stretched tight when the receptacle is pulled out of said niche to conceal said flush means thereby preventing dirt accumulation thereon, and adapted to fold along the back wall of the niche when the receptacle is inserted in the niche.

4,944,048

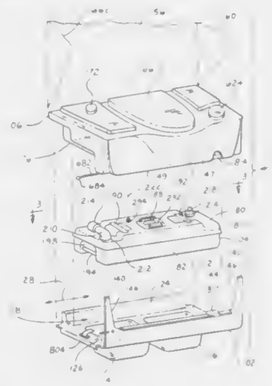
SELF-CONTAINED RV SANITARY SYSTEM

Charles L. Sargent, and John M. Antos, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 180,321, Apr. 11, 1988, abandoned, which is a division of Ser. No. 870,800, Jun. 5, 1986, Pat. No. 4,776,631. This application Oct. 25, 1989, Ser. No. 427,030

Int. Cl.[5] E03D *1/00*

U.S. Cl. 4—323 **38 Claims**



1. In a toilet system having a seat section and a tank for water which is used with said seat section, said seat section being supported independently of said tank, the improvement comprising a base which is fixed in a position below said seat section and upon which said tank is supported for separational movement with respect to said seat section from a united position in which said seat section is in fluid communication with said tank enabling water from said seat section to enter said tank to a separated position away from said seat section, said seat section having a lower outlet opening through which said water is discharged from said seat section and said tank having an inlet opening through which said water enters said tank, said seat section outlet opening and said tank inlet opening being vertically aligned with one another in said united position when said tank is in fluid communication with said seat section, retention means for constraining said tank in said united position so as to prevent unintended movement of said tank with respect to said seat section, a valve disposed on said tank which is moveable between positions opening and closing the tank opening, said valve, when in position opening said tank opening, enabling water from said seat section to enter said tank and, when in position closing said tank opening, said valve sealing the contents of said tank within said tank, an operator accessible from said seat section for operating the valve on the tank and coupling means extending from said operator to said valve whereby said valve can be selectively opened by a toilet system user when the tank is in said united position and can be closed when the tank is in said separated position to facilitate tank transport.

4,944,049

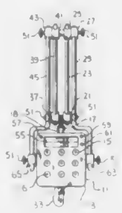
ADJUSTABLE SHOWER HEAD AND CLOCK APPARATUS

Robert Leonard, 7072 Melrose Ave., Apt. A, Buena Park, Calif. 90621

Filed Mar. 6, 1989, Ser. No. 319,099

Int. Cl.[5] B05B *1/00*

U.S. Cl. 4—597 **19 Claims**



1. An improved shower apparatus comprising:

support means for supporting said shower apparatus by a threaded connection to a water pipe;

positioning means, attached to said support means, for multiple positioning of said shower apparatus;

nozzle means for providing a liquid flow pattern;

housing means, pivotally attached to said positioning means, for orientationally supporting said nozzle means;

flow means, connected between said support means and said housing means, for facilitating liquid flow from said support means to said housing means; and, an electronic clock mounted in said housing means.

4,944,050

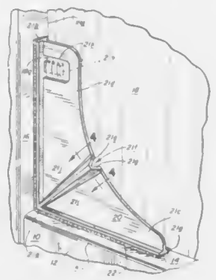
COMBINED SHOWER SPLASH GUARD AND SHOWER CURTAIN HOLDER

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed May 26, 1989, Ser. No. 357,125

Int. Cl.[5] A47K *3/22*

U.S. Cl. 4—609 **5 Claims**



1. For use with the existing combination of a shower-equipped tub for a bathroom, in which a person who is showering stands while showering, and where one end of said tub is located adjacent to a generally upright end wall that at least partially bounds the region above the tub; the tub providing a

horizontal upper edge positioned in a substantially vertical plane, and with a flexible shower curtain being provided, suspended from a support spaced above the tub, with said curtain's lowermost end extending downwardly to enter into the confines of the tub, and functioning to limit water splash within the tub from migrating to a region outwardly of the tub;

the improvement of providing a shower splash guard member for limiting water splash from migrating outwardly of the tub to be deposited onto a bathroom floor surface that is located adjacent the tub;

said splash guard member comprising, in combination, a unitary shower splash guard member, that is molded of plastic and is constructed to provide a pair of orthogonally arranged mounting legs that are joined together by a web which is formed integral with, and which extends between, said mounting legs; a first of said mounting legs being adapted to overlie a portion of a horizontal upper edge of the tub wall that is spaced above a bathroom's floor; said splash guard member providing a second mounting leg that projects upwardly relative to said first mounting leg and which is positioned to lie adjacent to, and being adapted to be secured to, said upright end wall;

an opening being provided extending through said web, and being located adjacent to said second mounting leg; a tongue extending from said second mounting leg in a direction away from the second mounting leg and projecting into said opening that extends through said web, said tongue and said opening into which the tongue projects cooperating to provide a means for gripping a portion of a shower curtain, by friction developed between the tongue and the shower curtain and between the web and shower curtain and being operative to hold the shower curtain in a selected position against the web of the splash guard member and against the tongue of the splash guard member.

4,944,051

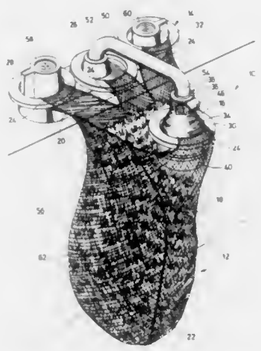
VEGETABLE WASHING ATTACHMENT FOR WATER FAUCETS

Mildred Porter, 2209 East 28th St., Kansas City, Mo. 64109

Filed Dec. 11, 1989, Ser. No. 448,539

Int. Cl.[5] B08B *3/02*

U.S. Cl. 4—638 **4 Claims**



1. A food washing attachment for washing food in a sink with two taps and a faucet having a ledge end and a nozzle end, the washing attachment comprising:

a porous, flexible bag having an upper, open end and a pliant, net-like weave;

at least four rings substantially evenly circumferentially spaced about and operatively coupled with said open end of said bag; and

sprinkler means including a sprinkler member having a connection end, adapted to mate externally with the nozzle end of the faucet, and a lower end including an apertured face for converting a falling stream of liquid into a shower of droplets, said lower end having a greater outer diameter than the inner diameter of said rings, said sprinkler means further including such that when the first of said rings is received on said nozzle end and then slid the length of said faucet to said ledge end, and the second and fourth of said rings are hung on either tap, the third of said rings is selectively placed on the nozzle end, the connection end of said sprinkler member is secured on the nozzle end by said fastening means, and the third of said rings is thus supported by the outer diameter of said lower end of said sprinkler member, so that when food is placed in said bag and the taps are turned on, the food receives a shower of droplets thereon.

4,944,052

PUBLIC SANITARY CUBICLE

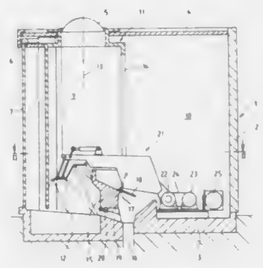
Hans Wall, St. Barbara Strasse 52, D-7517 Waldbronn, Fed. Rep. of Germany

Filed Jul. 28, 1989, Ser. No. 386,127

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1988, 3826847

Int. Cl.[5] E03D *9/00*; A47K *17/00*

U.S. Cl. 4—662 **33 Claims**



1. Public sanitary cubicle comprising a sanitary room, a drain means provided in the sanitary room, a floor means provided in the sanitary room and inclined towards said drain means, a water closet disposed in the sanitary room, door means for providing access to the sanitary room, a technical room subdivided by a partition means and being adapted to accommodate means for supplying, disposal and cleaning of the sanitary room including cleaning means adapted to be brought up to the water closet by a support arm means after moving at least a portion of the partition means, a plurality of spray nozzle means disposed on said support arm means and connected to a pressure water source, wherein at least two of said plurality of spray nozzle means are directed from above in different angular positions onto the water closet, and at least two other spray nozzle means of said plurality of spray nozzle means are directed at least onto the floor means of the sanitary room.

4,944,053

FABRIC DEVICE IN COMBINATION WITH A BED, RESTING SURFACE OR EXAMINING TABLE FOR FACILITATING USER TURNING AND PATIENT EXAMINATIONS

Mary E. Smith, 180 Arlington Ave., Hawthorne, N.J. 07506

Continuation-in-part of Ser. No. 94,331, Sep. 8, 1987, abandoned. This application Aug. 10, 1989, Ser. No. 392,191

Int. Cl.[5] A61G *7/10*

U.S. Cl. 5—61 **10 Claims**

2. In combination with a bed, resting surface, or the like

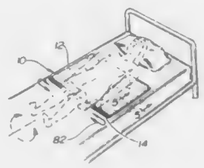
VOL 1116 ISS 5 JL 31 1990 UMI

having a top surface, a combined fabric device useful in facilitating the movement of a person's body while lying on said combined fabric device disposed on said top surface comprising:

(a) a first fabric made from a non-woven, paper thin, soft, pliable, compactable, porous material, said material being permeable to air and water and moisture absorbent, said material characterized in that it is non-irritating to the person's skin after laying on same for a prolonged period of time;

(b) a second fabric made from a material which is relatively frictionless such that it moves relatively easily on itself;

(c) means fixedly securing said first fabric to said second fabric to form a first subassembly having a first and second end; and



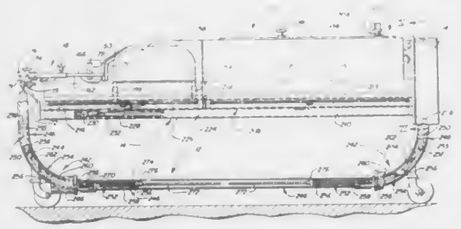
(d) means connecting said first end to said second end to form a closed loop of said first subassembly such that said second fabric is on the interior side of said closed loop whereupon it can slide on itself, said closed loop of said first subassembly having a width approximately equal to the width of the bed and having a length approximately extending the distance between the person's mid-back and thighs, said fabric device when interposed between a person and said top surface upon which he reclines and when disposed between that person's thighs and mid-back facilitating that person's ability to turn and move under his own power without the aid of a second person, the person's comfort not disturbed by laying thereon for a prolonged period of time, even though the fabric device may be bunched beneath him, due in part to the non-woven, paper thin, soft, pliable, porous, air and water permeable, moisture absorbent material comprising said first fabric.

4,944,054

THERAPEUTIC TABLE

Clayton E. Bossert, Aurora, Ill., assignor to Thomas J. Ring, Palos Heights, Ill.

Filed Jan. 29, 1988, Ser. No. 149,432
Int. Cl.[5] A61H *1/00*
U.S. Cl. 5—61 **12 Claims**



1. In a therapeutic table having a frame and a patient support rotably mounted to the frame, a motor for providing power to rotate the patient support relative to the frame, an improved drive control assembly, comprising:

means for disengaging the motor from the patient support to remove rotary power therefrom and stop movement of the patient support;

means, for locking the patient support in a horizontal position when actuated; and

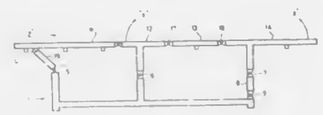
means associated with the disengaging means for automatically actuating the locking means when the motor is disengaged.

4,944,055

BED WHICH IS CONVERTIBLE INTO EASY CHAIR

Oded Shainfeld, 20 Rehov Kehilat Budapest, Tel Aviv, Israel

Filed Jan. 9, 1989, Ser. No. 294,357
Claims priority, application Israel, Feb. 17, 1988, 85442
Int. Cl.[5] A61G *7/05*
U.S. Cl. 5—68 **2 Claims**



1. A piece of furniture comprising:

a chassis (1) having first, second and third spaced apart contact portions;

a first arm (19) pivotally mounted to said first contact portion at a first hinge (5);

a second arm (8) having one end pivotally mounted to said third contact portion at a second hinge (9), said second arm having an opposite end;

a upper-structure connected at a plurality of hinges to said first and second arms and to said second contact portion, said upper-structure comprising a back support (14) having opposite ends, said back support having a T-shaped elevation with a cross piece for supporting a mattress and a post rigidly connected to said cross piece, said post of said back support being pivotally connected directly to said opposite end of second arm at a third hinge (7) located intermediate said opposite ends of said back support, and said back support being connected to said chassis only by said third hinge, a seat (13) having one end connected only at a fourth hinge (18) to one end of said back support, said seat having an opposite end, a first leg support (12) having one end connected only at a fifth hinge (17) to said opposite end of said seat, said first leg support having an opposite end and having a T-shaped elevation with a cross piece for supporting a mattress and a post rigidly connected to said cross piece of said first leg support, said post of said first leg support being directly pivotally connected at a sixth hinge (6) to said second contact portion and at an intermediate location on said first leg support between said one end and said opposite end of said first leg support, said seat being connected only to said back support and said first leg support, and a second leg support (11) having one end pivotally connected at a seventh hinge to said opposite end of said first leg support, said second leg support having an opposite end and being pivotally connected to said first arm at an eighth hinge (10) and at a location intermediate said one end and said opposite end of said second leg support; and

at least some of said hinges being lockable for locking a relative position between said first and second arms and between said back support, said seat, and said first and second leg supports;

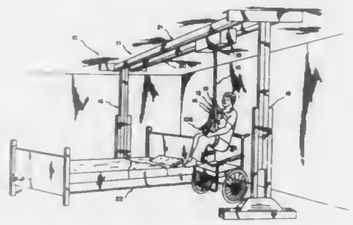
said back support, said seat, and said first and second leg supports each comprising a frame defining a concave space for receiving a single mattress spanning said back support, said seat, and said first and second leg supports, each of said fourth, fifth and seventh hinges being connected at upper edges of said frames forming said respective back support, seat and first and second leg supports.

4,944,056

METHOD AND APPARATUS FOR TRANSPORTING A DISABLED PERSON

Roger A. Schroeder, Tonawanda, N.Y.; Robert H. Broyden, Bristol, Va.; Robert C. Dearstyne, Amherst, N.Y.; Joseph L. Magner, Piney Flats, Tenn.; Randall J. Gephart; David W. Dayton, both of Abingdon, Va., and Raymond A. Newman, Cheektowaga, N.Y., assignors to The Research Foundation of State University of NY, Albany, N.Y.

Filed Sep. 28, 1988, Ser. No. 250,335
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—81 R **23 Claims**



9. Apparatus for transporting a disabled person in a carrying means, comprising:

support means adapted to engage both a ceiling and a floor;

hoist means secured to said support means for raising and lowering the carrying means; and

safety means to sense a malfunction in said hoist means, and to provide a controlled rate of descent of said hoist in response to said malfunction.

4,944,057

PATIENT SUPPORT AND LIFTING DEVICE

Karen Shaw, R.D. #2, Oxford, N.Y. 13830

Filed Sep. 28, 1989, Ser. No. 413,709
Int. Cl.[5] A61G *1/00*
U.S. Cl. 5—89 **8 Claims**



1. A sling-type device for assisting an individual in lifting a handicapped or infirm person from a seated position on a first supporting surface and transferring the person to a sitting position on a second supporting surface, said device comprising:

(a) a main body portion of flexible material having front, rear and right and left side edges;

(b) said material being folded inwardly to form a double layer, and attached to itself in marginal portions along each of said right and left side edges;

(c) a first pair of longitudinally elongated and spaced pockets, each open at both ends, in said double layer, marginal portions along said right side edge;

(d) a second pair of longitudinally elongated and spaced pockets, each open at both ends, in said double layers marginal portions along said left side edge; and

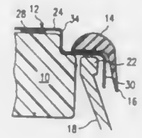
(e) first and second elongated, continuous loops of flexible material respectively passing through said first and second pair of pockets, whereby portions of each of said loops are accessible in a space between said longitudinally spaced pockets, said loops providing strap-type handle means adjacent each of said side edges for selective use either in the full length of said loops or in shortened length by drawing said portions of each of said loops through said pockets and doubling said loops upon themselves.

4,944,058

INTEGRATED MATTRESS AND FLUSH COMMODE

Monte Carnahan, and Gayle A. Carnahan, both of 100 W. Cedar, Wilburton, Okla. 74578

Filed Nov. 20, 1989, Ser. No. 439,849
Int. Cl.[5] A61G *7/02*
U.S. Cl. 5—90 **12 Claims**



1. A bed with an integrated flush commode, comprising:

a mattress and bed frame with a hole disposed therethrough to receive the upper portion of the flush commode such that the upper surface of the flush commode is proximate to the same plane as the upper surface of the mattress, the hole approximately the same size as the outer peripheral edge of the flush commode on the upper end thereof;

a sanitary insert disposed about the upper lip of the bowl of the flush commode, said sanitary insert having:

a flat surface disposed on the surface of said mattress and about the hole therein and extending from points distal to the rim of the flush commode bowl to the interior of the rear edge of the flush commode bowl,

a downwardly extending surface being cylindrical in shape and extending from the interior edge of the rim of the flush commode bowl and downward into the flush commode bowl on the interior surface thereof, and

means for attaching said flat surface to the surface of said bed on the outer peripheral edges of the flat surface; and

a commode seat configured to fit over the rim of the flush commode bowl and overlying the portion of said sanitary insert disposed over the rim of the flush commode bowl; and

a splash guard configured as a cylindrically shaped semi-rigid surface having the peripheral edges on one end thereof attached to the inner peripheral edge of said commode seat, the surface of said splash guard extending downward into said flush commode bowl.

4,944,059

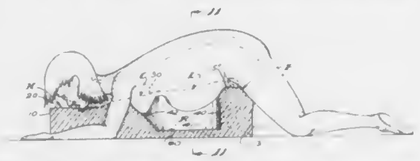
PRENATAL BODY SUPPORT

Carole Wall, Lake Arrowhead, Calif., assignor to Abby Brooks Corporation, Lake Arrowhead, Calif.

Filed Sep. 27, 1989, Ser. No. 413,999
Int. Cl.[5] A47C *27/00, 27/08*
U.S. Cl. 5—431 **15 Claims**

1. A prenatal body support adapted to support a pregnant female in a prone position with her lower back arched upwardly, with the head and knees supported in a lowered position relative to her lower back, said support comprising an elongate, soft, resilient load supporting body with longitudinally spaced front and rear ends, laterally spaced outer sides, a flat downwardly disposed bottom and an upwardly disposed top surface, the top surface having an upper rear pelvic support portion extending longitudinally and transverse the rear end portion of the body, a forward head support portion ex-

tending longitudinally and transversely of the front end portion of the body on a plane spaced below the plane of said pelvic support portion, a pair of laterally spaced longitudinally extending lateral-anterior abdominal support portions extending forward from said pelvic support portion, a longitudinally



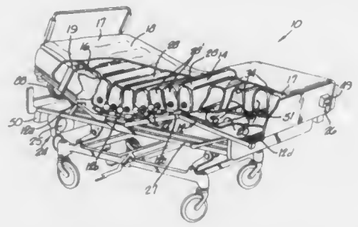
and transversely extending chest support portion between said head support portion and said abdominal support portions, and an upwardly opening abdomen receiving recess, the open top of said recess being defined by said pelvic, chest and abdomen support portions.

4,944,060

MATTRESS ASSEMBLY FOR THE PREVENTION AND TREATMENT OF DECUBITUS ULCERS

John R. Peery, 2170 Princeton St., Palo Alto, Calif. 94306; Michael N. Gold, 6222 Mammoth Ave., Van Nuys, Calif. 91401; Saadia M. Schorr, 3390 Vista Haven Rd., Sherman Oaks, Calif. 91403, and Jack Gorby, 525 N. Bellagio Ter., Los Angeles, Calif. 90049

Filed Mar. 3, 1989, Ser. No. 318,733
Int. Cl.[5] A47C *7/057, 27/10*
U.S. Cl. 5—453 **45 Claims**



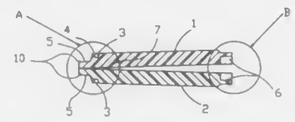
1. A mattress assembly for the treatment and prevention decubitus ulcers and for the treatment of other conditions of the skin and/or underlying tissue, said assembly comprising: a mattress core defining a plurality of discrete, air permeable air cells; a pair of lateral bolsters disposed adjacent opposite sides of said mattress core; a top sheet disposed over said core and said bolsters for defining a planar support surface for a person resting thereon, said sheet being formed of a blend of elastomeric and water wicking fibers to render said sheet air and liquid permeable, highly elastic, of low friction, and water wicking so as to conform readily to the irregularities in the topography of the body of a person resting thereon without wrinkling, and draw moisture away from the skin; air supply means for providing air flow to and through said cells and said sheet to inflate said cells for supporting a person thereon and maintaining the skin of a person thereon in a properly hydrated condition; and means for controlling the air pressure within said cells to maintain the contact pressure of the mattress assembly against the skin of a person thereon at a desired level.

4,944,061

TOOL FOR UNCOUPLING INTERLOCKING BLOCKS

Daniel A. Woodward, 807 Briarwood Dr., West Palm Beach, Fla. 33415

Filed Jan. 24, 1990, Ser. No. 469,341
Int. Cl.[5] B24F *1/00*
U.S. Cl. 7—170 **9 Claims**



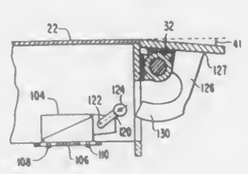
1. A tool for uncoupling interlocking blocks, comprising:
two elongate members, each member forming half of a tool;
a semicylindrical recess formed at one end of each member and a semicylindrical extension formed at the other end of each member;
pivotal means pivotally connecting the two members in apposition, intermediate said ends, the recesses and the extensions being in apposition to form a cylindrical recess at the one end of the tool and a cylindrical extension at the other end of the tool, said pivotal means forming a small clearance between the two members;
retaining means resiliently holding the two members in apposition, the retaining means being positioned between the pivotal means and the cylindrical extension.

4,944,062

DOCK LEVELER CONTROL SYSTEM

Edward T. Walker, Little Rock, Ark., assignor to Dock Leveler Manufacturing, Inc., Malvern, Ark.

Filed Dec. 15, 1987, Ser. No. 133,081
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—71.3 **18 Claims**



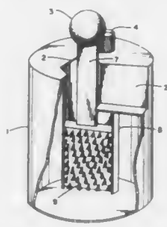
1. A dock leveler for bridging a gap between a loading dock platform and a carrier bed, comprising:
a frame having a first end to be disposed adjacent a loading dock platform and a second opposite end spaced outwardly from said first end;
a main deck having first and second opposite edges, said first edge pivotably connected to said first end of said frame for pivoting said main deck relative to the plane of the loading dock platform for positioning said second edge of said main deck at a selected height relative to the loading dock platform;
a lip member having first and second opposite edges, said first edge of said lip member pivotably connected to said second edge of said main deck for pivoting said lip member between a first angular position relative to said main deck for engaging the carrier bed, second angular position relative to said main deck, and a third angular position relative to said main deck for supporting said main deck at a selected level relative to the loading dock platform, said second angular position being intermediate said first and third angular positions;
hydraulic operating means for pivotably positioning said main deck relative to the loading dock platform and for pivoting said lip member between said first and third angular positions; and
a control system including switch means responsive to the position of said lip member for activating said operating means to pivot said main deck and to move said lip member to said third angular position, and for de-activating said operating means when said lip member is in said third angular position for supporting the second edge of the main deck at a selected level relative to the adjacent loading dock platform;
said switch means including a switch operable to a first condition for activating the hydraulic operating means and operable to a second condition for de-activating said hydraulic operating means; and wherein the control system further includes cam means configured for moving said switch to said first condition upon the pivoting of said lip member from said first angular position to said second angular position and for moving said switch to said second condition when said lip member is in said third angular position.

4,944,063

GOLF CLUB WASHER

Johnny Jordan, 1004 S. Eric, Monahans, Tex. 79756

Filed May 1, 1989, Ser. No. 306,918
Int. Cl.[5] A63B *57/00*
U.S. Cl. 15—104.92 **4 Claims**



1. Apparatus for washing the face of a golf club comprising an upwardly opening container for holding a solution of water and soap;
a closure member for said container, a slot opening where an iron golf club is held in captured relationship respective to said container, a wash brush having a handle opposed to a brush, means reciprocatingly mounting said wash brush within the container with the brush contacting the face of the golf club and the brush handle extending from the top of the container;
whereby a golf club can be placed in said slot with the golf club face contacting the brush, the brush is reciprocated to wash the golf club face.

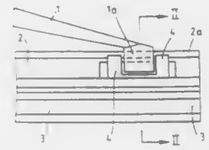
4,944,064

WIPER BLADE WITH RETENTION MEANS

Jose Verton, Saint-Vincent, Belgium, assignor to Champion Spark Plug Europe S.A., Belgium

Filed Dec. 21, 1988, Ser. No. 288,286
Claims priority, application United Kingdom, Feb. 1, 1988, 8802154
Int. Cl.[5] B60S *1/38*
U.S. Cl. 15—250.42 **9 Claims**

1. A wiper blade for motor vehicles or the like comprising a superstructure (1) provided with at least one claw (1*a*) capable of gripping a longitudinally extending pressure distributing rod (2), a wiping element (3) partially located in the pressure distributing rod (2) and retention means (4) capable of retaining the claw (1*a*) of the superstructure (1) of the wiper blade on the pressure distributing rod (2) and on the wiping element (3), characterized in that:
(a) the pressure distributing rod (2) is locally provided, on its bottom portion, with one single longitudinally extending recess (2*b*),
(b) the wiping element (3) is locally provided, on its top portion, with a longitudinally extending recess (3*b*) having substantially the same dimensions as the recess (2*b*) in the pressure distributing rod (2),
(c) said two recesses (2*b*, 3*b*) define one single transverse opening (5) in the assembly pressure distributing rod/writing element (2, 3),



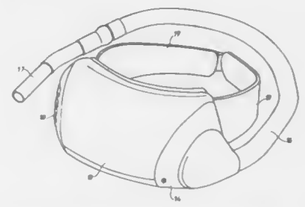
(d) said single transverse opening (5) extends longitudinally through the claw (1*a*) of said superstructure (1),
(e) the retention means (4) is located in said single transverse opening and has the form of a substantially rectangular element capable of embracing separately each of the two legs of the claw (1*a*) of the superstructure (1), and
(f) said substantially rectangular retention means (4) located in said single transverse opening is provided on each lateral side of the pressure distributing rod (2) with at least one upwardly projecting stop means (4*b*).

4,944,065

SUCTION CLEANER

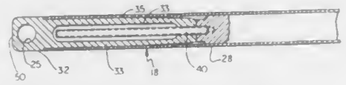
Joakim A. Svanberg, Johanneshov; Lars G. Kilstrom, Täby; Lars G. Tuvin, Knivsta, and Anders E. C. Larsson, Stockholm, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Aug. 28, 1989, Ser. No. 399,315
Claims priority, application Sweden, Sep. 27, 1988, 8803420
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—327 C **3 Claims**



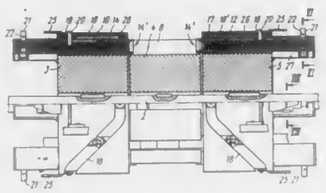
1. Suction cleaner comprising a housing (10) with a filter bag (11) and a suction fan (12) driven by a motor (13), wherein the housing (10) is provided with a carrier belt (19) adapted to be applied around the waist or hips of the user, and that the housing (10) comprises a concave supporting surface (20) adapted to conform to the figure of the user.

4,944,066
ADJUSTABLE CLOSER ARM
Zakhary Fayngersh, West Hartford; Ronald S. Slusarski, Berlin, and Richard W. Schumacher, Newington, all of Conn., assignors to Emhart Industries, Inc., Towson, Md.
Filed Feb. 14, 1989, Ser. No. 310,799
Int. Cl.[5] E05F *1/00*
U.S. Cl. 16—49 6 Claims



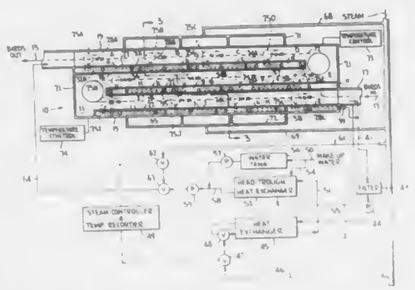
1. An arm for a door closer having a shaft rotatable about a first axis, said arm comprising:
a first arm member having a first end connected to said shaft and rotatable therewith;
a second arm member having a first end pivotably connected to a second end of the first arm member and a second end pivotably connected to a mounting bracket, said second arm member comprising:
an open ended axially movable housing member having radially inwardly extending detent means,
clamp means fully contained within said housing member and having a first end forming the first end of said second arm member and a second end forming radially expandable jaws, said housing detent means when in a first axial position maintains the jaws in a closed position and when in a second axial position permits the jaws to radially expand while fully contained within said housing member,
a link having a first end forming the second end of said second arm member and a second end, and
a joining member connected to the second end of said link and extending towards said clamp means, said joining means being held in a fixed position by said jaws when the jaws are closed and being axially movable relative to said clamp means when the jaws are radially expanded.

4,944,067
APPARATUS FOR BONING HAMS OF POULTRY CARCASSES
Boris V. Kulishev, Solnechnogorsky raion, p/o Rzhavki, 16, kv. 83; Yakov M. Petlakh, Solnechnogorsky raion, p/o Rzhavki, 16, kv. 98, and Boris V. Elizarov, Klinsky raion, p/o Vozdvizhenskoe, 5, kv. 44, all of, Moskovskaya oblast, U.S.S.R.
Filed Jan. 31, 1989, Ser. No. 304,229
Claims priority, application U.S.S.R., Oct. 3, 1988, 4485536[1]
Int. Cl.[5] A22C *21/00*
U.S. Cl. 17—11 7 Claims



1. Apparatus for boning hams of poultry carcasses, comprising:
means for engaging a ham, said means being made in the form of at least a pair of coaxially positioned first and second cylinders having interior spaces for receiving ham bones and a loading trough partly surrounding said cylinders when said cylinders are in a ham processing zone;
said cylinders being mounted for relative reciprocation; and
a cutting tool, said cutting tool comprising a hollow cylinder having an end cutting edge and coaxially mounted on one of said first and second cylinders for reciprocation in the trough with respect to said first and second cylinders.

4,944,068
POULTRY SCALDER, SCALDING SYSTEM AND PROCESS
Edward H. Covell, III, 919 Riverside Dr., Salisbury, Md. 21801
Filed Oct. 27, 1989, Ser. No. 427,484
Int. Cl.[5] A22C *21/04*
U.S. Cl. 17—11.2 23 Claims

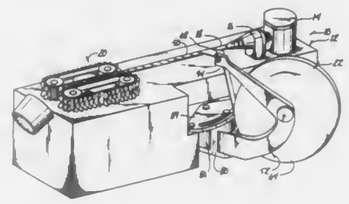


1. A poultry scalding system comprising, an open immersion tank adapted to contain scalding liquid at a predetermined scald temperature, conveyor means positioned above said, tank for moving poultry in one direction through said tank from an entrance station, through at least one intermediate station and to an exit station at said tank while the poultry is immersed in the liquid as the poultry hangs by the legs from said conveyor means, liquid recirculating means connected to said tank for recirculating the liquid in a direction opposite said one direction during operation of said conveyor means by removing the liquid at said entrance station and returning a quantity of liquid to said tank at said exit station, means for replenishing any loss of liquid from said tank, said recirculating means including means external to said tank for counterflowing the liquid in stages from said exit station through said intermediate station and to said entrance station in said opposite direction, means for filtering the liquid removed at said entrance location, and means for heating the replenished liquid to said scalding temperature before being returned to said tank.

4,944,069
ENCASED PRODUCT AND METHOD AND APPARATUS FOR ENCASING SAME
Ray T. Townsend, Des Moines; David W. Smith, West Des Moines, and Robert M. Dykes, Urbandale, all of Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed Apr. 28, 1988, Ser. No. 187,351
Int. Cl.[5] A22C *21/00*
U.S. Cl. 17—49 5 Claims

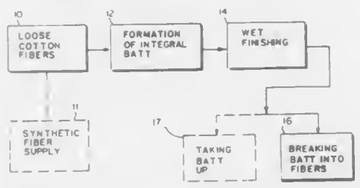
1. An apparatus for encasing a plastic product, comprising:
a support;
an elongated casing strip having opposite side edges;
first means on said support for forming said strip into a plurality of helical revolutions with said side edge of said strip within each one of said helical revolutions frictionally engaging and overlapping said side edges of said strip within those of said helical revolutions adjacent said one helical revolution so as to form an elongated tubular casing;
second means on said support for introducing said plastic product into said casing,
said overlapped edges of said casing strip being sufficiently

damp from the presence of water-based moisture and being sufficiently overlapped to create enough frictional



cohesiveness to maintain said helical revolutions in a self-contained tubular casing to contain said plastic product.

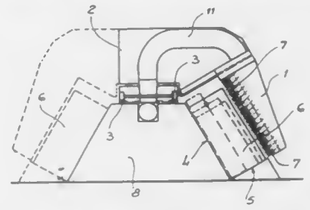
4,944,070
CONTINUOUS COTTON WET FINISHING
Lawrence Girard, and E. Walter Meyer, both of Greenville, S.C., assignors to Greenville Machinery Corporation, Greer, S.C.
Filed Mar. 23, 1989, Ser. No. 327,601
Int. Cl.[5] D06B *1/00, 3/00*
U.S. Cl. 19—66 CC 20 Claims



1. A method of wet finishing cotton fibers, comprising the steps of continuously, sequentially:
(a) forming a plurality of loose cotton fibers into an integral batt composed at least primarily of cotton fibers, having sufficient integrity to withstand further wet processing, yet remaining easily transformed back into loose fibers;
(b) wet finishing the integral batt including washing thereof; and
(c) breaking the integral batt back into wet-finished loose cotton fibers.

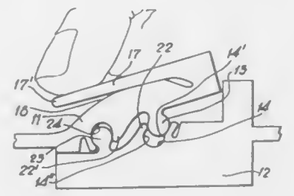
4,944,071
TEXTILE FIBRE BALE BREAKER
Pietro B. Marzoli, and Mario Mascheretti, both of Via Durante, 1, Palazzolo sull'Oglio (BS), Italy
Filed Oct. 25, 1989, Ser. No. 426,785
Claims priority, application Italy, Jun. 1, 1989, 20724 A/89
Int. Cl.[5] D01G *7/12*
U.S. Cl. 19—80 R 5 Claims

1. A bale breaker so designed and arranged as to remove textile fibres from a textile fibre bale in a direction perpendicular to laps of said bale, said bale breaker comprising a movable carriage sliding along a bearing frame of trapezoidal cross-section and supporting a plurality of slanted bales, said movable carriage being driven for moving along outer faces of said



bales and carrying a fibre removing carriage having a longitudinal axis which is perpendicular to said bale laps.

4,944,072
PROFILED FASTENERS
Peter M. Robson, Les Anguettes, Clos du Port, La Rocque, Grouville, Jersey C.I, Great Britain
Filed Jun. 20, 1989, Ser. No. 368,775
Claims priority, application United Kingdom, Jun. 25, 1988, 8815164; Nov. 8, 1988, 8826131
Int. Cl.[5] B65D *33/16*
U.S. Cl. 24—587 23 Claims



1. A profiled bead and recess fastener comprising mating, complementary parts of which one part has a recess and the other part has a bead which engages in the recess to maintain the fastener closed against tension forces so directed as to tend to separate the two parts, the recess having in cross section, an entrance for the bead, which is smaller in cross section than the bead cross section whereby to retain the bead in the recess, the cross section of said entrance being adjustable by local elastic deformation to permit the bead to enter or leave the recess laterally, such local deformation to permit the bead to leave the recess being caused by flexure of one side of the recess by the bead whilst the bead comes out of contact with the other side of the recess without applying tension forces between the two parts.

4,944,073
PLUG FASTENER
Reinhold Haug, Königsbach-Stein, Fed. Rep. of Germany, assignor to J. Kohle GmbH & Co. KG, Pforzheim, Fed. Rep. of Germany
Filed Nov. 15, 1989, Ser. No. 437,849
Int. Cl.[5] A44B *13/00;* A44C *11/02*
U.S. Cl. 24—590 13 Claims

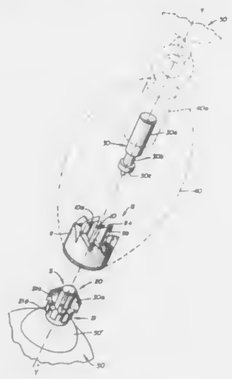
1. In a plug fastener for an ornamental band having two ends, comprising
a socket, which has a rear end and is adapted to be connected at said rear end to one end of said ornamental band and has an inside peripheral surface, which has an inner end axially spaced from said rear end of said socket and is formed with angularly spaced apart first axial grooves having a

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relatively large depth and with second axial grooves having a relatively small depth and disposed each between two adjacent ones of said first grooves, said socket being formed between said inner end of said inside peripheral surface and said rear end of said socket with an internal gear having teeth with taper toward said rear end of said socket and each of which has an inclined tooth face,

spring means, which are mounted in said socket between said inner end of said inside peripheral surfaces and said rear end of said socket and comprise an axially movable stem, which faces said gear, and spring means urging said stem toward said gear, and

a plug, which is adapted to be connected at one end to the other end of said ornamental band and which comprises a driving sleeve having a forward end, a central bore, which is open at said forward end, an outside peripheral surface formed with angularly spaced apart axial ribs, and at said forward end with angularly spaced apart teeth, each of which has an axially protruding crest, said plug also comprising a generally cylindrical head piece, which protrudes from said forward end of said sleeve and is rotatably mounted in said bore and is axially coupled to said sleeve with lost motion and has an outside peripheral surface formed with angularly spaced apart axial ribs having beveled rear end faces facing said sleeve,



wherein said plug is adapted to be inserted into said socket to move said ribs of said head piece through said first axial grooves and beyond said gear until said head piece is disposed between said gear and said stem and into axial engagement with said stem to axially depress the same,

said beveled rear faces of said ribs of said head piece are adapted to cooperate with said inclined tooth faces of said gear and with said teeth of said sleeve to impart a rotation to said head piece,

said head piece is adapted to assume in said socket between said gear and said stem at least one first angular position, in which said ribs of said head piece are axially aligned with said first axial grooves, and at least one second angular position, in which said ribs of said head piece are axially aligned with said second axial grooves,

the depth of said first axial grooves is sufficient to permit said ribs of said sleeve and said ribs of said head piece to axially enter said first axial grooves,

the depth of said second axial grooves is sufficient to permit said ribs of said sleeve to axially enter said second axial grooves and is insufficient to permit said ribs of said head piece to axially enter said second axial grooves, and

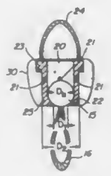
stop means are provided for limiting the movement of said plug in said socket toward said rear end of said socket in a position in which said stem is axially depressed by said head piece.

4,944,074

PRESET RESTRAINING DEVICE

David M. Bullat, Carlsbad, and Willie L. Thomas, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1989, Ser. No. 327,856
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—602 **3 Claims**



1. An apparatus for releasing a member thereof when subjected to a predetermined tensile force comprising:

a round-shaped member and

a retaining member fabricated from a flexible material and having a cylindrical shell-shaped housing provided with an axial bore sized to slidable receive said round-shaped member therein, a lip radially extending inwardly in said axial bore at one end of said cylindrical shell-shaped housing being sized to retain said round-shaped member therein and at least one slit extending part of the length of said cylindrical shell-shaped housing, said at least one slit permitting flexure of a portion of said cylindrical shell-shaped housing to bend and remove said lip out of said axial bore to thereby release said round-shaped member when said predetermined tensile force is exerted between said round-shaped member and said retaining member, said round-shaped member is a rigid ball having an interconnected loop and said cylindrical shell-shaped housing of said retaining member is further provided with a U-shaped member and is provided with a plurality of slits each parallel with one another and each partially extending the length of said cylindrical shell-shaped housing, in which the materials, numbers of slits and dimensions of said cylindrical shell-shaped housing are chosen to assure the proper selective said predetermined tensile force in accordance with the relationships:

$$I=R_2t(a+\sin a^{\circ}\cos a^{\circ})=2\sin^2 a^{o}$$

$$P=3EI\Delta x/L_1{}^3$$

$$\Delta_x=(D_b-D_t)/2$$

where:

E=modulus of Elasticity of the cylindrical housing, I=moment of Inertia, Δ_x=maximum deflection, L_1=length of slit, $\alpha=\frac{1}{2}$ angle in radians between slits, $\alpha^{\circ}=\frac{1}{2}$ angle the radial angle between slits expressed in degrees, P=load on each leg (total load at release divided by number of legs), $R_2=D_{2/2}$, t=thickness of cylindrical housing wall, D_b=diameter of ball, D_t=minimum cylindrical housing diameter and D_2=outside cylindrical housing diameter.

4,944,075

DETRIMENTAL-SUBSTANCE-CONTAINING THEFT-DETERRENT DEVICE

Dennis L. Hogan, St. Petersburg, Fla., assignor to Security Tag Systems, Inc., St. Petersburg, Fla.

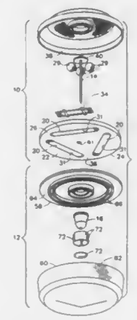
Filed Sep. 18, 1989, Ser. No. 408,618
Int. Cl.[5] A44B *9/00*
U.S. Cl. 24—704.1 **13 Claims**

1. A device for deterring theft of a protected article, comprising

means for attaching the device to the article, with said attaching means being embodied in two components that are adapted to be locked together on opposite sides of a portion of said article to prevent unauthorized removal of the device from the article, wherein the attaching means include a pin having a head that is anchored within one component and a clutch contained in the other component for grasping the pin to provide a predetermined retaining force for resisting separation of the components by prying or pulling the components apart;

wherein said one component includes at least one fragile elongated vial that fractures when at least a predetermined pressure is applied thereto, with said vial containing a detrimental substance that would damage the article if the vial were to be fractured while the device was attached to the article; and

wherein said one component defines a head space for enabling limited axial movement of the pinhead, and a guide



channel for containing a movable object between the pinhead and the vial; and

a movable object disposed in said guide channel, with said movable object exerting little or no pressure between the vial and the pinhead while the attaching means is in a relaxed state, which occurs when no force is being applied to separate the two components;

wherein the guide channel is contoured for enabling the pinhead to force the movable object to move and apply more than said predetermined pressure against the vial in response to the pinhead being moved in response to application to the two components of at least a predetermined threshold separation force that is nevertheless less than that required to overcome said predetermined retaining force, to thereby fracture the vial to release the substance contained therein before the components are separated by prying or pulling the components apart.

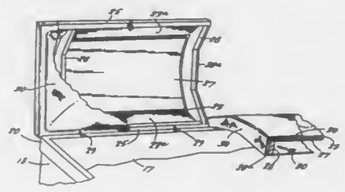
4,944,076

CORRUGATED FIBERBOARD CASKET LIDS

William M. Kay, Boyertown, Pa., and Bruce E. Elder, Royal Oak, Mich., assignors to Boyertown Casket Company, Boyertown, Pa. and Vandor Corporation, Rochester, Mich.

Continuation of Ser. No. 654,981, Sep. 27, 1984, abandoned. This application May 13, 1987, Ser. No. 54,129
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—14 **4 Claims**

1. A lid for closure of the base or shell of a casket, the principal closure area of the lid consisting of first and second laminated corrugated fiberboard layers, the first of said laminated fiberboard layers being formed as a unitary panel, extending substantially throughout the length and width of the lid from a flat sheet of single-wall fiberboard and comprising an elongated central area and bevelled edge portions at both the side and end edges of the lid, said unitary panel consisting of a single corrugated sheet with an uncorrugated sheet at each side of the corrugated sheet, the axes of the corrugations of said single corrugated sheet being extended transversely of the longitudinal axis of the lid, said unitary panel further having its central region progressively increased in height both laterally and longitudinally thereby providing a central domed area between the bevelled edges both laterally and longitudinally of the lid, frame structure connected with said unitary panel on the inner side thereof, the frame structure including a plurality of longitudinally spaced transversely extending bridges each having inclined portions engaged with the bevelled side edge portions of the lid and each further having an upwardly curved surface engaged with the central domed area of the lid, and the frame structure including marginal framing elements interconnected with the side and end edges of said unitary panel, the transversely extending bridges being formed of multiple wall corrugated fiberboard having a plurality of corrugated sheets



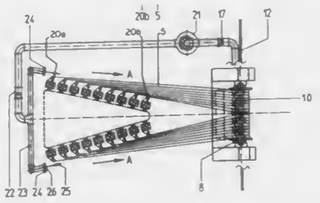
each having planar sheets at each side of each corrugated sheet and with the axes of the corrugations vertically aligned relative to the inner surface of the lid and thus also substantially perpendicularly to the axes of the corrugations of said first fiberboard layer of the lid, and said second layer of the principal closure area of the lid being formed of separate partial panels each lying at the underside of the unitary panel of the first layer in an area thereof between spaced bridges of the framing structure, the side edges of said partial panels being terminated inboard of the bevelled side edges of the first layer, each of said partial panels consisting of a single corrugated sheet and a single uncorrugated sheet, and the corrugated sheet of each partial panel being adhesively bonded to the unitary panel of the first layer and with the axes of the corrugations extended longitudinally of the lid and transversely of the axes of the corrugations of said first layer.

4,944,077

WINDING MACHINE WITH REDUCED YARN RUN RESISTANCE AND METHOD OF REDUCING THE YARN RUN RESISTANCE

Manfred Bollen, Oberuzwil, Switzerland, assignor to Benninger AG, Uzwil, Switzerland

Filed Jan. 25, 1989, Ser. No. 301,479
Claims priority, application Switzerland, Feb. 5, 1988, 417/88
Int. Cl.[5] D02H *13/22*; D02J *7/00*; B65H *49/00*
U.S. Cl. 28—173 **9 Claims**



1. A winding machine comprising a plurality of yarn bobbins each mounted for rotation about its own fixed individual axis,

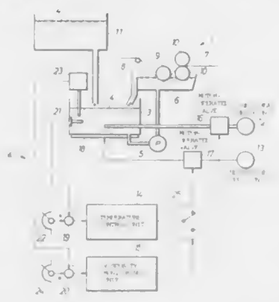
a beam mounted for rotation about a fixed axis located at a substantial distance from each said bobbin axis and arranged to wind thereon an array of yarns while withdrawing said array from said bobbins through an ambient atmosphere of air, and an arrangement for reducing air resistance to the passage of the yarns by accelerating the air velocity sufficiently to substantially reduce the air resistance of the yarn run in the region surrounding said array of yarns, at least partially between the bobbins and the beam and substantially in the yarn run direction toward said beam.

4,944,078

SIZE VISCOSITY CONTROL METHOD AND CONTROLLER FOR SLASHERS

Kiyoshi Nakade, Komatsu, Japan, assignor to Tsudakoma Corp., Ishikawa, Japan

Filed Jun. 9, 1989, Ser. No. 363,989
Claims priority, application Japan, Jun. 20, 1988, 63-152031; Jul. 5, 1988, 63-165902; Oct. 6, 1988, 63-252557
Int. Cl.[5] D06B *3/18*
U.S. Cl. 28—183 10 Claims



1. A method of controlling the viscosity of size for a slasher, employing a temperature control unit for maintaining the temperature of the size at a desired temperature, a direct heat supply unit for supplying wet heat containing water to the size, and an indirect heat supply unit for supplying dry heat to the size; characterized in that the heat supply ratio between the direct heat supply unit and the indirect heat supply unit is regulated on the basis of the deviation of the actual viscosity of the size measured by a viscosity detector from a predetermined desired viscosity so that the deviation is decreased.

4,944,079

MACHINE FOR CONNECTING AN END OF AN OPTICAL FIBER CABLE TO AN OPTICAL FIBER CONNECTOR

Kunio Nakamura, Tokyo, and Minoru Abe, Kawasaki, both of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

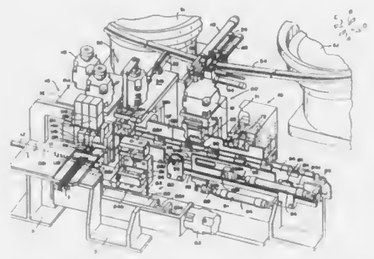
Filed Feb. 25, 1988, Ser. No. 160,214
Claims priority, application Japan, Mar. 5, 1987, 62-51178
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—33 M 8 Claims

1. A machine for connecting an end of an optical fiber cable to an optical fiber connector, comprising:

stripping means for stripping an end of a jacket from the end of the optical fiber cable to expose an end of a fiber core;

connecting means for positioning the optical fiber cable and optical fiber connector so that the stripped end of the optical fiber cable can be positioned in a hole of a housing of the optical fiber connector, for inserting the stripped end of the optical fiber cable in the hole of the optical fiber connector housing with a length of the exposed end of the fiber core protruding slightly beyond a front end of the connector housing and for moving a retainer normal to the axis of the hole and into a securing position in the housing of the optical fiber connector thereby securing the end of the optical fiber cable in the optical fiber connector;

cutting means for cutting off the length of fiber core that protrudes beyond the front end of the optical fiber connector leaving a tiny length of protruding fiber core; and



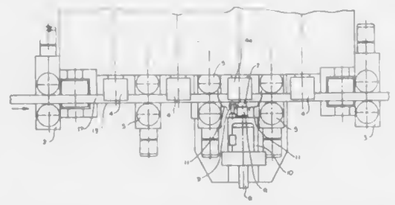
surface-finishing means spaced from the cutting means for applying to the tiny length of protruding fiber core thereby finishing the end surface thereof.

4,944,080

METHOD AND APPARATUS FOR THE LONGITUDINAL DEBURRING OF SECTIONS

Götz-Peter Blumbach, Schwerte; Willi Brueckner, Hagen, and Rudolf Moeller, Ennepetal, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 54,958, May 28, 1987, abandoned. This application Mar. 31, 1988, Ser. No. 175,752
Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618224
Int. Cl.[5] B23P *13/02*; B23C *3/12*
U.S. Cl. 29—33 A 11 Claims



1. A method for longitudinal deburring of sections utilizing an apparatus comprising a drive unit for driving said section through said apparatus, a milling unit having a rotatable tool head, drive means for driving said milling unit to enable said unit to move in a horizontal direction and in a vertical direction, sensing means for detecting the position of said burr, connecting means for connecting said sensing means and said drive means, wherein said sensing means outputs a signal to said drive means to cause said milling unit to move to a position in which said tool head may remove said burr and said sensing means comprises a roller sensor having a roller that engages said section on opposite sides of the burr characterized by the steps of driving said section through said apparatus, sensing the position of said burrs on said section with said roller sensor, outputting a signal from said roller sensor to said drive means to cause said milling unit to move to a position in which said tool head may remove said burr and rotating said tool head to remove said burr.

4,944,081

PACKING REMOVAL TOOL

Mark S. Ross, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 15, 1989, Ser. No. 366,821
Int. Cl.[5] B23P *14/04*
U.S. Cl. 29—235 3 Claims



1. A packing removal tool comprising:

(a) a hollow shaft having first and second ends, said first end terminating in a substantially pointed tip having a screw-like surface;

(b) at least two barbed levers pivotally mounted to said first end of said shaft;

(c) means for urging said barbed levers outward from said shaft, said urging means comprising a substantially conical structure;

(d) means for actuating said urging means contained within said shaft, said actuating means comprising a spring loaded rod having first and second ends, said substantially conical structure affixed to said first end of said rod; and

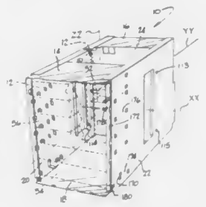
(e) a handle affixed to said second end of said rod.

4,944,082

METHOD OF PROVIDING A SHEET METAL HOUSING WITH PRECISELY POSITIONED MOUNTING REFERENCES

David P. Jones, and Mark E. Wanger, both of Fort Collins, Colo., assignors to Hewlett Packard Co., Palo Alto, Calif.

Filed Apr. 27, 1989, Ser. No. 344,191
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 29—467 11 Claims



1. A method of providing a sheet metal housing with precisely positioned mounting references for accurately locating components of an internally mounted apparatus comprising the steps of:

(a) providing first and second sheet metal wall panels;

(b) forming a pair of housing assembly reference deformations at precise, predetermined positions on each of the wall panels;

(c) forming apparatus locating deformations on each of the first and second wall panels at precise predetermined locations relative to the pair of housing assembly reference deformations on each wall panel;

(d) mounting each of the wall panels on a predetermined portion of an assembly jig using the housing assembly reference deformations to precisely locate each wall panel on the jig;

(e) fixedly attaching other sheet metal wall panels between and to the first and second sheet metal wall panels thereby providing a rigid housing structure with the first and second sheet metal wall panels held in a predetermined fixed relationship;

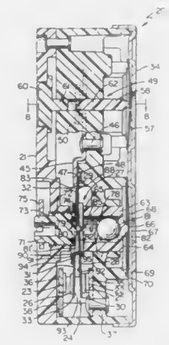
(f) removing the assembly jig from engagement with the first and second sheet metal wall panels.

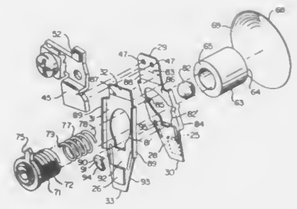
4,944,083

ELECTRICAL SWITCH CONSTRUCTION METHOD

Harold A. McIntosh, Crestline, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 145,053, Jan. 19, 1988, Pat. No. 4,875,278, which is a division of Ser. No. 885,865, Jul. 15, 1986, Pat. No. 4,736,514, which is a division of Ser. No. 694,350, Jan. 25, 1985, Pat. No. 4,633,211. This application Aug. 17, 1989, Ser. No. 395,320
The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.
Int. Cl.[5] H01H *11/00*
U.S. Cl. 29—622 2 Claims





1. In a method of making an electrical switch construction, said method comprising the steps of providing a support means, disposing a pair of spaced apart first and second fixed contacts to be carried by said support means, disposing a movable switch blade unit to be carried by said support means so that the contact means of the switch blade unit will be disposed in contact with said first fixed contact and out of contact with said second fixed contact when said switch blade unit is in a first position thereof and for being disposed in contact with

VOL 1116 ISS 5 JL 31 1990 UMI

said second fixed contact and out of contact with said first fixed contact when said switch blade unit is in a second position thereof, and forming said switch blade unit to have a first flexible switch blade means having opposed ends one of which is secured to said support means and the other of which carries a first part of said contact means for making or breaking contact with said first contact means and a second flexible switch blade means having opposed ends one of which is secured to said first switch blade means to be carried thereby and the other of which is spaced from said other end of said first switch blade means and carries a second part of said contact means for making or breaking contact with said second fixed contact, the improvement comprising the steps of forming said switch blade unit to comprise a first substantially rigid member and a second substantially flexible member with each member having opposed ends, forming said second member to have an intermediate portion secured to one of said ends of said first member and one of said ends thereof secured to said support means, forming said first switch blade means to comprise said first member and the portion of said second member that extends between said intermediate portion thereof and said one end thereof, and forming said second switch blade means to comprise the portion of said second member that extends between said intermediate portion thereof and the other of said ends thereof.

4,944,084

FUSE AND MANUFACTURING METHOD THEREOF

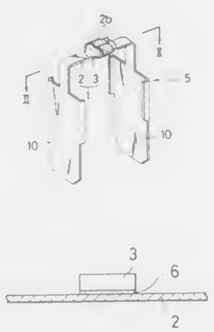
Kinya Horibe, and Hirohiko Fujimaki, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Mar. 22, 1989, Ser. No. 327,088

Claims priority, application Japan, Mar. 23, 1988, 63-67354; Mar. 23, 1988, 63-67356

Int. Cl.[5] H01H *69/02, 85/04*

U.S. Cl. 29—623 **4 Claims**



1. A method of manufacturing a fuse having a predetermined electrical current rating, in which the fuse comprises a metallic fuse element made from a material having a relatively high melting point and a metallic chip made from a material having a relatively low melting point and having at least one contacting surface to the fuse element, the chip being adapted to melt and fuse with the fuse element to form an alloy therewith when an overcurrent which generates a heat melting only the material of the metallic chip flows through the fuse, and the formed alloy having a relatively high electrical resistance such that the alloy will be melted and the fuse will be rapidly ruptured by an overcurrent which exceeds the predetermined electrical current rating flowing through the fuse, and the fuse having means for preventing oxidation of the contacting surface of the metallic chip to the fuse element, the method comprising the steps of:

applying a metallic powder to the at least one contacting surface of the metallic chip;

placing the metallic chip onto the fuse element in such a manner that the contacting surface having the metallic powder contacts the fuse element; and

passing an electrical current to the fuse element for melting the metallic powder so as to partially fuse the chip to the fuse element, whereby said oxidation preventing means is formed.

4,944,085

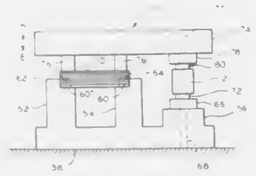
MEANS FOR ASSEMBLING ELECTRIC MOTORS WITH REDUCED END-PLAY

Max Lautner, Myrtle Beach, S.C.; Fred Hoffman, Chicago, and Edward Melnikov, Des Plaines, both of Ill., assignors to Uppco Incorporated, Chicago, Ill.

Division of Ser. No. 246,364, Sep. 20, 1988, Pat. No. 4,878,289. This application Apr. 25, 1989, Ser. No. 343,067

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—732 **5 Claims**



1. An apparatus for use in the manufacture of electric motors, said apparatus comprising first and second members mounted to move toward and away from each other, means on one of said members for supporting a stator and a rotor/shaft assembly in a side-by-side relationship, said rotor/shaft assembly having a compressible member thereon, means responsive to a dimension of said stator for limiting the motion of said members as they move toward each other, and means responsive to the movement of said members for compressing said compressible member to make the overall length of said rotor/shaft assembly including said compressible member match said dimension of said stator.

4,944,086

METHOD AND APPARATUS FOR ASSEMBLING ELECTRONIC AND/OR ELECTRIC PARTS TO BASE MEMBER

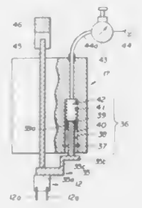
Tokihiro Nishihara, Chiba, and Yasushi Fukuda, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 9, 1988, Ser. No. 191,956

Claims priority, application Japan, May 19, 1987, 62-122119

Int. Cl.[5] H05K *3/30;* **B23P** *19/00*

U.S. Cl. 79—837 **37 Claims**



1. A method for assembling an electronic and/or electric part on a substrate, which part has an connector pin to be inserted through an opening formed through said substrate, comprising the steps of:

holding said part;

carrying said part to a predetermined orientation in relation to said substrate, at which said pin of said part is aligned to said opening;

shifting said part toward said substrate for inserting said pin into said opening;

monitoring magnitude of shifting of said part to detect at a predetermined position relative to said substrate, at which said opening is inserted into said opening in a first predetermined small magnitude;

detecting said part at said predetermined position, for stopping shift of said part toward said substrate;

releasing said part from holding;

exerting a second controlled magnitude of depression force greater than the first force to further insert said pin through said opening in response to releasing of holding;

monitoring position of said part to detect the position of the part where said pin is fully inserted through said opening; and

monitoring means detecting said fully inserted position of said pin, for clamping end of said pin for fixing said part on said substrate.

6. An apparatus for assembling an electronic and/or electric part on a substrate, which part has a connector pin to be inserted through an opening formed through said substrate, comprising:

means for holding said part and carrying the latter to a predetermined orientation in relation to a substrate, at which said pin of said part is aligned to said opening;

means for shifting said part holding means toward said substrate for inserting said pin into said opening;

means, cooperative with said shifting means, for monitoring a magnitude of shifting of said part holding means to detect said part holding means at a predetermined position relative to said substrate, at which said pin is inserted into said opening in a first predetermined small magnitude;

means, responsive to said monitoring means detecting said part holding means at said predetermined position, for deactivating said shifting means and releasing said part holding means;

means, responsive to said deactivating means releasing holding, for exerting a second controlled magnitude of depression force greater than said first predetermined small magnitude to further insert said pin through said opening

means for monitoring position of said part to detect the position of the part where said pin is fully inserted through said opening; and

means, responsive to said part position monitoring means detecting said fully inserted position of said pin, for clamping end of said pin for fixing said part on said substrate.

4,944,087

METHOD OF MAKING A CURVED PLASTIC BODY WITH CIRCUIT PATTERN

Vincent R. Landi, Danielson, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Oct. 5, 1988, Ser. No. 253,974

Int. Cl.[5] H05K *3/12*

U.S. Cl. 29—848 **17 Claims**

1. A method of making an article having a circuit pattern embedded on a surface of the article comprising:

forming a metallic circuit pattern on a flexible substrate to define a flexible circuit, wherein the circuit pattern is bonded to the substrate by an adhesive layer between the circuit pattern and the substrate;

placing said flexible circuit into a mold cavity with the circuit pattern facing toward the interior of the mod cavity;

introducing a molding compound into said mold cavity to fill the mold cavity, wherein said molding compound is forced against said flexible circuit;

curing said molding compound to define an article;

removing said article from the mold cavity with said flexible circuit embedded on the surface of the article; and



removing the adhesive layer to release said flexible substrate from said article while leaving said circuit pattern embedded on the surface of the article

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4,944,088

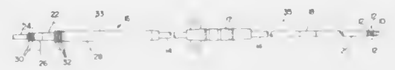
RING ELECTRODE FOR MULTICONDUCTOR PACING LEADS

Phong D. Doan, Shoreview; Kenneth E. Cobian, St. Anthony; James E. Upton, New Brighton, and Daniel C. Haeg, Brooklyn Park, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 25, 1988, Ser. No. 198,539

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—858 **4 Claims**



1. A method for fabricating an electrode for a medical electrical lead, comprising the steps of:

selecting a multifilar coil having at least two conductors and terminating one of the conductors intermediate the ends of the coil;

selecting a cylindrical sleeve of a thermoplastic material, having an internal lumen and a bore perpendicular to the internal lumen and sliding said sleeve over said multifilar coil and bringing the end of said terminated conductor out through said bore;

placing said sleeve and coil into a mold and applying heat, causing said sleeve to bond to said multifilar coil and to flow between the conductors of said multifilar coil;

sliding a cylindrical ring electrode over said sleeve intermediate the proximal and distal ends of said sleeve and electrically coupling said end of said terminated conductor to said cylindrical electrode; and

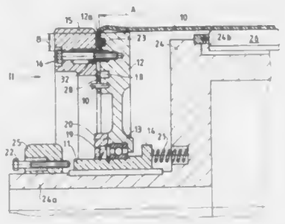
sliding first and second insulative sheaths over the proximal and distal ends of said sleeve, respectively, placing said ring electrode and the ends of said first and second sheaths into a mold and applying heat to bond the portions of said sleeve located proximal and distal to said electrode to said first and second sheaths to provide a continuous electrically insulative and fluid tight tubular structure extending through said ring electrode and to collapse the bore of said sleeve around said terminated conductor to provide a fluid seal.

4,944,089

MOUNTING A PRESS SHELL TO A PRESS ROLL FOR DEWATERING A WEB

Hans Flämig, Heidenheim; Andreas Schütte, Steinheim; Christian Schiel, Heidenheim; Karl Steiner, Herbrechtingen, and Josef Müllner, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Division of Ser. No. 267,023, Nov. 4, 1988, Pat. No. 4,878,281.
This application Oct. 30, 1989, Ser. No. 428,639
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1988, 3805350
Int. Cl.[5] B21D *31/00*
U.S. Cl. 29—895.22 **3 Claims**



1. A method for attaching a press shell to a press roll, wherein the press roll comprises:

a support body having a support area on its periphery and also having longitudinal axis and a longitudinally axially outward end;

a press shell support element located outward of the support body in the longitudinally axial direction of the support body;

the support element having an outer side face facing away from the support body;

a flexible, liquid impervious press shell disposed around the support body for being supported by the support area and also being disposed around the support element, the press shell having an edge zone; a plurality longitudinally axially outwardly projecting tongues defined on the edge zone and arrayed around the edge zone;

the press shell being of sufficient width to extend longitudinally axially beyond the axially outward end of the support body and to extend longitudinally axially outwardly beyond the outer side face of the shell support element and to be turned radially inwardly around the side face of the shell support element;

the method comprising:

disposing the press shell around the support body and moving the press shell so that the edge zone thereof extends longitudinally axially outward of the side face of the shell support element;

drawing the edge zone of the press shell radially inwardly over the side face of the shell support element by engaging each of the tongues of the press shell and moving each tongue radially inwardly and securing each tongue on a respective press shell holding element which projects out of the side face of the shell support element; and

thereafter clamping the edge zone of the press shell to the side face of the shell support element radially outward of the holding element.

4,944,090

RAZOR HEAD WITH YIELDABLE SHAVING AID

Stanley Sumnall, 2551 N. 17th, Springfield, Oreg. 97477

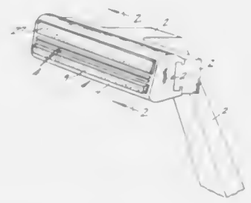
Filed Apr. 3, 1989, Ser. No. 331,832
Int. Cl.[5] B26B *19/44, 21/00, 21/40*
U.S. Cl. 30—41 **9 Claims**

1. An elongate razor head including,

a blade,

a soluble body movable relative said head,

said head defining a chamber to receive said soluble body and an opening through which said body may protrude for skin contact, and



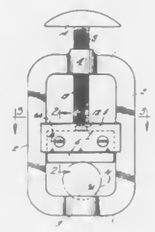
spring means attaching said body to said head, said spring means having a distal portion, said soluble body attached to said distal portion by adhesive means said spring means urging said body outwardly of said opening for biased contact with the user's skin.

4,944,091

NUT SPLITTING DEVICE

Paul E. Johnson, 1115 Main St., Springfield, Oreg. 97477

Filed Jul. 17, 1989, Ser. No. 380,803
Int. Cl.[5] B26B *17/00*
U.S. Cl. 30—120.2 **3 Claims**



1. A device for splitting nutshells comprising,

a base including a nutshell support and parallel guides,

a carrier on said guides and including a wedge, said carrier including flanges upwardly spaced from said wedge, and

adjustable means in threaded engagement with said base and with said carrier for imparting rectilinear travel thereto to urge the splitting member into and out of contact with a nut on said support, said adjustable means including a foot confined between said flanges and the wedge.

4,944,092

DEVICE FOR CUTTING THE STALK OF A FLOWER OR PLANT

Franciscus J. De Groot, Laren; Jan W. De Swart, CL Maarsen, and Jan Boerhoop, HP Woerden, all of Netherlands, assignors to Handelsvennootschap onder de firma Stengelbengel B.V., Maarssen, Netherlands

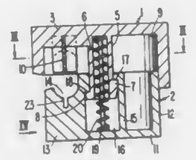
Filed Feb. 21, 1989, Ser. No. 312,168
Claims priority, application Netherlands, Feb. 22, 1988, 8800349
Int. Cl.[5] B25F *3/00;* **B26B** *1/06, 3/00*
U.S. Cl. 30—134 **8 Claims**

1. Device for cutting the stalk of a flower or plant, said device comprising:

at least two elements which are movable with respect to each other and pressed away from each other by a resilient means until a portion of one of the elements engages an abutment connected to the other element;

wherein the portions of both elements which are slid into each other being provided with cavities which, when the elements are pressed fully away from each other, form a bore running transverse to the direction of movement, said bore being adapted to receive a stalk;

the cavity in said first element having the shape of a hollow support surface for the stalk;



a knife being provided in the cavity of said second element, so that the stalk laid on the hollow support surface of the first element will be cut when the elements are pressed towards each other;

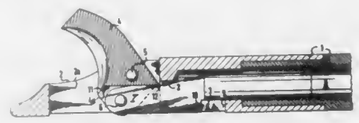
said cavities being shaped such that a stalk-receiving opening is defined in the pressed-apart position of both elements through which opening a stalk can be brought onto the hollow support surface of said first element.

4,944,093

FORCEPS WITH SHEARING JAWS

Ernst Falk, Sternenfels-Diefenbach, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Oct. 24, 1988, Ser. No. 261,487
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1987, 3736150
Int. Cl.[5] B23P *19/02*
U.S. Cl. 30—251 **1 Claim**



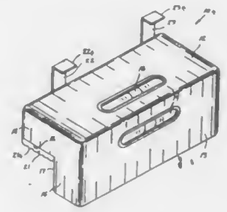
1. A forceps, in particular shears, comprising a tubular shaft having a recess transversing a distal end of the shaft from top to bottom to form a stationary shearing jaw, a scissors grip being mounted at a proximal end of the shaft, a push and pull rod extending in said shaft having a proximal end connected to a movable handle of the scissors grip, a movable shearing jaw being mounted on the stationary jaw by a transverse spindle for pivotable movement, said movable jaw being pivotably connected to a distal end of the push and pull rod to move between a closed position received in said recess and an opened position as said movable handle is moved, first stop means for defining the closed position comprising a step on the push and pull rod engaging an edge provided on said shaft adjacent the distal end thereof, and second stop means for defining the opened position comprising a stop edge on said movable jaw coating with a stop surface on said push and pull rod, said recess having a bottom portion extending proximally from the spindle to form a bottom shaft slot having a proximal edge forming said edge on said shaft of the first stop means, said push and pull rod having a flattened distal extension received in said slot, said step being provided on said extension and said stop surface being formed by an upper edge of said extension, said movable jaw at a proximal end having a bifurcating recess receiving a distal end of the flattened distal extension of the push and pull rod, said bifurcating recess having a base surface forming said stop edge of the movable jaw.

4,944,094

PICTURE FRAME LEVELING TOOL

Joseph G. Depiano, and Linda S. Schmidt, both of 4320 Deyo, Brookfield, Ill. 60513

Filed Sep. 11, 1989, Ser. No. 406,030
Int. Cl.[5] G01C *9/28*
U.S. Cl. 33—371 **5 Claims**



1. A picture frame leveling tool for positioning a picture frame in an aligned orientation relative to a vertical support surface, wherein the tool comprises,

a first elongate leg integrally and orthogonally mounted to a second elongate leg at a 90 degree apex to define an elongate "L" shaped body, wherein the first leg includes an exterior horizontal surface and the second leg includes an exterior vertical surface, wherein each exterior surface includes a visual indicator longitudinally aligned with each respective leg, the first leg includes an interior horizontal surface with a rear wall surface orthogonally joined to the respective exterior horizontal surface and the interior horizontal surface, and the second leg includes an interior vertical surface orthogonally intersecting the interior horizontal surface, and

the first and second legs of an equal thickness, and

wherein the interior horizontal surface is defined by a predetermined width and further including a selectively mountable resilient cushion layer of a polymeric material of a width equal to the predetermined width selectively mounted to the interior horizontal surface to provide an enhanced friction engaging surface for the picture frame, and

further including a first and second latch plate member reciprocatably mounted to the rear wall surface, each latch plate member defined by a respective first and second plate member slidably mounted relative to the rear wall surface, and

wherein the first and second latch plate includes a respective first and second grasp handle orthogonally secured to the respective first and second latch plate and directed overlying the exterior horizontal surface of the first leg, and

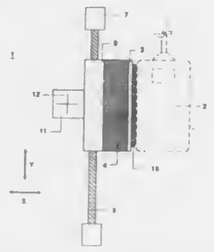
wherein the first and second latch plates further include a respective first and second guide loop, wherein each guide loop is mounted to the rear wall surface and aligned longitudinally with the rear wall surface to slidingly receive the respective first and second latch plates orthogonally relative to the rear wall surface.

4,944,095

GUIDING DEVICE FOR A COMPUTER MOUSE

James Anglehart, 1537 Summerhill, Apt. 208, Montreal, Quebec, Canada H3H 1C2

Filed Dec. 20, 1989, Ser. No. 453,862
Int. Cl.[5] B43L 7/00; H04N 1/10
U.S. Cl. 33—403 14 Claims



1. A guiding device for use with a computer mouse, the device comprising:

a body;

securing means provided on said body for securing said mouse to said body while allowing said mouse to operate on a working surface;

bearing means fixed to said body;

roller means including a horizontal shaft having a longitudinal axis and two ends, said shaft being rotatable in said bearing means, said bearing means being axially translatable on said shaft, said roller means further including working surface engaging wheels fixed to each end of said two ends, said roller means substantially supporting said body; and

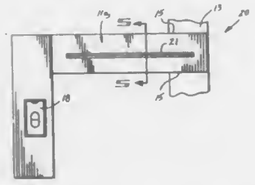
sighting means connected to said body for guiding said device to trace an image on said working surface, said device being able to be moved on said working surface in a direction of said axis by a translation of said bearing means on said shaft and in a direction perpendicular to said axis by a rolling of said wheels on said working surface.

4,944,096

WALL STUD CENTERING SQUARE

Sherman D. Tolley, Rt. 4, Box 3455, Elizabethton, Tenn. 37643

Filed Sep. 11, 1989, Ser. No. 406,024
Int. Cl.[5] B43L 7/06
U.S. Cl. 33—480 2 Claims



1. A wall stud centering square comprising,

a first rule blade member including a pair of opposed parallel longitudinal edges terminating in orthogonal first end edge, and

an elongate second rule blade member connected to said first rule blade member at one end thereof orthogonally thereto, said second rule blade member including a plurality of opposed longitudinal edges, each disposed orthogonally relative to said longitudinal edges of said first rule blade member, and

a bubble type liquid level indicator formed medially of said second rule blade member, and

said first rule blade member including a positioning member formed longitudinally of and medially through the first rule blade member wherein the positioning member is coextensively formed within the first rule blade member medially of the longitudinal side edges of the first rule blade member and terminating to a position adjacent a remote free end of the first rule blade member, and

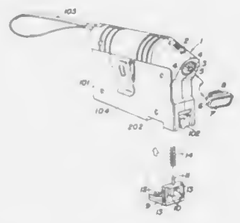
wherein the positioning member includes a knife edge portion including a plurality of aligned knife edges portions extending above and below the first rule blade member, wherein the knife edges are positioned medially of the longitudinal side edges of the first rule blade member for anchoring the first rule blade member onto an underlying construction stud.

4,944,097

MEASURING TAPE WITH LIGHT

Dongmin Kang, Pusan, Rep. of Korea, assignor to Korea Measures Co., Ltd., Pusan, Rep. of Korea

Filed Aug. 9, 1989, Ser. No. 391,479
Claims priority, application Rep. of Korea, Mar. 20, 1989, 3426[U]
Int. Cl.[5] G01B 3/10
U.S. Cl. 33—760 8 Claims



1. A measuring tape assembly comprising:

a housing having a front wall with a lower hole therethrough, said housing defining an upper space opening through an upper portion of said front wall;

a flashlight in said upper space for directing light outwardly from said front wall;

a measuring tape rolled in said housing and extending through said lower hole for projecting out of said housing;

a clamp mounted for movement in said housing adjacent said lower hole, said clamp including at least one jaw for engagement with said measuring tape to hold said measuring tape in a projected position from said housing;

a spring engaged between said housing and said clamp for biasing said clamp downwardly to engage said jaw against said measuring tape, at least a portion of said clamp being accessible from outside said housing for raising said clamp against said spring to release said tape;

said housing having a bottom wall with an opening therethrough positioned near said front wall, said clamp comprising an L-shaped member having a lower leg positioned in said bottom wall opening and an upstanding leg having a passage through which said measuring tape extends, said upstanding leg carrying said at least one jaw, said housing including at least one supporting jaw positioned below said measuring tape near said lower hole and aligned with said jaw on said clamp for engagement of said measuring tape;

a pin extending upwardly from said upstanding leg, said housing including a spring support positioned above said upstanding leg, said spring comprising a coil spring engaged around said pin and compressed between said spring support and said upstanding leg; and

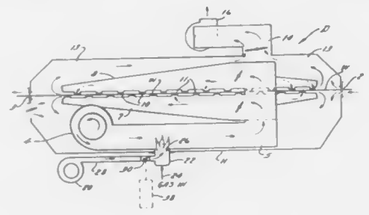
said flashlight comprising a bulb mounted in said upper space, a switch slidably mounted to a top of said housing near said front wall and a cap having an opening therethrough for engagement onto said bulb, said cap including a pair of retaining grooves and said upper space including a pair of projecting tongues for engagement with said pair of grooves for retaining said cap over said upper space.

4,944,098

HIGH VELOCITY RUNNING WEB DRYER HAVING HOT AIR SUPPLY MEANS

Terry A. Hella, DePere, and Gary L. Perry, White Lake, both of Wis., assignors to Advance Systems, Inc., Green Bay, Wis.

Filed Apr. 24, 1989, Ser. No. 341,816
Int. Cl.[5] F26B 13/00
U.S. Cl. 34—156 6 Claims



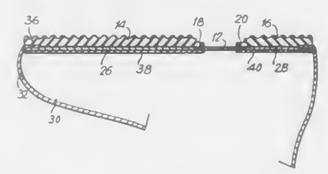
1. A high velocity web dryer having a series of upper and lower air bars for floatingly suspending a running web as the web moves through the dryer, means for furnishing hot air to said bars for drying the web, said means including a gas fired burner and a source of combustion air for said burner, and control means for controlling the admission of combustion air to said gas fired burner, said control means including adjustable valve means for controllably admitting combustion air to said burner, said valve means including initial air admitting means for providing initial air through said valve means prior to partial opening of said valve means, to thereby provide a relatively smooth and excessive surge-free supply of air to said burner, whereby a stable air supply system is provided without oxygen starvation and without blowing out a flame of the burner.

4,944,099

EXPANDABLE OUTSOLE

Howard Davis, New York, N.Y., assignor to Slingshot Corporation, Palmer, Mass.

Filed Aug. 30, 1988, Ser. No. 238,614
Int. Cl.[5] A43B 3/26
U.S. Cl. 36—97 22 Claims



1. A shoe outsole suitable for outdoor wear comprising:

a front outsole portion comprised of a semi-rigid material suitable for outdoor use, said front outsole portion having a ledge extending widthwise across the back end thereof;

a rear outsole portion comprised of a semi-rigid material suitable for outdoor use, said rear outsole portion having a ledge extending widthwise across the front end thereof wherein said ledges of the front and rear outsole portions extend upwardly away from the bottom of the front and rear outsole portions so that the ledges do not contact the ground; and

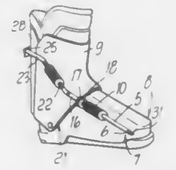
an elastic shank extending between said front and rear outsole portions, and means extending through said shank and said ledges for joining said shank to said outsole portions.

4,944,100

CLOSURE AND ADJUSTMENT DEVICE, PARTICULARLY FOR SKI BOOTS

Mariano Sartor, Montebelluna, and Valerio Tonel, Barbisano, both of Italy, assignors to Nordica S.P.A., Montebelluna, Italy

Division of Ser. No. 78,986, Jul. 29, 1987. This application Nov. 16, 1989, Ser. No. 436,849
Claims priority, application Italy, Aug. 1, 1986, 82566 A/86; Oct. 29, 1986, 59462/86[U]; Oct. 29, 1986, 59464/86[U]
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—120 7 Claims



1. In a ski boot of the rear entry type having a shell, a front quarter including an instep portion and a rear quarter with a rear surface and with attachment means for pivotally connecting said front and rear quarters to said shell,

an adjustable closure device for releasably closing said rear quarter against said front quarter to secure a skier's boot therebetween, comprising

a U-shaped bracket member including a pair of leg-like elements having free ends and rear ends and extending along each side of said front and rear quarters, said U-shaped bracket member having

a transverse body portion connecting said leg-like elements approximately at the rear ends thereof and arranged to face the rear surface of said rear quarter,

pivot means defining a pivot axis for pivotally fastening the front ends of said leg-like elements on said front quarter, thereby to allow said transverse body portion to move past said rear surface of said rear quarter in a plane perpendicular to said pivot axis when said leg-like elements are rotated about said pivot axis, said rear quarter having

a toothed formation protruding rearwardly from said rear surface thereof, said transverse body portion having

lever means pivotally attached thereon and movable from an opening position into a closed position thereof and vice versa, said lever means having

at least one pawl formation engageable with said toothed formation in closed position of said lever means.

4,944,101

APPARATUS AND METHOD FOR RECOVERING MATERIALS FROM FLUID BODIES

Robert H. Goble, P.O. Box 690013, Orlando, Fla. 32869

Filed Aug. 11, 1989, Ser. No. 392,587
Int. Cl.[5] F16K 55/18, 15/00; F16L 55/18; B01D 21/30
U.S. Cl. 137—15 13 Claims

1. A method for removing leaves, trash and other materials

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from a spa, pool, aquarium or other similar fluid body, the method comprising the steps of:

(a) providing a generally tubular member having first and second open ends, a portion of enlarged cross-section adjacent said second end, an exhaust opening extending through said enlarged portion and valve means for permitting fluid flow from said second open end into said enlarged portion and only out of said exhaust opening;

(b) trapping air in said tubular member by covering said first open end;

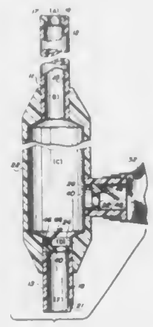
(c) extending said second open end into a fluid body and adjacent recovered materials to be removed;

(d) uncovering said first end to release the trapped air and to effectuate the flow of fluid and material into said second end and into said enlarged portion;

(e) lifting said tubular member at least partially out of said fluid body so that said fluid and recovered materials flow out of said enlarged portion only through said exhaust opening;

(f) trapping said recovered materials at said exhaust opening and simultaneously passing said fluid; and

(g) repeating steps (b) through (f) above until all of the materials are removed.



2. Apparatus for recovering sand, leaves, trash and other materials from a spa, pool, aquarium or other similar fluid body, said apparatus comprising:

a hollow generally tubular member having first and second ends and a dimension between said ends such that said first end extends above a fluid body from which materials are to be removed and such that said second end extends into said fluid body adjacent to the area where the material is located;

said tubular member having a first aperture at said first end which may be opened or closed to alternately release or trap air within said tubular member;

said tubular member having a second aperture at said second end;

an exhaust opening along said tubular member near said second end for venting fluid within said tubular member

means over said exhaust opening for trapping said recovered materials flowing from said exhaust opening; and

a one-way valve is said tubular member between said second aperture and said exhaust opening for permitting the passage through said valve in a first direction of fluid and material toward said exhaust opening from said second aperture and restricting flow in a direction opposite to said first direction.

4,944,102

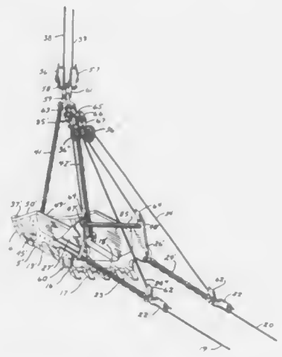
HIGH PRODUCTION SYSTEM BUCKET

Donald J. Behlendorf, Franklin; Frederick J. Kelp, Franksville, both of Wis., and Robert L. Benson, Underwood, N. Dak., assignors to Bucyrus Erie Company, South Milwaukee, Wis.

Filed Jun. 22, 1989, Ser. No. 370,416

Int. Cl.[5] E02F *3/47*

U.S. Cl. 37—135 **10 Claims**



1. A high production excavating bucket sytem comprising:

a bucket having side walls, a rear wall and a floor having a forward lip with excavating teeth extending therefrom; and

drag and dump lines connected to a forward portion of said bucket and hoist lines connected to rearward portions of said side walls;

said side walls having upper wall edges, a major forward portion of which is substantially parallel to the floor and a rear portion of which slopes downwardly to a top edge of the rear wall to provide a partially open area of the rear of said bucket, said open area defined by the rear portions of the upper wall edges of the side walls and the top edge of the rear wall to afford a complete dumping of said bucket before engagement with said hoist lines.

4,944,103

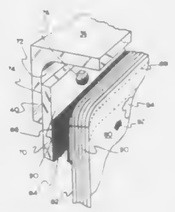
SPREADER ATTACHMENT APPARATUS

Michael J. Rzechula, Elizabethtown, Ill., assignor to Slick Ice Limited, Elizabethtown, Ill.

Filed Sep. 27, 1989, Ser. No. 411,115

Int. Cl.[5] E01H *4/00*

U.S. Cl. 37—219 **15 Claims**



1. A spreader attachment for an ice resurfacing machine of the type having a front and rear, a laterally extending housing with a rigid frame portion to be positioned in close proximity to a subjacent surface to be treated and having associated means for delivering water from a supply against a subjacent surface, and means for moving the housing across a subjacent surface to be treated, said spreader attachment comprising:

an elongate support bar;

means for securing the support bar to the rigid frame portion so that the length of the support bar is substantially horizontally situated along the lateral extent of the housing,

said support bar having a laterally extending support surface;

a spreader element with an attachment surface for engagement with a subjacent surface to distribute water from said supply evenly on a subjacent surface across the lateral extent of the housing as the housing is moved; and

cooperating means on the spreader element and support bar for releasably attaching the spreader element to the support bar in operative position thereon by movement of the attachment surface on the spreader element towards and against the support surface on the support bar and for releasing the spreader element and separating the spreader element from the support bar by movement of the attachment surface on the spreader element away from the support surface on the support bar.

4,944,104

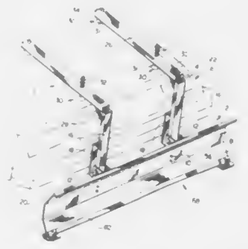
DETACHABLE SNOW PLOW ASSEMBLY

Dennis Kowalczyk, 7712 Princeton Pl., Middleburg Heights, Ohio 44130

Filed Jul. 13, 1988, Ser. No. 219,057

Int. Cl.[5] E01H *5/04*

U.S. Cl. 37—231 **21 Claims**



1. In combination with a snow plow blade and a vehicle having a hood and a bumper, the improvement comprising a pair of blade attachment assemblies generally symmetrically extending from the blade, each of the assemblies including an upright arm engageable by the vehicle bumper, each upright arm having a generally horizontal extension and means for detachably securing said horizontal extension to the hood.

4,944,105

ADJUSTABLE BASE FOR NEEDLEWORK FRAME

Gaylon E. Schulle, 52 Sundown Pkwy., Austin, Tex. 78746

Filed May 19, 1989, Ser. No. 354,132

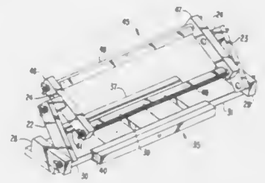
Int. Cl.[5] D06C *3/08*

U.S. Cl. 38—102 **4 Claims**

1. An adjustment base for supporting any frame selected from a group of needlework frames of generally rectangular configuration, the frames having means thereon for holding a piece of fabric, the frames of the group having several different lengths within a predetermined range of lengths, the base comprising

means defining a generally H-shaped structure with generally U-shaped recesses at both ends thereof separated by a central portion, each said recess having parallel edges facing each other;

first and second end members, each said end member including a slider plate having parallel opposite edges, a support arm attachable to one end of one of said frames and means for holding said support arm on said slider plate, each said slider plate being dimensioned to fit between said parallel edges; and



guide means on said parallel edges for receiving said slider plates, said slider plates being independently movable toward and away from said central portion to vary the spacing between said support arms, thereby to select a proper spacing to receive a selected one of said frames.

4,944,106

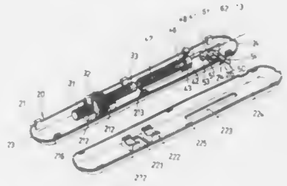
FISHING HOOKER OR CATCHER

Jaw-Shyong Wu, No. 15-3, Ming-Li St., Tai-Chung City; Yun-Terng Wang, No. 50-3, Chung-Shin Rd., Pu-Li Chen, Nan-Tu-Hsien; Hann-Chang Wu, No. 85, Pei-Chern St., Pu-Li Chen, Nan-Tu Hsien, and Jiin-Tsong Shieh, No. 5, Sec. 1, Shi-An Rd., Pu-Li Chen, Nan-Tu Hsien, all of Taiwan

Filed Sep. 22, 1989, Ser. No. 410,813

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—15 **6 Claims**



1. A fishing apparatus comprising a fishline-holding device which includes:

an elongated hollow housing having a first and and second end, said housing being formed of two halves which are detachably engaged with each other, said two halves having two opposed guide slots respectively and longitudinally formed therein, and two separate clamp members mounted near said first end of said housing;

a sliding member having a push rod connected thereto which is slidably mounted in said two guide slots of said housing so that said sliding member can be longitudinally moved along said guide slots, and a hook member extending longitudinally therefrom towards said second end of said housing;

a threaded rod longitudinally disposed in said housing and clamped by said clamp members of said housing so that said threaded rod can be moved longitudinally and prevented from rotation thereat, said threaded rod having an adjusting member mounted thereon by means of the interconnection of an internal thread provided in said adjusting member and an external thread provided on the threaded rod, said adjusting member being rotatably retained between said clamp members of said housing and having a portion thereof protruding out of an opening formed in

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said housing, so that said adjusting member can be axially rotated by a user's fingers to enable said threaded rod to move longitudinally;

a biasing member interconnected between said sliding member and said threaded rod so as to urge said sliding member toward said threaded rod;

means for retaining said hook member of said sliding member against a biasing action of said biasing member, which is mounted in said housing near said second end thereof; and

a linking member which links said hook member of said sliding member and said retaining means, being attached to an end of a fishline so that said hook member can be disengaged from said retaining means by the pulling of the said fishline which is triggered by a fish snapping at an baited hook attached to said fishline.

4,944,107

FIXED AND SLIDING FISHING SINKERS

Roger S. Wymore, 4612 F Ave. NE., Cedar Rapids, Iowa 52402

Filed Dec. 5, 1988, Ser. No. 280,308
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—44.89 **4 Claims**



1. A fishing sinker comprising a spherical body with two spherical segments removed from opposite sides and centered on an equatorial plane of said sphere, a mouth segment extending past the center line and having formed into two surfaces of groove a curve approximating a sin wave of $y=\sin x$, said curves center, where x is equal to zero, being on a perpendicular bisector of a throat line of the mouth segment, the curve gradually lessening in amplitude until nearly a straight line at said throat line, the other removed segment being truncated but whose surfaces projected approximately intersect the mouth segment throat line said truncated portion remaining forming an integral hinge and connecting the two remaining segments of said body, two steps, one above and one below the second removed section forming nearly parallel surfaces whereby coupled pressure applied to these surfaces can revolve open the mouth groove about said hinge for removal of fishing line, the fixing of the sinker on said fishing line occurring by coupled pressure on the opposite side of the hinge and to the spherical surfaces.

4,944,108

SYSTEM FOR HARVESTING CRUSTACEANS

Albert L. George, Lafayette, and Don Gooch, Erath, both of La., assignors to Crawfish Technology of South Carolina, Inc., Columbia, S.C.

Continuation-in-part of Ser. No. 5,590, Jan. 21, 1987, Pat. No. 4,798,020. This application Jul. 21, 1988, Ser. No. 222,718
Int. Cl.[5] A01K *81/04*
U.S. Cl. 43—6.5 **15 Claims**

1. A system for harvesting crustaceans out of a flooded area, the system comprising:

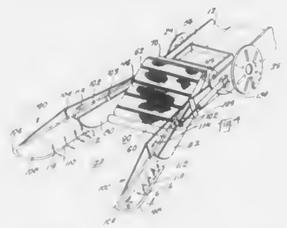
(a) a vessel movable through the water, the vessel having a forward portion;

(b) a primary roller attached to the forward portion;

(c) a first primary conveyor secured to the forward portion of the vessel behind the primary roler, so that crustaceans are moved rearwardly from the primary roller and deposited onto the conveyor as the vessel moves forward;

(d) means on the conveyor for maintaining the crustaceans on the surface of the conveyor as the conveyor moves rearwardly;

(e) means forward of said primary roller for educting water and air for disturbing the crustaceans in advance of the vessel, yet maintaining the crustaceans in the area substantially defined by the space between said educting means;



(f) receiving means in the vessel for receiving the crustaceans as the crustaceans are removed from the conveyor; and

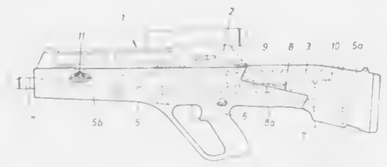
(g) means for separating grass collected by the conveyor from the crustaceans and returning the grass to the flooded area, the separating and returning means positioned between the primary conveyor and the receiving means.

4,944,109

RIFLE

Ulrich Zedrosser, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Sep. 7, 1989, Ser. No. 404,079
Claims priority, application Austria, Sep. 23, 1988, 2353/88
Int. Cl.[5] F41C *23/00*
U.S. Cl. 42—71.01 **5 Claims**



1. A rifle comprising

a receiver having a front portion and a rear portion,

a firing mechanism mounted in said receiver,

a barrel detachably connected to said receiver, said barrel having a front end and a rear end and defining a longitudinal direction,

a two-part stock, which covers said receiver and said barrel at least in part, said stock comprising a front part and a butt part extending along said longitudinal direction with said front part being in front of said butt part, said front part covering said barrel at least in part,

locking means detachably connecting said stock to said receiver,

a trigger mechanism mounted in said front part of said stock, and

a magazine holder mounted in said butt part of said stock,

said front part of said stock being slidably fitted on said front portion of said receiver and being forwardly removable from said front portion,

said butt part of said stock being slidably fitted on said rear portion of said receiver and being rearwardly removable from said rear portion,

each of said front and butt parts being detachably connected to said receiver by part of said locking means,

an interface along which said front and butt parts contact each other, said interface comprising an intermediate portion extending on opposite sides of said stock approximately in said longitudinal direction, and

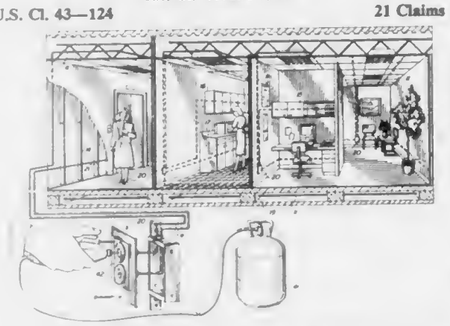
one of said front and butt parts being formed on opposite sides of said stock along said interface with edge flanges, which overlap the other of said front and butt parts.

4,944,110

INTEGRATED PEST CONTROL SYSTEM

Gregory A. Sims, Winter Springs, Fla., assignor to Extermination Systems, Inc., Orlando, Fla.

Filed Sep. 8, 1988, Ser. No. 242,041
Int. Cl.[5] A01M *7/00*
U.S. Cl. 43—124 **21 Claims**



1. A method of applying pest control substances to the interior of a building, comprising the steps of:

injecting a quantity of an expanding pest control substance under pressure into a receptacle mounted first open end of a length of a flexible tubing having a second closed end, the tubing running through a plurality of concealed cavities of a building; and

releasing the injected substance into the cavities through a plurality of apertures valveless in the tubing located in respective ones of the cavities;

whereby the released substance expands to provide pest control protection within the cavities.

4,944,111

HOOK AND LINE MINDER

Gordon S. Daniel, 3243 Rio Grande Trail, Kissimmee, Fla. 32741

Filed Mar. 29, 1989, Ser. No. 330,073
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—25.2 **2 Claims**

1. A hook and line minder device which comprises, a body removably attachable to a fishing pole for holding a fishing line, a fish hook leader, and an attached fish hook, a hinge means is secured to said body, for opening and closing said body, and a fastening means secured to said body for holding said body to said fishing pole, wherein said body is cylindrical and includes a longitudinal opening defined by a longitudinal groove provided in a pair of inner sleeve halves, and the longitudinal opening removably receives said fishing pole, wherein said pair of inner sleeve halves are fabricated of a resilient foam material wherein a barb of said fish hook may be embeded therein and retained for safety wherein a pair of outer sleeve halves are received in recessed areas provided in outer peripheral surfaces of said pair of inner sleeve halves and impart rigidity to said body and said hinge means is fabricated of a



flexible material and is fixedly secured to portions of said pair of outer sleeve halves.

4,944,112

LURE SYSTEM WITH ADAPTABLE INSITU BILL ASSEMBLY

Douglas L. Garmany, 816 Evergreen Dr., Houston, Tex. 77023, and James B. Hughes, P.O. Box 231372, Houston, Tex. 77223

Filed May 25, 1989, Ser. No. 357,177
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.09 **12 Claims**



1. In a lure system, including a head portion and a body portion, adaptable to a plurality of depths and movement characteristics, an insitu adjustable bill assembly detachably interconnected with said head portion, comprising

a bill base portion fixedly attached to the face of said head portion,

a bill extender portion having channel means adapted to be slidably and releasably received by said bill base portion,

said channel means comprising a recess region disposed upon the top surface of said bill extender portion configured to receive corresponding keyway means disposed longitudinally and symmetrically upon the bottom surface of said bill base portion, and

said recess region having slot means disposed longitudinally through and symmetrically of said recess region, to receive said keyway means, and further having a plurality of nipple-like projections disposed upon the top surface thereof, to securably receive a corresponding plurality of cavities disposed upon the bottom surface of said bill base portion.

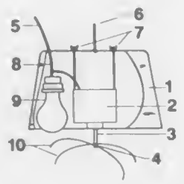
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4,944,113
FISHING FLOAT
Lisa Jean, No. 29, Yu Jen St., Wu Feng Hsiang, Taichung Hsien, Taiwan
Filed Dec. 11, 1989, Ser. No. 448,353
Int. Cl.[5] A01K *93/00*
U.S. Cl. 43—43.14 2 Claims



1. A fishing float comprising a spindle at an upper portion, a bob at a middle portion and a tail at a lower portion thereof, characterized in that:
said bob comprising a hollow inner shell enclosed by a hollow outer shell;
said outer shell being a substantially cylindrical shape with a bulbous section on a top portion thereof, a small opening projecting from a top end and said outer shell containing a rubber grommet for receiving a lower end of said spindle therein;
said inner shell being inserted into an opening at a lower end of said outer shell and being extensible with respect to said outer shell;
said inner shell being a substantially cylindrical shape and a circular rubber plug being disposed on a top end thereof, said circuit rubber plug contacting closely with an inner surface of said outer shell and provides a snug water tight fit, a scale also being provided on an outer surface of said inner shell; and
said tail being attached to a lower aperture of said inner shell.

4,944,114
FISH ATTRACTOR AND BUG KILLER
Charlie E. Burton, 3423 Colgate, Tyler, Tex. 75701, and James H. McKay, Rt. 2, Box 19, Flint, Tex. 75762
Filed Jan. 27, 1989, Ser. No. 302,824
Int. Cl.[5] A01M *1/04;* A01K *5/00*
U.S. Cl. 43—113 1 Claim



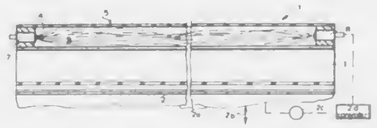
1. A fish feeding device comprised of a plastic dome having a closed top and open bottom, the closed top having a hanger for suspension, the open bottom containing a light source and an electric motor with a shaft having a flexible cord attached, the flexible cord extending past the light source for scattering insect parts over the water for feeding fish.

4,944,115
PROCESS FOR THE MULTIPLICATION OF PLANT VARIETIES AND PRODUCTS OBTAINED THEREBY
Sergio Patrucco, Diano San Pietro, Italy, assignor to 501 Patrucco Due Co. S.R.L., S.N., San Peitro, Italy
Filed Aug. 10, 1988, Ser. No. 230,772
Claims priority, application Italy, Aug. 10, 1987, 48286 A/87
Int. Cl.[5] A01G *1/00*
U.S. Cl. 47—7 12 Claims



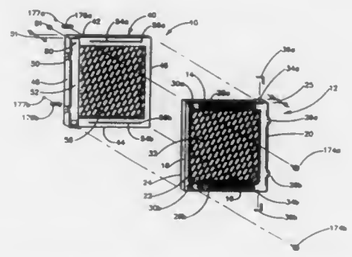
1. A process for the multiplication of plant varieties of comprising the following operations: (a) grafting of the variety to be reproduced on a tendril of a rooted mother plant at various levels and leaving the mother plant for time sufficient for the grafting to join to the rooted mother plant; (b) cutting said tendril grafted according to operation (a) from said rooted mother plant above and below said grafting levels to produce cuttings; and (c) rooting said cuttings obtained from operation (b).

4,944,116
SENSOR STRIP
Franz Mewald, Teesdorf, Austria, assignor to Mewald Gesellschaft m.b.H., Pottendorf, Austria
Filed Aug. 30, 1989, Ser. No. 400,557
Claims priority, application Austria, Sep. 1, 1988, 2139/88
Int. Cl.[5] E05F *15/20*
U.S. Cl. 49—27 10 Claims



1. A sensing strip for a movable member having an edge and a drive for said movable member, said sensing element comprising:
an elongated hollow elastically deformable body extending along said edge;
a support connecting said body to said edge and extending therealong;
a hollow light guide profile formed in said body at a side thereof opposite said support and constituting a leading edge portion with said hollow body, said hollow light guide profile being provided with a slit within said body whereby a light from said light beam traversing said hollow light guide profiles can escape upon spreading of said slit;
a light source generating said light beam at one end of said body directing said light beam into said hollow light guide profiles; and
a light receiver operatively connected to said drive for controlling same and disposed to receive said light beam in an undeformed state of said body, whereby a deformation force applied to said body spreads said slit and reduces light reaching said receiver.

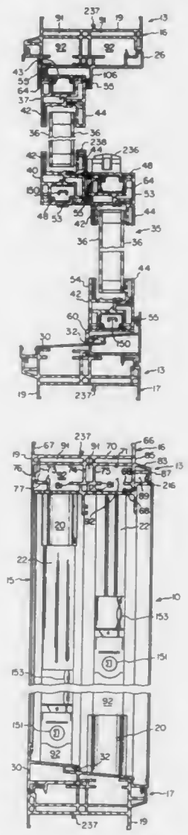
4,944,117
FOOTHOLD SECURITY GATE
Albert W. Gebhard, Denver; Roy E. Knoedler, Boulder; Robert M. Parker, Aurora, and William G. Au, Northglean, all of Colo., assignors to Gerico, Inc., Denver, Colo.
Filed Aug. 30, 1988, Ser. No. 238,621
Int. Cl.[5] E06B *7/00*
U.S. Cl. 49—55 11 Claims



1. A friction-mountable security gate for gating an area, comprising:
panel means having a center for at least partly covering the area;
at least one block movably attached to said panel means and movable from a first position substantially proximate to said panel means to at least a second position extended in a direction away from said center of said panel means;
first means attached to said panel means for moving said block from said first position to said second position, said first means including foot activatable means wherein said block is moved from said first position to said second position in response to said foot activatable means being depressed by a foot;
second means, being activated at substantially the same time as said foot activatable means, for releasing said block from said second position;
third means for releasably locking said block in said second position wherein said block is automatically locked when said block is moved to said second position;
fourth means for moving said block by storing energy when said foot activatable means is used to move said block from said first position to said second position; and
fifth means for engaging said third means and for moving said block away from said second position wherein at least part of said stored energy is used for said movement away from said second position.

4,944,118
WELDED WINDOW CONSTRUCTION
Alexander J. Biro, Gibsonia, Pa., assignor to Chelsea Industries, Inc., Boston, Mass.
Filed Jan. 19, 1989, Ser. No. 299,879
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—504 35 Claims

1. A low profile window comprising:
(a) a window frame of a polymeric material including at least two parallel side jambs, a head jamb extending perpendicular to and connecting at welded miter joints the upper ends of the side jambs and a bottom sill extending perpendicular to and connecting at welded miter joints the lower ends of the side jambs; said side jambs, said head and said bottom sill are formed of a common master frame and window frame inserts that snap into said common master frame, said master frame in cross-section having a first sidewall and a shorter second sidewall spaced parallel thereto; first and second spaced parallel connecting walls transverse to and joining said first sidewall and said second sidewall; first, second and third spaced parallel support walls extending perpendicularly from said first connecting wall and parallel to said first and second sidewalls, said first support wall adjacent said second sidewall and projecting from said first connecting wall through said second connecting wall to said second sidewall, said second support wall and said third support wall positioned parallel and adjacent one another and extending from a middle portion of said first connecting wall through said second connecting wall and terminating beyond said second connecting wall and said second support wall terminating short of said third support wall; an end section extending between and connecting said terminal ends of said first support wall and said second sidewall to form a



shelf therebetween; an L-shaped flange protruding from said end section and directed toward said second support wall; a crosspiece connecting said third support wall and said second support wall at the terminal end thereof and projecting beyond sides of said second and third support walls; a traingular shaped extension extending from a point of intersection of said second connecting wall and said first sidewall, said triangular extension having a protruding channel sidewall connected thereto and parallel to said first sidewall and terminating at a distance approximately equivalent to the projection of said first sidewall; said first and second connecting walls, said first and second sidewalls and said first, second and third support walls, end section, crosspiece and triangular shaped exten-

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sion cooperatively forming said master frame cross section; and

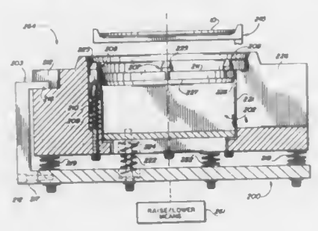
(b) at least one sash of a polymeric material and including a glazing having outer peripheral edges, at least two parallel side stiles, a top rail extending perpendicular to and connecting at welded miter joints the upper ends of the side stiles and a bottom rail extending perpendicular to and connecting at welding miter joints the lower ends of the side stiles to completely enclose the outer peripheral edges of said glazing, said top rail, said side stiles and said bottom rail constructed from a common master sash and at least one sash insert, said common master sash generally having a double wall h-shape cross-section and a plurality of sash crosspieces extending between said double walls of said master sash to reinforce said master sash such that said at least one sash insert in cooperation with said master sash surrounds the outer peripheral edges of said glazing to form said sash, said sash confined within said window frame to produce said low profile window.

4,944,119

APPARATUS FOR TRANSPORTING WAFER TO AND FROM POLISHING HEAD

Gerald L. Gill, Jr., Phoenix, and Thomas C. Hyde, Chandler, both of Ariz., assignors to Westech Systems, Inc., Phoenix, Ariz.

Filed Jun. 20, 1988, Ser. No. 208,685
Int. Cl.[5] B24B *41/06*
U.S. Cl. 51—215 R **8 Claims**



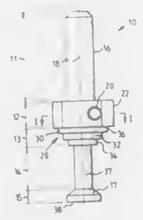
1. Transport apparatus for transporting a wafer into position for polishing by polishing apparatus, said wafer including
a peripheral edge circumscribing said wafer and including a first portion and a second portion, and
spaced apart top and bottom surfaces each terminating at said edge,
said polishing apparatus including
at least one station having a polishing surface,
a frame,
elongate carrier means mounted on said frame, and
a pressure head mounted on said elongate carrier means, said elongate carrier means moving said pressure head between at least two operative positions,
a first operative position with said head positioned over said transport apparatus, and
a second operative position with said head positioned over said station,
said pressure head including a lower portion for maintaining said wafer in contact therewith and against said polishing surface when said pressure head is positioned over said station,
said transport apparatus including
(a) a transport head assembly;
(b) displacement means for upwardly displacing said transport head assembly;
(c) a wafer dolly having an elongate tongue to support said wafer such that said second portion of said peripheral edge extends outwardly away from and free of said tongue;
(d) means for positioning said wafer on said tongue such that said second portion of said peripheral edge extends outwardly away from and free of said tongue; and
(e) means for positioning said wafer dolly with said elongate tongue extending over and in a selected position above said transport head assembly, said transport head assembly including
(i) a base,
(ii) an alignment cup mounted on said base and having
a support surface shaped and dimensioned to receive and support said second portion of said wafer to support said wafer in a selected orientation, and
a wall structure defining a central opening formed in said alignment cup intermediate and extending downwardly from said support surface and shaped and dimensioned to receive said tongue,
(iii) a plurality of spaced apart upstanding pins mounted on said base for contacting said second portion to permit said wafer to slide intermediate said pins downwardly toward said support surface, said pins circumscribing said central opening and said support surface;
said central opening, support surface and pins being shaped and dimensioned such that when said tongue is in said selected operative position over said transport head assembly and said displacement means upwardly displaces said transport head assembly toward said tongue, said wafer slides intermediate said pins onto said support surface while said structure and support surface move upwardly past said tongue, and,
(iv) means for upwardly displacing said support surface to position said wafer adjacent said lower portion of said pressure head when said pressure head is in said first operative position.

4,944,120

DOP FOR GEMSTONE HANDLING DURING MANUFACTURE

Ilan Weisman, 52 Brener Street, Herzelia; Roni Shapira, Moshav Givat-Chen, Ranana; Roni Shafir, 9 Leon Blum Street, Ramat-Aviv, and Hanoh Shtark, 23 Lamerchav Street, Ramat Hasaron, all of Israel

Filed Jun. 16, 1989, Ser. No. 366,928
Claims priority, application Israel, Jun. 16, 1988, 86761
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.72 **40 Claims**



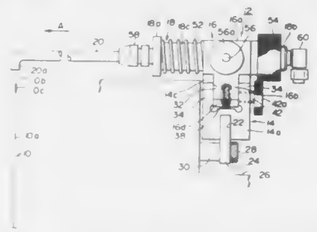
1. A dop for handling a gemstone comprising:
an elongate shaft having shank and gripper portions located at respective ends thereof, and a shaped portion provided therebetween on the shaft and defining a plurality of externally sensible features for providing information uniquely identifying the dop and for establishing its spatial orientation and that of the gemstone.

4,944,121

COOLANT SUPPLY NOZZLE APPARATUS FOR SLICING MACHINE

Hiroyuki Takahashi, and Yoshitaka Shiratori, both of Tokyo, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1988, Ser. No. 255,826
Claims priority, application Japan, Oct. 16, 1987, 62-158601[U]
Int. Cl.[5] B24B *55/02*; B26D *7/10*; B05B *15/08*
U.S. Cl. 51—267 **9 Claims**



1. A coolant supply nozzle apparatus for directing a coolant to an inner peripheral cutting edge of an annular disk blade rotating about an axis thereof, comprising:
a body including a pivot shaft disposed so as to extend axially of said blade;
a first mobile member pivotally mounted on said shaft;
a second mobile member mounted on said first mobile member so as to be movable in a direction parallel to said shaft;
a nozzle tube mounted on said second mobile member and having an opening end adapted to be directed toward the cutting edge of said blade, said opening end being shifted from said pivot shaft radially of said shaft;
first positioning means for positioning said second mobile member in place, and comprising
(i) pivoting means for causing said first mobile member to pivot about said pivot shaft, and
(ii) stopper means for stopping said first mobile member in place; and
second positioning means for positioning said second mobile member in place;
said first mobile member being supported by the pivot shaft for pivotal movement to move the nozzle in a plane perpendicular to the axis of the blade while maintaining the position of the nozzle in an axial direction of the blade;
said second mobile member being supported by the first mobile member for movement in a direction parallel to said shaft to move the nozzle axially of the blade while maintaining the position of the nozzle in a plane perpendicular to the axis of said blade;
wherein said pivoting means of said first positioning means comprises
(i) urging means interposed between said body and said first mobile member for urging said first mobile member to pivot about said pivot shaft in a prescribed direction, and
(ii) an adjusting screw threadedly mounted on said body for causing said first mobile member to pivot about said pivot shaft in a direction opposite to said prescribed direction against the urging force of said urging means.

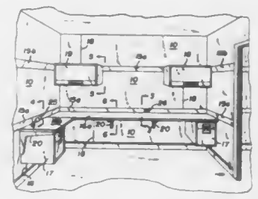
4,944,122

HORIZONTALLY ORIENTED DEMOUNTABLE PARTITION SYSTEM

Alan C. Wendt, 249 S. Poteet Rd., Barrington, Ill. 60010

Filed Oct. 4, 1988, Ser. No. 253,161
Int. Cl.[5] A47B *5/00*
U.S. Cl. 52—36 **9 Claims**

1. A partition construction comprising:
a substructure;
a runner extending generally axially horizontal, overlying and affixed to the substructure, the runner having upper and lower, spaced apart, generally parallel edges and further comprising
first panel edge engaging means disposed along the upper runner edge,
second panel edge engaging means disposed along the lower runner edge,
a runner web disposed between the upper and lower runner edge, the web and upper and lower runner edges forming a recess,



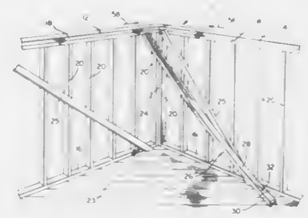
means disposed along the recess for engaging a cap, a first wall panel disposed above the runner and having a lower edge engaging the first edge engaging means of the runner;
a second wall panel disposed below the runner and having an upper edge engaging the second edge engaging means of the runner; and
a cap extending along the runner web and engaging the cap engaging means of the runner.

4,944,123

CONSTRUCTION PROP BASE

David Larrieu, 1936 Novato Blvd., Novato, Calif. 94901

Filed Jul. 14, 1989, Ser. No. 379,619
Int. Cl.[5] E04G *21/26*
U.S. Cl. 52—127.2 **3 Claims**

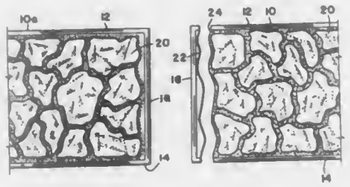


1. An inclined wall framing top plate-to-subfloor push stick incorporating an elongated, stiff prop member having first and second upper and lower ends, said first end including endwise outwardly facing abutment surface means for abutting engagement with a first wall frame top plate adjacent one end thereof adjoining a second wall frame disposed at an angle relative to said first wall frame, said second end including subfloor surface engaging means for non-slip engagement with and penetration of a subfloor upper surface spaced from said first wall frame against slipping of said subfloor surface engaging means relatively to said subfloor away from said first wall frame, but enabling shifting of said subfloor surface engaging means over said subfloor upper surface toward said first wall frame and subsequent non-slip re-engagement with and penetration of said subfloor upper surface, said elongated, stiff prop member being somewhat flexive and including physical characteristics

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enabling said prop member to be longitudinally bowed in a first vertical plane containing said prop member, but resisting longitudinal bowing of said prop member in a second plane containing said prop member and disposed normal to said first plane, said subfloor surface engaging means including an end member telescoped over said second end and of said prop member, said end member comprising a rectangular tubular member telescoped over and secured to said second end and including an end wall abutted against the terminal end face of said second end, said end member including endwise outwardly projecting teeth extending outward beyond said end wall.

4,944,124
DECORATIVE PANEL WITH CUTLINE
Larry Armstrong, Eufaula, Okla., assignor to Reil Rock Products, Inc., Eufaula, Okla.
Continuation of Ser. No. 91,387, Aug. 31, 1987, abandoned. This application Jun. 26, 1989, Ser. No. 371,124
Int. Cl.[5] B60R *27/00*
U.S. Cl. 52—169.12 2 Claims



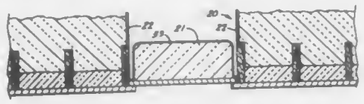
1. A molded rectangular panel for use as skirting on a mobile home or the like, comprising a panel having a raised and detailed masonry surface in the form of a rock pattern, a portion of the masonry surface adjacent one end of the panel terminating along a line which constitutes a cutline or a line of severance for that end such that a given panel, when the end is severed along the cutline, can be placed in overlapping relationship with an adjacent panel of the same design such that the interruption of the masonry pattern appears to be avoided.

4,944,125
FILTERING DEVICE
Yoshio Ito, Kurume, Japan, assignor to Tabai Espec Corporation, Osaka, Japan
Filed May 3, 1989, Ser. No. 346,842
Claims priority, application Japan, May 9, 1988, 63-112044
Int. Cl.[5] A01G *9/24*
U.S. Cl. 52—171 17 Claims



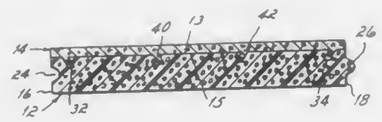
1. A filtering device comprising a mixture and a container for holding the mixture, the mixture containing water, a compound dissociable into ferrous salt ions, and at least one of L-ascorbic acid and D-ascorbic acid, the container comprising transparent members disposed face to face with each other, with the mixture confined therebetween.

4,944,126
ATTIC INSULATING SYSTEM
Gregory J. King, 5473 Logan St. SE., Rochester, Minn. 55904
Filed Nov. 30, 1989, Ser. No. 443,318
Int. Cl.[5] E06B *6/26*
U.S. Cl. 52—202 6 Claims



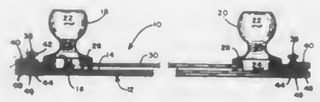
1. A system for insulating attics wherein access to the attic is had through an opening in the floor of the attic, which opening is normally closed by a trap door, comprising:
(a) an adjustably expandable guard, said guard being adjustable to a size and shape corresponding to the size and shape of said opening;
(b) means for securing said guard in surrounding and upwardly extending relation to said opening; and
(c) a trap door insulating pack comprising a harness enclosing one or more layers of insulating material, said pack being attachable to said trap door such that said pack overlies essentially all said trap door.

4,944,127
COMPOSITE BUILDING PANEL AND METHODS
Theodore E. Clear, Hamilton, Ohio, assignor to The Dow Chemical Company, Mich.
Continuation of Ser. No. 911,124, Sep. 24, 1986, abandoned. This application Sep. 14, 1989, Ser. No. 407,233
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—309.12 7 Claims



1. A composite building panel of the type including a foam layer and an overlying protective cementitious layer, each of said layers having a facing surface abutting the facing surface of the adjacent layer, and said foam layer having longitudinal edges extending from one end of the panel to another end, the improvement including:
said cementitious layer having an outer planar surface, an inner facing surface and perpendicular edges, said outer planar surface extending to and perpendicularly intersecting adjacent edges;
said foam layer having inner and outer surfaces and perpendicular edges, said inner foam layer surface disposed against said inner facing surface of said cementitious layer and extending to and perpendicularly engaging adjacent edges of said foam layer;
said edges of said foam and cementitious layers being coextensive;
an elongated, substantially continuous inclined outer groove formed in said foam layer inner surface at least adjacent and extending along each respective longitudinal edge thereof;
elongated inclined grooves formed in said inner surface of said foam layer internally of said outer groove;
said grooves having parallel side walls, each side wall inclined at an acute angle with respect to the inner facing surface of said foam layer, said grooves all extending to the same depth in said foam layer;
means comprising integral portions of said cementitious layer filling said grooves, for providing a mechanical grip between said cementitious layer and said foam layer, and for providing a moisture barrier to prevent ingress of moisture between said two inner facing surfaces internally of said grooves to inhibit moisture related delamination of said layers.

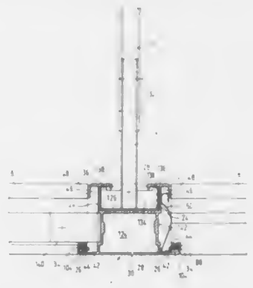
4,944,128
HAND SANDER WITH AUTOMATIC SLACK TAKE-UP FEATURE
John P. Relter, 10407 Quebec Ave. S., Bloomington, Minn. 55438
Filed Jul. 10, 1989, Ser. No. 377,113
Int. Cl.[5] B24D *15/08*
U.S. Cl. 51—363 6 Claims



1. Sanding apparatus for finishing both plane and curved surfaces comprising:
(a) a generally rectangular flexible base member having first and second major surfaces;
(b) hand grip means affixed to said first major surface;
(c) a strip of material sufficiently thin to permit flexure thereof mounted on said base member and overlaying said first major surface and including clamping means disposed at each end of said strip for releasably clamping opposed ends of a flexible generally rectangular sheet of abrasive material with the sheet of abrasive material extending over and backed-up by said second major surface of said base member; and
(d) tensioning means disposed between said first major surface of said base strip of material and said means mounted on said base member for maintaining said sheet of abrasive material in contact with said second major surface irrespective of whether said base member is flexed to conform to a convex or a concave curved surface, said tensioning means including a first pair of wedge members affixed to said strip and a second pair of wedge members affixed to said first major surface and located in contact with said first pair of wedge members such that flexure of said base member and said strip results in a change in separation of said strip relative to said base member.

4,944,129
CEILING LINING
Karl-Heinz Hartleif, Reilingen, Fed. Rep. of Germany, assignor to Hartleif Metalldecken GmbH, Hockenheim, Fed. Rep. of Germany
PCT No. PCT/EP88/00735, § 371 Date May 23, 1989, § 102(e) Date May 23, 1989, PCT Pub. No. WO89/01551, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 17, 1988, Ser. No. 347,802
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1987, 8711244
Int. Cl.[5] E04B *5/52*
U.S. Cl. 52—486 23 Claims

1. Ceiling lining of metal, comprising a supporting grid and cassettes arranged in grid compartments of the supporting grid which is composed of longitudinal struts and of transverse struts connected to said longitudinal struts, each longitudinal strut and each transverse strut having projections which are arranged on either side at lower ends of said struts and which extend in the longitudinal directions thereof, are provided with seals, the cassettes resting upon said seals in a tight sealing engagement therewith, the longitudinal struts being designed as essentially rectangular hollow profiles, characterized in that the hollow profile is designed in the form of a closed duct and that further the longitudinal strut has a region of substantially hollow cross-section for mounting suspension elements, the duct is arranged in the middle section of the longitudinal strut and the region of the substantially hollow cross-section is arranged above said duct, said region of the substantially hollow cross-section is substantially U-shaped such that suspension elements can be suspended therein, the longitudinal strut is



substantially rectangular in cross-section and comprises a horizontal separating web for separating the duct from the region of substantially hollow cross-section, the cassette has a circumferential step-like fold extending along its lower outer edge and resting with a horizontal surface of said step-like fold upon the projections in such manner that bottom portions of the cassette, the longitudinal strut and the transverse strut are substantially co-planar, and spring members are mounted on longitudinal struts or on transverse struts to secure the cassettes in position.

4,944,130
FLOOR TILE
Sebald Pallhorn, Goldbach, Fed. Rep. of Germany, assignor to Goldbach GmbH, Holz-, Kunststoff- und Metallverarbeitung, Goldbach, Fed. Rep. of Germany
Filed May 23, 1989, Ser. No. 355,970
Claims priority, application Fed. Rep. of Germany, May 25, 1988, 8806800
Int. Cl.[5] E04C *2/38*
U.S. Cl. 52—802 5 Claims



1. A floor tile for double floor installations with a tile core having a floor covering on its top side, a metal plate on its underside and a lipping on its peripheral edge, wherein the peripheral edge is provided with at least one groove (9) which is to receive hot-melt adhesive (3), the metal plate (8) has an

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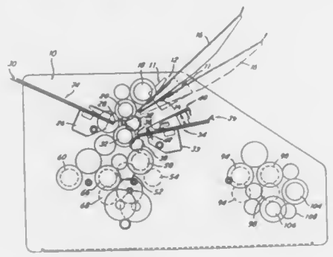
upward edge (4) which grips around the peripheral edge, reaches up to the lower rim of the groove (9) and is flush with a first lipping (7), and a second lipping (2), which covers the groove (9) and a part of the upward edge (4) of the metal plate (8), is located on top of the first lipping (7).

4,944,131

PAPER FOLDING APPARATUS

Rex M. K. Gough, Cambridge, United Kingdom, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 7, 1989, Ser. No. 334,966
Claims priority, application United Kingdom, Apr. 8, 1988, 8808313; May 6, 1988, 8810698
Int. Cl.[5] B65B *43/26, 51/02, 63/04*
U.S. Cl. 53—117 **9 Claims**



1. Paper folding apparatus including control means for controlling the operation of the machine, means for transporting a stationery item along a paper path, a buckle chute having opposed end regions of which one is generally open to a folding chute arranged in use to receive a portion of said stationery item to effect a fold therein and the other end includes deflector means arranged in use to deflect an oncoming stationery item to continue along said path, location means for reversibly locating the buckle chute adjacent said paper path with either said open end or said deflector means presented to said path and orientation detection means associated with said location means for determining which of said open end and deflector means are presented to said path and for outputting a signal to said control means.

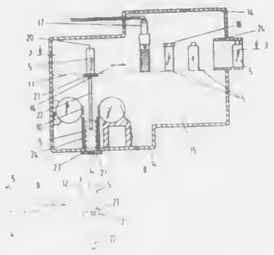
4,944,132

APPARATUS FOR THE STERILE PACKAGING OF CONTENTS

Lars C. Carlsson, Bleutarp; Sven O. S. Stark, Ystad, and Ulf Bengtsson, Dalby, all of Sweden, assignors to AB Tetra Pak, Lund, Sweden

Filed Mar. 10, 1989, Ser. No. 321,980
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1988, 3808058
Int. Cl.[5] B65B *55/02;* **A61L** *2/00*
U.S. Cl. 53—167 **7 Claims**

1. An apparatus for sterile packaging, which comprises in combination an inlet sluice with irradiating means for sterilizing performed empty containers, said inlet sluice being in the form of a tunnel, means for filling sterile empty containers, and means for sealing filled sterile containers, said inlet sluice with irradiating means for sterilizing empty containers, means for filling sterile empty containers and means for sealing filled sterile containers being located in the interior of a common sterile enclosure, said apparatus including conveying means for elevating the empty containers through said tunnel and delivering to said irradiating means and sterile enclosure, and conveying means for carrying filled sealed containers from said sterile enclosure.

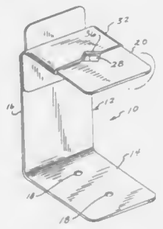


4,944,133

APPARATUS FOR FORMING BAIT SACKS

James V. Mause, 621 Rogers, Fort Atkinson, Wis. 53538

Filed Nov. 25, 1987, Ser. No. 125,133
Int. Cl.[5] B65B *67/06*
U.S. Cl. 53—390 **4 Claims**



1. An apparatus for use in preparing bait sacks comprising:
a base member adapted for securement to a structure and having an upwardly extending arm,
a first plate member including means to pivotally attach said first plate member to an upwardly distal portion of said arm and movable between a first position in which said plate member is disposed in a substantially horizontal plane and a second position in which said plate member is disposed in a substantially vertical plane with said first member spaced from said base member in both of said first and second positions and
a second member including means to slideably dispose said second member about said first plate member and movable between a first position in which the configuration of said member provides an opening and a second position in which said opening is substantially closed.

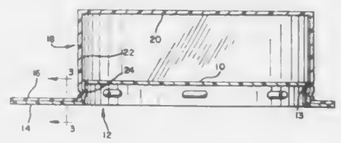
4,944,134

METHOD OF FORMING A RECLOSABLE PACKAGE

Paul E. Grisdrod, Madison, and Gerald O. Hustad, McFarland, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Feb. 2, 1989, Ser. No. 305,876
Int. Cl.[5] B65B *7/02, 31/02;* **B65D** *73/00*
U.S. Cl. 53—432 **24 Claims**

11. A method of forming a vacuumized, hermetically sealed package which is characterized by a predetermined quantity of a product arrange dint eh from of an upright mass on a raised panel portion of a semi-rigid base, which base has peripherally extending flange margins sealed to corresponding flange margins of a body member of a semi-rigid preformed plastic; said body member having a top panel for engaging the upper end of said product and depending side walls for engaging the side walls of said product, and the bottom edges of said body side walls being in telescoping relationship with portions of said base at the peripheral edges of said raised panel portion; said method comprising supporting said preformed body member in inverted position with the flanged margins thereof on the edge portions of a rigid upwardly opening hollow form, placing a sufficient quantity of said product in said body member to substantially fill said body member when the package is completed, positioning said base on the mouth of said body member with said product engaging panel disposed so as to telescope into said body member and engage with said product and with the flanged margins of said base overlying the corresponding margins of said body member, vacuumizing the assembly and hermetically sealing the package, wherein the package further contains a locking means contained in the base and body member side walls for snap locking the base to the body member, said locking means provides for friction interference fit, and postforming said locking means at temperatures below the melting point range but above about the glass transition temperature.

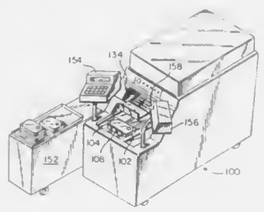


4,944,135

PACKAGE WRAPPING AND WEIGHING SYSTEM

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Continuation-in-part of Ser. No. 87,924, Aug. 21, 1987, Pat. No. 4,825,626. This application Mar. 14, 1989, Ser. No. 323,582
Int. Cl.[5] B65B *11/18*
U.S. Cl. 53—502 **6 Claims**



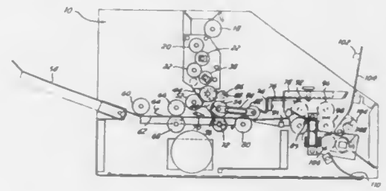
1. Packaging machine comprising an input station for receiving packages to be wrapped, a wrapping station for wrapping packages placed into said input station, an output station for discharging packages wrapped at said wrapping station, first conveying means for transporting said packages from said input station to said wrapping station, second conveying means for transporting said packages from said wrapping station to said output station, sensing means for sensing the presence of a package at said input station and generating a package sensing signal, and drive means responsive to said package sensing signal for causing operation of said machine for a sufficient number of cycles to wrap and discharge said package; characterized in that said drive means comprises means for stopping said first conveying means after said package arrives at said wrapping station and restarting said first conveying means in synchronism with the operation of said wrapping station upon receipt of a new package sensing signal.

4,944,136

PAPER HANDLING APPARATUS

Rex M. K. Gough, Cambridge, United Kingdom, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 7, 1989, Ser. No. 335,164
Int. Cl.[5] B65B *43/26, 63/04, 67/00*
U.S. Cl. 53—493 **12 Claims**



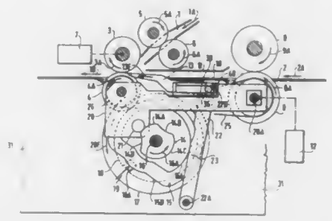
1. A folder inserter machine including transport means for transporting a partially folded primary insert from a second insert station and along a transport path, control means for controlling said transport means to interrupt and re-establish operation of said transport means, guide tray means arranged adjacent said second insert station for inserting a second insert, and switch means associated with said guide tray means for communicating with said control means whereby re-establishment of the operation of said transport means occurs on actuation of said switch means, so that passage of the partially folded primary insert is interrupted pending manual insertion of the second insert and is re-established only when said switch means has been operated.

4,944,137

DEVICE FOR OPENING ENVELOPE BODIES, AND FOR FILLING THEM

Marek Krasuski, Fontenay Aux Roses, and Bernard Prugnolle, Pantin, both of France, assignors to Societe Anonyme dite: Alcatel Satmar, Bagneux, France

Filed Jul. 17, 1989, Ser. No. 380,343
Claims priority, application France, Jul. 27, 1988, 88 10122
Int. Cl.[5] B65B *43/26*
U.S. Cl. 53—569 **16 Claims**



1. In a device for opening envelope bodies for filling for use in an insertion machine constituting means defining a mail path and in which each envelope body to be filled is held in a filling position facing said mail path, said device including opening fingers coupled to actuator means and control means coupled to said actuator means in order to move the opening fingers between a retracted position and an opening position facing an

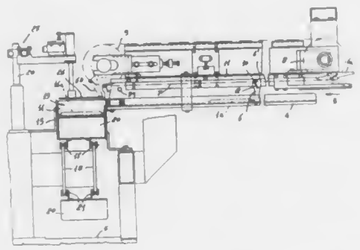
envelope in said filling position, the improvement wherein the device includes a finger shaft extending across said mail path, a preassembled assembly formed on said finger shaft, said preassembled assembly including said opening fingers mounted to rotate freely on said finger shaft about said shaft axis, longitudinal positioning first means on opposite sides of each finger for longitudinally positioning said fingers on said shaft, resilient abutment second means extending on the same side of said finger shaft for each finger between said longitudinally positioning first means, and wherein said device further includes a guide plate mounted facing said assembly and opposing the action of said second means on said fingers biasing said fingers against one face of said guide plate and guiding the fingers against said one face.

4,944,138

APPARATUS FOR GROUPING BAGS DISPENSED BY AN AUTOMATIC DEVICE

Franco Aiuola, Bologna, and Renato Piccinini, Sala Bolognese, both of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed May 2, 1988, Ser. No. 189,441
Claims priority, application Italy, May 13, 1987, 3478 A/87
Int. Cl.[5] B65B *35/40, 39/14*
U.S. Cl. 53—540 **3 Claims**



1. Apparatus for grouping bags dispensed by an automatic device, comprising:

a station for receiving bags dispensed by said automatic device in a stack formed of a selected number of bags;

a conveyor having successive housings and adapted to move step by step below said station, said step corresponding to the distance between two adjacent housings of said conveyor, said housings being adapted to receive said bags from said station;

means for extracting said stacks of said bags from said conveyor housings and means for packing said stacks;

said station defining at least two seats, said seats being disposed side by side at a distance equal to said distance between two adjacent housings of said conveyor, each of said seats being arranged over one of said conveyor housings in order that said at least two seats are respectively arranged over two of said housings when said conveyor is not moving;

an expeller adapted to eject said stacks of bags from said station and to introduce said stacks into said conveyor housings;

control means adapted to operate said expeller synchronously with said conveyor in order that when a preset number of said bags filled each of said seats to form said stack, an empty housing of said conveyor is arranged below each of said seats; said expeller being subsequently operated to fill each of said empty housings with a respective one of said stacks; said conveyor being subsequently operated to move forward by a preset number of steps until said housings filled with said stacks are moved beyond said station and successive empty conveyor housings are disposed below respective ones of said seats of said station; while said conveyor is being moved forward by said preset number of steps, said seats of said station are being filled with said preset number of bags, said preset number of steps corresponding to said preset number of bags forming each of said stacks; said expeller being subsequently operated to fill and empty conveyor housings with said stacks of bags,

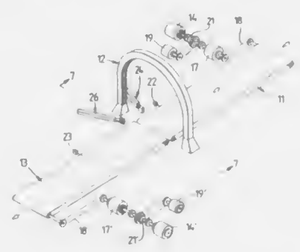
wherein each of said station seats comprises a pair of angular elements, each of said angular elements having a side portion and a bottom portion, said bottom portion of each of said pair of said angular elements being disposed face to face, a middle open portion being defined by said bottom portions of said pair of angular elements, said bottom portions of said angular elements being adapted to support at least one of said bags; said expeller comprising a pusher part adapted to insert into said open portion in order to push said bag stack through said open portion to eject said bag stack from said station and to introduce said stack into one end of said conveyor housings.

4,944,139

STRAPPER STOP APPARATUS

Robert F. Neilsen, and Peter Hiebert, both of Birmingham, Ala., assignors to Neilsen & Hiebert Systems, Inc., Birmingham, Ala.

Filed Oct. 3, 1988, Ser. No. 252,772
Int. Cl.[5] B65B *13/06, 57/16*
U.S. Cl. 53—599 **13 Claims**



1. A method for accurately positioning an article on a driven conveyor relative to a fixed reference while performing an operation on said article comprising the steps of:

(a) moving the article toward said reference point on a conveyor driven in a forward direction by a primary feed motor;

(b) sensing the position of the article proximal said fixed reference;

(c) reducing the speed of said conveyor;

(d) diagonally extending a stop member from alongside said conveyor to a position above said conveyor to engage an article and stop the forward movement thereof at a predetermined point relative to said fixed reference;

(e) sensing the engagement of an article with said stop member;

(f) performing said operation response to engagement of said article with said stop member; and

(g) releasing said article from said stop member for further movement on said conveyor;

(h) sensing the position of said article at a second position relative to said fixed reference;

(i) reversing the direction of said conveyor;

(j) displacing a second stop member from alongside said conveyor to a position above said conveyor to engage said article and stop the reverse movement thereof at a second predetermined point relative to said fixed reference;

(k) sensing the engagement of said article with said second stop member;

(l) performing said operation responsive to engagement of said article with said second stop member;

(m) and releasing said article for further movement on said conveyor in its original direction of travel.

4,944,140

GUIDANCE SYSTEM FOR A SELF-PROPELLED MACHINE

Richard L. Donaghey, The Paddocks, Gadlys Road, Llanmaes, Nr. Llantwit Major, South Glamorgan, United Kingdom

Continuation of Ser. No. 832,086, Feb. 24, 1986, abandoned.
This application Mar. 23, 1988, Ser. No. 172,329
Claims priority, application United Kingdom, Feb. 26, 1985, 8504889
Int. Cl.[5] A01D *34/63*
U.S. Cl. 56—10.2 **8 Claims**

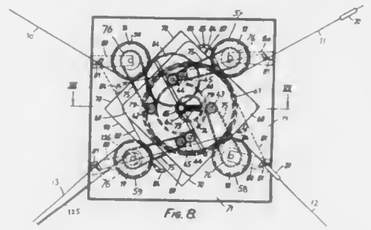


Fig. 8

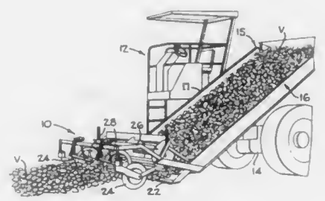
1. A self-propelled machine, including an automatic guidance system comprising a plurality of cables extending from the machine to anchorage points on the ground spaced apart in two orthogonal directions, and control means on the machine for controlling the cables to cause the machine to move around a multi-sided track defining a progressively changing area.

4,944,141

HEIGHT CONTROL SYSTEM

Franklin P. Orlando, Morgan Hill; Lee D. Butler, Kingsburg; Donald A. Luttrell, and Joseph S. Goulart, Santa Clara, all of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Dec. 9, 1988, Ser. No. 281,732
Int. Cl.[5] A01D *34/28*
U.S. Cl. 56—17.1 **36 Claims**



1. An apparatus for maintaining the desired level relative to the ground of at least one vertically movable harvesting component of a ground supported mobile harvester when harvesting a crop growing on ground which varies in elevation, comprising:

means for supporting said at least one vertically movable component for substantially vertical movement on said harvester;

means for detecting variations in the level of the ground and plants forwardly of said at least one vertically movable harvesting component;

at least one power means for moving said at least one vertically movable harvesting component downwardly in response to detecting a depression in the ground and upwardly in response to detecting a rise in the ground;

at least two lightweight wheels supported on the harvester and rising on the crop and ground forwardly of said vertically movable harvesting component;

control means independently responsive to changes in elevation of said at least two lightweight wheels in either direction relative to a variable but generally planar ground level for maintaining said at least one vertically movable component at desired levels relative to the variable ground level; and

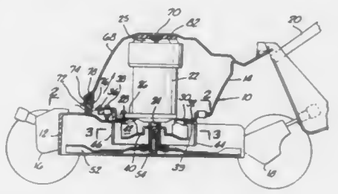
means for momentarily interrupting the signal to said at least one power means in response to said at least two lightweight wheels riding over small articles on said generally planar surface for precluding upward movement of said components.

4,944,142

POWER LAWNMOWER CONSTRUCTION

Hiroshi Sueshige; Akitsugu Inokawa, both of Powell, and William Bezilla, Marysville, all of Ohio, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1988, Ser. No. 234,857
Int. Cl.[5] A01D *34/67*
U.S. Cl. 56—320.1 **36 Claims**



1. A lawnmower comprising:

a body;

a power source mounted to said body;

a vertical drive shaft extending downwardly from said power source;

a cutter mounted to said shaft;

a fan mounted to said shaft between said power source and said cutter, said fan having radial flow fan blades defining a central inlet inwardly of said blades and directly below said power source;

a cutter scroll mounted to said body, said scroll including a cylinder wall concentrically disposed about said shaft outwardly of said fan and having its lower edge located above said cutter, and

a plurality of openings positioned directly radially outwardly of said fan extending through said cylindrical wall.

9. A lawnmower comprising

a body;

a power source mounted on said body;

a cover positioned on said body and extending at the periphery thereof to said body to define a chamber above said body;

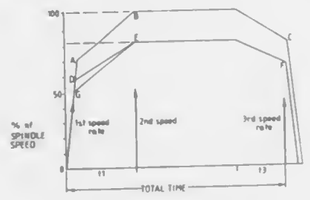
an opening in said cover about a portion of the periphery thereof;
an air filter positioned in said opening and extending in vibration damping relation between said cover and said body.

4,944,143

SPEED CONTROL MEANS AND APPARATUS FOR A REPEATABLE MATERIAL PROCESSING APPARATUS

Akira Tanaka, 4-28 Mandai Higashi 3-chome, Sumiyoshi-ku, Osaka, Japan

Filed Dec. 5, 1988, Ser. No. 279,949
Claims priority, application Japan, Dec. 4, 1987, 62-308420; Dec. 4, 1987, 62-308421
Int. Cl.[5] D01H *1/26*
U.S. Cl. 57—93 **5 Claims**



1. A repeatable finite quantity material processing apparatus which includes a driving motor which determines the process speed and a speed control apparatus including:
first preselecting means for preselecting an optimum operating speed (B) of the driving motor;
second preselecting means for preselecting a starting speed (A) as a preselected percentage of the optimum operating speed (B);
third preselecting means for preselecting a total time period (T) for the completion of the finite quantity process;
fourth preselecting means for preselecting a speed change time period (al) for the change from the starting speed (A) to the operating speed (B) as a preselected percentage of the total time period (T); and
an automatic processor for receiving signals from the four preselecting means and arranged to change the speed of the driving motor between the starting speed and the operating speed in a series of very small increments during the preselected speed change time period.

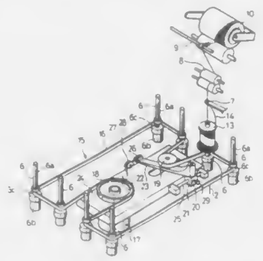
4,944,144

SPINDLE DRIVING DEVICE OF COVERING MACHINE

Tadao Kato, Ishikawa; Akira Yamagiwa, Kanazawa, and Yuichi Matsuoka, Matsuto, all of Japan, assignors to Kabushiki Kaisha Ishikawa Seisakusho, Ltd., Kanazawa, Japan

Filed May 17, 1989, Ser. No. 352,943
Int. Cl.[5] D01H *13/00*
U.S. Cl. 57—105 **6 Claims**

1. A spindle driving device for a covering machine, comprising:
a frame;
a plurality of groups of spindles mounted on the frame, each group of spindles having a predetermined number of spindles and a motor associated therewith;
a spindle-wharve installed on each spindle;
a driving pulley removably installed on each motor, a diameter of the driving pulley being determined according to a necessary speed of revolution of the spindles;
a tension pulley associated with each group of spindles;
an endless belt associated with each group of spindles the endless belt of each group being stretched around the driving pulley, the spindle-wharves and the tension pulley in the respective group;
an arm associated with each group, each arm having the tension pulley of that group mounted at an approximate center thereof;
a pivot supporting one end of each arm, the arm being rotatable around the pivot;
a slider connected to each pivot, said slider being slidable on



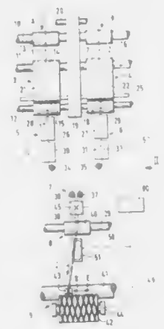
a guide-rod and being adapted to be fixed at a suitable position along the guide-rod in order to obtain a proper tension in the endless belt, the guide-rod permitting displacement of the slider, the pivot, the arm and the tension pulley in a direction for adjusting the tension in the endless belt;
an energizing member for biasing an opposite end of the arm in a direction adapted to remove slackness in the endless belt.

4,944,145

SPINNING MACHINE FOR PRODUCING FEEDING PACKAGES FOR TWISTING

Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany, a part interest

Filed May 11, 1989, Ser. No. 350,404
Claims priority, application Fed. Rep. of Germany, May 21, 1988, 3817493
Int. Cl.[5] D01H *1/115, 5/28, 15/00*
U.S. Cl. 57—261 **10 Claims**



1. A spinning machine arrangement for producing yarn packages used as feeding packages for subsequent twisting operations, comprising:
drafting means for drafting two yarn components,

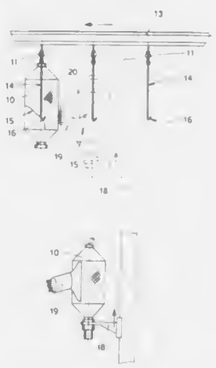
false twisting means for false twisting the two yarn components,
windup means for winding up the two yarn components as a double yarn on a spool package,
yarn quality monitoring means for monitoring the quality of the yarn components.
spinning operation interrupting means for interrupting the spinning operation in response to detection of a yarn quality defect by the yarn quality monitoring means.
windup operation interrupting means for interrupting the operation of the windup means to cause stoppage of a partially wound package in response to the detection of a yarn quality defect by the yarn quality monitoring means,
and a program control unit means including means for automatically controlling the spinning operation interrupting means and the windup operation interrupting means with coordination of the timing of the spinning interruption and the windup interruption and stoppage of the partially wound spool package to facilitate minimal waste of fiber material and assure location of the yarn end at a defined point for subsequent piecing.

4,944,146

METHOD TO CONVEY ROVING PACKAGES WITH THE ROVING PREPOSITIONED

Enzo Scaglia, Via Monte Rosa 21, Milano, Italy 20149

Filed Apr. 5, 1989, Ser. No. 333,535
Claims priority, application Italy, Apr. 27, 1988, 83374 A/88
Int. Cl.[5] D01H *9/18*
U.S. Cl. 57—281 **8 Claims**



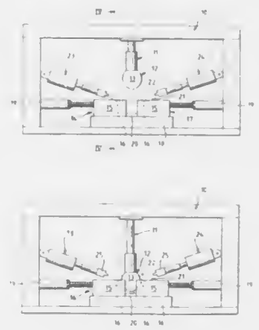
1. Method of automatically positioning a roving package for feeding a roving to a spinning machine comprising:
(a) removing the roving package from a package production machine,
(b) removing an end portion of the roving from the roving package,
(c) transferring the roving package to a package support, wherein said package support is connected to a conveyor means,
(d) positioning the end portion of the roving onto a roving support substantially during the step of transferring the roving package to the conveyor means, and
(e) conveying the roving package to a working position on the spinning machine.

4,944,147

APPARATUS FOR FORMING HORSE SHOES

Patrick J. Finnegan, 9 Parsonage Close, Kircubbin, County Down BT22 2 RZ, Ireland

PCT No. PCT/GB86/00745, § 371 Date Oct. 11, 1988, § 102(e) Date Oct. 11, 1988, PCT Pub. No. WO88/04208, PCT Pub. Date Jun. 16, 1988
PCT Filed Dec. 8, 1986, Ser. No. 259,569
Int. Cl.[5] B21K *15/02*
U.S. Cl. 59—56 **7 Claims**



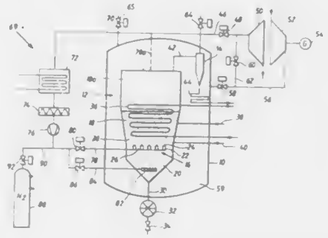
1. Apparatus for forming horse shoes comprising a hydraulic press having a ram and a cylinder, means to operate said press, a horse shoe former securable to the outer end of the ram or cylinder of the press, the former to engage, in use, with at least one blank of fullered horse shoe iron bar, an anvil against which the, or each, blank is deformed into a substantial U-shape by extension of said ram, and means on each side of, and on movement towards, said anvil to cause the outer ends of the, or each, deformed blank to be bent around said former, the former having at least one plate with an angled periphery over its forming peripheral surface to engage a sloped face of a respective blank to locate and correctly position said blank relative thereto and to the anvil.

4,944,148

METHOD AND A DEVICE FOR COOLING OF A PFBC POWER PLANT AFTER A GAS TURBINE TRIP

Lennart Hjalmarsson, Finspong, Sweden, assignor to ABB Stal AB, Sweden

Filed Dec. 23, 1988, Ser. No. 289,271
Claims priority, application Sweden, Dec. 23, 1987, 8705152
Int. Cl.[5] F02C *3/26*
U.S. Cl. 60—39.02 **3 Claims**



1. A method of cooling a bed material in a bed of a combus-

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tor in the event of an operational disturbance in the turbine unit of a PFBC power plant, including the steps of:

cooling the gas leaving the combustor, in a gas cooler located in a separate closed cooling circuit formed by the combustor, the gas cooler, a gas circulator and conduits forming interconnections therebetween; and

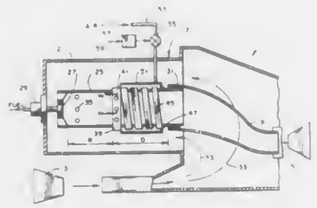
returning the cooled gas to the combustor.

4,944,149

COMBUSTOR LINER WITH AIR STAGING FOR NOX CONTROL

Masayoshi Kuwata, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1988, Ser. No. 284,226
Int. Cl.[5] F23R *3/26*
U.S. Cl. 60—39.23 **24 Claims**



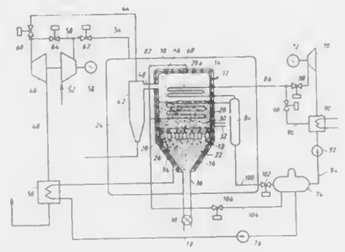
1. A cylindrical combustor liner including an upstream portion comprising a reaction zone and downstream portion comprising a dilution zone; a first plurality of dilution air holes disposed through the liner for admitting air into the dilution zone and a first plurality of combustion air holes for admittng air into the reaction zone; and, means for covering and uncovering one of the pluraltity of dilution air holes or the combustion air holes for regulating the flow of air through the dilution air holes and the combustion air holes into the combustor liner, said means being operative to increase air flow through the dilution air holes and to decrease air flow to the reaction zone upon a decrease in load and fuel flow to an associated combustor.

4,944,150

PFBC POWER PLANT

Sven-Olov Östman, Finspong, Sweden, assignor to ABB Stal AB, Sweden

Filed Jan. 18, 1989, Ser. No. 298,089
Claims priority, application Sweden, Jan. 18, 1988, 8800140
Int. Cl.[5] F02C *3/26, 6/18*
U.S. Cl. 60—39.182 **4 Claims**



1. A power plant burning a fuel at a pressure considerably exceeding the atmospheric pressure in a fluidized bed comprising:

a combustor with water-cooled walls which form a feed water preheater;

an evaporator provided within said combustor and having tubes which absorb heat from the fluidized bed and cool said bed;

at least one superheater arranged in said combustor;

a drain conduit connected to a feed water conduit between the preheater wall and the evaporator; and

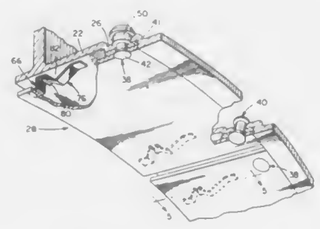
a drain valve provided in said drain conduit for draining part of the feed water flow, thus maintaining the generation of steam in the evaporator substantially under all operating conditions and in case of a load drop out.

4,944,151

SEGMENTED COMBUSTOR PANEL

Camer V. Hovnanian, Fairfield, Conn., assignor to Avco Corporation, Providence, R.I.

Continuation of Ser. No. 249,455, Sep. 26, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 445,119
Int. Cl.[5] F23R *3/60*
U.S. Cl. 60—39.32 **16 Claims**



11. In a combustion chamber for a gas turbine engine, the improvement comprising:

a generally cylindrically configured outer shell having a longitudinal axis and a plurality of annular lands lying in planes transverse to said axis and at spaced locations along said axis;

a plurality of axially spaced concentrically disposed segmented liner panels arranged in side by side circumferential relationship, each of said liner panels having a leading portion, a trailing portion, and opposed lateral portions extending, respectively, between said leading portion and said trailing portion,

first mounting means for fixedly attaching each of said liner panels to an associated one of said annular lands at a first location proximate to said leading portion such that said first location of said liner panel is thereby denied axial, radial, and circumferential movement relative to said outer shell;

second mounting means for attaching each of said liner panels to said associated annular land at a second location distant from said first location but proximate to said leading portion such that radial, axial and circumferential movement of said liner panel relative to said outer shell is permitted; and

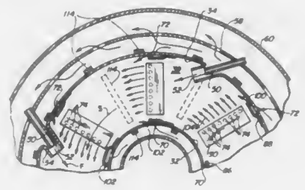
third mounting means for attaching each of said liner panels to said outer shell at a third location proximate to said trailing portion such that said third location of said liner panel is thereby held at a spaced distance away from said outer shell and restrained against radial movement relative to said outer shell while axial and circumferential movement of said liner panel relative to said outer shell are permitted.

4,944,152

AUGMENTED TURBINE COMBUSTOR COOLING

Jack R. Shekleton, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 11, 1988, Ser. No. 255,965
Int. Cl.[5] F23R *3/02*
U.S. Cl. 60—39.36 **6 Claims**



1. A turbine engine comprising:

a rotary compressor;

a turbine wheel rotatable about an axis and coupled to the rotary compressor to drive the same;

a nozzle for directing gases of combustion at said turbine wheel to cause the same to rotate;

an annular combustor centered on said axis and having an outlet connected to said nozzle, said combustor having at least one wall having an interior side and an exterior side and provided with spaced rows of apertures to produce a film of cooling air on said interior side from air entering said combustor through said apertures;

a plenum substantially surrounding said combustor and in fluid communication with said compressor and for delivering compressed air therefrom to said apertures; and

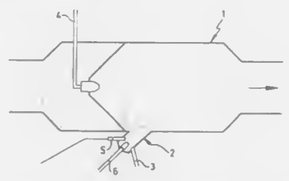
trip strips on said exterior side between said rows of apertures and directed toward, but not to, said plenum, said trip strips being located to minimize the temperature gradient between spaced locations located in turn between adjacent rows of apertures.

4,944,153

BURNER FOR HARD-TO-IGNITE MIXTURES

Dieter Goerlich, Emmering; Rainer Kolodzie, and Rainer Reiter, both of Munich, all of Fed. Rep. of Germany, assignors to Webasto AG Fahrzeugtechnik, Fed. Rep. of Germany

Filed Aug. 23, 1988, Ser. No. 235,292
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1987, 3728712
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—303 **11 Claims**



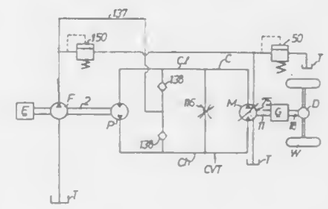
1. Burner for a hard-to-ignite mixture, such as exhaust gases of an internal combustion engine, comprising a main burner to which only fuel is supplied to the mixture and an ignition means for providing sufficient energy for ignition of the main burner; wherein said ignition means comprises an air supply device for creation of a local zone of an easy-to-combust mixture and an ignition device for producing a flame therefrom, and control means for turning off said air supply device once ignition of said main burner is achieved.

4,944,154

HYDRAULICALLY OPERATED CONTINUOUSLY VARIABLE TRANSMISSION

Eiichiro Kawahara; Kenichi Ikejiri; Mitsumasa Furumoto, and Noboru Yamamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1987, Ser. No. 130,418
Claims priority, application Japan, Dec. 9, 1986, 61-293069
Int. Cl.[5] F01B *13/04;* F16D *37/00*
U.S. Cl. 60—488 **9 Claims**



1. A hydraulically operated continuously variable transmission comprising:

an output shaft;

a hydraulic motor coupled to said output shaft and having a motor swash plate and a motor cylinder supporting an annular array of slidable motor plungers held in slidable contact with said motor swash plate;

a distribution member integral with said motor cylinder;

an input shaft;

a hydraulic pump coupled to said input shaft in sliding contact with said distribution member and having a pump swash plate movable with said motor cylinder and a pump cylinder supporting an annular array of slidable pump plungers held in slidable contact with said pump swash plate;

a closed hydraulic circuit inteconnecting said hydraulic pump and said hydraulic motor;

said pump cylinder being coaxially surrounded by said motor cylinder with a hydraulically hermetic chamber defined therebetween;

a replenishing pump operatively coupled to said input shaft and connected to said closed hydraulic circuit through a replenishing oil passage, said replenishing oil passage partly extending in said distribution member;

said distribution member having an oil passage defined therein and interconnecting said replenishing oil passage and said hydraulically hermetic chamber; and

a relief valve disposed in said oil passage in said distribution member, said relief valve being openable when the pressure of oil in said replenishing oil passage exceeds a prescribed level.

4,944,155

VACUUM SEPARATOR FOR DEWAR FLASK COLD EXCHANGE SYSTEMS

David K. Alexander, Indianapolis, Ind., assignor to Kadel Engineering Corporation, Danville, Ind.

Filed Jun. 14, 1989, Ser. No. 366,184
Int. Cl.[5] F17C *1/00*
U.S. Cl. 62—45.1 **7 Claims**

1. A cold exchange system for cooling a device in a device housing comprising:

a Dewar flask including;

an inner vessel for containing a cryogenic liquid;

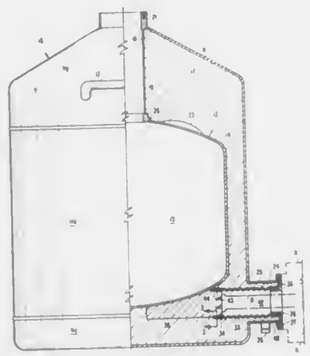
an outer vessel joined to and surrounding said inner vessel and defining a first evacuable chamber therebetween;

an evaporation port through said inner vessel and said outer vessel through which the cryogenic liquid can evaporate;

a device port through said outer vessel; and

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means for sealingly engaging the device housing to said outer vessel in communication with said device port;
a cold finger in heat transfer relation with said inner vessel;
a vacuum separator including;
a flexible non-metallic bellows having open ends, sealingly engaged at one of said ends to said cold finger and at the



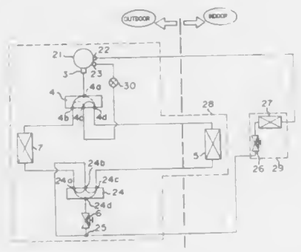
other of said ends to said outer vessel in communication with said device port, whereby said non-metallic bellows and the device housing define a second evacuable chamber separate from said first evacuable chamber; and
means for mounting the device to be cooled within said bellows in direct mechanical contact and heat transfer relation with said cold finger.

4,944,156

AIR CONDITIONING SYSTEM INTO WHICH A REFRIGERATOR OR A WARMING CABINET IS INTEGRATED, AND POWER SOURCE CIRCUIT THEREFOR

Katsuharu Yamamoto, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1988, Ser. No. 288,273
Claims priority, application Japan, Dec. 23, 1987, 62-325751; Aug. 3, 1988, 63-193078
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—324.6 **9 Claims**



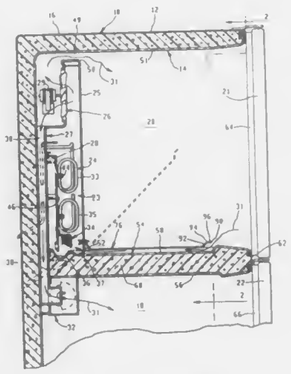
1. A system comprising:
(a) a compressor;
(b) a refrigerator;
(c) an indoor heat exchanger;
(d) an outdoor heat exchanger;
(e) a first valve having a first, a second, a third, and a fourth connecting port;
(f) a second valve having a first, a second, a third, and a fourth connecting port;
(g) an expansion valve;
(h) a first path of fluid communication linking said compressor to said first connecting port of said first valve;
(i) a second path of fluid communication linking said second connecting port of said first valve to said outdoor heat exchanger;
(j) a third path of fluid communication linking said outdoor heat exchanger to said first connecting port of said second valve;
(k) a fourth path of fluid communication linking said second connecting port of said second valve to said expansion valve;
(l) a fifth path of fluid communication linking said expansion valve to said first connecting port of said second valve;
(m) a sixth path of fluid communication linking said fourth connecting port of said second valve to said indoor heat exchanger;
(n) a seventh path of fluid communication linking said expansion valve to said refrigerator;
(o) an eighth path of fluid communication linking said refrigerator to said compressor;
(p) a ninth path of fluid communication linking said third connecting port of said first valve to said compressor; and
(q) a tenth path of fluid communication linking said fourth connecting port of said first valve to said indoor heat exchanger.

4,944,157

REFRIGERATOR FREEZER COMPARTMENT FLOOR COVERING ASSEMBLY

Thomas E. Jenkins, and David G. Beers, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 7, 1989, Ser. No. 376,436
Int. Cl.[5] F25D *17/04*
U.S. Cl. 62—407 **4 Claims**



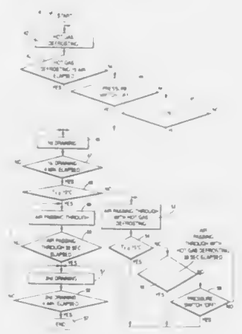
1. A refrigerator assembly comprising:
a freezer compartment having a rear wall, top wall, side walls, bottom wall and an open front,
an evaporator unit mounted in a space in front of the rear wall,
a vertical panel separating the evaporator unit from the rest of the freezer compartment to form an evaporator compartment between the panel and rear wall,
a plurality of upwardly open grooves in the bottom wall of the freezer compartment extending from the front section of the freezer compartment under the vertical panel and into the evaporator compartment, and
a cover hingedly connected to the panel for movement to a raised position above the bottom wall for access to the grooves in the bottom wall and to a lowered position horizontal to the bottom wall.

4,944,158

METHOD OF DEFROSTING A REFRIGERATING CIRCUIT FOR USE IN COOLING A VEHICULAR CHAMBER

Shigeru Akiike, Isesaki, and Yuuji Rikukawa, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Feb. 27, 1989, Ser. No. 315,575
Claims priority, application Japan, Feb. 26, 1988, 63-42319
Int. Cl.[5] F25D *21/06*
U.S. Cl. 62—81 **12 Claims**



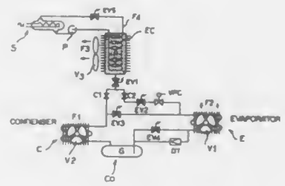
1. In a refrigerating circuit for use in cooling a vehicular chamber including a compressor, a condenser for condensing refrigerant gas discharged from said compressor, an expansion valve for expanding condensed refrigerant flowing from said condenser, a cooling unit having an evaporator and a fan disposed within the vehicular chamber to be cooled, and a controlled valve member for selectively switching a course of a flow of refrigerant gas discharged from said compressor in order to directly lead said discharged refrigerant gas to said evaporator, said fan for causing air in said vehicular chamber to pass through said evaporator, a method for defrosting a frost formed at said cooling unit comprising a first step of defrosting a frost formed at an outer surface of said evaporator by directly leading said discharged refrigerant gas to said evaporator and a second step of defrosting a frost formed at said cooling unit in addition to said evaporator by causing air in the vehicular chamber to pass through said evaporator, said first step being initiated when a command signal for defrosting a frost formed at said cooling unit is generated, said first step being terminated at the earlier point in time either of when the duration of operation of said first step exceeds a first predetermined period of time or when a temperature of an outer surface of said evaporator reaches or exceeds a predetermined value, said second step being initiated in operation after said first step is terminated, said second step being terminated when the duration of operation of said secnd step exceeds a second predetermined period of time.

4,944,159

PROCESS FOR PRODUCING COLD BY SOLID-GAS REACTION AND DEVICE PERTAINING THERETO

Georges Crozat, Perpignan, France, assignor to Falveley Entreprises, Saint-Ouen and Societe Nationale Elf Aquitaine, Courbevole, both of, France

PCT No. PCT/FR88/00255, § 371 Date Mar. 22, 1989, § 102(e) Date Mar. 22, 1989, PCT Pub. No. WO88/09465, PCT Pub. Date Dec. 1, 1988
PCT Filed May 20, 1988, Ser. No. 315,683
Claims priority, application France, May 22, 1987, 87 07209
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—112 **18 Claims**



1. A method for producing cold by means of a device comprising at least a reactor (R, R1, R2, R3) which contains a solid compound capable of reacting with a gas according to an exothermic reaction, this reactor being connected via one single isolation valve by separate circuits to a condenser (C) and an evaporator (E) which is in a heat exchange relationship with an enclosure to be cooled, the condenser (C) and the evaporator (E) being respectively connected by separate lines to a gas collector (Co), the interior of the reactor being in a heat exchange relationship with an external heat source (S), wherein the following simultaneous reactions are carried out in the reactor (R, R1, R2, R3):

$$<X,mNH_3> = n(NH_3) \rightarrow <X,(m+n)\ NH_3> \quad n[NH_3] \rightarrow n(NH_3)$$
$$\text{then } <X,(m+n)\ NH_3> \rightarrow <X,mNH_3> + n(NH_3) \quad n(NH_3) \rightarrow n[NH_3]$$

the symbols < >, [] and () denoting the solid, liquid and gaseous states respectively,

X being chosen from $ZnCl_2$, $CuSO_4$, CuCl, LiBr, LiCl, $ZnSO_4$, $SrCl_2$, $MnCl_2$, $FeCl_2$, $MgCl_2$, $CaCl_2$ and $NiCl_2$, and wherein, for the purpose of producing cold down to −40° C. in the enclosure to be refrigerated, the maximum temperature outside the latter being not more than 30° C., an external heat source (S) is employed, whose temperature is higher than a value Th, m and n being integers and Th having a value such that: for:

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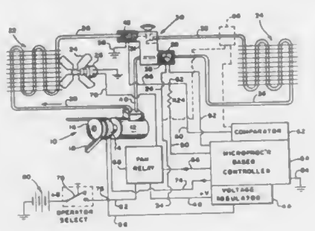
X = $ZnCl_2$(m = 2, n = 2) T_h = 139° C.
X = $CuSO_4$(m = 4, n = 1) T_h = 145° C.
X = CuCl(m = 1, n = 0.5) T_h = 151° C.
X = LiBr(m = 2, n = 1) T_h = 155° C.
X = LiCl(m = 1, n = 1) T_h = 167° C.
X = $ZnSO_4$(m = 3, n = 1) T_h = 173° C.
X = $SrCl_2$(m = 0, n = 1) T_h = 173° C.
X = $MnCl_2$(m = 2, n = 4) T_h = 174° C.
X = LiCl(m = 0, n = 1) T_h = 203° C.
X = $FeCl_2$(m = 2, n = 4) T_h = 208° C.
X = $MgCl_2$(m = 4, n = 2) T_h = 217° C.
X = $CuSO_4$(m = 2, n = 2) T_h = 230° C.
X = $ZnSO_4$(m = 2, n = 1) T_h = 247° C.
X = $CaCl_2$(m = 1, n = 1) T_h = 265° C.
X = $NiCl_2$(m = 2, n = 4) T_h = 282° C.

4,944,160

THERMOSTATIC EXPANSION VALVE WITH ELECTRONIC CONTROLLER

Peter J. Malone, Elk Grove Village; Michael B. Thompson, Hoffman Estates; Robert J. Torrence, Addison, and Marvin F. Gaudette, Rockton, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 31, 1990, Ser. No. 473,066
Int. Cl.[5] F25D *17/00*
U.S. Cl. 62—180 **4 Claims**



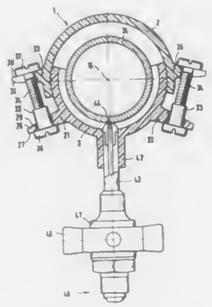
1. A refrigerant control system comprising:
(a) pump means including condenser means providing a source of pressurized liquid refrigerant;
(b) expansion valve means with a body having an inlet and outlet including conduit means operative to communicate pressurized liquid refrigerant from said pump means to the inlet thereof and having a valve member disposed in said body and movable therein for controlling flow of said liquid to said outlet for expansion;
(c) blower means operative for circulating air over said condenser means;
(d) evaporator means having an inlet and outlet and connected for receiving refrigerant flow at the inlet thereof from the outlet of said valve means and operative to absorb heat from a compartment to be refrigerated and effect vaporization of said refrigerant for discharge at the outlet thereof;
(e) said valve means body including a continuous passage therethrough connected to receive refrigerant flow from said evaporator means outlet and discharge refrigerant flow to the inlet of said pump means;
(f) said valve means further including actuator means responsive to the temperature of the refrigerant in said continuous passage operable for moving said valve member;
(g) first thermistor means disposed in said inlet of said valve means body and including current limiting resistance means electrically in series with said thermistor means;
(h) first circuit means operative to provide a flow of current to said thermistor means sufficient to cause boiling of refrigerant coming into contact therewith including means operative to determine the temperature of said flow at said boiling;
(i) second circuit means operative to compare said temperature with saturation values in a look-up table and convert said temperature to saturation pressure, said second circuit means operative to cycle said blower means responsive to said pressure;
(j) second thermistor means disposed at the outlet of said evaporator for sensing the temperature of the flow of refrigerant thereof; and
(k) second circuit means receiving a signal from said second thermistor means and operative to energize said pump means when said sensed temperature is greater than a predetermined "ON" temperature and operative to deenergize said pump means when said sensed temperature is less than a predetermined "OFF" temperature.

4,944,161

APPARATUS FOR FREEZING LIQUID-CARRYING PIPES

Josephus A. Van Der Sanden, Lange Voren 14, NL-5521 DD Eersel, Netherlands

Filed Feb. 23, 1989, Ser. No. 313,860
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1988, 8802515[U]
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—293 **9 Claims**



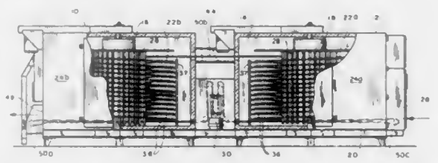
1. Apparatus for freezing liquid-carrying pipes, the apparatus comprising an annular casing having an inwardly open cross section, supply line means for supplying a refrigerant to an interior of the casing, valve means provided in said supply line means, said casing including a first casing part and a second casing part directly fixed together at right angles to a longitudinal center axis of the casing, each of said first and second casing parts including end walls spaced by jacket wall means, and wherein a carbon dioxide supply lance means is inserted in one of the first and second casing parts, the carbon dioxide supply lance means includes an end face having an opening adapted to be brought into contact with an exterior surface of the liquid carrying pipe so as to enable carbon dioxide to pass directly onto the liquid carrying pipe and over a circumference thereof.

4,944,162

HELICAL CONVEYOR FOOD FREEZER

Gary D. Lang, Naperville, and Brian E. Sink, Orland Park, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.

Filed Nov. 7, 1989, Ser. No. 432,594
Int. Cl.[5] F25D *25/04*
U.S. Cl. 62—380 **13 Claims**



1. A food freezer comprising an insulated enclosure for maintaining temperatures below ambient temperatures therewithin,
means forming an entrance and an exit in said enclosure,
an endless conveyor belt for carrying products throughout said enclosure from said entrance to said exit,
means for driving said conveyor belt so that said endless conveyor belt follows along an initial straight-line path section and then along at least one helical path section, with such helical path portion constituting a significant portion of said belt's total pathway,
cooling means for establishing a temperature within said enclosure sufficiently low to satisfactorily remove heat from products carried along said conveyor,
said belt having a plurality of horizontal rods extending laterally across said belt which rods are interconnected by means including a plurality of support surface-providing units, said interconnecting means being constructed so that, during change of belt orientation at the transition from said straight-line path section to said helical path section, the pitch between the inner ends of said rods remains constant whereas the pitch between the outer ends of said rods expands,
said conveyor belt driving means including at least one cylindrical cage supported for rotation about a vertical axis, said cage having a plurality of equidistantly spaced apart vertical drive elements located circumferentially around said cage, each of said drive elements having at least one radially and vertically extending drive surface, said drive surfaces being spaced apart on a pitch which is the same as said constant pitch at said inner ends of said rods, and
said rods having protruding heads at the laterally inner ends thereof, which heads are engaged by said drive surfaces to positively drive said belt throughout its helical path.

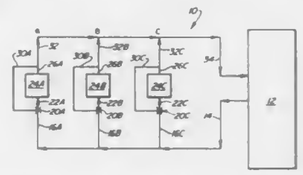
4,944,163

FLOW CONTROL APPARATUS AND METHOD

Richard E. Niggemann, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 129,449, Dec. 7, 1987, abandoned. This application Apr. 10, 1989, Ser. No. 336,595
Int. Cl.[5] F25B *1/06*
U.S. Cl. 62—500 **4 Claims**

1. A method of operating a cavitating venturi for fluid flow control in a thermal management system having an evaporator with a wet vapor exhaust, the venturi having an inlet section, a constricted section including a throat, and a diffusion section comprising regulating the pressure of a vaporous cavitation



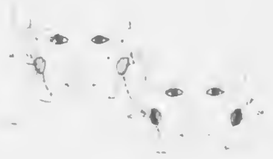
bubble downstream of the venturi throat to the pressure of said wet vapor exhaust of said evaporator.

4,944,164

CONVERTIBLE EARRING

Janis Y. Butler, R.D.8-372 Union Valley Rd., Mahopac, N.Y. 10541, and Esther Fuhrman, P.O. Box 342, Jenkintown, Pa. 19046

Filed Jul. 26, 1989, Ser. No. 385,723
Int. Cl.[5] A44C *7/00*
U.S. Cl. 63—12 **28 Claims**



1. A convertible earring comprising:
(A) a rigid earring body having a surface on one side and ear attachment means on the other side;
(B) said surface having a raised portion and an adjacent decorated portion; whereby
(C) when said earring body is attached to one ear by said ear attachment means, said raised portion hides said adjacent decorated portion behind said raised portion when said earring body is viewed from the front of the ear; and
(D) when said earring body is attached to the other ear by said ear attachment means, said adjacent decorated portion is visible in front of said raised portion when viewed from the front of the other ear;
(E) said earring body thereby being convertible to a more decorated earring body when viewed from the front of an ear by switching the attachment of said earring body from one ear to the other.

4,944,165

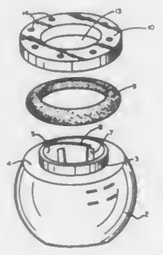
DEVICE FOR THE WASHING OF FABRIC BY MACHINE

Antonius C. G. Leebeek, Brussels, and James P. Johnston, Overijse, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 10, 1989, Ser. No. 309,448
Claims priority, application France, Feb. 11, 1988, 88 01658
Int. Cl.[5] D06F *39/02*
U.S. Cl. 68—17 R **9 Claims**

1. A device for releasing liquid and solid constituents of a washing agent into a washing bath including a main body interrupted by a filling orifice and a port for progressively releasing liquid detergent from within said main body into the

fabric during washing, wherein the improvement comprises: a solid product including soluble additive ingredients useful for



washing and a means for supporting and retaining said solid product on the exterior of said main body as said additive ingredient dissolves during washing.

4,944,166

DYEING APPARATUS

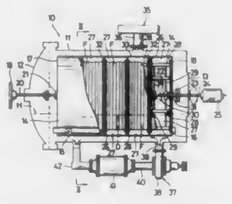
Yoshimichi Yamakita, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 10, 1989, Ser. No. 391,963

Claims priority, application Japan, Aug. 15, 1988, 63-202840

Int. Cl.[5] D06B *3/04*

U.S. Cl. 68—157 4 Claims



1. A dyeing apparatus for dyeing fabric materials with different colors which comprises:

(a) a horizontally mounted cylindrical vessel having a dished cover at one end and a rear end wall at the opposite end;

(b) a non-perforated cylindrical beam having both ends closed by end walls and concentrically mounted within said vessel and non-rotatively supported on rails, said beam having a plurality of partitions extending parallel and coextensive with said end walls and defining therebetween a plurality of dye chambers;

(c) a rotary shaft extending rotatably in bearings axially through said partitions;

(d) a plurality of winding frame members extending parallel with said rotary shaft and connected rotatably therewith by radially extending connecting bars;

(e) a drive motor having a drive shaft releasably connected to said rotary shaft;

(f) a pressure fluid reserve tank externally supported on and communicating with said vessel; and

(g) a heat medium supply externally mounted on and communicating with said vessel.

4,944,167

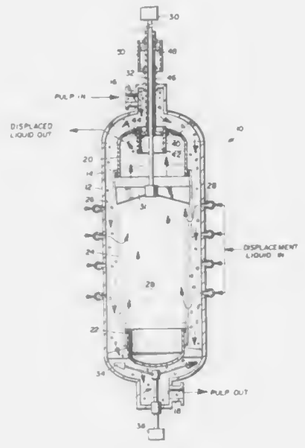
BACKFLUSHING PRESSURE DIFFUSER SCREENS

Finn Jacobsen, and Ole J. Richter, both of Karlstad, Sweden, assignors to Kamyr AB, Karlstad, Sweden

Division of Ser. No. 233,366, Aug. 18, 1988, Pat. No. 4,908,896, which is a continuation-in-part of Ser. No. 125,710, Nov. 27, 1987, Pat. No. 4,793,161. This application Nov. 9, 1989, Ser. No. 433,794

Int. Cl.[5] D21D *5/02*

U.S. Cl. 68—181 R 8 Claims



1. A pulp treating apparatus comprising:

a generally upright, liquid-tight, pressurized vessel defining a first interior volume for containing pulp to be treated under pressure;

a pulp inlet to the vessel;

a pulp outlet from the vessel, the pulp flowing generally vertically between said pulp inlet and said pulp outlet;

a screen defining a surface of revolution upstanding within the vessel and defining, in part, said interior volume containing pulp and having upper and lower ends of different cross-sectional area;

extraction means for withdrawing liquid from the pulp, through said screen, and including means defining a second interior volume within the vessel for receiving the extracted liquid;

means for vertically moving said screen to effect a major part of backflushing action; and

additional screen backflushing means mounted within the vessel and including a chamber defining element having first and second ends, the first end lying in communication with liquid in said second interior volume, and the second end lying in open communication with the pulp within said first interior volume of the vessel; a piston mounted within said chamber defining element for reciprocal movement therein and means for moving said piston in said chamber defining element towards said first end to cause said piston to force liquid out of the chamber and to provide an increase volume for the pulp in said first interior volume, and resulting in reduction of any shock effect of the backflushing.

4,944,168

CABLE LOCK

Ludger Kortenbrede, Telgte, Fed. Rep. of Germany, assignor to Aug. Winkhaus GmbH & Co. KG, Fed. Rep. of Germany

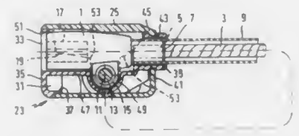
Filed Jul. 24, 1989, Ser. No. 384,746

Claims priority, application Fed. Rep. of Germany, May 18, 1989, 8906146

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] F05B *67/06*

U.S. Cl. 70—49 11 Claims



1. A cable lock comprising

an elongated lock body (1),

a flexible cable portion (3), having a first end (5) secured to the lock body (1) so that it extends in the longitudinal direction of the lock body (1) and having a second end (11) removably secured to the lock body (1) crosswise to the longitudinal direction of said lock body (1), and,

a casing (25, 31) enclosing the lock body (1) and having apertures (27, 29) for the two ends (5, 11) of the cable portion (3) and consisting of a synthetic plastic material, said casing (25, 31) comprising an outer casing part (25) being constructed as a tubular cap (25) and an inner casing part (31) fitted into the outer casing part (25) in the longitudinal direction of the lock body (1), said outer casing part (25) annularly enclosing the inner casing part (31) at least over a portion of its longitudinal dimension,

mutually complementary snap-action members (43, 45) disposed in the region of one of the ends of the outer casing part (25) seen in the longitudinal direction of the lock body, one of the snap-action members being constructed as a radially open annular groove (43) disposed in the plane extending substantially at rightangles to the longitudinal direction of the lock body (1) while the other snap-action member is constructed as an annular shoulder (45) adapted to snap into place in the annular groove (43).

4,944,169

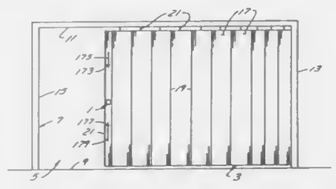
CLOSURE LOCK

H. M. Robert Labelle, Cornwall; Norman H. Cant, Bainsville, both of Canada, and Cecil M. Garrow, Hogansburg, N.Y., assignors to Martinray Industries Ltd., Cornwall, Canada

Filed Dec. 20, 1989, Ser. No. 453,792

Int. Cl.[5] E05B *65/08*; E05C *1/02*

U.S. Cl. 70—100 10 Claims



1. A closure lock for a closure of the type having a tubular post at its leading end, the closure lock having two locking bar assemblies mounted within the post, each locking bar assembly having a locking bar at one end and a strap at the other end, the locking bars projecting in opposite directions and the straps overlapping, each locking bar assembly movable longitudinally within the post between a locked position where the locking bar projects from the post and an unlocked position where the locking bar is withdrawn in the post; a locking pin within the middle of the post and movable transversely of the post between a locked and unlocked position, the locking pin, in its locked position cooperating with the overlapped straps of the locking bar assemblies, when they are in their locked position, to prevent longitudinal movement of the locking bar assemblies within the post.

4,944,170

DEVICE FOR LIFTING A TIME BAN ON THE ACTUATION OF A MECHANISM IN A CONDITIONAL-OPENING LOCKING SYSTEM IN THE EVENT OF A BREAKDOWN

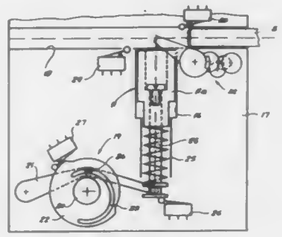
Francois Jolidon, La Chaux-de-Fonds, and Willy Richard, Les Convers 5, both of Switzerland, assignors to Reliot S.A., La Chaux-de-Fonds, Switzerland

Filed Aug. 19, 1987, Ser. No. 87,057

Claims priority, application France, Aug. 20, 1986, 86 11974

Int. Cl.[5] E05B *43/00*

U.S. Cl. 70—267 8 Claims



1. For use in a coded and conditional-opening locking system having a locking mechanism, a device for lifting, in the event of a breakdown in the locking system, a time ban on the actuation of said locking mechanism, said locking system comprising an electromagnetic latching unit for blocking the locking mechanism and electronic control means for activating and deactivating the electromagnetic latching unit according to a time-schedule thereby enabling or disabling actuation of the locking mechanism during preset times, wherein said device comprises detection means for sensing a breakdown in said locking system and transmission means controlled by the detection means for making, in response to the detection of a breakdown, said locking mechanism mechanically drive said electromagnetic latching unit such that actuation of said locking mechanism will render said electromagnetic latching unit inoperative regardless of its operative state at the time of detecting the breakdown.

4,944,171

TEMPORARY SUPPORT STRUCTURE, PARTICULARLY FOR EMERGENCY KEYS

Pierluigi Oliana, Via Redipuglia 13, 31015 Conegliano, Italy

Filed Feb. 2, 1989, Ser. No. 305,326

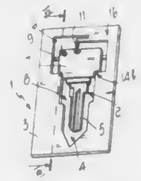
Claims priority, application Italy, Feb. 11, 1988, 82511 A/88

Int. Cl.[5] A47G *29/10*

U.S. Cl. 70—456 R 10 Claims

1. Temporary support structure for emergency keys, comprising ahead rigidly associated with a stem perimetrally shaped so as to allow the actuation of a lock, and at least one planar base having at least one seat for said key and at least one means for a temporary engagement to adapted grip elements

provided at least on said head of said key, wherein said at least one planar base has a means for booking to said head of said



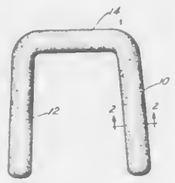
key constituted by a crosspiece, on said head of said key there is provided, transversely thereto, a head crosspiece seat shaped complimentarily to said crosspiece.

4,944,172

METHOD OF MAKING A U-SHAPED CLOSURE TAMPER EVIDENT

Alfred J. Evans, Raleigh, N.C., assignor to Delaware Capital Formation Inc., Apex, N.C.

Filed Nov. 14, 1988, Ser. No. 270,230
Int. Cl.[5] B24C *1/00*
U.S. Cl. 72—53 **3 Claims**





I. In the method for manufacture of an integral, U-shaped metal clip, the improvement comprising the steps of:

a. forming a length of wire by wire drawing techniques with a substantially uniform cross section and a minimum cross sectional area of approximately 0.005 square inches and a maximum cross sectional area of approximately 0.44 square inches;

b. initially texturing and work hardening the surface of the wire substantially uniformly to provide a roughness in the range of about 500 to 1000 micro-inches;

c. stress relieving the work hardened surface by further texturing the surface to a roughness in the range of about 100 to 500 micro-inches; and

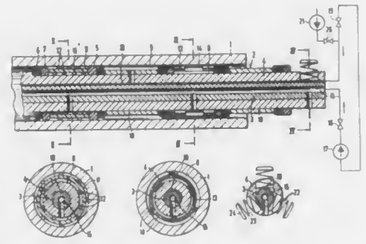
d. forming an integral length of the wire into a U-shaped metal clip, whereby the formed clip surface is tamper evident and the strength of the clip is enhanced relative to a clip formed without surface texturing.

4,944,173

PROBE FOR HYDRAULIC EXPANSION, INCLUDING CENTERING DEVICE

Helmut Swars, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Sep. 1, 1988, Ser. No. 239,599
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1987, 3729169
Int. Cl.[5] B21D *26/02*
U.S. Cl. 72—62 **10 Claims**



1. A flexible probe (2) for hydraulically expanding an inner faced tube (1) in portions, comprising:

seals (5) mounted and arranged in pairs on an outer surface of the probe, said pairs of seals defining operational regions therebetween when sealed against the inner face of the tube;

centering elements (11, 13) mounted on the probe and arranged between the seals of each said pair of seals, said centering elements flexibly resting against the outer surface of the probe (2) and flexibly contactable with the inner face of the tube when the probe is introduced into the tube, the centering elements being comprised of annular sleeves circumscribing the probe and having circumferentially distributed spring elements projecting therefrom and alternately bent inwardly toward the probe and outwardly toward a tube to be bent; and

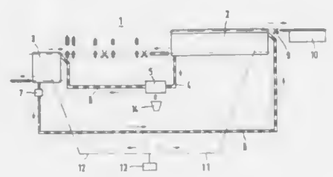
means for providing a pressurized hydraulic fluid to said operational regions so that the portions of the tube are expanded.

4,944,174

PROCESS FOR COOLING HEATED MATERIAL

Peter Muller, Neuss, Fed. Rep. of Germany, assignor to Deutsche Voest-Alpine Industrieanlagenbau GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 21, 1988, Ser. No. 196,941
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1987, 3713401
Int. Cl.[5] B21B *45/02*; C21D *1/56*
U.S. Cl. 72—201 **15 Claims**



1. A process for heating metal stock prior to its introduction into a hot roll mill and subsequent cooling after its egression therefrom comprising the steps of:

situating a heating bath including molten metal at an entry into a hot roll mill such that metal stock entering the hot roll mill passes through the heating bath acquiring heat therefrom;

situating a cooling bath including molten metal at an exit from the hot roll mill such that the metal stock exiting the hot roll mill passes through the cooling bath delivering heat thereto;

flowing the molten metal in each of said baths counter to the direction of passing of the metal stock therethrough to form within each bath a hotter fraction and a cooler fraction of the molten metal; and

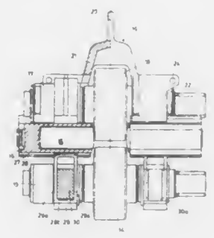
circulating the molten metal between the heating bath and cooling bath so that the hotter fraction of the molten metal in the cooling bath is transfered to the heating bath and the cooler fraction of the molten metal in the heating bath is transfered to the cooling bath.

4,944,175

UNIVERSAL ROLLING MILL STAND WITH ADJUSTABLE SETS OF HORIZONTAL ROLLS AND VERTICAL ROLLS

Alexandr Svagr, Hilden; Hans Bogendörfer, Düsseldorf; Klaus Riebschläger, Hilden; Hans-Jürgen Reismann, Düsseldorf, and Hubertus Wenig, Herne, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 16, 1988, Ser. No. 194,384
Claims priority, application Fed. Rep. of Germany, May 16, 1987, 3716501
Int. Cl.[5] B21B *31/08, 13/10*
U.S. Cl. 72—225 **16 Claims**



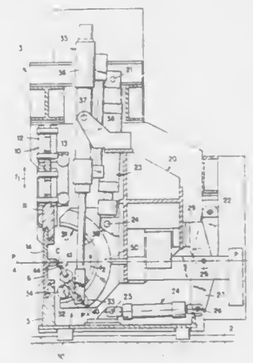
1. In a universal rolling mill stand with adjustable sets of horizontal rolls and vertical rolls guided in window-type recesses of roll housings, each roll housing having two roll housing halves formed by a pair of housing posts with cross-members connected by means of transverse supports, the rolls being provided with bearing chocks, the bearing chocks of the set of horizontal rolls being vertically movable between the housing posts of the respective pair of housing posts, the bearing chocks of the set of vertical rolls being movable horizontally between outwardly cantilevering attachments of the pair of housing posts, wherein the upper cross-members connecting the pairs of housing posts can be raised and swung horizontally, the improvement comprising a frame-type cage having plate-like members, the cage comprising means for connecting the cage comprising means for connecting the cage to lifting devices, means for guiding outer surfaces of the wall members of the cage on the guide surfaces of the housing posts of pairs of housing posts which face each other, the cage comprising means for vertically and horizontally moving the cage within the rolling mill stand and for installing the cage in and removing the cage from the rolling mill stand, inner surfaces of the wall members of the cage forming guide surfaces for adjustment movements of the bearing chocks of at least one of the rolls, the bearing chocks of at least one of the rolls being mounted to the cage and the bearing chocks of the other rolls being coupled to and suspended from the bearing chock of the at least one of the rolls mounted to the cage.

4,944,176

METAL PLATE BENDING MACHINE

Jean-Marie A. Glorieux, Ecole Valentin, and Jean-Pierre M. D. Gouget, Besancon, both of France, assignors to Societe Anonyme DIMECO ALIPRESSE, Miserey Salines, France

Filed Apr. 18, 1989, Ser. No. 339,654
Claims priority, application France, Apr. 20, 1988, 88 05481
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—319 **9 Claims**



1. A metal plate bending machine comprising:

(a) a machine frame;

(b) clamping means to clamp a metal plate such that it extends in a feeding and transfer plane P;

(c) a pair of bending jaws located on either side of plane P, each bending jaws having a bending edge extending substantially parallel to plane P;

(d) a guiding and rolling track having a partial cylindrical configuration about a central axis C extending substantially parallel to plane P;

(e) a bending flap having a plane of symmetry P' and a bending surface for bending said metal plate extending substantially parallel to plane P;

(f) means movably attaching the bending flap to the guiding and rolling track so that the bending flap rides in said track such that the plane of symmetry p' extends generally radially from the central axis C and the angle between the plane of symmetry P' and plane P can be varied to bend said metal plate;

(g) a sub-frame chassis movably suspended from the frame and having the guiding and rolling track mounted thereon; and

(h) actuating means operatively interposed between the frame and the suspended sub-frame chassis to move the sub-frame chassis with respect to the frame so as to move the guiding and rolling track and, consequently the bending flap, with respect to the bending jaws.

4,944,177

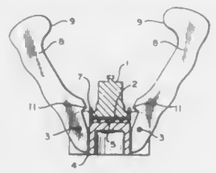
AUTOMOBILE LOCK CAP CLINCHER

Robert C. Womack, 5119 Radbrook Pl., Dallas, Tex. 75220

Filed May 22, 1989, Ser. No. 356,016
Int. Cl.[5] B25B *27/14*
U.S. Cl. 72—410 **7 Claims**

1. A cap clinching tool used for clinching metal caps in recaping automobile door and truck lock cylinders comprising: a tool base having an upper cylindrical pocket for receiving a cap, with sets of opposite side tabs, and a lock cylinder with a

head end about which tabs of the cap are clinched by the tool; two opposing handles each pivotally mounted by pivot mount means in said tool base on opposite sides of said upper cylindrical pocket; and each of said two opposing handles being formed with an inwardly directed clinching nose mounted above the pivot center of the handle about its pivot mount



means, and positioned to engage respective opposite side cap tabs aligned therewith bending the tabs initially inwardly and then progressively down as the clinching nose of each handle moves through an arc from a lateral movement to a semi-vertical movement pushing down on the cap tabs engaged by the inwardly directed clinching noses of the opposing handles as they are squeezed toward each other by a user's hand.

4,944,178

APPARATUS AND METHOD FOR MEASURING DISSOLVED GAS IN OIL

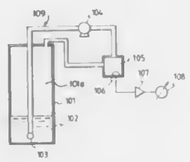
Yasuo Inoue; Masanari Kikkawa; Masaru Kamba, and Hiroshi Okuda, all of Kyoto, Japan, assignors to Nissin Electric Co., Ltd, Kyoto, Japan

Filed Apr. 5, 1989, Ser. No. 333,401

Claims priority, application Japan, Apr. 18, 1988, 63-95238; Sep. 27, 1988, 63-243709; Sep. 27, 1988, 63-126807[U]; Sep. 27, 1988, 63-126809[U]

Int. Cl.[5] G01N *7/00*

U.S. Cl. 73—19.1 **7 Claims**



1. A method of measuring a dissolved gas in oil comprising the steps of:

passing a bubbling gas into an oil sample having a dissolved gas in solution, taken out from oil handling equipment and contained in an extraction vessel, to form bubbles in said oil sample having a size within the range of from 0.1 to 8 mm;

stripping dissolved gas from said oil sample with said bubbles to form bubbles containing a gas mixture of said bubbling gas and dissolved gas stripped from said oil sample;

recovering the gas mixture in a gas recovering vessel and measuring the concentration of said dissolved gas with a gas sensor; and

returning said recovered gas mixture into said extraction vessel through a pump to thereby circulate said recovered gas mixture.

4,944,179

VIBRATION DETECTOR

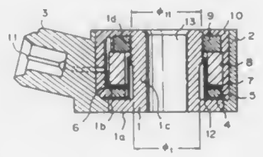
Satosi Komurasaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 252,407, Oct. 3, 1988, abandoned. This application Jan. 22, 1990, Ser. No. 465,657

Claims priority, application Japan, Oct. 1, 1987, 62-150588[U]

Int. Cl.[5] G01P *15/09*

U.S. Cl. 73—35 **9 Claims**



1. A vibration detector for detecting the vibration of an object, comprising:

a bushing having a bolt hole extending therethrough, said bushing having a block portion for attaching said detector to said object by means of a bolt extending from said object through said bolt hole and a tube-like portion extending from said block portion, said tube-like portion having a threaded portion and a non-threaded portion, said non-threaded portion being between said threaded portion and said block portion, the outer diameter of said non-threaded portion being equal to or smaller than the minimum diameter of said threaded portion;

a piezoelectric element for converting vibration of said object into an electric signal;

a weight adapted to subject said piezoelectric element to a load; and

a nut engaged with said threaded portion of said tube-like portion, said piezoelectric element and said weight being secured by means of said nut.

4,944,180

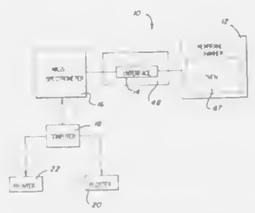
PERMEATION MEASUREMENT DEVICE

James C. Tou, and Donald C. Ruif, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 26, 1988, Ser. No. 237,290

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 **16 Claims**



1. A system for measuring the permeation rate of organic molecules across a polymer film, comprising:

chamber means for supporting a polymer film sample and permitting an upstream side of said polymer film sample to be swept with a fluid containing organic molecules and a downstream side of said polymer film sample to be swept with a carrier fluid under substantially atmospheric pressure and controlled environmental conditions on at least the upstream side of said polymer film sample;

interface means in communication with the downstream side of said polymer film sample for enabling organic molecules which have permeated across said polymer film sample to be subjected to low pressure mass spectrometry analysis; and

mass spectrometer means for analyzing the concentration of said permeant organic molecules in said carrier gas.

4,944,181

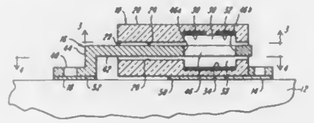
CAPACITIVE STRAIN GAGE HAVING FIXED CAPACITOR PLATES

Vincent P. Wnuk, Lunenburg, Mass., assignor to Hitec Products, Inc., Ayer, Mass.

Filed Aug. 30, 1988, Ser. No. 238,307

Int. Cl.[5] G01B *7/22*

U.S. Cl. 73—780 **9 Claims**



1. A capacitive strain gage for measuring strain in a test specimen, comprising:

a housing attachable to the test specimen at a first location, said housing including a passage extending therethrough between spaced-apart opposing surfaces, one of said opposing surfaces having first and second electrodes disposed thereon and the other of said opposing surfaces having a third electrode disposed thereon, said electrodes each having fixed positions on said housing, and said first and second electrodes each being positioned for capacitive coupling to said third electrode; and

a ground plane attachable to the test specimen at a second location in movable relation to said housing, said ground plane including an arm that extends into the passage in said housing, said arm including an aperture for electric fields that is aligned with said electrodes in a quiescent position, said aperture being sized and shaped such that when strain in said test specimen causes relative movement of said housing and said arm, the capacitive coupling between said third electrode and at least one of said first and second electrodes is changed, wherein said first and second electrodes comprise parallel conductive strips perpendicular to the direction of relative movement of said housing and said ground plane, wherein said first and second electrodes have parallel outer edges perpendicular to the direction of relative movement and wherein the aperture in said ground plane includes parallel opposite edges that are respectively aligned with and parallel to the outer edges of said first and second electrodes.

4,944,182

AIR FLOW RATE METER AND METHOD FOR PRODUCING AN AIR FLOW RATE METER

Heinz Gneiss, Ludwigsburg; Wolfgang Kienzle, Hemmingen; Rudolf Sauer, Benningen, and Werner Waensch, Unterriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

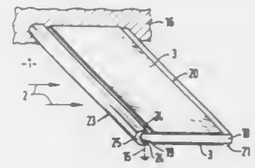
Filed Jan. 3, 1989, Ser. No. 292,868

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1988, 3801165; Nov. 12, 1988, 3838466

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.26 **13 Claims**

1. An air flow rate meter for measuring the quantity of air aspirated by internal combustion engines, comprising at least one temperature-dependent measuring resistor disposed in a flow cross section on a substrate having an upstream and a downstream zone and embodied as a film, said upstream zone of the substrate (18) further including an end face (19) and a body (23) with a leading edge, said body (23) covers said end face (19) of the substrate and extends into a flow direction of the aspirated air flow, said substrate has upper and lower side



faces (20, 21) that are oriented parallel to the flow direction and said body (23) is U-shaped including legs that are secured to said side faces (20, 21) and which extend along said upstream zone of said substrate.

4,944,183

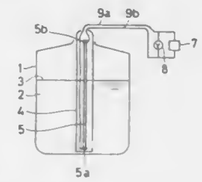
LEVEL GAUGE FOR LIQUID HELIUM

Tanyoshi Masumoto; Akihisa Inoue; Kunio Matsuzaki, all of Sendai; Masami Ishii; Ryohei Yabuno, both of Toyota, and Tetsuo Oka, Toyoake, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Nov. 29, 1988, Ser. No. 277,379

Int. Cl.[5] C22C *28/00*; J01F *23/24*; H01B *12/00*; G01K *7/00*

U.S. Cl. 73—295 **8 Claims**



1. A level gauge comprising:

a sensing element comprising a superconductive alloy represented by the formula:

$$Mo_aRu_bZ_c$$

wherein

Z is phosphorous, boron, or a mixture of phosphorous and boron,

b has a value of about 32,

c has a value of about 20, and

a+b+c=100;

means for passing an electrical current through said sensir element; and

means for detecting an indicia of the electric current passing through said sensing element.

4,944,184

ASYMMETRIC FLEXURE FOR PENDULOUS ACCELEROMETER

Graeme A. Blake, Bellevue; Brian L. Norling, Mill Creek, and Mitchell J. Novack, Kirkland, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

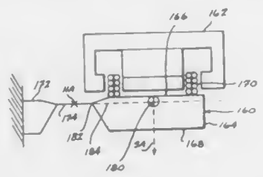
Filed Apr. 14, 1989, Ser. No. 338,808

Int. Cl.[5] G01P *15/13*

U.S. Cl. 73—514 **7 Claims**

1. In an accelerometer for measuring acceleration along a sensing axis, the accelerometer comprising a proof mass suspended from a support by one or more flexures such that the proof mass can pivot with respect to the support about a hinge

axis, the proof mass comprising a paddle attached to the flexures, the paddle having first and second paddle surfaces and a coil mounted on the first paddle surface, the paddle surfaces being planar and parallel to one another, the accelerometer further comprising means for mounting the support and means for forming a magnetic circuit with the coil such that the proof mass can be maintained in a null position, the improvement



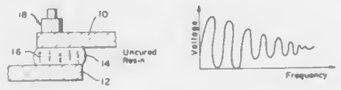
wherein the flexures are positioned such that a plane containing the hinge axis and a center of mass of the proof mass is parallel to one of the paddle surfaces, and closer to one paddle surface than to the other paddle surface, the second paddle surface not having a coil or other structure mounted thereon, such that the second paddle surface is accessible for use in a position pick-off system.

4,944,185

SYSTEM AND METHOD FOR QUALITATIVELY AND NONDESTRUCTIVELY INSPECTING ADHESIVE JOINTS AND OTHER MATERIALS

William G. Clark, Jr., Murrysville, and Warren R. Junker, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 17, 1989, Ser. No. 298,597
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—579 **33 Claims**



1. A method for nondestructively monitoring the structural integrity of a material wherein the material is impregnated with tagged particles, said system comprising the steps of:
activating said tagged particles to cause an inherent structural resonance in the material;
monitoring and measuring the activation and structural resonance of said material; and
relating the structural resonance of said material to the structural integrity of the material.

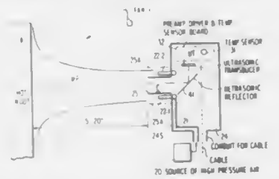
4,944,186

ULTRASONIC MEASURING SYSTEM

John A. Dorr, Crofton, Md., assignor to Xecutek Corporation, Annapolis, Md.

Filed Nov. 29, 1988, Ser. No. 277,604
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—597 **15 Claims**

1. In an ultrasonic range measurement system having an ultrasonic transducer for transmitting ultrasonic energy along a measuring path toward a hot target and for receiving reflection echoes of ultrasonic energy from said target, means for measuring the speed of sound in air in said measuring path and electronic means for determining the range to said target from the time of transmission of said ultransonic energy to the receipt of reflection of ultrasonic energy from said target, the improvement comprising, a source of measuring path air under pressure, means for forming a substantially homogenous column of said measuring path air between said ultrasonic transducer and said hot target a plenum chamber, means mounting said ultrasonic transducer within said plenum chamber on an



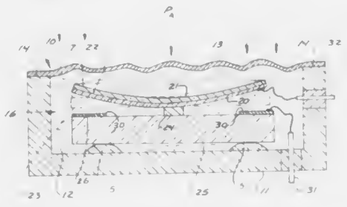
axis at a transverse angle to the axis of said measuring path, and an ultrasonic reflector for reflecting ultrasonic energy from said ultrasonic transducer through an opening in said plenum chamber to said hot target and from said target to said ultrasonic transducer through said opening.

4,944,187

MULTIMODULUS PRESSURE SENSOR

Roger L. Frick, Chanhassen, and Stanley E. Rud, Jr., Eden Prairie, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Dec. 23, 1988, Ser. No. 289,207
Int. Cl.[5] G01L *7/08, 9/04, 9/12*
U.S. Cl. 73—718 **25 Claims**



20. An apparatus for sensing a fluid pressure, comprising:
a first body disposed in the fluid having a first surface, the pressure tending to compress the first body at a first rate;
a second body disposed in the fluid having a second surface joined to the first surface, the pressure tending to compress the second body at a second rate different from the first rate;
the pressure compressing the joined bodies at different rates to cause the joined bodies to distort; and
means attached to the joined bodies for sensing the distortion and converting to an output indicating the pressure.

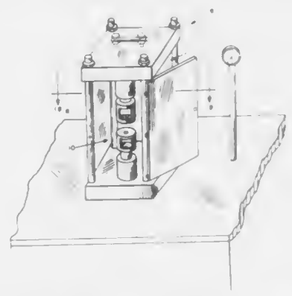
4,944,188

FASTENER TESTER

John H. Dial, 25 Ranger Rd., Cartersville, Ga. 30120

Filed May 10, 1989, Ser. No. 350,091
Int. Cl.[5] F16B *31/02*
U.S. Cl. 73—761 **22 Claims**

1. An apparatus for testing the performance of a fastener under load comprising:
an actuating assembly including:
a piston and cylinder assembly including a piston reciprocally mounted in a cylinder and having a piston rod extending from said cylinder;
a base member and a cap member disposed in spaced relation;
a plurality of support rods secured to said base member and extending through said cap member, said support rods being secured to said base member and said cap member; and,
actuating means for actuating said piston for the reciprocal movement thereof.
a tensile loading structure including:
a plurality of compression rods, each said compression rod having lower and upper ends with a said lower end of each compression rod being secured to a said support rod of said actuating assembly and extending upwardly therefrom, a second cap member secured to said compression rods at said upper ends thereof;
a pair of shackles disposed for securing a fastener therein, a first of said pair of shackles secured to said piston rod for movement therewith, a second of said pair of shackles secured to said second cap member;
a recording member connected to said piston cylinder of said actuating assembly for recording the amount of tension being applied to said fastener through said shackles; and
an enclosure for enclosing said tensile loading structure.

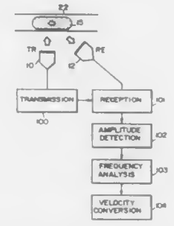


4,944,189

ULTRASONIC SPECKLE VELOCITY MEASUREMENT METHOD AND APPARATUS

Masato Nakajima, and Takashi Ito, both of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1988, Ser. No. 275,728
Claims priority, application Japan, Nov. 30, 1987, 62-301736
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.25 **9 Claims**



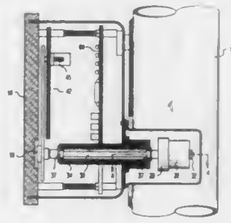
1. A non-Doppler ultrasonic speckle velocity measurement method comprising the steps of:
transmitting ultrasonic waves toward a moving measurement object including a large number of microscopic scattering bodies;
receiving echo signals generated by the interference of scattering waves reflected from said scattering bodies;
detecting the envelope of the time-based amplitude fluctuation of said echo signals;
frequency-analyzing said envelope of the time-based amplitude fluctuations to detect a fluctuation frequency showing the degree of said fluctuation; and
computing the speckle velocity from the fluctuation frequency.

4,944,190

FLOW METER

Henry A. Scally, Lederach, and Harold L. Gingrich, Norristown, both of Pa., assignors to Ametek Corporation, New York, N.Y.

Filed Sep. 19, 1988, Ser. No. 246,099
Int. Cl.[5] G01F *1/22*
U.S. Cl. 73—861.58 **4 Claims**



1. A flow meter comprising:
a flow tube adapted for connection into a fluid flow passage through which a fluid flow to be measured passes;
a magnetic float;
means for mounting said magnetic float within said flow tube for movement within said flow tube in response to said fluid flow;
a cylindrical magnet;
means for mounting said cylindrical magnet in proximity to said magnetic float and outside said flow tube for rotational displacement of said cylindrical magnet in response to changes in the magnetic coupling between said magnetic float and said cylindrical magnet caused by movement of said magnetic float within said flow tube;
a sensor responsive to rotational displacement of said cylindrical magnet for generating a voltage output signal having a sinusoidally varying amplitude dependent upon the angle of rotational displacement of said cylindrical magnet, said voltage output signal varying substantially linearly with said angle of rotational displacement of said cylindrical magnet over a limited range of rotational displacement of said cylindrical magnet;
a collar within which said sensor is mounted and having a rotation axis parallel to the axis of rotation of said cylindrical magnet;
and means for adjusting said collar for positioning said sensor in proximity to said cylindrical magnet and at a point on the circumference of said cylindrical magnet for producing said substantially linear voltage output signal for said limited range of rotation of said cylindrical magnet as said cylindrical magnet is rotationally displaced in response to movement of said magnetic float within said flow tube.

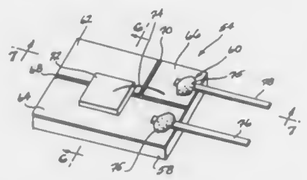
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4,944,191

ULTRASONIC DETECTOR

John Pastrone, Los Gatos; George H. Fellingham, San Jose, and Michael Lawless, Boulder Creek, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 45,951, May 1, 1987, Pat. No. 4,821,558.
This application Mar. 7, 1989, Ser. No. 307,489
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—599 10 Claims



1. An ultrasonic liquid detector comprising:
an ultrasonic sound generator and an ultrasonic sound receiver spacedly separated apart from one another so as to receive a liquid carrying member therebetween;
each of said sound generator and sound receiver including a substrate and a layer of conductive material on said substrate, said conductive layer having at least two regions electrically isolated from each other, a piezoelectric chip placed in electrical contact over at least a portion of a first region of said conductive layer, and a conductive member extending between said piezoelectric chip and a second region of said conductive layer;
whereby when an electrical signal is applied between said first and second regions the piezoelectric chip on said sound generator is excited, causing ultrasonic sound to be generated, and whereby an amplitude of the ultrasonic sound received by said piezoelectric chip on said sound receiver is electrically detected by monitoring the electrical signal produced between the first and second regions of the conductive layer on said sound receiver, the amplitude of the ultrasonic sound received increasing substantially when liquid is present in the liquid carrying member between the sound generator and the sound receiver.

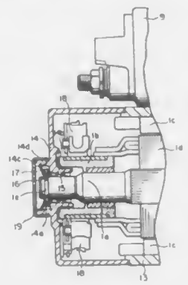
4,944,192

STARTER FOR AN INTERNAL COMBUSTION ENGINE

Akira Morishita, and Shuzoo Isozumi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 278,401, Dec. 1, 1988. This application Aug. 11, 1989, Ser. No. 392,504
Claims priority, application Japan, Dec. 26, 1987, 62-197808; Jan. 8, 1988, 63-1533; Feb. 26, 1988, 63-25276
Int. Cl.[5] F02N *11/02*
U.S. Cl. 74—6 8 Claims

1. A starter for an internal combustion engine comprising:
an electric motor including an armature mounted on an armature shaft and accommodated in a cylindrical yoke and a commutator;
a washer abutting a rear end of said commutator;
a front frame coupled to an output side of said cylindrical yoke and having a central aperture;
an output shaft forming an integral front extension of said armature shaft of said electric motor to be driven and rotated;
a hollow cylindrical member coaxially disposed around and axially slidably splined to a portion of said output shaft;
a hollow shaft coaxially and rotatably and axially slidably supported around a portion of said output shaft at a front side of said hollow cylindrical member splined to the output shaft;
a pinion gear formed at a front end of said hollow shaft and adapted to engage with a ring gear of the internal combustion engine;
a one-way clutch axially slidably disposed around said output shaft and coupling said hollow cylindrical member and said hollow shaft to transmit rotational motion in one rotational direction;
an annular bearing mounted to said central aperture of said front frame and rotatably and axially slidably supporting said hollow shaft extending therethrough;
a stopper member disposed on an axially slidable assembly including said hollow shaft and one-way clutch, said stopper member abutting against a rear side surface of said annular bearing to stop a forward movement of said axially slidable assembly at an extreme front position at which said pinion engages with a ring gear of the internal combustion engine; and



urging means for applying a thrust force urging the armature shaft of said electric motor in an axially forward direction, at least during a time when the electric motor is in rotation, thereby counterbalancing and cancelling an axially backward driving force acting on a splined portion of said output shaft from said axially slidable assembly at a time when said output shaft is in rotation to transmit a rotational force to said hollow cylindrical member, thereby to minimize friction between said washer and said commutator.

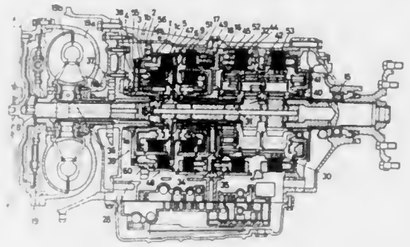
4,944,193

AUTOMATIC TRANSMISSION WITH A POWER TAKE-OFF MECHANISM

Kouhei Harada, Nagoya City, and Hiromi Hasegawa, Obucity, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 28, 1989, Ser. No. 316,778
Claims priority, application Japan, Feb. 29, 1988, 63-026302[U]
Int. Cl.[5] F16H *37/00*
U.S. Cl. 74—15.86 8 Claims

1. An automatic transmission provided with a power take-off mechanism comprising:
a plurality of friction clutches and a plurality of planetary gears providing for multiple gear ratio changes of the transmission;
a front clutch drum connected with a transmission input shaft, said friction clutches being positioned coaxially and radially with respect to each other and being positioned radially interiorly of said drum; a step portion formed on a radial outer side of said drum and said drum receiving radially interiorly therein a piston for operating one of said friction clutches positioned radially outwardly with



respect to another of said plurality of friction clutches; and
a power take-off gear fixedly connected to said step portion.

4,944,194

BACKUP CONTROL MEANS FOR SHIFT LEVER OF AN AUTOMATIC TRANSMISSION SYSTEMS

Akifumi Tanoue; Hiromi Kono, and Yuji Satoh, all of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 318,715
Claims priority, application Japan, Mar. 17, 1988, 63-61918
Int. Cl.[5] B60K *20/14;* G08B *21/00*
U.S. Cl. 74—335 11 Claims

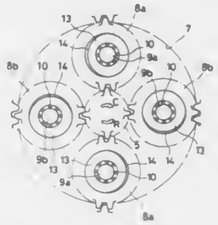
1. A drive control apparatus of an automatic transmission system of an automotive vehicle for displacing a shift lever of the automatic transmission system in a shift direction and a select direction which are at right angles to each other, said drive control apparatus comprising:
(a) a shift actuator and a select actuator, each of said shift actuator and said select actuator comprising,
(i) a fluid pressure actuator,
(ii) a piston rod and a detection rod arranged to be displaced an equal amount with respect to each other in response to a working fluid being supplied to and discharged from said fluid pressure actuator, said piston rod operatively connectable to the shift lever,
(iii) a plurality of electromagnetic valve means for supplying and discharging said working fluid to and from said fluid pressure actuator according to a control signal, and,
(iv) a position switch means for withdrawably engaging in a detection grove formed in an outer periphery of said detection rod, and for outputting a reference position signal when engaged in said detection grove;
(b) first and second stroke sensor means for continuously detecting a displacement of said detection rod of said shift actuator and said select actuator, respectively, and for outputting corresponding first and second displacement detection signals, respectively; and,
(c) control means, coupled to said first and second stroke sensor means and said position switch means of each of said shift actuator and said select actuator, for calculating an optimal operating position of each of said shift actuator and said select actuator according to an operating state of the automotive vehicle, and for outputting said control signal to said electromagnetic valve means of each of said shift actuator and said select actuator according to the thus calculated optimal operating position of each of said shift actuator and said select actuator, and according to said first and second displacement detection signals respectively output by said first and second stroke sensor means when said first and second stroke sensor means are operable, and according to said reference position signal of said position switch of at least one of said shift actuator and said select actuator when a corresponding one of said first and second stroke sensor means is inoperable.

4,944,195

CONTROLLING TRANSMISSION

Takashi Takahashi, 26-18, Kamisoshigaya 1, Setagaya-ku, Tokyo, and Kinichi Endo, Hachioji, both of Japan, assignors to Takashi Takahashi, Tokyo, Japan

Continuation-in-part of Ser. No. 193,601, May 12, 1988, which is a division of Ser. No. 27,383, Mar. 18, 1987, Pat. No. 4,759,229.
This application Sep. 22, 1988, Ser. No. 247,558
Claims priority, application Japan, Sep. 12, 1986, 61-215695; Oct. 21, 1987, 62-263665
The portion of the term of this patent subsequent to Jul. 26, 2005, has been disclaimed.
Int. Cl.[5] F16H *55/18*
U.S. Cl. 74—409 5 Claims



1. A controlling transmission comprising
a planetary gear mechanism having at least one pair of intermediate gears interposed to mesh with a sun gear and an internal gear, each of said intermediate gears being rotatably supported by a shaft and means fixing each of said intermediate gear shafts in a position on a carrier with the teeth of one of said intermediate gears of each pair contacting only a first face of the teeth of said sun gear and of said internal gear, and the teeth of the other intermediate gear of each pair contacting only a second face of said teeth of said sun gear and of said internal gear, wherein each of said intermediate gears in each pair contacts said sun gear and said internal gear to transmit power in opposite directions of rotation when each of said intermediate gears in each pair is driven to rotate in a direction opposite to the direction of rotation of the other intermediate gear of that pair and teeth of each of said intermediate gears constantly contact said first and second faces of said sun gear and said internal gear.

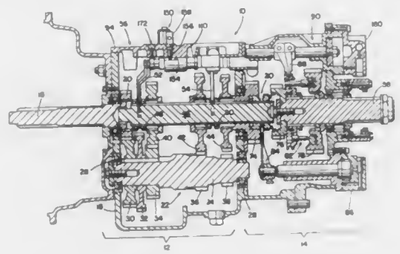
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4,944,196
CONJUGATE GEAR SYSTEM
Eugeny L. Rivin, Lathrup Village, Mich., assignor to The Board of Governors of Wayne State University, Detroit, Mich.
Filed Mar. 10, 1989, Ser. No. 321,375
Int. Cl.[5] F16H *55/16, 55/14*
U.S. Cl. 74—443 22 Claims



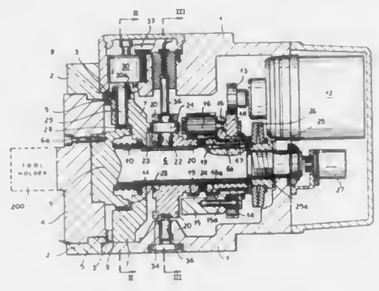
1. A gear system for transmitting mechanical power comprising a pair of meshingly engageable, conjugate toothed gears, the engagement therebetween producing a sliding component of motion and a rolling component of motion, at least one member of said pair of gears having at least one three-component tooth, which tooth includes:
a rigid core;
at least one rigid crescent disposed thereon, said crescent rollingly engageable with a tooth of the other member of the gear pair; and
means for displaceably mounting the crescent on the core such that the crescent is displaceable with respect to the core in the direction of the sliding component of motion, whereby the sliding component of motion is separated from the rolling component of motion during meshing of the gear pair.

4,944,197
RESILIENT RANGE INTERLOCK
Alan C. Stine, Kalamazoo, and Joseph D. Reynolds, Climax, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 7, 1989, Ser. No. 362,786
Int. Cl.[5] F16H *63/36, 63/38, 59/08*
U.S. Cl. 74—477 9 Claims



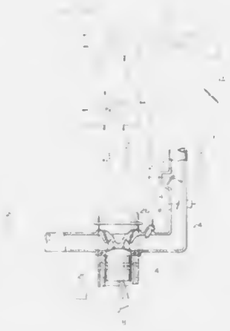
1. A range type compound change gear transmission (10/210) comprising a multiple speed ratio main transmission section (12/212) connected in series with a multiple speed ratio range type auxiliary transmission section (14/214) and a shift control assembly (56/270) therefor, said control assembly comprising a shift bar housing assembly (56) including at least two parallel shift rods (96, 98) axially movable therein from axially nondisplaced to axially displaced positions to engage and disengage, one at a time, selected main transmission section ratios, means (148/270) to selectively axially move the shift rods, and means (150/298) effective only when said main transmission is in neutral for causing the shifting of said range type auxiliary transmission section, said transmission characterized by:
a range interlock assembly (178, 190) having a first position when one of said range auxiliary section speed ratios is engaged and a second position when said range auxiliary section is in a shift transient, said range interlock assembly in said second position resiliently inhibiting axial displacement of said main transmission section shift rods from the axially centered positions thereof.

4,944,198
TOOL-HOLDER TURRET WITH AN EPICYCLIC TRANSMISSION AND POSITIONING UNIT
Mario Natale, Cologno Monzese, and Pier C. Boffelli, Milan, both of Italy, assignors to Baruffaldi S.p.A., San Donato Milanese, Italy
Filed Jul. 1, 1988, Ser. No. 214,664
Claims priority, application Italy, Jul. 14, 1987, 21270 A/87; Jun. 8, 1988, 48062 A/88
Int. Cl.[5] B23Q *16/00*
U.S. Cl. 74—813 R 15 Claims



1. A tool holder turret for a lathe comprising:
a housing having a longitudinal axis and provided with a fixed support member coaxial with said housing;
a shaft extending longitudinally in said housing and having a respective axis parallel to said longitudinal axis, said shaft having a periphery thereof and formed with two opposite ends;
a rotary member mounted on one of said ends of said shaft and coaxial therewith;
a tool holder plate operatively connected with said rotary member and coaxial with said shaft;
a reversible drive motor spaced from said rotary member in said housing and having a motor shaft rotatable about a motor axis parallel to said longitudinal axis;
a differential epicyclic transmission unit comprising:
a first member driven by said driven motor and coaxial with said longitudinal axis;
a second annular member coaxial with said longitudinal shaft and connected rigidly with said shaft;
a third annular member spaced axially from said second member and rotatable about said longitudinal shaft, said first member meshing with said second and third members;
an axially movable member provided with means for engaging said support member and said rotary member in a preselected angular position of a respective tool of a plurality of tools to be located on said tool holder plate;
means for arresting the rotation of said shaft in said preselected angular position of the respective tool; and cam means for transmitting the rotational movement of said third member of said epicyclic transmission unit to said axially movable member for the axial displacement thereof.

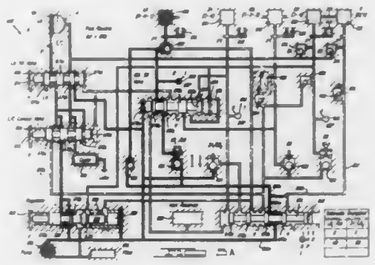
4,944,199
CONTROL APPARATUS FOR A VEHICLE ENGINE EQUIPPED WITH AN AUTOMATIC TRANSMISSION
Yoshinori Okino; Naoyuki Noguchi; Tatsuya Kita, and Takuro Shigemura, all of Hiroshima, Japan, assignors to Mazda Motor Corp., Hiroshima, Japan
Filed Jul. 29, 1988, Ser. No. 225,790
Claims priority, application Japan, Jul. 31, 1987, 62-193118
Int. Cl.[5] B60K *41/02*
U.S. Cl. 74—858 4 Claims



1. A control apparatus for a vehicle equipped with an automatic transmission having a lockup unit which is disposed between an output shaft of a vehicle engine and an input shaft of the automatic transmission and is activated at a speed larger than a lockup release speed at which said lockup unit is brought into a non-lockup position and which is set when the vehicle engine is decelerated, said control apparatus comprising:
means for detecting an operating engine speed of said vehicle engine;
means for calculating a deceleration rate of said operating vehicle engine;
means for setting said lockup release speed based on said deceleration rate in such a way that said lockup release speed becomes higher as said deceleration rate increases;
means for cutting off injection of fuel sprayed into a cylinder of said vehicle engine when said vehicle engine is decelerated;
means for resuming said injection of fuel when said operating engine speed reaches a fuel injection recovery speed which is set lower than said lockup release speed; and
means for increasingly correcting said lockup release speed according to said deceleration rate in such a way that the difference between said lockup release and fuel injection recovery speeds becomes larger as said deceleration rate increases.

4,944,200
METHOD OF APPLYING REVERSE GEAR IN AN AUTOMATIC TRANSMISSION
Howard L. Benford, Bloomfield Hills; Maurice B. Leising, Clawson, and Gerald L. Holbrook, Rochester Hills, all of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.
Filed Apr. 29, 1988, Ser. No. 187,210
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—867 7 Claims

1. In a vehicle transmission system including an input member, an output member, a torque converter assembly for transmitting torque between an engine and the input member, a gear assembly for changing the ratio of torque between the input member and output member, a plurality of frictional units for shifting the gear assembly, a fluid actuating device being movable for applying at least one frictional unit, at least one solenoid-actuated valve being movable in response to the presence or absence of electrical power to the valve for directing fluid flow between a fluid source and the fluid actuating device, at least one check valve, a manual valve moveable in response to a manual input, input sensors providing input signals of predetermined conditions, a controller for processing the input signals and providing output signals to control the at least one solenoid-actuated valve, a method of shifting the gear assembly in a vehicle transmission, said method comprising the steps of:
supplying fluid flow from a fluid source to through a manual valve in one predetermined position to a fluid actuating device to engage a frictional unit;



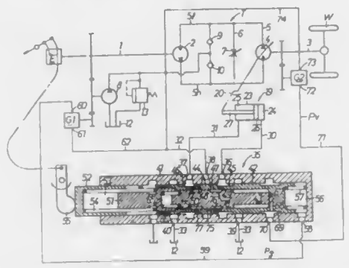
moving the manual valve in response to a manual input from one predetermined position to another predetermined position;
directing fluid to another fluid actuating device with fluid flow from the manual valve when in the latter position;
venting fluid flow from the former fluid actuating device past at least one check valve to disengage the former frictional unit for a time period;
applying the latter fluid actuating device to engage another frictional unit;
reading an input sensor to determined the time of application of the former fluid actuating device and adding an additional predetermined time period to that time to determine reapplication of the former fluid actuating device; and
reapplying the former fluid actuating device to engage the former frictional unit.

4,944,201
APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE AUTOMOTIVE TRANSMISSION
Takashi Iino, and Yoshihiro Katagiri, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1987, Ser. No. 137,756
Int. Cl.[5] B60K *41/14;* F16D *31/02*
U.S. Cl. 74—868 6 Claims

1 An apparatus for controlling a hydraulically operated continuously variable transmission in an automobile having an engine, the transmission including a transmission ratio controlling member and a hydraulic actuator operatively coupled to the transmission ratio controlling member for continuously operating the transmission ratio controlling member to increase or reduce the transmission ratio of the continuously variable automotive transmission, said apparatus comprising a control valve which applies a controlling hydraulic pressure to said hydraulic actuator dependent on the difference between a first control force commensurate with an indication of the

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automobile driver's intention of acceleration or deceleration of the automobile and a second force commensurate with the rotational speed of the engine, in order to change the direction in which the hydraulic actuator is operated, said control valve comprising a cylinder having first and second ports communicating with said hydraulic actuator, a third port communicating with a source of hydraulic pressure, and a fourth port communicating with an oil tank, a first spool slidably disposed in said cylinder and slidable dependent on the difference be-



tween said first and second control forces for selectively bringing said third and first ports into mutual communication and said second and fourth ports into mutual communication or bringing said third and second ports into mutual communication and said first and fourth ports into mutual communication, a second spool slidably disposed in said first spool and movable in response to a control force commensurate with a control signal, and variable restriction means disposed between said first and second spools for varying the amount of controlling hydraulic pressure applied to said hydraulic actuator.

4,944,202

ELECTROHYDRAULIC CONTROL FOR AN AUTOMATICALLY SHIFTABLE AUTOMOTIVE TRANSMISSION

Georg Gierer, Kressbronn, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

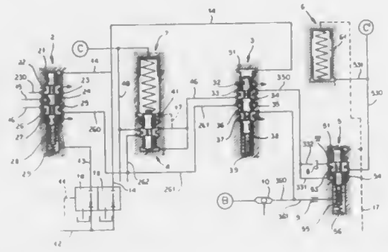
PCT No. PCT/EP87/00505, § 371 Date Feb. 24, 1989, § 102(e) Date Feb. 24, 1989, PCT Pub. No. WO88/02078, PCT Pub. Date Mar. 24, 1988

PCT Filed Sep. 7, 1987, Ser. No. 328,581

Claims priority, application PCT Int'l Appl., Sep. 9, 1986, PCT/EP86/00517

Int. Cl.[5] B60K *41/06*

U.S. Cl. 74—869 **6 Claims**



1. An automatically shiftable transmission including a basic transmission comprising a gearing mechanism operated by a first clutch and by a second clutch, said first and second clutches being controlled by a fluid-operated control system, said system comprising:

electrohydraulic control means for supplying a control pressure in response to a shifting order;

a first gear-selection control valve receiving a pressure system and controlling the first clutch;

a first coupling valve hydraulically connected with said first control valve, said first coupling valve being formed with a space receiving a modulation pressure;

a first damping means cooperating with said first coupling valve for a gradual engagement of said first clutch;

a second gear-selection control valve hydraulically interlinked with said first control valve and with said first coupling valve for receiving said system pressure, said second control valve receiving said control pressure from said control means;

a second coupling valve hydraulically interlinked with said second gear-selection control valve for receiving said pressure system, said second coupling valve being formed with a front space receiving said modulation pressure and with a bottom space isolated from said front space, said second coupling valve having a first shifting position of said second coupling valve corresponding to synchronous operation of said clutches at a relatively high transmission load and a second shifting position of said second coupling valve corresponding to asynchronuous operation of said clutches at a relatively low transmission load of said transmission; and

a damper provided with a bottom chamber and a top chamber biased by spring means for regulating the engagement of the second clutch, said bottom chamber receiving said system pressure, said top chamber being interlinked with said front space of said second coupling valve and receiving said modulation pressure, said damper being blocked by said modulation pressure in said first shifting position of said second coupling valve at said second high transmission load defining the synchronous engagement of said first and second clutches, said damper being received at said low transmission load of said modulation pressure in said second shifting position of said second coupling valve registered by means for registering provided in said bottom space of said second coupling valve and defining the asynchronous engagement of said first and second couplings.

4,944,203

DRYWALL HAMMER AND MAGNETIC HANDLE

John A. Miller, Rt. #1, Box 1315, Quinton, Va. 23141

Filed Sep. 27, 1989, Ser. No. 413,222

Int. Cl.[5] B25D *1/04*

U.S. Cl. 81—24 **4 Claims**



1. A drywall hammer comprising an elongate metallic head member including a first beveled end terminating in an elongate edge, and a second blunt end aligned with the first end, and

an elongate handle fixedly mounted to the head member symmetrically defined about a handle axis, the handle including a lowermost handle end defined by a first plane orthogonally aligned to the handle axis,

and

an elongate permanent magnet member extending through the handle adjacent the handle end orthogonally aligned relative to the handle axis,

and

wherein the handle includes an arcuate exterior surface, and each end of the elongate magnet extending through the handle is defined by an arcuate surface complementary to that defined by the handle,

and

wherein the head member is defined by a top planar surface, the top planar surface canted at an angle between five and fifteen degrees relative to a second plane, the second plane aligned orthogonally relative to the handle axis,

and

wherein the elongate edge of the beveled edge of the beveled end of the head member includes a first notch, and a second notch directed interiorly of a bottom surface of the head member adjacent the elongate edge oriented orthogonally relative to the first notch,

and

wherein the magnet member includes a first and second magnet, the first magnet includes a first cylindrical head member, and the second magnet includes a second cylindrical head member, the first head member is orthogonally mounted to and coaxially aligned with a first shank of a first diameter, and a threaded shank of a reduced second diameter coaxially aligned with the first shank integrally formed to the first shank of the first magnet, and the second head member including a second shank of a first diameter and formed with an integrally threaded bore to receive the threaded shank of the first magnet, and a bore defined by the first diameter directed orthogonally relative to the axis of the handle through the handle and adjacent the handle end.

4,944,204

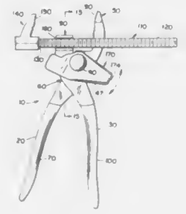
PLIERS WITH ADJUSTABLE JAW MEANS

Roland J. West, 303 Ridgewood Dr., Mystic, Conn. 06355

Filed Dec. 2, 1988, Ser. No. 278,783

Int. Cl.[5] B25B *7/04*

U.S. Cl. 81—385 **15 Claims**



1. Adjustable jaw pliers comprising

a pair of pliers having a first pliers handle and a second pliers handle, said first pliers handle and said second pliers handle crossing with respect to each other, traversing one within the other and being connected together with respect to one another by a pivot pin,

said first pliers handle forming a first pliers jaw above the crossing region of said first pliers handle and said second pliers handle, said first pliers handle forming a first grip portion below said crossing region,

said second pliers handle forming a quick release threaded rod positioning means above said crossing region and said second pliers handle forming a second grip portion below said crossing region, said first pliers jaw having a first work engaging surface,

a threaded rod having male threads and an end coupled to a second pliers jaw and being coupled to said quick release threaded rod positioning means,

said second pliers jaw having a second work engaging surface being disposed in opposed cooperating relationship and essentially parallel to said first work engaging surface of said first pliers jaw,

said thread rod being essentially perpendicular to said first work engaging surface of said first pliers jaw and said second work engaging surface of said second pliers jaw,

said quick release threaded rod positioning means having partial internal female threads for engaging a portion of said male threads of said threaded rod, said quick release threaded rod positioning means engages and disengages said threaded rod to reposition said threaded rod to change the distance between said first work engaging surface of said first pliers jaw and said second work engaging surface of said second pliers jaw,

said first pliers jaw includes a clearance space for said threaded rod to extend from said quick release threaded rod positioning means past said first pliers jaw, and

said pair of pliers having a locking means for locking said threaded rod into said quick release threaded rod positioning means, said locking means being connected to said pivot pin of said pair of pliers, said locking means pivoting on said pivot pin to engage said quick release threaded rod positioning means.

4,944,205

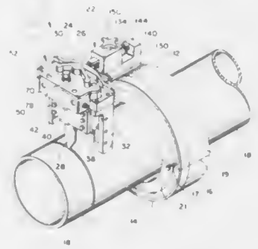
RATCHET FEED DRIVE FOR CLAMSHELL LATHE

Donato L. Ricci, Rte. 1, Box 1067, Hager City, Wis. 54014

Filed Jan. 29, 1990, Ser. No. 471,775

Int. Cl.[5] B23B *3/22*

U.S. Cl. 82—113 **6 Claims**



1. A ratchet tool feed drive for a clamshell lathe, said clamshell lathe being of the type comprising a toroidal structure including a stationary member for clamping a cylindrical workpiece therein and a motor driven relatively movable member encircling said workpiece and rotatable about the longitudinal axis of said cylindrical workpiece, said ratchet tool feed drive comprising in combination:

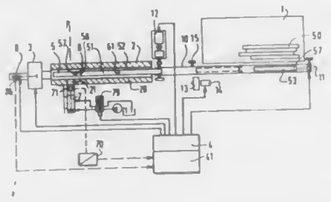
(a) guide block means attachable to said relatively movable member for rotation therewith, said guide block means including a guideway oriented radially relative to said workpiece when said guide block means is attached to said relatively movable member;

(b) tool holding means disposed in said guideway of said guide block for reciprocal sliding movement therein, said tool holding means including a bore extending parallel to

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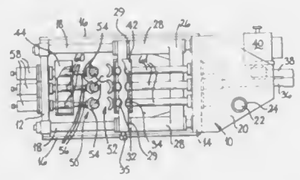
said guideway when said tool holding means is disposed within said guideway;
(c) lead screw means having a threaded nut thereon and extending through said bore, said nut being in engagement with said tool holding means whereby rotation of said lead screw means imparts translational motion to said tool holding means in said guideway;
(d) driven gear means attached to said lead screw;
(e) cam actuated ratchet gear means selectively operatively coupled to said driven gear means; and
(f) means attached to said stationary member for engaging said cam actuated ratchet gear means on each revolution of said movable member.

4,944,206
PROCESS AND INSTALLATION FOR PREPARING METAL BILLETS TO BE EXTRUDED
Bessey Guy, Auvers Sur Oise, and Jean-Yves Bonchut, Sorbiers, both of France, assignors to Clecim, Cedex, France
Filed Oct. 5, 1988, Ser. No. 253,645
Claims priority, application France, Oct. 5, 1987, 87 13740
Int. Cl.[5] B23D *33/02*
U.S. Cl. 83—42 13 Claims



1. A process for preparing from elongate bars (5) metal billets (B) having a length (b) and adapted to be extruded in an extrusion press, said process being carried out in apparatus comprising
a storage magazine table (1);
a tubular heating furnace (2) having an entrance and an exit,
hot shears (3) defining a shearing plane (Q) located downstream of said exit of said furnace (2);
a conveyor (10) for advancing said bars in succession along a generally straight path through said heating furnace (2) and said shears (3), said conveyor being associated with means for continuously measuring a length of advance of said bars and comprising means for stopping said advance when a length (b) of a said bar (5) to be cut has advanced downstream of said shearing plane (Q);
a loading device for receiving each billet from said shears and for placing it in the axis of said extrusion press,
said process comprising the steps of:
(a) determining the position of a stationary locating plane (P) intersecting the path of said bars at a point placed at a distance (Y) upstream of said shearing plane (Q) at least equal to the length (b) of a billet;
(b) advancing said bars (5, 51) one behind the other, the bars (5) to be cut being in contact with a succeeding bar (51) along a parting plane (6);
(c) continuously monitoring, during the advance of said bars (5, 51), the possible passage of said parting plane (6) through said stationary locating plane (P);
(d) in the event that such a passage is detected, continuously measuring the length of advance (X) of said bar (5) from the moment of passaging up to the moment of stopping the advance of said bars for cutting said bar (5);
(e) calculating the remaining length ($a=Y-X$) of the bar (5) after cutting by subtracting said length advance (X) from the distance (Y) between said locating plane (P) and said shearing plane (Q);
(f) deducing the expected length of said remnant ($c=a-nb$) after the cutting of a whole number (n) of billets of normal length (b) by subtracting from said remaining length (a) the accumulated lengths ($n\times b$) of the billets which can still be sheared in said bar (5) from the detection moment;
(g) comparing the absolute value of said expected length (c) with a critical length (1) corresponding to the handling limit of said remnant; and
(h) determining the shearing conditions in order to prevent an oddment of a length below said critical length (1) from being produced on either side of said parting plane (6).

4,944,207
SINGLE SHEAR BLADE MECHANISM FOR GOB SEVERING
Hermann H. Nebelung, Winsen/Luhe, and Walter Ruschau, Monheim, both of Fed. Rep. of Germany, assignors to Emhart Industries, Inc., Towson, Md.
Filed Oct. 13, 1989, Ser. No. 421,416
Claims priority, application United Kingdom, Oct. 18, 1988, 8824401
Int. Cl.[5] C03B *7/12*
U.S. Cl. 83—162 2 Claims

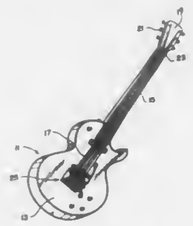


1. A mechanism for shearing discrete gobs from a runner of molten glass, comprising:
a shear blade having cutting edges on opposite sides thereof,
means for displacing said shear blade form a first rest position through the runner to shear the runner with the cutting edge on one side of said shear blade and for displacing said shear blade from a second rest position through the runner to shear the runner with the other cutting edge,
opposed gob guide means,
means for displacing one of said gob guide mans from a retracted position toward said first rest position to a selected gob guide location before said shear blade is displaced from said first rest position to shear a gob,
means for displacing the other one of said gob, guide means from a retracted position toward said second rest position to a selected gob guide location before said shear blade is displaced from said second rest position to shear a gob,
shroud means for enclosing said shear blade when said shear blade is located at either said first or second rest positions, and
means from introducing a mist of coolant into said shroud means to cool said shear blade, the mist condensing on the cooler shroud means to keep the shear blade free of coolant.

4,944,208
GUITAR WITH ADJUSTABLE TREMOLO
Peter A. Kusek, 1705 Westchester, Denton, Tex. 76201
Filed Apr. 21, 1989, Ser. No. 341,541
Int. Cl.[5] G10D *3/12*
U.S. Cl. 84—313 4 Claims

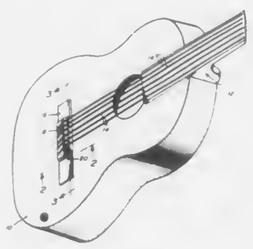
1. A guitar, comprising:
a body;
a neck, extending from the body;
a nut on the distal end of the neck;

a plurality of strings, attached to the distal end of the neck and stretched over the nut;
a plurality of tremolo bases, each tremolo base being attached to one of the strings and mounted on the body of the guitar to pivot about an axis perpendicular to the strings;
a plurality of tremolo keys, each tremolo key being attached to one of the tremolo bases for pivoting the tremolo base to modulate the pitch of the associated string;
a plurality of tremolo blocks, each tremolo block extending from one of the tremolo bases into a cavity in the body of the guitar;
a plurality of springs, each spring being attached between



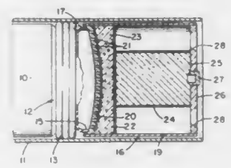
one of the tremolo blocks and the body of the guitar for returning the tremolo base to a neutral position when the associated tremolo key is released;
an actuator rod, mounted for movement between a first position, in which the actuator rod allows the tremolo keys to operate independently, and a second position, in which the actuator rod locks the tremolo bases together;
an activation lever mounted for movement between a first position and a second position; and
a cam mounted on the activation lever in contact with the actuator rod to move the actuator rod between the first and second positions of the actuator rod as the activation lever is moved between the first and second positions of the activation lever.

4,944,209
STRINGED INSTRUMENT PIEZOELECTRIC TRANSDUCER
Lawrence R. Fishman, 76 Grove St., W. Medford, Mass. 02155
Continuation-in-part of Ser. No. 876,238, Jun. 19, 1986, Pat. No. 4,774,867, which is a continuation-in-part of Ser. No. 856,189, Apr. 28, 1986, abandoned. This application Sep. 30, 1988, Ser. No. 251,570
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[5] G10H *3/18*
U.S. Cl. 84—731 21 Claims



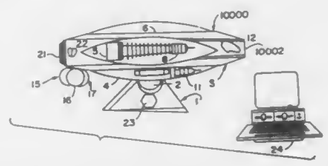
16. A stringed instrument transducer system that is adapted to be positioned adjacent the instrument strings to receive acoustic vibratory signals therefrom and comprising a first electrically conductive member, a second electrically conductive member, a plurality of piezoelectric crystals disposed between the first and second conductive members so as to provide an elongated unitary structure and with the crystals disposed so as to be in alignment with respective strings when installed in the musical instrument, a conductive shield means for shielding said transducers disposed about said unitary structure, said conductive shield means comprising a base dielectric layer adapted to be wrapped about the unitary structure and having vapor deposited thereon a metallic layer, and electrical lead means for conducting an electrical signal, said electrical lead means connecting to the first and second electrically conductive members, respectively.

4,944,210
MISSILE LAUNCHER
Thomas G. Flock, Thousand Oaks, and Scott D. Baysinger, Chatsworth, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 8, 1988, Ser. No. 229,882
Int. Cl.[5] F41F *3/04*
U.S. Cl. 89—1.818 11 Claims



1. Apparatus for launching a missile, comprising:
an open-ended tube for receiving the missile therewithin, said tube being longer than the missile and having fore and aft ends;
a selectively actuatable pressurized gas generator having external dimensions enabling sliding receipt of the generator within the tube aft end, said generator having a diffusor through which gas can move along in a first direction and a plurality of openings through which gas can move in a second direction generally opposite to the first direction; and
an expandable, air-tight, bag-like member, said bag-like member having an opening for receiving gas passing through the diffusor,
whereby expansion of said bag-like member causes said missile to be launched from said tube.

4,944,211
MASS ACTION DRIVER DEVICE
Larry Rowan, 3440½ Caroline Ave., and Larry Rosenberg, 3440 Caroline Ave., both of, Culver City, Calif. 90230
Continuation-in-part of Ser. No. 590,283, Mar. 19, 1984, abandoned. This application Dec. 30, 1986, Ser. No. 947,746
Int. Cl.[5] F41F *1/00, 1/02*
U.S. Cl. 89—8 11 Claims

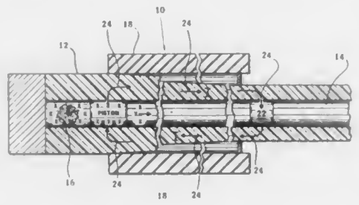


1. A multi-stage, mass-action driver device, including:

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computerized driver-control means having output terminals providing driver-sequencing signals;
a loading chamber for receiving and automatically advancing plasmatizable wafers;
plasmatizable wafers carried by said loading chamber;
a firing chamber electrically coupled to said output terminals and mechanically communicating with said loading chamber for receiving and plasmatizing, in a pre-determined sequence, said plasmatizable wafers, said firing chamber being responsive to the receipt of each of said wafers to self-seal while each wafer is being plasmatized;
said firing chamber including an electric arc coupled to a source of electrical power and to said output terminal and responsive to the sealing of said firing chamber to convert each of said wafers to a plasma state to form plasmoids;
a composite bore communicating with said firing chamber for receiving said plasmoids;
said composite bore including a series of aligned centrally located openings therethrough and multiple, longitudinally aligned and spaced, electrically conductive rails, concentrically positioned with respect to said bore;
means coupled to said output terminals for applying predetermined potentials from said external source, in sequence, to said rails;
plasma-accelerator means interposed between said firing chamber and said bore for accelerating plasmoids from said firing chamber towards said bore;
electromagnetic means circling said bore and positioned after said plasma-accelerator means in the direction of said bore, which means direct and accelerate plasmoids from said firing chamber;
means coupled electrically to said output terminals and located following said plasma-accelerator means in the direction of said bore for automatically injecting projectiles into said bore for propulsion by said plasmoids; and,
means for applying operating potentials to said driver device under the control of said computerized driver-control means;
said plasma-accelerator means including a plurality of radially disposed Tesla coils having their discharge ends positioned in a common cavity which is coupled to and follows said firing chamber in the direction of said bore.

4,944,212
MAGNETIC ADVANCED HYBRID RAIL GUN
Mohamed A. Hilal, Madison, Wis., assignor to General Dynamics Corporation, Convair Division, San Diego, Calif.
Filed Apr. 6, 1989, Ser. No. 334,308
Int. Cl.[5] F41F *1/02*
U.S. Cl. 89—8 **8 Claims**



1. An advanced concept rail gun comprising;
a non-conductive and non-magnetic rail gun barrel having a bore and an upstream and downstream end;
said barrel having a field winding wrapped around the outside thereof intermediate the ends thereof;
a low power source for charging said field winding;
a chemical reaction chamber in the upstream end of said barrel;
a pair of juxtaposed electrical conducting normally non-powered rails within said barrel extending from said chemical reaction chamber to the downstream thereof;
a piston guided within said bore during downstream movement by said rails normal to a field created by said field winding;
a projectile positioned in said bore downstream of said piston and guided by said rails whereby when said chemical reaction occurs in said reaction chamber said piston and said projectile are caused to translate within the bore at high speed in a downstream direction which causes emf from said field windings to be induced in said rails which further increases the velocity of said projectile as it exits the bore.

4,944,213
COMPENSATOR FOR HAND-HELD FIREARMS
Charles Ewert, Luxembourg, Luxembourg, assignor to Unipatent Holding S.A.
Filed Oct. 18, 1988, Ser. No. 259,159
Claims priority, application Austria, Oct. 19, 1987, 2762/87
Int. Cl.[5] F41A *21/36*
U.S. Cl. 89—14.3 **11 Claims**

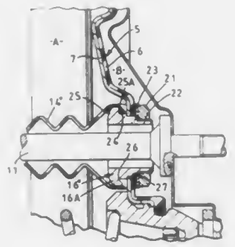


1. A compensator arrangement for redirecting propellant gases leaving the barrel muzzle of a hand-held firearm having a grip and a barrel, comprising:
a compensator attached to the grip so as not to interfere with disassembly and servicing of the firearm, and so as to be in front of the barrel;
an extended grip portion provided so as to extend under and toward the front of the barrel, the compensator being attached to the extended grip portion; and
latch means for locking the compensator on the extended grip portion.

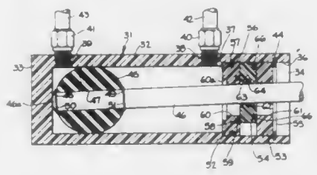
4,944,214
BRAKE SERVO BOOSTER
Stuart J. Briggs, Gwent, Great Britain, assignor to Lucas Industries Public Limited Company, Birmingham, England
Filed Oct. 31, 1988, Ser. No. 264,985
Claims priority, application United Kingdom, Nov. 14, 1987, 8726722
Int. Cl.[5] F01B *19/00*
U.S. Cl. 92—98 R **17 Claims**

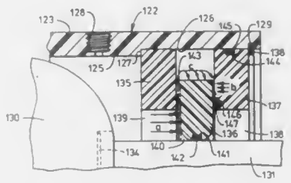
1. A brake servo booster comprising:
a housing;
a movable partition in said housing dividing said housing into a pair of chambers, said partition including a diaphragm secured in sealing relationship to said housing and being operatively connected to a force output member for the transmission of a power assistance force to a brake master cylinder;
at least one support member extending through said partition for connecting the booster, in use, to a fixed support, said at least one support member having an external surface;
a protective boot extending longitudinally of said at least one support member and surrounding said external surface thereof;
end regions on said boot, one of said end regions being connected to said at least one support member; and

a carrier member extending through said partition and engaged by adjacent portions of said boot and diaphragm for connecting the other end of said protective boot to said partition.



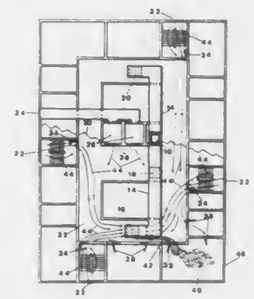
4,944,215
FLUID ACTUATED CYLINDER ASSEMBLY WITH A FLOATING CYLINDER HEAD
Frank D. Nimmo, 3851 Bennett, Cincinnati, Clermont Cty., Ohio 45245, and William H. Newton, 8009 Blairhouse Dr., Cincinnati, Hamilton Cty., Ohio 45244
Continuation-in-part of Ser. No. 283,979, Dec. 13, 1988, abandoned. This application Feb. 6, 1989, Ser. No. 307,019
Int. Cl.[5] F16J *15/18*
U.S. Cl. 92—168 **35 Claims**





1. A fluid actuated cylinder comprising a cylinder body, a piston, a piston rod and a cylinder head, said cylinder body having an axial bore with an open forward end and a closed rearward end, said piston rod having a rearward end, said piston being mounted on said piston rod at said rearward end thereof, said piston and piston rod being slidably mounted within said cylinder bore, means on said piston making a continuous seal with said cylinder bore, said piston rod extending through a central bore in said cylinder head and being slidable with respect thereto, means mounting said cylinder head near said cylinder body forward end, said cylinder head being so sized and said mounting means therefor being such that said cylinder head is shiftable in at least two opposite directions within a plane perpendicular to the longitudinal axis of said cylinder body, whereby wear of the cylinder assembly parts due to misalignment of the longitudinal axis of said piston rod with respect to the longitudinal axis of said cylinder body is greatly reduced.

4,944,216
BUILDING EMERGENCY EXHAUST FAN SYSTEM
Wilmot R. McCutchen, 9 Sally Ann Rd., Orinda, Calif. 94563
Filed Nov. 13, 1989, Ser. No. 435,749
Int. Cl.[5] F24F *11/00*
U.S. Cl. 98—33.1 **17 Claims**



1. A process, reserved for emergency purposes only, for safely evacuating smoke and gaseous emissions caused by a fire from anywhere within the occupied area of a building and simultaneously drawing fresh air into said building to replace the withdrawn smoke and gas, said building comprising a roof and enclosing outer perimeter walls, and one or more stories, each story comprising a floor and a ceiling, at least one entrance, at least one emergency exit leading directly to the outdoors, and an interior space subdivided into a plurality of zones, comprising the steps of:
(a) detecting and identifying, by smoke detection means, the presence of a smoke and gas source, and the location of a story and a zone within said story containing said smoke and gas source; and
(b) actuating, by remote control means, one or more emergency exhaust fans near the roof of said building to create significantly lower than atmospheric pressures within a main vertical exhaust duct connected to the inlet of said emergency exhaust fans; and
(c) opening, by remotely controlled damper means, a single exhaust air intake connected to said main vertical exhaust duct by means of a feeder duct, said exhaust air intake being located within the zone containing said smoke and gas source and away from any of said entrances and said emergency exits, to create a draft and directed stream of air with a velocity sufficient to carry said smoke and gaseous emissions from the occupied area of said building and to overcome the natural ventilation currents caused by said fire and to withdraw said smoke and gaseous emissions through said main vertical exhaust duct and said exhaust fan to a safe discharge location outside of said building; and
(d) opening said entrance and said emergency exit to said story to admit a flow of fresh and uncontaminated air toward the partial vacuum created at said smoke and gaseous emissions source.

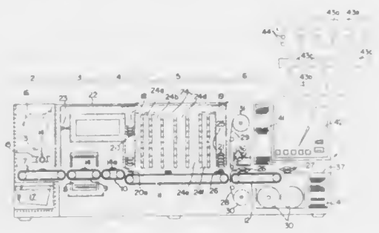
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4,944,217
AUTOMATIC COFFEE BREWING APPARATUS
Sharky Watanabe, 31 Deer Creek, Irvine, Calif. 92714
Filed Jul. 13, 1989, Ser. No. 379,475
Int. Cl.[5] A47J *31/34*
U.S. Cl. 99—280 7 Claims



1. An automatic coffee brewing apparatus having an input port for receiving a disposable water bottle, the water bottle storing a sufficient volume of water to brew a plurality of decanters of coffee, comprising:
(a) a housing formed to receive the water bottle;
(b) a first valve in fluid communication with the input port for controlling the flow of water from the water bottle;
(c) a reservoir in fluid communication with said first valve for receiving and storing at room temperature a measured quantity of water from the water bottle;
(d) a sensor for sensing the water level within said reservoir and for generating signals in response thereto;
(e) a heater in fluid communication with said reservoir for heating the measured quantity of water; and
(f) a controller for controlling the operation of said first valve and said heater in response to said sensor signals.

4,944,218
VENDING MACHINE FOR PREPARING AND DELIVERING HAMBURGERS
Christian Cresson, 6, rue Marie-Thérèse de Poix, Sepmes F-37800 Sainte Maure de Touraine, France
Filed Apr. 6, 1989, Ser. No. 334,282
Claims priority, application France, Apr. 12, 1988, 88 04820
Int. Cl.[5] A21D *13/08*; A23L *1/31*; B65B *25/16*; G07F *11/70*
U.S. Cl. 99—357 11 Claims



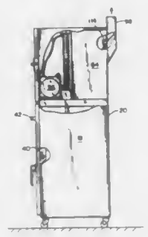
1. A vending machine for preparing and delivering hamburgers, wherein automatic operation of said machine can be initiated by a consumer by means of a payment system and wherein said machine comprises in the direction of feed of one or a plurality of conveyors terminating at a station for the delivery of each hamburger:
a cooking oven through which the conveyor passes and which is capable of cooling each piece of meat supplied from a supply of pieces of meat,
a first station for delivering a first series of half-rolls of bread on the conveyor in order that each half-roll may serve as an element for receiving a piece of meat supplied from the cooking oven,
a second station for delivering a second series of half-rolls of bread in order that each half-roll may serve as a covering element on a piece of meat already carried by a first half-roll of the first series,
a station for wrapping each hamburger thus formed, the function of this station being to wrap said hamburger between two films of wrapping material, within a pouch which is open on one side, the conveyor being divided into two successive sections upstream of the first station for delivering each half-roll of the first series, the upstream section of said conveyor being located at a higher level than the downstream section so as to deliver a piece of meat on the top face of a first half-roll which has already been placed on the downstream section of the conveyor.

4,944,219
TORSION LEVERAGE NUTCRACKER
John W. Hambright, 1212 Chaparral, DeSoto, Tex. 75115, and Jerry S. Hamoright, Rte. 1, Box 344, Hawkins, Tex. 75765
Filed Dec. 12, 1988, Ser. No. 282,592
Int. Cl.[5] A23N *5/00*; A47J *43/26*
U.S. Cl. 99—581 17 Claims



1. A nutcracker comprising:
upper and lower endplates, each said endplate comprising a plate member having a central portion;
said upper endplate plate member having an aperture-free central portion and a plurality of widely spaced apertures;
said lower endplate plate member having a plurality of apertures closely spaced in said central portion thereof;
a plurality of elongated rod members loosely interfitted at said ends thereof with said apertures in said upper and lower endplates to define a tapered nut envelope, said nut envelope being compressible by relative rotation of said upper and lower endplates; and
adjacent ones of said rod members being spaced apart to receive nuts into said nut envelope at said ends thereof interfitted to said upper endplate, with said rod members being closely spaced at said ends thereof interfitted to said lower endplate, such that a nut admitted into said nut envelope between two adjacent ones of said rod members, drops by gravity into contact engagement with said rod members at a lower position, and cracking forces are applied to said nut by relatively rotating said upper and lower endplates.

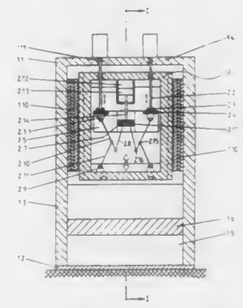
4,944,220
TRASH COMPACTOR FOR SANITARY HANDLING OF SOLID WASTE
Anthony Fox, Bloomington, Minn., assignor to TFC Corporation, Bloomington, Minn.
Filed May 26, 1989, Ser. No. 357,206
Int. Cl.[5] B30B *9/00, 15/06*
U.S. Cl. 100—90 10 Claims



1. The trash compactor of the type comprising a cabinet having a top, a floor, three mutually perpendicular side walls forming a hollow, rectangular, parallelepiped with an open front, said cabinet being divided into a machine compartment, a trash receiving compartment and a compaction compartment, said machine compartment including a compaction plate mounted for vertical reciprocal movement through said trash receiving compartment and into said compaction compartment and drive means coupled in driving relation to said compaction plate; and door means hinged to one of said side walls for moving in open and closed relation relative to said open front, the improvement comprising:
(a) an air plenum mounted in said machine compartment, said plenum having an air inlet in fluid communication with said trash receiving compartment and said compaction compartment and an air discharge port with filter means disposed in said air plenum between said air inlet and said air discharge port;
(b) motor driven fan means mounted in said air plenum for exhausting air out of said air discharge port;
(c) air flow sensing means disposed proximate said discharge port; and
(d) indicator means operatively coupled to said air flow sensing means for signaling when the rate of flow of air through said discharge port drops below a preset level indicative of the need for filter replacement.

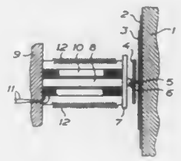
4,944,221
ARTICULATED LEVER CUTTING AND FORMING PRESS
Werner Leinhaas, Geinhausen, Fed. Rep. of Germany, assignor to E. Bruderer Maschinenfabrik AG, Switzerland
Continuation of Ser. No. 163,822, Feb. 22, 1988, Pat. No. 4,850,272. This application May 8, 1989, Ser. No. 348,855
Claims priority, application European Pat. Off., Jun. 20, 1986, 86108482.0
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] B30B *1/10*
U.S. Cl. 100—286 17 Claims

1. An articulated-lever cutting and forming press, comprising:
(a) a press stand;
(b) a frame-shaped press slide slidably arranged within said press stand;
(c) two symmetrically identical articulated lever systems located within said press slide, said articulated lever systems including joints, said articulated lever systems folding with their joints toward the center of said press slide;
(d) a hydraulic cylinder drive for actuating said articulated lever systems;
(e) a multi-articulated support guided in the center of said press, said multi-articulated support being connected to said hydraulic cylinder drive; and
(f) two connecting rod means movably arranged on said multi-articulated support, said connecting rod means having ends engaging said articulated lever systems;
(g) wherein said articulated lever systems are arranged with one end thereof on said press stand so that their height can be adjusted relative to said press stand;



(h) wherein said articulated lever systems are pivotally mounted with the other end thereof in said press slide;
(i) wherein said press further includes means for adjusting the working range of said press slide attached to said press stand; and
(j) wherein said means for adjusting the working range include guide beams provided on their lower surface with bearings for the suspension of said one end of each lever system, said beams being adjustably mounted on said press stand.

4,944,222
PRINTER DEVICE WITH NOISE REDUCING IMPACT HAMMER
Carl H. Tyrén, Malmö , Sweden, assignor to Atech Aktiebolag, Götegorg, Sweden
Continuation of Ser. No. 157,642, Feb. 18, 1988, abandoned, which is a continuation of Ser. No. 58,693, Jun. 3, 1987, abandoned. This application Apr. 28, 1989, Ser. No. 346,379
Claims priority, application Sweden, Jan. 30, 1984, 8400439
Int. Cl.[5] B41J *9/00*
U.S. Cl. 101—93.29 5 Claims



1. In an impact printer device having,
a striking member,
an abutment supporting a paper thereon,
an ink ribbon disposed between said striking member and said paper supporting abutment, said striking member by striking action transmitting a print to said paper via said ink ribbon,
at least one motion generator unit comprising a rod of a giant magnetostrictive material consisting of an alloy of rare

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earth metals and one of the substances iron, cobalt and nickel,

a supporting structure fixedly supporting one end of said rod, the opposite end of said rod being fixed to said striking member,

a magnet coil surrounding said motion generator unit,

a source of electric current,

the improvement comprising means for reducing the noise generated from said printer, said noise reducing means including control means for first supplying an electric current to said magnetic coil to bring said striking member in close proximity to said paper, striking means for driving said striking member toward said paper and ink ribbon at a reduced speed less than that used in reaching said close proximity, after said control means has brought said striking member into said close proximity.

4,944,223

MECHANISM FOR CONTINUOUSLY SUPPLYING DAMPENING MEDIUM IN OFFSET PRINTING MACHINE

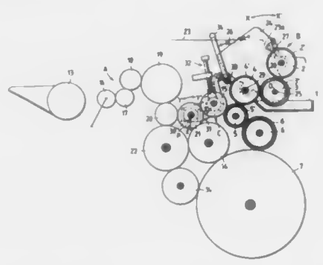
Koji Ishii, and Naoki Ikeda, both of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed May 15, 1989, Ser. No. 352,236

Claims priority, application Japan, May 16, 1988, 63-64850[U]

Int. Cl.[5] **B41L** *23/00*

U.S. Cl. 101—148 **5 Claims**



1. In a mechanism for continuously supplying a dampening medium in an offset printing machine, the offset printing machine including a stationary frame, a plate cylinder for mounting thereon a master plate, an inking unit for applying an ink to the master plate, and a dampening unit having a dampening medium fountain for applying a dampening medium onto the master plate, the dampening unit comprising a roller train including a dampening medium applicator roller in rotational contact with the master plate, a dampening medium transfer roller in rotational contact with the applicator roller, and a plurality of rollers bridging the fountain and the dampening medium transfer roller, dampening medium in the fountain being applied onto the master plate through the roller train, the improvement wherein:

the dampening medium transfer roller is rotatably supported by the stationary frame;

the dampening medium transfer roller and the dampening medium applicator roller comprise elastic layers at respective outer peripheral surfaces thereof; and

the plurality of rollers have one of a hydrophilic metal layer and an elastic layer at respective outer peripheral surfaces thereof, wherein adjacent ones of said rollers have different outer peripheral surface layers; and

means, having first and second positions, for selectively connecting said inking unit and said dampening unit, said inking unit contacting said dampening unit at said first position of said means, for applying dampening medium to said inking unit, and said inking unit being out of contact with said dampening unit at said second position of said means, for applying dampening medium to the master plate only through the dampening medium applicator roller.

4,944,224

ELECTRICAL IGNITING MEDIUM

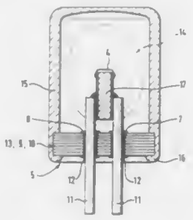
Kurt Fiedler, Diepersdorf; Bernhard Kratz, Wendelstein; Gerhard Kordel, Nurnberg, and Gerrit Scheiderer, Furth, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nurnberg and Dynamit Nobel Aktengesellschaft, Troisdorf, both of, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 337,616

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3812958

Int. Cl.[5] **F42B** *3/18, 3/182*

U.S. Cl. 102—202.2 **12 Claims**



1. Electrical detonator or igniting medium, comprising a support member; electrical lead lines extending towards a detonator bridge and passing through said support member, said support member forming a shunt-capacitance which is connected to the lead lines for the detonator bridge, and said shunt-capacitance including ceramic layers which are equipped with electrodes.

4,944,225

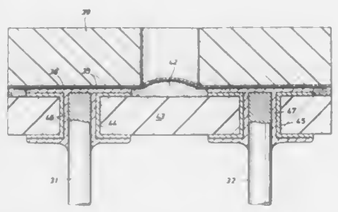
METHOD AND APPARATUS FOR FIRING EXPLODING FOIL INITIATORS OVER LONG FIRING LINES

James M. Barker, Katy, Tex., assignor to Halliburton Logging Services Inc., Houston, Tex.

Continuation-in-part of Ser. No. 175,961, Mar. 31, 1988, abandoned. This application Nov. 8, 1989, Ser. No. 433,305

Int. Cl.[5] **F42B** *3/10;* **F42C** *19/12*

U.S. Cl. 102—202.5 **13 Claims**



1. An initiator for detonation of an elongate explosive cord extending to plural shaped charges in a well borehole, the initiator comprising:

(a) a closed housing connected to an elongate explosive cord;

(b) secondary explosive charge means in said housing positioned relative to said explosive cord to detonate said cord and wherein said charge means has an exposed face;

(c) a transverse structural member disposed against said exposed face and having a passage therein wherein said passage has a face end against said exposed face and spaced from a remote end;

(d) a sheet member of electrically insulated material spanning said remote passage end and attached to said structural member by an adhesive means;

(e) a sacrificial metal foil member adjacent to said sheet member and aligned with said passage end;

(f) a pair of electrical conductors connected into said housing for electrical connection to said metal foil to deliver current through said housing to vaporize said foil on sufficient current flow; and

(g) wherein said housing confines vaporization of said metal foil to cause detonation through said passage toward said charge means face.

4,944,226

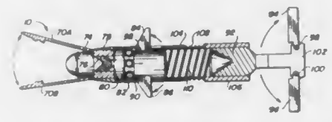
EXPANDABLE TELESCOPED MISSILE AIRFRAME

Larry D. Wedertz, Alta Loma; Jose R. Vazquez, Rancho Cucamonga, and Scott R. Schoneman, Ontario, all of Calif., assignors to General Dynamics Corp., Pomona Div., Pomona, Calif.

Filed Aug. 19, 1988, Ser. No. 234,764

Int. Cl.[5] **F42B** *13/02*

U.S. Cl. 102—476 **18 Claims**



1. An expandable airframe for a missile carrying a shaped charge comprising:

an aerodynamic front portion;

a rear portion; and

an extendible telescoping portion connected between said front and rear portions, contained within said front portion in a first, stowed configuration and extending rearwardly from said front portion in a second, deployed configuration;

wherein an increased distance between a frontmost tip of said front portion and said shaped charge following transition from said first to said second configuration results in more effective penetration by said shaped charge into a target subsequent to detonation of said shaped charge.

4,944,227

RAIL TRANSPORTATION SYSTEM WITH SWITCHES

Holger Madsen, Skjern, Denmark, assignor to ALFA-Laval Agri Scandinavia A/S, Skjern, Denmark

PCT No. PCT/DK88/00029, § 371 Date Oct. 20, 1988, § 102(e) Date Oct. 20, 1988, PCT Pub. No. WO88/06206, PCT Pub. Date Aug. 25, 1988

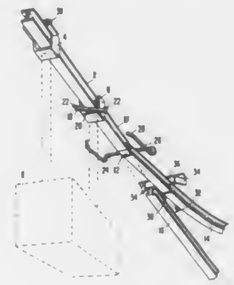
PCT Filed Feb. 18, 1988, Ser. No. 264,278

Claims priority, application Denmark, Feb. 20, 1987, 862/87

Int. Cl.[5] **E01B** *25/26;* **B61B** *3/00;* **B61L** *5/02*

U.S. Cl. 104—103 **5 Claims**

1. A rail transportation system comprising at least one rail switch having a switchable rail member which is switchable for connecting different rail sections of the system and at least one carrier which is controlled to operate according to a predetermined program, said carrier and said rail member being provided with cooperating engagement means for effecting relevant shifts of the rail member by a force derived from the motion of the carrier, said engagement means of said carrier being selectively shiftable between an operative and a non-operative position, the system further comprising actuator means operable to selectively shift these engagement means between said positions for enabling the carrier to carry out movements in the system in accordance with the predetermined program, and wherein said actuator means are constituted by fixed abutment members mounted at selected places along rail section of the system for cooperation with the engagement means of the moving carrier in such a manner that he



carrier, when moved forwardly and rearwardly in the system in a controlled, preprogrammed manner, interacts with the said abutment members to the effect that the carrier is thereby automatically controlled to move in compulsory accordance with the predetermined program.

4,944,228

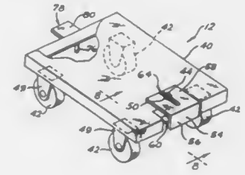
CONVEYOR SYSTEM

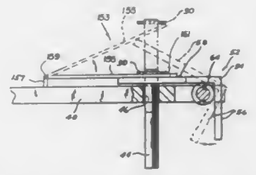
Arthur B. Rhodes, 3347 Camp Ground Rd., Louisville, Ky. 40211

Continuation-in-part of Ser. No. 270,102, Nov. 14, 1988. This application Apr. 13, 1989, Ser. No. 337,478

Int. Cl.[5] **B61B** *10/04*

U.S. Cl. 104—172.3 **11 Claims**





1. A load carrying unit for selected movement along a conveying path defined by an endless conveyor chain, comprising:

a frame structure;

floor engaging wheels rotatably attached to the frame structure;

a depending movable conveyor chain engagement pin attached to the frame structure near the front end of the frame structure movable between a lowered chain engaged position whereat the depending end of the pin engages the conveyor chain and a raised, chain disengaged position whereat the depending end of the pin is spaced above and out of contact with the conveyor chain;

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pin moving means structurally associated with the pin and mounted to the front end of the frame structure for pivotable movement about an axis perpendicular to the longitudinal axis of the pin to move the pin between the lower chain engaged position and raised chain disengaged position; and,

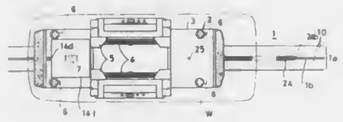
pin stabilizing means comprising a pin stabilizing plate, an upstanding mounting flange attached to the frame structure, hinge means interconnecting the top end of the mounting flange and one end of the stabilizing plate with its pivot axis spaced from and parallel to the pivot axis of the pin moving means, the stabilizing plate extending from the hinge means to the conveyor chain engagement pin, means defining a slot at the distal end of the stabilizing plate having a minor dimension slightly larger than the diameter of the conveyor chain engagement pin and with a major dimension coaxial with the longitudinal axis of the stabilizing plate receiving the top end of the conveyor chain engagement pin, and a keeper affixed to the top end of the conveyor chain engagement pin above the distal end of the stabilizing plate.

4,944,229

AUTOMOTIVE CARRIER TYPE CONVEYING APPARATUS

Masayasu Arakawa; Teruhisa Katsumata and Yoshimasa Ota, all of Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1989, Ser. No. 342,194
Claims priority, application Japan, Apr. 27, 1988, 63-102640; Apr. 30, 1988, 63-108331
Int. Cl.[5] B61B *13/00*
U.S. Cl. 104—137 **12 Claims**



1. A self-propelled carrier type conveying apparatus having a conveying carrier which travels along a self-propelled conveying passage, comprising:

a pit formed at the widthwise central portion of the conveying passage;

a guide rail laid within the pit;

a track formed to cover a top side of the pit and be flush with a road surface of the conveying passage, said track having a slit formed at the widthwise center of the track, said slit communicating with the pit;

a conveying carrier having a carrier body;

a plurality of wheels attached to the conveying carrier and contacting the road surface of the conveying passage, at least the wheels adjacent a front of the carrier being casters;

a steering frame pivotally supported on the conveying carrier and turnable about a vertical steering axis line;

a driving wheel and a motor for driving the driving wheel, both of which are attached to the steering frame, said driving wheel being so positioned as to contact the track at a location substantially directly below said vertical steering axis line; and

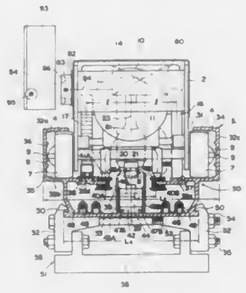
a guide member which is guided by the guide rail for movement and connected to the steering frame through the slit.

4,944,230

CONVEYOR APPARATUS USING AUTOMOTIVE CART

Hajime Maeda, Kasugai, and Masayuki Tsuneda, Komaki, both of Japan, assignors to Daifuku Co., Ltd., Japan

Continuation of Ser. No. 208,149, Jun. 17, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 453,332
Claims priority, application Japan, Aug. 3, 1987, 62-194118; Nov. 13, 1987, 62-173524[U]
Int. Cl.[5] B61C *13/00*; B61F *13/00*; E01B *25/22*
U.S. Cl. 104—139 **2 Claims**



1. A conveyor apparatus including an automotive cart and a rail device for supporting and guiding said automotive cart:

said rail device comprising an automotive cart guiding member having a C-shaped section provided with an open portion for the passage of said automotive cart therethrough,

a duct member connected to the wall of said guiding member opposite to said open portion thereof,

said wall having edge members defining a slit through said wall providing communication between said duct member and said guiding member,

feeding rail means mounted on each of said edge members for feeding electric power to said automotive cart,

said automotive cart having frictionally propelling rotary wheel means for driving said automotive cart and having pinion drive means,

a pair of guide surface means formed on said guiding member on opposite sides of said slit and extending in the direction of length of the rail device,

rack means detachably mounted on one of said guide surface means and engageable with said pinion drive means,

said feeding rail means comprising an insulating rod member formed of resins and applied on one of said edge members, and

a feeding rail applied on said rod member.

4,944,231

MOBILE STORAGE SYSTEM WITH DRIVING ASSEMBLIES

Alan R. Leist, Grand Rapids, Mich., assignor to Pipp Mobile Systems, Inc., Grand Rapids, Mich.

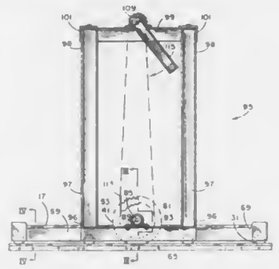
Filed Feb. 29, 1988, Ser. No. 162,644
Int. Cl.[5] B61C *11/00*
U.S. Cl. 104—287 **30 Claims**

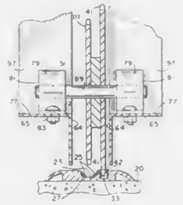
1. A mobile storage system for movably supporting a mobile storage unit comprising:

at least one track member of a one-piece unitary construction having an upper surface, said upper surface a defining a longitudinal guideway extending the length of said track member and a series of openings aligned longitudinally along the length of said track member to thereby define a row of openings substantially parallel with said guideway;

at least one support structure having means for supporting a mobile storage unit, and including a plurality of supporting rollers which are received in said guideway for movably supporting said support structure on said track member;

a driving sprocket rotatably mounted on said support structure directly over said series of openings on said track member, said driving sprocket having a plurality of radially extending teeth spaced apart a predetermined distance





such that said teeth are sequentially received within said openings as said driving sprocket is rotated; and

drive means for rotating said driving sprocket such that said support structure is moved along said track member as said driving sprocket is rotated, whereby said mobile storage unit is easily moved along the length of said track member.

4,944,232

DUAL-PURPOSE DEPRESSED CENTER RAILWAY FLAT CAR

Gary D. Schlaeger, Springtown, Tex., assignor to Burlington Northern Railroad, a wholly owned subsidiary of Burlington Northern, Inc., Fort Worth, Tex.

Filed Apr. 25, 1989, Ser. No. 343,036
Int. Cl.[5] B61F *1/00*; B60P *3/42*
U.S. Cl. 105—355 **14 Claims**



1. A dual purpose railway flat car for hauling a variety of ladings, said car comprising:

(a) a frame having a first end section, a middle section and a second end section;

(b) first and second trucks, having wheels, cooperatively connected to said first and second sections respectively adapted to be supported on railroad tracks;

(c) first, second and middle floor members cooperatively connected to said first, second and middle sections respectively;

(d) a first bulkhead cooperatively connected to one end of said frame and a second bulkhead cooperatively connected to a second end of said frame;

(e) a first integral structural cradle cooperatively connected to said frame positioned between said first section and said middle section;

(f) a second integral structural cradle cooperatively connected to said frame positioned between said second section and said middle section; and

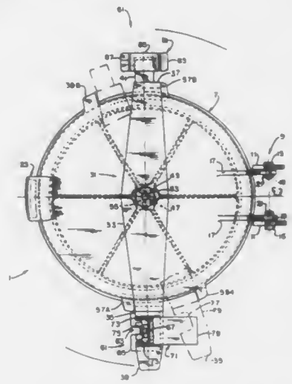
(g) said middle floor member positioned lower than said first and second members, thereby form a depressed center, said cradles configured to carry cylindrical objects and also to form integral intermediate bulkheads for said depressed center, wherein said car may be used to carry a variety of ladings including polygonal containers and forest products.

4,944,233

HATCH ARRANGEMENT FOR COVERED HOPPER CARS

Richard H. Dugge, St. Louis County, Mo., and John W. Coulborn, Harris County, Tex., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Jun. 12, 1989, Ser. No. 364,872
Int. Cl.[5] B61D *39/00*; B65D *45/00*
U.S. Cl. 105—377 **15 Claims**



1. A hatch cover assembly for a railway car comprising:

a hatch cover hingedly mounted to a roof of the car for pivotal movement of the cover to open and close a hatch formed in the roof, the hinge axis about which pivotal movement of the cover occurs being perpendicular to a center line of the car;

a locking strap pivotally mounted atop the hatch cover for movement between a cover locking position and a cover unlocking position, movement of the strap to its cover locking position preventing movement of the cover to open the hatch, the longitudinal axis of the strap when in the cover locking position being substantially perpendicular to the center line of the car; and,

latching means adjacent the cover for latching the strap in its cover locking position to prevent movement of the strap whereby the orientation of the strap with respect to the center line of the car and the location of the latching means permits the hatch cover assembly to have a substantially lower profile with respect to the roof of the car than conventional hatch cover assemblies thereby allowing the roof of the car to be raised which, in turn, increases to load carrying capacity of the car.

4,944,234

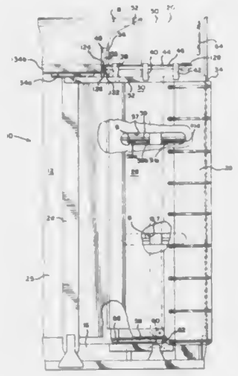
RAIL CAR END ASSEMBLY

Harold E. Hesch, St. John, Ind., assignor to Trinity Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 65,948, Jun. 24, 1987, abandoned. This application May 12, 1989, Ser. No. 352,715

Int. Cl.[5] B61D *17/06*

U.S. Cl. 105—378 **30 Claims**



1. A rail car end assembly comprising:

a pair of substantially straight and continuous side walls defining a space therebetween and having

top and bottom arcuate tracks;

a pair of rigid two-panel doors each having two panels for closing the space between the side walls and riding along the top and bottom arcuate tracks between open and closed positions;

said doors in the open position being located between said side walls and,

said two panels of each door defining a V-shaped recess for admitting therein and bypassing laterally inward portions of the end assembly as the doors move between closed and open positions.

4,944,235

ATTACHMENT MECHANISM FOR ATTACHING A DESK TOP TO A SUPPORT STRUCTURE

Eitelfriedrich Jahnke, Korbach, and Detlef Hänsel, Lippstadt-Dedinghausen, both of Fed. Rep. of Germany, assignors to Gesika Buromobelwerk GmbH & Co. KG, Geseke, Fed. Rep. of Germany

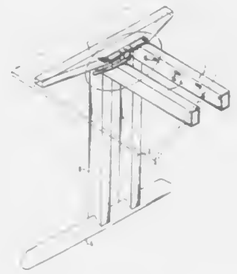
Filed Oct. 11, 1989, Ser. No. 420,066

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1988, 3835365

Int. Cl.[5] A47B *3/06*

U.S. Cl. 108—157 **10 Claims**

1. A desk comprising a support structure and a desk top adapted to be mounted on said support structure, said support structure including a pair of vertical pedestals disposed in spaced relation to one another and a pair of elongated horizontally extending parallel cross beams disposed between said pedestals adjacent the tops when said desk top is mounted on said support structure of said pedestals at a location below said desk top, each of said cross beams including abutment means thereon, and the underside of said desk top including an attachment mechanism thereon for separably attaching said desk top to said support structure, said attachment mechanism comprising a manually operable latching lever mounted for pivotal motion in a plane parallel to the underside of said desk top, a pair of clamp levers mounted for horizontal linear motion toward and away from one another in a direction transverse to said elongated cross beams, and motion changing means responsive to pivotal motion of said latching lever in one direction for effecting linear motion of said clamp levers into engagement with said abutment means on said cross beams, and



responsive to pivotal motion of said latching lever in a direction opposite to said one direction for disengaging said clamp levers from said abutment means.

4,944,236

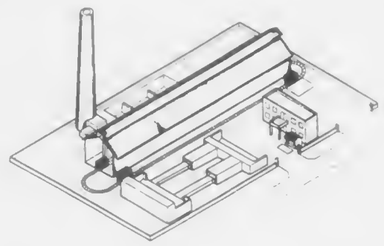
TUNNEL TYPE GARBAGE INCINERATOR

Chao-Chin Sheen, 283, Sec. 4, Fu-Hsin Rd., Taichung, Taiwan

Filed Aug. 24, 1989, Ser. No. 398,274

Int. Cl.[5] F23G *5/00, 5/12, 5/44*

U.S. Cl. 110—257 **3 Claims**



1. A tunnel type garbage incinerator which is characterized in that all of the component structures of this incinerator are constructed and deployed on a land area, comprising:

a garbage classification plant furnished with a crushing unit, a metal selecting unit, and a gravel sifting unit;

an incinerating tunnel having a length of about 120 to 140 meters;

a plurality of bogies;

an endless rail track passing through the said incinerating tunnel for guiding the travel of the bogies;

each bogie being provided with a fire brick platform, the upper portion of each bogie above the said platform being wider than the wheel track beneath it and closely encased by two adjacent side walls of the incinerating tunnel when the bogie travels into the incinerating tunnel, the middle section of the incinerating tunnel being an incinerating chamber, and a plurality of flame nozzles provided on the upper portions of each side wall, the tail section near the outlet port of the said incinerating tunnel being provided with a plurality of fresh air blowers, the fore section near the input port of the incinerating tunnel being provided with an exhaust gas outlet port;

a water rinsing pool and a smokestack;

and wherein the exhaust gases generated in the incinerating chamber are sucked out from the incinerating tunnel into the smokestack for emission into the air after passing through the water rinsing pool and the smokestack water rinsing device for filtering out smoke, solid particles and bad smelling gases contained in the untreated exhaust gases.

4,944,237

DETECTING DEVICE OF THE FEEDING QUANTITY IN A SEWING MACHINE

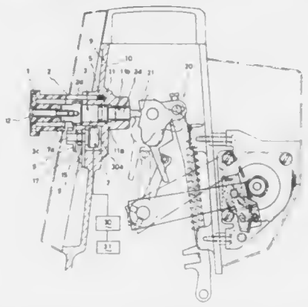
Shiro Nonaka, Kariya; Seiichiro Hagino, Chiryu, and Tsukasa Ando, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 31, 1989, Ser. No. 331,168

Claims priority, application Japan, Mar. 31, 1988, 63-80922

Int. Cl.[5] D05B *27/22, 35/12*

U.S. Cl. 112—315 **3 Claims**



1. A detecting device of the feeding quantity of material in a sewing machine, comprising:

a normally stationary dial rotatably mounted on an arm of the sewing machine;

mechanical means operatively connected to the dial for varying the feeding quantity in response to the rotational quantity of the dial, wherein said means for varying the feeding quantity comprises an adjusting member fixed to said dial and threaded into said arm, and wherein a portion of said adjusting member engages a feeding quantity adjusting mechanism of the sewing machine;

signal generator means for converting the rotational quantity of the dial into electric signals, wherein the signal generator means includes a microprocessor independent of said means for varying the feeding quantity, and a variable resistor having an output connected to the microprocessor and having a shaft rotated by the rotation of said dial; and

display means electrically connected to the signal generator means for displaying signals outputted therefrom.

4,944,238

SEMI-SUBMERGED SHIP

Thomas G. Lang, 417 Loma Larga Dr., Solana Beach, Calif. 92075

Continuation of Ser. No. 233,261, Aug. 17, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 447,206

Int. Cl.[5] B63B *1/12, 1/14*

U.S. Cl. 114—61 **33 Claims**

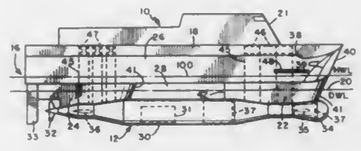
1. A semi-submerged ship, comprising:

a pair of parallel submerged hulls whose centers are spaced apart by at least two hull widths;

a strut structure extending upwardly from the hulls on each side of the ship;

a cross-structure connected across the upper regions of the strut structure to connect the opposite sides of the ship together;

the strut structure on each side comprising two lower struts extending upwardly from the hull on that side and a single, full length upper strut attached to the upper ends of the lower struts, each upper strut having a transverse width at its upper end which is no narrower than the width of the remainder of the upper strut, the upper struts lying above the operational design water line at least in the region midway between the lower struts;



the lowermost portion of each upper strut in the region midway between the lower struts being no lower than the lowermost portion of the upper strut lying directly above the forward lower strut; and each hull having an enlarged cross-section which extends into the region between the lower struts.

4,944,239

FLAP RUDDER AND STEERING SYSTEM

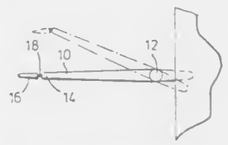
John S. McKenzie, 4039 Violet Street, North Vancouver, British Columbia, Canada

PCT No. PCT/GB87/00022, § 371 Date Nov. 15, 1988, § 102(e) Date Nov. 15, 1988, PCT Pub. No. WO88/05395, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 15, 1987, Ser. No. 250,680

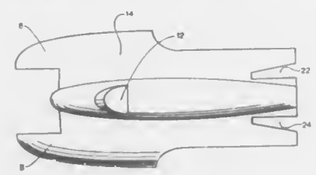
Int. Cl.[5] B63H *25/06*

U.S. Cl. 114—162 **13 Claims**



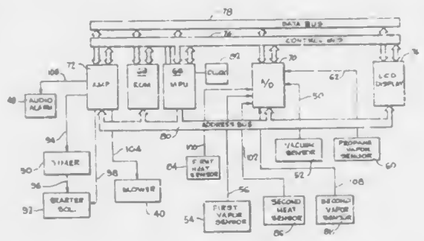
1. An active flap steering system for a towed vessel (34) having a rudder (10) mounted for swivelling movement about a rudder axis (12), characterized in that there is provided an active flap rudder extension (16) controlled for independent oscillation by an active flap actuator (18) that imparts a turning force to swing the flap rudder extension (16) with respect to the rudder (10) in a first direction, causing the extension (16) and the rudder (10) to swing together in a direction opposite to said first direction, said active flap actuator (18) forming part of an automatic control system between a towing vessel (38, 90) and the towed vessel (34, 92), said control system including means mounted on said towed vehicle and responsive to deviations of said towed vehicle from a preset towed path, for activating said automatic control system for actuating said active flap actuator and adjusting said active flap rudder extension for resetting said towed vehicle to said preset path.

4,944,240
HULL FOR WATER CRAFT
James K. Morris, 312 N. Stadium Way #402, Tacoma, Wash. 98403
Continuation of Ser. No. 816,151, Jan. 3, 1986, abandoned. This application Jul. 26, 1988, Ser. No. 224,493
Int. Cl.[5] B63B *1/12*
U.S. Cl. 114—283 3 Claims



1. A hull for a hydroplane boat comprising: two longitudinal sponsons establishing the buoyancy of the hull at either side of an interconnecting hull portion wherein the interconnecting hull portion includes two cutouts which extend through the entire height of the hull and are positioned equidistant from the centerline of said hull, each of said cutouts having a straight side parallel to the longitudinal axis of the boat extending from the bow towards the stern, a second side extending generally perpendicular to said first side, with a third side extending back to the stern at an angle which steadily increases the width of the cutout as it extends aft and terminates at the stern thereby leaving an open aft.

4,944,241
ENGINE VACUUM-CONDITION RESPONSIVE SAFETY SYSTEM
John A. Carter, 40 Williams La., Foster City, Calif. 94404
Filed Jul. 26, 1989, Ser. No. 385,772
Int. Cl.[5] B63J *2/06*
U.S. Cl. 114—211 18 Claims



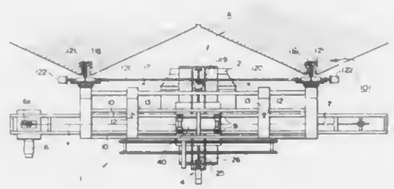
1. A safety system for ventilation of a marine engine compartment having a ventilating device for exhausting gas therefrom, said compartment housing a marine engine, said safety system comprising,
means for sensing a specified engine vacuum condition, said sensing means having an input operatively connected to said marine engine to detect vacuum pressure associated therewith and having an output, and
control means operatively connected to said output for activating and deactivating said ventilating device in response to said sensing of vacuum pressure, said control means activating said ventilating device upon detection of said specified engine vacuum condition.

4,944,242
RESCUE BALLOON
Donald H. Russell, P.O. Box 1282, Imperial Beach, Calif. 92032
Continuation of Ser. No. 186,584, Apr. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 908,807, Sep. 17, 1986, abandoned. This application Jan. 18, 1990, Ser. No. 469,743
Int. Cl.[5] B64B *1/50*
U.S. Cl. 116—210 2 Claims



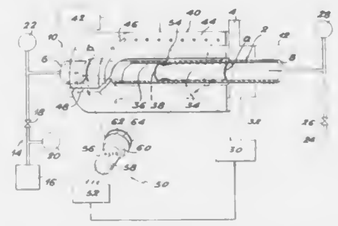
1. A rescue or signaling device comprising, in combination:
a lifting body balloon including filling means and sealing means;
a pressurized vessel of lighter-than-air gas including a necked down portion;
valving means attached to said pressurized vessel necked down portion for filling said lifting body balloon with lighter-than-air gas from said pressure vessel; and
tethering means attached to said lifting body balloon for tethering said filled lifting body balloon such that air flowing past said balloon when tethered produces a lifting force; said tethering means including:
a tether line; and
a friction spool upon which said tether line is wound; said friction spool attached to said pressurized vessel necked down portion for preventing said tether line from freely playing out.

4,944,243
APPARATUS FOR AUTOMATICALLY PAINTING EXTERNAL WALL OF BUILDING
Masahiro Takeno, Hasuda; Yoshihito Sakai, Sagamihara, and Atsushi Shirato, Kawaguchi, all of Japan, assignors to Taise Corporation, Tokyo, Japan
Filed Jun. 21, 1989, Ser. No. 369,187
Int. Cl.[5] B05C *1/02, 5/00*
U.S. Cl. 118—305 9 Claims



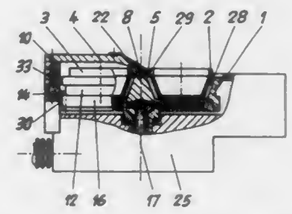
1. A system for automatically painting the external wall of a building, the external wall having two guide grooves formed along a vertical direction, the system comprising:
(a) a support suspended from a hoist apparatus, the hoist apparatus being disposed above the exterior wall, said support having a device for determining the horizontal position of said support, said horizontal position determining device having elements disposed within the guide grooves; and
(b) a painting apparatus suspended by said support, said support including moving means which enable said painting apparatus to move in a horizontal direction, said painting apparatus including a painting hood having a spray gun disposed therein, said painting apparatus having means for advancing and retracting said painting hood in a direction normal to said external wall.

4,944,244
APPARATUS FOR THE PRODUCTION OF PREFORMS FOR OPTICAL FIBERS
Monique Moisan; Dominique Pavy, both of Lannion; Marie-Eve Davoust, Michel S/Orge; Serge Saada, Kremlin-Bicetre, and Patrick Chollet, Les Ulis, all of France, assignors to Etat Francais Represente Par Le Ministere Des Postes, Issy Les Moulineaux, France
Filed Mar. 14, 1989, Ser. No. 323,623
Claims priority, application France, Mar. 16, 1988, 88 03392
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 15 Claims



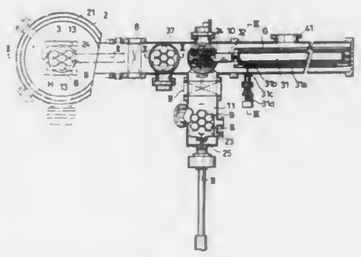
1. Apparatus for the production of preforms for optical fibers comprising means for depositing on the inner surface of a glass tube (2) a vitreous coating serving for the subsequent formation of the core of the optical fibers, said means comprising:
means (16, 24) for continuously passing from a first end (6) of the tube to the second end (8) of the tube, a mixture of ionizable gaseous compounds able to bring about the formation of the coating by reacting with one another,
an ultra-high frequency coupler (4) located on the side of the second end (8) of the tube and provided for forming in said tube a plasma column (34) for activating the reaction, said ultra-high frequency coupler being able to inject a travelling surface wave into the plasma column, and
a variable power microwave generator (30) for supplying the ultra-high frequency coupler (4) with an electromagnetic power and for continuously and progressively varying said power, in such a way that the end (38) of the plasma column (34) sweeps the tube, the vitreous coating deposit taking place at a given time in a deposition area (54) emitting a light characteristic of the reaction and which is located in the plasma column in the vicinity of the end thereof,
characterized in that the apparatus also comprises:
photodetection means (50) sensitive to said light and able to supply information relative to the position of the deposition area, and electronic means (52) for controlling the displacement of the deposition area, said displacement being such that the thickness of the coating is uniform, control means being provided for controlling the power of the generator (30) as a function of information supplied by the photodetection means (50).

4,944,245
CRUCIBLE COVER FOR COATING INSTALLATION WITH AN ELECTRON BEAM SOURCE
Wilfried Stoesel, Götzis, Austria; Christian Beusch, Triesenberg, Liechtenstein; Martin Boesch, Azmoos, Switzerland, and Peter Niggli, Vaduz, Liechtenstein, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein
Filed Jan. 16, 1990, Ser. No. 464,941
Claims priority, application Switzerland, Sep. 2, 1989, 445/89
Int. Cl.[5] C23C *14/00*
U.S. Cl. 118—726 15 Claims



1. A crucible cover assembly for a coating apparatus having an electron beam as an energy source for heating material to be vaporized, comprising:
a support block;
a crucible mounted for movement to said support block and having a surface with a plurality of material pockets therein;
a cover for covering at least one of the material pockets which are not to be heated by the energy source, said cover having at least one edge with a seal engageable with the crucible surface for sealing the cover to the crucible for covering the at least one material pocket; and
a lifting mechanism operatively connected between said crucible and said cover for changing the distance between said cover and the crucible surface when the crucible moves for moving said seal away from the crucible surface so that a different material pocket can be moved, with movement of said crucible, under the cover.

4,944,246
MOLECULAR BEAM EPITAXY APPARATUS
Haruo Tanaka, Shiga; Masato Mushiage, Kyoto, and Yuhji Ishida, Osaka, all of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Mar. 27, 1989, Ser. No. 329,313
Claims priority, application Japan, Mar. 30, 1988, 63-42830[U]; Mar. 30, 1988, 63-77798[U]; Apr. 8, 1988, 63-87918
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—729 17 Claims



7. A molecular beam epitaxy apparatus comprising:

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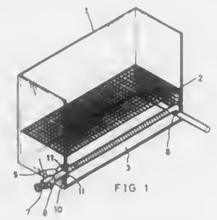
a growth chamber evacuatable to an ultra high vacuum,
holder support means arranged in said growth chamber,
a preparation chamber connected to said growth chamber via a first gate valve and evacuatable to a high vacuum,
a loading chamber connected to said preparation chamber via a second gate valve and evacuatable to a high vacuum,
a first transfer member arranged in said loading chamber for receiving at least one substrate at a time, said first member being movable into said preparation chamber through the open second valve to assume an advanced transfer position,
a second transfer member arranged in said preparation chamber for placing thereon a substrate holder, said second member being movable from a retreated transfer position in said preparation chamber into said growth chamber through the open first valve to enable transfer of the holder between said second member and said holder support means, and
a substrate transfer assembly arranged in said preparation chamber to transfer the, or each, substrate between said first member in said advanced transfer position and the holder placed on said second member in said retreated transfer position,
further comprising a preliminary heating unit arranged in said preparation chamber between said growth chamber and said retreated position of said second transfer member for degassing the substrate held by the holder before entry into the growth chamber,
wherein said preliminary heating unit comprises a stocker for storing a plurality of substrate holders in vertically spaced stages, and
wherein each stage of said stocker is provided by a pair of shelf plates which are spaced transversely of the moving path of said second transfer member, said pair of shelf plates being engageable with a corresponding substrate holder from below but spaced enough to allow passage of said second transfer member.

4,944,247
ANIMAL LITTER
Billy G. McNish, Little Rock, and Jarvis Harper, Benton, both of Ark., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Mar. 7, 1986, Ser. No. 837,186
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—1 **3 Claims**

1. The method of using sinter by-product, formed during a sinter-leach process that captures aluminum oxide from Bayer process residue, comprising placing it in a sized and dried form as litter for animals.

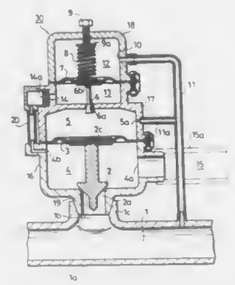
4,944,248
POLYGEN FISH GLOBE
Chen Ching Torng, 10F No. 50 Sung Chiang Rd., Taipei, Taiwan
Filed Jul. 20, 1988, Ser. No. 221,985
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—5 **3 Claims**

1. An aquarium comprising:
a tank having a bottom and upstanding walls one of the walls defining a port disposed adjacent the bottom;
a mesh shelf disposed within said tank and spaced above the bottom and above the port, said shelf adapted to support a layer of small stones;
an elongated suction tube extending through the port and of sufficient length to extend across the bottom of said tank, said tube terminating at the end inside the tank in a downwardly opening nozzle, and the end of said tube opposite said nozzle having a drain opening adapted to be coupled to a source of reduced pressure so that debris on the bottom will be sucked through the nozzle and expelled through the drain;
valve means coupled to said tube for opening and closing the drain opening therein; and


FIG 1

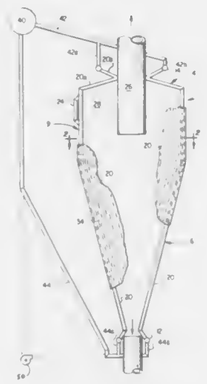
resilient seal means for sealing engagement between the exterior of said tube and said port for permitting sliding and lateral movement of said tube without leakage.

4,944,249
VACUUM-PRESSURE SUPPLY DEVICE
Toru Takeuchi, and Minoru Matsuzawa, both of Suzaka, Japan, assignors to Orion Machinery Co., Ltd., Nagano, Japan
Filed Jul. 12, 1988, Ser. No. 218,235
Int. Cl.[5] A01J *5/04*
U.S. Cl. 119—14.44 **2 Claims**



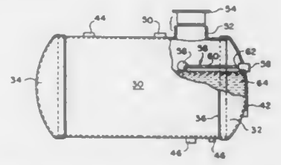
1. A vacuum pressure supply device for a dual pressure cow milking arrangement, comprising:
casing members defining a first hollow space and a second hollow space separated from said first hollow space by a wall member;
a first diaphragm cooperating with said casing members to define a first chamber and a second chamber in said first hollow space;
a second diaphragm cooperating with said casing members to define a third chamber and a fourth chamber in said second hollow space;
a high vacuum pressure pipe having a vacuum pump connected at one end to provide a pressure below atmospheric pressure and a milking arrangement in communication with a low vacuum pressure pipe pressure in said low vacuum pressure pipe being below atmospheric pressure and above said pressure in said high vacuum pressure pipe;
a pressure adjusting hole formed in said casing communicating with said high vacuum pressure pipe;
a first chamber valve body having one end secured to said first diaphragm and a second end positionable in said pressure adjusting hole to restrict said pressure adjusting hole an amount dependent upon the displacement of said first diaphragm;
a high vacuum pressure line connected to said high vacuum pressure pipe and connected to said second chamber and said fourth chamber;
an air-induction hole formed in said wall member providing communication between said second chamber and said third chamber;
a pilot valve connected to said second diaphragm and positioned in said air induction hole for adjusting an amount of air flowing through said air induction hole from said third chamber into said second chamber in dependence upon the displacement of said second diaphragm;
said third chamber being formed with an open portion for communication with one of atmospheric air and said first chamber; and
resilient means for supporting said second diaphragm by resilient force.

4,944,250
CYCLONE SEPARATOR INCLUDING A HOPPER FORMED BY WATER-STEAM COOLED WALLS
Venkatraman Seshamani, Gillette, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Mar. 30, 1989, Ser. No. 330,541
The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.
Int. Cl.[5] B04C *5/08*
U.S. Cl. 122—20 B **7 Claims**



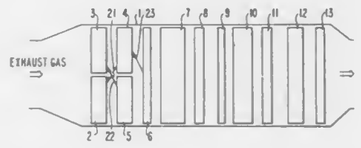
1. A cyclone separator comprising an inner cylinder; a plurality of tubes, the intermediate portions of said tubes extending vertically and circumferentially in a parallel relationship to form an outer cylinder extending around said inner cylinder in a coaxial relationship to define an annular chamber between said cylinders, the upper end portions of aid tubes being bent radially inwardly to form a roof section, and the lower end portions of said tubes being bent radially inwardly to form a conical shaped hopper section; a first ring header connected to the upper ends of said tubes; a second ring header connected to the lower ends of said tubes; means for passing water or steam or a water and steam mixture through said ring headers to circulate said water or steam or water and steam mixture through said tubes to cool said separator; and means for directing gases containing solid particles through said annular chamber for separating the solid particles from said gases by centrifugal forces, the separated gases exiting through said inner cylinder and the separated solids falling to the bottom of said hopper section for disposal or recycle.

4,944,251
CONDENSATE RETURN TANKS
Richard Fetterly, Fulton, N.Y., assignor to Fulton Boiler Works, Inc., Pulaski, N.Y.
Filed Mar. 3, 1989, Ser. No. 318,734
Int. Cl.[5] F22D *5/26*
U.S. Cl. 122—451 R **5 Claims**



1. A condensate return tank for storing and condensing water in a closed loop steam system, comprising a horizontally arranged generally cylindrical tank closed at each end, a float valve comprising a ball attached at one end to a lever arm which is itself attached at its other end to a pivotal fitting secured to the inner surface of one of the ends of said tanks so that said ball extends cantilevered therefrom to float on the surface of the water in said tank, an opening on the surface of said horizontally disposed tank, adjacent the one end of said tanks and spaced therefrom by a distance permitting manual entry into the tank in contact with said float valve, and a cap resting on and forming an air vent permitting escape of air from said tank.

4,944,252
REHEAT TYPE EXHAUST GAS BOILER
Toshiki Motai, and Masamichi Kashiwazaki, both of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1989, Ser. No. 412,323
Claims priority, application Japan, Jul. 25, 1988, 63-183677
Int. Cl.[5] F22G *7/12*
U.S. Cl. 122—470 **2 Claims**



1. A reheat type exhaust gas boiler comprising:
an exhaust gas boiler main body through which exhaust gases are adapted to flow in a generally longitudinal direction;
a high-temperature side superheater and a high-temperature side reheater mounted in parallel in a most upstream portion of said main body and each including a plurality of heat transfer tubes;
a low-temperature side reheater including a plurality of heat transfer tubes and being mounted in said main body on a downstream side of said high-temperature side superheater;
a low-temperature side superheater including a plurality of heat transfer tubes and being mounted in said main body on a downstream side of said high-temperature reheater;
said plurality of heat transfer tubes of said high-temperature side superheater having tube outer diameters, a number of rows along the longitudinal direction and pitches in both the longitudinal and transverse directions equal to those of

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said plurality of heat transfer tubes of said high-temperature side reheater; and

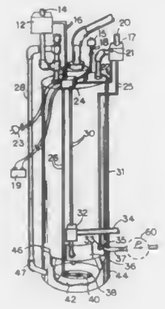
said plurality of heat transfer tubes of said low-temperature side superheater having tube outer diameters, a number of rows along the longitudinal direction and pitches in both the longitudinal and transverse directions equal to those of said plurality of heat transfer tubes of said low-temperature side reheater.

4,944,253

SAFETY SYSTEM FOR HYDRONIC WATER HEATERS AND BOILERS

Richard C. Bellofatto, 4 Lewis Clr., Peabody, Mass. 01960

Filed Oct. 10, 1989, Ser. No. 419,471
Int. Cl.[5] F22B *35/00*
U.S. Cl. 122—504 15 Claims



1. An electrical safety system for shutting off all elements of a water heating device, wherein the electrical safety system comprises:

a water heating device having a tank for heating water, a means for heating the water, a water supply means feeding into the tank, a hot water distribution system leading from the tank, an overflow drain connected to the hot water distribution system and a power supply means feeding the means for heating the water;

a water collecting means comprising a water proof sheet of material having a shallow collecting basin on a portion of the sheet, wherein the water collecting means is placed under the tank of the water heating device for collecting any water which leaks from the water heating device;

a water sensing means comprising low power electrical contacts sensitive to water on the sheet within the shallow collecting basin for detecting any water which begins to accumulate within the collecting basin, wherein the electrical contacts are elevated above the sheet to a level which is below the height of the shallow collecting basin;

a normally open valve connected to the water supply means, which normally open valve closes to shut off the supply of water when the water sensing means detects water in the water collecting means;

a means for preventing backflow of hot fluid connected to the hot water distribution system;

a power shut-off means attached to the power supply means and electrically connected to and activated by the water sensing means;

an outflow pipe leading out of the water tank and, connected to the water sensing means, a means for activating an outflow of water out of the tank into the outflow pipe upon detecting water in the water collecting means;

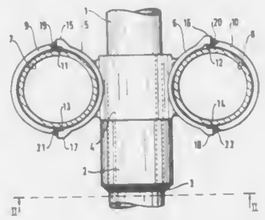
an extension of the overflow drain into the water collecting means.

4,944,254

DEVICE FOR SUSPENDING HORIZONTAL HEAT EXCHANGE TUBES ON A VERTICAL CARRIER TUBE, AND A METHOD OF MANUFACTURING THE DEVICE

Jean Fournier, Rochefort en Yvelines, and Gilbert Delsol, Cernay la Ville, both of France, assignors to Societe Anonyme dite : STEIN INDUSTRIE, Velizy Villacoublay, France

Filed Oct. 18, 1989, Ser. No. 423,280
Claims priority, application France, Oct. 18, 1988, 88 13703
Int. Cl.[5] F22B *37/06, 37/10*
U.S. Cl. 122—511 3 Claims



1. A device for suspending horizontal heat exchange tubes (7, 8) on a vertical carrier tube (1),

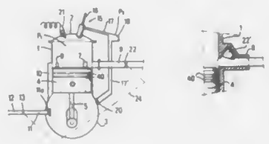
the device being characterized in that it comprises a bottom support sleeve (2) welded at its bottom edge around the support tube, a top support sleeve (4) having its bottom edge resting on the top edge of the bottom support sleeve, said top support sleeve being provided on its sides with two half-shells (5, 6) of radius of curvature slightly greater than that of the horizontal tubes, and add-on half-shells (9, 10) of radius of curvature slightly greater than that of the horizontal tubes, welded edge-to-edge (19, 21; 20, 22) to the half-shells fixed to the top sleeve, thereby forming collars which clamp the horizontal heat exchange tubes on either side of the vertical carrier tubes.

4,944,255

TWO-STROKE ENGINE WITH PNEUMATIC INJECTION AND FLOWRATE RESTRICTION AT THE EXHAUST

Pierre Duret, Paris, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Oct. 6, 1988, Ser. No. 254,266
Claims priority, application France, Oct. 7, 1987, 87 13837
Int. Cl.[5] F02B *33/04*
U.S. Cl. 123—65 EM 15 Claims



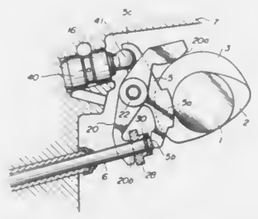
1. Two-stroke engine having at least one cylinder in which a piston moves, a crank case communicating with one end of the at least one cylinder and having means for admitting air into the crank case, at least one pipe means for admitting unmixed air from the crank case to a cylinder transfer port, means for pneumatically injecting fuel into the at least one cylinder comprising pneumatic injector means, means for supplying and metering fuel to said pneumatic injector means, and pipe means connected to the crank case by a valve means and forming a volume of pressurized air connected to the pneumatic injector means for supplying the pneumatic injector means with pressurized air for atomizing the fuel, an exhaust pipe means connected to the at least one cylinder by an exhaust port located in a position offset in a direction of travel of the piston with respect to the cylinder transfer port, and at least one restricting means disposed inside the exhaust pipe means for restricting a passage of exhaust gases, said restricting means being controlled and adjusted so as to be opened and closed as a function of at least one engine operating parameter.

4,944,256

ROCKER ARM ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE POPPET VALVES AND THE LIKE

Yutaka Matayoshi, Yokosuka; Yasuhiko Nakagawa, Kamakura; Kyugo Hamai, Yokosuka, and Shigeru Kamegaya, Tokyo, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Aug. 15, 1989, Ser. No. 394,091
Claims priority, application Japan, Aug. 16, 1988, 63-203521; Aug. 16, 1988, 63-203522; Aug. 16, 1988, 63-107763[U]
Int. Cl.[5] F01L *1/30, 1/18*
U.S. Cl. 123—90.24 10 Claims



1. In an internal combustion engine having a cylinder head, a valve reciprocally disposed therein and a cam shaft on which first and second cams are disposed, a rocker arm arrangement comprising:

a first rocker arm, said first rocker arm being pivotally mounted at a first end on a member which is supported on said cylinder head, said first rocker arm being arranged to engage the stem of said valve at a second end thereof and to have a first cam follower formed between said first and second ends, said first cam follower being arranged to engage the first cam of said cam shaft; and

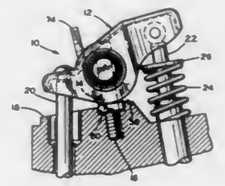
a second rocker arm, said second rocker arm being pivotally mounted on said first rocker arm, said second rocker arm having a second cam follower at a first end thereof and a portion which engages an engagement member which is provided on the top of said valve stem at a second end thereof, said second cam follower being arranged to engage the second cam formed on said cam shaft.

4,944,257

COLD-FORMED ROCKER ARM WITH BEARING FLANGES AND SPLASH PLATE

Jesse V. Mills, Toledo, Ohio, assignor to Henley Manufacturing Holding Company, Inc., Hampton, N.H.

Filed Sep. 27, 1989, Ser. No. 413,229
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.34 19 Claims



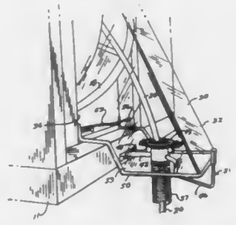
1. A cold-formed rocker arm comprising a one-piece metal body of generally inverted U-shaped cross section throughout most of its length, said body having a top wall and two generally parallel side walls extending downwardly therefrom and being structurally integral therewith, said side walls having annular flanges extending outwardly therefrom and forming aligned bores to receive bearings, said body having means at one end to engage an end of a push rod, and said body having means at the other end to engage an end of a valve stem.

4,944,258

OPERATOR PROTECTION FOR HIGH PRESSURE HOSE MACHINES

Robert D. Knutson, Oconomowoc; Bruce Boczkiewicz, Mukwonago, and James C. Wurster, Pewaukee, all of Wis., assignors to Super Products Corporation, New Berlin, Wis.

Filed Apr. 17, 1989, Ser. No. 340,899
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—167 C 14 Claims



1. In a sewer and/or catch basin cleaner of the type including a water injection system comprising a high pressure water hose, reel means supporting said hose and arranged to permit the hose to extend into and be withdrawn from a sewer catch basin or manhole, means for delivering water under pressure through said hose and means for protecting an operator from water hose or hose coupling failure, said protecting means including:

a first hood-like shield portion at least partially surrounding an upper exposed section of the water hose adjacent said hose reel;

a second elongate tubular portion for enclosing said water hose extending between said shield portion and said sewer catch basin or manhole and having a free end extending toward and communicating with the opening of the catch basin or manhole, the combined length of said first and second portions providing head-to-toe protection of the operator in case of hose or hose coupling rupture.

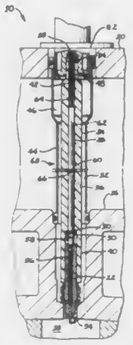
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4,944,259

ENGINE IGNITION SYSTEM WITH AN INSULATED AND EXTENDABLE EXTENDER

Ronald D. Richardson, Pekin, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 5, 1988, Ser. No. 280,472
Int. Cl.[5] F02P *15/00*
U.S. Cl. 123—169 P A **9 Claims**



1. A spark plug extender for use in a spark ignited engine for conducting an electrical charge from an energy source to a spark plug, comprising:

a tubular insulating member fixedly attached to and surrounding at least a portion of an electrically conductive core;

said core having a first end for receiving said electrical charge and a second end for transmitting said electrical charge, said core being at least 6 millimeters in diameter and at least 7.5 centimeters long with at least 3.6 centimeters of said core being on each side of the longitudinal midpoint of said extender;

a first terminal for receiving said electrical charge from said energy source and transmitting said charge to said first end of said core; and

a second terminal for receiving said electrical charge from said second end of said core and transmitting said charge to said spark plug;

one of said terminals being axially moveable with respect to said core.

4,944,260

AIR INTAKE HEATER SYSTEM FOR INTERNAL COMBUSTION ENGINES

Patrick R. Shea, Columbus, Ind., and Robert T. Niemczyk, Montgomery, Ala., assignors to Cummins Electronics, Inc., Columbus, Ind.

Filed Jun. 5, 1989, Ser. No. 361,380
Int. Cl.[5] F02M *31/02*
U.S. Cl. 123—179 H **17 Claims**

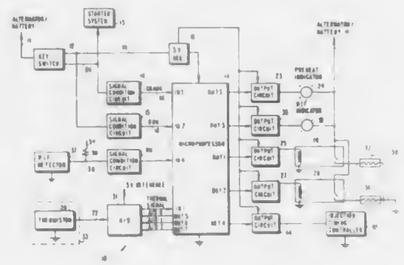
1. An air intake heater system for use with an internal combustion engine having a battery and corresponding charging system, said air intake heater system comprising:

(a) electrical air intake heater means for heating intake manifold air;

(b) temperature monitoring means for monitoring intake manifold air temperature, said temperature monitoring means producing a temperature signal corresponding to intake manifold air temperature;

(c) first circuit means responsive to said temperature signal and producing a first signal of variable duration based upon said temperature signal;

(d) second circuit means responsive to said temperature signal and producing a second signal of variable duration based upon said temperature signal when said battery voltage exceeds a predetermined limit; and



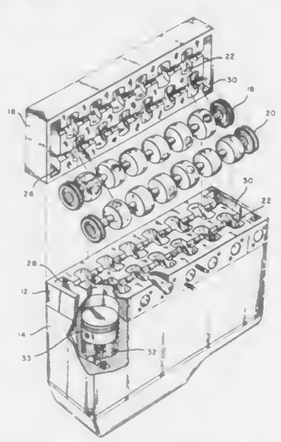
(e) third circuit means responsive to said first and said second signals, said third circuit means supplying a power signal from said battery to said electrical air intake heater means in response to said first and second signals.

4,944,261

SPHERICAL ROTARY VALVE ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

George J. Coates, 2500 Belmar Blvd., Wall Township, Monmouth County, N.J. 07719

Filed Oct. 16, 1989, Ser. No. 422,053
Int. Cl.[5] F01L *7/10*
U.S. Cl. 123—190 D **18 Claims**



1. An improved rotary valve assembly for use in internal combustion engines of the piston and cylinder type, said spherical rotary valve assembly comprising:

a removable two-piece cylinder head securable to the internal combustion engine, said two-piece removable cylinder head comprising an upper and lower cylinder head section, said upper and lower cylinder head sections when secured to said internal combustion engine define two cavites radially aligned with the cylinders of said internal combustion engine, said cavities defining a plurality of first drum accommodating cavities for receipt of radially aligned rotary intake valves, said second cavity defining a plurality of second drum accommodating cavities for receipt of a plurality of radially aligned rotary exhaust valves, said lower cylinder head section and said plurality of first drum accommodating cavities having an inlet port in communication with said cylinder, said lower cylinder head section and said second drum accommodating cavities having an outlet port in communication with said cylinder;

a sealing means associated with said inlet and said outlet port;

a first passageway for the introduction of a fuel/ air mixture into said cylinder head by way of said first drum accommodating cavity and said rotary intake valve and a second passageway for the evacuation of exhaust gases from said cylinder by way of said second drum accommodating cavity and said rotary exhaust valve;

a first shaft means journaled on bearing surfaces within said first cavity radially aligned with said cylinders of said internal combustion engine, said first shaft means having mounted thereon, said rotary intake valves;

a second shaft means journaled on bearing surfaces within said second radially aligned cavity, said second shaft means having positioned thereon, a plurality of said rotary exhaust valves;

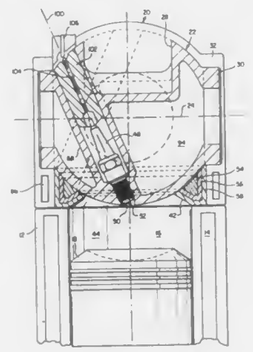
said rotary intake valve and said rotary exhaust valve each having a spherical section defined by two parallel planes of a sphere, said planes being disposed symmetrically about the center of said sphere, defining a spherical periphery and planer end walls, said rotary intake valves mounted on said first shaft means in said plurality of drum accommodating cavities in gas tight sealing contact with said inlet port, each of said rotary exhaust valves mounted on said second shaft means in said plurality of drum accommodating cavities in gas tight sealing contact with said inlet port and said outlet port, respectively, said rotary intake valve having a plurality of passageways therethrough for the introduction and interruption of fuel/air mixture to said engine and said rotary exhaust valve having a plurality of passageways therethrough for the evacuation and interruption of evacuation of said exhaust gases from said engine, wherein said shaft means and said rotary intake valve and rotary exhaust valve are rotated at a speed relative to said operating cycle of said engine relative to the number of passageways through said rotary intake valve and said rotary exhaust valves.

4,944,262

ROTATIVE COMBUSTION CHAMBER ENGINE

Richard W. Molina, Dallas, Tex.; Manuel Cortina, Mexico City, Mexico; Roberto Bertolina, Naucalpan, Mexico, and Luis H. Balsa, Cuautitlan, Mexico, assignors to INASA Automotive, Inc., Dallas, Tex.

Filed Apr. 5, 1989, Ser. No. 333,316
Int. Cl.[5] F01L *7/00*
U.S. Cl. 123—190 BD **16 Claims**



1. An improved combustion chamber assembly for an internal combustion engine having a block defining a cylinder open at a first end and piston moveable in the cylinder, comprising:

a head for mounting on the block and defining an inlet passage and an exhaust passage;

a rotating element having a generally spherical outer surface mounted in said head for rotation about a first axis, a depression formed into the outer surface to define an arcuate notch;

an annular seal assembly having an annular seal ring forming a circular seal with the outer surface of the rotating element, the annular seal ring lying in a seal plane generally parallel the first axis, the block, seal assembly, rotating element and piston defining a combustion chamber;

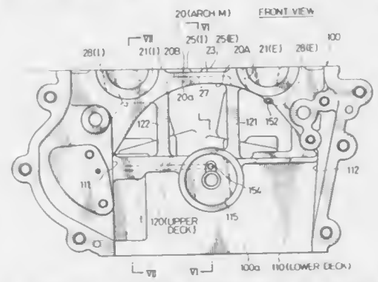
rotation of the rotating element about the first axis in a first rotational direction sequentially connecting the inlet passage and combustion chamber through the notch to charge the combustion chamber with a combustible mixture, sealing the combustion chamber for compression of the combustible mixture and combustion of the mixture, and connecting the exhaust passage to the combustion chamber to exhaust the combusted gases, the annular seal ring rotating about a second axis perpendicular the seal plane as the rotating element rotates to equalize wear between the seal and rotating element.

4,944,263

CYLINDER HEAD OF DOHC ENGINE

Seiichi Nagano; Masayuki Hashimoto, both of Kanagawa, and Akira Murasaki, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nissan Kohki Co., Ltd., Kanagawa, both of, Japan

Filed Nov. 15, 1989, Ser. No. 436,654
Claims priority, application Japan, Nov. 16, 1988, 63-149498[U]
Int. Cl.[5] F02F *1/00*
U.S. Cl. 123—193 H **7 Claims**



1. A cylinder head of a DOHC engine including two camshafts mounted on a cylinder head, wherein an arch member is formed integral with the cylinder head on a front camshaft driving side to support the two camshafts in such a way that an inner arcuate surface of said arch member extends to both inner side walls of the cylinder head.

4,944,264

CHAIN CASING FOR ENGINE

Akira Murasaki, Yokohama, and Masayuki Hashimoto, Kanagawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nissan Kohki Co., Ltd., Kanagawa, both of, Japan

Filed Nov. 9, 1989, Ser. No. 433,894
Claims priority, application Japan, Nov. 15, 1988, 63-148722[U]
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C **3 Claims**

1. A chain casing for an engine having at least one camshaft

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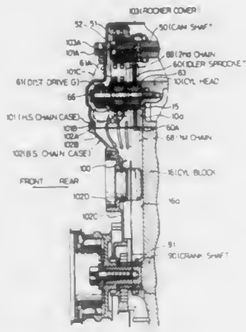
mounted on a cylinder head and a crankshaft attached to a cylinder block, comprising:

(a) at least one camshaft sprocket coaxially coupled to the at least one camshaft;

(b) an idler sprocket rotatably supported between the camshaft and the crankshaft and on the cylinder block;

(c) a first chain reeved around the crankshaft and said idler sprocket to rotate said idler sprocket by the crankshaft;

(d) a second chain reeved around said idler sprocket and said



camshaft sprocket to rotate said camshaft sprocket by said idler sprocket; and

(e) a chain casing fixed to an end of the cylinder head and the cylinder block enclosing said idler sprocket, first and second chains, said chain casing being formed with contiguous inner wall surfaces extending from approximate said at least one camshaft to approximate said crankshaft along which lubricant can smoothly flow downward on the basis of gravity without being accumulated midway therealong.

4,944,265

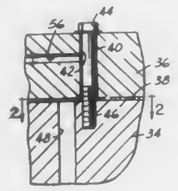
OIL RESTRICTING HEAD GASKET CONSTRUCTION

Mark A. Davey, St. Clair Shores, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 24, 1989, Ser. No. 383,504

Int. Cl.[5] F01M *1/00*

U.S. Cl. 123—196 R 4 Claims



1. In an internal combustion engine having an engine block and an overlying cylinder head attached to the block, an improved restricted oil supply for valve components supported by the cylinder head, comprising: an oil passage in the engine block extending to the cylinder head; another oil passage in the cylinder head extending to the engine block; the axes of the passages being laterally offset from one another sufficiently so that there is not a direct axial connection therebetween; a gasket extending between the engine block and the cylinder head, the gasket having openings therethrough corresponding to the passages in the block and the cylinder head respectively; the gasket defining an oil flow restrictive channel between the openings therein and between the block and cylinder head for limiting the flow of lubricating oil from the block to the cylinder head.

4,944,266

DIRECT-INJECTION DIESEL ENGINE

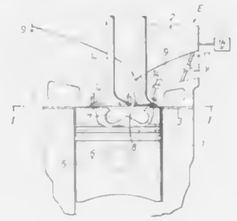
Shumpei Hasegawa; Yasushi Takahashi, and Yoshibumi Mishima, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1989, Ser. No. 310,293

Claims priority, application Japan, Feb. 12, 1988, 63-31097

Int. Cl.[5] F02B *15/00*

U.S. Cl. 123—302 2 Claims



1. A direct-injection diesel engine comprising a cylinder block having a plurality of cylinders in which a piston is slidably received in each cylinder, a cylinder head connected to an upper surface of the cylinder block, a plurality of fuel injector nozzles mounted in the cylinder head with at least one said nozzle to directly inject a fuel into a combustion chamber defined between each said piston and the cylinder head,, first and second independent intake ports provided in the cylinder head for introducing an intake gas into each said combustion chamber, a single exhaust port provided in the cylinder head for each combustion chamber, an intake controller mounted in each second intake port for bringing the second intake port into a controlled state in a region of low speed operation of the engine and into a normal state in a region of high speed operation of the engine, wherein each of said first and second intake ports are formed helically in the same direction to produce swirls in the same direction in intake gases introduced respectively through the intake ports into each combustion chamber and wherein downstream openings of the first and second intake ports are disposed in locations of substantially point symmetry with respect to the fuel injector nozzle position in each combustion chamber whereby a swirl in the intake gases is produced in both low and high speed operation of the engine, and a downstream opening of the exhaust port disposed adjacent one of the first and second intake ports in each combustion chamber in a direction of arrangement of the plurality of cylinders.

4,944,267

ELECTROPNEUMATIC DISPLACEMENT DEVICE FOR A THROTTLE VALVE OF AN INTERNAL COMBUSTION ENGINE

Arnold Mann, Bieber, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1989, Ser. No. 411,306

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840465

Int. Cl.[5] F02D *9/02*; F02M *3/07*; F15B *15/10*

U.S. Cl. 123—339 10 Claims

1. A system including an electropneumatic displacement device connected to a throttle valve of an internal combustion engine in idling condition, the displacement device comprising

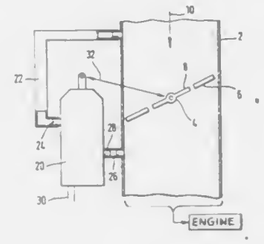
a housing having a chamber;

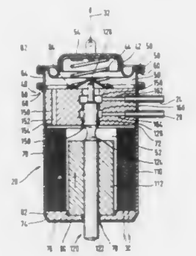
a diaphragm disposed in the chamber in the housing, the diaphragm forming an outer wall of the chamber and of the housing and being operatively connected to the throttle valve;

a spring in the chamber, the spring having a first end and a second end opposite the first end, the first spring end acting against the diaphragm;

a connection on the housing for atmospheric pressure, a magnet coil in the housing;

an armature which is axially displaceable in the magnet coil in response to electric current in the coil; and





a valve body firmly attached to the armature, the valve body holding said connection for atmospheric pressure open or closed corresponding to a position of the valve body; and

wherein the displacement device further comprises a connection on the housing for vacuum;

said connections for vacuum and atmospheric pressure are alternately kept open by the valve body;

the valve body is acted on by the second end of the spring; and

the coil current in the magnet coil serves as a control variable for positioning the throttle valve.

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APPARATUS FOR VARYING THE POSITION OF A CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Werner Wilde, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

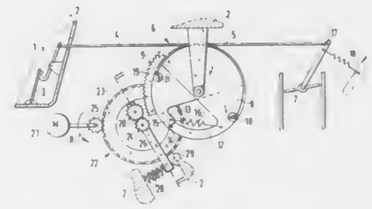
Filed Sep. 13, 1989, Ser. No. 406,934

Claims priority, applicatioo Fed. Rep. of Germany, Nov. 17, 1988, 3838915

Int. Cl.[5] F02D *11/10*

U.S. Cl. 123—342 29 Claims

1. An apparatus for varying the position of a fuel control device (7, 107) that controls the output of an internal combustion engine which comprises an operating element (3, 103) which manually operates a transmission device (6, 106), in which a control motor (21, 126) can be operatively connected via a gear assembly (22, 127) with a first rotary element (9, 109) connected to the fuel control device (7, 107), said first rotary elemen. is rotatably supported relative to a coaxial second rotary element (8, 108) operatively connected to the operating element (3, 103), wherein said two rotary elements (9, 8 or 109, 108) are prestressed by a spring (16, 116), forcing arms thereon to contact one another at stops (14, 15, 114, 115) disposed facing one another, said assembly gear (22, 127) has at least one



drive wheel (20, 124, 125) operatively connected to the control motor (21, 126), which drive wheel can be shifted from a position of repose, in which an operative connection with the first rotary element (9, 109) is interrupted, into a working position, in which the operative connection with the first rotary element (9, 109) is established.

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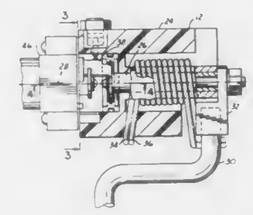
ACCELERATING PEDAL FOR ELECTRONIC THROTTLE ACTUATION SYSTEM

William J. Imoehl, Williamsburg, Va., assignor to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Filed Sep. 18, 1989, Ser. No. 408,636

Int. Cl.[5] F02D *41/00, 11/10*

U.S. Cl. 123—399 12 Claims



1. In an accelerator pedal control apparatus that remotely controls the throttle valve of an internal combustion engine via electrical signals wherein the apparatus comprises a housing, a shaft journaled on the housing, for imparting rotational motion to the shaft, a spring rotationally biasing the shaft toward a first position corresponding to the throttle valve being in closed or substantially closed position, an electrical sensor that is operated by the rotation of said shaft to positions away from said first position to signal the amount of rotation that is being imparted to the shaft, and a friction mechanism that acts on the shaft to dampen shaft rotation, the improvement in said friction mechanism characterized by a disk affixed to said shaft, friction elements on opposite sides of said disk, a pair of formed metal elements acting to sandwich said friction elements and said disk, and resilient means urging said formed metal elements to forcefully sandwich said friction elements and said disk.

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ASYMMETRICAL EXCITATION TYPE MAGNETIC DEVICE AND METHOD OF MANUFACTURE THEREOF

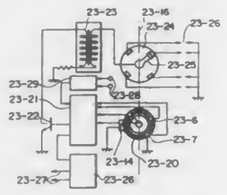
Akira Matsushita, 12-5, Miyazaki 1-Chome, Miyamae-Ku, Kawasaki-Shi, Kanagawa-Ken, and Susumu Abe, 9-204, Nishi-Kandaiji Danchi, 3-5 Kandaiji, Kanagawa-Ku, Yokohama-Shi, Kanagawa-Ken, both of Japan

Filed Mar. 31, 1988, Ser. No. 158,787

Claims priority, application Japan, Mar. 31, 1987, 62-75978; Aug. 17, 1987, 62-203840; Sep. 21, 1987, 62-236744; Sep. 21, 1987, 62-236745; Sep. 21, 1987, 62-236746

Int. Cl.[5] F02P 7/067; H01F 1/00; H03K 3/45; G11C 11/02

U.S. Cl. 123—414 26 Claims



1. An asymmetric excitation type magnetic device having a composite magnetic body and a detecting coil, said composite magnetic body being composed of a plurality of ferromagnetic molecules which are different in composition and coercivity with respect to each other and which are combined so as to have magnetic anisotropy oriented in the same direction, wherein external positive and negative asymmetric magnetic fields are applied to said composite magnetic body in the order: that first an auxiliary magnetic field is applied thereto so as to orient the direction of magnetization to a negative direction of only those ferromagnetic molecules in said composite magnetic body having a relatively small coercivity, and then next a main magnetic field is applied thereto to reverse the direction of magnetization of said ferromagnetic molecules having a relatively small coercivity to a positive direction being the same as the direction of magnetization of ferromagnetic molecules in said composite magnetic body having a relatively strong coercivity, thereby to produce variations in magnetic flux in said composite magnetic body due to rapid flux reversal therein for thereby resultantly generating pulse outputs across said detecting coil in response to said variations in magnetic flux.

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CONTROLLER FOR INTERNAL COMBUSTION ENGINE

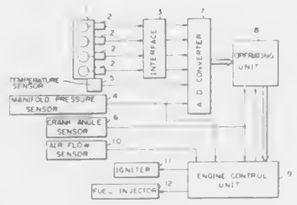
Toshio Iwata, and Satoru Ohkubo, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,505

Claims priority, application Japan, Apr. 13, 1988, 63-92165

Int. Cl.[5] F02M 51/00

U.S. Cl. 123—435 6 Claims



1. In a controller for an internal combustion engine operating on the basis of drive control parameters comprising:

pressure sensing means, having a variable transducing modulus and pressure offset between an actual pressure and a detected pressure in the cylinders of the engine, for detecting pressure in the cylinders of the engine and for generating an output representing a detected pressure profile;

calibrating means comprising (i) means for generating a renewed modulus and a renewed offset of said pressure sensing means, (ii) means for calibrating the output from said pressure sensing means on the basis of said renewed modulus and renewed offset of said pressure sensing means to produce a calibrated pressure profile in the cylinders, and (iii) means for determining the combustion parameters of the engine on the basis of said calibrated pressure profile; and

control means responsive to said calibrating means comprising means for determining the drive control parameters of the engine on the basis of said combustion parameters, and means for controlling combustion of the engine normally on the basis of said drive control parameters but, in predetermined operating conditions of the engine, on the basis of predetermined parameters.

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CARBURETOR ARRANGEMENT

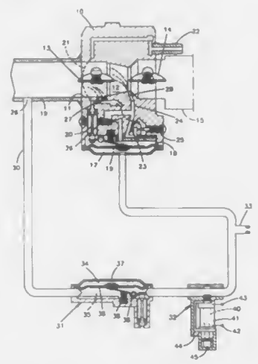
Bo P. I. Carlsson, Lerum, and Ulf M. Svensson, Trollhättan, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 10, 1988, Ser. No. 269,460

Claims priority, application Sweden, Nov. 23, 1987, 8704628

Int. Cl.[5] F02D 1/06

U.S. Cl. 123—438 8 Claims



1. A carburetor arrangement provided with a carburetor housing having a flow channel (11) where a throttle (13) and a venturi tube (12) are disposed as well as a fuel chamber (18) from which there is a connection to at least one nozzle located in the flow channel, and an air chamber (17) located beside the fuel chamber with connection to a reference pressure source, wherein the said reference pressure source comprises a pressure output (29) in the flow channel (11) or in the extension thereof (16) and a pressure regulator (31) connected to said output with a separate component (32) for an on/off control function in respect of the said reference pressure up to the connection to the air chamber and that the said separate component (32) for the on/off function is attached to a variable feed arrangement with which the mixture ratio of the carburetor is controlled in compliance with a characteristic provided by the feed arrangement, and wherein there is an opening (33) to the surrounding between the component for the on/off function and the air chamber.

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ZEOLITES AS SPECIFIC ADSORBENTS FOR NO_X AND CO

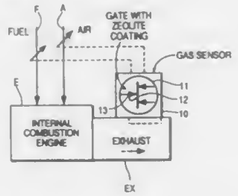
Detlef Baresel, Stuttgart, and Peter Scharner, Leonberg Gebersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 21, 1989, Ser. No. 313,621

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1988, 3805734

Int. Cl.[5] F02D 41/14; G01N 27/417

U.S. Cl. 123—440 18 Claims



16. In an internal combustion engine fuel supply control means of the type having a sensor means to generate a signal in proportion to levels of nitrogen oxides or carbon monoxide in exhaust gases from said engine and being operable to control the fuel/air ratio being introduced into the engine for combustion, the improvement wherein said sensor means comprises a sensor specific for a nitrogen oxide or carbon monoxide comprising a semiconductor having a control element; and a zeolite rich in silicic acid with an Si:Al ratio of 1:1 to 100:1, and which is a specific adsorbent for the nitrogen oxide or the carbon monoxide coated on said control element to influence the electrical characteristics of said semiconductor in proportion to the amount of the nitrogen oxide or carbon monoxide adsorbed by said zeolite and wherein

said semiconductor is an FET transistor and said zeolite is coated on its gate.

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AIR-FUEL RATIO CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Takayuki Itsuji, Novi, Mich.; Sadayasu Ueno, Katsuta, and Norio Ichikawa, Mito, both of Japan, assignors to Hitachi, Ltd, Tokyo and Hitachi Automotive Engineering Co., Ibaraki, both of, Japan

Filed Oct. 4, 1989, Ser. No. 417,075

Claims priority, application Japan, Oct. 11, 1988, 63-253774

Int. Cl.[5] F02M 51/00

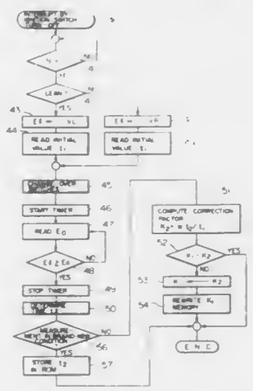
U.S. Cl. 123—489 8 Claims

1. An air-fuel ratio control apparatus for an internal combustion engine comprising:

a solid electrolyte having a first electrode arranged on one surface thereof to contact with the atmosphere and a second electrode arranged on the other surface thereof to contact with an exhaust gas from said engine through a diffusing resistor;

means for applying a voltage across said first and second electrodes to detect an oxygen pump current flowing through said solid electrolyte;

means for computing a correction factor relating to a change in a diffusion coefficient of said diffusing resistor; and



means for determining an air-fuel ratio of said exhaust gas in accordance with said correction factor and the oxygen pump current detected by said detecting means.

4,944,275

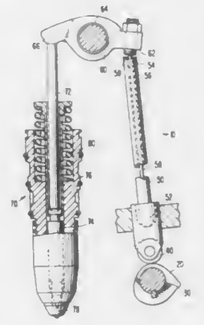
FUEL INJECTOR TRAIN WITH VARIABLE INJECTION RATE

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 10, 1989, Ser. No. 377,319

Int. Cl.[5] F02M 39/00

U.S. Cl. 123—501 19 Claims



1. A fuel injection train for injecting fuel at a reduced rate during a portion of a fuel injection cycle comprising:

a fuel injector having a plunger and plunger biasing means having a predetermined spring rate for biasing the plunger to control the injection rate of the injector,

a rocker arm for applying force to said plunger in response to force applied thereto,

cam assembly means,

and an elongate push rod means mounted between said cam assembly means and said rocker means, said cam assembly means operating to apply force to said push rod means to cause said push rod means to apply force to said rocker arm,

said push rod means including a first end in contact with said rocker arm, a second end in contact with said cam assem-

bly means, and push rod biasing means between said first and second ends, said push rod means operating in response to an axial force applied thereto which is in excess of a predetermined force to allow movement of said first and second ends for a limited distance toward one another against the bias of said push rod biasing means,

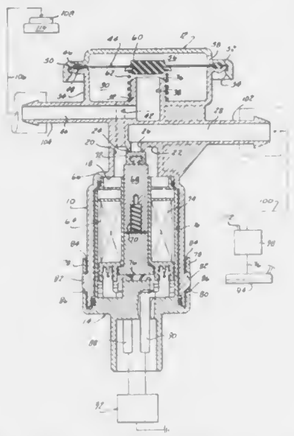
said push rod biasing means further including means for varying the bias thereby varying the predetermined force required to cause movement of said first and second ends toward one another and changing the point in the injection cycle at which the first and second ends begin to move toward one another, thereby varying the point in the field injection cycle in which the injector injects fuel at a reduced rate.

4,944,276

PURGE VALVE FOR ON BOARD FUEL VAPOR RECOVERY SYSTEMS

William J. House, Sterling Heights, Mich.; Loren H. Kline, Oregon, Ohio, and Lawrence McAuliffe, Jr., Southfield, Mich., assignors to Colt Industries Inc, New York, N.Y.

Continuation of Ser. No. 109,044, Oct. 6, 1987, abandoned. This application Jun. 22, 1988, Ser. No. 209,511
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **10 Claims**



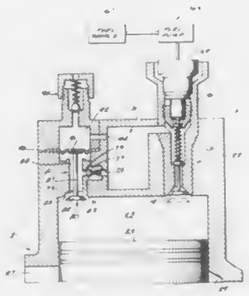
1. A purge valve for controlling the flow of vapor from a vapor source to a vacuum source, said valve comprising an elongate generally tubular main housing having a first chamber opening at one axial end of said housing and a second chamber opening at the opposite axial end of said housing, means defining an inlet passage adapted to be connected to a vapor source extending into said housing and an outlet passage adapted to be connected to a vacuum source extending into said housing, means defining a first axial passage extending from said inlet passage to an opening at the inner end of said first chamber, means defining a second axial passage extending from an outlet opening in said second chamber to said outlet passage, means defining a third passage placing said first and second chambers in constant communication with each other, first and second end cap means sealingly mounted at the opposite ends of said main housing to respectively seal said first and second chambers from atmopshere, first solenoid controlled valve means in said housing operable to selectively block or accommodate flow from said first axial passage into said first chamber, and second pressure responsive valve means operable to selectively block or accommodate flow from said second chamber into said second axial passage in response to variations in pressure in said outlet passage.

4,944,277

CYLINDER ENTRAPMENT SYSTEM WITH AN AIR SPRING

Jeffrey A. Olson, Mundelein, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 3, 1989, Ser. No. 318,708
Int. Cl.[5] F02M *67/04*
U.S. Cl. 123—532 **14 Claims**



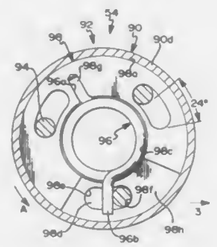
1. An internal combustion engine comprising a cylinder, a piston reciprocal in said cylinder, an accumulation chamber, a supply conduit including a check valve and extending between said cylinder and said accumulation chamber, a supply valve having a valve head located between said cylinder and said check valve and operable between an open position and a closed position to control gas flow from said cylinder through said supply conduit to said accumulation chamber, and means responsive to the pressure in said cylinder and responsive to the pressure in said accumulation chamber acting in by-passing relation to said check valve for selectively moving said supply valve relative to said open position and said closed position.

4,944,278

TORSION DAMPING MECHANISM FOR A SUPERCHARGER

Steven W. Woodard, Milford, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 14, 1989, Ser. No. 339,333
Int. Cl.[5] F02B *33/38*
U.S. Cl. 123—559.1 **16 Claims**



1. A torsion damping mechanism adapted to be rotatably interposed between first drive means rotatably driven in one direction by positive torque from a periodic combustion engine and a second drive means for driving a first gear in constant mesh with a second gear; characterized by:

annular means disposed for rotation about an axis and fixed to one of the drive means, the annular means including an annular member formed of elastomeric material having a hardness in the range of 50–80 shore D durometer and an outer shell banded about the annular member and formed of rigid material relative to the annular member, the annular member including a plurality of circumferentially spaced apart and generally arcuate-shaped slots each having first and second ends respectively defining stops in the one direction and in the opposite direction of rotation;

axially extending pins each having one end loosely received by one of the slots and the other end fixed to the other drive means; and

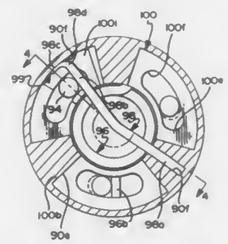
spring means for flexibly transmitting positive torque between the drive means and operative in a static state of the mechanism to position the pins closer to the second stops than the first stop.

4,944,279

SUPERCHARGER TORSION DAMPING MECHANISM WITH FRICTION DAMPING

Steven W. Woodard, Milford, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 14, 1989, Ser. No. 339,336
Int. Cl.[5] F02B *33/38*
U.S. Cl. 123—559.1 **14 Claims**



1. A torsion damping mechanism adapted to be rotatably interposed between first drive means rotatably driven in one direction by positive torque from a periodic combustion engine and a second drive means for driving a first gear in constant mesh with a second gear; the mechanism characterized by:

first and second spring means respectively operative to flexibly transmit the positive torque and a negative torque between the drives; and

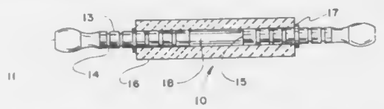
friction damper means operative only in response to negative torque flexing the second spring means.

4,944,280

SEPARATED CIRCUIT HOT SPARK PRODUCING APPARATUS

Carroll M. Washington, 3900 E. Chatham Dr., Richmond, Va. 23222

Filed Jun. 28, 1989, Ser. No. 372,602
Int. Cl.[5] F02P *15/00*
U.S. Cl. 123—627 **20 Claims**



1. An apparatus to introduce an adjustable auxiliary gap in the electrical path between the spark source and spark plug of an internal combustion engine comprising:

a non-conducting cylindrical housing having two ends longitudinally disposed along the length of said non-conducting cylindrical housing,

said non-conducting cylindrical housing having an exterior and an interior surface,

two electrodes comprised of a conductive material,

said electrodes being substantially cylindrical in shape,

said electrodes having two ends defining length of said electrode,

the first of said ends of said electrode being a planar end surface,

the second of said ends of said electrode being substantially spherical in shape allowing for the removable attachment to a spark plug wire,

said planar end surface of each of said electrodes being inserted into the interior of said non-conducting cylindrical housing,

said planar end surfaces of each of said electrodes being displaced next to one another without contacting one another within said interior of said non-conducting cylindrical housing,

said electrodes having adjustment means,

said adjustment means being grooves, and

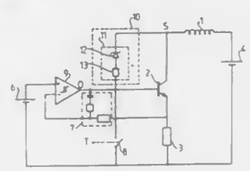
said grooves being displaced at regular intervals along the length of said electrodes.

4,944,281

CIRCUIT FOR REGULATING CURRENT IN AN INDUCTIVE LOAD

Michel Suquet, Cugnaux, France, assignor to Bendix Electronics S.A., Toulouse, France

Filed Nov. 13, 1987, Ser. No. 120,572
Claims priority, application France, Nov. 26, 1986, 86 16500
Int. Cl.[5] F02P *3/05*; H01H *47/32*
U.S. Cl. 123—644 **7 Claims**



1. Circuit for the regulation of the current flowing in an inductive load fed by a voltage source, comprising:

an electronic control device having a control electrode and input and output electrodes placed in series with the load;

a comparator having a first signal representing a reference current value connected to one input and a second signal representing the instantaneous value of the current flowing in the load and in said electronic control value connected to a second input and its output connected to said control electrode;

said comparator has a hysteresis type transfer characteristic, wherein the thresholds $-H/2$ and $+H/2$ define the transitions of the electronic control device to the cut-off state or to the saturation conducting state, to oscillate the current in the load between two values that are closely above and closely below the nominal current to be established in the load; and

a feedback loop operatively connected between a terminal common to the load and to said device, and said control electrode, said feedback loop coacting with said comparator, for controlling a proportional conduction of said device when the voltage at said common terminal reaches a predetermined threshold for oscillating the current in the load about a nominal value and a loop stability corrector network.

4. Circuit for the regulation of the current flowing in an ignition coil fed by a voltage source, comprising:

an electronic control device having a control electrode and input and output electrodes placed in series with the ignition coil;

a comparator having a first signal representing a reference current value connected to one input and a second signal representing the instantaneous value of the current flow-

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ing in the ignition coil and in said electronic control device connected to a second input and its output connected to said control electrode; and

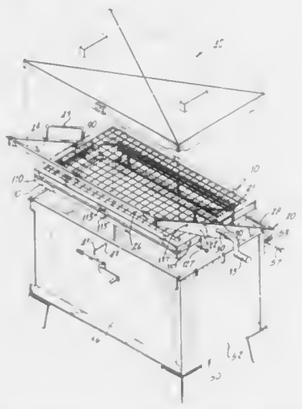
a feedback loop operatively connected between a terminal common to the ignition coil and to said device, and said control electrode, said feedback loop comprising a reversed biased Zener diode in series with a resistor, coacting with said comparator, for controlling a proportional conduction of said device when the voltage at said common terminal reaches a predetermined threshold for oscillating the current in the ignition coil about a nominal value and a loop stability corrector network.

4,944,282

GRILL APPARATUS

Ocasio F. Aguiar; Facundo T. Rodriguez, and Raul Fuentes, all of 110 E. 49th St., Hialeah, Fla. 33013

Continuation-in-part of Ser. No. 350,090, May 10, 1989. This application Dec. 22, 1989, Ser. No. 455,114
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—25 R **6 Claims**



1. A grill apparatus for cooking foodstuff mounted over a heat source in an oven that includes opening on its upper end and a cover and said oven having rear, front and side ends, comprising:

A. support frame means pivotally mounted to the rear of said oven and over said opening further including lateral sides that have outwardly extending flanges that come in contact with the adjacent side ends of said oven thereby resting thereon when in horizontal position; and

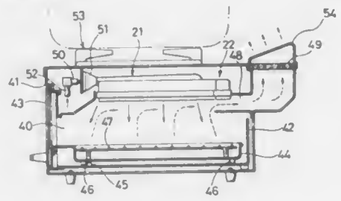
B. two grill assemblies having fastening means urging them toward each other and said grill assemblies being rotably mounted within said support frame means so that said foodstuff is sandwiched between said two grill assemblies and can be readily exposed to said heat source on both sides and said grill assemblies include steel wire means disposed in criss-crossed fashion with sufficiently small separation to hold the foodstuff top be cooked in place and wherein said grill assemblies include means for providing rotational movement from outside the oven to said grill assemblies.

4,944,283

GAS BURNER

Mitsuo Tsuchiya, Nagoya; Masafumi Matsubara, Owariasahi; Yoshihiro Mori, Kuwana, and Hideo Itami, Nagoya, all of Japan, assignors to Paloma Kogyo Kabushiki Kaisha and Toho Gas Co., Ltd., both of Nagoya, Japan

Filed Aug. 29, 1989, Ser. No. 399,899
Int. Cl.[5] A47J *37/00*; F24C *3/00*
U.S. Cl. 126—41 R **4 Claims**



1. A gas burner comprising

a main burner for cooking food,

a catalyzer for absorbing smoke, odor and other gases contained in combustion exhaust gas,

an after burner positioned at a lower level than the catalyzer and located in a position upstream of the catalyzer for activating the catalyzer to burn out smoke, odor and other gases contained in the combustion exhaust gas, and

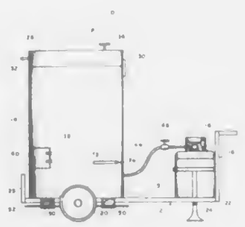
a fire guide, said main burner, after burner and fire guide being formed as an integral unit, said main burner and said after burner each having a porous flame plate through which gas passes to form a combustion area, and wherein the fire guide is formed on a boundary between the porous flame plate of said main burner and the porous flame plate of said after burner.

4,944,284

PORTABLE STOVE

Vorney O'Quin, P.O. Box 215, Galliano, La. 70354

Filed Sep. 5, 1989, Ser. No. 402,773
Int. Cl.[5] F23C *11/00*
U.S. Cl. 126—41 R **19 Claims**



1. A portable stove, comprising:

a platform;

a vertically oriented housing having an open bottom mounted on the platform;

a heating means positioned adjacent the bottom of the housing and connected to a fuel source outside of the housing;

a adjustable support means for supporting cooking utensils, and for adjusting the exposure of a cooking utensil to said heating means, positioned above the heating elements in the housing; and

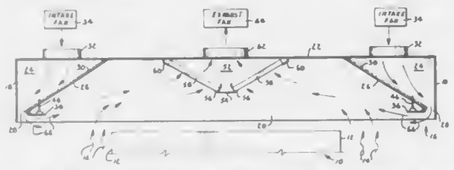
a cover means pivotally attached to a top portion of the housing.

4,944,285

EXHAUST HOOD FOR PIZZA OVENS

Joseph T. Glassman, 303 W. 38th St., Hays, Kans. 67601

Continuation-in-part of Ser. No. 365,765, May 25, 1989, Pat. No. 4,896,657. This application Oct. 30, 1989, Ser. No. 428,626
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299D **3 Claims**



1. In an exhaust system for a stationary pizza oven, the improvement comprising:

an overhead hood mounted above the oven, said hood having opposite sides extending along the hood from front to back and a top panel extending between said sides and from front to back;

a pair of inclined walls angling at an inclined orientation from the top panel of the hood toward the respective opposite sides thereof to provide a pair of air intake plenums extending along said sides and along said top panel, each inclined wall terminating in an edge spaced from the corresponding side of the hood to define an elongate outlet slot for discharging air from the corresponding intake plenum;

an exhaust plenum located substantially midway between said said intake plenum and extending along said top panel from front to back;

an exhaust duct connecting with said exhaust plenum through said top panel;

exhaust fan means for drawing air from the hood into said exhaust plenum and out through said exhaust duct in a manner to subject the entirety of the exhaust plenum to substantially equal pressure;

an intake duct for each intake plenum connecting therewith through said top panel;

filter means for filtering grease from the air which enters said exhaust plenum; and

intake fan means located outside of said intake plenum for forcing outside air into each of said intake ducts in a manner to subject the entirety of intake plenums to substantially equal pressure for discharge of incoming air therefrom through said outlet slots in a pair of high velocity air streams flowing in the hood in opposite directions toward said exhaust plenum to draw heat and vapor from the oven into said air streams by induction for passage therewith through said filter means.

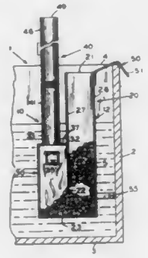
4,944,286

IMMERSIBLE WATER HEATER

Richard S. Millington, 1823 S. Ash Park La., Boise, Id. 83709

Filed Oct. 2, 1989, Ser. No. 415,761
Int. Cl.[5] F24B *9/00*
U.S. Cl. 126—367 **7 Claims**

1. An immersible water heater for water tanks comprising an elongated, combined air and solid fuel intake tube; means forming a combustion chamber located immediately adjacent in side by side relationship with said intake tube; a chimney mounted vertically over and in communication with a top wall of said combustion chamber, said air-fuel intake tube being substantially vertically oriented, and provided at its upper most end with a top opening for receiving fuel and air, said combustion chamber and fuel intake tube including a common horizontal wall and a common side wall extending from a top of said combustion chamber toward and spaced from said common bottom wall to provide an unobstructed port opening laterally into said combustion chamber for gravity feed of fuel placed within the intake tube to said combustion chamber, and said chimney having a top opening above the level of said top opening of said air-fuel intake tube for providing an air draft,



after ignition, operable to cool fuel within said intake tube and to cause combustion of fuel only within said combustion chamber.

4,944,287

FLEXIBLE TUBE OF ENDOSCOPE

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Mar. 24, 1989, Ser. No. 328,542
Claims priority, application Japan, Mar. 29, 1988, 63-77817; Mar. 29, 1988, 63-77818; Apr. 8, 1988, 63-87739
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **5 Claims**



1. An elongated flexible tube that constitutes an insert part of an endoscope, comprising:

a spiral tube made of a precipitation hardening metal and having a groove which is recessed inwardly from the outer surface of said tube, said groove extending in a straight line along the axis of said tube, said spiral tube being subjected to age hardening process after a solid solution treatment;

a braided-wire tube formed by weaving fine metal wires into a braid, said braided-wire tube being closely fitted over the outer surface of said spiral tube; and

a flexible skin closely and watertightly fitted over the outer surface of said braided-wire tube.

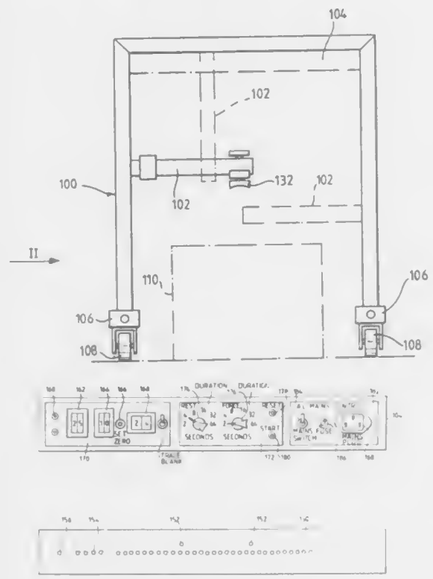
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,288

PHYSIOTHERAPY APPARATUS

John Rawcliffe, 11 Rutland Avenue, Atherton, Manchester, England M29 9HN

Continuation of Ser. No. 852,616, Apr. 16, 1986, Pat. No. 4,844,055. This application Dec. 7, 1988, Ser. No. 281,196
Claims priority, application United Kingdom, Apr. 18, 1985, 8509968
The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.
Int. Cl.[5] A63B *21/00*
U.S. Cl. 128—25 R 8 Claims



1. Programmable exercising apparatus comprising: resistance means for resisting a force applied by a patient contracting muscles associated with a limb or body part pressed against the resistance means, and a preset graphic display rest duration indication means, said preset graphic display rest duration indication means being adapted to issue a rhythmic "count-down" signal prior to a predetermined starting time at which the patient is required to exert force against said resistance means.

7. Exercising apparatus comprising: resistance means for resisting a force applied by a patient contracting muscles associated with a limb or body part pressed against the resistance means, a force indicator adapted to give an indication of force applied by the patient to said resistance means, adjustable force duration indication means adapted to give a signal so long as a force at least equal to a preselected target force is exerted on said resistance means, and rest duration indication means adapted to give a signal of predetermined duration indicating the length of a required rest period between muscular contractions of the patient, said rest duration means being further adapted to issue a rhythmic "count-down" signal prior to a predetermined starting time at which the patient is required to exert force against said resistance means.

4,944,289

METHOD AND APPARATUS FOR HEADACHE RELIEF

Charles J. Matthews, Medical Arts Building, Suite 104, 1135 Carthage St., Sanford, N.C. 27330

Filed Oct. 24, 1989, Ser. No. 426,118
Int. Cl.[5] A61H *7/00*; A61F *5/08, 5/24, 13/12*
U.S. Cl. 128—60 15 Claims



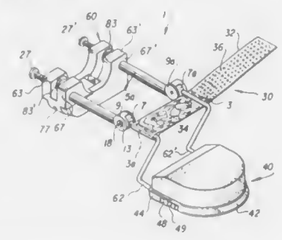
1. A headache relieving headband comprising:
an annular strip of material having an outwardly presented surface and an inwardly presented surface;
a channel means defined by said inwardly presented surface and said outwardly presented surface extending longitudinally along at least a portion of said annular strip of material;
a plurality of resilient protuberance means adjustably positioned within said channel means adapted to apply pressure simultaneously to preselected points on the cranium, whereby when the headband is placed around the head of a wearer above the ears, it provides concentrated pressure to selected points of the cranium which are known to contribute to alleviating headaches.

4,944,290

ADJUSTABLE SPLINT

George R. Hepburn, Severna Park, Md., assignor to Dynasplint Systems, Inc., Baltimore, Md.

Filed Aug. 9, 1988, Ser. No. 229,967
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—87 R 6 Claims



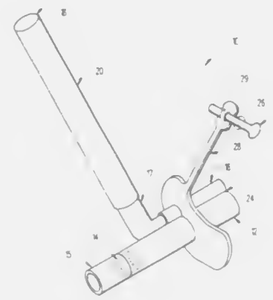
1. An adjustable splint assembly comprising a distal strut and a proximal strut pivotably connected to said distal strut, one of said struts having at one end a pivotably mounted head portion defining a cam surface, an adjustable biasing means mounted within the other strut and biased into engagement with said cam surface, for applying a quantifiable force tending to proximate or align said upper and lower struts, a limb cradle slidably mounted on the distal strut and defining an area in which a limb is received, means for adjusting said cradle to vary the size of said area so as to accomodate a limb part of different size, a platform for supporting a proximal limb part, means connecting said platform to the proximal strut, said platform being longitudinally adjustable, and means for securing said splint assembly to the limb.

4,944,291

DEVICE AND PROCESS FOR HYGIENIC MOUTH TO MOUTH ARTIFICIAL RESPIRATION

G. Neil Robertson, II, 1801 Hanover Dr., B-904, Davis, Calif. 95616, and Truman F. Allen, 316 California Ave., #326, Reno, Nev. 89509

Filed Aug. 31, 1988, Ser. No. 239,115
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—203.11 2 Claims



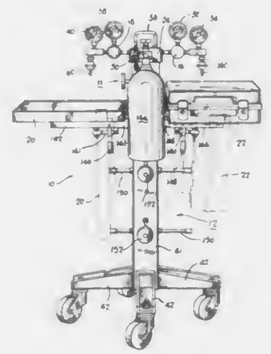
1. A device for use by an attendant in performing hygienic mouth to mouth artificial respiration on a patient, comprising:
a mouth mask formed from a flexible elastomeric material configured for conforming and sealing engagement over a patient's mouth;
a first tube formed from a clear plastic flexible material extending in sealing relation through said mask;
a first end of said first tube extending substantially through said mask and adapted for insertion into a patient's mouth;
a second end of said first tube extending substantially through said mask and having a mouthpiece adapted for insertion into an attendant's mouth;
a one way check valve in said first tube for allowing air to be blown into said second end by an attendant and out said first end into a patient's mouth and for preventing exhaled air from a patient from returning through said second end;
a second tube formed from a clear plastic flexible material extending in sealing relation through said mask, adjacent said first tube;
a first end of said second tube extending substantially through said mask and adapted for insertion into a patient's mouth;
a second end of said second tube extending substantially through said mask and having an elbow for directing exhaled air from a patient away from an attendant;
an elongated exhaust air conduit formed from a clear flexible plastic material connected to said elbow, said conduit having an outlet disposed remotely from said mouthpiece on said first tube;
an elongated flexible tether formed from an elastomeric material integrally with said mask;
a slotted portion formed adjacent a free end of said tether;
a nose clip inserted through said slotted portion and adapted for sealing engagement with a patient's nose; and
said tether extending from a top portion of said mask and dimensioned to position said nose clip adjacent a patient's nose upon placement of said mask into engagement with a patient's mouth.

4,944,292

MOBILE RESUSCITATING APPARATUS

John C. Gaeke, deceased, late of Westlake, Ohio, and by Louise Gaeke, executrix, 2245 Marshfield Blvd., Westlake, Ohio 44145, assignors to Louise M. Gaeke, Sequel, Calif.

Continuation of Ser. No. 712,541, Mar. 15, 1985, abandoned. This application Mar. 31, 1987, Ser. No. 33,904
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—204.18 5 Claims



1. A portable resuscitating apparatus comprising:
a mobile support stand which can be maneuvered;
a storage container attached to the stand for storing patient resuscitating equipment;
a manifold body mounted on the stand, said manifold body defining a mounting surface to engage the stand and further defining a first output port and a second output port in fluid communicating with an oxygen delivery conduit in said body coupled to at least one oxygen inlet port for routing oxygen through said oxygen delivery conduit;
a handle attached to the manifold;
first and second flow control means coupled to said first and second output ports on said manifold, said first flow control means having a first valve and a manual adjusting means for controlling a pressure of oxygen routed to a patient and said second flow control means having a second valve and a manual adjusting means for controlling a volume per unit time of oxygen to a patient, each of said first and second flow control means further having an output nozzle;
a pressurized oxygen source connected to the manifold for routing oxygen through the oxygen inlet port through the oxygen delivery conduit to the first and second flow control means;
routing means coupleable to the nozzle of one of said first and second flow control means for directing pressurized oxygen to a patient; and
a release mechanism coupled to the manifold having friction means for frictionally engaging the stand and means for releasing the friction means from engagement with the stand to allow the manifold, flow control means, oxygen source and routing means to be disconnected from the stand and carried via the handle.

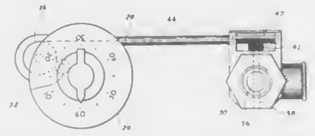
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4,944,293

TIMED OXYGEN BREATHING APPARATUS TRAINER

Edmund Swistosz, Maitland, and Paul D. Grimmer, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1989, Ser. No. 374,128
Int. Cl.[5] A62B 9/02
U.S. Cl. 128—205.24 5 Claims



1. In an apparatus that can be utilized as a simulator of a breathing apparatus that is used as a means to provide the user with a supply of oxygen that is exhaustible within a predictable period of time and that has a face mask to be worn by the user with an inhalation tube attached thereto to communicate breathable air from a reservoir upon demand by the user until the oxygen supply is exhausted, an improvement to said simulator to diminish the supply of oxygen at the expiration of said period and simulate for the trainee the corresponding experience encountered by the user of the operational breathing apparatus, comprising:

means associated with said inhalation tube and operable for restricting the flow of said breathable air;

means responsive to said time period and coupled to said flow restricting means for operating said flow restricting means at the expiration of said time period;

wherein said flow restricting means comprises a valve within the airflow path to said trainee and upstream said reservoir, and said operating means is a mechanism external the airflow path that is connected to said restricting means by a mechanical linkage;

wherein said restricting means includes a housing attachable to, and in the airflow path between, said reservoir and said inhalation tube, and said valve is a butterfly valve affixed to a shaft extending external the airflow path;

wherein said shaft is spring loaded to position said valve in a normally open position to permit maximum airflow from said reservoir to said inhalation tube, and wherein said shaft includes an enlarged portion forming an axial drum; and,

wherein said mechanical linkage is attached to said drum and windable thereabout such that when said linkage is withdrawn tangentially from about said drum, said drum, shaft and butterfly valve are caused to rotate about the axis of said shaft and thereby alter the orientation of said path valve within and with respect to said airflow path.

4,944,294

FACE MASK WITH INTEGRAL ANTI-GLARE, ANTI-FOG EYE SHIELD

Theodore S. Borek, Jr., 33 Allen Rd., Longmeadow, Mass. 01106

Filed Apr. 20, 1988, Ser. No. 183,783
Int. Cl.[5] A62B 18/00, 18/02; A61F 9/04
U.S. Cl. 128—206.19 2 Claims

1. A combined face mask and eye shield comprising:

a. a non-woven mask adapted in size and shape to fit over the mouth and nostrils of a wearer, said mask having fastening means for attaching the mask onto a wearer's face;

b. a transparent eye shield connected at a bottom portion thereof to a top portion of the mask in a laterally offset manner by at least two sponge strips attached between the shield and mask, said sponge strips being spaced apart to provide a gap between the strips, shield and mask, wherein said shield is made of plastic that has been coated with an anti-fogging agent to prevent the wearer's breath from fogging up the shield when the mask is worn; and

c. an upper sponge strip that is attached to a top portion of the shield, wherein said upper strip is adapted in size and shape to sit against and span the wearer's forehead when



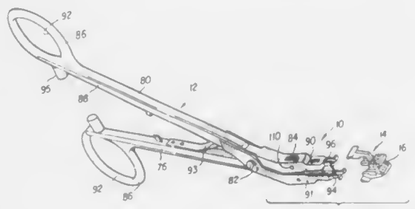
the mask is worn, whereby all the aforementioned sponge strips cooperate to space the shield sufficiently away from the wearer's face to prevent the wearer's eyelashes from contacting the shield, while positioning the upper strip to block sweat from dropping off the wearer's forehead into his eyes.

4,944,295

SUTURING ASSEMBLY

Owen M. Gwathmey, The Meadow, Box 96, Aylett, Va. 23009; Thomas E. Sloane, Jr., West Redding, Conn., and Robert R. Oddsen, Centerport, N.Y., assignors to Owen Gwathmey, Aylett, Va.

Division of Ser. No. 18,662, Feb. 25, 1987, Pat. No. 4,809,695, and a continuation-in-part of Ser. No. 313,514, Oct. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 175,787, Aug. 6, 1980, abandoned. This application Feb. 7, 1989, Ser. No. 307,116
Int. Cl.[5] A61B 17/04, 17/08; B31B 1/00; F16B 15/00
U.S. Cl. 227—176 9 Claims



1. A cartridge for holding a tissue-suturing staple, said cartridge comprising at least three separate pieces as follows:

a carrier having a linear track formed thereon; and

first and second opposite slidable jaws mounted on said carrier, each of said jaws having a follower means for engaging and riding on said linear track, a cartridge jaw gripper being attached to said follower means for engaging a staple, and a tool engagement means being attached to said follower means for mounting the cartridge on a tool for causing said first and second opposite slidable jaws to move linearly toward one another,

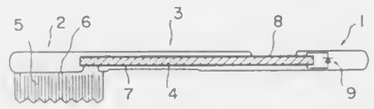
whereby said cartridge can be selectively mounted on said tool by engaging each of the cartridge jaws with the tool and a staple can be placed between the jaw grippers for being compressed by linear movement of the jaw grippers upon manipulation of the tool.

4,944,296

ELECTRONIC TOOTHBRUSH

Hideo Suyama, 65, Higashi-Juban, Sendai-Shi, Miyahi, Japan

Filed Aug. 10, 1988, Ser. No. 230,752
Claims priority, application Japan, Aug. 10, 1987, 62-198119; Jan. 5, 1988, 63-519
Int. Cl.[5] A61N 1/30
U.S. Cl. 128—393 6 Claims



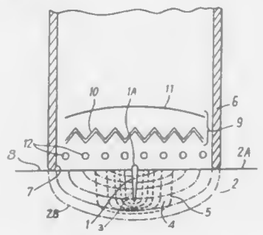
1. An electronic toothbrush comprising: a piezo-electric element with piezo-electric characteristic mounted in a handle between a gripped portion and a brushing portion of said electronic toothbrush for producing an electrical potential upon deformation due to use of the toothbrush by a user; an exposed electrode disposed in close vicinity to said brushing portion and an opposite exposed electrode disposed on said gripped portion of said handle formed on both sides of said piezo-electric element, said electrodes disposed such that said exposed electrode is in electrical contact with mouth of user during use of toothbrush by user and said opposite exposed electrode is in electrical contact with hand of user during use of toothbrush by user; and a diode with a rectifying action electrically connected to said electrodes formed on both sides of said piezo-electric element so as to cause an essentially unidirectional potential to be produced by said piezo-electric element.

4,944,297

PORTABLE APPARATUS FOR LOCALIZED HEATING OF THE SKIN FOR THERAPEUTIC PURPOSES

Georges Ratkoff, 7 chemin de la Guinguette La Taye, 28120 Illiers Combray, and Jean-Paul Deheuvels, 12 rue de Beauce Barjouville, 28630 Chartres, both of France

Filed Sep. 27, 1988, Ser. No. 249,759
Claims priority, application France, Oct. 7, 1987, 87 13825
Int. Cl.[5] A61F 7/00
U.S. Cl. 128—399 12 Claims



1. Apparatus for localized heating of the skin for therapeutic purposes, in particular for destroying venom injected into the skin by the sting or bite of certain insects and sea creatures, the apparatus comprising:

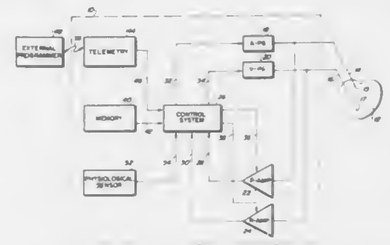
a hollow elongated body having an open end, a source of heat flux mounted in the hollow body and set back from said open end, a reflector placed in said body behind said source relative to the open end for directing energy radiating from said source to said open end, and an energy supply source contained in the body and connected to the heat flux source in a manner which is interruptible at will, wherein the heat flux source has a predetermined power output and the open end has a predetermined free area such that the ratio between the power of the heat flux source and the free area of the open end lies in the range 0.03 W/mm^2 and 0.30 W/mm^2.

4,944,298

ATRIAL RATE BASED PROGRAMMABLE PACEMAKER WITH AUTOMATIC MODE SWITCHING MEANS

Jason A. Sholder, Northridge, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed May 23, 1989, Ser. No. 355,588
Int. Cl.[5] A61N 1/00
U.S. Cl. 128—419 PG 20 Claims



1. An improved dual chamber pacemaker having programmable modes of operation, said pacemaker being capable of stimulating the atrial and the ventricular chambers of the heart, said pacemaker including programming means for selectively allowing the pacemaker to be programmed to operate in an atrial rate based mode of operation, and atrial sensing means for sensing atrial activity occurring in the atrial chamber, including atrial rate of said atrial activity, wherein the improvement comprises:

first sensing means for monitoring said atrial rate and sensing whether said atrial rate exceeds a first prescribed threshold;

means for providing a stimulating pulse to a selected chamber of the heart at a maximum upper rate in the event said atrial rate sensed by said first sensing means exceeds said first prescribed threshold;

second sensing means for monitoring said atrial rate above said first prescribed threshold and sensing whether said atrial rate exceeds a second prescribed threshold, said second threshold being at a higher rate than said first threshold; and

means for automatically switching the mode of operation of said pacemaker from said atrial rate based mode of operation to a selected alternate mode of operation in the event said atrial rate exceeds said second prescribed threshold.

4,944,299

HIGH SPEED DIGITAL TELEMETRY SYSTEM FOR IMPLANTABLE DEVICE

Sergiu Silvian, La Crescenta, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Aug. 8, 1989, Ser. No. 391,080
Int. Cl.[5] A61N 1/00
U.S. Cl. 128—419 PG 20 Claims



1. Implantable transmitter apparatus for transmitting digital binary data at a prescribed bit rate from an implantable device,

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said digital binary data comprising a sequence of incoming data bits, said transmitter comprising:

encoding means for converting said sequence of incoming data bits into an encoded binary data stream, comprising a sequence of encoded data bits, that includes an identifying mark only when a prescribed correlation exists between prescribed ones of said incoming data bits and encoded data bits;

a transmitting coil circuit tuned to said prescribed bit rate; and

means for applying a carrier signal having frequency equal to said prescribed bit rate to said transmitting coil circuit, including switching means for switching the phase of the carrier signal applied to said transmitting coil circuit by a prescribed amount for each identifying mark of said encoded binary data stream.

4,944,300

METHOD FOR HIGH ENERGY DEFIBRILLATION OF VENTRICULAR FIBRILLATION IN HUMANS WITHOUT A THORACOTOMY

Sanjeev Saksena, 33 Fairway Dr., Glenbrook, N.J. 08812

Continuation of Ser. No. 43,489, Apr. 28, 1987, abandoned. This application Jan. 12, 1990, Ser. No. 463,843

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—419 D **4 Claims**

1. A method for the high energy defibrillation of ventricular fibrillation or cardioversion of ventricular tachycardia in humans, which comprises subjecting the heart to a single bidirectional high energy electrical shock from a first anode and a second anode to a cathode, said shock comprising at least 15 Joules over a period of time of not less than about 2 milliseconds and being delivered to said anodes by an implanted shock generator, said cathode being transvenously positioned in the right ventricle, said first anode being transvenously positioned near the superior vena cava or in the right atrium, said second anode being positioned subcutaneously in the left half side of the chest and outside the rib cage near the axillary line and about at the level of the left fourth intercostal space, said anodes being electrically connected in parallel to said shock generator, said anodes and cathode being connected to said shock generator via implanted leads, and said anodes, cathode, leads and shock generator apparatus having been put into position without a thoracotomy.

4,944,301

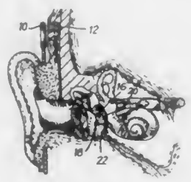
METHOD FOR DETERMINING ABSOLUTE CURRENT DENSITY THROUGH AN IMPLANTED ELECTRODE

Gregory P. Widin, and Christopher van den Honert, both of St. Paul, Minn., assignors to Cochlear Corporation, Englewood, Colo.

Filed Jun. 16, 1988, Ser. No. 207,774

Int. Cl.[5] A61N *1/36*

U.S. Cl. 128—420.6 **18 Claims**



1. A method for determining the absolute density of an electrical current passing through an electrode implanted in a body, comprising the steps of:

(a) applying a voltage waveform to said implanted electrode;

(b) measuring the distortion of said waveform introduced by the non-linear I-V characteristics of the interface between said electrode and the tissue of said body; and

(c) estimating the absolute current density of said electrical current through said electrode based on the characteristics of said distortion.

4,944,302

ELECTRONIC DEVICE FOR COSMETIC AND MEDICAL THERAPY

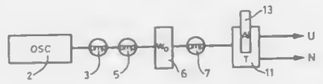
Epifanio J. Hernandez, and José C. Benach, both of Barcelona, Spain, assignors to Indiba, S.A., Barcelona, Spain

Continuation of Ser. No. 880,717, Jul. 11, 1986, abandoned. This application Oct. 26, 1988, Ser. No. 267,510

Claims priority, application Spain, Jul. 8, 1985, 287964; Dec. 12, 1985, 549883

Int. Cl.[5] A61N *1/40*

U.S. Cl. 128—422 **2 Claims**



1. An electronic device for use in cosmetic and medical treatment of a person by application to the person's epidermis having a load impedance, comprising: high frequency oscillating circuit means for supplying high frequency current in the range of from 1 to 2 megacycles per second and automatically reducing the supplied power when the load impedance is lowered, said high frequency oscillating circuit means including an oscillating circuit producing an oscillating signal at an output, a pre-amplifier having an input and an output, the input being connected to the oscillating circuit output receiving and boosting said oscillating signal, an amplifier having an input connected to the output of the pre-amplifier receiving the boosted oscillating signal and having an output outputting an amplified oscillating signal, resonant circuit means having an input connected to the amplifier output receiving said amplified oscillating signal and having an output outputting an oscillating signal with resonance at an operating frequency, an output amplifier having an input connected to the output of said resonant circuit means receiving the signal output by said resonant circuit means and having an output outputting an amplified signal at an operating frequency, high frequency transformer means having an input connected to the output of the output amplifier and including a first transformer winding connected to the transformer means input, a second transformer winding inductively coupled to the first transformer winding and a center housing located adjacent said second transformer winding, the housing having an aluminum cylinder arranged as a heat sink for dissipating heat generated by said first and second windings and reducing the load inductance of said first and second windings so as to increase the resonance frequency; and, electrical current application means electrically operatively connected to said second winding of said transformer means for transmitting high frequency current capacitively to the epidermis of the person being treated, said electrical current application means including an active electrode and a neutral return electrode, said neutral electrode adapted to be applied on the epidermis to avoid dispersion of electrical current flow.

4,944,303

NONCONTACT TYPE TONOMETER

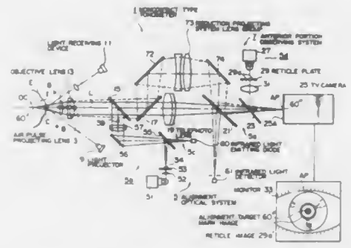
Kenjiro Katsuragi, Tokyo, Japan, assignor to Topcon Corporation, Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,611

Claims priority, application Japan, Dec. 27, 1986, 61-311257; May 21, 1987, 62-124165

Int. Cl.[5] A61B *3/16*

U.S. Cl. 128—648 **24 Claims**



1. A noncontact type tonometer having an orifice tube for discharging a fluid to deform a cornea of an eye under test and an alignment optical system for aligning an axis of the orifice tube with the cornea and viewing the anterior portion of the eye under test, said alignment optical system comprising:

an orifice tube disposed along an axis;

projection means for projecting an alignment target mark onto the cornea of the eye under test, the alignment target mark including light of a first range of wavelengths;

illumination means for illuminating an anterior portion of the eye under test with light of a second range of wavelengths different from said first range of wavelengths;

first imaging optical means, having a first optical axis coaxial with the axis of the orifice tube, for forming an image of the alignment target mark on a plane and for passing light of the first range of wavelengths;

second imaging optical means for forming an image of the anterior portion of the eye on the plane and for passing light of the second range of wavelengths; and

reticle means for providing a reticle image on the plane, the relative positions between the reticle image and at least one of (i) the image of the alignment target and (ii) the image of the anterior portion of the eye formed on the plane being indicative of the relative positions of the axis of the orifice tube and the cornea.

4,944,304

ELECTRONIC SPHYGMOMANOMETER

Teruya Nishina, 4-19-403, Kita Kawara Machi, Kameoka-city, Kyoto, Japan

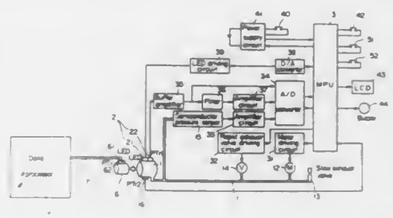
Filed Aug. 15, 1988, Ser. No. 232,040

Claims priority, application Japan, Aug. 14, 1987, 62-203282

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—667 **4 Claims**

1. An electronic sphygmomanometer comprising a cuff, a pulse wave detecting photoelectronic sensor comprising a light-emitting element and a light-receiving element which are disposed on said cuff, memory means for storing measured data, mode selecting means for selecting either a measuring mode or a transmitting mode; and means for allowing the light-emitting and -receiving elements of said pulse wave detecting photoelectric sensor to be used as light-emitting and



-receiving elements for tranmission of measured data in said transmitting mode.

4,944,305

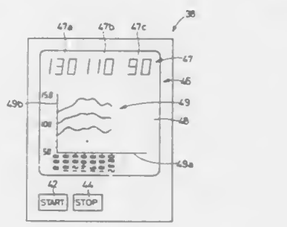
BLOOD PRESSURE MONITORING APPARATUS

Nariyasu Takatsu, and Hidenobu Nakashima, both of Kasugai, Japan, assignors to Colin Electronics Co., Ltd., Aichi, Japan

Filed Apr. 20, 1989, Ser. No. 343,522

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—683 **18 Claims**



1. A blood pressure monitoring apparatus for repetitively measuring blood pressure of a subject, comprising:

measuring means for measuring at least one of a maximum, a minimum and an average blood pressure of a subject at each of repetitive measuring cycles; and

display means for displaying a time-wise varying trend of said at least one of maximum, minimum and average blood pressure, by indicating a graph representing the repetitively measured values of said at least one blood pressure in a two-dimensional table defined by a first axis indicative of time and a second axis indicative of blood pressure.

4,944,306

SPIROMETER FOR PULMONARY MEASUREMENT

Frank J. Alvino, North Caldwell, N.J., assignor to Healthscan, Inc., N.J.

Continuation of Ser. No. 107,878, Oct. 13, 1987, abandoned, which is a continuation of Ser. No. 912,642, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 715,563, Mar. 25, 1985, abandoned. This application Oct. 11, 1989, Ser. No. 420,658

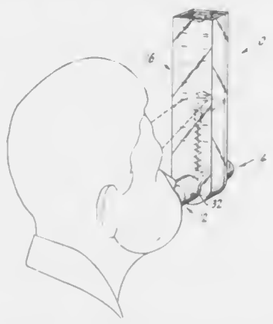
Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—725 **1 Claim**

1. A spirometer comprising a vertically-oriented chamber having opposed front and back walls, an open top formed as a pair of exit passageways divided by an upper central bridge element between said front and back walls, and an open bottom formed as a pair of entrance passageways divided by a lower central bridge element between said front and rear walls; a

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hollow inlet member mounted to and projecting outwardly from said front wall at the lower end thereof; a hollow outlet member mounted to and projecting outwardly from said back wall at the lower end thereof, said outlet member including an outlet orifice of reduced diameter at the distal end thereof, the interior of said inlet and outlet members being joined to the interior of said chamber through said entrance passageways to allow the passage of air therethrough; a piston mounted in said chamber for vertical movement therein; a guide rod centrally mounted within said chamber, the opposed ends thereof being supported by said upper and lower central bridge elements,



said piston having a vertical centrai throughbore whereby said piston is mounted on said guide rod; spring means mounted to said piston to urge said piston to a lower retracted position, said piston being movable upward along said guide rod in response to a flow of air through said inlet member into said chamber; an indicator mounted within said chamber for upward movement with said piston; a vertical slot located in a wall of said chamber; a shank extending from said indicator through said vertical slot and terminating in an enlarged head externally of said chamber; and a helical compression spring encircling said shank and entrapped between said indicator element and the inside face of said chamber bordering said slot.

4,944,307

INTRAUTERINE CATHETER

Edward H. Hon, Bradbury; Robert W. Hon, Los Altos, and Edward D. Hon, San Francisco, all of Calif., assignors to The Hon Group, Encino, Calif.

Filed Aug. 22, 1988, Ser. No. 234,546
Int. Cl.[5] A61B *5/03*
U.S. Cl. 128—748 **32 Claims**

1. An intrauterine catheter for measuring intrauterine pressure comprising:

(a) an elongated flexible catheter tube having a uterine end and a gauge end for providing a liquid coupling from a uterus to a suitable pressure measuring device;

(b) a flexible membrane member enclosing the uterine end of said flexible catheter tube, said flexible membrane member includes a rigid structure for supporting at least a portion of said membrane member;

(c) a hollow filling tube fitted within said catheter tube extending to substantially the uterine end of the said catheter tube;



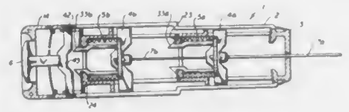
(d) a pressure measuring device having a first input and a second input, said pressure measuring device connected to said gauge end of said catheter tube.

4,944,308

TISSUE SAMPLING DEVICE

Dan Åkerfeldt, Uppsala, Sweden, assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Nov. 14, 1988, Ser. No. 270,368
Claims priority, application Sweden, Nov. 19, 1987, 8704559
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—751 **16 Claims**



1. A tissue sampling device comprising:

a housing having front and rear housing ends and defining a longitudinal axis extending between said front and rear housing ends, and said front housing end having an opening therethrough;

a hollow first needle positioned within said housing and extendable from said opening, said hollow first needle being moveable along said axis;

a second needle extending through said hollow first needle and movable along said axis, said second needle having a tip which is extendable from said hollow first needle and said opening, and said second needle further including a tissue sample receiving recess;

a first needle head coupled to said hollow first needle and mounted within said housing for movement along said axis to move said hollow first needle along said axis;

a second needle head coupled to said second needle and mounted within said housing for movement along said axis to move said second needle along said axis;

a first spring disposed within said housing and bearing directly against said second needle head, said first spring being capable of being placed into an energized mode to store energy, and said first spring being releasable from said energized mode to propel said second needle head along said axis towards said opening, such that said tip of said second needle is extended from said hollow first needle, whereby a tissue sample can be captured within said recess;

a second spring positioned within said housing and bearing directly against said first needle head, said second spring being capable of being placed into an energized mode to store energy, and said second spring being releasable from said energized mode to propel said first needle head along said axis towards said opening, said hollow first needle being extended from said opening such that said recess of said second needle is enclosed by said hollow first needle;

a first latch means selectively releasable from outside said housing for releasably holding said first spring in said energized mode; and

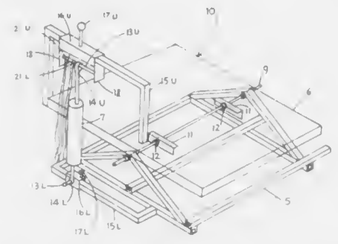
a second latch means for releasably holding said second spring in said energized mode, said second latch means being releasable in response to and subsequent to release of said first spring.

4,944,309

MEASURED VARIABLE RESISTANCE TILTBOARD

Richard W. Mechling, 830 Vedado Way NE., Atlanta, Ga. 30308

Filed Dec. 6, 1988, Ser. No. 280,360
Int. Cl.[5] A61B *5/10*
U.S. Cl. 128—782 **5 Claims**



1. In a variable resistance tiltboard including a platform pivotably supported above a base, and variable resistance means for providing a selectively variable resistance to the movement of said platform relative to said base operatively associated with said platform and said base, the improvement which comprises:

measuring means operatively associated with said platform and said variable resistance means for the instantaneous determination of the force applied by said variable resistance means against movement of said platform.

4,944,310

DEVICE FOR TREATING SNORING SICKNESS

Colin E. Sullivan, Birchgrove, Australia, assignor to Somed Pty. Ltd., Australia

Continuation of Ser. No. 941,542, Dec. 11, 1986, abandoned, which is a continuation of Ser. No. 773,244, Sep. 3, 1985, abandoned, which is a continuation of Ser. No. 456,046, Dec. 22, 1982, abandoned. This application Dec. 29, 1988, Ser. No. 292,646
Claims priority, application Australia, Apr. 24, 1981, PE8570
Int. Cl.[5] A62B *18/02*
U.S. Cl. 128—848 **12 Claims**



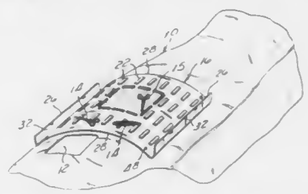
1. Apparatus for maintaining continuous positive airway pressure, said apparatus comprising a nose piece shaped to fit over the nose of a user and defining a first chamber; a large bore inlet tube entering into a second chamber attached to said nose piece and in fluid communication with said first chamber only via at least one orifice interconnecting said chambers, said second chamber having a large bore exit to the atmosphere including continually open resistance means to provide a resistance to the flow of gases through said exit and being located adjacent to said exit; and means to releasably seal said nose piece against the facial skin of said user adjacent to said nose to effect a pressure tight seal of said first chamber; said inlet tube connected to a high volume supply of air to cause a high volume of air to flow through said inlet tube, into said second chamber and out said resistance means, said resistance means causing the pressure within said second chamber to be elevated above, and maintained above, atmospheric pressure, said at least one orifice transmitting said elevated pressure to said first chamber, and the flow of air passing between said second chamber and said first chamber through said orifice being substantially equal to the air inhaled and exhaled by said user via the nose.

4,944,311

SURGICAL INSTRUMENT RETAINER

John D. Eldridge, Jr., and Mary A. Morgan, both of Newport Beach, Calif., assignors to Jodel Medical Products, Inc., Santa Ana, Calif.

Filed Mar. 9, 1988, Ser. No. 166,480
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—849 **14 Claims**



1. An apparatus for retaining surgical instruments adjacent a surgical field, comprising:

a drape having a top surface on which surgical instruments are rested and a bottom surface which lays on a patient, said drape being flexible so as to conform to said patient;

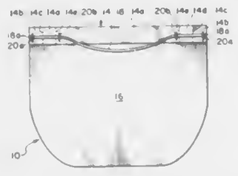
a plurality of instrument retaining magnets secured to said drape and oriented to that when a magnetizable surgical instruments is placed on said top surface of said drape adjacent one of said magnets, the force of magnetic attraction between said magnet and said instrument will cause said instrument to be retained in place on said top surface of said drape;

a peripheral portion of said drape being maintained in a non-planar configuration, said peripheral portion preventing surgical instruments from falling off said drape during a surgical procedure in the event that insufficient magnetic attraction is achieved to retain said instrument on said top surface, said drape thereby retaining and providing access to said surgical instruments so as to enable repeated placement of said instruments on said drape and removal of said instruments from said drape during the course of a surgical procedure; and

the means for reversibly causing deformation of said peripheral portion of said drape, said deformation causing means maintaining said non-planar configuration of said peripheral portion, wherein said deformation causing means comprises a deformable strip of metallic material secured to said drape.

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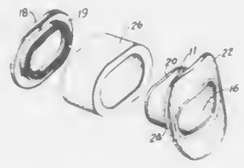
4,944,312
DISPOSABLE FACE SHIELD
B. Stewart Smith, 9016½ Pico Blvd., Los Angeles, Calif. 90035
Filed Sep. 11, 1989, Ser. No. 405,445
Int. Cl.[5] A62B *18/08*; A41D *13/00*
U.S. Cl. 128—857 **14 Claims**



1. A light-weight, disposable face shild assembly for the protection of the eyes and face of a wearer from accidental exposure to infectious, hazardous and undesirable substances, said face shield assembly comprising:
(a) a semi-flexible forehead support strip and a semiflexible protective face panel support strip, said forehead support strip being joined at each of its ends to one of the ends of said face panel support strip, said forelhead support strip being oriented in parallel relationship to said face panel support strip, and said forehead support strip including a central strip portion, relatively short intermediate strip portions foldable to and extending outwardly from said central portion, and relatively short end strip portions foldable to and extending outwardly from said intermediate strip portions;
(b) a generally rectangular, semi-flexible, transparent protective face panel affixed at its upper edge portion to said face panel support strip and depending downwardly therefrom; and
(c) an elastic head band having each of its ends affixed to an end of said forehead support strip proximate the point of joinder of said forehead support strip to said face panel support strip, said head band extending through slip fastener means associated with the central strip portion cf said forehead support strip proximate to fold lines between said central portion and said intermediate portions, the intermediate strip portions of said forehead support strip being foldable to said end portions of said forehead support strip and the ends of said face panel support strip being held in substantial abutment to the ends of the central strip portion of said forehead support strip when said head band is pulled through said slip fastener means and placed in tension about the head of the wearer of said face shield assembly whereby the semi-flexible forehead support strip in its central portion forms into an arcuate shape surrounding the forehead of the wearer and supports the semiflexible protective face panel support strip with said affixed transparent protective face panel in arcuate spaced face protection orientation on the head of the wearer.

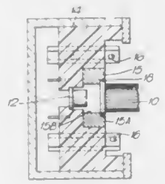
4,944,313
SINGLE-USE ANNULAR MOUTHPIECE
Seymour Katz, Glen Cove, N.Y., and Marna L. Schirmer, Norwalk, Conn., assignors to E-Z-EM, Inc., Westbury, N.Y.
Filed Sep. 6, 1989, Ser. No. 403,693
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—859 **23 Claims**

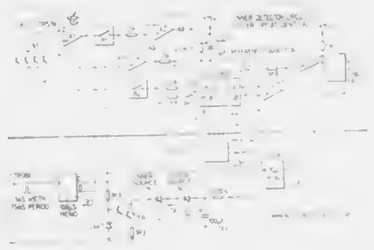
1. A single-use annular mouthpiece comprising:
a relatively rigid portion including an annular main body shaped and dimensioned to be held in a patient's mouth and to provide clearance for tubing through its central opening,
an annular lip extending radially out from said main body at one end thereof,
an annular flange extending radially out from said main body at the other end thereof, said flange being shaped and dimensioned to overlie a patient's lips; and
a compressible annular portion severable from and mounted around to overlie said annular main body of said rigid portion,
said portion being sized and shaped to encircle said main body portion and to fit between said lip and said flange,



the outer periphery of said lip extending radially out no further than the outer surface of said compressible annular portion,
whereby said mouthpiece is usable in medial and surgical procedures which require both protection for tubing used with the mouthpiece and protection for the patient undergoing the procedure.

4,944,314
CIGARETTE ENDS TESTING
Reginald C. Bolt, Saunderton, England, assignor to Molins PLC, Milton Keynes, England
Filed Jul. 30, 1987, Ser. No. 79,525
Claims priority, application United Kingdom, Jul. 30, 1986, 8618639
Int. Cl.[5] A24C *5/32, 5/34*
U.S. Cl. 131—280 **7 Claims**

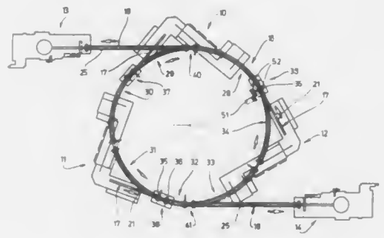




1. A device foi testing the ends of cigarettes, comprising:
means for conveying cigarettes sideways through a test station past a source of light arranged to direct light across the entire cross section and into the ends of successive cigarettes using a wide-angle diverging beam capable of illuminating the entire wrapper around an inadequately filled cigarette end in such a way that the paper wrapper around the end of each cigarette is illuminated if there is insufficient tobacco in the end, wherein the light from said wide angle diverging beam is directed in an unimpeded manner into the end of the cigarette; means for monitoring external illumination at the end of the cigarette, including at least one light detector positioned to detect light passing through the wrapper at the end of a cigarette at said test station; and means responsive to an output signal from said monitoring means for generating a fault signal upon detection of a cigarette having insufficient tobacco in the end.

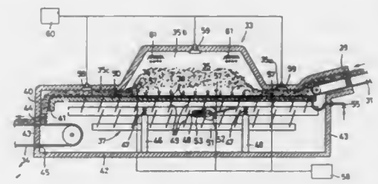
5. A device for testing the ends of cigarettes, comprising a source of light arranged to direct a wide-angle diverging beam of light across the entire cross section and into the ends of successive cigarettes being conveyed sideways through a test station so that the paper wrapper around the end of each cigarette is illuminated to the extent that insufficient tobacco is provided in the end thereof, wherein the light from said wide angle diverging beam is directed in an unimpeded manner into the end of the cigarette; means for detecting external illuminating passing through the wrapper at the end of each cigarette so as to produce a series of test pulses each having an amplitude indicative of the level of illumination detected for a respective cigarette; and control means for evaluating the test pulse from each cigarette against a reference signal derived from the test pulses of satisfactory cigarettes tested previously during a predetermined time interval, including means connected to receive said test pulses from said detecting means for producing a reference potential representing an average of a plurality of test pulses, comparator means connected to receive said reference potential and said test pulses for comparing the individual test pulses to said reference potential and for generating a fault signal when a test pulse exceeds said reference potential, and controllable means connected between said detecting means and said comparator means for adjusting the level of said test pulses by a selected proportion and for applying said adjusted test pulses to said comparator means for comparison with said reference potential.

4,944,315
APPARATUS FOR THE PRODUCTION AND PACKAGING OF CIGARETTES
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed Dec. 16, 1988, Ser. No. 285,455
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3742955
Int. Cl.[5] A24C *5/35*
U.S. Cl. 131—283 **12 Claims**



1. In an apparatus for the production and packaging of cigarettes and containing at least one cigarette producing machine and at least one packaging machine, the cigarette producing machine and the packaging machine being connected to one another by a cigarette conveyor which conveys a stream of cigarettes and which is oriented transversely relative to a conveying direction from the cigarette producing machine to the packaging machine, the improvement wherein:
said cigarette conveyor comprises: a circular cigarette store (16) designed as a continuous-flow store for receiving a stream of cigarettes; means for feeding cigarettes (15) to said circular cigarette store (16) from at least one entry station (37, 38, 39); and means for extracting said cigarettes (15) from said circular cigarette store (16) at at least one extracting station (40, 41), said extraction station being spaced from the entry station; and
said circular cigarette store (16) comprises a plurality of driven storage belts (28, 29, 30, 31, 32, 33, 34) which form a closed circular ring and which have a respective upper strand (46) which is guided in a horizontal plane and on which the cigarette stream (43) is stored and conveyed from an entry station to an extraction station.

4,944,316
PROCESS FOR TREATING TOBACCO AND SIMILAR ORGANIC MATERIALS
Oskar Stuhl, An der Thomaskirche 23, D-400 Düsseldorf 30, and Klaus-Dieter Wenzel, Am Kaiserwald 7, D-5503 Konz, both of Fed. Rep. of Germany
Continuation-in-part of Ser. No. 30,800, Mar. 27, 1987. This application Mar. 21, 1988, Ser. No. 171,330
Claims priority, application European Pat. Off., Apr. 22, 1987, 87 105 912.7
Int. Cl.[5] A24B *3/18*
U.S. Cl. 131—296 **10 Claims**



1. A process for treating tobacco and similar organic materials comprising
(a) impregnating the organic materials with an inert organic liquid and heating the impregnated materials above the boiling point of said inert organic liquid by contacting with a hot first gas under conditions which result in vaporization of the inert organic liquid and expansion of the organic materials,
(b) recovering a portion of the vaporized inert organic liquid and collecting expanded organic materials containing residual amounts of said inert organic liquid,
(c) subjecting the expanded organic materials to microwave radiation in a microwave chamber to vaporize the residual amounts of inert organic liquid contained in the expanded organic materials and
(d) introducing a second gas into contact with the expanded organic materials while the expanded organic materials are being subjected to said microwave radiation whereby the inert organic liquid is expelled from the expanded organic materials and is carried away by said second gas.

4,944,317
TOBACCO PORTION
Martin Thal, Tullinge, Sweden, assignor to Svenska Tobaks AB, Sweden
Filed Sep. 30, 1988, Ser. No. 251,232
Claims priority, application Sweden, Oct. 5, 1987, 8703827
Int. Cl.[5] A24D *1/14*
U.S. Cl. 131—348 **1 Claim**

1. An individually prepackaged tobacco portion including a

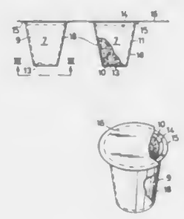
VOL 1116 ISS 5 JL 31 1990 UMI

portion of tobacco, an inner container, an outer container and a cover,

said tobacco portion located in said inner container,

said inner container formed of a thin, deformable metal foil having an open top, a perforated bottom wall and an imperforate side wall,

said outer container formed of an air and moisture impervi-



ous material having an open top and imperforate side and bottom walls with a flange surrounding said open top,

said cover being formed of an air and moisture impervious material and being adhered to said flange of said outer container, and

said inner container formed and adapted to nest in said outer container with the side and bottom walls of said inner and outer container in contact respectively with one another.

4,944,318

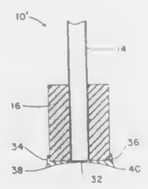
NAIL POLISH APPLICATOR

Thurmond O. Gaylord, Jr., and Thurmond O. Gaylord, Sr., both of 455 Uvalde, Houston, Tex. 77015

Filed Nov. 7, 1988, Ser. No. 268,280

Int. Cl.[5] A45D *29/00*

U.S. Cl. 132—73 **1 Claim**



1. A nail polish applicator, comprising:

an elongated shank member;

a bottle cap on one end of said shank member;

a rectangular sponge secured on an opposite end of said shank member;

said shank member extending through a central passage in said sponge and having a bottom end terminating flush with a bottom surface of said sponge;

a generally rectangular plate overlying and completely covering said bottom surface of said sponge, said plate centrally secured to said bottom end of said shank member;

said plate having a concave bottom surface;

said plate having a pair of upwardly extending side walls partially overlying opposite side faces of said sponge; and

said side walls of said plate having outwardly curved bottom edges, intersecting said bottom surface and forming a pair of parallel opposed scraping edges.

4,944,319

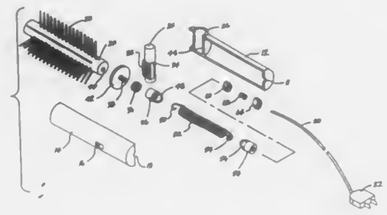
HAIR STYLING DEVICE

Ken Trombley, 5613 No. 52nd St., Tacoma, Wash. 98407

Filed Dec. 9, 1988, Ser. No. 282,306

Int. Cl.[5] A45D *2/36, 2/12*

U.S. Cl. 132—238 **2 Claims**



1. A hair styling device, comprising:

an elongated housing having first and second opposite ends;

a circular opening adjacent said first end of said housing;

a circular undercut groove in said housing adjacent said circular opening;

a circular disk covering said circular opening and rotationally mounted in said groove;

an externally threaded stud having a central bore and extending centrally through said disk;

an elongated brush secured to an outer side of said disk, by said stud, said brush having an internal electrical heating element;

a pinion gear coaxially secured to an inner side of said disk by said stud, said pinion gear having a central longitudinal aperture in registry with said central bore of said stud;

a first ring nut having a central threaded longitudinal bore threadably secured to said stud;

an elongated coil spring extending longitudinally within said housing and having a first end loop secured to said first ring nut;

a second ring nut fixed adjacent said second housing end;

said second ring nut having a central longitudinal bore aligned with an aperture formed through said second housing end;

a transversely extending well formed adjacent said first housing end;

a push button received for transverse reciprocal sliding movement in said well;

a gear rack on said push button engaging said pinion gear; and

a power cord extending sequentially through said aperture in said second housing end, said second ring nut, said coil spring, said first ring nut, said pinion gear, said pinion stud, said disk and connected with said internal heating element.

4,944,320

CHEMICAL CONTROL OF ROOT GROWTH IN SEWERS AND THE LIKE

Diana H. Waite, Marysville, Mont.; Nathan H. Chance, Jr., Visalia, and Robert A. Edmiston, Fresno, both of Calif., assignors to Airrigation Engineering Co., Inc., San Jose, Calif.

Continuation of Ser. No. 353,953, Jun. 9, 1987, abandoned, which is a division of Ser. No. 59,930, Jun. 9, 1987, abandoned. This application Oct. 18, 1989, Ser. No. 423,687

Int. Cl.[5] B08B *9/04*

U.S. Cl. 134—167 C **4 Claims**

1. A system for coating with clinging foam the upper portion of the interior walls of a generally horizontal pipe comprising:

separate sources for water, foam-producing solution, and atmospheric air,

a high-pressure pump connected to said source of water and

to a first downstream conduit for water under high pressure,

first lower-pressure pump and metering means connected to said source of water and to a second downstream conduit for supplying water in metered amounts to said second downstream conduit,

second pump and metering means connected to said source of foam-producing solution and to said second downstream conduit, for supplying and metering said foam producing solution to said second downstream conduit,

a compressor connected to said source of air and to said second downstream conduit,

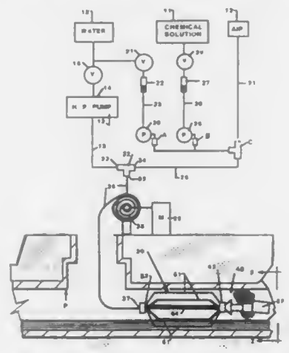
whereby metered amounts of water, foam-producing solution, and air can be combined into a damp sloppy foam that is fed to said second downstream conduit,

a three-way valve with two inlets, one connected to each of said first and second downstream conduits and having an outlet,

a long hose connected at an inlet end to said valve outlet and having an outlet end and wherein said damp sloppy foam is worked into a clinging foam, said hose being adapted to extend into the pipe to be interiorly coated with foam,

reeling means for reeling said hose and for enabling it to unreel freely,

skid means having a central pipe connected to said outlet end of said hose and having a series of skid rods regularly



spaced around said central pipe so that at any time two of said skid rods engage the bottom part of the wall of the pipe to be coated,

a nozzle connected to said skid's central pipe and supported by said skid, said nozzle comprising a body divided by pressure actuated valve means into a first chamber adjacent to said hose and having a series of high-pressure jet exits and a second chamber having a foam outlet, said valve means normally connecting said second chamber to said hose but, when the water from the hose is under high pressure, closing off said second chamber so that the water exits via said jet exits from said first chamber, and

gravity-operated outlet means connected to the foam outlet from said nozzle's second chamber, for enabling expulsion of said foam toward the walls of said pipe lying along a predetermined sector only and preventing expulsion toward the bottom portion of said pipe walls,

whereby in operation, said high-pressure pump sends water into said nozzle at high pressure to cause closure of said valve means and exit of said water from said first chamber through said jet exits, to jet said nozzle along said pipe to a desired position, while unreeling said hose, then, with said high-pressure pump de-activated, with consequent opening of said nozzle's valve means, said first and second pump and metering means and said compressor are actuated to supply said second downstream conduit with a foamed predetermined mixture of water foaming solution, and air to supply sloppy foam to the three-way valve while the hose is reeled in, so that clinging foam is impinged against the upper portion of said pipe walls.

4,944,321

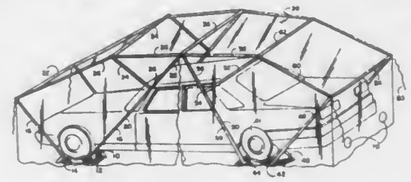
PORTABLE VEHICLE GARAGE AND TENT STRUCTURE

Francisco Moyet-Ortiz, Valle Tolimas, Calle 11 N-17, Caguas, P.R. 00625

Filed Feb. 2, 1990, Ser. No. 473,732

Int. Cl.[5] E04H *15/06*

U.S. Cl. 135—88 **14 Claims**



1. A structure useful as a cover in a first mode for a four-wheeled vehicle having a front and rear and as a tent in a second mode, comprising:

first, second, third and fourth support members, each having a front and rear, each positioned respectively under a wheel of said vehicle retaining such support members to the ground with said first and second support member disposed under the front wheels of said vehicle and said third and fourth support members disposed under the rear wheels of said vehicle;

a first pole support receipt means positioned in the front of each of said support members;

a second pole support receipt means positioned in the rear of each of said support members;

first and second front support poles having a top and bottom with the bottom of each affixed respectively to the first pole support receipt means of said first and second support members disposed under the front wheels of said vehicle, said first and second front support poles extending upward and forward with respect to said vehicle;

first and second front central poles having a top and bottom with the bottom of each affixed respectively to the second pole receipt means on said first and second support members disposed under the front wheels of said vehicle, said first and second front central poles extending upward and rearward with respect to said vehicle;

first and second rear support poles having a top and bottom with the bottom of each affixed to said second pole receipt means respectively of said third and fourth support members under the rear wheels of said vehicle, said first and second rear support pole extending upward and rearward with respect to said vehicle;

first and second rear central poles, each having a top and bottom with the bottom of each affixed to said first pole receipt means, respectively, of said third and fourth support members, said first and second rear central pole extending upward and forward with respect to said vehicle and attached at their tops to the tops of said first and second front central pole, respectively, on each side of said vehicle;

a central cross member interconnecting the tops of said attached first and second front central poles and said first and second rear central poles;

first and second middle support poles, each having a top and bottom with their bottoms angularly adjustably attached respectively to said first and second front central pole, said front middle support poles extending forward and upward with respect to said vehicle;

first and second upper front support poles extending from

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the tops of said first and second front support poles to the tops of said first and second front middle support poles, respectively;

first and second top front support poles extending from the tops of said first and second middle support poles, respectively, to the junction of said first and second front central poles and said first and second rear central poles at said central cross member;

first and second rear middle support poles, each having a top and bottom with their bottoms angularly adjustably attached respectively to said first and second rear central poles, said first and second rear middle support poles extending rearward and upward with respect to said vehicle;

first and second upper rear support poles extending respectively from the tops of said first and second rear support poles to the tops of said first and second rear middle support poles;

first and second top rear support poles extending from the tops of said first and second front middle support poles to the junction of the tops of said first and second front and rear central poles;

a front middle cross member extending from the top of said first front middle support pole over to said second front middle support pole;

a rear middle cross member extending from the top of said first rear middle support pole to said second rear middle support pole;

a front cross member extending from the top of said first front support pole to said second front support pole;

a rear cross member extending from said first rear support pole to said second rear support pole; and

covering extending over the structure of support poles and cross member to cover said structure.

4,944,322

FOLDABLE TENT

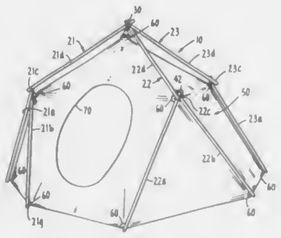
Robert E. Gillis, P.O. Box 67, Aptos, Calif. 95001

Filed Oct. 24, 1988, Ser. No. 261,349

The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.

Int. Cl.[5] E04H *15/42*

U.S. Cl. 135—105 **2 Claims**



1. A foldable tent structure comprising:

a plurality of pole clusters

each of said pole clusters having three poles which form an inverted Y-shape, said three poles being connected to each other by connecting means at the center of said inverted Y, the poles forming the two arms of each inverted Y-shape cluster extending to the ground and the poles forming the stems of each inverted Y-shape cluster extend upwardly and being connected to each other at the top of the structure

the stem of each Y-shape cluster being adapted to articulate about the center of said inverted Y, so that in the folded position, the top of the tent is adjacent the lower ends of said arms, and

a foldable membrane connected to both ends of each pole of each of said pole clusters by clip means, whereby said foldable tent structure may be assembled and disassembled repeatedly without separating said foldable membrane from said poles.

4,944,323

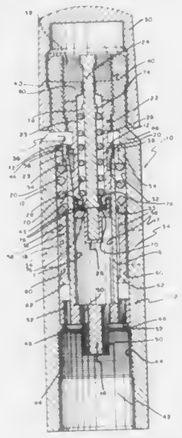
TIRE PRESSURE INDICATOR

Alan Bartholomew, Newton, and Jack J. Williams, Great Bend, both of Kans., assignors to Wagnon Power Jack, Inc., Great Bend, Kans.

Filed Dec. 16, 1987, Ser. No. 133,613

Int. Cl.[5] F16K *37/00*

U.S. Cl. 137—227 **16 Claims**



1. A visual tire pressure indicator comprising an outer body having a structure defining an inner wall, a transparent outer body section, a vent aperture, a top opening internally lined with top threads and a bottom opening internally lined with bottom threads;

an inner cap fitted against the inner wall of the outer body and having at least one air inlet aperture wherethrough air is emitted and at least one air outlet aperture wherethrough air passes;

an inner body having an outer wall, an inner wall, and secured to said inner cap;

an indicator sleeve means slidably disposed around said inner body;

a calibrated spring means helically surrounding said inner body and contacting a top end of said indicator sleeve means for biasing said indicator sleeve means towards said inner cap;

a valve core body threadably engaged to the top threads and fitted against the inner wall of the inner body, said valve core body having a structure defining a longitudinal bore;

an air flow control rod slidably disposed in said longitudinal bore;

a valve core cap secured to said air flow control rod; and

a valve core spring means disposed around said air flow control rod and in said longitudinal bore for biasing said valve core cap against the valve core body.

4,944,324

FUEL GAS SUPPLY EQUIPMENT WITH ABNORMAL OFFENSIVE ODOR SUPPRESSING FILTER

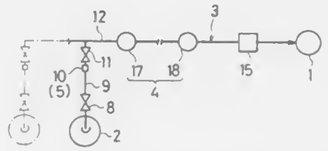
Hideo Kajino, Tokyo, and Kazuo Matsuo, Sapporo, both of Japan, assignors to Iwatani Sangyo Kabushiki Kaisha and Central Sekiyu Gas Kabushiki Kaisha, both of, Japan

Filed Apr. 3, 1989, Ser. No. 331,973

Claims priority, application Japan, Aug. 31, 1988, 63-115454

Int. Cl.[5] F17C *7/02*

U.S. Cl. 137—113 **11 Claims**



1. A gas supply system, having a gas container for containing a liquefied petroleum gas mixed with an odorous substance to facilitate detection of gas leakage, a gas supply passage and a pressure regulating means, the gas supply passage being arranged from a gas outlet of the gas container to a gas inlet of a gas burner and being provided with the pressure regulating means, comprising:

a filter-mounting portion of the gas supply passage disposed on the upstream side of the pressure regulating means; and

a cotton-like filter disposed in said filter-mounting portion to suppress an outflow of an abnormal quantity of said odorous substance, a gas inlet of the filter-mounting portion and a gas outlet thereof being intercommunicated through said cotton-like filter.

4,944,325

BUTTERFLY VALVE FOR EROSIVE FLUID STREAMS

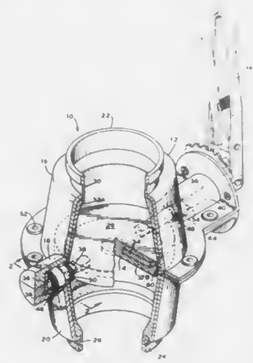
Stanley L. Baldwin, Winnipeg, and Charles W. Berscheid, Manitoba, both of Canada, assignors to INCO Limited, Toronto, Canada

Filed Oct. 16, 1989, Ser. No. 422,945

Claims priority, application Canada, Nov. 29, 1988, 584475

Int. Cl.[5] F16K *51/00*

U.S. Cl. 137—375 **4 Claims**



1. An erosive fluid butterfly valve, the valve comprising a housing formed by two flanged frustoconical body segments joined at their widest ends, the widest ends when joined defining a maximum internal diameter plane, the body segments including two opposed extensions that form first and second support cavities coincident with the maximum internal diameter plane, an access port disposed at the opposed end of each body segment, a rotatable disc disposed within the housing, the disc including opposed shafts extending into the first and second support cavities, split bushings disposed about the shafts in the first and second support cavities, erosion resistant liner material enveloping the disc and the interior of the housing and forming a sealable relationship therebetween, the liner material extending into the support cavities, and means for rotating the disc.

4,944,326

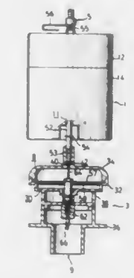
INLET VALVE FOR WATER TANKS

Su Yueh Hsieh, No. 126, Hsi Lu St., Hsi Lu Li, Tien Chung Chen, Chang Hua Hsien, Taiwan

Filed Sep. 8, 1989, Ser. No. 404,458

Int. Cl.[5] F16K *31/34, 33/00*

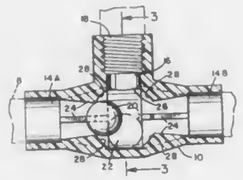
U.S. Cl. 137—414 **3 Claims**



1. An inlet valve for a water tank comprising a float having a hole extending in a longitudinal direction; a housing being disposed below said float, said housing including a casing, a cap being provided on a top end of said casing, and a connector being provided at a lower end for connecting to a water supply; an inlet and an outlet being formed in said casing, said inlet being formed in a lower center portion of said casing and said outlet communicating between an interior of said casing and said water tank; a center hole with at least one lateral hole being formed in a center of said cap, said lateral hole and said center hole, normally providing communication between said water tank and an interior of the cap; and a control device extending through said hole of said float, said center hole of said cap and said inlet of said casing; said float being movable up and down relative to said control device; said control device including means to block and open said lateral hole of said cap as the float moves up and down; a block element connected to a lower end of said control device and being actuated to block and release said inlet of said casing as the float moves up and down; means pushing said block element downward after said lateral hole is blocked; and a float level adjusting mechanism provided at an upper end of said control device wherein said adjusting mechanism comprises a coil spring coiled around a portion of the control device and having two ends extending from the coil spring as handles such that when the ends are squeezed together the coil spring is then freely movable with respect to the control device whereby when said handles are released said coil spring will become set at a selective position for adjusting an upper limit of said float relative to said control device for adjusting a water level in the tank.

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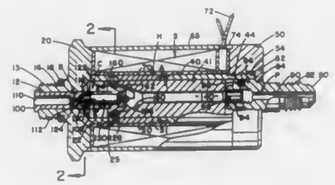
4,944,327
RISER CHECK VALVE
Christopher J. Gyben, 9751 Canyon Country La., Escondido, Calif. 92026
Filed Oct. 4, 1989, Ser. No. 417,190
Int. Cl.[5] F16K *17/24*
U.S. Cl. 137—519.5 12 Claims

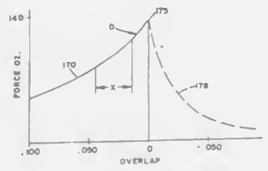


1. A fluid check valve comprising:
(a) a housing defining a first, generally horizontal fluid channel and a second, generally vertical fluid channel joining the first channel and in fluid communication therewith, the junction of the first and second channels defining a mouth through which fluid passes from the first channel into the second channel,
(b) a sphere disposed in the first channel below the mouth for closing said mouth, the size of the sphere and the shape of the mouth being such that the sphere substantially closes the mouth when the sphere is pressed against the mouth,
(c) means for confining movement of the sphere in the first channel to a volume space directly below the mouth,
(d) the mass of the sphere being large enough for the force of gravity acting upon the sphere to prevent the sphere from closing the mouth when fluid is flowing through both channels and the rate of fluid flow from the first channel into the second channel is restricted generally below a threshold rate, but the mass of the sphere being small enough to allow the sphere to close said mouth when the rate of said fluid flow is generally beyond the threshold rate.

4,944,328
SOLENOID CONTROLLED VALVE
Robert W. Brundage, 135 Paradise Rd., Painesville, Ohio 44077
Continuation of Ser. No. 58,644, Jun. 2, 1987, Pat. No. 4,791,958, which is a continuation of Ser. No. 563,760, Dec. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 378,133, May 14, 1982, abandoned. This application Dec. 16, 1988, Ser. No. 285,720
The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.
Int. Cl.[5] F16K *31/06*; G05D *7/06*
U.S. Cl. 137—528 15 Claims

1. An electrically controlled pressure relief valve comprising:
(a) a housing having a cylindrical cavity and a pressure inlet communicating with a valve seat;
(b) a moveable valve element having a valve seat engaging surface;
(c) a magnetically permeable armature movable in said cavity and adapted to create a force biasing the valve element towards engagement with the valve seat;
(d) a solenoid including:
(i) a solenoid coil;
(ii) an armature attracting annular pole piece adjacent to the valve seat; and
(iii) an armature supporting annular pole piece remote from the valve seat and axially spaced from the attracting pole piece;
(e) said armature including:
(i) one armature portion remote from the valve seat substantially overlapping the supporting pole piece; and
(ii) another armature portion located near to the valve seat and positioned to slightly overlap a cavity forming end portion of the attracting pole piece;





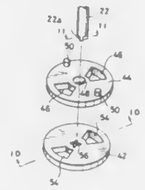
(f) operating means for causing a magnetic biasing force exerted on said armature by said solenoid to rise substantially as the valve element moves away from engagement with the valve seat, the rate of rise being greater at higher solenoid energization.

4,944,329
AUTOMATICALLY-OPERATED REDUNDANT-TYPE FLUID COUPLING DEVICE
Joseph M. Cardin, Buffalo, N.Y.; Raoul Fremy, Courcouronnes, France, and Patrick K. Griffin, Cowlesville, N.Y., assignors to Moog Inc., East Aurora, N.Y., a part interest
PCT No. PCT/US88/01778, § 371 Date Nov. 8, 1989, § 102(e) Date Nov. 8, 1989, PCT Pub. No. WO89/01587, PCT Pub. Date Feb. 23, 1989
PCT Filed May 26, 1988, Ser. No. 455,449
Int. Cl.[5] F16L *29/00*
U.S. Cl. 137—614.05 17 Claims



1. In a coupling section having an elongated body provided with a flow passageway therethrough, and having actuating member mounted for movement relative to said body between two extreme positions, the improvement which comprises:
at least two valve elements operatively arranged in said passageway, each of said elements being mounted for rotation between a flow-preventing position and a flow-permitting position, each of said elements being in said flow-preventing position when said actuating member is in one of said extreme positions and being in said flow-permitting position when said actuating member is in the other of said extreme positions; and
an actuating mechanism for selectively rotating said valve elements sequentially between their flow-preventing positions and their flow-permitting positions when said actuating member is moved from said one extreme position to said other extreme position;
whereby, when said actuating member is in said one extreme position, said valve elements will redundantly close said flow passageway.

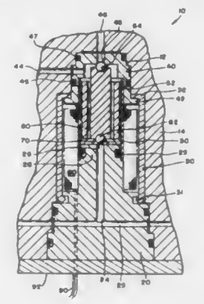
4,944,330
DISK TYPE VALVE
Kohei Sakakibara; Kanetaro Masuoka, and Toshio Fukushima, all of Tokoname, Japan, assignors to Inax Corporation, Tokoname, Japan
Filed Jul. 7, 1989, Ser. No. 376,997
Claims priority, application Japan, Jul. 22, 1988, 63-182935; May 26, 1989, 1-61451
Int. Cl.[5] F16K *3/08*
U.S. Cl. 137—625.31 6 Claims



1. A disk type valve comprising:
a cylindrical valve casing having an end portion and a side opening to allow fluid to pass from the end portion to the side opening,
a fixed disk immovably situated inside the casing adjacent the side opening to orient perpendicular to a central axis of the casing, said fixed disk having a central hole and at least one opening,
a movable disk rotationally situated inside the basing adjacent the fixed disk at a side of the end portion to orient parallel to the fixed disk, said movable disk having an opening and a cross-shaped recess in the center thereof,
means for supporting the movable disk without pressing the movable disk, said supporting means being attached to the casing under the movable disk, and
a spindle having a cross-shaped distal end, said spindle passing through the central hole of the fixed disk and engaging the cross-shaped recess of the movable disk so that when the opening of the movable disk communicates the opening of the fixed disk by turning the spindle, water flows from the end portion to the side opening through the openings of the fixed and movable disks.

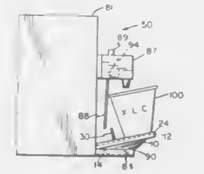
4,944,331
SOLENOID VALVE
Wendell D. Tackett, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.
Filed Jun. 22, 1989, Ser. No. 371,667
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 7 Claims

1. A solenoid valve, comprising a body having at a first end at least a first opening and at a second end second and third openings, the first end including a base member containing said first opening which extends laterally and communicates with a longitudinal opening extending in said base member, an armature disposed movably between said base member and said second end, the armature comprising a longitudinal member having a first valve which may sealingly engage the longitudinal opening of the base member and a second valve which sealingly engages the third opening, a pair of parallel axial passages extending through the armature in order to permit fluid flow through the armature, a wave washer disposed between said armature and base member and biasing said armature so that the second valve normally engages sealingly the third opening, the base member and second end of the body defining therebetween a chamber which houses said armature, the second and third openings communicating with said chamber, and coil means disposed about said armature and for effecting displacement of said armature, so that energization of



said coil means causes said armature to be displaced such that the second valve opens said third opening and said first valve sealingly engages said longitudinal opening and subsequent energization of the coil means in combination with fluid pressure received at the first opening causes said armature to modulate the valves between open and closed positions.

4,944,332
BEVERAGE DISPENSER FOR FILLING CUPS AND EXTRA-LARGE RECEPTACLES WITH AUTOMATIC DISPENSING SHUT OFF
Terrance G. Belland, Champlin, Minn., assignor to The Cornelius Company, Anoka, Minn.
Continuation-in-part of Ser. No. 880,464, Jun. 30, 1986, Pat. No. 4,738,285. This application Sep. 14, 1987, Ser. No. 96,983
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—1 25 Claims



14. A method of dispensing beverage from a single dispenser into any beverage receptacle selected from a predetermined group of standard sized beverage cups and at least one extra large beverage receptacle which is of greater size and capacity than any of the cups and which has a fluid capacity of at least one quart, with unattended automatic shut off of dispensing when dispensed beverage reaches or approaches the rim of the selected receptacle regardless of which of the group the selected receptacle is, comprising the steps of
(a) selecting any one receptacle from said receptacle group and placing the selected receptacle upon a rearwardly inclined receptacle support surface and tilting the selected receptacle to the rear,
(b) moving the rearwardly tilted selected receptacle rearward and downward upon the rearwardly inclined support surface and into physical contact with an electrically conductive beverage level probe;
(c) starting dispensing of beverage into said selected receptacle;

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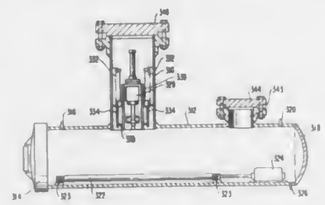
(d) electrically sensing the dispensed beverage with the probe as the dispensed beverage level in the selected receptacle reaches or approaches an upper rim of the selected receptacle and touches the probe;
(e) automatically terminating dispensing upon such sensing; and
(f) completely supporting a base of said selected beverage receptacle during the steps of dispensing and sensing and terminating, said supporting being done above and beyond a footprint of an original cup support upon said dispenser with an enlarged and inclined beverage receptacle support which is extended upward from and outward beyond said footprint for stably physically engaging the base of said selected beverage receptacle beyond said footprint.

4,944,333

CYLINDER RUPTURE VESSEL WITH CLAMPS FOR IMMOBILIZING A CONTAINER INSIDE THE VESSEL

Jeffrey W. Gold, Atlanta, Ga., and Dan A. Nickens, Orlando, Fla., assignors to Earth Resources Consultants, Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 669,537, Nov. 8, 1984, Pat. No. 4,690,180. This application Jun. 3, 1987, Ser. No. 57,083
Int. Cl.[5] B65B *31/00, 7/24*
U.S. Cl. 141—51 **10 Claims**



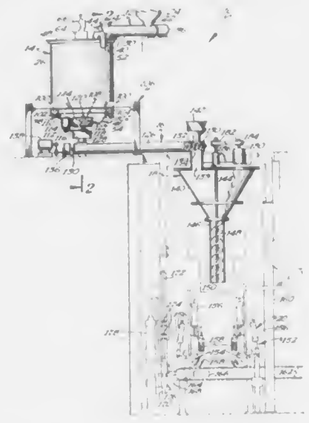
1. A cylinder rupture vessel comprising:
an enclosed chamber;
means for gaining access to the interior of the chamber;
a pair of rollers disposed along the elongate length of the chamber adapted to support thereon a target container to be ruptured;
means for sealing the chamber;
drill means disposed within the chamber for puncturing at least one wall of the target container;
clamp means for immobilizing the container on the pair of rollers;
at least two inlet purge connections communicating with the interior of the chamber and adapted to purge the gases therein;
at least one vacuum connection communicating with the interior of the chamber and adapted to evacuate the gases therein and the gases released into the chamber by the punctured target container; and
at least one drainage port communicating with the interior of the chamber and adapted to drain from the chamber the liquids released by the punctured target container.

4,944,334

VIBRATING HOPPER AND AUGER FEED ASSEMBLY

Harold R. McGregor, 1444 Lincoln Ave., Owatonna, Minn. 55060

Filed Nov. 14, 1988, Ser. No. 270,845
Int. Cl.[5] B65B *1/08, 1/12, 1/20*
U.S. Cl. 141—71 **20 Claims**



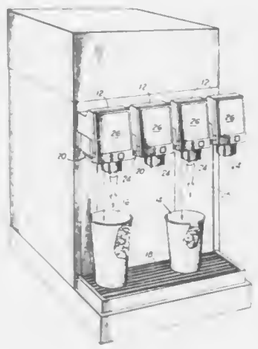
1. A vibrating hopper and auger feed assembly for use in de-aerating a product, said vibrating hopper and auger feed comprising:
a frame assembly;
a top bin connected to said frame assembly, said top bin defining an interior receptacle region to contain the product, an inlet port, and a generally open bottom;
a bottom hopper, said bottom hopper being connected to and mounted substantially beneath said top bin in fluid communication therewith such that the product in said top bin may flow downwardly into said bottom hopper through said generally open bottom, said bottom hopper defining an outlet port;
an inverted pressure dome, said pressure dome being connected to said bottom hopper and spaced apart generally therefrom such that product may flow between said pressure dome and said bottom hopper, said pressure dome defining a generally enclosed area disposed beneath said pressure dome, said pressure dome further defining an aperture extending therethrough;
an auger shaft, said auger shaft being oriented in a generally vertical direction and extending upwardly from said outlet port of said bottom hopper through said aperture defined in said pressure dome and terminating in a top end thereof disposed above said pressure dome, said auger shaft including a section of flighting, said section of flighting being disposed beneath said pressure dome and extending substantially between said outlet port and said enclosed area disposed beneath said pressure dome;
a vent tube, said vent tube surrounding said auger shaft and defining an air passage therebetween, said air passage of said vent tube communicating with said aperture defined in said pressure dome and with said enclosed area, said vent tube connected to and extending upwardly from said pressure dome in a generally vertical direction and terminating in a top end thereof;
venting means for venting air from said top end of said vent tube to an exterior region surrounding said top bin;
drive means for rotating said auger shaft, said drive means being connected to said auger shaft; and
vibration producing means for vibrating said bottom hopper relative to said frame assembly,
whereby the product is loaded into the top bin and flows downwardly around the inverted pressure dome and into the bottom hopper, the bottom hopper being vibrated by the vibration producing means, the product being compressed to remove excess gasses by the section of flighting as the auger shaft is rotated by the drive means, the product being expelled through the outlet port by said section of flighting with the excess gasses being vented upwardly through the pressure dome and vent tube.

4,944,335

AUTOMATIC CONTROL SYSTEM FOR FILLING BEVERAGE CONTAINERS

William F. Stembridge, College Park, Ga.; James C. Sturrock, Espanola, N. Mex., and W. Frank Stembridge, East Point, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 684,215, Dec. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 629,397, Jul. 10, 1984, abandoned. This application May 8, 1987, Ser. No. 48,111
Int. Cl.[5] B65B *3/26*
U.S. Cl. 141—95 **21 Claims**



1. A level sensing system comprising:
ultrasonic sound wave transducer means for emitting ultrasonic sound waves and for receiving ultrasonic sound waves reflected from a receptacle whose content level is to be sensed;
a content level detector, responsive to said reflected ultrasonic sound waves, for detecting the level of the contents of the receptacle by sensing reflected ultrasonic sound waves having a signal level greater than a first reference level;
a rim detector, responsive to said reflected ultrasonic sound waves, for determining the location of the rim of the receptacle by sensing reflected ultrasonic sound waves having a signal level greater than a second reference level which is different from said first reference level; and
a level comparator, responsive to said rim detector and said content level detector, for comparing the contents level with the rim location for indicating when the contents level is within a predetermined distance of the rim.

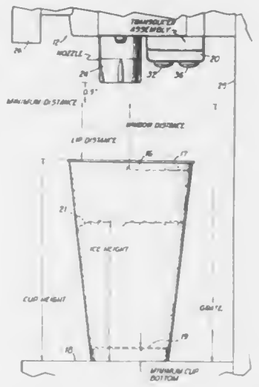
4,944,336

AUTOMATIC CONTROL SYSTEM FOR FILLING BEVERAGE CONTAINERS

William F. Stembridge, College Park, Ga.; James C. Sturrock, Espanola, N. Mex., and W. Frank Stembridge, East Point, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 48,111, May 8, 1987, which is a continuation-in-part of Ser. No. 684,215, Dec. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 629,397, Jul. 10, 1984, abandoned. This application Nov. 21, 1988, Ser. No. 274,091
The portion of the term of this patent subsequent to Oct. 25, 2005, has been disclaimed.
Int. Cl.[5] B65B *3/04;* **H04R** *17/00*
U.S. Cl. 141—95 **3 Claims**

1. A transducer assembly for use in the automatic filling of a container with a beverage comprising:
(a) a housing;
(b) a front pair of separate transmitter and receiver crystals mounted spaced-apart in said housing, each crystal having a lower surface and having a lens connected to the lower surface of the crystal and with the lower surface of each lens being adjacent the bottom of said housing and being exposed to atmosphere;
(c) a rear pair of separate transmitter and receiver crystals mounted spaced-apart in said housing, each crystal having a lower surface and having a lens connected to the lower surface of the crystal and with the lower surface of each lens being adjacent the bottom of said housing and being exposed to atmosphere;



(d) four separate non-ferrous metal tubes being located spaced-apart within said housing in a vertical orientation therein;
(e) each of said crystals of said front pair of crystals and of said rear pair of crystals being located within but not touching one of said four separate non-ferrous metal tubes; and
(f) polyurethane foam substantially filling the remaining space within said housing and within each of said tubes and holding each of said tubes and each of said crystals in place therein.

4,944,337

AUTOMATIC BEVERAGE DISPENSING SYSTEM WITH PLURAL CONVEYORS

William S. Credle, Jr., 1763 E. Gate Trail, Stone Mountain, Ga. 30087; Lawrence B. Ziesel, 531 Stillwaters Dr., Marietta, Ga. 30064, and Mark S. Heflin, 836 Glendale Ter., Atlanta, Ga. 30308

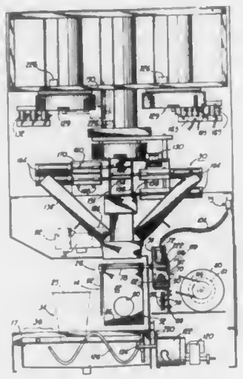
Filed Mar. 29, 1988, Ser. No. 174,742
Int. Cl.[5] B65B *3/04, 43/42*
U.S. Cl. 141—174 **10 Claims**

1. An automatic beverage dispensing system comprising:
(a) a dispenser and a housing for said dispenser;
(b) a first conveyor system for conveying cups sideways in said housing from a cup drop station to a transfer station on any one of a plurality of the below-recited second conveyor systems;
(c) a plurality of second conveyor systems for conveying cups forward of said housing from a respective transfer station located adjacent a proximal end of each of said second conveyor system to a beverage fill station located downstream from said transfer station and then to a pick-up station located downstream from said beverage fill station, each of said second conveyor systems including a straight, cup-supporting surface extending back to front in said housing;
(d) an automatic cup dropper assembly including a plurality

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of cup holders each adapted to hold a plurality of different size cups, and including means for dropping a cup of the desired size onto said first conveyor system at a cup drop station thereof;

(e) an ice dispenser assembly in said housing including an ice bin and an automatic ice dispenser for dispensing a selected quantity of ice into a cup supported on said first conveyor system at an ice drop station located on said first conveyor system;



(f) a beverage dispensing valve located at said beverage fill station of each of said plurality of second conveyor systems, for dispensing beverage into a cup located at said beverage fill station; and

(g) said second conveyor systems each including means for conveying filled cups from said fill station forward to said pick-up station.

4,944,338

BARKING METHOD, AND AN APPARATUS FOR UTILIZATION OF THE METHOD

Kjell-Anders Eriksson, Fiskgatan 10, Leksand, Sweden S-793 00

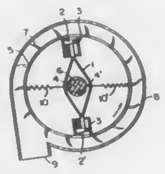
PCT No. PCT/SE87/00154, § 371 Date Sep. 27, 1988, § 102(e) Date Sep. 27, 1988, PCT Pub. No. WO87/05851, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 25, 1987, Ser. No. 252,455

Claims priority, application Sweden, Mar. 27, 1986, 86014495

Int. Cl.[5] B27L *1/00*

U.S. Cl. 144—208 E **17 Claims**



1. In a barking apparatus wherein a log is moved in a substantially linear feeding direction in the direction of its longitudinal axis through a barking means rotating around the log and urged into engagement with the periphery of the log by centrifugal force, the improvement comprising:

a rotating member:

an opening through said rotating member for receiving the log therethrough;

at least one barking device movably mounted on said rotating member for rotation therewith and projecting into said opening for engagement with the peripheral surface of the log;

centrifugal force operated means operatively connected to said at least one barking device for controlling the contacting pressure of said barking device against the peripheral surface of the log proportionally to the speed of rotation of said rotating member; and

co-acting means operatively associated with said barking device to positively cause disengagement of said barking device at predetermined rotating speeds of said rotating member.

4,944,339

PROCEDURE FOR MACHINING WOODEN ARTICLES, INSTALLATION FOR CARRYING OUT A PROCEDURE OF THIS TYPE AND CLAMPING BENCH TO BE USED IN AN INSTALLATION OF THIS TYPE

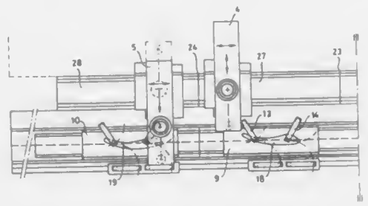
Jacobus H. Luyten, Tegelen, Netherlands, assignor to Helma Tegelen B. V., Netherlands

Filed Mar. 29, 1989, Ser. No. 329,951

Claims priority, application Netherlands, Mar. 30, 1988, 8800814

Int. Cl.[5] B27B *1/00*; B27C *5/00*

U.S. Cl. 144—363 **15 Claims**



1. Apparatus for machining one or more wooden articles from an initial shape to a final shape at a plurality of machining operation stations comprising:

a plurality of clamping benches, each so said benches being respectively adapted to support a wooden article to be machined and including at least one first clamping device mounted thereon for fixedly clamping its respective wooden article;

a conveyor arrangement for supporting said plurality of clamping benches and moving them along a predetermined path past said plurality of machining operation stations so that the wooden article supported on each clamping bench can be machined at each machining operation station in sequence;

a plurality of second clamping devices, at least one of said second clamping devices being respectively mounted at each of said plurality of machining operation stations and being adapted to fixedly clamp said wooden article mounted on said clamping bench when each clamping bench reaches its respective machining operation station whereby said wooden article remains fixedly mounted on its respective clamping bench until all of the machining operations to be carried out on said article from its initial shape to its final shape have been completed, said first clamping devices being used to support said wooden article at least during movement of said clamping benches between stations.

4,944,340

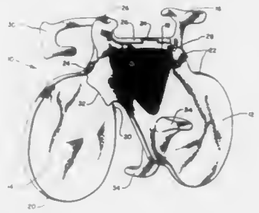
AERODYNAMIC BICYCLE COVER

Rainey Tortorich, 1755 Whispering Oaks, Ogden, Utah 84403

Filed Sep. 21, 1989, Ser. No. 410,648

Int. Cl.[5] B60R *9/10*

U.S. Cl. 150—167 **20 Claims**



1. An aerodynamic cover for a wheeled vehicle comprising:

a structure of flexible material configured such that when in place over the wheeled vehicle it conforms generally to the outside silhouette of the wheeled vehicle;

means for allowing placement of said wheeled vehicle within the structure of flexible material;

means for securing the flexible structure about the wheeled vehicle such that the structure and the wheeled vehicle are generally aerodynamic; and

at least one opening disposed through the cover and configured such that when a wheeled vehicle is placed within the cover, a sufficient quantity of air is capable of flowing through the cover such that the wheeled vehicle is capable of being transported on the outside of a motor vehicle, with the flapping of the cover being minimized.

4,944,341

INSULATING GLASS WINDOW WITH LIGHT GUARD

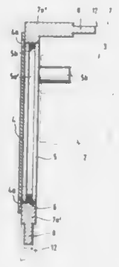
Edmund Trippner, Grüntenweg 9, D-7440 Reudern, and Heinz Thierer, Steiglesäcker 9, D-7312 Kirchheim/Teck, both of Fed. Rep. of Germany

Filed Feb. 24, 1989, Ser. No. 315,555

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806648

Int. Cl.[5] A47H *1/00*

U.S. Cl. 160—98 **5 Claims**



1. In an insulating glass window with two panes separate from each other by means of a sectional frame serving as a spacing member, a space being defined between the panes, the window further including a replaceable light guard device, the light guard device including a shutter with a light guard sheet, the sheet being movable in the space between the panes, and an electric motor for driving the light guard device, the entire light guard device being arranged in the space between the panes, the sectional frame having opposite frame sides extending transversely of the direction of movement of the light guard sheet, the light guard device being supported by the opposite frame sides, wherein the improvement comprises that at least one of the frame sides has an opening for the assembly and disassembly of the light guard device, and a cover for closing the opening in a gas-tight manner.

4,944,342

PROCESS AND DEVICE FOR COOLING ROLLERS

Wilhelm F. Lauener, Gerlafingen, Switzerland, assignor to Lauener Engineering AG, Thun, Switzerland

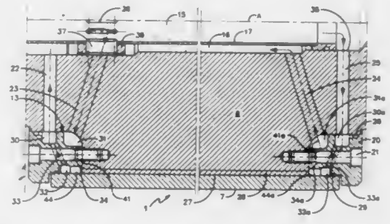
PCT No. PCT/CH87/00171, § 371 Date Aug. 22, 1988, § 102(e) Date Aug. 22, 1988, PCT Pub. No. WO88/04585, PCT Pub. Date Jun. 30, 1988

Continuation of Ser. No. 251,708, Aug. 22, 1988, abandoned. This PCT application Dec. 14, 1987, Ser. No. 428,486

Claims priority, application Switzerland, Dec. 22, 1986, 05132/86

Int. Cl.[5] B22D *11/124*

U.S. Cl. 164—485 **21 Claims**



16. A continuous casting roll apparatus having a roller core substantially surrounded in length and circumference by a roller shell, comprising:

a first and a second end face of said roller core, each of said end faces forming the terminating surface of the cylindrically-shaped roller core,

at least one pair of cooling channels which comprise a first cooling channel and a second cooling channel, said cooling channels consisting of adjacent, axial grooves in the surface of said roller core running parallel to the axis of said roller core from a first end of said roller core to a second end, said cooling channels being enclosed by said shell to enable said cooling channels to conduct coolant between roller shell and roller core;

a central conduit in said roller core, extending from said first end of said roller core axially to a point short of said second end, said conduit comprising an inlet channel and an outlet channel for supplying a coolant to and discharging said coolant from said cooling channels;

branch bores, located in said roller core in fluid communication with and radiating from said central conduit and terminating in said cooling channels, said branch bores comprising first and second inlet bores and first and second outlet bores, said first inlet bore being in fluid communication with said inlet channel to supply said coolant from said inlet channel to said first cooling channel at said first end of said roller core, said first outlet bore being in fluid communication with said first cooling channel at said second end of said roller core to discharge said coolant from said first cooling channel to said outlet channel and said second inlet bore being in fluid communication with said inlet channel to supply said coolant from said inlet channel to said second cooling channel at said second end of said roller core, said second outlet bore being in fluid communication with said second cooling channel at said

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first end of said roller core to discharge said coolant from said second cooling channel to said outlet channel.

4,944,343

APPARATUS FOR HEATING FUEL

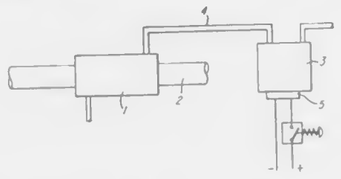
Fritz Müller, Stentenbergstrabe 31, D-5275, Bergneustadt, Fed. Rep. of Germany

Filed Jun. 23, 1988, Ser. No. 210,651

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1987, 3728895; Sep. 1, 1987, 3729112; Sep. 8, 1987, 3730060; Sep. 15, 1987, 3730913; Dec. 5, 1987, 3741281

Int. Cl.[5] F02M *31/10, 31/12, 37/22*

U.S. Cl. 165—47 2 Claims



1. An apparatus for heating fuel, especially Diesel fuel and heating oil, that is to be supplied to a unit in which said said fuel is to be atomized and burned, wherein a fuel line leads to said unit through a fuel filter, and a liquid line is provided in which flows liquid that is heated up by said unit; said apparatus comprises:

a heat exchanger disposed upstream of said fuel filter about said fuel line and in said liquid line, whereby said liquid flows through said heat exchanger to heat up said fuel line;

an electrical heating element that is disposed directly on said fuel filter for heating the inner space of the latter; and

switch means provided with said heating element being activated and deactivated in a controlled manner automatically with the aid of a temperature sensor when the temperature of the fuel has fallen below a predetermined temperature at the inlet to or the interior of the fuel filter, said fuel filter having a casing with a bottom that is provided with a water drain opening that is closed off by the threaded end of a drain plug having a longitudinal groove formed on the threaded end of the drain plug so that separated-off water can be drained from the fuel filter without completely removing the drain plug; and disposed in said filter casing is a filter element that leaves free an inner space, with said electrical heating element being in the form of a heating rod that is disposed on said threaded end of said drain plug and is inserted into said inner space; said heating rod having connection leads that extend through said drain plug.

4,944,344

HERMETICALLY SEALED MODULAR ELECTRONIC COLD PLATE UTILIZING REFLUX COOLING

Lawrence E. Crowe, Lindenwood, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 31, 1988, Ser. No. 264,786

Int. Cl.[5] F28D *15/02;* **H01L** *23/42*

U.S. Cl. 165—104.33 20 Claims

1. A modular reflux cooling plate for one or more heat generating components, comprising:

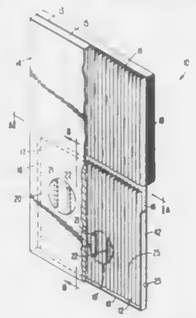
a condensing region;

boiling channels disposed beneath the condensing region;

at least one downcomer in the vicinity of the boiling channels so as to be operatively communicated between the condensing region and the boiling channels; and

end plates hermetically sealing the condensing region, the boiling channels and the at least one downcomer therebetween so that a coolant can be provided in the region of the boiling channels, wherein

the one or more heat generating components are mounted externally on at least one of the end plates adjacent the boiling channels to form an assembly which can be joined



with one or more other modular reflux cooling plates with assemblies thereon for providing heat exchange between heat generating components and the condensing region and the condensing region is provided with lanced offset fins.

4,944,345

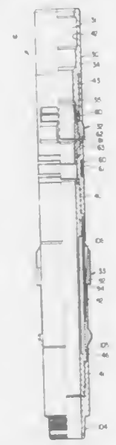
WELL DEVICE LOCK MANDREL AND RUNNING TOOL

Howard R. Mashaw, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 9, 1989, Ser. No. 320,965

Int. Cl.[5] E21B *23/02*

U.S. Cl. 166—206 20 Claims



1. A lock mandrel and running tool assembly for setting and locking a well tool-at a selected landing nipple along a well bore comprising:

a lock mandrel having a body provided with side window means and an internal fishneck along an upper end thereof;

radially movable locking dog means in said side window means;

a longitudinally movable expander sleeve in said body movable within said dog means for expanding and locking said dog means and releasing said dog means, said expander sleeve having an internal annular recess for engagement by an operating lug on said running tool to move said sleeve upwardly and downwardly and an external annular latch boss along an upper end portion thereof for releasably latching said expander sleeve at an upper locking position, said expander sleeve having a longitudinal bore there through having a diameter at least as large as the minimum diameter of the bore through said lock mandrel body;

a latch ring in said body around said expander sleeve above said locking dog means for engagement with said latch boss on said sleeve when said sleeve is at an upper locking position to releasably hold said sleeve in said upper position;

locator key means on said body spaced from said locking dog means having an external defined profile configured to engage an internal locator profile in said selected landing nipple;

longitudinal leaf spring means within said locator key means for holding said locator key means at outward positions for engagement with said selected landing nipple and permitting said locator key means to move inwardly to pass through landing nipples having an internal profile different from said locator profile on said locator key means; and

a running tool for installing said lock mandrel comprising:

a head assembly including a fishneck;

a latch key assembly for coupling said lock mandrel on said running tool;

mounting means supporting said latch key assembly on said running tool for operation between latch and release modes;

lock mandrel operator lug means for locking and releasing said lock mandrel in a landing nipple;

means mounting said operator lug means on said running tool and coupling said operator lug means with said latch key assembly;

non-weight bearing coupling means and release-lockout means connected between said head assembly and said latch key assembly and said operator lug means for holding said latch key assembly in a running mode latched with said lock mandrel and said lock mandrel in a release mode while installing said lock mandrel; and

said release-lockout means being operable responsive to a downward jar to activate said lockout means for locking said lock mandrel in a landing nipple and for release of said latch key means from said lock mandrel for retrieving said running tool.

4,944,346

ETHER SULFOXIDE COMPOUNDS FOR ENHANCED OIL RECOVERY

Roger A. Grey; Lawrence J. Karas, both of West Chester, Pa., and Linda A. Verkruyse, Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 11, 1989, Ser. No. 448,388

Int. Cl.[5] E21B *43/22*

U.S. Cl. 166—274 7 Claims

1. A process for recovering crude oil under high salinity conditions from a subterranean formation having at least one injection means in fluid communication with at least one production means comprising:

(a) injecting into said formation a liquid composition consisting essentially of at least one surfactant selected from surfactants having a formula

$$R^1O(R^2O)_x(R^3O)_y(CH)_zS(=O)R^4$$
$$\quad\quad\quad

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well annulus defined between said tubing string and said well bore, comprising:

an upper packer means for sealing between said tubing string and said well bore to divide said well annulus into an upper well annulus and a lower well annulus above and below said upper packer means, respectively;

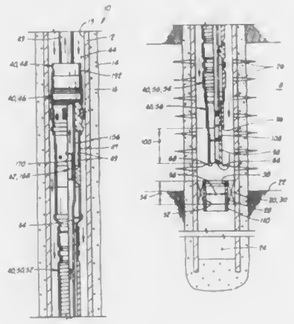
a crossover setting tool, operably associated with said upper packer means, including crossover valve means for permitting reverse circulation of fluid up through said tubing string during running in of said tubing string and said gravel packing assembly into said well, said setting tool also including a downward extending wash pipe initially communicated with said tubing string;

a screen located below said upper packer means and having said wash pipe extending downwardly therethrough; and

a wash pipe extension means, located below said screen, for permitting reverse circulation of sand fill out of said sump packer bore up through said wash pipe and said tubing string.

20. A method Of gravel packing a well comprising the steps of:

(a) supporting from a tubing string a gravel packing assembly including a permanent production packer, a screen



located below said packer, and a setting tool associated with said packer and having a wash pipe extending down through said screen;

(b) running said tubing string and said gravel packing assembly into said well until a sand fill is encountered;

(c) reverse washing said sand fill up through said wash pipe and said tubing string;

(d) running said tubing string and said gravel packing assembly further into said well until said gravel packing assembly is located at a selected location in said well;

(e) setting said permanent production packer within said well to define an upper well annulus and a lower well annulus;

(f) communicating said tubing string with said lower well annulus and said wash pipe with said upper well annulus;

(g) raising said wash pipe relative to said screen with said permanent production packer and said screen fixed in place in said well to communicate said wash pipe with an interior of said screen;

(h) gravel packing said lower annulus of said well around said screen; and

(i) removing said tubing string and said setting tool from said well leaving said permanent production packer and said screen in place in said well.

4,944,349

COMBINATION DOWNHOLE TUBING CIRCULATING VALVE AND FLUID UNLOADER AND METHOD

William D. Von Gonten, Jr., 1111 Fannin, Suite 1500, Houston, Tex. 77002

Filed Feb. 27, 1989, Ser. No. 316,159
Int. Cl.[5] E21B *37/00*
U.S. Cl. 166—304 **17 Claims**



1. A downhole fluid circulating and unloading valve comprising:

a tubular member adapted for connection in a tubing string disposable within a well bore that is closed to downward flow of fluid at a point below said tubular member, said tubular member having a port in the wall thereof for passage of fluid out of said tubular member;

a sliding sleeve disposed around the outside surface of said tubular member and having a port in the wall thereof for passage of fluid into the annulus between the tubing string and the well bore;

means for biasing said sliding sleeve toward a first, closed position preventing the passage of fluid out of the port in the wall of said tubular member through the port in the wall of said sliding sleeve;

means on said sliding sleeve responsive to an increase in the pressure of the fluid in said tubular member for shifting said sliding sleeve relative to said tubular member and against said biasing means from said first position to a second, open position in which the port in the wall of said tubular member is in fluid communication with the port in the wall of said sliding sleeve to allow fluid to pass out of the port in the wall of said tubular member and through the port in the wall of said sliding sleeve, and then, in response to a further increase in the pressure of the fluid in said tubular member, from said second position to a third, unloading position in which the port in the wall of said tubular member is also in fluid communication with the port in the wall of said sliding sleeve; and

means for locking said sliding sleeve in said third position to allow fluid to drain from within said tubular member into the annulus without regard to the decrease in the pressure of the fluid which occurs as fluid drains from said tubular member.

12. A method of removing the paraffin from a tubing string in a well having a circulating valve with a sliding sleeve connected therein and then draining the tubing string comprising:

filling the tubing string in the well with a paraffin-removing fluid;

increasing the pressure of the fluid in the tubing string to a first selected pressure to shift the sliding sleeve of the circulating valve connected therein from a first, closed position to a second, circulating position in which the circulating valve is opened to allow passage of fluid into the annulus outside the tubing string;

increasing the pressure of the fluid in the tubing string to a second selected pressure to shift the circulating valve from the second position to a third, unloading position in which the circulating valve is also open to allow passage of fluid therethrough and locked in the third position; and

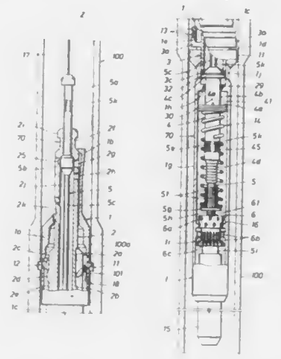
draining the fluid from the tubing string and into the annulus through the circulating valve.

4,944,350

TOOL FOR CLOSING A WELL TUBING

Peter Airey, Vulaines-Sur-Seine, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 99,683, Sep. 17, 1987, Pat. No. 4,756,372, which is a continuation of Ser. No. 918,467, Oct. 14, 1986, abandoned. This application Jan. 20, 1988, Ser. No. 147,077
Claims priority, application France, Oct. 18, 1985, 85 15490
Int. Cl.[5] E21B *34/14*
U.S. Cl. 166—373 **5 Claims**



1. A tool adapted to be suspended by an apparatus in a tubing containing fluid under pressure, comprising: a valve element connected to said apparatus, an upward force adapted to be applied to said apparatus by an operator during suspension of said tool by said apparatus in said tubing;

a valve seat adapted for contacting said valve element, said valve element moving into engagement with said valve seat when said upward force being applied to said apparatus is reduced; and

sealing means connected to said valve seat for sealing said tool to said tubing thereby isolating a top part in said tubing above said sealing means from a bottom part in said tubing below said sealing means when said valve element moves into engagement with said valve seat.

5. A method of operating a valve in a tool adapted to be disposed in a tubing containing fluid under pressure, said valve including a first piston; a second piston connected to said valve element, surrounding said first piston, and defining a first chamber between the first piston and the second piston, a hydraulic fluid being disposed in said first chamber, a port being disposed through said second piston; and a tube disposed around and sealingly engaging a portion of said second piston, said tube defining a second chamber between the tube and the second piston, a hydraulic fluid being disposed in said second chamber and being communicable with the hydraulic fluid in said first chamber via said port; comprising the steps of:

(a) closing said valve by moving a valve element of said valve into engagement with a valve seat of said valve;

(b) establishing a seal between said tool and said tubing thereby isolating one part of said tubing on one side of said seal from an opposite part of said tubing on the other side of said seal; and

(c) moving said valve element away from said valve seat thereby establishing fluid communication between said one part of said tubing and said opposite part of said tubing, the moving step (c) further including the steps of,

(d) moving said first piston thereby compressing the hydraulic fluid in said first chamber;

(e) flowing a portion of said hydraulic fluid from said first chamber into said second chamber via said port thereby compressing the hydraulic fluid in said second chamber; and

(f) moving said second piston relative to said tube so as to increase a volume of said second chamber in response to the flowing step (e),

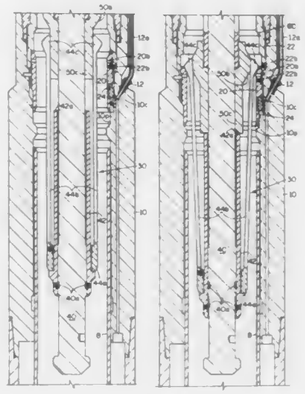
said valve element moving away from said valve seat thereby establishing fluid communication between said one part of said tubing and said opposite part of said tubing in response to the moving step (f).

4,944,351

DOWNHOLE SAFETY VALVE FOR SUBTERRANEAN WELL AND METHOD

Erik P. V. Eriksen; Brian K. Drakeley, and Michael A. Carmody, all of Broken Arrow, Okla., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Oct. 26, 1989, Ser. No. 426,762
Int. Cl.[5] E21B *34/10, 23/00*
U.S. Cl. 166—376 **12 Claims**



1. The method of establishing communication with a control fluid conduit provided in the tubular wall of a fluid pressure operated downhole tool comprising the steps of:

providing an annular internal shoulder on the inner surface of said tubular wall;

extending a portion of said control fluid conduit into, but not through said shoulder so that the inner end of said extension portion is disposed within the bore of said tubular wall; and

removing said shoulder in its downhole location by an auxiliary tool to expose the bore of said extension portion of said control fluid conduit.

4. Apparatus for effecting the downhole severing of a radially, inwardly directed hollow protuberance on the tubular wall of a valve housing, said tubular wall also defining a no-go shoulder above said protuberance comprising, in combination:

a tool sleeve axially slidably mounted within said tubular wall above said hollow protuberance;

a cutting tool mounted on said tool sleeve in axial alignment with said hollow protuberance;

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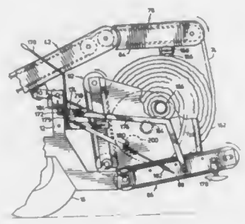
an outer sleeve assembly having an external shoulder engagable with said no-go shoulder;
an inner sleeve assembly telescopically traversing said outer sleeve;
means on the top end of said inner sleeve for rigid connection to a wireline incorporating a jar mechanism;
a mandrel telescopically inserted through said inner sleeve assembly;
a collet having a ring portion and peripherally spaced, axially extending collet arms terminating in enlarged head portions;
means for securing said collet ring portion to said mandrel with said enlarged head portions disposed above and adjacent to said tool sleeve;
means including an axially extending slot in said inner sleeve for rigidly connecting said outer sleeve and said mandrel;
shearable means for securing said inner sleeve relative to said mandrel and outer sleeve during run-in; and
means on said inner sleeve assembly for radially expanding said collet heads into operative engagement with said tool sleeve, whereby downward jarring movement imparted to said inner sleeve by said wireline shears said shearable means, engages said collet heads with said tool sleeve and moves said cutting tool through said protuberance.

4,944,352

SOD HARVESTER FOR ROLLING SOD WITH GRASS SIDE OUT

Gerardus J. Brouwer, Keswick, and Henry Zwambag, Sutton, both of Canada, assignors to Brouwer Turf Equipment Limited, Toronto, Canada

Division of Ser. No. 344,771, Apr. 28, 1989, Pat. No. 4,903,778, which is a division of Ser. No. 923,558, Oct. 27, 1986, Pat. No. 4,832,130. This application Dec. 4, 1989, Ser. No. 446,513
Claims priority, application Canada, Oct. 28, 1985, 494053
Int. Cl.[5] A01B *45/04*
U.S. Cl. 172—19 **4 Claims**



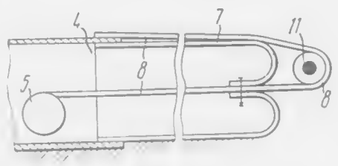
1. A sod harvester comprising:
(a) means for undercutting sod,
(b) first conveyor means for conveying cut sod to a raised position and discharging said sod from said raised position,
(c) sod roll forming means located below said raised position,
(d) said sod roll forming means including second conveyor means for forming a roll of sod,
(e) said first and second conveyor means being arranged for rolling said sod to form a said sod roll having its grass side facing outwardly, whereby to facilitate later laying of said sod and to reduce drying of the roots of said sod.

4,944,353

AGRICULTURAL MACHINE

Viktor V. Shishkin; Nikolai F. Kryazhevskikh, and Jury P. Shapovalov, all of Krasnodar, U.S.S.R., assignors to Trust "Juzhvodoprovod", Krasnodar, U.S.S.R.

PCT No. PCT/SU86/00131, § 371 Date Jul. 16, 1987, § 102(e) Date Jul. 16, 1987, PCT Pub. No. WO87/03775, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 17, 1986, Ser. No. 110,716
Claims priority, application U.S.S.R., Dec. 24, 1985, 3988675; Dec. 24, 1985, 3988674
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.[5] A01B *51/00*; B25J *11/00*; B62D *57/00*
U.S. Cl. 172—23 **7 Claims**



1. An agricultural machine comprising a self-propelled chassis (1), an attachment carrying a working member (9) with a rod (11) for performing agricultural operations in the field and means (10) for controlling the working member characterized in that the agricultural machine is provided with an arrangement for displacement of the working member (9) over the field surface, comprising a hermetic chamber (3) with a port (4), a source (2) of a fluid agent pumped into the chamber (3) under a pressure, and a first end of a flexible hose (7) wound on a drum (5) and internally accomodating a tractive element (8) on a section of which the tractive element (8) which projects projecting from a free end of the flexible hose (7) mounts is mounted the an attachment carrying the working member (9) and said tractive element (8) is movably connected with the flexible hose (7), while the free a second end of the hose (7) is passed through the chamber (3), turned inside out and hermetically secured in the port (4) of the chamber (3) so that it hose (7) forms an annular space (A) communicating with the latter chamber (3) and by changing its volume under the action of the fluid agent moves the hose (7) over the field and the latter hose (7) pushes in front of itself the attachment carrying the working member (9)

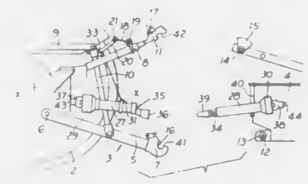
4,944,354

THREE-POINT COUPLING DEVICE

Hans Langen, Frechen; Norbert Fartmann, Siegburg, and Herbert Coenen, Gellenkirchen, all of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Apr. 6, 1989, Ser. No. 334,454
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1988, 3812198
Int. Cl.[5] A01B *59/06*
U.S. Cl. 172—47 **12 Claims**

1. A three-point coupling device for coupling a tractor to an implement, comprising two lower hitch arms which are articulated at the rear end of the tractor so as to be offset sideways with respect to the longitudinal axis of the tractor and whose free ends have each been provided with a catching hook having a lockable catching jaw which opens upwardly, with each lower hitch arm, via a lifting bar, being connected to a lifting arm movable by the power drive of the tractor; and comprising an upper hitch arm whose one end is articulated at the rear end of the tractor above the lower hitch arms in the region of the longitudinal axis and whose other end has been provided with a catching hook comprising a lockable catching jaw which opens downwardly or upwardly, with the catching hooks, for coupling purposes, being suitable for engaging, or being released from, the corresponding coupling points of the implement to be coupled, wherein the upper hitch arm is resiliently held by tensioned springs to move upwards or downwards relative to the tractor with the lower hitch arms, with the



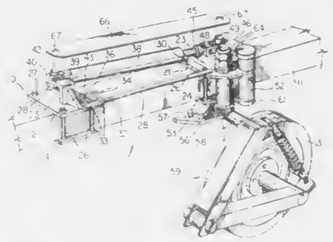
upper hitch arm moving in a direction opposite to the lower hitch arms, the upper hitch arm being held by providing two intermediate tension springs, one end of each of which is connected to the upper hitch arm and the other end of each of which is connected to a pulling means, which is first guided by guide means fixed to the rear of the tractor and then attached to lifting arms or lifting bars of the lower hitch arms or to the lower hitch arms themselves.

4,944,355

CASTER WHEEL CONTROL APPARATUS

John Karcbewski, Regina, Canada, assignor to Brandt Industries, Ltd., Saskatchewan, Canada

Filed Jul. 3, 1989, Ser. No. 375,355
Claims priority, application Canada, Jul. 20, 1988, 572602
Int. Cl.[5] A01B *73/06*
U.S. Cl. 172—278 **6 Claims**



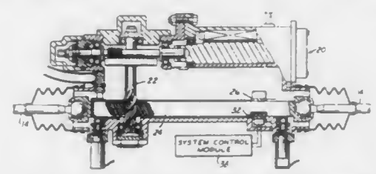
1. An apparatus for controlling a caster wheel assembly on a farm implement of the type including a boom for rotation between a transport position in which the boom is aligned with the direction of implement travel and a field position in which the boom is angled or perpendicular to the direction of implement travel, said apparatus comprising fluid actuated cylinder means for mounting on the boom; piston rod means extending out of said cylinder means; linkage means connected to said piston rod means for rotation thereby and releasably engageable with said wheel assembly, said linkage means including lever means connected to said piston rod means for rotation thereby; and arm means extending outwardly from said wheel assembly for releasable engagement by said lever means, wherein initial extension of said piston rod means rotates said lever means which engages and rotates said arm means and consequently said wheel assembly to a turning position, further extension of said piston rod means causes the release of said arm means and of said wheel assembly permitting free castering thereof in the field position, and retraction of said piston rod means causes re-engagement of said arm means by said lever means to lock the wheel assembly in the transport position.

4,944,356

STEERING SYSTEM POSITION DETECTOR

Algis Oslapas, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1988, Ser. No. 291,087
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **9 Claims**



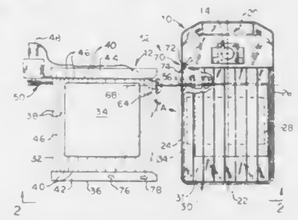
1. A system for continuously detecting the operational position of an automotive steering gear, comprising:
a magnet attached to a rack member which is reciprocably mounted within said steering gear, with said rack being linked with the output members of said steering gear, and means for continuously detecting the position of said magnet as said steering gear is moved reciprocably, with said means comprising an inductive pick up coil which is incorporated into a bearing for slidably supporting said steering rack.

4,944,357

POWER TRANSFERRING ARRANGEMENT

John E. Wible, Painesville, Ohio, and Paul D. Grohsmeyer, Dunlap, Ill., assignors to Caterpillar Industrial Inc., Mentor, Ohio

Filed Apr. 27, 1989, Ser. No. 343,704
Int. Cl.[5] B60T *7/16*
U.S. Cl. 180—169 **25 Claims**



1. A power transferring arrangement for passing electrical energy from an electrical energy source between an automatic guided vehicle having a frame, and a longitudinal vehicle axis and a load transfer station; comprising:
a contactor assembly having a contacting head portion movably connected to the frame, said contacting head portion being movable between a first position closely adjacent the frame and a second position outwardly of the frame and spaced from the first position;
means for receiving said contacting head portion and passing electrical energy from said source and between the vehicle and load transfer station;
means for sensing the position of the vehicle relative to the load transfer station and delivering a position control signal in response to the automatic guided vehicle being at a predetermined location adjacent the load transfer station;
control means for receiving the position control signal and delivering an actuator control signal in response to receiving said position control signal; and
actuator means for moving said contacting head portion

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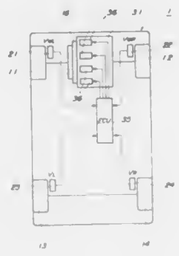
from said first position toward said second position and into engagement with said receiving means in response to receiving said actuator control signal.

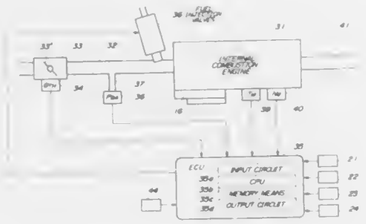
4,944,358

DRIVING WHEEL SLIP CONTROL SYSTEM FOR VEHICLES

Yoshio Wazaki, and Tetsuya Oono, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki, Tokyo, Japan

Filed Mar. 21, 1989, Ser. No. 326,830
Claims priority, application Japan, Mar. 23, 1988, 63-68700
Int. Cl.[5] B60K *3/00*
U.S. Cl. 180—197 **5 Claims**





1. In a system for controlling the slip of driving wheels of a vehicle equipped with an internal combustion engine, including deceleration detecting means for detecting a decelerating condition of said engine, slip detecting means for detecting a slip state of at least one of said driving wheels, and torque reducing means operable in response to output from said slip detecting means for reducing the torque of said driving wheels,

the improvement comprising inhibiting means for inhibiting operation of said torque reducing means irrespective of the output from said slip detecting means when said decelerating condition of said engine is detected by said deceleration detecting means.

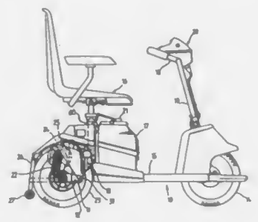
4,944,359

VEHICLE AND METHOD OF RELEASABLY COUPLING PARTS OF THE VEHICLE TOGETHER

Trevor D. Doman, 44, Birmingham New Road, Wolverhampton, West Midlands; John R. Buttery, 20 Maisons Place, Newport, Shropshire, both of United Kingdom, and Royston M. Gould, 6 Muirfield Crescent, Oakham Green, Tividale, Warley, West Midlands, Great Britain

Filed Jul. 28, 1988, Ser. No. 225,238
Int. Cl.[5] B62D *27/06*; B62K *5/06, 11/02*
U.S. Cl. 180—208 **11 Claims**

1. A vehicle comprising front and rear members, front and rear ground-engaging wheels for supporting said members respectively, a two-part releasable coupling for coupling said members mechanically to each other, said coupling comprising two coupling parts, one of said parts being provided on the front member and the other of said parts being provided on the rear member, and stop means provided on said rear member for engaging the ground when the rear member is uncoupled from the front member and is rocked backwards, said stop means being disposed rearwards of the rear wheels, wherein said coupling part on the front member has a downwardly facing



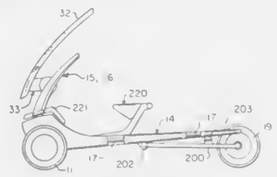
seat and said coupling part on the rear member has a load-receiving element on which the seat rests, wherein said coupling part on the rear member further includes a locking element which is spaced upwardly from the load-receiving element and is movable upwardly and downwardly to vary the vertical separation between the load-receiving element and the locking element and wherein said coupling part on the front member has an upwardly facing seat for receiving the locking element.

4,944,360

PLATFORM ORIENTED TRANSPORTATION VEHICLE

Daniel D. Sturges, 4346 Prado Dr., Boulder, Colo. 80303

Continuation-in-part of Ser. No. 175,815, Mar. 31, 1988. This application Mar. 15, 1989, Ser. No. 321,831
Int. Cl.[5] B62M *1/00*
U.S. Cl. 180—210 **23 Claims**



1. A vehicle having front and rear ground engaging wheel means, comprising:

a unitary and generally horizontal load bearing platform having spaced front and rear platform portions,

means defining a first horizontal axis of rotation for supporting said front wheel means on the underside of said platform adjacent to said front platform portion, whereby said front wheel means operates to support said front platform portion above the ground,

an arm having a first end portion pivoted relative to the underside of said platform adjacent to said front platform portion, and having a second end portion spaced from said first end portion and defining a second horizontal axis of rotation for supporting said rear wheel means relative to the underside of said platform adjacent to said rear platform portion, said arm having a generally horizontal position wherein said arm extends in a direction generally away from said first horizontal axis of rotation,

releasable platform suspension means extending between the second end portion of said arm and said rear platform portion without physically attaching the second end portion of said arm to said rear platform portion, whereby said rear wheel means operates to support said rear platform portion above the ground, and

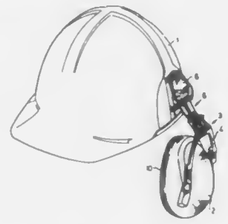
means whereby said rear platform portion may be lifted vertically upward, whereupon the second end portion of said arm and said rear platform portion pivot away from each other, as said platform pivots about said first axis of rotation, as said arm pivots about the first end thereof, and as said rear wheel means remains in ground engagement, to thereby facilitate storage of said vehicle with said rear platform portion extending generally vertically upward, and with the second end portion of said arm extending generally vertically downward.

4,944,361

ACOUSTIC EAR MUFF

Mats E. G. Lindgren, Vikmanshyttan, and Ingvar S. Sjöqvist, Sorunda, both of Sweden, assignors to AB Kompositprodukter S.K.-F.M., Vikmanshyttan, Sweden

Filed Aug. 29, 1988, Ser. No. 237,040
Claims priority, application Sweden, Sep. 2, 1987, 8703414
Int. Cl.[5] A42B *1/06*; G10K *11/00*
U.S. Cl. 181—129 **11 Claims**



1. An acoustic ear muff including a pad or cup (2) made of a rigid material and incorporating an opening for accommodating an ear of a wearer, and a resilient sealing annulus (10) which is located around a defining edge of said opening and which is intended to be brought into abutment with a head of the wearer, and further includes spring pressure exerting means (5) connected to a shell of a protective helmet (1) or to a head strap, characterized in that the spring pressure-exerting means is configured to produce a low pressing force which is substantially independent of head sizes which vary within given limits and in that the pressure exerting means includes a spring element (5), said spring element comprising a pair of elongate leaf spring having legs spaced apart from one another, one end of each of said leaf spring legs being secured to said shell while the other end of each of said spring legs are biased towards one another in a plane of said springs so as to impart a given twist thereto.

4,944,362

CLOSED CAVITY NOISE SUPPRESSOR

Russell E. Motsinger, Cincinnati, Ohio, and John W. Vdoviak, Marblehead, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 25, 1988, Ser. No. 275,993
Int. Cl.[5] B64F *1/26*; F02K *1/82*
U.S. Cl. 181—213 **13 Claims**

1. An acoustic liner for a gas turbine engine duct comprising:

an inner annular facing;

an outer annular wall spaced radially apart from said inner annular facing;

a plurality of annular Helmholtz resonator-type chambers having predetermined depths formed between said inner annular facing and said outer annular wall;

said chambers including necks having predetermined lengths wherein said neck lengths and said chamber depths run in a direction parallel to the gas flow;

an annular support member extending radially inward from said outer annular wall and forming at least a portion of axially spaced end walls of said chambers;

said annular support member including an annular flange at



a radially inner end of said support member and concentric with said annular wall having an axial length with respect to the engine that corresponds to said neck lengths of said chambers; and

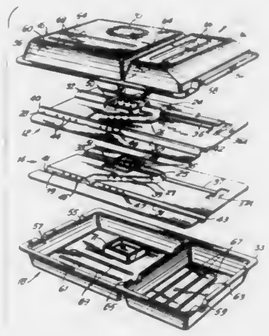
at least one circumferentially disposed wiggle strip mounted between said concentric annular flange and said inner annular facing forming at least a portion of said necks.

4,944,363

TOY BALL

John D. Osher, Shaker Heights, Ohio; Allison W. Katzman; Mark Luecke, both of Chicago, Ill., and John R. Wildman, North Riverside, Ill., assignors to Cap Toys, Inc., Bedford Heights, Ohio

Filed Feb. 6, 1990, Ser. No. 475,716
Int. Cl.[5] A63B *37/06, 45/00, 37/08*
U.S. Cl. 273—58 A **10 Claims**



9. A toy ball having a soft and supple feeling and a rebound percentage which is directly proportional to the height from which the ball is dropped, comprising:

a highly plasticized polyvinyl chloride core which is resiliently deformable due to its highly plasticized state and bleeds plasticizer;

a flexible polymer shell encasing said core for containing bleeding of the plasticizer from said core; and

a stretchable fabric outer cover encasing said core and said flexible shell.

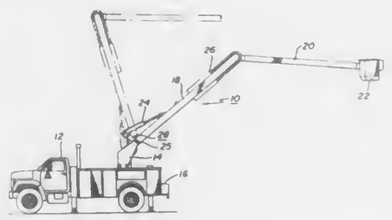
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,364

BOOM ELEVATING DEVICE FOR LINE LIFTS

Andrew G. Blasko, Riegelsville, Pa., assignor to Asplundh Tree Expert Co., Willow Grove, Pa.

Filed Apr. 24, 1989, Ser. No. 342,024
Int. Cl.[5] B66F *11/04*
U.S. Cl. 182—2 **16 Claims**



1. An improved boom elevating device for providing enhanced outward extension of a line lift, which comprises:
a mast assembly anchored to a vehicle bed;
a boom pivotally connected at one end to said mast assembly, said boom including a lower boom pivotally connected at a first end to said mast assembly and an upper boom connected to a second end of said lower boom;
at least one extension arm pivotally connected at one end at the point where said boom and mast assembly are pivotally connected;
a basket connected to the end of said upper boom;
a first expandable elevating means pivotally connected intermediate the ends of said boom at one end and the extension arm at its other end; and
a second expandable elevating means pivotally connected at one end to said mast assembly and at a second end to said extension arm, said second expandable elevating means rotating said extension arm relative to its pivotal connection to said mast assembly;
wherein when said first expandable elevating means and said second expandable elevating means are fully extended said lower boom achieves an angle of rotation greater than 90 degrees relative to said vehicle bed so as to maximize the outward extension of said upper boom and basket.

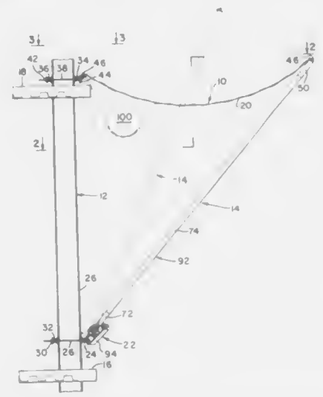
4,944,365

SAFETY NET SYSTEM

Alan J. Shalders, Purdys, N.Y., assignor to Universal Builders Supply, Inc., Mount Vernon, N.Y.

Filed Aug. 1, 1989, Ser. No. 388,580
Int. Cl.[5] E04G *21/32*
U.S. Cl. 182—138 **24 Claims**

1. A safety net system for capturing falling debris at a construction site, comprising:
a plurality of mounting brackets attached to a lower level of a structure under construction at spaced locations around the perimeter thereof;
a corresponding plurality of elongate post assemblies, each having a horizontally extending shaft attached thereto adjacent a first, inner end thereof;
annular bearing means carried by the horizontal shaft of each post assembly;
adjustable clamping means carried by each mounting bracket for releasably clamping the annular bearing means carried by said corresponding post assembly to restrain said post assembly against vertical rotation, whereby said post assembly may be rotated between and clamped at an upright, stowed position and an inclined, deployed position;
each mounting bracket further including means defining a deployed-position stop for the corresponding post assembly; and



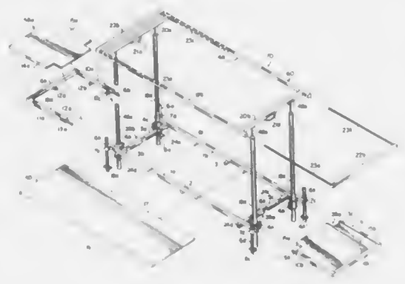
a safety net suspended between the second, outer ends of said plurality of post assemblies and an upper level of the structure.

4,944,366

PNEUMATICALLY OPERATED SCAFFOLDING

Dewey L. Pryor, and Charles L. Pryor, both of Reidsville, N.C., assignors to D. L. Pryor & Sons, Inc., Reidsville, N.C.

Filed Feb. 6, 1989, Ser. No. 306,758
Int. Cl.[5] E04G *1/22*
U.S. Cl. 182—141 **18 Claims**



18. Scaffolding comprising: a work support frame, a cylinder member, said cylinder member releasably attached to said support frame, a scaffold frame, means to pivotally attach said cylinder member to said scaffold frame, means to stop rotation of said cylinder, said stop means joined to said attaching means whereby said cylinder member can be rotated into a storage configuration when not in use wherein said attaching means comprises a c-clamp, a threaded member, said stop means consisting of a stop bar, said threaded member and said stop bar attached to said c-clamp, said c-clamp for engaging said cylinder and said threaded member for attachment to said scaffold frame.

4,944,367

INJECTION LUBRICATOR WITH PLURAL OUTLETS

John Nelson, Durham, N.H., and Robert B. Tosi, Littleton, Colo., assignors to Watts FluidAir Div. of Robertshaw Controls Company, Kittery, Me.

Filed Dec. 13, 1988, Ser. No. 283,617
Int. Cl.[5] F16N *11/10*
U.S. Cl. 184—29 **10 Claims**



1. An injection lubricator comprising
a lubricant pump having a pumping piston actuated by a pneumatic pulse to deliver a pulse of lubricant from a lubricant source to a lubricant pump outlet, said pump also having a pneumatic pulse outlet,
a lubricant distributor having a lubricant distribution inlet in communication with said lubricant pump outlet, a plurality of lubricant distribution outlets, and switchable flow paths within the distributor to cause one said lubricant distribution outlet to be connected to said lubricant distribution inlet at one time, and
a pneumatically-actuated piston that receives pneumatic pulses from said pneumatic pulse outlet and advances said lubricant distributor to switch to a different lubrication outlet with the application of each pneumatic pulse,
wherein said lubricant distributor includes a distribution member having a plurality of openings connected via said flow paths to said distribution outlets, and wherein said lubricant distributor includes a movable member that has a single movable outlet that is moved to different positions at which the single movable outlet sequentially mates with a plurality of openings in said distribution member,
further comprising means defining a lubricant chamber in communication with said lubricant distribution inlet, and further comprising a check valve providing discharge of a lubricant from said chamber to said lubricant source when pressure in said chamber exceeds a predetermined value.

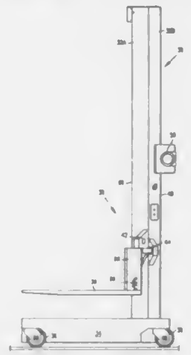
4,944,368

LIFT TRUCK HAVING IMPROVED SINGLE MAST AND BEARING WHEEL ASSEMBLY

J. Christopher Duderstadt, 1327 Tenth Ave., San Francisco, Calif. 94122

Filed May 25, 1989, Ser. No. 357,496
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 R **10 Claims**

1. An improved mast structure and lifting carriage bearing wheel assembly for a lifting apparatus comprising:
a rectangular mast, said rectangular mast having four edges, a front edge of said mast being formed by an intersection of first and second sides of said mast, said front edge being positioned so as to be pointed generally in a direction of a load supporting assembly connected to a lifting carriage, a first side edge of said mast being formed by an intersection of said first side of said mast with a third side of said mast, a second side edge of said mast being formed by an intersection of said second side of said mast with a fourth side of said mast, said first and second side edges of said mast being pointed in opposite directions approximately perpendicular to said direction of said front edge of said mast, and a rear edge of said mast being formed by an intersection of said third and fourth sides of said mast, said rear edge being pointed in a direction opposite to said front edge of said mast; and



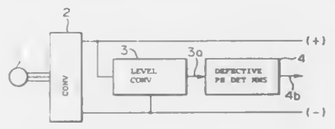
a set of bearing wheel assemblies connected to said lifting carriage, said set of bearing wheel assemblies comprising a first bearing wheel assembly secured to a bottom portion of said lifting carriage and contacting said first side of said mast, a second bearing wheel assembly secured to said bottom portion of said lifting carriage and contacting said second side of said mast, a third bearing wheel assembly secured to a top portion of said lifting carriage and contacting said third side of said mast, and a fourth bearing wheel assembly secured to a top portion of said lifting carriage and contacting said fourth side of said mast.

4,944,369

SAFETY DEVICE FOR ELEVATOR

Shigemi Iwata, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 14, 1988, Ser. No. 218,884
Claims priority, application Japan, Jul. 17, 1987, 62-178292
Int. Cl.[5] B66B *5/02*
U.S. Cl. 187—105 **9 Claims**



1. A safety device for an elevator comprising:
a converter which converts a 3-phase A.C. power supply into a D.C. power supply having a voltage waveform which remains substantially at peak value and above a reference value for all single phase periods of the power supply voltage and, when one or more phases of the power supply voltage are defective, drops to a low voltage below the reference value during any defective single phase periods,
a control circuit for the elevator employing as a power

supply the D.C. power supply outputted from said converter,

a level converter which converts the voltage waveform of said D.C. power supply outputted from said converter into a logic level signal with a different logic level for, respectively, peak value periods representing an uninterrupted power supply and low voltage periods representing one or more defective phases, and

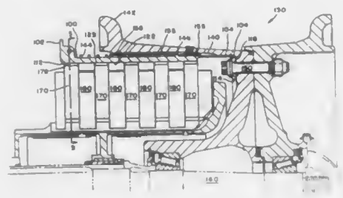
defective phase detecting means for detecting a defective phase of the 3-phase A.C. power supply by sampling the logic level signal of said level converter in a time division manner and determining a defective phase in response to the level of the logic level signal.

4,944,370

DRUM DRIVE FOR USE WITH MULTIPLE DISC BRAKES

Warren D. Chambers, and Jeffrey T. Jurczak, both of South Bend, Ind., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 27, 1989, Ser. No. 329,211
Int. Cl.[5] F16D *55/36*
U.S. Cl. 188—71.5 **9 Claims**



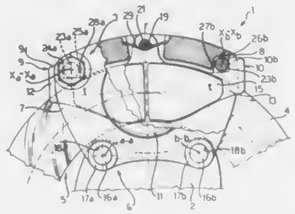
1. A drum drive of a disc brake for a single wheel and having a plurality of interleaved nonrotatable stator discs and rotatable rotor discs wherein the rotor discs are connected with the single wheel, the drum drive comprising an annular drum having an axial length which extends axially from an inboard end to an outboard end, the inboard end having an end opening and the outboard end having an end opening, an interior axially extending opening between the end openings, the drum including at spaced positions thereabout a plurality of axially extended splines which extend radially inwardly into the interior axially extending opening, the outboard end of the drum including a radially inwardly extending flange with an interior edge defining the end opening at the outboard end, the flange having a plurality of opening means receiving wheel fastening means thereat, the axially extending splines engaging complementary-shaped openings in said rotor discs in order to connect said rotor discs with said wheel, the inboard end of the drum having a radially outwardly extending opposite flange, and the axial length of the drum disposed substantially within the wheei such that a substantial portion of an exterior surface of the drum is spaced substantially radially apart from an interior surface of the wheel, so that radial spacing between the surfaces minimizes radial loading upon said discs caused by wheel deflection, the single wheel comprising two wheel parts held together by the wheel fastening means, and continuous annular heat shield means disposed exteriorly of the drum and extending axially within said wheel, the shield means extending axially at one end to abut the opposite flange and at the other end supported by the drum.

4,944,371

DISC BRAKE WITH A CALIPER BODY AND PADS RETAINED IN THE CALIPER BODY BY HOOKS

Alberto Giorgetti, Brembate Sopra, Italy, assignor to Via Provinciale, Paladina, Italy

Continuation of Ser. No. 752,940, Jul. 8, 1985, abandoned. This application Jun. 22, 1989, Ser. No. 370,146
Claims priority, application Italy, Jul. 9, 1984, 22508/84[U]
Int. Cl.[5] F16D *65/06*
U.S. Cl. 188—73.39 **1 Claim**



1. A disc brake mountable on a stationary support integral with a part of a vehicle and about a rotatable disc, said disc brake being used for braking the rotation of said rotatable disc, comprising:

a caliper having a first and second jaw adapted to be slidably mounted on opposite sides of said rotatable disc;

a pair of brake pads having hook shaped ends, said hook shaped ends opening away from the rotational axis of the rotatable disc, and positioned on opposite sides of said rotatable disc in a direction tangential to said rotatable disc;

a hydraulic cylinder for urging at least one of said pair of brake pads against said rotatable disc; and

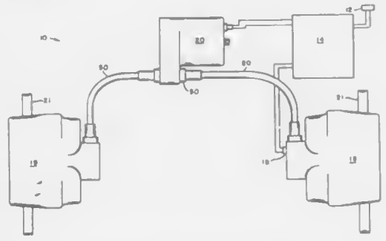
a pair of axially extending pins positioned at either end of said caliper and engaging said hook shaped ends of said brake pads, each of said pins connecting the first jaw to the second jaw and tightened to a predetermined force so as to provide a preloaded action against the braking force of said cylinder.

4,944,372

ELECTRICALLY ACTUATED BRAKING SYSTEM

Alistair G. Taig, Edwardsburg, Mich., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 15, 1988, Ser. No. 284,517
Int. Cl.[5] B60T *13/74*
U.S. Cl. 188—156 **21 Claims**



1. An electrically actuated braking system, comprising controller means connected with drive motor means, the controller means for sending signals to control operation of the drive motor means, the drive motor means operating a load-equalizing differential which is connected with flexible drive connection means, the flexible drive connection means connected with brake members, the load-equalizing differential comprising a drive member disposed between two opposed plates and having a plurality of openings receiving therein ball means, each opposed plate having ramps connected with cam tracks, the ramps and cam tracks of one plate shaped complementary with the ramps and cam tracks of the opposed plate, the controller means effecting operation of the drive motor means which rotates the drive member, rotation of the drive member effecting via the ball means rotation of the opposed plates which move relative to one another so that equal torque is transmitted to the brake members.

4,944,373

DISC BRAKE PAD

Kazuyuki Ohya, and Hidenori Kimbara, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,554
Claims priority, application Japan, Jun. 3, 1988, 63-135436
Int. Cl.[5] F16F *69/02*
U.S. Cl. 188—251 A **6 Claims**

1. A disc brake pad which comprises an integral mass produced by molding a friction material-forming thermosetting resin composition together with a substrate under heated and pressurized conditions, said thermosetting resin composition comprising:

(A) about 7–40 parts by weight of a cyanate ester-based curable resin composition selected from the group consisting of (a) polyfunctional cyanate esters, prepolymers of said cyanate ester, and prepolymers of said cyanate ester with an amine; and (a) in combination with at least one of (b) a polyfunctional maleimide, a prepolymer of said maleimide or a prepolymer of said maleimide with an amine, and (c) an epoxy resin;

(B) about 25–70 parts by weight of at least one fibrous reinforcement material having a fiber diameter of not less than 0.1 μm, and

(C) about 15–60 parts by weight of at least one friction abrasion moderator agent.

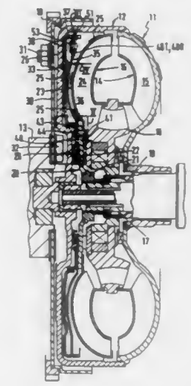
4,944,374

LOCK UP CLUTCH FOR A HYDRO-KINETIC COUPLING APPARATUS, ESPECIALLY FOR AN AUTOMOTIVE VEHICLE

Pierre Casse, Ermont, and Jean Bionaz, Fontenay-Sous-Bois, both of France, assignors to Valeo, Paris, France

Filed Jan. 18, 1989, Ser. No. 298,172
Claims priority, application France, Jan. 18, 1988, 88.00488
Int. Cl.[5] F16H *45/02*; F16D *3/06*
U.S. Cl. 192—3.29 **7 Claims**

1. A lock up clutch for a hydro-kinetic coupling device, particularly for an automotive vehicle, said clutch being of the kind comprising a coupling element adapted to act as a piston, and a clutch or hub plate coupled with said coupling element for rotation therewith so as to permit the clutch plate and coupling element to be driven together in rotation, said clutch plate having strip portions integral therewith and axially deformable for rigid engagement of the clutch plate with said coupling element, the clutch plate being itself adapted to be coupled to a drive member for rotation therewith, the clutch being characterized in that the clutch plate has, in combination, two groups of said strip portions, namely a first group in which the strip portions extend circumferentially in one direction and a second group in which the strip portions extend circumferentially in the opposite direction, whereby the coupling element can be driven positively in rotation, tenons being provided on the clutch plate for coupling pairs of said strip portions with the coupling element, there being only one said tenon for the two strip portions of any one pair thereof, the coupling element having an axial edge portion at its outer periphery, said axial edge portion being provided with slots, and each said tenon extending substantially radially from the



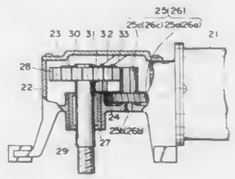
clutch plate and being engaged in a corresponding said slot with the slot constituting a mortice.

4,944,375

REDUCTION GEARING DEVICE FOR A WINDSHIELD WIPER MOTOR INCLUDING A UNIDIRECTIONAL BRAKE

Kenji Ohta, and Yasuo Ohashi, both of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 20, 1985, Ser. No. 746,692
Claims priority, application Japan, Jun. 22, 1984, 59-93942[U]
Int. Cl.[5] F16D *67/02*; B60T *7/12*
U.S. Cl. 192—8 R **4 Claims**



1. A reduction gearing device for a windshield wiper motor adapted to drive a wiper blade comprising a housing, a reduction gearing mechanism disposed in said housing having a plurality of gear members, bearing means rotatably supporting said gear members in said housing, electrical contact means for a stop position controlling system for the wiper motor operatively associated with one of said gear members for rotation therewith for stopping the wiper motor at a predetermined position, unidirectional brake means interposed between one of said gear members and said housing to prevent reverse of said gear members and said electrical contact means due to attempted reverse rotation of the wiper motor as a reaction when shut off due to forced stoppage of the wiper blade.

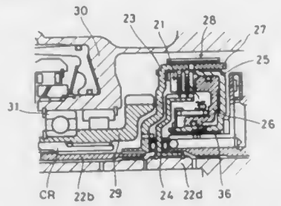
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,376

BRAKE BAND DRUM FOR PLANETARY GEAR-TYPE TRANSMISSIONS

Kazuhisa Ozaki, and Masakatsu Miura, both of Anjo, Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Filed Mar. 11, 1988, Ser. No. 167,279
Claims priority, application Japan, May 2, 1987, 62-109181
Int. Cl.[5] F16D *67/04, 25/063*
U.S. Cl. 192—17 A 3 Claims



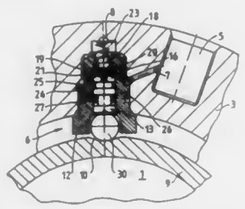
1. A brake drum for a planetary gear type automatic transmission comprising a clutch formed inside a press manufactured planetary gear input member coupled to a press-manufactured clutch cylinder and to one member of a planetary gear mechanism, said planetary gear input member having an outer peripheral surface formed to include an engaging surface of a band brake and an inner peripheral surface finished by machining for centering said clutch cylinder, said engaging surface having one of fitting holes or slots, and said clutch cylinder having projections fitted within said one of said fitting holes or slots for providing uniform movement between said clutch cylinder and said planetary gear input member.

4,944,377

SAFETY COUPLING

Ernst Elsner, Herbrechtingen, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 8, 1988, Ser. No. 281,517
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1987, 3742658
Int. Cl.[5] F16D *7/06*
U.S. Cl. 192—56 F 7 Claims



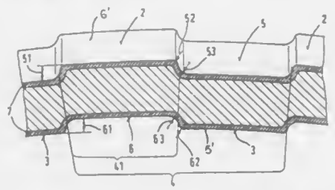
1. A safety coupling, comprising:
a shaft;
a hub disposed coaxially about said shaft, said hub including an annular chamber in fluid communication with an externally communicating fluid connection, the annular chamber being pressurizable by a fluid introducible therein via the fluid connection;
a release valve fastened to the hub and connected in fluid communication with the annular chamber, said release valve having a valve body and seat and a substantially radially oriented movable actuating member which is movable radially outwardly from an operationally ready position in which the actuating member is at rest and the valve is closed by fluid pressure prevailing in the annular chamber acting on the valve body, to a release position in which the actuating member displaces the valve body and the valve is opened thereby; and
release member means fastened to the shaft coaxially thereto for moving the movable actuating member of the release valve from the operationally ready position to the release position when, as a result of a torque overload, the release member is displaced with respect to the hub.

4,944,378

SYNCHRONIZING RING

Klaus Christian, Immenstaad, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP87/00200, § 371 Date Sep. 29, 1988, § 102(e) Date Sep. 29, 1988, PCT Pub. No. WO87/06314, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 11, 1987, Ser. No. 274,056
Claims priority, application Luxembourg, Apr. 16, 1986, PCT/EP86/00222
Int. Cl.[5] F16D *23/04*
U.S. Cl. 192—107 M 3 Claims



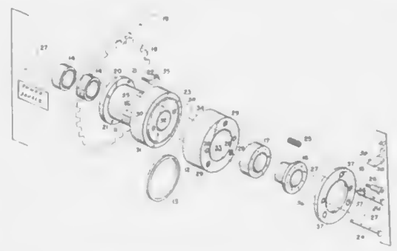
1. A synchronizing ring for a synchronizing assembly in a transmission of a motor vehicle which comprises a synchronizing ring body having parallel conical inner and outer surfaces and formed along each of said surfaces with uniformly spaced apart lands separated by grooves so that the lands and the grooves along each of said surfaces are respectively of equal circumferential width, each of said surfaces having a friction coating and each groove in said outer surface being disposed in a region corresponding to a land of said inner surface and each land of said outer surface being disposed in a region of said body corresponding to a location of a respective groove of the inner surface.

4,944,379

TORQUE LIMITER

James D. Haaser, Toledo, Ohio, assignor to Dynamic Research and Development Corp., Toledo, Ohio

Filed Nov. 5, 1987, Ser. No. 116,976
Int. Cl.[5] F16D *9/00*
U.S. Cl. 192—150 11 Claims



1. A torque limiting device for use on a shaft delivering torque to a power transmission element being rotated by said shaft; the device comprising:
(a) an adapter which rotates freely around said shaft and is attached at one end thereof to a power transmission element and having a planar face at the other end thereof;
(b) a sleeve firmly affixed to said shaft adjacent to said face;

(c) a clutch element having opposing surfaces with a high coefficient of friction and adapted to be compressed between said adapter and said sleeve; and
(d) shear pin means connecting said adapter to said sleeve with said clutch element therebetween being compressed with force applied by said shear pin means.

4,944,380

DIAPHRAGM SPRING DEVICE IN A CLUTCH

Seiichi Kitano; Masaaki Asada, and Michitomo Masaki, all of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Dec. 13, 1988, Ser. No. 283,715
Claims priority, application Japan, Dec. 18, 1987, 62-193276[U]
Int. Cl.[5] F16D *13/44, 13/70*
U.S. Cl. 192—89 B 3 Claims



1. A diaphragm spring device comprising:
a diaphragm spring including a radially outer portion seated on a rear surface of a pressure plate located in front of said diaphragm spring, a portion to be supported through fulcrum means by a clutch cover located at the rear of said diaphragm spring, a plurality of slits extending from an inner periphery of said diaphragm spring to a radially middle portion thereof, a plurality of tongues divided by said slits and having radially inner ends adapted to be pushed in an axially forward direction by a release bearing;
an annular lever plate seated on rear surfaces of said ends of said tongues and having a radially extending portion through which said radially inner ends of the tongues are pushed by said release bearing and a portion extending axially forward from said radially extending portion against which said radially inner ends of said tongues project,
an annular fixing bushing fixed to the inner periphery of said lever plate, and having a spring seat flange at a forward end which is located in front of said tongues and is pressed against and projects radially outwardly beyond an adjacent end of said axially extending portion of said lever plate and having a rear end radial flange which is pressed against a rear end of said axially extending portion of said lever plate; and
a conical spring interposed between said spring seat flange and said tongues precisely axially registering said plurality of tongues with each other in a circumferential direction of said diaphragm spring device.

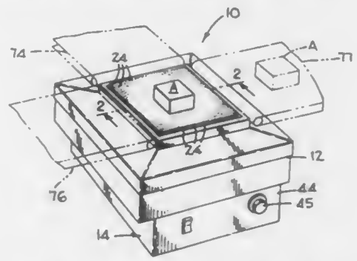
4,944,381

MULTI-DIRECTIONAL VIBRATORY CONVEYOR

Terry M. Riley, Santa Cruz, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 5, 1989, Ser. No. 402,939
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—370 22 Claims

1. A method of conveying and controlling the direction of movement of an article, comprising the steps of;
supporting the article on the top of a plurality of fingers in a bed of fingers;
maintaining the fingers parallel to each other with each finger having an upper and a lower end;
supporting the lower end of the fingers on a plate;



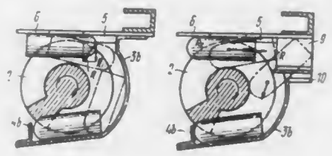
supporting an article to be conveyed on the upper ends of portions of several of the fingers;
vibrating the plate and fingers; and
pivoting the fingers in a plurality of different directions for conveying and controlling the direction of movement of the article in a plurality of selected directions.

4,944,382

APPARATUS FOR ORIENTING PARTS IN FEEDING DEVICES OF VARIOUS UNITS

Vladimir T. Gradoboev, ulitsa Kropotkina, 120/1. kv. 86; Leonid I. Melnikov, ulitsa Dm.Donskogo, 19, kv. 19; Alexandr M. Klimenov, Nevelskogo, 5, kv. 45, and Alexandr E. Sitnikov, ulitsa Leskova, 250, kv. 39, all of Novosibirsk, U.S.S.R.

Filed Apr. 29, 1987, Ser. No. 43,847
Claims priority, application U.S.S.R., Oct. 18, 1983, 3667922
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—399 3 Claims



1. An apparatus for orienting parts in feeding devices of various units, comprising:
a feeding hopper for the parts to be oriented;
a working member in the form of a screw conveyor extending vertically and withdrawing parts from said feeding hopper;
a guide member and a confining member for maintaining the parts in a pre-set position during feeding, which are provided on said workilng member;
members for picking-up improperly oriented parts and means for reorienting parts located in a gap between said guide and confining members said guide and confining members being offset downstream from said gap in the direction of movement of said screw conveyor, said picking-up members comprising an identifying cam and a control cam which are mounted as an extension of the guide and confining members in such a manner that the parts being oriented which have an asymmetrical surface configuration with respect to a plane drawn through the middle thereof, at right angles to their axes and which are fed with an improper orientation are engaged by said members and caused to turn into a proper orietation in

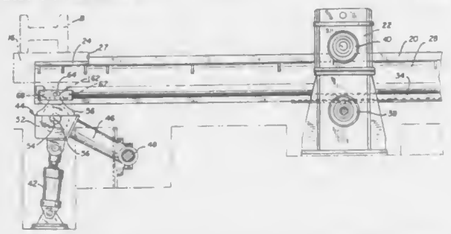
said reorienting means, and the parts which are properly oriented are caused to pass by said reorienting means.

4,944,383

FURNACE CHARGER APPARATUS

Peter Petrachkoff, Salem Ohio, assignor to PRMG, d./b./a. Fordees Manufacturing Company Inc., Leetonia, Ohio

Filed Jan. 3, 1989, Ser. No. 292,946
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—468.6 **6 Claims**



1. In combination with a workpiece handling apparatus having a horizontal extending arm and a workpiece carrying means at its one end for effecting vertical and horizontal manipulations of the workpiece,

said arm having opposed horizontal relatively friction free contacting surfaces comprising a lower contacting support surface for said arm and two upper surfaces serving as restraining surfaces for said arm,

a support and lifting means for said arm, including:

first roller means for engaging said lower arm contacting surface in a manner to support said arm while permitting relative movement therebetween,

second roller means comprising two cooperative pairs of spaced anti-friction rollers, including means for mounting each cooperative pair of rollers on an opposite side of said arm with respect to said two upper contacting surfaces, in a manner that said two upper contacting surfaces move beneath the cooperative pairs of rollers and contact their adjacent surfaces to restrict vertical relative movement between said arm and said second roller means,

means for pivotally mounting said cooperative pairs of rollers in a manner that said pairs move as a unit whereby both rollers of each pair are positionable to accomplish said restricting effect on said arm,

power means connected to said arm and said support means for moving said arm and support means for effecting said horizontal and vertical manipulations, respectively.

4,944,384

TRASH DISCHARGE APPARATUS FOR CROP TRANSFERRING CONVEYOR MECHANISM

Maynard M. Herron, Hesston, Kans., assignor to Hay & Forage Industries, Hesston, Kans.

Filed Jan. 30, 1989, Ser. No. 303,632
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—494 **14 Claims**

1. A material-conveying apparatus comprising:

a frame;

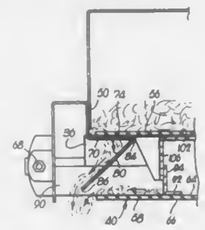
a first guide roller mounted on the frame for rotation about a first axis;

a second guide roller mounted on the frame for rotation about a second axis spaced from and parallel with the first axis;

an endless belt including lateral edges and being supported on the first and second guide rollers for travel in a path extending around the first roller, along an upper run, around the second roller and along a lower run, the belt being adapted to convey material along the upper run during travel of the belt;

a pair of support plates each extending beneath one of the lateral edges of the belt along the upper run, each of the support plates including an opening extending therethrough which permits material passing incidentally between the belt and the support plate to pass through the opening to an area beneath the support plate; and

a pair of deflection plates each disposed in the area beneath the belt and directly beneath the opening of one of the belt support plates, the deflection plates each including an



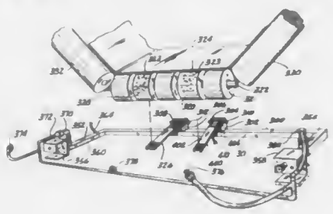
upper edge which is disposed laterally inward of the opening beneath which the deflection plate is disposed and extending downward and laterally outward relative to the upper run of the belt to a lower edge which is disposed laterally outward of one of the edges of the belt, whereby the material passing through the openings is directed by the deflection plates to an area laterally displaced from the lower run of the belt.

4,944,385

ENDLESS BELT MOISTURE CONTROL APPARATUS

Barry G. Shelby, 410 N. College St., Greenville, Ky. 42345

Continuation of Ser. No. 244,156, Sep. 14, 1988, abandoned. This application May 25, 1989, Ser. No. 357,692
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—495 **19 Claims**



1. An apparatus for controlling the moisture content of an endless moving belt comprising:

means for electrically conducting a signal;

means having a surface for providing electrical contact between the means for conducting and the belt, the means for providing being rotatable relative to the means for conducting;

means connected to the conducting means for detecting the belt resistance and providing a resistance signal having a magnitude representative of the belt resistance;

means for comparing a magnitude of the resistance signal to a magnitude of a preset reference signal and providing an activating signal when the resistance signal is greater than the reference signal; and

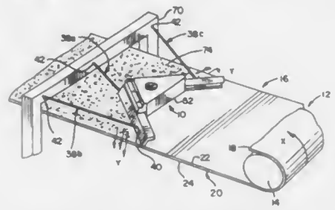
means responsive to the indicating means for increasing the moisture level of the belt when the moisture level falls below the predetermined minimum.

4,944,386

SCRAPER FOR CONVEYOR BELTS

Robert T. Swinderman, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.

Filed Jan. 8, 1990, Ser. No. 461,668
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 **14 Claims**



1. A mechanism for removing material from the surface of a conveyor belt said mechanism including:

a blade adapted to be positioned adjacent said conveyor belt surface;

means for securing said blade in position relative to said conveyor belt, said securing means allowing said blade to move in a vertical direction in response to vertical deflections of said belt; and

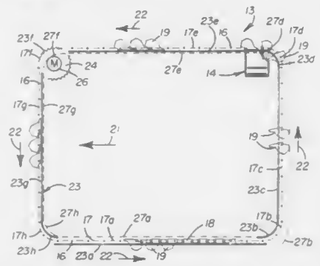
ballast container means associated with said blade for receiving varying amounts of a ballast material, whereby the force exerted by said container means and said ballast material urges said blade into engagement with said belt with a force dependent upon the mass of the ballast in said container.

4,944,387

BUCKET CONVEYOR SYSTEM

Desmond C. Burke, Mildura, 3500 Victoria, Australia

Filed Dec. 30, 1988, Ser. No. 292,528
Claims priority, application Australia, Jan. 5, 1988, 0017/88
Int. Cl.[5] B65G *47/40*
U.S. Cl. 198—706 **8 Claims**



1. A bucket conveyor system for a harvesting machine which can move along a row of plants, said bucket conveyor system comprising:

a pair of parallel endless chains each having spaced apart roller bearings,

means forming generally rectangular chain guides for said endless chains to confine and guide said chains for movement rearwardly along a lower horizontal path, upwardly along an upward vertical path, forwardly along an upper horizontal path, downwardly along a downward vertical path, and along four curved paths at the four corners between the horizontal and vertical paths,

a plurality of open-topped buckets connected to said endless chains at equally spaced intervals therealong, said buckets each having two side walls, a front wall, a rear wall, a rear lip extending between said side walls and rearwardly of said rear wall, and an upper edge around side walls, front wall and rear lip, the rear lip of each bucket extending over and beyond the front wall of the next bucket rearward thereof during movement of said chains along said lower path, said buckets each having a single pivot shaft extending outwardly from the upper end of each of said side walls, said shafts extending into roller bearings of said endless chains and being the sole connection of said buckets to said endless chains,

a first fixed bucket guide member engageable with the upper edge of said buckets for maintaining said buckets erect during movement of said buckets along said lower horizontal path,

a second fixed bucket guide member engageable with said buckets for maintaining said bucket substantially erect during movement of said bucket along said upward path,

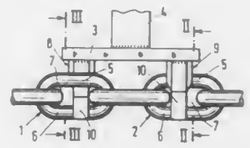
a third fixed bucket guide member engageable with said buckets for inverting said buckets over a discharge conveyor having a generally vertical wall spaced forwardly of said second fixed bucket guide member during movement of said buckets along said curved path between said upward path and said upper horizontal path and along said upper horizontal path, said third fixed guide member being positioned to first engage said buckets after their lips have moved forwardly of said discharge conveyor wall.

4,944,388

CHAIN CONVEYOR

Hans Dalferth, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger and Dietz GmbH u. Co., both of Aalen, Fed. Rep. of Germany

Filed Mar. 10, 1989, Ser. No. 321,913
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1988, 3808827
Int. Cl.[5] B65G *19/24*
U.S. Cl. 198—731 **11 Claims**



1. Chain conveyor comprising at least one drive chain strand, passng over chain wheels (14) and having oval round-steel links for conveying elements (4), which are connected to the drive chain strand via coupling elements (8,9) which are fixed to retaining plates (3) of the conveying elements (4) and pairs of which engage from a same side into the clear inner spaces (7) of a pair of connecting chain links (1,2) which directly follow one another and have the same orientation, each of said connecting chain links having two longitudinal legs (5,6), the coupling elements of each pair of coupling elements (8,9) being arranged in opposite directions into the clear inner spaces (7) of the connecting chain links (1,2) of each pair of connecting chain links in planes oriented at right angles to the longitudinal legs (5,6) of said connecting chain links (1,2), characterized in that one longitudinal leg (6) of each connecting chain link (1,2) is guided in a guide hollow (11) of each coupling element (8,9) and the other longitudinal leg (5) bears against a stop which is likewise formed by each coupling element (8,9) and limits movement of each coupling element (8,9) into said connecting chain link engaged by said coupling element.

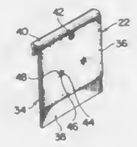
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,389

METHOD OF ASSEMBLING EARRING AND DISPLAY CARD ASSEMBLY AND ASSEMBLY THEREBY FORMED

Edward I. Robertson, North Providence, R.I., assignor to E. D. R. Industries, Inc., Providence, R.I.

Filed Dec. 20, 1989, Ser. No. 453,770
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—6.1 **16 Claims**



1. An earring and display card assembly comprising a card portion including a substantially flat card member having front and rear sides, said card member having a reduced aperture therethrough and a plurality of slits which radiate outwardly from said aperture to define a plurality of resilient fingers therearound, and an earring portion including an ornament member having front and rear sides, a post extending rearwardly from said ornament member and clutch means received and releasably frictionally retained on said post, said aperture being normally dimensioned to receive said post therethrough but not said clutch means, said fingers being rearwardly deflectable for receiving said post with said clutch means thereon through said aperture, said earring portion being assembled with said card member so that said post extends through said aperture with said ornament member disposed on the front side of said card member and at least a portion of said clutch means disposed on the rear side of said card member.

4,944,390

MERCHANDISING SYSTEM FOR PAINT BRUSHES AND THE LIKE

William E. Baucom, and Jeff Angustine, both of Canton, Ohio, assignors to The Wooster Brush Company, Wooster, Ohio

Filed Jan. 2, 1990, Ser. No. 459,543
Int. Cl.[5] A47B *81/02;* **B65D** *5/50, 5/52;* **A47F** *5/00*
U.S. Cl. 206—44 R **25 Claims**



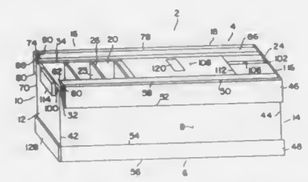
1. A carton for use in shipping and displaying paint brushes and the like, said carton having a bottom wall and upstanding side and end walls and an open top, and a wire frame within said carton, said wire frame comprising a base member, means for retaining said base member against said bottom wall, and a plurality of pegs extending generally perpendicular from said base member in spaced apart relation for supporting a plurality of brushes from said pegs.

4,944,391

CONTAINER AND DISPENSER OF COINS

Richard H. Johnson, 409 S. Orchard, Park Forest, Ill. 60466

Filed Aug. 21, 1989, Ser. No. 396,202
Int. Cl.[5] A45C *11/28;* **B65D** *43/20*
U.S. Cl. 206—0.83 **6 Claims**



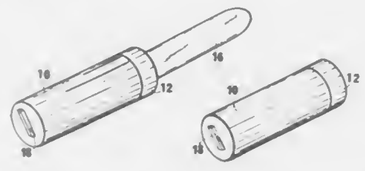
1. A coin dispenser comprising an elongated container having a peripheral side wall surrounding an elongated cavity, said peripheral side wall extending from a first end to a second end, said peripheral side wall extending between an upper peripheral edge and a lower peripheral edge, said elongated container having an upper wall adjacent said upper peripheral edge, a spaced apart lower wall adjacent said lower edge, spaced apart partition means in said elongated cavity spaced apart in the direction from said first end of said elongated container to said second end thereof to provide a plurality of coin receiving and dispensing pockets in said elongated cavity, first cover means to selectively open and close respective ones of said coin receiving and dispensing pockets, and indicator stop means to indicate when each of said coin receiving and dispensing pockets has been opened, wherein said first cover means is positioned to selectively open and close said upper wall of said container to receive coins in said pockets through said upper wall when said first cover means is opened, to hold coins in said pockets when said first cover means is closed, and to dispense coins from respective ones of said pockets through said upper wall when said first cover means is selectively opened to open said respective ones of said pockets, said upper wall includes an elongated openable section extending from said first end of said peripheral wall toward said second end thereof and terminating at an intermediate point therebetween, an elongated closed upper wall section extending from said second end of said peripheral wall toward said first end thereof and terminating at said intermediate point therebetween, said first cover means being positioned to selectively open and close said elongated openable section of said upper wall of said container to receive coins in respective ones of said pockets through said elongated openable section of said upper wall when said first cover means is opened, to hold coins in said pockets when said first cover means is closed, and to dispense coins from respective ones of said pockets through said elongated openable section of said upper wall when said first cover means is selectively opened to open said respective ones of said pockets, said first cover means includes a first slidable cover member slidable on said elongated container between a fully closed position wherein it fully closes said elongated openable section of said upper wall and a fully open position wherein it fully opens said elongated openable section of said upper wall, said first slidable cover member being slidable over said elongated closed upper wall section as it is slidably moved from its fully closed position toward its fully open position, said first slidable cover member having an inwardly facing surface, said elongated closed upper wall section having an outwardly facing surface in facing relationship with said inwardly facing surface of said first slidable cover member as it is slidably moved toward its fully open position, said indicator stop means including a plurality of spaced apart first detent members of a first two part detent assembly positioned between said inwardly facing surface of said first slidable/cover member and said outwardly facing surface of said elongated closed upper wall section and spaced apart in the direction from said first end of said elongated container toward said second end thereof as well as spaced apart a distance corresponding to the spaced apart distance of said partition means, and a second detent member of said first two part detent assembly positioned to cooperatively couple with respective ones of said spaced apart first detent members thereof as said first slidable cover member is slidably moved from said fully closed toward said fully open position, one of said first and second detent members of said first detent assembly being affixed to said inwardly facing surface of said first slidable cover member and the other to said outwardly facing surface of said elongated closed upper wall section whereby said first slidable cover member selectively opens a respective one of said pockets to said openable section of said upper wall when slidably moved in the opening direction a distance sufficient to move said detent members of said first detent assembly from one cooperatively coupled position to the next adjacent cooperative coupling position.

4,944,392

COMBINATION MATCH SAFE, KNIFE AND STRIKER

Harold L. Hull, 401 Canyon Way, Sp. 43, Sparks, Nev. 89434, and Thomas D. Newton, 136½ W. 2nd St., Reno, Nev. 89501

Filed Nov. 24, 1989, Ser. No. 440,720
Int. Cl.[5] B25F *1/00;* **A24F** *27/00*
U.S. Cl. 206—102 **9 Claims**



1. A combination match safe, knife and strikers comprising; a container, means for closing said container, means for sealing said container, a knife, said knife having a blade portion and a base portion, said base portion being substantially perpendicular to one end of said knife blade, said base portion and said knife portion having means cooperating with said container and said means for closing said container in a first and second position, said first position being one in which said knife blade is enclosed and sealed in said container, said second position being one in which said knife blade is exposed on the outside of said container, said base portion having a striking surface, and a second striking surface affixed to the outside surface of said container.

4,944,393

ANIMAL REPELLENT TRASH BAG

Doris J. Cappuzzo, 19813 E. 47th Terr. Ct., and John D. Cappuzzo, 2812 S. 5th, both of, Blue Springs, Mo. 64015

Filed Jun. 1, 1989, Ser. No. 360,056
Int. Cl.[5] B65D *30/22, 33/28*
U.S. Cl. 206—205 **1 Claim**

1. An animal repellent trash bag comprising,

an elongate flexible bag with an upper bag perimeter defining an opening, the opening including a closure means operatively associated therewith for selective closure of the bag, and

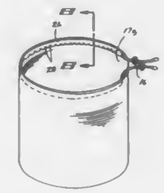
a covering means securable to an interior surface of the bag spaced above a floor of the bag wherein the covering is securable to the interior surface in a first position to define a compartment enclosing a quantity of animal repellent and deodorizing granules therein, and

the covering means removable from the bag to expose the granules and direct a deposit of the granules interiorly of the bag, and

wherein a covering means includes a cover strip, and the cover strip including a first adhesive surface formed at least about a perimeter of the cover strip on an interior surface of the cover strip, and

wherein the first adhesive surface is securable to a second adhesive surface of complementary configuration with the first adhesive surface formed on the interior surface of the trash bag, and

wherein the closure means includes a layer of the trash bag



overfolded about the upper perimeter to define a discontinuous conduit, the discontinuous conduit including an elongate flexible drawstring of a predetermined finite length, and

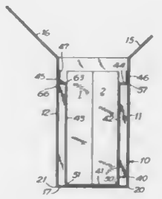
wherein the cover strip is adhesively secured about its entire interior surface to overlie the overfolded layer and the interior surface of the trash bag, and the overfolded layer including a series of apertures therein, and the conduit including the animal repellent and deodorizing granules whereupon removal of the cover strip enables the granules to be directed through the apertures for deposit interiorly of the bag.

4,944,394

CIGARETTE CARTON INSERT

Christopher J. Campbell, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 10, 1988, Ser. No. 205,120
Int. Cl.[5] B65D *5/48*
U.S. Cl. 206—256 **22 Claims**



1. A blank for forming an insert for attachment to a standard size cigarette carton for laterally positioning smaller than standard size cigarette packages within a standard size cigarette carton for stamping by tax marking machines designed for use with standard size cigarette packages contained in standard size cigarette cartons, said blank comprising:

a bottom panel defined by a front score line, a rear score line parallel to said front score line, and first and second sides transverse of said front and rear score lines;

a front wall panel connected to said bottom panel at said front score line, and further defined by a front top score line, and first and second sides transverse of said front and front top score lines;

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a front spacer connected to said front wall panel at said front top score line, and further defined by a front spacer score line parallel to said front top score line, and first and second sides transverse of said front top and front spacer score lines;

a front attachment tab connected to said front spacer at said front spacer score line, and further defined by a front margin and first and second sides transverse of said front spacer score line and said front margin;

a rear wall panel connected to said bottom panel at said rear score line, and further defined by a rear top score line, and first and second sides transverse of said rear and rear top score lines;

a rear spacer connected to said rear wall panel at said rear top score line, and further defined by a rear spacer score line parallel to said rear top score line, and first and second sides transverse of said rear top and rear spacer score lines; and

a rear attachment tab connected to said rear spacer at said rear spacer score line, and further defined by a rear margin and first and second sides transverse of said rear spacer score line and said rear margin.

8. In an erected cigarette carton having parts thereof defining a carton bottom panel, opposing front and rear carton wall panels, a top wall structure and right and left end wall structures;

said carton bottom panel defined by a carton bottom front score line, a carton bottom rear score line parallel to said carton bottom front score line, and first and second carton bottom sides transverse of said carton bottom front and rear score lines;

said front carton wall panel connected to said carton bottom front score line, and further defined by a front top margin parallel to said carton bottom front score line and first and second carton front sides transverse of said carton bottom front score line and said front top margin; and

said rear carton wall panel connected to said carton bottom rear score line, and further defined by a rear top margin parallel to said carton bottom rear score line and first and second carton rear sides transverse of said carton bottom rear score line and said rear top margin,

the combination with said carton of an insert having parts thereof defining an insert bottom panel, opposing front and rear insert wall panels, front and rear spacers, and front and rear attachment tabs;

said insert bottom panel defined by an insert bottom front score line, an insert bottom rear score line parallel to said insert bottom front score line, and first and second insert bottom sides transverse of said insert bottom front and rear score lines;

said front insert wall panel connected to said insert bottom panel at said insert bottom front score line, and further defined by a front top score line, and first and second insert front sides transverse of said insert bottom front score line and said front top score line;

said front spacer connected to said front insert wall panel at said front top score line, and further defined by a front spacer score line parallel to said front top score line, and first and second front spacer sides transverse of said front top score line and said front spacer score line;

said front attachment tab connected to said front spacer at said front spacer score line, and further defined by a front margin and first and second front attachment tab sides transverse of said front spacer score line and said front margin;

said rear insert wall panel connected to said insert bottom panel at said insert bottom rear score line, and further defined by a rear top score line, and first and second insert rear sides transverse of said insert bottom rear score line and said rear top score line;

said rear spacer connected to said rear insert wall panel at said rear top score line, and further defined by a rear spacer score line parallel to said rear top score line, and first and second rear spacer sides transverse of said rear top score line and said rear spacer score line; and

said rear attachment tab connected to said rear spacer at said rear spacer score line, and further defined by a rear margin and first and second rear attachment tab sides transverse of said rear spacer score line and said rear margin,

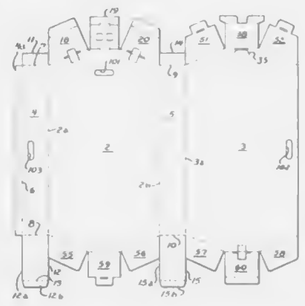
wherein the separation between said insert bottom front and rear score lines is less than the separation between said carton bottom front and rear score lines, and said front and rear attachment tabs are attached, respectively, to said front and rear carton walls.

4,944,395

GARMENT BOX

David D. Coursen, Garland, Tex., assignor to Gaylord Container Corporation, Deerfield, Ill.

Filed Sep. 23, 1988, Ser. No. 248,681
Int. Cl.[5] B65D *5/08, 85/18*
U.S. Cl. 206—288 **26 Claims**



1. A garment box formed from a unitary blank of corrugated paper board including a hanger apparatus for holding hangers, comprising:

a. a front wall and a back wall disposed parallel to each other;

b. a first side wall extending parallel to a second side wall, said first and second side walls disposed perpendicularly between said front wall and said back wall;

c. a foldable first flap extending from the top of said front wall, said first flap rotatable inwardly toward said back wall along a first fold line located at the top of said front wall to form such hanger apparatus, said first flap comprising:

(i) an engaging portion for securing said first flap to said back wall;

(ii) a hanger bar portion having a first score line and a second score line, both extending perpendicularly from said first fold line to said engaging portion, said first and second score lines dividing said hanger bar portion into three segments; and

(iii) a third score line parallel to said first fold line dividing said engaging portion and said hanger bar portion;

d. means on said back wall for receiving and supporting said engaging portion of said first flap;

e. a foldable second flap extending from the top of said back wall, said second flap rotatable inwardly toward said front wall along a second fold line located at the top of said back wall; and

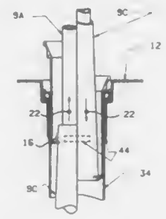
f. means for securing said second flap, whereby said first flap forming said hanger apparatus is folded inwardly along said first fold line and downwardly along said first, second and third score lines to form said hanger bar for supporting hangers, said engaging portion is secured in the means for receiving and supporting on said back wall, and said second flap is folded inwardly along said second fold line and over said first flap and secured to said front wall so that any hangers placed on said hanger bar portion are secured between said flaps.

4,944,396

CLUB REMOVAL INDICATOR

Mark Larkin, 419 Northgate, Lindenhurst, Ill. 60046

Filed Mar. 20, 1989, Ser. No. 325,950
Int. Cl.[5] A63B *55/04*
U.S. Cl. 206—315.6 **12 Claims**



1. A device for indicating the absence of golf clubs, each of which has a shaft, a head and a grip, from a golf bag having an open top, said device comprising:

a substantially planar golf bag insert member having a plurality of apertures extending therethrough, each of said apertures being constructed and arranged for telescopic reception and support of an individual golf club and separation of said head portion of said golf club from the head portion of the other golf clubs when said golf clubs are positioned in said apertures;

attachment means for attaching and supporting said insert member in said golf bag in a parallel position to said open top of said golf bag;

a plurality of tubular indicator members, each of said indicator members having an outside diameter substantially equal to the inside diameter of said apertures, whereby each of said tubular indicators may be slidably positioned in an aperture;

stop means for retaining said tubular indicator members within said apertures of said insert member when said tubular members are slid upwardly or downwardly; and

means associated with said tubular insert members for engaging said grip of said golf club when said golf club is inserted or removed from said golf bag, wherein said means associated with said tubular insert members for engaging said grip of said golf club comprises one or more fingers extending inwardly from said tubular indicator member proximate the bottom portion thereof, said flexible fingers being adapted to flexibly engage said grip of said golf club, whereby sliding movement of said golf club during removal of said golf club from said golf bag causes said tubular indicator member to be drawn outwardly and extend from said insert member, thereby visually indicating the absence of the golf club associated with said aperture, and wherein insertion of said golf club causes said tubular indicator member to be depressed back into said aperture of said insert member.

4,944,397

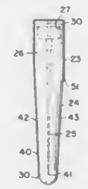
DISPOSABLE COVERED NEEDLE FOR SYRINGE

Ernest C. Miller, Jacksonville, Fla., assignor to University Medical Center, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 197,143, May 23, 1988, Pat. No. 4,886,503. This application Sep. 29, 1989, Ser. No. 414,283
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—365 **16 Claims**

1. A throw-away covered needle for releasable attachment to a syringe having a short tubular inlet/exit pipe, said covered needle including a needle member having a hollow needle with a free end and an encased end, said encased end being embedded in a socket having a top opening recess to engage said inlet/exit pipe and a passageway to connect said recess to the hollow of said needle; a cover member that is an elongated sheath enclosing said needle and pivotably attached to said socket and having an elongated lengthwise narrow opening structured and adapted to permit said needle to pass therethrough when said cover member is pivoted away from enclosing said needle; and a manually strippable adhesive tape attached to the outside of said cover member and to said socket so as to cover said narrow opening in said cover member and said top opening of said recess in said socket.

10. A safety covered needle for use on a medical syringe having a short tubular spout; said covered needle comprising a needle member and a cover member pivotally connected to



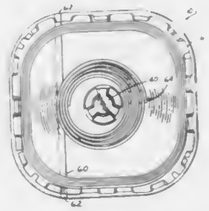
said needle member; said needle member including cup-shaped head with an interior recess with an upwardly facing opening adapted to frictionally engage said spout, a hollow needle having a free end and having the other end embedded in said head, a passageway in said head joining said recess and said other end of said needle; said cover member being an elongated sheath having an upper open end and a lower closed end and a longitudinal axis corresponding to the hollow of said needle, an elongated narrow opening extending from said open end to a closed end adjacent said lower end of said sheath; pivot means located adjacent said head and said open end of said sheath structured and adapted to permit said sheath to pivot away from said needle to expose said needle; and a manually strippable tape adhesively attached to said sheath and said head to cover said elongated narrow opening and the opening of said interior recess in said head.

4,944,398

STACKABLE NESTABLE TRAY WITH CENTRAL WEIGHT BEARING HUB

Edward W. Gatt, Richmond, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 1, 1989, Ser. No. 401,678
Int. Cl.[5] B65D *21/04*
U.S. Cl. 206—507 **6 Claims**



1. A tray for transporting coiled weather stripping comprising:

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a generally rounded body portion, said body portion having a bottom wall and an upstanding continuous sidewall, said bottom wall including a top surface and a bottom surface, said sidewall having an inner surface and an outer surface, said sidewall including a plurality of spaced radially inwardly extending step-like protrusions on said inner surface of said sidewall and forming corresponding radially inwardly extending indentations in the outer surface of said sidewall, said sidewall extending vertically above said inwardly extending step-like protrusions, said inwardly extending protrusions including upper surfaces defining a co-planar surface; a central hub portion extending from said bottom wall in an upstanding direction and being hollow in cross-section and opening at said bottom surface of said tray, said central hub portion including a plurality of radially outwardly extending central hub portion protrusions, thereby providing in the hollow underside of said central hub portion a corresponding plurality of radially outwardly extending indentations having walls extending therebetween, said weather stripping being coiled about the central hub portion in the space between the central hub portion and the sidewall, said central hub portion acting as a stop to help retain the weather stripping in its coiled orientation to reduce the possibility of damage of said weather stripping due to lateral movement during shipping, said tray being stackable with a tray of like configuration in a first position wherein portions of said bottom wall between said inwardly extending protrusions of the inner surface of said tray rest on the upper surfaces of the plurality of step-like inwardly extending protrusions of said tray of like configuration and the walls extending between the outwardly extending indentations provided in the hollow underside of said central hub portion rest on the radially outwardly extending central hub portion protrusions of said tray of like configuration, wherein the weight contained in said tray is distributed in stacking between said central hub portion and said plurality of inwardly extending protrusions of said sidewall and is nestable with said tray of like configuration when rotated to a second position wherein said plurality of radially inwardly extending protrusions of the inner surface of said tray nests into the plurality of radially inwardly extending indentations of said outer surface of said tray of like configuration and said plurality of radially outwardly extending central hub portion protrusions nest into the plurality of radially outwardly extending indentations provided in the hollow underside of the central hub portion of said tray or like configuration.

4,944,399

CONTAINER WITH INTEGRAL FOLDABLE HANDLE

Cornelis A. Ten Bruggencate, Alphen; Andréas N. Montijn, Hillegom, and Gerrit J. Van Keimpema, Woerden, all of Netherlands, assignors to Koninklijke Emballage Industrie Van Leer B. V., Amstelveen, Netherlands

Filed Apr. 10, 1989, Ser. No. 335,278

Claims priority, application Netherlands, Apr. 11, 1988, 8800929

Int. Cl.[5] **B65D** *21/02, 25/28*

U.S. Cl. 206—509 **1 Claim**



1. A stackable container for a pourable liquid comprising:

a hollow cylindrical body structure having a longitudinal axis and forming a side wall of the container,

a bottom wall joined at an outer edge with the side wall structure near the bottom edge thereof,

a top wall structure joined at its periphery with the top edge of the hollow body structure and forming a top wall for the container, said top wall structure having a recessed portion formed in the central region of the top wall for receiving a folded handle and a closable pouring orifice formed adjacent the outer edge of the top wall, said recessed portion having an upper edge and a bottom surface disposed a predetermined distance below the upper edge, and

a bail-type handle having legs integrally molded with the bottom surface of the recessed portion of said top wall structure from synthetic resin material and arranged to be swingable about a pivot axis located near said bottom surface and extending perpendicular to the longitudinal axis of said body structure and perpendicular to the plane of symmetry of said body structure through said longitudinal axis and and through the axis of said pouring orifice, said handle being dimensioned to be entirely received within said recess portion when swung downwardly and as released from a mold having a normal position in which the legs extend upwardly in a plane which makes a sharp angle with said longitudinal axis and the handle extends above the upper edge of the recessed portion to facilitate easy gripping of the handle, the transitional portion of the legs with the bottom surface of the recessed portion being sufficiently resilient to swing upwardly from its normal position when the handle is gripped to lift the container and to be urged downwardly to a substantially horizontal position against the bottom surface of the recessed portion to facilitate stacking of like containers and in each case to return to said normal position upon removal of the applied force

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4,944,400

SELF-SUPPORTING STORAGE, SHIPPING AND DISPLAY ASSEMBLY

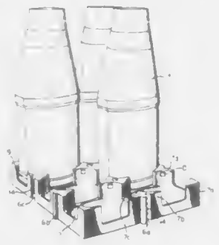
Elco T. J. M. Van Onstein, and Antonius C. G. Leebeek, both of Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 22, 1988, Ser. No. 234,852

Claims priority, application United Kingdom, Aug. 28, 1987, 8720422

Int. Cl.[5] **B65D** *21/00; A47G 19/00*

U.S. Cl. 206—509 **11 Claims**



1. A self-supporting storage shipping and display assembly including a horizontally layered stack of semi-rigid compound trays which are coextensive with each layer and filled with containers, wherein the upper surface of each compound tray is equipped with upward surface holding means for holding the bottoms of said containers such that adjacent containers are in contact with one another along their side edges without exerting any pressure on each other when placed therein, and wherein the bottom surface of each compound tray is equipped with downward surface holding means for holding the tops of containers on a subjacent compound tray, such that said containers are maintained in a substantially vertical position, wherein the improvement comprises: each compound tray being formed by a plurality of coplanar individual trays, said individual trays having cooperating interlocking elements along contiguous vertical side edges, said interlocking elements being self-centering and adapted for interengagement by relative movement only in the horizontal plane, said assembly further comprising means for preventing separation of said interlocking elements during transportation whereby to interlock each individual tray with an adjacent individual tray to form said compound tray.

4,944,401

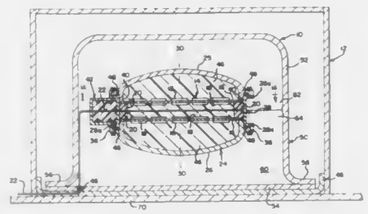
CRASH SURVIVABLE ENCLOSURE FOR FLIGHT RECORDER

Johannes B. Groeneweger, Kirkland, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Sep. 28, 1989, Ser. No. 413,805

Int. Cl.[5] **B65D** *81/02, 85/30*

U.S. Cl. 206—521 **68 Claims**



31. A crash survivable enclosure for an information storage device, comprising:

filler means around said device for absorbing external heat employing the heat of fusion of a meltable filler and physically supporting said device; and

metal shell means around said filler means for protecting said device against external penetration and shock forces.

4,944,402

PYRAMID COSMETIC CONTAINER

Shui-Kuan Wu, Tainan, Taiwan, assignor to Fong Yang Plastic Co., Ltd., Tainan, Taiwan

Filed Jan. 3, 1990, Ser. No. 460,528

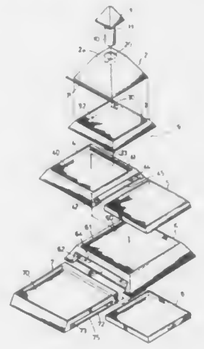
Int. Cl.[5] **B65D** *6/06*

U.S. Cl. 206—581 **4 Claims**

1. A pyramid cosmetic container of a pyramid shape having a base and a plurality of sloping side walls upwardly meeting at a point and comprising:

a base housing of a truncated pyramid in shape including a first compartment defined by a base and a plurality of upstanding side walls; a second compartment defined by a base and a plurality of upstanding side walls and slidably mounted to the first compartment such that in a first position said second compartment covers the first compartment and such that in a second position the second compartment enables access to the first compartment; and a third compartment defined by a base and a plurality of upstanding side walls and slidably mounted to said second compartment and adapted to be slide in a direction perpendicular to the moving direction of the second compartment relative to the first compartment such that in a first position the third compartment covers the second compartment and such that in a second position the third compartment enables access to said second compartment;

a top housing of a truncated pyramid in shape having a base hingedly connected to and adapted to cover the third compartment of the base housing and a top plate formed with a hole and a passage defining a chamber extending downwardly from the hole; and



a lipstick unit retained in said passage, including a handle portion of a pyramid in shape seating on the top plate of the top housing and a container portion inserted in the passage.

4,944,403

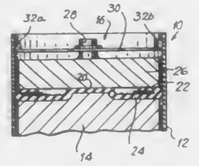
SHOCK MOUNT CONTAINER

Herbert W. LeKuch, New York; Herbert S. Kulik, Dix Hills, both of N.Y., and Nicholas J. Lucia, Jr., West Caldwell, N.J., assignors to Vibration Mountings & Controls, Inc., Bloomingdale, N.J.

Filed Dec. 4, 1989, Ser. No. 445,377

Int. Cl.[5] **B65D** *43/04*

U.S. Cl. 206—594 **7 Claims**



1. A shock-resistant container for objects placed therein comprising: a container body having a peripheral side wall, said container being dimensioned to receive a shock-sensitive object therein; a cover; and an elastomeric element dimensioned to be placed within said container upon the top of said inserted object and extending substantially across the inside diameter thereof in a non-wall-contacting configuration therewith, said elastomeric element being of generally planar configuration and having a flexible, upwardly-extending, peripheral lip and a central shock-absorbing pedestal; said cover being engageable with said elastomeric element whereby said peripheral lip engages said side wall and said cover is in contact with said pedestal, said elastomeric element being retained in a contents-sealing and shock-absorbing configuration between said cover and said object.

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FRAME STRUCTURE

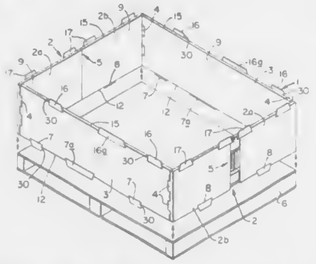
Peter L. Mead, Middlewich, Great Britain, assignor to Lin Pac Mouldings Limited, Birmingham, Great Britain

Filed Mar. 31, 1989, Ser. No. 331,497

Claims priority, application United Kingdom, Apr. 8, 1988, 8808272.2

Int. Cl.[5] B65D *19/00*

U.S. Cl. 206—600 **16 Claims**



1. A frame structure having an open top and an open bottom and which is adapted to be mounted on a base to form an enclosed upstanding plastics retaining wall; the retaining wall having a top edge and a bottom edge so that two similar frame structures can be mounted one on the other to form a hollow column with the bottom edge of the upper structure sitting on the top edge of the lower structure; peripherally spaced upwardly extending flanges on the wall adjacent to its open top and peripherally spaced downwardly extending flanges on the wall adjacent to its open bottom, the downwardly extending flanges being offset from the upwardly extending flanges on the respective walls whereby when two structures are mounted to form said hollow column the seated top and bottom edges are bridged by said upwardly and downwardly extending flanges to restrain the two frame structures from horizontal displacement relative to each other and wherein at least one of the upwardly extending flanges and at least one of the downwardly extending flanges have a profiled edge part, said profiled edge parts engaging between flanges of the two structures during location of the upper structure on the lower structure in forming said column to restrain the upper structure from lifting relative to the lower structure.

4,944,405

MULTI-CELLED ENCLOSED CARTON

John C. Buford, Madison, Wis., and Leslie H. Porter, Chebanse, Ill., assignors to Manville Corporation, Denver, Colo.

Filed Sep. 29, 1989, Ser. No. 415,161

Int. Cl.[5] B65D *5/48*

U.S. Cl. 206—614 **7 Claims**

1. A multi-celled carton, comprising:

four side panels connected to each other along fold lines, each side panel having an upper edge and a lower edge;

a bottom flap connected along a fold line to the lower edge of each of two opposite side panels, the bottom flaps forming a bottom panel;

cell-dividing flap means connected along a fold line to an edge of at least one of the bottom flaps opposite the fold line connected said one bottom flap to its associated side panel;

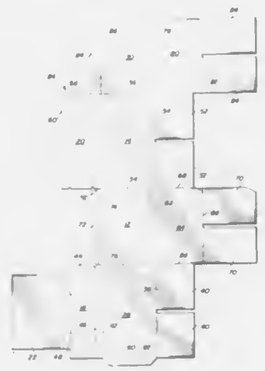
the cell-dividing flap means extending into the interior of the carton to divide the interior into two cells;

a top flap connected along a fold line to the upper edge of each of the other two opposite side panels, the top flaps forming a top panel closing the upper end of the carton;

means maintaining the top flaps in closed position; and

cell-dividing flap means connected along a fold line to an edge of at least one of the top flaps opposite the fold line connecting said one top flap to its associated side panel;

at least one of the top and bottom cell-dividing flap means including a slot, the other cell-dividing flap means extending through the slot to thereby enable the cell-dividing flap means of said one top flap to extend on either side of the cell dividing flap means of said one bottom flap to divide the interior of the carton into four cells.



4,944,406

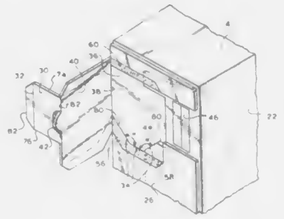
CARTON WITH POUR SPOUT

Sally A. Zehnal, Houston, Tex., assignor to Uncle Ben's Inc., Houston, Tex.

Filed Sep. 14, 1988, Ser. No. 244,136

Int. Cl.[5] B65D *5/70*

U.S. Cl. 206—621.4 **32 Claims**



1. A blank for forming a carton comprising:

(a) a back portion;

(b) first top and bottom inner flap portions connected to said back portion;

(c) first and second side portions connected to said back portion, said second side portion having:

(1) a pull tab cut therein, said pull tab having at least one free end;

(2) an orifice cover cut therein, said cover connected to said pull tab at a first hinge line and connected to said back portion at a second hinge line; and

(3) re-open means integral with said orifice cover;

(d) second top and bottom inner flap portions connected to said first side portion;

(e) third top and bottom inner flap portions connected to said second side portion;

(f) a front portion connected to said first side portion;

(g) top and bottom outer flap portions connected to said front portion; and

(h) a glue flap portion connected to said front portion at a bend score line, said glue flap portion having:

(1) a pull tab glue area; and

(2) an orifice notch cut therein located near said pull tab glue area.

4,944,407

PACKING CONTAINER

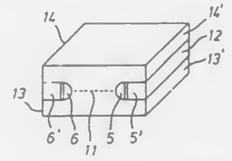
Harmut Thiele, Munich; Leo Gruber, Peutenried, and José Toral, Munich, all of Fed. Rep. of Germany, assignors to Reel/Frame 5189/0412 Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 447,714

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 8815897[U]

Int. Cl.[5] B65D *5/54*

U.S. Cl. 206—628 **4 Claims**



1. Square packing container, manufactured from a one-piece blank comprising a base and a lid portion and side wall surfaces located thereon, which can be connected to one another by means of connecting tabs, and wherein weakened lines are formed on the side wall surfaces, characterised in that the weakened lines (**9, 9', 10, 10', 11**) are formed approximately in the plane of symmetry of the side wall surfaces (**3, 4**) and that two perforated tabs (**5, 6**) are formed on at least one side wall (**3**), an adhesive tape (**12**) encircling the side wall surfaces being stuck on to extensions (**5', 6'**) of the said perforated tabs (**5, 6**), each in the direction of the side edges (**7, 8**), said adhesive tape (**12**) connecting the side tabs (**13, 13'** and **14, 14'**) of the base portion (**15**) and the lid portion (**16**) with one another.

4,944,408

OPENING ARRANGEMENT FOR CARDBOARD PACKAGE

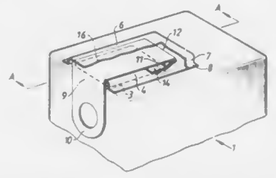
Hans Rausing, Wadhurst Park, England, assignor to Tetra Pak Holdings & Finance S.A., Pully, Switzerland

Filed Nov. 15, 1989, Ser. No. 436,717

Claims priority, application United Kingdom, Nov. 16, 1988, 8826750

Int. Cl.[5] B65D *5/70*

U.S. Cl. 206—628 **9 Claims**



1. An opening arrangement for a cardboard package of the type which has a package wall comprising a base layer of paper or cardboard having coatings of thermoplastic material on both sides and a tearing indication provided in the package wall enclosing at least parts of the desired opening area characterized by, on the one hand, a duct or pouring channel fixed to the said package wall, this pouring channel surrounding the said opening area so as to cover it, on the other hand a pull-out opening means arranged in the said pouring channel partially projecting from it and comprising parts which are inclinable in relation to the principal direction of the means and which are adapted so that with their one boundary edge they rest against, and are fixed to, the said opening area adjoining the tearing indication which delimits the opening area, and that the said opening means is adapted so that when a tensile force is exerted on the opened means substantially parallel with the longitudinal direction of the pouring channel, the said inclinable parts will be pressed in inclined position against the inside of the pouring channel and exert a pressure directed substantially against the package wall within the parts of the opening area where the said inclinable parts of the opening means are fixed, with the object of breaking up the said tearing indication and, on continued pulling out of the opening means from the pouring channel, remove the wall part or parts of the package wall present within the opening area after tearing up of the said tearing indication.

4,944,409

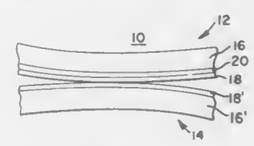
EASY OPEN PACKAGE

David A. Busche, Neenah, and David H. Bostian, Sheboygan, both of Wis., assignors to Carwood, Inc., Oshkosh, Wis.

Filed Feb. 10, 1988, Ser. No. 309,321

Int. Cl.[5] B65D *65/26*

U.S. Cl. 206—632 **17 Claims**



1. An easy open package adapted to be heat sealed to a closed condition to contain and protect product disposed therein, but which is readily openable by application of force, said package including a first package wall having a first thermoplastic polymeric film construction comprising a first outer layer, a first inner sealant layer of polymer and a first tie layer disposed between said first outer layer and said first inner sealant layer, said tie layer comprising a combination of polybutylene and one other constituent and being peelably bonded to one of either said first outer layer or said first inner sealant layer and being permanently bonded to the outer layer to which said tie layer is not peelably bonded, a second package wall joined at a portion of its perimeter to said first package wall, said second package wall having a second thermoplastic polymeric film construction with a second inner sealant layer of the same polymer as, and disposed adjacent to, said first inner sealant layer of said first film construction, whereby when said first inner sealant layer of said first film construction is heat sealed to said adjacent second inner sealant layer of said second film construction along a heat seal, a bond is formed between said inner sealant layers having greater bond strength than the peelable bond between said tie layer and said one layer of said first film construction to which said tie layer is peelably bonded such that upon application of force to open said package, the first and second inner sealant layers will remain bonded together and opening will take place between the peelably bonded layers at said heat seal.

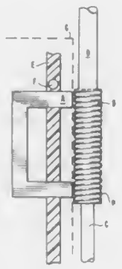
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,410

HYGIENIC SUSPENSION FOR DENTAL OR MEDICAL INSTRUMENTS

Richard C. Goet, Prinsenciland 53, 2024 LM Amsterdam, Netherlands

Filed Jun. 15, 1988, Ser. No. 206,776
Claims priority, application Netherlands, Jun. 16, 1987, 8701398
Int. Cl.[5] A61C *1/02*
U.S. Cl. 433—28 13 Claims



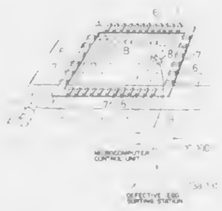
1. A connection device for use with a treatment instrument, comprising:
an elongated instrument tube having an instrument connecting end and a control connecting end;
a magnetizable member disposed at said instrument connecting end;
means for controlling the instrument, said control means having a first portion connected to said control connecting end of said instrument tube;
a second portion of said control means including a magnetizing means disposed to magnetically interact with said magnetizable member thereby to control the operation of the instrument; and
a replaceable means for covering said control means, said instrument tube and said magnetizable member, said covering means comprising at least one sheet which insulates said control means, said instrument tube and said magnetizable member from contamination.

4,944,411

POSITION INDICATOR DEVICE FOR CONVEYED OBJECT

Junzo Fukushima, Tsuyama, Japan, assignor to Kyowa Machinery Co., Ltd., Okayama, Japan

Filed Dec. 27, 1988, Ser. No. 290,228
Claims priority, application Japan, Feb. 8, 1988, 63-26869
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—705 2 Claims



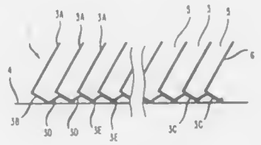
1. A position indicator device for conveyed objects comprising:
a checking area disposed relative to a conveyor having a conveying passage where a plurality of objects are unidirectionally conveyed while aligned in a conveying direction and a direction normal to the conveying direction;
an indicator manually movable to a position of a target object of conveyed objects within said checking area for indicating a position of the target object;
indicator-position detecting means for detecting a two-dimensional position of said indicator within said checking area;
said checking area includes a plurality of light beam emitters operable together to project beams of light in a grating form within said checking area and a plurality of oppositely disposed beam receivers each operable to receive the light beam from a corresponding light beam emitter;
said indicator acting as a beam-blocking member for blocking the beam of light transmitted between the light beam emitters and corresponding beam receivers; and
said indicator-position detecting means detects said target object position within said checking area based on positional information of the beam receivers blocked by said indicator.

4,944,412

ELEMENT FOR SLANTED DESK TOP RACK

Jean C. Daigre, Villemur sur Tarn, France, assignor to Societe Dacota (S.A.), Villemur sur Tarn, France

Filed Sep. 12, 1988, Ser. No. 243,455
Claims priority, application France, Sep. 19, 1987, 87 12664
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—11 9 Claims



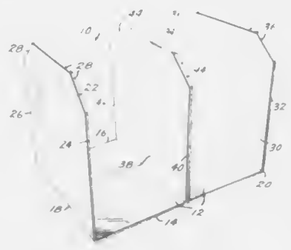
1. An ordering element for documents and other materials comprising a plate which is bent for defining the following sections: a backing; a foundation base adjoining the backing and forming an intersection angle with the backing;
a connection wall adjoining the foundation base and forming an intersection angle with the foundation wall, wherein the connection wall is bent in the same direction as the backing relative to the foundation base in the way of forming with the said backing and the said foundation base a U with unequal wings and wherein the intersection angle between the foundation base and the connection wall is provided for resting on a board surface or on another ordering element; a support surface adjoining the connection wall and forming an intersection angle with the connection wall and provided for receiving another ordering element, wherein the support surface is bent in a direction opposite to the foundation base relative to the connection wall, wherein the support surface and the connection wall form an intersection angle, and wherein the intersection angle between the foundation base and the connection wall is provided for resting on a board surface or on another ordering element and wherein an edge perpendicular to the support surface is provided for resting on said board surface in such a way that the backing be inclined above the foundation base.

4,944,413

BOOK SUPPORT APPARATUS

Wallace J. Connell, 604 W. 12th St., Juneau, Ak. 99801

Filed Jun. 24, 1988, Ser. Nn. 211,296
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—42 6 Claims



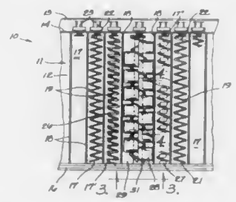
1. Book support apparatus, comprising:
a substantially planar base of first predetermined thickness defining exposed front and rear edges of said first thickness and further defining directly opposed left and right-end edges of said first thickness, each of said exposed front and rear edges defining visually discernible upper and lower margins;
a first substantially planar support of second predetermined thickness defining exposed front, rear and top edges of said second thickness, said first support permanently attached to and projecting upwardly from said left-end edge at an angle of substantially ninety degrees with said base;
a second substantially planar support of third predetermined thickness defining exposed front, rear and top edges of said third thickness, said second support permanently attached to and projecting upwardly from said right-end edge at an angle of substantially ninety degrees with said base; and
at least a third substantially planar support of fourth predetermined thickness defining exposed front, rear and top edges of said fourth thickness, said third support permanently attached to and projecting upwardly from said base between said left and right-end edges and at an angle of substantially ninety degrees with said base.

4,944,414

SHELF ASSEMBLY FOR VENDING TUBULAR PRODUCTS

Henry J. Albright, West Des Moines, Iowa, assignor to Fawn Engineering Corp., Des Moines, Iowa

Continuation of Ser. No. 114,724, Oct. 30, 1987, abandoned, which is a continuation of Ser. No. 922,060, Oct. 22, 1986, abandoned. This application Feb. 23, 1989, Ser. No. 314,489
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—59.2 2 Claims



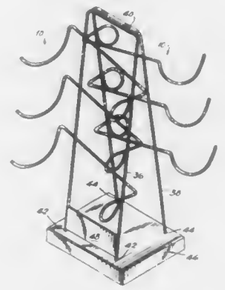
1. In a vendor comprising a cabinet having a front door, at least one shelf in the cabinet, the forward end of the shelf being spaced rearward from the door to provide a discharge space, a helix on the shelf extending in rear-to-front direction with respect to the cabinet and adapted to receive tubular items to be vended between its convolutions, the items being interiorly unobstructed so that the items may be received between its convolutions extending across the helix from one side thereof to the other, means for rotating the helix to advance the items toward the forward end of the shelf and discharge the forwardmost item off the forward end of the shelf to drop down into the discharge space, and panels extending in rear-to-front direction on the shelf at opposite sides of the helix defining a path of travel for the items, the improvement comprising the provision of placing the helix at midpoint between the panels, the panels being spaced a distance to accommodate the width of a pair of items to be dispensed placed end-to-end between the panels, the panels being so located relative to the helix that the items are supported at their outer ends by the panels and at their inner ends by each other, the portion of the convolutions of the helix on one side of the longitudinal center thereof being capable of supporting one rear-to-front row of tubular items, and the portions of the convolutions of the helix on the other side of the longitudinal center thereof being capable of supporting another rear-to-front row of tubular items in a relationship staggered relative to said one rear-to-front row, whereby the helix is capable of supporting the tubular items in a staggered relationship, thereby providing a forwardmost item for discharge alternately from each row.

4,944,415

BOTTLE SUPPORT APPARATUS

Max A. Orbach, 473 FDR Dr., New York, N.Y. 10002

Filed Mar. 2, 1989, Ser. No. 317,876
Int. Cl.[5] A47B *73/00*
U.S. Cl. 211—75 1 Claim



1. An apparatus for supporting a plurality of bottles in a slanted position, comprising a mounting frame including a pair of spines each in an inverted U-shape having a pair of parallel arms joined by an upper horizontal portion, said spines being pivotly mounted together at said upper horizontal portions, the arms thereof being supported in a spaced-apart position by a base, each of said spines having a plurality of bottle support units affixed thereto in a spaced-apart, parallel relationship, each of said bottle support units comprising a neck-embracing, substantially closed loop portion supported by a horizontally-extending arm, a generally curved bottle body supporting portion and a central portion joining said arm and body supporting portion in a spaced-apart relationship whereby a bottle may be retained in a slanted position thereby, each of said bottle support units being formed of a continuous length of a wire-like material.

4,944,416
LIGHT-WEIGHT SLOT-WALL DISPLAY PANEL
Robert J. Petersen, 9789 SE. 41st St., Mercer Island, Wash. 98040, and Marvin C. Lemmerman, 2234 SE. 8th Pl., Renton, Wash. 98055
Filed Nov. 21, 1988, Ser. No. 273,837
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—87 20 Claims



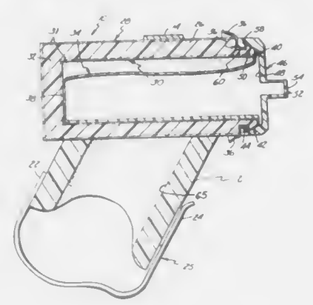
1. A slotted panel for display of merchandise of all types detachably mounted on a surface thereof comprising:
a flat board shaped core member having substantially planar front and back opposing faces with a plurality of spaced substantially parallel longitudinal grooves opening into said front face, said back face being adapted for attachment to a substantially vertical support surface,
said grooves being configured to accept and support hanger accessories thereon for supporting brackets cantilevered from said front face, and
said core member comprising molded-board expanded plastic foam having a density of from 3–6 pounds per cubic foot.

4,944,417
SEPARATOR FOR STORED GARMENTS
David Datlow, Chevy Chase, Md., assignor to J.D.'s, Washington, D.C.
Filed Apr. 14, 1988, Ser. No. 183,534
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—184 15 Claims



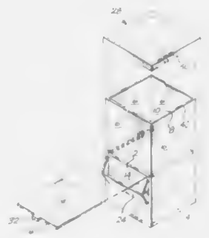
1. A device for separating garments hung adjacently on a common support rod comprising:
a flat separator element having a portion of a size and shape selected to extend substantially across the width and length of said hung garments, said flat separator element being integrally formed at a first end to have a transverse extension supportable by said support rod so as to hold said separator element vertically below said support rod; and
a restraining clamp means mounted over said transversal extension for clamping to said support rod while restraining sliding of said separator element along said support rod from a selected location thereon, wherein said restraining clamp means is movable in infinitely variable increments along the longitudinal axis of said support rod.

4,944,418
SOFT BABY BOTTLE
Kenneth O. Wallace, 862 Inglehart Ave., St. Paul, Minn. 55104
Filed Jan. 23, 1989, Ser. No. 370,613
Int. Cl.[5] A61J 9/00, 9/06, 11/04
U.S. Cl. 215—100 R 23 Claims



1. A soft, pliable baby bottle for use as a feeding device for children, wherein the bottle has a soft construction and is substantially deformable in shape, the baby bottle comprising:
a flexible, removable inner liner having one open end for containing a quantity of a liquid;
a soft, elastomeric nipple having an opening for delivering liquid at a limited rate and for preventing spillage;
a bottle wall comprising a flexible, foamed elastomeric material having an annular space for receiving the flexible inner liner; and
a seal formed between the bottle wall and the flexible inner liner as well as the nipple and the flexible inner liner, in response to the assembly of said liner and nipple with said wall.

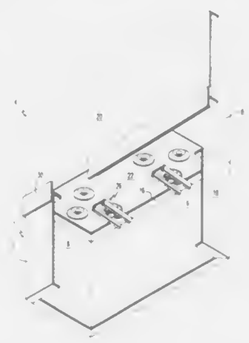
4,944,419
COMPARTMENTALIZED REFUSE CONTAINER
John W. Chandler, 131 NW. 55th St., Seattle, Wash. 98107
Filed May 8, 1989, Ser. No. 349,325
Int. Cl.[5] B65D 1/24, 25/06
U.S. Cl. 220—1 T 12 Claims



1. In combination,
an elongated upright container for holding refuse and the like,
said container having a closed bottom, a sidewall structure including a set of side walls upstanding about the bottom,

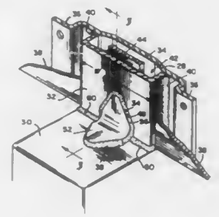
and a top opening defined by the upper edges of the side walls,
said container being adapted to be loaded and unloaded through said top opening by a person standing to the sides of the container,
said side walls of the container defining a hollow bin for the refuse between the closed bottom and top opening of the container, and said bin having a pair of apertures therein which open through the sidewall structure to the outside of the container at levels below the top opening thereof,
a divider panel for forming a false bottom in the container,
one of said apertures being rectangular and disposed at an intermediate level between the top opening and bottom of the container, to form a horizontally extending slot for the divider panel,
said divider panel being removably insertable in the bin through the slot and said container having means disposed about the bin at the level of the slot to support the panel crosswise of the bin at said level,
the other of said apertures being disposed at a level relatively below the slot and adapted to form an entry port for loading refuse in the portion of the bin below the slot, whereby two types of refuse can be loaded in the relatively top and bottom portions of the bin, above and below the slot, segregated from one another by the panel, and then the relatively top and bottom portions of the bin can be separately unloaded through the top opening of the container, to preserve the integrity of the respective types of refuse, by unloading the relatively top portion of the bin through the top opening, and then removing the panel through the slot to open the relatively bottom portion of the bin to the top opening of the container.

4,944,420
OIL-FILLED TRANSFORMER HOUSING
Herbert S. Adkins, Vienna, and Darrell D. Harris, Fulton, both of Mo., assignors to ABB Power T&D Company, Blue Bell, Pa.
Filed Jan. 6, 1989, Ser. No. 294,074
Int. Cl.[5] H02Q 3/08
U.S. Cl. 220—3.3 9 Claims



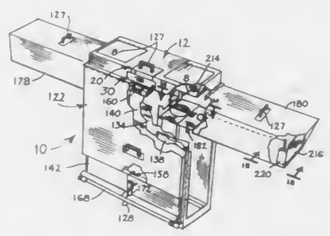
1. In a transformer housing assembly including a tank and a base supporting the tank, and a plurality of fastening devices securing the tank and based together, the tank being arranged to contain a body of oil and a transformer, and the tank having a bottom whose lower surface delimits a plane, and the base having an open top provided with an inwardly directed peripheral flange which supports the tank, the improvement wherein said tank bottom is formed to have a plurality of nonperforated upwardly recessed regions, each region having an outer edge located at said bottom plane and an interior portion located at a selected height above said bottom plane, and each said fastening device comprises: an attachment member permanently fastened to said tank bottom at said interior portion of a respective recessed region, said attachment member having a height not greater than said selected height and being provided with a screw thread; an elongate clamping member extending across said respective recessed region and having two opposed ends one of which bears against said tank bottom and the other of which ends bears against said base flange, said clamping member being provided with an elongate opening between said ends; and bolting means having a thread mating with said thread on said attachment member, said bolting means extending through said opening and engaging in said threaded bore for urging said other end of said clamping member against said flange in order to clamp said tank and base together.

4,944,421
ANGLE REINFORCEMENT
Howard J. Yurgevich, Monticello, Ind., assignor to Rosby Corporation, Monon, Ind.
Filed Jun. 19, 1989, Ser. No. 368,410
Int. Cl.[5] B65D 6/32, 6/34, 90/02
U.S. Cl. 220—1.5 8 Claims



1. In a container having a floor and walls including a plurality of vertically oriented posts joined to the floor, at least one of the posts comprising a generally box-shaped structure including an inner post wall and a reinforcement plate situated adjacent the floor within the box-shaped structure and fixed to the inner post wall, the improvement comprising: a notch in the inner post wall adjacent the floor exposing an inner surface of the reinforcement plate, and joining means for joining the reinforcement plate inner surface to the floor.

4,944,422
EXPANDABLE HOME PACKAGE DELIVERY BOX
Harold O. Aurness, 5808 Knox Ave. No., Brooklyn Center, Minn. 55430, and Thomas G. Mahler, 3841 Unity Ave. North, Robbinsdale, Minn. 55422
Filed Nov. 29, 1989, Ser. No. 442,851
Int. Cl.[5] B65D 25/00
U.S. Cl. 220—20 7 Claims



1. An expandable delivery box of an upright, rectangular shape comprising a box-shaped hinged cover at the top with

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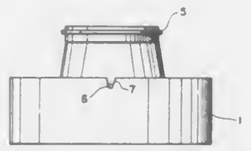
two integrated shallow boxes with lock-free lids with handles for casual deliveries; which top cover is kept locked, before a delivery, by a latch hook member of a spring-biased sliding latch base within a cover lock housing on the underside of the top cover, which latch hook extends down to a catch bar in a main lock housing on the unit frame; a pull-key, carried only by a delivery person, inserted into a keyhole of the main lock housing and onto a section of the sliding latch base designed to accommodate the key teeth when turned, allows a pulling action to unlock the top cover housing from the main lock housing; said main lock housing also comprising a first combination lock accessible from outside the unit, a first automatic receipt marking means activated by closing the top cover, which action automatically locks the top cover at the combination lock; a second receipt marking means handpressed by the delivery person; a spring-biased delivery signal automatically activated by closing the top cover only after a delivery; locking means for a front expansion box member of the unit comprising a step-lock base plate with a latch to hold the expansion member closed, means to automatically hold the locking means open while the expansion member is in use and automatically release when closed, a key receiving member plus a separate key, or release tool, carried only by a delivery person, to unlock the step-lock; a said front expansion box comprising hinged, folded sides with bottom placed tabs to hold a hinged, folding bottom member, a hinged, folding cover with a handle and a combination lock latch on its front side, a vertical front door assembly, with handles, on a frame hinged to the folding sides, which frame is secured in folded position at the bottom by a spring-biased lever on the main frame of the unit, with the doors of the front door assembly overlapping with an overlapping flap plate on the back of one of the doors featuring a locking means not accessible from the front but only when the expansion box cover is up, locking the doors at the top and bottom frame members, a second combination lock on the face of the top expansion frame member to receive the combination latch from the cover; a hinged support means to hold the front of the expansion box off the ground and kept in a retracted position by a spring-biased latch; a third receipt marking means on the inside of one of the front doors and further comprising, in the main part of the unit, covered hinged extension arms folded into each narrow side of the unit for accommodating long packages when extended horizontally and secured in closed position automatically by locking means inside the unit which can be unlatched by a delivery person when the top cover is open, comprising hinged, handless doors on each outer end with automatic locking means unlatchable only from the inside, including means for automatically pushing the doors ajar from the inside, a hinged bridge-plate assembly on each inside end of the arms for bridging the gap left underneath when the arms are extended; wherein after a delivery has been made to the unit, the delivery person cannot reopen the unit with the pull-key or release tool until it has been opened by the receiver using the combination lock and, conversely, the unit cannot be reopened by the receiver using the combination lock until another delivery has been made by a delivery person.

4,944,423

CRACKER AND CONDIMENT BOWL

Mary J. Clark, R.D. 3 Box 114, Claysville, Pa. 15323, and Paul M. Hankison, 106 Oakwood Rd., McMurray, Pa. 15317

Filed Dec. 4, 1989, Ser. No. 445,370
Int. Cl.[5] A47J *43/00*
U.S. Cl. 220—20 10 Claims



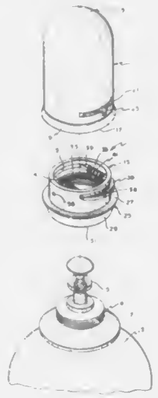
1. A bowl for packets of crackers and condiments, said bowl having an outer rim on the top of which at least one slot is provided having a razor blade piece embedded in the bottom of the slot for facilitating opening of said packets.

4,944,424

SAFETY CAP ASSEMBLY

Theodore N. Wood, Jr., Pole 257, R.D. 3, Box 121, Harvey's Lake, Pa. 18618

Filed Jan. 9, 1990, Ser. No. 462,468
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—85 P 12 Claims



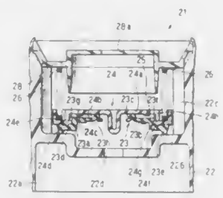
1. A safety cap assembly for protecting the valved discharge end of a pressurized cylinder provided with an existing threaded cap ring flange, which assembly comprises:
(a) a cap including a cylindrical-shaped open bottom end and a first pair of circumferential slots formed in opposed wall portions thereof;
(b) a cylindrical-shaped collar including a second pair of circumferential slots formed in opposed wall portions thereof and an internal threaded wall portion for threaded engagement with a threaded cap ring flange of a pressurized cylinder;
(c) a pair of locking tabs carried by the collar and spring means biasing the tabs outwardly through the second pair of slots; and
(d) the collar being slidably and rotatably receivable within the open end of the cap to position the first and second pairs of slots in alignment and permit the locking tabs to extend through the first pair of slots and detachably secure the cap to the collar.

4,944,425

FUEL CAP

Joji Kasugai, Ichinomiya; Satoshi Toki, Inazawa, and Norikazu Hosokawa, Aichi, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 23, 1988, Ser. No. 235,446
Claims priority, application Japan, Oct. 24, 1987, 62-269049
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—203 3 Claims



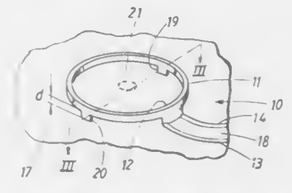
1. A fuel cap comprising:
(a) a cap body to be installed to a filler neck of a fuel tank and provided with a fluid flow path and with an annular projection projecting inward at an inner circumference of said fluid flow path;
(b) an annular valve body made of a rubber-like elastic material and provided with an outer circumferential lip element projecting from an outer circumferential edge thereof and pressed against said annular projection, with an inner circumferential lip element projecting from an inner circumferential edge thereof in reverse direction to said outer circumferential lip element, with a base portion arranged and held between said inner and outer circumferential lip elements, and with an inside arm member connecting said base portion and said inner circumferential lip element, said base portion being cylindrical, located at an intermediate position in radial direction between said inner and outer lip elements and having an annular recess in the upper side of the outer circumference thereof, said inside arm member extending from the upper side of said base portion inward in radial direction and having said inner circumferential lip element projecting upward and formed at the inner circumferential edge of said body;
(c) an outside arm member extending from the lower side of said base portion outward in radial direction and having said outer circumferential lip element projecting downward and formed at the other circumferential edge of said body;
(d) a disk-shaped valve support plate disposed at the rear side of said outer circumferential lip element and provided with a support portion for supporting said base portion of said valve body and with a seal member for pressing against said inner circumferential lip element when said valve body is supported, said valve support plate being spaced from said inside arm member to form a gap therebetween;
(e) communication means extending through said support plate radially outward of the portion of said seal member pressed against said inner circumferential lip element for communicating that side of said valve body from which said outer lip element projects with the opposite side of said valve support plate when said inner circumferential lip element is separated from said seal member, said plate having a disk-shaped inside plate and an annular outside plate connected to said inside plate through a plurality of coupling members extending from the outer circumferential edge of said inside plate and having L-like cross-sections to provide a gap between said inside plate and said outside plate to form said communication means, and said recess in said base portion being engaged with the inner circumferential edge of said outside plate when said valve body is assembled with said valve suport plate;
(f) means for biasing said valve support plate that said outer circumferential lip element is pressed against said annular projection; and
(g) movement restriction means disposed in said gap between said inside arm member and said valve support plate for restricting movement of said inside arm member towards said valve support plate.

4,944,426

CLOSURE DEVICE FOR A PACKAGING CONTAINER

Lars-Erik Piltz, Dalby, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Feb. 10, 1989, Ser. No. 309,414
Claims priority, application Sweden, Feb. 16, 1988, 8800514
Int. Cl.[5] B65D *41/32*
U.S. Cl. 220—270 8 Claims



1. An irreversibly openable closure for a packaging container comprising a substantially planner member containing an easy opening arrangement including a grip and a tearing strip defined by at least one tearing denotation emanating from said grip, said grip being integrally molded with said tearing strip and said grip having at least one additional connection portion attached to said closure, said connection portion of said grip having a predetermined size and shape adapted to maintain a substantially portion of said grip at a certain distance from said closure such that said grip is easily gripable, and wherein the operation of said grip is substantially normal to said substantially planner member.

4,944,427

DISPOSABLE TRAY FOR MEDICAL USE AND METHOD OF MAKING THE SAME

Hideaki Yamada, Kamakura; Masato Kimura; Masataka Oka, both of Fujisawa, and Kohta Saito, Yokohama, all of Japan, assignors to Nippon Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1988, Ser. No. 247,230
Claims priority, application Japan, Sep. 21, 1987, 62-143086; Dec. 4, 1987, 62-305761; Jul. 26, 1988, 63-184610
Int. Cl.[5] A61B *19/00*
U.S. Cl. 220—406 16 Claims



1. A disposable tray for medical use, comprising:
a tray body formed of a coextrusion multi-layer sheet, said sheet comprising at least two layers formed of thermoplastic resin, said layers including an upper surface layer that can be peeled from the next underlying layer;
recessed portions provided in said tray body for containing liquid medicines therein; and

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an instrument resting section provided on said tray for resting medical instruments thereon, said instrument resting section being provided with at least one ridge for supporting medical instruments.

4,944,428

APPARATUS FOR THE AUTOMATIC DETERMINATION OF A CONTINUOUS BULK MATERIAL THROUGHPUT BY MEANS OF A CONTINUOUS BALANCE

Bruno Gmür, Boppartstrasse 32, 9014 St. Gallen, and Bernd Kühnemund, Primelweg 4, Flawil, both of Switzerland

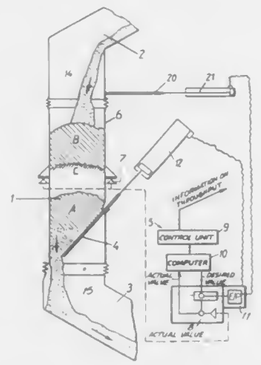
PCT No. PCT/EP86/00187, § 371 Date Nov. 6, 1986, § 102(e) Date Nov. 6, 1986, PCT Pub. No. WO86/05875, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 27, 1986, Ser. No. 948,350

Claims priority, application Switzerland, Apr. 4, 1985, 01485/85

Int. Cl.[5] G01G *11/14*

U.S. Cl. 222—55 7 Claims



1. Apparatus for automatic control of throughput of a bulk material through a continuous balance, comprising:

(a) a weighing vessel having an inlet opening and an outlet opening;

(b) weigh measuring means having an input and an output, said input being operatively connected with said weighing vessel;

(c) an adjustable of closure member positioned in an outlet region of said weighing vessel and connected thereto for closing and opening the outlet opening of said weighing vessel, said closure member having means to movably position the closure member in said weighing vessel to define said outlet opening of said weighing vessel so as to adjust a shape and a size of said outlet opening to ensure in it's opened position a continuous mass flow of said bulk material within and out of said weighing vessel;

(d) position indicating means connected with said closure member and having an output;

(e) a dosing member positioned upstream of said weighing vessel and adapted for control by the continuous balance as a function of weight changes monitored by said weighing measuring means;

(f) control means having a program for controlling the throughput of bulk matearial, said control means having a first input, a second input, a first output, and a second output, said first input being operatively connected with said output of said weight measuring means, said second input being operatively connected with said output of said indicating means, said first output being operatively connected with said closure member to set a position of the closure member to meet a programmed product-dependent opening position with respect to a desired throughput, and said second output being operatively connected with a control input of said dosing member to adjust the position of the dosing member such that an output signal of the weight measuring means is kept within a given range by the program of said control means, the limits of said range being chosen to lie between a first and a second output signal value, the first value corresponding to the lowest filling level of the weighing vessel at which said continuous mass flow is still possible while the second value corresponds to the maximum filling level, thereby using the weighing vessel with a set shape and size of said outlet opening thereof to ensure desired throughput.

4,944,429

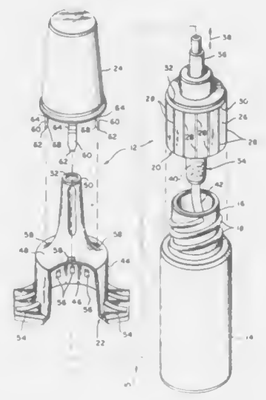
MANUALLY-OPERABLE SPRAY DISPENSER WITH LOCKING MECHANISM

Keith H. Bishop, River Vale, and William S. Blake, Linwood, both of N.J., assignors to Scherieg Corporation, Kenilworth, N.J.

Filed Aug. 28, 1987, Ser. No. 90,490

Int. Cl.[5] B67D *5/32*

U.S. Cl. 222—153 17 Claims



1. Spraying apparatus for withdrawing a dosage of liquid from a container and discharging the dosage of liquid in the form of a spray, comprising a cap removably attachable to a container of liquid; pumping means for pumping liquid from a container attached to said cap, said pumping means including a stem extending through said cap such that said stem is reciprocable relative to said cap between an extended position and a retracted position; actuating means for actuating said pumping means, said actuating means being movably mounted over and about said cap such that said actuating means is reciprocable relative to said cap between an extended position and a retracted position and said actuating means including spraying means for spraying liquid delivered thereto by said stem upon the movement of said stem from its extended position to its retracted position in response to the movement of said actuating means from its extended position to its retracted position; covering means for covering said spraying means when said covering means is mounted on said actuating means; and locking means for locking said actuating means in a locked position when said covering means is mounted on said actuating means, said locked position corresponding generally to said extended position of said actuating means, whereby said locking means inhibits the inadvertent actuation of said pumping means by said actuating means, said locking means including a plurality of openings provided in an upper surface of said actuating means and a plurality of resilient legs depending from said covering means, each of said legs being sized and shaped so as to extend through a corresponding one of said openings and having a lower end which is positioned in close proximity to an upper edge of said cap.

4,944,430

FLUID DISPENSER

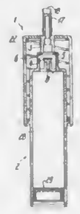
Lothar Graf, Rielasingen-Worblingen; Leo Maerte, Sipplingen, and Thomas Skorka, Radolfzell, all of Fed. Rep. of Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 649,514, Sep. 11, 1984, Pat. No. 4,694,977. This application Aug. 7, 1987, Ser. No. 83,669

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339180

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—259 32 Claims



1. A fluid dispenser for dispensing a fluid, said dispenser comprising:

a storage container (2) defining a storage space (28) for a volume of the fluid;

a piston pump (1) to be operated over a pump stroke cycle from an initial position along a pump stroke to an end position and back to the initial position along a return stroke, said piston pump (1) having a pump piston (4) displaceable relative to a pump cylinder (3) for evacuation of a pump chamber (15) defined by said pump cylinder (3) together with the pump piston (4), said pump chamber (15) being connected via an outlet duct to an external outlet (18);

said pump cylinder (3) having an inlet (11) for the fluid, said inlet (11) being defined by a portion of said pump cylinder (3) connected to the storage space (28);

control means for opening and closing said inlet (11) dependent upon the pump stroke,

wherein means are provided for preliminarily sucking the fluid into a vicinity of said inlet (11) during part of said pump stroke cycle, thereby immersing said inlet (11) in preliminarily-sucked fluid during evacuation of said pump chamber (15) until the pump stroke reaches opening of said inlet (11).

4,944,431

TRIGGER SPRAYER WITH MULTI-FUNCTION PISTON

William S. Blake, 14 Georgetown Ct., Linwood, N.J. 08221

Filed Sep. 23, 1988, Ser. No. 248,418

Int. Cl.[5] B67D *5/40*

U.S. Cl. 222—276 22 Claims

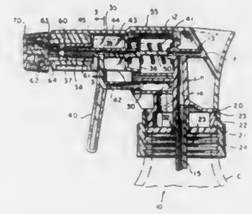
1. A dispenser pump to be mounted on a container for dispensing product from the container, comprising:

means defining a pump chamber for receiving product from the container through an inlet passage;

means defining an outlet chamber for receiving product from the pump chamber;

outlet passage means extending from the pump chamber to the outlet chamber for conveying product from the pump chamber to the outlet chamber; and

pump means including primary piston means and secondary piston means reciprocable in the pump chamber and outlet chamber, respectively, said primary piston means being operable to decrease the volume of the pump chamber upon a pressure stroke of the pump means to thereby pressurize product in the pump chamber, and said secondary piston means being operable upon said pressure stroke to enlarge the volume of the outlet chamber and create a



low pressure therein upon initial movement of the pump means on a pressure stroke for drawing product from the pump chamber and through the outlet passage to the outlet chamber, whereby flow of product from the pump chamber to the outlet chamber is enhanced and prime of the pump is maintained during initial movement on a pressure stroke.

4,944,432

APPARATUS FOR FACILITATING THE FILLING OF SPRAY DEVICES

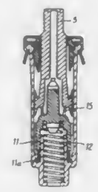
Claude Jouillat, Montigny sur Avre, France, assignor to S.T.E.P., Sur-Aure, France

Filed Jan. 26, 1989, Ser. No. 301,789

Claims priority, application France, Feb. 5, 1988, 88 01367

Int. Cl.[5] B05B *11/00*

U.S. Cl. 222—321 5 Claims



1. Apparatus for facilitating the filling of a spray device, the spray device being constituted by a receptacle and an extraction and projection pump mounted on the receptacle, wherein the pump is of the precompression type and comprises a body, a delivery piston disposed within said body and movable along an axis, a valve member having a pin which is operable between a valve open position and a valve closed position in which that pin is held pressed against a seat by a spring whose characteristics determine the degree of precompression, said seat being formed around the axis of the delivery piston of the pump, the improvement comprising:

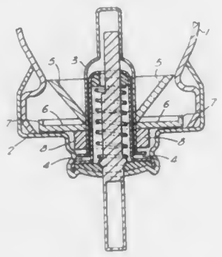
projections formed on the valve member and in contact with said piston for holding the valve in an open position.

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4,944,433
SEDIMENT BAFFLE FOR VALVES OF PRESSURIZED CONTAINERS

Adolf Knecht, Mainz; Ottfried Daab, Ingelheim Am Rhein, and Hans-Hermann Weil, Gau-Bickelheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jan. 30, 1989, Ser. No. 303,880
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1988, 3802498
Int. Cl.[5] B65D *83/14;* G01F *11/32*
U.S. Cl. 222—402.2 7 Claims

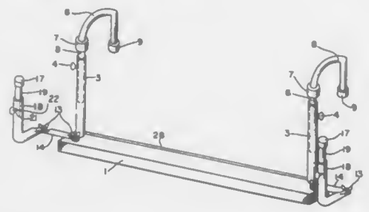


I. In a valve for dispensing metered doses from a pressurized dispensing container, which container and valve dispenses doses in an inverted position, the valve having a valve housing holding the valve and attaching the valve to the dispensing container so as to create a space between the valve housing and the walls of the dispensing container, the improvement which comprises an element disposed about the valve housing and extending radially therefrom toward the wall of the dispensing container so as to substantially close the space between the wall of the dispensing container and the valve housing, the element having a raised peripheral portion adjacent the wall of the dispensing container.

4,944,434
AUTOMOBILE PORTABLE HAULER

Kenneth B. Hamilton, 1408 Granville Rd., Westfield, Mass. 01085

Filed Jun. 30, 1989, Ser. No. 374,259
Int. Cl.[5] B60R *9/00, 11/00*
U.S. Cl. 224—42.45 R 14 Claims

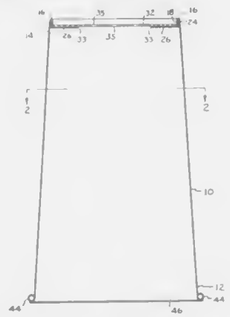


1. A portable hauler adapted to carry a load on the side of an automobile comprising a horizontal main frame member having a front and rear portion, a first U-shaped means adapted to fit over an open window of an automobile, means for connecting said first U-shaped means to said main frame member at one end thereof, a second U-shaped member adapted to fit over the open window of an automobile, means for connecting said second U-shaped member to said main frame member at the other end thereof, a first cradle forming horizontal member, adjustable means for connecting said first cradle forming horizontal member to the front portion of said main frame member, opposite the first U-shaped member, a first L-shaped member having a top and a bottom portion and being connected to the first cradle member, adjustable means connected to said first cradle forming horizontal member, a second cradle forming horizontal member, adjustable means for connecting said second cradle forming horizontal member to the front portion of said main frame member and opposite the second U-shaped member, a second L-shaped member having a top and a bottom portion and being connected to the second cradle member, adjustable means connected to said second cradle forming horizontal member, whereby a cradle is formed between the U-shaped members and the L-shaped members on said main frame for carrying an elongated load on the side of an automobile.

4,944,435
DISPOSABLE SEASONING OR CONDIMENT DISPENSER

James Lee, 8008 Nagle Ave., N. Hollywood, Calif. 91605

Filed May 8, 1989, Ser. No. 348,374
Int. Cl.[5] A47G *19/24*
U.S. Cl. 222—565 7 Claims



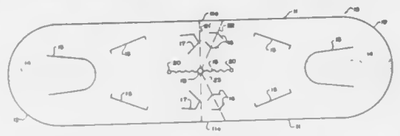
I. A condiment dispenser comprising:
an upstanding essentially cylindrical cardboard tube having a lower end and an upper end;
the upper end of said tube having a radially inturned section, followed by an axially reversed section spaced radially inwardly from the tube inner surface to form an internal annular slot;
a first annular flat disc having a peripheral flange extending into said slot so that an edge of the flange contacts the radially inturned section and the upper disc face is spaced below the lower edge of said axially reversed section;
and a second flat perforated disc seated against the upper face of said annular disc with its peripheral edge extending into the space below the lower edge of the axially reversed section.

4,944,436
GARMENT HANGER COVER

Harold W. Moen, and Darcy A. Moen, both of 74 Noonan Road, Regina, Saskatchewan, Canada S4V OJ6

Filed Feb. 17, 1989, Ser. No. 312,037
Int. Cl.[5] A47G *25/20, 25/14*
U.S. Cl. 223—98 5 Claims

I. A cover for a garment hanger of the type having a pair of diverging arms and an integral hook supporting such arms comprising, a fold formed generally rectangular normally flat flexible sheet of material having a central opening therein capable of permitting the passage of said hook therethrough, a main fold line on the central transverses axis dividing the sheet into opposite end portions, two further fold lines in one of said end portions, wedge shaped locking tongues formed by cuts generally transverse to and crossing the further fold lines, lips formed by a cut on the portion opposite to the one containing the locking tongues, which when pivotally displaced permit

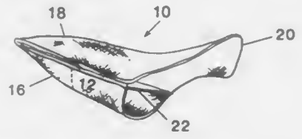


entry and provide coverage of the locking tongues in a unique and expeditious manner, such easily formed and positively locked cover providing a complete support for a garment on said hanger.

4,944,437
SEWING THIMBLE

Nathaniel Calvert, Rochester, Minn., assignor to IN Motion, Inc., Minneapolis, Minn.

Filed Sep. 12, 1988, Ser. No. 243,482
Int. Cl.[5] D05B *91/04;* A41D *13/00*
U.S. Cl. 223—101 9 Claims

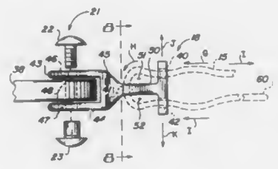


1. A needle work thimble comprising:
(a) a pliable member folded upon itself and hemmed to form an elongated envelope surrounding an interior cavity;
(b) an elastic member secured interiorly of said cavity in the hem that forms said cavity;
(c) at least one rigid planar member secured interiorly of said cavity to one surface of said pliable member; and
(d) wherein said cavity is sized to mount over at least the outer phalanx of a finger and is rotatable thereabout.

4,944,438
SHOULDER STRAP APPARATUS FOR CARRYING WEAPONRY ON THE PERSON

Richard N. Gallagher, 4311 W. Van Buren, Phoenix, Ariz. 85043

Filed Feb. 27, 1989, Ser. No. 315,551
Int. Cl.[5] F41C *33/02;* A44B *11/10*
U.S. Cl. 224—206 13 Claims

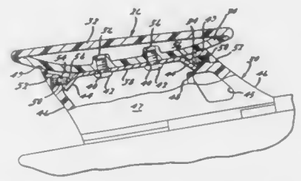


1. A shoulder strap support apparatus for carrying weaponry on the person, said apparatus including
(a) a weaponry container normally carried at the side beneath the shoulder of the person;
(b) elongate strap means made of substantially stiff material having a first end and a second end and normally extending upwardly from said container over the side of the chest, over the shoulder, and downwardly over the back of the person to said container;
(c) first connector means for attaching said first end to said container;
(d) second connector means for attaching said second end to said container;
at least one of said first and second connector means comprising unitary fastener means including
(e) a body including
(i) first, second and third spaced apart slots for slidably frictionally receiving one of said ends of said strap means, and
(ii) a mediate member extending between
said second slot, and
said first and third slots,
and including an end extending between and terminating intermediate said first and third slots; and,
(f) a head interconnecting said body and said container;
said body being shaped and dimensioned such that one of said first and second ends
(g) extends continuously sequentially through said first, second and third slots, and loops around said mediate member;
(h) is adjacent said mediate member at points intermediate
(i) said first and second slots, and
(ii) said second and third slots;
(i) frictionally slidably engages each of said slots;
(j) loops outwardly away from at least a portion of said mediate member and inwardly through said second slot and is spaced away from said portion of said mediate member, said looping of said strap through said second slot and said spacing of said strap away from said mediate member facilitating the frictional engagement of said strap by at least one of said first and third slots; and,
(k) passes only once through each of said slots.

4,944,439
ARTICLE CARRIER

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 207,062, Jun. 13, 1988, abandoned.
This application Nov. 28, 1989, Ser. No. 442,208
Int. Cl.[5] B60R *9/04*
U.S. Cl. 224—326 20 Claims



1. In an article carrier for carrying articles on a vehicle including at least one longitudinally extending support member adapted to be mounted on a generally horizontally extending body surface, a bracket having a first end mounted on the support member and extending upwardly to a second end and having means forming a cavity therein, and a cross bar extending laterally to the support member and disposed upon the second end of the bracket, a retaining assembly for retaining the cross bar to the bracket, said assembly comprising:
means forming a retaining member having a planar portion extending longitudinal and substantially parallel to the body surface and a flange at each end of said planar portion extending longitudinally and downwardly from the cross bar toward the body surface surface that said flange

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is inclined relative to said planar portion, said reataining member being disposed within the cavity; and

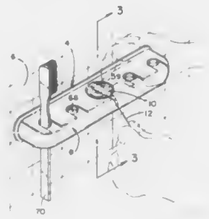
means on the bracket at each longitudinal end thereof for cooperating with said flanges for preventing longitudinal and vertical movement of said retaining member relative to said bracket for retaining the cross bar to the bracket.

4,944,440

DISPOSABLE DENTAL FLOSS CASSETTE DISPENSER SYSTEM

Eugene J. Fortman, 2111 Telemark La., Rochester, Minn. 55901

Filed Feb. 27, 1989, Ser. No. 316,094
Int. Cl.[5] B65H *75/32*; A47B *81/02*; A61C *15/04*
U.S. Cl. 225—1 **11 Claims**



1. A method of dispensing dental floss, said method comprising the steps of:

(a) providing a dental floss dispenser for attachment to a surface, said dental floss dispenser including:

(i) self-contained disposable cassette housing means for enclosing dental floss gathered for storage therein prior to being dispensed therefrom, said self-contained disposable cassette housing means including a gathered supply of dental floss and opening means for withdrawing dental floss from said housing; and

(ii) a support member for attachment to the surface, said support member including support means for supporting and receiving said self-contained disposable cassette housing means and attachment means for attaching said support member to the surface;

(b) attaching the support member to the surface;

(c) engaging said self-contained disposable cassette housing means with said support means; and

(d) withdrawing dental floss from said self-contained disposable cassette housing means when said housing means are seated within said support means.

4,944,441

TAPE CUTTING DISPENSER

John W. Gana, 5077 Landisville Rd., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 946,954, Dec. 19, 1986, Pat. No. 4,807,789. This application Dec. 14, 1988, Ser. No. 284,188
The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.
Int. Cl.[5] B65H *35/04*
U.S. Cl. 225—16 **9 Claims**

1. An apparatus for dispensing predetermined lengths of tape which comprises:

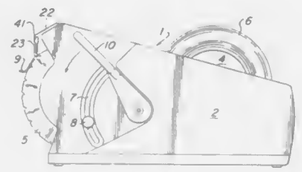
(1) a framed housing in which there is disposed a revolving tape drum for supporting a tape roll;

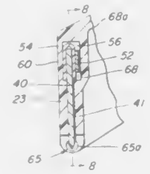
(2) a feeder wheel onto which said tape is dispensed;

(3) a lever arm for rotating said feeder wheel through a succession of sequenced movements so as to feed said tape incrementally onto the peripheral surface of said wheel;

(4) a cover assembly slidably engaged within grooved openings in said housing above said feed wheel, said assembly terminating in a vertical segment which includes a slotted aperture having two end openings for receiving a straight-edged blade;

(5) a spring means located within said slotted aperture; and





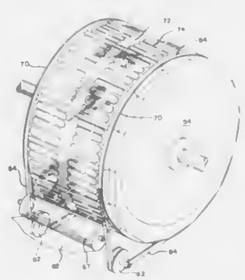
(6) a straight-edged blade positioned within said aperture and against said spring means to overcome variations in blade dimensions and a worn condition of said aperture.

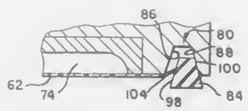
4,944,442

WEB RETENTION AND ADVANCEMENT MECHANISM

Raymond G. Buchko, Appleton, Wis., assignor to Curwood, Inc., Oshkosh, Wis.

Filed Oct. 6, 1988, Ser. No. 254,432
Int. Cl.[5] B65H *20/00, 5/02*
U.S. Cl. 226—171 **13 Claims**





1. A web retention and advancement mechanism for retaining a web upon a rotatable drum during an arcuate portion of its rotation; said drum being adapted to receive a web upon its outer surface; said mechanism comprising:

two spaced grooves formed on said drum, each groove having an inner groove defining wall, said drum inner groove defining walls being spaced apart from each other

a distance which is less than the axial width of the web; a pulley associated with each said groove and spaced from said drum in general alignment with its associated drum groove, each said pulley defining a groove including an inner groove defining wall, said pulley inner groove defining walls spaced apart a distance greater than the distance between said inner groove defining walls of said drum;

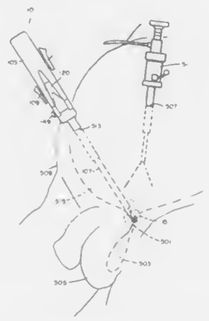
a pair of endless belts each one of which is positioned in a groove of said drum and a groove of one of said pulleys, each said belt being tensioned between said drum and pulley and being rotatable with said drum, each said belt having an inner annular surface in contact with a portion of said inner wall of one of said grooves in said drum to retain edges of the web in said grooves in said drum.

4,944,443

SURGICAL SUTURING INSTRUMENT AND METHOD

Robert R. Oddsen, Centerport, and Ralph Ger, Lake Success, both of N.Y., assignors to Innovative Surgical Devices, Inc., Westbury, N.Y.

Filed Apr. 22, 1988, Ser. No. 185,054
Int. Cl.[5] A61B *17/00*
U.S. Cl. 227—19 **58 Claims**



1. A surgical instrument for suturing an opening in internal body tissues of a patient from inside the body cavity of the patient, said instrument comprising:

elongate frame means for providing a superstructure for the instrument;

staple storing means on said frame means for temporarily storing at least one staple;

staple forming and ejection means at least in part movably mounted to said frame means for ejecting said staple from said stable storing means into the body tissues of the patient and deforming said staple from an open position to a closed position in which said staple holds together two pieces of body tissue on opposite sides of said opening;

first actuating means at least in part movably mounted to said frame means and connected to said staple forming and ejection means for moving at least a portion thereof;

tissue positioning means separate from said staple forming and ejection means and mounted to said frame means for gripping, approximating and temporarily holding in a stapling position said two pieces of body tissue prior to and during a stapling operation; and

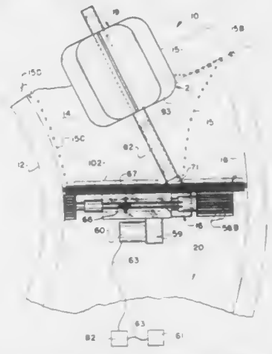
second actuating means separate from said first actuating means for moving at least a portion of said tissue positioning means prior to said stapling operation, said second actuating means being at least in part movably mounted to said frame means and connected to said tissue positioning means.

4,944,444

WELDING OR BURNING SHIELD

James S. Reaner, Milford, Ohio, assignor to MK-Ferguson Company, Cleveland, Ohio

Continuation of Ser. No. 369,735, Jun. 22, 1989, abandoned. This application Jan. 18, 1990, Ser. No. 467,321
Int. Cl.[5] B23K *9/32, 28/02*; F16P *1/06*
U.S. Cl. 228—59 **18 Claims**



1. A portable shield for preventing welding or burning by-products and other foreign bodies traveling substantially along or across a pipe from contaminating the inside diameter of the pipe comprising:

a shield assembly for support within the pipe that spans across and contacts the inside diameter of the pipe and limits the movement of by-products and foreign bodies traveling substantially along the pipe; and

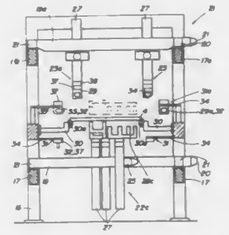
a splatter target that is connected to and extends from said support member for limiting the movement of welding by-products traveling across the inside diameter of the pipe.

4,944,445

METHOD FOR AUTOMATIC JOINING AND MACHINING

Ernst Zimmer, Friedberg, Fed. Rep. of Germany, assignor to Kuka Schweissanlagen & Roboter GmbH, Augsburg, Fed. Rep. of Germany

Division of Ser. No. 925,000, Oct. 22, 1986, Pat. No. 4,893,398. This application Oct. 17, 1989, Ser. No. 422,582
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1985, 3506314
Int. Cl.[5] B23K *37/02*
U.S. Cl. 228—102 **2 Claims**



1. A method for the automatic joining and machining of different assemblies, each assembly having at least one component contained in a workpiece carrier having a bearing arm, the method using a transfer line with a retoolable and reconfigurable work station, comprising: presorting parts for the

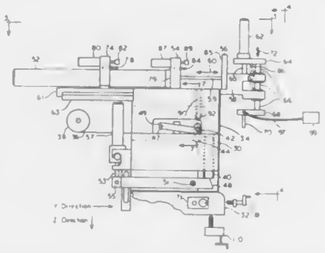
assembly and placing presorted parts on the workpiece carrier bearing arms in positions corresponding generally to a prearranged assembly position; delivering the assembly parts on the workpiece carrier bearing arms in a loose and unjoined condition to a work station; employing individual holding and clamping implements, associated with one of a plurality of tool carriers movable in at least two dimensions, at the work station to autmatically position the assembly parts into a precise predetermined joining position relative to other assembly parts; and, securing the assembly parts in a joining position, and thereafter completing at least one of lifting and welding the secured assembly parts.

4,944,446

AUTOMATIC PREFORM DISPENSER

Ted L. Thompson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 2, 1989, Ser. No. 430,257
Int. Cl.[5] B23K *3/06*
U.S. Cl. 228—102 **18 Claims**



1. An automatic preform dispenser apparatus for cutting and placing a predetermined length of preform on an integrated circuit (IC) package, comprising:

a. means for advancing a predetermined length of preform;

b. a blade and blade actuating means in the form of a first pneumatic cylinder positioned adjacent to the preform to cut a predetermined length of preform;

c. a vacuum operable preform pick-up tip operable between a pick-up location and an IC package;

d. means in the form of a second pneumatic cylinder to move the pick-up tip in a horizontal (Y) plane between a pick-up location and the IC package;

e. means in the form of a third pneumatic cylinder to move the pick-up tip in a vertical (Z) plane;

f. an adjustable XYZ table for supporting the automatic preform apparatus and providing micrometer adjustment in X, Y and Z directions; and

g. programmable means for controlling sequential operation of the apparatus.

4,944,447

BONDING VERIFICATION PROCESS INCORPORATING TEST PATTERNS

John R. Thome, Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1989, Ser. No. 330,039
Int. Cl.[5] B23K *1/19*
U.S. Cl. 228—103 **31 Claims**

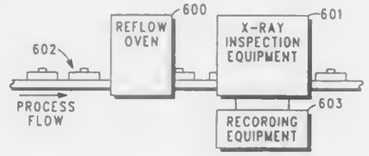
1. A method of bonding verification, which comprises the steps of:

(a) positioning at least one bonding test pattern on a substrate;

(b) applying a bonding agent to said at least one bonding test pattern;

(c) applying the bonding agent to components and the substrate;

(d) altering the applied bonding agent state to adhere the components to the substrate; and



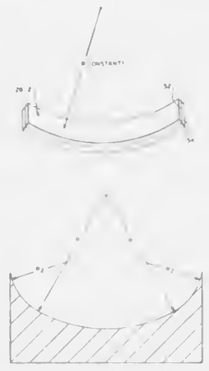
(e) inspecting the altered state of the bonding agent applied to said at least one bonding test pattern.

4,944,448

COMPOSITE ELECTRON BEAM TARGET FOR USE IN X-RAY IMAGING SYSTEM AND METHOD OF MAKING SAME

Kristian R. Peschmann, San Francisco, and Steve S. Shen, San Bruno, both of Calif., assignors to Imatron, Inc., South San Francisco, Calif.

Filed May 9, 1986, Ser. No. 861,416
Int. Cl.[5] B23K *20/02*
U.S. Cl. 228—173.2 **11 Claims**



1. A method of fabricating a composite structure including at least two metal sheets brazed together comprising the steps of preforming at least one of said metal sheets, assembling said metal sheets in a die having a preselected shape, and brazing the assembled metal sheets while in said die.

4,944,449

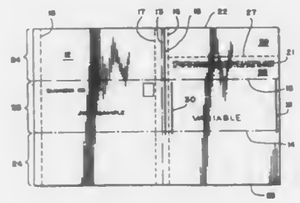
OVERSIZE LASER MAILER AND RETURN ENVELOPE AND METHOD

Eric Schmidt, Elgin, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Continuation-in-part of Ser. No. 391,302, Aug. 7, 1989. This application Aug. 9, 1989, Ser. No. 391,300
Int. Cl.[5] B65D *27/06, 27/12*
U.S. Cl. 229—73 **3 Claims**

1. A folded single sheet mailer comprising a rectangular sheet having two long sides and two short sides, said sheet on one face being imprinted with variable information and static information on the other face, said sheet being folded on itself transverse to said long sides along a line offset from the middle

of said sheet to provide one fold ply extending beyond the other fold ply and with the variable information containing face positioned outwardly, a transverse line of perforation in said one ply in the portion extending beyond the other fold ply, a transversely extending glue line on said static information face in said extending portion between said transverse line of perforation and the adjacent short side, superposed lines of transverse perforation in said one fold ply and said other fold ply adjacent said transverse fold line, a transversely extending glue line on said other ply on said variable information containing face between said superposed lines of perforation and said fold line, said sheet being folded on itself along two spaced apart longitudinally extending fold lines to provide a sealed outgoing envelope openable by tearing along said lines of transverse perforation, said longitudinally extending fold lines being substantially equally spaced relative to the said long sides to provide three substantially equal side-by-side panels in said other ply, the middle of said three panels on said variable information face being equipped with transversely extending ribbons of adhesive adjacent to said transverse lines of perforation to provide a return envelope after said envelope is open.

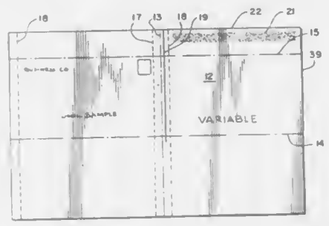


4,944,450

OVERSIZE LASER MAILER AND METHOD

Eric Schmidt, Elgin, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Aug. 9, 1989, Ser. No. 391,302
Int. Cl.[5] B65D *27/06, 27/12*
U.S. Cl. 229—73 **3 Claims**



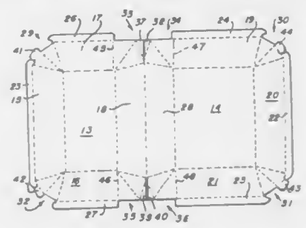
1. A folded single sheet mailer comprising a rectangular sheet having two long sides and two short sides, said sheet on one face being imprinted with variable information and static information on the other face, said sheet being folded on itself transverse to said long sides along a line offset from the middle of said sheet to provide one fold ply extending beyond the other fold ply and with the variable information containing face positioned outwardly, a transverse line of perforation in said one ply in the portion extending beyond the other fold ply, a transversely extending glue line on said static information face in said extending portion between said transverse line of perforation and the adjacent short side, superposed lines of transverse perforation in said one fold ply and said other fold ply adjacent said transverse fold line, a transversely extending glue line on said other ply on said variable information containing face between said superposed lines of perforation and said fold line, said sheet being folded on itself along two spaced apart longitudinally extending fold lines to provide a sealed envelope.

4,944,451

COMPARTMENTED FLANGED TRAY

Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 6, 1989, Ser. No. 446,795
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.17 **6 Claims**



1. A flanged tray for packaging, storing, heating and serving food prepared from a single blank of paperboard, said tray comprising multiple leakproof compartments with partitions between each adjacent pair of compartments, said flanged tray comprising:

(a) a base panel for each compartment formed by opposed score lines:

(b) upstanding side walls foldably attached to each base panel along said opposed score lines said side walls terminating at upper free edges wherein the adjacent walls of each pair of compartments are foldably attached to one another along their upper free edges to form partitions between each pair of compartments:

(c) flap extensions foldably attached to the upper free edges of all side walls of each compartment except the tray walls which form each partition to provide a peripheral flange around the tray:

(d) gusset panel corner closures foldably attached to the ends of said side walls at each corner of each base panel along paired score lines which extend from the intersection of said opposed score lines, said gusset panels being overlappingly bonded together and between said side walls to form leak proof corners for the respective compartments, said paired score lines being arranged at the gusset closures between the adjacent compartments to provide partition panels which extend substantially perpendicular from their respective base panels to lie in full face-to-face contact so that the paired compartments provide support for each other.

4,944,452

MULTIPLE PIZZA CONTAINER

Walter R. Kent, 1732 120th Ave., Allegan, Mich. 49010, and Terrence L. Guerrant, 2027 114th Ave., Otsego, Mich. 49078

Filed Sep. 27, 1989, Ser. No. 413,238
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.21 **7 Claims**

1. A multi-compartmented box blank comprising,

a single "L" shaped blank including a top panel member, a floor panel member, and a middle panel member,

the floor panel member includes a first wall hingedly mounted coextensively to a top edge of the floor panel member, and a left side wall panel positioned medially of and hingedly coextensively mounted to the floor panel member and to the middle panel, and a bottom side wall

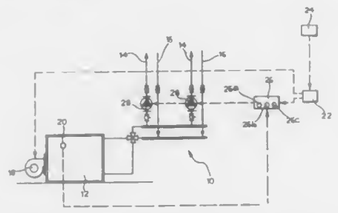
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panel positioned medially of and hingedly mounted coextensively to the floor panel member and the top panel



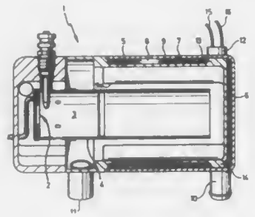
member intermediate the top panel member and the floor panel member.

4,944,453
HEATING SYSTEM
Artemio Ronzani, Frazione Clou N.6, 11010 Sarre (Aosta), Italy
Filed Sep. 23, 1988, Ser. No. 248,014
Int. Cl.[5] F22B *35/00*
U.S. Cl. 237—8 R 3 Claims



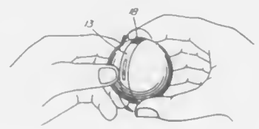
1. A space heating system including a boiler with which are associated a burner, inlet and delivery pipes for the liquid, at least one liquid circulation pump, and an electrical control panel connected to at least one ambient temperature sensor, characterised in that an electronic economiser device (26) is operatively associated with the electrical control panel (22) and comprises:
- a central processing unit provided with an input connected to a sensor (20) of the temperature of the liquid in the boiler (12) and an output connected to the pump (28);
- a first timer (26*a*) connected to the pump to control the duration of an operating cycle of the pump (28) in conjunction with the temperatures sensed by the ambient temperature sensor (24) and the boiler liquid temperature sensor (20), and
- a second timer (26*b*) connected to the pump to control the duration of a non-operating cycle of the pump (28) independently of the temperature sensors (20,24).

4,944,454
HEATER, IN PARTICULAR VEHICLE AUXILIARY HEATER, WITH A TEMPERATURE SAFETY MECHANISM
Friedrich Widemann, Munich; Guenter Kahnau, Soecking; Richard Kohse, Munich, and Dieter Raethel, Mittelstetten, all of Fed. Rep. of Germany, assignors to Webasto AG Fahrzeugtechnik, Fed. Rep. of Germany
Filed Feb. 22, 1989, Ser. No. 313,081
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1988, 3805610; Nov. 21, 1988, 3839244
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 C 23 Claims



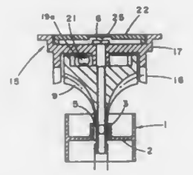
1. In a water type heater, for a vehicle auxiliary heater, of the type having a burner in a combustion chamber that is surrounded by a heat exchanger with a closed end facing away from the burner, the heat exchanger, in turn, being surrounded by a jacket casing in a manner creating a jacket space between the heat exchanger and the jacket casing through which a liquid heat exchange medium flows, and with a temperature safety means for shutting off the heater to prevent damage of temperature-sensitive parts, due to overheating; the improvement wherein the temperature safety means is a contact type temperature sensor, and wherein said temperature safety means is provided with means for supporting it exteriorly of the jacket casing and for connecting it in a heat-conducting manner with the heat exchanger.

4,944,455
AIR TREATING DEVICE
Wilhelm M. H. Haust, Toronto, and Charles E. Gagnon, Brampton, both of Canada, assignors to Kinney Canada Inc., Weston, Canada
Filed Aug. 24, 1989, Ser. No. 398,537
Int. Cl.[5] A61L *9/04*
U.S. Cl. 239—59 3 Claims



1. An air treating device comprising first and second interacting bodies joining along a circular join line to provide a hollow container for a volatilizable air treating compound, said join line being in a unitary plane, a rotatable annular ring having at least two apertures for the passage of volatilized air, said annular ring being mounted about said hollow body for rotation in said unitary plane, means disposed interiorly of said annular ring to provide openings in said hollow body in register with said apertures at one position of rotation of the annular ring and for sealing said apertures at another position of rotation of the annular ring, a post for connecting said bodies together, said post including a male post section joined to the first interacting body and a female post section joined to the second interacting body, said male and female post sections cooperating when engaged to provide a post extending substantially axially with respect to the axis of rotation of said ring, said male and female post sections being connected sufficiently securely to prevent easy access to the hollow container, a donut shaped disc of volatilizable material having upper and lower surfaces mounted on said post substantially in said unitary plane whereby air will flow freely between at least two apertures over both said upper and lower surfaces of the disc.

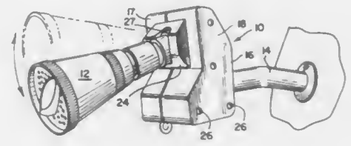
4,944,456
ROTARY SPRINKLER
Avi Zakai, Rishon Le-Zion, Israel, assignor to Dan Mamtirim, Galil Elyon, Israel
Filed Apr. 27, 1989, Ser. No. 343,700
Claims priority, application Israel, Apr. 29, 1988, 86226
Int. Cl.[5] B05B *3/04*
U.S. Cl. 239—222.19 5 Claims



1. A rotary sprinkler comprising:
- a base member for coupling to an irrigation supply and formed with a plurality of base member outlets;
- a rotary distributor member of substantially cuspidal shape rotatably mounted with respect to said base member with an apical end thereof adjacent the base member and an opposite broad end thereof remote from the base member;
- a plurality of distributor passages formed in a curved surface of the distributor member, each passage extending from a passage inlet located in said apical end adjacent to a base member outlet to a passage outlet located in said broad end;
- a rotary turbine member rotatably mounted with respect to said distribution member and provided with a plurality of turbine blades disposed adjacent said passage outlets so that irrigation streams emerging from said passage outlets strike said blades and rotatably displace the turbine member;
- a water flow path extending through said sprinkler from said base member outlets to said passage outlets;
- a ball drive chamber defined by adjacent portions of said turbine and distributor members and outside said water flow path; and
- a ball drive means located in said ball drive chamber for transmitting the rotary displacement of the turbine member to the distributor member.

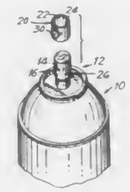
4,944,457
OSCILLATING DEVICE FOR FLUID NOZZLES
Mark Brewer, 25 W. 343 Highview, Naperville, Ill. 60540
Filed May 1, 1989, Ser. No. 345,460
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 10 Claims

1. A device adapted for direct attachment to a fluid pipe at one end and accommodating the attachment of a fluid nozzle at its opposed end for effecting the oscillating movement of a fluid nozzle in a vertical plane comprising in combination,
- a housing having a fluid inlet and a fluid outlet means mounted within a fluid outlet opening and spaced from said fluid inlet,
- said fluid inlet adapted to allow fluid under pressure to enter said housing,
- an impeller rotationally mounted within said housing and positioned in the path of fluid under pressure entering said housing through said fluid inlet thereby to rotate said impeller under the force of fluid under pressure,
- a gear system mounted within said housing and being operatively connected to said impeller,
- gear arm means operatively driven by said gear system at one end thereof and termination at an opposed end,
- said fluid outlet means comprising a fluid ejection nozzle mounted within the fluid outlet opening and adapted for oscillating movement in a vertical plane,



- said fluid ejection nozzle including connecting means for accommodating the engagement thereto of a shower head in linear alignment with said fluid ejection nozzle,
- and an actuator arm fixedly secured to said fluid ejection nozzle including mounting means associated therewith to accommodate the securement thereto of the opposed end of said gear arm means,
- whereby the rotational movement of said impeller caused by fluid under pressure causes a concomitant movement of said gear system which in turn causes a rotary movement of said gear arm means resulting in a reciprocating movement of said actuator arm and said fluid ejection nozzle in a vertical plane.

4,944,458
SPRAY CAN NOZZLE PROTECTOR
Richard Sassenberg, 180 E. Prospect Ave., Mamaroneck, N.Y. 10543
Filed Jan. 30, 1989, Ser. No. 302,922
Int. Cl.[5] B65P *1/04*
U.S. Cl. 239—288.5 7 Claims



1. A device for preventing the air drying of fluid at a fluid discharge orifice of a conventional spray nozzle assembly, said device comprising:
- a selectively removable and replaceable ring having a fibrous plug passing through the side wall of said ring, the diameter of said ring being only slightly larger than the diameter of the actuator of said spray nozzle assembly, said fibrous plug comprising an air blocking pad soaked in non-evaporative liquid which, when in use, is immediately

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adjacent to and substantially in contact with said fluid discharge orifice.

4,944,459

MOUNTING/DISMOUNTING SYSTEM FOR MOUNTING AND DISMOUNTING A SPRAY GUN ON AND FROM A PAINTING ROBOT

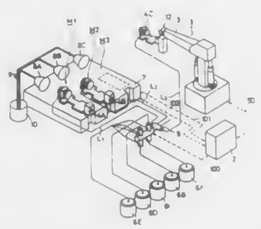
Takashi Watanabe, and Fujio Kobayashi, both of Yokohama, Japan, assignors to Tokico Ltd., Japan

Filed Dec. 15, 1988, Ser. No. 285,069

Claims priority, application Japan, Dec. 18, 1987, 62-192632[U]

Int. Cl.[5] **B05B** *13/00;* **B67D** *5/00*

U.S. Cl. 239—305 11 Claims



1. A mounting/dismounting system for mounting and dismounting a spray gun on and from an arm of a robot, comprising:

a base extending horizontally and having a flat top surface defined by a first side facing the robot and a second side opposing said first side for supporting said spray gun when the spray gun is dismounted, said flat top surface further being defined with a predetermined position on which the spray gun is to be positioned when the spray gun is waiting for mounting on the arm of the robot;

detecting means provided on the top surface of the base so as to be actuated by the spray gun when the spray gun is moved excessively towards said second side on the top surface and for producing an output signal indicating that the spray gun is displaced from said predetermined position towards said second side of the top surface;

a controller connected to said detecting means and to said robot for stopping the movement of the arm responsive to the output signal from said detecting means;

actuator means mounted on the base at a position below the base and connected to the controller so as to be actuated under control of the controller; and

an actuation arm driven by the actuator means, said actuation arm being movable between a first state in which a tip end of the atuation arm is located below the top surface of the base and a second state in which the tip end of the actuation arm is projected upwards beyond the top surface of the base at a horizontal position which is relatively close to the second side of the top surface as compared to that of the tip end of the arm in said first state, said tip end of the actuation arm urging said spray gun placed on the top surface to said predetermined position when the arm is moved from the first state to the second state.

4,944,460

MULTIFUNCTION NOZZLE

Robert W. Steingass, Valparaiso, Ind., assignor to Task Force Tips, Inc., Valparaiso, Ind.

Filed Sep. 9, 1988, Ser. No. 243,283

Int. Cl.[5] **A62C** *33/00;* **B05B** *1/26*

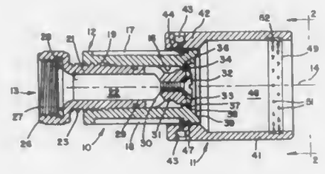
U.S. Cl. 239—428.5 11 Claims

1. A multifunction nozzle, comprising:

(a) a peripheral jet nozzle including barrel means and plunger means connected together for relative movement, said plunger means being adapted to receive a flow of liquid and said barrel means being movable relative to said plunger means to produce a substantially straight stream exit flow or a conically divergent exit flow of the liquid;

(b) a sleeve extending around said barrel and plunger means and being movable relative to said barrel means;

(c) said peripheral jet nozzle being operable to produce a conically divergent flow and said sleeve being movable into the exit flow of the liquid and the liquid being deflected forwardly by said sleeve, whereby the flow of said liquid causes air adjacent to it to be moved along with it, thereby creating a partial vacuum within said sleeve; and



(d) said partial vacuum within said sleeve inducing air from outside said sleeve to flow into said sleeve through said deflected flow of liquid;

(e) whereby a liquid containing a foaming agent creates a foam from said flows, and further including agitating means on said sleeve and located in the flow of the liquid.

4,944,461

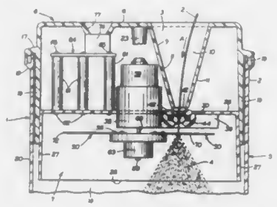
CARBON PAPER SHREDDER

Thomas L. Farnsworth, Hartville, Ohio, assignor to Invequest, Inc., North Canton, Ohio

Filed Aug. 7, 1989, Ser. No. 390,411

Int. Cl.[5] **B02L** *18/16*

U.S. Cl. 241—36 15 Claims



1. A carbon paper shredder including a housing having an upper cover and a lower receptacle, said receptacle having a top opening for receiving a piece of carbon paper, said cover being removably mounted on and covering the top opening of the receptacle and having a chute for feeding carbon paper into the interior of the housing; a cutting blade rotatably mounted within the housing; power driven feed rolls mounded adjacent the chute for drawing the piece of carbon paper through said chute and generally perpendicularly into the path of the cutting blade; an electric motor for rotating the cutting blade at a high speed to shred the piece of carbon paper into pieces which fall into the receptacle; and control means for controlling the rotation of the cutting blade including a single manually actuated control switch, for rotating the cutting blade in a forward cutting direction and for reversing the rotation of the cutting blade to eliminate jamming of said cutting blade.

4,944,462

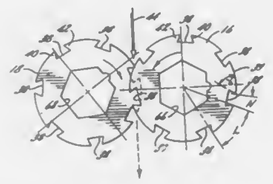
SHREDDER

Donald E. Raterman, Deerfield, and John Muka, Harwood Heights, both of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed May 2, 1989, Ser. No. 346,587

Int. Cl.[5] **B02C** *4/08, 18/16*

U.S. Cl. 241—100 22 Claims



1. A device for shredding sheet material, comprising:

first and second parallel shafts mounted for rotation in opposite directions;

a first plurality of discs fixed on said first shaft for rotation therewith and spaced at intervals along the length of said first shaft;

a second plurality of discs fixed on said second shaft for rotation therewith and spaced at intervals along the length of said second shaft to interleave with said first plurality of discs, wherein the periphery of each of said first and second plurality of discs has a V-shaped cross-section to form dual shredding blades at the axial edges of each disc;

at least one notch formed in the periphery of each disc, each of said notches narrowing toward the periphery of said each disc to form opposed double-pointed portions.

4,944,463

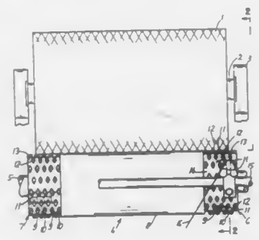
APPARATUS FOR CROSS-WINDING A TRAVELING YARN

Hans Raasch, Moenchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 346,874

Int. Cl.[5] **B65H** *54/46*

U.S. Cl. 242—18 DD 5 Claims



1. Apparatus for cross-winding a traveling yarn on a bobbin comprising a driven winding drum for peripheral contact with said bobbin for driving rotation thereof, and yarn guide means for traversing movement along said bobbin for applying the yarn in a cross-wound fashion to the periphery of said bobbin, said winding drum having two peripheral areas spaced from one another along said winding drum for contact respectively with opposite end areas of said bobbin whereat reversal of the cross-winding of the yarn occurs and a generally smooth peripheral area along said winding drum between said spaced peripheral areas, each said spaced peripheral area defining for any given said bobbin a plurality of discrete yarn engagement members spaced with respect to one another over the circumferential and axial extents of said spaced peripheral area, each said yarn engagement member being adapted for guiding the yarn onto said bobbin at its opposite end areas to resist axially inward deviation of the yarn from its cross-winding angle at the location of yarn cross-winding reversal.

4,944,464

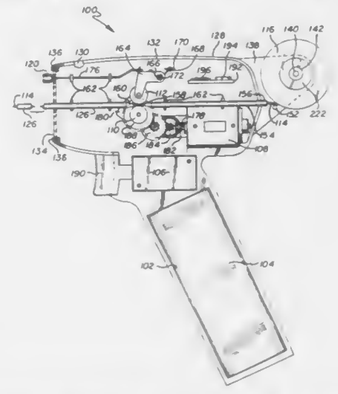
SOLDER DISPENSING APPARATUS AND METHOD OF OPERATION

Jerry L. Zeleaka, 4410 N. Healey Ct., Westlake Village, Calif. 91361

Filed Oct. 24, 1988, Ser. No. 261,622

Int. Cl.[5] **B65H** *75/00*

U.S. Cl. 242—54 R 20 Claims



1. A solder dispensing apparatus comprising, in combination:

housing means having a body and a handle;

driving means disposed within said body, said driving means operating a pulling means for moving a line of solder through a passageway located within said housing means;

energizing means mounted within said handle for electrifying said driving means;

controlling means disposed within said housing means for connecting said driving means to said energizing means and for limiting the speed of said driving means;

regulating means in electrical communication with said driving means for maintaining a constant input voltage to said driving means;

reducing means disposed between said driving means and said pulling means for providing improved speed change sensitivity; and

extending means in mechanical communication with said passageway for providing improved maneuverability and dispensibility of said line of solder to a designated solder joint.

4,944,465

SPRING DRIVING AND WINDING MACHINE

Aaron J. Levine, 3180 N. Lake Shore Dr., Apt. 5A, Chicago, Ill. 60657

Filed May 11, 1989, Ser. No. 350,409

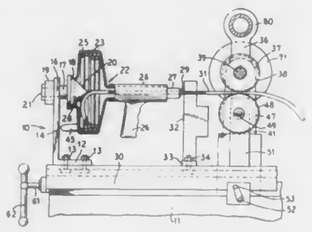
Int. Cl.[5] **B65H** *75/36*

U.S. Cl. 242—54 R 4 Claims

1. A spring snake driving and winding machine for a plumbing cleanout tool including a snake magazine formed with an opening comprising, a base, a first upright member supported from said base, a conical member rotatably supported by said first upright member, a pair of rollers formed with concave edges rotatably supported by said base above each other and moveable relative to each other so as to clamp said spring

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snake therebetween, a drive means connected to at least one of said pair of rollers, and said plumbing cleanout tool mountable on said machine with said conical member extending partially



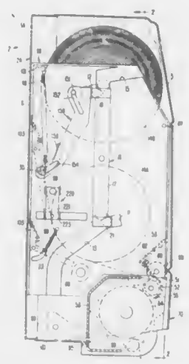
within said opening of said magazine of said plumbing cleanout tool so that said spring snake can be loaded into said magazine as said driving means is energized.

4,944,466

FLEXIBLE SHEET MATERIAL DISPENSER WITH AUTOMATIC ROLL TRANSFERRING MECHANISM

Paul W. Jespersen, Houston, Tex., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 218,994, Jul. 14, 1988, Pat. No. 4,856,724. This application May 17, 1989, Ser. No. 352,110
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] B65H *19/00*
U.S. Cl. 242—55.3 31 Claims



1. A dispenser for rolls of flexible sheet material wound on cores, the cores having ends extending beyond the sides of the rolls, the dispenser comprising:

a housing having opposite sidewalls, each sidewall having a guide track comprising a substantially vertical channel formed between lateral walls for receiving and guiding the core ends;

a substantially vertically disposed holding lever pivotably attached to each sidewall, said holding levers including an upper projection adjacent an upper end of said guide track for retaining a reserve roll of flexible sheet material at an upper reserve position along said guide track and a lower projection adjacent a lower end of said guide track for retaining a dispensing roll of flexible material at a lower position along said guide track;

a transfer roller supported in said housing adjacent the lower end of said guide track for contacting a roll of sheet material during a portion of the dispensing of the sheet material from the dispenser; and

dispensing means including at least one roller supported in said housing adjacent the dispensing roll and laterally of said transfer roller for dispensing sheet material from the dispensing roll and out of said dispenser;

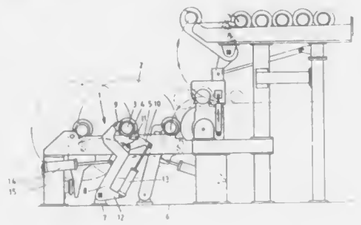
said transfer roller and said lower projections of said holding levers being located in said housing a predetermined distance from one another so that said transfer roller contacts the roll surface of a dispensing roll until a predetermined amount of sheet material is dispensed from the dispensing roll, said lower end of said guide tracks being positioned with respect to said dispensing means to locate the dispensing roll out of contact with rollers of said dispensing means.

4,944,467

METHOD AND APPARATUS FOR DECELERATING A JUMBO ROLL OF A PAPER OR BOARD MACHINE

Keijo K. Snygg, Karhula, Finland, assignor to A. Ahlstrom Corporation, Karhula, Finland

Filed Feb. 27, 1987, Ser. No. 19,617
Claims priority, application Finland, Feb. 27, 1986, 860835
Int. Cl.[5] B65H *18/16, 19/30*
U.S. Cl. 242—65 15 Claims



1. A method of decelerating and transferring a rotating jumbo roll associated with a paper or board manufacturing machine after a web has been completely wound about a reel drum to form said jumbo roll, comprising the steps of:

(a) providing a pair of pivotally mounted and substantially opposed brake shoes and causing said shoes to swing into engagement with brake surface means provided on said drum to decelerate rotation of the drum;

(b) actuating transfer means while said reel drum is rotating to move said jumbo roll in a direction perpendicular to its axis of rotation; and

(c) continuing to apply said brake shoes to said brake surface means during said transfer means actuating step.

4,944,468

EXPANDABLE ROLL SPINDLES WITH INTEGRAL DIRECTIONAL CONTROL VALVE

Lawrence R. Damour, 16 Chesler Square, Succasunna, N.J. 07876

Filed May 10, 1989, Ser. No. 351,390
Int. Cl.[5] B65H *75/24*
U.S. Cl. 242—72 B 9 Claims

1. An improved rotatable and expandable spindle assembly comprising:

(a) an elongated hollow shaft having an inner diameter and an outer diameter;

(b) a first end portion of said hollow shaft;

(c) a second end portion of said hollow shaft, said second end distal said first end;

(d) said hollow shaft adapted for cantilever mounting by said first end;

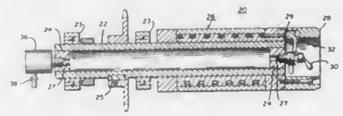
(e) an elongated expanding sleeve member, said sleeve member retentively engaged on the outer diameter of the second end of the shaft, said sleeve member adapted to loosely receive a roll of material thereon;

(f) a three way directional control valve having at least one inlet port, at least one outlet port, and at least one exhaust port;

(g) an actuating means for operating said valve;

(h) a first elongated conduit connected to said inlet port of the valve, said first conduit for carrying a constant supply of a pressurized medium into said inlet port, said first conduit including means for allowing the selective continuous rotation of the spindle;

(i) a means for mounting said valve to the spindle assembly



at or near the second end of the shaft, said mounting means allowing for the passage of the constant supply of the pressurized medium interior of said hollow shaft;

(j) a second elongated conduit means for connecting said outlet port of the valve with the expanding sleeve member; and

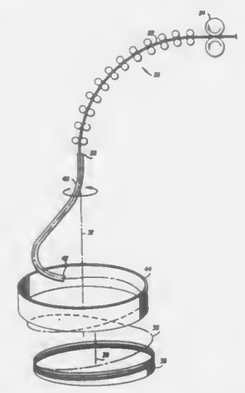
(k) said actuator means adapted for selectively operating said valve for directionally controlling the flow of the pressurized medium either to or away from the expandable sleeve member, for a rapid expansion or exhausting of said sleeve member, said expansion of said sleeve member to retentively engage an interior diameter of the roll of material placed thereon with a constant supply of the pressurized medium.

4,944,469

HIGH SPEED COILING APPARATUS

Thomas N. Wilson, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 28, 1988, Ser. No. 290,949
Int. Cl.[5] B21C *47/14*
U.S. Cl. 242—82 37 Claims



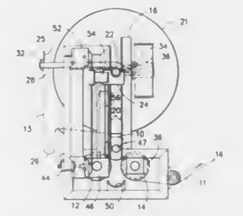
13. A rotatable flyer tube for use in coiling a continuous rod product advancing along a path of travel having an axis comprising an elongated tube with a rod entry end and a rod discharge end, said tube having a circular cross-section and a curvature about said axis, the radius of curvature of said tube continuously increasing from the entry end to the discharge end thereof, the discharge end being oriented and rotatably driven such that the rod product exits said tube with a radially outward component of motion.

4,944,470

LAMINATOR UNWIND ROLL STAND

George A. Mobley, Roebuck, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 229,253, Aug. 8, 1988, Pat. No. 4,832,272.
This application Feb. 13, 1989, Ser. No. 308,919
Int. Cl.[5] B65H *19/16, 19/22, 19/00*
U.S. Cl. 242—58.4 1 Claim



1. A method to continuously unwind a web of material by splicing replacement rolls of material thereto without stopping the unwinding operation comprising the steps of: unwinding a roll of material, placing a replacement roll of material above the roll of web material being unwound, placing a strip of double-side adhesive tape to the surface of the tail of the replacement roll of web material on the side of the tail which faces the roll of web material, applying a suction pressure to the tail of the replacement roll of web material and moving the tail to a position adjacent the roll of web material being unwound, maintaining the suction pressure on the tail until the roll of web material being unwound is almost exhausted, transferring the tail of the replacement web material to a perforated roll by releasing the suction pressure thereon and exerting another suction pressure thereon through the perforated roll and rotating the perforated roll to move the tape into engagement with the web of material of the roll being unwound to splice the replacement roll of web material thereto to allow the unwinding operation to continue uninterrupted.

4,944,471

METHOD OF PRODUCING A YARN TENSION ON A BOBBIN CREEL

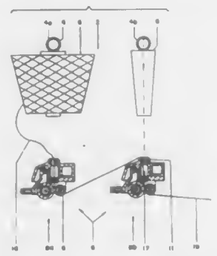
Manfred Bollen, Oberuzwil, Switzerland, assignor to Benninger AG, Uzwil, Switzerland

Filed Dec. 12, 1988, Ser. No. 282,555
Claims priority, application Switzerland, Dec. 23, 1987, 5049/87
Int. Cl.[5] B65H *49/02, 59/22*
U.S. Cl. 242—131.1 1 Claim

1. A method of producing a yarn tension on a bobbin creel which is associated with a winder and has a plurality of bobbin holding means arranged in rows for accommodating bobbins and associated with a respective yarn tensioner for each bobbin holding means, the method comprising drawing off a yarn from a bobbin mounted on one of said bobbin holding means in a row thereof, firstly passing said yarn through a first yarn tensioner associated with said bobbin, omitting a bobbin from further yarn holding means which is adjacent in said row,

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returning said yarn after leaving said first yarn tensioner to a second yarn tensioner associated with said further yarn hold-



ing means and passing said yarn through said second yarn tensioner before said yarn is fed to the winder.

4,944,472

APPARATUS FOR DISPENSING COILED ELECTRICAL WIRE OR CABLE

Ira R. Stahl, 3913 Lankenau Avenue, Philadelphia, Pa. 19131, assignor to Ira R. Stahl and John Siemiarowski, both of Philadelphia, Pa.

Filed Sep. 21, 1988, Ser. No. 247,212
Int. Cl.[5] B65H *49/00, 16/00*
U.S. Cl. 242—129 **9 Claims**



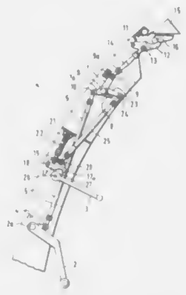
1. An apparatus for dispensing spooled cable comprising:
- a collapsible stand including two inverted generally U-shaped legs, each leg having an apex, said legs being pivotably connected at said apexes, said legs being movable between a collapsed position in which said legs are aligned one over the other and an in use position in which said legs are crossed;
- a collapsible reel including a flat base, a pair of inverted generally V-shaped rods pivotably mounted to said base, said rods being movable between an in use position in which said rods stand upright on said base and a collapsed position in which said rods lie next to said base;
- means for hooking said reel to said stand so that when said stand and said reel are in their respective in use positions, said reel rotates freely within said legs and when said stand and said reel are in their respective collapsed positions, the apparatus is flat.

4,944,473

LOCKING MECHANISM FOR AN AIRCRAFT DOOR

Guenter Kallies, and Wolfgang Lessat-Kaupat, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 2, 1989, Ser. No. 317,945
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1988, 3807067
Int. Cl.[5] B64C *1/14*
U.S. Cl. 244—129.5 **5 Claims**



1. A locking mechanism for an aircraft door, comprising means for latching said aircraft door in its closed condition, said latching means comprising an operating lever, latching eye means, latching hook means for engaging said latching eye means, linkage means including toggle action means operatively connecting said operating lever to said latching hook means for operating said latching hook means, testing means for ascertaining and indicating an improperly latched condition and a properly latched condition, said testing means comprising a testing lever (3) including arresting means for arresting said testing lever against further manipulation, and means for interlocking said latching means and said testing means, said interlocking means comprising a blocking member for cooperation with said arresting means of said testing means, and means for operating said blocking member in response to said improperly latched condition of said latching means to thereby render said testing lever inoperable for indicating said improperly latched condition, said testing lever remaining operable in response to said properly latched condition to indicate said properly latched condition.

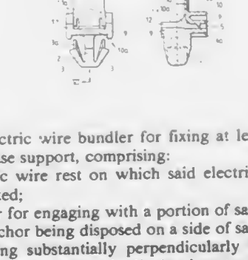
4,944,474

SPEED INDICATION SYSTEM

Laurence W. Jones, Newcastle, Australia, assignor to Kooragang Coal Management Pty. Ltd., Newcastle, Australia

Continuation of Ser. No. 230,554, Aug. 10, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 442,460
Claims priority, application Australia, Aug. 11, 1987, PI3661
Int. Cl.[5] B61L *3/18, 15/00*
U.S. Cl. 246—122 R **8 Claims**

1. A speed indication system for use in railway locomotive in providing locomotive speed related information to a locomotive driver, comprising:
- a sensing means located within a railway track for sensing a locomotive at predetermined locations on said railway track, said sensing means generating locomotive position information signals; a speed related information calculating means operably coupled to said sensing means and located outside of said railway track for calculating locomotive speed related information based on said locomotive position information signals;
- transmitter means operably connected to said speed related information calculating means for transmitting at least one of locomotive position signals and locomotive speed related information to said locomotive;
- a receiver means located within said locomotive for receiving at least one of said locomotive position signals and locomotive speed related information from said transmitter means; and



TRAIN SPEED INDICATION
RADIO TELEMETRY RECEIVER UNIT

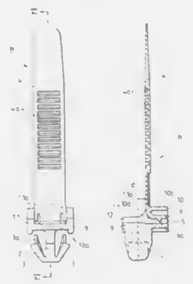
- a display means in said locomotive operably connected to said receiver means for displaying information indicative of said locomotive speed related information, wherein said display means has means for indicating a specific amount of required change in the speed of the locomotive-so that the driver can increase or decrease the speed of the locomotive in accordance to the amount of the required change in the speed of the locomotive.

4,944,475

ELECTRIC WIRE BUNDLER

Mamoru Ono; Ichiro Kudo, and Toshio Okazaki, all of Aichi, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 240,335, Sep. 16, 1988, abandoned. This application Sep. 20, 1989, Ser. No. 410,040
Claims priority, application Japan, Sep. 4, 1987, 62-134664
Int. Cl.[5] F16L *3/03*
U.S. Cl. 248—71 **5 Claims**



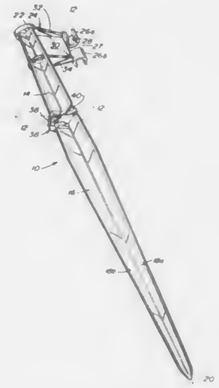
1. An electric wire bundler for fixing at least one electric wire to a base support, comprising:
- an electric wire rest on which said electric wire is to be supported;
- an anchor for engaging with a portion of said base support, said anchor being disposed on a side of said wire rest and extending substantially perpendicularly therefrom, said anchor having a longitudinal axis extending therealong which is substantially aligned with said electric wire rest;
- a boss provided on another side of said electric wire rest, said boss having an insertion hole disposed perpendicular to said longitudinal axis of said anchor, an engaging arm with a projection thereon provided in said insertion hole and a first end wall facing said longitudinal axis of said anchor, said first end wall being displaced from said longitudinal axis of said anchor by a predetermined distance, and wherein said engaging arm extends downwardly from said first end wall and curves around into said insertion hole; and
- a flexible band extending from a top surface of said boss along said first end wall thereof parallel to said longitudinal axis of said anchor and having a plurality of engaging portions at intervals in a longitudinal direction thereof, said flexible band being insertable into said insertion hole of said boss such that one of said engaging portions engages said projection on said engaging arm of said boss so as to secure said at least one electric wire to said bundler, wherein the center of said at least one electric wire is substantially aligned with said longitudinal axis of said anchor.

4,944,476

GROUND STAKE FOR RETAINING IRRIGATION CONDUIT

Donald O. Olson, 1935 Atlozana Dr., El Cajon, Calif. 92020

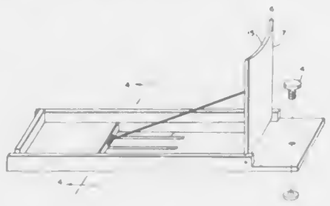
Filed Dec. 16, 1988, Ser. No. 285,550
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—87 **10 Claims**



1. A stabilizing stake adapted to be placed in a preselected ground area for retaining a flexible irrigation conduit, said stake comprising:
- an elongated body having an upper portion and an integral lower portion with a longitudinal centerline extending through said portions;
- a first integral conduit gripping means attached to and supported by said upper body portion for holding an end portion of said conduit in a generally upright position and for preventing it from rotating; and
- a second integral conduit gripping means on said body extending generally transverse to its said centerline and located below said first gripping means, said second gripping means including an open channel with spaced apart opposite edges for further holding the conduit retained by said first gripping means so that the conduit will remain in a position substantially parallel to said ground area.

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4,944,477
FOLDING TILTED BOTTLE HOLDER
Stephen R. Hendren, 13201 NW. 1st Ct., North Miami, Fla. 33168
Filed Aug. 21, 1989, Ser. No. 396,371
Int. Cl.[5] A47F 7/00
U.S. Cl. 248—150 **5 Claims**



1. A folding bottle holder having two conditions, a first, flat condition for access and a second, upright condition for holding a bottle in a tilted orientation on a shelf with the neck of the bottle above the bottom of the bottle, said holder comprising:
(a) a sliding carriage means having bottom engaging means for engaging said bottom of said bottle;
(b) an elongate base member having a bottom surface, a top surface, two long opposed sides and two short opposed ends, a front end and a rear end, said bottom surface adapted for resting upon said shelf, said base member including carriage-engaging means for holding said carriage means on said top surface in slideable engagement for sliding between a first carriage position away from said rear end when said holder is in said first, flat condition and a second carriage position approximating said rear end when said holder is in said second, upright condition;
(c) a pivoting support member hving bottle support means for engaging the upper portion of said bottle and holding it above said bottom of said bottle in stable position when said holder is in said second, upright condition;
(d) pivot means pivotally connecting said support member to said base member, wherein said support member may be rotated between a substantially horizontal position when said holder is in said first, flat condition and a substantially vertical position when said holder is in said second, upright condition; and
(e) connecting means operatively connecting said carriage means and said support member, said connecting means causing said support member to rotate to the vertical position as said carriage means slides from said first carriage position to said second carriage position upon action of the bottom of said bottle upon said bottom engaging means, and said connecting means further causing said carriage means to slide from said second carriage position to said first carriage position as said support member is rotated to the horizontal position by action of said uper portion of said bottle upon said support member during removal of said bottle.

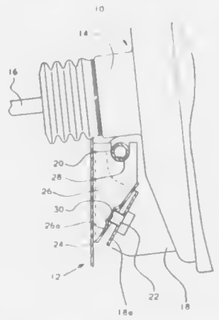
4,944,478
PORTABLE GRAB BAR
John L. Sullivan, 38 Brightwaters Dr., Sound Beach, N.Y. 11789
Filed Oct. 18, 1989, Ser. No. 423,953
Int. Cl.[5] A47B 96/06
U.S. Cl. 248—205.7 **4 Claims**

1. A portable grab bar for use by a person requiring the aid of such a device for support, said grab bar comprising, in combination: bar means; a first suction means secured to one end of said bar means having a suction member and an integral manually operated spring biased vacuum pump for evacuating air from under said suction member when adhering said first suction means to a surface; a second suction means secured to the other end of said bar means having a suction member and an integral manually operated spring biased vacuum pump for evacuating air from under said suction member when adhering said second suction means to a surface; the arrangement being such that said bar means is supported parallel to and spaced from a surface to which said suction members are adhered; and



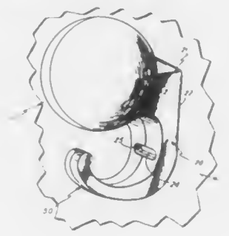
indicator means provided on each of the aforesaid vacuum pumps by which a user of the grab bar is warned when the pressure adhering a suction means to a surface may not be sufficient to support an additional force applied to the grab bar by a person using the grab bar.

4,944,479
SYSTEM FOR MOUNTING A BOOSTER
Jean-Pierre Gautier, Aulnay Sous Bois, France, assignor to Bendix France, Drancy, France
Filed May 25, 1989, Ser. No. 357,448
Claims priority, application France, Jun. 27, 1988, 88 08585
Int. Cl.[5] F04G 5/06
U.S. Cl. 248—222.2 **7 Claims**



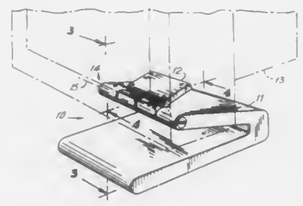
1. A system for mounting a booster on a supporting bracket, comprising:
catching members by means of which the booster rests on the supporting bracket as a result of gravity, said catching members defining a pivoting axis orthogonal to an actuating rod of the booster,
bearing faces arranged on the same side of the booster as the catching members and capable of being laid against one another under the effect of pivoting of the booster about said axis when a pushing force is exerted on the actuating rod, and
fastening members which keep the bearing faces against one another, the fastening members extending irreversibly one into another.

4,944,480
WALL MOUNTED CLOTHES HANGER
William E. Jarrett, 1465 Calvin, S.E., Grand Rapids, Mich. 49507, assignor to William E. Jarrett, Grand Rapids and Dan H. Vollink, Lowell, both of, Mich.
Filed Aug. 8, 1983, Ser. No. 521,439
The portion of the term of this patent subsequent to Mar. 11, 2000, has been disclaimed.
Int. Cl.[5] A47F 5/00
U.S. Cl. 248—309.1 **1 Claim**



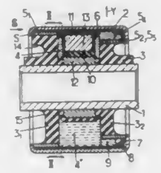
1. A clothes hanger for mounting on a wall, comprising:
a body comprising an upper, curved, convex surface wherein each point on said surface along any vertical section through the center of volume enclosed by said surface has a radius of curvatures of at least about one inch but no more than two inches, and wherein the sides extend downwardly to beyond their horizontal radii; and
a secondary clothes hook initially extending generally downwardly from said body and then extending upwardly to form a hook, wherein the end of said hook remains under said body and terminates at a point less distant from the wall than the outermost point of said body when said hanger is mounted on a wall, and the distance between said end and the lowermost portion of said body is such that a human head cannot come in direct contact with said end, said body shielding said end from such contact.

4,944,481
BALANCED MONITOR STAND
James R. Yurchenco, Palo Alto, and Eugene F. Duval, Menlo Park, both of Calif., assignors to NeXT, Inc., Redwood City, Calif.
Filed Jun. 30, 1988, Ser. No. 213,356
Int. Cl.[5] A47G 1/24
U.S. Cl. 248—372.1 **24 Claims**



1. A stand for supporting an object above a surface, said object having a mass and a center of gravity, such that said can be rotated about a horizontal axis between two extreme angular positions, said center of gravity being at a distance from said axis, said stand comprising:
base means for resting on said surface;
platform means for holding said object; and
hinge means linking said base means and said platform means, said hinge means comprising:
a hollow axle aligned with said axis and having first and seconds ends, said axle having first and second tube sections, each of said sections having an end remote from its respective axle end and an extension at said remote end extending less than 180 degrees about said axis, said first and second axle sections abutting with said extensions in overlapping relationship, said extensions forming stop means defining said extreme positions,
first and second means on said base for receiving said first and second ends, respectively, of said axle,
means on said platform for rigidly engaging one of said first and second tube sections, and
spring means capable of torsional deflection disposed within said axle, one end of said spring means being rotationally fixed relative to another of said first and second tube sections and another end of said spring means being rotationally fixed relative to said one of said first and second tube sections, such that relative rotational movement of said base means and said platform means creates a restoring a torque in said spring means, said spring means having a torque constant selected with regard for said mass and said distance so that said restoring torque substantially balances gravitational torque acting on said center of gravity when said platform means holding said object is rotated to different angular positions between said extreme positions.

4,944,482
HYDRAULIC VIBRATION DAMPING BUSHINGS
Bernard Boubler, Vierzon, France, and Bernd-Siegfried Batow, Stuttgart, Fed. Rep. of Germany, assignors to Hutchinson, France
Filed Sep. 13, 1989, Ser. No. 406,336
Claims priority, application France, Sep. 13, 1988, 88 11919
Int. Cl.[5] F16F 5/00
U.S. Cl. 248—562 **5 Claims**



1. A hydraulic vibration damping bushing comprising an external and internal tubular rigid armatures (1, 2), said external armature surrounding said internal armature and jointly united by an elastomeric body (3) configured in such a way to form with said armatures at least two tight pockets (4,4') diametrically opposed and communicating with each other by a narrow channel (7), said pockets and said channel being filled with a damping liquid, and an orifice (9), of the narrow channel (7), which opens into one of a two pockets (4) being located outside a central area of a portion of the said tubular rigid armatures, which define said one pocket, characterized in that it includes an elastomeric pad (10) housed inside said one pocket and secured on a concave face of a rigid plate (11), curved in the manner of a portion of cylinder of revolution having an angular extent at most equal to 180 degrees, the shapes and sizes of the pad and of the plate being selected in such a way that the plate permanently abuts on an internal face of the external tubular armature (2) and that, in a resting position of the bushing, the pad (10) is diametrically precompressed between the two armatures (1, 2) and pressed against the aforesaid central area of the internal tubular armature (1).

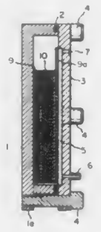
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4,944,483

APPARATUS FOR FORMING FIBER REINFORCED SLAB GEL FOR USE IN ELECTROPHORESIS

Hideyuki Nishizawa, 1-5-1 Nakazto Kuta Ku, Tokyo, Japan

Filed Dec. 21, 1988, Ser. No. 288,527
Claims priority, application Japan, Dec. 22, 1987, 62-324962
Int. Cl.[5] B29C *33/10*; G01N *27/26*
U.S. Cl. 249—83 **8 Claims**



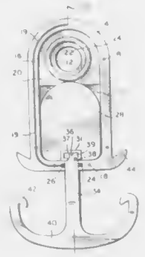
1. Apparatus for forming gel slabs for use in electrophoresis comprising:
- a box shaped casing, having an open vertical side and a first horizontal groove centrally located in an inner lower end surface thereof;
- a cover hermetically closing said open vertical side of said casing;
- said cover having an upwardly extending second groove located on a surface thereof facing said casing with a lower end aligned with said first groove;
- a pouring pipe in the lower end of said second groove and above said first groove for pouring an aqueous solution of organic monomer material into said casing, which when polymerized forms said gel slabs;
- an air vent in the upper end of said second groove;
- a plurality of spaced apart slab forming plates vertically stacked in said casing, one of said plates abutting the inner surface of said cover and extending to the upper end of said second groove.

4,944,484

GATE VALVE WITH LOCKING HANDLES

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Continuation of Ser. No. 831,068, Feb. 20, 1986, abandoned, which is a continuation of Ser. No. 694,697, Jan. 25, 1985, abandoned. This application Jun. 26, 1989, Ser. No. 372,231
Int. Cl.[5] F16K *35/00*
U.S. Cl. 251—101 **6 Claims**



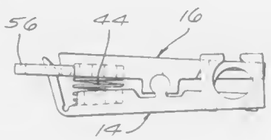
1. A gate for use with poultry watering systems comprising:
a valve body having a fluid passageway therethrough;
said valve body having a pair of opposed side walls of a predetermined width and an intersecting pair of opposed face walls of a predetermined width substantially greater than the width of said side walls;
a valve member slideably disposed within said valve body between open and closed positions for controlling fluid flow through said passageway;
a valve stem means rotatably attached to said valve member and extending outside said valve body at one end thereof to form a handle portion;
said handle portion being disposed for one directional linear manipulation to move said valve member between said open and closed positions;
locking means for simultaneously locking said valve member in said closed position when said valve member is moved into said closed position by said linear motion of said valve stem;
said locking means including a pair of oppositely disposed catches formed on said side walls at said end of said valve body from which said valve stem extends and a corresponding pair of oppositely disposed latches formed as part of said handle portion;
said latches being spaced apart by a predetermined first distance corresponding to said width of said face walls;
said latches having a side width of a second predetermined distance;
said second predetermined distance being substantially less than said first predetermined distance so as as to facilitate visual aligning of said latches with said side walls and said catches prior to movement of said valve member into said closed position; and
said latches being formed to snap-lock onto said catches with the provision of a distinct, audible snap when said valve member is moved into said closed position.

4,944,485

CLAMP FOR FLEXIBLE TUBING

Adib G. Daoud, and Fred W. Bacher, both of San Diego, Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Aug. 28, 1989, Ser. No. 398,887
Int. Cl.[5] F16K *7/02*
U.S. Cl. 251—9 **7 Claims**



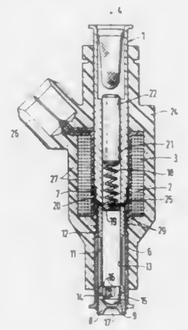
1. A clamp for flexible tubing for use in a means for delivering fluid having a housing and a door mounted on said housing to be adjacent said housing in a closed position, said means for delivering fluid being adapted to retain said tubing and said clamp in a space between said housing and said door in the closed position, said clamp comprising:
means for receiving said flexible tubing, including first and second elongated clamping members each having first and second ends, each clamping member having gripping means adjacent one of said ends for restricting fluid flow in said tubing when said tubing is clamped therebetween, one of said clamping members having a pivot hinge member intermediate said one clamping member first and second ends, and the other clamping member having a corresponding socket for receiving said pivot hinge member intermediate said other clamping member first and second ends;
means for biasing said gripping means together to clamp said flexible tubing received therebetween; and
latch means for releasably latching said gripping means apart in an engaged position, said clamping members being otherwise free to move to a disengaged position clamping said flexible tubing responsive to said means for biasing when said clamping members are not latched apart, and said latching means being forced to an intermediate disengaged position when said clamp is received in said space between said housing and said door, and said door is in the closed position, whereby said tubing received in said means for receiving fluid and said clamp is unclamped when said door is in the closed position, and said tubing becomes clamped when said door is moved to an open position.

4,944,486

ELECTROMAGNETICALLY ACTUATABLE VALVE AND METHOD FOR ITS MANUFACTURE

Rudolf Babitzka, Birkenweg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1989, Ser. No. 362,782
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1988, 3825134
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.21 **12 Claims**



1. An electromagnetically actuatable fuel injection valve for fuel injection systems in internal combustion engines, comprising a ferromagnetic, metal connection fitting serving as a core extending along a longitudinal axis of the valve, a magnet coil being disposed on the connection fitting, an armature being disposed adjacent said magnet coil and provided with a valve closing body (**14**), a metal valve seat body (**8**) including a fixed valve seat (**9**), said magnetic coil being adapted to actuate said armature and thereby said valve closing body with respect to said fixed valve seat (**9**), a plastic sheath surrounding at least a portion of the connection fitting and all of the magnet coil (**3**), and said plastic sheath includes fillers (**27**) having ferromagnetic properties adapted to conduct magnetic field lines provided within at least that portion of the plastic sheath (**24**) surrounding the magnetic coil (**27**).

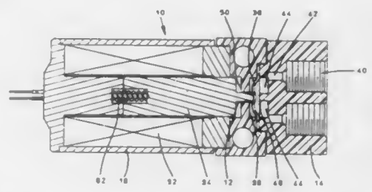
4,944,487

DIAPHRAGM VALVE

Ludwig K. Holtermann, Old Saybrook, Conn., assignor to Lee Company, Westbrook, Conn.

Filed May 8, 1989, Ser. No. 349,392
Int. Cl.[5] F16K *31/06, 7/14*
U.S. Cl. 251—129.17 **21 Claims**

1. A diaphragm valve comprising:
A. valve body means defining a first flow passage, a second flow passage and a valve seat means between the first and second flow passages;
B. diaphragm means comprised of an elastomeric material sealingly engageable with the valve seat means to prevent passage of fluid between the first and second flow passages;
C. retractable means for releasably biasing the diaphragm means against the valve seat means to sealingly engage therewith and control the flow of fluid through the valve; and



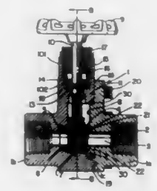
D. means for subjecting the diaphragm means to radial compression sufficient to cause the diaphragm means to disengage from the valve seat means when the biasing means is retracted.

4,944,488

GATE VALVE

Peter D. Clayson, Edmonton, Canada, assignor to Alberta Ltd., Canada

Division of Ser. No. 231,131, Aug. 11, 1988, abandoned. This application Nov. 13, 1989, Ser. No. 436,120
Claims priority, application Canada, Nov. 26, 1987, 552900
Int. Cl.[5] F16K *3/12*
U.S. Cl. 251—203 **9 Claims**



1. A gate valve of the type suitable for use in high pressure steam systems and the like, comprising:
(a) a valve body having a main body portion containing a valve chamber completely open on one side wall of the valve body such that the whole of the valve chamber is exposed and accessible for maching thereof, and a neck portion containing a closed stem chamber completely surrounded by an integral, unbroken chamber wall, said open side wall being machined to provide a flat mating surface surrounding said open valve chamber;
(b) said main body portion having inlet and outlet ports for high-pressure fluid and a transverse passage extending therebetween;
(c) a valve gate member guided vertically in said valve chamber and movable between an open position, in which said gate member is above said transverse passage, and a closed position, in which said gate member obstructs said passage to prevent fluid flow therethrough;
(d) said valve gate member having a smooth flat-faced downstream wall, which in the closed position seats on a flat-faced seat surrounding said passage, and having a wedge-shaped upstream wall, which cooperates with a wedge-shaped wall in said chamber to force the downstream wall sealingly onto the flat-faced seat;
(e) a valve stem guided in said neck portion through said

stem chamber and surrounded by said integral wall thereof, said valve stem extending into said valve chamber, said valve stem having a threaded lower end cooperating with a threaded recess in said gate member, and said stem being rotatable in a bearing means in said neck portion to raise and lowe said gate member between said open and closed positions;

(f) said open side of said main body portion being closed by a removable closure plate having a flat surface mating with the corresponding flat surface on said main body portion;

(g) clamping means for clamping said closure plate firmly to said main body portion;

(h) said closure plate further having a smooth protuberance on an inner surface thereof, which is slidable into the open side of the valve chamber so as to partially penetrate said valve chamber and become snugly located therein;

(i) said mating flat surfaces of said closure plate and said main body portion enclosing a recess surrounding the valve chamber for accommodating sealing means; and

(j) sealing means trapped in said (a) recess surrounding the valve chamber under the action of said clamping means to prevent leakage of high pressure fluid from said valve chamber;

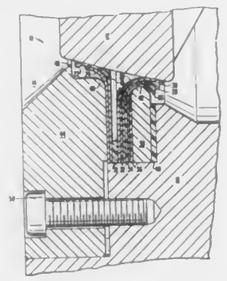
whereby said closure member can be removed to expose the whole of the interior of said valve chamber to permit machining thereof, and clamped in position on said main body portion to permit operation in high pressure steam systems and the like without compromising valve integrity.

4,944,489

ROTARY VALVE AND SEAL

Horst H. Adams; Bernd Brüggestrath, both of Bochum, and Rudolf A. Kappe, Marl, all of Fed. Rep. of Germany, assignors to Gebruder Adams Armaturen U. Apparate GmbH & Co., K.G., Fed. Rep. of Germany

Filed Aug. 10, 1989, Ser. No. 392,247
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—306 **18 Claims**



1. A rotary valve assembly including a housing, a valve member and a seal assembly, the seal assembly comprising:

a first resilient seal subassembly having a resilient sealing element, the sealing element having a substantially linear section and a curved section formed integrally with the linear section;

means for changing the resiliency of the first resilient seal subassembly, the means for changing comprising a second resilient sealing element having a substantially linear section and a curved section formed integrally with linear section, the linear and curved sections of the second resilient sealing element being disposed adjacent linear and curved sections of the first resilient sealing element, the second resilient sealing element having different resiliency characteristics then the first resilient sealing element, and the first seal subassembly further comprising an annular gasket disposed between the first resilient sealing element and the second resilient sealing element; and

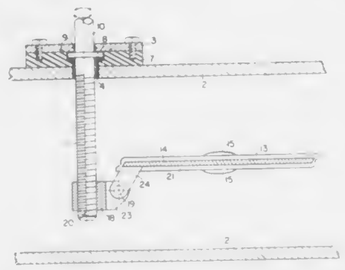
means for mounting the seal subassembly in the valve assembly.

4,944,490

SHAFTLESS BUTTERFLY VALVE

Paul G. Kennedy, 4174 Ridge Rd., Horseheads, N.Y. 14845

Filed Nov. 7, 1988, Ser. No. 268,298
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—306 **6 Claims**



5. A butterfly valve in a round pipe-like conduit, comprising:

a. a round pipe-like conduit;

an elliptical plate means;

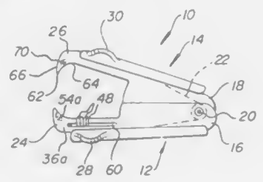
stem means reversibly rotating said plate means on an axis perpendicular to said pipe and also perpendicular to said stem means and at the same time translating the plate in the same direction as the flow in the round pipe to be sealed.

4,944,491

EXPANDING STAPLE REMOVER

Norbert Kirk, 1458 W. Belle Plaine, Chicago, Ill. 60613

Filed Jul. 18, 1988, Ser. No. 220,250
Int. Cl.[5] B25C *11/00*
U.S. Cl. 254—28 **31 Claims**



1. A staple remover for removing a staple from an object comprising:

an elongate member which is progressively forced under a crown of the staple, said member including

(a) flat lateral sides which are parallel and spaced apart a distance less than the length of the crown of the staple, each said lateral side converging to a tip,

(b) a lower bearing surface at each said lateral side which engages and slides along the object,

(c) an upper camming surface at each said lateral side which engages and slides along the object,

(d) an upper camming surface at each said lateral side which diverges from an associated said lower bearing surface at the associated tip and upon which the crown of the staple slides to force the crown of the staple away from the object, and

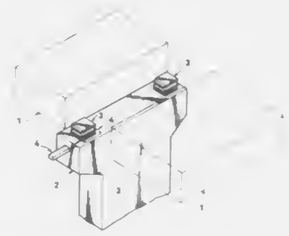
(d) a protrusion sticking out from each said flat lateral side between the associated said camming surface and bearing surface, the distance between the protrusions being greater than the length of the crown of the staple; and each said protrusion of the associated said lateral side (i) ending at a distance from the associated camming surface which is less than the length of a leg of the staple; and (ii) extending generally parallel to the associated said camming surface from adjacent the tip of the associated said lateral side to a maximum protruding height which maximum height occurs where the distance between the associated said camming surface and bearing surface is approximately 40 to 60% of the length of a leg of the staple.

4,944,492

WEDGE-TYPE JACK APPARATUS FOR RAISING STRUCTURE WHILE SUSTAINING VERY LARGE PRESSURE DUE TO SAME AND TEMPORARILY SUPPORTING THE STRUCTURE

Haruo Nonaka, Sakai, Japan, assignor to Matsuo Engineering Co., Ltd., Osaka, Japan

Filed Jun. 22, 1989, Ser. No. 369,972
Claims priority, application Japan, Jun. 24, 1988, 63-157469; Jun. 25, 1988, 63-84331[U]
Int. Cl.[5] B24B *41/06*
U.S. Cl. 254—104 **8 Claims**



1. A wedge-type jack apparatus comprising:

a wedge-like drive member restricted in movement in a widthwise direction and having inclined surface on both upper and lower sides,

a lower member having on the upper side an inclined surface substantially commensurate with the inclined surface on the lower side of said wedge-like drive member and restricted in movement in both widthwise and lengthwise directions,

an upper member having on the lower side an inclined surface substantially commensurate with the inclined surface on the upper side of said wedge-like drive member and restricted in both widthwise and lengthwise directions,

push means for applying a lontitudinal pushing force to said wedge-like drive member to move said drive member longitudinally between said inclined surfaces of said lower and upper members, and

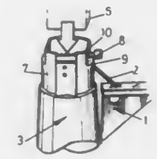
stopper means independent of said push means for preventing movement of said wedge-like drive member out of a state between said lower and upper members to which pushed by said push means.

4,944,493

POST AND RAIL ASSEMBLY

Keith Handy, Blackburn, United Kingdom, assignor to Glasdon Group Limited, United Kingdom

Filed Aug. 8, 1988, Ser. No. 229,937
Claims priority, application United Kingdom, Aug. 8, 1987, 8718857
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—23 **5 Claims**



1. A post and rail assembly comprising:

a rail;

a first end of a flexible tether secured to said rail;

a hollow upwardly open-ended post provided with a tether aperture through which said flexible tether may be passed;

a second end of said tether having an enlarged head which in at least one orientation with respect to said aperture in said post is too large to pass therethrough;

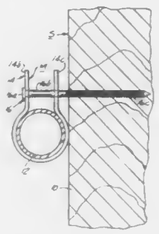
and a locking element releasably engageable within said open end of said post to restrict said aperture and both prevent passage of said enlarged head therethrough and removal of said first end of said tether therefrom.

4,944,494

FENCE STRUCTURE

Robert J. Pendleton, 6465 Edgewood, Brighton, Mich.

Filed Sep. 22, 1989, Ser. No. 410,812
Int. Cl.[5] E04H *17/14*
U.S. Cl. 256—68 **1 Claim**



1. A fence structure for containing horses and the like, comprising a plurality of vertical wooden posts, a plurality of horizontal metal rails disposed in parallel relation upon said posts, clamp means engageable with each of said rails, each of said clamp means including a generally semi-circular body portion and a pair of smooth-surfaced apertured flange portions extending outwardly and upwardly therefrom in spaced relation to one another and to said vertical posts, and nail means received in the aperture in each of said flange portions and grippingly engageable with said vertical wooden posts in substantial penetration thereinto.

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4,944,495

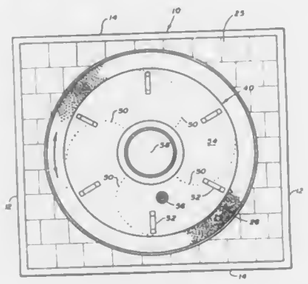
METHOD AND APPARATUS FOR LEVELING A REFRACTORY BED SURFACE

Robert H. Johns, Natrona Heights, and J. Richard Rzomp, Brackenridge, both of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1989, Ser. No. 303,867

Int. Cl.[5] C21D *9/00*

U.S. Cl. 266—100 **10 Claims**



10. Apparatus for flattening and leveling a support surface of refractory pebbles forming a refractory bed upon a floor portion of a tunnel furnace car for supporting a coil of strip, said apparatus including:

disk means having a flat face surface suitable for establishing a flat coil support site on the refractory bed;

a plurality of tooth members carried by said disk means to project from said flat face surface for moving refractory pebbles about the refractory bed, said plurality of tooth members being arranged in a series of helical patterns about a central axis corresponding to a geometrical center of said disk means;

means mounted upon a surface of the disk means opposite said flat face surface for rotating said disk means about a circular path having a vertical axis generally corresponding to said geometrical center to cause the plurality of tooth members to engage with individual ones of the refractory pebbles in a manner to thereby redistribute the pebbles of the refractory bed and cause the refractory pebbles to conform to the flat bottom surface of the disk means; and

means supported by said disk means for visually displaying a measure of the levelness of the refractory bed surface established by operation of said disk means for supporting a coil of strip material.

4,944,496

APPARATUS FOR INJECTING GAS INTO HIGH TEMPERATURE LIQUIDS, E.G. MOLTEN METALS

Anthony Thrower, Dronfield Woodhouse, and John R. Gelsthorpe, Sheffield, both of England, assignors to Injectall Limited, Sheffield, England

PCT No. PCT/GB88/00271, § 371 Date Dec. 29, 1988, § 102(e) Date Dec. 29, 1988, PCT Pub. No. WO88/08041, PCT Pub. Date Oct. 20, 1988

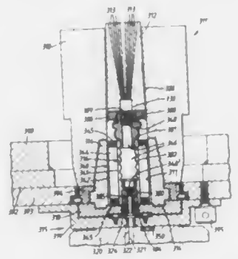
PCT Filed Apr. 8, 1988, Ser. No. 274,528

Claims priority, application United Kingdom, Apr. 10, 1987, 8708673; Jan. 22, 1988, 8801455

Int. Cl.[5] C21C *5/34*

U.S. Cl. 266—220 **43 Claims**

1. An injection nozzle for installation in a wall of a vessel, for use in introducing gas into liquid contained therein, the nozzle comprising a body pierced by a passage which is terminated at a discharge end of the nozzle by a gas-porous or foraminous passage-closing means, the nozzle including means gas-tightly affixed to the closing means to feed gas thereto, and the gas-feeding means including a duct structure which extends along the passage between the closing means and an inlet end of the body, the duct structure providing a substantially leak-tight



gas-feed path from an external gas delivery means to the passage-closing means, and the said structure being adjustable or extensible in length.

4,944,497

FLUSHING BLOCK

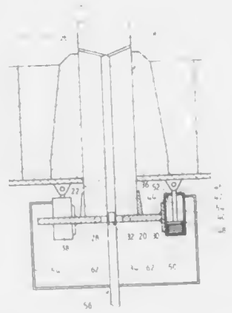
Bernd Grabner, Millstatt, Austria; Lorenz Dötsch, Valtendar, Fed. Rep. of Germany; Josef Knauder, Eitweg, Austria, and Hans Höffgen, Hör-Grenzhausen, Fed. Rep. of Germany, assignors to Radex-Heraklith Industriebeteilgungs AG, Austria

Filed Mar. 21, 1989, Ser. No. 326,295

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1988, 3809828

Int. Cl.[5] C21B *7/072*

U.S. Cl. 266—268 **16 Claims**



1. Flushing block having a circumferential surface for introducing gases alone or together with solid reagents and additives into a metallurgical melting vessel, said flushing block being connectable to at least one drive means, said flushing block having at a first end an inlet opening, and at its opposite second end having at least one outlet opening extending from the circumferential surface of said flushing block, gas channel means formed in said flushing block extending longitudinally through said flushing block and connecting the outlet opening with the inlet opening for conveying gases alone or together with solid reagents and additives through said flushing block to the interior of the metallurgical melting vessel, and means at the inlet opening of the gas channel means for connecting the gas channel means to a gas supply pipe.

4,944,498

GAS SPRING

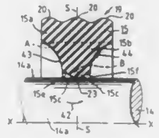
Bernd Körtgen, Adenau; Helmut Morgen, Mannebach; Heinz-Josef Heinrichs, Koblenz-Metternich; Castor Fuhrmann, Brachtendorf, and Herbert Freitag, Koblenz-Metternich, all of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Jul. 13, 1988, Ser. No. 218,671

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723654

Int. Cl.[5] F16F *9/36*

U.S. Cl. 267—64.11 **30 Claims**



1. A gas spring comprising a container tube (11) which has an axis and two ends and defines a cavity, piston rod guide means (18) at at least one end of the container tube (11), a piston rod (18) guided in axial direction (X—X) of the container tube (11) through said piston rod guide means (18), and sealing means (15,17) adjacent to said at least one end, said sealing means comprising a first axially outer sealing unit (17) and a second axially inner sealing unit (15),

said second sealing unit (15) comprising a sealing ring (15) of homogeneous elastomeric material,

said sealing ring (15) being in sealing engagement with an internal circumferential surface (11*a*) of said container tube (11) and in sealing engagement with an external circumferential surface (14*a*) of said piston rod (14),

a liquid chamber (13) being defined between said first sealing unit (17) and said second sealing unit (15),

said liquid chamber (13) containing a liquid,

a working space (12) being defined between said second sealing unit (15) and the other one of said two ends of said container tube (11),

said working space (12) containing a volume of pressurized gas,

said sealing ring (15) comprising—when regarded in a sectional plane containing said axis (X—X) of said container tube (11)—a radially outer root portion (15*a*) and a radially inner lip portion (15*b*),

said root portion (15*a*) engaging said internal circumferential surface (11*a*) of said container tube (11) in at least two axially spaced radially outer annular contact areas separated from each other by at least one radially outer annular non-contact area, with the radial dimension of said root portion (15*a*) being less than about 50 percent of the radial distance between said external surface (14*a*) of said piston rod and said internal surface (11*a*) of said container tube,

said lip portion (15*b*) engaging said external circumferential surface (14*a*) of said piston rod (14) in one single radially inner annular contact area, with the axial dimension of said lip portion (15*b*), as measured at a radial location spaced from the external surface (14*a*) by a distance of approximately 10–20% of the radial distance between the external surface (14*a*) and the internal surface (11*a*), being less than about 50 percent of the axial length of said root portion (15*a*),

said sealing ring (15) being axially movable with respect to said internal circumferential surface (11*a*) of said container tube (11),

said one single radially inner contact area being located axially between said at least two radially outer contact areas, and

said sealing ring (15) being free at both of its axially spaced end faces of rigid reinforcement members connected thereto for common axial movement.

4,944,499

DAMPER DISK

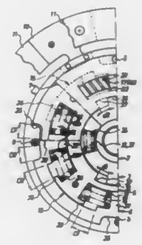
Hiromi Tojima, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Feb. 1, 1989, Ser. No. 304,632

Claims priority, application Japan, Feb. 10, 1988, 63-16712[U]

Int. Cl.[5] F16F *1/14*; F16D *47/02, 3/66*

U.S. Cl. 267—154 **6 Claims**



1. A damper disk comprising:

an output hub;

an annular intermediate member disposed around said output hub;

an annular spring seat member disposed around said intermediate member, and including spring seats which project radially inwardly;

a pair of annular input plates disposed at opposite sides of said intermediate member and around said output hub;

a plurality of circumferentially spaced pairs of input springs which circumferentially connect said input plates and said intermediate member to each other, said input springs in each pair being arranged circumferentially in series with said spring seats therebetween;

a plurality of circumferentially spaced output springs which circumferentially connect said intermediate member and said output hub to each other, said output springs being formed by compressible coil springs extending substantially in the circumferential direction of said damper disk;

a sub-plate fixed to said intermediate member for holding said output springs and a flange on said output hub and connected to said sub-plate through said output springs so that said intermediate member and said output hub are connected together through said sub-plate, said output springs and said flange in said output hub; and

stop means for restricting relative rotation between said input plates and said spring seat member, between said spring seat ember and said intermediate member and between said intermediate member and said output hub.

4,944,500

TRANSLATION LOCK FOR SURGICAL TABLE WITH DISPLACEABLE TABLETOP

Wolfgang Mueller, and Arthur T. Nagare, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Apr. 7, 1987, Ser. No. 35,529

Int. Cl.[5] A61G *13/00*

U.S. Cl. 269—322 **6 Claims**

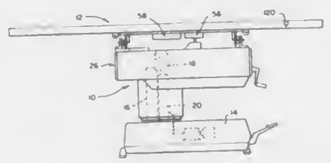
1. A table for medical use comprising:

a. an elongated tabletop formed of a radioluscent material and having a patient support surface, said surface having a longitudinal axis and a lateral axis;

b. a base member;

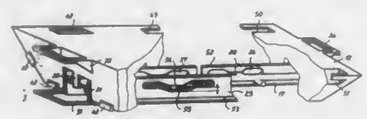
c. carriage means supported by said base member and supporting said tabletop for movement along said longitudi-

nal axis and said lateral axis, said carriage means comprising:
(i) a first carriage having lateral translation channels;
(ii) first roller means attached to said base member and configured to allow said first carriage to be supported by and moved thereon along said lateral axis;
(iii) a second carriage means having longitudinal channels, said second carriage being affixed to the underside of said tabletop;
(iv) second roller means attached to said first carriage and configured to allow said second carriage to be supported by and moved thereon along said longitudinal axis;
d. lateral locking means comprising:
(i) a first locking shaft supported by said base member and in facing relation to said first carriage;
(ii) means for moving said first locking shaft into and out of engagement with a portion of said first carriage, said means for moving comprising:



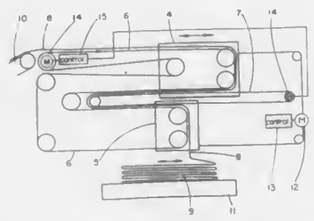
(a) a first bracket mounted on said base member;
(b) a first rotary solenoid mounted on said first bracket and having a rotational output;
(c) first linkage means connected between said rotational output of said first rotary solenoid and said first locking shaft such that the rotational output of said first rotary solenoid causes said first linkage means to move said first locking shaft to be retracted from engagement with said first carriage; and
(d) first spring means coupled between said first bracket and said first locking shaft so as to normally urge said first locking shaft toward said first carriage; and
e. longitudinal locking means comprising:
(i) a second locking shaft supported by said first carriage and in facing relation to said second carriage;
(ii) means for moving said second locking shaft into and out of engagement with a portion of said second carriage.

4,944,501
EXAMINATION BED FOR NMR OR TOMODENSITOMETRY APPARATUS
Jacques Sireul, Wissous, and René Gauthier, Antony, both of France, assignors to General Electric CGR SA, Issy les Moulineaux, France
PCT No. PCT/FR87/00278, § 371 Date Mar. 9, 1989, § 102(e) Date Mar. 9, 1989, PCT Pub. No. WO88/00451, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 10, 1987, Ser. No. 313,976
Claims priority, application France, Jul. 18, 1986, 86 10475
Int. Cl.[5] A61G *13/00*
U.S. Cl. 269—322 **10 Claims**



1. An examination bed, notably for a NMR or tomodensitometry apparatus, which comprises:
a chassis;
an examination plateau;
moving assembly means for moving the plateau with respect to the chassis and said apparatus; and
means for translating said moving assembly means with respect to said plateau, said chassis and said apparatus, said moving assembly means being elongated in shape, a first end of said moving assembly means including means for mechanically connecting said moving assembly means to said chassis and including means for moving said first end in translation with respect to said chassis and a second end of said moving assembly means including means for providing mechanical motion connection of said moving assembly means to the plateau, and means for moving said second end in translation with respect to said plateau wherein said means for translating said moving assembly means is connected to said moving assembly means.

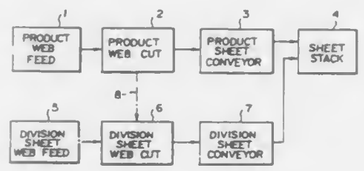
4,944,502
CARD WEBBER
Kurt Platzer, Friedberg; Herwig Hirschek, Bobingen; Edwin Schaller, Langweid, and Helmut Holzinger, Augsburg, all of Fed. Rep. of Germany, assignors to Autefa Maschinenfabrik GmbH, Friedberg, Fed. Rep. of Germany
Filed Nov. 14, 1988, Ser. No. 270,542
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1987, 3738190
Int. Cl.[5] B65H *29/46*
U.S. Cl. 270—31 **10 Claims**



1. A card webber including at least two rotating conveyor belts and including two reversibly movable folding carriages which are accelerated at the reversal points of their paths, wherein a drive for the conveyor belts and a drive for the folding carriages include independent actuators and the velocity of the belt conveyor and the velocity of the folding carriages between the acceleration phases may be adjusted at different velocities relative to one another said actuators each being servo-actuators, at least one of said actuators having a fully programmable controlling means.

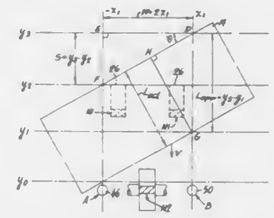
4,944,503
DIVISION SHEET FEEDING APPARATUS AND METHOD
Shinichi Arima, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 200,151, May 26, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 442,467
Claims priority, application Japan, May 26, 1987, 62-128849
Int. Cl.[5] B65H *33/04*
U.S. Cl. 270—95 **4 Claims**

1. A division sheet feeding apparatus for laying at least one division sheet upon a stack of a predetermined number of product sheets each time the predetermined number of product sheets are stacked one upon another, comprising:
a product web;
means for cutting said product web into product sheets;
means for feeding said product web to said cutting means for cutting said product web into product sheets of a predetermined product sheet size;
means for determining whether product sheets cut from said product web by said cutting means are cut to said predetermined product sheet size;
means for stacking said product sheets;
means for counting a number of product sheets stacked by said stacking means;
a division web;



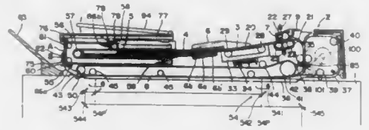
means for cutting said division web into division sheets of a predetermined division sheet size which is at least the same size as said predetermined product sheet size;
means for determining whether said division sheets are cut to said predetermined division sheet size; and
means for feeding at least one of said division sheets onto said stack when said counting means reaches a predetermined count.

4,944,505
SHEET LENGTH DETECTOR WITH SKEW COMPENSATION
William Sherman, III, Medford, N.J., assignor to Brandt, Inc., Bensalem, Pa.
Filed Jan. 30, 1989, Ser. No. 303,248
Int. Cl.[5] B65H *43/00*
U.S. Cl. 271—265 **14 Claims**



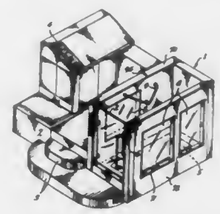
1. In a sheet feeder having first means for advancing a sheet along a path having a centerline to a nip formed by second feed means in which said sheet is subject to slippage relative to said first feed means before reaching said nip, apparatus for detecting sheet length including in combination a pair of sheet sensors disposed at transversely spaced locations along said path on either side of said centerline, each of said sensors being actuatable between two distinct conditions, means for producing a first signal in response to the actuation of both of said sheet sensors to the same one of said conditions by the leading edge of a bill, means for producing a second signal in response to the actuation of both of said sheet sensors to the other one of said conditions by the trailing edge of the bill and means responsive to said first and second signals for providing a measure of sheet length.

4,944,504
DOCUMENT FEEDING APPARATUS
Yasushi Yamada; Yoshikazu Maekawa; Hiroyuki Arai; Susumu Okui; Tsugio Hirabayashi, all of Hachioji, and Toshihide Miura, Koganei, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Feb. 12, 1988, Ser. No. 155,302
Claims priority, application Japan, Feb. 13, 1987, 62-29846; Mar. 25, 1987, 62-70750; Mar. 25, 1987, 62-70755; Mar. 25, 1987, 62-70756
Int. Cl.[5] B65H *1/06*
U.S. Cl. 271—171 **9 Claims**



1. A document feeding apparatus for circulating at least one document having a leading edge and a trailing edge, said apparatus comprising a movable regulating member adapted to contact and position said trailing edge, a paper feeding unit downstream of said regulating member, a movable recirculating discharge means comprising a substantially C-shaped flexible guide at least partially surrounding a rear portion of a document stacker and adapted to move downstream and/or upstream based upon movement of said regulating member, and detection means for determining the position of said regulating member.

4,944,505
EXERCISE DEVICE WITH UNDERWATER TREADMILL
Jeff Keller, and Robert Linton, both of Edmonds, Wash., assignors to Edmonds Medical Systems, Inc., Edmonds, Wash.
Continuation of Ser. No. 163,174, Feb. 26, 1988, abandoned, which is a continuation of Ser. No. 13,835, Feb. 12, 1987, abandoned. This application Nov. 18, 1988, Ser. No. 273,656
Int. Cl.[5] A63B *22/02*
U.S. Cl. 272—69 **1 Claim**



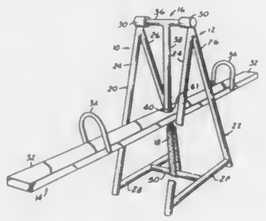
1. A kit for making an exercise therapy device of the type having a water tank including a treadmill, said kit comprising a unitary base unit having an open-topped central cavity for the treadmill, said base unit having an integral peripheral trough extending around the bottom portion of the remainder of said base unit and an upper horizontal support and mounting flange encircling the upper portion of said central cavity, said horizontal supporting and mounting flange being disposed upward and inward from said pheripheral trough, separate sidewall panels and end panels each having a bottom horizon-

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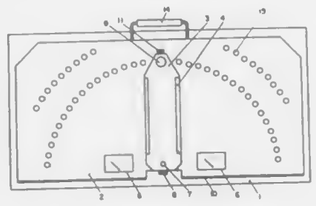
tal flange adapted for bolting to said horizontal support and mounting flange of said base unit and having flat, upright, opposite edge portions adapted for bolting to each other to form a composite exercise tank for receiving a user supported on the treadmill, a water storage container adapted to be connected with its interior in communication with said composite exercise tank, one of said end panels forming an upright frame member, a door member and hinges mounting said door member on said frame member for swinging about an upright edge portion to said exercise tank, and means for locking said door member in closed position, said hinges and locking means being constructed and arranged to permit outward-translating movement of said door member by pressure of water against it as the exercise tank is filled without applying stress to said hinges or locking means, said locking means including a lever pivoted to said frame member for swinging about a horizontal axis, an elongated upright link moved substantially vertically by pivoting movement of said lever, at least two bell cranks each having an apex portion pivoted to said frame member for swinging of said bell cranks about a horizontal axis, each of said bell cranks having a generally horizontally extending leg pivoted to said upright link and a generally upright leg, a plurality of horizontally elongated locking pins, one for each of said bell cranks, each of said pins being connected to said upright legs of said bell cranks for movement therewith, said pins being positioned for substantially horizontal movement so as to project from said frame member by swinging movement of said bell cranks caused by vertical movement of said upright link and bracket means mounted on said door member for receiving said pins and having holes sized so as to permit the translating movement of said door member relative to said frame member.

4,944,507
EASY GLIDE FUN RIDE
Ernest Efstratis, 6775 Wing Lake Rd., Birmingham, Mich. 48010
Filed Nov. 13, 1989, Ser. No. 434,367
Int. Cl.[5] A49B *39/00*
U.S. Cl. 272—85 **12 Claims**



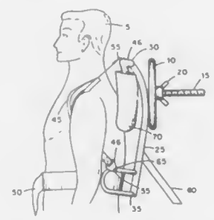
8. A glider especially for children, comprising a supporting frame having laterally spaced apart A-frame uprights, said uprights being disposed in parallel, generally vertical planes and each comprising a pair of legs connected at the tops, said legs diverging downwardly from the tops so as to be spaced apart at the bottoms, the bottoms of said legs being engageable with the ground to provide a base, an elongated rider board between said uprights having a seat portion at each end, means suspending said board from said supporting frame for swinging movement in a vertical plane generally parallel to the planes of said uprights in opposite directions from a generally horizontal position comprising a T-bar, aligned bearing sleeves at said tops of the legs of said uprights defining a horizontal pivot axis, said T-bar having a horizontal cross member the ends of which are received in said respective bearing sleeves for turning movement about the pivot axis of said bearing sleeves, said T-bar having a central member extending from the midpoint of said cross member at right angles thereto, means connecting said central member to said board approximately midway between the ends thereof, a beam connecting the bottoms of the legs of each upright, a brace connecting said beams, and means urging said board to said generally horizontal position including an elongated, stretchable elastic member looped under said brace and having the ends thereof connected to said board adjacent the midpoint in the length of the latter.

4,944,508
SHOULDER REHABILITATION DEVICE
Jayson H. Collins, 5804 Parkwood, Austin, Tex. 78735
Filed Aug. 10, 1989, Ser. No. 392,307
Int. Cl.[5] A63B *21/015*
U.S. Cl. 272—132 **5 Claims**



1. A multi-angle shoulder rehabilitation unit comprising:
(a) a base plate;
(b) a mounting plate means hingedly attached to said base plate with adjustable means to rigidly hold said mounting plate means in a multiplicity of different positions from horizontal to vertical;
(c) a lever means affixed at a lower end with a pivotal mounting means to said mounting plate means;
(d) a gripping handle means mounted at right angles to and in the upper end of said lever means; a multiplicity of holes in said mounting plate means, wherein said gripping handle means is movably mounted within said lever means to engage any one of said multiplicity of holes in said mounting plate means;
(e) a forearm cradle means mounted on said lever means between said gripping handle mounting means and said pivotal mounting means; and
(f) a tension adjustment means to adjust resistance to motion of said lever means.

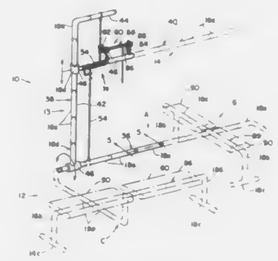
4,944,509
WEIGHTLIFTING BACKPACK
John M. Snider, 9544 Sarasota Dr., Knoxville, Tenn. 37923
Filed Apr. 27, 1989, Ser. No. 343,576
Int. Cl.[5] A63B *21/065*
U.S. Cl. 272—119 **7 Claims**



1. A weight lifting device for firmly securing standardized barbell weights having a central hole extruding therethrough

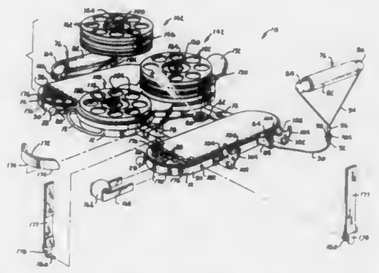
to the upper posterior portion of a user's body, said device comprising:
a back frame including
(a) a shoulder-spanning portion for extending across the upper portion of a user's back from a location adjacent the user's right shoulder to a location adjacent the user's left shoulder;
(b) a lower back-spanning portion for extending across the lower back of the user from a location adjacent the user's right side to a location adjacent the user's left side; and
(c) elongate means for connecting the shoulder-spanning portion to the lower back-spanning portion including upper and lower ends, said elongate means fixed at its upper end to the shoulder-spanning portion and fixed at its lower end to the lower back-spanning portion and extending generally along the center of the user's back when the device is operatively worn;
a weight-carrying bar associated with the frame about which standardized barbell weights can be positioned, said weight-carrying bar being fixed to the frame so as to project generally rearwardly thereof from a location adjacent the upper end of the elongate means and adapted to receive the weights placed thereon as the hole in each weight is directed onto the rearwardly-projecting end of the weight-carrying bar and the weight is positioned adjacent the frame;
clamp means associated with the weight-carrying bar for securing the weights in place along length of the weight-carrying bar; and
strap means securable about the frame for firmly securing the frame against the back of the user so that when the frame is firmly secured against the user's back, the center of gravity of the weights positioned on the weight-carrying bar is located adjacent the user's back at a location substantially midway between the user's shoulder blades.

4,944,510
EXERCISE APPARATUS
Dennis L. Brady, 2130 Huntington Dr., #311, S. Pasadena, Calif. 91030
Filed Jul. 27, 1987, Ser. No. 77,805
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—133 **18 Claims**



1. An exercise apparatus comprising:
a base member,
a support member including an elongate portion having normally upper and lower ends, and an end portion extending laterally from one end of said elongate portion,
means at the other end of said elongate portion of said support member mounting said support member on said base member,
a rope having one end secured to said laterally extending end portion of said support member, its other end secured to said base member, and an intervening portion extending between said upper and lower ends of and spaced laterally from said elongate portion of said support member,
an exercise member movable in an exercise motion back and forth along said intervening portion of said rope, and
friction brake means on said exercise member frictionally engageable with said rope for resisting said exercise motion.

4,944,511
ADJUSTABLE RESILIENT REEL EXERCISER
Paul S. Francis, 4603 Homestead Dr., Prairie Village, Kans. 66208, assignor to Paul S. Francis, Prairie Village, Kans.
Filed Jan. 23, 1989, Ser. No. 300,563
Int. Cl.[5] A63B *21/02*
U.S. Cl. 272—137 **21 Claims**



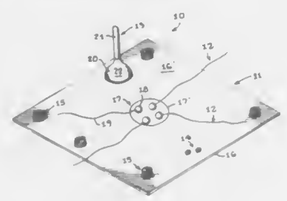
1. An exercising device comprising:
a portable base adapted to rest on a support surface and providing a pair of spaced apart foot pads for receiving the feet of the user;
a pair of reels supported for rotation on the base independently of one another, each reel being rotatable about a rotational axis oriented substantially perpendicular to said foot receiving surfaces;
a pair of flexible lines wound around the respective reels in a manner to rotate the reels when the respective lines are pulled;
a hand grip on each line, said hand grips being situated on opposite sides of said base at locations accessible to the hands of a user standing on said foot pads; and
resilient resistance means for each reel acting thereon in a manner to resist rotation of the reel in a direction caused by pulling on the corresponding line, the resilient resistance means for each reel acting independently of the resilient resistance means for the other reel.

4,944,512
GAME APPARATUS
Bonnie M. Mauck, and Ronnie L. Mauck, both of 10355 Tomahawk Trail, Colorado Springs, Colo. 80908
Filed Oct. 27, 1989, Ser. No. 427,433
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—1 GE **4 Claims**

1. A game apparatus consisting of:
a generally flat rectangular game board having a starting location designated on the top surface of the game board;
a plurality of tethered units each comprising a spherical game piece attached to one end of an elongated elastic tether; and,
a capture unit comprising an inverted receptacle member dimensioned to cover a portion of the top surface of the

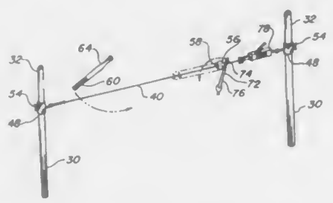
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game board, and having a handle element; whereby, the spherical configuration of the game piece will prevent the



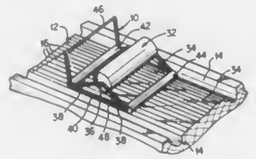
game piece from becoming caught between the periphery of said inverted receptacle member and the game board.

4,944,513
BALL BATTING GAME APPARATUS
John R. Zentner, 22442 Bessemer, Woodland Hills, Calif. 91367
Filed Mar. 7, 1989, Ser. No. 321,294
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 R 28 Claims



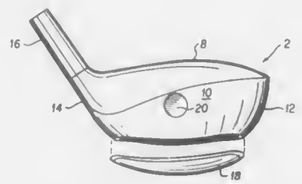
1. A ball batting game apparatus for playing with two players comprising:
(a) a pair of spaced-apart line-attaching members positioned at a predetermined distance,
(b) a line between and contiguous with said attaching members above a ground surface providing a directional guide therebetween,
(c) line tensioning means connected between the line and the attaching members causing the line to be taut defining a relatively straight linear guide between the members,
(d) a ball having a hole in the center thereof disposed on the line through the hole allowing the ball to move freely on the line in a linear direction,
(e) a ball striking device held by a player having extended fingers on one end and a gripping surface on the other providing a striking force to propel the ball along the line when hit by the player, with the fingers penetrating either side of the line hitting only the ball when the player accurately swings the striking device, and
(f) a bifurcated ball launching implement held by the other player, the implement having forks on one end and a handle surface on the other allowing the remaining player to orientate the forks on the line contiguous with the ball and propel the ball with a flip of the player's wrist to the player having the striking device in a pitching manner allowing the striking device to be swung impacting the ball thrusting it back toward the remaining player in a hitting manner duplicating, in constraint, a game using a ball and a bat or racket.

4,944,514
FLOOR FINISHING MATERIAL AND METHOD
James R. Suiter, Omaha, Nebr., assignor to Suitco Surface, Inc., Omaha, Nebr.
Continuation-in-part of Ser. No. 940,428, Dec. 11, 1986, Pat. No. 4,795,152, and a continuation-in-part of Ser. No. 203,617, Jun. 6, 1988, Pat. No. 4,867,816, which is a continuation of Ser. No. 871,318, Jun. 6, 1986, abandoned. This application Dec. 13, 1988, Ser. No. 283,863
Int. Cl.[5] A63C *19/04*; A63D *1/04*
U.S. Cl. 273—51 8 Claims



4. On a floor having a flat top surface and an improved material for finishing the top surface of the floor, the improvement comprising:
at least one elongated sheet including a uniform flexible film of clear plastic material having a thickness between about one mil and about twenty-five mils and
a continuous layer of adhesive material disposed between the top surface of the floor and the flexible film, the adhesive layer releasably adhering the flexible film onto the top surface of the floor.

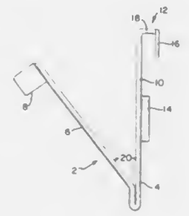
4,944,515
HOLLOW GOLF CLUB HEAD WITH INTERNAL SUPPORT
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Jan. 4, 1989, Ser. No. 293,451
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H 6 Claims



1. A hollow golf club head having a face, a back, a toe, a heel, a top and a bottom which comprise the exterior surface of said club head wherein said club head has an interior comprising a cavity having a dimension conforming to the general exterior surface configuration of said club and a linear support member extending between an internal surface of the face of said club head and an internal surface 9 of the back of said club head and wherein the exterior surface of the bottom has a substantially planar surface and wherein said linear support member has a longitudinal axis which is substantially parallel to said planar surface wherein said face of said club head has a substantially planar surface having a geometric center and wherein said linear support member abuts said internal surface of said face at said geometric center, said linear support member having a first end and a second end and a cavity extending from the first end of said linear support member through the second end of said linear support member and wherein said cavity in said linear support member extends through the back exterior surface of said club whereby said cavity of said linear

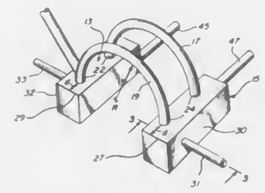
support member is visible from the exterior of said club head, whereby abutment of said linear support member against the internal surfaces of the face and back affords increased structural integrity to retard deformation of the club head during an impact.

4,944,516
PUTTING TRAINER DEVICE
Henry A. Bickler, 45-750 Pueblo Rd., Indian Wells, Calif. 92210
Filed Oct. 23, 1989, Ser. No. 425,574
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—183 B 9 Claims



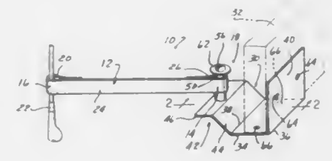
1. The device includes an attachment member which runs along the grip of the putter, terminating in a J-hook shaped member designed to engage a hole found in the top of a standard putter grip means for attachment comprising an attachment member connected to the angled member at one end and terminating in a J-hook member at the other end, said J-hook member being adapted to be inserted into a hole at the top of the grip wherein when the device is installed on a putter, the attachment member sits along the putter grip.

4,944,517
GOLF PRACTICE CLUB
Robert H. Redkey, 1630 Maple, Solvang, Calif. 93463
Filed Dec. 6, 1989, Ser. No. 446,930
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 A 8 Claims



1. A golf practice club for practice swinging at a golf ball comprising:
first and second block means for providing a channel therebetween, said block means each including a respective hole in a top surface thereof;
at least one arched ring means having first and second extensions thereon for insertion respectively in one of said holes; and
said first and second block means and said at least one arched ring providing an opening for passing over said golf ball without touching said ball when a proper swing is made.

4,944,518
GOLF SWING PRACTICE AND EXERCISE APPARATUS
William R. Flynn, 1707 Three Lakes Dr., Troy, Mich. 48098
Filed May 22, 1989, Ser. No. 355,193
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 A 2 Claims



1. A golf swing exercise apparatus for practicing a golf club swing comprising:
an elastic bond having first and second ends, the elastic band exerting a resistance to extension from a normal unextended length;
bracket means mountable to a stationary surface;
first means for attaching the first end of the band to the bracket means; and
second means in the form of a loop formed on the second end of the band for removably attaching the second end of the band to the shaft of a golf club, said bracket means comprising:
a planar base having opposed side edges;
a leg contiguous with the base and extending substantially perpendicular to one side edge of the base;
the base and leg configured for engagement with a stationary surface;
a support extending outward from the other side edge of the base;
a post fixedly connected to and extending substantially perpendicular from the support parallel to the leg, the first attaching means removably attachable about the post.

4,944,519
BOARD GAME FOR MEMORIZING MESSAGES, SLOGANS OR PHRASES
Heriberto Canela, 8027 W. 14 Avenue, Hialeah, Fla. 33014
Filed Aug. 14, 1989, Ser. No. 393,207
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 3 Claims

1. A board game, comprising:
A. a board member having an upper surface with a plurality of peripheral spaces with a corresponding plurality of centrally disposed spaces defined thereon and said centrally disposed spaces having one message each;
B. a stack of cards, twice in number as said plurality of

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centrally disposed spaces, wherein said cards are matched in pairs wherein each one of said matching cards in a pair include complementing parts of said messages;

C. a plurality of player token means that are used to represent each one of the players;

D. dice means for randomly reading symbols to be used to advance said player token means along said peripheral spaces; and

E. a plurality of matched pair token means for indicating the pairs of cards matched by a player.

4,944,520

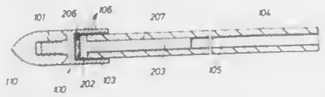
ARROW SHAFT END ADAPTOR APPARATUS AND BALANCE PIN APPARATUS AND METHOD

Conrad F. Fingerson; Bruce A. Nelson, both of Chatfield; Dennis L. Carlson, Brooklyn Park, and Robert D. Eickhoff, Fountain, all of Minn., assignors to AFC, Inc., Chatfield, Minn.

Continuation-in-part of Ser. No. 102,028, Sep. 29, 1987, Pat. No. 4,874,180. This application Sep. 26, 1988, Ser. No. 248,216

Int. Cl.[5] F42B *6/04*

U.S. Cl. 273—419 **2 Claims**



1. An arrow, comprising:

(a) a hollow circular arrow shaft having a first end and a second end and an opening with an inner surface defined therethrough,

(b) a single piece end adaptor for operative engagement to said hollow circular arrow shaft, said end adaptor having:

a cylindrical body having a ferrule end and an externally threaded end,

said ferrule end having an outer diameter and a cylindrical bore with a continuous inner surface defined upwardly therein, the inner surface of said bore adhesively engageable about a portion of the first end of the circular arrow shaft;

said externally threaded end opposite said ferrule end having constant pitch and constant diameter external threads defined thereabout, and an inclined surface defined in a circular manner about the intersection of said ferrule end and said externally threaded end, said inclined surface tapered inward from said outer diameter of said ferrule end towards said bore of said ferrule end, said inclined surface having an inner diameter greater than the diameter of the constant diameter external threads, said external threads and said inclined surface formed to threadedly receive and retain an arrow point with cooperating constant pitch and constant diameter internal threads and inclined surface so that impact forces from the arrow point are not transmitted to the inner surface of said circular arrow shaft, and

(c) a balance pin having a shaft portion with an outer diameter smaller than said opening defined through said arrow shaft, said balance pin shaft portion being received in a portion of said opening of said arrow shaft; and

a head portion interconnected to one end of said balance pin shaft portion having a diameter greater than said balance pin shaft portion outer diameter, said balance pin head portion diameter being smaller than the inner diameter of said first ferrule end.

2. A method of making an arrow comprising the steps of:

providing a hollow circular shaft having a first end and a second end and an opening with an inner surface defined therethrough,

providing a single piece end adaptor having:

a ferrule end with an outer diameter and a cylindrical bore with a continuous inner surface defined upwardly therein, the inner surface of said bore adhesively engageable about a portion of the first end of said hollow circular shaft; and

an externally threaded end opposite said ferrule end, said externally threaded end having;

constant pitch and constant diameter external threads defined therabout, and

an inclined surface defined in a circular manner about the intersection of said ferrule end and said externally threaded end, said inclined surface tapered inward from said outer diameter of said ferrule end towards said bore of said ferrule end, said inclined surface having an inner diameter greater than the diameter of the constant diameter external threads, said external threads and said inclined surface formed to threadedly receive and retain an arrow point with cooperating constant pitch and constant diameter internal threads and inclined surface so that impact forces from the arrow point are not transmitted to the inner surface of said circular shaft,

providing a balance pin having a shaft portion with an outer diameter smaller than said opening defined through said arrow shaft, said balance pin shaft portion sized to be inserted into a portion of said arrow shaft opening, and a head portion interconnected to one end of said balance pin shaft portion having a diameter greater than said balance pin shaft portion outer diameter, said balance pin head portion diameter being smaller than the inner diameter of said first ferrule end,

inserting said balance pin shaft portion in said arrow shaft opening until said balance pin head portion abuts said arrow shaft first end,

adhesively engaging a portion of said inner surface of said bore of said ferrule end to the outer surface of said first end of said hollow circular shaft,

threading an arrow point having an inclined surface on the externally threaded end of said end adaptor, and

contacting said inclined surface of said arrow point with said inclined surface of said externally threaded end.

4,944,521

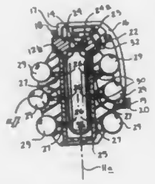
WAR GAME MARKING GRENADE

Donald R. Greeno, 1 Snowling Rd., Uxbridge, Mass. 01569

Filed Jun. 27, 1989, Ser. No. 371,838

Int. Cl.[5] A63B *71/02*

U.S. Cl. 273—428 **10 Claims**



1. A war game marking grenade comprising,

an elongate housing including a plurality of cavities formed in the exterior surface of the housing, and

a head portion fixedly mounted to an upper end of the housing including an actuator handle pivotally mounted to a forward upper portion of the head portion, and

a piercing head mounted to a lever member wherein the lever member is pivotally mounted to the handle, and

a cylindrical well positioned medially of the housing including a gas cylinder container therein with an upper end aligned with a forward end of the piercing head, and each of the cavities in communication with the well, and each of the cavities including a marking fluid containing capsule secured therein whereupon pivoting of the actuator handle directs the piercing head to effect release of a compressed gas contained within the gas cylinder to direct the capsules exteriorly of the housing.

4,944,522

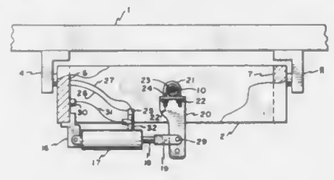
PIN RETRACTOR FOR SEMI-TRAILER TANDEMS

Bobbie M. Hart, P.O. Box 7514, Roanoke, Va. 24019

Filed Sep. 26, 1988, Ser. No. 248,955

Int. Cl.[5] B60G *5/04;* **B62D** *53/06*

U.S. Cl. 280—149.2 **20 Claims**



1. In a tandem which comprises a pin control shaft, wherein the rotation of said pin control shaft retracts pins on the tandem, the improvement comprising:

a lever arm attached to said pin control shaft by means of gripping the exterior of said pin control shaft at a point where there is no shaft extension, wherein said gripping means comprise two U bolts, an upper pipe segment and a lower pipe segment; and

a pneumatic ram pivotally attached both to the end of said lever arm and to said tandem; and

means for activating said ram.

4,944,523

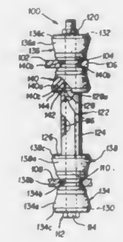
END LINK FOR STABILIZER BAR

Donald P. Hardy, Jr., and Eric C. Parker, both of Algonquin, Ill., assignors to Illinois Tool Works, Chicago, Ill.

Filed Mar. 3, 1989, Ser. No. 318,298

Int. Cl.[5] B60G *11/50*

U.S. Cl. 280—689 **22 Claims**



1. An end link for a stabilizer bar for a suspension system for a motor vehicle, such as an automobile or a light truck, the end link comprising:

(a) a unitary spool having a tubular body and having an annular flange at each end of the tubular body, said flanges conforming in thickness and outer diameter to each other;

(b) two annular washers, each conforming in outer diameter to each of said flanges;

(c) four annular grommets conforming in shape to each other and being made of an elastomeric material, each having a snap-fittable end adapted to be snap-fitted over either of said flanges or over either of said washers, and each having an opposite end;

(d) a bolt having a head and a shank with a threaded end; and

(e) a nut adapted to be threaded onto the threaded end of the shank of the bolt;

wherein the snap-fittable end of a respective one of said grommets is snap-fitted over each of said flanges, so as to form a grommet-spool-grommet subassembly; wherein the snap-fittable end of a respective one of said grommets is snap-fitted over each of said washers, so as to form a first grommet-washer subassembly and a second grommet-washer subassembly; wherein the shank of the bolt extends successively through the first grommet-washer subassembly, such that the washer of the first grommet-washer subassembly faces toward the head of the bolt, through the grommet-spool-washer subassembly, and through the second grommet-washer subassembly, such that the washer of the second grommet-washer subassembly faces away from the head of the bolt; and wherein the nut is threaded onto the threaded end of the shank of the bolt.

4,944,524

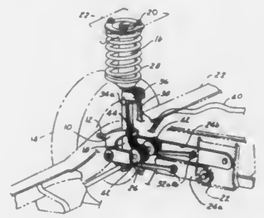
TELESCOPING STRUT SUSPENSION WITH FRICTION REDUCING TORSIONAL UNLOADING DEVICE

Kurt F. Achenbach, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 18, 1987, Ser. No. 122,315

Int. Cl.[5] B60G *17/00*

U.S. Cl. 280—701 **16 Claims**



1. An independent suspension for a motor vehicle comprising:

a wheel carrier including a spindle for rotatably mounting a road wheel;

a telescoping strut having a lower end rigidly attached to said wheel carrier and an upper end attached to the chassis of said motor vehicle;

a control arm interposed between said wheel carrier and said chassis; and

a torsional unloading device comprising a torsion spring interposed between said control arm and said telescoping strut such that said torsional unloading device will impose a force upon said telescoping strut tending to counteract an opposing bending moment imposed upon said strut by said wheel carrier.

4,944,525

SELF LOCKING TRAILER HITCH

Doyle L. Landry, Rt. 46, Box 295, Lafayette, La. 70508

Filed Jul. 3, 1989, Ser. No. 374,876

Int. Cl.[5] B60D *1/44, 1/14*

U.S. Cl. 280—479.3 **5 Claims**

1. A center locking hitch comprising:

(a) an elongated frame with means for attachment to a vehicle;

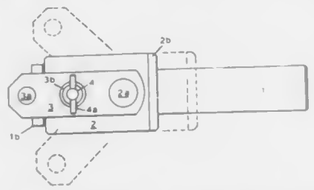
(b) a housing with means to attach to said frame for limited longitudinal movement thereon between an extended towing position and a retracted vehicle coupling position wherein said means to attach said housing to said frame comprises a non-circular longitudinal bore in said housing and a cooperating non-circular surface on said frame telescopingly received therein for said limited longitudinal movement;

(c) a swing bar pivotally mounted on said housing for swing-

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able movement about a vertical axis, with provisions at a free end for attachment to another vehicle;

(d) said housing, frame, and swing bar each having apertures with such apertures disposed in alignment when said



swing bar is centered on said housing and said housing is in said extended position;

(e) a locking pin mounted on said swing bar for extension through said apertures when they are in alignment to lock the hitch in towing position.

4,944,526

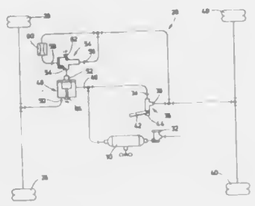
AIR SUSPENSION SYSTEM WITH LOAD CONTROLLED LIFTABLE AXLE

Charles E. Eberling, Wellington, Ohio, assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 1, 1989, Ser. No. 345,818

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—704 **7 Claims**



1. Suspension control system for a vehicle having a suspension system including support means using fluid pressure to support said vehicle and a liftable axle carrying wheels, said liftable axle being movable between a ground engaging position in which said wheels carried by the liftable axle engage the ground to assist in supporting the vehicle and a retracted position in which the wheels carried by the liftable axle are retracted from the ground, said suspension control system including valve means responsive to the pressure level in said suspension system to cause said liftable axle to move to the ground engaging position when the pressure level in the suspension system exceeds a predetermined level and to cause said liftable axle to move to the retracted position when the pressure level in the suspension system drops below a predecided level, said liftable axle including fluid pressure responsive means for causing said liftable axle to move between said positions, said valve means including communication controlling means for controlling communication between a source of fluid pressure and the fluid pressure responsive means, said valve means including pressure responsive means responsive to the pressure level in said support means, said pressure responsive means controlling said communication controlling means to communicate said fluid pressure responsive means to said fluid pressure source when the pressure level in the support means attains said predetermined level and to terminate communication between said fluid pressure responsive means and said fluid pressure source when the pressure level in the support means drops to said predecided pressure level.

4,944,527

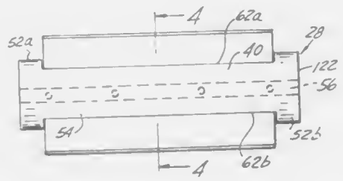
INTEGRAL RETAINER, HEAT SHIELD AND ASSEMBLY

Robert J. Bishop, Washington; Robert P. Fontecchio, Rochester Hills; Stanley B. Good, Richmond, all of Mich., and Troy C. Hendrix, Maryville, Tenn., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 31, 1989, Ser. No. 401,216

Int. Cl.[5] B60R *21/28*

U.S. Cl. 280—741 **20 Claims**



1. A device comprising a planar metal sheet having formed thereon at least a first set of opposing shaped slots such that upon forming the planar sheet as an open ended generally cylindrical member or cylinder first portions of the sheet, defined by the slots, extend away from the surface of the formed cylindrical member and form in conjunction with other surfaces of the sheet a plurality of first apertures, and the extending first portions serving to define heat sheet means for shielding a portion of an air bag, adapted to be secured thereabout, from hot gas generated by a gas generator, the formed cylindrical member adapted to receive a gas generator therein, the device including securement means, interacting with a rearward portion of the cylindrical member and adapted for urging a gas generator into forward facing portions of the cylindrical member, for securing same in place.

4,944,528

AUTOMATIC-IGNITION DEVICE FOR VEHICLE CRASH PROTECTION DEVICE

Karl E. Nilsson, Ottobrunn, and Siegfried Zeuner, Munich, both of Fed. Rep. of Germany, assignors to Bayern-Chemie, Gesellschaft für flugchemische Antriebe mbH, Aschau am Inn, Fed. Rep. of Germany

Filed Jul. 7, 1989, Ser. No. 376,827

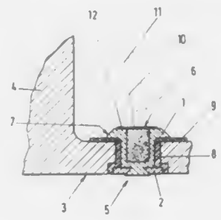
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1988, 3824469

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—741 **9 Claims**

1. An automatic-ignition device for a vehicle crash protection device for passengers having a gas generator arranged in a housing, said gas generator comprising a primary igniting mixture ignitable at a low ambient temperature and being embedded in a primary igniting mixture metal housing structure containing a window, the window having a dam and being aligned toward a secondary igniting mixture for generating gas, the primary igniting mixture metal housing structure being

disposed thermally insulated in an outer wall of the gas generator housing such that, in the area of the outer wall, a heat sink



is formed, which is thermally insulated from the gas generator housing.

4,944,529

INFLATABLE PROTECTIVE CUSHION

Hans-Gerd Backhaus, Wettstetten, Fed. Rep. of Germany, assignor to Audi AG., Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 941,758, Dec. 15, 1986, abandoned. This application Sep. 13, 1988, Ser. No. 243,438

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544248

Int. Cl.[5] B60R *21/22*

U.S. Cl. 280—743 **16 Claims**



1. An inflatable cushion for the protection of passengers in an automotive vehicle, comprising:

first and second quadrilateral and substantially congruent web means in superposed relation, each web means comprising first and second margins positioned opposited each other and third and fourth margins positioned opposite each other and extending along lines intersecting said first and second margins;

third web means comprising fifth and sixth margins positioned opposite each other and at least a seventh margin extending along a line intersecting said fifth and sixth margins, said fifth and sixth margins being connected to one of said third and fourth margins of said first and second quadrilateral web means and said seventh margin being substantially coextensive with one of said first and second margins of said first and second quadrilateral web means;

fourth web means comprising eighth and ninth margins positioned opposite each other and at least a tenth margin extending along a line intersecting said eighth and ninth margins, said eighth and ninth margins being connected to the other of said third and fourth margins of said first and second quadrilateral web means and said tenth margin being substantially coextensive with said one of said first and second margins of said first and second quadrilateral web means;

said third and fourth web means being positioned between said first and second quadrilateral web means and being folded along fold lines positioned between said fifth and sixth and said eighth and ninth margins, respectively, said seventh and tenths margins each forming first and second sections folded over and extending along each other and along said one of said first and second margins of said first and second quadrilateral web means;

first seam means for connecting one of said first and second margins of said first and second quadrilateral web means to each other and to said first and second sections of said seventh and tenth margins of said third and fourth web means;

second seam means for connecting the other of said first and second margins of said first and second quadrilateral web means to each other;

at least third seam means extending along a line intersecting said first and second margins of one of said first and second quadrilateral web means for forming a substantially enclosed chamber;

and means for inflating said chamber and located in one of said first and second seam means.

4,944,530

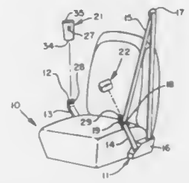
VEHICLE SEAT BELT METAL BUCKLE TEMPERATURE INSULATING COVER

Kevin H. Spurrier, 2205 Ridgecrest Dr., Richardson, Tex. 75080

Filed Mar. 27, 1989, Ser. No. 328,680

Int. Cl.[5] A44B *11/00*; B60R *22/00*

U.S. Cl. 280—801 **13 Claims**



1. A vehicle passenger protective belt metal connector temperature insulative cover comprising: a multi-layer folded over and stitched cover sized and configured to cover a first belt metal connector with first opening means in said cover for connection of a section of said belt to said metal connector; and second opening means in said cover for connection of said metal connector to a second connector on a second section of said belt; wherein said multi-layer material folded over and stitched cover is a three layer material cover with an outside layer a tightly woven resiliently stretchable cloth, an intermediate layer of foamed plastic, and an inner layer of tightly woven material.

4,944,531

DEVICE FOR COUPLING A BRACKET WHICH IS PROVIDED WITH A BUCKLE OF A SEAT BELT, TO A RETAINING MEMBER, WHICH IS FIXED IN A VEHICLE

Walter Knabel, Murnau-Staffelsee; Josef Mayer, Weichs, and Stephan Wentker, Dachau, all of Fed. Rep. of Germany, assignors to Autoliv-Kolb, GmbH. & Co., Dachau, Fed. Rep. of Germany

Continuation of Ser. No. 221,273, Jul. 19, 1988, abandoned. This application Dec. 8, 1989, Ser. No. 449,077

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1987, 3724134

Int. Cl.[5] B60R *22/18, 22/30*

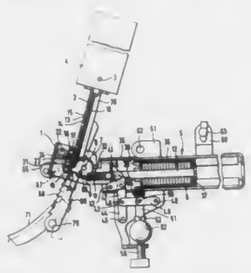
U.S. Cl. 280—806 **10 Claims**

1. A seat belt locking assembly for directly coupling a seat belt buckle to a vehicle in the event of a sudden acceleration or deceleration caused, for example, by a sudden impact, said device comprising:

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a pivotable locking member which is directly coupled to the belt buckle and having teeth means; and

a tie rod which is coupled directly to the vehicle but in close proximity to said locking member and generally restrained from moving away from said teeth means of said locking member, said tie rod having receiving means for lockably engaging said teeth means of said locking,



said locking member and said tie rod being positioned relative to each other such that when a tensile force of at least a predetermined amount is exerted on the belt buckle, the locking member is caused to rotate towards said tie rod and said teeth means become lockably engaged with said receiving means to create a direct mechanical coupling between the belt buckle and the vehicle.

4,944,532

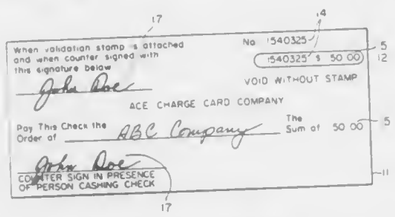
MULTIPLE-PART TRAVELERS' CHECK PROVIDING ENHANCED SECURITY AND PREVENTION OF UNAUTHORIZED USE

Albert C. Pollard, Pollard Properties, Inc., P.O. Box 266, Irvington, Va. 22480

Filed May 22, 1989, Ser. No. 354,565

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—70 **4 Claims**



1. A travelers' check system, comprising:

a plurality of travelers' checks, each having a predetermined monetary value printed thereon, said plurality of travelers' checks having a series of serial numbers printed on respective ones thereof so as to define a range, said serial numbers in said series being different from each other said travelers' checks each having a first space for a signature, and a second space for a countersignature;

a record sheet containing a plurality of validation labels, each of said labels having a different respective serial number printed thereon in correspondence with a respective one of said travelers' checks, each of said validation labels further having a predetermined monetary value printed thereon corresponding to a value of said respective one of said travelers' checks;

wherein said travelers' checks are negotiable only when they are combined with the validation label with the same serial number; and

an acknowledgement document containing the smallest and the largest of said serial numbers so as to define said range, wherein, in the execution of said travelers' checks system, said acknowledgement document and said validation labels are transmitted separately to a user.

4,944,533

FORGING-BY-COPYING-PROOF PRINTS

Shuhei Tsuchiya, Tokyo, Japan, assignor to Hosokawa Printing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 897,373, Aug. 18, 1986, Pat. No. 4,780,397. This application Oct. 18, 1988, Ser. No. 262,500

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—93 **6 Claims**



1. A process for preparing a forging-by-copying-proof print comprising the steps of first preparing a film positive sheet for a forging-by-copying-proof print, the preparing of the film positive sheet including the steps of providing a latent image negative, placing a multi-line negative on the upper surface of said latent image negative, placing an unexposed film having a photosensitive membrane on the undersurface thereof on the upper surface of said multi-line negative to form a primary three-layer film structure,. striking light from a light source against the undersurface of said primary three-layer film structure to partially expose said unexposed film so as to provide a primary film positive sheet, replacing said latent image negative by a latent image positive and said multi-line negative by a mesh negative, respectively, to form a secondary three-layer film structure, striking light from said light source against the undersurface of said secondary three-layer film structure to completely expose said partially exposed film and removing said latent image positive and mesh negative from said secondary three-layer film structure to thereby provide a film positive sheet for a forging-by-copying-proof print for use in the following step, and then preparing a forging-by-copying-proof print from the film positive sheet by an offset or relief printing method.

2. A forging-by-copying-proof print prepared by the process as set forth in claim 1.

4,944,534

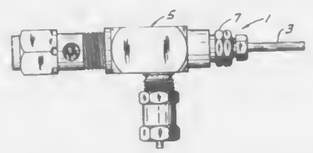
FRANGIBLE MALE COUPLING COMPONENT

Jeffrey M. Kotyk, St. Louis, Mo., assignor to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Oct. 3, 1988, Ser. No. 252,770

Int. Cl.[5] F16L *19/00*

U.S. Cl. 285—4 **8 Claims**



1. A frangible male coupling component for sealingly coupling a conduit to a fluid delivery device, such as a lubricant injector, of the type having a female coupling component with an axial passage therethrough, an internal camming surface in the passage, and internal threads spaced axially outwardly from said camming surface, said male coupling component having an integral tubular body of one-piece construction adapted to coaxially receive the conduit to be coupled, said body comprising:

an axial inner ferrule portion engageable with said camming surface, said ferrule portion having a bore therethrough;

an axial outer screw portion having a bore therethrough generally coaxial with the bore through said ferrule portion, a head formed for engagement by a wrench or the like, and a shank extending axially inwardly from the head formed with external threads engageable with the internal threads of the female coupling component whereby rotation of the screw portion in a first direction is adapted to effect relative axial movement of the male coupling component and the female coupling component to bring said ferrule portion into engagement with said camming surface; and

an annular frangible portion integrally connecting said ferrule and screw portions, said frangible portion having a bore therethrough generally coaxial with the bores through said ferrule and screw portions, said frangible portion being adapted to break on rotation of the screw portion in said first direction when the ferrule portion is in engagement with said camming surface thereby to permit relative rotation between said screw and ferrule portions, continued rotation of the screw portion in said first direction being adapted to effect relative axial movement of the screw portion relative to the ferrule portion to a point where said screw portion is engageable with the ferrule portion to press the ferrule portion against said internal camming surface therebY to cause said ferrule portion to deform radially inwardly against the conduit to form a seal around the conduit to prevent leakage therepast;

said frangible portion being so configured as to break into separate parts attached to the screw and ferrule portions, said parts being engageable with one another to inhibit separation of the screw and ferrule portions in the event the screw portion is rotated in a second direction opposite from said first direction to remove the male coupling component from the female coupling component.

4,944,535

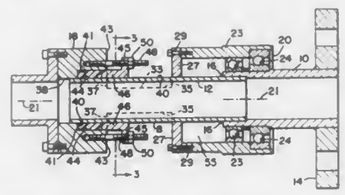
ROTARY LIQUID CONNECTION MECHANISM

Lorne D. Manpin, 341 Wagner Dr., Claremont, Calif. 91711

Filed Oct. 21, 1988, Ser. No. 260,496

Int. Cl.[5] F16L *55/00*

U.S. Cl. 285—16 **15 Claims**



1. A rotary liquid conduit mechanism comprising:

a stationary annular housing structure,

a rotatable fluid conduit extending axially through the housing structure,

bearing means in the housing structure and rotatably supporting the conduit against radial movement relative to said housing structure,

a stationary sleeve structure spaced axially from the housing structure and encircling the conduit,

bridge means extending between the housing structure and the sleeve structure,

said bridge means defining at least one opening for manual access therethrough,

said sleeve structure having an annular packing in a recess therein and disposed about the rotatable fluid conduit,

an annular piston slidable on the rotatable conduit and extensible into the recess to engage the packing, and

means for urging the piston against the packing in the recess to apply axial force to compress the packing.

4,944,536

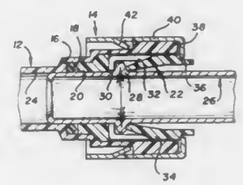
BLEED-DOWN CONNECTOR ASSEMBLY

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Continuation-in-part of Ser. No. 776,644, Sep. 16, 1985, Pat. No. 4,681,351, which is a continuation-in-part of Ser. No. 360,201, Mar. 22, 1982, Pat. No. 4,601,497, which is a continuation-in-part of Ser. No. 201,711, Oct. 29, 1980, Pat. No. 4,423,892. This application Mar. 23, 1989, Ser. No. 327,797

Int. Cl.[5] F16L *37/00*

U.S. Cl. 285—319 **13 Claims**



1. A connector assembly for providing a bleed-down connector position with a tubular conduit which is adapted to convey a pressurized fluid, comprising:

housing means for receiving said conduit, said housing means including a ramp means for enabling axial positioning of a cap means, said ramp means being circumferentially positioned about said housing and including varying axial lengths;

sealing means for providing a fluid tight connection between confronting portions of said housing means and said conduit when said conduit is in a fully inserted position in said housing means;

retainer means for maintaining said conduit in said housing means; and

said cap means rotatably mounted on said housing means for controlling the axial position of said retainer means in cooperation with ramp means, catch means associated with said cap means for engaging said ramp means and limiting the axial movement of said cap means with respect to said housing means, said cap means is capable of sliding axially with respect to said housing means upon the rotation of said cap means such that said conduit is permitted to be partially withdrawn from said housing means with the rotation of cap means to said bleed-down connector position in which said sealing means fluid tight connection is interrupted and means for locking said cap means to said housing means to prevent disengagement of said cap means from said housing means.

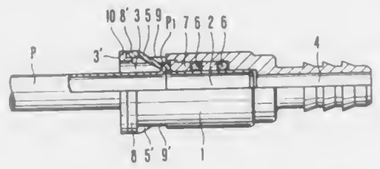
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,537

SMALL-DIAMETER PIPE CONNECTOR

Masayoshi Usui, Numazu, and Katsushi Washizu, Shizuoko, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Shizuoka, Japan

Filed Jun. 7, 1989, Ser. No. 362,565
Claims priority, application Japan, Jun. 13, 1988, 63-78170; Sep. 7, 1988, 63-117436
Int. Cl.[5] F16L *39/00*
U.S. Cl. 285—319 11 Claims



1. A connector for connecting a small-diameter pipe, said pipe having opposed first and second ends and an expanded annular wall portion spaced from the first end, said connector comprising:

a connector body having opposed front and rear ends, a channel extending axially into the body from the front end, a small-diameter chamber disposed rearwardly of and in communication with the channel and being provided with a seal ring and a bush therein, said seal ring and said bush being generally annular and having central openings dimensioned to receive the first end of the pipe and to prevent passage of the expanded annular wall portion of the pipe therethrough, a large-diameter chamber disposed rearwardly of and in communication with the small-diameter chamber, the large-diameter chamber being dimensioned to receive the expanded annular wall portion of the pipe therein, the rear end of the body defining a continuous annular support wall having an outer peripheral surface, a plurality of axially-elongate holes disposed forwardly of the continuous annular support wall of the body and extending into the large-diameter chamber; and

a socket body having an annular rear end wall and a plurality of obliquely-projecting pawl walls extending forwardly from the rear end wall of the socket body and inwardly through the axially-elongate holes in the connector body and into the large-diameter chamber, said socket body including an inner peripheral surface, at least a portion of the inner peripheral surface of the socket body engaging at least a portion of the outer peripheral surface of the connector body, wherein the pawl walls of the socket member resiliently lock the pipe in the connector body.

4,944,538

THREADED PIPE JOINT HAVING IMPROVED SEAL RING ENTRAPMENT

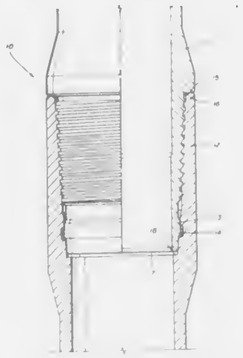
Shannon R. Read, Houston, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Filed Mar. 8, 1989, Ser. No. 320,476
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—334 4 Claims

1. A threaded, sealed joint comprising:

(a) a box member having a first inwardly tapered threaded section on its inner periphery, an enlarged diameter seal ring groove below the lower end of said first inwardly tapered threaded section, a deformable seal ring in said seal ring groove, and a first smooth, inwardly tapered surface on said inner periphery below said seal ring groove; and

(b) a pin member having a second inwardly tapered threaded section on its outer periphery, an extrusion hump having a given diameter below the lower end of said second threaded section, said pin member having an area between the lower end of said second threaded section and the extrusion hump of a diameter less than the said given diameter of said extrusion hump and a second smooth, inwardly tapered surface on said outer periphery below and immediately adjacent to said extrusion hump having



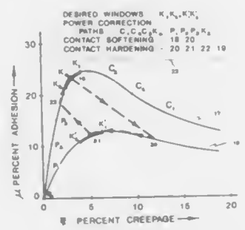
its greatest diameter less than the said given diameter of said extrusion hump, whereby upon makeup of the joint, the said extrusion hump entraps the said seal ring into sealing engagement between the box member and the pin member, and a primary metal-to-metal seal is formed between said first and second inwardly tapered smooth surfaces.

4,944,539

DIFFERENTIAL CREEPAGE CONTROL SYSTEM FOR OPTIMIZING ADHESION OF LOCOMOTIVES

Sudhir Kumar; Shiv R. Kumar, both of Westmont, and Dean A. Becker, Countryside, all of Ill., assignors to Tranergy Corporation and General Motors Corporation, both of Westmont, Ill.

Filed Mar. 15, 1989, Ser. No. 324,258
Int. Cl.[5] B61C *15/08*
U.S. Cl. 291—2 12 Claims



1. A method of controlling power applied to a locomotive drive train, comprising steps of:

(a) determining current I_N drawn by each drive motor of the locomotive;

(b) determining rotation speed n of each drive motor of the locomotive;

(c) calculating a function of differential of motor current with respect to rotational speed for each motor; and

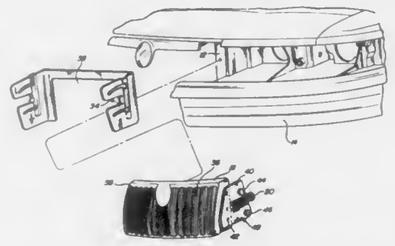
(d) adjusting the power applied to the locomotive drive train in response to said calculated function such that the smallest value of the function calculated for all motors is within an optimum range defined as an adhesion window.

4,944,540

SLIDING RADIATOR GRILL

Dhafer Y. Mansoor, West Bloomfield, and Arnold O. Pohto, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 24, 1989, Ser. No. 356,082
Int. Cl.[5] B60R *19/02*
U.S. Cl. 293—115 16 Claims



1. In a motor vehicle having a bumper assembly movable longitudinally of the body of the vehicle between a frontwardly located assembled position and a rearwardly located impact position in response to the imposition of an impact load on the bumper, and a movable grill assembly mounted on the vehicle body rearwardly adjacent and in the path of movement of the bumper assembly, an improved mounting arrangement for the movable grill assembly comprising:

a bracket adapted to be fixedly secured to the vehicle body;

means defining a longitudinally extending pin and slot connection between the grill and the bracket to permit controlled movement of the grill between the assembled and impact positions; and

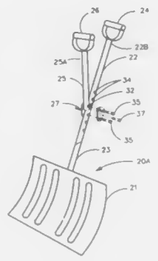
spring means operatively engaged between the grill and the bracket to urge the grill toward the assembled position.

4,944,541

TWO-HANDLED SHOVEL

Kenneth P. Waidschmidt, 309 E. 14th, Ellis, Kans. 67637

Filed Oct. 20, 1988, Ser. No. 260,533
Int. Cl.[5] A01B *1/22*; B25G *3/38*
U.S. Cl. 294—58 1 Claim



1. A shovel for use by a shoveler to shovel material, comprising:

an extended main shaft having top and bottom ends, a longitudinal axis extending between said top and bottom ends and apertures spaced along said main shaft, said apertures extending through said main shaft perpendicular to said longitudinal axis;

a main hand grip secured to said top end of said main shaft;

a shovel blade fastened to said bottom end of said main shaft;

an auxiliary shaft having top and bottom ends, said auxiliary shaft having an aperture formed near said bottom end thereof;

a second hand grip securely attached to said top end of said auxiliary shaft;

a brace adjustably and pivotally connecting said bottom end of said auxiliary shaft to said main shaft at a point on said main shaft above the point at which said shovel blade is fastened to said main shaft, said brace including first and second members, each of said members having first and second ends and having first and second apertures formed near said respective first and second ends, said members being in spaced relation to each other with said main shaft in between so that each of said first apertures in said member is aligned with one of said spaced apertures in said main shaft;

first means extending through said first apertures of said members and through said one of said spaced apertures in said main shaft for securing said members to said main shaft;

second means extending through said second apertures in said members and through said aperture in said auxiliary shaft for pivotally securing said auxiliary shaft to said main shaft;

each of said members has a third aperture formed therein spaced from said first aperture therein; and

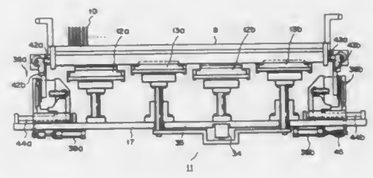
third means extending through said third apertures and through another of said apertures in said main shaft for securing said brace on said main shaft at a fixed angle.

4,944,542

SUPPORT DEVICE

Mizuki Uchida, and Kozo Hara, both of Yamanashi, Japan, assignors to Tei Yamanashi Limited, Niraaki, Japan

Filed Oct. 6, 1988, Ser. No. 254,183
Claims priority, application Japan, Oct. 7, 1987, 62-253226
Int. Cl.[5] B65G *47/00*; B66C *1/42*
U.S. Cl. 294—86.4 12 Claims



1. A support device comprising:

plural mounts on which an object to be supported is mounted,

a means for lifting at least one of said mounts,

a pair of support systems opposed to each other and having a variable interval between them,

drive means for moving said support systems to have a predetermined interval between them,

a single contact arranged at one of the support systems to contact one end face of said object,

a plurality of contacts arranged at the other of said support systems to contact the other end face of said object; and

expansible means for compensating for a distance moved by said support systems in synchronization with an abutment of said single contact and said plurality of contacts against the end faces of said object.

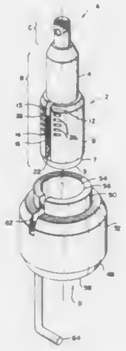
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4,944,543

ICE AUGER EXTRACTOR FOR RETRIEVING AUGERS OR SIMILAR DEVICES FROM A BORE HOLE

Michael R. Walsh, Weathersfield, Vt., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1988, Ser. No. 172,890
Int. Cl.[5] E21B *31/12*
U.S. Cl. 294—86.29 **5 Claims**



1. A device for retrieving an auger rod from a hole, comprising:
(a) a housing having a longitudinal axis;
(b) said housing including a first bore extending along said longitudinal axis;
(c) said housing having an exterior surface and an interior surface;
(d) said housing having a first recess formed in a portion thereof;
(e) a portion of said first recess extending through said exterior surface to said interior surface;
(f) detent means, including a cam means and a spring means biased thereto, positioned in said first recess for securing an auger rod in said housing;
(g) adapter means releasably attached to said housing for centering the auger rod on said axis, said adapter means including a sleeve having a first end and a second end, said sleeve having a second coaxial bore extending along the longitudinal axis thereof;
(h) said sleeve having a second recess adjacent said first end thereof; and
(i) said second recess aligned with said first recess so that a portion of said cam means extends through said second recess.

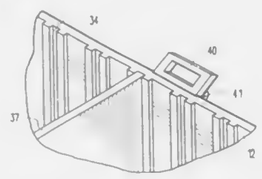
4,944,544

VEHICLE ACCESSORY STORAGE DEVICE

Scott W. Dick, 524 Chatham Park Dr., Apt. 2A, Pittsburgh, Pa. 15220

Filed Jun. 23, 1989, Ser. No. 370,180
Int. Cl.[5] B60R *5/04*
U.S. Cl. 296—37.1 **11 Claims**

1. A vehicle accessory storage device adapted for securement in a vehicle trunk, comprising:
an elongated open top rectangular receptacle;
an extensible rod mounted at each of two opposite exterior end walls of said receptacle for engagement with opposite interior side walls of a vehicle trunk;
a dovetail groove extending vertically along each of said end walls of said receptacle;
a complementary formed clamp nut slidably received in each of said grooves; and



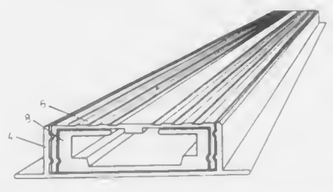
an inner end portion of said rods in threaded engagement with said clamp nuts to allow selective vertical adjustment of said rods along said grooves.

4,944,545

STANCHION FOR GOODS VEHICLES

Sture B. R. Simme, Maratongatan 39, Lidköping, Sweden S-531 52

PCT No. PCT/SE88/00210, § 371 Date Oct. 13, 1989, § 102(e) Date Oct. 13, 1989, PCT Pub. No. WO88/09282, PCT Pub. Date Dec. 1, 1988
PCT Filed Apr. 26, 1988, Ser. No. 424,210
Claims priority, application Sweden, May 19, 1987, 8702069
Int. Cl.[5] B62D *33/023*
U.S. Cl. 296—43 **6 Claims**



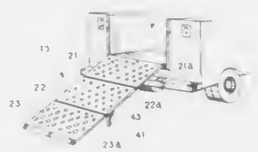
6. A stanchion for retaining goods on a platform of a vehicle formed of at least two shaped aluminum sections interlocked longitudinally by a plurality of mating weight-bearing means including ridges and grooves along two opposed sides of a substantially rectangular configuration to form a unitary load bearing unit surrounding a hollow interior.

4,944,546

FOLDABLE TRUCK RAMP

William K. Keller, P.O. Box 881595, Steamboat Plaza, Colo. 80488

Filed Sep. 8, 1989, Ser. No. 404,883
Int. Cl.[5] B60P *1/43*; B65G *69/28*
U.S. Cl. 296—61 **7 Claims**



1. A folding ramp for vehicles including:
a first plate having a top and bottom pivotably attached to a vehicle;

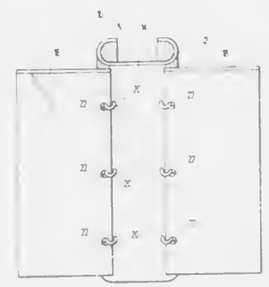
a second plate having a top and bottom pivotably attached to said first plate;
a third plate having a top and bottom pivotably attached to said second plate;
a plurality of legs pivotably attached to and extending away from said bottom of said second plate;
said legs biased by springs to extend out from said bottom of said second plate;
cable means connecting each leg to one end of a pivoting means; and
said one end of said pivoting means slidably engaged to said bottom of said second plate, said pivoting means having an opposite end pivotably attached to said bottom of said first plate;
whereby unfolding of said first and second plates extends said legs, and folding together said first and second plates causes said legs to retract.

4,944,547

ADJUSTABLE SUN VISOR

Marcella Watts, 724 S. Grand St., and Johnnie M. Wrice, 605 Gail St., both of Charleston, Mo. 63834

Filed Jan. 4, 1989, Ser. No. 293,426
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.8 **9 Claims**



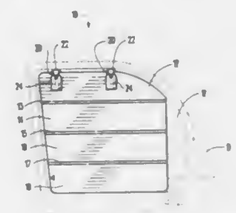
1. An adjustable sun visor for attachment to a generally vertical roof pillar disposed between a windshield and a door window of a vehicle, comprising.
an elongated clamp body formed from a resilient material and having a C-shaped tubular cross section , said clamp body having a planar front surface with opposite longitudinal edges connecting juxtaposed arcuate side walls, said clamp body dimensioned for frictional engagement around a vehicle roof pillar;
a plurality of pairs of rings secured in aligned relation along opposite longitudinal edges of said front surface of said clamp body, forming two parallel aligned ring columns;
a pair of sun shield members;
each of said sun shield members having a plurality of spaced apertures receiving one of said rings, such that said sun shield members are pivotally mounted adjacent said opposite longitudinal edges of said front surface of said clamp body;
each of said sun shield members including a plurality of slidably connected extensible sections; and
said extensible sections connected in overlying parallel relation by cooperating dovetail projections and recesses, whereby said sun shield members may be independently pivotally and slidably adjusted to simultaneously shield a windshield and a door window of a vehicle.

4,944,548

SIDE WINDOW SHADE FOR AUTOMOBILES

George E. Payne, and Doris P. Payne, both of 1121 Prescott, Memphis, Tenn. 38111

Filed Aug. 21, 1989, Ser. No. 396,062
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.8 **1 Claim**



1. A side window shade for automobiles, comprising:
a panel having a plurality of sections connected by double folding joints;
an upper edge of said panel configured with a curvature corresponding to an automobile side window frame;
a plurality of spaced notches in said upper edge of said panel;
a suction cup retainer received in each of said notches for securing said panel to an automobile side window, said suction cup retainer including a pair of pivotally connected jaw members;
spring means biasing said jaw members to a closed position;
aligned clamping portions of said jaw members provided with abrasive friction enhancing pads for engagement with said panel;
a circular aperture formed in one of said jaw members, said circular aperture connected to a side edge of said jaw member by a lateral slot;
a suction cup having a cylindrical reduced diameter neck portion removably received in said circular aperture of said jaw member for engagement with an automobile side window; and
a tab extending upwardly at an oblique angle from a frusto conical back surface of said suction cup for manually releasing said suction cup from an automobile side window.

4,944,549

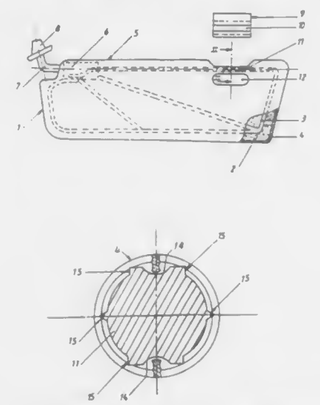
SUN VISOR FOR MOTOR VEHICLES

Bernhard Hilbert, Cappel, and Gerard Hilt, Henriville, both of France, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Aug. 18, 1989, Ser. No. 395,756
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1988, 3833673
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.9 **13 Claims**

1. A sun visor for a motor vehicle, said sun visor comprising:
a cushioning body, a reinforcement insert for reinforcing said cushioning body and a cover for covering said cushioning body and said reinforcement insert;
said reinforcement insert including a swing mounting pin, said swing mounting pin being located near an upper edge of said sun visor;
said cover surrounding said swing mounting pin without being welded to said swing mounting pin, said cover including two sheets which are connected together by welds, said welds being formed by high frequency welding, said welds including a first elongated weld which extends along one side of said swing mounting pin and a second elongated weld which extends along another side of said swing mounting pin, said first elongated weld

including an elongated bead which is directed inwardly toward said swing mounting pin;
said swing mounting pin including first means for (a) receiving said elongated bead of said first elongated weld such



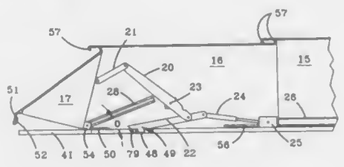
that the outer surface of said cover has a generally smooth, circular cross section in the vicinity of said first elongated weld and (b) preventing relative movement between said cover and said swing mounting pin.

4,944,550

TELESCOPING TYPE COVER FOR TRUCK BEDS AND THE LIKE

Donald L. Drown; Richard O. Runge, both of Galion, and Elmer L. Brumenshenkel, Lexington, all of Ohio, assignors to Versa Cap, Inc., Galion, Ohio

Filed Nov. 29, 1988, Ser. No. 277,250
Int. Cl.[5] B60P *3/32, 7/02*
U.S. Cl. 296—100 22 Claims



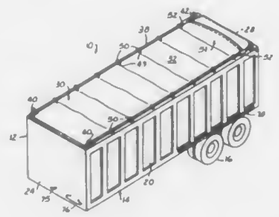
1. An enclosure assembly for an area comprising:
track means having a channel formed therein positioned at spaced apart parallel boundaries of said area and extending the length thereof;
a plurality of rigid cover sections including at least forwardmost and rearwardmost sections extending between said track means and at least one of said cover sections having interengaging means corresponding to said channels for slidable reception in said track means;
said cover sections being extendable to substantially enclose said area and collapsible so as to leave said area at least partially open;
said forwardmost cover section being interconnected to said rearwardmost cover section by actuation means which operates to move at least one of said cover sections to collapsed or extended positions and allows selective positioning of at least one of said cover sections at any variable location between extended and collapsed positions;
wherein said actuation means includes force applying means coupled to said rearwardmost cover section acting to pivot said rearwardmost cover section into a collapsed position within an adjacent one of said cover sections.

4,944,551

OPEN TOP DUMP TRAILER TARPING SYSTEM

Harold Hardy, Jr., Canton, Mich., assignor to Rock-Way, Inc., Romulus, Mich.

Filed May 30, 1989, Ser. No. 358,078
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—100 3 Claims



1. A tarping system for a truck or trailer vehicle body having laterally spaced side walls, longitudinally spaced end walls and an open top, comprising a linear member secured to and extending along the top of each side wall, a flexible tarp for covering the open top of said vehicle body, said tarp having side edge portions provided at longitudinally spaced points with attaching means slidably engaging said linear members, said tarp having a fixed end portion secured to one end wall of said vehicle body, said tarp having as free end portion which may be manually drawn toward the opposite end wall of said vehicle body to cause said attaching means to slide along said linear members and said tarp to assume an extended position covering the open top of said vehicle body, said free end portion of said tarp being capable of being manually drawn toward said one end wall of said vehicle body to cause said attaching means to slide along said linear members and said tarp to fold and bunch up adjacent said one end wall of said vehicle body in retracted position, means for securing said tarp in said extended and retracted positions, a transverse draw bar secured to said tarp adjacent the free end portion thereof, means at the ends of said draw bar slidably engaging said linear members, said free end portion of said tarp extending beyond said draw bar and being in the form of a terminal flap, said terminal flap having a tip end remote from said draw bar and having laterally spaced side edges, and flexible wire-like elements secured to said draw bar near the ends thereof, said wire-like elements extending from said draw bar along and secured to said side edges, said wire-like elements extending to said tip end of said terminal flap where said wire-like elements are connected and adapted to be engaged by said means for securing said tarp in extended and retracted positions.

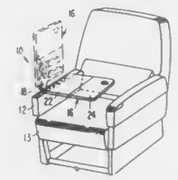
4,944,552

STOWABLE TABLE SYSTEM

David S. Harris, Denton, Tex., assignor to Weber Aircraft, Inc., Burbank, Calif.

Filed Mar. 17, 1989, Ser. No. 324,617
Int. Cl.[5] A47C *7/70*
U.S. Cl. 297—145 15 Claims

1. A stowable table system adapted for use in a vehicle seat or the like, including:
a table structure;
means forming a compartment in said seat for stowing said table structure;
a pivot block mounted for pivotal movement about a substantially horizontal axis in said compartment for moving said table structure between a stowed condition in said compartment and an exposed condition exteriorly thereof;
a table base for securing said table structure to said pivot block; and
means for attaching said table base for pivotal movement with respect to said pivot block comprising:
a pivot stud having means at one end for pivotal connection with said table base and means at the other end for pivotal



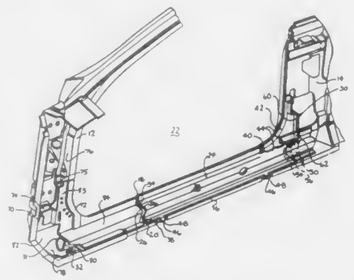
connection to said pivot block, whereby said table base is movable with respect to said pivot block about two angularly spaced pivot axes when said table structure is in its exposed condition; and
mutually cooperable shoulder means fixedly positioned with respect to said pivot block and said table base, respectively, for limiting the angular displacement of said table base with respect to said pivot block when said table structure is in its exposed condition.

4,944,553

VEHICLE REINFORCING STRUCTURE

Edward H. Medley, Fraser; Raymond N. Kreucher, Jr., Sterling Heights; Dennis F. Stedman, Ortonville, and Thomas R. Downs, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 30, 1989, Ser. No. 373,437
Int. Cl.[5] B62D *27/02*
U.S. Cl. 296—188 17 Claims



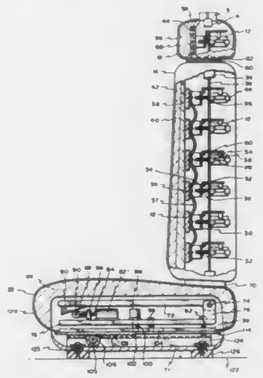
1. A reinforcement structure for a vehicle having first and second upwardly extending columns longitudinally spaced from each other and a longitudinally extending beam between the first and second columns, said reinforcement structure comprising:
means comprising an elongated tubular member forming a longitudinally extending member adapted to be disposed adjacent the beam; and
means for securing said member to the beam and the first and second columns to absorb and dampen bending and torsional loads between the first and second columns and the beam, said means for securing comprising a support member for sandwiching said tubular member between the beam and said support member, a brace assembly for securing the ends of said tubular member to the first and second columns, and fastening means for fastening means for fastening said support member to said tubular member and beam and said brace assembly to said first and second columns and said tubular member.

4,944,554

ACTIVE BIOMECHANICAL CHAIR

Clifford M. Gross, 1675 Northern Blvd., Roslyn, N.Y. 11756, and James P. Santos, 223 Rockingstone Ave., Larchmont, N.Y. 10538

Continuation of Ser. No. 103,739, Oct. 2, 1987, abandoned. This application Jul. 12, 1989, Ser. No. 377,804
Int. Cl.[5] A47C *1/022;* **B60N** *1/02*
U.S. Cl. 297—284 13 Claims



1. The combination, comprising:
an active biomechanical chair comprising: a frame structure; a back rest mounted to the frame structure, said back rest including a front wall having an inner surface and an outer surface; a plurality of contour adjusting mechanisms which are spaced apart vertically relative to the front wall, each contour adjusting mechanism having plate means which are borizontally adjustable to engage the inner surface of the front wall, motor means connected to the plate means; seat means connected to the frame structure; a decoder; and a central controller; and
a portable device having a prerecorded particular spinal profile or portion thereof, of an occupant of the chair encoded thereon, said spinal profile, or portion thereof, representing a condition of least intradiscal pressure of an occupant of the chair, said portable device engaging said chair to be read by said decoder and to activate said central controller for controlling the plurality of contour adjusting mechanisms by selectively actuating the individual motor means thereby adjusting the horizontal position of their associated plate means automatically as a function of the prerecorded particular spinal profile or portion thereof so that the outer surface of the front wall automatically conforms to the prerecorded particular spinal profile or portion thereof.

4,944,555

VEHICLE POWER SEAT

Enzo Brussasco, Torino, Italy, assignor to R.G.B. S.p.A., Italy

Filed Jul. 22, 1988, Ser. No. 223,542
Claims priority, application Italy, Jul. 29, 1987, 53564/87 [U]
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—330 7 Claims

1. A vehicle power seat comprising:
a reclinable backrest and a front seat portion, said seat portion comprising a carriage having an unobstructed center

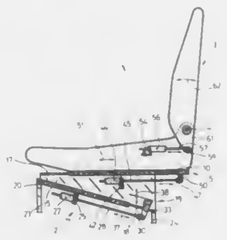
VOL 1116 ISS 5 JL 31 1990 UMI

cavity and connected at the rear to said backrest so as to enable rotation of the same, in relation to said carriage, about a transverse hinge axis;

two fixed longitudinal guides extending perpendicularly to the hinge axis, sloping upwards towards the front of said seat portion, and located on opposite sides of said cavity;

a slide mounted in sliding manner on said fixed guides;

two substantially horizontal longitudinal guides located over the slide and connected in sliding manner to the same, said two horizontal guides supporting the carriage so as to travel, together with the same, along the slide, and being located on opposite sides of said cavity;



a first drive means rigidly fixed with respect to the carriage and connected to rotate the backrest relative to the carriage;

a second drive means rigidly fixed with respect to the slide and connected to move the carriage relative to the slide;

a third drive means rigidly fixed with respect to the fixed guides and connected to move the slide relative to the fixed guides;

and wherein said first, second and third drive means comprise a pair of linear actuators located on opposite sides of said center cavity of the carriage.

4,944,556

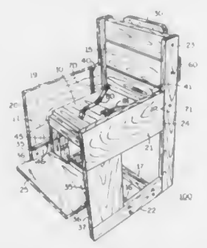
SUPPORTIVE CHAIR, ADJUSTABLE FOR GROWING WITH A CHILD

Theodore J. Griesbanm, Seguin, Tex.; Joan S. Lydic-Mettler, Newark, Del.; Pamela A. Flores, San Antonio, Tex.; Anthony B. Jasek, Eagle River, Ak., and Mary A. Wrzensinski-Conran, San Antonio, Tex., assignors to Brighton School Incorporated, San Antonio, Tex.

Filed Sep. 6, 1988, Ser. No. 240,214

Int. Cl.[5] A47C *7/40, 7/50*

U.S. Cl. 297—437 **1 Claim**



1. An apparatus for supporting a person's body in a normal sitting position, comprising:

a seat member for supporting said person, said seat member having a forwardmost edge, a first lateral edge, and a second lateral edge, such that the knees of said person rest beyond said forwardmost edge;

a means for limiting abduction of the legs of said person comprising a first panel connected to said first lateral edge of said seat and a second panel connected to said second lateral edge such that the forwardmost edge of the seat is rearward of the forward edges of the first and second panels said first panel having a first slot and said second panel having a second slot , said slots extending upwardly from a rear portion of said seat member ;

a backrest for holding the back of said person in a substantially upright position, said backrest being selectively positionable in either a first configuration or a second configuration relative to said seat member, said backrest comprising a first member and a second member, said first member rigidly connected between said first and second panels and rearwardly of said opposing slots said second member adjustable relative to said seat member, said second member received slidably in said first slot and said second slot to define said second configuration;

a handle mounted to and extending between the first and second panels and to the rear of said backrest, said handle forming a third slot between said backrest and said handle for receiving said second member therein when said backrest is positioned in said first configuration; and

a footrest for limiting movement of the lower portions of the legs of said person, said footrest being connected between the first and second panels by a further plurality of opposed slots, said further plurality of opposed slots being vertically spaced so in such a manner as to enable the adjustment of the height of said footrest relative to the height of said forwardmost edge of said seat member.

4,944,557

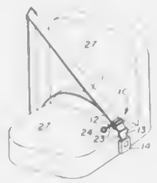
SEAT BELT HANDLE ASSEMBLY

Ryozo Tsubai, 3637 W. Alabama, #155, Houston, Tex. 77027

Filed May 27, 1988, Ser. No. 199,806

Int. Cl.[5] B60R *21/00*

U.S. Cl. 297—468 **3 Claims**



1. In combination with a seat and shoulder belt for occupant restraint in a vehicle, a seat belt handle apparatus comprising

clip means for attaching the handle assembly to the shoulder belt,

a handle for grapsing the seat belt handle assembly,

connecting means comprising a flexibly rigid material detachable attaching the handle to the clip means,

the seat belt handle assembly being so attached to the shoulder belt that the handle projects forward parallel to the direction of the occupant when the seat belt is disengaged and the seat and shoulder belt is retracted, and wherein the distance between the said handle and the said clip means may be adjusted by varying the length of the said connecting means.

4,944,558

DRUM CUTTER-LOADER FOR UNDERGROUND MINING

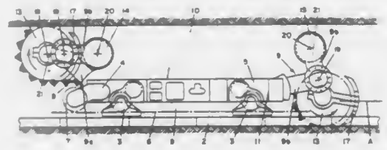
Klaus Oberste-Beulmann, Sprockhovel, and Herbert Schupphaus, Bochum, both of Fed. Rep. of Germany, assignors to Gebr. Eickoff Maschinenfabrik u. Eisengiesserie mbH, Bochum, Fed. Rep. of Germany

Filed Jun. 16, 1989, Ser. No. 367,045

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1988, 3822875

Int. Cl.[5] F21C *25/08*

U.S. Cl. 299—42 **20 Claims**



1. A drum cutter-loader mining machine comprising:

a machine body;

at least one support arm pivotally mounted to one end of said machine body and supporting a first rotatable cutting drum thereon, said at least one support arm comprising a first arm section pivotally mounted at one end thereof to said machine body and a second arm section pivotally mounted to said first arm section at an end of said first arm section opposite to said one end; and

motor means carried by said second arm section for driving said first cutting drum.

4,944,559

TOOL FOR A MINE WORKING MACHINE COMPRISING A DIAMOND-CHARGED ABRASIVE COMPONENT

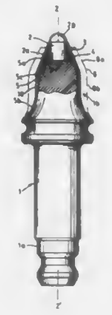
Jean Sionnet, Saint Egreve, and Paul A. Renard, Uriage, both of France, assignors to Societe Industrielle de Combustible Nucleaire, Annecy, France

Filed Jun. 1, 1989, Ser. No. 360,175

Claims priority, application France, Jun. 2, 1988, 88 07371

Int. Cl.[5] E21C *35/18*

U.S. Cl. 299—86 **15 Claims**



1. A tool for a mine working machine comprising:

a single piece steel component body comprising a rear part for enabling said rear part to be mounted into a tool support of the working machine and a front working part provided with a housing and limited by an external working surface of overall frustoconical shape surrounding the housing and corresponding substantially to an equilibrium erosion profile of the tool in its working conditions, the external working surfacing being at least partially covered with an erosion layer of a material whose hardness is greater than that of the steel forming the body; and

a composite abrasive component directly fixed in the housing of the steel body, said composite abrasive component consisting of a metallic carbide slug integrally bonded to a polycrystal diamond active part having one end thereof projecting from the body.

4,944,560

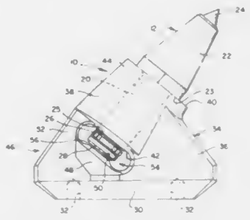
MINER CUTTING BIT HOLDING APPARATUS

George A. Osterwise, Franklin, Pa., assignor to Joy Technologies Inc., Pittsburgh, Pa.

Filed Jun. 15, 1989, Ser. No. 366,559

Int. Cl.[5] E21B *35/18*

U.S. Cl. 299—91 **8 Claims**



1. Apparatus for attaching a cutting bit, which includes an elongated shank having a cutting tip secured to one end thereof and an abutment surface provided on the other end thereof, to a driven element so that said cutting bit is advanced in a cutting direction, comprising:

a. a base member adapted for attachment to said driven element;

b. a body member attached to said base member on the end thereof facing in the cutting direction, said body member having a first surface on the end thereof facing toward said cutting direction and a second surface on the opposite end thereof and a bore through said body member terminating in apertures in said first and said second surfaces and adapted to receive said shank to hold said cutting bit in a predetermined cutting orientation;

c. a rearward member attached to said base member on the end thereof facing away from said cutting direction, said rearward member having an anvil surface parallel to said abutment surface and disposed in spaced facing relation to said second surface;

d. a reinforcement member attached intermediate and permanently to said rearward member and said body member; and

e. means for releasably retaining said shank in said bore.

4,944,561

PROCESS AND APPARATUS FOR PRODUCING BUNCHES OF ARTIFICIAL OR NATURAL BRUSH MATERIAL

Werner Blankschein, Grandlstrasse 59a, 8000 München 60, Fed. Rep. of Germany

Continuation of Ser. No. 47,631, May 7, 1987, abandoned. This application Jan. 30, 1989, Ser. No. 304,880

Claims priority, application Fed. Rep. of Germany, May 21, 1986, 3616976

Int. Cl.[5] A46D *1/10*

U.S. Cl. 300—10 **18 Claims**

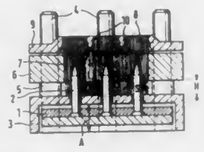
1. Apparatus for producing brush heads from a brush material consisting of brush material elements having tips and root

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ends, which brush material is brought together to form a bundle, each said brush head having a root end, said apparatus comprising:

a brush material holder having a bottom portion and a side wall portion, said bottom and side wall portions defining a bundle receiving aperture in said holder, said aperture extending completely through said side wall portion and having an axis extending substantially perpendicularly with respect to said bottom portion, said bottom portion supporting the tips of the brush material elements in said bundle and said side wall portion being of sufficient height above said bottom portion so that the brush material elements are held in the bundle and prevented from falling apart;

an apertured plate capable of being moved towards said holder along said axis, said apertured plate having a plurality of apertures which receive the root ends of respective portions of said bundle of brush material thereby



dividing the brush material into a plurality of bunches to form respective brush heads and thereby forming and holding the root ends of said brush heads; and

a plurality of support needles having tips projecting into said bundle receiving aperture from the bottom portion substantially in parallel with said axis of said bundle receiving aperture, such that said tips of said support needles remain within said aperture so that after insertion of said bundle of brush material into said bundle receiving aperture,

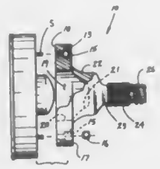
said support needles project lengthwise into the tips of the bundle of brush material in the direction towards the root ends thereof, and laterally displace the brush material elements and press the brush material elements against one another to eliminate spaces therebetween, thereby permitting improved introduction and uniform distribution of the brush material elements through each aperture of said apertured plate when said apertured plate is positioned against said root ends of the brush material of the bundle.

4,944,562

WIRE WHEEL HUB ADAPTER APPARATUS

Britt Garrison, P.O. Box 177, 818 Rose Ave., Morton, Pa. 19070

Filed Feb. 16, 1989, Ser. No. 310,931
Int. Cl.[5] B60B *27/06*
U.S. Cl. 301—111 **1 Claim**



1. A wheel hub adapter apparatus for use in combination with a wheel wherein said wheel includes an internally splined hub mounted coaxially of the wheel and a separate internally threaded locking hub, said apparatus comprising,

an annular flange means formed with a circular pattern of apertures for receiving threaded projecting studs extending outwardly from a brake assembly, and

a central hub integrally formed to said annular flange formed with an internal cavity for receiving a bearing cup extending outwardly from said brake assembly, and

an axle means extending outwardly and orthogonally relative to the central hub including a first and second shaft portion to receive said hub and locking hub respectively thereon, and

wherein said annular flange means includes a planar outer surface parallel to a planar inner surface, and said apertures each include a blind bore extending from said outer surface towards an inner surface of a diameter greater than said apertures for accommodating locking nuts therewithin, and

wherein said annular flange means, said central hub, and said axle means are in coaxial alignment with one another, and

wherein said central hub includes a cylindrical wall and a generally hemispherical recess overlying said cylindrical wall for receiving said bearing cup, and

wherein said central hub is formed with a gradually increasing wall thickness extending from said annular flange to said axle means to enhance the strength and rigidity of the apparatus, and

wherein said axle means includes an axle shaft of a first diameter adjacent said central hub and integrally formed to said first shaft portion, said first shaft portion formed of a second diameter greater than said first diameter including circumferentially encompassing splines about said first shaft portion wherein said splines are formed with a forward beveled edge to enhance accommodation of the medial hub, and

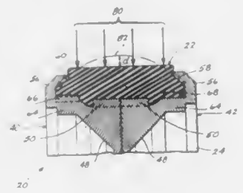
wherein said second shaft portion is coaxially aligned with said first shaft portion and integrally formed thereto including external threads for receiving said locking hub wherein said threads extend from said first shaft portion to a forwardmost terminal end of said second shaft portion.

4,944,563

WHEEL ASSEMBLY INCLUDING A SOLID TIRE

Colin Pinchbeck, Kirkland, and Thomas H. Shorey, Mill Creek, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1989, Ser. No. 331,903
Int. Cl.[5] B60C *7/00*
U.S. Cl. 301—63 DS **20 Claims**



7. A wheel assembly having a controlled range of radial deflection under load and resistance to abrasion, comprising:

a solid tire having a cross-sectional shape defined by an outwardly curving surface adjoining two sides, and a radially inner surface, said solid tire comprising a wear-resistant composition of predefined elasticity and shore hardness; and

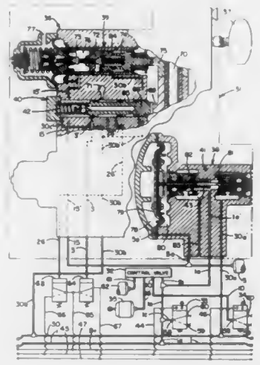
rim means for mounting the solid tire on an axle, including gripping means for gripping the sides of the solid tire to prevent its circumferential slippage under traction, and means that include a plurality of depressions disposed between the solid tire and rim means, for controlling displacement of the solid tire as it deflects radially under a load so that the radial deflection of the solid tire as a function of the load is within predefined limits.

4,944,564

BRAKE VALVE DEVICE ARRANGED FOR ELECTRO-PNEUMATIC CONTROL

Richard F. Balukin, Pittsburgh; John R. Reisz, North Versailles, and Frank J. Jerina, Irwin, all of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed May 26, 1989, Ser. No. 357,567
Int. Cl.[5] B60T *15/54*
U.S. Cl. 303—33 **9 Claims**



1. A brake valve device for charging a brake pipe to a certain chosen pressure and for venting said brake pipe, such charging and venting of said brake pipe effecting operation of a control valve device to admit fluid under pressure to a brake cylinder device and to release fluid under pressure from said brake cylinder device, such release of fluid under pressure from said brake cylinder device being controlled via electro-pneumatic means in series with said control valve device, said brake valve device comprising:

(a) means for selecting different operating conditions of said brake valve device including a Release condition and a Holding condition;

(b) a first passageway having discrete pressure states;

(c) suppression valve means operative for effecting one discrete pressure state of said first passageway in said Release condition of said brake valve device and for effecting another discrete pressure state in said Holding condition of said brake valve device; and

(d) first pressure switch means operative in response to said other pressure state of said first passageway for effecting operation of said electro-pneumatic means such as to cut off said release of fluid under pressure from said brake cylinder device.

4,944,565

HYDRAULIC BRAKE CIRCUIT FOR A MOTOR VEHICLE EQUIPPED WITH WHEEL ANTI-LOCK AND ANTI-SLIP DEVICES

Kervagoret Gilbert, Argenteuil, France, assignor to Bendix France, Drancy, France

Filed May 22, 1989, Ser. No. 355,527
Claims priority, application France, Jun. 15, 1988, 88 07996
Int. Cl.[5] B60T *8/32, 8/48, 13/14*
U.S. Cl. 303—110 **5 Claims**

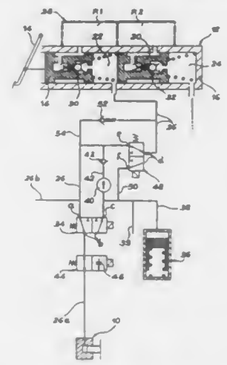
1. A hydraulic brake circuit for motor vehicle equipped with a wheel anti-lock device and with a wheel anti-slip device, the circuit comprising:

a master cylinder controlled by means of a brake pedal,

at least one brake associated with a wheel of the vehicle,

a solenoid relief valve via which the master cylinder normally communicates with the brake, an actuation of said solenoid relief valve controlled by the anti-lock device putting the brake in communication with brake-fluid storage means,

a pump of which an actuation controlled by the anti-lock device delivers brake fluid from the storage means to the



brake via the solenoid relief valve when said solenoid relief valve is not actuated,

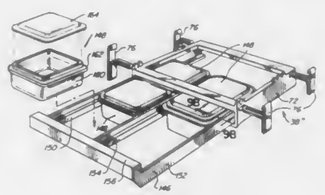
a solenoid anti-slip valve which is located upstream of said solenoid relief valve and via which the master cylinder normally communicates with the brake, wherein an actuation of the solenoid anti-slip valve controlled by the anti-slip device putts the master cylinder in communication with a suction port of the pump, the actuation of which is likewise controlled by the anti-slip device.

4,944,566

REFRIGERATOR SHELF ACCESSORY MOUNTING SYSTEM

Dwight A. Carper, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 9, 1989, Ser. No. 294,370
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—311 **14 Claims**



1. A universal refrigeration apparatus accessory storage system adaptable for mounting to a refrigeration apparatus shelf of any selected width comprising:

a storage accessory for storing items to be refrigerated, said storage accessory including a frame defining opposite sides, each said side having an outwardly opening slot; and

means for attaching said storage accessory to said shelf comprising a pair of brackets, each bracket having a base portion adapted to be slidably received in one of said slots and adjustably positioned relative to said storage acces-

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sory according to the selected width of the shelf, and a connector portion for attaching said bracket to the shelf.

4,944,567

FIBER OPTIC LASER BEAM DELIVERY SYSTEM

Jerry W. Kuper, Martinsville; Joseph J. Barrett, Morris Plains; William E. Langert; Martin C. Baker, both of Budd Lake, all of N.J., and Andrew N. Stephenson, Ventura, Calif., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 117,766, Nov. 5, 1987, abandoned. This application Jan. 9, 1989, Ser. No. 294,317

Int. Cl.[5] G02B *6/32*

U.S. Cl. 350—96.18 12 Claims



1. An optical fiber means for delivering a high power laser beam, said optical fiber means comprising an optical fiber having and input end for receiving a collimated laser beam, and an output end for delivering the laser beam, wherein said input end incorporates an integrally formed cladded tapered fiber section, said cladded input section having a taper angle not greater than a taper angle θ_c, measured with reference to the center line of the tapered section, is determined by the relationship

$$\theta_c = \sin^{-1}\left(\frac{\eta_{cladding}}{\eta_{core}}\right),$$

wherein η_{core} and $\eta_{cladding}$ represent the refractive indices of the core material and the cladding material, respectively.

4,944,568

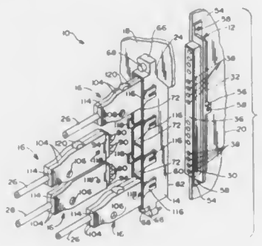
FIBER OPTIC CONNECTOR ASSEMBLY

Philip J. Danbach, Naperville, and Stephen Sampson, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 5, 1989, Ser. No. 384,203

Int. Cl.[5] G02B *6/36;* **H01R** *13/64;* **H01J** *5/16*

U.S. Cl. 350—96.20 16 Claims



1. A fiber optic connector assembly for interconnecting a plurality of active optical devices to a plurality of optical fibers each terminated in a ferrule having a nose portion, said assembly comprising:

a receptacle including a body member for supporting the plurality of active optical devices, said body member having a flat, planar mating face and a plurality of recesses each extending between said mating face and one of the active optical devices;

connector means including housing means with a plurality of ferrule receiving cavities and including a mating end;

means for supporting one of the ferrules in each of said cavities with the nose portion projecting from said mating end;

said housing means being supported adjacent said receptacle body with each of said nose portions received in one of said recesses;

the assebmly being characterized by:

said connector means including at least two similar separately mateable connector modules, said housing means including a corresponding number of at least two module housings each including a plurality of said ferrule receiving cavities;

a shroud interposed between said receptacle and said connector modules, said shroud including a peripheral wall extending between an open receptacle end and an open connector module end, said receptacle end being configured to receive said mating face within said peripheral wall; and

said connector modules being receivable in said connector module end of said shroud for independent compliance of each connector module with a different portion of said receptacle.

12. In a fiber optic connector assembly for use with an optic fiber and an active optical device, the combination comprising:

a conductive metal receptacle body supporting the active optical device;

a connector housing movable to a mated position with a forward end adjacent said receptacle body and including wall means defining a l cavity;

a conductive metal spring retention clip engageable with said wall means adjacent a rear end of said cavity;

a conductive metal ferrule surrounding the end of the optic fiber, said ferrule being received in said cavity and including a nose portion projecting from said forward end of said connector housing; and

a conductive metal spring in said cavity in contact with and in compression between said ferrule and said spring retention clip, said spring urging said ferrule nose portion into contact with said receptacle body and completing a continuous electrical circuit between said receptacle body and said spring retention clip.

4,944,569

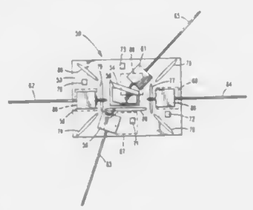
MULTI-FIBER ALIGNMENT PACKAGE FOR OPTOELECTRONIC COMPONENTS

Robert A. Boudreau, Hampton, N.H., and Joanne S. LaCourse, Hudson, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 18, 1989, Ser. No. 395,931

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.20 17 Claims



1. A multi-fiber alignment package for optoelectronic components, comprising:

a carrier of a thermally conductive material, said carrier having two opposed major surfaces;

at least one optoelectronic component mounted on a first major surface of said carrier;

a plurality of fiber-positioning means on said first major surface of said carrier, each holding one of said optical fibers coupled to said component;

a plurality of cooling means secured to the second major surface of said carrier, each of said cooling means having a major surface positioned below one of said fiber-positioning means and each being capable of locally controlling the temperature of said carrier in its immediate vicinity; such that each one of said optical fibers may be actively aligned with said component and secured in said aligned position with solder sequentially;

said cooling means serving to locally cool said carrier under said fiber-positioning means during soldering of the fiber-positioning means above it; such that said local cooling causes the heat of said soldering to be conducted away from said carrier at the connection point, thus enabling the sequential soldering of each of said fiber-positioning mean without affecting a previously soldered connection point.

4,944,570

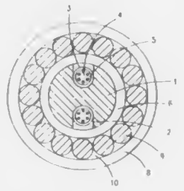
FIBER OPTIC CABLE HAVING AN EXTENDED ELONGATION WINDOW

Michael L. Oglesby, Kansas City, Mo., and Kenneth E. Cornelison, Overland Park, Kans., assignors to Alcatel NA, Inc., Hickory, N.C.

Continuation of Ser. No. 16,193, Feb. 18, 1987, abandoned. This application Jun. 30, 1989, Ser. No. 361,823

Int. Cl.[5] G02B *6/44*

U.S. Cl. 350—96.23 35 Claims



1. A fiber optic cable suitable for use as an overhead static wire, comprising:

an electrically conducting core having at least one helical channel with a predetermined lay in its periphery;

a tube containing a dielectric water-blocking compound and at least one optical fiber randomly arranged within the tube, the tube being positioned within said helical channel, and the tube, the optical fiber and the helical channel being arranged to provide an elongation window greater than 0.5%; and

a plurality of metal wires wrapped around and in electrical contact with the core, and providing at least the major portion of the tensile strength for the cable.

4,944,571

OPTICAL FIBERS

Alan J. Rogers, Bookham, England, assignor to National Research Development Corporation, London, England

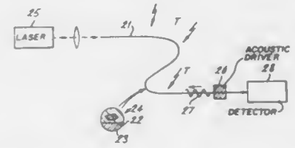
Filed Sep. 17, 1987, Ser. No. 97,826

Claims priority, application United Kingdom, Sep. 19, 1986, 8622609

Int. Cl.[5] G02B *6/02, 6/16*

U.S. Cl. 350—96.29 6 Claims

1. A spatially-distributed optical-fibre measurement system including a length of monomode 'D' fibre having a flat surface coated with a material which has an optical refractive index strongly dependent on the temperature, a continuous-wave linearly polarised radiation source adapted to launch radiation at one end of the fibre, an acoustic driver adapted to launch an acoustic pulse to induce local circular (optical) birefringence



within said fibre and a modulation detector adapted to measure the modulation of the emergent light.

4,944,572

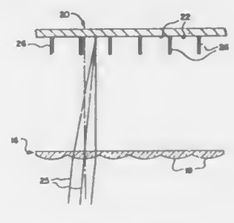
VARIABLE ASPECT DISPLAY

Clinton J. T. Young, c/o Outlook Engineering Corporation, P.O. Box 2185, Alexandria, Va. 22301

Continuation-in-part of Ser. No. 47,829, May 6, 1987, abandoned, which is a division of Ser. No. 766,379, Aug. 16, 1985, Pat. No. 4,663,871, which is a division of Ser. No. 457,607, Nov. 13, 1983, Pat. No. 4,542,958. This application Aug. 24, 1988, Ser. No. 236,101

Int. Cl.[5] G09F *19/14;* **G03B** *25/02*

U.S. Cl. 350—167 4 Claims



1. A variable aspect display, comprising:

a lenticular screen having a series of discrete lens elements;

a non-planar object field supported behind said lenticular screen at or near the foci of said lens elements;

said object field being divided into a plurality of lens fields, each of said lens fields corresponding to one of said lens elements and extending across substantially the entire intended viewing angle for its respective one of said lens elements for the intended range of viewing directions for said variable aspect display;

said lens fields each being divided into a plurality of display elements to form a pattern, said display elements selectively visible to a viewer through said lenticular screen as a function of the angular position of the viewer in relation thereto; and

said object field including means for extending each of said lens fields, along at least one edge thereof, toward said lenticular screen to shield adjacent ones of said lens fields from being viewed at off-center viewing angles through ones of said lens elements not associated therewith, thereby to continue presenting the proper corresponding ones of said lens fields to the particular individual ones of said lens elements associated therewith when viewed at such off-center viewing angles;

said display elements being positioned along said means for extending said lens fields, whereby at least a portion of each of said patterns extends toward said lenticular screen, thereby positioning said patterns at distances from said lens elements at least partially compensating for the curvature of field of said lens elements at off-center viewing angles.

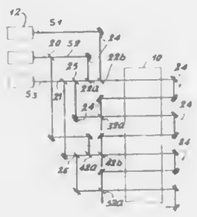
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4,944,573

DEVICE FOR DISTRIBUTING LASER BEAMS USED IN AN ISOTOPIC SEPARATION METHOD

Maurice Michon, Draveil, France, assignor to Commissariat a l'Energie Atomique, France

Filed Feb. 24, 1989, Ser. No. 314,944
Claims priority, application France, Mar. 2, 1988, 88 02634
Int. Cl.[5] **G02B** *27/14;* **B01D** *59/34*
U.S. Cl. 350—173 **1 Claim**



1. Device for distributing laser beams used in an isotopic separation method by lasers, comprising:

(a) a flow chamber for containing a body from which a substance is to be extracted;

(b) a plurality of laser sources delivering laser pulses of beams S1, . . . , Sn, n being a whole number at least equal to 2, with different wavelengths allowing for a selective excitation of the substance to be extracted and a transformation of said substance after excitation, each wavelength corresponding to a valve of the absorption cross section of the substance to be extracted;

(c) a plurality of partially reflecting mirrors allowing for beams S1, . . . , Sn to be divided into several parts;

(d) means for superimposing beams S1, . . . Sn and introducing them into various places of the chamber; and

(e) a means for returning beams following several passages through the chamber and an adjustment of the path lengths through the chamber, wherein the means for superimposing beams comprise various categories of dichroic mirrors, each category presenting spectral characteristics different from those of the other categories, the partially reflecting mirrors and the dichroic mirrors being selected and disposed so as to optimize the absorption of at least two beams of different wavelengths, regardless of the values of the absorption cross sections corresponding to the wavelengths of these beams.

4,944,574

STAND MAGNIFIER AND LENS

Robert J. Roote, High Wycombe; Ian K. Pasco, Warfield; Ian J. Smithers, Taplow, and Paul J. Fisher, Slough, all of England, assignors to Combined Optical Industries Limited, Berkshire, England

Filed Jan. 28, 1988, Ser. No. 149,280
Claims priority, application United Kingdom, Jan. 28, 1987, 8701880
Int. Cl.[5] **G02B** *25/00, 3/02*
U.S. Cl. 350—245 **7 Claims**

1. A stand magnifier comprising a stand adapted to be supported on a surface, said surface having an object zone to be magnified by said magnifier, a magnifying lens of predetermined focal length fixed to a part of said stand, at least said part of the stand and the lens fixed thereto being tiltable together to a predetermined angular extent with respect to the surface in either direction from a position where the lens is parallel to the surface and about a point separated from the lens by a distance close to the focal length of the lens, whereby the lens is maintained substantially at its optimum working distance from said object zone of the surface, said lens being a bi-convex lens



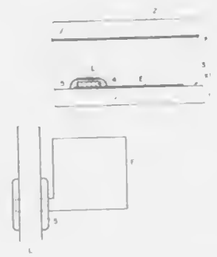
having aspheric surfaces, each of substantially identical curvature.

4,944,575

ELECTROOPTICAL DISPLAY SCREEN AND A METHOD OF FABRICATION OF SAID SCREEN

Pierre Aigrain, Paris; Bruno Mourey, Boulogne-Billancourt; Jean C. Dubois, St. Remy les Chevreuses; Michel Hareng, La Noville, and Philippe Robin, Sceaux, all of France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 51,710, May 20, 1987, abandoned. This application Dec. 28, 1988, Ser. No. 291,327
Claims priority, application France, May 20, 1986, 86 0744
Int. Cl.[5] **G02F** *1/13*
U.S. Cl. 350—333 **10 Claims**



1. An electrooptical display screen comprising:

first and second parallel plates which tightly enclose electrooptical material;

the first plate being provided on that face which is in contact with the electrooptical material with a matrix array of electrodes arranged in rows and columns each electrode forming a pixel of said display, row control leads each associated with one row of electrodes of said matrix array and extending in a direction parallel to each row of electrodes;

the second plate being provided on that face which is in contact with the electrooptical material with column leads each corresponding to one column of the matrix array of electrodes of the face of the first plate so that each electrode is located at an intersection of a row control lead and a column lead; and

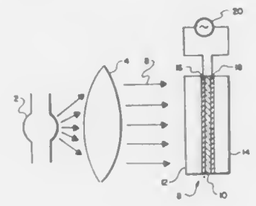
a plurality of coupling elements of ferroelectric polymer material, with one element being placed at the intersection of each electrode and its associated row control lead and lying therebetween so as to electrically couple the electrode and the row control lead, each element being covered with a thin film of insulating material.

4,944,576

FILM WITH PARTIAL PRE-ALIGNMENT OF POLYMER DISPERSED LIQUID CRYSTALS FOR ELECTRO-OPTICAL DEVICES, AND METHOD OF FORMING THE SAME

Anna M. Lacker, Los Angeles; J. David Margerum, Woodland Hills; Elena Ramos, Santa Monica; Willis H. Smith, Jr., Newbury Park, and Khoon C. Lim, Agoura, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1988, Ser. No. 170,955
Int. Cl.[5] **G02F** *1/13*
U.S. Cl. 350—334 **15 Claims**



1. A method for forming a polymer dispersed liquid crystal (LC) film, comprising:

forming a solution of a LC dissolved in a polymerizable monomer system,

polymerizing said solution to form a polymerized film having a dispersion of LC bubbles therein,

causing the LC molecules within said bubbles to partially align in a predetermined direction during said polymerization, and

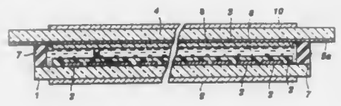
controlling said direction of the LC molecules during polymerization so that substantially less than full alignment in said predetermined direction is achieved, thereby providing the film with a relatively low threshold voltage for optical transmission, and a relatively high optical contrast ratio over a predetermined voltage range.

4,944,577

LIQUID CRYSTAL DISPLAY DEVICE

Tetsushi Yoshida, and Ken Kozima, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1988, Ser. No. 258,176
Claims priority, application Japan, Oct. 19, 1987, 62-263146
Int. Cl.[5] **G02F** *1/13*
U.S. Cl. 350—346 **19 Claims**



16. A liquid crystal display device, comprising:

opposing first and second substrates;

a plurality of first electrodes substantially parallelly arranged on and extending in a first direction on an inner surface of said first substrate opposing said second substrate;

a plurality of second electrodes substantially parallelly arranged on and extending in a second direction perpendicular to the first extending direction of said first electrodes on an inner surface of said second substrate opposing said first substrate;

a first aligning film, covering surfaces of at least said first electrodes formed on said first substrate, and oriented in a first direction;

a second aligning film, covering surfaces of at least said second electrodes formed on said second substrate, and oriented in a second direction substantially 90° with respect to the first orienting direction of said first aligning film;

a nematic liquid crystal, interposed between said first and second substrates on which said first and second electrodes are formed, and having a positive dielectric anisotropy and a value of a dielectric ratio $\Delta\epsilon/\epsilon\perp$ of not less than 0.1 and not more than 0.5 which is a ratio of a dielectric anisotropy $\Delta\epsilon$ to dielectric constant in a direction perpendicular to a liquid crystal molecular axis direction, a value of an elastic constant ratio K_{33}/K_{11} of not more than 0.8 which is a ratio of a bending elastic constant K_{33} to a splay elastic constant K_{11}, and values of a liquid crystal layer thickness d and an optical anisotropy Δn with which a value of a product $\Delta n \cdot d$ of the liquid crystal layer thickness d and the optical anisotropy Δn becomes not less than 0.5 (μm) and not more than 0.7 (μm);

a sealing member for sealing said nematic liquid crystal between said pair of substrates; and

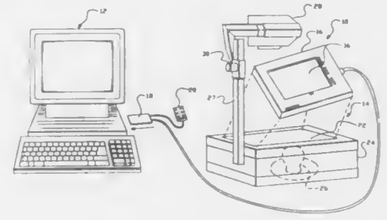
a pair of polarizing plates arranged to sandwich said nematic liquid crystal so that polarizing axis directions of said pair of polarizing plates are parallel to each other.

4,944,578

COLOR GRAPHIC IMAGER UTILIZING A LIQUID CRYSTAL DISPLAY

William W. Denison, Edina, Minn., assignor to Telex Communications, Minneapolis, Minn.

Filed Jul. 21, 1988, Ser. No. 222,164
Int. Cl.[5] **G02F** *1/13;* **G03B** *21/00*
U.S. Cl. 350—347 E **25 Claims**



1. A display apparatus comprising: a liquid crystal cell including

(i) a liquid crystal material having a state of optical retardation variable only within a range between about 0.3 microns and 1.6 microns,

(ii) a plurality of electrodes for applying an electric field across said liquid crystal material,

(iii) a first polarizer at a viewing side of said cell

(iv) a second polarizer on the side of said cell remote from said first polarizer, and

(v) said liquid crystal material in said cell responsive to different magnitudes of the electric field for the display of perceived color differences;

said cell part of a panel positionable on a stage projector, said panel having first and second transparent surfaces to establish a light path therethrough and said cell located therebetween; and

means for interfacing said cell with a computer and for converting color display information produced by said computer to drive signals and means for applying said drive signals to said electrodes wherein different levels of average rms voltage are applied across selected ones of said electrodes to display said perceived color differences.

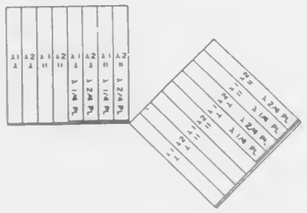
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,579

DETECTION SYSTEM FOR CIRCULARLY POLARIZED RADIATION

Walter G. Egan, Woodhaven, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 31, 1989, Ser. No. 359,371
Int. Cl.[5] G02B *5/30, 5/28*
U.S. Cl. 350—396 **6 Claims**



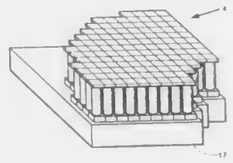
1. A system for detecting polarized radiation having a circular polarization component, comprising a radiation filter which comprises a plurality of different wavelength λ1 to λn interference filter coatings applied to different areas of filter substrate, including at least four coating areas for each wavelength λn, such that different wavelengths λ1 to λn are passed by the different areas of the substrate, and a plurality of different polarization filters of either parallel polarization or perpendicular polarization applied to said different areas of the filter substrate, such that some of the different areas of the filter substrate pass radiation of parallel polarization and others of the different areas pass radiation of perpendicular polarization, and at least first and second quarter wave plates for each different wavelength λn, a first quarter wave plate being applied over a parallel polarization λn coating area, and a second quarter wave plate being applied over a perpendicular polarization λn coating area, and each quarter wave plate being designed particularly for each wavelength λn and applied to both the parallel and perpendicular polarization filters to enable a characterization of the circular polarization component of the radiation.

4,944,580

ACTIVE SEGMENTED MIRROR INCLUDING A PLURALITY OF PIEZOELECTRIC DRIVERS

MacDonald Bruce G.; William G. Hulburd, and Raymond A. LaBelle, all of San Diego, Calif., assignors to Thermo Electron Technologies Corp., San Diego, Calif.

Filed Jul. 27, 1988, Ser. No. 225,092
Int. Cl.[5] G02B *7/18, 5/08;* **G01V** *1/20*
U.S. Cl. 350—611 **5 Claims**



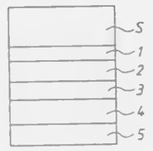
1. A segmented mirror for making wavefront corrections comprising:
a mounting block,
a plurality of piezoelectric drivers, each driver having a generally tubular shape defining an axis, and a first end and a second end and comprising outside and inside electrically conducting surfaces said conducting surface being fabricated to define at least three axial piezoelectric segments each segment having its own independent voltage source, each voltage source having a voltage range including zero volts, so as to provide tilt, tip, and piston piezoelectric motion for said driver,
a plurality of segment mirror elements each such mirror element comprised of an essentially flat mirror surface and a mirror substrate,
said plurality of piezoelectric drivers being attached to said mounting block and said plurality of segment mirror elements being attached one each to said plurality of piezoelectric drivers in such a manner as to produce an essentially flat segmented mirror when all of said independent voltages sources are at zero voltage.

4,944,581

REAR FACE REFLECTION MIRROR OF MULTILAYER FILM FOR SYNTHETIC RESIN OPTICAL PARTS

Hajime Ichikawa, Sagamihara, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Aug. 18, 1989, Ser. No. 396,640
Claims priority, application Japan, Sep. 20, 1988, 63-235556
Int. Cl.[5] G02B *5/08, 5/28, 1/00*
U.S. Cl. 350—641 **4 Claims**



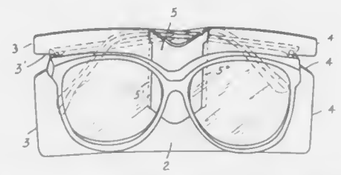
1. A rear face mirror of multilayer film for synthetic resin optical part comprising a synthetic resin substrate and a five layer laminate formed on a surface of said substrate, wherein a first layer viewing from a side of said surface is SiO layer having an optical thickness (n_1d_1) of $0 < n_1d_1 \leqq 0.1\lambda_0$, a second layer is CeO_2 layer having an optical thickness (n_2d_2) of $0.19\lambda_0 \leqq n_2d_2 \leqq 0.25\lambda_0$, a third layer is SiO_2 layer having an optical thickness (n_3d_3) of $0.25\lambda_0 \leqq n_3d_3 \leqq 0.3\lambda_0$, a fourth layer is Al layer having a mechanical thickness (d_4) of 100～200 nm, and a fifth layer is SiO layer having an optical thickness (n_5d_5) of $0.18\lambda_0 \leqq n_5d_5 \leqq 0.25\lambda_0$.

4,944,582

DEVICE FOR SUPPORTING SPECTACLES FRAMES

Alberto Zancaner, Piazza Roma, 8, 31040 Segusino (Treviso), Italy

Filed Feb. 26, 1988, Ser. No. 160,598
Claims priority, application Italy, Mar. 11, 1987, 21087/87[U]
Int. Cl.[5] G02C *1/00;* **A45C** *11/04*
U.S. Cl. 351—41 **1 Claim**



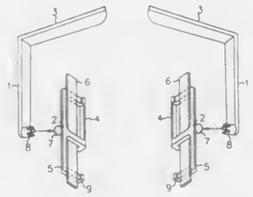
1. A device for supporting a single spectacles frame having two glass loop portions, a bridge portion for joining the two loop portions, and two arms, said device comprising a substantially rectangular flat base element having rounded corners, a top portion, a central recess formed in said top portion, and opposite side notches for supporting the two arms in the bent condition of the arms; and a dihedral-shaped spacer element engageable in said central recess for supporting the bridge portion to prevent deformation of the bridge portion, and having a rounded corner portion for engaging the bridge portion, and spaced elongate cuts for removably engaging said flat base element.

4,944,583

EYEGLASS SHADING DEVICE

Matthew G. Jennings, 1820 Monte Vista La., Moses Lake, Wash. 98837

Filed Mar. 15, 1989, Ser. No. 323,801
Int. Cl.[5] G02C *7/16*
U.S. Cl. 351—45 **1 Claim**



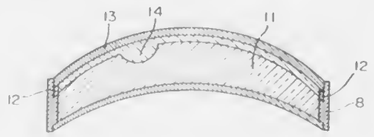
1. A shading device for attachment to a pair of eyeglasses, the device comprising an elongated shading member, a second elongated member extending rearwardly from said shading member, said second elongated member having a receptacle attached to the end distant from said shading member, said receptacle consisting of a plurality of expandable sides, said device further comprising a clip element having a shaped portion with an opening through which the temple of a pair of eyeglasses may pass, and said clip further having a tail section in the form of an L extending from said shaped portion for supporting the clip against the temple, said clip further including a ball element being sized for providing a rotatable connection to the receptacle; whereby, when said device is attached to a pair of eyeglasses, an adjustable eye shade is provided.

4,944,584

PLASTIC MULTIFOCAL POINT SPHERICAL LENS

Koichi Maeda; Akio Takigawa; Yasuyoshi Tago, all of Nishinomiya, and Motoaki Yoshida, Kawanishi, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 61,592, Jun. 15, 1987, abandoned. This application Feb. 23, 1989, Ser. No. 315,258
Claims priority, application Japan, Jun. 14, 1986, 61-137295
Int. Cl.[5] G02B *3/10;* **B29D** *11/00*
U.S. Cl. 351—172 **2 Claims**



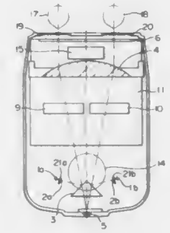
1. A plastic multifocal point spherical lens comprising a unitary structure of
(A) a first synthetic resin layer having a fixed refractive index,
(B) a second synthetic resin layer having a substantially fixed refractive index different from the refractive index of the first synthetic resin layer and
(C) a third synthetic resin layer existing between the first synthetic resin layer and the second synthetic resin layer and having a refractive index gradient varying continuously from the refractive index of the first synthetic resin layer to that of the second synthetic resin layer,
part of the second synthetic resin layer and part of the third synthetic resin layer together being recessed into the first synthetic resin layer, and the second synthetic resin layer being thicker at the recessed part than the rest, said recessed part having either a spherical surface or a parabolic surface.

4,944,585

DEVICE FOR MEASURING PUPILLARY DISTANCE

Toshiaki Mizuno, Gamagori, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

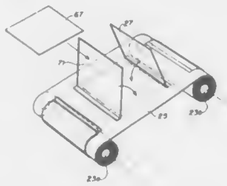
Filed Dec. 8, 1988, Ser. No. 281,367
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—204 **11 Claims**



1. A device for measuring a pupillary distance comprising:
fixation target forming means disposed in said device and including at least a light source;
a window provided in a front panel of said device in such a manner as to enable a subject to look at a fixation target in the device;
locating means for locating said front panel properly in relation to a face of said subject;
at least a converging lens fixedly mounted in said device such that an appearant viewing distance of said fixation target has a predetermined distance value and said converging lens is disposed corresponding to at least one eye of the subject;
sighting mark forming means provided on an inner side of said front panel such as to form a sighting mark which corresponds to a position of a cornea reflection image of said fixation target formed on a cornea of said subject;
sighting mark position control means for enabling an inspector to control a position of said sighting mark in relation to the position of said cornea reflection image;
observation means for enabling said inspector to observe a front portion of an eye of said subject; sighting mark position reading means for reading a position of said sighting mark at least at a preselected viewing distance;
viewing distance setting means for setting a viewing distance at which said pupillary distance is desired to be determined;
computing means for determining the pupillary distance at the desired viewing distance set by said viewing distance setting means based upon the position of said sighting mark at said preselected viewing distance; and
computing display means for displaying the result of said means.

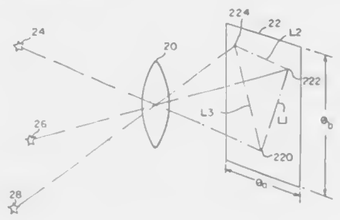
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4,944,586
AUTOMATED TRANSPARENCY ORGANIZER
Bruce M. Rightmyre, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 30, 1989, Ser. No. 444,000
Int. Cl.[5] G03B *23/10*
U.S. Cl. 353—108 **2 Claims**



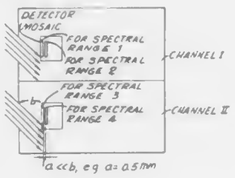
1. A conveniently demountable apparatus for use in conjunction with an overhead projector, for storing and automatically displaying overhead transparencies comprising:
a. a web means having at least one transparent section thereon;
b. means for holding at least one overhead transparency on said web means over said transparent section said means for holding comprising corner strip means for securing an overlay leaf;
c. cassette means for positioning said web means in proper alignment over said overhead projector;
d. means for driving said web means and said transparencies mounted thereon in said cassette means over the active projecting area of said overhead projector.

4,944,587
STAR SENSOR
Masatoshi Harigae, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 3, 1989, Ser. No. 318,635
Claims priority, application Japan, Mar. 17, 1988, 63-64059; Jan. 17, 1989, 1-5947
Int. Cl.[5] B64G *1/36*
U.S. Cl. 356—152 **6 Claims**



1. A star sensor for attachment to a base, comprising:
imaging means fixed to the base for generating star image signals corresponding to the appearance of a star from the base;
memory means for storing predetermined star information corresponding to an assumed magnitude of brightness and position of the star;
processing means connected to the imaging means for determining actual star information from the star image signals corresponding to the actual magnitude of brightness and position of the star, and generating an attitude signal corresponding substantially to the orientation of the base with respect to the star when the predetermined star information and the actual star information substantially coincide;
detecting means for generating an output signal corresponding substantially to the attitude of the base with respect to a predetermined orientation; and
correcting means responsive to the detecting means for correcting the predetermined star information stored in the memory means when the predetermined star information and the actual star information do not substantially coincide.

4,944,588
SYSTEM FOR DETECTING LASER RADIATION
Ludwig Köhler, Walldorf, Fed. Rep. of Germany, assignor to Eltro GmbH, Heidelberg, Fed. Rep. of Germany
Filed Nov. 25, 1987, Ser. No. 125,592
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1986, 3640946
Int. Cl.[5] G01C *1/00*; H01J *3/14*
U.S. Cl. 356—152 **17 Claims**

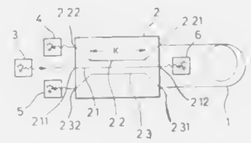


16. A system for detecting laser radiation, comprising processing electronics coupled to a detection unit arranged on an object to be protected such that detection of laser radiation is possible, said detection unit detecting laser radiation in a sector-shaped solid angle and comprising:
(a) an array of fixed detector elements arranged in a plane, each detector element of said array being capable of generating a signal in response to the impingement of laser radiation in a first predetermined wavelength range thereon; and
(b) a diaphragm for defining the field of vision of said detection unit, the diaphragm having a quadrate window of a size substantially equal to the size of said array and lying in a plane substantially parallel to the plane of said array and displaced therefrom,
wherein said diaphragm and said array are arranged so that a direction of laser radiation passing through said window can be determined by said processing electronics in dependence on the pattern of said detector elements having laser radiation impinging thereon.

4,944,589
METHOD OF REDUCING THE SUSCEPTIBILITY TO INTERFERENCE OF A MEASURING INSTRUMENT
Karl G. Nordqvist, Viken, Sweden, assignor to Tecator AB, Hoganas, Sweden
Filed Sep. 22, 1988, Ser. No. 247,689
Claims priority, application Sweden, Dec. 8, 1987, 8704886
Int. Cl.[5] G01J *3/18, 3/51*; G01N *21/27*
U.S. Cl. 356—326 **4 Claims**

1. A method of reducing the susceptibility to interference of a measured value obtained from a measuring instrument which measured valued has at least one property which varies during measurements an thereby introduces an unknown interference of the measurement value comprising the steps of:
subjecting a test object to measurements with respect to a plurality of primary test object properties whose effect on the measured value concerning a secondary property of said test object has been mapped by a calibration procedure which is effected by;
taking measurements by means of the same or a similar instrument which measurements are carried out on a sufficient number of calibration test objects each having a known value of the secondary property, and with a sufficient variation of the other test object properties affecting the second property, so as to cover expected variations of said properties, and
by processing mathematically the thus obtained measured values of said primary properties in such manner that a number of calibration constants in a mathematical relationship between said primary properties and said secondary property are generated, and
intentionally introducing during the calibration procedure a variation of at least one property of the measuring instrument, or a representation thereof in the processing of measured values, said variation having the same order of magnitude as or being substantially greater than expected variations, when one or several test objects are being measured, without information on the variation in said at least one property of the measuring instrument being supplied to said instrument in any other way.

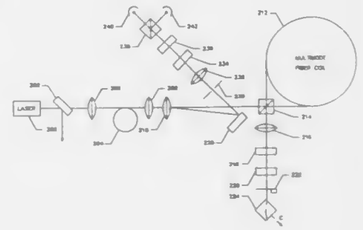
4,944,590
OPTICAL-FIBER GYROSCOPE OF SAGNAC TYPE HAVING A FIBER-OPTIC LOOP AND 3×3 COUPLER
Hans Poisel, Dachau, and Gerd Trommer, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GMBH, Munich, Fed. Rep. of Germany
Filed Feb. 24, 1989, Ser. No. 315,720
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1988, 3805904
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **4 Claims**



1. An optical-fiber gyroscope of the Sagnac type having a fiber-optic loop, and a 3×3 coupler comprising three optically coupled fiber-optic guides, the fiber optic guides each having a first end and a second end, a first of said fiber-optic guides of the 3×3 coupler being coupled at the first end to an optical radiation source and the two other fiber-optic guides of the 3×3 coupler being coupled on respective ones of the second ends to ends of the fiber-optic loop and, on the first ends, each to a radiation detecting instrument, the first fiber-optic guide of the 3×3 coupler being coupled to a radiation detecting instrument on the second end opposite the radiation source.

4,944,591
DOUBLE PHASE-CONJUGATE FIBER OPTIC GYROSCOPE
Ian C. McMichael, Port Hueneme, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 5, 1988, Ser. No. 280,088
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **4 Claims**

1. An optical fiber rotation sensor, comprising:
a source of coherent light;
a first polarizing beam splitter for transmitting a first component of the coherent light having a first polarization direction and reflecting a second component of the coherent light having a second polarization direction orthogonal to the first polarization direction;
a coiled multimode optical fiber having first and second ends coupled to the first beam splitter such that the first component is directed into the first end of the fiber and the second component is directed into the second end of the fiber, the first and second components thereby propagating in the fiber in opposite directions;
a polarizer having a third polarization direction at 45° with respect to the first and second polarization directions for receiving the portion of the first component transmitted by the first beam splitter after propagating through the fiber and for receiving the portion of the second component reflected by the first beam splitter after propagating through the fiber, the polarizer thereby transmitting a linearly polarized third component containing equal contributions from the first and second components;
a half-wave plate for receiving the third component from the polarizer and rotating the polarization of the third component by 45°;
a phase conjugating element oriented to receive the polarization-rotated third component and reflect a phase-conjugated fourth component in a direction opposite to the third component by self-pumped phase conjugation,



such that the fourth component retraverses the half-wave plate and the polarizer, then is divided by the first polarizing beam splitter into fifth and sixth components, the first beam splitter transmitting the fifth component with the first polarization direction and reflecting the sixth component with the second polarization direction;
such that the fifth component is directed into the second end of the fiber and the sixth component is directed into the first end of the fiber, the fifth and sixth components thereby propagating in the fiber in opposite directions,
a second polarizing beam splitter for receiving the portion of the fifth component reflected by the first beam splitter after propagating through the fiber and for receiving the portion of the sixth component transmitted by the first beam splitter after propagating through the fiber, the second beam splitter transmitting a seventh component having the first polarization direction and reflecting an eighth component having the second polarization direction;
a first detector for measuring the power of the seventh component; and
a second detector for measuring the power of the eighth component, the difference between the power of the seventh component and the power of the eighth component being related to the angular motion of the rotation sensor.

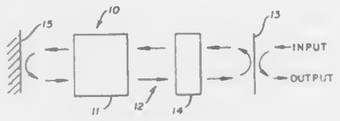
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4,944,592

DEVICE AND METHOD FOR QUANTUM NONDEMOLITION MEASUREMENTS USING PARAMETRIC OSCILLATION

Harry J. Kimble, Austin, Tex.; Silvania F. Pereira, Campinas, Brazil, and Daniel F. Walls, Auckland, New Zealand, assignors to The University of Texas System, Austin, Tex.

Continuation of Ser. No. 109,218, Oct. 16, 1987, abandoned.
This application Apr. 4, 1989, Ser. No. 333,869
Int. Cl.[5] G01J *4/00*
U.S. Cl. 356—364 7 Claims



1. A device for measurement of a characteristic of an electromagnetic field, comprising:

means for converting at substantially a single frequency between at least a portion of the electromagnetic field in a first polarization state and at least a portion of the electromagnetic field in a second polarization state; and,

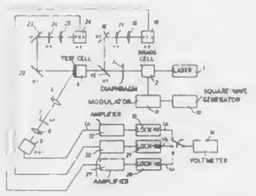
means for parametrically amplifying said polarization states having a gain G, said means for parametrically amplifying coupled to said means for converting, the magnitude of converting between said first polarization state and said second polarization state a function of said gain G.

4,944,593

VOLUME-MEASURING METHOD FOR SURFACE DEPRESSIONS

Reiner Kalstroem, Kiel, and Erich Schulz-DuBois, Preetz, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE87/00239, § 371 Date Dec. 30, 1987, § 102(e) Date Dec. 30, 1987, PCT Pub. No. WO87/07369, PCT Pub. Date Dec. 3, 1987
PCT Filed May 26, 1987, Ser. No. 153,840
Claims priority, application Fed. Rep. of Germany, May 27, 1986, 3617714
Int. Cl.[5] G01B *11/06*
U.S. Cl. 356--379 12 Claims



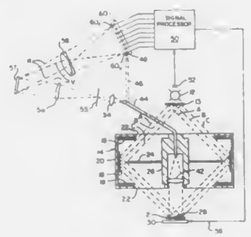
1. A method of measuring the volume of surface depressions, comprising the steps of filling the depression to be measured with a material which emits wavelength-shifted scattered light under irradiation; and illuminating said material with a light source which has a wavelength that lies in the region of the absorption spectrum of said material; and measuring the intensity of the wavelength-shifted scattered light which is emitted by the material with a photo-detector, and wherein the measured intensity indicates the volume of the surface depression.

4,944,594

APPARATUS AND METHOD FOR MEASURING DARK AND BRIGHT REFLECTANCES OF SHEET MATERIAL

Gary N. Burk, Columbus, Ohio, assignor to Process Automation Business, Inc., Columbus, Ohio

Filed Apr. 28, 1988, Ser. No. 187,204
Int. Cl.[5] G01J *3/42*
U.S. Cl. 356—446 18 Claims



1. Apparatus for measuring dark and bright reflectances of translucent sheet material, comprising:

first optical means for illuminating one side of the sheet material with a source of optical electromagnetic radiation of substantially uniform intensity, whereby a portion of said reduction is transmitted through the sheet material and another portion of said radiation is reflected by the sheet material;

stationary electrically switchable optical gating means, positioned adjacent the other side of the sheet material in a fixed position relative to said first optical means, for absorbing substantially all of the transmitted portion of said radiation when electrically switched to a dark state and reflecting substantially all of the transmitted portion of said radiation back into the sheet material when electrically switched to a bright state;

second optical means for collecting said reflected portion of said radiation and the portion of said transmitted portion of said radiation reflected by said optical gating means and retransmitted through the sheet material to provide a total reflectance having a dark reflectance intensity when said optical gating means is in said dark state and a bright reflectance intensity when said optical gating means is in said bright state; and

sensing means, responsive to said total reflectance provided by said second optical means, for providing a dark signal having a magnitude corresponding to said dark reflectance intensity and a bright signal having a magnitude corresponding to said bright reflectance intensity.

4,944,595

APPARATUS FOR PRODUCING CEMENT BUILDING MATERIAL

Simon Hodson, 3916 State St., Santa Barbara, Calif. 93102

Filed Aug. 19, 1988, Ser. No. 234,819
Int. Cl.[5] B28C *5/16;* B01F *5/12, 7/22*
U.S. Cl. 366—65 20 Claims

1. In an apparatus for producing cement paste, the apparatus of the type including a hollow generally barrel-shaped enclosure having a bottom and a central longitudinally disposed rotatable shaft and having a feed inlet to receive cement and water and a discharge outlet to dispense the resulting paste, the inner wall of the enclosure including an upper cylindrical portion above and adjacent to a middle conical portion which is above and adjacent to a lower conical portion, the enclosure including a thrust generating assembly having:

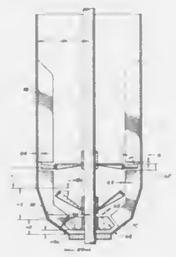
a downthrust generating component which includes a substantially horizontal set of upper downthrust blades is spaced relationship relative to each other, and a lower set of downthrust blades in a spaced relationship relative to each other, each of such blades having a leading and a trailing edge;

an upthrust generating component which includes substantially horizontal upper upthrust blades in spaced relationship relative to each other, each of the upper upthrust blades having a leading and a trailing edge and being coupled to one of the substantially horizontal upper downthrust blades outwardly of the upper downthrust blades, and substantially vertical lower upthrust blades in spaced relationship relative to each other, each of such lower upthrust blades having a leading edge and a trailing edge; and

upper and lower baffles extending from the inner walls of the enclosure toward the shaft, the upper baffle having a lower end and the lower baffle having an upper end, the lower end of the upper baffle and upper end of the lower baffles being spaced from each other providing a baffle space, the lower baffle having a lower free edge, wherein each of the upper upthrust blades is rotatable within the baffle space,

the improvement wherein,

the ratio of R1 to H1 ranges from 0.39 to 0.45, the ratio of R1 to R2 ranges from 0.80 to 0.83, the ratio of R1 to H2 ranges from 0.59 to 0.61, the ratio of R1 to R3 ranges from 0.36 to 0.41, the ratio of R1 to H3 ranges from 0.30 to 0.32, the ratio of R1 to H2*a* ranges from 0.001 to 1.0, the ratio



of R1 to H3*a* ranges from 0.001 to 1.0, G1 is 0.20±0.124 inches, G5 is 0.25±0.125 inches, and V ranges from a height of H1+H2+H3 to H1+H2+H3+4R1,

where R1 is the radius of the cylindrical portion of the inner wall of the housing,

R2 is the radius of the cylindrical portion of the inner wall of the housing along the horizontal plane containing the upper edge of the lower upthrust blade,

R3 is the radius of the lower conical portion of the inner wall of the housing along the horizontal plane containing the lower edge of the lower upthrust blade,

H1 is the distance along the shaft between the horizontal plane containing the leading edge of the upper upthrust blade and the horizontal plane containing lower end of the cylindrical portion of the housing,

H2 is the distance along the shaft between the horizontal plane containing lower end of the cylindrical portion of the housing and the lower end of the middle conical portion of the housing,

H3 is the distance along the shaft between the horizontal plane containing the lower end of the middle portion of the housing and the horizontal plane containing the lower end of the lower conical portion of the housing,

H2*a* is the smallest vertical distance between the upper edge of the lower downthrust blade and the plane containing the largest radius of the middle conical portion,

H3*a* is the smallest vertical distance between the bottom and the lower edge of the lower upthrust blade,

G1 is the smallest distance between the leading edge of the upper upthrust blade and the lower edge of the upper baffle,

G5 is the smallest distance between the trailing edge of the lower upthrust blade and the lower free edge of the opposing lower baffle, and

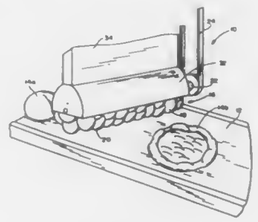
wherein R1 ranges from 4.0 to 48.0 inches.

4,944,596

APPARATUS WITH ROLLER FOR KNEADING A PROOFED BALL OF DOUGH

Eugene L. DeChristopher, 20 Ahlstrom Rd., Cotati, Calif. 94928

Filed Sep. 18, 1989, Ser. No. 408,918
Int. Cl.[5] B29B *1/06*
U.S. Cl. 366—69 5 Claims



1. A roller for kneading a proofed dough ball into a pizza shell comprising:

a shaft;

an elongated core member, comprising a number of rings keyed onto said shaft side by side, mounted for rotation about a longitudinal axis; and

a plurality of annular rows of spherical protrusions on said core member along the length thereof;

there being a row of spherical protrusions around each of said rings;

the spherical protrusions on each of said rings being staggered relative to the spherical protrusions are closely nested;

at least some of said protrusions being in the configuration of more than one-half of a sphere extending above the surface of said core member;

each of said rings being of a width less than the diameter of said spherical protrusions.

4,944,597

EXTRUSION APPARATUS

Paul Geyer, 15660 Tacoma, Detroit, Mich. 48025

Filed May 4, 1989, Ser. No. 347,092
Int. Cl.[5] B29B *1/06*
U.S. Cl. 366—79 7 Claims



1. An extrusion apparatus for the refining, mixing and extruding of thermoplastic and rubber like materials, for both hot or cold feed, which comprises:

an elongated generally cylindrical barrel member and an elongated rotor member disposed coaxially in the interior of said barrel member;

means provided for relative rotational movement between said rotor and barrel members in treating and axial advancing the material to be processed along said members;

said rotor and barrel members having a feed end and a dis-

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charge end, a pressurizing section, a rotor to barrel transfer zone, a barrel extrusion mixing section, a barrel to rotor transfer zone, and an end extrusion section interposed between said feed and discharge ends;

said pressurizing section being provided with helical rotor grooves coacting with a smooth barrel bore to pressurize and transport the process material to the rotor to barrel transfer zone;

said barrel within said extrusion mixing section being provided with a first longitudinally extending barrel groove;

said barrel to barrel transfer zone having a pair of barrel grooves which start shallow and increase in depth and in extrusion capacity;

said rotor within said rotor to barrel transfer zone being provided with multiple short longitudinal cam-shaped projections arranged to receive the said process material, from the said pressurizing section and forcing it radially outward into said pair of barrel grooves which increase in depth and extrusion capacity, in a circumferential downstream direction and at their downstream end are arranged to transfer the said process material to said longitudinally extending barrel groove extending the length of the barrel extrusion mixing section and having upstream and downstream ends;

said first longitudinally extending barrel groove terminating at the downstream end of the barrel extrusion mixing section in a wide cam-shaped area which starts deep and progressively decreases in depth in a circumferential downstream direction and which coacts with a smooth cylindrical rotor to move said process material in a circumferential direction;

the rotor action developing high local pressure in the process material and as the clearance between the cam-shaped area to rotor decreases, a high shear rate develops forming conditions ideal for the micro dispersion of chemicals into the polymer, and the flow of the said process material is such that the well worked process material is rapidly moved downstream in preference to the less worked process material deeper in the cam-shaped area;

whereby moving the said well worked process material rapidly forward, minimizes the rework of well worked process material and exposes the less worked material to extruder action;

said barrel extrusion mixing section having a second longitudinally extending groove;

the said process material, at the end of the cam-shaped area being intercepted by said second longitudinally extending groove, extending the length of the barrel extrusion mixing section and at its downstream end enters the barrel to rotor transfer zone, the barrel portion of which is provided with dual circumferential grooves, communicating with said second longitudinally extending groove of the barrel extrusion mixing section and directing the process material radially inward to multiple helical rotor grooves, arranged to receive said process material and transport it downstream;

design of said barrel to rotor transfer zone is such, that endwise movement of said rotor member in relation to the barrel member obstructs the barrel to rotor flow of the process material and thereby reduces extruder capacity;

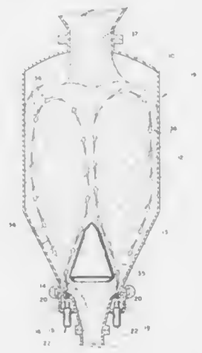
the control of extruder capacity can be used to control the temperature of extrusion as approximately the same input work is applied to less process material.

4,944,598

CONTINUOUS FLOW AIR BLENDER FOR DRY GRANULAR MATERIALS

James R. Steele, Stillwater, Minn., assignor to Dynamic Air Inc., St. Paul, Minn.

Filed May 10, 1989, Ser. No. 349,780
Int. Cl.[5] B01F *13/02*
U.S. Cl. 366—106 **5 Claims**



1. Apparatus for mixing together two or more granular materials, comprising:

(a) a vertically elongated container having an open discharge outlet at the bottom and a vertical center line;

(b) inlet means for simultaneously feeding two or more granular materials into the top of said container so they tend to fall toward the bottom of the container;

(c) means for applying pressurized gas upward and inward toward the vertical center line of the container into the falling granular materials while the granular materials are being fed into the container to cause turbulence within the container to mix the materials together; and

(d) means within the container located above the discharge outlet for deflecting the granular materials from flowing in a direct path from said inlet means to said discharge outlet.

4,944,599

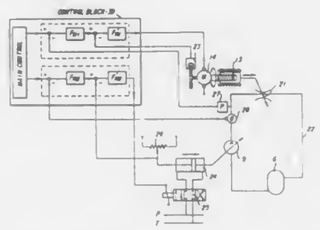
IMPINGEMENT MIXING DEVICE WITH PRESSURE CONTROLLED NOZZLE ADJUSTMENT

Wolfgang Soechtig, Germering, Fed. Rep. of Germany, assignor to Krauss-Maffei A.G., Fed. Rep. of Germany

Division of Ser. No. 119,127, Nov. 10, 1987, Pat. No. 4,854,713.
This application Jun. 8, 1989, Ser. No. 363,022
Int. Cl.[5] B01F *15/02*
U.S. Cl. 366—132 **7 Claims**

1. A method for controlling a high pressure impingement mixing device comprising the steps of:

monitoring the pressure of a mixing head component delivery line,



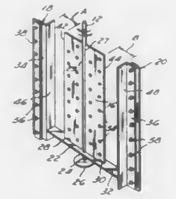
axially displacing a nozzle needle thereby affecting pressure in said component delivery line in a fashion to regulate pressure at desired levels.

4,944,600

METHOD AND APPARATUS FOR LOW FROTH AGITATION OF TANK FLUIDS

John L. McKelvey, Lakeland, Fla., assignor to The Ink Company, Sacramento, Calif.

Division of Ser. No. 212,268, Jun. 27, 1988, Pat. No. 4,893,943.
This application Oct. 31, 1989, Ser. No. 429,714
Int. Cl.[5] B01F *7/16, 15/06, 7/32*
U.S. Cl. 366—142 **15 Claims**



1. A method for agitating and controlling the viscosity of fluid within a holding tank having a generally cylindrical inner tank wall, said method comprising the steps of:

(a) providing and positioning, within said holding tank, a fluid mixing and tank wall wiping device comprising:

(1) a vertical shaft member;

(2) at least one panel joined to and extending laterally from said vertical shaft member, and

(3) at least one tank wiping blade connected to said vertical shaft member and held in contact with the inner wall of the fluid holding tank such that rotational movement of the shaft member will cause said tank wall wiper blade to separate fluid from said inner tank wall;

(b) placing a quantity of a first fluid within said holding tank;

(c) continually sensing the viscosity of the fluid held within said holding tank;

(d) rotating said vertical shaft member in a first rotational mode to maintain temperature homogeneity within said first fluid and maintaining said first rotational mode so long as the viscosity of said fluid remains within a predefined operative range;

(e) upon sensing that the viscosity of the first fluid has moved out of said predefined operative range, adding a second fluid to said first fluid to provide a first fluid/second fluid mixture having a viscosity which is within said predefined range;

(f) coincident with the addition of said second fluid to said first fluid, shifting from said first rotational mode to a second rotational mode whereby said fluid mixing and tank wall wiping device will thoroughly mix and disperse said second fluid within said first fluid to form the said first fluid/second fluid mixture;

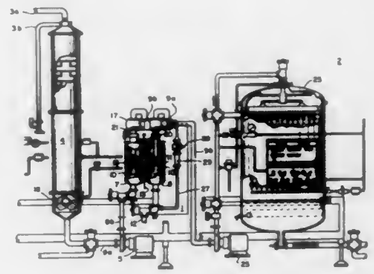
(g) upon sensing that the viscosity of the first fluid/second fluid mixture has entered said predefined range, shifting once again to said first rotational mode;

4,944,601

DAMON SYRUP RECOVERY SYSTEM

Kenneth Damon, R.F.D. #1, Box 610, Poland, Me. 04273

Filed Feb. 8, 1990, Ser. No. 476,712
Int. Cl.[5] B01F *15/02; A23L 2/40*
U.S. Cl. 366—160 **10 Claims**



1. A method for proportionately combining water and a syrup in an automated large-scale bottling system, comprising process (a) and improvement process (b) wherein said process (a) includes the steps of:

a. transferring said syrup from a syrup reservoir and said water from a water reservoir adjacent to said syrup reservoir into a mixing manifold located directly above said syrup reservoir and said water reservoir, utilizing

i. an immersed syrup conduit extending downward from said mixing manifold into, but not to the bottom of, said syrup reservoir and an immersed water conduit extending downward from said mixing manifold into, but not to the bottom of, said water reservoir,

ii. a controllable pressurization of said syrup reservoir and said water reservoir wherein said pressurization forces said syrup up through said immersed syrup conduit into said mixing manifold and also forces said water up through said immersed water conduit into said mixing manifold,

b. mixing said water and said syrup in said mixing manifold to produce a mixture of said syrup and said water in a ratio determined by the size of a syrup orifice fixture in proportion to the size of a water orifice fixture, wherein

i. said syrup orifice fixture connects said mixing manifold and said immersed syrup conduit,

ii. said water orifice fixture connects said mixing manifold and said immersed water conduit,

c. pumping said mixture with a transfer pump through a transfer line to a carbonation vessel, and

d. stopping said process (a) by automatic termination when said syrup in said syrup reservoir falls to the bottom of said immersed syrup wherein a syrup plunger in said immersed syrup conduit and a water plunger in said immersed water conduit are closed simultaneously, leaving a syrup residue in said syrup reservoir,

wherein said improvement process (b) comprises the steps of

a. reopening said water plunger in said immersed conduit to force said water up into said mixing manifold utilizing said controllable pressurization of said water reservoir,

b. creating a venturi effect at a recovery orifice fixture by pumping said water from said mixing manifold through

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said transfer line past said recovery orifice fixture, wherein said recovery orifice fixture connects a residue transfer tube with said transfer line,

c. reopening said syrup plunger to force said syrup residue out of said syrup reservoir and up into said transfer line utilizing

i. said residue transfer tube, one end of said residue transfer tube comprising said recovery orifice fixture and the other end comprising a transfer tube orifice fixture, wherein said transfer tube orifice fixture opens into a syrup inlet line underneath said residue in said syrup reservior,

ii. said controllable pressurization of said syrup reservoir,

d. mixing said syrup residue flowing into said transfer line with said water flowing past said recovery orifice fixture so as to form a residue mixture,

e. sizing said recovery orifice so as to ensure that said residue mixture contains said syrup residue and said water in a predetermined proportion,

f. pumping said residue mixture to said carbonation vessel.

4,944,602

HIGH PRESSURE HOMOGENIZING APPARATUS

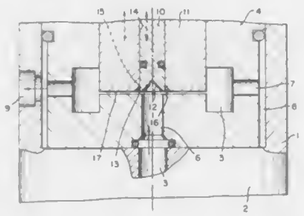
Hanns-Georg Buschelberger, Vaterstetten, Fed. Rep. of Germany, assignor to Bran & Luebbe GmbH, Norderstadt, Fed. Rep. of Germany

Filed Nov. 29, 1988, Ser. No. 277,335

Claims priority, application Fed. Rep. of Germany, May 28, 1988, 3818237

Int. Cl.[5] B01F *5/06*

U.S. Cl. 366—337 **16 Claims**



1. A high pressure homogenizing apparatus for break-up of micro-organisms or other micro-biological structures, comprising a nozzle assembly having an inlet and an outlet, an annular gap communicating with said inlet and said outlet, said gap having a width transverse to a given flow direction, said nozzle assembly including a stationary member and means displaceable relative to said stationary member for adjusting the gap width, a cutting edge provided downstream of said inlet and having a defined circumference in a path of flow, a concentrical annular recess extending around said cutting edge and having a width transverse to said flow direction so as to exceed said gap width downstream of said cutting edge, said recess width decreasing in said flow direction.

4,944,603

RECLOSABLE PACKAGE WITH ENCOMPASSING TAMPER-EVIDENT BAND

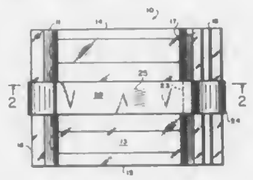
Darrell G. Cornish, McFarland; Timothy G. Mally, Oregon; Daniel A. Thiemann, Windsor, and Bjorn J. Thompson, Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Apr. 14, 1989, Ser. No. 338,268

Int. Cl.[5] B65D *33/34*

U.S. Cl. 383—5 **9 Claims**

1. In a flexible package wherein a product is sealed between opposed front and back wall panels, wherein the package is permanently sealed about any bottom and side edges and contains an access opening at a top edge and wherein the access opening contains a reclosure seal, the improvement comprising a tamper-evident band which is permanently bonded to the front and back wall panels and extends across and spans a portion of the access opening spaced from said access opening, such that attempts to remove the band will result in visible disruption of either the band itself or the front or back wall



panel, said reclosure seal is a zipper seal, said band contains at least two lines of perforations which are spaced apart from each other and which define and facilitate removal of said portion of the band which extends across the access opening at the top edge of the flexible package to thereby provide substantially unobstructed digital access to said zipper seal for opening and closing same.

4,944,604

FLEXIBLE CONTAINER COMPRISING SEVERAL LIFTING MEANS

Eirik Myklebust, and Odd F. Rasmussen, both of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway

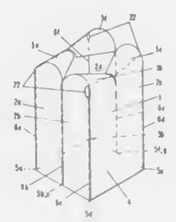
PCT No. PCT/NO88/00028, § 371 Date Dec. 21, 1988, § 102(e) Date Dec. 21, 1988, PCT Pub. No. WO88/08400, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 18, 1988, Ser. No. 288,644

Claims priority, application Norway, Apr. 24, 1987, 871705

Int. Cl.[5] B65D *30/04, 33/02, 33/14*

U.S. Cl. 383—7 **10 Claims**



1. In a flexible intermediate bulk container including a side wall structure formed of at least one piece of flexible woven material, a base structure at the bottom of said side wall structure, and at least two lifting loops formed of integral extensions of upper portions of said side wall structure, said lifting loops having a total combined width equal to at least 25% of the circumference of said side wall structure, the improvement wherein:

said side wall structure includes plural side wall panels;

each said side wall panel includes at least one said integral extension; and

each said lifting loop is formed by folding and joining respective said integral extensions of adjacent said side wall panels at an angle to the principle axis of said lifting loop, such that each said lifting loop is composed of material of said adjacent side wall panels, and opposite edges of each said lifting loop and all fibers of said material therebetween have substantially the same lifting height in an unstressed mode.

4,944,605

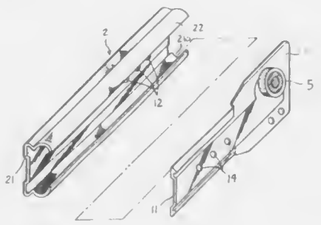
DRAWER SLIDES SETS

Ming T. Shen, No. 909, Fu Hsin Road, Chupei, Hsinchu, Taiwan

Filed Oct. 2, 1989, Ser. No. 415,632

Int. Cl.[5] A47B *88/00*

U.S. Cl. 384—19 **4 Claims**



1. A drawer slide set comprising:

a guide for connection to the interior of a cabinet, said guide comprising a guide-connector (1) formed of a single plate having an inner portion (11) with upper and lower hook profiles, and an outer portion, a roller (5) rotatably mounted to a side of said outer portion of the single plate forming the guide-connector, a guide-rail (2) formed by a single molded piece of material and having upper and lower curved flanges (22), said guide-rail having a channel (21) therein with a shape confirming to the shape of the inner portion of the guide-connector for receiving the inner portion of the guide-connector therein near an outer end of the guide-rail, said guide including means for fixing said guide-connector to said guide-rail;

a slide adapted for connection to the side of a drawer for sliding engagement on said guide to permit the draw to slide into and out of the cabinet, said slide comprising a slide-connector (3) formed of a single plate having an outer end (31) and upper and lower bent edges (32, 33), said slide-connector having an inner portion and a roller (6) rotatably mounted to a side of said inner portion of said slide-connector, said slide including a slide-rail (4) with an upper arc flange (42) on an upper edge thereof and a V-shaped channel (41) formed under said arc flange near the upper edge of said slide-rail, said slide-rail including an inclined base (43) defining a recess, said outer end with said upper and lower bent edges of said slide-connector conforming in shape to said V-shaped channel and the recess form by said inclined base, said outer end with said upper and lower bent edges of said slide-connector being received within said V-shaped channel and the recess of said inclined base, said slide including means for fixing said slide connector to said slide-rail; and

said upper curved flange (22) being larger than said arc flange (42) so that with said slide slidably engaged to said guide, said arc flange is in sliding contact under said curved flange and, with relative movement between said sliding guide, said rollers (5, 6) of said guide-connector and said slide-connector roll respectively on said slide-rail (4) and said guide-rail (2).

4,944,606

PRECISION MOTION SLIDEWAYS

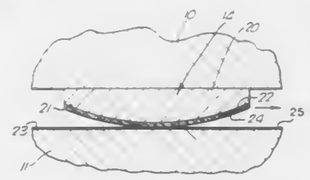
Kevin Lindsey, Middlesex, and Stuart T. Smith, Bedfordshire, both of England, assignors to The Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 7, 1989, Ser. No. 405,938

Claims priority, application PCT Int'l Appl., Apr. 16, 1987, PCT/GB88/00296; United Kingdom, Apr. 16, 1987, 8709290

Int. Cl.[5] F16C *33/20, 33/14*

U.S. Cl. 384—42 **32 Claims**



1. A plain bearing slide system including a carriage (10) mounted on a slide (11), the carriage (10) being kenematically constrainable to move along an accurately defined paath by means of bearing pads (14) between the carriage (10) and slide (11), characterised in that the surface of each bearing pad (14) is of convex shape, is coated with a thin layer (22, 41) of sybstantially non-eroding polymeric materia! having a convex surface (24), and is arranged to ride along a counterface in the form of a surface (25) of a thin layer (23, 42) of substantially non-eroding polymeric material, the combined thickness of the two layers (22, 23, 41, 42) of the substantially non-eroding polymeric material being such that the difference between the static and dynamic coefficients of friction is considerably less than the difference between the static and dynamic bulk coefficients of friction and that the fluctuation in dynamic coefficient of friction is correspondingly reduced.

32. A process of constructing a plain bearing slide system having a carriage (10) mounted on a slide (11), the carriage being kinematically constrainable to move along an accurately defined path by means including bearing pads (14) between the darriage (10) and the slide (11), the system being characterised in having the surface of each pad (14) of convex shape, coated with a thin layer (22,41) of sybstantially non-eroding polymeric material, and arranged to ride along a counterface (25) on a thin layer (23,42) of substantially non-eroding material, the process being characterised in including the steps of;

selecting a polymeric substance which, at the planned operating conditions of the slide system, has a thin layer difference of static and dynamic coefficients of friction substantisIly less than the bulk difference and a correspondingly reduced fluctuation in dynamic coefficient of friction, and which is capable of providing a counterface (25) having a roughness no greater than 5 nanometers Ra;

determining a combined thickness of the thin layers (22, 23; 41,42) which gives a reduced difference in coefficient of friction and a reduced fluctuation in dynamic coefficient of friction appropriate to the required accuracy of the instrument;

establishing limits of radius of curvature of a surface (24,44) of the thin layer (22,41) of each bearing pad (14) within which, in use, any variation of interface contact position or area and any inadequacy in averaging out geometrical imperfections are not too great to prevent the required accuracy from being attained, and within which interface stress remains within acceptable limits; and

constructing the bearing pads (14), assembling the carriage (10), slide (11) and bearing pads (14) and adding the layer (23,42) of material to provide the counterface (25) for each bearing pad (14) such that the combined thickness of the thin layers (22, 23; 41, 42) is no greater than that which has

been determined to give coefficient of friction characteristics appropriate to the desired accuracy.

4,944,607

REVOLVING GUIDING MEANS FOR ROLLING MEMBERS

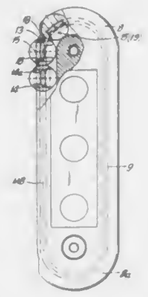
Werner Jacob, Brianring 29, D-6000, Frankfurt/Main 70, Fed. Rep. of Germany

Filed Jul. 11, 1989, Ser. No. 378,132

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1988, 3824191

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—44 **21 Claims**



1. Revolving guiding means for rolling members, comprising:

a basic member having two extending parallel track portions and two curved deflection portions connecting the two track portions, a first one of the track portions being provided as a supporting track portion from which the rolling members project so as to establish contact with a guiding rail track, a second one of the track portions and the curved deflecting portions being at least partially closed so as to permit load-free guidance, each of the portions having running tracks for the rolling members; and

a plurality of adjoining cage elements (**13**, **13***a*) each having, relative to adjoining cage elements, faces with cylindrical portions (**14**, **14***a*) having an axis (**15**), the cylindrical portions (**14**, **14***a*) being arranged so that the axis (**15**) extends perpendicularly to a center plane (ME) through the center (M) of the rolling members (**12**, **12***a*), each rolling member (**12**, **12***a*) being guided so as to be laterally embraced by a cage element, the cage elements (**13**, **13***a*) further having guiding extensions (**16**, **16***a*) arranged so as to extend vertically to the center plane (ME) so as to engage guiding grooves (**17**, **17***a*) parallel to a center path (MB) of the rolling members.

4,944,608

ROLLER-TYPE LINEAR GUIDE

Nobuyki Osawa, Takasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 7,174,235, Mar. 28, 1988, abandoned. This application May 26, 1989, Ser. No. 357,116

Int. Cl.[5] F16C *29/04, 29/12*

U.S. Cl. 384—58 **3 Claims**

1. A roller-type linear guide comprising:

a guide rail having opposed sides with outer surfaces thereon, the rail extending in a longitudinal direction and having V-shaped track grooves respectively formed in the outer surfaces of opposite sides thereof;

a slider having two side walls each of the side walls having a cross-sectionally trapezoidal accommodation space formed in the inside thereof, the slider being movably straddlingly mounted on said guide rail across the width of said guide rail,

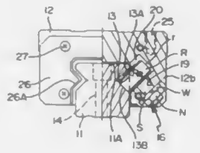
a pair of upper slider support members, respectively, attached to the side walls of the slider and, respectively, having rollers rollable on the upper surfaces of the V-shaped track grooves at opposite sides of the guide rail;

a pair of lower slider support members, respectively, attached to said side walls of said slider and, respectively, having rollers rollable on lower surfaces of said V-shaped track grooves at opposite sides of said guide rail; and

wherein part of at least one of the rollers is received in a cross-sectionally trapezoidal accommodation space in the slider, the trapezoidal accommodation space mating to the respective V-shaped track groove so as to form a substantially rectangular space which receives therein the whole of the roller.

3. A roller-type linear guide comprising:

a guide rail having opposed sides with outer surfaces thereon, the rail extending in a longitudinal direction and having V-shaped track grooves respectively formed in the outer surfaces of opposite sides thereof;



a slider having two side walls and an end face between the side walls at an end thereof, and being movably straddlingly mounted on said guide rail across the width of said guide rail,

a pair of upper slider support members, respectively, attached to the side walls of the slider and, respectively, having rollers rollable on upper surfaces of the V-shaped track grooves at opposite sides of the guide rail;

a pair of lower slider support members, respectively, attached to the side walls of the slider and, respectively, having rollers rollable on lower surfaces of said V-shaped track grooves at opposite sides of said guide rail;

the slider having fixing holes formed therethrough between the inside and the outside of each of the side walls for fixing the upper and lower slider support members therein, and wherein the fixing holes for fixing the lower slider support members extend to and open at the end face of the slider to allow the lower slider support members to be inserted therein.

4,944,609

OIL FILM BEARING AND BUSHING

Lowell S. Salter, Jr., Shrewsbury; Thomas E. Simmons, Westborough, and Charles L. Innis, Jr., Paxton, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

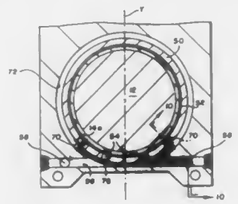
Continuation-in-part of Ser. No. 31,422, Mar. 30, 1987, Pat. No. 4,772,137. This application Sep. 19, 1988, Ser. No. 246,450

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—118 **10 Claims**

1. An oil film bearing for a rotating roll neck in a rolling mill, said bearing comprising: means defining a journal surface of the roll neck; a bushing having a cylindrical internal bearing surface surrounding said journal surface, said bushing being contained by and fixed within a bearing chock; inlet means for introducing a continuous flow of oil between said journal surface and said bearing surface at locations which allow the thus introduced oil to be formed hydrodynamically by the rotary motion of said journal surface relative to said bearing surface into an oil film on which the journal surface is carried at a load zone on one side of the bearing; outlet means for continuously removing oil from said load zone at a location intermediate to the ends of said bushing, thereby providing an



interruption in the load carrying continuity of the hydrodynamically formed oil film and separating said load zone into compound pressure zones; and position sensing means located between said compound pressure zones for monitoring the spatial relationship of said journal surface to said bearing surface at said load zone.

4,944,610

BEARING SEAL AND RETAINER

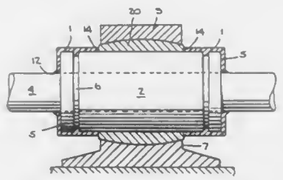
Dennis G. Berg, East Rockaway, N.Y., assignor to Winfred M. Berg, Inc, E. Rockaway, N.Y.

Continuation of Ser. No. 676,290, Nov. 29, 1984, Pat. No. 4,869,602. This application Mar. 20, 1989, Ser. No. 325,891

The portion of the term of this patent subsequent to Sep. 29, 2006, has been disclaimed.

Int. Cl.[5] F16C *33/74*

U.S. Cl. 384—147 **2 Claims**



1. A unitary flexible molded plastic bearing retainer for retaining a bearing in a bearing mounting with the bearing having faces at its opposite ends and spaced locking grooves adjacent to said ends comprising a hollow generally cylindrical body member proportioned for at least partially surrounding the bearing and extending axially of the bearing and having a radially inwardly extending end portion on one end of the body member with a shaft opening and positioned for engaging a bearing end face, a flexible sealing element on said end portion at said shaft opening for sliding sealing engagement with the shaft, an abutment portion on the opposite end of said body member for abutting the bearing mounting, a radially inwardly extending locking flange on the inner surface of the hollow body member for engaging one of said locking groove in the bearing, said sealing element having a generally tapered cross-section with its thinner portion positioned at a shaft retained by said bearing, and said locking flange having a cross-section complementary to the cross-section of the said locking grooves.

4,944,611

DIE CAST ANTI-FRICTION BEARING HOUSING

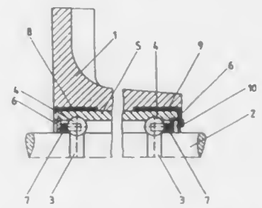
Gerhard Aukenbauer, Rotenburg/Fulda, and Heinrich Hofmann, Schweinfurt, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed May 19, 1989, Ser. No. 354,450

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1989, 3906801

Int. Cl.[5] F16C *35/077*

U.S. Cl. 384—476 **10 Claims**



1. In combination, a cast bearing housing and an anti-friction bearing housed within the housing, the combination comprising:

the bearing comprising means defining an inner race for a row of bearing rolling elements; an outer ring around the inner race, the outer ring having an outer race defined in it which is placed axially for defining cooperating inner and outer races for rolling elements; a row of rolling elements received in the inner and outer races for rolling therealong; and seals for the anti-friction bearing between the means defining the inner race and the outer ring and located axially to the side of the row of rolling elements for defining a sealed space including the races and the row of rolling elements;

the housing comprising a cast housing cast around the outer ring;

a jacket wrapped about the outer ring in the axial region of the races and of the seal, the jacket being disposed inside the cast housing and separating the outer ring from the cast housing for the protection of the races and the seal during casting of the housing.

4,944,612

TRUCK BED LINER

Michael J. Abstetar, 19 Hein Ave., Plymouth, Wis. 53073, and Richard W. Kopplitz, 2001 N. 19th St., Sheboygan, Wis. 53081

Filed Oct. 3, 1989, Ser. No. 416,409

Int. Cl.[5] B60R *13/01*

U.S. Cl. 296—39.2 **6 Claims**

1. In a multi-piece snap-in vehicle bed liner characterized in that no fasteners are required for assembly to the vehicle which has a body with sides including inturned top flanges and a floor, said bed liner including:

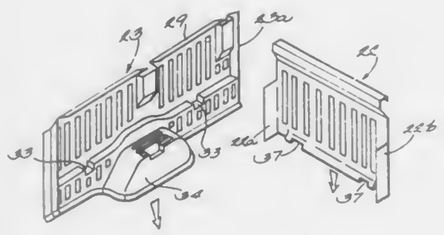
a right side panel, a left side panel, and a cab-back panel, all of which panels interact for compression and retention within the body of said vehicle beneath the body top flange and the floor, and

said side panels being C-shaped in cross section, and each including an in-turned upper edge and also a lower edge, and

said side panels constructed and arranged so that they are compressed and retained in place when the in-turned upper edge of the panels are located beneath the in-turned top flange of the vehicle body and when the lower edge of the panel rests on the vehicle floor, and

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said cab-back panel including flanges which are disposed behind the front edges of the side panels when the side



panels are compressed and retained in place, thus to secure the cab-back panel in place.

4,944,613

PRINTING DEVICE

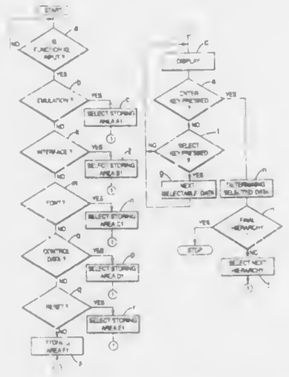
Fumio Fukushige, Fukuoka; Hisanobu Hori, Oonojou, and Kiichiro Tanaka, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 143,187, Jan. 13, 1988, abandoned. This application Nov. 27, 1989, Ser. No. 442,444

Claims priority, application Japan, Jan. 13, 1987, 62-5352

Int. Cl.[5] B41J *5/30*

U.S. Cl. 400—61 **4 Claims**



1. A device for selecting data items denoting operating conditions of a printer, said device comprising:

a first storing means for storing a plurality of data groups, each of said plurality of data groups having at least a first hierarchy data set and a second hierarchy data set, each data set having at least two data items;

input means for selecting one of said at least two data items of at least one of said data sets, said input means including a data group input key for each of said plurality of data groups and a select key and an enter key;

a second storing means for storing selected data items;

a display means for displaying a data item;

a control means for controlling said first storing means and display means and said second storing means and said input means, wherein upon activation of a data group input keys aid control means causes said display means to display a first data item of the first hierarchy data set of a data group corresponding tc the activated data group key and wherein upon activation of said select key said control means causes said display to display a next data item of a hierarchy data set of the data group corresponding to the activated data group key, and wherein upon activation cf said enter key said control means stores in said second storage means a data item displayed on said display and then causes said display to display a first data item of a next hierarchy data set of the data group corresponding to the activated data group key; and,

a determining means for determining, upon activation of said enter key, whether a next hierarchy data set is present within the data group corresponding to the activated data group key, wherein upon activation of said enter key and upon determining that there is an absence of a next hierarchy data set said control means releases the printer from a mode for selecting operating conditions.

4,944,614

FORM OVERLAY TYPE PRINTING APPARATUS

Kenmei Tanaka, Hyogo, Japan, assignor to Kanzaki Paper Mfg., Tokyo, Japan

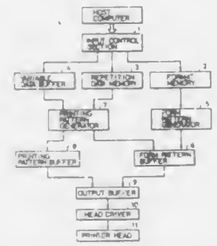
Division of Ser. No. 867,010, May 20, 1986, Pat. No. 4,826,333. which is a continuation of Ser. No. 631,789, Jul. 17, 1984, abandoned. This application Feb. 7, 1989, Ser. No. 307,267

Claims priority, application Japan, Jul. 18, 1983, 58-131500

The portion of the term of this patent subsequent to May 2. 2006, has been disclaimed.

Int. Cl.[5] B41J *5/40*

U.S. Cl. 400—68 **8 Claims**



1. A form overlay type document printing apparatus for receiving from a host computer form data, repetition data which remains constant for a first number of sequential pages of a document, and variable data which varies with each page of the document, and for producing a printed output corresponding thereto, the apparatus comprising:

a format memory for storing form data;

a repetition data memory for storing repetition data;

a variable data buffer for storing variable data;

input data means for supplying form data, repetition data, and variable data received from the host computer to said format memory, said repetition data memory, and said variable data buffer, respectively;

a form pattern generator for generating form printing signals corresponding to said format data stored in said format memory;

a printing pattern generator for generating repetition printing signals corresponding to said repetition data and variable printing signals corresponding to said variable data;

a form pattern buffer for combining said form printing signals and said repetition printing signals to output a selected sequence of combined printing signals for a succession of documents;

an output buffer for combining said combined printing signals with said variable printing signals to produce corresponding print driver signals for each document in said succession of documents; and

means, responsive to said print driver signals, for printing said succession of documents,

whereby only said variable data need be transferred from said host computer for each of said sequential documents pages.

4,944,615

PERMANENT MAGNET PRINT HEAD ASSEMBLY WITH A SQUARE MAGNET

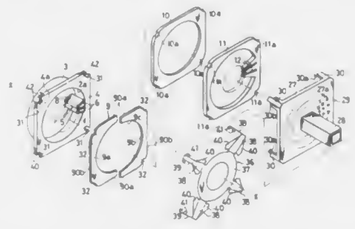
Shigeki Kato, Chiryu, and Yoshihumi Suzuki, Ena, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 35,677, Apr. 7, 1987, abandoned. This application Mar. 20, 1989, Ser. No. 326,429

Claims priority, application Japan, Apr. 7, 1986, 61-79586; Apr. 24, 1986, 61-62946

Int. Cl.[5] B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. A print head assembly of a printing device which moves along a print line to perform a printing operation and includes an outer peripheral portion having a specific width in a paralleled direction to the print line and a specific height in a perpendicular direction to the print line, comprising:

a plurality of cores arranged in a circular ring;

a yoke member surrounding and supporting the cores;

solenoid coils wound individually around the cores;

a plurality of armature members arranged individually facing the cores;

a resilient member swingably supporting the armature members and urging the armature members in the one direction by means of its resilient force;

a plurality of print wires operatively connected to the armature members corresponding thereto; and

a permanent magnet member fixed to the yoke member and forming a plurality of magnetic paths, each of which passes through the yoke member, one of the cores and one of the armatures, said magnet member urging the armature members in the other direction by means of its magnetic force,

said resilient member accumulating an urging force in one direction in such a situation that the armature members are urged in the other direction by the magnetic force of the permanent magnet member, and moving that armature member corresponding to a selected one of the solenoid coils in one direction, by means of the accumulated urging force, when the magnetic force of the permanent magnet member is cancelled by selective excitation of the solenoid coils, thereby driving that printing wire corresponding to the moved armature member toward a printing position,

said permanent magnet member including a square outer periphery, having a pair of first outer peripheral edges extending substantially along the print line, and a pair of second outer peripheral edges extending substantially at right angles to the print line, the distance between the paired first outer peripheral edges being equivalent to said specific height of the print head assembly, and the distance between the paired second outer peripheral edges being equivalent to said specific width of the print head assembly said permanent magnet member further having a circular inner periphery to define a center opening which is concentric with said circular ring along which said plurality of cores are arranged, and

said yoke member has an outer periphery which is substantially the same form as that of the permanent magnet member.

4,944,616

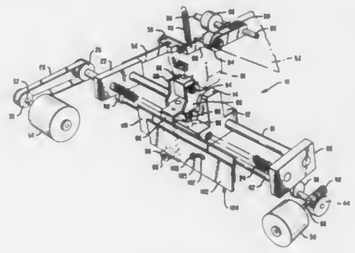
PASSBOOK READ/WRITE MECHANISM

Shingo Watanabe, Chigasaki, and Shohei Murakami, Hadano, both of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 6, 1989, Ser. No. 432,120

Int. Cl.[5] B41J *5/00*

U.S. Cl. 400—105 **16 Claims**



1. A passbook printer for use with a passbook, said printer comprising a

carriage, a

print head and means for moving the print head across the printer, a

platen operating at a printing station with said print head and carried by said carriage,

means for driving said carriage across said printer in a direction normal to the path of the passbook past the printing station, and a

magnetic head carried by said carriage and positioned to operate with a magnetic stripe on said passbook, said printer including means for moving the print head and the magnetic head relative to each other and said printer including means for moving said heads in synchronism across said printer to print data on said passbook and to read data from and to write data into said magnetic stripe on said passbook.

4,944,617

ENCODER EMPLOYING A SHOCK ABSORBING TENSION SPRING

John Tribert, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 24, 1989, Ser. No. 342,215

Int. Cl.[5] B41J *9/06, 9/20*

U.S. Cl. 400—157.2 **10 Claims**

1. An apparatus comprising:

a beam having first and second beam end portions;

mounting means including a pivot member for mounting said beam thereon for pivotal movement to enable said first beam end portion to be moved between a first position and a second position;

a beam stop;

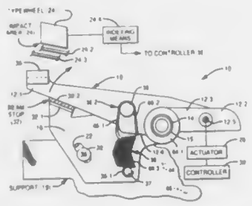
a mounting member on said beam; and

a tension spring coupled to said beam and said mounting means to resiliently bias said first beam end portion to said first position against said beam stop;

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said tension spring having a body portion and first and second spring end portions extending from said body portion, with said first spring end portion being secured to said mounting means;

said second spring end portion having a first generally U-shaped portion to partially surround said mounting member and also having a second generally U-shaped portion to enable a portion of said beam to be received therein; and



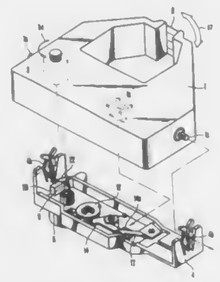
said second spring end portion being shaped to cause said body portion of said tension spring to assume an arched position when said first beam end portion is positioned against said beam stop and also being shaped to increase an area of contact between said first generally U-shaped portion and said mounting member as said first beam end portion is moved from said first position toward said second position.

4,944,618

MULTICOLOR INK RIBBON SWITCHING SYSTEM FOR PRINTER

Yorihiko Ideta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 7,203, Jan. 27, 1987, abandoned. This application Dec. 15, 1988, Ser. No. 285,294
Claims priority, application Japan, Jan. 27, 1986, 61-15284
Int. Cl.[5] B41J *33/14, 35/14*
U.S. Cl. 400—211 3 Claims



1. A multicolor ink ribbon switching system comprising:

a ribbon cassette swingably supported in a base;

a cassette swinging mechanism for swinging the multicolor ribbon cassette and changing colors of a ribbon; and

a ribbon feed mechanism for winding the ribbon in said ribbon cassette;

said cassette swinging mechanism and said ribbon feed mechanism having a common single driving source movable in a first rotational direction and a second rotational direction opposite to the first rotational direction;

said cassette swinging mechanism comprising:

a first one-way clutch for transmitting a rotational force in said first rotational direction of said single driving source and

a first converting mechanism for converting movement of said first one-way clutch into rotation of said cassette, said first converting mechanism comprising:

a switching roller disposed on a bottom surface of said cassette opposite to said base and rotatably mounted in said ribbon cassette,

a disc-shaped cam disposed substantially parallel to said base and coaxially coupled to said first one-way clutch, said cam having a center of rotation and a circumferential surface as well as a shape for providing different distances from said center of rotation to various portions of said circumferential surface in accordance with various rotational angles, and

a lever means, said lever means comprising a lever, a roller contacting with said circumferential surface of said cam at one end thereof, a fixed shaft disposed at the center of said lever and operative to rotate said lever on a plane substantially parallel to said base, and an L-shaped abutment piece engageable with said switching roller for moving said roller by urging it and thereby converting the rotational movement of said lever into shaft movement of said ribbon cassette in a direction substantially perpendicular to said base, and

said ribbon feed mechanism comprising:

a second one-way clutch for transmitting the rotational force in said second rotational direction of said single driving source and

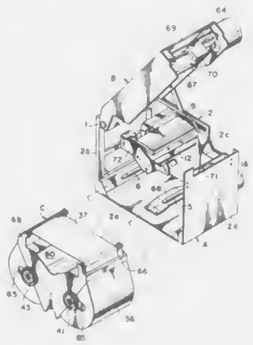
a second converting mechanism for converting movement of said second one-way clutch into a winding motion of the ribbon in said ribbon cassette, said second converting mechanism comprising a ribbon running roller rotatably mounted in said ribbon cassette, and a torque piece having one end connected to said second one-way clutch and the other end coupled to a shaft of said ribbon running roller.

4,944,619

CONSTRUCTION FOR MOUNTING AN INK RIBBON CASSETTE IN A HEAT TRANSFERABLE LINE PRINTER

Kenji Suzuki, Shizuoka, Japan, and Dunstan P. Sheldon, Altadena, Calif., assignors to Star Seimitsu Kabushiki Kaisha and Mag-Tek Inc., both of, Japan

Filed Jun. 8, 1988, Ser. No. 204,102
Claims priority, application Japan, Jun. 8, 1987, 62-141554
Int. Cl.[5] B41J *33/00*
U.S. Cl. 400—224.2 3 Claims



1. A line printer comprising:

upper and lower units pivotably connected with each other through a pivot shaft, the upper unit having therein a platen extending parallel with the pivot shaft, the lower unit having therein a thermal print head extending under and along the platen of the upper unit and a pair of spool shafts fixed at one end thereof to the inside of a back side portion of the lower unit and extending below the thermal print head and parallel to the pivot shaft;

a symmetrical ink ribbon cassette removably mounted in the lower unit and carrying an ink ribbon passing between the platen and the thermal print bead, the ink ribbon cassette comprising a casing having front and back sides and having a symmetrical shape to enable mounting of the casing in the lower unit in either a frontward position in which the casing front side lies adjacent the front side of the lower unit or a backward position in which the casing back side lies adjacent the front side of the lower unit, a pair of guide rollers extending parallel with each other on an upper side of the casing for guiding the ink ribbon therebetween; first and second spools disposed within the casing and detachably coaxially receiving therein the respective spool shafts of the lower unit for reversibly transporting the ink ribbon therebetween, and a cylindrical hub gear fixedly disposed on and around each of the opposite ends of the respective spools and projecting outwardly through a corresponding opening formed in one of the front and back sides of the casing;

power transmitting means carried by the lower unit and having a driving gear selectively engageable with one of the two cylindrical hub gears of the first and second spools, depending on whether the casing is mounted in the frontward or backward position, for driving the selected spool to wind the ink ribbon through engagement between the driving gear and the cylindrical hub gear;

back-tension applying means carried by the lower unit and having a back-tension gear selectively engageable with one of the two cylindrical hub gears other than the ones engageable with the driving gear of the power transmitting means, depending on whether the casing is mounted in the frontward or backward position, for preventing slipping rotation of the spool being used for feeding the ink ribbon to the other spool;

locking means for releasably locking the ink ribbon cassette in an operating position thereof in cooperation with the pair of spool shafts within the upper and lower units, the locking means comprising a pair of shoulders formed outside the respective guide rollers on the upper side of the casing, a pair of rods fixedly disposed within the upper unit so as to extend along and engage with the respective shoulders, a plate spring disposed on the bottom of the lower unit for urging the casing against the rods to thereby engage the shoulders with the rods, the rods being immovably positioned relative to the lower unit, and a flange formed on an end of each rod so that the flange engages with one of the opposite ends of the shoulders to thereby hold the ink ribbon cassette in position with respect to the axial directions of the spool shafts;

first gear-adjusting means coacting with the power transmitting means for resiliently absorbing impact between the teeth of the cylindrical hub gear and the driving gear, which impact is caused when the ink ribbon cassette is loaded into the lower unit with these gear teeth being mutually aligned, and for subsequently adjusting these gears to suitably mesh with each other; and

second gear-adjusting means coating with the back-tension applying means for resiliently absorbing impact between the teeth of the cylindrical hub gear and the back-tension gear, which impact is caused when the ink ribbon cassette is loaded into the lower unit with these gear teeth being mutually aligned, and for subsequently adjusting these gears to suitably mesh with each other;

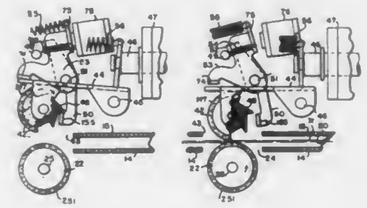
whereby the ink ribbon cassette is releasably simply locked in the same operating position regardless of whether the ink ribbon cassette is mounted in the lower unit in the frontward or backward position.

4,944,620

PRINTER DEVICE FOR DUPLICATE SLIPS AND THE LIKE

Milton Scozzafava, Rowland Heights, and John G. Clary, Pasadena, both of Calif., assignors to Addmaster Corporation, Monrovia, Calif.

Filed Aug. 7, 1989, Ser. No. 390,636
Int. Cl.[5] B41J *11/50*
U.S. Cl. 400—608.1 9 Claims



1. A printer for printing data on each of a pair of superimposed record mediums comprising the combination of

a printing device,

means for guiding said mediums past said printing device,

a feed roller,

means for rotating said feed roller,

a pinch roller for pressing said mediums into engagement with each other and with said feed roller, said rollers having greater frictional gripping characteristics than the frictional gripping characteristics of said mediums with each other,

a braking device coupled to said pinch roller,

means for (preventing) enabling said braking device whereby to prevent rotation of said pinch roller whereby (prevent) to enable said feed roller to advance one only of said mediums past said printing device, and

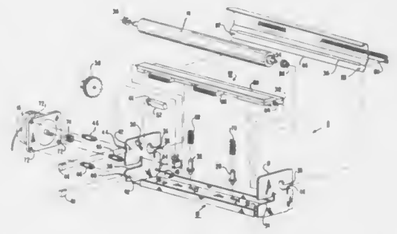
means for thereafter (enabling) disabling said braking device to enable said feed roller to advance the other of said mediums past said printing device.

4,944,621

SELF-CONTAINED PRINTHEAD/PAPERDRIVE MECHANISM

Kenneth D. Uecker, Janesville, Wis., assignor to Burdick Corporation, Milton, Wis.

Filed Dec. 22, 1988, Ser. No. 288,524
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—691 13 Claims



1. A self-contained printhead/paperdrive mechanism, comprising:

a single piece frame formed of a single sheet of material, having a substantially straight base portion and end portions formed so as to project substantially vertically from

opposite ends of said base portion, each of said end portions having a plurality of guide slots formed therein, with corresponding ones of said guide slots from each of said end portions forming a respective pair of said guide slots;

a platen/paperdrive roller comprising a shaft having opposite end portions, said shaft having a length substantially equal to the length of said base portion between the opposite ends of said frame;

an elongated printing means having opposite end portions projecting axially therefrom and a length between said opposite end portions which is substantially equal to the length of said base portion between the opposite ends of said frame; and

at least one spring member;

wherein the opposite end portions of each of said platen/-drive roller and elongated printing means, respectively, engage a respective pair of said guide slots formed in said end portions of said frame; and

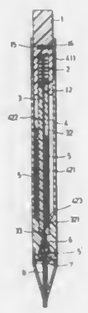
wherein said spring member is positioned so as to urge both said platen/drive roller and printing means into a fixed location relative to said guide slots so as to locate said platen/drive roller and printing means, respectively, securely on said frame and in an operating position.

4,944,622

WRITING IMPLEMENT

Tyng-Jen Sheu, 3, 11F-7, Fu-Shin 2nd Rd., Lin-Ya Dist. Kaohsiung, Taiwan

Filed Mar. 16, 1989, Ser. No. 325,697
Int. Cl.[5] B43K *24/10, 24/14, 24/16, 24/18*
U.S. Cl. 401—90 **1 Claim**



1. A writing implement comprising:

an elongated tube having an upper open end and a lower end in which a clamping means is mounted, a propelling means associated with said clamping means having a retractable lower portion protruding out from said lower end of said tube, a central bore extended from said upper open end to said clamping means, said clamping means being adapted to clamp leads coming from said central bore and prevent said leads from moving toward said central bore, said propelling means being adapted to temporarily release said clamping means and enable said leads to protrude from said retractable lower portion thereof for writing purposes by means of depressing said lower portion of said propelling means into said lower end of said tube and then letting said lower portion spring back to its original position; wherein the improvement is characterized in that said tube has a plurality of positioning slots axially formed around an inner surface thereof near said upper open end, each positioning slot having an upper and a lower end of a predetermined length, and said central bore of said elongated tube includes an upper section as well as a lower section the diameter of which is smaller than that of said upper section, said lower section having a lower end connected with said clamping means, and a plurality of radial grooves extended from said lower section correspondingly aligned with said positioning slots for receiving said leads, each of said grooves having an upper end communicating with said upper section and a lower end bounded by an inclined inner face of said tube, said inclined inner faces converging toward said lower end of said lower section;

a lead supplying rod having an upper and lower end in which a through bore is axially formed, said lower end of said lead supplying rod being fitted within said lower section of said central bore of said tube and connected with said clamping means so that said leads can pass through said through bore of said lead supplying rod into said clamping means, said lead supplying rod having a slot radially extended from said through bore thereof communicating with one of said grooves of said tube so as to permit said leads to singly enter said through bore thereof via said slot of said lead supplying rod and a first engaging member formed near said upper end thereof, said first engaging member including a pair of opposite sliding grooves;

an elongated cylindrical body with an upper end and a lower end having a cylindrical cavity formed therein, said cavity being adapted to receive said upper end of said lead supplying rod, said elongated cylindrical body having a second engaging member including two opposite protrusions radially protruding into said cavity of said cylindrical body, said protrusions being adapted to slidably engage with respective of said sliding grooves of said first engaging member of said lead supplying rod so that said lead supplying rod can be rotated along with said elongated cylindrical body, and a push rod extended from the bottommost cylindrical cavity into said through bore of said lead supplying rod so as to push a lead received in said through bore into said clamping means when said elongated cylindrical body is depressed, said elongated cylindrical body having a mounting hole radially formed near said upper end thereof, said mounting hole having a spring and a ball received therein, said ball being biased by said spring so as to engage with one of said positioning slots formed near said upper open end of said tube allowing said elongated cylindrical body to be placed between a first position where said elongated cylindrical body protrudes upward and a second position where said push rod of said elongated cylindrical body pushes the lead received in said through bore into said clamping means; and

a spring member mounted between said upper end of said lead supplying rod and the bottommost cylindrical cavity which urges said elongated cylindrical body to an upward protruding position; whereby said slot of said lead supplying rod may be rotated to communicate with an adjacent groove of said tube by manually rotating said elongated cylindrical body several degrees from one to another of said positioning slots and said lead in said grooves can enter said through bore of said lead supplying rod and be pushed into said clamping means when said elongated cylindrical body is depressed.

4,944,623

WINDOW CLEANING APPARATUS

Arley McNeil, Box 271, Sonoita, Ariz. 85637

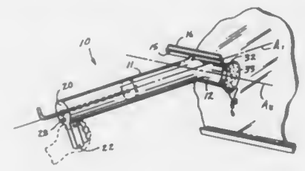
Filed Aug. 11, 1989, Ser. No. 392,456
Int. Cl.[5] A47L *1/08*
U.S. Cl. 401—25 **7 Claims**

1. A window cleaning apparatus comprising,

an elongate body including a first hollow cylindrical housing secured in alignment to a second hollow cylindrical housing, wherein the first cylindrical housing defines a first chamber in communication with a second chamber defined within the second cylindrical housing, and

a porous applicator head mounted at a forward end of the second cylindrical housing remote from the first cylindrical housing, and

pressurizing means contained within the first cylindrical housing to direct a quantity of cleansing fluid contained within the elongate body between the pressurizing means and the applicator head for directing the fluid through the applicator head onto a surface to be cleaned, and



wherein the first cylindrical housing is defined by a first axis and the second cylindrical housing is defined by a second axis, wherein the second axis is arranged at an obtuse angle relative to the first axis, and

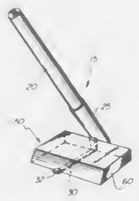
wherein the porous applicator head includes a truncated conical sponge member integrally secured within an internally threaded cap, the internally threaded cap being selectively securable to the second cylindrical housing.

4,944,624

WRITING INSTRUMENT STAND/HOLDER ATTACHABLE TO CAP POCKET CLIP

R. Darryl Garland, Santa Barbara, Calif., assignor to Larry K. Roberts, Newport Beach, Calif., a part interest

Filed Sep. 22, 1989, Ser. No. 411,097
Int. Cl.[5] B43K *23/02;* **A47F** *7/00*
U.S. Cl. 401—131 **16 Claims**



1. A stand for writing instruments having a barrel and a removable cap, the cap characterized by a cap body to which is affixed a pocket clip of a spring material, the clip being attached to the cap at a first end of the clip, and wherein the pocket clip second end terminates in a clip protrusion, the stand comprising:

a stand base structure; and

means for attaching the cap to the stand base by cooperative engagement of the stand base with the pocket clip, so that the cap is supported by the stand base in a generally upright or inclined position, and wherein said attaching means is defined by said stand base and comprises means for supporting the clip body and cap such that the second end of the pocket clip is pivoted away from the cap body, and wherein said supporting means comprises a first structure defined by said stand base for wedging between the cap body and pocket clip, and a second structure defined by said stand base for engaging the clip protrusion, thereby locking the clip and cap in place in said generally upright or inclined position;

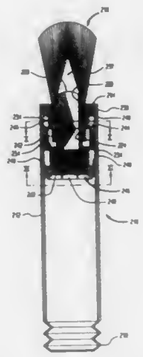
whereby the writing instrument barrel may be inserted into the cap being supported by the stand base so that the barrel is supported in a generally upright or inclined position.

4,944,625

POWDER-APPLYING BRUSH

Menachem Futter, Staten Island, N.Y.; James E. Wilson, Bound Brook, N.J., and Annette M. Golden, New York, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Oct. 21, 1988, Ser. No. 260,768
Int. Cl.[5] A45D *33/06;* **A46B** *11/04*
U.S. Cl. 401—153 **44 Claims**



1. A powder-dispensing brush, comprising a substantially rigid housing having a capacity selected such that a predetermined quantity of powder can be stored in said housing; bristles projecting outwardly from one end of said housing; dispensing means positioned in said one end of said housing for dispensing powder from said housing into said bristles; filtering means for filtering powder before it is dispensed from said dispensing means, whereby said filtering means inhibits said dispensing means from becoming clogged; and propelling means located at an opposite end of said housing for propelling powder from said housing through said dispensing means and into said bristles, said propelling means including compressible bellows which communicate with said housing, said bellows being manually compressible by a thumb of a user to thereby reduce the capacity of said housing and being automatically expandable after their compression to thereby cause outside air to be sucked into said housing through said dispensing means and said filtering means, whereby powder is expelled from said filtering means and returned to said housing in a loosened and aerated condition.

4,944,626

APPARATUS HAVING TWO ADJUSTABLE SLIDE SUPPORTS WHICH HAVE ATTACHMENT SURFACES FOR ATTACHING TWO HOLDING DEVICES

Armin Dommer, Elchweg 13, and Dieter Dommer, Bahnhofstr. 5, both of, 7257 Ditzingen 1, Fed. Rep. of Germany

Filed Jan. 30, 1989, Ser. No. 304,059
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1988, 3802663
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—3 **15 Claims**

1. An apparatus having two slide supports, adjustable with respect to one another, the slide supports each have an attachment surface for attaching two holding devices, the apparatus further comprising:

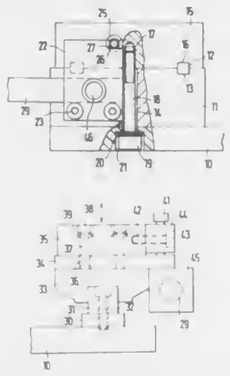
the slide supports each comprising a slide support base plate (11,34) and an attachment plate (15,35) having the attachment surfaces;

VOL 1116 ISS 5 JL 31 1990 UMI

VOL 1116 ISS 5 JL 31 1990 UMI

said attachment plate (15,35) connected with spring tension in an adjustable manner relative to said slide support base plate (11,34) with spring-stressed bolts (18,37) oriented perpendicular to the attachment surfaces;

said attachment plate (15) of a first slide support of the slide supports perpendicularly adjustable relative to a direction



of adjustment of the slide supports on a first slide support base plate (11); and

said attachment plate (35) of a second slide support of the slide supports perpendicularly adjustable relative to the attachment surface of a second slide support base plate (34);

an attachment block (22) attached in a first area of a front side of said first slide support base plate (11) of said first slide support, said attachment block (22) extending into a second area of said attachment plate (15);

in an upper side of said attachment block (22) a first adjustment bolt (24) mounted in an axially non-displaceable but rotatable manner and mateable within a receptacle (28) of said attachment plate (15), said first adjustment bolt (24) oriented perpendicular relative to a sliding direction of adjustment of said slide supports; and

said first slide support base plate (11) and said attachment plate (15) of said first slide support having reception grooves (13, 16) for guide bars (12) and said guide bars (12) positioned parallel to said first adjustment bolt (24).

4,944,627

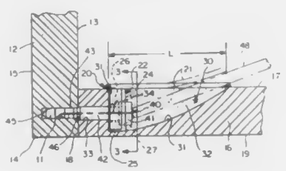
APPARATUS AND METHOD FOR JOINING WORKPIECES

Max W. Durney, Penngrove, Calif., assignor to Durney/Alexander, San Francisco, Calif., a part interest

Filed Nov. 17, 1988, Ser. No. 272,444

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—8 **22 Claims**



1. In apparatus for securely fastening a first workpiece to a second workpiece, said apparatus including a mortise formed in a surface of said first workpiece with a load-bearing face of said mortise oriented substantially perpendicular to said surface, a fastener receiving bore extending between said load-bearing face of said mortise and an edge of said first workpiece, a fastener receiving insert member including an insert portion having a front wall mating with said load-bearing face of said mortise and an insert bore aligned with said fastener receiving bore, and fastening means mounted in said insert bore and in said fastener receiving bore, said fastening means including an end portion having attachment means thereon for fastening to said second workpiece the improvement in said apparatus comprising:

said insert portion surrounding said insert bore to provide a seat supporting said fastening means completely around said insert bore; and

said mortise, insert member and fastening means are dimensioned for insertion of both said insert member and said fastening means into said mortise from said surface in said first workpiece having said mortise formed therein.

4,944,628

QUICK COUPLING MEANS FOR A WORKING IMPLEMENT OF AN EXCAVATING MACHINE

Fritiof Huldén, Pl 3155,S-660 60, Molkom, Sweden

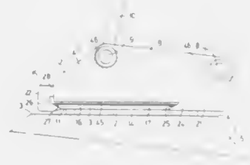
PCT No. PCT/SE88/00020, § 371 Date Jun. 28, 1989, § 102(e) Date Jun. 28, 1989, PCT Pub. No. WO88/05847, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 22, 1988, Ser. No. 378,190

Claims priority, application Sweden, Jan. 28, 1987, 8700319

Int. Cl.[5] F16B *1/00*

U.S. Cl. 403—24 **15 Claims**



1. A coupling means for detachably coupling a working implement (1) to the operating arm of an excavating machine, said implement having an upper surface facing the operating arm, said coupling means comprising a first attachment member (11) which is rigidly mounted to the upper surface of the implement (1) and comprises a coupling element (13), and a second attachment member (12) supported by the operating arm stick (6) and operating cylinder (7) via horizontal, parallel shafts (8, 9) and comprising a coupling element (15) consisting of two locking parts (21, 22) arranged movable in relation to each other to be brought into locking engagement with the coupling element (13) of the first attachment member (11) by means of a power-generating means (32), said coupling elements (13, 15) having cooperating engagement surfaces (17, 25, 27) which, when the attachment members (11, 12) are connected together, are located in a common reference plane (R) which is perpendicular to a common central plane for the stick (6) and operating cylinder (7), characterised in that all engagement surfaces (17, 25, 27) of the two coupling elements (13, 15) have a circle arc-shaped extension in said reference plane (R) and have the same radius.

4,944,629

QUICK CHANGE TOOL HOLDER

Johnnie E. Peveto, El Paso, Tex., assignor to Acustar, Inc., Troy, Mich.

Filed Mar. 14, 1989, Ser. No. 322,869

Int. Cl.[5] F16B *21/00*; B25G *3/18*

U.S. Cl. 403—330 **6 Claims**

1. A quick change tool holder for a machine or the like having two basic assemblies which are normally attached together but are readily detached one from the other, comprising:

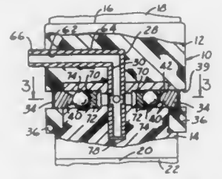
a first component assembly having a flat surface adapted to be fastened to the machine or the like;

a second component assembly having a flat surface adapted to be fastened to a tool or the like;

one of the component assemblies having a central boss formed thereon with an axis extending substantially normal to the flat surface;

the other component assembly having a recess formed therein with an axis extending substantially normal to the flat surface and with the recess shaped in correspondence to the boss whereby the boss is received into the recess during assembly to an attached mode of operation;

the boss portion having a circumferentially extending channel formed therein;



at least one elongated lock bar pivotally mounted to the other component assembly at an end portion and having an edge portion movable about the pivot mounted end portion so that the edge portion is movable into and out of the channel to lock and unlock the boss in the recess respectively;

means for selectively pivoting the lock bar from a lock position to an unlock position thus permitting separation of the component assemblies including

a radially extending cylinder bore extending in the boss portion normally to the boss axis and intersecting the channel; a reciprocal piston in the cylinder bore; means for selectively directing pressurized air to the radially inward portion of the reciprocal piston; means moved by the piston adjacent the edge portion of the lock bar for pivoting the edge portion radially outwardly to the unlock position.

4,944,630

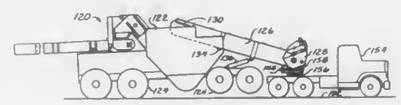
CONNECTOR AND METHOD OF CONNECTION BETWEEN A ROAD MAKING MACHINE AND THE FIFTH WHEEL OF A TRACTOR

James D. Brock, Chattanooga, Tenn.; Donald W. Smith, Aurora, and James H. Bassett, Sycamore, both of Ill., assignors to Barber-Greene Company, DeKalb, Ill.

Filed Feb. 7, 1989, Ser. No. 307,684

Int. Cl.[5] E01C *19/00*

U.S. Cl. 404—83 **27 Claims**



1. A reversible connector between a conveyor supported on a chassis and the fifth wheel of a tractor, the conveyor being moveable relative to the chassis, the reversible connector comprising:

track means attached to the conveyor;

support means slideably supported in the track means;

locking means to reversibly secure the slideable support means to the track means in a plurality of positions; and

pin means attached to the sliding support means, the pin means capable of connection to the fifth wheel of a tractor.

25. A method of reversibly connecting an apparatus to a tractor having a fifth wheel, the apparatus having a chassis, a downwardly extending conveyor means attached to the chassis, the conveyor means having means to reversibly engage the fifth wheel near its distal end, and means for moving the conveyor means relative to the chassis, the method comprising the steps of:

raising the distal end of the conveyor means to the height of the fifth wheel; and

moving the apparatus relative to the tractor to engage the fifth wheel with the fifth wheel engagement means.

4,944,631

MACHINE FOR REDEVELOPING THE CONSTRUCTIONAL LAYERS OF ROADS

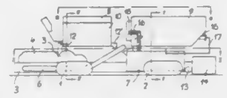
Urs Egli, Wetzikon, Switzerland, assignor to Egli AG, Wetzikon, Switzerland

Filed Nov. 10, 1988, Ser. No. 269,995

Claims priority, application Switzerland, Nov. 18, 1987, 04481/87

Int. Cl.[5] E01C *23/08, 23/12*

U.S. Cl. 404—91 **4 Claims**



1. A machine for constructing a road layer through reuse of old material removed from a road, comprising:

a motor whose heat is transferred by means selected from the group consisting of a cooling-water circulation system and an exhaust flow system;

a chassis for said motor, said chassis being of box-like construction and divided into a plurality of tanks for fuel, additives and hydraulic oil;

a silo for receiving said old material, said silo being mounted on said chassis;

a horizontal stream crusher having a major longitudinal axis through a length thereof, said axis being directed parallel to said road layer, said crusher feedable with said old material in regulatable quantities from said silo, said crusher having associated therewith a means for feeding said old material in regulatable quantities from said silo;

a mixer mounted on said chassis having an opening for receiving said old material at an upper end thereof distant from said road layer and said mixer being subjected to heat exchange by said heat transfer means;

a dosaging conveying device comprising a scraper band positioned between said crusher and said mixer, said scraper band being angled upward above said crusher with an end of said scraper band terminating over said opening of said mixer;

a screed drawn along behind said chassis; and

a conveyor worm between said mixer and said screed capable of feeding prepared material ready for distribution therebetween.

4,944,632

DEVICE FOR DISPENSING ASPHALT REPAIR MATERIALS

Harold W. Dillingham, P.O. Box 661, Jacksonville, Tex. 75766

Filed Feb. 16, 1989, Ser. No. 310,940

Int. Cl.[5] E01C *19/06, 19/18*

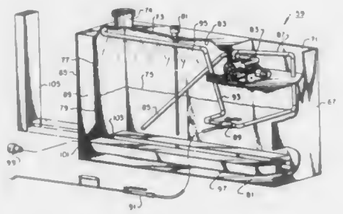
U.S. Cl. 404—111 **12 Claims**

1. An improved tack oil dispensing apparatus of the type used in repairing potholes in asphalt pavements, the apparatus comprising:

a tack oil tank adapted to be mounted on a portable base for transporting the tank to a repair site, the tack oil tank having a bottom wall, a top wall and interconnecting sidewalls which together define a closed interior having a

bottom region and a top region, respectively, the closed interior being supplied with a preselected level of tack oil which comprises a liquid-liquid emulsion, the level of the tack oil being below that of the top wall;

circulating means within the tack oil tank for continuously circulating tack oil from the bottom portion of the closed interior to the top portion thereof, the circulating means including dispensing means for dispensing the recirculated tack oil downwardly within the tank interior onto the top of the liquid level therein, to thereby maintain the tack oils within the tank in an emulsified state;



heat transfer means located within the tack oil tank for heating the tack oil to thereby maintain the tack oil in a liquid state; and

wherein the circulating means located within the tack oil tank includes a pump having an inlet conduit for collecting liquid from the bottom portion of the tank and an outlet conduit leading to the top portion thereof and wherein the dispensing means comprises a spray bar which communicates with said outlet conduit, said spray bar having a plurality of apertures for dispensing recirculated liquid downwardly onto the top of the liquid level within the tank.

4,944,633

BOAT SUPPORT MEANS

Frank B. Robb, Willoughby, Ohio, assignor to Jos. Dyson & Sons, Inc., Painesville, Ohio

Continuation-in-part of Ser. No. 215,234, Jul. 5, 1988, abandoned. This application Apr. 10, 1989, Ser. No. 335,707

Int. Cl.[5] B63C *1/08, 15/00*

U.S. Cl. 405—3 **14 Claims**





1. Boat cradle and storage means comprising a set of at least two spaced main support units of substantially identical construction, each including a base member to engage the surface above which a boat or the like is to be supported, a substantially vertical column extending upwardly from the base member, a pair of brace parts extending angularly and engaging the column and base member, said brace parts being positioned to facilitate nesting of like units with the columns of each in closely spaced relation with respect to one another and tension units connecting the support units to maintain the same in spaced relation, wherein the base member is chevron-shaped, comprising a pair of diverging wing-like portions, the column is fixed at its lower end at the juncture of the portions, the brace parts are fastened at their lower extremities to corresponding ends of the wing-like portions and at their upper ends to the upper end of the column, the column is fastened to the base member in a position spaced from the apex formed at the juncture of the wing-like portions, to facilitate nesting of a series of support means with the column of each in substantial alignment, and relatively close to one another.

4,944,634

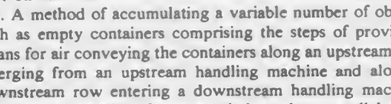
ANTI-FRICTION COMPOSITION CONTAINING MGO AND METHOD

William Alexander, Naperville, and Mark Bertane, Elgin, both of Ill., assignors to American Colloid Company, Arlington Heights, Ill.

Filed Oct. 4, 1985, Ser. No. 784,604

Int. Cl.[5] C09K *7/00*; E02F *5/10*

U.S. Cl. 405—184 **16 Claims**



11. A method of moving one solid object with respect to another solid object, wherein said solid objects are in close proximity, one to another, such that movement of said one solid object with respect to the other solid object is hindered by frictional forces exerted between the solid objects on frictionally engaging adjacent surfaces, the method comprising:

contacting said frictionally engaging adjacent surfaces of said solid objects with a pumpable composition comprising a water swellable smectite clay and MgO, wherein the MgO comprises at least 0.025% based on the dry weight of the water swellable clay, while forcing said one solid object to move with respect to the other solid object against the frictional force remaining between the two adjacent surfaces.

4,944,635

METHOD AND DEVICE FOR ACCUMULATING OBJECTS IN A PNEUMATIC CONVEYANCE SYSTEM

Michel Carlier, Wambrechies, and Olivier Blic, Bondues, both of France, assignors to Oerlikon Motch Corporation, Hayward, Calif.

Filed Sep. 23, 1988, Ser. No. 249,357

Claims priority, application France, Oct. 2, 1987, 87 13673

Int. Cl.[5] B65G *51/02*

U.S. Cl. 406—10 **20 Claims**

1. A method of accumulating a variable number of objects such as empty containers comprising the steps of providing means for air conveying the containers along an upstream row emerging from an upstream handling machine and along a downstream row entering a downstream handling machine, providing a plurality of separate, independent, parallel accumulation rows between the upstream and downstream rows with each accumulation row providing a channel for flow-through of objects from the upstream row to the downstream row, monitoring the absence or presence of objects at certain points of the various rows, closing access to each accumulation row in which the presence of objects is monitored, diverting containers to another accumulation row, and releasing objects from accumulation when the absence of objects is monitored at certain points in various rows.

4,944,636

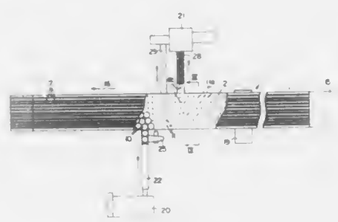
METHOD AND DEVICE FOR THE TRANSFERRING AND ACCUMULATING OF PACKING ELEMENTS BY AIR CONVEYING

Michel Carlier, Wambrechies, and Frederic Bernard, Sailly-Lez-Lannoy, both of France, assignors to Oerlikon Motch Corporation, Hayward, Calif.

Filed Sep. 7, 1988, Ser. No. 241,349

Int. Cl.[5] B65G *51/02*

U.S. Cl. 406—72 **10 Claims**



1. A device for the transferring and accumulating of packing elements in the form of a box which is open on one face, comprising an air-conveyor defining an accumulating path in a closed loop (1), at least one upstream machine (20) feeding packing elements to the accumulating path and at least one downstream machine (21) receiving with packing elements from the accumulating path, the closed loop (1) being arranged substantially vertically and including an upper horizontal path portion (2), a lower horizontal path portion (3) located below the upper portion, and two curved end connecting portions (4, 5), certain of said upstream and downstream machines being connected to the upper portion of the path and other said machines being connected to the lower portion of the path.

4,944,637

VALVED SEED OUTLET

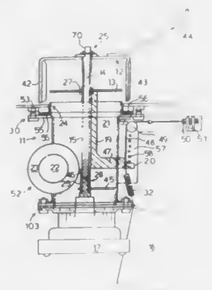
Gilbert K. Fletcher, P.O. Box 527, Emerald, Queensland 4720, Australia

Continuation of Ser. No. 100,622, Sep. 24, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 393,852

Claims priority, application Australia, Jan. 30, 1987, PI0110

Int. Cl.[5] B65G *53/40*

U.S. Cl. 406—132 **7 Claims**



1. A valved seed outlet to be used in a seed apparatus to dispense fluffy or hairy coated seed that is prone to bridging wherein a storage container with walls contoured to lead seed therein gravitationally to an opening is used, the valved seed outlet being mounted in said opening of said container, said valved seed outlet comprising:

a body part with a first passage therethrough to lead seed from the storage container, the first passage having first and second ends;

the first end being provided with a mounting means thereat whereby the valved seed outlet may be mounted beneath said storage container at said opening therein externally of the container;

a valve seat at the first end defining an orifice by which seed may flow from said storage container;

a valve means mounted for operative movement orthogonal to the valve seat within the container, said movement achieved by a valve support disposed into the first passage from the lower surface of the valve means, said movement regulating a flow area into the orifice, said flow area being defined by the separation between the outer circumference of the valve seat and the outer circumference of the valve means, so that the flow of seed past the orifice is metered by the position of the valve means and the flow of seed is stopped when the valve means engages the valve seat to block the orifice, said valve means being restrained from rotary motion by at least one support post firmly affixed to the body part of said valve seed outlet;

seed sweep means rotatively mounted to disturb seed at the orifice;

means by which the seed sweep means may be continuously or intermittently activated;

a second passage, transverse to the first passage adjacent the second end thereof, the second passage being operative, in use, with a flow of air therethrough to draw seed through the orifice by aspiration, the second passage being restricted in size adjacent the first passage to increase aspiration utilizing the venturi effect; and

the seed sweep means being operative to disturb seed at the orifice, the seed sweep means including at least a first set of depending arms to sweep closely around the periphery of the valve and its valve seat.

4,944,638

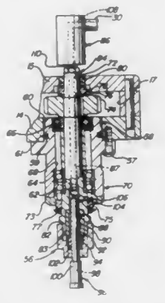
REMOVABLE SPINDLE FOR DRILL HEADS

Lawrence F. Brohammer, 5078 Longview, Troy, Mich. 48098

Continuation of Ser. No. 200,634, May 31, 1988, Pat. No. 4,867,618. This application Jul. 19, 1989, Ser. No. 382,481

Int. Cl.[5] B23B *27/12*; B23Q *5/04*

U.S. Cl. 408—59 **3 Claims**



1. A spindle for a glass drilling unit comprising:

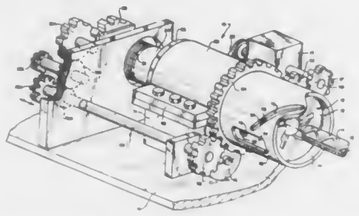
a body member;

means adapted for removably coupling said body member with a deck of the glass drilling unit;

shaft means adapted for receiving and rotating a drill, said shaft means adapted to be removably, rotatably coupled with a gear train of the drilling unit; and

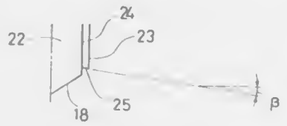
means adapted for providing a collant to a workpiece, said means for providing a collant attached to said spindle.

4,944,639
THREAD CUTTING DEVICE
Bruce A. Washington, Twinsburg, Ohio, assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Division of Ser. No. 847,728, Apr. 3, 1986, abandoned. This application Jun. 24, 1988, Ser. No. 212,074
Int. Cl.[5] B23G *1/22*
U.S. Cl. 408—176 5 Claims



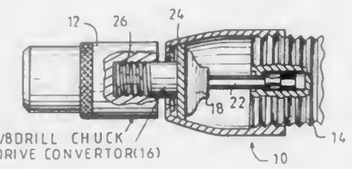
1. A machine for threading a body comprising a frame, a head for supporting a thread forming tool, means for supporting the head relative to the frame for rotation and feeding movement along the axis of such rotation, an interengaged screw and nut each rotatably supported on the frame, the screw and nut including means for feeding the head axially relative to the frame at a rate proportional to the difference in rotational speed between the screw and nut, power drive means on the frame for separately rotating the screw and nut at different speeds, and means to retract said tool radially at a rate proportional to the axial movement between said head and said frame.

4,944,640
VERTICAL FEED TYPE BURNISHING DRILL
Yasuhiro Suzuki, Nagoya; Tuguo Yoshikawa, Okazaki; Kazuhiro Shibata, Kazuhiro; Akio Fukui, Toyohashi, and Kiyotaka Shiga, Okazaki, all of Japan, assignors to Aisan kogyo Corporation, Obbu and Fuji Seiko Corporation, Toyota, both of, Japan
Filed Sep. 7, 1989, Ser. No. 404,354
Claims priority, application Japan, Jan. 10, 1989, 1-1490[U]
Int. Cl.[5] B23B *51/02*
U.S. Cl. 408—211 3 Claims



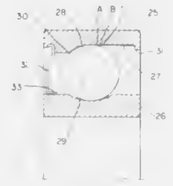
1. A vertical feed type burnishing drill comprising:
a shank;
a cylindrical drill body connected at one end with said shank, the opposite end of said drill body being formed with a reduced-diameter portion having its external diameter smaller than the maximum external diameter of said drill body;
first cutting edge means being formed to extend diametrically in said reduced-diameter portion, extending radially outward from the center of the forward end of said reduced diameter portion, and inclining axially in the rearward direction with a first cutting angle; and
second cutting edge means being formed substantially perpendicular to said first cutting edge means, extending radially outward from a position inward of the outermost peripheral wall of said first cutting edge means, and inclining axially in the forward direction with a second cutting angle.

4,944,641
CLUTCH ENGAGER SLEEVE
Andre Alves, 1429 Shore Pkwy., Brooklyn, N.Y. 11214
Filed Aug. 2, 1989, Ser. No. 392,723
Int. Cl.[5] B23B *51/12*
U.S. Cl. 408—239 A 7 Claims



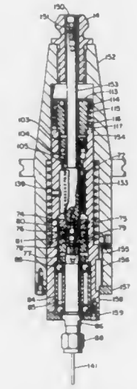
1. A clutch engager sleeve for a drill gun having a forward mode and a reverse mode, comprising:
a drive converter capable of receiving a reverse lock down screw;
a drill chuck having a cavity, said drill chuck being secured to said drive converter;
a clutch engager adjacent said drive converter, said clutch engager providing pressure for a forward mode and a reverse mode;
a shank extending from said clutch engager, said shank being capable of engagement with a screw gun; and,
a lock down collar for securing said shank and applying pressure to said clutch engager in the forward mode and the reverse mode.

4,944,642
BEARING ARRANGEMENT IN ROTARY MACHINES
Börje Andersson, Husvägen, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden
Filed Apr. 27, 1989, Ser. No. 344,221
Claims priority, application Sweden, May 11, 1988, 8801787
Int. Cl.[5] B23B *45/16*
U.S. Cl. 408—241 R 7 Claims



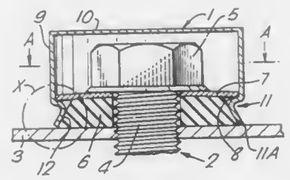
1. A hammer drill mechanism comprising an elongated shaft adapted to carry a tool at one end, means rotatably supporting the shaft in a housing, means mounting the shaft in the housing for limited reciprocatory movement, said mounting means comprising at least one ball bearing having an outer race ring securely fitted in the housing and an inner race ring securely fitted on the shaft, means defining confronting raceways for the balls, at least one of said raceways having a cylindrical portion formed as an extension of the raceway permitting back and forth axial movement of the balls relative to the raceways when the mechanism is functioning as a hammer drill.

4,944,643
TORQUE THRUST AND SURFACE SENSING DEVICE
Robert A. Lehmkuhl, 72 Carpenters Ridge, Cincinnati, Ohio 45241
Filed May 8, 1989, Ser. No. 348,772
Int. Cl.[5] B23B *49/00*
U.S. Cl. 409—80 12 Claims



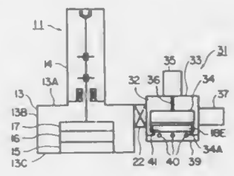
1. A tooling device for computer numerically controlled machining centers having a spindle, a control rod passing through said spindle, a sliding element, said control rod connected to said sliding element, means connected to said sliding element to control position, a spring loaded telescoping tool holder, an actuating rod in said tool holder adapted to engage said control rod, said actuating rod displacing said control rod to displace said sliding element and electronic coupling means to the axis feed rate of the computer numerical control for controlling spindle deceleration from rapid traverse to zero traverse, a means for producing a signal to transmit work surface location to the computer numerical control to feed the spindle to a programmed depth at a programmed feed rate, said telescoping tool holder having a presetable spring loaded thrust unit arranged to permit further telescoping of said tool holder if tool cutting thrust exceeds preset amount further displacing said actuating rod, before programmed depth is reached signalling said computer numerical control that excessive thrust has been reached.

4,944,644
SCREW FASTENER CAP
Alan Bell, Glasgow, Scotland, assignor to Steelpress (Supplies) Limited, Glasgow, Scotland
Filed Oct. 13, 1987, Ser. No. 106,689
Claims priority, application United Kingdom, Oct. 11, 1986, 8624427; Dec. 31, 1986, 8631093
Int. Cl.[5] F16B *19/00, 33/00, 43/00*
U.S. Cl. 411—372 13 Claims



1. A cover cap fitting to a screw fastener device which device comprises a fastener element including a threaded shank and a head part, first washer means located under the head part; and a resilient second-washer located below the first washer means; said cover cap comprising a cap member for location over said head part of the screw fastener element, said cap member including a closed top and an annular wall for location around said washer means, and indent means arranged around the periphery of said annular wall, said indent means being arranged for location below the first washer means to secure the cover cap in position on the screw fastener device, said annular wall including a peripheral skirt below said indent means for engagement with a peripheral portion of said resilient second-washer, the lower edge of said peripheral skirt being located above the level of the bottom edge of the uncompressed resilient second-washer, when the cap cover is fitted to a said screw fastener device.

4,944,645
METHOD AND APPARATUS FOR LOADING OBJECTS INTO EVACUATED TREATING CHAMBER
Akira Suzaki, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 850,226, Apr. 10, 1986, abandoned. This application Jan. 11, 1989, Ser. No. 296,277
Claims priority, application Japan, Apr. 16, 1985, 60-81080
Int. Cl.[5] H01L *21/30*
U.S. Cl. 414—217 9 Claims



1. Apparatus for loading an article to be treated into an evacuated treating casing, said article being depicted with a circuit pattern in said treating casing with an electron beam at a predetermined temperature, comprising:
a sealable chamber communicating with said evacuated treating casing;
a magazine disposed in said sealable chamber for supporting said article which has been preadjusted to a temperature substantially equal to said predetermined temperature;
temperature adjusting means disposed in said sealable chamber such that said temperature adjusting means can contact directly with a surface of a holder supporting said article for adjusting temperature of said article to said predetermined temperature in order to compensate for a temperature variation of said article caused by adiabatic expansion of gas exhausted from said sealable chamber;
means for loading said article whose temperature has been adjusted to said a predetermined temperature by said temperature adjusting means into said treating casing; and
a plurality of holders contained in said magazine, each holder supporting an article, and an elevator means for successively bringing one of said holders to a predetermined level.

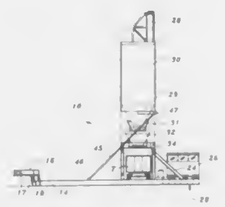
VOL 1116 ISS 5 JUL 31 1990 UMI

4,944,646

HIGHWAY TRANSPORTABLE MATERIAL STORAGE APPARATUS AND FRAME ASSEMBLY THEREFOR

M. Earl Edwards, Hixon, Tenn., and James G. May, Rising Fawn, Ga., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Filed Jan. 12, 1989, Ser. No. 296,491
Int. Cl.[5] B65G *69/00*
U.S. Cl. 414—332 11 Claims



1. A frame assembly for a highway transportable material storage apparatus or the like, and which is characterized by the ability to permit the frame assembly to be lowered into ground engaging contact so as to provide a foundation pad for the material storage apparatus during use thereof, said frame assembly comprising

an elongate main frame including a pair of parallel opposite side beams which define a longitudinal direction and front and rear end portions of said frame assembly,

a supporting gridwork mounted to said main frame at said rear end portion thereof and comprising a plurality of longitudinally spaced apart transverse beams extending transversely between said opposite side beams, a pair of longitudinal beams positioned parallel to said side beams and extending between a pair of said transverse beams and so that said side beams and said pair of transverse beams define a rectangular opening which is divided by said longitudinal beams into a central area and opposite outer areas, said gridwork further comprising at least one support beam extending transversely between said pair of longitudinal beams,

wheeled ground engaging carriage means including a pair of longitudinal arms, means pivotally mounting one end of each of said arms to respective ones of said longitudinal beams for pivotal movement about a common horizontal transverse axis, a transverse strut extending transversely between and interconnecting said arms, with said transverse strut being located generally below said one transverse support beam and at a medial location along the length of said longitudinal arms, an axle extending transversely between and mounted to the other end of each of said arms, a pair of road engaging wheel assemblies mounted to respective opposite ends of said axle and such that each wheel assembly is positioned within a respective one of said opposite outer areas of said rectangular opening, and air bag suspension means disposed between said transverse strut and said one transverse support beam, and

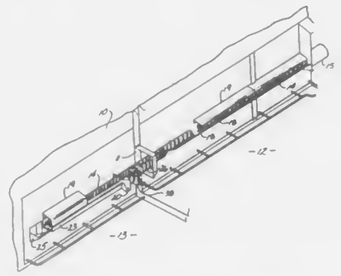
air control means for selectively supplying air to said air bag suspension means so as to pivot said carriage means about said transverse axis to a lower ground engaging position when said air bag suspension means is filled, and exhausting air from said air bag suspension means and so that said carriage means pivots about said transverse axis to a raised position with respect to said main frame and said main frame is lowered to engage and rest upon the ground.

4,944,647

BOTTLE CUTTING AND EMPTYING MACHINE

John C. Oleson, South Pasadena; Steven K. Teske, Moreno Valley; Richard F. Iturzaeta, Moorpark, and Erwin E. Langer, Rancho Cucamonga, all of Calif., assignors to Alpha Therapeutic Corporation, Los Angeles, Calif.

Filed Apr. 29, 1988, Ser. No. 187,818
Int. Cl.[5] B65B *3/04*
U.S. Cl. 414—412 25 Claims



1. A machine for cutting and emptying plastic bottles comprising:

a feed screw for conveying bottles through the machine;

a support screw parallel to the feed screw for supporting the bottles in an erect orientation and preventing collapse of the bottles;

a stationary knife with a fixed horizontal cutting edge above the screws and aligned with the erect bottles below the top for cutting caps off the bottles; and

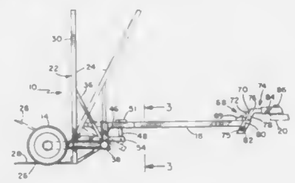
guide means along the feed screw downstream from the knife and downstream from the support screw for at least partly inverting the bottles while in the feed screw and emptying the contents of the bottles.

4,944,648

TRAILER ASSEMBLY

Willard J. Parr, 230 S. West St., Yerrington, Nev. 89477

Filed Jun. 8, 1989, Ser. No. 363,279
Int. Cl.[5] B60D *1/16*
U.S. Cl. 414—483 17 Claims



1. A trailer assembly for transporting a load behind a vehicle comprising:

a wheel assembly comprising spaced wheels and an axle connecting the wheels;

an elongate tow bar assembly projecting forwardly from the wheel assembly and including securing means at its forward end for securing said assembly to the towing point of a vehicle;

a load supporting frame pivotally secured to the wheel assembly for movement between a ground position in which the frame is subtantially vertical, a first towing position in which the frame is inclined forwardly of said vertical position, and a second, flat towing position in which the frame projects horizontally from the wheel assembly in the same direction as said tow bar assembly to form a flat bed trailer;

power means for moving said frame between said ground and said first positions; and

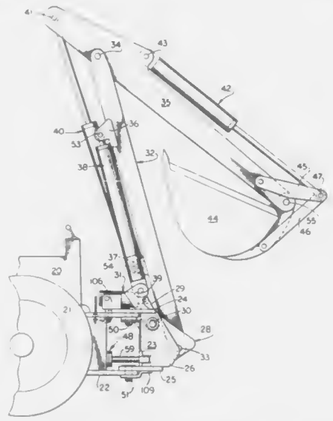
a first releasable latch for releasably latching said frame in said first towing position.

4,944,649

MECHANISM FOR COUPLING SUBORDINATE MACHINE TO TRACTOR

Cecil J. Stralow, 14672 Brookstone Dr., Poway, Calif. 92064

Continuation-in-part of Ser. No. 143,016, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 887,811, Jul. 21, 1986, Pat. No. 4,720,234. This application Apr. 19, 1989, Ser. No. 339,934
Int. Cl.[5] E02F *3/32*
U.S. Cl. 414—686 9 Claims



3. In a position control and transport mechamism for use in coupling a subordinate machine to a tractor, the combination of:

a swing tower,

means secured to the tractor for mounting the swing tower for movement in azimuth,

actuating means intercoupling said tractor and tower for swinging the tower,

a pair of spaced side members and a hub secured therebetween to form a rigid rocker distinct from the machine, said rocker having a pivot point in its midsection and spaced formations for coupling it to the machine,

pin means for swingably mounting the rocker for rotary movement in elevation on said tower between lift and working positions, said pin means projecting through said hub and being journaled on said tower so as to provide a single horizontal axis transverse to the longitudinal axis of the mechanism for the swinging movement of the rocker and machine,

rocker-actuating means mounted on the tower and intercoupling the tower and the rocker for driving the rocker in elevation, and

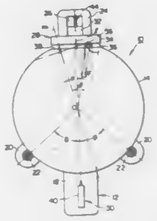
a hydraulic motor carried by said rocker and disposed between the spaced side members of said rocker, the motor including a power takeoff shaft directed toward the machine and transverse to said horizontal axis so that the power takeoff follows the angular movements of the machine in elevation and swings along with it in azimuth.

4,944,650

APPARATUS FOR DETECTING AND CENTERING WAFER

Tatsumi Matsumoto, Nagareyama, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1988, Ser. No. 263,726
Claims priority, application Japan, Nov. 2, 1987, 62-277896
Int. Cl.[5] B65J *1/00*
U.S. Cl. 414—757 5 Claims



1. An apparatus for detecting an orientation flat of a wafer and centering said wafer, comprising:

a hand base operable to be located in opposed relation to one of opposite faces of said wafer, said hand base having first and second ends and an axis along the hand base, and including a guide frame formed at the first end of the hand base and defining a first guide means extending along said axis;

a pair of second guide means mounted on said hand base for supporting said wafer located in opposed relation to said hand base, and second guide means being symmetrically disposed with respect to said axis of said hand base;

stopper means mounted on said hand base for cooperating with said pair of second guide means to center said wafer, said stopper means being accommodated in said first guide means for sliding movement therealong and along said axis of said hand base and engageable with said orientation flat of said wafer; and

urging means connected between said guide frame and said stopper means for urging said stopper means in a direction away from the second end of said hand base;

wherein said stopper means comprises a stopper member having a reference face adapted to be held in contact with the orientation flat of said wafer, and drive means connected to said stopper member for moving said stopper member toward and away from said wafer.

4,944,651

COMPONENT CARRYING APPARATUS AND METHOD

William D. Bogar, 80 Cambridge St., Burlington, Mass. 01803

Filed Jan. 29, 1985, Ser. No. 696,062
Int. Cl.[5] B23P *19/04*
U.S. Cl. 414—787 4 Claims

1. Apparatus for carrying components having leads comprising,

a base plate,

a matrix of supporting platforms on said base plate,

each of said platforms being dimensioned to support a component in a region between the component leads with the component leads above said base plate,

said base plate also carrying end support means for supporting cover means,

said cover means being releasably supported on said end support means at a height above said platforms corresponding substantially to the distance between a platform and the top of a component supported thereon,

whereby an assembly comprising said base plate, said matrix of platforms and said components supported thereon and said cover means may be inverted, said base plate re-

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moved from said cover means and said components rest on the inside of said cover means inverted with leads



upstanding in substantially the same relationship to one another while supported on said matrix of platforms prior to inversion.

4,944,652

PROCESS AND DEVICE FOR THE CONTROL OF TURBO COMPRESSORS

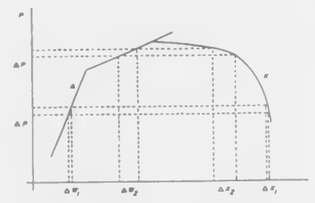
Wilfried Blotenberg, DinsLaken, Fed. Rep. of Germany, assignor to MAN Gutehoffnungshütte GmbH, Oberhausen, Fed. Rep. of Germany

Filed Feb. 17, 1989, Ser. No. 312,638

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805119

Int. Cl.[5] F04D *27/02*

U.S. Cl. 415—27 **7 Claims**



1. A method for controlling a turbocompressor to avoid turbocompressor surge comprising the steps of: determining a characteristic curve including non-linear characteristics of the turbocompressor based on two turbocompressor variables, such as discharge pressure and volumetric rate of flow; forming a blow-off line based on the same two turbocompressor variables, such as discharge pressure and volumetric rate of flow; during operation, continuously measuring one of the two variables as a controlled variable, such as volumetric rate of flow and continuously measuring the other variable as the command variable, such as discharge pressure, the measured command variable and measured controlled variable defining the position of the turbocompressor working point with respect to the characteristic curve and the blow-off curve; determining a set value of the controlled variable on the blow-off curve corresponding to the measured command variable; generating a controller output for operating a blow-off valve based on the difference between the measured value and the set value of the controlled variable; and, changing the gain of the turbocompressor control depending upon the nonlinear characteristics of the turbocompressor characteristic curve at the working point so that the influence of the gradient nonlinear characteristics of the turbocompressor characteristic curve on the overall gain on the control loop is substantially compensated.

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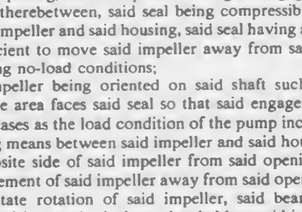
PLASTIC CENTRIFUGAL PUMP

Robert D. Wilkes, Little Rock, Ark., assignor to Jacuzzi, Inc., Little Rock, Ark.

Filed Mar. 24, 1988, Ser. No. 172,577

Int. Cl.[5] F04D *29/08*

U.S. Cl. 415—174.3 **7 Claims**



1. A centrifugal pump comprising:

a pump housing enclosing a rotatable impeller driven by a shaft of a motor, said housing having an opening therethrough for passage of said shaft, said impeller being axially movable on said shaft;

a seal interposed between said impeller and said opening, said seal being interposed adjacent an intake area of said impeller, said seal comprising a first part rotatable with said impeller and a second part fixed to said housing at said opening, said two parts defining an engagement surface therebetween, said seal being compressible between said impeller and said housing, said seal having a resiliency sufficient to move said impeller away from said opening during no-load conditions;

said impeller being oriented on said shaft such that said intake area faces said seal so that said engagement force increases as the load condition of the pump increases; and

bearing means between said impeller and said housing on an opposite side of said impeller from said opening to limit movement of said impeller away from said opening and to facilitate rotation of said impeller, said bearing means comprising a spherical member held on said impeller and a plate secured to said housing engageable by said spherical member upon sufficient movement of said impeller away from said opening.

4,944,654

SPLIT SCROLL FOR CENTRIFUGAL BLOWER

S.-T. Rudy Chou, Liverpool, and Mark R. Hogan, Manlius, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

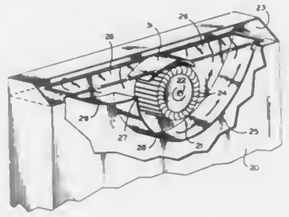
Filed May 15, 1989, Ser. No. 351,597

Int. Cl.[5] F04D *29/44*

U.S. Cl. 415—211.2 **11 Claims**

1. A centrifugal blower assembly comprising a centrifugal fan rotor having an axis of rotation, a circular cross section of a predetermined diameter and a plurality of vanes spaced about its circumference for blowing air centrifugally, said air exiting the fan rotor at an airflow tangent at a predetermined angle from the circumference of the rotor; and a scroll air guide to direct air exiting the rotor to an exit plane to one side of the rotor from whence the air enters an external environment, said scroll air guide including a first curved wall section having a radius from the fan rotor axis which increases monotonically in the fan rotation direction from a predetermined cutoff point closest to the rotor circumference and toward the exit plane, a second curved wall section extending from the cutoff point

towards the exit plane in the direction against rotation, said first and second curved wall sections being substantially mirror images of one another about a plane corresponding to the airflow tangent that passes through said cutoff point; and a



curved cover over substantially all of that part of the circumference of the fan rotor that is at said exit plane, the cover blocking any noise from the fan rotor from radiating directly out into the external environment.

4,944,655

PROPELLER BLADE OF A FIBER-REINFORCED PLASTIC MATERIAL

Herbert Merz, Munich, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Munich GmbH, Fed. Rep. of Germany

Filed May 8, 1989, Ser. No. 348,878

Claims priority, application Fed. Rep. of Germany, May 10, 1988, 3815906

Int. Cl.[5] B63H *1/00, 3/00, 5/00, 7/00*

U.S. Cl. 416—61 **20 Claims**





1. Propeller blade having a blade span and positioned at a propeller blade hub including metallic parts, the propeller blade comprising:

a fiber reinforced plastic airfoil section;

an outer shroud constructed from a thermally and electrically conductive, deformable material forming a leading edge of the plastic airfoil section;

cavity means formed by the plastic airfoil section and outer shroud, the cavity means separating the outer shroud and the plastic airfoil section of the blade and extending in a direction of the blade span of the propeller blade;

electrical deicing means within the cavity means and in thermal and electrical contact with the outer shroud, the electrical deicing means including a heating conductor and grounding means for electrically grounding the outer shroud;

lightning protection means comprising the outer shroud and the grounding means of the electrical deicing means as lightening conductors; and

connecting means for connecting the lightening protection means to the metallic parts of the propeller blade hub.

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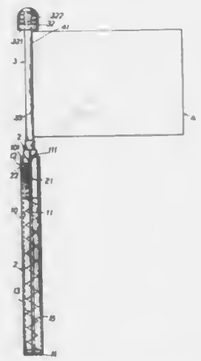
TELESCOPIC ROD MEANS HAVING ROTATABLY RETRACTABLE DISPLAY SHEET

Ou-Yang Feng, and Ou-Yang C. Ho, both of P.O. Box 10160, Taipei, Taiwan

Filed Jan. 27, 1989, Ser. No. 302,665

Int. Cl.[5] G09F *17/00*

U.S. Cl. 116—173 **7 Claims**



1. A telescopic rod means comprising:

a hollow handle having a longitudinal slit formed therein as cut from a top edge of the handle, a longitudinal cylindrical hole formed in the handle, an upper side window formed on an upper portion of the handle, a lower side window formed on a lower portion of the handle and vertically aligned with said upper side window, a bottom cap sealing a bottom hole of the handle, and a helical spring retained inside the bottom cap; an alignment coupler generally formed as a cylindrical sleeve slidably movable inside said longitudinal hole in the handle, said coupler having an inner through hole formed therein, a longitudinal extension formed on the coupler slidably engages the longitudinal slit of said handle, a spring hook plate which is secured to a lower portion of the coupler having a portion which protrudes radially outwardly from the corner for operatively engaging said upper side window or engaging said lower side window of said handle, said coupler further including a truncated tube section fixed to a middle portion of the inner through hole of said coupler having an upper inclined surface tapered upwardly and having a central through hole formed therein said coupler being resiliently biased toward one end of

said longitudinal hole of said handle by said helical spring; and

a reel pole having a top knob formd on its top end, a display sheet having an inner side edge of the sheet secured within a longitudinal slit formed in said pole, a lower portion of said reel pole having a lower inclined surface tapered downwardly and rotatably engageable with said upper inclined surface of said tube section of said coupler, said reel pole including a tail rod protruding downwardly from said lower inclined-surface portion of said pole and having an end hook portion formed on a bottom end of said tail rod, said tail rod extending through said central through hole of said tube section, said reel pole having its lower portion depressible rotated within the inner through hole in said coupler,

whereby initial depression of the top knob toward said handle rotates the lower inclined-surface portion of said pole into tangential engagement with said upper inclined surface of said tube section of said coupler, the pole and the display sheet are thereby rotated to align said display sheet with said longitudinal slit of said handle and further downward depression of the knob causing said spring hook plate to be disengaged from said upper side window and engage said lower side window for a quick retraction of said pole into said hollow handle so that said sheet can be wound around said pole in said handle by rotating said top knob; and upon a depression of said spring hook plate to disengage said hook plate from said lower side window, said helical spring in said handle will restore and extend said coupler and said pole coupled to said coupler upwardly until said spring hook plate engages said upper side window.

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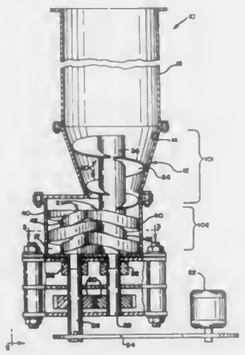
TWO-STAGE PUMPING APPARATUS WITH LOW SHEAR FIRST STAGE

John C. Mowli, 640 Sanders Ct., Gurnee, Ill. 60031

Filed Mar. 1, 1989, Ser. No. 317,460

Int. Cl.[5] F04B *25/14;* **F01C** *1/16;* **A22C** *11/02*

U.S. Cl. 417—203 **21 Claims**



1. A two-stage pumping apparatus comprising:

a pump housing through which material is pumped, said housing defining (1) a material infeed opening, (2) a first stage non-positive displacement pumping region communicating with said infeed opening, (3) a second stage positive displacement pumping region downstream of, and communicating with, said first stage region, and (4) at least one material discharge opening communicating with said second stage region;

a first stage auger means in the form of a single rotor in said first stage region rotatable about an axis for moving material along said first stage auger means and having non-positive displacement helical flight means configured around said first stage auger means axis for providing non-positive displacement pumping and a net positive suction head at the interface of said first and second stage regions;

a pair of second stage positive displacement auger means extending in said second stage region rotatable together about respective parallel axes for moving said material along said second stage auger means from said first stage region downstream to said material discharge opening, each of said second stage auger means having positive displacement helical flight means configured for engaging said material and for being respectively intermeshed with the positive displacement helical flight means of the other one of said second stage auger means for providing positive displacement pumping;

said first stage auger means single rotor being parallel to or coaxial with one of said second stage auger means; and

drive means for rotatably driving said pair of second stage auger means and said first stage auger means.

4,944,658

LUBRICATION PUMP WITH AN ADJUSTABLE METERING DEVICE

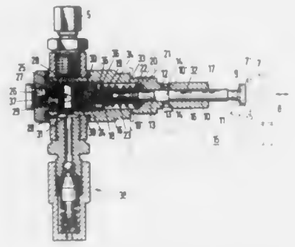
Willibald Büttner, Kirchenthumbach, Fed. Rep. of Germany, assignor to Baier & Köppel GmbH & Co., Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,357

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3818802

Int. Cl.[5] F04B *49/08*

U.S. Cl. 417—274 **9 Claims**



1. A lubrication pump with regulatable metering of an amount of lubricant delivered with each stroke of the pump, comprising:

a suction space having an adjustable volume;

a delivery piston actuatable in a stroking manner by the pump so as to aspirate the lubricant into the suction space;

means for feeding the lubricant from the suction space through an intermediate storage space to one of a lubricant outlet and a lubrication circulation circuit;

a longitudinally displaceable regulating member provided so as to limit the suction space in a delivery direction of the lubricant, regulation of a quantity of lubricant delivered upon each stroke occurring by longitudinal displacement of the regulating member;

a housing provided so as to surround the regulating member, the housing having lateral bores for passing the lubricant from the intermediate storage space to the suction space; and

a check valve provided in the delivery path of the lubricant, the check valve, when viewed in the delivery direction of the lubricant, being located following the suction space and upstream of the intermediate storage space, the check valve having an annularly shaped sealing surface arranged so as to surround the regulating member and rest at a sealing surface of the housing in a closed position.

4,944,659

IMPLANTABLE PIEZOELECTRIC PUMP SYSTEM

Jean-Marie Labbe; Eduard H. J. Damhuis, both of Bousval, Belgium, and Robert E. L. Cox, Le Pecq, France, assignors to KabiVitrum AB, Stockhol, Sweden

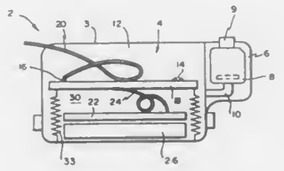
PCT No. PCT/EP88/00062, § 371 Date Nov. 22, 1988, § 102(e) Date Nov. 22, 1988, PCT Pub. No. WO88/05314, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 27, 1988, Ser. No. 282,131

Claims priority, application United Kingdom, Jan. 27, 1988, 8701731

Int. Cl.[5] A61M *1/00;* **F04B** *17/00*

U.S. Cl. 417—322 **9 Claims**



1. A dispensing device, comprising:

a housing forming a reservoir for fluid to be dispensed and a pump for dispensing the fluid located within the reservoir;

said pump including a pump chamber, a movable pump element and a piezoelectric element, said pump element being physically contiguous with and directly coupled to said piezoelectric element whereby changes in dimension of said piezoelectric element induce pumping movement in the movable pump element;

a source of electrical power connected to a control means for cyclically applying electrical voltage to said piezoelectric element for inducing periodic changes in dimension in said piezoelectric element;

a first one-way valve member bing directly connected between the fluid reservoir and the pump chamber for permitting flow of a fluid from said reservoir into said pump chamber upon movememt of the pump element and a second one-way valve member connected between the pump chamber and an outlet for dispensing said fluid from said pump chamber; and

means for maintaining the pressure of the fluid in the reservoir as the fluid is being dispensed, said pressure maintaining means including an expandable member having one end connected to said pump which closes a space defined by said expandable member.

4,944,660

EMBEDDED NUT COMPRESSOR WHEEL

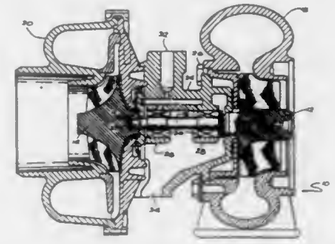
Fidel M. Joco, Long Beach, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Sep. 14, 1987, Ser. No. 96,566

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—407 **16 Claims**

1. A compressor wheel for rotation about an axis of rotation including a hub defining said axis of rotation, said hub including a pair of ends, a radially projecting portion between said ends, said radially projecting portion defining a transverse plane between said ends, and a pair of radially tapering surfaces extending between said radially projecting portion toward a corresponding ones of said ends, aerodynamic blade means carried on the surface extending between said radially projecting portion and one end of the hub, the other surface terminating in a boss portion extending to the other end of said hub, said boss defining a blind bore therein extending from said other end of the hub toward said transverse plane defined by the radially projecting portion but terminating in an end surface located between said other end of the hub and said transverse plane, and a retaining member carried in said boss portion between said other end of the hub and the end surface of the blind bore for engagement with a supporting shaft, said retaining member defining an aperture coaxial with said blind bore for engagement by said shaft.



4,944,661

ELECTRO-MAGNET ACTUATED FUEL PISTON PUMP

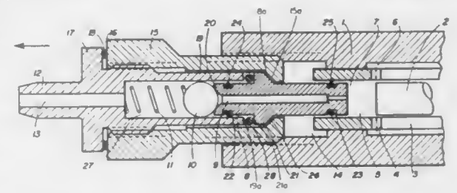
Wolfgang Mayer, Esslingen, Fed. Rep. of Germany, assignor to J. Eberspächer, Esslingen, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,682

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1987, 3707764

Int. Cl.[5] F02M *59/46;* **F04B** *17/04*

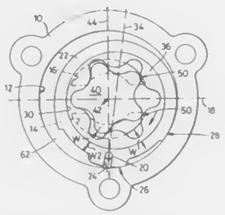
U.S. Cl. 417—501 **8 Claims**



1. An electromagnetic actuated fuel piston pump for heating equipment which operates on liquid fuel, comprising: a housing defining a cylinder space and defining a valve space; an electromagnetically reciprocating piston movable in said cylinder space; a seating member arranged within said housing in alignment with said cylinder space, said seating member having a delivery bore therethrough extending from a first end adjacent said cylinder space to a second end in said valve space, said valve space and said seating member including means for restricting movement of said seating member in the direction of said piston; a spring-loaded pressure valve engageable with a valve seat of said seating member; a pressure pipe joint forming an extension of said housing, said pressure pipe joint including an annular neck extending into said housing surrounding said spring-loaded pressure valve; a first sealing element for sealing in between a surface defining said cylinder space and said seating member adjacent said seating member first end; a second sealing element for sealing between said annular neck and said seating member adjacent said seating member second end, and elastic means positioned between a shoulder of said seating member and a sleeve edge of said annular neck of for reducing noise generated during pumping.

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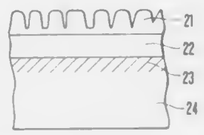
4,944,662
REVERSIBLE GEROTER PUMP WITH PIVOTING CARRIER UNIDIRECTIONAL FLOW
Robin E. Child, Leamington Spa, Great Britain, assignor to Concentric Pumps Limited, Birmingham, Great Britain
Filed Feb. 16, 1989, Ser. No. 311,937
Claims priority, application United Kingdom, Feb. 26, 1988, 8804582
Int. Cl.[5] F04C *2/10, 15/02*
U.S. Cl. 418—32 **5 Claims**



1. A reversible unidirectional gerotor pump comprising:
(a) an inner male toothed rotor;
(b) a female lobed annulus;
(c) a reversing ring or carrier;
(d) a pump body;
the rotor being located in the female lobed annulus,
wherein the annulus meshes with the rotor, the annulus rotates about an axis which is eccentrically related to the rotor axis, and the annulus is located in the reversing ring or carrier,
the reversing ring or carrier being located in the pump body, and
the axis of the annulus being moveable between a pair of operative positions in one of which liquid is pumped in a pre-determined direction during rotation of the rotor and annulus in one direction and in the second position at which liquid is pumped in the same direction during rotation of the rotor and annulus in the opposite direction,
the reversing ring or carrier being shaped externally relative to the body of the pump so that it can pivot about a pivot means within the body of the pump to translate the annulus from one operative position to the other, to thereby move from one side of the body to the other side of the body,
the carrier being free to move in a direction perpendicular to a line joining the axis of the annulus in the two positions,
the pivot means comprising an elongated slot cooperating with a pivot pin, and
the annulus being externally cylindrical and journalled in an internally cylindrical bore in the carrier.

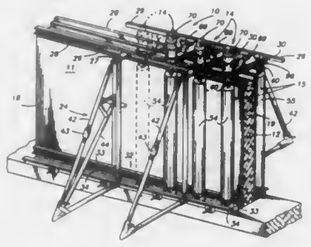
4,944,663
ROTARY COMPRESSOR HAVING OXIDIZING AND NITRIDING SURFACE TREATMENT
Tadashi Iizuka, Ashikaga; Kazushi Fukuda, Tochigi; Shin Ishihara, Kasukabe; Yasuo Kamitsuma, Mito, and Yusaku Nakagawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 19, 1989, Ser. No. 340,289
Int. Cl.[5] F04C *18/356*
U.S. Cl. 418—178 **15 Claims**

1. A compressor including a cylinder, a roller disposed therein in an eccentric relationship thereto, a crankshaft for rotating said roller in said cylinder and a vane disposed in sliding engagement with said roller, at least one of said cylinder, said roller, said crankshaft and said vane comprising a member which is made from a ferrous substantially non-porous material and which has a surface disposed in relative sliding engagement with an associated member, said surface comprising a first porous layer of oxidized iron backed up by a second



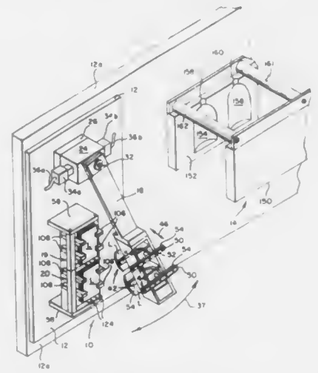
layer of oxidized and nitrided iron disposed inwardly of said first layer.

4,944,664
CONCRETE WALL FORM APPARATUS
Cecil F. Allred, 1307 Oak, Othello, Wash. 99344
Filed Sep. 19, 1989, Ser. No. 409,389
Int. Cl.[5] E04G *11/34, 17/00*
U.S. Cl. 425—63 **26 Claims**



1. A concrete wall form apparatus for supporting sheet forms to prevent buckling or bulging of the forms while concrete is being poured between the sheet forms in a progressive formation of an elongated concrete wall along a predetermined path including a corner, the sheet forms having opposed outwardly facing surfaces and inwardly facing surfaces spaced apart to determine a finished wall thickness, comprising:
a pair of upright form engaging rollers, one for the outwardly facing surface of each form;
a carriage frame mounting the rollers for rotation against the outwardly facing surfaces in opposed relation across the wall thickness;
guide tracks mountable to the sheet forms and operatively engaging the form engaging rollers to guide the rollers along the predetermined path and along the outwardly facing surfaces of the sheet forms;
drive gears on the carriage frame in meshing engagement across the frame and interconnected with the rollers so that rotation of any one of the drive gears will cause corresponding counter rotation of the rollers against the outer surfaces of the sheet forms, thereby influencing movement of the apparatus along the predetermined path;
a drive motor on the carriage and connected to the drive gears for selectively rotating the drive gears; and
a clutch interposed between at least one of said rollers and the drive gears, selectively operable as the apparatus encounters a corner along the predetermined path to disengage the one roller from the drive gears and thereby enable the one roller to freewheel while the remaining roller continues to rotate and move about the corner responsive to continued operation of the drive gears and drive motor.

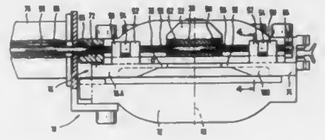
4,944,665
ROTARY ARM LABEL TRANSFER APPARATUS IN COMBINATION WITH MOLDING APPARATUS
Siegfried C. Hasl, 80 Liberty Corner, Warren, N.J. 07060, and Charles J. Lisnet, Westport, Conn., assignors to Siegfried C. Hasl, Warren, N.J.
Continuation of Ser. No. 594,885, Mar. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 544,986, Oct. 24, 1983, abandoned. This application Nov. 29, 1989, Ser. No. 443,014
Int. Cl.[5] B29C *49/24*
U.S. Cl. 425—116 **14 Claims**



1. An apparatus comprising, in combination:
a stationary base,
a radial arm mounted to the base, means for pivoting said arm about an axis which is fixed with respect to the base, said arm being pivotally movable about said fixed pivot axis between a first radial position and a second radial position, said two positions defining a plane,
a molding apparatus mounted on the base and comprising opposed mould cavities which move, relative to each other, in a direction substantially perpendicular to said plane against each other to form a closed mould cavity and away from each other to open the mould cavity,
and a label transfer means mounted on said arm and movable therewith for picking up a label at said first position, for retaining said label during transport to said second position and for depositing the label into the mould cavity at said second position, said label transfer means comprising at least one label transfer head, mounting means for mounting said label transfer head on the arm for reciprocal movement in a direction substantially perpendicular to said plane, such that the label transfer head moves substantially perpendicular to said plane at the first position to pick up a label and substantially perpendicular to said plane at the mould cavity to deposit the label into said mould cavity.

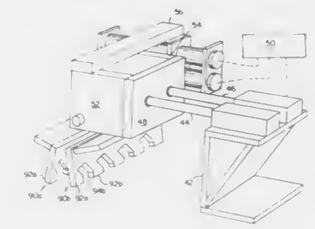
4,944,666
INJECTOR HEAD FOR PRODUCING TREAD STRIPS
Rainer Hilke, Starnberg, and Gerhard Schmaderer, Cham, both of Fed. Rep. of Germany, assignors to A-Z Foremen- und Maschinenbau GmbH, Munich, Fed. Rep. of Germany
Filed Aug. 18, 1989, Ser. No. 395,938
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1988, 8810470[U]
Int. Cl.[5] B29C *47/16*
U.S. Cl. 425—131.1 **16 Claims**

1. In an injector head for producing extruded tread strips for tires, including a thickness-adjusting slide means and two side plates to form an essentially extruded trapezoidal tread strip profile, the improvement comprising:
means for mounting said side plates in such a way that said side plates are adjustable in a lateral direction, at right angles to a direction of extrusion, and are supported against said thickness-adjusting slide means in a direction



parallel to said direction of extrusion, with said thickness-adjusting slide means, on a short side of said trapezoid, extending over the entire tread strip width; and
an end member that is mounted on said injector head in such a way that it can swivel, one of said thickness-adjusting slide means and said two side parts being mounted on said end member.

4,944,667
APPARATUS FOR REMOVING FLASHING FROM BOTTLES
Thomas F. Greene, 2 Harrison Eaton La., Amesbury, Mass. 01913
Filed May 15, 1989, Ser. No. 351,950
Int. Cl.[5] B29C *49/72*
U.S. Cl. 425—317 **7 Claims**



1. An apparatus for removing flashing from bottles which comprises:
a clamping assembly having opposed jaws including means to reciprocate the jaws between an open position and a closed position;
means to close the jaws to grippingly engage the flashing;
means to rotate the jaws while in gripping engagement with the flashing to remove the flashing while the flashing is clamped;
means to open the jaws to release the flashing therefrom;
a housing assembly having opposed walls, one wall having recesses therein in register with similar recesses within the other wall, the recesses defining nests when in a closed position;
means to move the housing assembly into alignment with the clamping assembly; and
means to move the walls of the housing assembly to a closed position to nest the bottles therein, and to maintain the walls in a closed position while the flashing is being removed and the nests stabilizing the bottle while the flashing is removed therefrom.

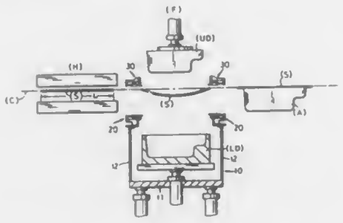
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4,944,668

DEVICE FOR GRIPPING AND PULLING SOFTENED PLASTIC SHEET AT FRONT AND REAR EDGES TO BE MOLDINGLY FORMED

Kazuo Asano; Toshihiso Takai, and Mitsuke Takito, all of Nagoya, Japan, assignors to Kabushiki Kaisha Asano Kenkyusho, Aichi, Japan

Filed Jan. 26, 1989, Ser. No. 301,771
Claims priority, application Japan, Feb. 24, 1988, 63-41669
Int. Cl.[5] B29C *51/04*
U.S. Cl. 425—397 **6 Claims**



1. A device for gripping a length of thermally softened and inevitably dangled plastic sheet, said sheet brought in position in a forming machine by feeding means while holding concaved front and rear edges of said plastic sheet to be pulled for straightening, said device comprising; at least two pairs of lower and upper gripping members arranged below and above front and rear edges of said plastic sheet; means for vertically moving each pair of said gripping members towards each other for gripping said plastic sheet and pulling apart from each other for releasing said sheet, each of said pair of gripping members comprising;

a body portion,

a gripping tip provided at one end of said body portion,

a longitudinally extended pull lever and a longitudinally extended pivot lever pivotally connected with each other,

a sleeve pivotally mounted on said body portion at an opposite end thereof and fitted with said pivot lever at said opposite end portion and slidingly movable therein,

a pair of parallel link arms pivotally mounted at said one end on said pull lever and said opposite end on said body portion, and

spring means mounted on said pivot lever as to urge the pull lever to protrude at a free end portion beyond said gripping tip and

each of said pair of gripping members being arranged symmetrical with respect to each other so that opposite gripping tips are normally separated to form an opening therebetween through which said pull levers normally separated are protruded and so that when said means for vertically moving moves said pair of gripping members towards each other said pull levers are firstly engaged to grip an edge of the plastic sheet therebetween at the free end portion and concurrently retracted against a force of said spring means for pulling to straighten the concaved edge and then the gripping tips are engaged to further grip the edge of the plastic sheet.

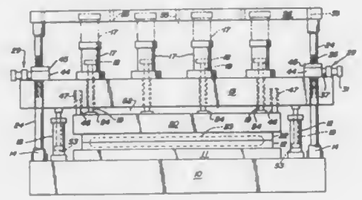
4,944,669

HIGH TONNAGE RIM PRESS

Paul Zakich, Akron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1989, Ser. No. 318,574
Int. Cl.[5] B29C *45/03*
U.S. Cl. 425—589 **16 Claims**

1. A RIM press comprising a pair of mold plates movable with respect to each other to a clamping position, each plate providing one of a pair of mold parts cooperable to interfit and comprise a mold having a sealed reaction injection mold cavity therebetween when said plates are clamped toward each other at said clamping position, a carrier associated with one of said plates and movable with respect thereto to a locking position adjacent to said one plate at said clamping position, means operative for blocking movement of said carrier from said locking position force exerting means carried by said carrier for forcing said one plate toward said other plate at said clamping position comprising a plurality of connectors extensible independently of each other in the direction from said carrier toward said one plate for pressing thereagainst at a plurality of separate locations within the area of said mold when the latter is clamped between said plates, and means independent of said force exerting means for moving said mold plates with respect to each other to said clamping position.

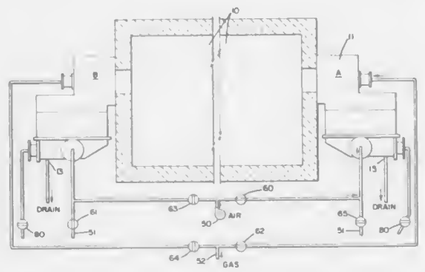


4,944,670

SELF-CLEANING BURNER

James E. Watson, Southgate, Mich., assignor to North American Manufacturing Co., Cleveland, Ohio

Filed Dec. 15, 1989, Ser. No. 451,784
Int. Cl.[5] F23D *11/44*
U.S. Cl. 431—166 **7 Claims**



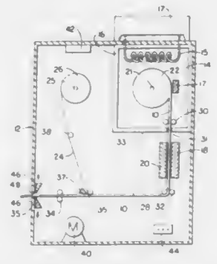
1. In a burner having a regenerative bed, which regenerative bed is prone to the solidification of contaminants from the material being heated within the furnace due to the existence within the regenerative bed of bed media having a temperature lower than the solidifying temperature of such contaminant material, the improvement comprising means to heat the bed media in the regenerative bed to above the solidifying temperature of the contaminants such that the contaminants are unsolidified and means to drain off the unsolidified contaminants from the regenerative bed.

4,944,671

METHOD AND APPARATUS FOR STORING AND DISPENSING ENVIRONMENTALLY SENSITIVE MATERIALS

Marion G. Vohland; Edwin M. Odom, and Herbert H. Harris, Jr., all of Albuquerque, N. Mex., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 25, 1988, Ser. No. 223,506
Int. Cl.[5] F27B *9/25*
U.S. Cl. 432—8 **11 Claims**



1. Apparatus for storing and dispensing an environmentally sensitive material, said apparatus comprising:

a housing;

a storage chamber in said housing;

means for controlling the environmental conditions within said storage chamber;

at least one conditioning chamber in said housing;

conditioning means in said conditioning chamber;

means for advancing said material along a predetermined path from said storage chamber through said conditioning chamber;

said means for controlling the environmental conditions in said storage chamber including means for maintaining said storage chamber at a temperature to retard chemical cross-linking of said composite material; said conditioning means including means in said conditioning chamber for heating said composite material.

first dispensing means positioned in said path for dispensing said material from said storage chamber into said conditioning chamber; and

second dispensing means positioned in said path for dispensing said material from said conditioning chamber to the outside of said housing.

4,944,672

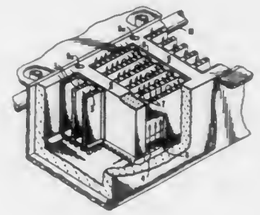
METHOD FOR RENOVATING RING CHAMBER FURNACES

Hogne Linga, and Carlo Eliassen, both of Årdalstangen, Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Feb. 8, 1989, Ser. No. 310,833
Claims priority, application Norway, Feb. 8, 1988, 880532
Int. Cl.[5] F27B *5/02, 5/16*
U.S. Cl. 432—3 **6 Claims**

1. A method of renovating a ring section furnace, said furnace having a plurality of sections each of which alterntes between a heating cycle and an inactive period, and said furnace normally operating with a number of said sections in said heating cycle, said sections in said heating cycle being substantially grouped to define a plurality of firing zones separated by the remaining ones of said sections which are in said inactive period, said sections defining each said firing zone beginning and ending their respective heating cycle at staggered intervals whereby said firing zones remain discrete and progress through said plurality of sections, said method comprising the steps of:

altering the duration of said firing cycle for less than all of said firing zones, whereby the number of said sections in said inactive period which border at least one of said firing zones increases at one end of said at least one of said firing zones; and



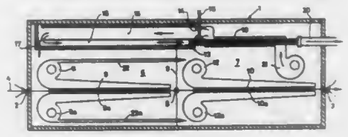
performing renovation work on at least one of said sections in said inactive period which borders said at least one of said firing zones at said one end thereof.

4,944,673

DRIER FOR A WEB OF MATERIAL

Thomas G. M. Jacobs, Boxmeer, and Clemens J. M. De Vroome, Beugen, both of Netherlands, assignors to Stork Contiweb B.V., Netherlands

Filed Jan. 27, 1989, Ser. No. 303,485
Claims priority, application Netherlands, Jan. 29, 1988, 8800226
Int. Cl.[5] F27B *9/28*
U.S. Cl. 432—59 **9 Claims**



1. A drier for a web, said drier comprising:

an essentially closed housing, said housing including an inlet through which the web enters said housing and an outlet through which the web exits said housing;

a heating section for heating the web, said heating section being located within said housing;

an evaporating section for evaporating material from the web after the web is heated by said heating section, said evaporating section being located within said housing;

a partition for separating said evaporating section from said heating section so that substantially no evaporation occurs within said heating section, said partition including an opening for transferring air directly from said heating section to said evaporating section to maintain the temperature within said evaporating section at a first temperature; and

a heating appliance, including:

(a) an incinerator for incinerating the evaporated material and for generating hot combustion gases;

(b) an intake for transferring the evaporated material from said evaporating section to said incinerator; and

(c) a discharge opening for discharging at least a portion of the hot combustion gases to said heating section to maintain the temperature within said heating section at a second temperature which is greater than the first temperature.

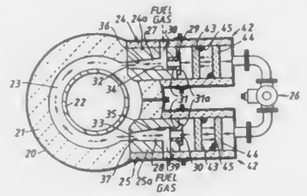
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,674

APPARATUS FOR HEATING A VESSEL

Philip J. Wedge, Solihull, and David Wharmby, Birmingham, both of England, assignors to British Gas plc, London, England

Filed Nov. 13, 1989, Ser. No. 434,782
Int. Cl.[5] F27B *14/00*
U.S. Cl. 432—158 14 Claims



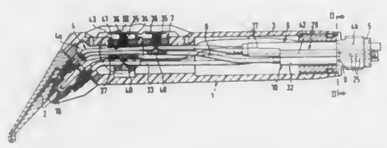
1. Apparatus for heating a vessel comprising an enclosure to surround said vessel, a reversing burner system having at least first and second burners for operating alternately as firing burners or as flues for hot combustion product gases, said enclosure being spaced from said vessel so that a flow path exists between the enclosure and vessel, said flow path being for receiving the hot combustion product gases discharged into the flow path from said firing burners, said flow path being adjacent to the exterior of the vessel and extending completely around said vessel for allowing circulation and re-circulation of the hot combustion product gases, and the first and second burners being in positions for causing the hot combustion product gases from the first burner to flow in one direction along the flow path when the second burner is operating as a said flue in one cycle of operation of the burners and for causing the hot combustion product gases from the second burner to flow in the opposite direction along the flow path when the first burner is operating as a said flue in the alternate cycle of operation.

4,944,675

DENTAL SPRAY HANDPIECE

Gerd Löhn, Biberach/Rissegg, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an det Riss, Fed. Rep. of Germany

Filed Sep. 27, 1988, Ser. No. 249,891
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734831
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—32 22 Claims



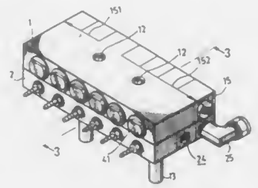
1. Dental spray handpiece comprising a gripping sleeve having a media inlet connection at one end and a media discharge outlet; a media conduit in said sleeve leading from the media inlet connections to the media discharge outlet and discharging outwardly therefrom; electrical heating means for heating media and a shut-off valve which is movable into an open position by finger-actuation, said shut-off valve being associated with said media conduit and a branch line branching off from said media conduit downstream of said shut-off valve, said branch line leading to a pressure-responsive electric switch for closing a previously interrupted electrical current circuit which is connected with said heating means responsive to a pressure force.

4,944,676

REPLACEABLE FLUID FLOW CONTROL DEVICE FOR DENTAL UNITS

Chien-Hsiung Hu, No. 3-1, Alley 8, Lane 906, Minsheng E. Rd., Taipei, Taiwan

Filed Feb. 10, 1989, Ser. No. 308,611
Int. Cl.[5] A61C *1/02*
U.S. Cl. 433—98 5 Claims



1. A replaceable fluid flow control means for dental units, comprising a first means and a second means which are engaged together by at least two screws;

said first means having a plurality of cylindrical bores which extend lengthwise through lateral sides of said first means; each of said bores having first, second, and third portions of different radii; said first portion receiving a first spring, a valve control sealing ring and a first cap; said third portion for receiving a second spring and a second cap; and said second portion for receiving a valve body disposed between said first and second springs; a number of said third portions of adjacent said bores being intercommunicated to one another by a respective fluid-supply channel from each end side of said first means;

a first supply hole being provided on lower surface of said first means communicating with said fluid-supply channel; a first air-input hole communicating with said first portion of each said bore; a first air-output hole proximate to said first portion and a first access hole proximate to said third portion being provided thereof communicating with said second portion of each said bore;

a second supply hole, air-input hole, air-output hole and access hole being provided on an upper surface of said second means, and respectively corresponding to said first supply hole, first air-input hole, first air-output hole and first access hole for each said bore; a sealing ring being provided on an uppermost end of all holes on said second means to prevent leakage between said first and second means;

a connector being provided on each end side of said second means to communicate with said second supply hole for fluid input; all of said second air-output holes being intercommunicated by a second channel extending lengthwise all the way through said end sides of said second means;

a plurality of input ports being provided on a lateral side of said second means to communicate with said respective second air-input holes for compressed air input to actuate said valve body; a plurality of output ports being provided on a second lateral side of said second means to communicate with said respective second access holes for fluid output; and

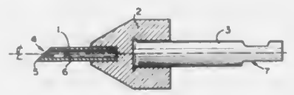
said compressed air causing said valve control sealing ring to actuate said valve body; a movement of said valve body making said first channel communicate with said first access hole to output fluid supplied from said respective connector.

4,944,677

INTRAOSSEUS DENTAL ANESTHESIA APPARATUS AND METHOD

Raymond J. Alexandre, 18, Rue Lamartine, Fort de France 97200 Martinique, France, assignor to Raymond Joseph Alexandre, Martinique, France and Richard P. Masel, Newton, N.J.

Filed Jun. 29, 1987, Ser. No. 67,153
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—165 12 Claims



1. An apparatus for enabling the intraosseous injection of dental anesthesia comprising:

means for drilling a hole in a jawbone comprising a hollow needle of from about 25 to 35 gauge having a drilling end with a substantially smooth and uniform cylindrical surface and a beveled tip and attached end, said bevelled tip being formed by a single planar cut through said hollow needle at an angle of 15 to 75 degrees to the longitudinal axis of said hollow needle;

a connecting flange to which the fastened end of said drilling means is permanently fastened; and

a mandrel lying on a common axis with said drilling means, having a free end adapted for engagement with a dental handpiece and a fastened end which is permanently or removably fastened to said connecting flange, projecting in a direction opposite to said drilling means.

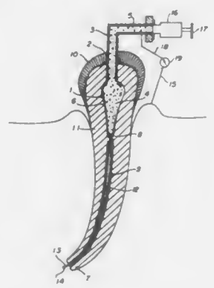
11. A mandrel comprising a rod of 10 to 25 mm length with a diameter of about 1.5 to 2.5 mm having at one end thereof an annular mandrel collar threadably engaged with a cuplike hub having affixed thereto a disposable 25 to 35 gauge dental needle about 4 to 12 mm in length, said needle being hollow and having a bevelled tip formed by a single planar cut through said needle at an angle of 15 to 75 degrees to the longitudinal axis of the needle.

4,944,678

PROCESS AND APPARATUS FOR DEVITALIZATION OF A TOOTH

Alain Villette, St. Pierre des Echanbrognes, France, assignor to Bristol-Myers-Squibb Company, New York, N.Y.

Filed Feb. 8, 1988, Ser. No. 153,122
Int. Cl.[5] A61C *5/02*
U.S. Cl. 433—224 18 Claims



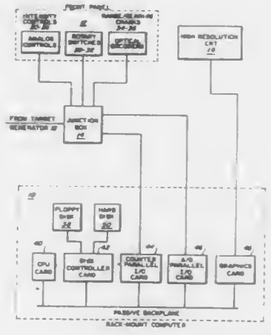
1. An apparatus for devitalization of a tooth by obduration comprising a cannula which is adapted to be inserted into an orifice in the crown section of a tooth such that said cannula is removably retained within said orifice and enters and terminates at the pulp cavity of said tooth and an injector means, said injector means being adapted to inject an inert paste into said cavity and a means to terminate the pressure on the inert paste whenever a predetermined pressure is reached during injection and a means to monitor the level of paste inside the tooth during the injection process, said injector means being adapted to inject an inert paste into a tooth such that said paste compresses the pulp tissue of said tooth against the dentin wall and eliminates tissue fluids in the pulp.

4,944,679

GENERIC RADAR DISPLAY

John H. Allen, and Robert S. Reif, both of Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

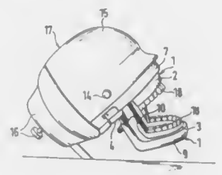
Filed Oct. 2, 1989, Ser. No. 416,201
Int. Cl.[5] G09B *9/00*; G01S *7/40*
U.S. Cl. 434—2 9 Claims



1. Radar simulation apparatus comprising a microprocessor system having an input subsystem for receiving the output stream of data from a target generator, and having an output subsystem capable of displaying a simulated radar return image, and being adapted to interact with said target generator and process its output, including timing means responsive to said stream from said target generator for initiating said processing a preselected period after an interruption of said data that exceeds a predetermined rate for packets of said data, assembly means responsive to target coordinate data for converting it to a predetermined coordinate system that is compatible with said output subsystem and assembling the converted target data in digital storage by age such that each target has at least one digital bit that correlates to a position on the predetermined coordinate system including an index that correlates to the time relative to other targets that the target data was received by the system, decay means responsive to the relative age of the stored coordinates and including a preselected color table having a relationship to said index, for rotating the color table in coordination with said rate such that the color related to said index changes from one color to another and will progressively appear less bright on said output subsystem each time said table is rotated, and presentation means responsive to said stored coordinates and said decay means for providing a signal to said output subsystem that denotes the coordinates of the targets in storage and their relative intensities by age, said microprocessor means comprising a general purpose computer adapted by software, and wherein said timing means, said assembly means, said decay means and said presentation means are adjustable by software modification for use of said system with a plurality of target generators.

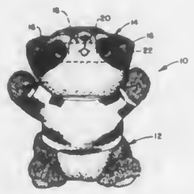
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4,944,680
ARTIFICIAL DENTURE-SKULL FOR DENTAL PURPOSES
Hans-Walter Lang, Leutkirch, and Alfred Straka, Isny, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany
Filed Apr. 13, 1989, Ser. No. 337,397
Claims priority, application Fed. Rep. of Germany, May 10, 1988, 3816006
Int. Cl.[5] A61C *19/00*
U.S. Cl. 434—264 4 Claims



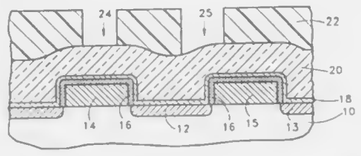
1. Artificial denture-skull for dental teaching and practice, including an upper jaw model and a lower jaw model; jaw linkage means connecting said lower jaw model for pivotal movement with said upper jaw model, said jaw linkages being arranged at both sides of the jaw models; and latching means for fixing the denture-skull in an open position being arranged on said upper jaw model, said latching means extending downwardly and being engageable with said lower jaw model, said latching means including a mounting block fixed on said upper jaw model and latching struts each extending from said mounting blocks, said mounting block positioned adjacent said jaw linkage means; wherein said mounting block is positioned on said upper jaw model within the plane of said upper jaw model, and said latching struts extend from said mounting block in a plane parallel to and adjacent to the plane of said jaw linkages so as to maintain an unobstructed rear view of said upper and lower jaw models.

4,944,681
PLUSH TOY WITH EAR SYSTEM FOR DISPLAYING NORMAL AND ABNORMAL EARDRUMS
Paul A. Burgio, 4279 Brigadoon, Shoreview, Minn. 55126, and C. Randall Nelms, Jr., 15 Ridge Rd., N. Oaks, St. Paul, Minn. 55127
Filed Jan. 11, 1989, Ser. No. 296,082
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—270 1 Claim



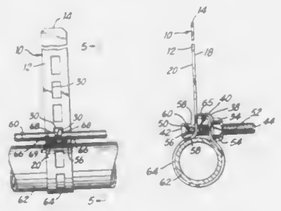
1. A simulator unit for use in learning about ear conditions, comprising:
an animal-like plush toy having a head portion, said head portion having ear openings defined therein;
an elongate tube member in said head portion having an inner space defined therein;
a first opening in one end of said elongate tube member which is adapted to receive an otoscope, said first opening being substantially aligned with and in communication with one of said ear openings; a second opening in the other end of said elongate tube member, said second opening being substantially aligned with and in communication with another of said ear openings;
means for positioning a photographic slide within the inner space defined in said elongate tube member; and
means on an opposite side of said positioning means from said first opening for providing illumination said illumination means comprising membrane means positioned between said positioning means and said second opening; whereby images of normal or diseased ears may be viewed through an otoscope by placing an appropriate slide in said positioning means and by inserting the otoscope into said first opening.

4,944,682
METHOD OF FORMING BORDERLESS CONTACTS
John E. Cronin; Susan F. Cronin, both of Georgia; Carter W. Kaanta, Colchester; Charles W. Koburger, III, Essex; Stephen E. Luce, Cambridge, all of Vt., and Dale J. Pearson, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 254,633, Oct. 7, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 453,368
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 10 Claims



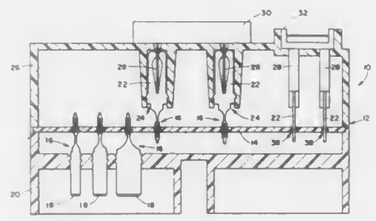
1. In the process of forming semiconductor components on a substrate material, and wherein there are at least two exposed regions having an overlying passivating material which is subject to etching by a given etchant, the improvement comprising; selectively depositing in at least a portion of a selected one but less than all of said exposed regions a material that resists said etchant, and thereafter exposing all of the regions to said etchant, whereby only said regions without said etch resisting material will be etched.

4,944,683
GROUNDING CLAMP
Ignazio E. Leonardo, Union, N.J., assignor to A K Stamping Co., Inc., Mountainside, N.J.
Filed Nov. 13, 1989, Ser. No. 435,337
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—96 18 Claims



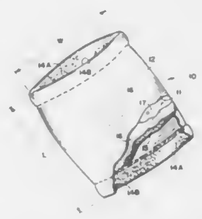
1. A grounding clamp for connecting and clamping a selected ground conductor to a grounding member, the selected ground conductor having a particular size selected from a range of sizes capable of being accommodated in the grounding clamp, the grounding clamp comprising:
an elongate strap of electrically conductive material having opposite first and second faces, a length extending longitudinally between opposite first and second ends and including an aperture passing through the strap adjacent the second end of the strap, the aperture having a peripheral configuration along the perimeter thereof, and a plurality of slots passing through the strap and spaced longitudinally along the length of the strap between the aperture and the first end of the strap, each of the slots having a peripheral configuration along the perimeter thereof;
a stud having axially opposite first and second ends and including a head adjacent the first end, and fastener means adjacent the second end, the relative dimensions of the aperture and the fastener means being such that fastener means may be passed through the aperture, and the relative dimensions of each slot and the head being such that the head may be passed through any selected one of the slots; and
a passage extending transversely into the head and having a size great enough to receive the selected ground conductor;
whereby, upon looping at least a segment of the strap around the grounding member and bringing the aperture into juxtaposition with the selected one of the slots, portions of the first face of the strap will confront one another adjacent the looped segment of the strap, and the stud will pass through the aperture and through the selected one of the slots, with the fastener means and the head placed adjacent to and extending axially beyond corresponding portions of the second face of the strap, thereby enabling insertion of the ground conductor into the passage with the ground conductor juxtaposed with the corresponding portion of the second face of the strap and extending transversely beyond the perimeter of the selected one slot so that operation of the fastener means to draw the stud in the direction from the second end toward the first end will tend to close the looped segment of the strap around the grounding member and clamp the ground conductor against the corresponding portion of the second face of the strap in direct electrical contact with the strap.

4,944,684
ELECTRICAL JUNCTION BOX AND METHOD FOR ITS MANUFACTURE
Joseph D. Leibowitz, Culver City, Calif., assignor to TRW, Inc., Cleveland, Ohio
Filed Jun. 28, 1988, Ser. No. 212,966
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 15 Claims



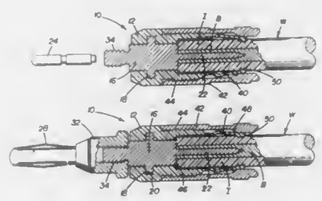
1. An electrical junction box, comprising:
a housing;
a multilayer circuit board supported by the interior of the housing and having a plurality of layers of circuit traces of varying thicknesses for conducting signals of equally varying current levels, thereby minimizing the amount of metal required to fabricate the junction box; and
an array of electrical connectors supported by the exterior of the housing, each connector making electrical contact with one or more of the circuit traces in the circuit board;
wherein the layers of circuit traces are arranged in the multilayer circuit board according to the thicknesses of the traces, the layers of circuit traces with the greater thicknesses being the outermost layers of the circuit board and the layers of circuit traces with the lesser thicknesses being the innermost layers, thereby enhancing heat dissipation from the circuit board.

4,944,685
CONNECTOR PROTECTOR
Peter G. Schulte, 700 NE. Court, Ft. Lauderdale, Fla. 33334
Filed Nov. 2, 1989, Ser. No. 430,635
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—135 6 Claims



1. A protector for a cable connector when said connector is disconnected from its mating connector comprising:
a sleeve formed from a flexible fabric having first and second open ends thereof;
padding material covering inside surfaces of said sleeve;
means along the inner edges of said first and second open ends for temporarily closing said open ends wherein said sleeve is to be disposed over a cable having said connector attached at a distal end thereof and said first and second sleeve ends closed around said cable when said connector is attached to a second connector, and, when said connector is disconnected from said second connector, said sleeve encloses said disconnected connector, and said first sleeve end is closed, and said second sleeve end is closed around said cable.

4,944,686
SOLDERLESS ELECTRICAL CONNECTOR
Jonathan Gertz, Lexington, Ky., assignor to Audio Authority Corporation, Lexington, Ky.
Filed May 1, 1989, Ser. No. 345,698
Int. Cl.[5] H01R *11/32*
U.S. Cl. 439—175 14 Claims



1. A solderless connector for connecting an insulated electrical conductor to an electrical apparatus, comprising:
a body member;

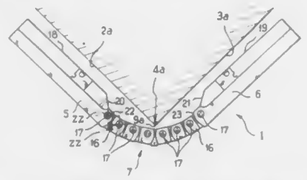
means for connecting said body member to the electrical conductor;
means mounted to said body member for making electrical contact with said electrical conductor;
terminal means mounted to said body member for making electrical contact with said electrical apparatus;
means on said terminal means for mounting an alternative terminal means; and
a weakened zone on said terminal means that is frangible to allow the selective breaking off of said terminal means from said body member and the attachment of an alternative terminal means to said means for mounting.

4,944,687

DEFORMABLE ELECTRICAL CONNECTION SYSTEM

Régis Mailly, Belleneuve; Jean Pierre Thierry, Couternon, and Serge Verdenne, Marcilly S/Tille, all of France, assignors to La Telemecanique Electrique, France

Filed Jan. 30, 1989, Ser. No. 303,894
Claims priority, application France, Feb. 3, 1988, 88 01236
Int. Cl.[5] H01R *35/00;* **H02G** *15/08*
U.S. Cl. 439—207 **23 Claims**



1. A system for connecting, along a selectable curved path, relatively fixed spaced apart ends of two electrical energy distribution conduits and of respective conductors disposed longitudinally in each conduit, the system comprising an elongated protective casing and a plurality of plastically bendable elongated conductors disposed in mutual insulating relation inside the casing and extending longitudinally side by side in a layer having a width dimension transverse to the length of the casing, the casing and layer of conductors being jointly bendable into a selected curved path about a series of pivot axes substantially parallel to the width dimension of the layer within a certain limited range of curvature within which said bending occurs by plastic deformation of the bendable conductors, and wherein the casing comprises two end elements, each end element being adapted to be connected to an end of a respective one of the two conduits, and a central part connecting the two end elements, the central part comprising a series of links pivotally hinged to each other, the hinges between adjacent links defining said series of pivot axes, the bendable conductors extending successively through the links.

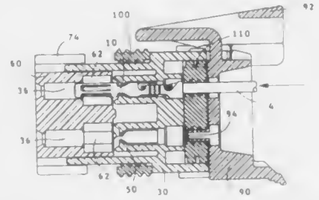
4,944,688

PROGRAMMABLE SEALED CONNECTOR

Robert G. Lundergan, Kernersville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 25, 1989, Ser. No. 411,933
Int. Cl.[5] H01R *00/00*
U.S. Cl. 439—275 **20 Claims**

1. A sealed electrical connector for use with a plurality of wires, comprising:
an insulative housing having a plurality of cavities located in an array of terminal positions;
a plurality of terminals located in a least some of the cavities, each terminal including means for termination to a wire;
elastomeric sealing means for establishing a seal around each wire, the sealing means having a plurality of holes located at each terminal position, each hole being aligned with a cavity; and
a plate positioned adjacent the sealing means, the plate initially having a plurality of selectively removable projections in a pattern corresponding to the array of terminal positions, projections corresponding to the locations of terminals terminated to wires extending from the terminals through holes in the elastomeric sealing means having been removed, remaining projections extending through holes in the elastomeric sealing means, aligned with unoccupied terminal positions, to establish a seal at each terminal position in the array.

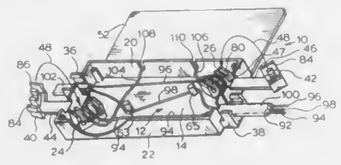


4,944,689

PANEL WIRING CONNECTOR

Owen R. Carr, Vancouver, Canada, assignor to Univ. of British Columbia, Vancouver, Canada

Filed Jul. 13, 1989, Ser. No. 379,209
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—417 **6 Claims**



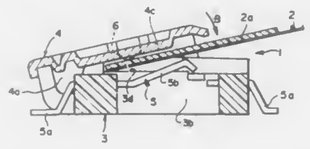
1. A molded junction box for connecting a heating panel to an electric power line, said box comprising an open ended cavity defined by a bottom wall and side walls, a first power line opening through a first one of said side walls, a second power line opening through a second one of said side walls, a first and a second wire clamping means associated with said first and said second power line openings, a pair of wire connectors in said cavity, one of said pair of wire connectors located adjacent said first wall and the other of said pair of wire connectors adjacent said second wall, each of said wire connectors opening toward an open end of said cavity, a cooperating wire connector closure means for each of said wire connectors, each said cooperating connector closure means having a strap integral with and connecting said closure means to its adjacent of said side walls, each said strap positioning its respective said closure means with respect to its respective said wire connector so that each said closure means may be folded into said cavity and into closing relationship with its respective wire connector, a box cover means having snap fastener means positioned to cooperate with mating snap fastener means on said box to lock said cover in a closing position on said box, a mounting flange projecting from one side of said box, a cooperating mounting flange projecting from said box cover means, said flange and said cooperating flange being positioned in spaced parallel relationship when said box cover means is mounted in closing relationship on said box to snugly receive a heating panel to which said box is to be connected between said mounting flange and said cooperating mounting flange.

4,944,690

ELECTRICAL CONNECTOR FOR FLAT ELECTRICAL CABLES

Akira Imai, Kanagawa, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 16, 1988, Ser. No. 272,178
Claims priority, application Japan, Jan. 14, 1988, 63-3778
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—492 **13 Claims**



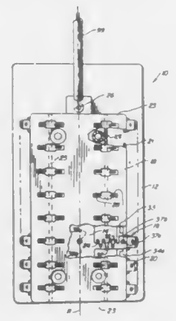
1. An electrical connector for electrically connecting electrical conductors of a flat cable to a circuit board, the connector comprising:
a dielectric housing having electrical contact members secured therein at spaced intervals corresponding to the spacing of the electrical conductors of the flat cable, said contact members having spring contact sections being within said housing for making electrical connection to the conductors of the flat cable and leg sections extending outwardly from said housing for electrical connection to the conductors of the circuit board;
a cover member pivotally and slidably mounted on said housing for pivoting said cover member between an open position to allow insertion of the flat cable and a closed position to be held in that position by sliding said cover member; and
securing members on said cover member extending toward said housing for clampingly engaging the inserted flat cable in the closed position of said cover member.

4,944,691

HOLDER FOR A REMOVABLE CIRCUIT ELEMENT

David R. Marach, Marengo, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 232,322, Aug. 15, 1988, Pat. No. 4,872,262. This application Jul. 19, 1989, Ser. No. 382,096
Int. Cl.[5] H01R *9/28*
U.S. Cl. 439—516 **29 Claims**



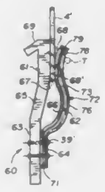
1. A holder for a removable circuit element having two end terminals, comprising:
(a) an insulated base;
(b) an electrical bus member carried by said base, said bus member comprising a plurality of lateral branches joined to a common trunk, each branch having at its free end one integral terminal for receiving one end terminal of a removable circuit element; and
(c) a plurality of terminal members carried by said base and aligned to said lateral branches, each terminal member having at one end an electrical terminal for an electrical connection thereto and having at an opposite end one integral terminal for receiving one end terminal of a removable circuit element, said one integral terminal being spaced apart from said one integral terminal on an aligned said lateral branch so as to receive a removable circuit element therebetween, said terminal members and said bus member having been formed from the same blank of metal.

4,944,692

ELECTRICAL PLUG-IN CONNECTORS

Edward F. Allina, 605 Capri Blvd., Treasure Island, Fla. 33706

Filed Feb. 24, 1989, Ser. No. 315,559
Int. Cl.[5] H01R *33/945*
U.S. Cl. 439—517 **8 Claims**



1. Electrical plug-in connector apparatus, comprising
adjacent first and second electrically conductive jaws oriented generally parallel to one another, and fastened together near one end of each, and biased together near their opposite or free ends;
the first jaw being relatively rigid and having a substantially flat face near its free end adjacent the free end of the second jaw,
the second jaw being S-curved, relatively flexible and having a convex portion near its free end with a substantially flat face adjacent the flat face of the first jaw;
a similarly curved biasing spring fastened to the second jaw and extending along but spaced from the side of the second jaw most remote from the first jaw to the free end of the second jaw, where the free end of the biasing spring becomes contiguous with the second jaw and is thereby adapted to bias its flat face toward the other flat face;
the jaws being so adapted to receive a substantially straight conductive blade in contact therewith between such free ends.

4,944,693

LATCH ARM FOR ELECTRICAL CONNECTOR HOUSING

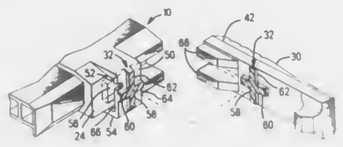
Dean A. Puerner, Maricopa, Ariz., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 387,203, Jul. 28, 1989, abandoned. This application Nov. 7, 1989, Ser. No. 433,412
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—358 **11 Claims**

1. A hinge joint for joining a deflectable section integrally to a plastic article, comprising a bight section spaced from a surface portion of said plastic article and joined integrally thereto by a pair of leg sections coextending outwardly from said surface portion and spaced apart substantially in parallel to define a relief area therebetween, and a rib section joining said

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bight section to said deflectable section and having at least a first rib component joined to said bight section substantially parallel to said leg sections and midway therebetween and extending from proximate a first edge of said bight section to proximate a second edge, whereby upon deflection of said



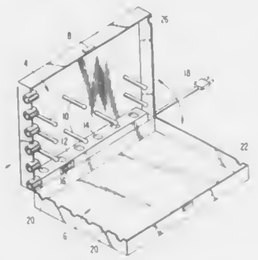
deflectable section relative to said article, said bight section is flexible by being adapted to be locally elastically deformed by said first rib component relatively toward said article surface portion at one of said first and second edge portions and relatively away therefrom at the other of said first and second edge portions.

4,944,694

ELECTRIC CORD TAKE-UP DEVICE

Kevin L. Dorn, 4816 South 29th St., Arlington, Va. 22206

Filed Mar. 28, 1989, Ser. No. 329,820
Int. Cl.[5] H01R *13/72*
U.S. Cl. 439—501 **13 Claims**



1. An electric wire take up device, comprising:
- a closable container having a top and a bottom;
- pegs fixed to the bottom of the container, the pegs being arranged in predetermined geometric patterns;
- cut-outs in at least one side of the container; and
- an electrical outlet strip in the container, the outlet having a plurality of plugs; and
- wire securing means associated with each cutout;
- wherein an electric wire introduced into the container through one of the cut-outs can be wrapped about one or more pegs in a unique pattern and its end plugged into the outlet.

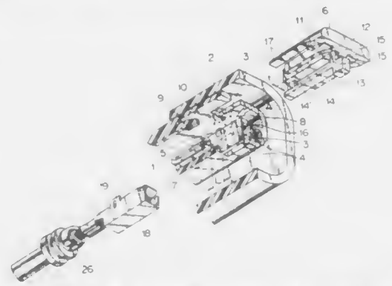
4,944,695

CONNECTOR TERMINAL RETAINING CONSTRUCTION

Masanori Tsuji; Yoshihiro Murakami, and Makoto Yamanashi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,101
Claims priority, application Japan, Dec. 9, 1988, 63-310115
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **4 Claims**

1. A terminal connector retaining construction comprising:
- a connector housing,
- a plural number of terminal compartments provided in said connector housing,
- a resilient arm and a locking step provided in inner walls of each of said compartment for retaining an inserted terminal, said resilient arm and said locking step being adapted respectively to be pressed against one side of said terminal and to be engaged with the other side of said terminal,
- a spacer for pressing sid resilient arm against said terminal, said spacer being adapted to be inserted into said connector housing in the direction opposite to a terminal insertion direction,
- a provisional locking projection and a final locking projection provided on one of the outer wall of said terminal compartment and on said spacer, and
- engagement portions formed on one of the other member of said wall portion and of said spacer for engaging with said provisional locking projection and said final locking projection respectively.

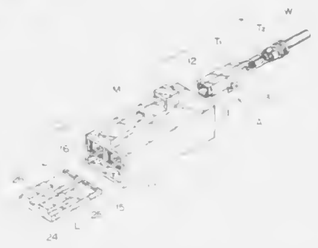


4,944,696

ELECTRICAL CONNECTOR APPARATUS

Tadahiro Sueyoshi; Takayuki Yamamoto, and Masanori Tsuji, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 17, 1989, Ser. No. 437,725
Claims priority, application Japan, Dec. 19, 1988, 63-318467
Int. Cl.[5] H01R *00/00*
U.S. Cl. 439—595 **6 Claims**



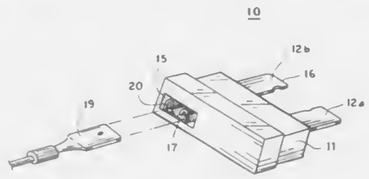
1. An electrical connector apparatus having a terminal accommodation chamber means in an insulated housing equipped with a latching arm means extending in front of an opening and having a terminal latching part, said latching arm means is engaged with a latching part of a terminal when said terminal is inserted in a proper position of said chamber means so as to subsequently prevent inadvertent disengagement of said terminal, characterized in that said electrical connector apparatus includes a deflectable terminal latching plate integrally extending backward from the front of the opening of said terminal accommodation chamber means and being formed with said latching arm means which is extending integrally forward from a free edge part in a back portion of said terminal latching plate, said terminal latching plate also having a latching groove, said terminal having notches apart from said latching part thereof, wherein said notches can be engaged with said latching groove in said proper position.

4,944,697

AUTOMOTIVE FUSE CONNECTOR

Douglas M. Dorman, 3559 Franklin Rd., Roanoke, Va. 24014

Filed Nov. 8, 1989, Ser. No. 433,125
Int. Cl.[5] H01R *13/68*
U.S. Cl. 439—621 **2 Claims**



1. An automotive fuse that allows connection of external electrical devices, including:
- a hollow housing shell having three apertures, two of said apertures being adjacent on one side of said housing shell and the third of said apertures being on the other side of said housing shell opposite one of said other two apertures;
- one conventional flat conductive contact disposed in said housing shell and through a first one of said apertures;
- a second contact having one conventional flat end and a secondary electrical connector disposed on the other end, said second contact disposed in said housing shell with said one conventional flat end disposed through a second of said apertures adjacent said first one of said apertures, said other end being disposed in said housing shell adjacent said third aperture to allow access for a corresponding electrical connector;
- wherein said secondary electrical connector is a female-type connector which is adapted to receive therein a male-type electrical connector blade; and
- wherein a current limiter is connected between said first and second contacts in said housing shell, said current limiter breaking the connection between said first and second contacts upon an overload of current.

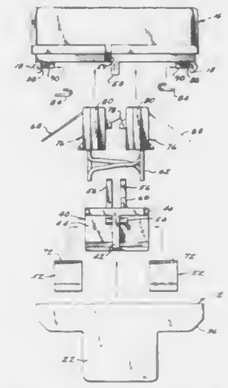
4,944,698

DUAL MODULAR JACK ADAPTER

John A. Siemon, Watertown, Conn., and Richard Early, San Diego, Calif., assignors to The Siemon Company, Watertown, Conn.

Filed Dec. 27, 1988, Ser. No. 290,033
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—676 **23 Claims**

1. A dual modular test adapter which is adapted to electrically and mechanically connect onto two or more parallel columns of terminals extending from a communications terminal block, comprising:
- an insulative housing having an interior and an exterior, said housing having at least two parallel and adjacent rows of apertures, said apertures communicating between said housing exterior and said housing interior, each of said apertures leading to a cavity in said housing interior;
- a plurality of connector clip means, one each of said clip means being disposed in one each of said cavities, said connector clip means being adapted to effect electrical and mechanical connection with a terminal from a terminal block;
- a pair of modular jack means, said pair of modular jack means being retained within said housing and communicating between said housing interior and said housing exterior, said modular jack means having contact pins therein;
- a plurality of conductor means in said housing, one each of said conductor means being electrically connected between one each of said connector clip means and one each of said contact pins of said modular jack means; and



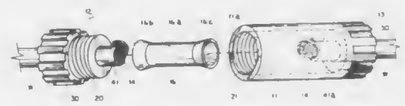
- insulating connector clip carrier means, said carrier means being disposed within said housing interior, said carrier means having a plurality of cells which in conjunction with said housing define said cavities for each of said connector clip means.

4,944,699

SPLICING CONNECTOR

David C. Velke, Sr., 3305 Aidle Rd., Catharpin, Va. 22018; George P. Marsden, 7621 Mary Cassatt Dr., Potomac, Md. 20854, and Burton C. Leffingwell, 242 Meadows La., N.E., Leesburg, Va. 22075

Filed Jun. 28, 1989, Ser. No. 372,657
Int. Cl.[5] H01R *4/30*
U.S. Cl. 439—784 **2 Claims**



1. A connector means for the joining of the free ends of separate wire cables, comprising:
- a connector housing having an outer and inner surface,
- said connector housing having two opposite ends,
- threaded fastener means on one said connector housing end,
- said connector housing being substantially hollow throughout its length and defining an interior chamber therein,
- a lateral end cap removably attachable to said connector housing by said threaded fastener means,
- said connector housing having a fixed housing end cap at its end opposite said end having said threaded fastener means,
- said removable lateral end cap and said fixed housing end cap each having a passageway therethrough for receiving the free end of the wire cable,
- said removable lateral end cap and said fixed housing end cap each having a cylindrical portion disposed thereon with said removable lateral end cap cylindrical portion insertable within said connector housing interior,

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a separate conductive connector member insertable within said connector housing interior,

said conductive connector member having a cylindrical shape and provided with conically shaped flanges at either end thereof, and

said cylindrical portions respectively insertable within said conically shaped flanges at either end of said conductive connector member, whereby

upon insertion of wire cable ends through said lateral end cap and connector housing end cap passageways and movement of said lateral end cap toward said connector housing, the wire cable ends are captively secured between said conductive connector member flanges and said respective cylindrical portions.

4,944,700

ELECTRICAL CONNECTING CLAMP

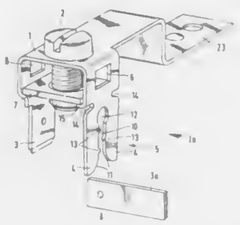
Hans Simon, Bruchausener Strasse, 5463 Unkel/Rhein, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,015

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1988, 3808197

Int. Cl.[5] H01R *4/34*

U.S. Cl. 439—801 **5 Claims**



1. Electrical connecting clamp, for connecting an electrical conductor to an electrical device such as an electrical connection box or connecting bar for connecting the conductor of a connecting cable to an electrical device, e.g. an electric oven, the connecting clamp having a substantially U-shaped clamping body comprising two parallel arms and a midsection extending therebetween which the conductor is connected by means of a clamping screw on and through said midsection, one said arm of said clamping body ending in at least one insertable blade, characterized in that on the other said arm at least one resilient contact element is formed which differs from said insertable blade, said one resilient contact element including an opening extending in a direction of insertion of an insertable blade, said opening dividing said other arm into two resilient walls each provided with a bevelled lead-in portion, and the opening having a widened part at its end opposite to said lead-in portion to improve resilience.

4,944,701

COAXIAL PLUG-TYPE INNER CONDUCTOR CONNECTION

Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham, Fed. Rep. of Germany

Filed Mar. 6, 1989, Ser. No. 319,655

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1988, 3808632

Int. Cl.[5] H01R *13/17*

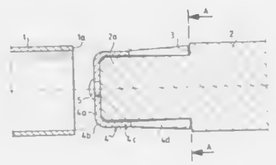
U.S. Cl. 439—827 **15 Claims**

1. A coaxial plug-type inner conductor connection, comprising:

a socket having an inner diameter and defining an end face;

a plug defining a plug axis and having a forward portion of reduced diameter so as to define an annular shoulder providing a stop for said end face of said socket; and

a contact cap surrounding said forward portion of said plug, said contact cap having a base attached to said forward portion at an end face opposing said contact cap and a wall suitably shaped so as to impart a radial resiliency thereto, said wall having at its distal end from said base a greatest outer diameter which exceeds said inner diameter



of said socket and being provided with a plurality of axial slots so as to be subdivided into resilient spring plates, with each individual spring plate being arched transverse to its longitudinal axis so as to define a longitudinal fold which extends parallel to said plug axis.

4,944,702

HOUSING RUDDER FOR ELECTRIC TROLLING MOTOR

Alan Cain, Fort Worth, Tex., assignor to Shark-fin Products, Inc., Arlington, Tex.

Filed Apr. 17, 1989, Ser. No. 339,225

Int. Cl.[5] B63H *21/26*

U.S. Cl. 440—51 **5 Claims**



1. In an electric trolling motor of a type having a drive unit and a cylindrical control shaft, a housing device enclosing the drive unit comprising in combination:

(a) a vertical plane of symmetry,

(b) an upper section having top and bottom extremities and opposed sidewalls of large area, the control shaft extending upward from the upper section, the upper section having a leading edge which extends forward of the control shaft and inclines downward at an angle relative to the axis of the control shaft, the upper section having a trailing edge located rearward of the control shaft and extending downward, the distance from the lowermost portion of the trailing edge of the upper section to the lowermost portion of the leading edge of the upper section being substantially greater than the diameter of the control shaft,

(c) a middle section emergent from the bottom extremity of said upper section and closely embracing the drive unit, and

(d) a lower section whose thickness is generally smaller than the thickness of said middle section, and contoured as a guard vane downwardly directed from the underside of said middle section.

4,944,703

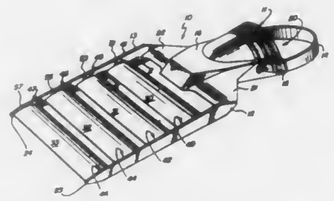
SWIM FIN HAVING MULTIPLE ARTICULATING TRANSVERSE HYDROFOIL BLADES

Arthur R. Mosier, 10922 Oak St., No. 216, Los Alamitos, Calif. 90720

Filed Apr. 11, 1988, Ser. No. 180,155

Int. Cl.[5] A63C *31/10*

U.S. Cl. 441—62 **6 Claims**



1. For use in aiding a swimmer or diver, a swim fin comprising:

foot attachment means;

a pair of elongated support beams secured to and extending from said foot attachment means;

a plurality of hydrofoil blades each defining a length, a leading edge, a trailing edge and opposed hydrofoil curved surfaces therebetween wherein said hydrofoil blades each define lengths substantially greater than the distance from their leading edges and trailing edges;

pivotal attachment means coupling said hydrofoil blades to said support beams in a pivotal attachment in which said hydrofoil blades are pivotal through a limited angular range, said pivotal attachment means including spring means operative upon each of said hydrofoil blades biasing said hydrofoil blades to a neutral position in alignment with said elongated beam supports and including pairs of pins extending from said hydrofoil blades defining an axis of rotation therebetween and wherein said axis of rotation is closer to said leading edge than said trailing edge; and

said hydrofoil blades each defining a center of force and wherein said pivotal attachment means are coupled to each of said hydrofoil blades at points offset from said center of force.

4,944,704

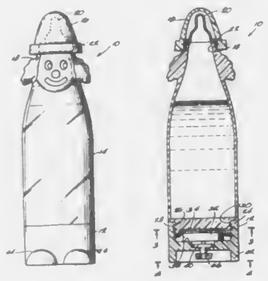
TOY-SHAPED MUSICAL NURSER

Carol Grace, 32709 S. Lakeshore Dr., Burlington, Wis. 53105

Filed Dec. 29, 1988, Ser. No. 291,530

Int. Cl.[5] A63H *3/28*; A61J *9/00*

U.S. Cl. 446—74 **6 Claims**



1. A musical nurser comprising:

a bottle portion having an open end adapted to receive thereon a nipple and having a closed end opposite said open end;

a base portion detachably mountable on said closed end of said bottle portion, said base portion including a bottom wall having an aperture therethrough;

a cap portion detachably mountable over said nipple at said open end of said bottle portion;

a music source comprising a wind-up music box fully enclosed within said base portion;

user-actuable means comprising a key for actuating said music source, said key extending through said aperture and including an upper flange of greater dimension than said aperture for preventing complete withdrawal of said key through said bottom wall; and

said bottle portion, said base portion and said cap portion each being shaped so as to form, when joined to each other, a unitary structure having a predetermined toy-like shape.

4,944,705

TILT DAMPER

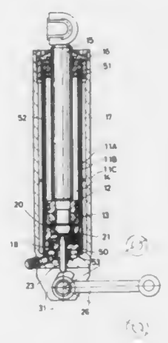
Mitsuhiro Kashima, and Nobumichi Hanawa, both of Kani, Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1988, Ser. No. 256,898

Claims priority, application Japan, Oct. 26, 1987, 62-270027; Nov. 12, 1987, 62-286222; Nov. 12, 1987, 62-286224; Feb. 10, 1988, 63-29667; Apr. 13, 1988, 63-49795[U]; Jun. 7, 1988, 63-75432[U]; Jul. 28, 1988, 63-100001[U]

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—61 **31 Claims**



1. A tilt damper for a propelling device attached to a boat comprising a cylinder means containing a supply of oil, a piston means dividing said cylinder means into a first oil chamber and a second oil chamber and movable in said cylinder means to extend and retract relative to said cylinder means, a gas chamber means containing a pressurized gas, first valve means operable to provide communication between said gas chamber means and said first oil chamber, second valve means operable to provide communication between said first and second oil chamber means, and an operating member movable between a plurality of operable positions for opening said first and second valve means, one of said operable positions being a first operable position which opens said first valve means to provide communication between said gas chamber means and said first oil chamber while said second valve means is closed such that said pressurized gas provides cushioning of said first oil chamber and thereby cushioning of extension of said piston means while precluding retraction of said piston means, another of said operable positions being a second operable position which opens both said first and second valve means to provide communication between said first and second oil chambers and

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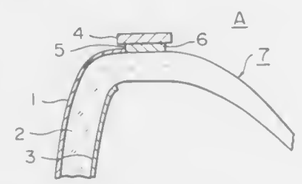
between said gas chamber means and said first and second oil chambers such that the pressurized gas extends said piston means, said operating member having a third operable position in which both said first and second valve means are closed to thereby preclude extension and retraction of said piston means.

4,944,706

CATHODE RAY TUBE AND METHOD OF MAKING THE SAME

Toshio Tojo, Chiba, Japan, assignor to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Ltd., Chiba, both of, Japan

Continuation of Ser. No. 155,061, Feb. 11, 1988, abandoned.
This application Jul. 11, 1989, Ser. No. 378,501
Claims priority, application Japan, Mar. 20, 1987, 62-63862
Int. Cl.[5] H01J 9/00
U.S. Cl. 445—8 6 Claims



1. A cathode ray tube comprising:
a bulb body;
a fluorescent screen formed on an inner surface of a panel of said bulb body;
a conductive coating formed on a surface of said panel which is opposite to and substantially parallel to said fluorescent screen;
a metal reinforcement arranged on a front-side wall portion of said bulb body;
an insulating member arranged between said metal reinforcement and said bulb body; and
a conductive material impregnated into said insulating material to establish conduction between said metal reinforcement and said conductive coating.

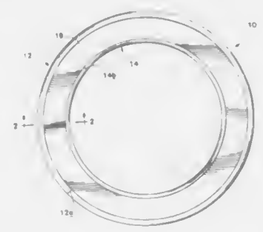
4,944,707

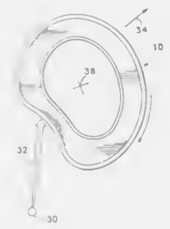
RING-LIKE FLYING TOY

David E. Silverglate, Santa Cruz, Calif., assignor to OddzOn Products, Inc, Campbell, Calif.

Continuation-in-part of Ser. No. 324,986, Mar. 15, 1989, abandoned, which is a continuation of Ser. No. 11,145, Feb. 5, 1987, abandoned. This application Aug. 31, 1989, Ser. No. 400,997
Int. Cl.[5] A63H 27/00
U.S. Cl. 446—48 18 Claims

1. A ring-like flying toy comprising means defining outer and inner, ring-like, generally concentric, deformable boundary structures nominally bounding an annular space, and an





air-foil web joined to and tensed between said structures in said space.

4,944,708

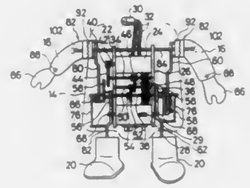
MOVING DOLL TOY

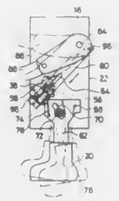
Haruo Kawabe, Misato, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,379
Claims priority, application Japan, Feb. 29, 1988, 63-26354[U]
Int. Cl.[5] A63H 11/18, 30/04
U.S. Cl. 446—175 7 Claims

1. An improved driving structure for use with a moving doll having a body, the body having a left side and a right side, and upon which body a left arm, a right arm, a left leg, and a right leg are pivotally connected, the improvement comprising:
a frame located in the body, the frame having a left side and a right side,
a motor mounted on the frame,
a gear transmission mechanism mounted on the frame and connected to the motor, the gear transmission mechanism having a left side output shaft and a right side output shaft;
a first pair of cam means for providing rotating camming surfaces of a predetermined shape, one of the first cam means being mounted to the left side output shaft and the other of the first cam means being mounted to the right side output shaft;
a first pair of connecting members, each connecting member having an arm side that is connected to one of the arm pairs and a camming side that engages the camming surface of a corresponding one of the first pair of cam means;
a second pair of cam means for providing rotating camming surfaces of a predetermined shape, one of the second cam means being mounted to the left side of the output shaft and the other of the second cam means being mounted to the right side of the output shaft;
a second pair of connecting members, each connecting member having a leg side that is connected to one of the legs and a camming side that engages the camming surface of a corresponding one of the second pair of cam means; and
biasing means, located between the left and right output

shafts and the corresponding camming side of each connecting member, for biasing the camming side of each connecting member against its corresponding cam means





whereby the arms and legs of the moving doll may be moved in a predetermined fashion in accordance with the predetermined shapes of the cam means.

4,944,709

BALLOON SCULPTURING METHODS, APPARATUS AND PRODUCTS

Craig J. Lovik, 8565 Custer School Rd., Custer, Wash. 98240

Division of Ser. No. 183,720, Apr. 19, 1988, Pat. No. 4,850,926.
This application Jun. 21, 1989, Ser. No. 369,634
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] A63H 3/06; B65D 90/04
U.S. Cl. 446—221 6 Claims



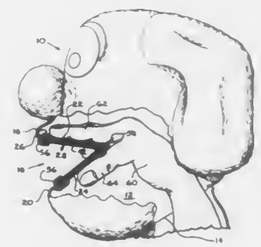
1. The method of forming a balloon sculpture simulating a tree from a plurality of balloons of the type having a constricted neck portion terminating at one end in an inflation aperture and at the other end in an imperforate inflatable sidewall, said method comprising the steps of:
(a) forming a plurality of basic balloon building blocks each including:
(i) a rigid rod-like balloon former having a first end, a second end, and means defining at least one (1) axially extending diametric slot formed in at least one (1) of the first and second former ends; and,
(ii) at least one (1) partially inflated first balloon having its(their) constricted neck portion(s) extending through the slot defining means in the former with at least one (1) of the inflation aperture and/or constricted neck portion of each first balloon being secured to the former, and having the inflated imperforate sidewall of each partially inflated first balloon stretched along the unslotted length of the former and a portion thereof stretched over and about the other of the first and second former ends so as to create a basic balloon building block wherein the former defines a lineal barrier precluding distension of the balloon sidewall juxtaposed therewith in the direction of the former so that each partially inflated balloon has a flat surface abutting the former, tapered pointed upper and lower extremities, and an at least partially ovate configuration in all other planes bisecting the balloon and the former;
(b) establish a vertically upstanding support simulating a tree trunk and having a plurality of radial bores formed therein at diverse axial locations on, and uniformly disposed about, the support with each radial bore being angled downwardly towards the axis of the support; and,
(c) inserting the slotted end of the former in each of the plurality of basic balloon building blocks formed in Step (a) in respective different ones of the radial bores in the upstanding support to simulate the branches of a tree.

4,944,710

PUPPET MOUTH CONSTRUCTION

Valerie D. Sommers, Jackson, Mich., assignor to National Child Safety Council, Jackson, Mich.

Division of Ser. No. 267,321, Nov. 4, 1988, Pat. No. 4,871,341.
This application May 22, 1989, Ser. No. 354,732
Int. Cl.[5] A63J 19/00
U.S. Cl. 446—329 6 Claims



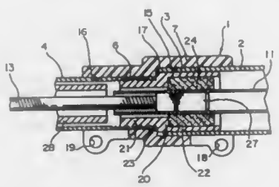
6. A puppet mouth assembly capable of being moved by the fingers for a puppet having a mouth opening defined by upper and lower lip regions, the improvement comprising, a pair of substantially identical base pieces formed of a staff material each having a first and second side located on opposite sides of the associated base piece, an outer lip peripheral region and an inner peripheral region, said base pieces being attached together adjacent said inner peripheral region with said base pieces' first sides in opposed relationship to define a hinge, a first fabric disposed over said first side of each base piece, a second fabric affixed to each of said first fabrics adjacent the common base piece's outer lip region extending over the associated lip region and affixed to the associated base piece's second side, and a mouth plate affixed to said lip peripheral region of each base piece extending inwardly with respect to the mouth opening, said base pieces' second sides each being attached to a mouth plate to close the mouth opening.

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4,944,711
EXTENDABLE/RETRACTABLE OPERATIONAL SLEEVE

Yoshiaki Hironaka, Sayama, and Isao Matsumoto, Koganei, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 313,526
Claims priority, application Japan, Mar. 23, 1988, 63-38212[U]
Int. Cl.[5] F16C *1/06, 1/26*
U.S. Cl. 464—52 **1 Claim**



1. An extendable/retractable operational sleeve comprising a main sleeve portion and a movable sleeve portion which is movable in an axial direction in a telescopic manner relative to said main sleeve portion, characterized in that a front end portion of said main sleeve portion is securedly fixed to a large diameter hole portion of a joint member; a rear end portion of said movable sleeve portion is inserted into a small diameter portion of said joint member; a stop member is fixed to the rear end portion of said movable sleeve portion; said stop member has a large diameter portion that is slidably engaged with said main sleeve portion in the axial direction and a shoulder portion engaged with a step portion at an inner end of the large diameter hole portion of said joint member for limiting outward separation of said movable sleeve portion; said main sleeve portion has therein a tubular transmission shaft rotatably supported by a bearing mounted within said large diameter portion of said stop member; and a movable transmission shaft is supported rotatably within said movable sleeve portion and is movable together with said movable sleeve portion; an inner peripheral portion of said main transmission shaft is in the form of non-circular shape in cross section and a shaft joint member mounted on said movable transmission shaft has a complementary shape with the inner periphery of said main transmission shaft to thereby support said shaft joint member slidably in the axial direction within said main transmission shaft.

4,944,712
SPLIT FLYWHEEL WITH VIBRATION COMPENSATION BETWEEN VEHICLE ENGINE AND DRIVE TRAIN

Günter Wörner, Kernern, and Ernst Tscheplak, Weinstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

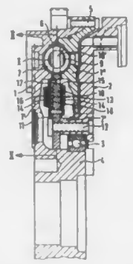
Filed Dec. 23, 1988, Ser. No. 289,033
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743801
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] F16D *3/14;* F16F *15/12*
U.S. Cl. 464—67 **17 Claims**

1. A split flywheel for driving insertion between an engine and a driving unit, having two equiaxial flywheel elements with essentially apportioned flywheel masses has a spring arrangement means drivingly inserted between the flywheel elements for absorbing vibrations and transmitting power therebetween;

a non-positive coupling means positively connected between an abutment part of the spring arrangement means and one flywheel element for limiting the power transmitted by the spring arrangement means during excessive vibrations and high torque transfers;

said spring arrangement means comprising at least a long-stroke non-prestressed or negligibly prestressed helical spring means which has a helical axis in the form of an arc of a circle, with a center of curvature at the flywheel axis;

the helical spring means, in response to centrifugal force, being operated by an additional friction force against bearing faces arranged on at least one of the abutment part and a flywheel element which supports the helical spring means in a centrifugal radially outwards movement relative to the flywheel axis to stiffen the helical spring means during normal and high engine speeds where the engine normally drives the driven unit to reduce vibration absorption and relative motion between the flywheel elements;

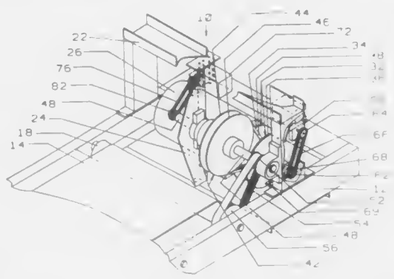


and wherein spring constants of the spring arrangement means are so soft that the vibrations occurring at a low engine speed when the engine is not used to drive the driven unit are in the supercritical range and the helical spring means operates without the additional friction force allowing greater relative motion between the flywheel elements.

4,944,713
TREADMILL SPEED RESET SYSTEM

Mark Salerno, 205 E. Main St., Suite 3-6, Huntington, N.Y. 11743-2923

Filed Oct. 30, 1989, Ser. No. 428,588
Int. Cl.[5] F16H *55/52;* A63B *23/06*
U.S. Cl. 474—11 **18 Claims**



1. A treadmill comprising in combination:

a. frame means for supporting an endless walking belt for movement;

b. a main drive motor;

c. variable speed transmission means for receiving drive input from said main drive motor and for delivering its drive output to move and adjust the speed of said walking belt;

d. said transmission means comprising variable pitch input pulley means for receiving shaft input from said main drive motor, variable pitch output pulley means for delivering shaft power to said walking belt, main drive belt means for transferring drive from said input pulley means to said output pulley means, and speed change means for varying the effective pitch of said input pulley means for altering the speed of said walking belt, said output pulley means including means affected by said main drive belt means to make a change in the effective diameter of said output pulley means;

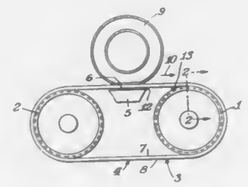
e. programmed means in response to deenergization of said main drive motor to automatically energize said speed change means to change the effective diameter of said input pulley means to reset the transmission means to minimum walking belt speed; and

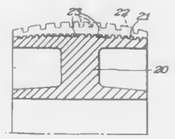
f. programmed speed reset means to continue rotation of said output pulley means to permit said output pulley means after said main drive motor is deenergized and while said speed change means is slowing down said walking belt to be adjusted properly by said main drive belt means while the effective diameter of said input pulley means is being changed.

4,944,714
METHOD AND APPARATUS FOR GUIDANCE AND ACTUATION OF FLAT BELT DRIVE UNDER EXTERNAL LOAD

Karlheinz Storck, Muhltal, Fed. Rep. of Germany, assignor to Carl Schenck AG, Fed. Rep. of Germany

Filed Mar. 29, 1989, Ser. No. 329,943
Claims priority, application European Pat. Off., Apr. 22, 1988, 88106487.7
Int. Cl.[5] F16H *57/04;* F16N *15/00*
U.S. Cl. 474—91 **11 Claims**



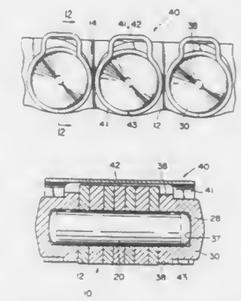


1. A method for guiding and moving a flat belt having inner and outer surfaces and trained around a drive roller and an idler roller comprising the steps of applying a load to the outer load carrying surface of the flat belt, supporting the load from the inner surface of the flat belt, introducing a liquid flow onto the inner surface of the flat belt at the location where the load is applied to assist in supporting the load and to reduce friction, and draining liquid away from between the flat belt and drive and idler rollers in order to increase frictional engagement between the flat belt and the rollers.

4,944,715
CHAIN FOR V-PULLEY

Seitaro Ueda, Kumagaya; Yukio Okubo, Fukaya; Shinichiro Izumi, Kumagaya, and Takeshi Hoshiro, Takarazuka, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo and Mitsuboshi Belting Ltd., Hyogo, both of, Japan

Filed Jun. 22, 1989, Ser. No. 370,000
Claims priority, application Japan, Jun. 27, 1988, 63-158254
Int. Cl.[5] F16G *1/22*
U.S. Cl. 474—245 **7 Claims**



1. A chain for a V-pulley having a plurality of link plates and a plurality of connecting pins connecting adjacent ones of said link plates in such a manner as to be bendable and used by being endlessly trained between a pair of V-pulleys, said chain comprising:

a plurality of blocks each provided on the outside of each of a plurality of outer link plates opposed to an inner wall of said V-pulley;

each of said blocks having a convey surface which is brought into contact with said inner wall of said V-pulley;

said convex surface being formed into the configuration of a cone or a truncated cone which has an apex angle substantially identical to that of said inner wall of said V-pulley and has an axis parallel to an axis of said connecting pin;

means for providing each of said blocks to be easily rotatable about the axis of said cone or said truncated cone.

4,944,716
WIRE NETTING BELT

Wilhelm Graff, Duren, Fed. Rep. of Germany, assignor to GKD Gebr. Kufferath GmbH & Co. KG, Duren, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,522
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1988, 3828210
Int. Cl.[5] F16H *3/06*
U.S. Cl. 474—255 **17 Claims**

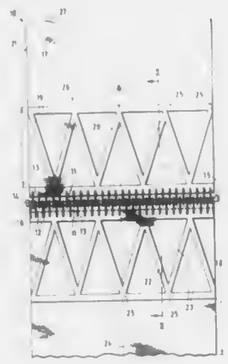
1. A wire netting belt comprising lengths of wire and meshes between adjacent lengths of wire having:

first and second belt ends, and end regions of the belt at said first and second ends respectively;

an elongate connecting element;

linking means at the belt ends, said linking means being engageable by the elongate connecting element to join the belt ends together, and

a reinforced portion of each said end region of the belt said reinforce dportions comprising a flexible solidified com-



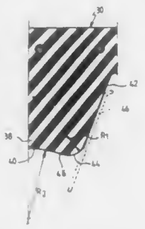
position filled into the meshes of the belt regions over a limited length thereof.

4,944,717

RIBBED BELT FOR POWER TRANSMISSION

Pierre Georget, Chambray les Tours, France, assignor to Hutchinson, Paris, France

Filed Jun. 29, 1989, Ser. No. 373,140
Claims priority, application France, Jun. 30, 1988, 88 08807
Int. Cl.[5] F16G *5/06*
U.S. Cl. 474—238 **6 Claims**



1. A ribbed belt for transmitting power, the belt having an inner surface comprising circumferential ribs with truncated apexes each having a small base and cross-sections which are substantially trapeziumshaped, wherein the small base of each rib comprises a concave curved surface and joins the sides of the rib via convex curved surfaces.

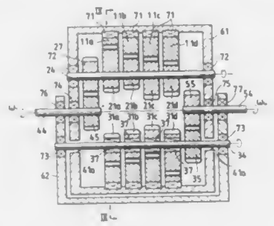
4,944,718

ANGULAR VELOCITY MODULATING DEVICE

Toshiyuki Takahara, and Akira Takami, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1989, Ser. No. 367,072
Claims priority, application Japan, Jun. 17, 1988, 63-80807[U]; Jun. 17, 1988, 63-80808[U]
Int. Cl.[5] F16H *55/17*
U.S. Cl. 475—16 **2 Claims**

1. An angular velocity modulating device which comprises:
first and second rotary shafts;
first and second bearing means;
primary angular velocity modulating means including
a first non-circular gear which is an internal gear rotatably supported, and
a second non-circular gear which is an external gear fixedly mounted on said first rotary shaft and engaged with said first non-circular gear,
with a primary angular velocity ratio for said first and second non-circular gears;
secondary angular velocity modulating means including
said first non-circular gear, and
a third non-circular gear which is an external gear mounted on said second rotary shaft in such as manner as to be able to transmit power and engaged with said first non-circular gear,
with a secondary angular velocity ratio for said first and third non-circular gears;
a first frame supporting said first non-circular gear and said first rotary shaft through said first bearings; and
a second frame supporting said second rotary shaft through second bearings, said second frame being rotatably sup-



ported about the axis of rotation of said first non-circular gear, relative to said first frame, one of said first and second frames being stationary,
wherein said primary angular velocity ratio expressed by an exponential function $e^{K\theta}.F(0)$ where F(0) and K are the reference angular velocity ratio and the angular velocity modulating coefficient which are set to desired values in advance, and θ is the angular displacement of said first non-circular gear, and
said secondary angular velocity ratio expressed by an exponential function $e^{K(\theta+\alpha)}F(0)$ where F(0) is said reference angular velocity ratio, and α is the angle which is set to a desired value by adjusting the relative rotation of the said first and second frames, and
a condition is provided in which the ratio in angular velocity of said third rotary shaft to said second rotary shaft is given by an exponential function $e^{K\alpha}$, where K is said angular velocity modulating coefficient and α is said angle, which is the quotient of said secondary angular velocity ratio divided by said primary angular velocity ratio.

4,944,719

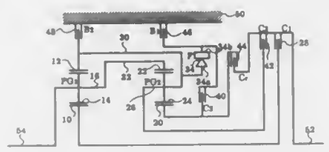
PLANETARY GEAR TYPE SPEED CHANGE DEVICE HAVING ONE-WAY CLUTCH OPERABLE IN TWO FUNCTIONS

Tokuyuki Takahashi, Aichi; Hiroshi Ito, and Seltoku Kubo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Aug. 1, 1988, Ser. No. 226,470
Claims priority, application Japan, Aug. 5, 1987, 62-195471; Aug. 5, 1987, 62-195472
Int. Cl.[5] F16H *57/10*
U.S. Cl. 475—281 **5 Claims**

1. A planetary gear type speed change device comprising:
a housing;
an input rotary member;
an output rotary member;
a first planetary gear mechanism having a first sun gear, a first ring gear, first planetary pinions and a first carrier;

a second planetary gear mechanism having a second sun gear, a second ring gear a second planetary pinions and a second carrier; and
interconnecting means including a plurality of clutches. at least one brake and at least one-way clutch and connecting said first and said second planetary gear mechanism between said input rotary member and said output rotary member so as to provide a plurality of forward speed stages according to selective engagement and disengagement of said clutches and said brake, wherein said one-way clutch has a first and second clutch member, said first clutch member engaging said second clutch member



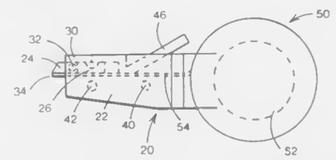
when said first clutch member attempts to rotate in a first rotational direction relative to said second clutch member and freewheeling in a second rotational direction opposite to said first rotational direction relative to said second clutch member, and while driving in a first forward speed stage said first clutch member is impelled in said first rotational direction with said second clutch member reacting in said second rotational direction and while driving in a second forward speed stage said second clutch member is impelled in said second rotational direction with said first clutch member reacting in said first rotational direction.

4,944,720

TAB FORMING DISPENSER WITH TAPE PASSING UNDER THE CUTTER

Robert N. Suhr, 431 Chowning Pl., NW., Marietta, Ga. 30064

Filed Jul. 31, 1989, Ser. No. 386,730
Int. Cl.[5] B26F *3/02*
U.S. Cl. 493—466 **8 Claims**



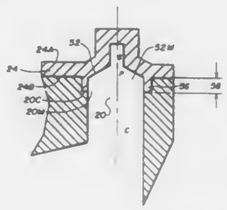
1. A method of forming a tab on the end of an adhesive tape on a tape dispenser, comprising the steps of:
(a) pulling a length of outstretched tape from a tape roll on the dispenser to a swingable cutter on the dispenser;
(b) passing the tape under the cutter, with the adhesive side of the tape facing down and away from said cutter; and
(c) swinging the cutter in an arc of approximately 180 degrees downwardly and onto the outstretched tape causing a leading portion of the tape to fold back on itself such that the adhesive side of a leading portion of the leading portion bonds to the adhesive side of the remaining portion of the outstretched tape to form a tab at the end of the outstretched tape.

4,944,721

CAVITY SEALING SYSTEM FOR A CENTRIFUGE ROTOR

David M. Carson, Newtown, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1988, Ser. No. 278,561
Int. Cl.[5] B04B *1/00, 7/02*
U.S. Cl. 494—16 **16 Claims**



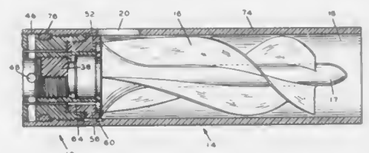
1. A cover for a centrifuge rotor having a body with plural cavities therein, the cover having an annular ring disposed thereon, an array of receptacles being formed in the annular ring, a plurality of flanges depending a predetermined distance from the cover, each flange being disposed in surrounding relationship with one of the receptacles, the receptacles being arranged so that when the cover is attached to the body each of the receptacles communicates with one of the cavities and each flange is receivable in one of the cavities.

4,944,722

PERCUTANEOUS AXIAL FLOW BLOOD PUMP

John W. Carriker, and Richard K. Wampler, both of Gold River, Calif., assignors to Nimbus Medical, Inc., Rancho Cordova, Calif.

Filed Feb. 23, 1989, Ser. No. 314,813
Int. Cl.[5] A61M *1/00*
U.S. Cl. 600—16 **6 Claims**



1. A cable-driven percutaneous insertable intravenous axial flow blood pump preloadable to provide a substantially constant purge pressure unaffected by manipulation of the pump drive cable or cable sheath, comprising:
(a) a static housing;
(b) a rotor disposed in said static housing;
(c) a drive cable for driving said rotor, said drive cable terminating in a cable fitting having a thrust bearing surface;
(d) rotor extension means for connecting said rotor to said drive cable through said static housing, said rotor extension means being resiliently extendable;
(e) movable bearing means disposed in said static housing, said rotor extension being journalled in said bearing means, and said bearing means having thrust bearing surface means for mating with said cable fitting thrust bearing surface to form a thrust bearing;
(f) shoulder means on said rotor extension means for engaging said movable bearing means when said extension is extended; and
(g) means for selectively fixedly interconnecting said mov-

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able bearing means and said static housing to immobilize said movable bearing means within said static housing;

(h) whereby said thrust bearing can be preloaded to a predetermined load by pulling said cable fitting to extend said extension with a force greater than said predetermined load, relaxing said force to said predetermined load, and then immobilizing said bearing means.

4,944,723

UNIVERSAL DISPOSABLE SAFETY SYRINGE SYSTEM

Terry M. Haber, El Toro; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Feb. 2, 1989, Ser. No. 305,800

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **25 Claims**



1. A syringe comprising:

a cylinder having proximal and distal ends and receiving a supply of fluid at the interior thereof;

piston assembly means movable reciprocally through said cylinder;

a hypodermic needle cannula communicating with the fluid supply of said cylinder and projecting outwardly from the distal end of said cylinder for penetrating a targeted tissue area;

clamping means comprising at least one pair of normally open jaws between which said needle cannula is received, said jaws located within and closed by the distal end of said cylinder for releasably retaining said needle cannula at said distal end; and

means connected to and movable distally with said piston assembly means through said cylinder for sliding said jaws relative to the distal end of said cylinder and thereby causing said jaws to open and release said needle cannula from said distal end.

4,944,724

APPARATUS FOR LOCATING BODY CAVITIES HAVING SIGNALING INDICATOR

Edward M. Goldberg, Glencoe; Lev Melinyshyn, Mt. Prospect; Michael Jaron, Des Plaines, and Jeffrey M. Stupar, Chicago, all of Ill., assignors to Uresil Corporation, Skokie, Ill.

Continuation of Ser. No. 58,400, Jun. 5, 1987, abandoned. This application Feb. 13, 1989, Ser. No. 310,366

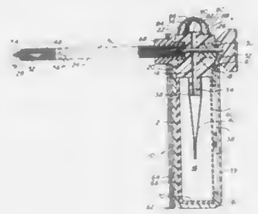
Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—118 **11 Claims**

1. An apparatus for locating a body cavity having a fluctuating fluid pressure and transporting fluid either into or out of the cavity, comprising:

a conduit for entering the cavity;

means, in communication with said conduit, for signaling the fluctuation of the fluid pressure in the cavity when said conduit enters the body cavity, said signalling means comprising a dome-shaped elastomeric element having a wall thickness gradually tapering from its base to its apex



which pulsates in response to the fluctuating fluid pressure in the body cavity; and

means, in communication with said conduit, for transporting fluid either into or out of the cavity.

4,944,725

SAFETY NEEDLE APPARATUS

Michael McDonald, 15847 Woodbine Circle, Mundelein, Ill. 60060

Continuation-in-part of Ser. No. 56,536, Jun. 1, 1987, Pat. No. 4,834,718. This application Apr. 11, 1989, Ser. No. 336,654

Int. Cl.[5] A61M *5/18*

U.S. Cl. 604—164 **11 Claims**



1. Clinical needle apparatus comprising:

a needle having a pointed forward end adapted to intentionally puncture the skin of a patient;

handle means secured to the needle rearwardly of the pointed end and adapted for manually pulling said needle rearwardly with a motion having only a rearward translational component in order to withdraw said needle from an intentional puncture site;

protective housing means having an interior needle-receiving passage therein and a guard means surrounding said passage;

said needle being received within said passage with said pointed end extending forwardly out of said passage, and being mounted therein in a manner to be moved rearwardly relative to said protective housing means;

said passage being long enough to permit said pointed end to be withdrawn rearwardly into said passage to prevent accidental punctures from occurring after said intentional puncture;

latch means on said handle means and said protective housing means interengaging upon rearward motion of said handle means and said needle relative to said protective housing means to prevent subsequent accidental forward motion of said handle means and said needle relative to said protective housing means;

said latch means being positioned so as to interengage only after said pointed end of said needle has entered said passage;

a catheter, one end of which is adapted to be inserted into a patient's blood vessel by means of said needle;

a catheter fitting comprising a generally tubular passage, said catheter fitting being secured to an opposite end of the catheter;

said needle being slidably received within said catheter and said catheter fitting passage;

said protective housing means being positioned in relation to said catheter fitting so that rearward withdrawal of said needle from said catheter and from said catheter fitting passage by means of said handle means is automatically effective to withdraw said pointed end of said needle toward said protective housing passage, whereby said needle can be withdrawn from said catheter and into said protective housing passage with one continuous motion;

and locking means for locking said protective housing means to said catheter fitting when said pointed end of said needle extends inside said catheter fitting, and for unlocking said protective housing means from said catheter fitting as said pointed end is withdrawn from said catheter fitting, so that said protective housing means cannot be disconnected from said catheter fitting until said pointed end of said needle is withdrawn into said protective housing means, whereby said pointed end is continuously protected from exposure to accidental puncture from the time of withdrawal from said catheter;

said locking means comprising at least one resilient projection extending from said guard means, a boss on said resilient projection extending radially outwardly from said resilient projection, and a recess on said catheter fitting positioned to receive and engage said boss, thereby locking said housing to said catheter fitting;

said resilient projection being adapted to flex radially inwardly in response to a rearward force applied to the handle means as said needle is pulled rearwardly into said catheter fitting beyond said boss, thereby unlocking said housing from said catheter fitting.

4,944,726

DEVICE FOR POWER INJECTION OF FLUIDS

Said S. Hilal, Laguna Niguel, and Robert P. Cooper, Yorba Linda, both of Calif., assignors to Applied Vascular Devices, Laguna Hills, Calif.

Filed Nov. 3, 1988, Ser. No. 266,200

Int. Cl.[5] A61M *5/145*

U.S. Cl. 604—143 **28 Claims**



1. A hand-held and operated pneumatically powered infusion/inflation device comprising in combination

(a) a housing adapted to be gripped and held by a human hand and containing

(b) a pressure vessel containing a gas under pressure

(c) valve means connected to the vessel for alternatively venting the gas and directing it to an infusion chamber

(d) an infusion chamber assembly comprising

(i) a power chamber having an inlet for receiving said gas and being connected in tandem to

(ii) an infusion chamber for holding an infusate having an outlet through which the infusate is ejected under the pressure exerted by said gas

(iii) a two-headed piston contained within and spanning the power and infusion chambers with one head positioned in the drive chamber and receiving pressure from the gas and the other head positioned in the infusion chamber and placing pressure on the infusate

(e) a second valve means connected to said outlet for controlling the pressurized flow of infusate from the infusion chamber; and

(f) a conduit connected to said valve means for carrying the infusate from the valve to an infusion/inflation site.

4,944,727

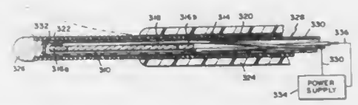
VARIABLE SHAPE GUIDE APPARATUS

William C. McCoy, Zionsville, Ind., assignor to Catheter Research, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 870,926, Jun. 5, 1986, Pat. No. 4,758,222, which is a continuation-in-part of Ser. No. 728,634, May 3, 1985, Pat. No. 4,601,705, which is a continuation-in-part of Ser. No. 547,402, Oct. 31, 1983, Pat. No. 4,543,090. This application Oct. 2, 1987, Ser. No. 103,926

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—95 **29 Claims**



1. A variable shape guide apparatus comprising

a temperature-activated memory element moving in a first direction to assume a predetermined shape when heated to a predetermined temperature,

spring means housing the memory element for yieldably urging the memory element in a second direction away from the first direction upon cooling of the memory element to a temperature less than the predetermined temperature so that the memory element is moved to assume a shape other than the predetermined shape, the spring means having an original shape alterable by movement of the memory element in its first direction toward its predetermined shape,

insulation means for preventing electrically conductive contact between the memory element and the spring means, and

control means for selectively heating the memory element so that the memory element is moved in the first direction against the urging of the spring means to permit an operator to alter the shape of the spring means automatically by heating the memory element, whereby the spring means is allowed to resume its original shape upon cooling of the memory element housed in the spring means, the spring means being an elongated coil spring formed to include a longitudinal cavity and the memory element being positioned in the longitudinal cavity.

4,944,728

INTRAVENOUS CATHETER PLACEMENT DEVICE

Michael W. Carrell, and Stephen H. Gericke, both of Oklahoma City, Okla., assignors to Safe Medical Devices, Inc., Moore, Okla.

Filed Oct. 17, 1988, Ser. No. 258,578

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—164 **16 Claims**

1. A safe intravenous catheter placement device comprising:

an elongated, tubular needle having a hollow interior and having a sharpened, pointed first end and a second end, said tubular needle having a plurality of radial blood flash ports extending radially through the wall of said needle at a location nearer to said second end of said needle than to said first end of said needle for discharging out through said radial flash ports, blood passing through said needle from a blood vessel;

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a tubular intravenous catheter end section positioned concentrically around a portion of said needle and including:
a first end adjacent the sharpened point at said first end of said needle and slidably encircling the outer periphery of the needle; and
an open, second end;
a protective sheath subassembly around a portion of said needle, which portion of said needle is located between the first end thereof and the second end thereof, and includes the second end thereof, said protective sheath subassembly comprising:
an elongated, tubular sheath which includes at the end thereof closest to the pointed first end of said needle, a transparent cylindrical end portion encircling the medial portion of said needle between the ends of said needle and



removably connected to the open second end of said catheter end section, said tubular sheath further including a blood-receiving flash chamber surrounding the portion of said needle having said radial blood flash ports therethrough, said flash chamber being located adjacent said transparent cylindrical end portion, said elongated tubular sheath surrounding a portion of said needle which is spaced therealong from said pointed first end of said needle; and
manual retracting means connected to said second end of said needle for retracting said needle through said catheter end section and said transparent cylindrical end portion, and into said tubular sheath so that said pointed first end of said needle is within said tubular sheath, said manual retracting means comprising:
an elongated tubular shaft having one of its ends connected to the second end of said tubular needle and defining a passageway communicating with the hollow interior of the needle; and
handle means connected to said elongated tubular shaft and including removable cap means selectively closing said tubular shaft at its end opposite its end connected to the second end of said needle; and
means for locking said needle in a retracted, protected position in which said pointed first end is within, and is protected by, said elongated tubular sheath.

4,944,729

FEMORAL ARTERIAL CANNULA

Gerald D. Buckberg; James V. Maloney, Jr., both of Los Angeles; Kenneth A. Jones, Lake Elsinore, and Weldon D. West, Mission Viejo, all of Calif., assignors to Shiley, Inc., Irvine, Calif.

Filed Aug. 29, 1988, Ser. No. 238,154
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—164 **12 Claims**



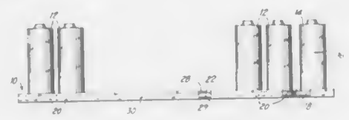
1. A cannula comprising:
an elongated tube having a flexible tip section adapted to be inserted into a wall of a vascular conduit and extend generally parallel to the axis of said conduit; and
a flexible intermediate section adjacent to said tip section having a diameter larger than that of the tip section whereby a shoulder is formed at the juncture of the two sections, said shoulder being sufficiently larger than the diameter of the conduit such that it engages the exterior of the conduit and limits the insertion of the tip section into the conduit, the surface of said shoulder for engaging the conduit substantially conforming to the exterior of the conduit consistent with the angle of insertion of the tip section into the conduit whereby a seal is formed by the shoulder with respect to the exterior of the conduit, said angle being an acute angle so as to facilitate the bending of the tube in insertion of said tip section into said conduit.

4,944,730

ORGANIZER AND DISPENSER FOR BLOOD SAMPLE NEEDLE HOLDERS

Andrzej J. Plucinski, Norwood, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 23, 1988, Ser. No. 235,138
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—187 **7 Claims**



1. An assembly for organizing a plurality of blood sample needle holders in orderly fashion prior to use at a nursing tray or cart, characterized by
(a) an elongated substantially flat base;
(b) said elongated substantially flat base having a top surface and a bottom surface;
(c) an integral wall extending at right angles from each side edge of said flat base;

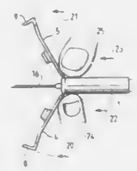
(d) each said integral wall extending in the same direction from said base to form a generally u-shaped structure;
(e) an integral flange extending at right angles from the edge of each of said walls opposite said base;
(f) each said flange extending toward each other to a point spaced from each other to define a holder receiving space; and
(g) each said flange being substantially parallel to said base to define a blood sample needle holder base receiving space;
(h) a plurality of blood sample needle holders;
(i) each said blood sample needle holder including
(1) a tubular body having a substantially closed one end and an open end;
(2) said substantially closed end having an opening positioned centrally thereof;
(3) said centrally positioned opening having screw threads therein for receiving a double-ended needle for taking a blood sample;
(4) an integral base flange extending outwardly from said open end;
(5) two diametrically opposed side edges on said base flange being straight;
(6) two diametrically opposed side edges on said base flange being curved; and
(7) the distance between said curved side edges being greater than the distance between said straight edges.

4,944,731

NEEDLE PROTECTION

John Cole, 33 Horsham Road, Pease Pottage, Near Crawley, Sussex, England RH11 9AW

Filed Mar. 14, 1989, Ser. No. 324,255
Claims priority, application United Kingdom, May 3, 1988, 8810366; May 25, 1988, 8812439; Jul. 14, 1988, 8816783
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **2 Claims**



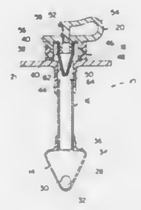
1. A needle protector for use with a hypodermic syringe which has a needle, a cylindrical body with a hub connecting the needle to the body and a plunger for movement within the body, the needle protector comprising a pair of arms mounted or mountable at or generally adjacent to the hub of the syringe and diametrically opposed, one to the other, on each side of the syringe, each arm being hinged or articulated so as to be capable of folding along the needle such as to shield and protect the tip thereof and being positively securable in that folded disposition, the arms additionally being pivotable away from the needle to lie alongside the body of the syringe, with the arms incorporating angled tabs or flaps constituting finger tabs for engagement by the first and second fingers respectively of a user on either side of the syringe for operation thereof by depression of the syringe plunger with the thumb of the user.

4,944,732

GASTROSTOMY FEEDING PORT

Ronald D. Russo, Barrington, R.I., assignor to Sandoz Nutrition Corporation, Minneapolis, Minn.

Filed Aug. 15, 1988, Ser. No. 232,597
Int. Cl.[5] A61M *39/02*
U.S. Cl. 604—247 **16 Claims**



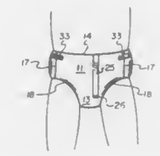
1. A gastrostomy feeding port comprising a tip portion, a tube portion, a fitting portion and a valve portion, said tip portion being receivable through a preestablished stoma in the stomach of a patient and being operative for passing a fluid into said stomach, said tip portion including retaining means engageable with the inner wall of said stomach for preventing the inadvertent removal of said feeding port from said stoma, said tube portion communicating with said tip portion for passing said fluid thereto and extending rearwardly therefrom, said tube portion being dimensioned to extend outwardly through said stoma when said tip portion is in engagement with the inner wall of the stomach of said patient, said fitting portion being of a low-profile configuration and being attached to the rear end of said tube portion so that said fitting portion is disposed substantially on the exterior of said patient adjacent the skin surrounding said stoma when said tip portion is in engagement with said inner stomach wall, said valve portion being disposed substantially in said fitting portion and being accessible from the exterior of said patient, said valve portion comprising a valve element which is operative for permitting the flow of a feeding formula into said tube portion from said fitting portion and for preventing the reverse flow of said feeding formula and a closure element which is operative for removably sealing said fitting portion without interferring with said valve element.

4,944,733

DIAPER FOR USE IN TOILET TRAINING MALE CHILDREN OR FOR USE BY INCONTINENT MALE ADULTS

Larry Casale, 2092 Webster Dr., Park City, Utah 84060

Filed Jun. 12, 1989, Ser. No. 364,641
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—385.1 **6 Claims**



1. A diaper for attachment around the waist and legs of a user consisting of
a pad means having a front portion for placement over the groin area of a user, a back portion for placement about the buttocks of a user and a crotch portion for placement between the user's legs, said crotch portion connecting

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said front and back portions, said front portion having a top edge and side edges, and said back portion having a top edge and side edges, said front portion side edges and said back portion side edges being interattachable about a user's legs, said front portion top edge and said back portion top edge forming a continuous edge about the user's waist when said front and back portion side edges are interattached about the user's legs, said front portion top edge having a central section located generally centrally between said front portion side edges,

attaching means for interattaching said front portion side edges with said back portion side edges,

first and second flap means extending from said central section of said front portion top edge into said crotch portion, said first and second flap means being movable from a first position forming an adjacent overlapping closure, to a second position forming a penile opening, and

a first adhesive fastening means for removably fastening said first flap to said second flap in said overlapping position.

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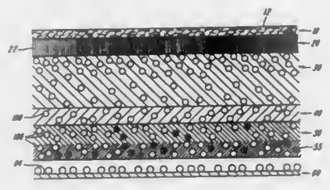
BIODEGRADABLE INCONTINENCE DEVICE WITH EMBEDDED GRANULES

Donald F. H. Wallach, Brookline, Mass., assignor to Micro Vesicular Systems, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 320,944, Mar. 9, 1989. This application Jun. 26, 1989, Ser. No. 371,210

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—358 20 Claims



1. An incontinence device having improved biodegradability comprising:

an inner layer which is substantially porous to allow the transfer of an aqueous solution into said device, said inner layer being made of a material which is substantially non-wettable;

one or more absorptive layers formed primarily of a cellulosic material, said cellulosic material having biodegradability enhancer granules embedded therein, said enhancer granules containing of a particulate material which degrades over time encapsulating a biodegradability enhancer agent selected from the group consisting of cellulase, hemicellulase or related cellulose degrading enzymes, and bacteria or spores which release cellulase, hemicellulase or related cellulose degrading enzymes; and

an outer layer which is substantially impermeable to water.

4,944,735

SHAPED NAPKIN WITH ELASTICIZED EDGES

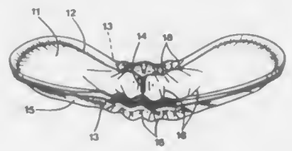
Patti J. Mokry, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 581,945, Feb. 21, 1984, abandoned. This application Mar. 24, 1986, Ser. No. 843,332

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.2 3 Claims

1. A sanitary napkin comprising a cup-shaped napkin having arcuate inwardly extending edges that form the deepest portion of the cup corresponding generally to the perineal area in the area of narrowest width and wherein (a) the cupping is such that the angle formed by the outer profile of the edge of the napkin with the plane upon which the napkin rests is between 30° and 90°, (b) said cupping is achieved by elastic extending from 10 to 30 percent of the length of the side edges of said napkin, (c) said cupping is achieved by elastic located at or exterior of the area where a fluid impermeable baffle and a



fluid pervious cover are sealed together, (d) said napkin having a central portion which acts as a reservoir to provide additional time for fluid applied to said napkin to penetrate the cover, and (e) said napkin having an absorbent which has arcuate edges.

4,944,736

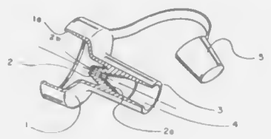
ADAPTOR CAP FOR CENTERING, SEALING, AND HOLDING A SYRINGE TO A BOTTLE

Leonard J. Holtz, 9474 Wayside Dr., Sunland, Calif. 91040

Filed Jul. 5, 1989, Ser. No. 375,504

Int. Cl.[5] A61B *19/00*; **A61M** *5/32*; **B65B** *7/28*

U.S. Cl. 604—403 10 Claims





1. For use with a liquid-containing bottle having a perforatable closure diaphragm, and a syringe: an adaptor cap having means to attach said cap to the bottle above the diaphragm, said cap having a body and a hollow portion extending outwardly from said body and terminating in a larger opening, a guide portion spaced from said larger opening and having converging surfaces terminating in a smaller hole inwardly in said hollow portion, said syringe having a barrel, a projection fittable into said larger opening extending from said barrel and carrying a hollow needle, whereby a user may insert said needle into the larger opening of said hollow portion, and then into said smaller hole and into and through said diaphragm, while the syringe projection enters said larger opening and is retained therein, thereby causing the needle to be axially aligned and penetrate the diaphragm immediately below said hole and causing said syringe and bottle to be frictionally held together.

4,944,737

SURGICAL STENCIL AND METHOD OF USING THE SAME

Robert F. Bloom, Lubbock, Tex., assignor to Kathryn Rowe Bloom, Lubbock, Tex.

Filed Dec. 14, 1988, Ser. No. 284,333

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—1 4 Claims



1. The method of performing flap surgery at a site on skin comprising:

a. selecting a shape of excision from a plurality of shapes of excision, then

b. placing on the site a transparent stencil having lines and perforations depicting a plurality of sizes of the selected shape of excision and incision lines for flaps for each excision size.

4,944,738

SURGICAL LASER BACKSTOP INSTRUMENT

Michael A. Rodriguez, 929 Graham Dr., Suite B, Tomball, Tex. 77375

Continuation-in-part of Ser. No. 107,058, Oct. 13, 1987, Pat. No. 4,815,461. This application Mar. 22, 1989, Ser. No. 327,016

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—2 18 Claims



1. A surgical laser backstop instrument comprising:

a rod having a non-reflective surface;

a backstop pivotally connected to one end of said rod, said backstop comprised of a non-reflecting material; and

backstop adjustment means mounted to the other end of said rod, said backstop adjustment means for controlling the movement of said backstop.

4,944,739

BONE GRIPPING FIXATION CLAMP

Randall J. Torre, 842 S. Clover, San Jose, Calif. 95128

Filed Mar. 24, 1989, Ser. No. 328,494

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—53 7 Claims

1. A bone clamp for clamping bone segments together at an osteotomy site, comprising:

a pair of elongated members, each of said elongated members having a handle portion formed at an upper end thereof and a lower portion;

pivot means medially interconnecting said pair of elongated members;

a pair of bone-gripping means, each of said bone-gripping means rigidly attached to said lower portion of a respective one of said elongated members, each said bone-gripping means extending from its respective elongated member at a predetermined angle oriented to be substantially parallel to and adjacent the other one of said pair of bone-gripping means, each of said lower portions bent away from the other lower portion such that each one of said pair of bone-gripping means is disposed in a facing, opposed relationship having a horizontal and vertical offset therebetween; and



ratching means disposed between said elongated members disengagably coupling said handle portions together, said ratchet means having a plurality of discrete engagement points, each engagement point associated with a corresponding lateral separation between said pair of bone-gripping means, said ratohet means preventing said elongated members from rotating about said pivot means until said ratch means is disengaged.

4,944,740

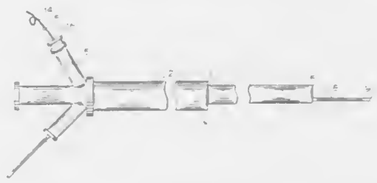
OUTER EXCHANGE CATHETER SYSTEM

Maurice Buchbinder, and Ronald J. Solar, both of San Diego, Calif., assignors to Medtronic Versaflex, Inc., San Diego, Calif.

Continuation of Ser. No. 909,446, Sep. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 651,806, Sep. 18, 1984, abandoned. This application Aug. 18, 1988, Ser. No. 235,829

Int. Cl.[5] A61M *29/02*

U.S. Cl. 606—194 4 Claims



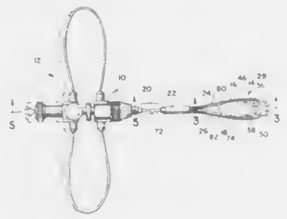
1. A method for dilating a stenosis in a passageway in a body, which comprises:

(a) introducing a guide catheter having proximal and distal ends and a single lumen into the body through an incision or opening;

(b) advancing a catheter system comprising an outer sheath and a first steerable inner dilatation catheter having a control means, each of said outer sheath and said dilatation catheter having proximal and distal ends and said dilatation catheter having a dilatation balloon means adja-

cent the distal end thereof, into and through the guide catheter to cause said dilatation balloon means to be positioned across a stenosis in said passageway;
(c) inflating said first dilatation balloon means to cause the stenosis to dilate;
(d) deflating said dilatation balloon means;
(e) slidably advancing the outer sheath distally along said first dilatation catheter to position said outer sheath across the stenosis;
(f) withdrawing said first dilatation catheter in the proximal direction within said outer sheath to remove said first dilatation catheter from the body;
(g) advancing a second dilatation catheter having proximal and distal ends and larger dilatation balloon means distally within said outer sheath to cause the larger balloon dilatation means to be positioned across said stenosis;
(h) withdrawing said outer sheath in the proximal direction to the extent that the proximal end of the outer sheath is positioned near the proximal end of the second dilatation catheter;
(i) inflating said second balloon dilatation means; and
(j) repeating steps (d) to (i) until the stenosis is sufficiently dilated.

4,944,741
LAPROSCOPIC INSTRUMENT WITH PIVOTABLE SUPPORT ARM
Harrith M. Hasson, 2043 N. Sedgwick, Chicago, Ill. 60614
Filed Dec. 9, 1988, Ser. No. 281,626
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—206 **19 Claims**



1. A surgical instrument for performing a laproscopic procedure, said instrument comprising:
an elongate stem having first and second jaws that are selectively movable towards and away from each other into closed and open positions respectively;
an arm having an elongate edge;
means for mounting the arm to one of said first and second jaws for movement between (a) a first position wherein the length of the edge is aligned lengthwise of said elongate stem and (b) a second position wherein the length of the edge is transverse to the position that said edge assumes, with the arm in its first position; and
means operable from a position remote from said arms for manually moving said arm selectively between said first and second positions.

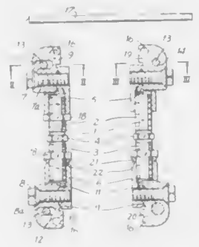
4,944,742
BONE PIN
Alastair J. T. Clemow, Princeton; Scott H. Jaeger, Cherry Hill, both of N.J., and Allan Ritchie, Sway, England, assignors to Johnson & Johnson Orthopaedics, Inc., New Brunswick, N.J.
Continuation-in-part of Ser. No. 202,602, Jun. 6, 1988, Pat. No. 4,858,603. This application Jun. 5, 1989, Ser. No. 361,177
Int. Cl.[5] A61F *2/00*
U.S. Cl. 606—59 **7 Claims**

1. A bone pin comprising a tapered cylindrical portion made of polymeric material said pin having two ends, with one end tapered and a separate drill portion made of a metallic material affixed to said tapered end of the cylindrical polymeric portion, the cylindrical polymeric portion of the pin having a taper such that the diameter is reduced by from 0.005 to 0.05 millimeters per millimeter of length of the polymeric portion of the pin;



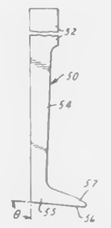
said polymeric portion and said drill portion being adapted for insertion into the bone as a unit, in one step, so as to maintain alignment of bone fragments during the one step insertion of said drill and said polymeric portion;
said drill portion being introduced on one side of the bone and drilled through and out of the other side of the bone so as to leave only the polymeric portion in the bone.

4,944,743
SPINAL FIXATION DEVICE
L. Gotzen, Marburg; Karl-Heinz Kunze, Kiel, both of Fed. Rep. of Germany, and Claudius Techow, Oxnard, Calif., assignors to Mecron Medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany
Filed Sep. 12, 1988, Ser. No. 243,477
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733924
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—61 **9 Claims**



1. An implantable spinal column vertebral fixation for bridging at least one vertebral segment, comprising:
(a) a support bar having a longitudinal axis with a length corresponding to the vertebral segment which is to be bridged and having ends thereof threaded in opposite rotational directions;
(b) a pair of threaded jaw supports which are attachable to the two threaded support bar ends;
(c) a plurality of bone screws having heads extending radially from one end of the screw;
(d) a pair of bolt jaws rotatively attachable to the jaw supports and defining an axis of rotation between the jaws and the jaw support which is perpendicular to the support bar longitudinal axis, the bolt jaws each having a clamping screw oriented perpendicularly to the support bar longitudinal axis with the clamping screw selectively attachable to the jaw supports for rigidly locking the jaw support to the bolt jaw, the clamping screw having a longitudinal axis;
(e) means for receiving the bone screws within the bolt jaw, which are oriented for captured passage of the bone screw therethrough in a direction generally perpendicular to each of the support bar and clamping screw longitudinal axes, so that the bone screws can be tightened with the heads substantially flush with the bolt jaw without cutting the bone screws; and
(f) the bolt jaws having recesses directly therein separate from the receiving means for engagement of lever-like positioning instruments, for alignment of vertebral segments attached to the fixation device.

4,944,744
BONE IMPACTORS
Charles D. Ray, Wayzata, Minn., assignor to Surgical Dynamics, Inc., Alameda, Calif.
Continuation-in-part of Ser. No. 731,024, May 6, 1985, Pat. No. 4,657,002. This application Jul. 17, 1986, Ser. No. 887,607
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—79 **4 Claims**



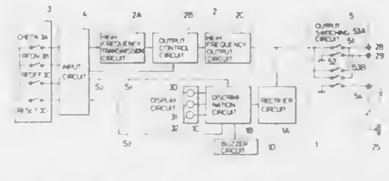
1. A bone impactor which is useful for compressing a bone excrescence to relieve pressure on a nerve and comprises a handle and a shank which terminates in a foot that tapers to a thin toe, and a flat working surface beneath the foot that makes an angle of at least 95° with the longitudinal axis of the shank of the impactor, each edge of the working surface having a radius of at least 0.1 mm.

4,944,745
PERFUSION BALLOON CATHETER
David J. Sogard, Minneapolis, and Scott Savitt, Eden Prairie, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Feb. 29, 1988, Ser. No. 162,003
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—194 **44 Claims**



1. A perfusion balloon catheter for use in combination with a guide wire to dilate a stenosed coronary artery, the perfusion balloon catheter comprising:
an elongate shaft having an inflation lumen and a guide wire lumen integral therewith, with the guide wire lumen having a generally bevelled opening at its distal end;
a separate balloon head connected to a distal end of the shaft, the balloon head defining a relatively short blood flow channel, an open proximal end of the blood flow channel being defined by a generally bevelled opening which is opposite to, generally axially aligned with, and relatively closely longitudinally spaced from the bevelled opening at the distal end of the guide wire lumen, and the blood flow channel having a larger cross-section than the guide wire lumen;
a balloon mounted around the balloon head and defining a balloon interior which is in communication with a distal end of the inflation lumen; and
a distal tip connected to and extending distally from the balloon, the distal tip having a central passage aligned with the blood flow channel to permit blood flow from the artery into the bevelled opening of the blood flow channel, through the blood flow channel and through the central passage while the balloon is inflated, and also to permit the guide wire to move through the bevelled opening of the blood flow channel, through the channel and through the central passage.

4,944,746
METHOD OF AND APPARATUS FOR SEPARATING A BALLOON IN A BALLOON CATHETER
Hiroo Iwata, Suita; Sen Yamagata, Kyoto; Waro Taki, Osaka; Takehisa Matsuda, Minoo; Haruhiko Kikuchi, Suita; Yasuhiro Yonekawa, Kyoto, and Yasuhiro Goto, Aichi, all of Japan, assignors to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan
Filed Mar. 14, 1989, Ser. No. 322,923
Claims priority, application Japan, Mar. 18, 1988, 63-65084
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—195 **13 Claims**



1. In a balloon catheter having a catheter body and a balloon connected to said catheter body through a connecting member made of a heat-meltable material, said balloon being adapted to be charged with a settable liquid and then be separated from said catheter body as a result of melting of said connecting member by an electric current supplied between at least a pair of electrodes arranged on or in the vicinity of said connecting member,
a method of separating said balloon from said catheter body comprising:
measuring the impedance of an electrode circuit which includes said electrodes and lead lines connected to said electrodes;
comparing the measured value of said impedance with a predetermined reference range and judging that, when said measured value does not fall within said reference range, an abnormal condition exists in said electrodes; and
prohibiting the charging of said settable liquid into said balloon when existence of said abnormal condition is detected as a result of the judgment.

4,944,747
PAIN THERAPY TOOL AND METHOD
Gregory L. Newth, and Alice C. S. Newth, both of 59 East Taylor Hill Rd., Montague, Mass. 01351
Continuation of Ser. No. 105,313, Oct. 5, 1987, abandoned. This application Jan. 27, 1989, Ser. No. 303,992
Int. Cl.[5] A61H *39/04*
U.S. Cl. 606—204 **12 Claims**

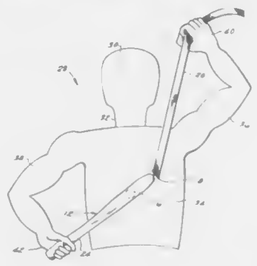
10. Trigger point pain therapy tool for the human body comprising:

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elongated handle means having a pre-determined length and having a first end adapted for hand gripping and having an opposed second end, said first end of said handle means being free of any attachment to any other member;

only a single rigid protrusion extending laterally and outwardly from said handle means near said second end with said handle means being otherwise free of lateral protrusions, said rigid protrusion being adapted to apply pressure to the human body at a specified single area on the body, said single protrusion being substantially transverse to said length of said elongated handle means; and

flexible strap means having opposed first and second ends with said first end of said flexible strap means being pivotably connected to said second end of said handle means, and said second end of said strap means being free of any attachment to any other member.



4,944,748

MAGNETICALLY SUSPENDED AND ROTATED ROTOR

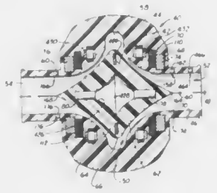
Gunter W. Bramm, Luisen Strasse 49, 8000 Munchen 2, Fed. Rep. of Germany, and Don B. Olsen, 8832 Blue Jay La., Salt Lake City, Utah 84121

Continuation of Ser. No. 914,486, Oct. 12, 1986, which is a continuation of Ser. No. 720,081, Apr. 4, 1985. This application May 9, 1988, Ser. No. 193,180

The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.

Int. Cl.[5] A61M *1/10*

U.S. Cl. 623—3 10 Claims



1. A pump implantable in the human body to provide a replacement for, or an assist to, the natural heart, comprising:

a housing constructed of or coated with a blood compatible material having an inlet passage and an outlet passage for connecting the pump into the circulatory system of the person into which the pump is implanted, the housing having an impellor chamber fluidly interposed between the inlet passage and the outlet passage;

an impellor constructed of or coated with a blood compatible material disposed in the housing impellor chamber and rotatable therein about an impellor rotation axis for drawing blood into the housing inlet passage and discharging blood from the housing outlet passage;

magnetic suspension means for magnetically suspending the rotor in said pump chamber out of contact with the walls of the impellor chamber, comprising:

permanent magnet impellor support means comprising an assembly of permanent magnets mounted on the impellor and on the housing for exerting forces on the impellor tending to align the rotation axis of the impellor with a selected support axis of the housing while tending to drive the impellor axially away from a selected null position on said support axis at such times that the impellor is axially displaced from the null position;

an electromagnet mounted on the housing and positioned thereon to exert a force directed along the support axis on portions of the permanent magnet impellor support means disposed on the impellor at such times that an electric current is passed through the electromagnet, the electromagnet thereby exerting an axial force on the rotor,

electromagnet control means mounted on the housing for detecting a displacement of the impellor from a control position of the impellor on the support axis and passing a current through the electromagnet to drive the impellor toward the control position; and

impellor drive means mounted on the housing for sensing a preselected physical quantity related to the flow of blood in said circulatory system and magnetically coupled to the impellor for rotating the impellor at a rate varying in accordance with a selected relationship to the value of said quantity.

4,944,749

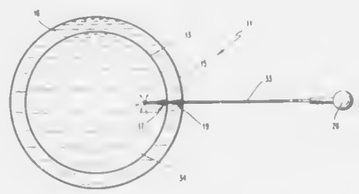
IMPLANT AND INFLATING CONSTRUCTION

Hilton Becker, 301 Dunbar Rd., Palm Beach, Fla. 33408

Continuation of Ser. No. 693,890, Jan. 23, 1985, abandoned. This application Jul. 27, 1988, Ser. No. 225,634

Int. Cl.[5] A61F *2/12, 2/02*

U.S. Cl. 623—8 6 Claims



1. An implant system comprising

inner and outer inflatable lumens each comprised of a respective membrane, said inner and outer lumens being unattached and freely movable relative to each other,

each of said membranes having a separate valve for inflating each lumen respectively,

a separate and removable filling tube adapted for penetrating each of said valves when they are in a predetermined position and aligned;

a volume of viscous gel between said inner and outer lumen for inflating the outer lumen,

said valves having self sealing means whereby the filling fluid exerts a biasing force on the valve of the inner lumen which together with the viscous gel closes the valve of the inner lumen when the filling tube is removed and the viscous gel exerts a biasing force on the valve of the outer lumen which sealingly closes the valve of the outer lumen.

4,944,750

COMPOSITE SHELL MATERIAL FOR PROSTHESIS

James E. Cox, Jr., Oxnard, Calif., assignor to Cox-Uphoff International Reel, Carpinteria, Calif.

Filed Oct. 12, 1988, Ser. No. 256,659

Int. Cl.[5] A61F *2/12*

U.S. Cl. 623—8 5 Claims



1. A composite material to form a flexible part of an implantable prosthesis intended to contain a fluid, said material comprising: an inner wall, an outer wall, and a foam layer between said walls in adherent surface-to-surface contact therewith, both of said walls being made of a flexible elastomeric material which is impermeable or has limited permeability, and said foam being resiliently deformable to resist sharp folding of the walls and resiliently to resist relative in-plane motion of the walls.

4,944,751

MATTED (DELUSTERED) ARTIFICIAL HAIR AND METHOD OF PREPARATION THEREOF

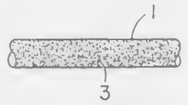
Shiro Yamada, No.2-7-1-606, Mita, Minato-ku, Tokyo, Japan

Division of Ser. No. 183,224, Apr. 19, 1988, Pat. No. 4,880,428. This application Jan. 4, 1989, Ser. No. 301,861

Claims priority, application Japan, Dec. 25, 1986, 61-307867

Int. Cl.[5] A61F *2/10*

U.S. Cl. 623—15 10 Claims



1. A method for the preparation of a matted artificial hair, comprising

applying an abrasive material to a bundle of monofilaments of a synthetic fiber having a substantially circular section,

scrubbing said monofilament bundle between two abrading plates each having a soft layer on a surface thereof by reciprocating the two abrading plates in the opposite directions at an angle of 45° to 90° with respect to the longitudinal direction of travel of the monofilament bundle while applying a slight pressure in the presence of said abrasive, and

controlling the rate of reciprocation of said plates relative to the rate of longitudinal travel of the monofilament bundle whereby a large number of scrubbed flaws are formed predominantly circumferentially with irregular size and shape on the surface of each monofilament of the bundle of monofilaments.

4,944,752

HAIR PROSTHESIS METHOD

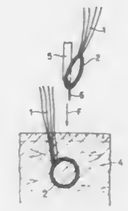
Claudio Santi, Savona, Italy, assignor to SALC di Pellegrino & C.S.d.f., Savona, Italy

Continuation of Ser. No. 38,396, Apr. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 838,776, Feb. 12, 1986, abandoned. This application May 4, 1989, Ser. No. 351,325

Claims priority, application Italy, Feb. 14, 1985, 19513 A/85

Int. Cl.[5] A61F *2/10*

U.S. Cl. 623—15 12 Claims



1. A method of permanently implanting human hair in human skin comprising the steps of forming one end portion of at least one human hair into a knotted elasto-rigid loop which is devoid of outwardly extending protrusions; attaching said loop to the tip of an implanting tool having a diameter less than that of said loop; introducing said tool and said loop into the subcutaneous region of a selected portion of the human skin at a selected entry point so that said tool provides a path for introduction of said loop into the skin and introduces said loop into the subcutaneous region of the skin; and extracting said tool by way of the selected entry point.

4,944,753

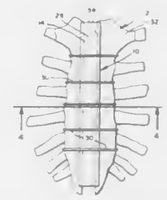
METHOD FOR PRODUCING RETRO-STERNAL SPACE

Frank M. Burgess, and Neal B. Burgess, both of 610 Amber Dr., Huntington Beach, Calif. 92648

Filed Sep. 26, 1988, Ser. No. 249,123

Int. Cl.[5] A61B *17/00*

U.S. Cl. 623—16 15 Claims



1. A method for producing an artificial retro-sternal space during closure of a longitudinally severed sternum, comprising the steps of:

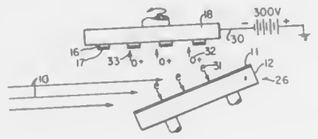
providing an implantable elongate member having a length approximately the length of the sternum,

disposing said member longitudinally along the severed sternum and opposing the posterior surface thereof, and

securing said disposed member to the sternum such that said member underlies the sternum when closed for assisting in guiding a sternum cutting device subsequently provided during a reserving of the sternum.

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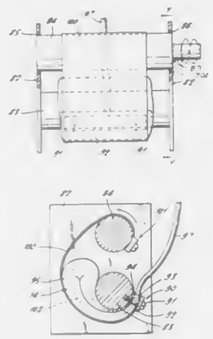
4,944,754
METHOD OF MANUFACTURING SYNTHETIC BONE COATED SURGICAL IMPLANTS
Leonard I. Linkow, New York, N.Y.; Anthony J. Armini, Bedford, Mass., and Anthony W. Rinaldi, Philadelphia, Pa., assignors to Vent-Plant Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 43,908, Apr. 29, 1987. This application Apr. 26, 1988, Ser. No. 193,505
Int. Cl.[5] C23C 14/46
U.S. Cl. 623—16 16 Claims



1. A process for manufacturing a hydroxylapatite-coated implant suitable for implantation into an animal said implant having a fully crystalline hydroxylapatite coating comprising the steps of:
directing a high energy beam, operating at at least 10 kev energy, against a hydroxylpatite target positioned such that HA ions kicked off of the target strike the implant and apply an ion beam sputter coating of hydroxylapatite to said implant,
applying a negative potential to said implant material, ranging between about 300 volts and about 1000 volts, while the high energy beam is directed at the target,
heating said implant for between about 1 hour and about 24 hours at a temperature of between about 300° C. and about 900° C.,
conducting said process under a vacuum of less than or equal to 10^{-5} torr in the presence of a preselected amount of oxygen gas, and
recovering a fully crystalline hydroxylapatite-coated implant.

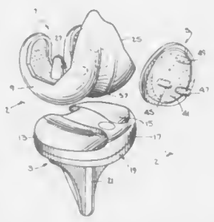
4,944,755
MOTORIZED JOINT
James R. Hennequin, Bedford, and Peter Fluck, Cambridge, both of United Kingdom, assignors to Air Muscle Limited, Kepston Bedford, United Kingdom
PCT No. PCT/GB87/00743, § 371 Date Jun. 20, 1988, § 102(e) Date Jun. 20, 1988, PCT Pub. No. WO88/03008, PCT Pub. Date May 5, 1988
PCT Filed Oct. 21, 1987, Ser. No. 213,701
Claims priority, application United Kingdom, Oct. 21, 1986, 8625144
Int. Cl.[5] A61F 2/30
U.S. Cl. 623—19 10 Claims

1. A motorized joint comprising a pair of relatively movable members; an elongate, inflatable element having an inextensible wall; means for holding apart opposing inner surfaces of the inflatable element such that a fluid passage exists within the inflatable element; actuating means having means for inflating the inflatable element causing it to increase in cross section; and means mounting the two ends of said inflatable element in a folded condition on one of the relatively movable members and acting on the other relatively movable member whereby



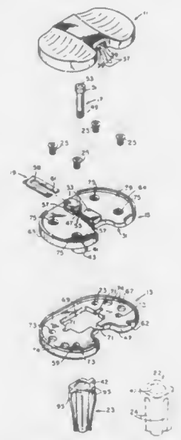
inflation of the inflatable element causes relative movement between the relatively movable members.

4,944,756
PROSTHETIC KNEE JOINT WITH IMPROVED PATELLAR COMPONENT TRACKING
Robert V. Kenna, Hobe Sound, Fla., assignor to Pfizer Hospital Products Group, New York, N.Y.
Filed Feb. 3, 1988, Ser. No. 151,747
Int. Cl.[5] A61F 2/38
U.S. Cl. 623—20 7 Claims



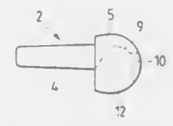
1. A knee joint prosthesis including a tibial component adapted to be secured to the proximal tibia and having a spaced pair of tibial condylar bearing portions; a patellar component adapted to be secured to the patella and having a patellar bearing surface; and a femoral component adapted to be secured to the distal femur and having an anterior plate portion adapted to contact said patellar bearing surface with the prosthetic knee joint at full extension, spaced femoral lateral and medial condylar bearing portions adapted for mutual articulation with said tibial condylar bearing portions, and a web portion joining said two femoral condylar bearing portions at their anterior ends and along at least a part of their respective lengths from said anterior ends, said femoral condylar bearing portions having generally convex bearing surfaces and said web portion having a concave bearing surface, said anterior plate portion, femoral condylar bearing surfaces and web portion bearing surface defining together a continuous track to cooperate with said patellar bearing surface and guide the patellar component during flexion of the prosthetic knee joint from a fully extended state to a fully flexed state, and with the bearing surface of said lateral femoral condylar bearing portion, as viewed in transverse cross sections through said femoral bearing portion along said track, being steeply sloped towards said web portion over at least the innermost one-third of the width of the bearing portion so as to substantially deepen the lateral wall of said track guiding the patellar component and thereby reduce the tension on the quadriceps mechanism at high degrees of flexion and substantially increase the maximum level of flexion achievable with the prosthetic knee joint, the generally convex bearing surface of said lateral femoral condylar bearing portion exhibiting, as viewed in transverse cross sections through said bearing portion along said track, a smooth continuous line consisting essentially of, from outside to inside, a first arcuate outer segment having a radius of curvature R_1, which runs into a second segment, which runs in turn into a third arcuate inner segment having a radius of curvature R_2, said second segment being relatively flat, R_2 being at least about 2.5 times R_1, and the arc length of the third segment being at least about as long as the length of said second segment.

4,944,757
MODULATOR KNEE PROSTHESIS SYSTEM
David M. Martinez, 5486 Quail Ridge, Camarillo, Calif. 93010; Roger G. Carignan, 2570 Calle Abedul, Thousand Oaks, Calif. 91360, and S. David Stalberg, 5739 S. Blackstone Ave., Chicago, Ill. 60607
Filed Nov. 7, 1988, Ser. No. 268,056
Int. Cl.[5] A61F 2/38
U.S. Cl. 623—20 20 Claims



1. A modular knee joint prosthesis variably using selected prosthetic components to join a variably resected tibia bone to a femur bone comprising:
a tibial platform defining a tibia implantable stem on a bottom surface and an upraised boss on a top surface which is adapted to engage a surface operatively associated with the femur, said platform having engaging and peripheral edges on a bottom surface of said platform to engage components to vary the orientation of said platform between and relative to said femur and tibia bones.

4,944,758
ARTIFICIAL FINGER JOINT
Katsutoshi Bekki, and Shigeo Niwa, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Sep. 16, 1988, Ser. No. 245,255
Claims priority, application Japan, Sep. 18, 1987, 62-141586[U]
Int. Cl.[5] A61F 2/42, 2/32
U.S. Cl. 623—21 10 Claims



1. An artificial finger joint comprising:
a first member adapted for fixation to a first bone including a butt portion shaped generally as a single ball located at one end of said first member and having a socket type structure with an internal opening and a long guide groove extending to said internal opening;
a second member adapted for fixation to a second bone in contact with the butt portion of said first member and including an expanded portion at one end of said second member and a generally cylindrical portion, adjacent the expanded portion along the member, said expanded portion formed as an integral part of said second member and fitted in said internal opening of said first member;
a thin projection along both sides of said long guide groove preventing said expanded portion from separating from said internal opening except at prescribed positions of said first and second members, said long guide groove being adapted for guiding the movement of said second member as it bends relative to said first member in a prescribed direction and said cylindrical portion being adapted for sliding on the projection along the long guide groove; and
an insertion opening in said butt portion for receiving said expanded portion and leading to said internal opening of said butt portion, said insertion opening being located below an upper side of said butt portion.

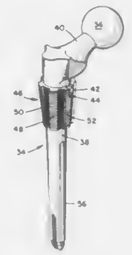
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4,944,759

POROUS-COATED ARTIFICIAL JOINTS

Thomas H. Mallory, Columbus; Timothy McTighe, Chagrin Falls, both of Ohio, and Douglas G. Nolles, New Canaan, Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Continuation of Ser. No. 256,126, Oct. 6, 1988, Pat. No. 4,883,491, which is a continuation of Ser. No. 820,772, Jan. 21, 1986, abandoned. This application Sep. 5, 1989, Ser. No. 402,803
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] A61F *2/28, 2/30, 2/34*
U.S. Cl. 623—22 11 Claims



1. A prosthesis comprising a body having an outside surface upon which is formed a screw thread for engagement with bone, the screw thread being interrupted by porous-coated columns so as to produce an alternating pattern of threaded columns adjacent to porous-coated columns, the threaded columns being free of porous coating and providing initial mechanical fixation of the prosthesis to the bone and the porous-coated columns allowing long-term fixation through bone ingrowth and remodeling.

4,944,760

METHOD AND INSTRUMENTATION FOR THE REPLACEMENT OF A KNEE PROSTHESIS

Robert V. Kenna, Saddle River, N.J., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,714
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 7 Claims

1. A method for surgically replacing in a patient a previously implanted knee joint prosthesis comprising a first femoral component and a first tibial component with a revision knee joint prosthesis comprising a second femoral component and a second tibial component while retaining the lateral and medial collateral ligaments intact and functional, with each of said first and second femoral components and first and second tibial components comprising a spaced pair of bearing members adapted to fit when implanted against the surgically prepared distal femur and proximal tibia, respectively, said first femoral component bearing members being adapted for mutual articulation with said first tibial component bearing members and said second femoral component bearing members being adapted for mutual non-linked articulation with said second tibial component bearing members, and the bearing members of said first and second femoral components including a distal portion adapted to contact the associated tibial component bearing member when the prosthetic knee joint is in extension and a posterior portion adapted to contact the associated tibial component bearing member when the prosthetic knee joint is in flexion, comprising the steps of

(a) selecting a second tibial component;

(b) selecting a second femoral component having bearing members with thicker distal and posterior portions than the bearing members of said first femoral component;

(c) removing said first femoral component and said first tibial component from the body of the patient;

(d) cutting the distal end of the patient's femur and the proximal end of the patient's tibia to prepare said femur and tibia to fit closely with said second femoral component and said second tibial component upon the implantation thereof; and

(e) implanting said second femoral component and said second tibial component at the distal end of the patient's femur and the proximal end of the patient's tibia, respectively,

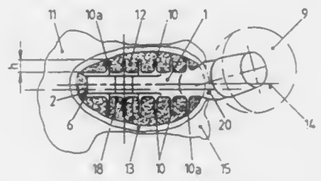
with the dimensions of the bearing members of said second femoral component and said second tibial component being selected so that the natural anatomic transverse joint plane and collateral ligamentous balance are restored in extension and flexion of the prosthetic knee joint.

4,944,761

BLADE-LIKE STEM FOR A FEMORAL HEAD PROSTHESIS

Karl-Gerhart Stuhmer, Ravensburg, Fed. Rep. of Germany, and Rudolf Koch, Berglingen, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 8, 1989, Ser. No. 447,687
Claims priority, application Switzerland, Jan. 10, 1989, 70/89
Int. Cl.[5] A61F *2/36*
U.S. Cl. 623—23 12 Claims



5. A stem for a femoral head prosthesis having

a distal zone;

a proximal zone of rectangular cross-section extending from said distal zone along a longitudinal axis, said proximal zone widening in a medial direction and a lateral direction longitudinally thereof and having a plane posterior side and a plane anterior side; and

a plurality of sharp-edged ribs extending from each said side in parallel to said axis for implanting in spongy tissue of a femur, said ribs on said anterior side being of less height than said ribs on said posterior side, the outermost ribs on each said side being sized to bear on a hard cortical shell of the femur bone to define a resilient four point bearing on the cortical shell with the innermost ribs disposed within the spongy tissue and spaced from the cortical shell.

4,944,762

JOINT ENDOPROSTHESIS

Helmut D. Link, Hamburg, and Arnold Keller, Kayhude, both of Fed. Rep. of Germany, assignors to interplanta Arzt-und Krankenhausbedarf GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 11, 1986, Ser. No. 907,122
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125657; May 3, 1982, 3216533
Int. Cl.[5] A61F *2/32*
U.S. Cl. 623—23 3 Claims

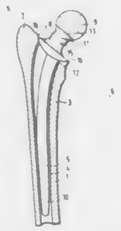
1. A joint endoprosthesis for use with an elongate bone having a bone axis, a hollow interior and a joint end, the joint end modified to expose the hollow interior and create a cylindrical prepared joint surface, the joint surface surrounding one end of the hollow interior and having a resection line at an

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angle to the elongate bone axis, the joint endoprosthesis comprising:

an elongate shaft defined by a longitudinal axis and having first and second ends, said first end configured to be inserted into the hollow interior of said bone and said second end to be adjacent to the prepared joint surface;

said second end having attached thereto a support plate



having an upper surface and a lower surface, said lower surface defining a cylindrical convex surface corresponding to a concave shape of the prepared joint surface;

a combination neck and joint head extending from said upper surface of the support plate wherein said combination neck and joint head defines a central axis; and

said cylindrical surface having an axis of rotation which is spaced eccentrically from said central axis.

4,944,763

FIXING STEM FOR A PROSTHESIS

Hans-Georg Willert, Gottingen, Fed. Rep. of Germany, and Rudolf Koch, Berlingen, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 11, 1989, Ser. No. 393,525

Claims priority, application Switzerland, Aug. 24, 1988, 3144/88

Int. Cl.[5] A61F *2/36, 2/30*

U.S. Cl. 623—23 **11 Claims**



1. A fixing stem for a prosthesis having a plurality of discrete projections in a proximal zone, each said projection being of pyramidal prism shape having an apex directed in a distal direction and an axis directed in parallel to a longitudinal axis of the stem and inclined at an acute angle to said longitudinal axis, said projections having a constant ratio of base height to length along said longitudinal axis with said projections at a proximal end of said zone having a greater base height than projections at a distal end of said zone.

4,944,764

HIP PROSTHESIS

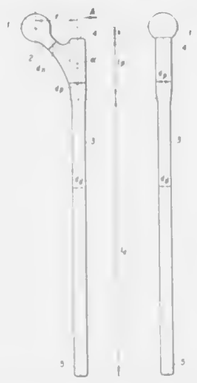
Clifford A. Stossel, Kent, England, assignor to Headcorn Instrumentation Ltd., Kent, England

Filed Jun. 13, 1988, Ser. No. 205,835

Int. Cl.[5] A61F *2/32, 1/04*

U.S. Cl. 623—23 **1 Claim**

1. A hip prosthesis consisting essentially of a generally spherical head, a generally cylindrical neck and a generally cylindrical elongate straight shaft; said shaft being about 18 cm to about 40 cm long, said shaft having a proximal end and a distal end for insertion into the femur of a subject in need of the prosthesis, wherein a distal portion of said shaft has an outer diameter of about 1.3 cm to about 1.5 cm and a proximal portion of said shaft, less than 9.5 cm long and shorter than said distal portion, has an outer diameter of about 1.4 cm to about 1.6 cm and which is greater than said distal portion; wherein



said neck is integrally mounted on said proximal portion of said shaft, the angle between the respective longitudinal axes of said neck and said shaft being about 45°; wherein said head, integrally mounted on said neck, has a diameter of about 2.25 cm to about 5.5 cm; wherein said proximal end of said shaft is spaced by between about 0.5 cm and about 1.5 cm from the plane defined by the center of said head and normal to the longitudinal axis of said shaft; and wherein said center of said head is offset by between about 3.5 cm and about 4.25 cm from said longitudinal axis of said shaft.

4,944,765

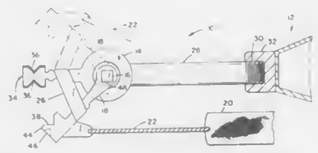
PROSTHETIC DRIVE DEVICE FOR ROTATABLE TOOL

Danny M. Keith, General Delivery, Broadford, Va. 24316

Filed Mar. 20, 1989, Ser. No. 325,999

Int. Cl.[5] A61F *2/54*

U.S. Cl. 623—65 **14 Claims**



1. A tool drive device adapted for attachment to and use with an artificial arm prosthetic member adapted to be affixed to an arm segment for movement therewith, said tool drive comprising tool body means, tool holder means rotatably mounted on said tool body means, lever means engaging said holder means and adapted to be attached to one end of body strap means the other end of which is operator body mounted, whereby relative motion between said operator body and said arm segment will tension said strap means and cause said lever means to rotate said tool holder means relative to said tool body means.

4,944,766

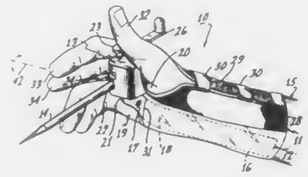
GRIPPING DEVICE

Brian R. Williams, 32802 Valle Rd. #32, San Juan Capistrano, Calif. 92675

Continuation of Ser. No. 167,338, Mar. 14, 1988, abandoned. This application Jul. 20, 1989, Ser. No. 383,281

Int. Cl.[5] A61F *2/68*

U.S. Cl. 623—65 **22 Claims**



1. A prosthetic device, comprising:

an elongated support member having first and second end portions and an intermediate portion extending between the first and second end portions; and

gripping means attached to the second end portion of the elongated support member for holding first and second implements so that a user can support a selected one of the first and second implements in a hand of the user without having to grip the selected one;

the first end portion being dimensioned and arranged to be held on the arm of the user with the first end portion in a position adjacent the inner wrist such that the support member extends toward the hand;

the intermediate portion being dimensioned and arranged to curve slightly over the heel of the hand;

the second end portion being dimensioned and arranged to extend toward the palm of the hand with the gripping means supported generally at the palm of the hand; and

the gripping means being configured so that the first implement is held in a position approximating a conventional writing position and so that the second implement is held in a position such that the second implement extends along a line that lies in a plane generally perpendicular to the axis of the arm, which line is inclined to the plane of the palm toward the thumb.

4,944,767

SYNTHETIC MATERIAL APT TO STABLY ADSORB HIGH QUANTITIES OF HEPARIN, AND PROCESS FOR THE PRODUCTION THEREOF

Rolando Barbucci, Siena; Paolo Ferruti, Milan; Adalberto Grossi, Siena, all of Italy, and Wilfried G. Lemm, Berlin, Fed. Rep. of Germany, assignors to G. Creamascoli S.p.A., Milan, Italy

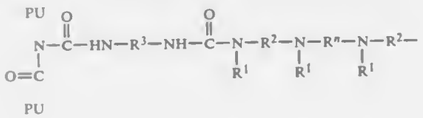
Filed Jan. 15, 1987, Ser. No. 3,537

Claims priority, application Italy, Jan. 16, 1986, 19094 A/86

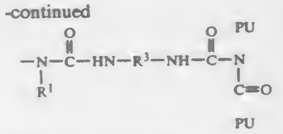
Int. Cl.[5] A61F *2/54*

U.S. Cl. 623—66 **22 Claims**

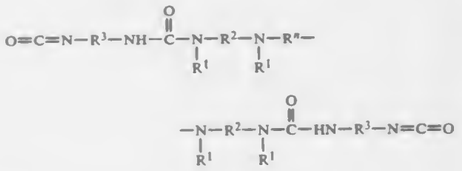
1. Synthetic material apt to stably adsorb high quantities of heparin, characterized in that said synthetic material consists of a polyurethane resin, cross-linked with copolymeric chains in correspondence of at least part of the urethane groups



-continued



of said resin, as per the following general formula:



wherein,

PU—is a polyurethanic polymeric chain;

R^1 is an alkyl or aralkyl, containing functional groups inert to isocyanates;

R^2 is an alkylene;

R^3 is an alkylene, arylene or other bivalent organic residue of a diisocyanate; and

R^n is a polyamidoaminic radical.

4,944,768

SOLID FORMULATION OF ANIONIC WOOL DYES WITH ANIONIC DISPERSANT AND AMPHOTERIC SURFACTANT: GLYCINE OR BETAINE

Paolo Balliello, Rheinfelden, Fed. Rep. of Germany; Otto Schilling, Basel, and Beat Bruttel, Böckten , both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 92,800, Sep. 3, 1987, abandoned. This application Feb. 13, 1989, Ser. No. 309,921

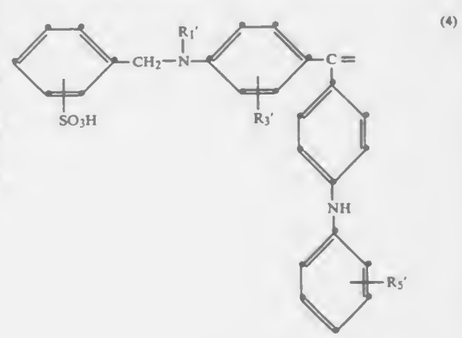
Claims priority, application Switzerland, Sep. 10, 1986, 3638/86

Int. Cl.[5] C09B *67/24;* C11D *1/88;* D06P *3/14*

U.S. Cl. 8—524 **12 Claims**

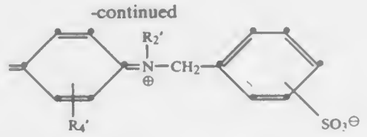
1. A solid formulation comprising 20 to 80% by weight of at least two anionic wool dyes, 1 to 20% by weight of an anionic dispersant and 1 to 20% by weight of at least one amphoteric surfactant, the anionic wool dyes being selected from the group consisting of

(a) triphenylmethane dyes having at least two sulfonic acid groups of the formula



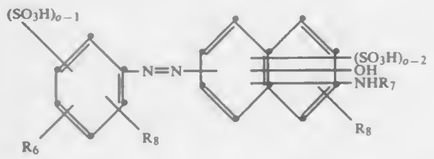
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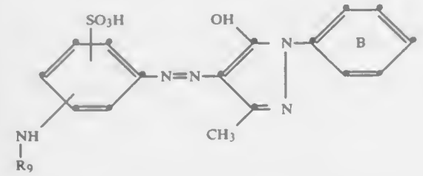
in which R_1', R_2', R_3' and R_4' independently of each other are C_{1-4}-alkyl and R_5' is C_{1-4}-alkyl, C_{1-4}-alkoxy or hydrogen,

(b) monoazo and disazo dyes of the formula



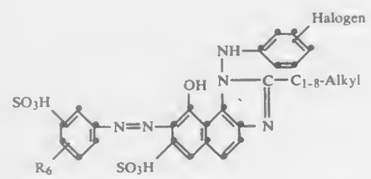
(5)

in which R_6 is a fibre-reactive group bonded via a —NH— group, benzoylamino, phenoxy, chlorophenoxy, dichlorophenoxy or methylphenoxy, R_7 is hydrogen, benzoyl, phenyl, C_{1-4}-alkyl, phenylsulfonyl, methylphenylsulfonyl or a fibre-reactive group which is or is not bonded via aminobenzoyl, and the substituents R_8 are independently of each other hydrogen or a phenylaminosulfonyl or N-phenyl-N-methylaminosulfonyl radical,



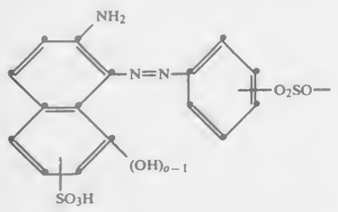
(6)

in which R_9 is a fibre-reactive group and the phenyl ring B can be substituted by halogen, C_{1-4}-alkyl and sulfo,



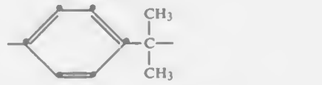
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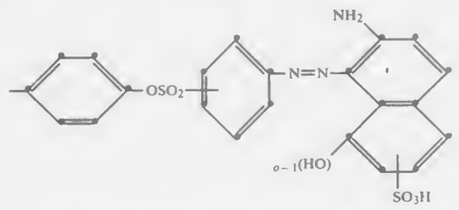
in which R_6 is as defined under formula (5), and



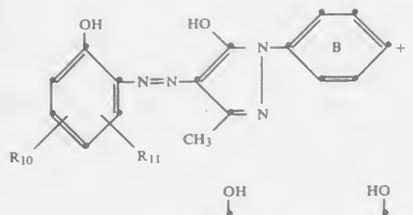
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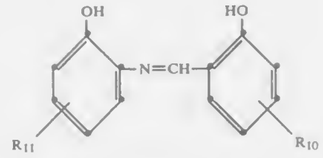




(c) the 1:2 chromium complex dyes of the azo and azomethine dyes of the formula (9)

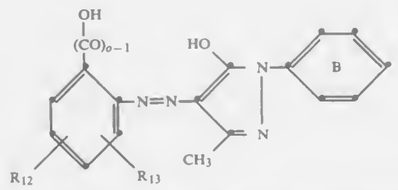


(9)



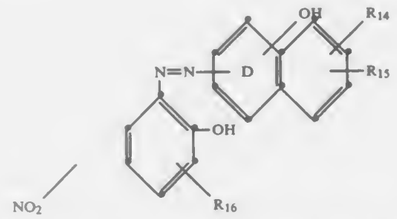
in which R_{10} is hydrogen, sulfo or phenylazo, R_{11} is hydrogen or nitro, and the phenyl ring B can contain the substituents specified under formula (6):

(d) the symmetrical 1:2 chromium complex dyes of azo dyes of the formulae (10) and (11)



(10)

in which the phenyl ring B can contain the substituents specified under formula (6) and R_{12} and R_{13} independently of each other are hydrogen, nitro, sulfo, halogen, C_{1-4}-alkylsulfonyl, C_{1-4}-alkylaminosulfonyl or $—SO_2NH_2$;

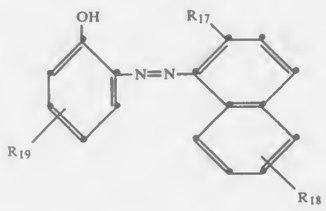


(11)

in which R_{14} is hydrogen, C_{1-4}-alkoxycarbonylamino, benzoylamino, C_{1-4}-alkylsulfonylamino, phenylsulfonylamino, methylphenylsulfonylamino or halogen, R_{15} is hydrogen or halogen, and R_{16} is C_{1-4}-alkylsulfonyl,

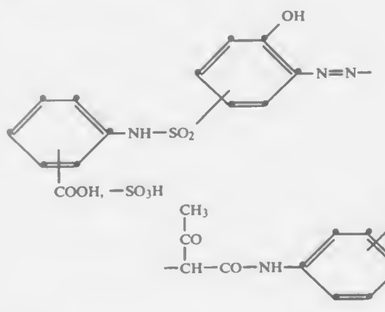
C_{1-4}-alkylaminosulfonyl, phenylazo, sulfo or $—SO_2NH_2$, and where the hydroxyl group in the benzo ring D is bonded in o-position relative to the azo bridge to the benzo ring D;

the symmetrical 1:2 cobalt complexes of azo dyes of the formulae



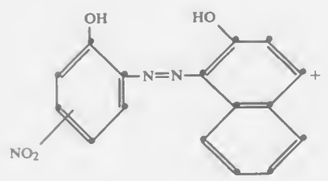
(12)

in which R_{17} is the —OH or NH_2 group, R_{18} is hydrogen or C_{1-4}-alkylaminosulfonyl, and R_{19} is nitro or C_{1-4}-alkoxy-C_{1-4}-alkyleneaminosulfonyl; or



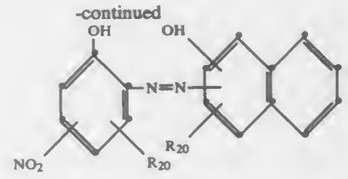
(13)

the 1:2 chromium complex dyes of azo dyes of the formulae

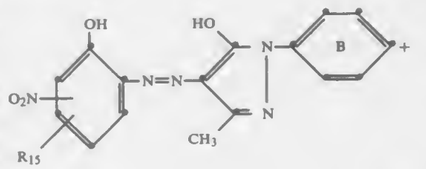


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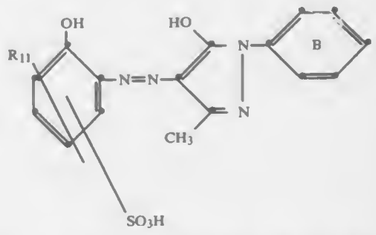
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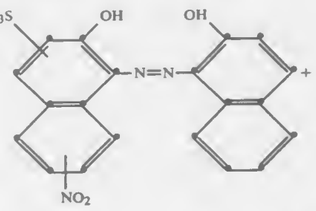
in which one of the substituents R_{20} is hydrogen and the other is sulfo;

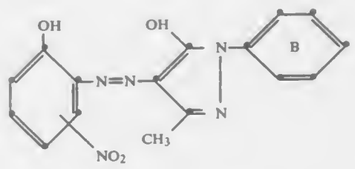


(15)

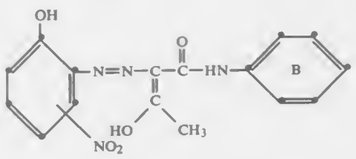


in which R_{11} is as defined under formula (9) and R_{15} is as defined under formula (11), and the phenyl rings B independently of each other can contain the substituents specified under formula (6); or of the formulae



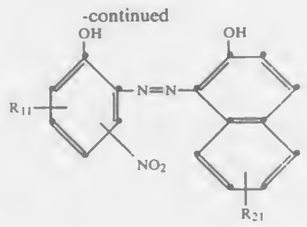


(16)

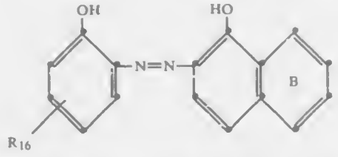


(17)

-continued



(18)



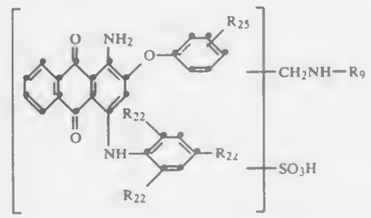
(19)

in which the phenyl ring B in the formulae (16), (17) and (19) can contain the substituents specified under formula (6), R_{11} is as defined under formula (9), R_{21} is hydrogen, methoxycarbonylamino or acetylamino, and R_{16} is as defined under formula (11);

1:2 chromium complex dyes of azo dyes of the formulae (10)+(11); and

1:2 chromium mixed complexes of azo dyes of the formulae (10) and (11); and

(e) anthraquinone dyes of the formulae



(22)

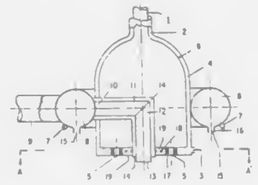
in which R_9 is as defined under formula (6), R_{22} is as defined under formula (20), and R_{25} is C_{4-8}-alkyl.

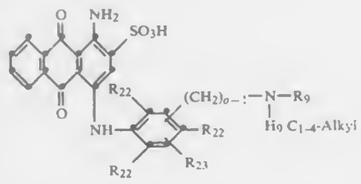
4,944,769

PROCESS FOR THE GRANULATING OF SULPHUR

Roberto Garcia, and Jose H. da Silva, both of Belo Horizonte, Brazil, assignors to Petroleo Brasileiro S.A. - PETROBRAS, Rio de Janeiro, Brazil

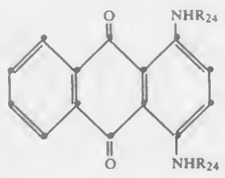
Filed Sep. 16, 1987, Ser. No. 97,031
Int. Cl.[5] B01J *2/00*; B29B *9/00*
U.S. Cl. 23—293 S 6 Claims





(20)

in which R_9 is as defined under formula (6), the R_{22}s independently of each other are hydrogen or C_{1-4}-alkyl, and R_{23} is hydrogen or sulfo;



(21)

in which the substituents R_{24} independently of each other are cyclohexyl or the diphenyl ether radical which can be substituted by sulfo or the radical $—CH_2NH—R_9$ in which R_9 is as defined under formula (6); and

1. A process for granulating sulfur in which a hollow cylindrical jet of melted sulfur strikes a disk resting on a shaft and able to turn freely upon being struck in any way, between the middle of an the outer edge of such disc wherein

a jet of water is provided inside the cylinder produced by said jet of melted sulfur;

another jet of water is provided surrounding said jet of sulfur;

the jets of water and sulfur strike such disk;

the sulfur solidifies into granules as result of the two jets of water striking it; and

said granules and the water are spun out beyond the surface of the disk, said water having been so spun out being substantially free from any solidified sulfur.

4,944,770

MOTOR FUEL ADDITIVE AND ORI-INHIBITED MOTOR FUEL COMPOSITION

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco, Inc., White Plains, N.Y.

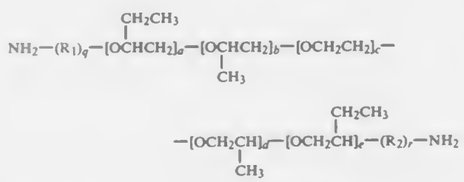
Filed Sep. 2, 1988, Ser. No. 239,865
Int. Cl.[5] C10L *1/18, 1/22*
U.S. Cl. 44—073 9 Claims

1. A composition obtained by reacting, at a temperature of 30° C.–200° C.:

(a) 0.5–2.5 moles of an alkyl-substituted phenol;

(b)0.5–2.5 moles of an aldehyde; and

(c) 0.5–1.5 moles of a polyoxyalkylene diamine of the formula



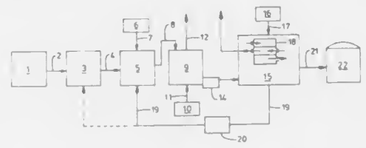
where R_1 and R_2 are C_1–C_{12} alkylene groups, q and r are integers having a value of 0 or 1, c has a value from 2–150, b+d has a value from 2–150, and a+e has a value from 2–12.

4,944,771

METHOD FOR METHANE PRODUCTION

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Frederick A. Hauck, 2 Grandin Terr., Cincinnati, Ohio 45208

Division of Ser. No. 54,529, May 27, 1987, Pat. No. 4,869,729. This application Jul. 19, 1989, Ser. No. 382,545
Int. Cl.[5] C07C *9/04*
U.S. Cl. 48—197 R 8 Claims



1. A process of producing methane which comprises:

forming aluminum carbide by reducing aluminum hydroxide with excess carbon derived from coal at a temperature of at least 1250° C., including the steps of admixing powdered coal and aluminum hydroxide, preheating the mixture in a fluidized bed in a reducing atmosphere, passing the preheated mixture from said fluidized bed downwardly through a flame wherein said mixture is heated to a maximum temperature sufficient to cause melting of aluminum hydroxide with solution of at least part of said coal therein while still in a reducing atmosphere, and collecting the melt in a pool wherein reaction to form aluminum carbide is substantially completed;

quenching the aluminum carbide together with impurities admixed therein;

hydrolyzing said aluminum carbide in the presence of an acid catalyst to form aluminum hydroxide and a hydrocarbon gas consisting essentially of methane; and

returning aluminum hydroxide and admixed impurities formed in the hydrolyzing step to the aluminum carbide forming step for forming additional aluminum carbide.

4,944,772

FABRICATION OF SUPPORTED POLYCRYSTALLINE ABRASIVE COMPACTS

Hyun S. Cho, Sandy, Utah, assignor to General Electric Company

Filed Nov. 30, 1988, Ser. No. 277,874
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 12 Claims

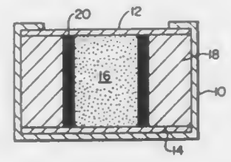
1. A process for fabricating a supported polycrystalline diamond or CBN bi-layer compact which comprises:

(a) forming a sintered polycrystalline diamond or CBN compact having a surface;

(b) separately forming a cemented carbide support having a support surface;

(c) mating said compact and said support at their respective surfaces with a layer of diamond or CBN crystals having a largest dimension of between about 30 and 500 micrometers interposed between said surfaces;

(d) providing a source of catalyst/sintering aid material in association with said layer of crystals;



(e) subjecting said mated compact and support to HP/HT conditions and for a time adequate for converting said diamond or CBN crystals into a polycrystalline diamond or CBN layer and for providing a support polycrystalline bi-layer compact comprising at least two polycrystalline layers.

4,944,773

BONDED ABRASIVE TOOLS WITH COMBINATION OF FINELY MICROCRYSTALLINE ALUMINOUS ABRASIVE AND A SUPERABRASIVE

Charles V. Rue, Petersham; Leonard G. Pukaite, West Boylston, and Krishnamoorthy Subramanian, Groton, all of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 95,781, Sep. 14, 1987, abandoned. This application Sep. 9, 1988, Ser. No. 243,284
Int. Cl.[5] B24D *3/04*
U.S. Cl. 51—307 19 Claims

1. A bonded abrasive tool comprising generally discrete, size graded abrasive grits held in a matrix of a bond material chemically distinct from said abrasive grits, wherein said grits are a mixture of superabrasive grits and aluminous grits, said aluminous grits consisting predominantly of approximately equiaxed alpha alumina or alumina spinel microcrystallites having a maximum dimension of no more than about one micron that have been nickel coated before being bonded into the tool.

4,944,774

HARD FACING FOR MILLED TOOTH ROCK BITS

Madapusi K. Keshavan, Fullerton, Calif.; Lance D. Underwood, Spring, Tex.; Naresh J. Kar, Westminster, Calif.; Thomas W. Oldham, Mission Viejo, Calif.; Cary A. Roth, Moreno Valley, Calif., and Brian J. Armstrong, Seal Beach, Calif., assignors to Smith International, Inc., Houston, Tex.

Division of Ser. No. 139,602, Dec. 29, 1987. This application Mar. 27, 1989, Ser. No. 329,251
Int. Cl.[5] B24D *3/02*
U.S. Cl. 51—309 23 Claims

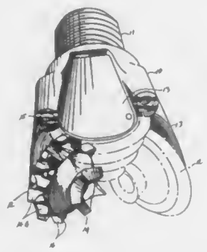
1. A rock bit hard facing comprising:

steel in the range of from 18% to 32% by weight; and

filler in the range of from 68% to 82% by weight, the filler comprising:

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from 20% to 65% by weight single crystal monotungsten carbide particles;



from 35% to 80% by weight cemented tungsten carbide particles; and

a balance of steel deoxidizer.

4,944,775

PREPARATION OF POLY(PHENYLENE OXIDE) ASYMMETRIC GAS SEPARATION MEMBRANES

Richard A. Hayes, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1989, Ser. No. 378,097

Int. Cl.[5] B01D *53/22, 69/04, 71/38*

U.S. Cl. 55—16 **27 Claims**

1. A process for preparing an integrally-skinned asymmetric poly(phenylene oxide) gas separation membrane comprising,

forming a solution of from 5 to 50 weight percent of film forming molecular weight poly(2,6-dimethylphenylene-1,4-oxide) in a solvent mixture comprising a main constituent of an aprotic solvent at from 50° C. to 200° C.,

forming said solution into a nascent membrane,

partially drying said nascent membrane for 0.005 to 10 minutes at 20° C. to 200° C., and

precipitating said nascent membrane in a coagulation bath at 0° C. to 80° C., said coagulation bath being a non-solvent for the poly(phenylene oxide) while being miscible with the main constituent of the solvent mixture.

26. A gas separation membrane prepared by the process of claim 1.

4,944,776

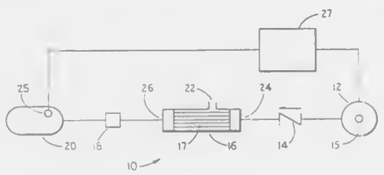
DEHUMIDIFIER FOR WAVEGUIDE SYSTEM

Lloyd A. Keyser, Dallas; Donald A. Nelson, Allen, and David C. Thornton, Grapevine, all of Tex., assignors to Andrew Corporation, Orland Park, Ill.

Filed Oct. 5, 1989, Ser. No. 417,595

Int. Cl.[5] B01D *53/22*

U.S. Cl. 55—16 **42 Claims**



1. A method of dehumidifying gas comprising the steps of

routing gas through a membrane cartridge for a first time period, said membrane cartridge having membranes which filter water vapor contained in said gas through said membranes, said membrane cartridge having a first outlet for ejecting dehumidified gas from said cartridge and a second outlet for ejecting water vapor from said cartridge;

directing said dehumidified gas from said first outlet of said membrane cartridge into a dry gas system; and

passing gas back into said membrane cartridge through said first outlet for a second time period after said first time period.

25. A gas supply system for furnishing pressurized and dehumidified gas to a selected space, said system comprising

a primary gas source for supplying pressurized gas,

a membrane cartridge having an inlet for receiving said pressurized gas from said primary gas source and an outlet for supplying dehumidified, pressurized gas to said selected space, said cartridge having membranes which filter water vapor contained in said gas through said membranes, and a second outlet for ejecting water vapor from said cartridge,

control means for repetitively energizing and de-energizing said primary gas source so that said pressurized gas is supplied intermittently to said selected space, and

a secondary gas source for supplying gas to said membrane cartridge when said primary gas source is de-energized so as to maintain the effectiveness of said membranes during the periods of de-energization of said primary gas source.

4,944,777

SEPARATING HYDROGEN FROM A MIXTURE OF SUBSTANCES

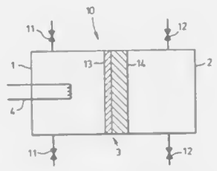
Walter T. Shmayda, 240 Melrose Avenue, King City, Ontario, Canada; Francois Waelbroeck, Mannheimer Str. 4, D-5170 Juelich, Fed. Rep. of Germany; Peter Wienhold, Rurallee 7, D-5172 Linnich, Fed. Rep. of Germany, and Joerg Winter, Auestrasse 36, D-5162 Niederzier, Fed. Rep. of Germany

Filed Sep. 16, 1985, Ser. No. 776,623

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1984, 3434150

Int. Cl.[5] B01D *53/22, 71/02*

U.S. Cl. 55—16 **9 Claims**



1. A method of separating hydrogen from a gas mixture by diffusion, which method comprises:

providing a diffusion cell including first and second chambers separated by a non-porous membrane which is selectively permeable to hydrogen, the membrane comprising at least two layers consisting respectively of a first material on one side of the membrane adjacent to the first chamber and a second material on the other side of the membrane adjacent to the second chamber, the first material being less dissolving to hydrogen and having a lower release rate constant at the operating temperature than the second material,

admitting the gas mixture to the first chamber,

at least partially dissociating the hydrogen of the mixture in said first chamber,

contacting the mixture with said one side of the membrane whereby hydrogen diffuses through the membrane, and

collecting the diffused hydrogen in said second chamber.

4,944,778

ELECTROSTATIC DUST COLLECTOR

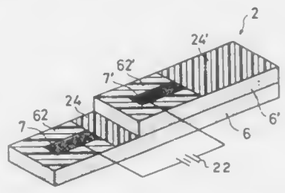
Motoo Yanagawa, Tokyo, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 754,314, Jul. 12, 1985, abandoned. This application Jul. 13, 1987, Ser. No. 389,414

Claims priority, application Japan, May 30, 1985, 60-115342; May 30, 1985, 60-115343

Int. Cl.[5] B0BC *3/00*

U.S. Cl. 55—131 **5 Claims**



1. An electrostatic dust collector comprising a filter element formed of narrow elongated strips of pliable, porous dielectric filter material having a gas barrier film on at least one surface thereof of each strip, said narrow strips and electrodes therebetween being superimposed in face to face contact, and at least on one gas barrier film and electrode therebetween and on each strip, so that said pliable, porous dielectric filter material fills the space between the gas barrier film and electrodes with no air gap exists between said face to face strips, means for applying an electrical voltage to said electrodes for forming an electrical field therebetween in the pores of said porous dielectric filter material and means for passing gas containing particles through said strips in a stream parallel to said contacting faces and said gas barrier film therebetween and through said pores of said porous material to electrically charge said particles and to attract said charged particles to a wall of said pores charged by said electrical field to remove said charged particles from said gas passing therethrough.

4,944,779

VAPOR RECOVERY SYSTEM

Emil Szlaga; Robert S. Harris, and Robert H. Thompson, all of Connersville, Ind., assignors to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 236,798, Aug. 26, 1988, Pat. No. 4,836,835, which is a continuation-in-part of Ser. No. 106,632, Oct. 8, 1987, Pat. No. 4,816,045, which is a continuation-in-part of Ser. No. 846,081, Mar. 31, 1986, Pat. No. 4,770,677. This application Apr. 7, 1989, Ser. No. 334,724

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] B01D *53/00*

U.S. Cl. 55—168 **23 Claims**

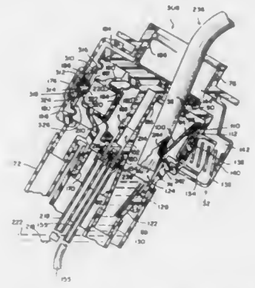
1. An apparatus for recovering fuel vapors discharged from a vehicle fuel system during refueling, the vehicle fuel system including a fuel tank having a filler neck and canister means for processing fuel vapor, the apparatus comprising

means for conducting fuel vapor between the fuel tank and the canister means,

first valve means for selectively blocking flow of fuel vapor through the conducting means, the first valve means being movable in the conducting means between a flow-blocking position and flow-delivery positions, the first valve means dividing the conducting means upon movement of the first valve means to its flow-blocking position into an inner region communicating with the fuel tank and an outer region communicating with the canister means,

first passageway means for communicating a closing pressure from the fuel tank to the first valve means to move the first valve means to its flow-blocking position,

means for selectively venting the first passageway means to the atmosphere to dissipate any closing pressure therein to permit pressure generated by fuel vapor in the fuel tank having a magnitude in excess of a predetermined threshold level and communicated to the first valve means via the inner region of the conducting means to apply a load to the first valve means sufficient to move the first valve means from its flow-blocking position to a flow-delivery position, thereby permitting pressurized fuel vapor to



flow from the fuel tank to the canister means through the conducting means, and

second passageway means for communicating fuel vapor from the first passageway means to the inner region of the conducting means while the first valve means is in its flow-blocking position, the second passageway means being situated outside of the fuel tank filler neck.

4,944,780

CENTRAL VACUUM CLEANER WITH DETACHABLE FILTER ASSEMBLY

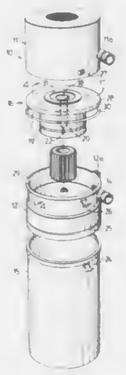
Kal Usmani, 11 Morningdew Dr., Brantford, Ontario, Canada N3R 3P1

Filed Feb. 17, 1989, Ser. No. 311,807

Claims priority, application Canada, Jan. 12, 1989, 588134

Int. Cl.[5] B01D *50/00*

U.S. Cl. 55—337 **3 Claims**



1. A cyclonic-separator type central vacuum cleaner comprising releasably secured sub-assemblies including:

a motor/exhaust housing sub-assembly having an exhaust outlet, and housing a fan motor and a vacuum inducing fan operably connected in driven relation therewith, said housing having a substantially open bottom;

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a substantially open topped and open bottomed vacuum inlet sub-assembly, adapted to be secured to a vacuum cleaner-supporting horizontal surface, and releasably secured in axial register with said substantially open bottom of said motor/exhaust housing sub-assembly, said vacuum inlet sub-assembly comprising a cylindrical body having a tangential air inlet arranged adjacent the substantially open top thereof;

a substantially open topped dust collecting sub-assembly releasably secured in axial register with the open bottom of said vacuum inlet sub-assembly;

an in-line-filter-supporting vortex finder comprising a plate releasably secured in removable clamped relation intermediate between said motor/exhaust housing and vacuum inlet sub-assemblies, said plate defining a septum between the open base and the open top of the respective ones of the motor/exhaust housing and vacuum inlet sub-assemblies and having a generally centrally located aperture communicating between opposed sides of said plate and opening on one side thereof into a cylindrical vortex finder that is secured at a first end thereof to said one side of said plate, and extends downwardly from said one side into the interior of said vacuum inlet sub-assembly to terminate below said tangential air inlet at a second open end, in inlet airflow deflecting relation;

wherein filter mounting means is fixed to said vortex finder with a demountable filter secured thereto in vortex finder supported relation, said filter being shielded by said cylindrical vortex finder and arranged therein in operative inline filtering relation of an airflow passing from within said cylindrical vortex finder and through said aperture, that is induced between said inlet and said exhaust outlet by the operation of said vacuum inducing fan.

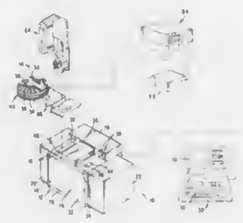
whereby, with the motor/exhaust housing sub-assembly removed from said vacuum cleaner and the plate thereby released from said secured clamped relation, said vortex finder is upwardly removable from said vacuum inlet sub-assembly with said filter transported therein in shielded relation, to permit said vortex finder to be inverted and the filter demounted from said filter mounting means without undue release of dust into a surrounding living space.

4,944,781

GAS CHROMATOGRAPH/AUTOSAMPLER COUPLING ASSEMBLY

Donald A. Ruggirello, Sunrise, and Christopher R. Banfield, Plantation, both of Fla., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jul. 12, 1989, Ser. No. 378,745
Int. Cl.[5] B01D *53/02*; G01N *30/88*
U.S. Cl. 55—386 **25 Claims**



1. An assembly for coupling an autosampler mounted on a mounting plate, to a gas chromatograph having an injection site, said assembly comprising:

bracket means for mounting said mounting plate to said gas chromatograph, said bracket means being secured to said gas chromatograph adjacent injection site so as to permit access to said injection site by said autosampler; and

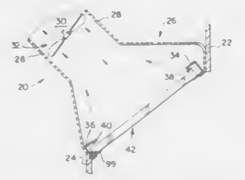
securement means for securing said mounting plate on said bracket means.

4,944,782

BAFFLE TYPE HOOD AND DUCT FILTERS FOR COMMERICAL USE

Narayanan Rajendran, Melrose Park, and Karl G. Otzen, Barrington, both of Ill., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 360,367, Mar. 22, 1982, abandoned.
This application Feb. 6, 1989, Ser. No. 308,957
Int. Cl.[5] B01D *45/00*
U.S. Cl. 55—444 **22 Claims**



1. A combination range hood filter and flame arrester unit adapted for removable reception in an associated range hood, said unit including a body having upstream and downstream face elements, with said upstream face element being subdivided into generally planar, upper, lower and side surfaces combining to define the outer front face margins of said body, and a plurality of contoured front panels joined at their ends to at least two of said front face margin surfaces, said contoured front panels being also spaced apart from each other to define therebetween plural air inlet areas, with each contoured panel including an outer marginal surface, tapered offsetting surfaces, and a flat central impactor panel offset toward the interior of the said body from the plane of the surrounding marginal panel surfaces, with said downstream face element also including upper, lower and side surfaces defining the outer rear face margins of said body, and a plurality of contoured panels joined at their respective ends to at least two said rear face margin surfaces, said contoured rear panel also having outer, generally planar margins, inner offset surfaces lying inwardly of said body, and offsetting surfaces extending between said panel margins and said inner offset surfaces, with said rear panels being likewise spaced apart from each other so as to define therebetween plural air outlet areas, with said individual front and rear panels being arranged in staggered, partially overlapping relation to one another to provide a labyrinthine flow path for grease-laden exhaust air, and with each panel further including means defining a path for accumulated grease and the like to drain from the surfaces of said panels past at least said bottom face margin of said body to a collection area.

4,944,783

METHOD FOR PRODUCING GLASS PREFORM FOR SINGLE MODE OPTICAL FIBER

Hiroyasu Hongo, and Yuji Takahashi, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

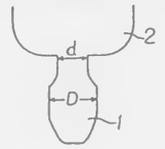
Filed Dec. 8, 1988, Ser. No. 281,067
Claims priority, application Japan, Dec. 11, 1987, 62-312104
Int. Cl.[5] C03B *19/06, 37/07*
U.S. Cl. 65—3.11 **3 Claims**

1. A method for producing a glass preform for use in the fabrication of a single mode optical fiber, which comprises steps of:

forming a porous core body and a porous cladding body simultaneously while heating a part of the porous core body to partially shrink the core body so that a ratio of a diameter of the shrunk part of the core body to that of the unshrunk part of the core body is adjusted in the range between 0.65 and 0.9 by

measuring the diameters of the shrunk part and the unshrunk part of the core body,

calculating a ratio of the diameter of the shrunk part of the



core body to that of the unshrunk part of the core body and

adjusting a heating degree of the part of the core body to be shrunk so that said ratio of the diameters is in said range through adjustment of temperature at the part of the core body, and

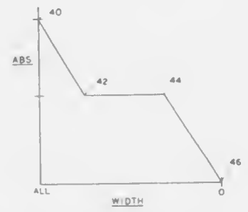
then heating the porous glass preform to consolidate it to obtain a transparent glass preform.

4,944,784

PROCESS FOR PREPARING A BOROSILICATE GLASS

Jeffrey T. Kohli, Alfred, and James E. Shelby, Alfred Station, both of N.Y., assignors to Alfred University, Alfred, N.Y.

Filed Nov. 3, 1989, Ser. No. 431,633
Int. Cl.[5] C03C *3/091, 23/00*; C03B *32/00*
U.S. Cl. 65—32.3 **20 Claims**



1. A process for preparing a surface-darkened glass, comprising the steps of sequentially:

(a) providing an alkali alumino-borosilicate silicate glass comprised of from about 50 to about 85 weight percent of silica, from about 4 to about 26 weight percent of boron, from about 1 to about 26 weight percent of alumina, from about 0 to about 20 parts per million of silver ion, from about 0 to about 20 parts per million of halide ion, from about 0.2 to about 10.0 weight percent of antimony ion, and alkali, wherein said alkali is selected from the group consisting of from about 2 to about 8 weight percent of lithium oxide, from about 4 to about 15 percent of sodium oxide, from about 6 to about 20 weight percent of potassium oxide, from about 8 to about 25 weight percent of rubidium oxide, from about 10 to about 30 weight percent of cesium oxide, and mixtures thereof; and

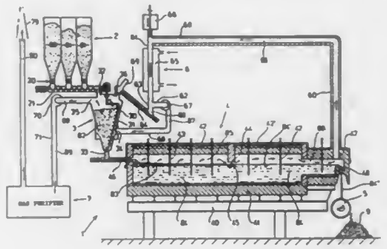
(b) subjecting said glass to a temperature of from about 350 to about 1,000 degrees Celsius for from at least about 30 minutes while contacting said glass with hydrogen-containing gas.

4,944,785

PROCESS USING MELT ACCELERATOR FOR THE CONVERSION OF SOLID WASTE SUBSTANCES INTO GLASS

Helmut Sorg, Glattbach; Helmut Pieper; Hartmut Zachocher, both of Lohr/Main, and Heinz Meriet, Kelkheim, all of Fed. Rep. of Germany, assignors to SORG Gmbh & Co. KG, Lohr-/Main and Metallgesellschaft AG, Frankfurt, both of, Fed. Rep. of Germany

Filed Jun. 23, 1989, Ser. No. 370,593
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841889; Feb. 2, 1989, 3904613
Int. Cl.[5] C03B *5/04*
U.S. Cl. 65—136 **12 Claims**



1. Process for converting solid, dehydrated waste substance into glass, comprising

mixing the waste substances with at least one additive to form a mixed batch,

generating a gall layer of alkali salt or alkaline earth salt on the surface of a glass melt heated solely by electrodes, and

introducing the mixed batch onto said glass melt surface so that a major portion is melted into the melt and a minor portion produces an exhaust gas emerging from the melt, said gall layer serving as a melt accelerator,

introducing the exhaust gas into the batch to be melted, thereby cooling said gas and producing condensation products in the batch, and

reintroducing said condensation products into the melt with the batch.

4,944,786

APPARATUS FOR MANUFACTURING THERMAL PRINT HEAD

Goro Oda; Niro Nagata; Yoshitsugu Nakatomi, all of Kanagawa; Takashi Sawafuji, Tokyo; Yoshihisa Shinozaki, Saitama, and Eizo Goto, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 161,368, Feb. 22, 1988, which is a continuation of Ser. No. 937,483, Dec. 3, 1986, abandoned. This application Jul. 15, 1988, Ser. No. 220,064
Claims priority, application Japan, Dec. 26, 1985, 60-292044
Int. Cl.[5] C03B *29/04, 5/02*; C03C *27/02*
U.S. Cl. 65—154 **5 Claims**

1. An apparatus for forming a glass glaze layer on an elongated base, comprising:

a furnace having a space to accommodate molten glass therein;

a pair of opposed electrodes disposed within said furnace with their opposed faces inclined such that the distance between them is smallest at their upper ends, and said distance increases towards their lower ends, said electrodes extending to the surface of the molten glass;

means for supplying electric power across the electrodes;

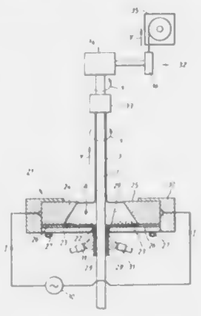
said furnace defining an opening provided at the bottom of

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said furnace to allow the base inserted therethrough parallel to the direction of elongation of the base;

means for withdrawing the base inserted in said opening as the base passes through the molten glass, said withdrawing means including:

means for gripping the top end of the base,



means for rotating said gripping means, and

means for lifting said rotating means and gripping means upward; and

means for cooling the molten glass at the bottom of said furnace.

4,944,787

THERMALLY STABLE UREA-SULFURIC ACID COMPOSITIONS AND METHODS OF MANUFACTURE

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 442,296, Nov. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 318,629, Nov. 5, 1981, Pat. No. 4,445,925. This application Nov. 20, 1984, Ser. No. 673,508

Int. Cl.[5] **C05C** *9/00*

U.S. Cl. 71—28 **78 Claims**

1. A thermally stable composition comprising urea and sulfuric acid which composition contains about 1 weight percent water or less based on the combined weight of said urea and said sulfuric acid.

4,944,788

SUBSTITUTED NITRO AND CYANOGUANIDINES AND THEIR USE FOR INCREASING CROP YIELDS

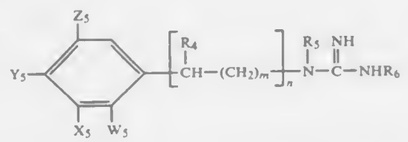
Laurine M. Speltz, Princeton; Bryant L. Walworth, Pennington, and Alexander D. Pavlista, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 835,847, Mar. 3, 1986, Pat. No. 4,804,780, which is a division of Ser. No. 551,611, Nov. 17, 1983, Pat. No. 4,594,092, which is a continuation-in-part of Ser. No. 451,698, Dec. 20, 1982, abandoned. This application Dec. 1, 1988, Ser. No. 278,709

Int. Cl.[5] **A01N** *43/16, 37/06;* **C07D** *309/12;* **C07C** *63/06*

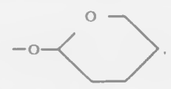
U.S. Cl. 71—88 **17 Claims**

1. A method for increasing crop yield of underground step crops, underground stem ornamentals, root crops, graminaceous crops, forage crops, tomatoes, tabacco, sunflowers, cucurbits, cotton, and epigynous fruits, said method comprising: applying to the foliage thereof or to soil containing the seeds or other propagating organs thereof, a crop-yield enhancing amount of a compound having the following structural formula,



(V)

wherein W_5 is H, F or Cl; X_5 is H, straight or branched C_1–C_4 alkyl, halogen, CN, NO_2, CH_2CN. $OCHF_2$, OCF_2CHF_2, OCF_3, CF_3, C_1–C_4 alkoxy,



tetrahydro-2H-pyran-2-yl, OH, $C(OH)_2CF_3$, SCH_3, $COCH_3$, $N(CH_3)_2$, $COOCH_3$ or CH_2OR_3 where R_3 is H or CH_3; Y_5 is H, OH, OCH_3, CH_3 or halogen; Z_5 is H, CH_3, halogen, OCH_3 or CF_3; R_4 is H, CH_3 C_2H_5 or CF_3; R_5 is H or CH_3; R_6 is NO_2 or CN; m is an integer of 0, 1 or 2; n is an integer of 0 or 1; and the salts or tautomers thereof.

4,944,789

AZETIDINE DERIVATIVE AND THEIR USE FOR REGULATING PLANT GROWTH

Costin Rentzea, Heidelberg; Wilhelm Rademacher; Johann Jung, both of Limburgerhof, and Albrecht Harreus, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

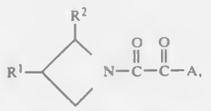
Filed Jul. 7, 1989, Ser. No. 376,994

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1988, 3824052; May 19, 1989, 3916364

Int. Cl.[5] **A01N** *43/34;* **C07D** *205/04*

U.S. Cl. 71—88 **5 Claims**

1. Azetidine compound of the formula I



(I)

where R^1 and R^2 are each hydrogen or C_1–C_3-alkyl. A is $—XR^3$ or $—N(R^5)—OR^4$, X is oxygen or sulfur, R^3 is C_1–C_{20}-alkyl, C_1–C_{20}-haloalkyl, C_3–C_{18}-alkenyl, C_3- or C_4-alkynyl, bridged C_3–C_{12}-cycloalkyl or C_4–C_{12}-alkylcycloalkyl, the cycloalkyl radicals or alkylcycloalkyl radicals being unsubstituted or substituted by C_1–C_5-alkyl or cyclohexyl, R^4 is C_1–C_{20}-alkyl, C_1–C_{12}-haloalkyl, C_1–C_6-cyanoalkyl, C_1–C_{12}-alkoxyalkyl, C_3–C_{18}-alkenyl, C_3–C_{18}haloalkenyl, C_3- or C_4-alkynyl, C_3–C_{12}-cycloalkyl or C_4–C_{12}-cycloalkylalkyl, C_3–C_1.$_6$alkoxycarbonylalkyl or C_7–C_{20}-aralkyl being unsubstituted or substituted on the aromatic group by halogen, nitro, halo-C_1–C_4-alkyl, C_1–C_4-alkyl or C_1–C_4-alkoxy, and R^5 is hydrogen or C_1–C_3-alkyl.

4. A process for regulating plant growth, wherein the soil, the plants or the seed are treated with an azetidine compound of the formula I as set forth in claim 1.

5. A process for regulating plant growth, wherein an effective amount of at least one azetidine compound of the formula I as set forth in claim 1 is allowed to act on plants or their habitat.

4,944,790

1,5-DIPHENYLPYRAZOLE-3-CARBOXYLIC ACID DERIVATIVES FOR THE PROTECTION OF CULTIVATED PLANTS

Hans Moser, Magden; Beat Böhner, Binningen, and Werner Föry, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

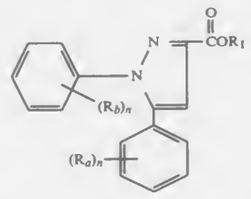
Division of Ser. No. 109,667, Oct. 16, 1987. This application Mar. 20, 1989, Ser. No. 325,833

Claims priority, application Switzerland, Oct. 22, 1986, 4215/86; Oct. 22, 1986, 4217/86

Int. Cl.[5] **A01N** *43/60, 43/56;* **C07D** *405/12, 403/12*

U.S. Cl. 71—92 **8 Claims**

1. A 1,5-diphenylpyrazole-3-carboxylic acid of the formula:



in which R_1 is

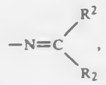
(i) hydrogen;

(ii) a plant-physiologically acceptable metal or ammonium cation;

(iii) an unsubstituted, monosubstituted or polysubstituted alkyl group of 1 to 18 carbon atoms or cycloalkyl group of 3 to 18 carbon atoms in which the substituents are selected from the group consisting of alkenyl of 2 to 8 carbon atoms, alkynyl of 2 to 8 carbon atoms, cycloalkenyl of 3 to 8 carbon atoms, halo, nitro, cyano, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms, carbamoyl, dialkylcarbamoyl in which each alkyl group has 1 to 4 carbon atoms, amino, alkylamino of 1 to 4 carbon atoms, and dialkylamino in which each alkyl group has 1 to 4 carbon atoms;

(iv) the group -U in which U is unsubstituted, monosubstituted or polysubstituted phenyl or naphthyl in which the substituents are selected from the group consisting of halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, cyano, nitro, carboxy, alkoxycarbonyl of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms, carbamoyl, alkylcarbamoyl of 1 to 4 carbon atoms, dialkylcarbamoyl wherein each alkyl group has 1 to 4 carbon atoms, sulfamoyl, alkylsulfamoyl of 1 to 4 carbon atoms, dialkylsulfamoyl wherein each alkyl group has 1 to 4 carbon atoms, pyrrolidino, piperidino, pyrrolidinocarbonyl, piperidinocarbonyl, and morpholinocarbonyl;

(v) the group -EU in which U is as herein defined and E is alkylene of 1 to 4 carbon atoms, alkenylene of 2 to 4 carbon atoms, or alkynylene of 2 to 4 carbon atoms; or



(vi)

in which each R_2, independently of the other, is alkyl of 1 to 4 carbon atoms or cycloalkyl of 3 to 7 carbon atoms or together with the carbon atom to which they are bound are a saturated carbocylic ring of 5 to 7 carbon atoms, unsubstituted or substituted with one or more alkyl groups totaling no more than 6 carbon atoms;

each n, independently of the other, has a value of 1 to 3;

R_b is halo, alkyl of 1 to 5 carbon atoms, haloalkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, alkynyl of 2 to 5 carbon atoms, cyano or alkoxy; and

R_a is hydrogen, halo, alkyl of 1 to 5 carbon atoms, haloalkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, alkynyl of 2 to 5 carbon atoms, alkoxy or cyano, with the proviso that when R_a is hydrogen, R_1 is hydrogen or ethyl, and R_b is methyl or halo, R_b is in the ortho position.

8. A composition for protecting cultivated plants from the phytotoxic action of herbicidally active 2-[4-(phenoxy, pyridin-2-yloxy, benzoxazolyloxy, benzthiazolyloxy and quinoxalin-2-yloxy)-phenoxy]-propionic acid esters, which contains besides inert carrier material as active ingredient a herbicidally antagonistic effective amount of a 1,5-diphenylpyrazole-3-carboxylic acid derivative according to claim 1.

4,944,791

HERBICIDAL HYDANTOINS

Ludwig Schröder, Ingelheim; Werner Stransky, Gau-Algesheim; Rudolf Mengel, Ingelheim, all of Fed. Rep. of Germany; Erich Raddatz, Cali, Colombia; Sigmund Lust, Darmstadt; Gerbert Linden, Ingelheim, and Gerhart Schneider, Mühltal, all of Fed. Rep. of Germany, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

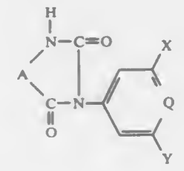
Continuation of Ser. No. 157,903, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 46,622, May 4, 1987, abandoned, which is a continuation of Ser. No. 856,825, Apr. 18, 1986, abandoned, which is a continuation of Ser. No. 774,901, Sep. 11, 1985, abandoned, which is a continuation of Ser. No. 623,961, Jun. 25, 1984, abandoned, which is a continuation of Ser. No. 492,946, May 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 479,709, Mar. 28, 1983, abandoned. This application Dec. 14, 1988, Ser. No. 284,093

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213140; Oct. 16, 1982, 3238447; Jan. 14, 1983, 3301008

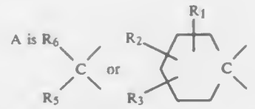
Int. Cl.[5] **A01N** *43/50, 43/52;* **C07D** *401/04*

U.S. Cl. 71—92 **13 Claims**

1. A compound of the formula



wherein Q is —CH= or —N=;



R_1, R_2 and R_3 are each independently hydrogen or alkyl of 1 to 4 carbon atoms, at least one of R_1, R_2 and R_3 being hydrogen; R_4 and R_5 are each independently alkyl of 1 to 4 carbon atoms or cycloalkyl of 3 to 6 carbon atoms; provided that at least one of them is C_3-alkyl or C_3-cycloalkyl; and X and Y are halogen, with the proviso that Q is not —CH= when A is



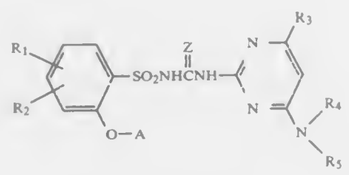
VOL 1116 ISS 5 JL 31 1990 UMI

4,944,792
N-PHENYLSULFONYL-N'-PYRIMIDINYLUREAS

Willy Meyer, Riehen; Werner Föry, Basle, and Karl Gass, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 430,635, Sep. 30, 1982, Pat. No. 4,579,584. This application Jan. 16, 1986, Ser. No. 819,431
Claims priority, application Switzerland, Oct. 13, 1981, 6541/81
Int. Cl.[5] C07D *239/48;* A01N *43/54*
U.S. Cl. 71—92 25 Claims

1. A compound selected from the group consisting of a pyrimidinylsulfonylurea of the formula:



wherein
Z is O or S;
A is (i) alkynyl of 3 to 6 carbon atoms, (ii) an alkyl group of 1 to 6 carbon atoms substituted with halo, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, haloalkyl sulfinyl or haloalkylsulfonyl; or (iii) an alkenyl group of 2 to 6 carbon atoms which is unsubstituted or substituted with halo, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, haloalkyl sulfinyl or haloalkylsulfonyl;
R_1 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, or R_6—Y—
in which
Y is O, S, SO, or SO_2 and
R_6 is alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms or alkynyl of 2 to 6 carbon atoms;
R_2 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, haloalkyl of 1 to 4 carbon atoms, R_5—Y—, nitro, R_7OCO—, or R_8R_9NCO—,
in which
Y and R_6 are as defined above;
R_7 is an alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, or alkynyl of 2 to 6 carbon atoms; and
each of R_8 and R_9 is independently hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms or alkynyl of 2 to 6 carbon atoms;
R_3 is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, or alkoxyalkyl of up to 4 carbon atoms;
R_4 is hydrogen, methyl, or ethyl; and
R_5 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms, methoxymethyl, cyanomethyl, or cyanoethyl; and the salts thereof.

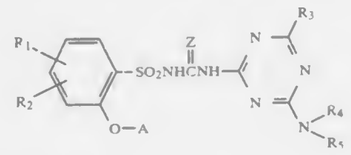
12. A herbicidal and growth-regulating composition which comprises an effective amount of at least one compound according to claim 1, together with a suitable carrier therefor.

4,944,793
N-PHENYLSULFONYL-N-TRIAZINYLUREAS

Willy Meyer, Riehen; Werner Föry, Basel, and Karl Gass, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 430,635, Sep. 30, 1982, Pat. No. 4,579,584. This application Sep. 19, 1985, Ser. No. 777,899
Claims priority, application Switzerland, Oct. 13, 1981, 6541/81
Int. Cl.[5] A01N *43/68, 43/70;* C07D *251/18, 251/52*
U.S. Cl. 71—93 23 Claims

1. A compound selected from the group consisting of a triazinylsulfonylurea of the formula:



wherein z is O or S;
A is alkynyl of 3 to 6 carbon atoms;
R_1 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, or R_6—Y—in which Y is O, S, SO or SO_2; and
R_6 is an alkyl, alkenyl, or alkynyl group of up to 5 carbon atoms;
R_2 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, haloalkyl of 1 to 4 carbon atoms, R_5—Y—, nitro, R_7OCO—, or R_8R_9NCO—, in which Y and R_6 are as defined above;
R_7 is an alkyl, alkenyl, or alkynyl group of up to 5 carbon atoms; and each of R_8 and
R_9 are hydrogen or an alkyl, alkenyl or alkynyl group of up to 5 carbon atoms;
R_3 is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, or alkoxyalky of up to 4 carbon atoms;
R^4 is hydrogen. methyl, or ethyl; and
R_5 is hydrogen, alkyl of 1 to 4 carbon atoms. alkoxy of 1 to 3 carbon atoms, methoxymethyl, cyanomethyl, or cyanoethyl; and the salts thereof.

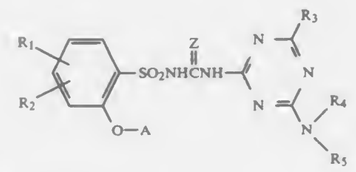
14. A herbicidal and growth-regulating composition which comprises an effective amount of at least one compound according to claim 1, together with a suitable carrier therefor.

4,944,794
N-PHENYLSULFONYL-N TRIAZINYLUREAS

Willy Meyer, Riehen; Werner Föry, Basel, and Karl Gass, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 430,635, Sep. 30, 1982, Pat. No. 4,579,584. This application Sep. 19, 1985, Ser. No. 777,900
Claims priority, application Switzerland, Oct. 13, 1981, 6541/81
Int. Cl.[5] A01N *43/68, 43/70;* C07D *251/18, 251/52*
U.S. Cl. 71—93 19 Claims

1. A compound selected from the group consisting of a triazinylsulfonylurea of the formula:



wherein Z is O or S;
A is haloalkyl of 1 to 6 carbon atoms;
R_1 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, haloalkyl of 1 to 4 carbon atoms, R_5—Y—, nitro, R_7OCO—, or R_8R_9NCO—, in which Y and R_6 are as defined above;
R_7 is an alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, or alkynyl of 2 to 6 carbon atoms; and
each of R_8 and R_9 is independently hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms of alkynyl of 2 to 6 carbon atoms;
R_3 is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms, or alkoxyalkyl of up to 4 carbon atoms;
R_4 is hydrogen, methyl, or ethyl; and
R_5 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms, methoxymethyl, cyanomethyl, or cyanoethyl; and the salts thereof.

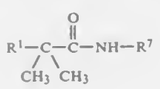
10. A herbicidal and growth-regulating composition which comprises an effective amount of at least one compound according to claim 1, together with a suitable carrier therefor.

4,944,795
3-BUTENANILIDES

Gary D. Crouse, Indianapolis, and Jeffery D. Webster, New Palestine, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 30, 1989, Ser. No. 428,557
Int. Cl.[5] A01N *31/14;* C07C *233/08*
U.S. Cl. 71—98 17 Claims

1. A compound of the formula (1)



(1)

wherein R^1 *is*



(a)

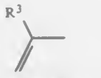
(E)
where R^2 is F, Cl, Br, I, SCH_3, or OCH_3,



(b)

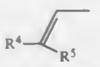
(Z)

-continued



(c)

where R^3 is F, Cl, or Br,



(d)

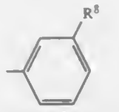
where R^4 and R^5 are both Cl or both Br, or



(e)

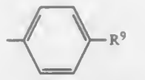
(Z)
where R^6 is F, Cl, or Br; and

R^7 is



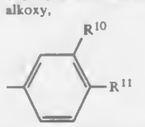
(a)

where R^8 is H, F, Cl, Br, I, SCF_3, or CF_3,



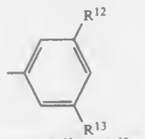
(b)

where R^9 is F, Cl, Br, I, SCF_3, $SOCF_3$, SO_2CF_3, halo (C_1–C_3) alkyl, (C_1–C_3) alkoxy, halo (C_1–C_3) alkoxy,



(c)

where R^{10} and R^{11} are independently F, Cl, Br, SCH_3, or CF_3; or



(d)

where R^{12} and R^{13} are both F or both Cl.

15. A herbicide composition comprising as active ingredient a compound of claim 1 in combination with an agriculturally acceptable carrier.

VOL 1116 ISS 5 JL 31 1990 UMI

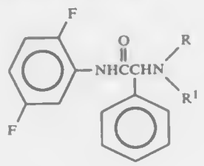
4,944,796

CERTAIN 2-(DISUBSTITUTED AMINO) ACETANILIDE HERBICIDES

Siok-Hui H. Wee, Berkeley, Calif., assignor to ICI Americas Inc., Wilmington, Del.

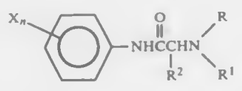
Filed Nov. 14, 1988, Ser. No. 270,573
Int. Cl.[5] A01N *37/26*; **C07C** *103/64, 103/82*
U.S. Cl. 71—118 **26 Claims**

1. A compound having the formula



wherein
R is C_1–C_3 alkyl or phenyl;
R^1 is selected from the group consisting of amino, substituted carbonyl wherein said substituent is C_1–C_4 alkylthio, carboxy, phenylthio, or C_1–C_4 alkylamino; and C_2–C_4 alkylthio thiocarbonyl.

17. A method of controlling undesirable vegetation comprising applying to said vegetation or to the locus thereof a herbicidally effective amount of a compound having the formula



wherein
R is C_1–C_3 alkyl or phenyl;
R^1 is selected from the group consisting of amino, C_1–C_4 alkyl, allyl, substituted carbonyl wherein said substituent is C_1–C_4 haloalkyl, C_2–C_4 alkoxycarbonyl, C_1–C_4 alkylthio, carboxy, C_1–C_5 alkoxy, C_1–C_4 alkyl, vinyl, haloanilino, phenylthio, C_1–C_4 alkylamino, benzylamino, C_3–C_6 alkoxycarbonylalkyl or substituted carbamyl wherein the substituent is C_1–C_2 alkyl halocarbanilide; C_2–C_4 alkylthio thiocarbonyl; mono-haloanilino carbonylmethylene, C_1–C_3 alkoxy carbonylmethylene, and carboxymethylene;
R^2 is phenyl;
X is halo or C_1–C_2 haloalkyl; and
n is an integer selected from 1–3 inclusive.

4,944,797

LOW OXYGEN CONTENT FINE SPHERICAL COPPER PARTICLES AND PROCESS FOR PRODUCING SAME BY FLUID ENERGY MILLING AND HIGH TEMPERATURE PROCESSING

Preston B. Kemp, Jr., Troy, N.Y., and Walter A. Johnson, Houghton, Mich., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 3, 1989, Ser. No. 292,790
The portion of the term of this patent subsequent to Nov. 8, 2205, has been disclaimed.
Int. Cl.[5] B22F *9/04*
U.S. Cl. 420—469 **9 Claims**

1. A process for producing fine spherical copper powder particles, said process comprising:
(a) reducing the size of a electrolytically produced starting dendritic copper powder material by fluid energy milling to produce a finer powder, essentially all of which has a particle size of less than about 20 micrometers in diameter;
(b) entraining said finer powder in a carrier gas and passing said powder through a high temperature zone at a temperature above the melting point of said finer powder said temperature being from about 5500° C. to about 17,000° C., to melt at least about 50% by weight of said finer powder to form essentially fine spherical particles of said melted portion; and
(c) rapidly and directly resolidifying the resulting high temperature treated material while said material is in flight, to form fine spherical particles having a particle size of less than about 20 micrometers in diameter, said particles being essentially free of elliptical shaped material and essentially free of elongated particles having rounded ends, said particles having an oxygen content of less than about 0.5% by weight, and a carbon content of no greater than the carbon content of said starting material.

6. A powder material consisting essentially of spherical copper particles, said powder material being essentially free of elliptical shaped material and essentially free of elongated particles having rounded ends, said powder material having a particle size of less than about 20 micrometers in diameter, said powder material being made by jet milling a starting electrolytically produced material which is dendritic copper powder in the dry state with an inert gas by impacting the particles of said starting material against each other to fracture said particles of said starting material, followed by high temperature processing and direct solidification of the resulting high temperature treated material, said powder material having an oxygen content of less than about 0.5% by weight and a carbon content of no greater than the carbon content of said starting material.

4,944,798

METHOD OF MANUFACTURING CLEAN STEEL

Tohei Ototani, Tokyo, Japan, assignor to Metal Research Corporation, Tokyo, Japan

Filed Jun. 7, 1989, Ser. No. 363,570
Claims priority, application Japan, Feb. 1, 1989, 1-20817
Int. Cl.[5] C21C *7/02*
U.S. Cl. 420—85 **5 Claims**

1. A method of manufacturing clean steel comprising refining molten steel by adding additives of from not more than 0.5% to more than 0.001% by weight additives of from not more than 0.5% to more than 0.001% by weight of molten steel to the molten steel bath; said additives being Al together with at least one element selected from the group consisting of Ti, Nb, Ta, B and alkali earth metal in vacuo or a non-oxidizing atmosphere within a melting furnace or vessel made of or lined with a basic main refractory material consisting essentially of 7–90 wt% of CaO and 90–7 wt% of MgO, wherein the total content of CaO and MgO is 70% to 99.9%, and wherein there is included another refractory material consisting of 30–0.1 wt% of at least one element selected from the group consisting of Al_2O_3, CrO, $ZrO_2.SiO_2$, ZrO_2O, SiO_2, ZrC and C as supplemental components, and obtaining clean steel containing less than 30 ppm of oxygen, less than 30 ppm of sulfur, less than 150 ppm of nitrogen, 5 to 0.1 ppm of Mg and 25 to 0.1 ppm of Ca.

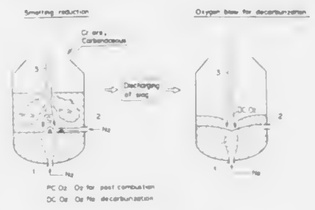
4,944,799

METHOD OF PRODUCING STAINLESS MOLTEN STEEL BY SMELTING REDUCTION

Haruyoshi Tanabe; Masahiro Kawakami; Kenji Takahashi; Katsuhiro Iwasaki, and Shigeru Inoue, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP88/00910, § 371 Date Apr. 25, 1989, § 102(e) Date Apr. 25, 1989, PCT Pub. No. WO89/02478, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 9, 1988, Ser. No. 362,418
Claims priority, application Japan, Sep. 10, 1987, 62-225254; Sep. 10, 1987, 62-225255; Sep. 17, 1987, 62-231042; Nov. 13, 1987, 62-285444; Dec. 25, 1987, 62-330979
Int. Cl.[5] C21C *5/32, 5/34*
U.S. Cl. 75—501 **20 Claims**

1. A method of producing stainless molten steel by smelting reduction in a smelting reduction furnace comprising a bottom tuyere, a side tuyere, and a top lance comprising a first outlet and a second outlet; said method comprising the steps of
reducing raw chromium ore in said furnace by use of carbonaceous material to produce chromium molten metal at the bottom of said furnace and having slag above said molten metal;
blowing CO and/or inert gas through said bottom tuyere into said molten metal to cause agitation thereof;
blowing CO and/or inert gas through said side tuyere into said molten metal so as to contact said agitated molten metal;



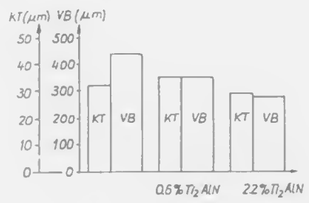
concurrently blowing decarburizing oxygen through said first outlet of said top lance into said molten metal and post combustion oxygen through said second outlet of said top lance into said slag, so that said molten metal is decarburized;
reducing chromium material by maintaining a ratio of post combustion to be more than 0.3;
discharging said slag after completion of reduction; and
after discharging of the slag concurrently blowing a decarburizing oxygen diluted with an inert gas through one of said outlets of said top lance into said molten metal and blowing an inert gas through said bottom tuyere into said molten metal so as to agitate forcibly said molten metal.

4,944,800

PROCESS FOR PRODUCING A SINTERED HARD METAL BODY AND SINTERED HARD METAL BODY PRODUCED THEREBY

Hans Kolaska, Bottrop, Fed. Rep. of Germany, and Peter Ettmayer, Vienna, Austria, assignors to Krupp Widia GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 2, 1989, Ser. No. 318,177
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806602
Int. Cl.[5] C22C *29/04*
U.S. Cl. 75—238 **24 Claims**



1. A process for producing a sintered hard metal body, comprising:
mixing together at least one hard substance, at least one binder material, and at least one of at least one complex carbide and at least one complex nitride to form a starting mixture each constituent of which is in powdered form,
wherein the at least one hard substance is selected from the group consisting of carbides, nitrides, and carbonitrides of transition metals of Groups IVB, VB and VIB of the Periodic Table of Elements, is present as at least one of a carbide, a mixed carbide, a nitride, a mixed nitride, a carbonitride, and a mixed carbonitride, and has a cubic crystal form, and
wherein the at least one binder metal is selected from the group consisting of iron, nickel and cobalt;
grinding the starting mixture;
compressing the starting mixture, after grinding same, into a predetermined shape; and
sintering the starting material, after compressing same, to melt the at least one binder metal and decompose the at least one of at least one complex carbide and at least one complex nitride to form at least one of at least one transition metal carbide and at least one transition metal nitride, which at least one of at least one transition metal carbide and at least one transition metal nitride grows on the surface of the at least one hard substance in powdered form and forms a diffusion inhibiting layer thereon.

4,944,801

PROCESS FOR PREPARING POWDER OF AN ALLOY OF A RARE EARTH ELEMENT, IRON AND BORON FOR A RESIN BONDED MAGNET

Takashi Ishikawa; Nobumitsu Oshimura, and Kenji Ohmori, all of Ichikawa, Japan, assignors to Sumitomo Metal Mining Co. Ltd., Japan

Filed Jul. 5, 1989, Ser. No. 375,459
Claims priority, application Japan, Jul. 7, 1988, 63-167727
Int. Cl.[5] H01F *1/053, 1/09*
U.S. Cl. 75—349 **6 Claims**

1. A process for preparing a powder of an alloy of a rare earth element, iron and boron used for making a magnet with a resin, comprising:
mixing a powder of a rare earth oxide or a powder of a rare earth oxide and a rare earth metal, a powder containing iron, a powder containing boron, and at least one material selected from the group consisting of an alkali metal, an alkaline earth metal and a hydrogenated product thereof;
heating their mixture to a temperature of 900° C. to 1200° C. in a non-oxidizing atmosphere;
crushing said mixture coarsely;
heating said mixture to a temperature of 650° C. to 1100° C.;
subjecting said mixture to wet treatment, whereby an alloy powder is obtained; and
pulverizing said powder into a finer powder having an average particle diameter of 1 to 10 microns.

4,944,802

HIGH COERCIVITY MAGNETIC INKS AND METHOD FOR MAKING SAME

Mark S. Chagnon, Lowell, and John R. Ferris, Newburyport, both of Mass., assignors to Omni Quest Corporation, Atkinson, N.H.

Filed Sep. 16, 1988, Ser. No. 245,330
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 **26 Claims**

1. A method for producing a magnetic ink comprising: combining barium ferrite powder, an inorganic oxide, a blend of a polyurethane polymer and a vinylchloride-vinyl acetate copolymer, an organic solvent and a surface active agent of the general structure R''—R'—R—YH wherein: R'' is a solubilizing tail of similar solubility parameter to a mixture of the organic solvent and the polymer blend; R' is a double bond, ether linkage, secondary amine, phenyl ring, phosphate ester or sulfide linkage; R is an aliphatic chain about C_4 to C_{20} in length; and YH is COOH, NH_2, PO_3H, SO_3H or OH.

VOL 1116 ISS 5 JL 31 1990 UMI

4,944,803

CATALYST-CONTAINING COATING TO PROMOTE RAPID CURING POLYURETHANE LACQUERS

Wayne A. Kraus, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 24, 1988, Ser. No. 172,615

Int. Cl.[5] C08L *1/18*; C09K *3/00*

U.S. Cl. 106—203 4 Claims

1. A cure coat composition for application over a coating of a two component polyurethane lacquer that is in a wet or semi-dry state, said cure coat composition consisting essentially of (1) from about 0.5% to about 20% of a hydroxy functional polymer, (2) from about 99.4% to about 70% of a solvent for the hydroxy functional polymer, and (3) from about 0.1% to about 10% of a catalyst for the reaction of the hydroxyl groups of the hydroxy functional polymer with isocyanate groups of the polyurethane lacquer to form urethane linkages, all percentages being by weight based on the total weight of the composition.

4,944,804

PLASTER OF PARIS (STUCCO) AS MIXING AID FOR AQUEOUS BITUMINOUS EMULSION AGGREGATE SLURRIES

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 31, 1988, Ser. No. 265,268

Int. Cl.[5] C08L *95/00*

U.S. Cl. 106—277 8 Claims

1. An improved bituminous emulsion-aggregate paving slurry comprising aggregate and from about 15% to about 25%, based on the weight of the aggregate, of a bituminous emulsion comprised of from about 30% to about 80%, based on the weight of the emulsion, of bitumen, from about 0.2% to about 10%, based on the weight of the emulsion, of an emulsifier selected from the group of cationic and anionic emulsifiers, and water to make up 100%, based on the weight of the emulsion, wherein the improvement comprises extended mixing time and improved adhesion of the bitumen to the aggregate after evaporation of the water by the addition to the slurry of from about 0.1% about 2%, based on the weight of the aggregate, of calcium sulfate hemihydrate.

4,944,805

METHOD OF HEAT TREATMENT AMORPHOUS SOFT MAGNETIC FILM LAYERS TO REDUCE MAGNETIC ANISOTROPY

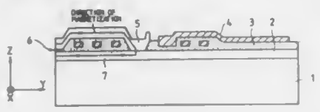
Kanji Nakanishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1988, Ser. No. 243,533

Claims priority, application Japan, Sep. 10, 1987, 62-225167; Sep. 10, 1987, 62-225168

Int. Cl.[5] C21D *1/04*

U.S. Cl. 148—108 18 Claims



1. In a method of heat treating an amorphous soft magnetic film fabricated by depositing various layers of material on a substrate including at least two layers of amorphous soft magnetic film, the improvement in combination therewith comprising the steps of:

performing a heat treatment, after each layer of said amorphous soft magnetic film has been deposited, at a temperature lower than the crystallization temperature and the Curie point of said amorphous soft magnetic film, while applying a static magnetic field in a first direction generally perpendicular to a second direction in which a high permeability for high frequency is desired in said amorphous soft magnetic film of said fabricated device relative to the permeability for high frequency in said first direction;

performing a final heat treatment, after all of the layers of said amorphous soft magnetic film have been deposited, at a temperature equal to or lower than the temperature for the heat treatment previous to the final heat treatment, while applying a static magnetic field in said second direction, and controlling at least one of the temperature and duration of the final heat treatment so as to control the magnitude of a uniaxial magnetic anisotropy to be imparted to said amorphous soft magnetic film.

4,944,806

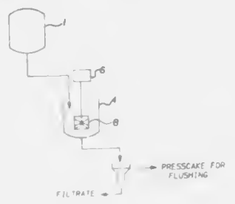
RIGMENTARY SALT OF A TRIPHENYLMETHANE COMPOUND AND PROCESS FOR MAKING SAME

Anand S. G. Sharangpani; Floyd G. Spence, both of Holland, and Brian D. Teunis, Grand Haven, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

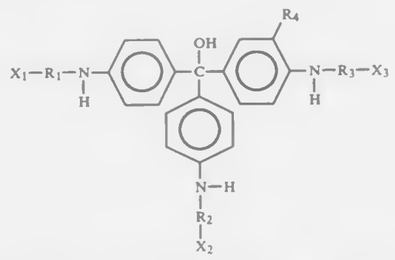
Filed Dec. 28, 1987, Ser. No. 138,323

Int. Cl.[5] C08K *5/00*

U.S. Cl. 106—493 15 Claims



1. A resin-free pigmentary salt of a triphenylmethane compound, wherein the triphenylmethane compound has the following structure:



and wherein R_1, R_2 and R_3 are direct linkages, phenyl, or napthyl groups; R_4 is hydrogen or methyl; X_1, X_2 and X_3 are hydrogen, halogen, alkyl of 1 to 4 carbons or alkoxy of 1 to 4 carbons; provided that at least one of R_1, R_2 and R_3 is not a direct linkage and provided that X_1, X_2 and X_3 is hydrogen when the corresponding R_1, R_2 or R_3 is a direct linkage.

4,944,807

PROCESS FOR CHEMICALLY STRIPPING A SURFACE-PROTECTION LAYER WITH A HIGH CHROMIUM CONTENT FROM THE MAIN BODY OF A COMPONENT COMPOSED OF A NICKEL-BASED OR COBALT-BASED SUPERALLOY

Vladimir Sova, Remetschwil, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Nov. 30, 1988, Ser. No. 278,327

Claims priority, application Switzerland, Dec. 1, 1987, 4675/87

Int. Cl.[5] C23G *1/04*

U.S. Cl. 134—3 8 Claims



1. A process for chemically stripping a surface-protection layer with a high chromium content from a main body of a component composed of a nickel-based or cobalt-based superalloy, comprising immersing the component for a time of 1 h to 150 h at a temperature in the range from 50° to 70° C. in an aqueous chloride solution which does not release oxygen, which contains iron (III) and copper (II) and which contains still further additives, but no components of any kind which form chromium oxide.

4,944,808

METHOD OF REMOVING PARTICLES FROM A FLEXIBLE SUPPORT, AND APPARATUS FOR PRACTICING SAME

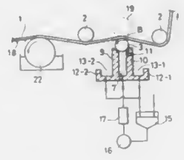
Tuyoshi Sugiyama; Hideo Takeda; Tsunehiko Sato, and Hiroshi Chikamasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 28, 1986, Ser. No. 901,500

Claims priority, application Japan, Sep. 12, 1985, 60-200662; Sep. 12, 1985, 60-200663

Int. Cl.[5] B08B *3/00*

U.S. Cl. 134—15 3 Claims



1. A cleaning method of removing foreign particles from a flexible sheet, comprising the steps of:

running a flexible sheet in a first direction adjacent a rod member, said rod member having an outer cylindrical surface;

applying a solvent onto said flexible sheet upstream of said rod member;

rotating said rod in a direction opposite to said first direction, whereby particles on said flexible sheet are transferred from substantially an entire width of said flexible sheet to said outer cylindrical surface; and

separating said particles from said outer cylindrical surface.

4,944,809

METHOD AND APPARATUS FOR VACCUM CLEANING A PILE OF MINERAL WOOL PLATES

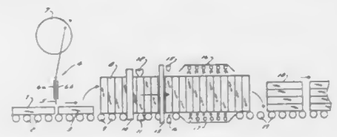
Ingemar Öhberg, Skövde, Sweden, assignor to Rockwool Aktiebolaget, Skövde, Sweden

Filed Mar. 21, 1989, Ser. No. 326,316

Claims priority, application Sweden, Mar. 31, 1988, 8801206

Int. Cl.[5] B08B *5/04*

U.S. Cl. 134—21 17 Claims



1. A method for manufacturing individual plates (3) from a mineral wool mat having main planar surfaces to minimize the spread of loose fibers and other particles from said plates comprising the steps of

A. cutting said mat into individual plates each having marginal edges of the same length and end edges of the same width with each of said edges presenting an edge surface;

B. placing said main surfaces of each plate into aligned face-to-face relation with those of adjacent plates to form a pile which has four sides each composed of a plurality of said mineral wool edge surfaces;

C. establishing a vacuum cleaning slot means for withdrawing and exhausting air from areas closely adjacent said sides of said pile; and

D. causing relative movement between said pile and said vacuum cleaning slot means to vacuum clean said sides of said pile.

4,944,810

BOTTLE WASHER USING A 360 DEGREE ARC AND EXTENDED PADDLES TO CONTROL THE BOTTLES' MOVEMENT

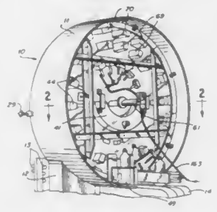
William J. McBrady, 2902 Bob-O-Link Rd., Flossmoor, Ill. 60422

Division of Ser. No. 106,627, Oct. 6, 1987, Pat. No. 4,834,123.

This application Apr. 18, 1989, Ser. No. 339,707

Int. Cl.[5] B08B *9/00*

U.S. Cl. 134—23 4 Claims



1. A method for cleaning bottles moving along a first route on a conveyor comprising:

(A) directing bottles on said conveyor off said conveyor at a particular location;

(B) moving said bottles directed off of said conveyor along a second route different than said first route and including

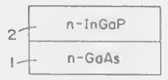
a plurality of substantially 360 degree rotations in adjacent separate planes about an axis, each of said substantially 360 degree rotations occurring in a single plane;
(C) cleaning said bottles while moving along said second route;
(D) for each one of said rotations, guiding said bottles beginning said one rotation along a first path and said bottles ending said one rotation along a second path and maintaining said first and second paths clear of each other; and
(E) replacing said bottles moved along said second route on said conveyor.

4,944,811

MATERIAL FOR LIGHT EMITTING ELEMENT AND METHOD FOR CRYSTAL GROWTH THEREOF

Tokuzo Sukegawa, Hamamatsu, and Kazuyuki Tadatomo, Itami, both of Japan, assignors to Tokuzo Sukegawa, Shizuoka and Mitsubishi Cable Industries, Ltd., Hyogo, both of, Japan

Continuation of Ser. No. 71,254, Jul. 8, 1987, abandoned. This application Aug. 9, 1989, Ser. No. 391,391
Claims priority, application Japan, Jul. 16, 1986, 61-167504; Jul. 16, 1986, 61-167505; Jul. 16, 1986, 61-167506; Jul. 16, 1986, 61-167507; Jul. 16, 1986, 61-167508
Int. Cl.[5] H01L *21/20, 21/208, 29/00, 29/06*
U.S. Cl. 148—33.1 **4 Claims**



1. A material for a light emitting element of at least a two-layered structure comprising a gallium arsenide (GaAs) substrate and a tin (Sn) doped indium gallium phosphide (InGaP) layer whose mixed crystal composition expressed by the molar fraction (x) of gallium phosphide (GaP) is 0.63 to 0.74, wherein a solution comprising Sn as a solvent is used in forming an sn doped InGaP layer on the GaAs substrate.

4,944,812

TANNIN MANNICH ADDUCTS FOR IMPROVING CORROSION RESISTANCE OF METALS

Andreas Lindert, Troy, and Stephen M. Wolpert, Detroit, both of Mich., assignors to Henkel Corporation, Ambler, Pa.

Filed Nov. 16, 1988, Ser. No. 272,172
Int. Cl.[5] C23C *32/82*
U.S. Cl. 148—251 **21 Claims**

1. An aqueous metal treatment solution comprising from about 0.01 g/liter to about 50 g/liter of the condensation reaction product of a vegetable tannin, an aldehyde and an amine.

4,944,813

PROCESS FOR PHOSPHATING METAL SURFACES

Kurt Hosemann, Titz, and Reinhard Opitz, Dueren, both of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Koeln-Ehrenfeld, Fed. Rep. of Germany

Filed Jan. 13, 1989, Ser. No. 297,155
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800835
Int. Cl.[5] C23C *22/12*
U.S. Cl. 148—260 **16 Claims**

1. In a process comprising cleaning and phosphating metal surfaces, the improvement wherein the surfaces without previous activation are contacted in a temperature range of from 30° C. to 70° C. with an aqueous solution consisting essentially of:
(a) from about 10 to about 40 g/l of Ca^{2+} ions,
(b) from about 10 to about 40 g/l of Zn^{2+} ions,
(c) from about 10 to about 100 g/l of PO_4^{3-} ions,
(d) an accelerator selected from the group consisting of
(i) about 10 to about 100 g/l of nitrate ions and
(ii) about 0.1 to about 2.0 g/l of organic nitro compounds,
(e) up to about 10 g/l of Ni^{2+} ions, and
(f) up to abut 10 g/l of simple, complex, or mixed simple and complex fluoride ions,
said solution having a pH value in the range from about 2.0 to about 3.8, a ratio of free acid to total acid from about 1:4 to 1:100, and a ratio by weight of Zn^{+2} ions to Ca^{+2} ions of about 1:0.5 to about 1:1.5; said process producing on the metal surfaces a phosphate layer containing scholzite in an areal density between about 3 and about 9 g/m^2.

4,944,814

ALUMINUM-MANGANESE-IRON STEEL ALLOY

James M. Zimmer, Beaver, Pa., and William D. Bailey, Regina, Canada, assignors to Ipsco Enterprises, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 162,876, Mar. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 34,485, Apr. 2, 1987, abandoned. This application Aug. 31, 1989, Ser. No. 401,093
Int. Cl.[5] C22C *38/04, 38/06*
U.S. Cl. 148—329 **12 Claims**

1. A substantially austenitic steel alloy having a predetermined volume percent of ferrite structure in the range of about 1 percent to about 8 percent, said alloy comprising by weight 6 to 13 percent aluminum, 20 to 34 percent manganese, 0.2 to 1.4 percent carbon, 0.4 to 1.3 percent silicon, and the balance comprising iron, wherein the proportions of the elements alloyed with iron selected from the said ranges satisfy the formula

$$1 < VPF = 32 + 2.6(Al\ \% \pm 0.08) + 5.2(Si\ \pm 0.03) - 1.6(Mn\ \% + 0.16) - 8.5(C\ \% + 0.03) < 8$$

or substantial metallurgical equivalent thereof, where Al %, Si %, Mn % and C % are selected percentages by weight of aluminum, silicon, manganese and carbon respectively present in said alloy, and where VPF is the volume percent of ferrite structure; and wherein the proportions of the elements alloyed with iron are selected to exclude the following composition: (30±1)% Mn, (9±0.35)% Al, (1±0.05)% Si and (1±0.05)% C, with the balance being iron.

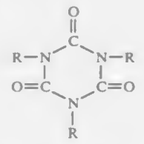
4,944,815

BONDING AGENT FOR COMPOSITE PROPELLANTS

John P. Consaga, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 24, 1980, Ser. No. 178,258
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.1 **25 Claims**

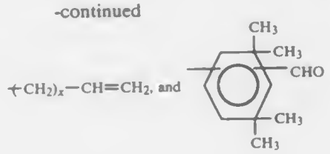
1. In a composite propellant, the improvement comprising the inclusion, in an effective amount, of a bonding agent represented by the formula:



wherein R is selected from the class consisting of

$(CH_2)_xOH$, $+CH_2)_xCOOH$, $+CH_2)_x-CH\!\!-\!\!CH$ (epoxide), $+CH_2)_xSH$,

-continued



$+CH_2)_x-CH=CH_2$, and

and x is from 1 to 5.

4,944,816

ULTRA-ULTRAHIGH BURNING RATE COMPOSITE MODIFIED DOUBLE-BASE PROPELLANTS CONTAINING POROUS AMMONIUM PERCHLORATE

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1976, Ser. No. 671,221
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.8 **2 Claims**

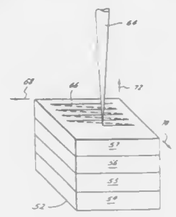
1. An ultra-ultrahigh burning rate composite modified double-base propellant composition consisting of an aluminum metal fuel in a combined weight percent from about 5 weight percent to about 11 weight percent, said aluminum metal fuel being present in an amount from about 1–3 weight percent of aluminum powder and in an amount from about 4–8 weight percent of aluminum staples; porous ammonium perchlorate in an amount from about 34–38 weight percent, said porous ammonium perchlorate coated with an N-arylalkeneimine to protect the porosity during propellant mixing; a nitrocellulose binder in an amount from about 16 to about 20 weight percent; nitroglycerin as an explosive plasticizer in an amount from about 28 to about 32 weight percent; triacetin as a non-explosive plasticizer in an amount from about 4 to about 8 weight percent; and an amount from about 1–3 weight percent of stabilizers selected from resorcinol and 2-nitrodiphenylamine.

4,944,817

MULTIPLE MATERIAL SYSTEMS FOR SELECTIVE BEAM SINTERING

David L. Bourell; Harris L. Marcus; Joel W. Barlow; Joseph J. Beaman, and Carl R. Deckard, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Sep. 5, 1989, Ser. No. 402,694
Int. Cl.[5] B27N *3/00;* **B32B** *31/00;* **B23K** *9/00;* **B29C** *67/00*
U.S. Cl. 156—62.2 **20 Claims**



7. A method of producing a part comprising the steps of:
depositing a first portion of powder onto a target surface, said first portion of powder comprising a plurality of materials, said plurality of materials having more than one bonding temperature;
scanning the aim of a directed energy beam over the target surface;
sintering a first layer of the first powder portion corresponding to a first cross-sectional region of the part by operating the beam when the aim of the beam is within boundaries defined by said first cross-sectional region;
depositing a second portion of powder onto the first sintered layer, said second portion of powder comprising a plurality of materials, said plurality of materials having more than one bonding temperature;
scanning the aim of a directed energy beam over the first sintered layer;
sintering a second layer of the second powder portion corresponding to a second cross-sectional region of the part by operating the beam when the aim of the beam is within boundaries defined by said second cross-sectional region, including the substep of
joining the first and second layers during the sintering of the second layer; and
depositing successive portions of powder onto the previous sintered layers and sintering each successive portion to produce successive sintered layers joined to a previous sintered layer and a part comprising a plurality of sintered layers.

4,944,818

COMPOSITE ROOFING SUBSTRATE PANEL

John M. Dybsky, 711 S. Dearborn, Chicago, Ill. 60605; George A. Erswell, Jr., 5015 Wickford Way, Dunwoody, Ga. 30338; John L. Silvestri, 4 Faith St., Lisbon Falls, Me. 04252; Karl H. Loser, 6925 60th Ave., New York, N.Y. 11378, and Craig A. McDonald, 6034 N. Nickerson, Chicago, Ill. 60631

Continuation-in-part of Ser. No. 32,325, Mar. 31, 1987, abandoned. This application Sep. 1, 1987, Ser. No. 93,098
Int. Cl.[5] B32B *5/26, 32/00;* **E04D** *5/10, 11/02*
U.S. Cl. 156—71 **20 Claims**

1. For use as a substrate for a torch-down roof membrane wherein the membrane and substrate are bonded together by the application of torch-generated heat applied to surfaces of the membrane and substrate, a composite panel comprising:
a board of lateral and longitudinal extent with upper and lower major surfaces, said board formed of a combustible material which is capable of igniting, charring or decomposing when exposed to torch-generated heat, and
a facer sheet overlyingly adhered to the upper surface of said board for providing the uppermost layer of said panel, said facer sheet being formed of a fabric of bituminous coated noncombustible fibers so that the uppermost layer of said panel resists ignition, charring or decomposition when exposed to torch-generated heat during the bonding of the torch-down roof membrane to said panel.

20. A method for applying a torch-down modified bitumen membrane roof to a roof deck comprising the steps of:
providing a laterally and longitudinally extending board of combustible fibers;
overlyingly adhering a noncombustible facer sheet to the upper major surface of said board, said facer sheet generally coextensive with said upper surface, thereby forming a panel;
covering said roof deck with a plurality of said panels and fastening said panels to said roof deck; and
covering said panels with a modified bitumen membrane while adhering said membrane to said panels by the application of flame.

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4,944,819

USE OF 2-COMPONENT REACTION RESINS FOR FASTENING PURPOSES

Ludwig Gebauer, Olching, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 13, 1989, Ser. No. 337,734

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812814

Int. Cl.[5] **B32B** *31/14, 5/20*

U.S. Cl. 156—78 **4 Claims**

1. A method for fixing anchoring means, such as a tie bar, in a borehole comprising using mortar which is a foamable, free radical curable 2-component reactive resin composition to fix said anchoring means to said borehole, said composition containing about 35 to 85% by weight of reactive resin, about 0.1 to 5% by weight of peroxide curing agent and about 2.5 to 62% by weight of foaming agent, each % by weight being based on the total weight of the mortar composition.

4,944,820

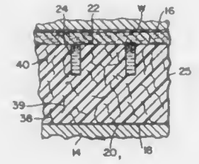
METHOD FOR MAKING A BLANKET FOR AN EXTENDED NIP PRESS

Pani McCarten, Scranton, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 8, 1988, Ser. No. 179,086

Int. Cl.[5] **B32B** *31/00, 31/22;* **D21F** *3/00;* **B31C** *13/00*

U.S. Cl. 156—154 **10 Claims**



1. A method of fabricating a blanket for an extended nip press which includes a shoe and a felt, said method including the sequential steps of:

simultaneously saturating a fiber mat on both sides thereof with polyurethane;

wrapping the saturated mat around a smooth mandrel;

heating the wrapped mandrel such that the polyurethane gels;

further heating the wrapped mandrel within a heating over for curing the polyurethane;

cooling the cured mat which constitutes the blanket;

grinding the blanket to a uniform thickness;

grooving the outer surface of the blanket while the blanket is still supported on the mandrel; and

removing the finished blanket from the mandrel.

4,944,821

ADHESIVE TREATMENT FOR NYLON CORDS

Tomohisa Nishikawa, Kodaira, and Kazuo Oshima, Higashiyamato, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 15, 1988, Ser. No. 284,530

Claims priority, application Japan, Dec. 28, 1987, 62-330286; Dec. 28, 1987, 62-330287

Int. Cl.[5] **B05D** *1/18, 5/10*

U.S. Cl. 156—161 **8 Claims**

1. A method for treating nylon-6 cord with an adhesive containing the steps of:

(A) subjecting a twisted cord made from nylon-6 fiber having a yarn strength of not less than 12 g/d to a stretch heating treatment under temperature and tension conditions satisfying the following relationship:

$$T \geqq 84/S - 80 \quad (1)$$

wherein T is a temperature (°C.) in the strength heating treatment of the cord and S is a tension (g/d) in the stretch heating treatment of the cord; and

(B) subjecting the resulting stretch heat treated cord to an adhesive treatment in a dipping solution satisfying the following relationships:

$$y \geqq -0.75x + b \quad (2)$$

$$b = -0.274z^2 + 4.282z + 16.8 \quad (3)$$

wherein x is a solid content (weight %) in the dipping solution, y is a ratio (weight %) of the total weight of resorcin and formaldehyde to weight of latex in the dipping solution and z is a ratio (weight %) of the weight of vinylpyridine latex to the total weight of vinylpyridine latex and styrene-butadiene copolymer latex in the latex of the dipping solution.

4,944,822

METHOD FOR PRESS-BONDING LAMINATED ASSEMBLY

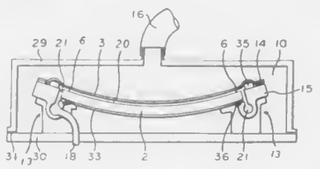
Kenichi Ishikawa; Koji Kurita; Satoru Fukawa, and Kenji Maeda, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 25, 1988, Ser. No. 236,163

Claims priority, application Japan, Aug. 25, 1987, 62-209297; Sep. 8, 1987, 62-223171

Int. Cl.[5] **B32B** *31/20*

U.S. Cl. 156—212 **10 Claims**



1. A method for press-bonding a laminated assembly of a sheet material and a plastic film, which comprises stacking a sheet material cut to have a predetermined shape and a plastic film, evacuating a first vacuum compartment formed by the plastic film, a circumferential frame for spreading the plastic film, the sheet material and a gasket to thereby evacuate the space between the plastic film and the sheet material and at the same time, evacuating a second vacuum compartment enclosing at least the plastic film side of the first vacuum compartment and separated from the first compartment, and then releasing the second vacuum compartment from the vacuumed condition so that the plastic film is press-bonded to the sheet material, wherein a primer layer capable of adhering at room temperature is applied, and said primer layer is provided at only the substantially peripheral portion of said sheet and wherein said first vacuum compartment is evacuated through at least one duct which forms a part of said circumferential frame.

4,944,823

COMPOSITION FOR BONDING SOLID LIGNOCELLULOSIC MATERIALS

John Stofko, Beaverton, Oreg., assignor to Carbocol, Inc., Beaverton, Oreg.

Filed Sep. 26, 1985, Ser. No. 780,295

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—283 **15 Claims**

1. A method of bonding wood surfaces together and thereby producing a consolidated wood product, which comprises

contacting said wood surfaces with an amount of bonding material of 1–15 grams per square foot area or 1–12% by weight based on the weight of wood, said bonding material consisting essentially of a homogeneous mixture, initially reacted in the substantial absence of water, of 50–95% by weight of starch or sugar or other active material, 5–50% of liquid isocyanate, 0–10% catalyst, 0–50% stabilizing agent and 0–10% release agent, or a glucourethane reaction product thereof, the total quantity of said liquid isocyanate being 0.25–2% by weight based on the weight of the wood;

pressing the coated wood surfaces together at an elevated temperature and for a time sufficient to effect bonding to produce said bonded wood product.

4,944,824

PROCESS FOR PREPARATION OF TOOLING OF CARBON FIBER REINFORCED POLYIMIDE FOR COMPOSITES MANUFACTURE

Dipak Gupta, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 23, 1988, Ser. No. 248,393

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] **B32B** *31/12*

U.S. Cl. 156—286 **1 Claim**

1. A method for preparing a composite tool suitable for fabricating composite articles of high Tg comprising forming a lay-up of prepregs containing carbon fiber reinforcement and substantially stoichiometric quantities of a mixture of diamines consisting essentially of about 95% p-phenylene diamine with the remainder m-phenylene diamine and 2,3-bis-(3',4'-dicarboxyphenyl)hexafluoropropanol in an amount sufficient to produce 35 to 45 volume % of polyimide in the prepreg upon curing, enclosing the lay-up in a vacuum bag, heating the lay-up to a temperature in the range of about 250° to 400° F. while pulling a vacuum on the contents of the bag and while applying a pressure on the bag of at least 180 pounds per square inch, cooling the assembly while releasing the pressure and vacuum, and curing the assembly by heating in an oven to a temperature of at least 700°–725° F. at a rate of 1°–3° F. per minute until the Tg of the composite tool reaches at least 730° F. without application of external pressure but with application of vacuum to remove polymerization byproducts.

4,944,825

LABELING APPARATUS

Eric P. Gifford, Chagrin Falls, and William J. Roblin, North Royalton, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Oct. 28, 1988, Ser. No. 264,443

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—294 **15 Claims**

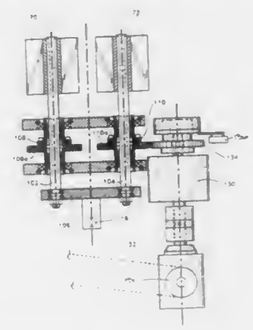
1. In a labeling apparatus having a labeling assembly for applying sleeve labels to products, a product advancing mechanism comprising:

(a) a pair of intermittently rotatable product advancing members for advancing a product from a product presenting position to a label applying position;

(b) said product advancing members including product engaging elements arranged such that when said product is in said label applying position, said product is located by confronting product engaging elements of said product advancing members;

(c) member support means defining a pair of laterally spaced and substantially parallel axes of rotation for said advancing members;

(d) means for reciprocally moving said advancing members along a path substantially parallel to said axes of rotation



of said advancing members to provide clearance for said labeling assembly as said labeling assembly moves through a label applying path of movement during a label applying cycle;

(c) means for synchronizing rotation and reciprocal movement of said product advancing members with said label applying assembly.

4,944,826

METHOD AND APPARATUS FOR PREPARING A SCREEN PRINTING SCREEN

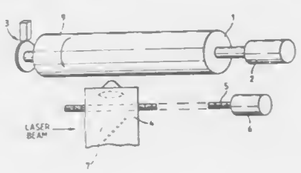
Peter M. Zollman, Walton on Thames; Brendon T. Pollard, Betchworth, and Andrew D. Birch, Guildford, all of England, assignors to ZED Instruments Ltd., Surrey, England

Filed Aug. 17, 1988, Ser. No. 233,087

Claims priority, application United Kingdom, Aug. 17, 1987, 8719412

Int. Cl.[5] **B41C** *1/14*

U.S. Cl. 156—345 **9 Claims**



1. In a laser engraving device for patterning a perforated screen printing screen having a lacquer coating filling its perforations by ablating said lacquer from said screen with a laser beam, said laser engraving device including a laser engraving head, and a scanner for scanning said laser engraving head over said screen printing screen, the improvement wherein said laser, engraving device includes a detector for detecting a locus of perforations in said screen printing screen extending in a scanning direction of said laser engraving head and a location of each of said perforations in said scanning direction and providing an output, alignment means operatively connected to said detector and said laser engraving head and responsive to said output of said detector to align said laser engraving head with said locus of said perforations detected by said

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detector, and enabling means to enable said laser engraving device to be actuated only when said laser engraving head is aligned with an individual one of said perforations.

4,944,827

LABEL PRINTING SYSTEM FOR A COMPUTER OUTPUT LINE PRINTER

Norman R. Lilly, Stratford; M. James Marin, S. Norwalk, and Michael E. Field, Brookfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 150,474, Jan. 27, 1988, abandoned, which is a continuation of Ser. No. 883,228, Jul. 8, 1986, abandoned. This application Mar. 15, 1989, Ser. No. 323,238

Int. Cl.[5] B41J *15/00, 15/18*

U.S. Cl. 156—384 **10 Claims**

1. A label printer comprising:

(a) a computer output line printer said line printer further comprising:

(a1) a substantially cylindrical platten roller

(a2) a bail rod assembly means having a bail rod mounted parallel to the axis of, and resiliently bearing against, said platten roller for holding a web against said platten during printing;

(a3) a tractor feeder means, positioned on the path of said web through said printer downstream of said platten roller and said bail rod assembly, for drawing said web through said printer;

(a4) said platten roller, bail rod assembly means and tractor feeder means together defining a first web path for travel of a web of material through said label printer, said first path comprising a substantial straight portion between the point where said web passes between said bail rod assembly and said platten roller and said tractor feeder means; and,

(b) separator means for defining a separating edge spaced from and parallel to said bail rod, said separating edge, said platten roller, said bail rod and said tractor feeder means defining a second path for travel of a web of material through said label printer, said second path comprising a portion between the point where said web passes between said bail rod assembly and said platten roller and said tractor feeder means where said separating edge changes the direction of travel of said web by an angle, alpha, said angle, alpha, being sufficient, when said web is a web of release liner having labels mounted thereon, to separate said labels from said release liner as said release liner passes over said separating edge.

4,944,828

DEVICE AND METHOD FOR THE MANUFACTURE OF A TIRE REINFORCEMENT FROM A SINGLE CORD

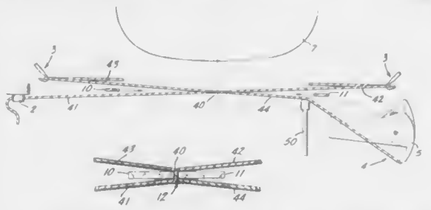
Jean-Claude Mayet, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin et Cie, Clermont-Ferrand Cedex, France

Filed Feb. 8, 1989, Ser. No. 308,096

Claims priority, application France, Feb. 19, 1988, 88 02102

Int. Cl.[5] B29D *30/38, 30/20*

U.S. Cl. 156—397 **2 Claims**



1. A device for securing the ends of a tire reinforcement produced by hooking a continuous cord (4) back and forth between two circular arrays of retaining means (3) for the cord (4) so as to define a cylinder by a plurality of forward and return movements from one cord retaining means to the other cord retaining means, then folding the cords (4) on and around a core (7), characterized by the fact that said device comprises:

two jaws (10, 11) disposed on opposite sides of the strands (41+42, 43+44) of cord (4) to be cut which clamp the cord (4) by a movement parallel to a rotational axis of said core (7); a cutting system (12) for the cord (4) on the side of the jaws opposite the core (7); and means for bringing said jaws against said core while holding them closed.

4,944,829

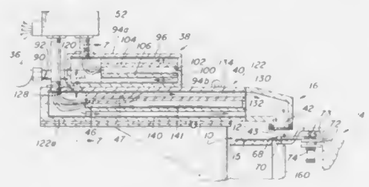
APPARATUS FOR APPLYING WRAPPERS

Kenneth A. Tuttle, Horsham, and James Corrado, Coopersburg, both of Pa., assignors to Rorer Pharmaceutical Corporation, Ft. Washington, Pa.

Filed Apr. 14, 1989, Ser. No. 338,117

Int. Cl.[5] B65C *9/25*

U.S. Cl. 156—497 **5 Claims**



1. Apparatus for securing a wrapper to each of a train of cylindrical objects with the wrapper extending at least partly around the circumference of each said object, said wrapper having a heat-activable adhesive layer on at least a portion of one side thereof, said apparatus comprising:

means for forming a moving train of said wrappers;

air-blast means supplied with said train of wrappers for applying a short blast of hot air against the surface of each successive wrapper of said train at a position opposite said portion of said one side to activate said heat-activatable adhesive layer on said portion by heat transmission through said wrapper;

means for forming a train of said objects; and

wrapping means supplied with said train of objects and with said train of wrappers from said air-blast means for wrapping each of said wrappers received from said air-blast means around one of said objects to adhere it thereto.

4,944,830

MACHINE FOR LABELLING BOTTLES

Rudolf Zodrow, Düsseldorf; Wolfgang Rogall, Wuppertal; Egon Höveler, Haan, and Rainer Buchholz, Düsseldorf, all of Fed. Rep. of Germany, assignors to Holstein und Kappert AG, Dortmund, Fed. Rep. of Germany

Filed May 23, 1988, Ser. No. 197,653

Claims priority, application Fed. Rep. of Germany, May 23, 1987, 3717463; Mar. 3, 1988, 3806919

Int. Cl.[5] B65C *9/02*

U.S. Cl. 156—567 **18 Claims**

1. A labelling machine for a plurality of bottles comprising:

means for labelling said bottles;

a bottle support platform for supporting and advancing said bottles to said means for labelling;

said bottle support platform having a plurality of bottle turntables mounted thereon;

a plurality of support plates, a said support plate mounted on each of said bottle turntables to prevent relative rotation between each of said support plates and a respective said bottle turntable;

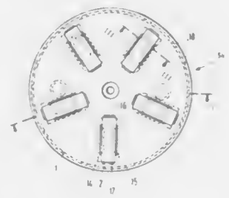
each of said support plate shaving an upper surface for receiving a bottom of one of said bottles thereon;

bottle feeding means for sequentially feeding said bottles onto said upper surfaces;

bottle removing means for sequentially removing said bottles from said upper surfaces;

said bottle support platform including means for selectively retaining a top of a said bottle when a said bottle has been positioned on a said upper surface by said bottle feeding means prior to advancement to said means for labelling;

said means for selectively retaining a said top being capable of producing an axial force between a bottom of a said bottle and a said upper surface;



each said support plate including an elastic body;

a plurality of block-shaped friction bodies being resiliently supported by each said elastic body with each of said friction bodies being embedded and held therein;

each of said friction bodies having an exposed, friction surface which lies generally in said upper surface of each said support plate; and

said axial force producing frictional contact between a bottom of a said bottle and a said plurality of said friction surfaces to prevent relative rotation between said bottles and said bottle turntables.

4,944,831

PROCESS FOR OBTAINING A PATTERN, IN FERROMAGNETIC MATERIAL HAVING DIFFERENTLY SLOPING SIDES

Henri Sibuet, Saint Egreve, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 5, 1988, Ser. No. 228,448

Claims priority, application France, Aug. 14, 1987, 87 11599

Int. Cl.[5] B44C *1/22;* **B29C** *37/00;* **C23F** *1/02;* **C03C** *15/00*

U.S. Cl. 156—643 **8 Claims**

1. Process for obtaining a pattern (4*a*) in a first material having differently sloping sides (20, 24), characterized in that it comprises the following stages:

(a) deposition on a layer of first material (4) of a first photosensitive resin (6) layer,

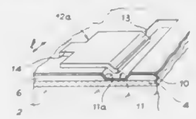
(b) formation of an opening (8) with inclined sides (8*a*) in the first resin layer (6),

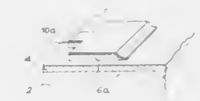
(c) producing a mask (10*a*, 12*a*) on the first resin layer (6), partly masking said opening (8), defining the shape or the pattern to be produced and having an inclined side (11*a*, 13) facing said opening,

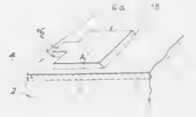
(d) anisotropic etching of the first resin layer (6) in order to eliminate the regions of said first layer which are not masked,

(e) elimination of the mask (12*a*),

(f) anisotropic etching of the layer of the first material (4*a*)









using the first etched resin layer as the etching mask (6*a*), and

(g) elimination of the remainder of the first resin layer (6).

4,944,832

LABEL PEELER

Ichiro Abe, and Toshio Suzuki, both of Tokyo, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,635

Claims priority, application Japan, Jan. 27, 1988, 63-8111[U]

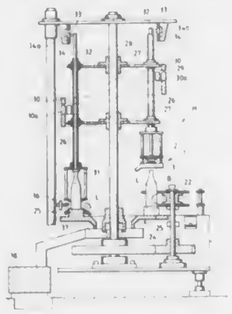
Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—584 **5 Claims**

1. A device for peeling off a label attached to a side of a container, said device comprising:

a holder for holding the container; label scraping means of a substantially cylindrical structure made entirely of an elastomeric material for scraping the label off the container by effecting sliding movement in intimate contact with the side of the container; a label reattachment preventing means disposed adjacent to said label scraping

means for preventing the scraped label from being reattached to the container; and driving means for varying the relative position of the container and said label scraping means to remove the label from the side of the container.



4,944,833

CZOCHRALSKI PULLING OF MONOCRYSTALLINE LANTHANUM ORTHOGALLATE

Roger F. Belt, Morristown, and Robert Uhrin, Brookside, both of N.J., assignors to Litton Systems, Inc., Morris Plains, N.J.

Filed Mar. 4, 1988, Ser. No. 164,235
Int. Cl.[5] B01J *17/18;* **C04B** *35/46*
U.S. Cl. 156—617.1 **12 Claims**

1. A method of growing a monocrystalline lanthanum orthogallate from a pure melt along a predetermined crystallographic direction having dimensions greater than 1 cm in diameter and 10 cm in length which comprises:

a. forming a mixture of La_2O_3 and Ga_2O_3;

b. heating said mixture to form a melt of uniform composition in a controlled atmosphere; and,

c. cooling said melt to form said monocrystalline lanthanum orthogallate.

4,944,834

PROCESS OF PULLING A CRYSTAL

Kohji Tada, and Toshihiro Kotani, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 900,008, Aug. 20, 1986, abandoned.
This application Jul. 7, 1988, Ser. No. 218,457
Claims priority, application Japan, Sep. 11, 1985, 60-199377
Int. Cl.[5] C30B *15/24*
U.S. Cl. 156—620.5 **6 Claims**



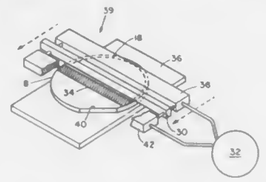
1. In a Czochralski process for pulling a crystal from a raw material melt comprising providing a baffle plate whose bore diameter is gradually increased upward and which is arranged in such a manner that the melt inside and outside the baffle plate is in communication with each other through a small opening part at the bottom end thereof, the improvement of which comprises moving the baffle plate relatively to the surface of the melt in such a manner that an annular space is maintained between the baffle plate and the crystal, and so as to increase the diameter of the melt surface inside the baffle plate with an increase of the diameter of the pulled crystal at the solid-liquid interface between the crystal and the melt surface.

4,944,835

SEEDING PROCESS IN ZONE RECRYSTALLIZATION

Lisa P. Allen, Norton; Duy-Phach Vu, Taunton; Michael W. Batty, No. Attleboro; Richard H. Morrision, Jr., Taunton, and Paul M. Zavracky, Norwood, all of Mass., assignors to Kopin Corporation, Taunton, Mass.

Filed Mar. 30, 1989, Ser. No. 330,458
Int. Cl.[5] C30B *13/32, 1/08, 19/08, 29/06*
U.S. Cl. 156—620.7 **13 Claims**



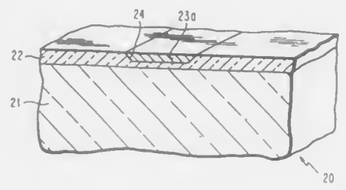
1. In a zone melting and recrystallization process in which a polysilicon film formed over an insulator film over a silicon wafer is melted, by translating a heater past the wafer, and allowed to recrystallize to form a substantially single crystal silicon film seeded by said silicon wafer through seed openings formed through the insulator to the silicon wafer, the improvement comprising forming said seed openings in a discontinuous pattern formed of discontinuous sub-patterns of shaped seed openings, said pattern extending in a semicircle closely adjacent the periphery of the wafer.

4,944,836

CHEM-MECH POLISHING METHOD FOR PRODUCING COPLANAR METAL/INSULATOR FILMS ON A SUBSTRATE

Klaus D. Beyer; William L. Guthrie, both of Poughkeepsie; Stanley R. Makarewicz, New Windsor; Eric Mendel, Poughkeepsie; William J. Patrick, Newburgh; Kathleen A. Perry, Lagrangeville; William A. Pliskin, Poughkeepsie; Jacob Riseman, Poughkeepsie; Paul M. Schaible, Poughkeepsie, and Charles L. Standley, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1985, Ser. No. 791,860
The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.
Int. Cl.[5] H01L *21/304, 21/306*
U.S. Cl. 156—645 **11 Claims**



1. In the fabrication of planarized multilevel metal on a semiconductor substrate having active devices therein, the method for producing said multilevel metal comprising substantially coplanar conductive and insulator films on said substrate comprising the steps of:

forming a first layer of either said conductive film or said insulator film on said substrate,

said first layer having a non-planar upper surface,

depositing a second layer of the other of said conductive film or said insulator film on said first layer,

said second layer having an upper surface generally following the topography of the upper surface of said first layer, and

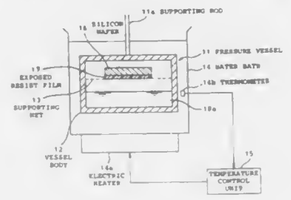
chem-mech polishing said structure in order to remove said second layer at a faster rate than said first layer until the upper surfaces of said first and second layers are substantially coplanar.

4,944,837

METHOD OF PROCESSING AN ARTICLE IN A SUPERCRITICAL ATMOSPHERE

Masaru Nishikawa, Tsutsujigaoka Haimu A-409, 13-3, Shibazaki 2-chome, Chofu-shi, Tokyo, Japan; Kazumichi Nakagawa, and Yohichi Yamaguchi, both of Tokyo, Japan, assignors to Masaru Nishikawa and Hoya Corporation, both of Tokyo, Japan

Filed Feb. 28, 1989, Ser. No. 317,202
Claims priority, application Japan, Feb. 29, 1988, 63-47196
Int. Cl.[5] B44C *1/22;* **C23F** *1/02;* **B29C** *37/00;* **C03C** *15/00*
U.S. Cl. 156—646 **20 Claims**



1. A method of forming a patterned resist film having a predetermined pattern on a surface layer formed on a substrate, said method comprising the steps of depositing a resist film on said surface layer, pre-processing said resist film into a pre-processed resist film which is attached to said surface layer and which has a latent image of said predetermined pattern, and processing said pre-processed resist film into said patterned resist film, said processing step comprising the steps of:

introducing said pre-processed resist film together with said substrate into a supercritical atmosphere; and

developing said pre-processed resist film in said supercritical atmosphere to selectively remove said pre-processed resist film in accordance with said latent image and to thereby form said patterned resist film.

4,944,838

METHOD OF MAKING TAPERED SEMICONDUCTOR WAVEGUIDES

Thomas L. Koch, Holmdel, and Uziel Koren, Fair Haven, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

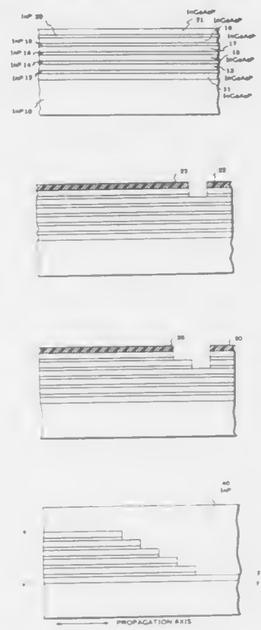
Filed Aug. 3, 1989, Ser. No. 389,074
Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—652 **9 Claims**

1. A method for etching a multilayer semiconductor heterostructure body to form a waveguide device, said multilayer semiconductor heterostructure body including guiding layers and stop-etch layers interleaved with each other, the method comprising the steps of:

contacting a surface of a predetermined exposed guiding layer portion with a first material selective chemical etchant for a time period sufficient to expose a corresponding predetermined stop-etch layer portion;

contacting a surface of a predetermined exposed stop-etch layer portion with a second material selective chemical etchant for a time period sufficient to expose a corresponding predetermined guiding layer portion;

iterating in sequence the first contacting step followed by the second contacting step wherein the predetermined exposed layer portions during a given iteration are longer than and include at least the predetermined exposed layer portions for previous iterations so that a staircase-like tapered waveguide profile is formed.



4,944,839

INTERSTAGE LIQUOR HEATER FOR PLATE TYPE FALLING FILM EVAPORATORS

Axel E. Rosenblad, Seabright, N.J., assignor to Rosenblad Corporation, Princeton, N.J.

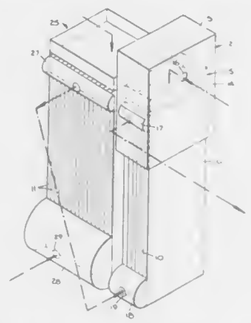
Filed May 30, 1989, Ser. No. 357,808
Int. Cl.[5] B01D *1/00*
U.S. Cl. 159—13.1 **5 Claims**

1. A falling film evaporator comprising a plurality of heating elements, said heating elements are envelopes comprised of flat plates joined at their peripheries; means for circulating a heating medium through the elements, in which some elements have their upper portions enclosed within a downwardly open hood; means for distributing liquor to be evaporated to surfaces of the heating elements, said hood serving to prevent direct contact heat exchange between feed liquor to be evaporated and condensible vapor generated by the evaporation of the liquor a vent exhaust port disposed within the hood; and means for feeding heating medium exiting from heating elements which do not have their upper portions enclosed within said hood to said elements which have their upper portions enclosed within said hood.

5. A falling film evaporator comprising a plurality of heating elements within a casing, said heating elements are envelopes comprised of flat plates joined at their peripheries; means for venting the heating elements, wherein some of the heating

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elements have upper portions enclosed within a hood within the casing for collecting noncondensibles with the hood to prevent direct contact of liquor to be evaporated with condensible vapor within the hood; and means for circulating



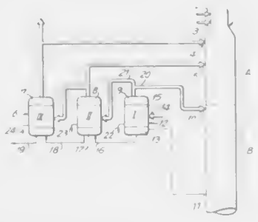
liquor collected at the bottom of the casing to a liquor distribution means positioned outside the hood for distributing liquor to heating elements which do not have their upper portions within the hood.

4,944,840

METHOD AND APPARATUS FOR EVAPORATING WASTE LIQUOR PRODUCED WHEN COOKING FIBROUS MATERIAL CONTAINING CELLULOSE

Kaj Henricson, Kotka, Finland; Ryham, Rolf, Princeton, N.J., and Sannholm, Krister, Espoo, Finland, assignors to Ahlströmföretagen Svenska AB, Norrköping, Sweden

Filed Jan. 11, 1989, Ser. No. 295,825
Claims priority, application Sweden, Jan. 14, 1988, 8800100
Int. Cl.[5] D21C *11/06*
U.S. Cl. 162—46 **13 Claims**



1. A method of evaporating waste liquor comprising:
(a) introducing fibrous cellulose containing material and cooking liquor into a continuous pulp digester having a cooking zone below an impregnation zone;
(b) heating said fibrous material to the cooking temperature by the addition of vapor to said cooking zone;
(c) discharging waste liquor from said digester;
(d) introducing said discharged waste liquor into a first of multiple evaporation stages;
(e) evaporating said waste liquor in said first evaporation stage by the addition of a heat medium;
(f) generating vapor in said evaporation stages;
(g) evaporating said waste liquor in a second evaporation stage by the addition of vapor generated in said first stage;
(h) evaporating said waste liquor in a third evaporation stage by the addition of vapor generated in said second stage;
(i) directly introducing into said cooking zone at least part of said vapor generated in said first evaporation stage for heating said fibrous material in step (b); and
(j) introducing into said impregnation zone at least part of said vapor generated in said second and third evaporation stages at different levels and at a temperature below said cooking temperature.

9. An apparatus for evaporating waste liquor containing fibrous cellulose material comprising:
a continuous digester for cooking said fibrous material at the cooking temperature, said digester comprising an impregnation zone and a cooking zone below said impregnation zone, an inlet opening for heating vapor in said cooking zone and a discharge opening for waste liquor;
a plurality of evaporation stages, the first evaporator stage comprising a vapor space, an evaporation chamber, a heat exchange element within said chamber, and a liquid space; means for maintaining the same pressure in said evaporation chamber as in said digester; said vapor space being in direct fluid communication with said heating vapor inlet opening in said cooking zone of said digester; said liquid space being in fluid communication with said waste liquor discharge opening of said digester; said heat exchange element of said first evaporation stage having an inlet for introducing vapor at a temperature higher than said cooking temperature; the second evaporation stage comprising a second evaporation chamber and a second vapor space, a vapor outlet, a second heat exchange element and a second liquid space within said second evaporation chamber; said second vapor space being connected to said first vapor space of said first evaporation stage and said second vapor outlet being connected to said impregnation zone; and
the third evaporation stage comprising a third evaporation chamber including a third vapor space, a third vapor outlet, a third heat exchange element and a third liquid space within said third evaporation chamber, said second vapor space being connected to said third heat exchange element, and said third vapor space being connected to said impregnation zone at a level above said connection of said second vapor outlet.

4,944,841

PROCEDURE FOR CONTROLLING ALKALINE PULPING PROCESSES

Eero Sjöström, and Alén Raimo, both of Helsinki, Finland, assignors to Kajaani Elektroniikka Oy, Finland

Filed Apr. 15, 1988, Ser. No. 181,825
The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.
Int. Cl.[5] D21C *3/02, 7/12*
U.S. Cl. 162—49 **4 Claims**



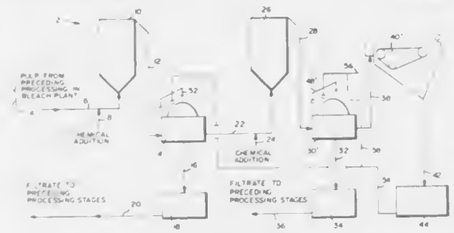
1. A method of controlling an alkaline pulping process, comprising the steps of pulping cellulose material with an alkaline cooking liquor in a pulping process, said process being selected from the group consisting of a sulfate process, and a soda anthraquinone process, determining at a plurality of time intervals the concentration ratios of at least two different monomeric degradation compounds of lignin formed during the pulping wherein the ratios change at various times during the pulping, and terminating the pulping when a predetermined concentration ratio of said two compounds is reached.

4,944,842

METHOD FOR REDUCING CONTAMINATION IN PULP PROCESSING

C. Bertil Stromberg; Joseph R. Phillips, and Louis O. Torregrossa, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glen Falls, N.Y.

Filed Mar. 26, 1987, Ser. No. 40,245
Int. Cl.[5] D21C *9/02, 9/10;* D21F *1/66*
U.S. Cl. 162—60 **20 Claims**



1. In a pulp processing system utilizing multiple pulp bleaching and washing stages prior to feeding of said pulp to a further processing device, the method comprising the steps of:
(a) feeding white water effluent from said further processing device directly to a next-to-last washing stage; and
(b) reducing contamination of the pulp and white water effluent leaving the further processing device by feeding fresh water to the last washing stage, causing contamination in the white water effluent fed to the next-to-last washer stage to be reduced at the last washing stage.

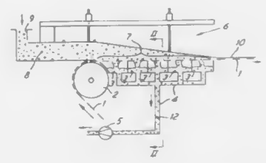
16. In a pulp processing system including multiple bleaching and washing stages upstream of a further processing device, which further processing device discharges white water effluent, the improvement comprising:
(a) means for reducing contamination of said pulp and said white water effluent, said means comprising first conduit means for feeding white water effluent from said further processing device to a next-to-last washing stage, and second conduit means for supplying fresh water to a last washing stage so that contamination of the pulp and white water effluent is reduced at the last washer stage.

4,944,843

PROCESS AND APPARATUS FOR FORMING PARTICULATE LAYERS

Peter L. Wallace, High Wycombe, and Anthony J. Willis, Marlow, both of England, assignors to The Wiggins Teape Group Limited, Basingstoke, United Kingdom

Filed May 25, 1988, Ser. No. 198,217
Claims priority, application United Kingdom, May 28, 1987, 8712522
Int. Cl.[5] D21F *1/00, 1/48, 1/66*
U.S. Cl. 162—101 **4 Claims**



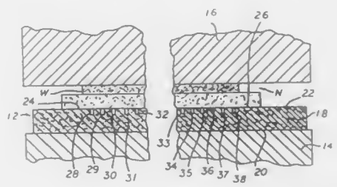
1. A process for forming a layer including fibrous material, comprising the steps of forming a foamed dispersion of fibrous material, moving a foraminous sheet through a predetermined zone of a plane, supplying said foamed dispersion to the predetermined zone of a plane through which a foraminous element is moving, controlling induction of free air into the predetermined zone by supplying the foamed dispersion through a confined channel defined in part by a head box having a slice coextensive with the predetermined zone on one side of said foraminous element, applying a vacuum to said plane across said zone on the other side of said foraminous element using a wet vacuum means, so as to drain foam therethrough and form a fibrous layer thereon, the drained foam having a level in the vacuum means, removing from said drained foam substantially immediately after drainage any free air drawn through or past the foraminous element during drainage to minimize foam destabilization by providing a vacuum line connected to the vacuum means at a position above the level of the foam therein, and continuously recycling the resulting foam for re-use in forming the foamed fibrous dispersion.

4,944,844

POLYURETHANE EXTENDED NIP PRESS BLANKET

Joseph J. Marcinko, Shaker Heights, Ohio, assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 11, 1989, Ser. No. 378,117
Int. Cl.[5] D21F *3/02*
U.S. Cl. 162—205 **7 Claims**



1. In an extended nip press defined by an elongate press shoe and a cooperating backing roll, a press blanket for pressing water from a formed web extending contiguously with the blanket through an extended nip defined between the elongate press shoe and the cooperating backing roll, the press shoe, the backing roll, and the blanket all having substantially the same cross machine direction width, said blanket comprising:
a single layer of fiber reinforced urethane defining an endless loop, said layer cooperating with the press shoe and extending through the extended nip for pressing the water from the formed web;
said single layer having an inner and an outer surface and a first and a second edge zone;
said inner surface of said single layer slidably cooperating with the press shoe, said inner surface being smooth and having a diameter which is reproducible to within a predetermined tolerance range;
said outer surface defining a plurality of parallel-spaced circumferential grooves for assisting the drainage of the water from the formed web during passage of the web between said outer surface and the backing roll; and
said edge zones each being devoid of said grooves for a width substantially greater than the distance between adjacent grooves such that during use of the blanket, fracturing of said single layer in the vicinity of said grooves disposed adjacent to said edge zones is inhibited.

7. A method of draining water from a formed web extending through an extended nip defined between an elongate press shoe and a backing roll, said method comprising the steps of:
moving a single layer fiber reinforced press blanket through the extended nip such that the web is disposed between the blanket and the backing roll; the press shoe, the back-

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ing roll, and the blanket all having substantially the same cross machine direction width, and

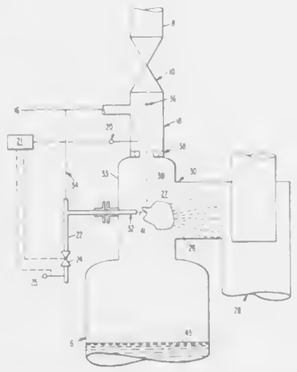
draining water pressed from the formed web during passage of the web through the extended nip by means of a plurality of parallel-spaced circumferential grooves, the grooves extending over an outer surface of the blanket which faces toward the backing roll, the blanket having first and second lateral edge zones which each have a width substantially greater than the distance between adjacent grooves, the grooves terminating short of the first and second lateral edge zones of the blanket such that fracturing of the grooves in the vicinity of the edge zone is inhibited.

4,944,845

APPARATUS FOR UPGRADING LIQUID HYDROCARBONS

David B. Bartholic, 75 Wetumpka La., Watchung, N.J. 07060

Division of Ser. No. 116,886, Nov. 5, 1987, Pat. No. 4,859,315.
This application Jul. 3, 1989, Ser. No. 365,118
Int. Cl.[5] B01J *8/18*; C10G *7/00, 9/28*
U.S. Cl. 202—84 17 Claims



1. Apparatus for the treatment of a liquid hydrocarbon charge containing solids or solids-forming contaminants comprising:

(a) a contactor vessel having at least one liquid charge inlet, at least one vaporizing media inlet above said charge inlet and at least one vapor-solids outlet;

(b) atomizing means positioned in said charge inlet for forming small particles of said liquid charge having a preselected size and directing said particles of liquid substantially horizontally into said contactor vessel;

(c) vaporizing media introduction means positioned in said vaporizing media inlet for introducing a fluidized mixture of a gas dispersion media and hot circulating solid particles into said contactor vessel substantially vertically so as to traverse the path of said liquid particles and intimately contact said liquid particles; and

(d) contactor separator means connected to said vapor-solids outlet for separating solid particles entrained in vapors formed in said contactor vessel;

(e) wherein said vapor-solids outlet is positioned in said contactor vessel substantially opposite said liquid charge inlet to receive said vapors and entrained solid particles and rapidly pass the same into said separator means.

4,944,846

PROCESS FOR THE SEPARATION OF HF VIA AZEOTROPIC DISTILLATION

Leo E. Manzer; V. N. Mallikarjuna Rao, both of Wilmington, Del.; Richard T. Rockwell; Michael A. Sisk, both of Corpus Christi, Tex.; Edwin J. Warwas, Wilmington, and Roy Winteringham, Hockessin, both of Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Aug. 1, 1988, Ser. No. 226,737
Int. Cl.[5] B01D *3/00*; C07C *17/00*
U.S. Cl. 203—1 6 Claims

1. A process for the separation of hydrogen fluoride from an initial mixture which comprises hydrogen fluoride and either 2,2-dichloro-1,1,1-trifluoroethane or both 2,2-dichloro-1,1,1-trifluoroethane and 2-chloro-1,1,1,2-tetrafluoroethane, comprising the steps of:

(a) controlling the molar ratio of hydrogen fluoride to 2,2-dichloro-1,1,1-trifluoroethane in said initial mixture by adding 2,2-dichloro-1,1,1-trifluoroethane when the molar ratio of hydrogen fluoride to 2,2-dichloro-1,1,1-trifluoroethane is greater than about 1.3:1, thereby providing said initial mixture with a molar ratio of hydrogen fluoride to 2,2-dichloro-1,1,1-trifluoroethane of 1.3:1, or less;

(b) separating the initial mixture provided in step (a) by azeotropic distillation in a distillation column having a temperature of from about 50° C. to 300° C. and a pressure of from about 0.10 MPa to about 4.0 MPa at the bottom of the column;

(c) removing top products from the distillation column which contain a portion of the 2,2-dichloro-1,1,1-trifluoroethane from the initial mixture provided in step (a) and substantially all of the hydrogen fluoride from the initial mixture provided in step (a) and which comprise at least one low-boiling azeotrope selected from the group consisting of azeotropes of hydrogen fluoride and 2,2-dichloro-1,1,1-trifluoroethane, azeotropes of hydrogen fluoride and 2-chloro-1,1,1,2-tetrafluoroethane, and azeotropes of hydrogen fluoride and both 2,2-dichloro-1,1,1-trifluoroethane and 2-chloro-1,1,1,2-tetrafluoroethane; and

(d) removing bottom products from the distillation column which are substantially free of hydrogen fluoride and which comprise 2,2-dichloro-1,1,1-trifluoroethane; wherein sufficient 2,2-dichloro-1,1,1-trifluoroethane is withdrawn from the bottom of the distillation column to maintain said temperature and pressure.

4,944,847

METHOD FOR INHIBITING EPICHLOROHYDRIN FOULING

Karis W. Snow, Stafford, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 12, 1989, Ser. No. 364,736
Int. Cl.[5] B01D *3/34*
U.S. Cl. 203—8 3 Claims

1. A method of inhibiting fouling in distillation towers, overhead lines, reflux lines, and condensers operating in a process to manufacture and purify epichlorohydrin which method comprises treating process streams containing epichlorohydrin entering or exiting said towers, lines and condensers, including feed streams, reflux streams, gaseous or liquid overhead streams, with an effective antifouling amount of a C_3–C_9 linear or branched alkyl substituted catechol containing a major portion or percentage of 4-tertiary butyl catechol, or mixtures thereof, which linear or branched alkyl substituted catechols are dissolved in a liquid alcoholic solvent chosen from the group consisting of C_1–C_6 alcohols, C_1–C_6 chlorinated alcohols, and mixtures thereof.

4,944,848

PROCESS FOR THE PURIFICATION OF 1,1-DIPHENYLETHANE WITH GOOD FRAGRANCE QUALITY

Manfred Kanfhold, Marl, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 21, 1989, Ser. No. 410,408
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1988, 3837450
Int. Cl.[5] B01D *3/00*
U.S. Cl. 203—35 13 Claims

1. A process for the purification of a 1,1-diphenylethane product with improved fragrance quality from a distillation residue of ethylbenzene production, comprising the steps of:

subjecting the distillation residue of ethylbenzene production to a first distillation to obtain a distillate comprising 1,1-diphenylethane;

washing said distillate with concentrated sulfuric acid at a temperature in the range of about −10° to +50° C.;

separating the sulfuric acid phase from an oil phase;

washing the oil phase with an aqueous solution of an alkali metal hydroxide followed by washing with water; and

subjecting the washed oil phase to a second distillation so that a 1,1-diphenylethane product comprising greater than 85% by wt. 1,1-diphenylethane having improved fragrance quality is obtained.

4,944,849

EXTRACTIVE DISTILLATION OF CYCLOALKANE/ALKANE FEED EMPLOYING SOLVENT MIXTURE

Fu Ming Lee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1989, Ser. No. 378,665
Int. Cl.[5] B01D *3/40*
U.S. Cl. 203—55 23 Claims

1. In a process for separating at least one cycloalkane containing 5–10 carbon atoms per molecule from at least one close-boiling alkane by extractive distillation of a feed consisting essentially of said at least one cycloalkane and said at least one alkane, the improvement which comprises employing a solvent consisting essentially of a mixture of

(a) at least one saturated alcohol selected from the group consisting of alkanols and cycloalkanols, wherein said alcohol contains 5–9 carbon atoms and one OH group per molecule, and

(b) cyclotetramethylene sulfone;

wherein said extractive distillation process produces (i) an overhead product which contains a smaller volume percentage of said at least one cycloalkane and a larger volume percentage of said at least one alkane than said feed, and (ii) a bottoms product which contains said solvent and a larger volume percentage of said at least one cycloalkane and a smaller volume percentage of said at least one alkane than said feed; and wherein said at least one cycloalkane is separated from said solvent and recovered from said bottoms product.

13. In a process for separating at least one cycloalkane containing 5–10 carbon atoms per molecule from at least one close-boiling alkane by extractive distillation of a feed consisting essentially of said at least one cycloalkane and said at least one alkane, the improvement which comprises employing solvent consisting essentially of a mixture of

(a) at least one saturated alcohol selected from the group consisting of alkanols and cycloalkanols, wherein said alcohol contains 5–9 carbon atoms and one OH group per molecule,

(b) cyclotetramethylene sulfone, and

(c) about 0.1–20 weight-% water;

wherein said extractive distillation process produces (i) an overhead product which contains a smaller volume percentage of said at least one cycloalkane and a larger volume percentage of said at least one alkane than said feed, and (ii) a bottoms product which contains said solvent and a larger volume percentage of said at least one cycloalkane and a smaller volume percentage of said at least one alkane than said feed; and wherein said at least one cycloalkane is separated from said solvent and recovered from said bottoms product.

4,944,850

TAPE AUTOMATED BONDED (TAB) CIRCUIT AND METHOD FOR MAKING THE SAME

John H. Dion, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 18, 1989, Ser. No. 454,808
Int. Cl.[5] C25D *5/02*
U.S. Cl. 204—15 19 Claims

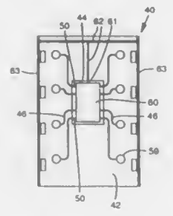
1. A method of manufacturing a tape automated bonded circuit comprising:

providing a flexible substrate having at least one conductive metal layer thereon and an opening therethrough;

selectively removing portions of said metal layer to form a pattern of conductive traces on said substrate, said pattern terminating in a plurality of leads which extend into said opening;

leaving a region of said metal layer intact over said opening, said region being smaller than said opening and conduc-

tively connected to all of said leads in order to short said leads together for the electro-plating thereof; and



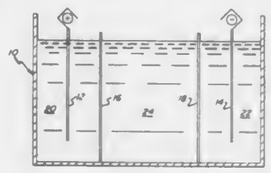
electro-plating a metal coating onto said pattern of conductive traces, said region of said metal layer remaining in position over said opening during said electro-plating.

4,944,851

ELECTROLYTIC METHOD FOR REGENERATING TIN OR TIN-LEAD ALLOY STRIPPING COMPOSITIONS

John L. Cordani, Waterbury, and Raymond A. Letize, West Haven, both of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Jun. 5, 1989, Ser. No. 361,548
Int. Cl.[5] C25C *1/12, 1/14;* C23F *1/44, 1/46*
U.S. Cl. 204—106 **14 Claims**



1. A method for treating a metal stripping composition, initially comprised of an aqueous solution of an alkane sulfonic acid and ferric nitrate, and which by virtue of its use in stripping metals comprises of tin or tin-lead from a substrate surface, contains therein stripped metals comprised of tin and optionally lead in the form of solubilized metal salts, including soluble metal salts of said alkane sulfonic acid, comprising electrolyzing said aqueous solution utilizing an anode element and a cathode element under conditions of current density effective to deposit said stripped metals, in their metallic form, on the surfaces of said cathode element.

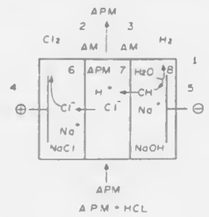
4,944,852

METHOD FOR PURIFYING A DIPEPTIDE ESTER

Yasuhiro Kuranchi; Michihiro Akazawa, both of Atsugi; Tsuneo Harada, Shin-nanyo; Kiyotaka Oyama, Hikari, and Akira Tokuda, Shin-nanyo, all of Japan, assignors to Tosoh Corporation, Shin-nanyo, Japan

Filed Aug. 5, 1988, Ser. No. 228,489
Claims priority, application Japan, Aug. 7, 1987, 62-196296
The portion of the term of this patent subsequent to May 15, 2006, has been disclaimed.
Int. Cl.[5] B01D *15/00*
U.S. Cl. 204—131 **10 Claims**

1. A method for purifying a dipeptide ester by electrolysis in an electrolytic cell comprising an anode compartment, a cathode compartment and a central compartment partitioned by anion exchange membranes, which comprises supplying an aqueous dipeptide ester solution containing an inorganic acid to the central compartment defined by said anion exchange membranes, an aqueous solution containing a basic substance or an aqueous electrolyte solution containing a basic substance to the cathode compartment and an aqueous electrolyte solution to the anode compartment, supplying hydroxyl ions from the cathode compartment to the central compartment through



the anion exchange membrane to neutralize the aqueous dipeptide ester solution containing the inorganic acid and removing anions of the inorganic acid in the aqueous dipeptide ester solution from the central compartment to the anode compartment through the anion exchange membrane.

4,944,853

PHOTOCHEMICAL PREPARATION OF 3-(ORGANOTHIO) ALDEHYDES

Stanley R. Sandler, Springfield, Del., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 11, 1989, Ser. No. 405,784
Int. Cl.[5] B01J *19/08*
U.S. Cl. 204—157.76 **10 Claims**

1. A process for the preparation of 3-(organothio) aldehydes comprising (a) forming an equimolar mixture of a C_1–C_{12} alkyl, a C_5–C_6 cycloalkyl or a C_6–C_{12} aryl or alkaryl mercaptan with a C_3–C_{10} α, β-unsaturated aliphatic aldehyde, and (b) subjecting said mixture to actinic radiation at a temperature ranging from about 2° to less than 60° C. in the absence of an oxygen-containing atmosphere to thereby produce a product consisting predominantly of the corresponding 3-(organothio) aldehyde.

4,944,854

ELECTRET PROCESS AND PRODUCTS

Clinton D. Felton, Charlotte; Baylor D. Gibson, Waxhaw; Charles E. Jamison, Charlotte; William O. McWhorter, Monroe, and George A. Serad, Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 550,069, Nov. 8, 1983, Pat. No. 4,623,438.
This application Sep. 30, 1985, Ser. No. 781,164
Int. Cl.[5] C07C *3/24*
U.S. Cl. 204—168 **8 Claims**



1. A method for the manufacture of electrets which comprises passing a polymeric film or a warp beam of tightly packed synthetic yarn having a warp density as determined by light transmission of not more than 40% through a corona charging station a plurality of times while in a heated and tensioned condition, said corona charging station subjecting the film or yarn to corona discharge treatments generated between an upper grid member and a lower grid member.

4,944,855

AQUEOUS ELECTROCOATING BATHS FOR CATHODIC PLANT DEPOSITION AND PROCESSES FOR THEIR PREPARATION

Georg Schon, Everswinkel; Gunter Ott, and Michael Geist, both of Munster, all of Fed. Rep. of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP87/00130, § 371 Date Sep. 23, 1988, § 102(e) Date Sep. 23, 1988, PCT Pub. No. WO87/05922, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 7, 1987, Ser. No. 275,085
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610183
Int. Cl.[5] C08L *63/00;* C25D *13/06*
U.S. Cl. 204—181.7 **8 Claims**

1. An aqueous electrocoating bath for cathodic paint deposition which contains, as a cathodically depositable binder, a modified epoxide-amine adduct and is prepared by reacting, in the presence of a basic amine catalyst,

(A) a polyepoxide with

(B) a compound which contains one or more hydroxyl groups per molecule bonded to an aromatic or (cyclo)aliphatic molecular fragment,

the reaction of (A) and (B) forming an epoxide group-containing intermediate, and by further reacting said intermediate with

(C) one or more amines or amine salts selected from the group consisting of primary (poly)amines, secondary (poly)amines, salts of said amines and salts of tertiary amines,

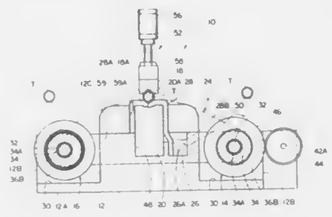
the resultant product being neutralized with acid, dispersed in an aqueous medium and processed to form an electrocoating bath, wherein said basic amine catalyst is neutralized prior to said further reaction of said intermediate, with a Brönsted acid having pK_s value of the first stage of dissociation, measured at 20° C., below 3.7.

4,944,856

ELECTROLYTIC ETCHING APPARATUS AND METHOD FOR MARKING METAL TUBES WITH SEQUENTIAL IDENTIFICATION NUMBERS

John A. Catanese, Seward, and Susan R. Saunders, Cook Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 19, 1989, Ser. No. 340,199
Int. Cl.[5] C25F *3/02, 7/00*
U.S. Cl. 204—129.2 **23 Claims**



1. An electrolytic etching apparatus for marking a metal tube with identification indicia, comprising:

(a) a pair of spaced rotatable spools;

(b) a pair of upper and lower electrodes defining an etching station located between said spools, one of said electrodes being movable toward and away from the other;

(c) a continuous stencil connected to and extending between said spools such that rotation of said spools moves a portion of said stencil imprinted with identification indicia into said etching station between said upper and lower electrodes;

(d) a reservoir of electrolyte disposed below said stencil; and

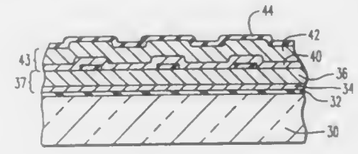
(e) a wicking pad having a main portion disposed over and in contact with said lower electrode and below said portion of said stencil and an end portion extending downwardly into said reservoir of electrolyte, said wicking pad thereby capable of drawing up electrolyte from said reservoir by capillary action to provide a steady flow of the electrolyte to said wicking pad main portion for facilitating etching of the identification indicia on a metal tube placed below said upper electrode and above said lower electrode, wicking pad and stencil upon relative movement of said electrodes toward one another and application of a predetermined voltage to said electrodes.

4,944,857

MONOLITHIC FREQUENCY SELECTIVE LIMITER FABRICATION

John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1989, Ser. No. 401,710
Int. Cl.[5] H01P *1/218*
U.S. Cl. 204—192.15 **18 Claims**



1. A method for assembling a frequency selective limiting unit having a multilayer structure, comprising the steps of:

depositing a first ferrite film on a metallized surface of a substrate layer;

growing a first ferrite layer on said first ferrite film;

positioning at least one signal carrying conductor on said first ferrite layer;

depositing a second ferrite film on said conductor and first ferrite layer in conformal manner;

growing a second ferrite layer on said second ferrite film to thereby form a monolithic multilayer structure; and

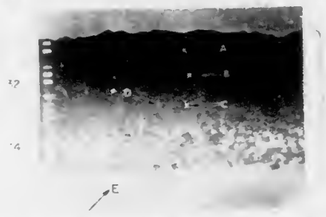
depositing a layer of metal on a free surface of said monolithic multilayer structure in contact with the metallized surface of the substrate layer forming a ground plane.

4,944,858

METHOD FOR APPLYING DIFFUSION ALUMINIDE COATING

Kenneth S. Murphy, Jupiter; Robert E. Hendricks, Port St. Lucie, both of Fla., and Richard J. Fenton, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 8, 1988, Ser. No. 281,161
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—192.15 **8 Claims**



1. A process for forming an oxidation resistant diffusion

aluminide coating on a superalloy substrate, comprising the steps of simultaneously sputtering aluminum and an oxygen active element onto the substrate at conditions to diffuse aluminum and the oxygen active element into the substrate to form an outward diffusion aluminide coating microstructure characterized by an outer coating zone and and an inner coating zone, wherein the outer coating zone contains approximately 15–30 percent aluminum and 0.01–2.0 percent oxygen active element.

4,944,859

ELECTROLYTIC CELL FOR RECOVERY OF METAL

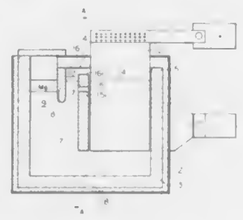
Hiroshi Matsunami; Kunio Machara, and Susumu Kosemura, all of Kanagawa, Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1989, Ser. No. 330,143

Claims priority, application Japan, Mar. 30, 1988, 63-74597; Mar. 30, 1988, 63-74598; Jun. 8, 1988, 63-139440

Int. Cl.[5] C25C *3/04, 3/08, 3/22, 7/00*

U.S. Cl. 204—244 **10 Claims**



9. A bipolar type electrolytic cell for recovery of metal comprising a first partition wall provided with partition openings situated beneath the level of an electrobath and disposed between a disassociated metal recovery chamber and an electrolytic chamber having an anode and a cathode and a second partition wall adapted to constitute an intermediate chamber between said first and second partition walls for recovery of disassociated Cl_2 gas and wherein the insulation blocks situated beneath the anode and cathode or the bipolar electrodes are supported by shelves formed on the inner wall of the electrolytic chamber and control plates for preventing the stagnation of an electrobath flow are alternately disposed between the insulation blocks.

4,944,860

PLATEN ASSEMBLY FOR A VACUUM PROCESSING SYSTEM

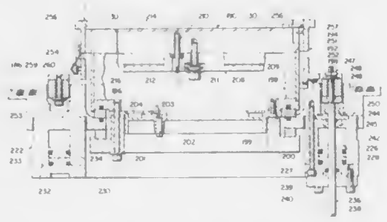
Robert B. Bramhall, Jr., Gloucester, and Richard M. Cloutier, Salisbury, both of Mass., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 4, 1988, Ser. No. 267,421

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.23 **10 Claims**

1. Apparatus for holding a semiconductor wafer for treatment in a vacuum environment comprising a circular plate having a wafer receiving surface formed thereon for receiving a wafer in a substantially horizontal position, a ring disposed in surrounding relation to said plate, first wafer engaging means formed on said ring for supporting a wafer in alignment with said wafer receiving surface, second wafer engaging means formed on said ring above said first wafer engaging means for exerting a clamping force against a wafer to maintain said wafer in engagement with said wafer receiving surface, and means for moving said ring between a first position wherein a wafer is supported by said first wafer engaging means in spaced relation to said wafer receiving surface and a second position



wherein said wafer is supported by said wafer receiving surface and engaged by said second wafer engaging means.

4,944,861

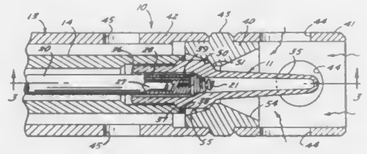
OXYGEN SENSING PROBE HAVING IMPROVED SENSOR TIP AND TIP-SUPPORTING TUBE

Eric J. Reber, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Apr. 3, 1989, Ser. No. 332,052

Int. Cl.[5] G01N *27/417*

U.S. Cl. 204—428 **12 Claims**



1. A probe for measuring the concentration of oxygen in fluids, said probe comprising an outer tube defining an outer conductor, an inner tube coaxial with and spaced inwardly from said outer tube, a sensor tip secured to said inner tube and composed of solid electrolyte material, two electrodes disposed on opposite sides of said sensor tip, and an inner conductor in electrical contact with one of said electrodes, said probe being characterized in that an electrically conductive sleeve is telescoped tightly into one end portion of said outer tube in electrical contact therewith and is telescoped over said sensor tip in electrical contact with the other of said electrodes, one end portion of said sleeve being formed with an annular frustoconical seat, said tip being formed with a frustoconical shoulder located in faceto-face mating engagement with the seat of said sleeve, the seat of said sleeve being defined by a series of angularly spaced segments having passages therebetween to permit fluid to flow out of the inside of said sleeve and along the outside of said inner tube.

4,944,862

INTEGRATED CATALYTIC DEWAXING AND CATALYTIC CRACKING PROCESS

Nai Y. Chen, Titusville; Anil B. Ketkar, Cranbury, and Randall D. Partridge, West Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

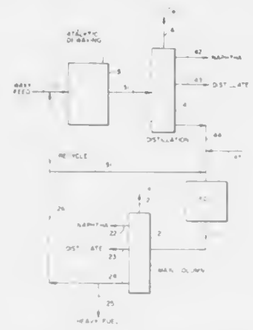
Filed Oct. 26, 1988, Ser. No. 262,779

Int. Cl.[5] C10G *69/04, 55/06*

U.S. Cl. 208—49 **22 Claims**

1. An integrated process for upgrading a heavy hydrocarbon feed comprising waxy components, and having an end boiling point exceeding 750 F. into lighter products including a heavy fuel oil product by subjecting said feed to both dewaxing and catalytic cracking by:

(a) catalytically dewaxing at least a portion of said feed to produce a dewaxed product with a reduced wax content, and an end boiling point exceeding 750 F. and



(b) catalytically upgrading said dewaxed product by catalytic treatment consisting essentially of catalytic cracking with a conventional catalytic cracking catalyst in a conventional catalytic cracking unit to produce a catalytically cracked product comprising a heavy fuel oil product.

4,944,863

THERMAL HYDROCRACKING OF HEAVY STOCKS IN THE PRESENCE OF SOLVENTS

C. Morris Smith, Princeton, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corp., New York, N.Y.

Filed Sep. 19, 1989, Ser. No. 409,374

Int. Cl.[5] C10G *47/00*

U.S. Cl. 208—107 **23 Claims**

1. A process for treating heavy petroleum stocks comprising thermally hydrocracking a heavy stock in the presence of gaseous hydrogen and a substantially inert solvent.

4,944,864

PROCESS USING CRACKING CALALYST CONTAINING STRONTIUM CARBONATE

Edwin L. Kugler, Glen Gardner, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 14,469, Feb. 13, 1987, Pat. No. 4,824,815, which is a continuation-in-part of Ser. No. 743,593, Jun. 11, 1985, abandoned. This application Mar. 27, 1989, Ser. No. 328,845

Int. Cl.[5] C10G *11/05*

U.S. Cl. 208—120 **8 Claims**

1. A process for converting a hydrocarbon oil containing at least one vanadium-containing compound, nickel-containing compound, or mixture thereof to lower boiling hydrocarbon products which comprises contacting the oil at conversion conditions with a cracking catalyst containing

(a) a zeolitic material;

(b) a matrix material; and

(c) strontium carbonate dispersed in the matrix as discrete particles, wherein strontium carbonate is present in an amount sufficient to form a product having a melting point greater than about 670° C. when the carbonate is reacted with the vanadium-containing compound, nickel-containing compound, or mixture thereof, at fluid catalytic cracking regenerator temperatures.

4,944,865

PROCESS FOR CRACKING HIGH METALS CONTENT FEEDSTOCKS

Mario L. Occelli, Allison Park, and James V. Kennedy, Pittsburgh, both of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 640,388, Aug. 13, 1984, abandoned, and a continuation-in-part of Ser. No. 375,379, May 6, 1982, Pat. No. 4,465,588. This application Sep. 19, 1986, Ser. No. 909,819

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—121 **6 Claims**

1. In a process which comprises the cracking, in the absence of added hydrogen, of a vanadium-containing hydrogen feed in a cracking zone under cracking conditions employing a cracking catalyst having high activity; the improvement which comprises combining with said catalyst a diluent consisting essentially of magnesium oxide to form a catalyst composite, said diluent forming a separate and distinct entity within said catalyst composite, and the concentration of said diluent within said composite being adjusted so as to be directly proportional to the concentration of vanadium on said catalyst composite in said cracking zone and wherein said concentration of said diluent is in the range of 20–50 weight percent of said catalyst composite.

4,944,866

PROCESS FOR THE HYDROGENATION OF COAL

Klaus Fuhrmann, Everskamp; Ulrich Graeser, Haltern, and Ludwig Merz, Recklinghausen, all of Fed. Rep. of Germany, assignors to Veba Oel Technologie GmbH, Gelsenkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 595,036, Mar. 29, 1984, abandoned. This application Apr. 15, 1986, Ser. No. 852,391

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3311552

Int. Cl.[5] C10G *1/06*

U.S. Cl. 208—408 **6 Claims**

1. A process for the hydrogenation of coal, which comprises:

slurrying pulverized coal with an oil, wherein the coal and oil are slurried in a weight ratio of coal:oil of from about 1:20 to 1:1, said oil consisting of a non-process derived hydrocarbon mixture having a boiling range above about 200° C., in an amount of 40–100% by weight and selected from the group consisting of mineral oils containing substantial amounts of aromatic and naphthenic compounds, mineral oil derived top residue, vacuum residue, heavy oils, oils obtained from the retorting of oil shales or tar sands, and mixtures thereof, and the remainder of said oil being process-derived oils having a boiling range above about 200° C., and obtained by fractionated condensation of the gaseous product leaving a hot separation step following,

hydrogenating the mixture of coal and oil at an elevated temperature of about 350°–520° C. and under hydrogen pressure of about 100–1,000 bar, in a liquid-phase hydrogenation step to yield a product mixture,

using at least one hot separation step to separate said product mixture into a gaseous non-condensed fraction and into liquid and solid products and wherein oil obtained by fractionated condensation of the gaseous product or an oil obtained by the solid enrichment of the separated liquid and solid products as used, at least partially, as the process derived portion of the slurry oil; and further

hydrogenating the remainder of said gaseous product, without depressurizing the gas phase over fixed bed catalysts.

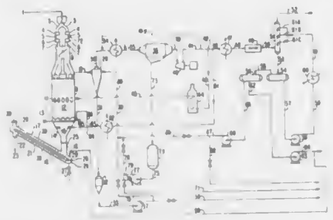
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4,944,867

PROCESS TO SECURE OIL, GAS, AND BY-PRODUCTS FROM PYROBETUMINOUS SHALE AND OTHER MATTER IMPREGNATED WITH HYDROCARBONS

Rene Mundstock; Kuniyuki Terabe; Antonio R. de Almeida Lamprecht; Joao C. Teixeira, all of Sao Mateus do Sul; Altair R. D. Batista, Rio de Janeiro; Edson d. Dias, Sao José dos Campos; Laiz D. Santos, Macaé ; Osvaldo Amorim, Campinas; Joel Rezende, Curitiba; Jorge H. Filho, Sao Mateus do Sul; Joao C. Gobbo, Curitiba, and Romeu Machado, Curitiba, all of Brazil, assignors to Petreleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Dec. 22, 1987, Ser. No. 136,573
Claims priority, application Brazil, Dec. 22, 1986, 8606369
Int. Cl.[5] C10G *1/00*
U.S. Cl. 208—409 3 Claims



1. In a process for obtaining oil, gas and other products from pyrobituminous shales and other matter impregnated with hydrocarbons, which includes introducing crushed shale from a hopper downwardly into the upper portion of a retort through rotating charging devices having gas operated sealing means, contacting said crushed shale in the top portion of the retort with a stream of retort gasses, injecting hot gasses at an intermediate point of said retort at a temperature of about 500° C. to about 600° C., introducing a stream of cold gasses at the bottom of said retort at a temperature ranging between 110° C. and 180° C. and at a pressure of 15 kPa to 50 kPa (pressure gauge), discharging the crushed shale through a bottom sealing mechanism, removing gaseous retorted matter above the zone where the shale undergoes pyrolysis treatment, directing said gaseous retorted matter to a cyclone **29** for separation of heavy liquid components from a gaseous stream containing very fine solids in a mist, precipitating the very fine solids, compressing said gaseous stream, directing a first portion of said compressed gaseous stream through a heater **44** to raise the temperature to about 500°–600° C. for injection into said retort to start pyrolysis of the shale, directing a second portion of said compressed gaseous stream through a heat regenerator to reduce the temperature to about 110°–130° C. and injecting said stream into the retort through nozzles **15**, directing a third portion of said compressed gaseous stream through cooling means to a spray tower **51** for separation of a gaseous component for extraction and a liquid component consisting primarily of water and heavy oil, and directing the liquid component to a decanting system, the improvement comprising:

(a) supplying the liquid component comprised of water and heavy oil to first and second separating decanters **54** and **56** connected in series, removing the bottom watery layer from said first decanter to a circulating pump **58**, pumping the bottom watery layer into said spray tower as a spray for condensation of said liquid components of the gasses, transferring the top layer containing mainly oil by pipe **55** to said second decanter **56**, removing the bottom watery part to a pump **63** for disposal while supplying the oily portion to a pump **66** from which part of the oily portion separated for reuse outside the process and recirculating the remainder of the oily portion to said cyclone **29**,

(b) cooling gasses issuing from said cyclone **29** in a heat regenerator **34** to lower their thermal charge and passing the cooled gasses through electrostatic precipitators **36** to a compressor so as to cause the temperature of the gasses to drop by about 20° to 60° C. in order to enter the compressor at a temperature of about 130°–180° C. and preferably about 130°–140° C.,

(c) directing a portion of said compressed gaseous stream from the compressor through a heat regenerator **47** and an air operated cooler **49** in sequence so that the temperature may be brought down to about 90° C. and supplying the cool compressed gas to the spray tower **51**,

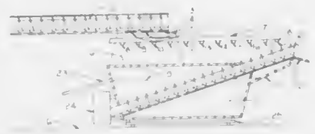
(d) injecting a portion of said compressed gaseous stream from the compressor as a "cold gas" into the bottom of the retort whereby the difference in pressure between the charging devices and sealing means of the retort and the bottom portion of the retort is about 1.36 kPa.

4,944,868

PROCESS AND APPARATUS FOR SEPARATING PLASTICS FROM CONTAMINANTS

Jerry L. Jay, Sr., Rte. 3 #3, Box 239, and Ben Cottrell, Rte. 3 #3, Box 313, both of Newbern, Tenn. 38059

Filed Aug. 28, 1988, Ser. No. 227,604
Int. Cl.[5] B03B *5/28*
U.S. Cl. 209—10 6 Claims



1. A process for separating plastics from contaminants comprising the steps of: providing a supply auger for delivering contaminated plastic particles to a separation tank; the separation tank being equipped with a separation discharge auger that will discharge materials that sink and a discharge chute that will discharge particles that float, and is filled with a separation solution; rotating the wash tank to deposit either sink or float material into a wash tank; the wash tank being filled with a wash solution for cleaning any dirt or residue remaining on the particles after separation; the wash tank being supplied with a wash tank discharge auger to carry the particles through and out of the wash tank to a rinse tank; providing front, rear, and center support legs for the wash tank; adjusting the level of the wash solution in relation with the wash tank discharge auger by adjusting the front and rear legs in relation to the center leg so that the wash solution level will be altered, in relation to the auger, so that the auger is more or less submerged in the solution, to make it most efficient in transferring either sink or float materials through and out of the wash tank to the rinse tank; the rinse tank being filled with a rinse solution for rinsing away any residue remaining on the particles from the wash tank; the rinse tank being supplied with a rinse tank discharge auger to carry the particles through and out of the rinse tank to a lift conveyor; providing front, rear, and center support legs for the rinse tank; adjusting the level of the rinse solution in relation to the rinse tank discharge auger by adjusting the front and rear legs in relation to the center leg so that the solution level is altered, in relation to the auger, so that the auger is more or less submerged in the solution to make it most efficient in transferring sink or float materials to the lift conveyor; the lift conveyor transferring the material to a material dryer where it is dried and discharged ready for reuse or remanufacturing.

4,944,869

METHOD AND INSTALLATION FOR OBTAINING ENRICHED FRACTIONS FROM USED STORAGE BATTERIES

Nedyalko K. Lyakov; Georgi A. Haralampiev; Todor G. Nikolov, all of Sofia; Georgi S. Buyukliev, Kardjali; Peter S. Petrov, Kardjali; Peter V. Valchev, Kardjali; Valcho P. Myuftiev, Kardjali, and Kalin T. Primov, Kardjali, all of Bulgaria, assignors to Nauchno-Installation Sektor-Vchti, Sofia, Bulgaria

Filed Aug. 16, 1988, Ser. No. 232,828
Int. Cl.[5] B03B *5/56*
U.S. Cl. 209—173 6 Claims

1. An apparatus for obtaining enriched fractions from used storage batteries having a plurality of units arranged in series, each unit comprising

two concentrically disposed drums, namely an outer cylindrical drum and an inner cylindrical perforated drum;

said cylinder having a first helical strip mounted on its inner wall, a lid with inlet opening fastened to a front part of said cylinder, a first cone fixed at a rear part of said cylinder, said first cone having a second helical strip mounted on its inner wall;

the first cone ending in an annular opening with a second inverse cone;

a perforated partition with an intermediate opening is disposed between said cylinder and said first cone;

the cylinder being provided with reinforcing rings on its outer wall;

in the front end of the inner wall at the lid a plurality of stirring blades are mounted, while the inner perforated drum is mounted, fixed by means of ribs;

said inner perforated drum having a third helical strip mounted on an inner wall thereof;

perforated blades being fastened to the outer wall of said inner perforated drum;

longitudinal openings being formed at the base of said blades within the cylinder;

the front end of the inner perforated drum being closed by a bottom; reflectors being mounted over the longitudinal openings; and a screen being fixed over the intermediate opening;

a small perforated cylinder, which is closed by a jacket having an opening, being fastened to the inverse cone; and an inclined worm being mounted to a lower part of said small perforated cylinder, in a plane perpendicular to an axial line of the small perforated cylinder;

the inner perforated drum ending in a conic perforated passage to which is fastened a tube with a fourth helical strip and an outlet opening;

while concentrically to the tube, which is perforated in a zone after the small perforated cylinder, there being fastened a large perforated cylinder which is closed by a jacket with a first opening and a second opening, while over the small and large perforated cylinders are disposed nozzles.

4,944,870

AUTOMATIC FILTRATION DEWATERING SYSTEM

Aisaburo Yagishita, Nagoya; Yasunori Iriyama, Iwakura, and Joulchiro Osuga, Nagoya, all of Japan, assignors to Kabushiki Kaisha Yagishita, Tokyo, Japan

Continuation of Ser. No. 844,198, Mar. 26, 1986, abandoned.
This application Feb. 21, 1989, Ser. No. 313,342
Claims priority, application Japan, Mar. 27, 1985, 60-060773
Int. Cl.[5] B01D *33/044, 33/82, 33/70*
U.S. Cl. 210—103 1 Claim

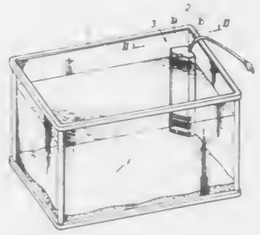
1. An automatic filtration dewatering system, comprising a cover to which a supply pipe is connected, a plate having a filter medium support engaged with an upper surface thereof and a filtrate exhaust pipe, a pneumatic cylinder for vertically moving said cover into and out of contact with said plate, a plurality of filter medium moving rollers provided on both sides of said cover and said plate, and a sheet-like long filter medium stretched over said rollers and means for moving the filter medium a predetermined distance per one step of filtration, said filter medium being temporarily fixedly held between a circumferential portion of said cover and a circumferential portion of said plate; and further including a control system having valve means for operating said pneumatic cylinder just after receiving a starting signal to close said cover and said plate and for generating a closed condition signal when the cover and plate are closed, pump means for supplying raw liquid for filtration via said supply pipe after such closed condition signal is detected and a predetermined closed time has elapsed, means for stopping supply of said raw liquid at the earlier time either when pressure of said raw liquid in said cover has reached a predetermined value or a predetermined filtration time has elapsed, means for supplying pressurized air through the supply pipe to the filter medium for at least a predetermined time interval and until air pressure in said cover becomes lower than a predetermined value to reduce the mother liquor content of the filter cake, pressure switch means connected to the supply pipe for detecting said predetermined values of raw liquid pressure and air pressure in said supply pipe, means for operating said pneumatic cylinder to separate said cover from said plate, and switch means for detecting a separate position of said cover by means of a limit switch to generate a signal for starting movement of said filter medium, wherein said control system further includes delay timer means for inducing said predetermined closed time to enable pressure acting to close said cover to reach a closed pressure before a supply of raw liquid is supplied into the cover for filtration.

4,944,871

FILTERING DEVICE

Yonekichi Ogawa, Tokyo, Japan, assignor to Suisaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1988, Ser. No. 205,780
Claims priority, application Japan, Jun. 11, 1987, 62-145889
Int. Cl.[5] B01D *29/56*
U.S. Cl. 210—169 8 Claims



1. A filtering device comprising a vertically extending housing attached to a wall surface of a water basin, the housing having a filtering chamber therein, a water intake port and a water discharge port, these intake and discharge ports communicating with the filtering chamber, a vertically extending filtering material being accommodated in an interior of said housing so as to divide said filtering chamber into an unpurified chamber and a purified chamber on opposite sides of the material, a vertically extending suction pipe mounted in said housing and communicating with a lower end of the purified chamber as well as with said water discharge port, said water intake port communicating with the unpurified chamber, and a pump unit including a motor being mounted in the housing so as to circulate water in said suction pipe from an upper end of the suction pipe into the water basin through the water discharge port, said housing further having an auxiliary filtering chamber therein surrounding a sufficient portion of said pump unit to cool said motor with water flowing through said auxiliary

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filtering chamber during operation of said device, said auxiliary filtering chamber communicating with an auxiliary water intake port perforated in the housing and with the unpurified chamber to admit water flow from the auxiliary water intake port to the unpurified chamber through the auxiliary filtering chamber.

4,944,872

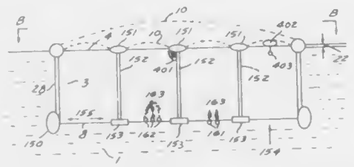
APPARATUS AND METHOD FOR CONTAINING AND PROCESSING LIQUIDS AND WASTES

Frederick W. Kantor, 523 W. 112th St., New York, N.Y. 10025

Continuation of Ser. No. 423,782, Sep. 27, 1982, abandoned. This application May 10, 1985, Ser. No. 732,803

Int. Cl.[5] B63B *38/00*

U.S. Cl. 210—170 **4 Claims**



1. A flexible enclosure for containing liquid and solid materials, the enclosure being constructed and connected in support reception to support means arranged to be disposed within a body of water, comprising:

(a) an enclosed side wall defining a lateral boundary for the enclosure and having a lower edge;

(b) at least one float means for supporting said side wall in said body of water;

(c) a flexible membrane attached to said lower edge of said side wall and closing off the enclosure to form a bottom thereof; and

(d) means for restoring said membrane bottom to a substantially level condition in the event of a surface deformity.

4,944,873

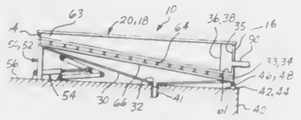
DEWATERING SYSTEM FOR SLUDGE REMOVAL

Jack R. Williams, Box 207, Westport, Wash. 98595

Filed Jan. 12, 1989, Ser. No. 296,447

Int. Cl.[5] B01D *24/14*

U.S. Cl. 210—209 **4 Claims**



1. A dewatering system for use in the treatment of waste water comprising:

a tank adapted to receive waste water;

a filter bed disposed within the tank and adjustably inclined with respect to the horizontal for removing solids from the waste water as it is drawn downward through the bed by gravity, the bed including filter media which remain stationary with respect to the bed;

means for discharging waste water into the tank above the filter bed;

means for inducing a flow of air through the filter bed to facilitate drying of the removed solids; and

means for adjusting the angle of inclination of the filter bed including a scissors linkage pivotally mounted to the filter bed and power means for actuating the linkage.

4,944,874

CENTRIFUGAL SEPARATOR

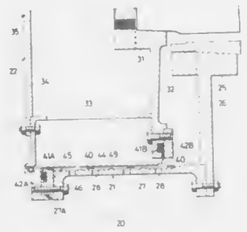
Masaru Kobayashi, Shizuoka, and Sumio Kawai, Shizuoka, both of Japan, assignors to Kabushiki Kaisha Okawara Seisakusho, Japan

Filed Oct. 25, 1988, Ser. No. 262,835

Claims priority, application Japan, Dec. 12, 1986, 61-296406; Dec. 9, 1987, 62-311775

Int. Cl.[5] B01D *33/10*

U.S. Cl. 210—232 **17 Claims**



1. A centrifugal separator comprising:

(a) a rotatable centrifugal drum rotatable about an axis of rotation and including a perforated basket having an open end, and a rotor slidably received in said basket and normally closing said open end of said basket, said rotor being rotatable in unison with said basket and reciprocally movable in a direction parallel to the axis of rotation of said drum into and out of said drum through said open end of said basket;

(b) a flexible annular filter extending between said basket and said rotor to be overturned in response to the reciprocating movement of said rotor;

(c) a water-permeable tubular screen disposed between said filter and an inner peripheral surface of said basket and having an annular flange at one end thereof detachably connected to said open end of said basket, said annular flange of said screen having a first circular groove receiving therein one peripheral edge of said annular filter, said rotor including an annular end plate having a second circular groove facing away from said first circular groove in a direction away from the open end of said basket and receiving therein the other peripheral edge of said annular filter, and a pair of presser ring plates detachably connected to said annular flange and said end plate, respectively, for holding said peripheral edges of said filter in said first and second circular grooves; and

(d) spacer means disposed between said screen and said basket for holding them in radially spaced relation to one another.

4,944,875

PLURAL FILTER TUBE SEQUENTIAL DISTRIBUTION APPARATUS

Yves Gaignet, Montigny Le Bretonneux, France, assignor to Millipore, S.A., St. Quentin en Yvelines Cedex, France

Filed Jun. 20, 1988, Ser. No. 208,924

Claims priority, application France, Jun. 18, 1987, 87 08509

Int. Cl.[5] B01D *29/24*

U.S. Cl. 210—232 **7 Claims**

1. Apparatus for purifying a fluid which comprises:

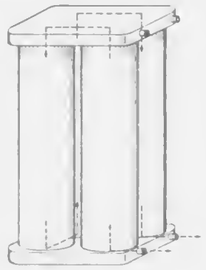
a plurality of tubes each containing at least one fluid treating element adapted to receive said fluid to be purified;

first and second end plates integrally joined to the respective ends of said tubes;

first and second fluid distribution means located respectively within said first and second end plates and being in fluid communication with the ends of said tubes;

means in fluid communication with said first fluid distribution means for introducing said fluid into said first end plate, said first fluid distribution means directing said fluid through one end of one of said tubes;

said first and second fluid distribution means being adapted to pass said fluid sequentially through each of said tubes to purify said fluid; and



means in fluid communication with said second fluid distribution means for removing purified fluid from said second end plate, whereby said apparatus constitutes a one piece, self contained fluid purification cartridge.

4,944,876

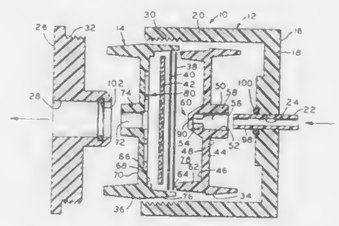
FILTER CAPSULE WITH INLET DISPERSION

Michael R. Miller, Churubusco, Ind., assignor to Telectro-Mek, Inc., Fort Wayne, Ind.

Filed Oct. 3, 1989, Ser. No. 416,714

Int. Cl.[5] B01D *61/18*

U.S. Cl. 210—321.75 **20 Claims**



1. A filter capsule assembly through which a fluid sample is passed in order to filter off particulates suspended therein, wherein the particulates are subsequently analyzed to determine the particulate contamination level of the fluid sample, comprising:

an inlet half including an inlet bottom wall, a fluid inlet opening extending through said inlet bottom wall, and an inlet side wall extending upwardly from said inlet bottom wall, said fluid inlet opening extending along a longitudinal axis substantially normal to said inlet bottom wall and having along the axial length thereof a minimum transverse cross-sectional area;

an outlet half including an outlet bottom wall, a fluid outlet opening extending through said outlet bottom wall, and a generally cylindrical outlet side wall extending upwardly from said outlet bottom wall, said inlet half and said outlet half being adapted to engage one another to define a filter chamber bounded by said inlet and outlet bottom walls and said inlet and outlet side walls;

a filter element retained intermediate said inlet bottom wall and said outlet bottom wall within said filter chamber when said inlet half and said outlet half are engaged; and

means for distributing said particulates on said element in a layer of substatially uniform thickness, including fluid dispersion means associated with said inlet half for radially dispersing a stream of fluid that would enter said filter chamber through said fluid inlet along said longitudinal axis, said fluid dispersion means comprising a fluid-contacting plate member and support means extending between said inlet bottom wall and the peripheral edge of said plate member for supporting said plate member in spaced relationship with said inlet bottom wall, said plate member having a fluid-contacting surface facing said inlet bottom wall in registry with said fluid inlet opening along said longitudinal axis, the area of said fluid-contacting surface being no greater than said minimum transverse cross-sectional area of said fluid inlet opening.

4,944,877

SPACERLESS FEED CHANNEL MEMBRANE FILTER ELEMENT

Paul D. Maples, 820 Los Vallecitos, San Marcos, Calif. 92069

Filed Oct. 10, 1989, Ser. No. 418,873

Int. Cl.[5] B01D *6/108*

U.S. Cl. 210—321.74 **12 Claims**



1. A reverse osmosis filtration device which comprises:

means for providing an alternative to a feed/brine spacer material while providing sufficient structured open channel where said spacer material would otherwise have been located, including

a flexible, elongated bladder made from two generally symmetrical sheets of reverse osmosis membrane peripherally bonded together;

said bladder being wrapped into a plurality of spaced-apart layers;

suspending means along two opposite edges of said bladder for spacing-apart said layers and for allowing unrestricted fluid flow from one of said opposite edges to the other between said layers; and

means for draining the bladder.

4,944,878

DECONTAMINATION OF WATER USING NITRATE SELECTIVE ION EXCHANGE RESIN

James E. Lockridge, and James S. Fritz, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 16, 1989, Ser. No. 437,266

Int. Cl.[5] C02F *1/42*

U.S. Cl. 210—683 **6 Claims**

1. A method for nitrate decontamination of water, comprising:

passing water containing nitrate ions through a bed of nitrate selective alkylphosphonium anion exchange resin having pendant alkyl groups of C_3 or larger, thereby removing said nitrate ions from the water.

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4,944,879

MEMBRANE HAVING HYDROPHILIC SURFACE

Michael J. Steuck, North Reading, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Jul. 27, 1989, Ser. No. 385,641
Int. Cl.[5] B01D *67/00, 69/00, 71/00*
U.S. Cl. 210—500.27 57 Claims

1. A composite porous thermoplastic membrane which comprises a porous membrane substrate having an average pore size between about 0.001 and 10 microns formed of a first polymer, said substrate being directly coated on its entire surface with a cross-linked second polymer formed from a monomer and crosslinking agent polymerized with energy from an electron beam of at least 0.1M rad, said composite porous membrane further comprising essentially the same porous configuration as said porous membrane substrate and properties for providing a porosity loss of less than about 20% when wet.

13. The process comprising: forming a composite porous membrane formed from a porous membrane substrate having an average pore size between about 0.001 and 10 microns formed of a first polymer, said substrate being directly coated over its entire surface with a cross-linked second polymer, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate and provideing said composite porous membrane with a porosity loss of less than about 20% when wet by

(a) washing said porous membrane substrate to wet the surfaces of the pores in said porous membrane; and

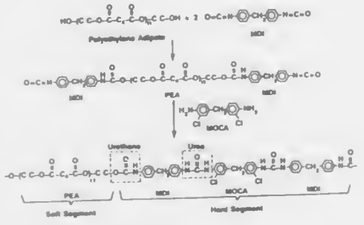
(b) contacting said porous membrane from step (a) with a solution of a monomer of said second polymer, and a crosslinking agent and exposing said monomer to energy from an electron beam of at least 0.1M rad to cross-link said second polymer in situ over the entire surface of said first polymer under conditions to avoid plugging of said pores, said composite porous membrane being characterized by a porosity loss of less than about 20% when wet.

4,944,880

POLYIMIDE/ALIPHATIC POLYESTER COPOLYMERS

S. Winston Ho; Guido Sartori, both of Annandale; Warren A. Thaler, Flemington, and David C. Dalrymple, Bloomsbury, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 16, 1989, Ser. No. 422,385
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 7 Claims



1. A method comprising: separating aromatics from feeds which are mixtures of aromatics and non-aromatics by selectively permeating the aromatic hydrocarbon through a thin membrane including a copolymer composition comprising the hard segment of a polyimide and the soft segment of an oligomeric aliphatic polyester, wherein said polyimide is derived from a dianhydride having between 8 and 20 carbon and a diamine having between 2 and 30 carbons and said oligomeric aliphatic polyester is a polyadipate, a polysuccinate, a polymalonate, a polyoxalate or a polyglutarate.

4,944,881

LIQUID SEPARATION MEMBRANE FOR PERVAPORATION

Akira Michizuki; Yoshio Sato; Hisashi Ogawara, all of Kurashiki, and Syuzo Yamashita, Kiyoneson, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Division of Ser. No. 1,727, Jan. 7, 1987, Pat. No. 4,808,313, which is a division of Ser. No. 815,453, Dec. 31, 1985, abandoned. This application Nov. 29, 1988, Ser. No. 277,242
Claims priority, application Japan, Jan. 8, 1985, 60-443; Jan. 30, 1985, 60-14503; Mar. 29, 1985, 60-63429
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 9 Claims

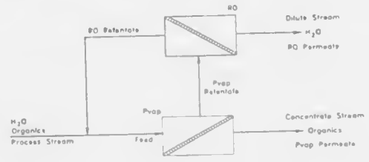
1. A separating method, which comprises feeding a water-organic liquid mixture or an organic liquid-organic liquid mixture to be separated into an upstream side of two chambers partitioned by a separation membrane for pervaporation while reducing the pressure, or maintaining a low vapor pressure, in the downstream chamber to thereby cause a component of the mixture having a higher affinity for the membrane to preferentially permeate through the membrane in the vapor phase, said membrane being composed of a polymeric substance having in the main chain a glycosidic skeleton containing ammonium groups at least some of which are in the form of a salt with acids or groups having a nitrogen atom coordinated with polyvalent metal ions, and/or acidic groups which are in the form of salts with bases at least some of which are polyvalent metal salts.

4,944,882

HYBRID MEMBRANE SEPARATION SYSTEMS

Roderick J. Ray, and David D. Newbold, both of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Filed Apr. 21, 1989, Ser. No. 341,646
Int. Cl.[5] B01D *13/00*
U.S. Cl. 210—640 38 Claims



1. A method including a combination of membrane separations for the removal of solvent and solute from a process stream containing a solvent and at least one solute with less membrane surface area than would be required for the component membrane separations of said combination or with greater separation than that obtainable with the component membrane separations having the same membrane surface area, said method including a combination consisting essentially of the component membrane separations of

(a) providing a solvent removal process for selectively removing solvent from said process stream, said solvent removal process forming a solvent-rich portion and a solvent-poor portion and being selected from the membrane processes of reverse osmosis, nanofiltration, membrane distillation and pervaporation,

(b) providing at least one selective solute removal process for selectively removing solute from said process stream, said selective solute removal process forming a solute-rich portion and a solute-poor portion and being selected from the membrane processes of pervaporation, supported-liquid membranes, coupled transport, and membrane contactors, and

(c) providing said solvent removal process and said selective solute removal process as a part of a recycle stream having either of the following relationships:

(1) the solute-poor portion of the selective solute removal process comprises the feed for the solvent removal process and the solvent-poor portion of the solvent removal process is combined with the process stream to form the feed to the selective solute removal process; or

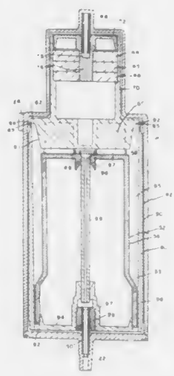
(2) the solvent-poor portion of the solvent removal process comprises the feed for the selective solute removal process and the solute-poor portion of the selective solute removal process is combined with the process stream to form the feed to the solvent removal process.

4,944,883

CONTINUOUS CENTRIFUGATION SYSTEM AND METHOD FOR DIRECTLY DERIVING INTERMEDIATE DENSITY MATERIAL FROM A SUSPENSION

Donald W. Schoendorfer, 1842 Whitestone Ter., Santa Ana, Calif. 92705, and Claude E. Berthe, 1303 Hansel La., San Dimas, Calif. 91773

Continuation of Ser. No. 2,804, Jan. 13, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 256,234
Int. Cl.[5] B01D *45/12;* B04B *1/02*
U.S. Cl. 210—782 60 Claims



1. A method of separating from whole blood, a plasma carrier rich in platelets comprising the steps of:

a centrifuging a mass of whole blood about an axis to provide at least partial radial stratification of the mass, the mass being moved along the axis;

propagating axially a number of fluid convective patterns within the at least partially stratified mass to form circumferentially separated zones of plasma rich in platelets;

withdrawing plasma carrier rich in platelets from the separated zone of plasma rich in platelets; and

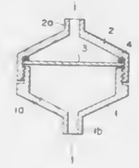
recirculating blood constituents within a housing and outside the moving mass in a direction opposite a direction of the axial movement, and establishing a higher impedance to flow of the recirculating blood constituents than along the flow path of the axially moving mass.

4,944,884

BODY FLUID PURIFICATION METHOD USING ACTIVATED CARBON FIBERS OF NOVOLOID RESIN ORIGIN

Keiji Naoi, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 300,744, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 48,057, May 11, 1987, abandoned. This application Dec. 18, 1989, Ser. No. 453,361
Claims priority, application Japan, May 14, 1986, 61-109921
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—692 3 Claims



1. A method for removing histamine or serotonin from body fluid comprising

providing a housing defining a body fluid flow path and a filter consisting essentially of activated carbon fibers, arranged in said housing in a position to traverse said body fluid flow path, said activated carbon fibers being made from novoloid fibers by baking and activating said novoloid fibers;

catching and adsorbing histamine or serotonin from the body fluid by passing said body fluid along said flow path and through said filter; and

recovering the body fluid from the housing.

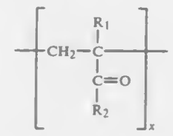
4,944,885

WATER TREATMENT POLYMERS AND METHODS OF USE THEREOF

Fu Chen, Newtown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

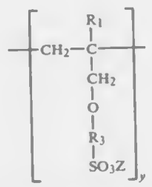
Continuation of Ser. No. 220,195, Jul. 18, 1988, which is a continuation-in-part of Ser. No. 37,484, Apr. 13, 1987, Pat. No. 4,759,851, which is a continuation of Ser. No. 864,049, May 16, 1986, Pat. No. 4,659,481, which is a continuation of Ser. No. 545,563, Oct. 26, 1983, abandoned. This application Oct. 5, 1989, Ser. No. 417,380
The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.
Int. Cl.[5] C02F *5/10*
U.S. Cl. 210—701 9 Claims

1. A method of controlling the deposition of calcium phosphate on the structural parts of a system exposed to an aqueous medium containing said calcium and phosphate ions under deposit forming conditions, said method comprising adding to said aqueous medium at least about 10 ppm of a water soluble polymer comprising repeat unit moieties (a) and (b) wherein said repeat unit (a) comprises the structure



and wherein said repeat unit (b) comprises the structure

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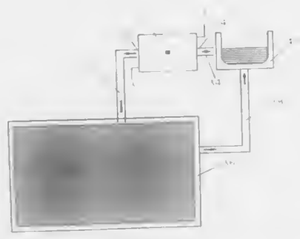
wherein each R_1 is independently H or lower alkyl (C_1–C_3); R_2 is OH, or OM; M is a water soluble cation; R_3 is 2-hydroxypropylidene; and Z is H or hydrogen atoms or a water soluble cation or cations which together counterbalance the valence of SO_3; and the molar ratio x:y of said polymer being between about 8:1 to 1:5.

4,944,886

METHOD OF SEWAGE TREATMENT

Saad A. Masri, 36 Wildwood Road West, Lethbridge, Alberta, Canada T6K 6C6

Filed Mar. 20, 1989, Ser. No. 325,432
Claims priority, application Canada, Nov. 23, 1988, 583868
Int. Cl.[5] C02F *1/36*
U.S. Cl. 210—748 **7 Claims**



1. A method of sewage treatment, comprising the steps of:
a. firstly, directing the sewage to be treated into a first tank in which a mechanical rake is rotatably mounted to screen out coarse solids;
b. secondly, passing the sewage into a second tank and subjecting the sewage in said second tank to ultrasonic vibrations in a range between 15 and 150 kilohertz for a period in excess of 12 seconds through use of a plurality of ultrasonic probes mounted on one or more arms which rotate in the second tank thereby achieving cavitation of the sewage;
c. thirdly, draining liquids from the sewage;
d. fourthly, removing sewage residue remaining after drainage of liquids.

4,944,887

REGENERATIVE DIATOMACEOUS EARTH FILTER

Stanley H. Frederick, Sanford, N.C., assignor to Essef, Chardon, Ohio

Filed Jan. 13, 1989, Ser. No. 296,611
Int. Cl.[5] B01D *37/02*
U.S. Cl. 210—778 **13 Claims**

1. A fluid filter comprising a casing defining a fluid chamber and inlet and outlet apertures to and from said chamber to respectively conduct unfiltered fluid to said chamber and filter fluid from said chamber, means defining a flow path within said chamber between said apertures, filter means interposed in said flow path substantially normal to a direction of flow of said fluid within said chamber, said fliter means comprising screen means defining a filter compartment having a covering of a filter aid on an upstream side of said screen means, and means to regenerate said filter aid by removing said filter aid from said screen means, including means to rotationally reciprocate said screen means relative to said casing and in an arcuate reciprocation path corresponding to the path definded by the direction of flow through said filter means and further including stop means at both ends of said path to limit the extent of said reciprocation path, the extent of said path permitting fluid to flow entirely through said compartment upon reciprocation of said screen means.

12. A method of filtering fluid with a filter aid deposited on screen means and for regenerating impurity-laden filter aid on the screen means, comprising the steps of entraining a quantity



of filter aid in an impurity-laden stream of fluid to be filtered, causing said fluid to flow through said screen means in a direction substantially normal to said screen means to deposit a coating of filter aid as a filter cake on said screen means and to remove impurities from said fluid by entraining said impurities in said filter aid to form an impurity-entrained filter cake, and, after a predetermined amount of impurities has been so entrained, regenerating said filter cake by creasing said flow and, while retaining a body of said fluid about said screen, arcuately reciprocating said screen means relative to said fluid and along a path substantially normal to said screen means to remove said impurity-entrained filter cake, and resuming said flow to redeposit a coating of filter aid as a filter cake on said screen means.

4,944,888

SUSPENSION POLYMERIZATION IN AN ORGANIC MEDIUM

Prakash Mallya, Pasadena; Yehuda Ozari, Arcadia, and Colin C. Smith, Glendale, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 138,509, Dec. 23, 1987, Pat. No. 4,810,763. This application Mar. 6, 1989, Ser. No. 319,530
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—787 **6 Claims**

1. In a process for the formation of inherently tacky, adhesive microspheres by suspension polymerization in a first liquid media in which the microspheres are insoluble and formed followed by addition of a volatile organic liquid second media to which the formed microspheres are substantially transferred from the first media to form a mixture of the first media and second media containing the microspheres, the improvement which comprises continuously subjecting the mixture in a disc separation to a centrifugal force in excess of about 2,000 times the force of gravity for a time sufficient to separate the first media from the second media containing the microspheres.

4,944,889

LUBRICANT AND SURFACE CONDITIONER FOR FORMED METAL SURFACES

Sami B. Awad, Troy, Mich., assignor to Henkel Corporation, Ambler, Pa.

Filed Aug. 18, 1989, Ser. No. 395,620
The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.
Int. Cl.[5] C10M *137/04*
U.S. Cl. 252—32.5 **9 Claims**

1. The process of reducing the coefficient of static friction on the outside surface of a metal can and enabling the drying of said can at a lower temperature, comprising applying to said can a liquid lubricant and surface conditioner composition consisting essentially of a watersoluble organic material selected from the group consisting of an ethoxylated fatty acid, an alcohol having at least about 4 carbon atoms and containing up to about 20 mole of ethylene oxide per mole of alcohol, and an ethoxylated alkyl alcohol phosphate ester, said composition having a pH of between about 1 and about 6.5, said organic material being applied to said can in an amount sufficient to lower the drying temperature of said can by from about 25 to about 100° F.

4,944,890

COMPOSITIONS AND PROCESS OF USING IN REFRIGERATION

Thomas M. Deeb; George K. Henry, both of Newark, Del., and Heather L. Bergmann, Fairfax, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 23, 1989, Ser. No. 356,330
Int. Cl.[5] C10M *107/38*
U.S. Cl. 252—54 **13 Claims**

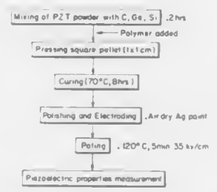
1. A composition for use in compression refrigeration comprising:
(a) a saturated hydrocarbon having 1–4 carbon atoms that is partially or fully substituted with at least one atom of chlorine or fluorine and having a normal boiling point in the range of −80° C. to +50° C.; and
(b) a sufficient amount to provide lubrication of at least one fluorinated hydrocarbon in which the weight ratio of fluorine-to-carbon is from about 0.5 to 5 and having an SUS viscosity at 100° F. of at least 50.

4,944,891

EASILY POLED 0-3 PIEZOELECTRIC COMPOSITES FOR TRANSDUCER APPLICATIONS

Geon Sagong; Robert E. Newnham; Ahmad Safari, and Sel-Joo Jang, all of State College, Pa., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 742,333, Jun. 7, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,519
Int. Cl.[5] C04B *35/00*
U.S. Cl. 252—62.9 **17 Claims**



1. A poled piezoelectric-polymer composite material of 0-3 connectivity for use in transducer applications and which comprises: a matrix of insulating polymer, a piezoelectric ceramic powder dispersed within said polymer matrix and an inorganic conductive or semiconductive particulate third phase additive dispersed within said polymer matrix, said inorganic third phase additive having an electrical conductivity greater than the electrical conductivity of said insulating polymer matrix, said composite being poled in a poling field strength of at least 20 kilovolts per centimeter.

4,944,892

FUNGICIDAL AND ALGICIDAL DETERGENT COMPOSITIONS

Amy Z. Leathers, Allison Park, and S. Thomas Greer, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 46,748, May 7, 1987, Pat. No. 4,806,263, which is a continuation-in-part of Ser. No. 815,493, Jan. 2, 1986, abandoned. This application Sep. 30, 1988, Ser. No. 254,017
Int. Cl.[5] C11D *3/48, 3/12*
U.S. Cl. 252—92 **10 Claims**

1. A non-film forming, aqueous cleaning composition comprising:
(a) from 0.1 to 0.4 percent by weight of said composition of a water-insoluble compound selected from the group consisting of diiodomethyl p-tolyl sulfone, N-(trichloromethylthio) phthalimide, N,N-dimethyl-N'-phenyl-N'-(fluorodichloromethyl thio) sulphamide, imazalil, and a mixture of 2-(thiocyanomethylthio) benzothiazole and methylene bis(thiocyanate);
(b) from 1.0 to 6.0 percent by weight of said composition of a detergent;
(c) a thickener present at a level sufficient that said composition has a viscosity at 25 degrees C. of between about 200 and about 4,000 centipoise;
(d) an oxidizing agent which can provide an amount of chlorine to said composition, calculated as elemental Cl, in a range of from 0.17 to 0.50 percent by weight of said composition; and
(e) water.

4,944,893

REMOVER SOLUTION FOR RESIST

Hatsuyuki Tanaka, Samukawa; Masakazu Kobayashi, Kawasaki; Kazumasa Wakiya, Samukawa, and Toshimasa Nakayama, Hiratsuka, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kawasaki, Japan

Filed Sep. 12, 1988, Ser. No. 243,001
Claims priority, application Japan, Sep. 16, 1987, 62-229648
Int. Cl.[5] C09D *9/00*
U.S. Cl. 252—171 **7 Claims**

1. A remover composition for a resist which comprises, in an add mixture;
(a) an organic remover solution comprising an alkylbenzene sulfonic acid having 7 to 20 carbon atoms and at least one compound selected from the group consisting of phenols halogenated hydrocarbons and aromatic hydrocarbons; and
(b) an actylene alcohol in an amount from 1 to 50,000 ppm by weight based on the organic remover solution.

4,944,894

ETHER FREE ORGANOMETALLIC AMIDE COMPOSITIONS

Vijay C. Mehta; Terry L. Rathman, both of Gastonia, N.C.; Ramiro Sanchez, Greenville, S.C., and Robert C. Morrison, Gastonia, N.C., assignors to Lithium Corporatoin of America, Gastonia, N.C.

Filed Feb. 25, 1988, Ser. No. 160,229
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—182.12 **4 Claims**

1. An ether-free lithium magnesium diorganoamide comprising a composition represented by the formula:

$$Li_xMg_y(NR^3R^4)_z$$

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wherein R^3 and R^4 are independently selected from the group of hydrogen, primary, secondary and tertiary alkyl groups containing 2 to 20 carbon atoms, cycloalkyl groups containing 3 to 20 carbon atoms and aryl groups containing 6 to 10 carbon atoms, $x+y=1$ and $z=x+2y$ with the proviso that at least one of R^3 and R^4 is other than hydrogen and R^3 and R^4 are not both hydrogen.

4,944,895

PROCESS FOR PRODUCING LIQUID CRYSTALLINE COMPOSITES

Alan Buckley, Berkeley Heights; Tessie M. Che, Westfield; Thomas M. Leslie, Clinton Township; James B. Stamatoff, Westfield; Dagobert E. Stuetz, Watchung, all of N.J., and Donald R. Ulrich, Alexandria, Va., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 15,757, Apr. 10, 1987, Pat. No. 4,814,211. This application Aug. 24, 1988, Ser. No. 235,515

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.[5] C09K *19/52, 19/00;* **G02F** *1/13*

U.S. Cl. 252—299.01 **4 Claims**

1. A process for producing a composite composition comprising a homogeneous inorganic oxide glass monolith with a microporous structure containing a liquid crystalline component, which comprises hydrolyzing tetraalkoxysilane under acidic or basic pH conditions in a sol-gel reaction medium comprising water, a water-miscible organic solvent and a liquid crystalline component, until gellation of the reaction medium is completed, and removing the solvent medium to provide a porous glass monolith with incorporated liquid crystalline component; wherein the glass monolith microporous structure has an average pore diameter in the range between about 50–300 angstroms, and substantially all of the pore diameters are within about a 100 angstrom diameter variation range.

2. A composite composition produced in accordance with the sol-gel process of claim 1.

4,944,896

SIDE CHAIN LIQUID CRYSTALLINE POLYMERS EXHIBITING NONLINEAR OPTICAL RESPONSE

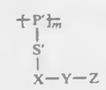
Ronald N. DeMartino, Wayne; Hyun-Nam Yoon, New Providence; James B. Stamatoff, Westfield, and Alan Buckley, Berkeley Heights, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 822,090, Jan. 24, 1986, abandoned. This application Jul. 13, 1988, Ser. No. 219,866

Int. Cl.[5] F21V *9/00, 11/00*

U.S. Cl. 252—587 **2 Claims**

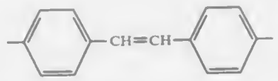
1. In an electrooptic light modulator device with a polymeric nonlinear optical component the improvement which comprises a transparent solid medium of a thermotropic liquid crystalline polymer having a comb structure of mesogenic side chains which comprises at least about 25 weight percent of the polymer, wherein the polymer has a glass transition temperature above about 40° C., and the mesogens exhibit a second order nonlinear optical response of conjugated electronic origin, and wherein the polymer has a stable orientation of an external field-induced alignment of mesogens, and wherein the polymer is characterized by a recurring monomeric unit corresponding to the formula:



where P' is a polyvinyl main chain; m is an integer of at least 3; S' is a flexible spacer group having a linear chain length of between about 1–25 atoms; X is —NR—, —O— or —S—; R is hydrogen or a C_1–C_4 alkyl group; Y is



or



and Z is $-NO_2$ in the polymer formula.

4,944,897

ARRANGEMENT IN A FUEL SYSTEM

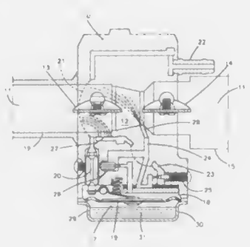
Bo C. Andreasson, Kungälv, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Feb. 3, 1989, Ser. No. 306,806

Claims priority, application Sweden, Feb. 5, 1988, 8800371

Int. Cl.[5] F02M *15/06*

U.S. Cl. 261—35 **5 Claims**



1. In a fuel system of an engine having a membrane-type carburetor including a carburetor body, a flow channel with a venturi, the inlet end of the flow channel connected to an air filter and the outlet end of the flow channel connected to a manifold of the engine; a throttle, and a choke; the lower portion of the carburetor body including an air chamber and a fuel chamber separated by a membrane that controls an inlet valve for fuel entering the fuel chamber, wherein an operating temperature is created in the fuel system when the engine is running, and an after-temperature is created in the fuel system immediately after the engine is stopped,

the improvement, comprising:

a body of meltable material (31) in a closed volume (30), said closed volume (30) being formed in the lower portion of the carburetor body on the air chamber side of the membrane, said body of meltable material (31) remaining in a solid state when said operating temperature is present in said fuel system and having a melting point lower than the after-temperature present in the fuel system immediately after the engine is stopped whereby said meltable material (31) absorbs heat in said fuel system created by said after-temperature.

4,944,898

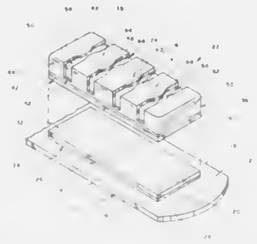
CEILING FAN BLADE MOUNTED AIR FRESHNER DISPENSING DEVICE

Stephen B. Glaser, 464 Division Ave., Hicksville, N.Y. 11801

Filed Sep. 26, 1989, Ser. No. 412,342

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—84 **5 Claims**



1. A ceiling fan blade mounted room deodorant and air freshening product dispenser comprising:

(A) a planar mounting element having adhesive on one surface thereof for attaching said mounting element to a planar surface of a ceiling fan blade and a hook-and-loop fastening means on another surface thereof;

(B) a hollow case containing air freshener product therein and having a planar base with hook-and-loop fastening elements thereon which co-operate with the hook-and-loop fastening means on said mounting element to releasably hold said case on said fan blade, a top surface, side surfaces and end surfaces connected to said planar base; and

(C) an air flow control means for increasing the air velocity relative to said air freshener product over the air velocity relative to said case as said fan blade rotates, said air flow control means including a channel defined in said case top surface and a converging/diverging section in said channel.

4,944,899

PROCESS AND APPARATUS FOR CASTING LENSES

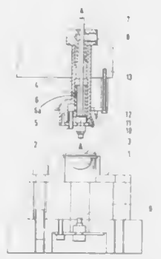
Albert H. Morland, Lower Swanwick, and Timothy J. Warren, Bursledon, both of England, assignors to CooperVision, Inc., Palo Alto, Calif.

Continuation of Ser. No. 840,781, Mar. 18, 1986, abandoned. This application Nov. 9, 1987, Ser. No. 119,269

Claims priority, application United Kingdom, Mar. 19, 1985, 8507007

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.4 **11 Claims**



1. A process for casting contact lenses using male and female mold halves formed from a light transmissive thermoplastic polymer which comprises:

(a) placing a polymerisable liquid composition in the female mold half,

(b) guiding the male mold half into the female mold half along a substantially vertical path passing through the axes of the male and female mold halves,

(c) detecting the moment of initial contact between the male mold half and the surface of the polymerisable liquid composition,

(d) simultaneously with the detection of said initial contact releasing said male mold half,

(e) applying a closing pressure to said mold halves to thereby define a closed mold cavity filled with said liquid polymerisable composition, and

(f) while maintaining said closing pressure, causing the polymerisable liquid composition to cure and then removing the lens from the mold.

9. Apparatus for casting lenses by placing a volume of a liquid polymerizable composition in a light transmissive female mold, inserting and positioning a light transmissive male mold in the female mold, said apparatus comprising a substantially horizontal support for the female mold, a holder for releasably holding the male mold, means for moving the male mould in said holder towards and into the female mold along a substantially vertical path passing through the axes of the molds and means for detecting contact between the male mold and the surface of the liquid composition and causing said holder to release the male mold.

4,944,900

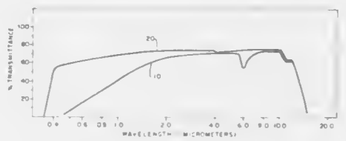
POLYCRYSTALLINE ZINC SULFIDE AND ZINC SELENIDE ARTICLES HAVING IMPROVED OPTICAL QUALITY

Charles B. Willingham, Framingham, and James Pappis, Westwood, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 473,983, Mar. 16, 1983, abandoned, which is a continuation of Ser. No. 220,944, Dec. 29, 1980, abandoned. This application Jun. 14, 1984, Ser. No. 619,642

Int. Cl.[5] C04B *35/64*

U.S. Cl. 264—1.2 **10 Claims**



1. A method of treating a transmissive body of zinc sulfide of zinc selenide having electromagnetic energy absorbing impurities therein to increase the optical transmissivity of such body, comprising the step of reducing such absorbing impurities comprising wrapping said body in a platinum foil, heating said body to a temperature in the range of 700° C. to 1050° C. and applying, simultaneously with such heating, isostatic pressure to said body of at least 5000 psi, such heating and pressure being applied for a time duration of at least three hours.

4,944,901

METHOD OF MAKING DENTAL COPINGS

Lloyd A. Kwok, 6170 Skyline Blvd., Burlingame, Calif. 94010

Filed Apr. 14, 1988, Ser. No. 181,569

Int. Cl.[5] A61C *13/08;* **B29C** *51/10, 51/18*

U.S. Cl. 264—19 **8 Claims**

1. A method for producing a plurality of dental copings simultaneously, comprising,

providing a die-holding tray having a well or recess, the tray

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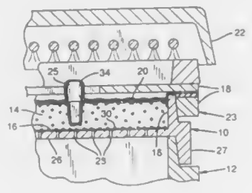
having a plurality of holes through its bottom communicating with the well or recess,

preventing blockage of the holes by positioning a wire mesh over the holes in the bottom of the well or recess,

partially filling the well or recess with a fluid-like mass of lead shot over the wire mesh,

placing a plurality of dental dies, each having a tail piece or pin, into the fluid-like mass of lead shot such that the tail pieces or pins on the dies are submerged into the fluid-like mass of lead shot and held in position by the lead shot, serving as a die holding medium,

laying a sheet of heat-softenable plastic material, retained in



a frame, over the top of the tray so as to cover the recess or well, substantially sealing against air leakage into the well or recess,

applying heat to the sheet from above, to soften the sheet to the extent that it can be deformed into dental copings around the dies,

applying a source of vacuum to the bottom side of the tray so as to apply vacuum to the well or recess up through the fluid-like mass of lead shot and thereby drawing the softened sheet down around the dies using the vacuum to deform the sheet into dental copings, and

removing the heat after the copings have properly formed over the dies, and allowing the copings to cool.

4,944,902

POLYIMIDE COMPOSITIONS AND PROCESSES

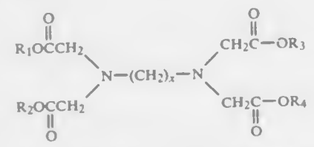
Carroll W. Lanier, Baker, La., and Raymond Lee, Elk Grove Village, Ill., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 26, 1989, Ser. No. 456,512

Int. Cl.[5] H05B *1/00*

U.S. Cl. 264—25 **9 Claims**

1. A process for preparing a copolyimide foam which includes heating a precursor composition comprising one or more of an aromatic tetracarboxylic acid and a compound of the formula I:



where x is an integer from 1 to 12 and R_1, R_2, R_3 and R_4 are the same or different and are hydrogen, C_1 to C_6 linear or branched alkyl or mixtures thereof with an aromatic or heteroaromatic diamine or mixture of said aromatic and heteroaromatic diamine.

4,944,903

METHOD FOR REGULATING THE WORKING AND THE OUTPUT OF PLASTIC MATERIAL IN EXTRUSION MOULDING

Bo Nilsson, Postbox 3139 K,, Gräsö, S-740 71 Öregrund, Sweden

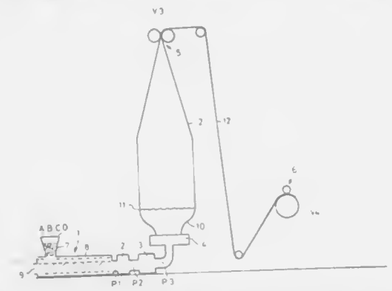
PCT No. PCT/SE87/00112, § 371 Date Aug. 17, 1988, § 102(e) Date Aug. 17, 1988, PCT Pub. No. WO87/05259, PCT Pub. Date Sep. 11, 1987

PCT Filed Mar. 5, 1987, Ser. No. 235,884

Claims priority, application Sweden, Jul. 3, 1986, 8601075

Int. Cl.[5] B29C *47/92*

U.S. Cl. 264—40.1 **20 Claims**



1. A method of controlling the level of kinetics of extrusion and metering out of a plastic material in an extrusion process, by means of an extrusion plant comprising a process unit for melting and mixing the plastic material to form a plastic melt, a pump for metering out the melt to a die, and a screen pack assembly positioned between the process unit and the pump, comprising the steps of maintaining the plastic melt of the process unit at a constant level of kinetics of extrusion, independent of variations in raw material, in flowthrough of the screen pack assembly, and maintaining melt pressure between and screen pack assembly and the pump at a predetermined level.

4,944,904

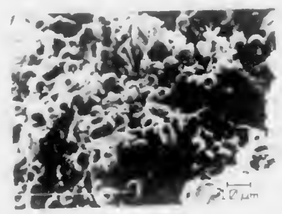
METHOD OF OBTAINING A FIBER-CONTAINING COMPOSITE

Raj N. Singh, Schenectady, and William A. Morrison, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 66,271, Jun. 25, 1987, abandoned. This application Jul. 8, 1988, Ser. No. 216,488

Int. Cl.[5] C04B *33/36*

U.S. Cl. 269—60 **15 Claims**



1. A process for producing a composite with a porosity of less than about 20% by volume comprised of boron nitride-coated fibrous material and a matrix phase, said fibrous material component of said coated fibrous material comprising at least about 5% by volume of the composite, said matrix phase containing silicon carbide and/or boron-containing silicon carbide formed in situ in an amount of at least about 5% by volume of the composite and a solution of elemental boron and

silicon in an amount of at least about 1% by volume of the composite, which comprises the following steps:

(a) depositing boron nitride on a carbon-containing fibrous material producing a coating thereon which leaves no significant portion of said fibrous material exposed;

(b) depositing a silicon-wettable material on said boron nitride-coated fibrous material producing a coating thereon which leaves no significant portion of said boron nitride exposed;

(c) admixing an infiltration-promoting material containing elemental carbon with the resulting coated fibrous material producing a mixture wherein the fibrous material component of said coated fibrous material comprises at least about 5% by volume of said mixture;

(d) forming said mixture into a preform having an open porosity ranging from about 25% by volume to about 90% by volume of the preform;

(e) providing an infiltrant comprised of boron and silicon containing elemental boron in solution in silicon in an amount of at least about 0.1% by weight of elemental silicon;

(f) contacting said preform with infiltrant-associated infiltrating means whereby said infiltrant is infiltrated into said preform;

(g) heating the resulting structure to a temperature at which said infiltrant is molten and infiltrating said molten infiltrant into said preform to produce an infiltrated product having the composition of said composite, said preform containing sufficient elemental carbon to react with said infiltrant to form said composite; and

(h) cooling said product to produce said composite.

(d) firing the mixture from (c) at a sufficient temperature and for sufficient time to vitrify the mineral particulate.

4,944,905

PARTICULATE CERAMIC USEFUL AS A PROPPANT

James L. Gibb, Woodbury, Minn.; James A. Laird, St. Joseph, Wis.; George W. Lee, St. Paul, and William C. Whitcomb, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 571,739, Jan. 18, 1984, Pat. No. 4,680,232. This application Jan. 21, 1986, Ser. No. 820,013

Int. Cl.[5] B29B *9/00*

U.S. Cl. 264—62 **12 Claims**



1. A process of making particulate ceramics, containing alumina and characterized by a greater alumina concentration near the surface than in the interior of the particles, said process comprising the following steps:

(a) mixing and pelletizing with the aid of water, raw materials comprising

a minearl particulate which comprises a ceramic mineral which melts below about 1300° C., does not substantially sublime or volatilize below about 1300° C., vitrifies upon cooling, and has a fired density of less than about 2.9 grams per cubic centimeter;

particulate alumina having a substantially smaller particle size than the mineral particulate; and a binder characterized by adhering the mineral particulate and alumina together into unified masses after pelletizing, but before firing;

(b) drying the wet pellets from step (a);

(c) mixing the dry pellets from (b) with alumina parting agent; and

4,944,906

METHODS OF INJECTION MOLDING AND EXTRUDING WET HYGROSCOPIC IONOMERS

Paul N. Colby, New Castle, Pa., and Michael F. Durina, Poland, Ohio, assignors to Spirex Corporation, Youngstown, Ohio

Filed Oct. 11, 1988, Ser. No. 255,883

Int. Cl.[5] B29C *45/63, 47/60, 47/76*

U.S. Cl. 264—101 **20 Claims**



1. A method of injection molding a wet hygroscopic ionomer, comprising directly injection molding said wet ionomer using a reciprocating two-stage vented barrier screw having a feed side and an output side and having a barrier flight and a subsequent venting zone, wherein the barrier flight has a melt channel and a solids channel, the melt channel being only partially filled with melted ionomer and having a melt vapor phase adjacent thereto, whereby the vapor phase adjacent to melted ionomer in the barrier flight has access to said venting zone and vents therethrough, and whereby during said injection molding, said ionomer is dried to a degree sufficient that said injection molding is substantially free from problems which would otherwise occur were said wet ionomer to be injection molded without at least said degree of drying.

13. A method of extruding a wet hygroscopic ionomer comprising directly extruding said wet ionomer using a two-stage vented barrier screw having a feed side and an output side and having a barrier flight and a subsequent venting zone, wherein the barrier flight has a melt channel and a solids channel, the melt channel being only partially filled with melted ionomer and having a melt vapor phase adjacent thereto, whereby the vapor phase adjacent to melted ionomer in the barrier flight has access to said venting zone and vents therethrough, and whereby during said extruding, said ionomer is dried to a degree sufficient that said extruding is substantially free from problems which would otherwise occur were said wet ionomer to be extruded without at least said degree of drying.

4,944,907

METHOD FOR MOLDING CONCRETE BLOCKS OR BRICKS

Lindsey B. Davis, Jr., Box 32, Cambridge, Me. 04923

Division of Ser. No. 72,178, Jul. 10, 1987, Pat. No. 4,836,762, which is a division of Ser. No. 815,382, Dec. 31, 1985, Pat. No. 4,702,877. This application Feb. 13, 1989, Ser. No. 251,503

The portion of the term of this patent subsequent to Oct. 27, 2004, has been disclaimed.

Int. Cl.[5] B28B *1/08*

U.S. Cl. 264—220 **1 Claim**

1. A method for molding concrete elements in an open top mold forming a primary mold cavity, comprising the following steps:

(a) forming a removable secondary mold in said primary mold cavity, said secondary mold being made of moisture resistant synthetic material,

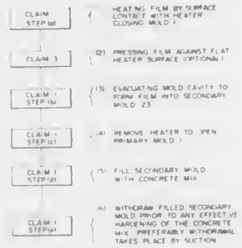
(b) filling said secondary mold in said primary mold cavity with a concrete mix,

(c) compacting said concrete mix in said secondary mold while said secondary mold is still in said primary mold cavity,

(d) withdrawing said secondary mold filled with compacted

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concrete mix from said primary mold cavity prior to any substantially noticeable or effective hardening of said concrete mix in said secondary mold which together with said compacted but not yet effectively hardened concrete mix forms a sufficiently shape retaining unti for immediate transportation, and



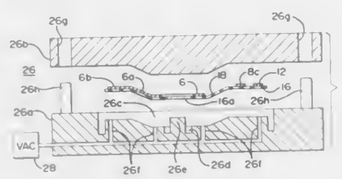
(e) completing the curing and hardening of said concrete mix in said secondary mold outside said primary mold cavity so that expansion forces resulting from hardening and curing of said concrete mix are substantially prevented from becoming effective in said primary mold cavity and for permitting a renewed use of said primary mold cavity before said compacted concrete mix hardens.

4,944,908

METHOD FOR FORMING A MOLDED PLASTIC ARTICLE

Denis J. Leveque, Milwaukee, and Neil A. Czarnecki, Mukwonago, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 28, 1988, Ser. No. 264,115
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—232 **5 Claims**



1. A method of providing a molded plastic article having a continuous conductive printed circuit embedded in at least two adjoining non-coplanar recessed surfaces of said article with an exposed surface of said printed circuit substantially flush with said recessed surfaces in which it is embedded, comprising:

providing a flexible temporary backing member;

applying an adhesive coating to one surface of said backing member;

providing a conductive printed circuit on said adhesive coating providing an injection mold having a cavity defined by at least two adjoining non-coplanar cavity defining surfaces;

positioning and flexibly conforming said backing concurrently against each said adjoining non-coplanar cavity-defining surface of said injection mold with said conductive printed circuit disposed within said mold cavity defined by said surfaces, said printed circuit extending continuously from one said adjoining cavity-defining surface to another said adjoining cavity-defining surface;

injecting plastic into said mold cavity around three sides of said conductive printed circuit;

releasing said plastic from said mold as said molded plastic article with said conductive printed circuit embedded in said at least two adjoining non-coplanar recessed surfaces of said article and said backing affixed to said conductive printed circuit by said adhesive, said circuit being continuous between said adjoining non-coplanar surfaces; and

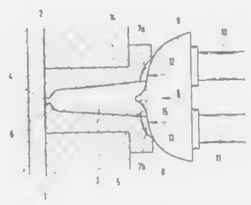
peeling said backing and said adhesive from said conductive printed circuit, leaving a fourth side of said conductive printed circuit forming said exposed surface which is substantially flush with said article surfaces in which it is embedded.

4,944,909

METHOD FOR MANUFACTURING MULTILAYER MOLDED ARTICLES

Helmut Eckardt, Meinerzhagen; Jürgen Ehritt, Hilchenbach-Müsen; Alexander Bockenheimer, Wipperfürth, and Rainer Teschner, Meinerzhagen, all of Fed. Rep. of Germany, assignors to Battenfeld GmbH, Fed. Rep. of Germany

Filed Oct. 14, 1988, Ser. No. 258,023
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 3735099
Int. Cl.[5] B29C *45/16, 45/30*
U.S. Cl. 264—255 **2 Claims**



1. In a method of manufacturing multilayer molded articles of at least two plastics material components having substantially different properties with respect to behavior, processing and/or temperature changes, the method including injecting the plastics material components from different extruder units through a common sprue bushing into a mold cavity of a molding tool, the improvement comprising introducing the plastics material components in a predetermined time sequence initially to different cross-sectional areas of a common sprue cone while simultaneously deflecting the plastics material components toward each other in transverse direction of the sprue cone, subsequently again deflecting the plastic material components in axial direction of the sprue cone and forcing the components in the sprue cone in a converging manner toward a sprue duct of the sprue bushing, and finally spherically deflecting the plastics material components toward each other in transverse direction of the sprue cone and conducting the plastics material components from the sprue cone into the sprue duct of the sprue bushing.

4,944,910

METHOD OF MOLDING THERMOPLASTIC MATERIAL

James W. Hendry, Spring Hill, Fla., assignor to Michael Ladney, Sterling Heights, Mich.

Filed Oct. 17, 1988, Ser. No. 258,556
Int. Cl.[5] B29C *45/63;* B29D *22/00*
U.S. Cl. 264—572 **5 Claims**

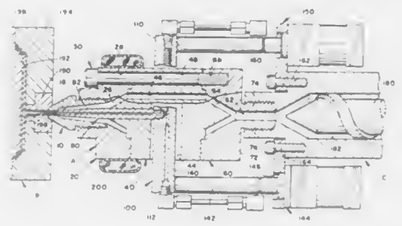
1. A method for molding thermoplastic material, comprising:

providing a nozzle body through which thermoplastic material flows with a valve member having a bore through which a fluid flows;

communicating the nozzle body with a mold space into which the thermoplastic material flows, the mold space being defined by mold surfaces;

actuating the valve member to allow thermoplastic material to flow through the nozzle body into the mold space;

subsequently allowing pressurized fluid to flow through the valve member bore into the thermoplastic material in the



mold space to form a fluid cavity in the thermoplastic material;

actuating the valve member to terminate the flow of thermoplastic material through the nozzle body;

continuing to allow pressurized fluid to flow through the valve member bore into the fluid cavity; and,

subsequently venting the pressurized fluid from the fluid cavity through the valve member bore.

4,944,911

NUCLEAR FUEL ASSEMBLY STRUCTURE COMPACTING DEVICE

Jean A. Beneck, Ormesson, and Guayre Claude, Neuilly Plaisance, both of France, assignors to Framatome, Courbevoie, France

Filed Jun. 8, 1989, Ser. No. 362,995
Claims priority, application France, Jun. 10, 1988, 88 07795
Int. Cl.[5] G21F *9/36*
U.S. Cl. 376—261 **9 Claims**

1. Device for compacting a structure of a nuclear fuel assembly devoid of fuel rods, comprising:

a vertically elongated compacting chamber having a vertical axis, whose cross-section is dimensioned to that of a structure to be compacted and which is of sufficient length to receive said structure, in non-fractionated condition;

a compacting jack located at an end of said compacting chamber for axially forcing the structure toward the other end of the chamber and crushing said structure;

a movable unit confronting said other end of the compacting chamber, having a structure reception box and movable transversely to the axis of the chamber between a position for axial introduction of the structure to be compacted into said compacting chamber through said unit and a position in which said reception box forming an abutment member is aligned with the compacting chamber and forms an abutment for the compacted structure; and





an ejection jack carried by said movable unit, arranged to force the structure in crushed condition out of said reception box when energized.

4,944,912

FUEL ROD FOR A NUCLEAR REACTOR FUEL ASSEMBLY

Hartmut Schlomm, Limeshain, and Konrad Martin, Linsengericht, both of Fed. Rep. of Germany, assignors to Reaktor-Brennelement Union GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 13, 1988, Ser. No. 244,079
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1987, 3730973
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—420 **5 Claims**



1. Fuel rod for a nuclear reactor fuel assembly, comprising a metal cladding tube having two closed ends, a column of

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nuclear fuel pellets disposed in said cladding tube, a compression spring having helical coils and being coaxial with said column of pellets within one of said ends of said cladding tube, a shim having two sides and being disposed between said column of pellets and said helical spring, and a pair of leaf springs on one of said sides of said shim being locked to and biased against said coils of said helical spring.

4,944,913

ARRASIVE AND WEAR RESISTANT MATERIAL

Stephen A. Parsons, 199 Downham Avenue, Mondeor, Johannesburg, Transvaal; Henry B. Dyer, 28 George Street, Bryanston, Transvaal, both of South Africa, and John Dodsworth, 1 Manor Close, Trimdon Village, County Durham, United Kingdom

Continuation of Ser. No. 368,968, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 219,907, Jul. 18, 1988, abandoned, which is a continuation of Ser. No. 84,384, Aug. 11, 1987, abandoned. This application Dec. 11, 1989, Ser. No. 449,472

Claims priority, application South Africa, Aug. 11, 1986, 86/6005

Int. Cl.[5] B22F *3/00*

U.S. Cl. 419—13 **10 Claims**

1. A method of producing an abrasive and wear resistant material consisting essentially of a mass of carbide particles, a mass of cubic boron nitride particles and a bonding metal or alloy bonded into a coherent, sintered form, the cubic boron nitride particle content of the material not exceeding 20 percent by weight and the material being substantially free of hexagonal boron nitride, including the steps of contacting a mass of carbide particles and a mass of cubic boron nitride particles with a bonding metal or alloy and sintering the particles and metal or alloy under temperature and pressure conditions at which the cubic boron nitride is crystallographically stable "said pressure being in the range of 50 to 70 kilobars".

4,944,914

TITANIUM BASE ALLOY FOR SUPERPLASTIC FORMING

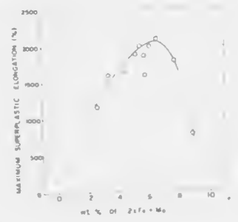
Atsushi Ogawa; Hiroyoshi Suenaga, and Kuninori Minakawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,930

Claims priority, application Japan, Dec. 24, 1988, 63-327316

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—418 **23 Claims**



1. A titanium alloy having superplastic forming characteristics consisting essentially of about 5.5 to 6.75 wt. % Al, 3.5 to 4.5 wt. % V, 0.85 to 3.15 wt. % Fe, 0.85 to 3.25 wt. % Mo, with 2×Fe wt. %+Mo wt. % being from 3 to 8, 0.01 to 0.2 wt. % oxygen and the balance titanium; said alloy containing α-crystals having a grain size below about 6 μm in diameter.

4,944,915

COPPER ALLOYS FOR ELECTRICAL AND ELECTRONIC PARTS AND ITS MANUFACTURING PROCESS

Young G. Kim, Seoul, and Yun S. Lim, Inchon, both of Rep. of Korea, assignors to Poongsan Corporation, Seoul, Rep. of Korea

Filed Jun. 8, 1989, Ser. No. 363,535

Claims priority, application Rep. of Korea, Dec. 21, 1988, 17124/1988

Int. Cl.[5] C22C *9/04*

U.S. Cl. 420—479 **1 Claim**

1. A copper alloy having high strength and excellent spring characteristics, consisting of 20 to 27% Zinc, 2.0 to 5.0% Aluminum, 0.5 to 5.0% Nickel, 0.1 to 1.0% Silicon, 0.01 to 0.5% Zirconium, and the balance copper.

4,944,916

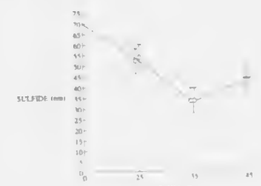
CORROSION INHIBITION

John P. Franey, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 7,105,946, Oct. 8, 1987, abandoned. This application Aug. 23, 1989, Ser. No. 399,427

Int. Cl.[5] C23F *13/00, 15/00*

U.S. Cl. 422—8 **5 Claims**



1. A process for protecting an article including a metal region from corrosion comprising the steps of locating said article in an enclosure, said enclosure having a means for providing said protection comprises particles, said particles comprising a protecting metal chosen from the group consisting of aluminum and copper wherein said particles are embedded in said polymer by introducing and dispersing particulates into said polymer and wherein said surface area of said protecting metal is sufficient to regard said corrosion.

4,944,917

USE OF THIOSULFATE SALT FOR CORROSION INHIBITION IN ACID GAS SCRUBBING PROCESSES

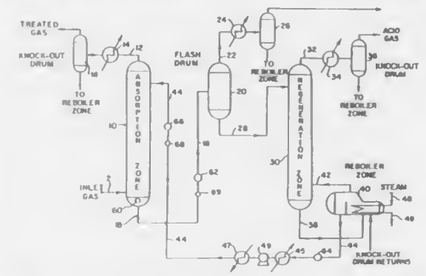
Patrick C. Madden, II, Whippany, and Z. Andrew Foroulis, Mendham, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 6/912,258, Sep. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 503,061, Jun. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 398,077, Jul. 14, 1982, abandoned. This application Dec. 28, 1987, Ser. No. 138,630

Int. Cl.[5] C23F *11/06*

U.S. Cl. 422—13 **10 Claims**

1. In a process for removing acidic gases from a gaseous stream containing H2S, wherein said gaseous stream is contacted with an amine-containing scrubbing solution at an elevated operating temperature, the improvement comprising adding an effective amount of an ammonium or metal thiosulfate salt thereby inhibiting corrosion of metal surfaces in



contact with the acid gas stream containing the scrubbing solution.

4,944,918

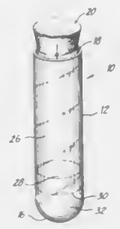
STERILIZATION OF BLOOD COMPONENT SEPARATION DEVICES

Jay S. Desai, Closter, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 15, 1988, Ser. No. 144,214

Int. Cl.[5] A61L *2/08*; G01N *1/00*

U.S. Cl. 422—22 **10 Claims**



1. A method for radiation sterilization of blood component separation containers containing ficoll-hypaque, as one of the separation media therefore, while avoiding precipitation of a sodium component of the ficoll-hypaque during exposure to said radiation sterilization, the steps which comprise

(a) selecting a blood sample separation container for introducing a blood sample therein;

(b) introducing in a first introducing step at least one blood separation component into said container for providing a blood separation medium for said container,

said at least one blood separation component including ficoll-hypaque;

(c) in a second introducing step, introducing into said container a material for adjusting the pH level of said blood separation medium in said container, said material being selected from the group consisting of sodium bicarbonate, sodium bicarbonate with potassium or sodium/mono or dibasic phosphates, sodium carbonate, sodium carbonate with potassium or sodium/mono or dibasic phosphates, tris-hydroxymethyl amino methane with sodium or potassium phosphate, tris-hydroxymethyl amino methane, hydroxyethyl piperazine/N/2/ethane sulfonic acid with sodium or potassium phosphate, and hydroxyethyl piperazine/N/2/ethane sulfonic acid, said material being in an amount sufficient to bring the pH level of said blood separation medium to within the range of between about 6.5 and 7.6 after exposure to radiation sterilization; and

(d) exposing said container to radiation sterilization.

4,944,919

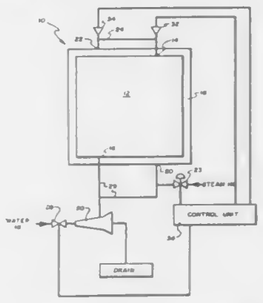
LOW TEMPERATURE STERILIZER

Anthony D. Powell, Lima, N.Y., assignor to MDT Corporation, Torrance, Calif.

Filed May 27, 1987, Ser. No. 54,786

Int. Cl.[5] A61L *2/06*

U.S. Cl. 422—26 **11 Claims**



1. An apparatus for exposing objects to be saturated steam at subatmospheric pressure, comprising:

a sealed chamber with an inlet and an outlet;

a source of steam connected to said inlet through first flow control means;

a source of vacuum connected to said outlet through second flow control means;

temperature sensing means mounted to sense the temperature within said chamber;

pressure sensing means mounted to sense the pressure within said chamber; and

electronic control means operably associated with said first and second flow control means, said temperature sensing means and said pressure sensing means to effect a conditioning phase of operation prior to an exposure phase of operation in a sterilization cycle, said conditioning phase including the steps of:

simultaneously introducing steam through said first flow control means and applying vacuum through said second flow control means, thereby to establish a fluid flow stream through said chamber;

operating said first flow control means in response to the temperature sensed by said temperature sensing means, thereby to establish a preselected exposure temperature within said chamber; and thereafter

operating said second flow control means in response to the pressure sensed by said pressure sensing means to establish an exposure pressure within said chamber at a pressure level at which steam is saturated at said exposure temperature, while continuing to operate said first flow control means to maintain the temperature within said chamber at said exposure temperature.

4,944,920

NOVEL METHOD TO TREAT BLOOD

Alan I. Rubinstein, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Continuation of Ser. No. 892,058, Aug. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 838,253, Mar. 10, 1986, abandoned. This application Feb. 27, 1989, Ser. No. 316,604

Int. Cl.[5] A61L *2/18*; C07K *15/06*

U.S. Cl. 422—37 **20 Claims**

1. A method for reducing the infectivity of HIV-1 virus that causes AIDS; said method comprising the steps of:

preparing a disinfectant from lactic acid and sodium chlorite,

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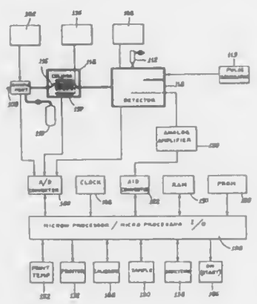
each in concentration of less than two percent, in a solution of normal saline;
then exposing a substance comprising red blood cells to the disinfectant for a time period sufficient to inactivate HIV-1 virus; and
then washing the red blood cells with normal saline until the concentration of disinfectant is insignificant.

4,944,921

AUTOMATED PCB ANALYZER SYSTEM

Bruce N. Colby, Carlsbad, and Eugene A. Burns, Solana Beach, both of Calif., assignors to Maxwell Laboratories, San Diego, Calif.

Filed Mar. 6, 1984, Ser. No. 586,665
Int. Cl.[5] G01N *27/62, 30/70, 30/86*
U.S. Cl. 422—70 **5 Claims**



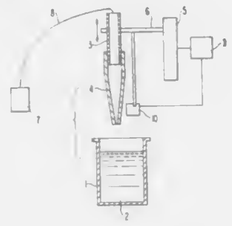
1. Portable apparatus for field testing to determine the presence of polychlorinated biphenyls (PCBs) in a material which may contain an interfering component and PCBs, said apparatus comprising:
a gas chromatographic column for separating polychlorobiphenyl components and having an input for receiving a sample and an output for providing separated component peaks;
an electron capture detector connected to the output of said column, said detector providing an analog electrical output which varies with magnitude and retention time of component peaks;
an analog to digital converter connected to the detector to convert the output of said detector to a digital signal and provide an output indicative thereof, wherein the output of said converter constitutes sample data;
a microprocessor connected to the output of said converter, said microprocessor including a memory in which is located data regarding magnitudes and retention times for a plurality of standard PCB mixtures, said microprocessor further including means for comparing said sample data with the PCB standard data for recognition of a substantially similar elution pattern therewith and an output for indicating the presence of a PCB in a sample; and
indication means responsive to the microprocessor output for providing indication of the presence of a PCB in a sample, said microprocessor further including means for determining with high certainty that a sample contains a PCB, for determining that a sample may contain a PCB and for determining with high certainty that a sample does not contain a PCB, said microprocessor further including means for causing said indication means to signal that a PCB is present in a sample, further testing of a sample should be undertaken, or no PCB is present in a sample, respectively.

4,944,922

QUANTITATIVE DISPENSER FOR A LIQUID

Hidechika Hayashi, Kanagawa, Japan, assignor to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 880,364, Jun. 30, 1986, abandoned. This application Apr. 14, 1989, Ser. No. 338,508
Int. Cl.[5] G01F *11/00;* **G01N** *1/14*
U.S. Cl. 422—100 **12 Claims**



1. A quantitative dispenser for a liquid, comprising; pipette means having a downwardly directed nozzle adapted to pick up and deliver a predetermined quantity of a liquid, drive means for moving said pipette means downwardly to immerse the lower end of said nozzle in a liquid supply, and liquid supply level sensing means for determining the stopping point for the downward movement of said pipette means, said liquid supply level sensing means being comprised of housing means, lens means mounted in said housing means and having a focal point outside of said housing means, light source means mounted in said housing means for directing a beam of light through said lens means onto the surface of said liquid supply, photosensor means mounted in said housing means for receiving light reflected from said surface of said liquid supply through said lens means, and control means operatively connected to said photosensor means and said drive means for controlling the operation of said drive means so as to stop the downward movement of said pipette means when the maximum intensity of reflected light is detected by said photosensor means,
wherein said lens means comprises two convex lens portions so that said beam of light from said light source means is directed through a first one of said two convex lens portions and said light reflected from said surface passes through a second one of said two convex lens portions which has a focal point on said photosensor means whereby the maximum intensity of reflected light occurs when the surface coincides with the focal point of the first lens portion.

4,944,923

AUTOCLAVE FOR THE PRESSURE DIGESTION OF SAMPLE MATERIALS IN ANALYTICAL CHEMISTRY

Hartmut Heinrichs, Göttingen; Hans-Jürgen Brumsack, Baurat-Gerber-Strasse 3, D-3400 Göttingen; Norman Loftfield, Lange Strasse 22, D-3433 Neu Eichenberg, and Nils König, Göttingen, all of Fed. Rep. of Germany, assignors to Wolfgang Schultz; Hans-Jürgen Brumsack, both of Göttingen and Norman Loftfield, Neu Eichenberg, all of, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,123
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1986, 3620381
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **7 Claims**

1. An autoclave vessel for pressure digestion of samples for chemical analysis, comprising: a closeable beaker containing a sample and sustaining elevated temperatures and pressures during operation; a lid in direct contact with said beaker and forming a tight seal therewith; a metallic lid support disc in contact with said lid; clamping means in contact with said lid support disc and surrounding said beaker and lid for pressing sealing surfaces of said beaker and lid together through pressure on said metallic lid support disc; said sealing surfaces having a periphery in direct contact with outside air to admit outside air free from metallic contaminants into said beaker when said seal is broken due to cooling said vessel after heating thereof; said beaker receiving outside air when said seal is broken for preventing contamination of the sample with metallic constituents; said clamping means applying pressure to said lid through said metallic support disc at a single point to permit said lid to deflect under pressure within said beaker for opening a gap between said sealing surfaces and thereby breaking the seal to relieve the pressure within said beaker through said gap for preventing explosion of said beaker; said periphery being free from confinement by a surrounding wall to prevent permanent deformation of said beaker and lid after said vessel is heated to an elevated temperature and then cooled; said clamping means remaining in place with said lid when pressure within said beaker is relieved through said gap, said metallic lid support disc being a rigid backing of said lid for producing predetermined pivoting action of said lid about said single point to form said gap and prevent destruction of said beaker and lid.

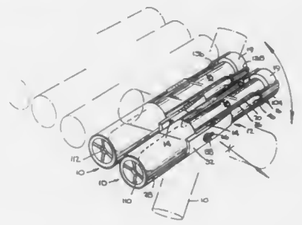


4,944,924

TEST TUBE HOLDER

James A. Mawhirt, Brooklyn; Joseph E. DiFlora, Eastchester, both of N.Y.; William J. C. McCandless, Ringwood, N.J., and George H. Ward, So. Ozone Park, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jun. 11, 1987, Ser. No. 61,252
The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.
Int. Cl.[5] B01L *9/06*
U.S. Cl. 422—104 **38 Claims**



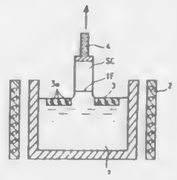
1. A test tube holder comprising,
(a) an elongated tubular member, elongated along a longitudinal axis, said tubular member having a first wall portion extending in the direction of said longitudinal axis and a first latch member formed on said first wall portion,
(b) a pivot member supported on said elongated tubular member to permit relative pivotal movement between said pivot member and said tubular member about said longitudinal axis, said pivot member having a second wall portion extending in the direction of said longitudinal axis and a second latch member formed on said second wall portion such that said first and second latch members are relatively moveable toward and away from each other in a radial direction with reference to said longitudinal axis when there is said relative pivotal movement between said pivot member and said tubular member in opposite directions about said longitudinal axis, and said first and second latch members being respectively arranged on said first and second wall portions such that said first and second latch members are unengagable when said pivot member is supported on said elongated tubular member to permit relative pivotal movement between said pivot member and said tubular member about said longitudinal axis.

4,944,925

APPARATUS FOR PRODUCING SINGLE CRYSTALS

Kazuhisa Yamauchi; Kazuo Sawada, and Yoshihiro Nakai, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 85,858, Aug. 14, 1987, abandoned, which is a division of Ser. No. 872,523, Jun. 10, 1986, abandoned. This application May 25, 1989, Ser. No. 357,663
Claims priority, application Japan, Jun. 10, 1985, 60-125765; Jun. 10, 1985, 60-125766
Int. Cl.[5] C30B *35/00, 15/22*
U.S. Cl. 422—249 **4 Claims**



1. An apparatus for growing single crystals, comprising a crucible for holding a melt of material of which said single crystals are to be grown, first separately controllable heating means arranged for heating said crucible to a first melt temperature sufficient to keep said material in a molten state in said crucible, a die located in contact with said melt, said die consisting of a die body forming a melt withdrawing outlet located for pulling a single crystal out of said melt and of second heating means controllable separately and independently of said first heating means, said second heating means being embedded directly inside said die body around said melt withdrawing outlet of said die body so that said die body and said second heating means form a single integral one piece structure for independently and directly heating said die body to a second die temperature sufficiently higher than said first melt temperature for maintaining a well defined temperature gradient between said melt and said die outlet for stabilizing a solid-liquid interface at or near said melt withdrawing outlet of said die body.

4,944,926

METHOD TO TREAT RHODIUM-CONTAINING SOLUTIONS

Akhtar Osman, Clearwater, and William G. Bradford, Sarnia, both of Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Aug. 1, 1988, Ser. No. 226,883
Int. Cl.[5] C01G 55/00; C08C 2/00
U.S. Cl. 423—22 7 Claims

1. A process to treat a rhodium-containing rubber solution obtained from the catalytic hydrogenation of nitrile rubber, said process consisting of:

(i) adding to said solution an additive selected from thiourea, and polysaccharide,

thereby forming a rhodium-containing precipitate which is not soluble in said solution, and

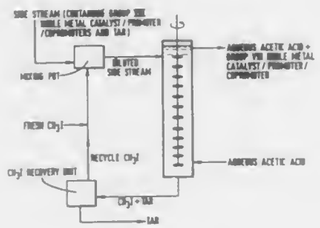
(ii) separating said precipitate from said solution.

4,944,927

PROCESS FOR THE RECOVERY OF METALS

David J. Gulliver, North Humberside, England, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 79,513, Jul. 30, 1987, abandoned. This application May 17, 1989, Ser. No. 355,850
Claims priority, application United Kingdom, Jul. 31, 1986, 8618710
Int. Cl.[5] C01G 55/00
U.S. Cl. 423—22 12 Claims



1. A continuous process for recovering a Group VIII noble metal catalyst from tar generated by the polymerization of ketene or the reaction of ketene with one or more of methyl acetate, acetic anhydride or ethylidene diacetate, which process comprises the steps of:

diluting the tar containing the Group VIII noble metal catalyst with methyl iodide to produce a process stream;

thereafter contacting the diluted tar containing Group VIII noble metal catalyst with an extracting stream comprising acetic acid in water under conditions where the Group VIII noble metal is extracted from the diluted tar into the extracting stream; and

thereafter separating the diluted tar from the extracting stream containing the Group VIII noble metal catalyst.

4,944,928

PROCESS FOR PRODUCING PURE MAGNESIUM OXIDE

Michael Grill, and Gerhard Graf, both of Leoben, Austria, assignors to Veitscher Magnestiwerke-Actien-Gesellschaft, Vienna, Austria

PCT No. PCT/AT88/00048, § 371 Date Feb. 27, 1989, § 102(e) Date Feb. 27, 1989, PCT Pub. No. WO88/10236, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 23, 1988, Ser. No. 342,503
Claims priority, application Austria, Jun. 26, 1987, 1621/87
Int. Cl.[5] C01F 5/06, 5/10
U.S. Cl. 423—161 11 Claims

1. A process for the preparation of pure magnesium oxide from starting materials selected from the group consisting of magnesium silicate and magnesium hydrosilicate materials comprising dissolving the starting material in hydrochloric acid to form a slurry comprising crude brine and residues, separating the residues from the slurry, adding finely ground crude serpentine having a grain size of between 0 and 1mm to the brine as the pH increasing substance for precipitating oxides of iron and aluminum, separating the precipitates and thermally decomposing the magnesium chloride solution thus obtained to obtain magnesium oxide and hydrogen chloride.

4,944,929

PROCESS FOR THE REMOVAL OF NITROGEN OXIDE FROM FLUE GASES

Luc Van Royen, Stabroek; Roland Putseys, Helde-Kalmthout; Willy Van Herck, Brasschaat; Domien Sluyts, Stabroek; Robert Pype, Ekeren, all of, and Karl Brändle, Bergisch Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 16, 1989, Ser. No. 367,001
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1988, 3821744
Int. Cl.[5] C01B 21/00, 21/20
U.S. Cl. 423—235 11 Claims

1. Process for the removal of nitrogen oxide from flue gases of combustion plants or reaction gases comprising stoichiometrically converting the nitrogen oxide contained in the stream of gas into a composition of N_2O_3 by contact with a sulfuric acid solution, said sulfuric acid solution having a concentration of H_2SO_4 of 30%–70% by weight, and containing from 0.1%–5% by weight nitric acid, at a temperature between 25° C. and 80° C., and removing the N_2O_3 from the gas steam.

4,944,930

SYNTHESIS OF FINE-GRAINED α-SILICON NITRIDE BY A COMBUSTION PROCESS

J. Birch Holt, San Jose; Donald D. Kingman, Danville, and Gregory M. Bianchini, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 933,438, Nov. 21, 1986, abandoned. This application Sep. 19, 1988, Ser. No. 246,215
Int. Cl.[5] C01B 21/063, 33/06
U.S. Cl. 423—344 6 Claims

1. A method for the combustion synthesis of α-silicon nitride comprising the steps of:

dry mixing silicon powder with an alkali metal azide;

introducing the mixture in a combustion chamber;

pressurizing said chamber with nitrogen at a pressure in the range of about 50 to 100 atmospheres;

igniting said mixture within said chamber; and

isolating said α-silicon nitride formed.

4,944,931

PROCESS FOR PRODUCING NITROSYL FLUORIDE

Mario Mistrorigo, Arzignano; Massimo Barcaro, Vicenza, and Andrea Faccin, San Quirico, all of Italy, assignors to Miteni S.r.L., Cagliari, Italy

Filed Feb. 9, 1989, Ser. No. 308,760
Claims priority, application Italy, Feb. 12, 1988, 19388 A/88
Int. Cl.[5] C01B 21/084
U.S. Cl. 423—386 9 Claims

1. A process for preparing nitrosyl fluoride, comprising reacting nitrosyl sulfuric acid with hydrofluoric acid in the liquid phase in the present of water in an amount of at least 2 moles of water per mole of nitrosyl sulfuric acid.

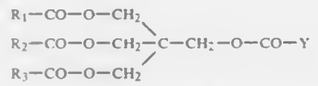
4,944,932

PROCESS FOR PRODUCING CARBON FIBER

Keigo Shiromoto; Yasuo Adachi, and Kiyoyuki Nabae, all of Iyo, Japan, assignors to Toray Industries Inc., Tokyo, Japan

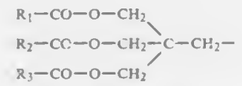
Continuation-in-part of Ser. No. 942,650, Dec. 17, 1986, abandoned. This application Sep. 30, 1988, Ser. No. 251,972
Claims priority, application Japan, Dec. 27, 1985, 60-292815
Int. Cl.[5] D01F 9/12
U.S. Cl. 423—447.6 3 Claims

1. A process for producing an acrylic carbon fiber obtained by heating an acrylic fiber in an oxidizing atmosphere to convert the same into oxidized fiber and heating said oxidized fiber in an inert atmosphere at a higher temperature to carbonize the same, wherein the acrylic fiber is treated with an oiling agent after it is subjected to a water washing step, said oiling agent comprising (a) from 20 to 90% by weight of a neopentyl alcohol derivative represented by the following general formula (I):



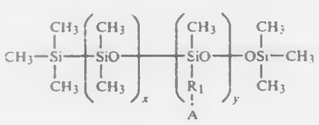
(I)

wherein R_1, R_2, and R_3 are each an alkyl group having 1 to 12 carbon atoms, and Y is an alkyl group having 1 to 12 carbon atoms or is



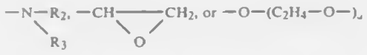
wherein R_1, R_2, and R_3 are each an alkyl group having 1 to 12 carbon atoms,

and (b) 10 to 80 wt. % of a modified polysiloxane represented by the following formula (II):



(II)

wherein R_1 is an alkylene group having 5 or less carbon atoms or an aryl group, x is an integer of 10 to 1000, y is an integer of 1 to 20, A is



wherein R_2 is hydrogen or an alkylene group having 5 or less carbon atoms, R_3 is hydrogen or an alkylene or aminoalkyl group each having 5 or less carbon atoms, and a is an integer of 1 to 50.

4,944,933

PREPARATION OF BASIC ALUMINIUM HALIDES

Peter W. Inward, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 30,194, Mar. 24, 1987, abandoned. This application May 19, 1989, Ser. No. 355,885
Claims priority, application United Kingdom, Mar. 27, 1986, 8707718; Aug. 11, 1986, 8619551
Int. Cl.[5] C01F 7/56
U.S. Cl. 423—462 9 Claims

1. Process of making a basic aluminum chloride in powder form having an aluminum:chloride molar ratio of from 1.7 to 2.2:1 and having a Band III fraction of at least 20% which comprises the steps of:

(a) rapidly dissolving metallic aluminum powder which passes a 200 mesh sieve in an aqueous starting solution of aluminum chloride or, a basic aluminum chloride, having an aluminum:chloride molar ratio of up to 1.8:1, said starting solution being held at a temperature of about 50 degrees C. to about 105 degrees C. for a time just long enough to dissolve sufficient aluminum to produce an aqueous solution of a final basic aluminum chloride having an aluminum:chloride molar ratio in the range of 1.7 to 2.2:1, provided that in the case where the starting aluminum compound is a basic aluminum chloride the amount of aluminum dissolved is such that the final basic aluminum chloride has an aluminum:chlorine molar ratio which exceeds by at least 0.3 that of the starting basic aluminum chloride, the concentration of the aluminum in the starting solution and the amount of aluminum dissolved being such that the aluminum concentration in the solution of the final basic aluminum chloride is from 7.5% to 13% by weight, and the reaction being carried out within 5 hours and in such manner that the metallic aluminum powder is dissolved so rapidly that said final basic aluminum chloride has a Band III fraction of at least 20%; and

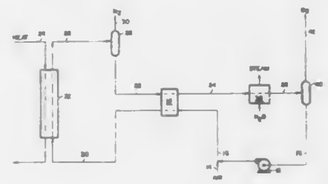
(b) drying the solution of the final basic aluminum chloride so as to give the final basic aluminum chloride in the form of a hydrated powder having a Band III fraction of at least 20%.

4,944,934

HIGH TEMPERATURE OXYGEN RECOVERY WITH REVERSIBLE CHEMICAL REACTION

Brian R. Dunbobbin, Allentown, Pa.; Richard T. Carlin, Tuscaloosa, Ala., and Anthony A. Cassano, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 3, 1990, Ser. No. 460,467
Int. Cl.[5] C01B 13/00
U.S. Cl. 423—579 7 Claims



1. A continuous process for separating oxygen from air by a reversible chemical absorption at relatively high temperature and desorption at a relatively low temperature comprising the steps of:

(a) contacting air with a liquid slurry of a chemical absorbent for oxygen having a composition of

$$M_xV_2O_5$$

wherein M=Li, Na, K, Ag, or mixture thereof and $0<x<1$, and heating the liquid slurry to a temperature in the range of approximately 630° C. to 870° C. to absorb at least a portion of the oxygen from the air and oxidize the liquid slurry to a predominantly liquid M_2O/V_2O_5 mixture;

(b) separating the oxygen depleted air from the oxidized liquid mixture;

(c) cooling the oxidized liquid mixture to a temperature in the range of approximately 370° C. to 500° C. to desorb oxygen from the liquid mixture and regenerate the liquid slurry; and

(d) separating the oxygen from the liquid slurry.

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4,944,935

PROCESS FOR PRODUCING COPPER HYDROXIDE

Bernd Langner, Wiesen/Lahe, and Rene-Holger Wilde, Badendorf, both of Fed. Rep. of Germany, assignors to Norddeutsche Affinerie Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 21,486, Mar. 4, 1987, abandoned. This application May 18, 1988, Ser. No. 196,839
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1986, 3606920
Int. Cl.[5] C01G *3/02*
U.S. Cl. 423—604 11 Claims

1. A process for producing blue copper hydroxide which comprises the steps of:

(a) treating a material containing copper metal at a temperature of 0° C. to 40° C. with an aqueous solution of:

0.1 to 10 g/l of NH_4^+ in an ammonium salt selected from the group consisting of:

ammonium chloride,

ammonium sulfate,

ammonium phosphate,

ammonium nitrate, and

ammonium acetate, and

0 to 5 g/l of a copper(II) salt, and

0 to 1 g/l of ammonium hydroxide calculated as NH_3, with stirring and with simultaneous introduction into said solution of an oxygen-containing gas, at atmospheric pressure in continuous communication with the ambient atmosphere, to produce directly a suspension of solid suspended particles of copper(II) hydroxide at least in part from copper of said material; and

(b) thereafter separating the suspended particles of copper (II) hydroxide produced in step (a) from the solution.

4,944,936

TITANIUM DIOXIDE WITH HIGH PURITY AND UNIFORM PARTICLE SIZE AND METHOD THEREFORE

Earl R. Lawhorne, Savannah, Ga., assignor to Kemira, Inc., Savannah, Ga.

Continuation of Ser. No. 37,204, Apr. 10, 1987, abandoned. This application Jul. 29, 1988, Ser. No. 228,810
Int. Cl.[5] C01G *23/047*
U.S. Cl. 423—612 10 Claims

1. A method for producing uniform particle size titanium dioxide, comprising the steps of:

(a) providing a quantity of titanium tetrachloride;

(b) adding said titanium tetrachloride to water to form a titanium oxychloride solution having a molar ratio of chloride to titanium of from about 4.0 to about 2.5;

(c) providing a seed suspension of titanium dioxide;

(d) adding said seed suspension to said titanium oxychloride solution;

(e) boiling said solution for a period sufficient to effect precipitation of titanium hydrolysate;

(f) recovering the precipitated titanium hydrolysate at a temperature of less than or equal to about 110° C.;

(g) calcining said precipitated titanium hydrolysate to form free flowing, anhydrous, rutile titanium dioxide having a mean particle size substantially within the range of from about 10 μm to about 40 μm as the final product; and

(h) controlling the rate of precipitation of titanium dioxide and the final product particle size by varying the concentration of the titanium oxychloride solution or the amount of seed added by way of said seed suspension.

4,944,937

COSMETIC STICKS

Patrick C. McCall, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 19, 1984, Ser. No. 683,829
Int. Cl.[5] A61K *7/32, 7/34, 7/38, 7/42*
U.S. Cl. 424—65 20 Claims

1. A cosmetic stick composition, comprising:

(a) one or more liquid base materials;

(b) a solidifying agent of a type and amount effective to solidify said liquid base materials; and

(c) from about 2% to about 30% (by volume) of chemically inert particulates of at least about 10 microns in diameter and having a density less than about 0.60 g/ml.

4,944,938

ANTIPERSPIRANT AND DEODORANT

A. Chimpirama Potini, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 16, 1988, Ser. No. 285,100
Int. Cl.[5] A61K *7/32, 7/34, 7/38*
U.S. Cl. 424—68 4 Claims

1. A clear, quick drying highly active antiperspirant and deodorant gel, free of monohydric alcohols which comprises in combination

(a) from about 18 to 26% by weight aluminum chlorohydrate,

(b) from about 15 to 29% by weight water,

(c) from about 13 to 20% by weight isostearyl benzoate emollient,

(d) from about 10 to 20% by weight volatile siloxanes,

(e) from about 14 to 25% by weight cetyl ether emollient,

(f) from about 2 to 6% by weight glycol solubilizers.

4,944,939

SHAVING PREPARATION FOR TREATMENT AND PREVENTION OF PFB (INGROWN HAIRS)

Milton D. Moore, 2940 Holly Hall, Houston, Tex. 77054

Continuation of Ser. No. 132,496, Dec. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 922,076, Oct. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 822,608, Jan. 27, 1986, abandoned. This application Jul. 10, 1989, Ser. No. 378,450
Int. Cl.[5] A61K *7/15*
U.S. Cl. 424—73 7 Claims

1. A shaving preparation to aid in prevention and treatment of pseudofolliculitis barbae or ingrown hairs, consisting essentially of:

from about 0.1 to 6% by weight salicylic acid;

a glucocorticoid in amount effective to reduce inflammation caused by ingrown hairs;

from about 0.5 to 5% weight sulfur.

4,944,940

BUCK LURE

Leland G. Christenson, II, Rt. 1, Box 27, Eleva, Wis. 54738

Continuation of Ser. No. 92,160, Sep. 2, 1987, abandoned. This application Oct. 13, 1988, Ser. No. 258,076
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—84 29 Claims

1. A buck lure kit comprising:

(a) substantially intact deer tarsal gland from one deer; and

(b) a deer scent fluid including deer urine, wherein the deer scent fluid is adapted to admix with the tarsal gland to produce a deer attracting scent.

4,944,941

METHODS AND COMPOSITIONS FOR THE TREATMENT OF LUNG CONDITIONS

Arthur J. Ammann, San Rafael, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Filed Aug. 7, 1987, Ser. No. 83,605
Int. Cl.[5] A61K *37/66, 37/00*
U.S. Cl. 424—85.5 15 Claims

1. A method of treating an individual having or at risk of having idiopathic respiratory distress to increase the surfactant content of the individual's lungs, the method comprising the steps of:

(a) identifying an individual whose lungs may be in need of an increased level of surfactant; and

(b) administering to the individual a composition which includes a therapeutically effective amount of gamma interferon or TNF.

4,944,942

INTRANASAL VACCINATION OF HORSES WITH INACTIVATED MICROORGANISMS OR ANTIGENIC MATERIAL

Karen K. Brown, Kansas City, Mo., and Sharon A. Bryant, Shawnee, Kans., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1987, Ser. No. 90,272
Int. Cl.[5] A61K *39/09, 39/12*
U.S. Cl. 424—89 19 Claims

1. A process of immunizing horses against infection by *Streptococcus equi* comprising applying inactivated organisms, antigenic extracts, or recombinant DNA or synthetic peptide antigens of *Streptococcus equi* to the nasal mucosa or tonsilor tissue of said horses in a dose sufficient to increase the negative log of LD_{50}.

4,944,943

MIXTURE OF A SUBSTANCE HAVING THROMBOLYTIC ACTIVITY AND OF AN ANTITHROMBOTIC SUBSTANCE

Volker Eschenfelder, Wiesloch; Bernhard Schmied, Frankenthal, and Klaus Ruebsamen, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 13, 1989, Ser. No. 309,299
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1988, 3804600
Int. Cl.[5] A61K *37/547, 35/62*
U.S. Cl. 424—94.64 7 Claims

1. A pharmaceutical composition for the treatment of thrombosis, which consists essentially of:

(a) an amount of prourokinase, urokinase, streptokinase or t-PA or a polypeptide having t-PA activity effective for dissolving thrombosis or a combination thereof, or the pharmaceutically acceptable salts thereof, and

(b) an amount of hirudin or a hirudin derivative effective for preventing or impeding the development of blood clots or a combination thereof, or the pharmaceutically acceptable salts thereof.

4,944,944

DIETARY COMPOSITIONS AND METHODS USING BILE SALT-ACTIVATED LIPASE

Jordan J. N. Tang, and Chi-Sun Wang, both of Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Filed Nov. 19, 1987, Ser. No. 122,410
Int. Cl.[5] A61K *37/54;* A23C *9/00;* A23L *2/38*
U.S. Cl. 424—94.6 23 Claims

1. A dietary composition for a human or non-ruminant animal comprising:

a nutritional base from a first source, the base containing fats and being poor in pile salt-activated lipase selected from the group consisting of milk bile salt-activated lipase and bile salt-activated pancreatic carboxylesterase; and

an effective amount of an isolated bile salt-activated lipase derived from a second source to increase fat absorption from the first source and growth of human or non-ruminant animal.

4,944,945

PHARMACEUTICAL COMPOSITION FOR INHIBITING VIRUSES AND INCREASING IMMUNE FUNCTION (PII)

Yaguang Lui, 67-08 168th St., Flushing, N.Y. 11365

Division of Ser. No. 6,736, Jan. 27, 1987, Pat. No. 4,886,666. This application Aug. 21, 1989, Ser. No. 396,332
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 1 Claim

1. A process for producing Banlankensu from powdered roots of a plant selected from the group consisting of *Isatis tinctoria* L, *I. indigotica* Fort and *Baphicacanthus cusia* Bremek comprising:

(a) extracting said powder with 95% ethanol at room temperature for 24 hrs;

(b) separating the extract from the powder;

(c) refluxing the separated powder of step (b) twice with ethanol over a water bath for 6 hours, separating the ethanol extracts from the powder, and combining all the extracts;

(d) distilling the extract under reduced pressure to yield a residue;

(e) dissolving the residue in water;

(f) extracting the resulting solution with ether and recovering the aqueous layer;

(g) extracting the aqueous layer with an equal volume of water-saturated butanol;

(h) distilling the water-butanol layer to yield a residue;

(i) dissolving the residue in ethanol;

(k) precitating the Banlankensu with acetone, washing the precipitate twice with acetone and twice with ether; and

(l) drying the Banlankensu.

4,944,946

PHARMACEUTICAL COMPOSITION FOR INHIBITING VIRUSES AND INCREASING IMMUNE FUNCTION (PII)

Yaguang Liu, 67-08 168th St., Flushing, N.Y. 11365

Division of Ser. No. 6,736, Jan. 27, 1987, Pat. No. 4,886,666. This application Aug. 21, 1989, Ser. No. 396,331
Int. Cl.[5] A61K *35/78, 31/715*
U.S. Cl. 424—195.1 1 Claim

1. A process for producing polysaccharide of Wang Qi from powders of *Astragalus membranaceus Bge*; or other Astragalus species comprising:

(a) extracting said powder with boiling water and simmering for 60–90 minutes,

(b) separating the resulting extract from the powder;

(c) concentrating the extract under reduced pressure;

(d) precipitating a crude polysaccharide from the concentrated extract by adding 95% ethanol thereto until the ethanol concentration reaches 60%;

(e) recovering the crude polysaccharide by filtration;

(f) dissolving the polysaccharide of step (e) in water and filtering the resulting mixture to yield a filtrate;

(g) concentrating the filtrate under reduced pressure;

(h) precipitating the refined polysaccharide from the filtrate by adding 95% ethanol thereto until the final concentration of ethanol reaches 80%;

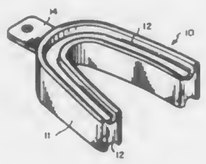
(i) allowing the 80% ethanol solution to stand at 4 degrees C. overnight;

(j) recovering the refined polysaccharide and washing with 95% ethanol three times followed by acetone and ether twice each; and

(k) vacuum drying the polysaccharide.

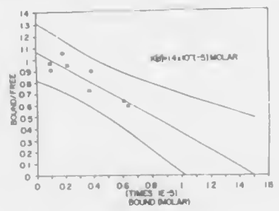
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4,944,947
THERAPEUTIC DENTAL APPLIANCE
Martin H. Newman, 77 Norwood St., Sharon, Mass. 02067
Filed Apr. 26, 1988, Ser. No. 186,449
Int. Cl.[5] A61K *7/18*
U.S. Cl. 424—435 **14 Claims**



1. A dental appliance useful for treating teeth or mouth tissue, said appliance being in the form of a sterilized block of foam material comprising a mixture of a water-activated, hydrophilic foam prepolymer with an aqueous treatment solution containing a treatment effective amount of a therapeutic composition, said block having a predetermined shape containing said aqueous treatment solution for use as a dental therapeutic device.

4,944,948
EGF/LIPOSOME GEL COMPOSITION AND METHOD
Paul S. Uster, Palo Alto; Robert M. Fielding, Redwood City, and Francis J. Martin, San Francisco, all of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.
Filed Feb. 24, 1989, Ser. No. 315,392
Int. Cl.[5] A61K *37/22*
U.S. Cl. 424—450 **30 Claims**



1. A high-viscosity liposome composition for use in administering a sustained release dose of epidermal growth factor (EGF) at a wound or surgical incision site, comprising
(a) EGF/liposomes (i) containing neutral phospholipid, between 10–50 weight percent negatively charged phospholipid, and liposome-entrapped EGF; and (ii) having a lipid concentration of at least 50 mg/g composition and a pH between 5.5 and 8.5; and
(b) means for imparting a high composition viscosity selected from the group consisting of:
(i) a low-conductivity aqueous medium containing a zwitterionic compound having an isoelectric point between pH 5.5 and 8.5; and
(ii) empty liposomes which are substantially free of negatively charged phospholipid and entrapped EGF.

4,944,949
PHARMACEUTICAL DELIVERY SYSTEMS
Michael J. Story, Threapwood, and Michael J. Flynn, Surrey, both of England, assignors to T.I.L. Medical Ltd., Middlesex, England
Filed Dec. 17, 1987, Ser. No. 134,243
Claims priority, application United Kingdom, Dec. 18, 1986, 8630273
Int. Cl.[5] A61K *9/66*
U.S. Cl. 424—451 **15 Claims**

1. A method for the treatment of prophylaxis of inflammatory arthropathy, the method comprising the steps of:
providing a non-aqueous formulation of a non-steroidal anti-inflammatory drug and a surfactant, the formulation forming micelles containing the drug on oral administrstion; and
orally administering said formulation to a patient to be treated.

4,944,950
BAIT COMPOSITION AND INSECTICIDE
Bronislava Sakharova, 605 Washington St., Peekskill, N.Y. 10566
Division of Ser. No. 33,837, Apr. 3, 1987, Pat. No. 4,826,682. This application Apr. 26, 1989, Ser. No. 343,958
Int. Cl.[5] A01N *59/06, 59/14, 59/18, 59/22*
U.S. Cl. 424—623 **15 Claims**

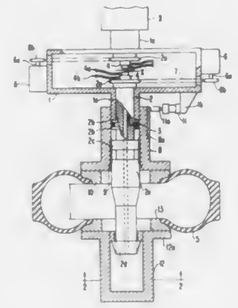
1. An unctuous cohesive homogeneous insecticidal composition comprising an intimate mixture of the following bait components, in percent by weight:

	%
cucumbers, finely divided	10–50
whole, hard boiled eggs, finely divided	2–20
boiled potatoes, finely divided	15–60
sugar, finely divided	2–20
honey	2–20

and an insecticidally effective amount of an insecticide.

4,944,951
TIRE LOADING MECHANISM OF A TIRE COOLER FOR A TIRE VULCANIZING MACHINE
Hideaki Katayama; Akira Hasegawa, and Katsuyoshi Sakaguchi, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 31, 1989, Ser. No. 359,717
Claims priority, application Japan, Jun. 6, 1988, 63-137219
Int. Cl.[5] B29C *35/16*
U.S. Cl. 425—58.1 **2 Claims**

1. A tire loading mechanism of a tire cooler for a tire vulcanizing machine, comprising a main shaft pivotably supported from a rotary table and rotationally driven by a drive source, an outer cylinder mounted to said main shaft so as to be relatively displaceable in an axial direction via screw threads and having an upper bead ring support flange at its lower end, a housing mounted to the lower end of said main shaft via disengageably fitting claws and having a lower bead ring support flange at its upper end, a disengageably fitting rod for stopping rotation of the outer cylinder, that is provided on said rotary table as opposed to a vertical groove on the surface of said outer cylinder, and means provided between said main shaft



and said outer cylinder for fixedly securing the outer cylinder to the main shaft upon rotational air cooling of the tire

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4,944,952
METHOD FOR PRODUCING PROCESSED MILK CONTAINING GALACTOOLIGOSACCHARIDE
Yoichi Kobayashi; Tatsuhiko Kan, and Tsuneo Terashima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan
Filed Dec. 20, 1988, Ser. No. 286,719
Claims priority, application Japan, Dec. 24, 1987, 62-325488
Int. Cl.[5] A23C *9/12*
U.S. Cl. 426—42 **4 Claims**

1. A method for producing a milk product containing galactooligosaccharide comprising: admixing an animal milk with a β-galactosidase derived from Streptococcus thermophilus or lactobacillus bulgaricus at a temperature of 40～60° C., a pH of about 6～8, and an enzyme concentration of 1～100 units/ml wherein the amount of glucose generated in the period of 1 hour from the commencement of enzyme treatment is not greater than 30 wt.% of lactose in said animal milk, so as to convert at least 15% of lactose contained in said animal milk into galactooligosaccharide expressed by the following general formula:

$$Gal\text{-}(Gal)_n\text{-}Glc$$

where, Gal represents galactose residue, Glc represents glucose residue and n represents an integer of 1 to 4.

4,944,953
PURIFICATION OF HYDROLYSED PROTEIN WITH CRYSTALLINE ZEOLITE
Guy J. Hartman, and Gary G. Spyres, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.
Filed May 19, 1989, Ser. No. 354,543
Int. Cl.[5] A23J *3/30*
U.S. Cl. 426—271 **10 Claims**

1. A method of purifying a hydrolysed protein comprising contacting an aqueous mixture of hydrolysed protein having a chlorohydrin concentration greater than about 50 ppb with a crystalline zeolite agglomerate to reduce the amount of chlorohydrin in said aqueous mixture.

4,944,954
VEGETABLE OIL EXTRACTION PROCESS
Hans R. Strop, and Richard R. Perry, both of Strongsville, Ohio, assignors to EPE Incorporated, Strongsville, Ohio
Division of Ser. No. 855,127, Apr. 23, 1986, Pat. No. 4,808,426. This application Nov. 14, 1988, Ser. No. 271,002
Int. Cl.[5] C11B *1/00, 3/00*
U.S. Cl. 426—417 **10 Claims**

1. A method of extracting a vegetable oil from an oil-bearing material comprising the steps of:
adding a food oil to the oil-bearing material to form a slurry;
deactivating enzymes present in said slurry;
pasteurizing said slurry; and,
subsequently extracting a physically refinable oil from said slurry, the oil physically refinable without further chemical refining.

4,944,955
MICROWAVABLE, UNCOOKED STARCH-CONTAINING, DRY MIXES
Ivette A. Bassa, East Windsor; Joseph P. Destephano, Mt. Laurel; Jay H. Katcher, Cranbury, and Robert E. Schara, Princeton Junction, all of N.J., assignors to Kraft General Foods, Inc., Glenview, Ill.
Filed Dec. 7, 1988, Ser. No. 281,118
Int. Cl.[5] A23L *1/187*
U.S. Cl. 426—579 **13 Claims**

1. A dry, food mix which is suitable for both microwave or stovetop preparation by mixing with milk or water and, cooking, said mix comprised of:
(a) up to 80% by weight of sweetening agents, bulking agents or combinations thereof,
(b) 12 to 80% by weight of spray-cooked and dried pregelatinized starch, having a particle size distribution herein at least 30% by weight of the starch is retained on a 270 U.S. Standard Sieve and no more than 1% by weight is retained on an 80 U.S. Standard Sieve;
(c) 8 to 40% by weight uncooked starch, wherein the weight ratio of the pregelatinized starch to cooked starch is 1.5 to 2.5:1;
(d) dispersant in an amount of 0.1 to 2% by weight; and
(e) a cold-water dispersible hydrocolloid gum in an amount of from 0.015 to 3% by weight.

4,944,956
NEW ETHANOLIC COMPOSITIONS CONTAINING ANETHOLE
Bernard Brun, Montpellier, and Pierre Dupont, Sucy-en-Brie, both of France, assignors to Pernod Ricard, Paris, France
Filed Oct. 31, 1989, Ser. No. 429,565
Claims priority, application France, Nov. 7, 1988, 88 14501
Int. Cl.[5] C12G *3/06*
U.S. Cl. 426—592 **11 Claims**

1. A clear ethanolic composition containing anethole, which comprises of at least one waterethanol medium containing from 10 to 30% v/v of ethanol and 1 to 3 g/l of anethole and, in addition, of a quantity, which is effective to keep the composition clear, of a surfactant or of a mixture of surfactants having the following characteristics:
it is acceptable in human foodstuffs,
its HLB is $12<HLB<15$,
the CMC is $10^{-3\,1} > CMC > 10^{-3}$,
the haze point being greater than 30° C. for a non-ionic surfactant and the Krafft temperature being less than 10° C. for an ionic surfactant.

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4,944,957

PROCESS AND COMPOSITION FOR IMPROVING THE ORGANOLEPTIC PROPERTIES OF SEAFOOD

L Steven Kingsley, Ridgewood, and Victor S. Turback, South Amboy, both of N.J., assignors to Cuisine Crafts, Inc., Linden, N.J.

Continuation of Ser. No. 15,161, Feb. 17, 1987, abandoned. This application Feb. 9, 1989, Ser. No. 309,946

Int. Cl.[5] A22C *25/00*; A23L *1/325*

U.S. Cl. 426—643 19 Claims

1. A composition useful to improve the organoleptic properties of seafood comprising:

a. about 30 to 97 percent, by weight, salt;

b. about 2.2 to 30 percent, by weight, of an organic acid approved for use in food materials;

c. about 0.5 to 20 percent, by weight, calcium salt;

d. about 0.1 to 15 percent, by weight, of a sweetening agent; and

e. about 0.2 to 37 percent, by weight, of a flavoring/masking agent.

4,944,958

METHOD OF MANUFACTURING A COHESIVE BANDAGE

Gunter Langen, Wolfstein, and Harald Jung, Kreimbach-Kaulbach, both of Fed. Rep. of Germany, assignors to Karl Otto Braun KG, Wolfstein, Fed. Rep. of Germany

Division of Ser. No. 92,084, Sep. 2, 1987. This application Apr. 28, 1989, Ser. No. 345,409

Claims priority, application European Pat. Off., Sep. 5, 1986, 86112283

Int. Cl.[5] A01N *1/02*

U.S. Cl. 427—2 5 Claims



1. A Method of manufacturing a bandage comprising the following steps:

providing a least one layer of woven fabric,

applying a coating to at least one face of the fabric,

said coating including an adhesive substance formed from a foamed aqueous dispersion of 50% one thousand parts polybutylacrylate ester, and two parts alkylphenyl polyethylene glycol, and ten parts stabilizer,

adding to said dispersion a wetting agent and foam stabilizer, said coating being applied by atomization according to an airless method micro-selectively in statistical distribution wherein the quantity of coating is selected by a pump pressure in such a capacity that per fabric side the quantity of coating is 8–10 grams per square meter.

4,944,959

PROCESS FOR ELECTROSTATIC RECORDING COMPRISING CHARGING DIELECTRIC SHEET TO POLARITY OPPOSITE OF IMAGING CHARGE

Hisanori Yagi, Ibaraki; Kousuke Hamada, Amagasaki; Isamu Nakano, Takatsuki; Yoshihiro Nishimura, Amagasaki; Hajime Matsubayashi, Kobe, and Hisashi Tani, Kawanishi, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Limited, Japan

Continuation of Ser. No. 124,591, Nov. 24, 1987, abandoned. This application Aug. 28, 1989, Ser. No. 399,441

Claims priority, application Japan, Nov. 29, 1986, 61-285251; Dec. 5, 1986, 61-291367; Dec. 8, 1986, 61-291894; Mar. 13, 1987, 62-59771; Mar. 30, 1987, 62-80816; Jun. 22, 1987, 62-154901

Int. Cl.[5] G03G *13/048*

U.S. Cl. 427—14.1 19 Claims

1. A process for producing an image of an electrostatic recording medium consisting of an electroconductive support and a dielectric layer formed on the support and containing an insulating resin and a pigment, comprising the steps of forming on the dielectric layer a surface static charge of a polarity opposite to that of a charge to be applied for image formation, applying a charge for image formation to form a latent image and developing the latent image with a toner.

4,944,960

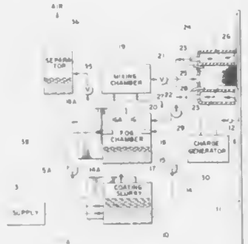
METHOD AND APPARATUS FOR COATING PAPER AND THE LIKE

Patrick J. Sundholm, Smedsintie 7A, Kauniainen SF-0217700, Finland; Robert H. Donnelly, 31 MacMillan, Christchurch 2, New Zealand, and Martti Y. O. Kangas, P.O. Box 2470, Decatur, Ga. 30031

Filed Sep. 23, 1988, Ser. No. 248,177

Int. Cl.[5] B05D *1/06*; B05B *5/14*

U.S. Cl. 427—27 7 Claims



1. A method for coating a paper-like substrate wherein said substrate moves continuously along a path, said method including the steps of providing a plurality of slurries, each slurry of said plurality of slurries comprising a material to be coated on said substrate, breaking up each of said slurries into small particles for producing a plurality of fogs containing said material to be coated on said substrate, mixing said plurality of fogs and directing the resulting mixture towards said substrate for adherence to said substrate, wherein the said step of directing the resulting mixture towards said substrate includes the steps of placing an application nozzle adjacent to said substrate, and providing a positive force for urging said mixture through said application nozzle and towards said substrate.

2. Paper coating apparatus for coating a continuously moving substrate, said apparatus including at least one means for providing a slurry containing solid material to be coated onto said substrate, means for breaking up said slurry into fine particles for creating a fog containing said solid material to be coated onto said substrate, application means for applying said fog to said substrate, said application means being adjacent to and spaced from said substrate and spaced from said means for breaking up said slurry and means for providing a current of gas for entraining said fog and carrying said fog through said application means.

4,944,961

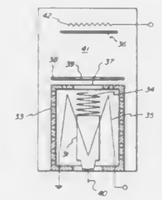
DEPOSITION OF METALS ON STEPPED SURFACES

Toh-Ming Lu, Latham, and Shao-Ning Mei, Wappingers Falls, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Aug. 5, 1988, Ser. No. 228,985

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 16 Claims



1. A process for coating a stepped surface of a substrate with a metal or metal alloy comprising:

(a) vaporizing the metal or metal alloy,

(b) partially ionizing the vapor to an ion/atom ratio of from about 0.7% to about 5%,

(c) applying a bias potential of at least 500 volts to the substrate to draw the partially ionized vapor to the substrate, and

(d) maintaining the substrate at a temperature of at least about 150° C. until a desired amount of the metal or metal alloy has been deposited on the surface.

4,944,962

METHOD FOR DIRTPROOFING TREATMENT FOR PLASTIC LENS

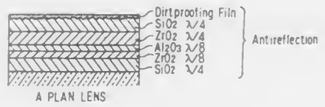
Shoichiro Faruta, Aza-Gohigashi; Hirohisa Kato, Aichi, and Hirohito Seto, Anjo, all of Japan, assignors to Ito Optical Industrial Co., Ltd., Gamagori, Japan

PCT No. PCT/JP88/01079, § 371 Date May 17, 1989, § 102(e) Date May 17, 1989, PCT Pub. No. WO89/04005, PCT Pub. Date May 5, 1989

PCT Filed Oct. 24, 1988, Ser. No. 363,903

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—164 3 Claims



1. A method for the impartation of dirtproofness to a plastic lens provided in advance of a film formed by vacuum evaporation, which method comprises the steps of:

(a) mixing a polyfluoroalkyl silane-containing coating liquid and trichlorotrifluoroethane in a gravimetric ratio in the range of ¼ to 1/10 and boiling the resultant mixture,

(b) subjecting said plastic lens to a dip coating treatment in the boiled mixture, and

(c) removing said plastic lens from said boiled mixture and dried with hot air under the conditions of 1 to 5 minutes×40° C. to 60° C. thereby forming a dirtproofing film on said film of vacuum evaporation.

4,944,963

IN SITU CROSSLINKING OF POLYELECTROLYTES

Shmuel Dabi, Highland Park, N.J., and Jayson C. Vassallo, Emmaus, Pa., assignors to McNeil-PPC, Inc., Milltown, N.J.

Division of Ser. No. 86,017, Aug. 17, 1987, which is a continuation-in-part of Ser. No. 749,907, Jun. 28, 1985, abandoned. This application Dec. 11, 1989, Ser. No. 448,392

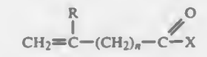
Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—195 4 Claims

1. A process for producing absorbent materials comprising:

(a) a carboxylic polyelectrolyte monomer;

(b) a reactive self crosslinking monomer having the formula:



$$CH_2=C-(CH_2)_n-C-X$$

(R above the C, O above the C)

wherein R is selected from the groups consisting of H or CH_3, n is selected from the group consisting of zero or the integers 1 to 5, and X is selected to be a group capable of reacting through self condensation or with carboxylic acid by condensation or ring opening; and

(c) a hydrophobic monomer; wherein whenever X in (b) above is either N-methylol or an N-methylol alkyl ether, the composition has a pH of at least 7;

copolymerizing said monomers to form a poly(electrolyte) self crosslinking copolymer dispersed in water; and drying said dispersion to produce absorbent material comprising crosslinked poly(electrolyte) copolymers.

4,944,964

LACQUER, AND PROCESS FOR PRODUCING ANTI-CORROSION COATINGS

Helmut Schmidt, Höchberg; Helmut Patzelt, Kist; Gerhard Tünker, and Horst Scholze, both of Würzburg, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Division of Ser. No. 185,268, Apr. 18, 1988, Pat. No. 4,840,666. This application May 31, 1989, Ser. No. 359,623

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 3439880

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—203 5 Claims

1. A process for the production of anti-corrosion surface coatings, which comprises applying a lacquer to the surface to be coated and then drying said lacquer, wherein said lacquer comprises:

(1) a silicic acid heteropolycondensate prepared by the hydrolysis and polycondensation of:

(a) at least one organosilane of the formula (I):

$$R_mSiX_{4-m} \quad (I)$$

wherein R is alkyl, alkenyl, aryl, arylalkyl, alkylaryl, arylalkenyl or alkenylaryl, X is hydrogen, halogen, hydroxyl, alkoxy, acyloxy or the group —NR'_2, wherein R' is hydrogen or alkyl or both, and m is 1, 2 or 3, and at least one of the following components (b), (c) and (d):

(b) one or more silicon-functional silanes of the formula (II):

$$SiX_4 \quad (ii)$$

wherein X has the above meaning, with the proviso that not all of the radicals X are hydrogen,

(c) one or more oxides, which have low volatility and are soluble in the reaction medium, of an element of main

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groups Ia to Va or subgroups IIb Vb of the periodic table or one or more compounds, which forms such an oxide of low volatility, of these elements, and

(d) one or more organo-functional silanes of the formula (III):

$$R_n(R''Y)_pSiX_{(4-n-p)} \quad (III)$$

wherein R and X have the above meaning; R'' is alkylene, arylene, alkenylarylene, alkenylene or alklenearylene, wherein said R'' radicals are uninterrupted or interrupted by oxygen or sulfur atoms or —NH— groups; Y is halogen or an amino, amide, aldehyde, alkyl carbonyl, carboxyl, hydroxyl, mercapto, cyano, alkoxy, alkoxy carbonyl, sulfonic acid, phosphoric acid, acyloxy, methacyloxy, glycidyloxy, epoxy or vinyl group; n is 0, 1 or 2 and p is 1, 2 or 3, with n+p being 1, 2 or 3; and

(2) a filler in flake or lamellar form; and

(3) a solvent for the silicic acid heteropolycondensate.

4,944,965

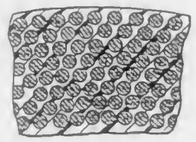
ELONGATED MOLDING GRANULES AND INJECTION-MOLDING PROCESS EMPLOYING THEM

Bruce A. Luxon, Stamford, and Malalur V. Murthy, Wethersfield, both of Conn., assignors to American Cyanamid, Me.

Continuation of Ser. No. 939,597, Dec. 9, 1986, abandoned, which is a division of Ser. No. 744,363, Jun. 13, 1985, abandoned. This application Aug. 18, 1988, Ser. No. 233,582

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—389.7 **19 Claims**



1. A method of manufacturing injection molding granules of dispersible filaments comprising the steps of continuously passing reinforcing filaments through at least one bath of a thermally stable, readily melting film forming non-crosslinkable thermoplastic adhesive, which substantially disperses on contract with hot molten plastic, in a liquid medium to impregnate the filaments, passing the impregnated filaments through a sized opening to remove any excess adhesive, passing the treated filaments into a heated zone first to evaporate the liquid medium and then to flux the thermoplastic adhesive, and withdrawing the treated filaments from said zone and thereafter chopping them into elongated granules whereby there are produced granules comprising 67.5–97.5% by volume of reinforcing filaments extending generally parallel to each other longitudinally of the granule and substantially uniformly dispersed throughout said granule in from 2.5–32.5% by volume of said thermoplastic adhesive which substantially surrounds each of said filament.

4,944,966

PROCESS FOR THE HARDENING OF PHOTOGRAPHIC GELATIN COATINGS AND A COMPOSITE HARDENER FOR GELATIN-CONTAINING COATINGS

Hans Jerenz, Osnabruck, Fed. Rep. of Germany, assignor to Felix Schoeller Jr. GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 16, 1988, Ser. No. 232,933

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1987, 3727293

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—397 **5 Claims**

1. A process for hardening gelatin-containing photographic coatings and auxiliary coatings using an organic hardener comprising:

preparing a premix hardening agent comprising a solution of an effective amount of a substituted 1,3,5 triazine and formaldehyde;

aging said premix hardening agent at least one hour;

adding said premix hardening agent to a photographic gelatin-containing solution after said aging of said premix hardening agent; and

coating a paper base with said gelatin-containing solution containing the premix hardening agent.

4,944,967

PROCESS FOR THE PREPARATION OF INFORMATION RECORDING MEDIUM

Masao Yabe, Shizuoka, and Yoshio Inagaki, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1988, Ser. No. 280,358

Claims priority, application Japan, Dec. 7, 1987, 62-310283

Int. Cl.[5] B05D *3/02;* **G11B** *7/24*

U.S. Cl. 427—393.5 **7 Claims**

4. A process for the preparation of an information recording medium which comprises the steps of:

coating a solution which contains a polymer in a solvent containing at least 10 weight % of diacetone alcohol over a polycarbonate substrate having a pregroove thereon;

drying thus coated layer to form an intermediate layer; and

forming an information recording layer on the intermediate layer.

4,944,968

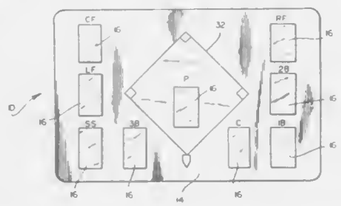
PLACEMAT WITH CHANGEABLE CARD DISPLAY

Eugene Wagner, 3424 Kingsbridge Ave., Bronx, N.Y. 10463

Filed Sep. 14, 1989, Ser. No. 407,195

Int. Cl.[5] G09F *1/10*

U.S. Cl. 428—13 **15 Claims**



1. A display mat for carrying a plurality of display cards, the mat comprising a pliant panel, the panel being dimensioned with a surface area greater than the combined surface area of a plurality of cards, the panel including a like plurality of pockets, each pocket including a substantially rectangular face and further face each having four peripheral edges, means mounting each pocket to the panel in a predetermined array, the panel including an open surface area free of pockets, means for closing each pocket along three peripheral edges and means associated with a fourth peripheral edge of each pocket for insertion and removal of cards into and out of the pocket, the face of each pocket being formed of a transparent, liquid impervious pliant layer of thermoplastic material, the panel being dimensioned with a total surface area greater than the combined surface area of the plurality of pocket faces leaving at least 30% of the total panel surface area as the open surface area free of pockets.

4,944,969

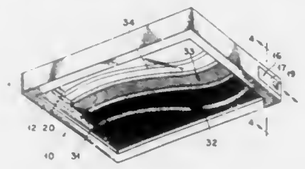
MULTIPURPOSE BOARD LIKE ARTICLE FOR DECORATION AND AMUSEMENT

Nobutane Usui, 36-3, Shimizu 1-chome, Suginami-ku, Tokyo, Japan

Continuation of Ser. No. 6/726,101, Apr. 23, 1985, abandoned. This application Nov. 25, 1987, Ser. No. 127,578

Int. Cl.[5] B44C *5/04;* **B44F** *1/10;* **G09F** *19/00*

U.S. Cl. 428—14 **16 Claims**



1. A multipurpose board for a variable, layered pattern, comprising:

a least three transparent plates;

a supporting frame having support means for supporting the plates by their peripheries in a spaced condition forming respective segregating clearances therebetween;

particles in each segregating clearance between the plates, the particles in each segregating clearance having a physical property which differs from that of the particles in the next adjacent segregating clearance, and the particles in each segregating clearance only partially filling the segregating clearance, whereby to be movable in the segregating clearance upon appropriate movement of the supporting frame.

4,944,970

PACKAGING FILM, IN PARTICULAR A SAUSAGE CASING, BASED ON POLYAMIDE

Karl Stenger, Ruedesheim; Hans Strutzel, Wiesbaden, and Gaenther Crass, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 298,060

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1988, 3801344

Int. Cl.[5] F16L *11/00;* **B65D** *81/34*

U.S. Cl. 428—34.8 **16 Claims**

1. A tubular, biaxially stretch-oriented packaging film which comprises a polymer mixture comprising:

(a) a linear aliphatic polyamide,

(b) a polyterephthalic acid ester,

(c) an aromatic polyamide comprising the reaction product of (i) a branched aliphatic diamine and an aromatic dicarboxylic acid or (ii) an aromatic diamine and an aliphatic dicarboxylic acid, and

(d) a dye.

4,944,971

AUTOMOBILE "SUN VISOR SLIP COVERS"

John P. McLaughlin, 1387 Grosser Rd., Gilbertsville, Pa. 19525

Filed Mar. 21, 1989, Ser. No. 326,739

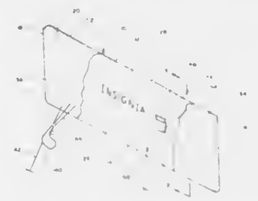
Int. Cl.[5] B65D *65/22*

U.S. Cl. 428--34.9 **4 Claims**

1. A cover for use on an automobile sun visor having a length and a width, comprising:

a monolithic hollow body which includes end edges and side edges and which is formed of stretchable material that is heat shrinkable upon application of warm air from an element such as a hand-held hair dryer in selected locations, with such selected locations being located only adjacent to said body end edges with areas between said end edges being resistant to heat-induced shrinking, said body having an unstretched and unshrunk shape that corresponds to a shape of an automobile sun visor and having an elongated opening defined through one end edge thereof,

said body material being a plastic wrap type material that is stretchably deformed to permit the sun visor to be inserted into the hollow body through the opening, and being shrinkable upon the application of warm air thereto to the



dimensions of the sun visor positioned inside said body to snugly encase such sun visor,

said opening extending from one of said side edges to a location spaced from the other of said side edges and being smaller than the width of the sun visor so that the cover must be deformed to permit the sun visor to pass through said opening into said hollow body;

fabric material fixed to said body in the area between said selected locations, said fabric material including pockets.

4,944,972

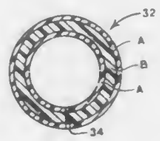
COEXTRUSION APPARATUS, METHODS, AND RELATED FILMS AND PACKAGES

Robert J. Blembereg, Appleton, Wis., assignor to American National Can Company, Chicago, Ill.

Filed Dec. 31, 1987, Ser. No. 140,096

Int. Cl.[5] B32B *1/08, 27/30*

U.S. Cl. 428—35.2 **68 Claims**



1. A multiple layer film having two outer surfaces, said film having first and second layers, in surface-to-surface contact with each other, said film having a weld line, said weld line extending, in a single, unbroken path, through said first and second layers, said weld line, comprising said single, unbroken path, extending to, and intersecting, both said outer surfaces.

4,944,973

WRAPAROUND ARTICLE

Martha G. Follette, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 58,609, Jun. 4, 1987, abandoned, which is a continuation of Ser. No. 832,279, Apr. 7, 1986, abandoned, which is a division of Ser. No. 560,344, Dec. 12, 1983, Pat. No. 4,581,265. This application Sep. 13, 1989, Ser. No. 406,883

Int. Cl.[5] H02G *15/00;* **B32B** *31/00*

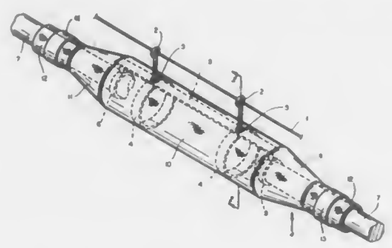
U.S. Cl. 428—36.1 **8 Claims**

1. An article comprising:

a shape of material, said shape having two spaced apart

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parallel sides joined together at the edges by respective concave sides, said material having a cone penetration value of 100 to 350 (10^{-1} mm) and an ultimate elongation



of at least 200%, wherein the two concave sides adapted for contacting the surface of two elongate substrates and establishing a seal between the substrates.

4,944,974

COMPOSITE STRUCTURES OF ULTRA-HIGH-MOLECULAR-WEIGHT POLYMERS, SUCH AS ULTRA-HIGH-MOLECULAR-WEIGHT POLYETHYLENE PRODUCTS, AND METHOD OF PRODUCING SUCH STRUCTURES

Anagnostis E. Zachariades, 65 Glengary Way, Hillsborough, Calif. 94010

Continuation-in-part of Ser. No. 132,200, Dec. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,838, Dec. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,015, Dec. 18, 1985, Pat. No. 4,655,769. This application Oct. 26, 1988, Ser. No. 262,970

Int. Cl.[5] **B32B** *27/00, 27/12*

U.S. Cl. 428—36.1 **17 Claims**



1. A single phase composite structure of a filamentary reinforcing component and a non-filamentary matrix component made from the same semicrystalline linear polymer with a weight average molecular weight of at least 500,000, which is capable of forming a pseudo-gel in a solvent compatible with forming such pseudo-gel and of being processed into a high modulus, and high strength fibrillar product with a tensile modulus of at least 10 GPa and a tensile strength of at least 0.5 GPa, said composite structure comprising:

layers of the non-filamentary matrix component of said polymer in sheet form interleaved with at least one layer of the filamentary reinforcing component, also of said polymer, comprised of high modulus, high strength fibers.

4,944,975

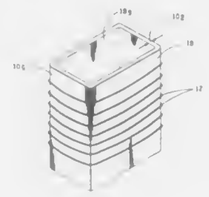
COMPOSITE COIL FORMS FOR ELECTRICAL SYSTEMS

M. Lana Sheer, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1988, Ser. No. 251,773

Int. Cl.[5] **B32B** *5/08, 5/16;* **H01F** *27/302*

U.S. Cl. 428—36.1 **1 Claim**



1. A coil form for an electrical device comprising:

a structure of an aramid prepreg impregnated with an electrically insulating resin, said structure having a longitudinal passage therethrough, a continuous outer peripheral surface forming support for a coil wound thereon and structural stability and a UL Standard 1446 rating of greater than 200° C., said aramid prepreg having fibers greater than ¼ inch in length, said aramid prepreg being an aramid paper which is a blend of Kevlar ® aramid and a Nomex ® aramid in an 85% to 15% by weight ratio, respectively.

4,944,976

SEMI-RIGID PLASTIC JACKET WITH INTERLOCKING LONGITUDINAL SEAM

Walter A. Plummer, III, Santa Ana, Calif., assignor to The Zippertubing Co., Los Angeles, Calif.

Filed Feb. 17, 1989, Ser. No. 312,735

Int. Cl.[5] **F16L** *9/00*

U.S. Cl. 428—36.9 **10 Claims**



1. A tubular jacket for enclosing conductors, tubing, cabling, or the like, which jacket has a main body having a longitudinal snap-lock seam effective when closed for maintaining the body stressed in hoop tension and comprising:

an elongated, generally tubular main body of uniform thickness extruded in one piece from a plastic material having a durometer hardness of not less than D50 and formed with snap lock male and female seam forming members along the lateral edge portions of the body and closely spaced apart circumferentially from each other as extruded and prior to being forcibly nested with one another;

said male member consisting of a single asymmetrical hook of generally obtuse triangular shape in cross section, integral with, extending along, and with a portion of thickness greater than the thickness of the body being confined to the exterior of one lateral edge portion of the main body, said triangle comprising an inner side, a longer outer side, and a shorter outer side, with the shorter outer side being inclined outwardly and away from the adjacent face of the main body at an acute angle to the outer face of the jacket, the inner side being an extension of the interior surface of the main body, and the longer outer side being inclined acutely with the inner side for forming an apex along the lateral edge of the main body; and

said female member being V-shaped in cross section, with the open end thereof facing toward the adjacent apex of the triangular shaped male member, and having a smooth surfaced inner leg of uniform thickness and having an outer leg provided at its outer end with an inwardly projecting hook shaped to interlock with the shorter side of the male member when nested therewith, said hook cooperating with the triangular shaped portion of the male member positioned exteriorly of the main body when nested for holding the seam members strongly and effectively interlocked with the main body stressed in hoop tension.

4,944,977

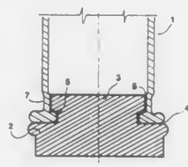
FRICTION WELDING FLASH TRAP SEAL

Ronald B. Shantz, Sheffield, and Robert J. Knight, Guelph, both of Canada, assignors to A.R.D. Industries Ltd., Cambridge, Canada

Continuation of Ser. No. 52,084, May 19, 1987, Pat. No. 4,832,769. This application Apr. 7, 1989, Ser. No. 334,559

Int. Cl.[5] **B23K** *20/12;* **B29C** *65/06*

U.S. Cl. 428—36.92 **4 Claims**



1. In a friction welded part comprising firstly a hollow cylindrical part defining a cavity and secondly a second part to which said hollow cylindrical part is friction welded, said friction welded part including a friction weld between said hollow cylindrical part and said second part, and an internal flash trap in the region of the weld, said flash trap being defined between said hollow cylindrical part and said second part, the improvement in which one of said hollow cylindrical part and said second part is deformed towards the other part at a location remote from the weld and between the weld and the cavity without a weld formed at said location, so as to seal said flash trap from the cavity.

4,944,978

PIRN MARKER SHEET AND METHOD FOR FORMING THE SAME

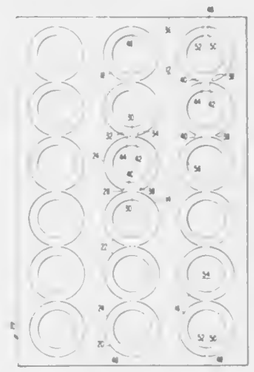
Alfred R. Pipkins, 3776 Court Dr., Theodore, Ala. 36582

Filed Sep. 28, 1989, Ser. No. 413,762

Int. Cl.[5] **B32B** *3/10*

U.S. Cl. 428—43 **12 Claims**

1. A sheet of circular pirn markers which are removable from the remainder of the sheet as an interconnected row of pirn markers comprising a sheet of material having at least one row of pirn markers formed therefrom and connected thereto, said row including first and second end pirn markers and a plurality of intermediate pirn markers therebetween, each end pirn marker being connected at one side thereof along a line of joinder to an intermediate pirn marker and at an opposite side thereof by a single connection point to the remainder of said sheet, each such end and intermediate pirn markers having



opposed sides defined by continuous opposed arcuate cuts extending through said sheet.

4,944,979

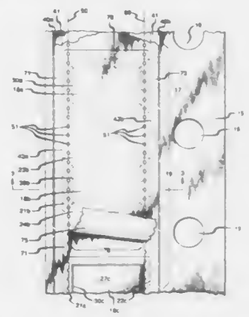
TAPE CONVEYERS FOR COMPONENTS

Francis P. Gagliano, Mountainside, and Solomon L. Hechtlinger, Somerset, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 19, 1989, Ser. No. 423,826

Int. Cl.[5] **B65D** *85/30, 75/22*

U.S. Cl. 428—43 **15 Claims**



1. The improvement in a component part conveyer comprising: a longitudinally elongated carrier belt, a stock of component parts carried on said belt in a row of such parts extending lengthwise on such belt, an adhesive deposited on said belt in bands flanking such row, and a tape extending in the length of said row over said parts to hold them on said belt, and having regions on laterally opposite sides of said row which are bonded to said adhesive to attach said tape to said belt, said improvement comprising: a pair of tear lines defined in said tape alongside and on opposite sides of the centerline of said row and bounding opposite sides of a strip of said tape extending in its length between said lines, said tear lines being demarcated by discontinuities formed in said tape's structure to weaken its shear strength along such lines, and said lines promoting peeling at the front of said belt of said strip away from border portions of said tape which are on either side of said

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strip and remain adhered to said belt, said peeling providing access to ones of such parts on said belt.

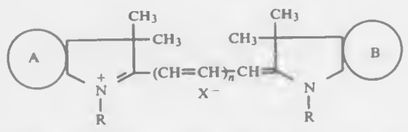
4,944,980

OPTICAL RECORDING MATERIAL

Mitsuo Akutsu, Tokyo; Syuji Iwakura, and Keiji Oya, both of Saitama, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1989, Ser. No. 384,653
Claims priority, application Japan, Aug. 5, 1988, 63-195906
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 1 Claim

1. An optical recording material comprising, as an indispensable constituent, a compound of the following general formula:



wherein R represents a cycloalkyl group having 3 to 12 carbon atoms, X^- represents a halide anion, a perchlorate anion or a nickel bisdithiolate anion, rings A and B each represent a benzene or naphthalene ring which may be substituted with halogen atom, and n represents 1 to 4.

4,944,981

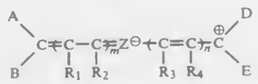
OPTICAL RECORDING MEDIUM

Yoshihiro Oguchi, Yokohama, and Tsuyoshi Santoh, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

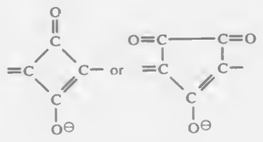
Continuation of Ser. No. 159,350, Feb. 23, 1988, abandoned.
This application Apr. 11, 1989, Ser. No. 336,515
Claims priority, application Japan, Feb. 25, 1987, 62-40416; Feb. 25, 1987, 62-40417; Feb. 25, 1987, 62-40418
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 3 Claims



1. An optical recording medium comprising a substrate supporting an organic film, wherein said a polymethine compound represented by



wherein A, B, D and E each represent a hydrogen atom, a substituted or unsubstituted alkyl group, a cyclic alkyl group, an alkenyl group, substituted or unsubstituted aryl group, a substituted or unsubstituted styryl group, a substituted unsubstituted heterocyclic group: R_1, R_2, R_3, and R_4 each representing a hydrogen atom, a halogen atom, or an alkyl group; m and n each represents an integer of 1, 1 or 2; and Z^- represents



4,944,982

INFORMATION RECORDING MEDIUM HAVING MAGNETIZABLE HUB

Yasushi Kikuchi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1989, Ser. No. 332,964
Claims priority, application Japan, Apr. 4, 1988, 63-82820; Apr. 4, 1988, 63-82821
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 8 Claims



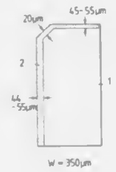
1. An information recording medium comprising an information recording disc for writing or reading information by means of a laser beam which has a circular hole at its center and a magnetizable hub which comprises a boss and a flange and has a hole at its center for insertion of a spindle, wherein the boss of the magnetizable hub has had at its bottom a diameter being equal to or larger than the diameter of the circular hole of the recording disc, and the magnetizable hub has been pushed into the circular hole of the recording disc, whereby the hub is firmly fitted into the hole of the disc.

4,944,983

SLOPED SUBSTRATE FOR A THERMAL HEAD AND METHOD OF MANUFACTURING THE SAME

Osamu Nonoyama, and Masahiro Kato, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jul. 10, 1989, Ser. No. 377,688
Claims priority, application Japan, Jul. 11, 1988, 63-170860; Apr. 14, 1989, 1-94995
Int. Cl.[5] G01D *15/10*; B32B *1/04*
U.S. Cl. 428—81 3 Claims



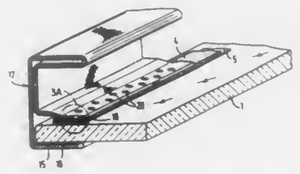
I. A sloped substrate for a thermal head, comprising:
a main plane surface;
a subplane surface which is perpendicular to said main plane surface;
a sloped surface extending between an edge of said main plane surface and an edge of said subplane surface, said sloped surface having a width in a range between 200 μm to 2,000 μm; and
a glaze bonded by firing to said main plane surface, said subplane surface and said sloped surface, said glaze having a thickness of 100 μm or less.

4,944,984

WINDOW GLASS FOR MOTOR VEHICLES AND A METHOD FOR THE MANUFACTURE THEREOF

Heinz Kunert, Cologne, Fed. Rep. of Germany, assignor to Saint-Gobain Recherche, Aubervilliers, France

Continuation of Ser. No. 28,064, Mar. 19, 1987, abandoned, which is a continuation of Ser. No. 624,122, Jun. 25, 1984, abandoned. This application May 11, 1988, Ser. No. 193,224
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322799
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—83 2 Claims



1. A method of manufacturing a window glass for motor vehicles, which, after producing the glass, comprises:
(a) applying a layer of a pasty, curable elastic polymer to the surface of said glass,
(b) curing said elastic polymer layer on the surface of said glass, and
(c) pushing a spring-elastic, force-fitting clamping shaped bracket onto said cured elastic polymer layer to locally partially deform the elastic polymer,
wherein said shaped bracket is provided with holes into which the material of the elastic polymer layer partially penetrates.

4,944,985

METHOD FOR ELECTROLESS PLATING OF ULTRAFINE OR COLLOIDAL PARTICLES AND PRODUCTS PRODUCED THEREBY

Guy B. Alexander, Salt Lake City, Utah, and Ravindra M. Nadkarni, Wrentham, Mass., assignors to Leach & Garner, North Attleboro, Mass.

Filed Apr. 11, 1988, Ser. No. 180,367
Int. Cl.[5] B32B *15/02, 15/04*
U.S. Cl. 428—570 14 Claims

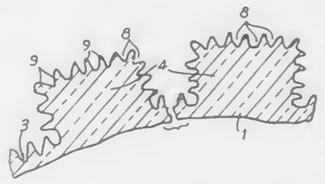
1. An ultrafine composite powder consisting of a plurality of ultrafine particles, said particles comprising:
a core portion of material having an average size less than about 20 microns; and
a coating portion comprising a plurality of layers, a first layer adjacent to and contiguous with the surface of said core portion being a complex oxide and each of the other layers being a substantially uniform, stable and dense deposition of at least one metal selected from the group consisting of copper, silver, gold, lead, tin, nickel, zinc, cobalt, antimony, bismuth, iron, cadmium, chromium, germanium, gallium, selenium, tellurium, mercury, tungsten, arsenic, manganese, iridium, indium, ruthenium, rhenium, rhodium, molybdenum, palladium, osmium and platinum.

4,944,986

ANTI-REFLECTIVE GLASS SURFACE

David C. Zael, Burnsville, Minn., assignor to Zael Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 248,860, Sep. 23, 1988, abandoned. This application Jan. 13, 1989, Ser. No. 298,332
Int. Cl.[5] C03C *15/00*
U.S. Cl. 428—156 4 Claims



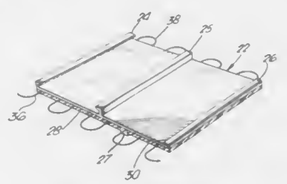
1. A glass product composed of an alkali or alkaline earth metal oxide silicate glass, the glass product having high optical clarity, and low reflectance, at least surface of the glass product comprising:
a plurality of scallops extending across the surface of the glass, each scallop being about 100 to 2000 micrometers in diameter,
a plurality of islands disposed on the surface of the scallops at a density of 25 to 500 islands per square millimeter, each of said islands being between about 10 to 20 micrometers in diameter,
said scallops and islands extending across said surface of the glass in such a distribution that said scallops and islands contribute to providing decreased reflectance of incident light across said surface of the glass
a skeletized silicon structure extending uniformly over the entire said surface of the glass including said scallops and said islands, the skeletized structure having openings of about 200 to 600 angstroms uniformly distributed throughout, and
said product having low reflectance of incident light.

4,944,987

HEAT RECOVERABLE ARTICLES

Johannes M. Cordia, Pellenberg, Belgium; Roger W. Evans, Chiseldon, England, and Robert H. Van Loo, Linden, Belgium, assignors to N. V. Raychem S. A., Belgium

Continuation of Ser. No. 203,507, May 25, 1988, abandoned, which is a continuation of Ser. No. 45,267, Apr. 22, 1987, abandoned, which is a continuation of Ser. No. 858,541, Apr. 29, 1986, abandoned, which is a continuation of Ser. No. 720,214, Apr. 5, 1985, abandoned. This application Feb. 22, 1989, Ser. No. 314,324
Claims priority, application United Kingdom, Apr. 6, 1984, 8408908; Apr. 6, 1984, 8408907; Nov. 28, 1984, 8430088
Int. Cl.[5] H05B *3/10*
U.S. Cl. 428—192 18 Claims



1. A heat-recoverable cover comprising a sheet of polymeric material and an elongate electrical resistance heating element which is in thermal contact with the cover and which is arranged to pass back and forth in a direction generally parallel

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to the surface of the cover in a serpentine path, the cover having a first closure means positioned toward one end of the sheet and a second closure means spaced apart from the first closure means to define a first cover portion between them, which first cover portion can be wrapped once around an object to be covered and secured in the wrapped configuration by the first and second closure means, the second closure means being spaced from the end of the cover opposite the first closure means to define a second cover portion that can be wrapped at least once around the object inwardly of the first cover portion.

4,944,988

INK JET RECORDING SHEET AND PROCESS FOR PRODUCING SAME

Kenji Yasuda, Yachiyo; Akira Kobayashi, Kasugai; Makiko Tokita, Chiba; Masao Maekawa, Kitakatsuragi; Masahiko Kitajima, Izumi, and Hisao Maruyama, Toyonaka, all of Japan, assignors to OJI Paper Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1988, Ser. No. 291,032
Claims priority, application Japan, Dec. 29, 1987, 62-334054
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 15 Claims

1. An ink jet recording sheet comprising:
a substrate sheet; and
at least one coating layer formed on at least one surface of the substrate sheet and comprising a resinous binder and at least a pigment dispersed in the resinous binder,
said resinous binder comprising at least one cationic copolymer which is a copolymerization product of:
(a) 99.95 molar % or less of a principal copolymerization component comprising at least one fatty acid vinyl ester comonomer; with at least
(b) 0.05 to 0.4 molar % of a cationic copolymerization component comprising at least one cationic comonomer having at least one ethylenically unsaturated hydrocarbon radical and at least one cationic radical selected from the group consisting of tertiary amino radicals and quaternary ammonium radicals.

4,944,989

COMPOSITIONS WHICH CROSSLINK IN THE PRESENCE OF MOISTURE AT ROOM TEMPERATURE TO FORM ELASTOMERS

Norman Dorsch, Burghausen; Asivin Sommer, Burghausen; Alvis Strasser, Burghausen, and August Schiller, Neuatteng, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 255,234
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3737458
Int. Cl.[5] B32B *27/28, 17/10;* C08G *77/04*
U.S. Cl. 428—319.7 10 Claims

1. A composition which can be stored in the absence of moisture, but crosslinks in the presence of moisture at room temperature to form elastomers comprising a diorganopolysiloxane having terminal condensable groups, a silicon compound having at least three hydrolyzable groups bonded directly to silicon per molecule, in which an average of at least one acyloxy group is present as a hydrolyzable group per silicon atom in the silicon compound and a cyclic diorganopolysiloxane having at least one vicinal epoxy group.

4,944,990

ORIENTED WHITE OPAQUE MULTILAYER HEAT SEALABLE FILM AND METHOD OF FORMING SAME

Leland L. Liu, Macedon, and Patricia A. Cyr, Farmington, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 16, 1988, Ser. No. 208,307
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—353 17 Claims

1. A multi-layer heat sealable structure comprising:
(a) a substrate having a white opaque, cavitated polyolefin film;
(b) a second layer coextruded on at least one surface of said substrate, said second layer including a heat sealable homopolymer, copolymer, terpolymer or blend thereof;
(c) a primer coating on at least one surface of said second layer (b) the surface having been previously treated to increase the energy of the surface; and
(d) a heat sealable layer on said primer coating (c), said heat sealable layer including a vinylidene chloride copolymer containing at least 50% by weight of vinylidene chloride.

4,944,991

FORMATION OF ALUMINA IMPREGNATED CARBON FIBER MATS

Bradley R. Karas, Amsterday, and Robert W. Powers, Schenectady, both of N.Y., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jul. 8, 1988, Ser. No. 216,890
Int. Cl.[5] C25B *11/06;* B32B *9/04*
U.S. Cl. 428—408 25 Claims



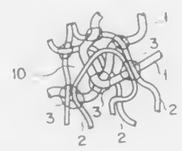
19. A carbon mat comprising carbon fibers and nodules of alumina, said nodules being substantially uniformly dispersed throughout said mat.

4,944,992

CUSHION

Yasuo Yoneshige, Kawasaki; Atsushi Misumi, Yokohama; Shuji Hiromoto, Chigasaki, and Toru Sakai, Tokyo, all of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Mar. 7, 1989, Ser. No. 319,749
Claims priority, application Japan, Apr. 14, 1988, 63-92046
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—198 16 Claims



1. A cushion comprising:
synthetic cotton consisting essentially of first curled synthetic fibers with a denier value of 20 or more and second curled synthetic fibers with a denier value of less than 20, said first and second synthetic fibers being mixed in the ratio of 0.5 to 2:1 by weight and three-dimensionally intertwined with air-passing space among them; and
a polyurethane binder binding the intersections of the first and second synthetic fibers, such that said air-passing space is maintained.

4,944,993

TOUGHENED RUBBER BASED HOT MELT ADHESIVE COMPOSITIONS FOR DISPOSABLE APPLICATIONS

Gary Raykovitz, Flemington; Robert Schmidt, Great Meadows, and Paul Puletti, Glen Gardner, all of N.J., assignors to National Starch and Investment Holding Corporation, Wilmington, Del.

Filed Aug. 17, 1988, Ser. No. 233,181
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—290 10 Claims

1. A hot melt adhesive composition suitable for disposable constructions consisting essentially of:
(a) 10 to 40% by weight of a substantially radial styrene-butadiene block copolymer having a styrene content greater than 35% by weight, a modulus at 300% elongation of at least 4.5 MPa and a solution viscosity less than 1000 cps;
(b) 20 to 65% by weight of at least one compatible tackifying resin;
(c) 0.1 to 4% by weight stabilizer; the remainder (to 100%) comprising at least one oil diluent.

4,944,994

TOUGHENED HOT MELT ADHESIVE COMPOSITION FOR BOOK CASEMAKING

Thomas P. Flanagan, Green Brook, N.J., assignor to National Starch and Investment Holding Corporation, Wilmington, Del.

Filed Aug. 17, 1988, Ser. No. 233,173
Int. Cl.[5] G32B *27/00*
U.S. Cl. 428—290 7 Claims

1. A case for a hard cover book formed by bonding the cover boards to the book cover stock using a hot melt pressure sensitive adhesive composition comprising:
(a) 10 to 40% by weight of a substantially radial styrene-butadiene block copolymer, the copolymer having a styrene content greater than about 35% by weight, a modulus at 300% elongation of at least 4.5 MPa and a solution viscosity less than about 1000 cps;
(b) 20 to 65% by weight of a compatible tackifying resin;
(c) 0.1 to 4% by weight stabilizer; and
(d) the remainder (to 100%) comprising a plasticizing oil.

4,944,995

TAPE HAVING A SURFACE WITH A LOW COEFFICIENT OF FRICTION AND LONG WEAR CHARACTERISTICS

John C. Owens, Arvada, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 10, 1988, Ser. No. 166,257
Int. Cl.[5] B32B *15/08, 27/36*
U.S. Cl. 428—294 7 Claims

1. A tape having a low friction surface comprising:
substrate means manufactured from a conformable elongated material of the group including: polycarbonate or mylar, and having first and second sides;
a plurality of alumina rods, the surface of which has a low coefficient of friction, attached to said first side of said substrate means at a predetermined spacing for providing said first side of said substrate means with a low friction surface.

4,944,996

SEPARATING ELEMENT

Jean-Michel Bauer, Pagny S/Moselle; Jacques Maire, Paris, and Maurice Verna, Nice, all of France, assignors to Le Carbone Lorraine, Courbevoie, France

Continuation of Ser. No. 871,824, Jun. 9, 1986, abandoned. This application Dec. 6, 1988, Ser. No. 280,387
Claims priority, application France, Jun. 10, 1985, 85 09264
Int. Cl.[5] B01D *39/20;* B32B *5/24;* C02F *1/44*
U.S. Cl. 428—307.7 15 Claims

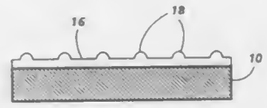
1. A separating element comprising a porous mineral membrane sintered to the face of a carbon-carbon composite material of small thickness permitting high permeability, which is of a strength adapted to resist bursting and which is of a porous texture suited to the mineral membrane.

4,944,997

ELECTROSTATOGRAPHIC RECORDING MATERIAL

Norman A. Nielsen, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 18, 1988, Ser. No. 272,848
Int. Cl.[5] B23B *23/08;* G03Q *13/22*
U.S. Cl. 428—327 12 Claims



1. A coated paper suitable for use in an eletrostatographic process for a toner image formed with a liquid developer, said paper comprising a substrate and bound thereto by a resin binder on at least one side generally smooth surfaced spherical bearing spacer particles having a substantially uniformly particle size of from about 5 to about 15 micrometers extending through the resin binder and being substantially uniformly distributed on at least one side of said substrate.

4,944,998

CHARGE DISSIPATIVE FLOOR TILES

Susan M. Von Stetten, Landisville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 78,899, Jul. 29, 1987, Pat. No. 4,826,912. This application Jan. 26, 1989, Ser. No. 301,595
Int. Cl.[5] C08L *27/06;* B32B *5/16*
U.S. Cl. 428—327 13 Claims

1. A surface covering product having static dissipative electrical properties comprising a composition of a consolidated agglomeration of individual chips of polymeric material wherein a first portion of said individual chips are electrically conductive and a second portion of said individual chips are electrically non-conductive.

4,944,999

CARBONACEOUS FIBER OR FIBER ASSEMBLY WITH INORGANIC COATING

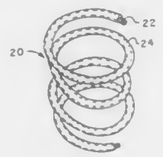
Francis P. McCullough, Jr., Lake Jackson; R. Vernon Snelgrove, Damon; Steven L. Brewster, Lake Jackson, all of Tex., and George C. Higgins, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 163,919, Mar. 4, 1988. This application Jun. 14, 1989, Ser. No. 366,811
Int. Cl.[5] D02G *1/00, 3/00*
U.S. Cl. 428—371 9 Claims

1. An oxygen and thermally stable resilient coated fiber or tow of fibers comprising a non-linear carbonaceous fiber or

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fibers having a reversible deflection ratio of greater than 1.2:1, an aspect ratio greater than 10:1 and an LOI value greater than



40, said fiber or fibers having a metallic surface coating whereby said fibers are oxygen or thermally stable.

4,945,000

PARTICULATE THERMOSETTING ADHESIVE COMPOSITIONS

Marcel Widmann, Belleville, and James H. Hickey, Picton, both of Canada, assignors to BTL Specialty Resins Corp., Toledo, Ohio

Filed Jan. 18, 1989, Ser. No. 297,691

Int. Cl.[5] **B32B** *19/02;* **C08K** *9/04;* **C09J** *1/00*

U.S. Cl. 428—407 **11 Claims**

1. A particulate thermosetting adhesive composition having heat softening properties and the ability to resist penetration in a porous substrate, comprising individual free flowing finely divided discrete particles of substantially water insoluble inorganic particulate matter inert to and coated with a thermosetting resin comprising at least one aldehyde condensation product selected from the group consisting of phenol, resorcinol, melamine, urea, acetone, dicyandiamide, and mixtures thereof; and wherein the amount of particulate matter varies from about 1 to 240 parts by weight per 100 parts by weight of the solids content of the thermosetting resin.

4,945,001

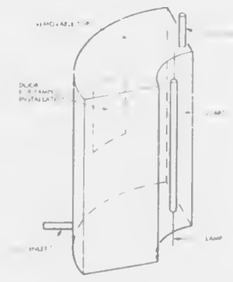
INTERNAL STABILIZATION OF POLYCARBONATE RESINS

Amitava Gupta, Pasadena; Ranty H. Liang, Arcadia, and Andre H. Yavrouian, La Crescenta, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

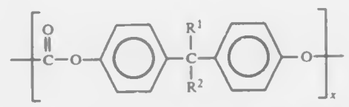
Division of Ser. No. 939,523, Dec. 8, 1986, Pat. No. 4,749,726, which is a continuation-in-part of Ser. No. 410,397, Aug. 23, 1982, abandoned. This application May 31, 1988, Ser. No. 200,246

Int. Cl.[5] **C08J** *3/28;* **C08G** *61/12, 63/46*

U.S. Cl. 428—412 **3 Claims**



1. A solid polycarbonate article having a bulk interior consisting essentially of a polycarbonate resin of the formula:



where x is the sum of n+m+m' and said article having a surface layer of a stabilized polycarbonate resin of the formula: where n, m, and m' are integers and R^1 and R^2 are individually selected from H, lower alkyl of 1 to 6 carbon atoms or aryl and m+m' is 2 to 8 percent of n+m+m' and m is at least 0.5 of m+m'.

4,945,002

IMPACT-RESISTING ANTI-LACERATIVE WINDOW UNITS

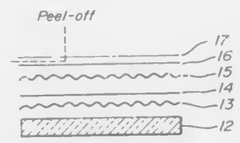
Itsuo Tanuma, Sayama; Hideo Takeichi, Tanashi; Masashi Segawa, Kodaira, and Toshio Honda, Akigawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 28, 1987, Ser. No. 90,290

Claims priority, application Japan, Aug. 28, 1986, 61-200008; Sep. 29, 1986, 61-228277

Int. Cl.[5] **B32B** *17/10;* **C03C** *27/12*

U.S. Cl. 428—425.6 **4 Claims**



1. An impact-resisting anti-lacerative window unit of a sandwich structure comprising two exterior plate-like members made of a transparent organic polymer (A) and a transparent organic polymer (B) or a glass plate, respectively, and multilayer structure intermediate films interposed between the exterior platelike members, wherein said films consist essentially of alternatively laminated ethylene-vinyl acetate and ethylene-vinyl acetate triallyl isocyanurate terpolymer layers having therebetween a layer of a high breaking strength material selected from the group consisting of polyethylene terephthalate, polyamides, aromatic polyamides, polyester polyethers, polysulfones and polyimides.

4,945,003

UV COATINGS CONTAINING CHLORINATED POLYOLEFINS, METHOD OF CURING, AND COATED SUBSTRATES THEREFROM

James E. Poole, Gibsonia, and Marvis E. Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 168,069, Mar. 14, 1988, Pat. No. 4,880,849. This application Jul. 3, 1989, Ser. No. 374,799

Int. Cl.[5] **B32B** *15/08, 27/08, 27/32*

U.S. Cl. 428—462 **7 Claims**

1. A plastic substrate having directly adhered to a surface thereof, a crosslinked film from a coating composition containing:

(A) from 1 to 5 percent of a saturated, cholorinated polymeric material selected from the group consisting of (1) a chlorinated polyolefin containing about 5 to 75 percent by weight of chlorine and having a number average molecular weight of about 5,000–50,000, (2) a chlorinated polyolefin containing carboxylic anhydride groups and about 5 to 25 percent by weight of chlorine and having a number average molecular weight of about 5,000–50,000, and (3) a mixture thereof; (B) from 20 to 80 percent of a radiation sensitive monomer having at least two addition polymerizable unsaturated bonds; (C) from 0.1 to 5.0 percent of a photopolymerization initiator; and (D) from 80 to 20 percent of an acrylic addition polymer having at least one amino group and having a number average molecular weight of about 8,000–70,000, said addition polymer being derived from a mixture of copolymerizable ethylenically unsaturated monomers containing a monomeric ethylenically unsaturated amine;

wherein said percentages of (A), (B), (C) and (D) are by weight based on nonvolatile components of said coating composition.

4,945,004

BASE MATERIAL FOR AN ALUMINUM OFFSET PRINTING PLATE

Gerhard Sprintschnik, Taunusstein; Walter Niederstaetter, Elville; Kurt Reiss, Wiesbaden; Wolfgang V. Asten, Pulheim; Gunther Scharf, Boon, and Barbara Grzemba, Bonn, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main and Vereinigte-Aluminum Werke AG., Bonn, both of, Fed. Rep. of Germany

Filed Apr. 26, 1988, Ser. No. 186,152

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714059

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—469 **8 Claims**

1. A base material for aluminum offset printing sheets comprising an aluminum alloy consisting of from about 0.2 to about 0.6% by weight of iron, less than about 0.25% by weight silicon and copper combined, from about 0.1 to about 0.3% by weight manganese and the remainder being aluminum and trace production impurities, said base material further characterized as containing secondary precipitates in the form of phases of the Al Mn Si: Al Fe: Al Mn type which bear a ratio to one another of from about 1:1:2 to about 1:1:3, the mean particle size of said phases being from about 0.05 to about 0.10 micron with a maximum particle size of less than about 0.3 micron and further containing a precipitation structure with a degree of dispersion of less than about 50 phases per cubic micron.

4,945,005

THERMOPLASTIC COMPOSITIONS AND ARTICLES MADE THEREFROM

John F. Aleckner, Jr., Arlington; David J. Cherry, Grapevine, and Lee R. Spencer, Jr., Arlington, all of Tex., assignors to Dexter Corporation, Windsor Locks, Conn.

Continuation of Ser. No. 32,641, Mar. 31, 1987, abandoned. This application Jul. 28, 1989, Ser. No. 387,407

Int. Cl.[5] **C08L** *23/26, 23/04, 33/02;* **C08K** *3/00, 3/34*

U.S. Cl. 428—500 **27 Claims**

1. A thermoplastic composition comprising:

(a) about 2 to 25 weight percent of a copolymer having a melt index of between 0.5 and 1500 and derived from
  (i) about 70 to 95 weight percent of ethylene and
  (ii) about 5 to 30 weight percent of an ethylenically unsaturated carboxylic acid;
(b) about 3 to 50 weight percent of an elastomeric copolymer derived from
  (i) ethylene and
  (ii) a C_3 and C_{12} alpha-olefin;
(c) an amount up to about 55 weight percent of a crystalline polymer, said amount being sufficient to enable the thermoplastic composition to withstand an oven bake temperature of greater than 180° F., said polymer having a flow rate of up to about 30 and selected from one or more of the group consisting of
  (i) a homopolypropylene,
  (ii) a polypropylene onto which has been grafted up to about 12 weight percent of an ethylenically unsaturated carboxylic acid, and
  (iii) a copolymer of
    (1) propylene and
    (2) up to about 20 mole percent of a C_2 to C_{12} alpha-olefin;
(d) about 5 to 50 weight percent of an inorganic filler; and
(e) about 10 to 35 weight percent of a polymer having a melt index of between about 0.1 and 20 and selected from one or more of the group consisting of
  (i) homopolyethylene and
  (ii) a copolymer of
    (1) ethylene and
    (2) one or more of the group consisting of
      (A) a C_3 to C_{12} alpha-olefin,
      (B) a salt of an unsaturated carboxylic acid, and
      (C) an ester of an unsaturated carboxylic acid.

4,945,006

LOW ODOR ADHESIVE COMPOSITIONS AND BONDING METHOD EMPLOYING SAME

John M. Muggee, Stillwater, and Eric L. Zilley, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 17, 1989, Ser. No. 297,873

Int. Cl.[5] **B32B** *27/00*

U.S. Cl. 428—500 **20 Claims**

14. A process of bonding two or more substrates comprising the steps:

(a) applying to at least one of said substrates a coating comprising an adhesive composition comprising a mixture of:
  (1) at least one acrylamido compound selected from the group consisting of N-substituted acrylamides and methacrylamides that have a cyclic group directly attached to the amide nitrogen and acrylamides and methacrylamides in which the amide nitrogen is a member of a cyclic group;
  (2) at least one ethylenically-unsaturated acid that is copolymerizable with said acrylamido compound;
  (3) an effective amount of polymeric toughener; and
  (4) an effective amount of a free radical initiator; and
(b) applying to at least one of said substrates a coating comprising an activator composition;
(c) placing said coated substrates in an abutting relationship so as to form contact between said coatings, optionally under compressive pressure, until said adhesive composition polymerizes thereby bonding said substrates together.

4,945,007

BLANK OF MATERIAL IN SHEET FORM AND PARTITION MADE THEREFROM

Guy Coalier, Noce, and Jean-Claude Serre, Beaune, both of France, assignors to Embal-Systems, Paris, France

Filed Mar. 9, 1989, Ser. No. 321,753

Claims priority, application France, Mar. 10, 1988, 88 03125

Int. Cl.[5] **B65D** *5/48*

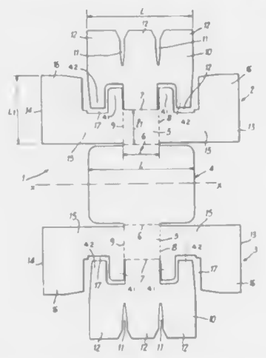
U.S. Cl. 428—542.8 **8 Claims**

1. A one-piece blank made of a material in sheet form for producing a partitioning intended to subdivide a recipient container into a plurality of compartments, wherein said blank comprises:

two assemblies of articulated flaps which, by folding, are each capable of forming part of the compartments of said, partitioning; and

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an approximately rectangular intermediate panel connected to the two assemblies of flaps respectively along a line



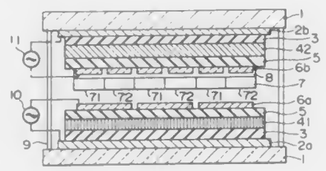
capable of being broken and along a line capable of serving as line of fold.

4,945,008
LAMINATED METAL SHEET
Peter J. Heyes, Wantage, and Nicholas J. Middleton, Highworth, both of England, assignors to CMB Packaging (UK) Limited, Worcester, England
PCT No. PCT/GB88/00856, § 371 Date Jun. 9, 1989, § 102(e) Date Jun. 9, 1989, PCT Pub. No. WO89/03307, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 12, 1988, Ser. No. 377,836
Claims priority, application United Kingdom, Oct. 15, 1987, 8724242
Int. Cl.[5] B29C *35/02*; B32B *1/10, 15/08*
U.S. Cl. 428—623 32 Claims



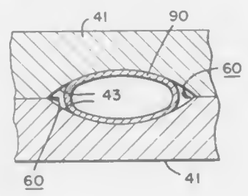
24. A container or a component for a container formed from a laminated metal sheet having adhered to one of its major surfaces a composite co-extruded polyolefin-containing film (B) comprising a plurality of layers in the following order:
(B1) an inner layer of a bonding resin which is an acid modified polyolefin resin containing carboxyl or anhydride groups,
(B2) a layer of a polyolefin,
(B3) a further layer of a bonding resin which is as defined for layer (B1), and
(B4) a layer of a polyamide.

4,945,009
ELECTROLUMINESCENCE DEVICE
Kazuo Taguchi, Tokyo; Moriaki Fuyama, Hitachi; Kenichi Onisawa, Hitachi; Katsumi Tamura, Hitachi; Yoshimasa Ono, Mito; Yoshio Abe; Takahiro Nakayama, both of Hitachi; Akira Sato, Takahagi, and Kenichi Hashimoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 11, 1988, Ser. No. 166,986
Claims priority, application Japan, Mar. 12, 1987, 62-57274
Int. Cl.[5] H05B *33/14, 33/22*
U.S. Cl. 428—690 31 Claims



1. An electroluminescence element comprising:
a structure, in which a first electrode, a first insulating layer, a light emitting layer, a second insulating layer and a second electrode are superposed one after another on a substrate; and
AC power sources connected between said first electrode and said second electrode;
wherein said light emitting layer comprises a bluish green light emitting sub-layer made of SrS as base material doped with Ce as activation material and a red light emitting sub-layer made of one selected from the group consisting of CaS as base material doped with Eu as activation material, ZnS as base material doped with Sm as activation material, and SrS as base material doped with Eu as activation material, said bluish green light emitting sub-layer being provided with a blue filter transmitting only blue light and a green filter transmitting only green light in the light emitted by said bluish green light emitting sub-layer, the brightness of the red, blue and green lights being substantially uniform, whereby three separate colors are transmitted from the red and bluish green light emitting sub-layers, and one of said AC power sources is for exciting said red light emitting layer and the other of said AC power sources is for exciting said bluish green light emitting layer.

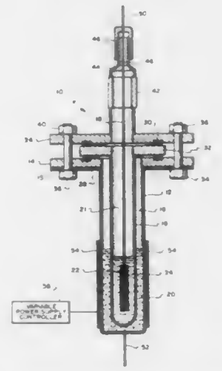
4,945,010
COOLING ASSEMBLY FOR FUEL CELLS
Arthur Kaufman, West Orange, and John Werth, Princeton, both of N.J., assignors to Engelhard Corporation, Edison, N.J.
Continuation of Ser. No. 500,498, Jun. 2, 1983, abandoned. This application Aug. 13, 1986, Ser. No. 896,329
Int. Cl.[5] H07M *8/04*
U.S. Cl. 429—26 7 Claims



1. Cooling assembly for use in removing heat from a fuel cell

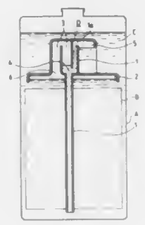
having means for circulating coolant through a cooling assembly adjacent the cell, the cooling assembly comprising:
(a) at least one comfortable coolant conduit means for carrying the coolant through the cooling assembly, and
(b) means for holding the conduit means in the cooling assembly including at least one member which, when assembled with the conduit means, conforms at least a portion of the conduit means with its exterior surface in intimate contact with the interior surface of the member, the member including channel means therein to hold the coolant conduit means, the channel means shaped with its interior surface in a truncated half-circle contour so as to conform the coolant conduit means to the shape of the channel automatically when the member and coolant conduit means are assembled, the coolant conduit means comprising a non-corrodible, metal-free, dielectric material of a constant cross-sectional configuration in the area whereat it is held by the member.

4,945,012
COPPER CHLORIDE CATHODE FOR A SECONDARY BATTERY
Ratnakumar V. Bugga, Arcadia; Salvador Distefano, Alhambra; Ganesan Nagasubramanian, La Crescenta, and Clyde P. Bankston, Studio City, all of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.
Filed Sep. 11, 1989, Ser. No. 405,169
Int. Cl.[5] H01M *6/20*
U.S. Cl. 429—103 19 Claims



1. A battery system comprising in combination:
a first body of liquid Group I metal anode;
a second liquid catholyte body comprising a metal salt molten at the temperature of operation of the battery, said molten salt including a Group I metal salt;
a solid ceramic separator disposed between said first and second bodies capable of conducting ions from the first body to the second body;
a first metal current collector in contact with said first body; and
a positive electrode comprising a solid porous body incorporating solid copper chloride in contact with said second body said copper chloride being insoluble in said molten metal salt.

4,945,011
STORAGE BATTERY PROVIDED WITH ELECTROLYTIC SOLUTION STIRRING DEVICE
Masafumi Tanaka, Kyoto, Japan, assignor to Japan Storage Battery Company Limited, Kyoto, Japan
Filed Jul. 14, 1989, Ser. No. 379,769
Claims priority, application Japan, Jul. 20, 1988, 63-180982
Int. Cl.[5] H01M *2/38*
U.S. Cl. 429—81 4 Claims



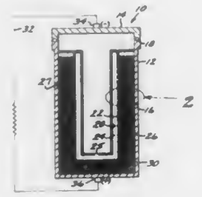
1. A storage battery of the type having electrode plates immersed in an electrolytic solution; said battery being provided with an electrolytic solution stirring device comprising:
a vertically disposed solution-circulating tube positioned within said battery and being open at its upper and lower ends; said tube having a small hole therein at a middle portion thereof and a gas reservoir provided at said upper open end;
a gas-collecting chamber disposed above said plates and having a lower end opening below the level of said small hole; and
an inverted U-shaped siphon strap connected between said gas-collecting chamber and said small hole for communicating fluid between said gas chamber and said tube via said small hole.

4,945,013
CAPILLARY MIXING OF IMMISCIBLE LIQUIDS IN A BATTERY CELL
Hong S. Lim, Agoura, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 9, 1989, Ser. No. 295,094
Int. Cl.[5] H01M *10/39*
U.S. Cl. 429—104 15 Claims

1. A sodium sulfur electrical storage cell, comprising:
a sodium anode;
a sulfur cathode;
a solid ceramic electrolyte separating the sodium anode and the sulfur cathode;
means for conducting an electrical current from the cathode to an external electrical connection; and

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means for circulating sulfur toward the electrolyte and moving reaction products away from the electrolyte through



the cathode during discharge of the cell, the means for circulating being operable in a weightless environment.

4,945,014

SECONDARY BATTERY

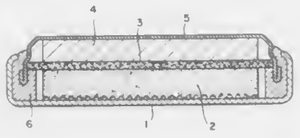
Mitsutaka Miyabayashi; Toshifumi Nishii; Hiroshi Yui, all of Yokkaichi; Kuniaki Inada, Tokyo; Katsuji Ikeda, Tokyo; Hiroyoshi Nose, Tokyo, and Kenji Tsuchiya, Tokyo, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Toshiba Battery Co., Ltd., both of Tokyo, Japan

Filed Feb. 2, 1989, Ser. No. 305,795

Claims priority, application Japan, Feb. 10, 1988, 63-27419; Apr. 5, 1988, 63-82256; Apr. 5, 1988, 63-82257; Oct. 31, 1988, 63-273146

Int. Cl.[5] H01M *4/38, 10/40*

U.S. Cl. 429—218 **21 Claims**



1. In a secondary battery having a negative electrode composed of an active substance and a carrier carrying said active substance, the improvement wherein

(1) said active substance is lithium or an alkali metal mainly composed of lithium,

(2) said carrier is a mixture composed of

(a) a carbonaceous material having

(i) an atomic ratio of hydrogen/carbon of less than 0.15 and

(ii) a spacing of (002) planes (d_{002}) as determined by X-ray wide angle diffraction of 3.37 Å or more and a crystallite size in the direction of c axis of 150 Å or less, and

(b) an alloy including said active substance and/or a metal capable of forming an alloy with said active substance.

4,945,015

INTUMESCENT MATERIAL

Bruce A. Milner, Sawston; Tessa Malcolm-Brown, Pampisford, and Eric Southern, Stevenage, all of England, assignors to Dixon International Limited, Pamisford, England

PCT No. PCT/GB87/00650, § 371 Date Mar. 13, 1989, § 102(e) Date Mar. 13, 1989, PCT Pub. No. WO88/02019, PCT Pub. Date Mar. 24, 1988

PCT Filed Sep. 17, 1987, Ser. No. 340,297

Claims priority, application United Kingdom, Sep. 17, 1986, 8622341; Sep. 23, 1986, 8622823; Sep. 26, 1986, 8623157

Int. Cl.[5] C09K *21/14*

U.S. Cl. 523—179 **9 Claims**

1. A non-foamed intumescent material comprising: 40 to 70% by weight of a copolymer of vinyl acetate and ethylene as a flexible polymeric binder, and 15 to 60% by weight of expandable graphite, the percentages being based on the combined weight of said copolymer and said graphite.

4,945,016

ADHESIVE COMPOSITION

Tatsuya Murachi, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jan. 24, 1989, Ser. No. 300,899

Claims priority, application Japan, Mar. 25, 1988, 63-72417; Apr. 14, 1988, 63-92246; Apr. 27, 1988, 63-104897

Int. Cl.[5] C09G *18/42, 18/48;* C09J *175/06, 175/08*

U.S. Cl. 524—81 **6 Claims**

1. An adhesive composition comprising 100 parts by weight of a polyester-polyurethane having an isocyanate group (—NCO) and 0.002–20 parts by weight of a halogenating agent.

4,945,017

RUST CONVERSION COMPOSITION

Paul J. DesLauriers, Conroe, and William J. Heilman, Houston, both of Tex., assignors to Pennzoil Products Company, Houston, Tex.

Continuation of Ser. No. 884,175, Jul. 9, 1986, abandoned. This application Mar. 3, 1989, Ser. No. 320,842

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—111 **15 Claims**

1. A rust conversion composition which consists essentially of the following reactants:

(a) a reducing agent which is compatible with the other reactants and will function to reduce trivalent iron to divalent iron;

(b) 20–50 wt % of an organic monomer or 70–80 wt % of an organic oligomer which is capable of polymerization in the presence of the reducing agent and ferric ions; and

(c) a stable free radical initiator which will function to polymerize the organic monomer wherein when said rust conversion composition is applied to a rusted surface in situ polymerization occurs which results in a durable coating.

4,945,018

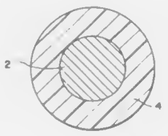
CROSSLINKABLE FLAME RETARDANT COMPOSITION OF POLYOLEFIN AND POLYPHENYLENE ETHER

Visvaldis Abolins, Delmar, N.Y.; Joseph E. Betts, Westport, Conn.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Division of Ser. No. 888,561, Jul. 18, 1986, Pat. No. 4,808,647, which is a continuation of Ser. No. 525,782, Aug. 23, 1983, abandoned. This applicatioo Feb. 27, 1989, Ser. No. 316,247

Int. Cl.[5] C08K *5/521;* C08L *73/00*

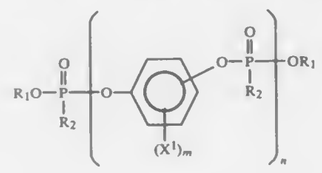
U.S. Cl. 524—141 **51 Claims**

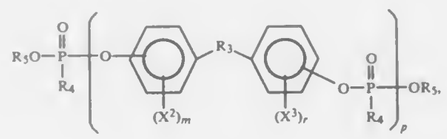


1. A heat or radiation curable flame retardant composition, comprising an admixture of

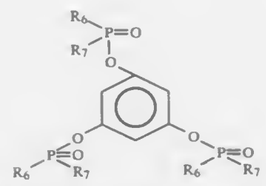
(a) at least 20 parts by weight of a non-rubbery crosslinkable olefinic polymer based on 100 parts of the combined polymers in the composition;

(b) a flame retardant combination of (i) at least 5 parts of a polyphenylene ether resin based on 100 parts of (a) and (b)(i), (ii) an organic phosphate di- or polyfunctional compound or polymer having the formula





or



including mixtures thereof, wherein R_1, R_3, and R_5 are, independently, hydrocarbon; R_2, R_4, R_6 and R_7 are, independently, hydrocarbon or hydrocarbonoxy; X^1, X^2 and X^3 are halogen; m and r are 0 or integers from 1 to 4, and n and p are from 1 to 30, and (iii) a stable brominated material; and

(c) an effective amount of a crosslinking agent.

4,945,019

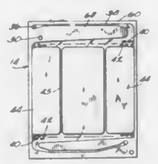
FRICTION WELDED BATTERY COMPONENT

Gerald K. Bowen, Cedarburg, and Jeffrey P. Zagrodnik, Hales Corner, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Sep. 20, 1988, Ser. No. 247,035

Int. Cl.[5] H01M *2/38*

U.S. Cl. 429—72 **15 Claims**



1. A battery component for use in a flow battery containing fluid electrolyte, the battery component comprising:

first and second bond ribs disposed on opposite sides of and defining a channel; and

respective primary flash traps disposed adjacent said bond ribs opposite said channel.

4,945,020

PHOTOSENSITIVE LEUCO DYE CONTAINING ELECTROSTATIC MASTER WITH PRINTOUT IMAGE

Richard J. Kempf, Towanda, Pa.; Rolf Dessauer, Greenville, and Steven C. Freilich, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1989, Ser. No. 374,491

Int. Cl.[5] G03G *13/32;* G03F *7/20*

U.S. Cl. 430—49 **42 Claims**

1. A high resolution, photosensitive electrostatic master which upon imagewise exposure forms conductive exposed image areas, the master comprising an electrically conductive substrate bearing a layer of a photosensitive composition consisting essentially of

(A) at least one organic polymeric binder,

(B) a hexaarylbiimidazole photooxidant,

(C) a leuco dye that is oxidizable to an ionic species by the photooxidant,

(D) a nonionic halogenated compound, and

(E) a compatible plasticizer.

4,945,021

PHOTOSENSITIVE MEMBER COMPRISING BISAZO PIGMENT

Masakazu Takata; Takamasa Ueda; Kimiyuki Ito, all of Osaka; Yuko Mikasa, Nishinomiya; Yuki Shimada; Tsuneaki Hirashima, both of Osaka; Souichi Yamamoto, Himezi; Yoshio Ishino, Kyoto, and Toshinobu Ohno, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha and Osaka Municipal Government, both of Osaka, Japan

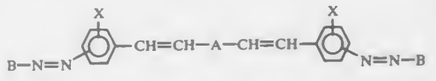
Filed Feb. 10, 1989, Ser. No. 308,629

Claims priority, application Japan, Feb. 16, 1988, 63-34593; May 25, 1988, 63-127495; Jul. 7, 1988, 63-169379; Oct. 27, 1988, 63-271899

Int. Cl.[5] G03G *5/06*

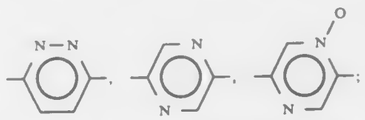
U.S. Cl. 430—76 **12 Claims**

1. A photosensitive member comprising a photoconductive layer incorporating a bisazo compound described by general structural formula [I] and formed on an electrically conductive substrate;



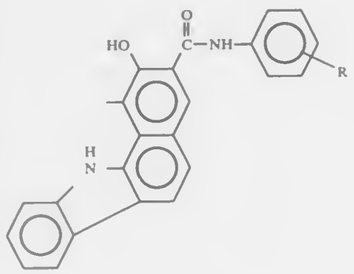
[I]

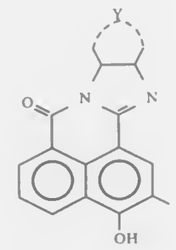
Wherein X is a hydrogen atom, halogen atom, alkyl radical, alkoxi radical, nitro radical or cyano radical; A is a diatomic radical selected from among the following:

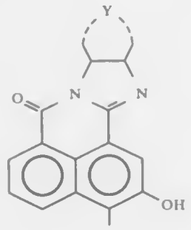


B is a coupler described by formulae [II] through [IV];

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R is a hydrogen atom, halogen atom, alkyl radical, alkoxi radical, nitro radical or cyano radical; and Y is an aromatic carbocyclic residue or aromatic heterocyclic residue, each of which may have a substituent.

4,945,022

TRIBOELECTRIC CHARGE APPLICATION MEMBER FOR TONER COMPRISING COPOLYMER OF FLUORO-OLEFIN MONOMER AND UNSATURATED SILICON MONOMER

Nobuhiro Nakayama, Susono; Yasuo Asahina, Numazu; Hiroyuki Fushimi, Numazu, and Yasuaki Iwamoto, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 163,694, Mar. 3, 1988, Pat. No. 4,841,331.
This application Mar. 14, 1989, Ser. No. 323,359
Int. Cl.[5] G03G 9/08
U.S. Cl. 430—120 22 Claims

1. A triboelectric charge application member for triboelectrically charging toner comprising a base substrate member and an overcoat layer formed thereon which layer comprises as the main component as copolymer prepared from at least one fluoro-olefin monomer and an unsaturated organosilane monomer.

4,945,023

[II] LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND WHEREIN THE SILVER HALIDE IS MONODISPERSED

Soichiro Yamamoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1987, Ser. No. 24,494
Claims priority, application Japan, Mar. 11, 1986, 61-55508
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] G03C 1/68, 1/72
U.S. Cl. 430—138 14 Claims

1. A light-sensitive material comprising a support and a light-sensitive layer containing silver halide grains, a reducing agent, an ethylenically unsaturated polymerizable compound, wherein the silver halide grains and polymerizable compound

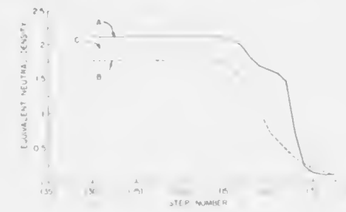
[III] are contained in microcapsules which are dispersed in the light-sensitive layer, said silver halide grains having such a grain size distribution that the coefficient or variation in terms of $\sigma/\bar{r}$ is not more than 20%, wherein σ means a standard deviation of the grain size and $\bar{r}$ means an average grain size, and said polymerizable compound being contained in microcapsules in an amount of 5 to 1.2×10^5 times by weight as much as the amount of the silver halide grains.

4,945,024

METHOD FOR IMPROVING COLOR BALANCE IN IMAGING SYSTEMS EMPLOYING PHOTOSENSITIVE MICROCAPSULES

[IV] Kerry Kovacs, Centerville, and Amy Burkholder, Kettering, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 10, 1988, Ser. No. 269,528
Int. Cl.[5] G03C 7/00, 1/68
U.S. Cl. 430—138 12 Claims



1. A process for forming full color images using a photosensitive material which includes a support having a layer of photosensitive microcapsules on the surface thereof, said photosensitive microcapsules including a first, a second and a third set of microcapsules uniformly distributed on said surface; said first set of microcapsules containing a cyan image-forming agent and a first photohardenable composition sensitive in a first wavelength band, said second set of microcapsules containing a magenta image-forming agent and a second photohardenable composition sensitive in a second wavelength band, and said third set of microcapsules containing a yellow image-forming agent and a third photohardenable composition sensitive in a third wavelength band; said process comprising the steps of:

uniformly exposing said photosensitive material to radiation within at least one of said first, second, and third wavelength bands in an amount sufficient to sequester oxygen present in said microcapsules and thereby differentially adjust the gamma of at least one of said first, second and third sets of microcapsules such that it more closely approximates the gamma of the other of said microcapsules;

image-wise exposing said photosensitive material to radiation within said first, second and third wavelength bands; and

subjecting said microcapsules to a uniform rupturing force to cause said microcapsules to rupture and release image-wise said cyan, magenta and yellow image-forming agents.

4,945,025

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND WHEREIN THE LIGHT-SENSITIVE LAYER IS PROVIDED WITH A COVER SHEET

Koichi Nakamura, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1987, Ser. No. 24,481
Claims priority, application Japan, Mar. 11, 1986, 61-55507
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] G03C 1/68, 1/72
U.S. Cl. 430—138 18 Claims

1. A light-sensitive material comprising a support and a light-sensitive layer containing silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound, said silver halide and said ethylenically unsaturated compound being contained in microcapsules which are dispersed in the light-sensitive layer, and said ethylenic unsaturated compound being contained in microcapsules in an amount of 5 to 1.2×10^5 times by weight as much as the amount of the silver halide,

wherein the light-sensitive layer is provided thereon with a cover sheet.

4,945,026

IMAGE RECEIVING ELEMENT FOR USE IN A SILVER SALT DIFFUSION TRANSFER PROCESS

Hideki Tomiyama; Yukio Karino, and Hiroshi Hayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 249,528, Feb. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 85,495, Aug. 14, 1987, abandoned. This application Oct. 2, 1989, Ser. No. 418,692
Claims priority, application Japan, Aug. 15, 1986, 61-191224; Aug. 15, 1986, 61-191225
Int. Cl.[5] G03C 5/54
U.S. Cl. 430—233 4 Claims

1. A method for preparing an image receiving element for use in a silver salt diffusion transfer process, said method comprising:

(1) coating on a support in the recited order at least:

(a) an alkali neutralization layer,

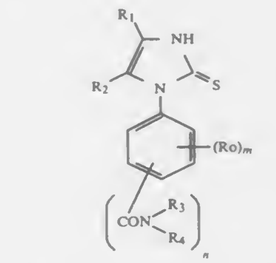
(b) a neutralization timing layer, and

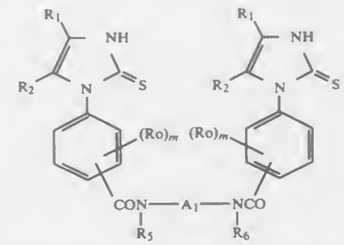
(c) an image receiving layer containing silver precipitation nucleus material, a cellulose ester and a substantially water free alkaline solution; and then

(2) saponifying said cellulose ester with said substantially water free alkaline solution to obtain said silver precipitation nucleus material in regenerated cellulose,

wherein said alkaline solution contains from 1 to 20% by weight of a polyhydric alcohol having two or more hydroxyl groups or a derivative thereof.

2. The method for preparing an image receiving element for use in a silver salt diffusion transfer process as claimed in claim 1, wherein at least one of the compounds represented by the following general formulae (I) or (II) is present in the neutralization layer and/or neutralization timing layer:





(II)

wherein Ro, which may be the same or different from each other, represents a hydrogen atom, a halogen atom, an alkyl group, a substituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alkyl-sulfonyl group, a substituted or unsubstituted aryl-sulfonyl group, a sulfamoyl group, an alkyl- or aryl-sulfonamido group, a carbamoyl group, a carbonamido group, a substituted or unsubstituted heterocyclic group, a substituted or unsubstituted aryl group, an acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted acyloxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a primary amino group or a salt thereof, a secondary or tertiary amino group substituted with an alkyl or aryl group or a salt thereof, a nitro group, a hydroxy group, a carboxyl group, a sulfonic acid group or a cyano group;

R_1 and R_2 represent a hydrogen atom, an alkyl group, a substituted alkyl group or an aryl group;

R_3 and R_4 represent a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a substituted or unsubstituted heterocyclic grup;

R_3 and R_4 may form together with the N atom a 5- to 6-membered ring in which a hetero atom may further be included;

R_5 and R_6 represent a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a substituted or unsubstituted heterocyclic group;

A_1 represents a divalent group; m represents 0 or an integer of from 1 to 4; and n represents 0, 1 or 2.

4,945,027

1,4 OR 9,10 DIMETHOXYANTHRACENE TRIGGERS FOR 2-TRI(CHLORO OR BROMO)METHYL-4(1H)-QUINAZOLIMONE POLYMERIZATION INITIATORS

Wojciech A. Wilczak, Scotch Plains, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 23, 1987, Ser. No. 112,797
Int. Cl.[5] G03C 1/68
U.S. Cl. 430—281 19 Claims

1. A polymerization initiator composition which comprises in admixture 1,4 or 9,10 dimethoxyanthracene and 2-tri(chloro

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or bromo)methyl-4(1H)-quinazolinone in a respective weight ratio of from about 0.05:1 to about 1:1.

4,945,028

METHOD FOR FORMATION OF PATTERNS USING HIGH ENERGY BEAM

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 61,541, Jun. 12, 1987, abandoned. This application Apr. 20, 1989, Ser. No. 341,257

Claims priority, application Japan, Jun. 12, 1986, 61-136512; Oct. 14, 1986, 61-243401

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—296 **10 Claims**



1. A pattern forming method comprising the steps of:

preparing an energy-beam sensitive and hydrophobic film which comprises providing energy-beam sensitive molecules or polymers which contain energy-beam sensitive and hydrophobic groups which form hydrophilic groups when irradiated with said energy-beam, on the entire surface of a substrate;

selectively changing portions of the surface of said hydrophobic film to hydrophilic portions in a pattern-wise manner by selectively irradiating said film with said energy-beam;

selectively depositing an additional monomolecular film or an additional multi-monomolecular built-up film on said hydrophilic portions of the irradiated film by chemically adsorbing a silicon-containing reagent; and

performing a dry etching process using said additional monomolecular film on said additional multi-molecular built up film as a mask to form a thin film pattern.

4,945,029

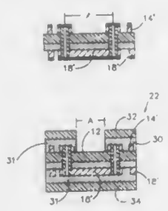
PROCESS FOR THE MANUFACTURE OF MULTI-LAYER CIRCUITS WITH DYNAMIC FLEXING REGIONS AND THE FLEXIBLE CIRCUITS MADE THEREFROM

David L. Bronnenberg, Riviera, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed May 6, 1988, Ser. No. 190,872

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—316 **9 Claims**



1. A method of manufacturing a flexible circuit comprising the steps of:

providing an adhesiveless laminate comprising a first flexible non-conductive carrier film having a first conductive layer thereon;

providing a second conductive layer having a first layer of adhesive thereon;

laminating said first carrier film, first conductive layer, second conductive layer and first adhesive layer to define a flexible diclad laminate wherein said first carrier film and said adhesive layer are sandwiched between said first and second conductive layers;

forming at least two spaced conductive through holes in said diclad laminate with the area adjacent said through holes defining a bending region;

forming a first circuit pattern in said first conductive layer in a location outside of said bending region;

forming a second circuit pattern in said second conductive layer, said second circuit pattern being located in at least a portion of said bending region; and

removing the portion of said first conductive layer in said bending region to expose said first carrier film.

4,945,030

METHOD FOR DEVELOPING LITHOGRAPHIC PLATES COMPRISING A DEVELOPER COMPRISING ETHYLENE OXIDE/PROPYLENE OXIDE BLOCK COPOLYMERS

Gregory P. Turner, Belle Isle, and David S. Riley, Glidersome, both of England, assignors to Horsell Graphics Industries Limited, Leeds, England

Continuation of Ser. No. 124,838, Nov. 24, 1987, abandoned. This application Aug. 7, 1989, Ser. No. 393,047

Claims priority, application United Kingdom, Nov. 29, 1986, 8628613

Int. Cl.[5] G03C *5/24, 5/34*

U.S. Cl. 430—331 **16 Claims**

1. A method for developing lithographic printing plates, negative-acting and reversible lithographic printing plates comprising treating said plates with a developing fluid comprising between 12.5% and 17.5% by weight of an alkali and between about 0.01 and 10% by weight of an ethylene oxide/-propylene oxide block copolymer.

4,945,031

IMAGE-FORMING PROCESS COMPRISING BLEACHING AT LOW PH A MATERIAL COMPRISING A CYAN COUPLER AND HYDROQUINONE

Minoru Sakai; Osamu Takahashi, and Kozo Aoki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

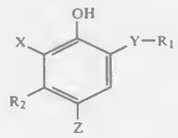
Filed Jun. 20, 1988, Ser. No. 208,904

Claims priority, application Japan, Jun. 19, 1987, 62-152744

Int. Cl.[5] G03C *5/38, 7/32, 7/34*

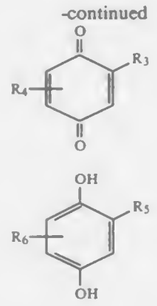
U.S. Cl. 430—393 **18 Claims**

1. An image-forming process, which comprises subjecting a multilayer silver halide photographic material containing, in an oil droplet dispersion in a light-sensitive layer provided on a support, at least one diffusion-resistant oil-soluble coupler capable of coupling with an oxidation product of an aromatic primary amine developing agent to form a substantially non-diffusible cyan dye represented by the following formula (I) and at least one member selected from the compounds represented by the following formulae (II) and (III), to imagewise exposure and color development, and then processing said multilayer silver halide photographic material with a bleaching or bleach-fixing solution having a pH of 6.3 or less:



(I)

-continued



(II)

(III)

wherein:

Y represents —NHCO— or —CONH—;

R_1 represents an aliphatic group, an aromatic group, a heterocyclic group or an amine group;

X represents a hydrogen atom, a halogen atom, an aliphatic group, an alkoxy group or an acylamino group;

R_2 represents an alkyl group or an acylamino group or, when bound to X, non-metallic atoms forming a 5- to 7-membered ring;

Z represents a hydrogen atom or a group capable of being eliminated upon coupling with an oxidation product of a developing agent; and

R_3, R_4, R_5, and R_6 each represents a hydrogen atom, a straight chain, cyclic or branched alkyl or alkylthio group, provided that R_3 and R_4, or R_5 and R_6, do not represent hydrogen atoms at the same time and that at least one of R_5 and R_6 or at least one of R_5 and R_6 represents a branched or straight chain alkyl group having 8 to 20 carbon atoms and that, when they represent alkyl groups, those which are bound to the benzene ring via a tertiary carbon atom are excluded.

4,945,032

STEREOLITHOGRAPHY USING REPEATED EXPOSURES TO INCREASE STRENGTH AND REDUCE DISTORTION

Edward J. Murphy, Des Plaines; Robert E. Ansel, Hoffman Estates, and John J. Krajewski, Wheeling, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 176,240, Mar. 31, 1988, abandoned. This application Oct. 31, 1989, Ser. No. 429,561

Int. Cl.[5] B29B *13/08;* B29C *35/08*

U.S. Cl. 430—394 **6 Claims**

1. In a method for the formation of a thin walled three-dimensional object in a reservoir of liquid ultraviolet-curable ethylenically unsaturated material and in which a support is positioned immediately beneath the upper surface of the liquid reservoir with said upper surface being exposed to ultraviolet light in a pattern of line exposures to solidify the liquid at and near said upper surface in a series of cross-sections of the desired three-dimensional object, one atop the other, and thus form a series of superposed layers which adhere to one another to build said three-dimensional object within the liquid reservoir, the improvement comprising, stopping the line exposure at any portion of the surface in the formation of said series of superposed layers and then repeating the line exposure at least once again in the production of each said superposed layer so that the strength and solvent resistance of the formed object are increased and its distortion is minimized.

5. In a method for the formation of a three-dimensional object in a reservoir of liquid ultraviolet-curable ethylenically unsaturated material and in which a support is positioned immediately beneath the upper surface of the liquid reservoir with said upper surface being exposed to light effective to polymerize said ehtylenically unsaturated material in a pattern of line exposures to solidify the liquid at and near said upper surface in a series of cross-sections of the desired three-dimensional object, one atop the other, and thus form a series of superposed layers which adhere to one another to build said three-dimensional object within the liquid reservoir, the improvement comprising, stopping the line exposure at any portion of the surface in the formation of said series of superposed layers and then repeating the line exposure at least once again in the production of each said superposed layer so that the strength and solvent resistance of the formed object are increased and its distortion is minimized.

4,945,033

DIRECT POSITIVE PHOTOGRAPHIC MATERIALS

Naoyasu Deguchi, and Shigeru Ohno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

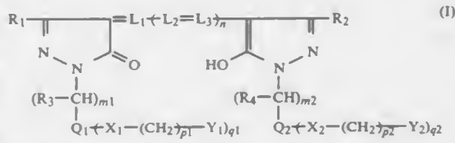
Filed Dec. 28, 1988, Ser. No. 291,017

Claims priority, application Japan, Dec. 28, 1987, 62-335568

Int. Cl.[5] G03C *1/84*

U.S. Cl. 430—522 **20 Claims**

1. A direct positive photographic material which has at least one previously-not-fogged internal latent image-type silver halide emulsion layer on a support, wherein said photographic material contains at least one compound represented by the following formula (I):



(I)

wherein each of R_1 and R_2 represents an alkyl group, an aryl group, a cyano group, —$COOR_5$, —$CONR_5R_6$, —OR_5, —NR_5R_6, —$NR_6SO_2R_7$, where each of R_5 and R_6 represents a hydrogen atom, an alkyl group or an aryl group; R_7 represents an alkyl or aryl group; R_5 and R_6, or R_6 and R_7 may link together to form a 5- or 6-membered ring; each of R_3 and R_4 represents a hydrogen atom or an alkyl group; each of Q_1 and Q_2 represents an aryl group; each of X_1 and X_2 represents a bond or a divalent linking group; each of Y_1 and Y_2 represents a sulfo group or a carboxyl group; each of L_1, L_2 and L_3 represents a methine group; n represents 0, 1, or 2; each of m_1 and m_2 represents 1 or 2; each of p_1 and p_2 represents 0, 1, 2, 3 or 4; and each of q_1 and q_2 represents 1 or 2.

4,945,034

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masaki Tanji, and Toyoki Nishijima, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

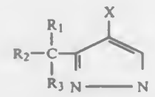
Filed Jan. 24, 1989, Ser. No. 301,612

Claims priority, application Japan, Jan. 28, 1988, 63-18907

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—546 **13 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing silver halide grains having a silver chloride content of not less than 90 mol %, a compound represented by the following Formula I, and a quencher capable of deactivating the oxidized product of a color developing agent, said quencher having a relative reaction rate of not less than 1.6;



Formula I

wherein R1, R2 and R3, which may be the same as or different from each other represent a radical other than a hydrogen atom; Z represents a group of non-metal atoms necessary to complete a heterocyclic ring which may have a substituent; X represents a hydrogen atom or a group capable of being split off upon reaction with the oxidized product of a color developing agent;

wherein said relative rate is defined as relative reaction rate = DM/DM' wherein DM represents the density of a color image of coupler N when the quencher is not used; DM' represents the density of the color image of the coupler N when the quencher is added in a quantity of 1/10 mol per mol of coupler N.

10. The material of claim 1, wherein said silver halide emulsion layer contains a high-boiling organic solvent having a dielectric constant of less than 6.0.

4,945,035

PHOTOGRAPHIC EMULSIONS CONTAINING INTERNALLY MODIFIED SILVER HALIDE GRAINS

John E. Keevert, Jr.; Woodrow G. McDugle, and Raymond S. Eachus, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 8, 1988, Ser. No. 179,377

The portion of the term of this patent subsequent to May 20, 2006, has been disclaimed.

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—567 **14 Claims**

1. A photographic silver halide emulsion comprised of radiation sensitive silver halide grains containing greater than 50 mole percent chloride and less than 5 mole percent iodide, based on total silver, with any residual halide being bromide, said grains exhibiting a face centered cubic crystal lattice structure formed in the presence of a hexacoordination complex of rhenium, ruthenium, or osmium with at least four cyanide ligands.

4,945,036

SILVER HALIDE PHOTOSENSITIVE MATERIAL

Naoki Arai, and Kazuo Kagawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

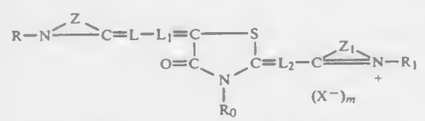
Filed May 31, 1989, Ser. No. 359,304

Claims priority, application Japan, May 31, 1988, 63-134096

Int. Cl.[5] G03C *1/18*

U.S. Cl. 430—567 **11 Claims**

1. A silver halide photosensitive material comprising two or more monodisperse silver halide emulsions of different average grain size on a support, wherein at least one of said monodisperse silver halide emulsions has an average grain size of at least 0.7 μm, and at least one of the silver halide emulsions has a smaller average grain size than the other, the average grain size of the silver halide emulsion as a whole being within the range of from 0.33 to 0.54 μm, with a coated silver weight of from 2.3 to 3.8 g/m^2, and which contains a sensitizing dye represented by formula (I)



(I)

wherein Z and Z_1 each represents a group of non-metallic atoms forming a thiazole nucleus, a benzothiazole nucleus, or a benzoxazole nucleus; R_0 represents an alkyl group having from 1 to 6 carbon atoms, an allyl group, or an aralkyl group; R and R_1 each represents an alkyl group or an aryl group; L, L_1, and L_2 each represents a methine group; X represents an anion; and m represents 0 or 1, and an internal salt is formed when m is 0.

4,945,037

SILVER HALIDE PHOTOGRAPHIC EMULSION AND METHOD FOR MANUFACTURE THEREOF

Mitsuo Saitou, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 11, 1989, Ser. No. 336,406

Claims priority, application Japan, Apr. 11, 1988, 63-088376

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—567 **5 Claims**



1. A method for the manufacture of a silver halide emulsion comprising silver halide grains, at least 60% of the total projected area of said silver halide grains being comprised of tabular silver halide grains having a central portion and an outer portion, of which the iodide content of the central portion is from 7 mol % to the solid solution limit, and which have two parallel twinned crystal planes, which comprises the steps of nucleating said silver halide grains under conditions where the gelatin concentration in the reaction solution is set at from 0.1 to 20 wt %, the addition rates of the silver salt and the halide are set at from 6×10^{-4} to 2.9×10^{-1} mol/minute per liter of reaction solution, and the pBr value in the reaction solution is set at from 1.0 to 2.5, Ostwald ripening the nucleated grains, and then growing the thus ripened grains.

4,945,038

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yasuhito Momoki; Takanori Hioki, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

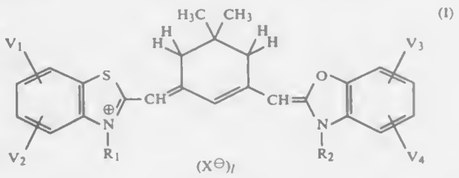
Continuation-in-part of Ser. No. 138,185, Dec. 28, 1987, abandoned. This application Feb. 14, 1989, Ser. No. 310,104

Claims priority, application Japan, Dec. 25, 1986, 61-314422

Int. Cl.[5] G03C *1/28*

U.S. Cl. 430—576 **11 Claims**

1. A silver halide color photographic material comprising a support having provided thereon at least one silver halide emulsion layer, wherein said at least one silver halide emulsion layer comprises at least one compound represented by the formula (I) and at least one compound represented by the formula (II):



(I)

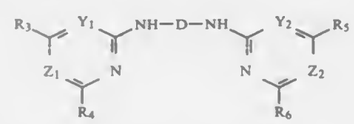
wherin

V_1, V_2, V_3 and V_4 each represents a hydrogen atom, a halogen atom, an alkyl group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a carboxy group, a cyano group, a hydroxy group, an amino group, an acylamino group, an alkoxy group or an aryl group, or V_1 and V_2, or V_3 and V_4 may be bound to each other to form a benzene ring;

R_1 and R_2, which may be the same or different, each represents an alkyl group and may optionally form a salt with a metal atom or other organic compound;

$X^{\ominus}$ represents an anion; and

l represents 0 or 1 or, when the dye forms an inner salt, l represents 0;



(II)

wherein

D represents a divalent aromatic moiety;

R_3, R_4, R_5 and R_6 each represents a hydrogen atom, a hydroxy group, an alkoxy group, or an aryloxy group, a heterocyclic group, a mercapto group, an alkylthio group, an arylthio group, a heterocyclylthio group, an amino group, an alkylamino gorup, a cyclohexylamino group, an arylamino group, a heterocyclylamino group, an aralkylamino group or an aryl group;

Y_1 and Y_2 each represents —N= or —CH=; and

Z_1 and Z_2 each represents —N= or —CH=;

further at least one of Y_1 and Z_1 is —N=, and at least one of Y_2 and Z_2 is —N=.

4,945,039

STANDARD MATERIALS FOR MEASUREMENT OF IMMUNE COMPLEXES AND METHOD FOR MEASUREMENT OF IMMUNE COMPLEXES

Hideaki Suzuki, Koganei; Kenji Hosoda, Kawagoe; Takaharu Kubota, Hino, and Yuji Fukumoto, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 711,134, Mar. 13, 1985, abandoned. This application Jun. 10, 1987, Ser. No. 60,957

Claims priority, application Japan, Mar. 13, 1984, 59-46422

Int. Cl.[5] G01N *33/564*

U.S. Cl. 435—7 **10 Claims**

1. A standard material for measuring immune complexes which is prepared by chemically binding immunoglobulin or its $F(ab')_2$ fragment or Fab' fragment from a non-immunized individual or FC fragment, with a substance selected from the group consisting of C1, C2, C3, C4, C5, C6, C7, C8, C9, C1q, C1v, C1s, C3c, C3d and Sh group containing derivatives of said C1, C2, C3, C4, C5, C6, C7, C8, or C9, through the medium of a bifunctional reagent.

4,945,040

IMMUNOASSAY FOR LIPOPROTEIN(A)

Gunther M. Fless, Hinsdale, and Angelo M. Scanu, Chicago, both of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Feb. 29, 1988, Ser. No. 162,000

Int. Cl.[5] G01N *33/92*

U.S. Cl. 435—7 **12 Claims**

1. A method for the detection and quantification of lipoprotein(a) in a fluid sample comprising:

forming a first immobilized complex of lipoprotein(a) present in said sample and an anti-apo(a) first antibody;

contacting said first immobilized complex with anti-apo B second antibody to form a second immobilized complex of anti-apo B second antibody/lipoprotein(a)/anti-human apo(a) first antibody; and

quantitating said bound lipoprotein(a) by quantitating the amount of said second immobilized complex formed.

4,945,041

MONOCLONAL ANTIBODIES FOR *MYCOPLASMA PNEUMONIAE* AND USE FOR DIAGNOSIS OF PNEUMONIA

Joel B. Baseman, San Antonio, Tex., assignor to Board of Regents

Continuation of Ser. No. 552,822, Nov. 17, 1983, abandoned. This application Jan. 9, 1987, Ser. No. 4,767

Int. Cl.[5] G01N *33/53*; C12N *5/00*; C12P *21/00*

U.S. Cl. 435—7 **11 Claims**

3. A method for the immunochemical diagnosis of *Mycoplasma pneumoniae* infection in a mammal using a monoclonal antibody comprising:

contacting body fluid from said mammal with a monoclonal specific for a non-immunodominant protein antigen of *Mycoplasma pneumoniae*;

measuring the amount of material immunologically bound by said monoclonal antibody; and

determining by comparing, for a positive diagnosis, whether the amount of bound material is greater than that found with body fluid from an uninfected mammal.

4,945,042

PROCESS AND REAGENT FOR THE DETERMINATION OF AN ANTIBODY

Thomas Geiger, Diessen, and Wolf D. Engel, Pähl, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 19, 1988, Ser. No. 157,707

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1987, 3705686

Int. Cl.[5] G01N *33/535, 33/53, 33/563, 33/543*

U.S. Cl. 435—7 **10 Claims**

1. Process for the determination of an antibody comprising incubating an antibody containing sample with three different reagents R_1, R_2 and R_3, wherein R_1 and R_3 are in liquid phase and R_2 is found to a solid phase and binds to R_1 but not R_3, wherein R_1 comprises a conjugate of (i) a substance having at least one epitope specific for a paratope of an antibody to be determined and is specifically recognized by said antibody to be determined and (ii) a first reaction component of a two part, specific binding system, R_3 comprises a conjugate of (i) a substance having at least one epitope which binds to the same paratope of the antibody to be determined as does R_1 and is specifically recognized by said antibody to be determined and (ii) a label, wherein R_1 and R_3 compete for binding to the two identical paratopes of the antibody to be determined, and R_2 comprises a second reaction component of said two part, specific binding system, so as to bind R_1, complexes of R_1 and antibody, and conjugates of R_1, antibody and R_3 to said solid phase, separating liquid phase from said solid phase and measuring R_3 bound to said solid phase as a measure of antibody in said sample.

4,945,043

PROCESS AND REAGENT FOR THE DETERMINATION OF α-AMYLASE

Martin Gerber, Weilheim-Unterhausen, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed May 15, 1987, Ser. No. 50,887

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621271

Int. Cl.[5] C12Q *1/40*; G01N *33/53*

U.S. Cl. 435—7 **31 Claims**

1. Method for determining α-amylase in a sample comprising adding to said sample:

(i) an α-amylase substrate,

(ii) a monoclonal antibody which binds to α-amylase in the presence of all of the monoclonal antibodies produced by hybridoma cell lines NCACC 84111301, NCACC

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84122003, NCACC 85022203 and ECACC 86060601 and which increases enzymatic activity of α-amylase, and

(iii) one or more auxiliary enzymes which act on a cleavage product formed by action of α-amylase on said α-amylase substrate, and measuring a cleavage product formed by action of said one or more auxiliary enzymes on the cleavage product formed by the action of α-amylase on its substrate as a measure of α-amylase in the sample.

4,945,044

OBJECTIVE BIOCHEMICAL METHOD FOR DETERMINING FERTILIZATION POTENTIAL IN OLIGOSPERMIC MEN

Gabor B. Huszar, 16 Chestnut Ln., Woodbridge, Conn. 06525

Filed Oct. 11, 1988, Ser. No. 255,510

Int. Cl.[5] C12Q *1/50*

U.S. Cl. 435—17 **13 Claims**

1. A method for testing sperm quality comprising the steps of:

(a) obtaining a sperm sample;

(b) detecting sperm CK enzyme from said sperm sample;

(c) measuring a CK enzyme concentration for CKX isoforms of said CK enzyme; and

(d) determining a sperm quality parameter based upon the CK enzyme concentration wherein an increased concentration of said CKX isoform indicates a higher chance of fertilization by said sperm sample.

4,945,045

ELECTROCHEMICAL METHODS OF ASSAY

Gordon C. Forrest, East Morsley; Simon J. Rattle, Quainton; Grenville A. Robinson, London, and Hugh A. O. Hill, Oxford, all of England, assignors to Serono Diagnostics Ltd., England

Continuation of Ser. No. 733,514, May 13, 1985, abandoned. This application Jun. 23, 1988, Ser. No. 212,043

Claims priority, application United Kingdom, Jul. 6, 1984, 8417301

Int. Cl.[5] C12Q *1/26*; G01N *27/26*

U.S. Cl. 435—25 **23 Claims**

1. In a homogeneous method of assaying a ligand in a sample using electrochemical apparatus containing a working electrode and components comprising:

(a) the sample, and

(b) a specific binding partner to the ligand, or a specific binding partner to the ligand and at least one further reagent selected from ligand analogues and specific binding partners to the ligand, the improvement which comprises said components including

(c) an electron-source or electron-acceptor selected from oxidoreductase enzymes in cooperation with a substrate therefor and non-enzyme electron sources;

one of components (b) being labelled with an electron-transfer mediator capable of aiding the transfer of electrons between the electron-source or electron-acceptor and the working electrode by accepting electrons from the electron-source and donating them to the working electrode, or accepting electrons from said electrode and donating them to the electron-acceptor; and

which method includes the step of determining whether the said transfer of electrons is perturbed by formation of a complex of said ligand with a specific binding partner.

4,945,046

YEAST PROMOTER AND PROCESS FOR PREPARING HETEROLOGOUS PROTEIN

Hajime Horii; Haruhide Kawabe; Hirofumi Arimura; Hiromichi Mukai; Kaoru Kobayashi; Muneo Tsujikawa, all of Osaka; Masayuki Nishida, and Tadakazu Suyama, both of Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jun. 3, 1987, Ser. No. 57,143

Claims priority, application Japan, Jun. 3, 1986, 61-127153; Sep. 26, 1986, 61-227441

Int. Cl.[5] C12P *21/00*; C12N *15/00, 5/00*

U.S. Cl. 435—69.3 **12 Claims**

1. A method of producing a heterologous protein in yeast which comprises transforming a yeast *Saccharomyces cerevisiae* with recombinant DNA comprising a hybrid promoter consisting essentially of *Saccharomyces cerevisiae* PHO5 or GAP-DH promoter from which the upstream activation site (UAS) has been deleted and replaced with the early enhancer region derived from SV40 virus and a gene coding for the heterologous protein, culturing the resulting transformed cells under conditions that permit expression of the gene coding for the heterologous protein, and isolating the heterologous protein from the culture medium.

4,945,047

MICROBIOLOGICAL PROCESS FOR THE PREPARATION OF A PROTEIN BY CULTURING A MUTANT BACTERIAL STRAIN

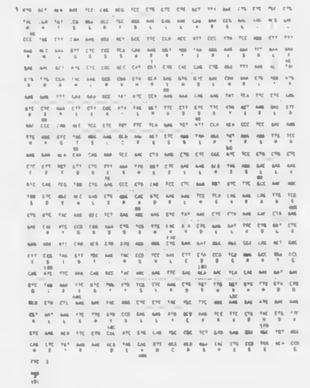
Richard Legoux, Caraman; Pascal Leplatois, Cuq Toulsa; Evelyne L. Joseph, Saint Orens De Gameville; Brigitte Niaudet, Toulouse, and Willem Roskam, Montgiscard, all of France, assignors to Societe Anonyme: Sanofi, Paris, France

Filed Apr. 9, 1987, Ser. No. 36,263

Claims priority, application France, Apr. 10, 1986, 86 05133

Int. Cl.[5] C12P *21/00*; C12N *15/00*; C12R *1/07, 1/185*

U.S. Cl. 435—69.4 **15 Claims**



1. A microbiological process for the preparation of a protein by culturing Gram-negative bacteria into which a DNA sequence coding for a precursor of this protein has been introduced, which comprises using a strain of bacteria whose chromosome carries at least one mutation affecting the system formed by the cya gene or the crp gene and the DNA sequences regulating expression of the cya gene or the crp gene, which mutation limits, or even suppresses, the expression of the operons whose transcription depends on the fixation of the cAMP-CRP complex, and wherein expression of the DNA sequence is not sensitive to the combined action of cAMP and CRP.

4,945,048

PROCESS FOR PRODUCING L-SORBOSE BY SUBCULTURE OF SEED

Yuji Uchihori; Yasushi Sekitani, and Ikuo Yoshida, all of Hikari, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 23, 1988, Ser. No. 197,404

Claims priority, application Japan, May 23, 1987, 62-126580

Int. Cl.[5] C12P *19/02*; C12R *1/01, 1/02*

U.S. Cl. 435—105 **4 Claims**

1. A process for producing L-sorbose which comprises culturing a L-sorbose-producing bacterium of the genus gloconobacter to obtain a seed culture and subjecting the seed culture to a main fermentation with a batchwise fermentation procedure, wherein a part of said seed culture is subjected to subculture to prepare a seed culture for a next batch, while carrying out the main fermentation with the remainder of said seed culture, and this procedure being repeated, successively.

4,945,049

METHOD FOR PREPARING MAGNETIC POWDER

Toru Hamaya, 1-D, Daiichiseifuso, 5-5, Minami 1-chome, Meguro-ku, Tokyo 152, and Koki Horikoshi, 39-8, Sakuradai 4-chome, Nerima-ku, Tokyo 176, both of Japan, assignors to Research Development Corporation; Toru Hamaya and Koki Horikoshi, all of Tokyo, Japan, a part interest

PCT No. PCT/JP88/00814, § 371 Date Apr. 14, 1989, § 102(e) Date Apr. 14, 1989, PCT Pub. No. WO89/01521, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 18, 1988, Ser. No. 343,263

Claims priority, application Japan, Aug. 18, 1987, 62-204815

Int. Cl.[5] C12P *3/00*

U.S. Cl. 435—168 **16 Claims**

1. A method for preparing at least one member selected from the group consisting of iron oxides, iron hydroxides and iron oxyhydroxides comprising: reacting an alkali-producing enzyme with a substrate of the enzyme in a solution containing iron ions to form an alkali substance, thereby alkalanizing the solution by the alkali substance; and obtaining fine particles of the iron compound having an average particle size ranging from about 50 to 500 nm.

4,945,050

METHOD FOR TRANSPORTING SUBSTANCES INTO LIVING CELLS AND TISSUES AND APPARATUS THEREFOR

John C. Sanford, Geneva; Edward D. Wolf, Ithaca, and Nelson K. Allen, Newfield, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,771

Int. Cl.[5] C12N *15/00, 15/89*

U.S. Cl. 435—172.1 **22 Claims**

1. A method for introducing particles into cells comprising accelerating particles having a diameter sufficiently small to penetrate and be retained in a preselected cell without killing the cell, and propelling said particles at said cells whereby said particles penetrate the surface of said cells and become incorporated into the interior of said cells.

4,945,051

PRODUCTION OF HUMAN LYSOZYME

Masakazu Kikuchi, Toyono; Koji Yoshimura, Osaka, and Kazuo Nakahama, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 24, 1987, Ser. No. 65,860

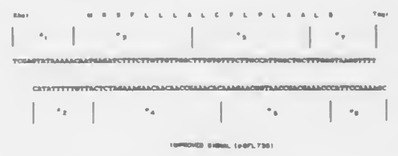
Claims priority, application Japan, Jun. 30, 1986, 61-151809; Aug. 20, 1986, 61-192639; Feb. 23, 1987, 62-37869

Int. Cl.[5] C12N *15/00, 9/36, 1/16*; C07H *15/12*

U.S. Cl. 435—172.3 **8 Claims**

1. A purified and isolated DNA sequence for use in a yeast cell comprising a DNA segment coding for a signal peptide of the formula:

M-R-S-F-L-L-L-A-L-C-F-L-P-L-A-A-L-G



functionally linked to the 5' end of a DNA segment coding for human lysozyme.

4,945,052

PRODUCTION OF A VITAMIN C PRECURSOR USING GENETICALLY MODIFIED ORGANISMS

Kimber Hardy, Geneva, Switzerland; Hendrick van de Pol, Gif Sur Yvette, France; June Grindley, Alameda, Calif., and Mark A. Payton, Geneva, Switzerland, assignors to Biogen, Inc., Cambridge, Mass.

PCT No. PCT/US86/01571, § 371 Date Jun. 2, 1987, § 102(e) Date Jun. 2, 1987, PCT Pub. No. WO87/00863, PCT Pub. Date Feb. 12, 1987

PCT Filed Aug. 1, 1986, Ser. No. 45,859

Claims priority, application United Kingdom, Aug. 2, 1985, 8519536

Int. Cl.[5] C12N *15/00*; C12P *21/00*; C07H *15/12*

U.S. Cl. 435—172.3 **16 Claims**

1. A DNA sequence coding for a 2,5-DKG reductase, said DNA sequence selected from the group consisting of:

(a) a synthetic or isolated DNA sequence of the formula:

CCGAACATCCCCACCATCAGCCTCAACGACGGACGC
CCCTTCGCCGAGCCTGGGCTCGGCACGTACAACCTG
CGCGGCGACGAGGGGGTCGCGGCCATGGTCGCCGCG
ATCGACTCGGGCTACCGCCTGCTCGACACGGCGGTG
AACTACGAGAACGAGAGCGAGGTCGGCCGAGCGGTG
CGCGCGAGCAGCGTCGATCGCGACGAGCTCATCGTG
GCGAGCAAGATCCCGGGCCGCCAGCACGGGCGCGCC
GAGGCGGTCGACAGCATCCGCGGATCGCTCGACCGG
CTGGGGCTCGACGTGATCGACCTGCAGCTGATCCAC
TGGCCGAACCCCAGCGTGGGCCGGTGGCTCGACACC
TGGCGCGGCATGATCGACGCGCGCGAGGCGGGCCTG
GTCCGCTCGATCGGCGTCTCGAACTTCACCGAGCCG
ATGCTGAAGACCCTCATCGACGAGACCGGGGTCACA
CCCGCGGTCAACCAGGTCGAGCTCCACCCGTACTTC
CCCCAGGCGGCGCTGCGCGCGTTCCACGACGAGCAC
GGCATCCGCACCGAGAGCTGGAGCCCGCTCGCCCGG
CGCAGCGAGCTGCTCACCGAGCAGCTGCTGCAGGAG
CTGGCGGTCGTCTACGGAGTGACGCCGACGCAGGTG
GTGCTGCGGTGGCACGTGCAGCTCGGCAGCACCCCG
ATCCCCAAGTCCGCCGACCCCGATCGCCAGCGCGAG
AACGCCGATGTGTTCGGCTTCGCCCTCACCGCCGAC
CAGGTCGATGCGATCTCGGGCCTCGAGCGCGGGCGG
CTCTGGGACGGCGACCCCGACACGCACGAAGAGATG; and

(b) synthetic or isolated DNA sequences which, as a result of the degeneracy of the genetic code, code for a polypeptide encoded by the foregoing DNA sequence.

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4,945,053

NOVEL ALKALINE CELLULASES AND A MICROORGANISM FOR PRODUCING THE SAME

Susumu Ito; Tomokazu Sato; Katsuya Ozaki; Shitsuw Shikata, all of Utsunomiya; Kikuhiko Okamoto, Koshigaya; Shigeo Inoue; Kenzo Koike, both of Utsunomiya; Yuichi Ota, and Akira Takei, both of Hasaki, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 110,774

Claims priority, application Japan, Oct. 28, 1986, 61-257775; Oct. 28, 1986, 61-257776; Oct. 28, 1986, 61-257777; Oct. 28, 1986, 61-257778

Int. Cl.[5] C12N *9/42;* C12R *1/07*

U.S. Cl. 435—209 8 Claims

8. A biologically pure strain of bacteria *Bacillis* species KSM-635 and variants thereof capable of producing an alkaline cellulase K, and having the following enzymatic properties:

(1) activity:
having Cx enzymatic activity, weak C_1 enzymatic activity and a weak beta-glucosidase activity;

(2) substrate specificity:
acting on carboxymethyl cellulose (CMC), crystalline cellulose, microcrystallline cellulose, cellobiose, and p-nitrophenyl cellobioside (PNPC);

(3) working pH and optimum pH:
having a working pH in the range of 4 to 12 and an optimum pH in the range of 9 to 10;

(4) pH stability:
being stable at a pH of 4.5 to 10.5 and 6.8 to 10 when allowed to stand at 40° C. for 10 minutes and 30 minutes, respectively;

(5) working temperature range and optimum working temperature;
working over a temperature range of from 10 to 65° C. with an optimum temperature at about 40° C.;

(6) influence of chelating agents:
having an activity not impeded by ethylenediamine tetraacetic acid, ethyleneglycol-bis-(beta-aminoethylether)-N,N,N',N''-tetraacetic acid, N,N-bis(carboxymethyl)glycine (nitrilotriacetic acid), sodium tripolyphosphoate and zeolite;

(7) influence of surface active agents:
losing little activity by sodium linear alkylbenzenesulfonates, sodium alkylsulfates, sodium polyoxyethylene alkyl sulfates, sodium alpha-olefin sulfonates, sodium alpha-sulfonated aliphatic acid esters, sodium alkyl sulfonates, polyoxyethylene secondary alkyl ethers, fatty acid salts (sodium salts), and dimethyldialkylammonium chloride;

(8) resistance to proteinases:
having a strong resistance to proteinases;

(9) molecular weight as determined by gel chromatography;
having a molecular weight of 180,000±10,000. ,

4,945,054

PROCESS FOR THE SEPARATION AND PURIFICATION OF PROTEASES AND ANTIPROTEASES OF BLOOD CLOTTING, AS WELL AS OF THE PROTEASE/ANTIPROTEASE COMPLEX

Christine Fougnot, Saint Denis; Marcel Jozefowicz, Lamorlaye, both of France, and Robert D. Rosenberg, Brookline, Mass., assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 17, 1983, Ser. No. 495,511

Claims priority, application France, May 19, 1982, 82 08779

Int. Cl.[5] C12N *9/74, 9/48*

U.S. Cl. 435—214 12 Claims

1. A process for the separation and purification of a protein selected from the group consisting of thrombin (T), antithrombin (AT) and the complex thrombin-antithrombin (T-AT) from a solution which process consists essentially of

contacting an insoluble cross-linked polymer including in its chain at least one member of the group consisting of $-SO_3R_1-$ and $-SO_2R_2-$, in which R_1 hydrogen or a metal, and R_2 is an amino acid residue linked to the $-SO_2-$ bridge through its amine function —NH—, with a solution containing protein selected from the group consisting of (T), (AT) and (T-AT),

separating the polymer which has absorbed one of the said proteins from said solution,

washing the polymer on which desired protein is absorbed with a buffer,

desorbing (a) the absorbed protein (T) with a solution of a polycationic compound, or (b) the absorbed (AT) or (T-AT) with an albumin solution and isolating (T), (AT) or (T-AT), respectively.

4,945,055

HUMAN CHORIONIC GONADOTROPIN RELEASING FACTOR

Thomas J. Kuehl; M. J. K. Harper; Gabriel S. Khodr, and Theresa M. Siler-Khodr, all of San Antonio, Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed May 15, 1986, Ser. No. 863,310

Int. Cl.[5] C12N *9/64*

U.S. Cl. 435—226 12 Claims

8. A method for the preparation of a 4,000- fold purified human placental hCG-RF protein from human placental tissue, comprising the steps of:

(a) obtaining an amount of human placental tissue;

(b) dissecting membranes and vessels from the placental tissue to form processed human placental tissue;

(c) lyophilizing the processed placental tissue to form lyophilized human placental tissue;

(d) defatting the lyophilized human placental tissue with acetone and collecting an acetone precipitate;

(e) extracting hCG-RF from the placental acetone precipitate with an aqueous buffer having a pH of about 7.0 to about 9.0 form a placental suspension;

(f) collecting a placental supernatant from the placental suspension;

(g) collecting a placental eluate from the placental supernatant through a chromatography column;

(h) dialyzing and concentrating the human placental eluate to form a concentrated human placental eluate;

(i) applying the concentrated human placental eluate to a diethylaminoethyl ion exchange filtration dextran bead column;

(j) washing the column with a NaCl buffer to collect a purified humand placental eluate; and

(k) concentrating the purified human placental eluate to form a 4,000-fold purified preparation of human placental hCG-RF protein.

4,945,056

L60: A NOVEL MONOCLONAL ANTIBODY

David W. Buck, Granada, and Jane M. Bindl, Los Altos, both of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Dec. 30, 1987, Ser. No. 139,491

Int. Cl.[5] G12N *5/00, 15/00;* C12R *1/91;* A61K *39/00*

U.S. Cl. 435—240.27 2 Claims

1. A hydridoma deposited as ATCC number HB-9575.

4,945,057

MONOCLONAL ANTIBODIES TO CRYSTAL PROTEIN OF *BACILLUS THURINGIENSIS* SUBSPECIES *ISRAELENSIS*

Kevin B. Temeyer, San Antonio; Maurice Haufler, and John H. Pruett, both of Kerrville, all of Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 18, 1987, Ser. No. 50,451

Int. Cl.[5] C12N *5/20;* C07K *15/28*

U.S. Cl. 435—240.27 2 Claims

1. The hybridoma ATCC HB 9362 or a subclone thereof which produces and secretes monoclonal antibody that specifically binds to the 68K crystal protein of *Bacillus thuringiensis* subsp. *israelensis.*

2. Monoclonal antibody produced by the hybridoma of claim 1.

4,945,058

PLASMID WITH WIDE HOST RANGE AND PROCESS OF PRODUCING L. THREONINE USING THE SAME

Akira Yanai, 4-21, 2-chome, Tsunishi, Kamakura, Japan (248), and Yoshizumi Ueda, 81-K, 1-Chome, Ikegamidai, Midori-ku, Nagoya, Japan (458)

Filed Oct. 17, 1986, Ser. No. 919,993

Claims priority, application Japan, Oct. 18, 1985, 60-230993; Oct. 18, 1985, 60-230996

Int. Cl.[5] C12N *1/20, 15/00;* C12P *13/08*

U.S. Cl. 435—252.3 11 Claims

1. A wide host range plasmid pYU300 extracted from a microorganism belonging to the genus Providencia which can replicate in a second genus belonging to the family Enterobacteriaceae.

4,945,059

METHOD OF PROLIFERATING VESICULAR-ARBUSCULAR MYCORRHIZAL FUNGI

Mitsuyoshi Okii, Ami, and Shunichi Ishijima, Miho, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1987, Ser. No. 104,396

Claims priority, application Japan, Oct. 2, 1986, 61-235406

Int. Cl.[5] C12P *1/02;* C12N *1/14;* C12R *1/645*

U.S. Cl. 435—254 4 Claims

1. A method of proliferating vesicular arbuscular mycorrhizal fungi (VAM fungi) which comprises inoculating VAM fungi selected from fungi belonging to the genus Gigaspora, Glomus, Sclerocystis, Entrophospora or Acaulospora in a soil medium containing a potato and a porous amphoteric ion exchanger selected from the group consisting of Adelite, DEAE-CPG and DEAE-Cellulofine adsorbed by a VAM fungi growth accelerator selected from the group consisting of organic acids, amino acids and vitamins and/or a VAM formation accelerator selected from the group consisting of ethylene generators and auxins, and growing a potato in the soil medium.

4,945,060

DEVICE FOR DETECTING MICROORGANISMS

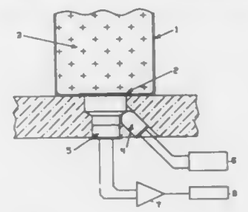
James E. Turner, Chapel Hill; Thurman C. Thorpe, Durham; James L. Di Guiseppi, Chapel Hill, and Richard C. Driscoll, Raleigh, all of N.C., assignors to Akzo N. V., Arnhem, Netherlands

Filed Mar. 15, 1988, Ser. No. 168,291

Int. Cl.[5] C12M *1/34*

U.S. Cl. 435—291 7 Claims

1. A device for continuously monitoring biological activity in a specimen comprising a sealable, sterilizable, specimen container, having an internal chamber in which a specimen may be cultured with a sterile culture medium, having at least one transparent section in said container and a sensor means located inside said container in the region of the transparent section, whereby changes in the appearance of the sensor means can be continuously monitored from the exterior of said container through said transparent section, thereby monitoring biological activity without violating the integrity of said container after sealing, said sensor means comprising a membrane



and a non-fluorescent indicator medium, the indicator medium being selected for its ability to exhibit a detectable change when exposed to products of an organism's metabolic activity, wherein the sensor is sterilizable by heating without affecting its function.

4,945,061

DISPOSABLE CULTURE DISH WITH REINFORCEMENT RIBS

Ezzat Iskander, 36 George Crescent, Caledon East, Ontario, Canada L0N 1E0

Filed Nov. 27, 1989, Ser. No. 441,530

Int. Cl.[5] C12M *3/00*

U.S. Cl. 435—298 19 Claims



1. In a Petri dish having a substantially flat horizontal bottom portion and a short substantially cylindrical side wall integral with and around said bottom portion, the improvement in which said bottom portion is provided with a plurality of upwardly projecting ribs, the upwardly projecting portions of said ribs, projecting not more than about 0.050 inches above the upper surface of said bottom, and in which the thickness of said bottom portion other than at the ribs is not greater than about 0.030 inches.

4,945,062

CONTROL FOR BLOOD GAS/CALCIUM ANALYSIS INSTRUMENTATION

Ching Chiang, Acton, Mass., assignor to Bionostics Incorporated, Actou, Mass.

Filed Jun. 15, 1988, Ser. No. 207,182

Int. Cl.[5] G01N *31/00*

U.S. Cl. 436—11 17 Claims

16. An autoclavable, stable, homogeneous liquid control standard for blood analysis instrumentation systems comprising an aqueous solution containing a buffering agent in an amount sufficient to maintain the control standard pH in a

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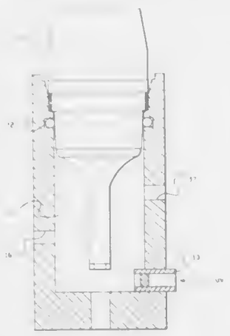
range of from about 7.1 to about 7.7 and additionally containing sufficient bicarbonate ion to provide a pCO_2 ranging from about 15 mmHg to about 80 mmHg, gaseous oxygen to provide a pO_2 ranging from about 15 mmHg to about 400 mmHg retained, a calcium salt to provide a total calcium concentration in a range of between about 1.3 mM and about 3.6 mM, a citric acid calcium sequestering solution to provide an ionized calcium concentration ranging from about 0.5 mM to about 1.7 mM, wherein the concentration ratio of ionized calcium to total calcium is in a range of about 30% to about 60%, salts of sodium, potassium and lithium to provide an electrolyte concentration in the range of physiological sodium, potassium and lithium electrolyte concentration, and absorbance means corresponding to a predetermined level of hemoglobin and hemoglobin fractions, said absorbance means comprising dyes selected from the group consisting of Acid Red Dye #27 (CI 16185), Ponceau 3R Red Dye (CI 16155), Acid Yellow Dye #23 (CI 19140) and Acid Blue Dye #9 (CI 42090).

4,945,063

METHOD FOR DETECTING ORGANIC COMPOUNDS BY PHOTOACOUSTIC CONVERSION

Madeline S. Toy, 4190 Manuela Ave., Palo Alto, Calif. 94306, and Melvin K. Carter, 129 Worcester Loop, Los Gatos, Calif. 95032

Filed Sep. 22, 1988, Ser. No. 247,710
Int. Cl.[5] G01N *33/44*; B01J *19/08, 19/10*
U.S. Cl. 436—85 11 Claims



1. A method for detecting residues of organic resins in an aqueous sample comprising the steps of simultaneously exposing said aqueous sample suspected of containing said resins to ultraviolet radiation and acoustic energy to decompose said organic resins to simple decomposition products, and analyzing said sample to detect at least one of said simple decomposition products, if present.

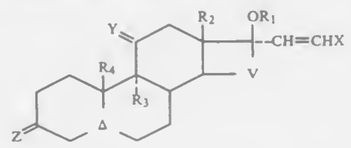
4,945,064

ESTRANE AND ANDROSTANE DERIVATIVES, PROCESS FOR PRODUCING THEM AND PREPARATIONS CONTAINING THESE COMPOUNDS

Helmut Hofmeister; Henry Laurent; Paul E. Schulze, all of Berlin; Klaus Annen, Muenster-Albachten; Rudolf Wiechert, Berlin; Kunhard Pollow, Mainz-Hechtsheim; Bernhard Manz, Mainz-Bretzenheim, and Hans-Joerg Grill, Mainz, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 737,242, Dec. 3, 1986, abandoned, which is a continuation of Ser. No. 659,581, Oct. 10, 1984, abandoned. This application Jan. 19, 1988, Ser. No. 147,580
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1983, 3337179
Int. Cl.[5] G01N *33/566, 33/567*; C07J *1/00, 3/00*
U.S. Cl. 436—503 38 Claims

1. An estrane of the formula



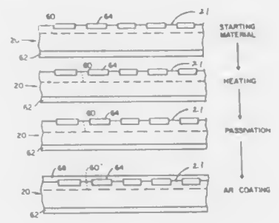
wherein
X is bromo, iodo, triphenyltin or tri-(C_{1-6})alkyltin;
Y is two hydrogen atoms or methylene;
Z is two hydrogen atoms or oxo;
V is vinylene, cyclopropylene or 1,3-propylene;
R_1 is H, a C_{1-8}-hydrocarbon radical, or a C_{1-8}-hydrocarbon radical interrupted by an oxa atom or substituted by oxo;
R_2 is methyl or ethyl;
R_3 and R_4 together form a carbon-carbon bond, or R_3 is H and R_4 is H or methyl; and
Δ symbolizes a 4(5) double bond.

4,945,065

METHOD OF PASSIVATING CRYSTALLINE SUBSTRATES

James A. Gregory, Sudbury; Jack I. Hanoka, and Zinovy Y. Vayman, both of Brookline, all of Mass., assignors to Mobil Solar Energy Corporation, Billerica, Mass.

Filed Jun. 2, 1988, Ser. No. 201,559
Int. Cl.[5] H01L *21/223, 21/322, 31/18*
U.S. Cl. 437—4 6 Claims



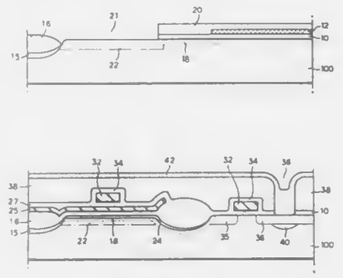
1. A method of fabricating a solar cell comprising in sequence the steps of:
(a) providing a polycrystalline silicon substrate having a p/n junction formed therein adjacent one side of the substrate, said substrate having an electrode grid on one side and an aluminum layer on the other side thereof, further wherein said one side is not coated with a layer of silicon nitride or phosphorus glass;
(b) exposing said one side of the substrate to an SiF_4 ion beam of an intensity and for a duration sufficient to bulk passivate said substrate; and
(c) applying an antireflection coating to said one side of said substrate.

4,945,066

PROCESS FOR MANUFACTURING A DYNAMIC RANDOM ACCESS MEMORY CELL

Myong-Ku Kang, Seoul; Byong-Hyun Park, Kyoungsangbuk, and Won-Hee Jang, Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Rep. of Korea

Filed Feb. 23, 1988, Ser. No. 159,177
Claims priority, application Rep. of Korea, Feb. 24, 1987, 1987-1554
Int. Cl.[5] H01L *27/108, 21/265*
U.S. Cl. 437—30 19 Claims



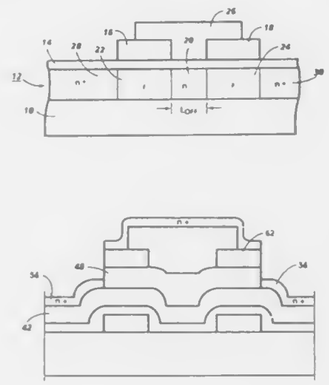
1. A process for manufacturing a dynamic random access memory cell, comprising the sequential steps of:
(1) forming a first oxide layer and a silicon nitride layer over a surface of silicon substrate and ion implanting boron for forming a channel stopping region;
(2) forming a field oxide layer for isolating each cell over said channel stopping region;
(3) ion implanting phosphorus for forming a coupling region connecting a lower electrode of a storage capacitor with a source region of a transistor;
(4) etching an edge part of said field oxide layer just around a perimeter of said storage capacitor with a diluted solution of hydrofluoric acid to increase capacitance of said storage capacitor by enlarging an area of the storage capacitor, and ion implanting boron for forming a first barrier to prevent a collection of minority carriers resulting from alpha particles under the storage capacitor;
(5) growing a second oxide layer over an etched area of the storage capacitor and ion implanting arsenic for forming said lower electrode of the storage capacitor;
(6) forming a first polysilicon layer over said second oxide layer to serve as a second electrode of said storage capacitor;
(7) forming a thick oxide layer over said first polysilicon layer and, after removing all remaining of said silicon nitride layer, doping impurities in all the surface of the substrate in order to control threshold voltage;
(8) forming a second polysilicon layer to serve as a gate electrode of the transistor and a word line over the first oxide layer, and forming a source and drain region of the transistor;
(9) forming an interlayer of oxide over the substrate, forming a window for coupling a bit line to the drain of said transistor and then ion implanting boron through said window to form a second barrier against minority carriers below the drain region of the transistor; and
(10) forming the bit line over said interlayer.

4,945,067

INTRA-GATE OFFSET HIGH VOLTAGE THIN FILM TRANSISTOR WITH MISALIGNMENT IMMUNITY AND METHOD OF ITS FABRICATION

Tiao-Yuan Huang, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,872, Sep. 16, 1988, Pat. No. 4,907,041. This application Nov. 2, 1989, Ser. No. 430,850
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 3 Claims



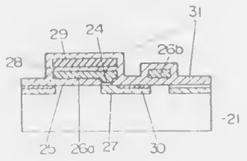
1. A process for forming a high voltage thin film transistor comprising the steps of
depositing an intrinsic non-single crystal semiconductor layer upon a dielectric substrate,
depositing a gate dielectric layer over said intrinsic semiconductor layer,
depositing a conductive layer over said gate dielectric layer,
patterning said conductive layer with a single mask to form a pair of gate electrodes with a precise distance therebetween,
implanting lightly doped regions in said semiconductor layer, using said gate electrodes as an implantation mask, so as to dope those regions of said semiconductor layer outboard of and between said gate electrodes,
depositing a roughly aligned mask upon said gate electrodes for blocking said inter-gate distance, and
implanting heavily doped source and drain regions in said semiconductor layer in those regions outboard of said gate electrodes.

2. A process for forming a high voltage thin film transistor comprising the steps of
patterning a pair of spaced gate electrodes upon a substrate with a single mask,
sequentially depositing a gate dielectric layer, an intrinsic non-single crystal semiconductor layer, and a passivation layer on said substrate, over said gates,
forming a pair of masking members upon said semiconductor layer in alignment with said gate electrodes,
depositing a rough mask upon and between said pair of masking members,
etching said passivation layer outboard of and in alignment with said pair of masking members,
depositing a heavily doped non-single crystal semiconductor layer, and
lifting off said pair of masking members and said rough mask along with the portion of said heavily doped non-single crystal semiconductor layer overlying said masking members and said rough mask.

4,945,068
MANUFACTURING METHOD OF SEMICONDUCTOR NONVOLATILE MEMORY DEVICE

Tadashi Sugaya, Nara, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Oct. 25, 1989, Ser. No. 426,230
Claims priority, application Japan, Oct. 25, 1988, 63-267041
Int. Cl.[5] H01L *27/115*
U.S. Cl. 437—52 4 Claims



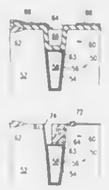
1. A manufacturing method of semiconductor nonvolatile memory device comprising:
a step of forming a mask on the surface of a silicon substrate, and patterning said mask,
a step of injecting nitrogen ions into the surface of said silicon substrate from above said mask,
a step of removing said mask, 'a step of forming oxide films on the surface of said silicon substrate by simultaneously oxidizing the nitrogen ion injection region and the injection-free region of said silicon substrate surface, thereby forming an ultrathin tunnel oxide film on said nitrogen ion injection region and a thick first gate oxide film on said injection-free region of said silicon substrate surface respectively,
a step of depositing a first semiconductor thin film on the surface of said tunnel oxide film and said first gate oxide film,
a step of forming a first gate in a shape of covering at least said nitrogen ion injection region by patterning said first semiconductor thin film,
a step of forming an insulating film on the surface of said first gate,
a step of depositing a second semiconductor thin film on the surface of said insulating film, and
a step of forming a second gate overlapping with said first gate and said insulating film, by patterning said second semiconductor thin film.

4,945,069
ORGANIC SPACE HOLDER FOR TRENCH PROCESSING

Duane E. Carter, Plano, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Dec. 16, 1988, Ser. No. 285,910
Int. Cl.[5] H01L *21/312, 21/336*
U.S. Cl. 437—67 16 Claims

12. A method for fabrication of a device, comprising the steps of:
providing a substrate with a cavity formed therein;
filling said cavity with a first material;
forming an etch mask partially covering said first material;
etching said first material where not protected by said etch mask;

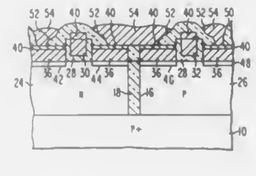


filling the portion of said first material removed by said etching with a second material; and
removing the remainder of said first material.

4,945,070
METHOD OF MAKING CMOS WITH SHALLOW SOURCE AND DRAIN JUNCTIONS

Sheng T. Hsu, Lawrenceville, N.J., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 24, 1989, Ser. No. 301,073
Int. Cl.[5] H01L *21/235*
U.S. Cl. 437—160 15 Claims



1. A method of making a MOS transistor having shallow source and drain regions in a body of single crystalline silicon of one conductivity type having a major surface comprising the steps of:
forming a thin layer of silicon oxide on a portion of the major surface of the body;
forming a gate line of a conductive material on the silicon oxide layer;
then forming on the major surface of the silicon body on each side of the gate line a layer of polycrystalline silicon having a region of a refractory metal silicide extending at least through a portion thereof;
then doping the silicide region with a conductivity modifier of a conductivity type opposite to that of the silicon body; and
then heating the body to diffuse the conductivity modifier through the polycrystalline silicon layer into the silicon body to form the shallow source and drain regions of the transistor.

4,945,071
LOW SOFTENING POINT METALLIC OXIDE GLASSES SUITABLE FOR USE IN ELECTRONIC APPLICATIONS

G. Delbert Friesen, Hunt. Beach; Yun K. Shin, Glendale, both of Calif., and Lewis Hoffman, deceased, late of Riviera Beach, Fla. (by Norma Hoffman, Executrix), assignors to National Starch and Chemical Investment Holding Company, Wilmington, Del.

Filed Apr. 19, 1989, Ser. No. 340,183
Int. Cl.[5] C03C *3/12*
U.S. Cl. 501—41 13 Claims

1. A low softening point glass composition comprising 2 to 40% by wt. silver oxide, 12 to 40% by wt. vanadium oxide, and 35 to 75% by wt. tellurium oxide, and 2 to 30% by wt. lead oxide, wherein all percentages total 100.

4,945,072
PRECERAMIC METALLOPOLYSILANES

Gary T. Burns, and Gregg A. Zank, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

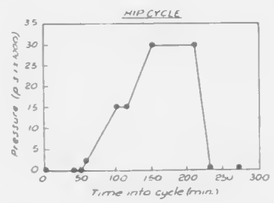
Division of Ser. No. 264,561, Oct. 31, 1988, Pat. No. 4,906,710.
This application Dec. 11, 1989, Ser. No. 457,120
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—88 15 Claims

1. A method for preparing a ceramic material which method consists of heating a metallopolysilane in an inert atmosphere, in a vacuum, or in an ammonia atmosphere to a temperature of at least 750° C. until the metallopolysilane is converted to a ceramic material, where the metallopolysilane is prepared by a method which comprises (A) contacting a polysilane with a metallic compound capable of generating open coordination sites where the metallic compound contains a metal selected from the group consisting of aluminum, boron, chromium, molybdenum, tungsten, titanium, zirconium, hafnium, vanadium niobium, and tantalum and (B) forming open coordination sites of the metallic comPound, in the presence of the polysilane, until a metallopolysilane is obtained.

4,945,073
HIGH HARDNESS, WEAR RESISTANT MATERIALS

Ellen M. Dubensky, and Edward E. Timm, both of Traverse City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 247,054, Sep. 20, 1988. This application Sep. 1, 1989, Ser. No. 403,209
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—93 13 Claims



1. A material suitable for use in fabricating articles of manufacture requiring high degrees of hardness or wear resistance, the material consisting essentially of a substantially fully dense, complex, multi-phase, fine-grained product of an incomplete reaction between AX and a source of B, the reaction taking place under pressure and at an elevated temperature, said product consisting essentially of at least one compound AX and at least one compound (A,B)X wherein A and B are different materials selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten and X is carbon.

4,945,074
POLYMERIC ALKALI METAL SILICATE GLASS

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Continuation of Ser. No. 339,667, Apr. 18, 1989, Pat. No. 4,908,339, which is a continuation-in-part of Ser. No. 057,810, Jun. 1, 1987, Pat. No. 4,824,807. This application May 1, 1989, Ser. No. 345,841
Int. Cl.[5] C03C *3/04*
U.S. Cl. 501—53 17 Claims

1. A polymeric alkali metal silicate glass produced by contacting alkali metal silicate glass powder, having a silicon dioxide: alkali metal oxide ratio of 1:1 to 3.9:1 by weight, with a gaseous water at a temperature ranging from ambient temperature to above 100° C., at a pressure ranging from ambient pressure to a steam pressure sufficient to hydrate the alkali metal silicate glass powder and for a time sufficient to hydrate no more than 4 silicon dioxide radicals in each alkali metal silicate glass molecule then the hydrated alkali metal silicate is contacted with air containing a low humidity, at sufficient temperature, pressure and time to dehydrate about 50% of the hydrated silicon dioxide radicals by evaporating off water and these processes are repeated until polymerization has taken place.

4,945,075
OXIDATIVE SECONDARY RHODIUM RECOVERY PROCESS

Michael R. Cushman; Vincent A. Nicely; Brent A. Tennant, and Joseph R. Zoeller, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,253
Int. Cl.[5] B01J *38/68, 38/54;* C01G *55/00;* C07C *51/10*
U.S. Cl. 502—24 6 Claims

1. Process for the recovery of rhodium catalyst values from a catalyst-tar solution derived from a production system in which acetic anhydride is prepared by contacting a mixture of methyl acetate and/or dimethyl ether and methyl iodide with carbon monoxide in the presence of a rhodium catalyst comprising the steps of:
1. submitting the catalyst-tar solution to an extraction with a combination of methyl iodide and aqueous hydrogen iodide and recovering (a) the aqueous phase containing most of the rhodium catalyst values, and (b) the methyl iodide phase containing most of the tar which contains minor amounts of the rhodium catalyst values;
2. treating the methyl iodide phase of step 1 with an oxidant selected from peracetic acid, hydrogen peroxide and ozone; and
3. submitting the treated methyl iodide phase of step 2 to an extraction with aqueous hydrogen iodide to recover in the aqueous phase rhodium catalyst values present in the treated methyl iodide phase.

4,945,076
POLYMERIZATION CATALYST SYSTEM

Andrzej M. Piotrowski, Peekskill, and Elliot I. Band, North Tarrytown, both of N.Y., assignors to Akzo America Inc., New York, N.Y.

Filed Jul. 28, 1989, Ser. No. 386,938
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—117 14 Claims

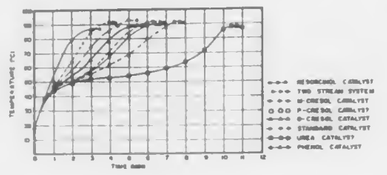
9. A catalyst for the polymerization of olefins which comprises a compound of a Group IVB transition metal and an aluminoxane catalyst component which comprises an effective amount of a hydroxysiloxane for increased activity for the polymerization.

4,945,077

MODIFIED PHENOLIC FOAM CATALYSTS AND METHOD

Paul J. Meunier, Sarnia; James Lant, Brights Grove, and Edwin J. MacPherson, Sarnia, all of Canada, assignors to Fiberglass Canada Inc., Ontario, Canada

Division of Ser. No. 310,491, Feb. 9, 1989, Pat. No. 4,883,824, which is a continuation of Ser. No. 853,397, Apr. 18, 1986, abandoned. This application Sep. 18, 1989, Ser. No. 408,265
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—168 4 Claims



1. A modified phenolic foam catalyst comprised of an aromatic acid, a diluent and a compound selected from the group consisting of resorcinol, m-cresol, o-cresol and p-cresol.

4,945,078

MIXED BASIC METAL SULFIDE CATALYST

Erek J. Erekson, LaGrange; Anthony L. Lee, Glen Ellyn; S. Peter Barone, Hoffman Estates, and Irvine J. Solomon, Highland Park, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 274,415, Nov. 21, 1988, and a continuation-in-part of Ser. No. 274,499, Nov. 21, 1988, and a continuation-in-part of Ser. No. 274,454, Nov. 21, 1988, each is a continuation-in-part of Ser. No. 172,808, Mar. 28, 1988, Pat. No. 4,826,796. This application May 31, 1989, Ser. No. 359,207
Int. Cl.[5] B01J *21/02, 23/02, 23/04, 27/04*
U.S. Cl. 502—202 13 Claims

1. A mixed basic metal sulfide catalyst having the formula:

xA.yB.zC.qS

wherein

A is an alkali metal selected from lithium, sodium, potassium, rubidium, cesium and mixtures thereof;

B is a cation which has an ionization state 1 greater than the ionization state of C;

B is selected from scandium, yttrium, lanthanum, actinium, aluminum, boron and mixtures thereof when C is selected from beryllium, magnesium, calcium, strontium, barium, radium, zinc, cadmium, mercury and mixtures thereof and

B is selected from titanium, zirconium, hafnium, silicon and mixtures thereof when C is selected from scandium, yttrium, lanthanum, actinium, aluminum, boron and mixtures thereof;

x and y are in mole fractions of z such that when z=1 then x=0.001 to 0.25, and y=0.001 to 0.25; and

q is a number necessary to maintain charge balance with S being sulfur.

4,945,079

CATALYST OF NICKEL AND MOLYBDENUM SUPPORTED ON ALUMINA

Lee A. Pedersen, Allegheny County, Pa., and Alvin B. Stiles, Welshire, Del., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 670,747, Nov. 13, 1984, abandoned. This application Mar. 18, 1985, Ser. No. 712,873
Int. Cl.[5] B01J *21/04, 23/88*
U.S. Cl. 502—314 1 Claim

1. A catalyst comprising alumina having and catalytically effective amount of Ni and Mo.

4,945,080

DIRITHROMYCIN METABOLITE

Terry D. Lindstrom, and Gary W. Whitaker, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 26, 1987, Ser. No. 53,642
Int. Cl.[5] A61K *31/70;* C07H *17/08*
U.S. Cl. 514—29 3 Claims

1. Dirithromycin metabolite, which has these characteristics:

Molecular weight: 734
Empirical formula: $C_{37}H_{70}O_{12}N_2$
FAB-MS, m/z: 735 (M+H), 577, 158
FD-MS, m/z: 735 (M+H), 159
EI-MS, m/z: 577, 158
IR (KBr): FIG. 1
500 MHz ^1H NHR($CDCl_3$): FIG. 2

or a pharmaceutically acceptable acid addition salt thereof, in substantially pure form.

2. A composition useful for the treatment of susceptible bacterial infections comprising an effective antibacterial amount of a compound of claim 1 together with a suitable vehicle.

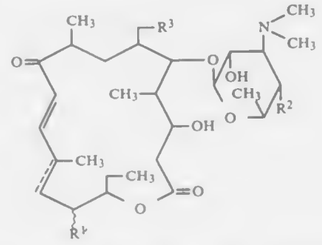
4,945,081

MYCAMINOSYL TYLONOLIDE DERIVATIVES

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Kanagawa; Tomio Takeuchi, Tokyo; Akihiro Tanaka, Tokyo, and Shuichi Sakamoto, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 861,537, May 9, 1986, Pat. No. 4,794,173. This application Aug. 16, 1988, Ser. No. 232,904
Claims priority, application Japan, May 13, 1986, 60-102402
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—30 5 Claims

1. A method of producing an antibacterial activity in a subject in need of such treatment, which comprises administering to said subject an antibacterially effective amount of a pharmaceutical composition comprised of from 10 to 1000 mg. of a mycaminosyl tylonolide derivative of the formula:



wherein R^1 is a lower alkanoyloxy group, benzoyloxy group, azido group, or amino group which may be substituted with a lower alkyl or a lower alkanoyl radical; R^2 is a hydrogen atom or hydroxyl group; R^3 is a hydrogen atom or formyl group; and ═══ means a double bond or a radical represented by



or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

4,945,082

CONTROLLED DSRNA THERAPY FOR HUMAN VIRAL INFECTIONS

William A. Carter, Birchrunville, Pa., assignor to HEM Research, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 136,978, Dec. 23, 1987, which is a continuation-in-part of Ser. No. 900,614, Aug. 26, 1986, Pat. No. 4,795,744, which is a continuation-in-part of Ser. No. 886,363, Jul. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 769,494, Aug. 26, 1985, abandoned. This application Mar. 11, 1988, Ser. No. 167,190
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—44 9 Claims

1. A method of selectively treating an HIV infection or a susceptible viral infection other than HIV which has a common mechanism of viral multiplication or pathogenesis, in whole or in part, similar to that of HIV in a person infected therewith comprising the successive steps of:

(1) measuring at least one of the person's clinically assessable parameters of the immunological system selected from the group consisting of the T4/T8 cell ratio, a skin sensitivity response to at least one predetermined antigen, and the concentration of HIV in blood or other body fluids or cells and identifying an immune deficit; thereafter

(2) again measuring the same immune parameter as measured in step (1) at a later time and identifying an immune deficit, and, if the immune deficit measured in step (2) is greater than that measured in step (1),

(3) instituting therapy with the mismatched dsRNA rIn·r($C_{12,13}$,U)$_n$ in a quantity and for a period of time sufficient to at least stabilize the immune deficit, as compared with the value measured in step (2), thereby at least stabilizing the HIV infection prior to the development of frank acquired immunodeficiency syndrome in that HIV-infected patient.

4,945,083

SAFE ORAL FOLIC-ACID-CONTAINING VITAMIN PREPARATION

Christian J. Jansen, Jr., 6350 Glen Coe Dr., Indianapolis, Ind. 46260

Continuation of Ser. No. 869,985, Jun. 3, 1986, abandoned, which is a continuation of Ser. No. 662,813, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 500,228, Jun. 1, 1983, abandoned, which is a continuation of Ser. No. 268,744, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 826,814, Aug. 22, 1977, abandoned, which is a continuation of Ser. No. 650,887, Jan. 21, 1976, abandoned, which is a continuation of Ser. No. 57,302, Jul. 22, 1970, abandoned. This application Feb. 1, 1989, Ser. No. 305,422
Int. Cl.[5] A61K *31/70, 31/50, 31/495*
U.S. Cl. 514—52 6 Claims

1. A method of treating or preventing macrocytic-megaloblastic anemia in humans which anemia is caused by either folic acid deficiency or by vitamin B_{12} deficiency which comprises administering a daily oral dosage of a vitamin preparation to a human in need thereof comprising at least about 0.5 mg. of vitamin B_{12} and at least about 0.5 mg. of folic acid.

4,945,084

METHOD AND COMPOSITION FOR TOPICALLY TREATING ANORECTAL OR OTHER DERMAL WOUNDS

Elias W. Packman, Merion, Pa., assignor to Norman Okuman, Mountain Lakes, N.J.

Filed Jul. 8, 1987, Ser. No. 70,904
Int. Cl.[5] A61K *31/715*
U.S. Cl. 514—53 34 Claims

1. A composition for topical administration in the treatment of an anorectal disease or disorder in humans which comprises a disaccharide polysulfate-aluminum compound and a pharmaceutically-acceptable topical carrier selected from the group consisting of an ointment, cream, gel, paste, foam, aerosol, suppository, pad and gelled stick.

4,945,085

USE OF SUCRALFATE FOR CONTROLLING EMESIS AND/OR DIARRHEA

Kurt Steiner, Grafing, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,510
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322078
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—53 12 Claims

1. A method of treating emesis in an animal in need of such treatment comprising administering to the animal an effective amount of sucralfate.

5. A method of treating diarrhea in a veterinary animal in need of such treatment comprising administering to the animal an effective amount of sucralfate.

9. A method of simultaneously treating emesis and diarrhea in an animal in need of such treatment comprising administering to the animal an effective amount of sucralfate.

4,945,086

SMOOTH MUSCLE CELL GROWTH INHIBITOR

William E. Benitz, and Merton Bernfield, both of Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 3, 1988, Ser. No. 189,622
Int. Cl.[5] C08B *37/10*
U.S. Cl. 514—56 29 Claims

1. A smooth muscle cell growth inhibitor, comprising a substantially pure glycosaminoglycan having smooth muscle cell growth inhibition activity and being isolatable from an endothelial-cell-conditioned medium as part of a heparan sulfate proteoglycan having molecular weight of about 10^5 to 10^7 and a buoyant density of less than 1.4 g/ml which release a glycosaminoglycan chain having a molecular weight of about 55,000 to 75,000 on protease cleavage.

15. In a method of purifying a proteoglycan smooth muscle cell growth inhibitor from a liquid medium containing said inhibitor as biochemically synthesized by endothelial cells, an improvement which comprises:

including a dialyzable detergent in said medium prior to additions of reagents which induce dissociative Or chaotropic conditions, and maintaining said detergent in the presence of said proteoglycan during said purifying.

4,945,087

TASTE MASKING OF THYMOL

Anil K. Talwar, Long Valley, and Edward J. Carlin, Secaucus, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 31, 1988, Ser. No. 175,568
Int. Cl.[5] A61K *7/16, 7/28/7/22*
U.S. Cl. 514—60 25 Claims

1. A composition comprising thymol, an effective amount of a sugar alcohol, and an effective amount of anethole wherein

the ratio of said sugar alcohol to said thymol is within the range of about 2750:1 to about 200:1, and the ratio of said anethole to said thymol is within the range of about 0.1:1 to about 1.75 to 1, wherein the combination of said sugar alcohol and said anethole mask the unpleasant taste of said thymol.

4,945,088

INSECTICIDAL WETTABLE POWDER

Yukikazu Okamoto, Ikeda; Manabu Tagami, Nishinomiya; Goro Shinjo, Toyonaka, and Kozo Tsuji, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 14, 1985, Ser. No. 701,456

Claims priority, application Japan, Sep. 21, 1982, 57-165442

Int. Cl.[5] A01N *57/00, 25/00*

U.S. Cl. 514—132 **3 Claims**

1. An insecticidal wettable powder comprising from 10 to 75% of an organo-phosphorous insecticide selected from the group consisting of fenitrothion, pirimiphos-methyl, malathion and diazinon, which is liquid at room temperature, and calcined synthetic hydrated silicon dioxide, wherein the calcined synthetic hydrated silicon dioxide is obtained by calcining a synthetic hydrated silicon dioxide at a temperature of 600° to 800° C. and is present in an amount of one-third of to equal the amount of the insecticide, said liquid organo-phosphorous insecticide not separating as an oil when the insecticidal wettable powder is mixed with water.

4,945,089

USE OF TETRAHYDROCORTEXOLONE TO PREVENT ELEVATIONS IN INTRAOCULAR PRESSURE CAUSED BY CORTICOSTEROIDS

Abbot F. Clark, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 139,222, Dec. 29, 1987, abandoned.

This application Aug. 28, 1989, Ser. No. 399,351

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—171 **10 Claims**

1. A method of treating ophthalmic inflammation in a human patient which comprises applying topically to the affected eye a therapeutically effective amount of a pharmaceutical composition containing an amount of a glucocorticoid effective for the treatment of inflamed ocular tissue and an amount of tetrahydrocortexolone effective to inhibit the glucocorticoid from elevating the intraocular pressure of the patient, wherein the ratio of the amount of glucocorticoid to the amount of tetrahydrocortexolone is in the range of 10:1 to 1:20.

4,945,090

PHENOXY-SUBSTITUTED BETA-CARBOLINE DERIVATIVES, THEIR PRODUCTION AND THEIR USE AS DRUGS

Ralph Schmiechen; Dieter Seidelmann; Andreas Huth; Herbert H. Schneider; David N. Stephens, all of Berlin, Fed. Rep. of Germany; Mogens Engelstoft, Vaerlose, Denmark; John B. Hansen, Lyngby, Denmark, and Erling Petersen, Glostrup, Denmark, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

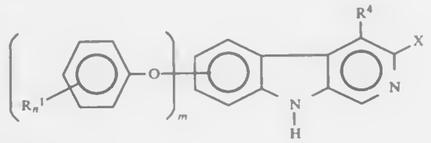
Filed Nov. 13, 1986, Ser. No. 929,861

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 3540654

Int. Cl.[5] A61K *31/38, 31/435;* **C07D** *471/04*

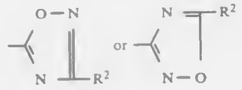
U.S. Cl. 514—232.8 **22 Claims**

1. A phenoxy-substituted beta-carboline of the formula



wherein

X is $COOR^3$, $CONHC_{1-3}$ alkyl or an oxadiazolyl radical of the formula



R^2 is H, C_{1-6}-alkyl or C_{3-7} cycloalkyl,

R^3 is C_{1-6}-alkyl,

R^4 is hydrogen, C_{1-6}-alkyl or C_{1-6}-alkoxy-C_{1-6}-alkyl,

R^1 is halogen, C_{1-6}-alkyl, C_{1-6}-alkoxy, C_{1-4}-alkanoyl, phenyl, C_{2-5} alkylenedioxy, trifluoromethyl, cyano, nitro, C_{1-6}-alkoxycarbonyl, azido, SO_2R^6, $SO_2NR^7R^8$, or NR^9NR^{10},

R^6 is C_{1-6}-alkyl,

R^7 and R^8 independently are C_{1-6}-alkyl or together with the connecting nitrogen atom form a saturated hereto ring of 5 or 6 members, or such a ring wherein one or two CH_2 groups are replaced by O, S or N,

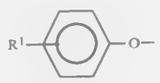
R^9 and R^{10} independently are each hydrogen, C_{1-6}-alkyl, C_{1-4}-alkanoyl or together with the connecting nitrogen atom form a saturated hetero ring of 5 or 6 members, or such a ring wherein one or two CH_2 groups are replaced by O, S or N,

n is 0 to 5, and

m is 1–2,

with the proviso that X is not COOEt, when

(a)



is 5-phenoxy and R^4 is methyl or when

(b)



is 6-(4-methoxyphenoxy) and R^4 is methoxymethyl.

10. 5(-4-chlorophenoxy)-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-4-methoxymethyl-beta carboline

5-phenoxy-4-methyl-3-(3-ethyl-1,2,4-xoadiazol-5-yl)-beta-carboline

5-(4-nitrophenoxy)-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

5-(4-chlorophenoxy)-4-methyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-phenoxy-4-methyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-chlorophenoxy)-4-methyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-aminophenoxy)-4-methyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-chlorophenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-chlorophenoxy)-4-methoxymethyl-3-(3-cyclopropyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-morpholinosulfamoylphenoxy)-4-methoxymethyl-3-(3-cyclopropyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(4-4-methylsulfonylphenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(2-chlorophenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(2,4-dichlorophenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

5-(4-nitrophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(4-nitro-2-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

6-(4-nitrophenoxy)-4-methyl-beta-carboline-3-carboxylic acid ethyl ester

6-(4-nitrophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(4-aminophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-phenoxy-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(3-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(2-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

6-phenoxy-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(4-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(4-chlorophenoxy)-4-methyl-beta-carboline-3-carboxylic acid ethyl ester

5-(2,4-dichlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

6-(4-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-(2-chlorophenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

5-(3-chlorophenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

5-(2-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(2-nitrophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(2-cyano-3-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(2-cyanophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(4-acetylphenoxy)-4-methoxymethyl-3-(3-ethyl-1,2,4-oxadiazol-5-yl)-beta-carboline

6-(3-methylphenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(3-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(2,4-dichlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid ethyl ester

5-phenoxy-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

5-(4-chlorophenoxy)-4-methyl-beta-carboline-3-carboxylic acid isopropyl ester

5-(4-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(4-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(4-fluorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

6-(3,4-dichlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropyl ester

5-phenoxy-4-methoxymethyl-beta-carboline-3-carboxylic acid t-butyl ester

6-phenoxy-4-methoxymethyl-beta-carboline-3-carboxylic acid t-butyl ester or

5-(4-chlorophenoxy)-4-methoxymethyl-beta-carboline-3-carboxylic acid isopropylamide.

4,945,091

3(2H)-PYRIDAZINONE COMPOUNDS DERIVATIVES AND COMPOSITIONS FOR CONTROLLING AND/OR PREVENTING INSECT PESTS INTERMEDIATES FOR SUCH COMPOUNDS, AND A PROCESS FOR THEIR MANUFACTURE

Takahiro Makabe; Tomoyuki Ogura; Yasuo Kawamura; Tatsuo Numata, all of Funabashi; Kimisori Hirata, Minamisaitama; Masaki Kudo, Minamisaitama; Toshiro Miyake, Minamisaitama, and Hiroshi Haruyama, Minamisaitama, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jul. 12, 1988, Ser. No. 217,664

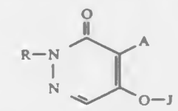
Claims priority, application Japan, Jul. 30, 1987, 62-191289; Dec. 17, 1987, 62-319336

Int. Cl.[5] A01N *43/58;* **C07D** *237/16*

U.S. Cl. 514—252 **12 Claims**

1. A 3(2H)-pyridazinone compound of the formula

[I]

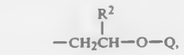


wherein,

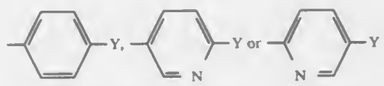
R represents an alkyl group having 3 to 6 carbon atoms substituted by 1 to 3 halogen atoms;

A represents halogen atom;

J represents $—CH_2—Q$ or



in which R^2 represents hydrogen atom or methyl group and Q represent



in which Y is selected from the group consisting of hydrogen atom, halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a haloalkyl group having 1 to 4 carbon atoms and a haloalkoxy group having 1 to 4 carbon atoms.

4,945,092

SUBSTITUTED 1-(OXOPYRROLIDINYLALKANOYL)-PIPERAZINES USEFUL AS NOOTROPICS

William Bencze, Therwil; Wolfgang Fröstl, Basel, and Max Wilhelm, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 191,671, May 9, 1988, abandoned, which is a division of Ser. No. 5,974, Jan. 21, 1987, abandoned.

This application Jun. 19, 1989, Ser. No. 370,093

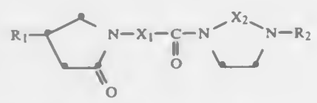
Claims priority, application Switzerland, Jan. 30, 1986, 346/86

Int. Cl.[5] A61K *31/495;* **C07D** *403/12, 403/14*

U.S. Cl. 514—252 **17 Claims**

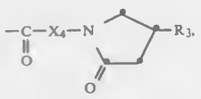
1. A compound of the formula

VOL 1116 ISS 5 JL 31 1990 UMI



(I)

wherein R_1 represents a phenyl or naphthyl that is unsubstituted or mono- or di-substituted by at least one of lower alkyl, lower alkoxy, halogen and trifluoromethyl, X_1 represents lower alkylidene, X_2 represents ethylene or oxoethylene and R_2 represents hydrogen, lower alkyl or a radical of the formula



(Ia)

wherein X_4 represents lower alkylidene and R_3 represents hydrogen or phenyl or naphthyl that is unsubstituted or mono- or di-substituted by at least one of lower alkyl, lower alkoxy, halogen and trifluoromethyl, in free form or in the form of pharmaceutically acceptable salt.

17. Method for the treatment of cerebral insufficiency in human or animal body comprising administering a nootropically effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,945,093

NOVEL DERIVATIVES OF UREYLENE, 2,4-TRIAMINOPYRIMIDINE-3- OXIDE, THEIR PREPARATION AND USE IN COSMETIC AND PHARMACEUTICAL COMPOSITIONS

Jean Maignan, Tremblay-les-Gonesse; Serge Restle, Aulnay-sous-Bois, and Gerard Lang, Saint-Gratien, all of France, assignors to L'Oreal, Paris, France

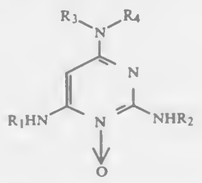
Filed Jul. 29, 1988, Ser. No. 225,849

Claims priority, application Luxembourg, Jul. 31, 1987, 86959

Int. Cl.[5] A61K *31/505, 31/535;* **C07D** *413/04, 239/28*

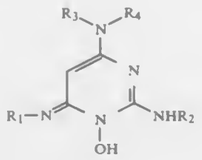
U.S. Cl. 514—235.8 **11 Claims**

1. A compound having the general formula:



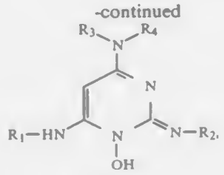
(I)

which has tautomeric forms represented by the general formulae:



(IA)

-continued

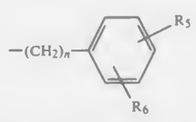


(IB)

wherein R_3 and R_4 are either

(i) be identical or different and are selected from the group consisting of a hydrogen atom, a linear or branched C_1–C_{18} alkyl group, an alkenyl group having 2 to 18 carbon atoms, a cycloalkyl group having 5 to 8 carbon atoms which may have one or more substituent selected from the group consisting of a lower alkyl group, an alkenyl group and a cycloalkyl group, wherein said alkenyl and cycloalkyl group may each have one or more substituent hydroxyl groups,

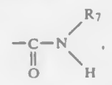
(ii) an aryl group or an aralkyl group having the general formula:



(II)

wherein n can be 0 to 4, and R_5 and R_6 may be identical or different and are selected from the group consisting of a hydrogen atom, a C_1 to C_8 lower alkyl group, a nitro group, a hydroxyl group, an alkoxy group, a halogen atom, a carboxyl group, and the salts, esters, or amides of any of the preceding groups, or

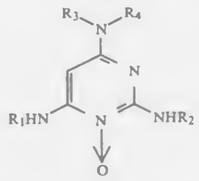
(iii) together with the nitrogen atom to which they are each linked, form a heterocyclic group selected from the group consisting of morpholino, piperidino, pyrrolidino, piperazino, and 4'-N-alkylpiperazino, and R_1 and R_2 are selected from the group consisting of a hydrogen atom and a carbamoyl group having the formula:



(III)

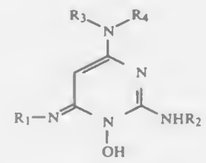
wherein R_1 and R_2 may be identical or different but are not both hydrogen, R_7 is selected from the group consisting of a linear or branched C_1 to C_{18} alkyl group, a C_2 to C_{18} alkenyl group, a C_5 to C_8 cycloalkyl group, and an aryl or aralkyl group corresponding to said formula (II).

8. A pharmaceutical composition for the treatment of alopecia, hair loss, or desquamating dermatitis containing a carrier suitable for topical application and an effective amount of at least one compound having the general formula:

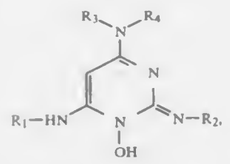


(I)

which has tautomeric forms represented by the general formulae:



(IA)

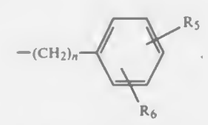


(IB)

wherein R_3 and R_4 are either

(i) be identical or different and are selected from the group consisting of a hydrogen atom, a linear or branched C_1–C_{18} alkyl group, an alkenyl group having 2 to 18 carbon atoms, a cycloalkyl group having 5 to 8 carbon atoms which may have one or more substituent selected from the group consisting of a lower alkyl group, an alkenyl group and a cycloalkyl group, wherein said alkenyl and cycloalkyl group may each have one or more substituent hydroxyl groups,

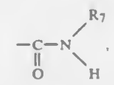
(ii) an aryl group or an aralkyl group having the general formula:



(II)

wherein n can be 0 to 4, and R_5 and R_6 may be identical or different and are selected from the group consisting of a hydrogen atom, a C_1 to C_6 lower alkyl group, a nitro group, a hydroxyl group, an alkoxy group, a halogen atom, a carboxyl group, and the salts, esters, or amides of any of the preceding groups, or

(iii) together with the nitrogen atom to which they are each linked, form a heterocyclic group selected from the group consisting of morpholino, piperidino, pyrrolidino, piperazino, and 4'-N-alkylpiperazino, and R_1 and R_2 are selected from the group consisting of a hydrogen atom and a carbamoyl group having the formula:



(III)

wherein R_1 and R_2 may be identical or different but are not both hydrogen, R_7 is selected from the group consisting of a linear or branched C_1 to C_{18} alkyl group, a C_2 to C_{18} alkenyl group, a C_5 to C_8 cycloalkyl group, and an aryl or aralkyl group corresponding to said formula (II).

4,945,094

SYNERGISTIC BIOLOGICALLY ACTIVE SUBSTANCES

Awa S. M. Salim, Department of Surgery, Royal Infirmary, Perth, PH1 1NX, Scotland

Filed Feb. 1, 1988, Ser. No. 151,220

Int. Cl.[5] A61K *31/52*

U.S. Cl. 514—264 **15 Claims**

1. A combination for use in improving the condition of skin, which combination comprises a xanthene and procaine and a physiologically acceptable, organic, in vivo sulphydryl group releasing agent selected from the group consisting of cysteine, cysteamine, cystine, dimethylsulphonxide, methionine wherein the carboxyl group has been esterified, s-methyl substituted ternary sulphonium, derivatives of methionine and dithioglycerol wherein said procaine and said agent are present in relative proportions

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4,945,095

METHOD FOR SUPPRESSING THE IMMUNE RESPONSE

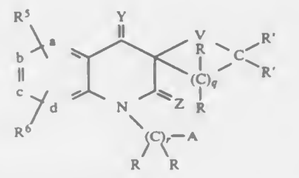
Sidney R. Smith, 700 Spring Ave., Ridgewood, N.J. 07450, and Marvin I. Siegel, 507 Maple Hill Dr., Woodbridge, N.J. 07095

Filed Dec. 12, 1985, Ser. No. 808,404

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—278 **15 Claims**

1. A method for suppressing T cell functions of the immune response in a mammal which comprises administering to a mammal in need of such treatment an immunosuppressing effective amount of a compound having the structural formula I:



I

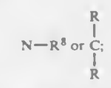
(II)

or solvate thereof, wherein:

two of the ring groups a, b, c and d may be CH or N and the remaining two groups represent CH;

Y and Z independently represent O or S;

V represents O, $S(O)_n$,



each R independently represents hydrogen, C_1 to C_6 alkyl, CH_2OH, COR_7 (wherein R^7 represents hydrogen or C_1 to C_6 alkyl) or hydroxy, with the proviso that only one hydroxy group can be attached to one carbon atom;

each R' independently is as defined for R above, except that when V represents O, $S(O)_n$ or N-R^8, R' may not be hydroxy;

R^8 is hydrogen, alkyl having from 1 to 6 carbon atoms, carboxylic acyl having from 2 to 7 carbon atoms, alkylsulfonyl having from 1 to 6 carbon atoms, carboalkoxy having from 2 to 7 carbon atoms, $CONH_2$, phenyl or pyridyl of which the last two may be substituted with up to three substituents, Q, whereby each Q independently is hydroxy, alkyl having from 1 to 6 carbon atoms, halogen, nitro, alkoxy having from 1 to 6 carbon atoms, trifluoromethyl, cyano, cycloalkyl having from 3 to 7 carbon atoms, alkenyloxy having from 3 to 6 carbon atoms, alkynyloxy having from 3 to 6 carbon atoms, $S(O)_n$-R^a {wherein n is defined herein and R^a is alkyl having from 1 to 6 carbon atoms}, $NHSO_2R^a$ {wherein R^a is defined herein}, $NHSO_2CF_3$, SO_2NH_2, COR^b {wherein R^b is OH, NH_2 or OR^a (wherein R^a is defined herein)}, O-B-COR^b {wherein B is alkylene having from 1 to 4 carbon atoms and R^b is defined herein}, or $NHCOR^c$ {wherein R^c is hydrogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, COR^d (wherein R^d is hydroxy or alkoxy having from 1 to 6 carbon atoms) or

NHR^e (wherein R^e is hydrogen or alkyl having 1 to 6 carbon atoms)];
R^5 and R^6 may be the same or different and are hydrogen, alkyl having from 1 to 6 carbon atoms, halogen, nitro, alkoxy having from 1 to 6 carbon atoms, trifluoromethyl, alkylthio having 1 to 6 carbon atoms or cyano;
n is 0, 1 or 2;
r is 0, 1 or 2;
q is an integer of from 1 to 5; and
A is phenyl, naphthyl, indenyl, indanyl, 2-, 3- or 4-pyridyl, 2-, 4-, 5- or 6-pyrimidyl, 2- or 3-pyrazinyl, 2- or 3-furyl, 2- or 3-thienyl, 2-, 4- or 5-imidazolyl, 2-, 4- or 5-thiazolyl or 2-, 4- or 5-oxazolyl, any of which may be substituted with up to three substituents Q as defined herein above.

4,945,096

TREATMENT OF A DEPRESSIVE STATE WITH 2-[(4-PIPERIDYL)METHYL]-1,2,3,4-TETRAHYDROISOQUINOLINE DERIVATES

Pascal George, Vitry-sur-Seine, and Mireille Sevrin, Paris, both of France, assignors to Synthelabo, Paris, France

Division of Ser. No. 228,748, Aug. 5, 1988, Pat. No. 4,885,302. This application Aug. 30, 1989, Ser. No. 400,811

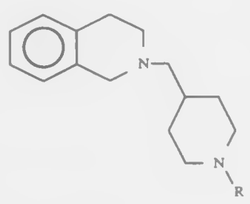
Claims priority, application France, Aug. 7, 1987, 87 11288; Dec. 30, 1987, 87 18342; Apr. 19, 1988, 88 05129; Apr. 19, 1988, 88 05130

Int. Cl.^{5} A61K *31/47*

U.S. Cl. 514—307 **1 Claim**

1. A method of treatment of a depressive state which comprises administering, to a subject suffering or liable to suffer from said state an effective amount of the compound of formula (I)

(I)



in which R is
(a) a hydrogen atom;
(b) a linear or branched (C$_1$–C$_6$) alkyl group; an allyl group; a cycloalkylmethyl group in which the cycloalkyl moiety has from 3 to 6 carbon atoms; a phenylmethyl group unsubstituted or substituted with one to three substituents chosen from halogen atoms and trifluoromethyl, nitro, amino, dimethylamino, cyano, aminocarbonyl, linear or branched (C$_1$–C$_3$) alkyl, linear or branched (C$_1$–C$_3$) alkoxy an linear or branched (C$_1$–C$_3$) alkylthio groups; a 2-phenylethyl group; a 3-phenylpropyl group; a 3-phenyl-2-propenyl group; a phenylcarbonylmethyl group; a naphthylmethyl group; a pyridylmethyl group; a furylmethyl group; or a thienylmethyl group; or
(c) a linear or branched (C$_2$–C$_6$) alkanoyl group; a cycloalkylcarbonyl group in which the cycloalkyl moiety has from 3 to 6 carbon atoms; a trifluoroacetyl group; a phenylcarbonyl group unsubstituted or substituted with one to three substituents chosen from halogen atoms and trifluoromethyl, nitro, linear or branched (C$_1$–C$_3$) alkyl, linear or branched (C$_1$–C$_3$) alkoxy and linear or branched (C$_1$–C$_3$) alkylthio groups; a 1-oxo-3-phenyl-2-propenyl group; a naphthylcarbonyl group; a pyridylcarbonyl group; a furylcarbonyl group; a thienylcarbonyl group; a (2-indolyl)carbonyl group; or a (5-indolyl)carbonyl group; or a pharmacologically acceptable acid addition salt thereof.

4,945,097

ARYL-CYCLOALKYL-ALKANOLAMINES FOR TREATMENT OF NEUROTOXIC INJURY

John W. Olney, Ladue, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

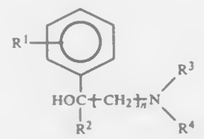
Filed Oct. 23, 1987, Ser. No. 112,659

Int. Cl.^{5} A61K *31/40, 31/445*

U.S. Cl. 514—318 **9 Claims**

1. A method to control excitotoxic neuropathological processes and the neurodegenerative consequences thereof in mammals, which method comprises treating a mammal susceptible to or suffering from anoxia, hypoxia or ischemia with a therapeutically-effective amount of a compound of the formula

(I)



wherein R^1 is one or more groups independently selected from hydrido, halo, alkyl, acyl, hydroxyalkyl, haloalkyl, aminoalkyl, alkoxy, amino alkylamino and acylamino; wherein R^2 is selected from hydrido, cycloalkyl, cycloalkenyl, halocycloalkyl, alkylcycloalkyl, acylcycloalkyl, hydroxycycloalkyl, haloalkylcycloalkyl, aminoalkylcycloalkyl, alkoxycycloalkyl, aminocycloalkyl, bicycloalkyl, bicycloalkenyl and tricycloalkyl wherein the bicycloalkyl, bicycloalkenyl and tricycloalkenyl groups may be substituted with one or more groups selected from alkyl, halo acyl, hydroxy, hydroxyalkyl, haloalkyl, acyl, alkoxy, amino and alkylamino; wherein each of R^3 and R^4 is independently selected from hydrido, alkyl, acyl, alkenyl, cycloalkyl, phenylalkyl, phenyl, aminoalkyl and alkylaminoalkyl; and wherein R^3 and R^4 together to form a cyclic group including the nitrogen atom of Formula I, and n is an integer selected from one through five.

4,945,098

NOVEL PROPANE-1,3-DIOL DERIVATIVES AND USE

Gunnar Grue-Sorensen, Olstykke, and Christian K. Nielsen, V rlose, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

PCT No. PCT/DK86/00128, § 371 Date Jul. 10, 1987, § 102(e) Date Jul. 10, 1987, PCT Pub. No. WO87/03281, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 20, 1986, Ser. No. 78,525

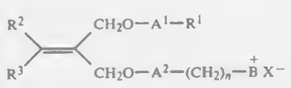
Claims priority, application United Kingdom, Nov. 25, 1985, 8528959

Int. Cl.^{5} C07D *275/02*; A61K *31/41*

U.S. Cl. 514—365 **12 Claims**

1. A compound of the formula I

I



where O—A^1 and O—A^2, which can be the same or different, each represents O, O—C(O), O—C(O)NH, O—C(S)NH or O—C(O)O, R^1 represents an alkyl or alkenyl group of 10–22 carbon atoms, n is an integer from 1 to 11, B$^+$ represents N$^+$(Het), where —N$^+$(Het) stands for 1-pyridinio, 1-pyridazinio, 1-pyrimidinio, 1-pyrazinio, 3-oxazolio, 3-thiazolio, 1-isoquinolinio, 1-quinolinio, 3-alkyl-1-imid-azolio; X$^-$ means the anion of a pharmaceutically acceptable inorganic or organic acid; and R^2 and R^3 are the same or different, and represent hydrogen or alkyl groups of 1–4 carbon atoms.

4,945,099

ANTI-INFLAMMATORY AGENTS

Nancy G. Bollinger; Theodore Goodson, Jr., and David K. Herron, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

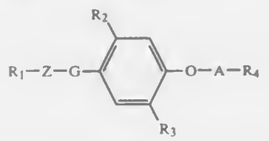
Continuation-in-part of Ser. No. 2,542, Jan. 12, 1987, abandoned. This application Jun. 5, 1989, Ser. No. 361,873

Int. Cl.^{5} C07D *257/04*; A61K *31/41, 31/275*; C07C *49/84*

U.S. Cl. 514—381 **20 Claims**

1. A compound of the formula

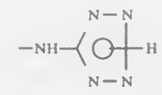
I



or a pharmaceutically acceptable base addition salt thereof, wherein
R$_1$ is hydrogen or R'OOC—;
Z is —(CH$_2$)$_n$— or phenylene;
n is 1–8;
G is



R$_2$ is hydroxy, halo, or —O—(CH$_2$)$_m$—Y;
R$_3$ is C$_1$–C$_6$ alkyl, C$_1$–C$_6$ alkanoyl, C$_2$–C$_4$ alkenyl, C$_1$–C$_4$ alkoxy, hydroxy-substituted C$_1$–C$_3$ alkyl, or —CH$_2$—D;
A is a bond or straight or branched chain C$_1$–C$_{10}$ alkylidene;
R$_4$ is —CN, —COR$_7$, 5-tetrazolyl optionally substituted with a C$_1$–C$_4$ alkyl group or —(CH$_2$)$_q$COOR', or phenyl substituted with one or two groups selected from cyano, —CH$_2$CN, 5-tetrazolyl, or 5-tetrazolyl substituted with C$_1$–C$_4$ alkyl or —(CH$_2$)$_q$—COOR';
where each R' is independently hydrogen or C$_1$–C$_4$ alkyl;
m is 1–4;
q is 1–4;
Y is hydrogen or —CN;
D is halo, C$_1$–C$_4$ alkoxy, or —S—(C$_1$–C$_4$ alkyl); and
R$_7$ is



provided that when A is a bond, R$_4$ must be a substituted phenyl group.

4,945,100

PROCESS FOR THE PREPARATION OF 1-TRIAZOLYLETHYL ETHER DERIVATIVES

Robert Nyfeler, Basel; Helmut Zoodler, Bottmingen, and Elmar Sturm, Aesch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 815,681, Jan. 2, 1986, abandoned, which is a division of Ser. No. 610,224, May 14, 1984, abandoned. This application Sep. 2, 1988, Ser. No. 240,441

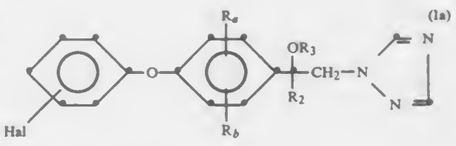
Claims priority, application Switzerland, May 19, 1983, 2730/83

Int. Cl.^{5} A01N *43/653*; C07D *249/08*

U.S. Cl. 514—383 **10 Claims**

1. A compound of formula Ia

(Ia)



in which Hal is halogen;
R$_a$ and r$_b$ independently of one another are hydrogen, halogen, C$_1$–C$_6$-halogenoalkyl, C$_1$–C$_6$-halogenoalkoxy, C$_1$–C$_6$-alkoxy, C$_1$–C$_6$-alkyl, nitro and/or cyano, with the proviso that at least one of R$_a$ and R$_b$ is not hydrogen;
R$_2$ is C$_1$–C$_{12}$-alkyl, C$_1$–C$_4$-alkyl which is substituted by C$_1$–C$_6$-alkoxy or C$_3$–C$_8$-cycloalkyl, C$_3$–C$_8$-cycloalkyl, phenyl which is unsubstituted or monosubstituted to trisubstituted by halogen, C$_1$–C$_6$-halogenoalkyl, C$_1$–C$_6$-halogenoalkoxy, C$_1$–C$_6$ alkoxy, C$_1$–C$_6$-alkyl, phenoxy, halogenophenoxy, phenyl, benzyl, halogenobenzyl, nitro and/or cyano, or benzyl which is unsubstituted or monosubstituted to trisubstituted by halogen, C$_1$–C$_6$-halogenoalkyl, C$_1$–C$_6$-alkoxy, C$_1$–C$_6$-alkyl, nitro and/or cyano; and
R$_3$ is C$_1$–C$_6$-alkyl which is unsubstituted or substituted by C$_1$–C$_3$-alkoxy, or is C$_3$–C$_4$-alkenyl, benzyl or halogenobenzyl.

4,945,101

FUNGICIDAL NOVEL HYDROXYALKYNYL-AZOLYL DERIVATIVES

Gerhard Jäger, Leverkusen; Klaus Böckmann, Cologne; Karl H. Büchel, Burscheid; Wilhelm Brandes, Leichlingen; Paul-Ernst Frohberger, Leverkusen, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

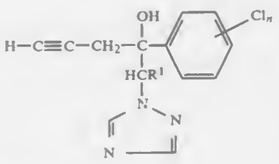
Division of Ser. No. 498,606, May 27, 1983, Pat. No. 4,578,396. This application Oct. 4, 1985, Ser. No. 784,405

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222191

Int. Cl.^{5} A01N *43/653*; C07D *249/08*

U.S. Cl. 514—383 **5 Claims**

1. A hydroxyalkynyl-azolyl derivative of the formula



in which
n is 0, 1 or 2, and
R^1 is hydrogen or methyl, or an addition product thereof with an acid or metal salt.

VOL 1116 ISS 5 JL 31 1990 UMI

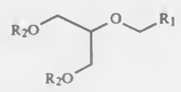
4,945,102

HETEROCYCLIC DERIVATIVES AND RADIOSENSITIZING AGENTS AND ANTIVIRAL AGENTS COMPRISING SAME AS THEIR ACTIVE COMPONENT

Toshimitsu Suzuki; Masakazu Sakaguchi; Yoshiyuki Miyata, and Tomoyuki Mori, all of Yokohama, Japan, assignors to Pola Chemical Industries Inc., Japan, Shizuoka, Japan

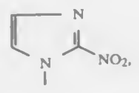
Filed Sep. 21, 1988, Ser. No. 247,376
Claims priority, application Japan, Oct. 22, 1987, 62-267485
Int. Cl.[5] C07D *233/91;* A61K *31/415*
U.S. Cl. 514—398 **3 Claims**

1. A heterocyclic derivative of the following formula (I):



(I)

wherein R_1 represents



and R_2 represents a hydrogen atom or an acetyl group.

4,945,103

METHOD OF TREATING PRE-MENSTRUAL SYNDROME

Michael Cohen, Kerkeboslaan 4A, Wessenaar, Netherlands

Filed Jan. 17, 1989, Ser. No. 297,328
Int. Cl.[5] A61K *31/40, 31/58*
U.S. Cl. 514—419 **14 Claims**

1. A method of alleviating premenstrual anxiety, irritability, depression, confusion, fatigue, insomnia, hypersomnia, weight gain, abdominal bloating, pain or tenderness, breast swelling or tenderness, pelvic pain or cramps, increased appetite or weight gain, edema, or a combination thereof which comprises the administration, on a cyclic schedule, of melatonin in a series of daily doses to a human female of child-bearing years who suffers symptoms of PMS, said administration at dosage levels sufficient to alleviate said symptoms.

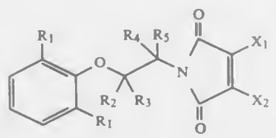
4,945,104

MALEIMIDE DERIVATIVES AND USE THEREOF IN AGRICULTURAL AND HORTICULTURAL FUNGICIDES

Harukazu Fukami, Kyoto; Masaki Hashimoto, Ibaraki; Shinjiro Niwata, Toyonaka; Norio Ohtsuka, Hiratsuka, and Fumio Fujita, Yokohama, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jun. 23, 1989, Ser. No. 370,800
Int. Cl.[5] A01N *37/32;* C07D *207/456*
U.S. Cl. 514—425 **3 Claims**

1. A maleimide derivative having the formula (I):



(I)

wherein R_1 represents a lower alkyl group having 1 to 4 carbon atoms, R_2, R_3, R_4 and R_5 independently represent a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, a phenyl group, a chlorophenol group, a tolyl group or an aralkyl group having 7 to 10 carbon atoms, and X_1 and X_2 independently represent a hydrogen atom or a halogen atom.

3. An agricultural and horizontal fungicide comprising, as an active ingredient, a maleimide derivative represented by the formula (I) of claim 1.

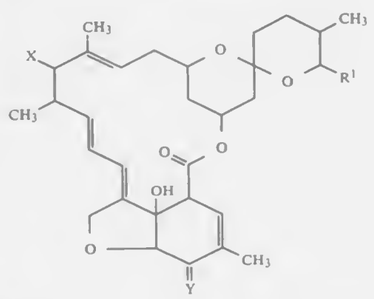
4,945,105

13-HALOMILBEMYCIN DERIVATIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Kazuo Sato; Toshiaki Yanai; Noritoshi Kitano, all of Tokyo; Akira Nishida, Shiga, all of Japan; Bruno Frei, Liestal, and Anthony O'Sullivan, Basel, both of Switzerland, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 866,571, May 22, 1986, abandoned. This application Dec. 28, 1988, Ser. No. 290,835
Claims priority, application Japan, May 31, 1985, 60-118629
Int. Cl.[5] A61K *31/364;* C07D *313/00*
U.S. Cl. 514—450 **54 Claims**

1. A milbemycin compound of formula (I):



(I)

in which:

R^1 represents a methyl group, an ethyl group, an isopropyl group or a sec-butyl group;

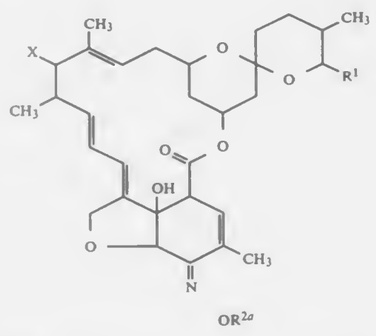
X represents a halogen atom; and

Y represents an oxygen atom or a group of formula $=N—OR^2$, wherein

R2 represents a hyrogen atom, a C_1–C_6 alkyl group, a C_7–C_9 phenylalkyl group, a C_7–C_9 phenylalkyl group having at least one substituent on the phenyl ring selected from the group consisting of C_1–C_6 alkyl, halogen and nitro substituents or a group of formula $—CH_2COOR^3$, in which R^3 represents a hydrogen atom or a C_1–C_6 alkyl group;

and, when R^2 represents a hydrogen atom, a salt or ester thereof.

5. A milbemycin compound of formula (Ia):



(Ia)

OR^{2a}

wherein:

R^1 represents a methyl group, an ethyl group, an isopropyl group or a sec-butyl group;

X represents a halogen atom; and

R^{2a} represents:

a group of formula $—COR^4$, in which R^4 represents a C_1–C_{20} alkyl group, a C_2–C_{20} alkenyl group, a C_3–C_8 cycloalkyl group, a C_7–C_9 phenylalkyl group, a C_7–C_9 phenylalkyl group having at least one substituent on the phenyl ring selected from the group consisting of C_1–C_6 alkyl, halogen and nitro substituents, a phenyl group, a phenyl group having at least one substituent selected from the group consisting of C_1–C_6 alkyl, halogen, nitro, carboxy and C_2–C_7 alkoxycarbonyl substituents or a group of formula $—(CH_2)_nCOOR^5$, wherein n is an integer from 1 to 3 and R^5 represents a hydrogen atom or a C_1–C_6 alkyl group;

a group of formula $—CZ.NR^6R^7$, wherein R^6 and R^7 are the same or different and each represents a hydrogen atom, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a phenyl group or a phenyl group having at least one substituent selected from the group consisting of C_1–C_6 alkyl and halogen and Z represents an oxygen or sulfur atom;

a group of formula $—COOR^8$, wherein R^8 represents: a C_1–C_6 alkyl group; a C_7–C_9 phenylalkyl group, a C_7–C_9 phenylalkyl group having at least one substituent on the phenyl ring selected from the group consisting of C_1–C_6 alkyl, halogen and nitro substituents; a phenyl group; a phenyl group having at least one substituent selected from the group consisting of C_1–C_6 alkyl and halogen; a group of formula $—CH_2(—O—CO)_m—B$ where m is 0 or 1 and B represents an oxygen-containing heterocyclic group having 5 or 6 ring atoms or said heterocyclic group having at least one C_1–C_4 alkyl substituent; or a group derived by removing an omega-hydroxy group from a sugar alcohol selected from the group consisting of glycerol, erythritol, threitol, arabinitol, adenitol, xylitol, sorbitol, mannitol and dulcitol or said sugar alcohol being protected by a group selected from the group consisting of formyl, acetyl, tetrahydro-2-furanyl, tetrahydro-2-pyranyl, 1-methoxyethyl, 1-ethoxyethyl, trimethylsilyl, triethylsilyl and dimethyl-t-butylsilyl;

a group of formula $—SO_2R^9$, wherein R^9 represents a C_1–C_6 alkyl group, a phenyl group, or a phenyl group having at least one substituent selected from the group consisting of C_1–C_6 alkyl and halogen; or

a group of formula $—(Z=)P(—OR^{10})_2$, in which Z is as defined above, and each of the groups represented by R^{10}, which may be the same or different, is a C_1–C_6 alkyl group.

29. A composition as claimed in claim 27, wherein Y represents a group of formula $=N—OH$.

33. A composition as claimed in claim 31, where R^{2a} represents:

a group of formula $—CO.NR^6R^7$ where R^6 and R^7 are independently selected from the group consisting of hydrogen atoms and C_1–C_6 alkyl groups;

a group of formula $—COR^4$ where R^4 represents a C_1–C_{20} alkyl group, a benzyl group or a phenyl group; or a group of formula $—COOR^8$ where R^8 represents a C_1–C_6 alkyl group, a benzyl group or a phenyl group.

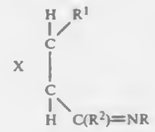
4,945,106

PROSTAGLANDINS

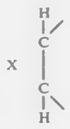
Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, United Kingdom

Continuation of Ser. No. 807,442, Dec. 10, 1985, abandoned, which is a division of Ser. No. 349,084, Feb. 12, 1982, Pat. No. 4,596,823. This application Jul. 6, 1989, Ser. No. 377,760
Claims priority, application United Kingdom, Jul. 1, 1980, 8021537
Int. Cl.[5] C07C *177/00;* A61K *31/557*
U.S. Cl. 514—469 **45 Claims**

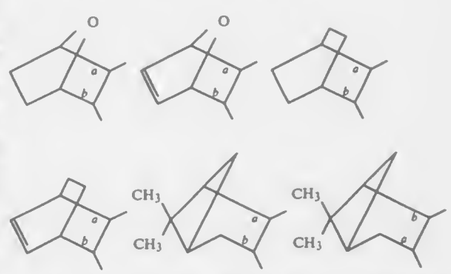
1. A compound of the formula (I)



wherein



represents one of the divalent cyclic groups



the letters a and b indicating in each case the points of attachment of the substituents R^1 and $C(R^2)=NR$, respectively; wherein

R^1 is a group of the formula $R'—COQ$ where R' is selected from the group consisting of $(—CH_2)_j—$ where j is an integer from 4 to 8; $—CH=CH—(CH_2)_k—$, where k is 2 or 3; $—CH_2—CH=CH—(CH_2)_m—$, where m is an integer from 1 to 5; $—CH_2—CH_2—CH=CH—(CH_2)_n—$, where n is 0 or an integer from 1 to 4; $—X—(CH_2)_p—$, where p is an integer from 3 to 7; $—CH_2—X—(CH_2)_q—$, where q is an integer from 2 to 6; and $—CH_2—CH_2—X—(CH_2)_m—$, where X is O or S; and COQ is carboxy, a

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physiologically acceptable carboxylate salt, a C_1–C_5 alkyl ester or $CONHSO_2CH_3$;

R^2 is selected from the group consisting of hydrogen, C_{1-10} aliphatic hydrocarbon groups, and C_{1-10} aliphatic hydrocarbon groups substituted by Ar, OAr or SAr, where Ar represents a phenyl, naphthyl, fluorenyl, dibenzocyclohexyl, dibenzocycloheptyl, pyridyl, benzthiazolyl, dihydrobenzthiazolyl, N-methyldihydrobenzthiazolyl, benzoxazolyl, dihydrobenzoxazolyl or N-methyldihydrobenzoxazolyl group or such a group substituted by one or more substituents selected from C_{1-10} alkoxy, halogen, C_{1-10} halogen-substituted alkyl, sulphamoyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups;

and R is a group $—OR^3$, $—OR^4$, $—A—R^3OR—N=R^5$ in which A is —NH—, —NH.CO—, $NH.CO.CH_2N(R^6)$—, $—NH.SO_2—$, —NH.CO.NH— or —NH.CS.NH— and wherein R^3 is a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr; R^4 is a C_{1-10} aliphatic hydrocarbon group which is substituted through an oxygen atom by a C_{1-10} aliphatic hydrocarbon group which is itself substituted by one or more groups Ar; R^5 is a C_{1-10} aliphatic hydrocarbon group, a group Ar', where Ar' represents a fluorenylidene, dibenzocyclohexylidene, dibenzocycloheptylidene, dihydrobenzthiazolylidene, N-methyldihydrobenzthiazolylidene, dihydrobenzoxazolylidene or N-methyldihydrobenzoxazolylidene group or such a group substituted on a benzene ring or rings thereof by one or more substituents selected from C_{1-10} alkoxy, halogen, C_{1-10} halogen-substituted alkyl, sulphamoyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups, or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr; and R^6 is hydrogen, a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr.

4,945,107
INSECT ATTRACTANT

Dawn C. Misetti, Wykoff, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 129,501, Dec. 7, 1987, abandoned. This application Nov. 8, 1988, Ser. No. 267,246
Int. Cl.[5] A01N *43/08*
U.S. Cl. 514—473 **8 Claims**

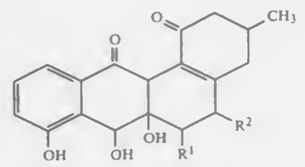
1. A method for attracting cockroaches which comprises placing a composition containing an effective amount of 4-hydroxy-2,5-dimethyl-3(2H) furanone and an inert diluent is an area inhabited by cockroaches.

4,945,108
ANGUCYCLINONES FROM STREPTOMYCETES, A PROCESS FOR THE PREPARATION THEREOF, AND THE USE THEREOF

Susanne Grabley, Königstein/Taunus; Joachim Wink, Offenbach; Carlo Giani, Frankfurt; Gerhard Seibert, Darmstadt; Wolfgang Raether, Dreieich; Susanne Dobreff, and Axel Zeeck, both of Göttingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 24, 1989, Ser. No. 342,061
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3813967
Int. Cl.[5] C07D *303/17, 69/00, 49/543;* A61K *31/335*
U.S. Cl. 514—475 **3 Claims**

1. A compound of the general formula I



I

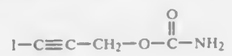
in which, independently of one another,
R^1 can be hydroxyl and
R^2 can be hydrogen, or
R^1 and R^2 represent, together with the carrying carbon atoms, an oxirane ring,
as well as the (C_1toC_5)-acyloxy compounds derivatized on the hydroxyl groups indicated in formula I.

4,945,109
ESTER OF CARBAMIC ACID USEFUL AS A MICROBICIDE AND A PRESERVATIVE

S. Rao Rayudu, Germantown, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Aug. 24, 1988, Ser. No. 235,943
Int. Cl.[5] A01N *47/12*
U.S. Cl. 514—478 **18 Claims**

1. A compound having the formula:



4,945,110
MEMBRAME-FORMING VETERINARY ANTIBACTERIAL TEAT DIP

Kyle Brokken, Chaska, and Randolph S. Porubcan, Victoria, both of Minn., assignors to Quali Tech, Inc., Chaska, Minn.

Continuation-in-part of Ser. No. 62,278, Jun. 15, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 339,197
Int. Cl.[5] A61K *31/205, 31/195, 35/78*
U.S. Cl. 514—517 **35 Claims**

27. A viscosity stabilized, aqueous, topically adherent, self-supporting film-forming veterinary antibacterial composition comprising:

sodium lauryl sulfate in amount between about 4 to 8 weight percent of the total composition;

lactic acid, a food grade salt thereof, or admixtures thereof in an amount between 0.01 to 10 weight percent of the total composition;

a bactericidal food grade organic acid selected from benzoic acid, sorbic acid, citric acid, lower alkanoic acids, a food grade salt thereof, or admixtures thereof in an amount between 0.001 to 0.100 weight percent of the total composition;

a film forming food grade pectin or gum in an amount between about 0.02 to 2.5 weight percent of the total composition; and

a veterinarily acceptable water soluble emollient selected from short chain aliphatic polyols of up to six carbon atoms;

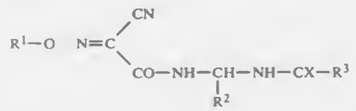
having a viscosity stabilized between 80 to 160 cps at 25 degrees C. and forming a topically adherent flexible protective antibacterial barrier film which adheres to the animal until removed by water washing.

4,945,111
FUNGICIDAL N,N'-DIACYLAMINALS

Winfried Lunkenheimer; Dieter Berg, both of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 11, 1988, Ser. No. 231,121
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1987, 3728277
Int. Cl.[5] A01N *37/34;* C07C *255/64*
U.S. Cl. 514—521 **14 Claims**

1. An N,N'-diacylaminal of the formula



in which
R^1 stands for alkyl which is unsubstituted or substituted by halogen, cyano, $—COOR^I$, $—CONR^{II}R^{III}$, $—OR^{IV}$, acyl, optionally substituted aryl or optionally substituted cycloalkyl; or
stands for optionally substituted alkenyl, optionally substituted alkinyl, optionally substituted cycloalkyl, or optionally substituted cycloalkenyl;
R^2 stands for hydrogen or alkyl which is unsubstituted or substituted by cyano, alkoxy, alkylthio, $—COOR^I$, acylamino, optionally substituted aryl or optionally substituted cycloalkyl; or
stands for optionally substituted alkenyl, optionally substituted alkinyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, or optionally substituted aryl;
R^3 stands for hydrogen or for alkyl which is unsubstituted or substituted by halogen, alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, acyloxy, acylamino, cyano, $—COOR^I$, optionally substituted aryl or optionally substituted cycloalkyl; or
stands for optionally substituted alkenyl or optionally substituted alkinyl; or
stands for optionally bridged and/or fused, optionally substituted cycloalkyl or cycloalkenyl; or
stands for optionally fused, optionally substituted aryl; or for alkoxycarbonyl, $—OR^4$, $—SR^4$ or $—NR^5R^6$;
R^4 stands for alkyl which is unsubstituted or substituted by halogen, $—OR^{IV}$, $—SR^{IV}$, $—COOR^I$, $—CONR^{II}R^{III}$, —CN, $—NR^{II}R^{III}$, acyl, optionally substituted aryl, optionally substituted aryloxy, optionally substituted cycloalkyl, or optionally substituted cycloalkenyl; or
stands for optionally substituted alkenyl, optionally substituted alkinyl, optionally substituted cycloalkyl, or cycloalkenyl;
R^5 stands for hydrogen or for alkyl which is unsubstituted or substituted by halogen, cyano, $—COOR^I$, $—CONR^{II}R^{III}$, $—NR^{II}R^{III}$, $—OR^{IV}$, $—S(OR_n R^{IV}$, acyl, or optionally substituted aryl, optionally substituted cycloalkyl, or cycloalkenyl; or
stands for optionally substituted alkenyl, optionally substituted alkinyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, or optionally substituted aryl; and
R^6 stands for hydrogen or for alkyl which is unsubstituted or substituted by halogen, cyano, $—COOR^I$, $—CONR^{II}R^{III}$, $—NR^{II}R^{III}$, $—OR^{IV}$, $—S(O)_n R^{IV}$, acyl, or optionally substituted aryl, optionally substituted cycloalkyl, or optionally substituted cycloalkenyl; or
stands for optionally substituted alkenyl, optionally substituted alkinyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, or optionally substituted aryl, or the $—OR^{IV}$ group;
R^I stands for hydrogen or alkyl which is unsubstituted or substituted by halogen, or optionally substituted aryl, optionally substituted cycloalkyl, or optionally substituted cycloalkenyl;
R^{II} and R^{III} are identical or different and stand for hydrogen or alkyl which is unsubstituted or substituted by halogen, $—COOR^{IV}$, $—CONR^IR^{IV}$, optionally substituted aryl, optionally substituted cycloalkyl, or optionally substituted cycloalkenyl; or
stand for alkenyl, alkinyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, or optionally substituted aryl;
R^{IV} stands for hydrogen, alkyl, aralkyl, or acyl;
n stands for the numbers 0, 1, or 2; and
X stands for oxygen or sulfur;

wherein

the term "optionally substituted aryl" stands for phenyl which is unsubstituted or substituted by one or more substituents independently selected from the group consisting of halogen, alkyl and alkoxy each having 1 to 4 carbon atoms, halogenoalkyl and halogenoalkoxy each having 1 to 2 different carbon atoms and 1 to 5 identical or different halogen atoms;

the term "optionally substituted aryloxy" stands for "optionally substituted aryl" bonded through oxygen;

the terms "optionally substituted cycloalkyl" and "optionally substituted cycloalkenyl" stand for cycloalkyl and cycloalkenyl which are each unsubstituted or substituted by alkyl having 1 to 4 carbon atoms;

the terms "optionally substituted alkenyl" and "optionally substituted alkinyl" stand for alkenyl or alkinyl which are each unsubstituted or substituted by phenyl which is unsubstituted or substituted by a substituent selected from the group consisting of halogen and alkyl having 1 to 4 carbon atoms;

the term "optionally bridged and/or fused optionally substituted cycloalkyl or cycloalkenyl" stands for cycloalkyl or cycloalkenyl each of which is (1) unbridged or bridged by methylene or ethylene, (2) unfused or fused to 1 or 2 benzene, cyclopentane, or cyclohexane rings, and (3) unsubstituted or substituted by one or more substituents independently selected from the group consisting of halogen, alkyl and alkoxy each having 1 to 4 carbon atoms, acyloxy and acylamino each having 2 to 5 carbon atoms, the oxo group, phenyl, hydroxycarbonyl, and alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part; and

the term "optionally fused, optionally substituted aryl" stands for phenyl which is (1) unfused or fused to 1 to 2 benzene or cyclohexane rings and (2) unsubstituted or substituted by one or more substituents independently selected from the group consisting of halogen, hydroxyl, nitro, alkyl and alkoxy each having 1 to 4 carbon atoms, halogenoalkyl and halogenoalkoxy each having 1 to 2 carbon atoms and 2 to 5 identical or different halogen atoms, acylamino and acylalkylamino each having 2 to 5 carbon atoms in the acyl part and 1 to 4 carbon atoms in the alkyl part, hydroxycarbonyl and alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part.

13. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a cmpound according to claim 1.

4,945,112

GUANIDINIUM COMPOUNDS AND FUNGICIDES CONTAINING THEM

Matthias Zipplies, Hirschberg; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

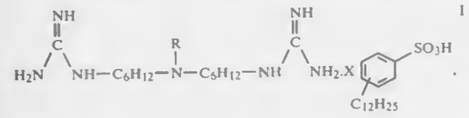
Filed Mar. 16, 1989, Ser. No. 324,422

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3812945

Int. Cl.[5] A01N *31/08, 33/04*; C07C *87/24, 143/34*

U.S. Cl. 514—555 **10 Claims**

1. Guanidiniumdodecylbenzene sulfonates of the formula I:



where

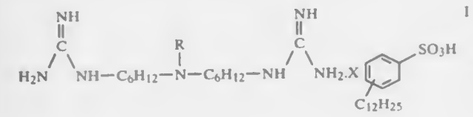
R is the group —H, —CH_3 or



and

X is 1, 2, 3 or 4.

3. A process for combating fungi, wherein the fungi, or the materials, plants, seeds or the soil are treated with an effective amount of a guanidiniumdodecylbenzene sulfonate of the formula I:



where

R is the group —H, —CH_3 or



and

X is 1, 2, 3 or 4.

4,945,113

HERBICIDAL SULFONAMIDE DERIVATIVES

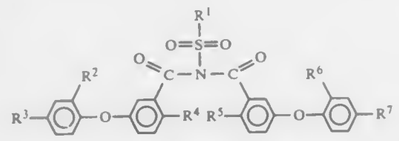
Mark A. Nowakowski, Haddam, and Allyn R. Bell, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Sep. 29, 1989, Ser. No. 414,977

Int. Cl.[5] A01N *41/06*

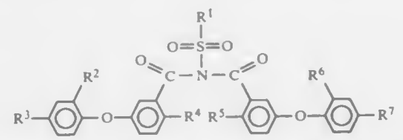
U.S. Cl. 514—605 **8 Claims**

1. A compound having the structural formula:



wherein R^1 is C_1–C_8 alkyl; R^2, R^3, R^6 and R^7 are each independently halogen or tri-halomethyl; and R^4 and R^5 are halogen, cyano or nitro.

5. A method for controlling the growth of undesirable plants comprising applying to the locus of such plants an herbicidally effective amount of a compound having the structural formula:



wherein R^1 is C_1–C_8 alkyl; R^2, R^3, R^6 and R^7 are each independently halogen or tri-halomethyl; and R^4 and R^5 are halogen, cyano or nitro.

4,945,114

THERAPEUTIC AGENTS CONTAINING ENANTIOMERS OF PROPAFENONE

Albrecht Franke, deceased, late of Wachenheim (by Renate E. Franke, Catharina Franke, legal representatives); Rainer Schlecker, Bissersheim; Josef Gries, Wachenheim; Gerda Von Philipsborn, Weinheim, and Liliane Unger, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1988, Ser. No. 225,756

Claims priority, applicatioo Fed. Rep. of Germany, Jul. 30, 1987, 3725273

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—652 **7 Claims**

1. A method for the treatment of arrhythmias in an older patient or a patient suffering from hypotension and cardiac insufficiency, for whom β-blockers are contraindicated, by administering to said patient an effective amount of (R)-propafenone alone.

4,945,115

PROCESS FOR PREPARING FERULIC ACID

Yaguang Liu, 30 Seaman Ave., New York, N.Y. 10034

Division of Ser. No. 732,146, May 9, 1985, Pat. No. 4,687,761. This applicatioo Jun. 18, 1987, Ser. No. 63,433

Int. Cl.[5] A61K *31/05*

U.S. Cl. 514—731 **4 Claims**

1. A process for preparation of ferulic acid comprising:

a. extracting dried powder of a plant selected from the group consisting of Levisticum officinal Koch and Angelica sinenis Diels with boiling water to yield an extract;

b. concentrating the extract under reduced pressure;

c. adding 95% ethanol to said concentrated extract to form a solution;

d. filtering the solution and concentrating under reduced pressure the resulting filtrate to a syrup;

e. drying said syrup in the presence of silica gel to form crude ferulic acid;

f. extracting said crude ferulic acid with 95% ethanol to form an extract;

g. concentrating said ethanol extract under reduced pressure to yield a residue;

h. dissolving said residue in water;

i. passing the water solution through a polyamide column to fractionate the ferulic acid; and

j. extracting the fractionated ferulic acid with benzol-acetone;

k. distilling the resulting extract under reduced pressure; and

l. crystallizing ferulic acid therefrom.

4,945,116

FISCHER-TROPSCH SYNTHESIS PROCESS EMPLOYING A MODERATED RUTHENIUM CATALYST

Hayim Abrevaya, Wilmette, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 29, 1988, Ser. No. 290,398

Int. Cl.[5] C07C *1/04*

U.S. Cl. 518—715 **14 Claims**

1. A process for producing C_3-plus hydrocarbons from carbon monoxide which comprises contracting a feed stream comprising hydrogen and carbon monoxide with a solid catalyst in a reaction zone maintained at conversion-promoting conditions and producing an effluent stream comprising C_3-plus hydrocarbons, with the catalyst comprising (i) an inorganic oxide support; (ii) about 0.3–6.0 wt. percent ruthenium present as particles of about 40–60 Angstroms and (iii) about 0.1–5 wt. % of a modifier component chosen from the group consisting of aluminum, silicon, lead, arsenic, and bismuth.

4,945,117

LIQUID POLYISOCYANATE COMPOSITIONS, A PROCESS FOR THEIR PREPARATION, AND THEIR USE FOR THE PREPARATION OF FLEXIBLE POLYURETHANE FOAMS

Peter Gansen; Klaus-Dieter Wolf, and Klaus Seel, all of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed May 19, 1989, Ser. No. 354,649

Claims priority, applicatioo Fed. Rep. of Germany, Jun. 2, 1988, 3818769

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—99 **26 Claims**

1. A urethane-modified polyisocyanate composition having an NCO content of about 15 to about 30% by weight that is liquid at room temperature, wherein said polyisocyanate composition is obtained by reaction of

(a1) a polyisocyanate or polyisocyanate mixture of the diphenylmethane series containing from 50 to 100% by weight diisocyanatodiphenylmethane isomers,

with

(b) a substoichiometric quantity of a polyether polyol composition, said composition being (i) a polyether polyol having a hydroxyl equivalent weight of about 500 to about 3000 and a hydroxyl functionality greater than about 4 or (ii) a mixture of two or more polyether polyols having an average hydroxyl equivalent weight of about 500 to about 3000 and an average hydroxyl functionality greater than about 4.

4,945,118

(HALONEOCARBYL-SUBSTITUTED)ALIPHATIC OR OXYALIPHATIC)HALOGENATED ALIPHATIC OR OXYALIPHATIC)-PHOSPHORATES WITH POLYURETHANES

Chester E. Pawloski, Bay City; Donna J. Fielding, and David J. Wampfler, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 895,541, Aug. 11, 1986, Pat. No. 4,851,559. This application May 3, 1989, Ser. No. 347,097

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—107 **12 Claims**

1. A method for satisfying a production characteristic of a flame-retardant polyurethane comprising incorporating a (haloneocarbyl-substituted) (aliphatic or oxyaliphatic)-(halogenated aliphatic or oxyaliphatic)phosphorate into a polyurethane whereby said production characteristic is satisfied.

4,945,119

FOAMING SYSTEM FOR RIGID URETHANE AND ISOCYANURATE FOAMS

Guide F. Smits, Wijnegem, Belgium, and Henri J. M. Grünbauer, Oostburg, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 10, 1989, Ser. No. 350,184

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—131 **29 Claims**

1. A process for preparing a rigid closed-celled polyisocyanate-based foam by reacting at least one organic polyisocyanate with at least one active hydrogen-containing compound in the presence of a blowing agent composition characterized in that the composition comprises:

(a) from about 40 to about 95 mole percent based on components (a) and (b) of at least one organic compound having a boiling point of at least about 283K, and

(b) from about 5 to about 60 mole percent based on components (a) and (b) of at least one organic compound having a boiling point less than or equal to about 266K,

and wherein the ratio of the said boiling point of a component (a) to a component (b) is from about 1.06:1 to about 1.20:1 and wherein the said composition is substantially free of any organic compound having a boiling point of at least 338K.

4,945,120

PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAMS USING STERICALLY HINDERED AROMATIC DIAMINES

Richard Kopp; Günter Oertel; Eckehard Weigand, and Rolf Wiedermann, all of Bayer AG, D 5090, Leverkusen, Fed. Rep. of Germany

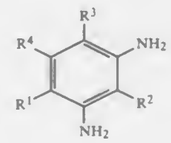
Filed May 23, 1989, Ser. No. 355,943

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1984, 3433979

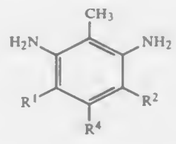
Int. Cl.[5] C08G *18/00, 18/14*

U.S. Cl. 521—163 **13 Claims**

1. In a process for the production of a free-rise polyurethane foam by reacting (i) an organic polyisocyanate and (ii) a compound containing at least two isocyanate-reactive hydrogen atoms and having a molecular weight of from 400 to 10,000, in the presence of (iii) water and/or an organic blowing agent, and allowing the reaction mixture to foam, the improvement wherein a sterically hindered aromatic diamine corresponding to the formula(e)



and/or



in which

R^1 R^2 may be the same or different and represent C_1–C_4 alkyl and R^3 and R^4 may again be the same or different and represent H or CH_3, is added to said reaction mixture.

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4,945,121

THERMOSETTING DYED LATEX COLORANT DISPERSIONS

Fortunato J. Micale, Bethlehem, and Garry T. Gwozdz, Nazareth, both of Pa., assignors to Koh-I-NOOR Radiograph, Inc., Bloomsbury, N.J.

Filed Aug. 18, 1987, Ser. No. 86,741

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.[5] C08L *63/00;* C08K *3/20*

U.S. Cl. 523—339 13 Claims

1. In a process for producing a thermosetting colorant comprising a stable aqueous suspension of nanoparticles of crosslinked thermosetting polymer, wherein water-insoluble dye molecules are intermixed in a polymer matrix, according to a process comprising the steps of:

A. Mixing together an organic solvent, a polymer comprising an epoxy resin that is soluble in said solvent but substantially insoluble in water and dye which is soluble in said solvent and substantially insoluble in water to form a homogeneous mixture, wherein said solvent is characterized by a vapor pressure higher than water and said mixing is continued until said dye and polymer are molecularly intermixed to form a dyed polymer that substantially is dissolved within said solvent; and

B. Dispersing by adding said solvent/polymer/dye solution to water, in a concentration range of 1.0 percent to 50.0 percent, by weight, and agitating until an emulsion results wherein droplets of solvent/polymer/dye less than 10 microns in diameter comprise a discontinuous phase in water as the continuous phase, wherein said dispersing step is done under conditions where interfacial tension between the organic solvent and the water is less than approximately 20 dynes/cm; and

C. Removing substantially all of said solvent to define a resulting fluid comprising an aqueous suspension of dyed polymer nanoparticles;

the improvement which comprises the step of combining dyed polymer with a curing agent by contacting curing agent in a liquid phase with polymer, before or after said dispersing step, to create a final fluid adapted to be crosslinked selectively upon applying heat to raise the temperature of the dyed polymer and curing agent combination above its glass transition temperature.

4,945,122

ACRYLIC RESIN COMPOSITION

Bill R. Edwards, 10311 Merton St., Wichita, Kans. 67209

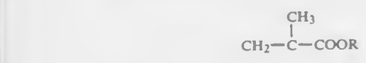
Filed Jul. 27, 1989, Ser. No. 386,501

Int. Cl.[5] C08K *5/42;* C08F *2/38*

U.S. Cl. 524—166 24 Claims

1. A polymerization syrup having a improved shelf life, the polymerization syrup consisting essentially of:

from about 300 to about 1000 parts by volume of an acrylic monomer represented by the formula



wherein R is an alkyl moiety containing 1 to about 18 carbon atoms;

from about 0.1 to about 1 parts by volume 2,2-bis(allyloxymethyl)-butan-1-ol;

from about 0.5 to about 5 parts by volume of a mercaptan; and

from about 0.3 to about 40 parts by volume of a crosslinking agent compatible with the acrylic monomer.

4,945,123

COATING COMPOSITION FOR TREATING SURFACE OF HIGH MOLECULAR ELASTIC MATERIAL

Masayoshi Miyama, and Hiroki Komori, both of Chiba, Japan, assignors to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan

Filed Jan. 31, 1989, Ser. No. 304,816

Claims priority, application Japan, Feb. 2, 1988, 63-22483

Int. Cl.[5] G08J *7/02*

U.S. Cl. 524—269 4 Claims

1. A coating composition for treating a surface of a high molecular elastic material, comprising:

(a) a urethane coating material;

(b) a silicone oil;

(c) a fluorocarbon resin powder; and

(d) a polyethylene powder, wherein the silicone oil, fluorocarbon resin powder, and polyethylene powder are mixed and blended with the urethane coating material to form a surface treating material.

4. A coating composition for treating a surface of a weatherstrip member applicable to an automotive vehicle, comprising:

(a) a urethane coating material;

(b) a silicone oil;

(c) a fluorocarbon resin powder; and

(d) a polyethylene powder, wherein the silicone oil, fluorocarbon resin powder, and polyethylene powder are mixed and blended with the urethane coating material.

4,945,124

IMPACT RESISTANT POLYAMIDE MOULDING COMPOUNDS MODIFIED WITH SILICONE GRAFT RUBBERS

Uwe Westeppe, Remscheid; Christian Lindner, Cologne; Karl-Erwin Piejko, Bergisch-Gladbach, and Josef Merten, Korschenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1989, Ser. No. 294,216

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1988, 3801537

Int. Cl.[5] C08L *51/08*

U.S. Cl. 525—63 13 Claims

1. A thermoplastic moulding composition comprising

(I) 40–99 parts by weight, of a partially crystalline or amorphous polyamide and

(II) 60–1 parts by weight of a graft rubber, having

(a) a core of 0.1 to 90 parts by weight of a cross-linked silicone rubber, wherein the silicone rubber core contains R_2SiO with from 0 to 10 molar units of the formula $RSiO_{3/2}$, from 0 to 1.5 molar units of the formula $R_3SiO_{1/2}$ and from 0 to 3 molar units of the formula SiO_2 per 100 molar units of the formula R_2SiO, wherein R is a saturated hydrocarbon group having 1–18 carbon atoms, phenyl, alkoxy, vinyl or γ-mercaptopropyl;

(b) a first shell of 99.9 to 10 parts by weight of a cross-linked acrylate rubber, graft polymerized on (a), which comprises polymerized alkyl acrylate esters and

(c) a second shell of resin forming graft polymerized vinyl monomers or mixtures of monomers which are α-methylstyrene, styrene, acrylonitrile, alkyl(meth)acrylates or maleic acid derivatives or vinyl acetate or mixtures thereof;

the ratio by weight of the sum of (a)+(b):(c) being in the range of from 7 : 15 to 19 : 3.

4,945,125

PROCESS OF PRODUCING A FIBRILLATED SEMI-INTERPENETRATING POLYMER NETWORK OF POLYTETRAFLUOROETHYLENE AND SILICONE ELASTOMER AND SHAPED PRODUCTS THEREOF

Joseph A. Dillon, and Mark E. Dillon, both of Huntingdon Valley, Pa., assignors to Tetratec Corporation, Feasterville, Pa.

Filed Jan. 5, 1987, Ser. No. 389

Int. Cl.[5] C08L *27/18;* D01D *5/16;* D01F *1/02*

U.S. Cl. 527—427 5 Claims

1. A process for producing a semi-interpenetrating polymer network of polytetrafluoroethylene and silicone elastomers which comprises the steps of (1) intimately blending a mixture of a major amount of unsintered and unfibrillated particulate polytetrafluoroethylene dispersion resin and minor amounts of (A) a hydrocarbon liquid and (B) an addition curable silicone composition consisting essentially of a polydiorganosiloxane having alkenyl unsaturation, an organohydrogenpolysiloxane crosslinking agent, a catalyst for promoting crosslinking of said polysiloxane, and an inhibitor for the catalytic reaction; (2) forming said blend into an extrudable shape; (3) biaxially extruding said blend through a die into a shaped extrudate product having a randomly fibrillated structure; (4) evaporating said hydrocarbon liquid, and activating said catalyst so as to generate a cured silicone elastomer and polytetrafluoroethylene semi-interpenetrating polymer network comprising said fibrillated extrudate structure.

4,945,126

METHODS OF IMPROVING FRICTION AND WEAR PROPERTIES OF POLYMER SYSTEMS

Jane M. Crosby, Wilmington, Del., and John E. Theberge, King of Prussia, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 465,968, Feb. 14, 1983, abandoned, and Ser. No. 774,170, Sep. 9, 1985, abandoned. This application Feb. 2, 1987, Ser. No. 10,032

Int. Cl.[5] C08L *27/18, 23/04, 23/10*

U.S. Cl. 524—507 19 Claims

1. In a method of making a plastic-plastic or plastic-metal wear system wherein the surface of a polymer composite bears against another surface causing friction and wear of the polymer composite, the improvement comprising improving the wear resistance and lowering the coefficients of friction of said composite by melt mixing of a polymer matrix and about 1 to 30 weight percent, based on the total composite, of a lubricant comprising a blend of about 2 to 98 weight percent polyolefin having a weight average molecular weight of about 50,000 to about 500,000 and about 98 to 2 weight percent finely divided polytetrafluoroethylene, to form said composite in which said polyolefin does not remain as discrete, identifiable particles after melt mixing with said polymer matrix, and said matrix is not the same as the polyolefin in the lubricant.

4,945,127

POLYMER COMPOSITION, ITS HEAT-RESISTANT, SHAPE MEMORY FORMED PRODUCT AND METHOD OF PRODUCING SAME

Seiji Kagawa; Hideaki Toda, and Shinichiro Nomura, all of Yokohama, Japan, assignors to Tonen Sekiyukagaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1988, Ser. No. 289,100

Claims priority, application Japan, Dec. 28, 1987, 62-333890; Mar. 10, 1988, 63-56695; Jun. 17, 1988, 63-149739

Int. Cl.[5] C08L *31/04, 23/16*

U.S. Cl. 524—524 7 Claims

1. A shape memory formed product made of a polymer composition comprising 40–70 weight % of a thermoplastic elastomer containing a repeating unit derived from ethylene and a repeating unit derived from propylene, and 60–30 weight % of an ethylene-vinyl acetate copolymer containing 7.5 weight % or more of a vinyl acetate repeating unit, wherein said polymer composition is prepared by blending at a temperature of 160° C. or less, then molded at a temperature of 180° C. or less to produce a formed product, then which is deformed at such a temperature that crystal phases wherein are melted and then cooled while being kept in a deformed shape so as to obtain a shape memory formed product.

4,945,128

DISPERSIONS OF CROSSLINKED POLYMER MICRO-PARTICLES IN AQUEOUS MEDIA, A PROCESS FOR THE PREPARATION OF THESE DISPERSIONS, AND COATING COMPOSITIONS CONTAINING THESE DISPERSIONS

Hans-Dieter Hille, Bergisch-Gladbach; Horst Muller, Cologne, and Arnold Dobbelstein, Münster, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben Aktiengesellschaft, Münster, Fed. Rep. of Germany

Filed Aug. 26, 1988, Ser. No. 267,126

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1986, 3606512

Int. Cl.[5] C08L *75/06;* C08G *18/42*

U.S. Cl. 524—591 18 Claims

1. A dispersion of crosslinked polymer micro-particles in an aqueous medium, wherein the dispersion has been prepared:

(1) by dispersing a mixture of the components (A) and (B) in an aqueous medium, the component (A) being composed of one or more polyester-polyols containing at least 2 hydroxyl groups, and the component (B) being composed of one or more polyisocyanate compounds, and the component (A) having available a number of ionic groups sufficient to form a stable dispersion, and at least one part of the components (A) and/or (B) containing more than 2 hydroxyl or isocyanate, respectively, groups per molecule and

(2) by subsequently heating the dispersion thus obtained to a temperature sufficiently high for the components (A) and (B) to react to form crosslinked polymer micro-particles.

4,945,129

POLYAMIDE COMPOSITIONS WITH HIGH IMPACT STRENGTH AT LOW TEMPERATURES

Charles D. Mason, Chatham Township, Morris County, N.J.; John A. Young, Midlothian, Va.; John C. Haylock, Dennysville, Me., and Ian C. Twilley, Chester, Va., assignors to Allied-Signal Inc., Morristownship, N.J.

Continuation of Ser. No. 90,184, Aug. 27, 1987, abandoned. This application Jan. 26, 1989, Ser. No. 303,038

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—66 13 Claims

1. A melt blended polyamide composition comprising:

from 0.5 to 95% by weight of the total polyamide of polyamide molecules having 60 to 97 mole percent of their end groups as amine groups;

from 5 to 99.5% by weight of the total polyamide of at least one additional polyamide selected from the group consisting of polyamides formed from diamines and dibasic acids and having balanced end groups, and polyamides comprising molecules having end groups formed by reaction with monoamines, or having end groups which are more than 50 mole percent acid groups; and

from 2 to 50 percent by weight of the total polymer of a reactive copolymer comprising a copolymer consisting essentially of ethylene and a monomer elected from the group consisting of an alpha-olefin having 3 to 8 carbon atoms, the reactive copolymer having an average of at least two reactive moieties per copolymer molecule wherein each of said reactive moieties is a dicarboxylic acid or derivative thereof and said amine groups of said polyamide and said at least two reactive moieties of said copolymer react together during melt blending.

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4,945,130

MOLDING COMPOSITIONS OF POLYCARBONATE, THERMOTROPIC POLYMER, GRAFT POLYMER AND FLUORINATED POLYOLEFIN

Joachim Genz; Hans-Rudolf Dicke, both of Krefeld; Ulrich Grigo, Kempen, and Werner Nouvert e, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 206,820, Jun. 15, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 408,473

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721239

Int. Cl.[5] C08L *69/00, 67/00*

U.S. Cl. 525—67 6 Claims

1. Thermoplastic molding compositions of

A. 1 to 98.87% by weight of an aromatic polycarbonate,

B. 1 to 86% by weight of a thermotropic polymer,

C. 0.05 to 5% by weight of a fluorinated polyolefin and

D. 0.08 to 8% by weight of an elastomeric graft polymer,

the percentages being based in each case on the sum of components A to D.

4,945,131

CONTROL OF SURFACE GLOSS BY VARIATION OF HIPS RUBBER SWELL INDEX IN POLYPHENYLENE ETHER COMPOSITION

Sai-Pei Ting, Delmar, N.Y., assignor to General Electric Company, Selkirk, N.Y.

Filed Jan. 10, 1986, Ser. No. 817,903

Int. Cl.[5] C08L *7/12*

U.S. Cl. 525—68 9 Claims

1. A method of controlling the surface gloss of a molded composition of (a) a polyphenylene ether resin and (b) a rubber modified, high impact polystyrene comprising regulating the rubber swell index of the rubber in component (b) from about 9.3 to about 17.9 to vary the surface gloss after molding from about 37 to about 58 in inverse proportion to the swell index.

4,945,132

CROSSLINKED POLYMER INTERDISPERSIONS, RELATED COMPOSITIONS AND METHOD OF MAKING SAME

Edward V. Wilkus, 27 Woodmere Dr., and Alexander F. Wu, 33 Melrose Ave., both of, Trumbull, Conn. 06611

Division of Ser. No. 908,966, Aug. 14, 1986, Pat. No. 4,781,979, and Ser. No. 679,144, Dec. 6, 1984, Pat. No. 4,758,627. This application Apr. 18, 1988, Ser. No. 182,886

Int. Cl.[5] C08L *23/26, 25/10, 27/18, 27/22*

U.S. Cl. 525—194 9 Claims

1. A composition of matter comprising a chemically crosslinkable interdispersion of a first polymer and a second polymer, said interdispersion (i) being at least partially formed with at least one polytetrafluoroethylene interdispersing agent and (ii) containing a peroxide crosslinking agent;

wherein the first polymer is selected from the group consisting of:

low density polyethylene,
high density polyethylene,
linear low density polyethylene,
ethylene/propylene copolymer,
polypropylene
ethylene/propylene/diene terpolymer,
ethylene/vinyl acetate copolymer,
ethylene/ethyl acrylate copolymer,
chlorinated polyethylene, and
chlorosulfonated polyethylene;

the second polymer is selected from the group consisting of:

polyvinyl chloride,
styrene/butadiene rubber, polychloroprene,
polymethyl methacrylate, and
polypropylene;

and, in each interdispersion, the first polymer is different from the second polymer.

4,945,133

OXIDATION OF HALOGENATED POLYMERS AND ANTICAKING HALOGENATED POLYMERS

Donald W. Pennington, and Joseph L. Allison, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 101,615, Sep. 26, 1987. This application Nov. 22, 1988, Ser. No. 274,877

Int. Cl.[5] C08F *8/34*

U.S. Cl. 525—261 11 Claims

1. A process of preparing a graft copolymer comprising steps of

(a) forming an admixture of (1) an acidic oxidizing agent selected from the group consisting of peroxydisulfuric acid, and its alkali and alkaline earth metal salts and (2) a suspension of a particulate halogenated polymer selected from the group consisting of halogenated olefin polymers and halogenated rubbers in a polar liquid;

(b) heating the admixture to a temperature sufficient to initiate reaction between the polymer and the oxidizing agent; and

(c) continuing the reaction until an oxidized polymer having a preselected extent of oxidation is obtained

(d) grafting to the oxidized polymer at least one addition polymerizable compound.

4,945,134

INTERPOLYMERS HAVING COLOR AND HEAT STABILITY AS WELL AS OXYGEN BARRIER PROPERTIES

Karen L. Wallace, and Dolk Lee, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 12, 1988, Ser. No. 282,654

Int. Cl.[5] C08F *214/08, 111/08*

U.S. Cl. 525—301 7 Claims

1. An emulsion polymerized interpolymer having two phases consisting essentially of: (a) a first phase of an effective amount of at least one ethylenically unsaturated monomer and (b) a second phase of an effective amount of vinylidene chloride monomer and at least one ethylenically unsaturated comonomer wherein the first and second phases are miscible with each other and wherein the ethylenically unsaturated monomer of the second phase is selected from the group consisting of: vinyl chloride, alkyl acrylates, alkyl methacrylates, acrylic acid, methacrylic acid, and itaconic acid and wherein the ethylenically unsaturated monomer of the first phase is selected from the group consisting of: methylmethacrylate; alkyl acrylates; and alkyl methacrylate monomer mixtures and wherein the effective amount of the ethylenically unsaturated monomer present in the first phase is from about 95 to about 5 weight percent based on total monomer present in the total interpolymer particle and wherein the effective amount of the ethylenically unsaturated comonomer present in the second phase is from about 5 to about 25 weight percent based on total monomer present in the second phase.

4,945,135

RING OPENING METATHESIS POLYMERIZATION OF STRAINED CYCLIC ETHERS

Robert H. Grubbs, South Pasadena, and Bruce M. Novak, El Sobrante, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 371,982, Jun. 22, 1989, Pat. No. 4,883,851, which is a continuation-in-part of Ser. No. 223,406, Jul. 25, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 407,888

Int. Cl.[5] C08C *19/02*

U.S. Cl. 525—338 3 Claims

1. A process of forming fully saturated polymers comprising hydrogenating polymers obtained from the polymerization of 7-oxanorbornene and its derivatives.

4,945,136

PROCESS FOR THE PREPARATION OF CARBOXYLATED PROPYLENE POLYMERS

Anne C. Udding, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 184,644, Apr. 22, 1988, Pat. No. 4,849,477. This application Feb. 15, 1989, Ser. No. 310,165

Claims priority, application United Kingdom, Nov. 27, 1987, 8727775

Int. Cl.[5] C08F *8/34*

U.S. Cl. 525—351 5 Claims

1. A process for the preparation of carboxylated propylene homo- and copolymers which comprises the reaction of a thermoplastic propylene homo- or copolymer with between 0.1 and 6.0% of an azidosulfonylbenzoic acid by mechanically mixing for not more than about 30 minutes said polymer and said acid at a temperature of between 200° C. and 220° C. in the substantial absence of a free-radical initiator and wherein the reaction components are blended at a temperature from 160° C. to 170° C. prior to the reaction step.

4,945,137

BINDER COMBINATIONS AND A PROCESS FOR THE PRODUCTION OF FLAT MATERIALS

Walter Schäfer, Leichlingen; Hans Rudolph, Krefeld; Rolf Dhein, Krefeld; Hanns-Peter Müller, Krefeld; Michael Sonntag, Odenthal; Christian Wamprecht, Neuss; Harald Blum, Wachtendonk, and Walter Krauss, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Oct. 2, 1989, Ser. No. 415,863

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834750

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—375 6 Claims

1. In improved binder combinations of

(a) polymers containing intramolecular carboxylic anhydride groups and having an average molecular weight of from 500 to 25,000 and

(b) organic compounds containing 4,5-dihydrooxazole groups in a quantity corresponding to an equivalent ratio of carboxylic anhydride groups to 4,5-dihydrooxazole groups of from 0.5:1 to 2:1,

the improvement comprises said combinations having a content of from 0.005 to 6% by weight, based on the weight of components (a) and (b), of ammonia, a primary amine or secondary amine.

4,945,138

STYRYLAZA VINYL ESTERS

Robert E. Hefner, Jr., and John W. Robinson, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 101,047, Sep. 25, 1987, Pat. No. 4,851,483. This application Feb. 28, 1989, Ser. No. 317,267

Int. Cl.[5] C08G *8/10*

U.S. Cl. 525—502 2 Claims

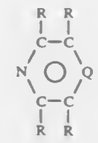
1. A polymerizable mixture comprising

(I) the vinyl ester resin composition prepared by reacting

(A) a polyepoxide of a thermostable hydroxystyrylaza compound wherein said hydroxystyrylaza compound is prepared by reacting

(1) one or more mono hydroxy aromatic aldehydes wherein the ortho and para positions from the hydroxy group having no aldehyde groups are substituted by groups inert to condensation with alkyl azines, and

(2) one or more methylated azine compounds having the formula

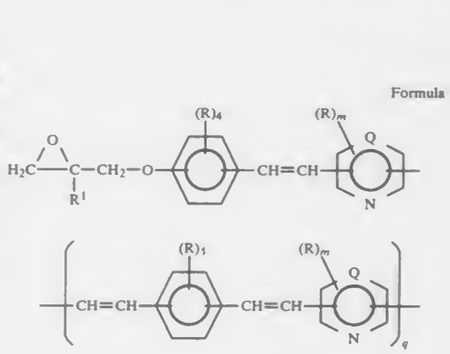


where Q is N or C-R, and each R is independently hydrogen, a halogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to 20 carbon atoms, nitro, nitroso, nitrile,

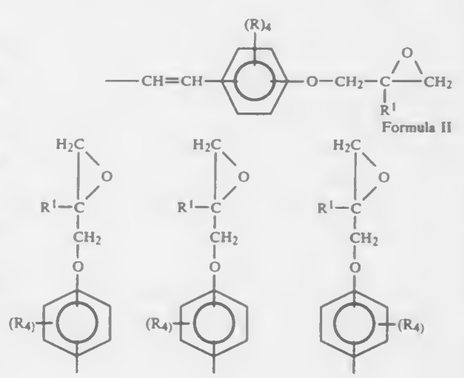


allyl or a methallyl group; E is a hydrocarbyl group having from 1 to about 20 carbon atoms with the proviso that the total number of methyl groups (R = —CH_3) substituted on the ring is in the range from 2–4 and wherein said polyepoxy compound has one of the following formulas

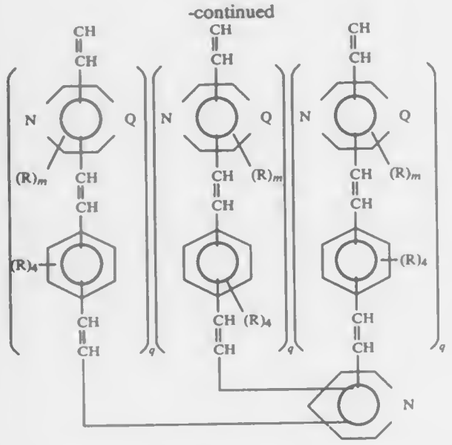
Formula I



Formula II



-continued



wherein Q is independently C-R or N and when Q is C-R, m is 3, when Q is N, m is 2; each R is independently hydrogen, a halogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms, nitro, nitroso, nitrile,



allyl or a methallyl group; E is a hydrocarbyl group having from 1 to about 20 carbon atoms with the proviso that the R groups ortho or para to the glycidyl ether linkage may not be hydrogen; q has a value from 0 to about 50; and R^1 is independently hydrogen or a hydrocarbyl group having from 1 to about 4 carbon atoms with

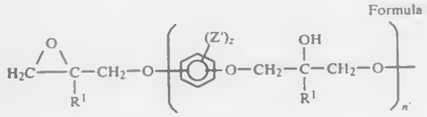
(B) about 0.75 to about 1.0 mole of one or more monoolefinically unsaturated monocarboxylic acids per mole of epoxide; and

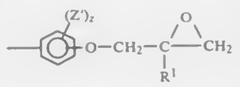
(II) one or more members of the group consisting of

(A) ethylenically unsaturated monomers,

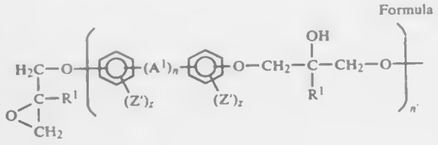
(B) vinyl ester compositions derived from (1) one or more epoxy resins represented by the following formulas VIII, IX, X or XI

Formula VIII

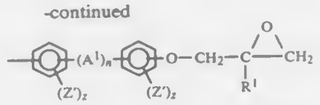




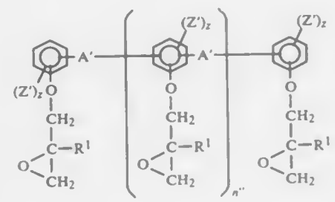
Formula IX



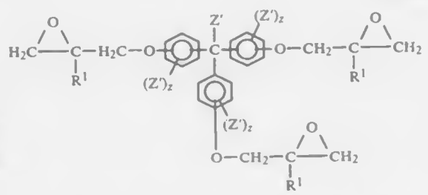
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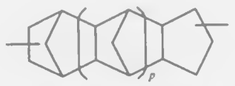
Formula X



Formula XI



wherein A^1 is independently an alkylene group having from 1 to about 10 carbon atoms, —O—, —CO—, —S—, —S—S—, —SO—, —SO_2—; each A' is independently an alkylene group having from 1 to about 6 carbon atoms or a



group; Z' is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms, a halogen, or a phenyl group; each R^1 is independently hydrogen or a hydrocarbyl group having from 1 to about 4 carbon atoms; n has a value of zero or 1; n' has a value of from about zero to about 30; n'' has a value from about 0.001 to about 6; p has a value from zero to about 10; z has a value of 4; and z' has a value of 3; and (2) at least one mono-olefinically unsaturated monocarboxylic acid,

(C) styryl pyridines, and/or their prepolymers or polymers,

(D) vinyl styryl pyridines, and/or their prepolymers or polymers,

(E) alkenylphenyl cyanates,

(F) dicyanates and/or polycyanates,

(G) bismaleimides and/or polymaleimides,

(H) epoxy resins,

(I) alkenylphenol capped styryl pyridines and/or their prepolymers or polymers,

(J) allyl styryl pyridines and/or their prepolymers or polymers,

(K) styryl pyridine cyanates and/or their prepolmers or polymers,

(L) furan capped styryl pyridines and/or their prepolymers or polymers, and

(M) alkenylphenyl glycidyl ether capped hydroxystyryl pyridines and/or their prepolymers or polymers.

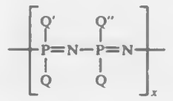
4,945,139

PROCESS FOR SURFACE TREATING PHOSPHONITRILIC FLUOROELASTOMERS

Charles H. Kolich; W. Dirk Klobucar, and Jeffrey T. Books, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 24, 1989, Ser. No. 383,642
Int. Cl.[5] C08G 79/02
U.S. Cl. 525—538 **12 Claims**

1. A process for treating a cured phosphonitrilic fluoroelastomer of the formula



where x is an integer of from about 3 to about 50,000, Q and Q' are the same or different and are fluoroalkoxy of the formula $—OCH_2(CF_2)_mCF_2Z$ where m is an integer from 0 to 20 and Z is hydrogen or fluorine and Q'' is a group having some olefinic unsaturation comprising treating the surface of said cured phosphonitrilic fluoroelastomer with a solution of an alkali metal fluoroalkoxide of the formula MOC_nf where M is an alkali metal and C_nf is a fluorocarbon moiety represented by the formula $—(CH_2)_y(CF_2)_nCF_3$ where y is 1 or 2 and n is an integer from 1 to 20; replacing some of said Q and Q', where Q and Q' are as previously defined with said moiety OC_nf; whereby the resulting cured phosphonitrilic fluoroelastomer possesses a decreased number of fluoroalkoxide groups where Z is hydrogen.

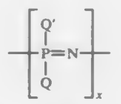
4,945,140

PROCESS FOR PREPARATION OF PHOSPHONITRILIC FLUOROELASTOMERS

Charles H. Kolich, and W. Dirk Klobucar, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 30, 1989, Ser. No. 373,449
Int. Cl.[5] C08G 79/02
U.S. Cl. 525—538 **9 Claims**

1. A process for the preparation of phosphonitrilic fluoroelastomer by treating a phosphonitrilic polymer of the formula



where x is an integer of from about 3 to about 50,000, Q and Q' are the same or different and are fluoroalkoxy of the formula $—O(CH_2)_y(CF_2)_mCF_2Z$ where y is 1 or 2, m is an integer from 0 to 20 and Z is hydrogen or fluorine with a ligand replacement mixture of i) an alkali metal fluoroalkoxide of the formula MOC_nf where M is an alkali metal and C_nf is a fluorocarbon moiety represented by the formula $—(CH_2)_y(CF_2)_nCF_3$ where y is 1 or 2 and n is an integer from 1 to 20 and ii) a fluoroalcohol of the formula HOC_nf^6 where C_nf is the same or different than C_nf where y and n are as previously defined; replacing some of said Q and Q', where Q and Q' are as previously defined with C_nf and C_nf; whereby the resulting phosphonitrilic fluoroelastomer possesses a decreased number of fluoroalkoxide groups where Z is hydrogen.

4,945,141

RING OPENING METATHESIS POLYMERIZATION OF STRAINED CYCLIC ETHERS

Robert H. Grubbs, South Pasadena, and Bruce M. Novak, El Sobrante, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 371,982, Jun. 22, 1989, Pat. No. 4,883,851, which is a continuation-in-part of Ser. No. 223,406, Jul. 25, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 407,884
Int. Cl.[5] C08F 4/42
U.S. Cl. 526—90 **2 Claims**

1. A process for carrying out emulsion catalysis comprising contacting oxanorbornene or its derivatives with a catalyst selected from the group consisting of $RuCl_3$ (hydrate), $OsCl_3$ (hydrate), K_2RuCl_5 (hydrate), $[Ru(NH_3)_5Cl]Cl_2$, $[Ru(NH_3)_5(H_2O)](CH_3CO_2)_2$, $Ru_3O_2(NH_3)_{14}Cl_6$, $RuBr_3$ (hydrate), $Ru(H_2O)_6(Ts)_2$ (Ts=tosylate), cis-tetrakis(dimethylsulfoxide)dichlororuthenium (II), trans-tetrakis(dimethylsulfoxide)dibromoruthenium (II), and tetrakis(tetrahydrothiophene)dichlororuthenium (II).

4,945,142

COMPOSITION AND PROCESS FOR FRICTION LOSS REDUCTION

Donald E. Gessell, Friendswood, Tex., and Donald P. Hosman, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 14, 1988, Ser. No. 271,552
Int. Cl.[5] C08F 4/64, 4/68
U.S. Cl. 526—128 **3 Claims**

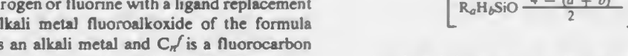
1. A method of preparing an ultra-high molecular weight hydrocarbon soluble polymer having an inherent viscosity greater than 12.0, comprising contacting under polymerization conditioned an ethylenically unsaturated monomer with a catalyst prepared by contacting, under an inert atmosphere,

(1) a transition metal halide of the general formula MX_t, wherein M is titanium or vanadium, and t is equal to 2.5 to 4.0, and x is a halogen with

(2) a first electron donor selected from the group consisting of ethers, amines, esters, phosphines, piperdines, phosphites, phosphates, pyridines, sulfides and mixtures of these, and allowing the components to react for a period of at least 3 minutes, then contacting the reaction product of (1) and (2) with

(3) a co-catalyst comprising an organoaluminum or organoaluminum halide of the formula AlR_nX_{3-n}, wherein R is a hydrocarbon radical containing from 1 to 20 carbon atoms, X is at least one constituent selected from the group consisting of halogen, siloxide or alkoxide, and n is less than 3, and

(4) a polysiloxane of the general formula



wherein R is hydrogen, an alkyl group containing from 1 to 20 carbon atoms, aralkyl or alkaryl group containing from 6 to 20 carbon atoms, a and b are greater than 0, and where the sum (a+b) does not exceed 3.0, and c is 2 or more, and wherein the ethylenically unsaturated monomer is at least 80 percent alpha-olefins, and wherein the resultant polymer formed is formed from alpha-olefins containing at least 4 carbon atoms.

4,945,143

ALLYLOXY ACTIVATED COATING COMPOSITIONS

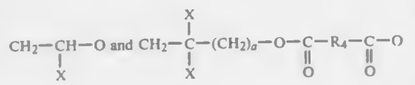
Christopher J. Hardiman, Belchertown, and Gary R. Bowers, Westfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 286,012, Dec. 19, 1988, Pat. No. 4,861,668, which is a division of Ser. No. 946,742, Dec. 24, 1986, Pat. No. 4,816,535. This application Jul. 21, 1989, Ser. No. 383,114
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.[5] C08F 4/06
U.S. Cl. 526—206 4 Claims

1. A coating composition comprising
(a) a free-radical polymerizable compound,
(b) an allyloxy compound,
(c) a metal drier catalyst,
(d) a peroxide free radical initiator, and
(e) a strong fugitive acid as a catalyst stabilizer;
wherein said allyloxy compound is selected from the group represented by the formulae:

$$R_2((E)_mR_3)_n,\ R_5(OCH_2Y)_p,\ R_6(CH(OCH_2Y)_2)_q \text{ or } R_7(O_2CHY)_r$$

where R_2 is a radical molecular weight less than about 10000 obtained by removal of active hydrogen from an active hydrogen compound selected from the group consisting of water, alcohols, thiols, carboxylic acids, carboxylic amides and amines, where the functionality of R_2 is n and is in the range of 1 to 10, where E is a divalent radical selected from the group represented by the formulae



where X is selected from the group consisting of H, CH_3,C_2H_5 and CH_2OCH_2Y,Y being selected from the group consisting of

$$CH{=}CH_2,\ CH_3{-}C{=}CH_2,\text{ and } C_2H_5{-}C{\equiv}CH$$

where a is 0 or 1, where R_3 is hydrogen or an unsubstituted or substituted C_1 to C_{10} hydrocarbyl radical, where R_4 is a divalent unsubstituted or substituted C_2 to C_{10} hydrocarbyl radical and where the product of m and n is at least 4 and not more than about 60; where R_5 is a C_2 to C_{12} aliphatic hydrocarbyl or oxahydrocarbyl radical of equivalence p in the range of 4 to 12; where R_6 is absent or is a C_1 to C_{20} unsubstituted or substituted hydrocarbyl group and q is in the range of 2 to about 30; R_7 is a radical of molecular weight less than about 10,000 obtained by removal of at least two active hydrogens from a polyol and r is in the range of about 1 to about 170; and wherein the weight ratio of α,β-ethylenically unsaturated compound to allyloxy compound is in the range of about 30:70 to about 99:1; and wherein the allyloxy compound contains from 4 to 60 allyloxy groups per molecule.

4,945,144

RING OPENING METHATHESIS POLYMERIZATION OF STRAINED CYCLIC ETHERS

Robert H. Grubbs, South Pasadena, and Bruce M. Novak, El Sobrante, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 371,982, Jun. 22, 1989, Pat. No. 4,883,851, and a continuation-in-part of Ser. No. 223,406, Jul. 25, 1988, abandoned. This application Sep. 15, 1989, Ser. No. 407,881
Int. Cl.[5] C08F 24/00
U.S. Cl. 526—268 3 Claims

1. A process of initiating polymerization of a strained cyclic olefin comprising contacting said olefin with a dilute aqueous solution of a derivative of 7-oxanorbornene.

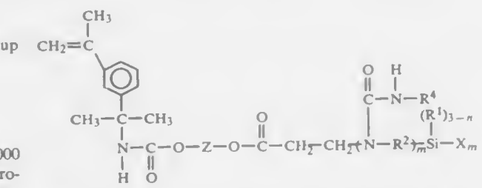
4,945,145

SILANE COATING COMPOSITION FOR AMBIENT CURE

Paul P. Bruylants, Sicklerville; Patrick H. Corcoran, Cherry Hill, both of N.J., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1989, Ser. No. 334,514
Int. Cl.[5] C08F 30/08
U.S. Cl. 526—279 5 Claims

1. A curable resin having a number average molecular weight of 1,000 to 100,000 of a copolymer of a prepolymer (F) having a number average molecular weight of 550 to 1770 with a vinyl monomer (D), said prepolymer (F) having the formula (III):



where R^4 is an alkyl, cycloalkyl, aryl or aralkyl group having 1 to 30 carbon atoms or a group having the formula $(C_2H_5O)_3$—Si—$(CH_2)_3$—; R^1 is an alkyl, aryl or aralkyl group having 1 to 10 carbon atoms; R^2 is a bivalent group having 1 to 10 carbon atom selected from the group consisting of alkylene, arylene and aralkylene groups; X is a hydrolyzable group selected from the group consisting of a halogen atom, an alkoxyl group, an acyloxyl group, a ketoxymate group, mercapto group and an alkenyloxy group;
Z is a residue of an oligomer (A) having a number average molecular weight of 28 to 900 and having one group consisting of acryloyl group and one group consisting of a hydroxy group, n is an integer of 1 to 3, and m is an integer of 1 to 10.

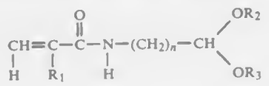
4,945,146

DISPERSION POLYMERS PROCESSES FOR THEIR PREPARATION AND THEIR USE

Wolfgang Kapmeyer, Marburg, and Helmut Rinno, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Fed. Rep. of Germany

Continuation of Ser. No. 943,802, Dec. 29, 1986, abandoned.
This application Nov. 18, 1987, Ser. No. 124,338
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545595
Int. Cl.[5] C08F 265/10
U.S. Cl. 526—304 13 Claims

1. A process for preparing a dispersion polymer comprising the steps of:
(a) adding an emulsifier and a free-radical initiator to an aqueous seed dispersion of latex having a particle diameter of 0.02 μm to 2 μm; and
(b) adding dropwise with stirring at a temperature in the range of 10° C. to 120° C. to the seed dispersion containing the emulsifier and the initiator a monomer of Formula I

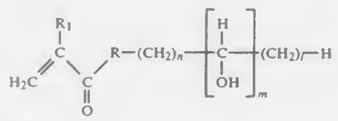


in which
n denotes 1–6;
R_1 denotes H or CH_3;

R_2 and R_3 are identical or different and denote —$(CH_2)_m$—CH_3, and
m denotes 0–7, or



in which
X, Y and Z denote $(CH_2)_p$—CH_3 and
p denotes 1–3, where
X, Y and Z are identical or different, and a monomer of Formula II



in which
R denotes 0 or NH;
n denotes 1–3;
m denotes 1–4;
l denotes 0–4; and
R_1 denotes H or CH_3
to form a dispersion polymer comprising latex particles and a copolymer of Formula I and II formed on the surface of the particle.

11. A biologically active dispersion polymer, comprising a dispersion polymer obtained by the process of claim 1 and an antibody, an antigen or a hapten bonded thereon.

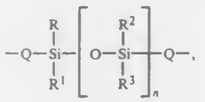
4,945,147

AROMATIC POLYESTER-SILOXANE BLOCK COPOLYMERS AND METHOD FOR MAKING

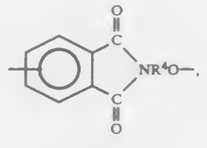
Peter P. Policastro, Niskayuna, N.Y.; Pamela K. Hernandez, North Olmsted, Ohio; Sandra A. Swint, Schenectady, N.Y.; Gary C. Davis, Albany, N.Y.; Jonathan D. Rich, Rexford, N.Y.; Philip J. McDermott, Clifton Park, N.Y., and Thomas L. Guggenheim, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1989, Ser. No. 319,027
Int. Cl.[5] C08G 77/04
U.S. Cl. 528—26 10 Claims

1. An aromatic polyester-siloxane block copolymer comprising chemically combined aromatic polyester units selected from the class consisting of dihydric phenol units, aromatic diacid units and condensed mixtures thereof, and 0.1 to 100 mole percent of condensed siloxane units based on the total moles of condensed polyester units and siloxane condensed units in the aromatic polyester-siloxane block copolymer, where the condensed siloxane units have the formula,



Q is a member selected from the class consisting of



and mixtures thereof, R–R^3 are selected from $C_{(1-13)}$ monovalent hydrocarbon radicals and $C_{(1-13)}$ monovalent hydrocarbon radicals substituted with radicals inert during condensation reaction, R^4 is a $C_{(6-13)}$ divalent aromatic organic radical and n is an integer having a value of from 1 to 200 inclusive.

4,945,148

SILICON-POLYCARBONATE BLOCK COPOLYMERS

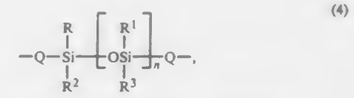
Jonathan D. Rich, Rexford; Philip J. McDermott, Clifton Park; Gary C. Davis, Albany; Peter P. Policastro, Niskayuna; Karen A. Regh, Clifton Park, all of N.Y.; Pamela K. Hernandez, North Olmsted, Ohio, and Thomas L. Guggenheim, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1989, Ser. No. 319,025
Int. Cl.[5] C08G 77/04
U.S. Cl. 528—26 5 Claims

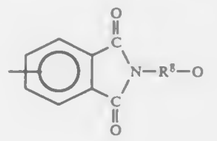
1. A silicone-polycarbonate block copolymer having 0.5 to 90% by weight of silicone blocks and comprising recurring chemically combined groups having the formula

—YD—,

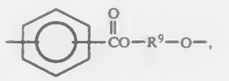
where
Y is a divalent organosilicon siloxane group having the formula


(4)

Q is a member selected from the class consisting of


(5)

and


(6)

and mixtures thereof,
D is a divalent polycarbonate block having the formula



where R—R³ are selected from the same or different $C_{(1-14)}$ hydrocarbon radicals or $C_{(1-14)}$ hydrocarbon radicals substituted with radicals inert during equilibration or condensation, R^8 is selected from divalent $C_{(6-13)}$ divalent arylene radicals $OCC_{(6-13)}$ *divalent arylene radicals substituted with radicals inert during equilibration or condensation,* R^9 and R^{10} are selected from $C_{(6-20)}$ divalent aromatic hydrocarbon radicals, or $C_{(6-20)}$ divalent aromatic hydrocarbon radicals substituted with radicals inert during equilibration and condensation, n is an integer equal to from 1 to 200 inclusive and m is an integer equal to from 1 to 50 inclusive.

4,945,149

COATING COMPOSITION A NON-POROUS MOISTURE-PERMEABLE COATING LAYER OR FILM OF A HYDROPHILIC POLYURETHANE RESIN

Yukio Matsumoto, and Nobuaki Kunii, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 903,964, Sep. 5, 1986, abandoned. This application Aug. 2, 1988, Ser. No. 229,727

Claims priority, application Japan, Sep. 6, 1985, 60-196085

Int. Cl.⁵ C08G *18/10*

U.S. Cl. 528—61 **7 Claims**

1. A coating composition for forming a substantially non-porous moisture-permeable coating layer or film of a hydrophilic polyurethane resin, which comprises (i) a prepolymer of a polyol combination and a polyisocyanate compound, said prepolymer having a viscosity of a most 10,000 cp at 25° C. and (ii) a curing agent for said prepolymer selected from the group consisting of a diol and a diamine having a molecular weight of 200 or less, said polyol combination comprising:

(a) from about 50 to about 98% by weight of polyoxyethylene polyol having an oxyethylene group content of from about 50 to about 90% by weight, at least 5% by weight of C_3–C_4 alkylene oxide residues, a hydroxyl value of from about 15 to about 60 and at least 3 hydroxyl groups; and

(b) from about 2 to about 50% by weight of a diol having a molecular weight of from about 62 to about 2,000 which may contain oxyethylene groups;

provided that the molar equivalent ratio of the component (b) to the component (a) is from about 0.3 to about 3, and the total oxyethylene group content in the components (a) and (b) is from about 75% to about 95% by weight.

4,945,150

MELT PROCESSABLE THERMOTROPIC AROMATIC COPOLYESTER DERIVED FROM HYDROXY PHENOXY BENZOIC ACIDS AND HYDROXY BENZOIC ACID

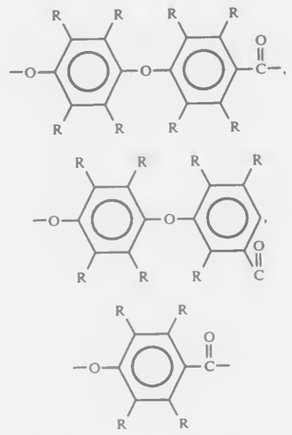
William B. Marshall; James R. Pribish, and James L. Brewbaker, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1989, Ser. No. 348,317

Int. Cl.⁵ C08G *63/02, 63/00*

U.S. Cl. 528—193 **13 Claims**

1. A copolymer capable of forming an optionally anisotropic melt comprising recurring structural units (a) independently selected from the group consisting of Formulas I, II, and mixtures thereof; and recurring structural units (b) independently selected from the group consisting of Formula III:



wherein each R is a chemically inert substituent.

4,945,151

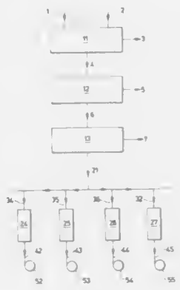
CONTINUOUS PRODUCTION OF POLYESTER FILAMENTS

George R. Goodley, Kinston, and Harold J. Taylor, Emerald Isle, both of N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 8, 1989, Ser. No. 320,551

Int. Cl.⁵ C08G *63/02*

U.S. Cl. 528—272 **6 Claims**



1. An improvement in a continuous process for producing spin-oriented polyester filaments from ethylene glycol and dimethyl terephthalate or terephthalic acid, in which polyester polymer is prepared and melt-spun from a plurality of spinning machines, and whereby said improvement provides a capability to spin a plurality of mergible products, wherein said improvement is characterized by incorporating into the polymer a chain-branching agent in controlled amounts which may vary within the range of about 0.2 to about 0.6 MEQ and wherein dyeability of products prepared from the filaments is determined periodically and the amounts of chain-branching agent added are varied and adjusted to maintain a substantially uniform dyeability in said mergible products.

4,945,152

MOLDED NYLON 4.6 ARTICLE HAVING FIRST AND SECOND ENTHALPY

Erik R. Peerlkamp, Born, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 111,062, Oct. 22, 1987, abandoned. This application Aug. 29, 1988, Ser. No. 237,711

Claims priority, application Netherlands, Nov. 20, 1986, 8602947; European Pat. Off., Mar. 28, 1988, 88200584.6

Int. Cl.⁵ C08G *69/46*

U.S. Cl. 528—335 **7 Claims**

1. A molded polyamide article consisting substantially of tetramethylene adipamide units, having a first melting enthalpy which is at least 30 Joules per gram higher than a second melting enthalpy determined after melting and subsequent solidification of the polyamide, the first melting enthalpy being determined on a sample of the molded article by differential scanning calorimetry (DSC), with a heating rate of 5° C. per minute, and the second melting enthalpy being determined after the molten polyamide has cooled at a rate of 5° C. per minute to below its crystallization temperature and after complete solidification is reheated at a heating rate of 5° C. per minute.

4,945,153

METHOD OF PRODUCING PREPOLYMER OF AROMATIC POLYTHIAZOLE IN THE PRESENCE OF A PHOSPHORIC ACID COMPOUND

Hideo Nishino, Miyoshi; Tatsuya Hattori, Wako; Tsuneharu Kushida, and Masataka Kumata, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1989, Ser. No. 362,513

Claims priority, application Japan, Jun. 8, 1988, 63-140807

Int. Cl.⁵ C08G *75/32*

U.S. Cl. 528—337 **4 Claims**

1. A method of producing a prepolymer of aromatic polythiazole from an aromatic diaminodithiol compound salt and a dicarboxylic acid derivative, comprising the step of polymerizing said aromatic diaminodithiol compound salt and said dicarboxylic acid derivative in the presence of a phosphoric acid compound at a temperature of 70°–140° C.

4,945,154

DENSIFIED POLYETHERSULFONE

Mounir M. Ghali, Dublin, and Winston L. Hedges, Livermore, both of Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed Jul. 7, 1989, Ser. No. 377,116

Int. Cl.⁵ C08F *6/14*

U.S. Cl. 528—480 **12 Claims**

1. Densified polyethersulfone (PES) in the form of particles about 1–100 microns in diameter of reduced surface area as compared with undensified polyether sulfone prepared by solution polymerization followed by precipitation, such that up to 40% by weight of said densified polyethersulfone may be added to a thermosetting resin, with retention of sufficient tack and flow for processability.

4,945,155

PREPARATION OF LOW COLOR COPOLY(ARYLENE SULFIDE) BY HEATING COPOLY(ARYLENE SULFIDE)

David R. Fagerburg; Mark Rule; Joseph J. Watkins, and Paul B. Lawrence, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 11, 1989, Ser. No. 350,668

Int. Cl.⁵ C08G *75/16*

U.S. Cl. 528—480 **12 Claims**

1. A process comprising heating for a minimum of 5 minutes and at a temperature in the range of the glass transition temperature of the polymer to 5 degrees C. below the melting point of the polymer, a solid, comminuted, copoly(arylene sulfide) prepared by reacting at a polymer producing temperature a mixture of a diiodoaromatic compound and elemental sulfur which contains less than 0.05 weight percent sulfur which contains less than 0.05 weight percent carbon, the copoly(arylene sulfide) corresponding to the structure

$$[(-A-S-)_{1-x}(-A-S-S-)_x]_n$$

wherein A is a divalent substituted or unsubstituted aromatic radical, x is in the range of 0.2 to 0.005 and n is at least 100.

4,945,156

SOLUTION PROCESSING OF RIGID CHAIN AND LADDER POLYMERS

Samson A. Jenekhe, Rochester, N.Y., and James R. Peterson, St. Paul, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1988, Ser. No. 291,792

Int. Cl.⁵ C08J *3/02*; C08G *73/18, 73/22*

U.S. Cl. 528—485 **26 Claims**

1. A method of regenerating pristine macromolecular polymer compounds, of a class normally insoluble in aprotic organic solvents from solubilized electron acceptor mediating agent complexes thereof in an aprotic organic solvent system comprising the step of decomplexation of the mediating agent with respect to the macromolecular polymer.

4,945,157

NOVEL EXTRACTION PROCEDURE FOR PROTEIN G

Michael D. P. Boyle, and Ervin Faulmann, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed May 27, 1988, Ser. No. 199,548

Int. Cl.⁵ C07K *3/28, 15/04*

U.S. Cl. 530—409 **9 Claims**

1. A process for recovering protein G from wild-type group G or group C streptococci which comprises

(a) extracting protein G with cyanogen bromide from group G or group C streptococcus bacteria to obtain a soluble phase containing protein G;

(b) concentrating and dialyzing said soluble phase containing protein G to obtain a concentrate; and

(c) treating said concentrate with a source of primary amine at a pH of about 8 to about 10 to obtain a concentrated preparation of protein G wherein the chemically reactive homoserine carboxy terminal residue has been blocked.

4,945,158

ANTIDIABETIC PHOSPHONATES

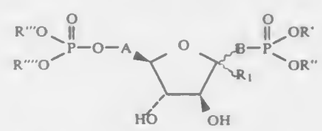
Vern G. DeVries, Ridgewood; Thomas H. Claus, Montvale, both of N.J.; Middleton B. Floyd, Jr., Suffern, and Semiramis Ayral-Kaloustian, Tarrytown, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 12, 1988, Ser. No. 232,333

Int. Cl.⁵ C07H *11/04*

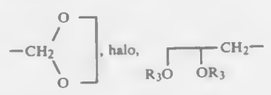
U.S. Cl. 536—117 **17 Claims**

1. A compound selected from those of the formula:



wherein A and B are selected independently of each other from the group consisting of C_1 to C_4 alkylene and C_2 to C_4 hydroxyalkylene R_1 is selected from the group consisting of hydrogen, hydroxy, C_1 to C_4 alkyl, C_1 to C_4 hydroxyalkyl, C_2 to C_4 dihydroxyalkyl, C_3 or C_4 trihydroxyalkyl and C_4 tetrahydroxyalkyl; R′, R″, R‴ and R⁗ are selected independently from the group consisting of hydrogen, C_1 to C_{18} alkyl, C_3 to C_6 cycloalkyl, phenyl, mono- and disubstituted phenyl

(wherein the substituents are selected from alkyl C_1 to C_6, alkoxy C_1–C_6, NO_2 or halo), C_3 to C_8 isoalkyl, Cl_3CCH_2—, CH_2=$CHCH_2$—, ZCH_2CH_2— (where Z is SO_2R_2, SR_2, OR_2 or $Si(R_2)_3$ and R_2 is C_1 to C_3 alkyl),



where R_3 is C_1 to C_3 alkyl and R_3–R_3 is alkylene or acetal),

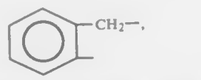


where R_4 is hydrogen or methyl),





(where R_8 is hydrogen or C_1 to C_{18} alkyl,



phenylmethyl, substituted phenylmethyl wherein the substituents are selected from C_1 to C_{18} alkyl, C_1 to C_6 alkoxy, nitro and halogen; and with the provisos that (a) when A and B are both —CH_2— and R', R'', R''' and R'''' are the same and are phenyl or ethyl, then R_1 may not be hydrogen, and (b) when A and B are both —CH_2— and R', R'', R''' and R'''' are hydrogen, then R_1 may not be hydrogen or —CH_2OH; and, when any one or more of R', R'', R''', or R'''' are hydrogen, the pharmaceutically acceptable salts thereof.

4,945,159

FORMATION OF LACTAMS AND OTHER AMIDES UNDER MILD CONDITIONS BY ACTION OF CYANOGEN

Richard A. Day, Cleves, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Filed Dec. 2, 1986, Ser. No. 936,891
Int. Cl.[5] C07D *501/06, 499/10, 213/127;* **C07C** *102/04*
U.S. Cl. 540—215 **10 Claims**

10. A method of preparing a cyclic amide comprising recting (1) a compound selected from the group consisting of lactam-requiring precursors of penicillins, cephalosporins and other beta-lactams containing at least one carboxylic acid group and at least one group selected from the group consisting of primary and secondary amino groups with (2) cyanogen for sufficient time and at sufficient temperature and pressure to form at least one intramolecular amide bond within said organic compound.

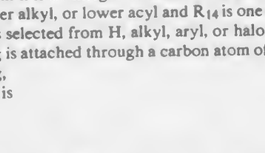
4,945,160

PREPARATION OF CERTAIN 7-SUBSTITUTED QUINOLONES

John S. Kiely, Ann Arbor, Mich.; Lawrence E. Lesheski, Dublin, Ohio, and Mel C. Schroeder, Dexter, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

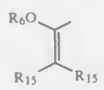
Filed Nov. 22, 1988, Ser. No. 275,149
Int. Cl.[5] C07D *215/56*
U.S. Cl. 540—481 **10 Claims**

1. A process for the preparation of a compound of formula

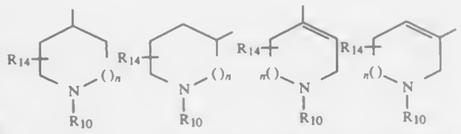


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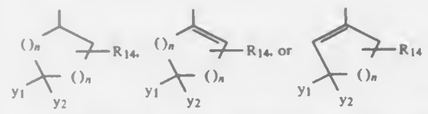
or a pharmaceutically acceptable salt thereof wherein:
$R_1$is lower alkyl,
aryl,
alkenyl,
cycloalkyl of from three to six carbon atoms,
R_2 is hydrogen, alkyl, or metal salts;
R_3 is hydrogen, halogen, OR_8, alkyl, $N(R_9)_2$
wherein R_8 is hydrogen, lower alkyl, lower acyl, trialkylsilyl and R_9 is hydrogen, lower alkyl, lower acyl maleimido, phthalimido, succinimido;
R_4 is hydrogen, halogen or lower alkyl;
X is [N or] CR_{10} wherein R_{10} is hydrogen, halogen, CN, CF_3, OR_8, alkyl, $N(R_9)_2$ wherein R_8 and R_9 are as above; [X and R_1 may be joined by C—Y—$CH_2CH(CH_3)$ where Y is O, S or N-alkyl to form a ring;]
R_5 is [aryl,] [cycloalkyl,] [cycloalkenyl,]



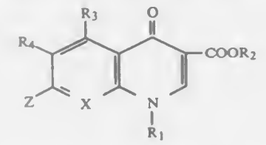
wherein R_6 is lower alkyl or R_7Si
wherein R_7 is lower alkyl or phenyl
and R_{15} is hydrogen, alkyl, alkenyl, aryl, or halogen; or
or R_5 may be a saturated or partially unsaturated heterocyclic ring



wherein n is an integer of from 0 to 4 and R_{10} is hydrogen, lower alkyl, or lower acyl and R_{14} is one or more substituents selected from H, alkyl, aryl, or halogen provided the ring is attached through a carbon atom of the heterocyclic ring,
or R_5 is

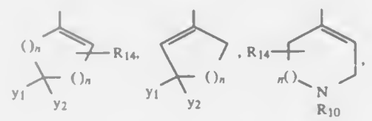


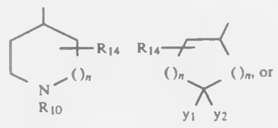
wherein Y_1 and Y_2 are each independently hydrogen, alkyl, OR_8, or $N(R_9)_2$ or taken together are =O or =NOR_8 wherein R_8 and R_9 are as above, and η=0–4 and R_{14} is as above;
which comprises reacting a compound of formula

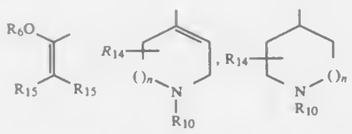


II

or a pharmaceutically acceptable salt thereof wherein R_1, R_2, R_3, R_4, and X are as described above and [Z is halogen when the compound is a naphthyridine and] Z is (halogen)$_3CSO_3$-with a tetraorganostannane of the formula III $(R_{12})_3SnR_{13}$ wherein R_{12} is alkyl, [alkenyl, alkynyl, cycloalkyl, cycloalkenyl, or aryl] and R_{13} is







wherein n, R_{14}, R_{10}, R_6, R_{15}, Y_2 and Y_2 are as described previously in the claim to produce the desired compound of formula I.

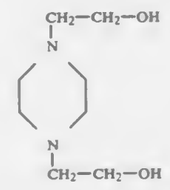
4,945,161

PROCESS FOR THE PREPARATION OF N,N'-BIS-(2-HYDROXY-ETHYL) PIPERAZINE

Giuseppe Messina, Alghero; Paolo Calaresu, Sassari, and Loreno Lorenzoni, Porto Torres, all of Italy, assignors to Enichem Anic S.p.A., Palermo, Italy

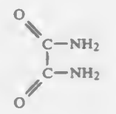
Filed Apr. 21, 1989, Ser. No. 345,361
Claims priority, application Italy, Apr. 21, 1988, 20273 A/88
Int. Cl.[5] C07D *295/08*
U.S. Cl. 544—401 **10 Claims**

1. A process for preparing N,N'-bis-(2-hydroxyethyl)-piperazine (I)



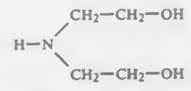
(I)

which comprises heating to a temperature of from 50° to 268° C. oxamide (II)



(II)

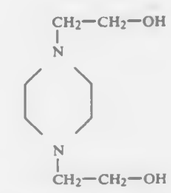
with diethanolamine (III)



(III)

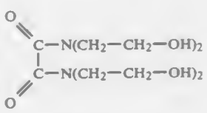
wherein the molar ratio diethanolamine/oxamide is >2, the reaction being carried out under conditions wherein the molar ratio of diethanolamine (III) to oxamide (II) is initially at least 2, and the total amount of diethanolamine (III) employed during the course of the reaction is such that the ratio of the total amount of diethanolamine (III) employed to oxamide (II) during the course of the reaction is greater than 2, any unreacted diethanolamine (III) serving as a reaction solvent.

9. A process for preparing N,N'-bis-(2-hydroxyethyl)-piperazine (I)



(I)

which comprises heating to a temperature of from 160° to 268° C. N,N'-tetra-(2-hydroxyethyl)oxamide (IV)



(IV)

in the presence of diethanolamine.

VOL 1116 ISS 5 JL 31 1990 UMI

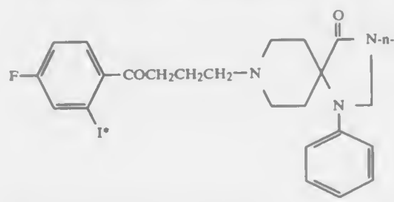
4,945,162

NOVEL RADIOACTIVE PROPYL 2-IODOSPIROPERIDOL AND PROCESSES FOR THE PREPARATION THEREOF

Iwao Nakatsuka, Kobe, and Masami Okuno, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 4, 1987, Ser. No. 128,821
Claims priority, application Japan, Dec. 26, 1986, 61-314256
Int. Cl.[5] C07D *471/10*
U.S. Cl. 546—20 **2 Claims**

1. A radioactive propyl 2-iodospiroperidol of the formula:



wherein I* is radioactive iodine atom.

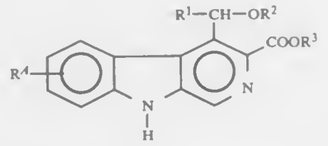
4,945,163

PROCESS FOR THE PREPARATION OF 4-ALKOXYALKYL β-CARBOLINES

Andreas Huth; Dieter Rahtz; Ralph Rohde; Ralph Schmiechen, and Dieter Seidelmann, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Aug. 30, 1988, Ser. No. 238,086
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1987, 3729370
Int. Cl.[5] C07D *471/14;* A61K *31/435*
U.S. Cl. 546—85 **19 Claims**

1. A process for the preparation of a 4-alkoxyalkyl β-carboline of Formula I



wherein

R^1 is hydrogen or methyl;

R^2 is a saturated or unsaturated, straight-chain or branched, aliphatic hydrocarbon residue containing 1–6 carbon atoms or a cycloalkyl or cycloalkylalkyl group containing 3–7 carbon atoms which can contain 1–3 substituents, said substituents being halogens or C_{1-2}-alkoxy groups;

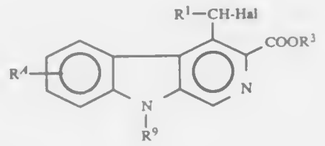
R^3 is C_{1-4}-alkyl;

R^4 is hydrogen, halogen, $COOR^4$ or OR^5;

R^4 is C_{1-4}-alkyl;

R^5 is hydrogen, C_{1-4}-alkyl, C_{3-7}-cycloalkyl, unsubstituted phenyl, or a substituted phenyl group containing 1–3 substituents selected from the group comprising chlorine, bromine, iodine, fluorine, C_{1-4}-alkyl and C_{1-4}-alkoxy;

comprising reacting a compound of general Formula II



wherein

R^1, R^3, R^4, R^5 and R^4 have the meanings given above,

Hal is halogen, and

R^9 is an acyl, arylsulfonyl, or silyl group, in the presence of $AgBF_4$ with an alcohol of the formula

R^2OH wherein R^2 has the meanings indicated above, and optionally splitting off the blocking group.

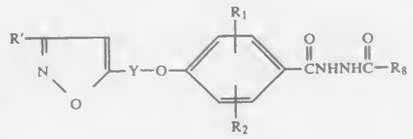
4,945,164

1,3,4-OXADIAZOLYL-PHENOXYALKYLISOXAZOLES AND THEIR USE AS ANTIVIRAL AGENTS AND INTERMEDIATES THEREOF

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 18, 1989, Ser. No. 396,419
Int. Cl.[5] C07D *261/10*
U.S. Cl. 548—247 **3 Claims**

1. A compound of the formula



wherein:

Y is an alkylene bridge of 3–9 carbon atoms;

R' is lower-alkyl or hydroxy-lower-alkyl of 1–5 carbon atoms;

R_1 and R_2 are hydrogen, halogen, lower-alkyl, lower-alkoxy, nitro, lower-alkylcarbonyl or trifluoromethyl; and

R_8 is hydrogen or lower-alkyl of 1–5 carbon atoms.

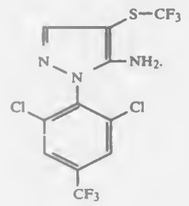
4,945,165

PEST-COMBATING AGENTS BASED ON PYRAZOLE DERIVATIVES

Uta Jensen-Korte, Dusseldorf; Reinhold Gehring, Wuppertal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Heinz-Jürgen Wroblowsky, Langenfeld; Benedikt Becker, Mettmann; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath-Steinenbruck; Wilhelm Stendel, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 201,649, Jun. 2, 1988, abandoned, which is a continuation of Ser. No. 858,475, Apr. 30, 1986, Pat. No. 4,804,675. This application Jul. 21, 1989, Ser. No. 384,188
Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3717843; Jan. 30, 1986, 3602728
Int. Cl.[5] C07D *231/44*
U.S. Cl. 548—362 **3 Claims**

1. A 5-aminopyrazole having the formula



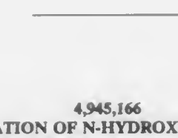
4,945,166

PREPARATION OF N-HYDROXYPYRAZOLES

Ulf Baus, Donnenheim; Wolfgang Reuther, Heidelberg, and Rolf Fikentscher, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

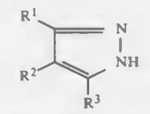
Filed Jun. 16, 1989, Ser. No. 367,053
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820738
Int. Cl.[5] C07D *231/12, 231/54, 231/56*
U.S. Cl. 548—369 **8 Claims**

1. A process for the preparation of an N-hydroxypyrazole of the formula I

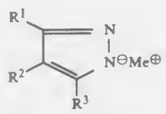


where R^1, R^2 and R^3 may be identical or different and are each hydrogen, alkyl, halogen or aryl, or R^1 and R^2 or R^2 and R^3 together with the carbon atoms carrying these radicals form an aromatic or nonaromatic ring of 5 or 6 carbon atoms, wherein

(A) a pyrazole of the formula II



where R^1, R^2 and R^3 have the meanings stated for formula I, is converted in a conventional manner with an alkali metal hydroxide, alkali metal hydride or alkali metal carbonate into one of its metal salts of the formula III



where R^1, R^2 and R^3 have the meanings stated for formula I and Me^{61} is a cation of an alkali metal, and

(B) the resulting metal salt of the formula III is reacted with a diacyl peroxide.

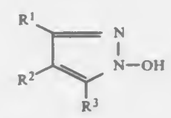
4,945,167

PREPARATION OF N-HYDROXYPYRAZOLES

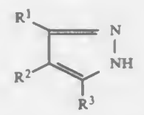
Ulf Baus, Donnenheim; Wolfgang Reuther, and Erwin Hahn, both of Heidelberg, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 16, 1989, Ser. No. 367,047
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820739
Int. Cl.[5] C07D *231/12*
U.S. Cl. 548—375 **12 Claims**

1. A process for the preparation of a N-hydroxypyrazole of the formula I



where R^1, R^2 and R^3 may be identical or different and are each hydrogen or halogen, wherein a pyrazole of the formula II



where R^1, R^2 and R^3 have the meanings stated for formula I, is reacted with an aliphatic or aromatic peroxocarboxylic acid in such a way that the reaction temperature is from −5° C. to 60° C.

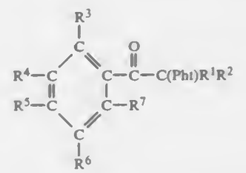
4,945,168

METHOD OF PREPARING ARYL-(1-PHTHALIMIDO)-ALKYL KETONES

Franz Effenberger, Stuttgart, and Dieter Steegmüller, Magstadt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 22, 1988, Ser. No. 234,635
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1987, 3727898
Int. Cl.[5] C07D *405/06, 209/48*
U.S. Cl. 548—454 **3 Claims**

1. A method of preparing aryl-(1-phthalimido)-alkyl ketones of the general formula



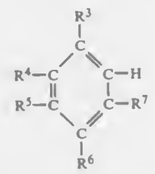
in which

R^1 signifies hydrogen or a straight-chain or branched (C_1–C_4)-alkyl group,

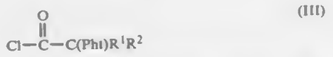
R^2 signifies hydrogen, a straight-chain or branched (C_1–C_8)-alkyl group, a benzyl group, a 4-(C_1–C_4)-alkoxy benzyl group, a 4-benzyloxybenzyl group, a 3,4-di-(C_1–C_4)-alkoxybenzyl group, a 1,3-benzodioxol-5-yl-methyl group, an N-formyl-indole-3-yl-methyl group, an N-(C_2–C_3)-acylindole-3-yl-methyl group, a 5-(C_1–C_4)-alkoxy-N-(C_2–C_3)-acyl-indole-3-yl-methyl group, a 5-(C_1–C_4)-alkoxy-N-formyl-indole-3-yl-methyl group or a (C_1–C_4)-alkyl group substituted by a (C_1–C_6)-alkoxy group, a benzyloxy group, a

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phenyloxy group, a phthalimido group, a (C_1–C_4)-alkoxycarbonyl group or a benzyloxy carbonyl group,
R^3, R^4, R^5, R^6 and R^7 signify, independently of each other, hydrogen, a straight-chain or branched (C_1–C_4)-alkyl group, a (C_1–C_6)-alkoxy group, a benzyloxy group or a phenyloxy group and
Pht signifies a phthalimido group,
which comprises reacting an aromatic compound of the general formula



in which R^3, R^4, R^5, R^6 and R^7 each have one of the meanings already given is reacted in an inert solvent in the presence of iron-(III)-chloride with an N-phthaloyl-2-amino carboxylic acid chloride of the general formula

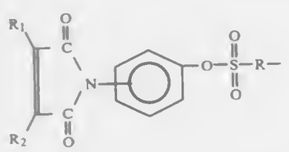


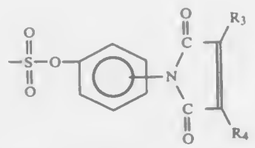
(III)

in which R^1, R^2 and Pht have the meanings already given wherein the iron-(III)-chloride is added in an amount between 0.5 and 50 mole percent in relation to the amount of N-phthaloyl-2-amino carboxylic acid chloride added.

4,945,169
BIS-MALEIMIDE COMPOUNDS CONTAINING SULFONATE LINKAGES
Bojayan Durairaj, Pittsburgh, Pa., assignor to Indspec Chemical Corporation, Pittsburgh, Pa.
Filed Jul. 6, 1988, Ser. No. 215,555
Int. Cl.[5] C07D *403/10, 403/12*
U.S. Cl. 548—521 **8 Claims**

1. Bis-maleimides containing sulfonate linkages of the formula:

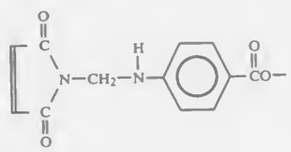


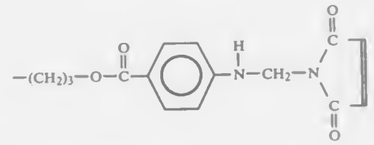


wherein R is a divalent radical selected from the group consisting of meta phenylene, para phenylene, naphthalene and radicals of the formula A—A and A—Z—A wherein A is selected from the group consisting of meta phenylene, para phenylene and naphthalene and Z is selected from the group consisting of meta phenylene, para phenylene, naphthalene oxygen, —CH=CH— and —C≡C—and R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, an alkyl group having from 1 to about 4 carbon atoms and a halogen.

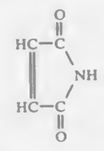
4,945,170
METHOD FOR MAKING POLYIMIDES AND PRODUCTS PRODUCED THEREBY
Dalip K. Kohli, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 695,991, Jan. 29, 1985, Pat. No. 4,608,431.
This application May 30, 1986, Ser. No. 868,489
Int. Cl.[5] C07D *207/404*
U.S. Cl. 548—522 **1 Claim**

1. A method for the preparation of a bismaleimide of the formula:

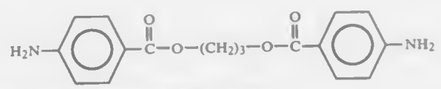




which comprises heating a mixture comprising
(i) maleimide, a compound of the formula



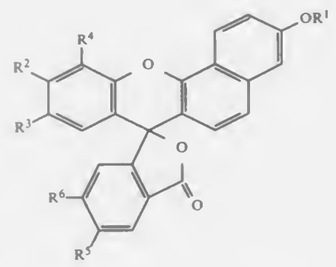
(ii) from about 0.5 to about 2 moles per mole of (i) of formaldehyde; and
(iii) from about 0.5 to 2 moles per mole of (i) of an arylene diamine of the formula



until reaction is substantially complete.

4,945,171
XANTHENE DYES HAVING A FUSED (C) BENZO RING
Richard P. Haugland, Junction City, and James Whitaker, Eugene, both of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.
Filed Aug. 10, 1987, Ser. No. 83,459
Int. Cl.[5] C07D *311/78*
U.S. Cl. 549—224 **25 Claims**

1. A compound of the formula:



wherein:
R^1 is hydrogen, acetyl or methyl,
R^2 is hydroxyl, acetoxyl, dimethylamino, diethylamino, ethylamino or methoxyl
R^3 is hydrogen, hydroxyl, halo, methyl or carboxyethyl
R^4 is hydrogen,
R^5 is hydrogen, carboxyl or acetoxymethoxycarbonyl, and
R^6 is hydrogen, carboxyl or acetoxymethoxycarbonyl.

4,945,172
PREPARATION OF N-FORMYL-L-ASPARTIC ANHYDRIDE
John B. Hill, Woodstock; Hugh L. Dryden, Jr., Deerfield, and Robert Erickson, Des Plaines, all of Ill., assignors to The Nutra Sweet Company, Deerfield, Ill.
Continuation of Ser. No. 156,268, Feb. 12, 1988, abandoned.
This application Nov. 28, 1989, Ser. No. 442,040
Int. Cl.[5] C07D *307/22*
U.S. Cl. 549—253 **14 Claims**

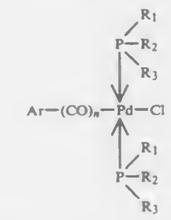
1. A method which comprises:
(a) reacting L-aspartic acid with formic acid in the presence of an effective amount of acetic anhydride under conditions sufficient to form N-formyl-L-aspartic anhydride; and thereafter
(b) adding to (a) above an effective amount of a C_3–C_6 secondary alcohol to consume excess formic acid wherein the resulting N-formyl-L-aspartic anhydride reaction mixture is suitable for further reactions without modification.

4,945,173
PROCESS FOR THE PRODUCTION OF GAMMA-BUTYROLACTONE
Michael A. Wood, Middlesbrough, England, assignor to Davy McKee (London) Limited, London, England
Filed Jul. 22, 1988, Ser. No. 223,079
Claims priority, application United Kingdom, Jul. 29, 1987, 8717992
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[5] C07D *307/33*
U.S. Cl. 549—295 **16 Claims**

1. A process for the production of substantially pure gamma-butyrolactone from a feed mixture containing a major amount of gamma-butyrolactone and a minor molar amount of diethyl succinate which comprises:
(a) providing a fractionation zone;
(b) providing a stream comprising diethyl ethoxysuccinate;
(c) supplying the feed mixture to the fractionation zone;
(d) supplying the stream of step (b) to the fractionation zone;
(e) fractionally distilling the feed mixture in the fractionation zone in the presence of diethyl ethoxysuccinate of the stream of the step (b); and
(f) recovering from the fractionation zone;
(A) an overhead vaporous product comprising gamma-butyrolactone which is substantially free from diethyl succinate; and
(B) a liquid bottom product comprising diethyl ethoxysuccinate and diethyl succinate in admixture one with another.

4,945,174
PALLADIUM-BASED COMPLEXES
Marc Huser, and John Osborn, both of Strasbourg, France, assignors to Rhone Poulenc Chimie, Courbevoie, France
Filed Jul. 20, 1989, Ser. No. 383,077
Claims priority, application France, Jul. 20, 1988, 88 09789
Int. Cl.[5] C07F *15/00*
U.S. Cl. 556—16 **15 Claims**

1. A complex of the formula (I)



(I)

in which
Ar is a substituted or an unsubstituted mono- or polycyclic or heterocyclic aromatic radical
each of R_1, R_2, and R_3 is identical or different and is selected from cyclohexyl, benzyl and isopropyl radicals, with the proviso that one of R_1, R_2, or R_3 can be a phenyl group when the other two are a cyclohexyl group, and
n is an integer equal to 0 or 1.

4,945,175
DEHYDROCYCLODIMERIZATION PROCESS START-UP PROCEDURE
Simon H. Hobbs, Chicago, and Christopher D. Gosling, Roselle, both of Ill., assignors to UOP, Des Plaines, Ill.
Filed May 26, 1989, Ser. No. 357,221
Int. Cl.[5] C07C *2/02, 2/00*
U.S. Cl. 585—417 **14 Claims**

1. A process for the dehydrocyclodimerization of C_2–C_5 hydrocarbons in the presence of a catalyst comprising a phosphorous containing alumina, a gallium component, and a crystalline aluminosilicate zeolite having a silica to alumina molar ratio of at least 12 characterized in that the start-up of the process comprises:
(a) contacting the catalyst with a dry start-up gas comprising 50 mole percent or less hydrogen;
(b) heating the catalyst in the presence of the dry start-up gas to a temperature at which the dehydrocyclodimerization reaction will occur;
(c) passing the C_2–C_5 hydrocarbons across the heated catalyst and thereby producing a dehydrocyclodimerization reaction product including hydrogen; and
(d) displacing the non-hydrogen dry start-up gas from the process with the gaseous product of the dehydrocyclodimerization reaction including hydrogen.

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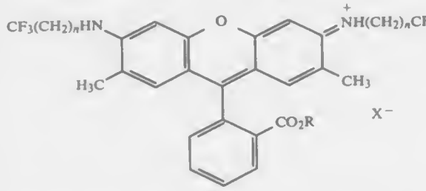
4,945,176

NOVEL FLUORINATED LASER DYES

Peter R. Hammond, Livermore, Calif., and James F. Feeman, Wyomissing, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 8, 1989, Ser. No. 373,316
Int. Cl.[5] C07D *311/82*
U.S. Cl. 549—227 8 Claims

1. A compound of the formula



wherein R is hydrogen or linear or branched alkyl of 1 to 10 carbon atoms, n is an integer from 1 to 4, and X is an anion.

4,945,177

ANTIMICROBIALLY ACTIVE NITRILES AND THE PRODUCTION THEREOF

Horst-Juergen Krause; Hans-Theo Leinen, both of Duesseldorf, and Rudolf Lehmann, Leichlingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

PCT No. PCT/EP86/00220, § 371 Date Feb. 11, 1987, § 102(e) Date Feb. 11, 1987, PCT Pub. No. WO86/06369, PCT Pub. Date Nov. 6, 1986
PCT Filed Apr. 16, 1986, Ser. No. 3,425
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1985, 3514688
Int. Cl.[5] C07C *119/00*; C07D *279/12, 265/30*
U.S. Cl. 558—405 3 Claims

1. 2,2-Dibromo-3-oxonitriles of formula I

$$R—CO—CBr_2—CN \quad (I)$$

wherein R represents a straight chain or branched alkyl group with 5 to 21 carbon atoms, a cycloaliphatic group unsubstituted or substituted with at least one alkyl group, and having 3 to 6 ring carbon atoms, or a phenyl or naphthyl group unsubstituted or substituted with at least one alkyl group, alkoxy group, fluorine or bromine atom, or nitro group.

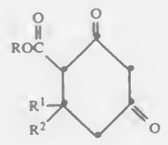
4,945,178

PREPARATION OF 4-CARBOALKOXY-1,3-CYCLOHEXANEDIONE TYPE COMPOUNDS

Charles A. McCombs, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 825,010, Feb. 3, 1986, abandoned. This application Feb. 24, 1989, Ser. No. 314,994
Int. Cl.[5] C07C *67/347*
U.S. Cl. 560—125 5 Claims

1. The process for preparing a 4-carboalkoxy-5-[2-(alkylthio)-alkyl]-1,3-cyclohexanedione of the formula



comprising reacting an acetoacetic ester of the formula $R—OOCCH_2COCH_2$ with an unsaturated ester of the formula $R^1R^2C=CHCOOR^3$ in the presence of ethanolic sodium ethoxide catalyst, wherein:

R is ethyl;

R^1 and R^2 are each selected independently from: H; alkyl; cycloalkyl; alkyl substituted cycloalkyl; aryl, aryl substituted with alkyl of 1–6 carbons, alkoxy or 1–6 carbons, or halogen; heterocyclic; or heterocyclic substituted with alkyl of 1–6 carbons, alkoxy of 1–6 carbons, or halogen; with the provision that at least one of R^1 and R^2 is an alkylthioalkyl group and wherein the alkyl groups or moieties of R^1 and R^2 are 1–18 carbons; and

R^3 is alkyl of 1–6 carbons or cycloalkyl.

4,945,179

PROCESS FOR THE PREPARATION OF ESTERS OF CARBOXYLIC ACIDS AND CATALYTIC SYSTEM FOR USE THEREIN

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1988, Ser. No. 232,059
Claims priority, application United Kingdom, Sep. 28, 1987, 8722743
Int. Cl.[5] C07C *67/38*
U.S. Cl. 560—233 9 Claims

1. A process for the preparation of esters of carboxylic acids which process comprises contacting an olefinically unsaturated compound with carbon monoxide and an alcohol in the presence of a catalytic system is prepared by combining:

component (a)—a ruthenium compound and

component (b)—lithium bromide and/or an onium bromide, wherein a molar ratio of carbon monoxide to olefinically unsaturated compound of not higher than 2.0 is used.

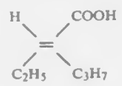
4,945,180

PROCESS FOR THE PREPARATION OF E-2-PROPYL-2-PENTENOIC ACID AND PHYSIOLOGICALLY COMPATIBLE SALTS THEREOF

Helmut Schäfer, Kayhyde, Fed. Rep. of Germany, assignor to Desitin Arzneimittel GmbH, Hamburg, Fed. Rep. of Germany

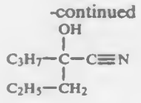
Filed Jun. 2, 1988, Ser. No. 203,291
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1987, 3718803
Int. Cl.[5] C07C *51/377, 51/41, 51/08, 57/03*
U.S. Cl. 562—599 7 Claims

1. A process for the preparation of E-2-propyl-2-pentenoic acid of the formula:



or a physiologically compatible salt thereof using -di-n-propyl-ketone-cyanohydrin of the formula:

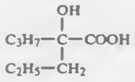
-continued



(II)

as the starting material, comprising the steps of:

(1) saponifying the compound of Formula II to form 2-hydroxy-2-propyl pentanoic acid of the formula:



(IV)

(2) reacting the compound of formula IV at a temperature of at least 200° C. with less than a stoichiometric quantity of a tertiary amine,

(3) separating the E-2-propyl-2-pentenoic acid formed in step (2) from the mixture; and, optionally

(4) converting the free acid obtained in step (3) into a physiologically compatible salt thereof.

4,945,181

METHOD FOR RESOLUTION OF RACEMIC THIAMPHENICOL PRECURSORS AND INTERMEDIATES THEREFOR

Helmut Dick, Frankenthal; Wolf-Dietrich Gradel, Ludwigshafen-Ruchheim, and Mathias Weber, Mutterstadt, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,173
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543021
Int. Cl.[5] A61K *31/10*; C07C *147/10, 147/12, 147/14*
U.S. Cl. 564—212 11 Claims

1. A process for the preparation of thiamphenicol from D,L-threo-1-(p-methylsulphonylphenyl)-2-aminopropane-1,3-diol hydrochloride which is first converted to D,L-threo-aminodiolbenzal comprising

hydrolyzing the D,L-threo-aminodiolbenzal to D,L-threo-aminodiol.HCl;

separating D-threo-aminodiol.HCl from the D,L-threoaminodiol.HCl by selective crystallization by oscillating racemate resolution comprising alternating crystallization of D-Threo-aminodiol.HCl and of L-threo-aminodiol.HCl; and

converting D-threo-aminodiol.HCl to thiamphenicol.

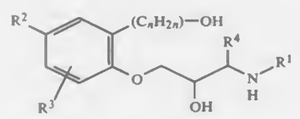
4,945,182

OCULOSELECTIVE BETA-BLOCKERS

John J. Baldwin, Gwynedd Valley; David C. Remy, North Wales, and David A. Claremon, Audubon, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 813,324, Dec. 24, 1985, abandoned. This application Sep. 29, 1986, Ser. No. 912,871
Int. Cl.[5] C07C *93/06*
U.S. Cl. 564—349 3 Claims

1. A compound of structural formula:



(I)

which includes the (R) and (S)-enantiomer, mixtures of the (S) and (R) enantiomers and the threo and erythro-diastereomers and the individual enantiomer thereof or an ophthalmologically acceptable salt thereof, wherein:

R^1 is t-butyl or isopropyl;

R^2 is C_{1-3}alkyl;

R^3 is hydrogen;

R^4 is hydrogen or C_{1-3}alkyl; and

n is 1–5.

4,945,183

PROCESS FOR THE PREPARATION OF 4-PHENYLQUINOL

Edward F. Moran, Jr., Wenonah, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1989, Ser. No. 443,376
Int. Cl.[5] C07C *45/28*
U.S. Cl. 568—309 6 Claims

1. A process for the preparation of 4-phenylquinol which comprises oxidizing at a temperature in the range of 20 to 90 degrees C., biphenyl dissolved in an organic solvent with an aqueous mixture of cerous methanesulfonate, ceric methanesulfonate and methanesulfonic acid, in which the mole ratio of cerous methanesulfonate to ceric methanesulfonate is in the range of about 0.2 to 50 mole percent, and the solvent is substantially inert with respect to the ceric methanesulfonate, the cerous methanesulfonate and the methanesulfonic acid.

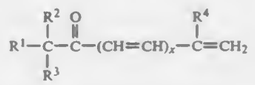
4,945,184

PREPARATION OF UNSATURATED KETONES

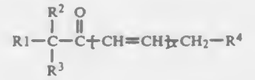
Joseph Pugach, McCandless Township, Allegheny County, and Jeffrey S. Salek, Oakdale Borough, Allegheny County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 19, 1989, Ser. No. 367,902
Int. Cl.[5] C07C *45/75*
U.S. Cl. 568—313 15 Claims

1. Method of making a compound of the formula



comprising reacting a ketone of the formula



with paraformaldehyde in the presence of a catalyst comprising a secondary amine in the form of a halogen acid salt, and a small amount of a carboxylic acid having up to about 15 carbon atoms in a ratio of amine catalyst to carboxylic acid of about 0.5:1 to about 10:1, where R^1, R^2, R^3 and R^4 are independently selected from hydrogen, alkyl and aromatic groups having 1 to about 15 carbon atoms including unsaturated groups provided that if both R^1 and R^2 are unsaturated, they should have a total of at least 4 carbon atoms, and also provided that R^1, R^2, R^3 and R^4 may form parts of the same carbon or heterocyclic ring which may have substitutions the total number of carbon atoms thereof being up to about 30, and x is 0 or 1.

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4,945,185
PROCESS FOR PRODUCING MIXTURES OF KETONES AND ALDEHYDES
Anthony J. Papa, St. Albans, and David R. Bryant, S. Charleston, both of W. Va., assignors to Union Carbide Chemicals and Plastics Company Inc., Danbury, Conn.
Continuation of Ser. No. 137,670, Dec. 24, 1987, abandoned. This application Dec. 5, 1989, Ser. No. 445,927
Int. Cl.[5] C07C *45/49*
U.S. Cl. 568—387 17 Claims

1. A hydrocarbonylation process for producing a mixture of a ketone and an aldehyde which comprises:
(I) forming a reaction mixture comprising:
(a) a catalytic amount of a complex catalyst consisting essentially of rhodium in complex combination with
(i) a triorganophosphine, and
(ii) a carboxylic acid selected from the group consisting of p-chlorobenzoic acid, p-fluorobenzoic acid and p-nitrobenzoic acid,
(b) an alpha-olefin having 2 to 5 carbon atoms inclusive,
(c) carbon monoxide, and
(d) hydrogen
with the proviso that the reaction mixture has a mole ratio of said carboxylic acid to rhodium of at least about 2; and a mole ratio of said triorganophosphine to rhodium not in excess of about 4; and
(II) maintaining the reaction mixture at a temperature and pressure at which said (b), (c) and (d) react to form a mixture of a ketone and an aldehyde.

4,945,186
METHOD OF PRODUCING 3-BROMOBENZALDEHYDE
Shinichi Matsuura, and Osamu Miyano, both of Shin-nanyo, Japan, assignors to Toso Organic Chemical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 172,803, Mar. 28, 1988, abandoned. This application Jan. 2, 1990, Ser. No. 455,782
Claims priority, application Japan, Aug. 25, 1987, 62-211198
Int. Cl.[5] C07C *45/00*
U.S. Cl. 568—433 10 Claims

1. A method of producing 3-bromobenzaldehyde, comprising:
initially brominating benzaldehyde with molecular bromine in 1,2-dichloroethane solvent in the presence of a bromonating catalyst thereby producing the desired 3-bromobenzaldehyde product and unavoidably converting significant quantities of 1,2-dichloroethane solvent to 1,2-bromochloroethane and 1,2-dibromoethane;
recovering said 3-bromobenzaldehyde product and isolating the converted solvent containing brominating catalyst;
treating the converted solvent with molecular chlorine in the presence of brominating catalyst, thereby representing 1,2-dichloroethane solvent and molecular bromine; and
continuing the desired brominating reaction, which produces 3-bromobenzaldehyde, by the addition of molecular bromine and benzaldehyde to the regenerated solvent and molecular bromine.

4,945,187
PROCESS FOR PREPARING ENANTIOMERICALLY PURE PROPAN-1,2-DIOLS
Klaus R. Muller, Mannheim, Fed. Rep. of Germany, assignor to Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany
Filed Jul. 14, 1989, Ser. No. 379,741
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1988, 3823787
Int. Cl.[5] C07C *29/36, 31/20, 29/76, 29/80*
U.S. Cl. 568—868 8 Claims

1. A process for preparing enantiomerically pure S(+)-propan-1,2-diol which comprises reacting L(−)-lactide with a reducing agent and then isolating the enantiomerically pure S(+)-propan-1,2-diol.

2. A process as recited in claim 1 which comprises the steps of:
(a) reacting L(−)-lactide with a reducing agent, in an inert first solvent at a temperature of between about 40° C. and about 70° C. to produce a first reaction mixture;
(b) hydrolysing the first reaction mixture with an aqueous solution of an alkali metal or alkaline earth metal, to form a second reaction mixture comprising an aqueous phase and an organic phase;
(c) separating the aqueous phase from the organic phase;
(d) separating out any aluminum hydroxide from the aqueous phase by precipitation;
(e) concentrating the aqueous phase by evaporation to produce a residue;
(f) suspending the residue in a second solvent to produce a suspension;
(g) filtering the suspension to remove solid reaction products;
(h) removing the second solvent from the filtered suspension to produce a filtrate; and
(i) purifying the filtrate by distillation, to produce an enantiomerically pure S(+)-propan-1,2-diol.

4,945,188
BUS SYSTEM
Raymond T. Jackson, Brighton East, Australia, assignor to Cableware Pty. Ltd., Australia
Filed Feb. 17, 1989, Ser. No. 311,828
Int. Cl.[5] H02G *5/06, 5/10*
U.S. Cl. 174—16.2 6 Claims

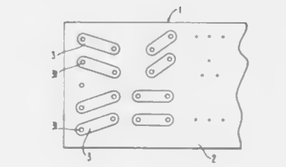
1. A bus duct including a plurality of bus bars stacked in substantially parallel flat-to-flat relationship within a housing, said bus bars having a joining means external of said housing, said housing comprising a first pair of walls each disposed one on either side, parallel to and longitudinally along said bus bars and a second pair of walls disposed transversely and longitudinally of said bus bars and fixed to said first pairs of walls to define a cavity within which said bus bars are accommodated, said first pair of walls and said bus bars being electrically insulated one from another by individual interposed sheets of separate insulating material, said second pair of walls and said bus bars being electrically insulated one from another by resilient insulation means disposed between the plurality of bus bars and the second pair of walls, each of said first pair of walls additionally including a plurality of integrally formed outwardly projecting longitudinally disposed cooling fins, said bus bars, insulating material of said interposed sheets and the resilient insulation means, and first pair of walls being held in intimate contact with one another to provide conductive heat transfer from said bus bars to said cooling fins and so that said bus bars are rigidly held along substantially their entire length by said housing.

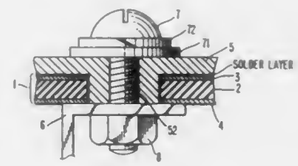
4,945,189
ASYMMETRIC AUDIO CABLE FOR HIGH FIDELITY SIGNALS
Donald E. Palmer, #189 1275 Vicente Ave., Sunnyvale, Calif. 94086
Filed Aug. 9, 1989, Ser. No. 391,768
Int. Cl.[5] H01B *11/00*
U.S. Cl. 174—32 11 Claims



1. An interconnection cable for audio frequency high fidelity applications for carrying a signal comprising:
a first conductor;
a second conductor disposed helically surrounding said first conductor and insulated from said first conductor;
said first conductor and said second conductor each having first ends electrically connected one another at a signal source and second ends electrically connected to one another at a load; and
said second conductor having a physical length substantially longer than said first conductor such that signal length of said second conductor is substantially greater than signal length of said first conductor in order to minimize lengthwise end to end resonance.

4,945,190
CIRCUIT BOARD DEVICE FOR MAGNETICS CIRCUIT AND METHOD OF MANUFACTURING SAME
Yoshiki Fujioka, Yamanashi, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP88/00407, § 371 Date Nov. 16, 1988, § 102(e) Date Nov. 16, 1988, PCT Pub. No. WO88/08660, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 26, 1988, Ser. No. 276,453
Claims priority, application Japan, Apr. 28, 1987, 62-105979
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—68.5 6 Claims





1. A circuit board device for a magnetic circuit for use in wiring an electrical circuit which handles a high current, said circuit board device comprising:
a printed circuit board including:
an electric insulator blank having openings formed therein penetrating both surfaces; and
circuit patterns of copper foil formed by an etching process on the surfaces of said electric insulator blank and over the openings in said electric insulator blank; and
short bars fastened to said circuit patterns of copper foil including said openings in said electric insulator blank for serving as conductor pieces for the high current, through-holes smaller in diameter than said openings in said electric insulator blank being provided in positions on said short bars corresponding to said openings, and peripheral end parts of said through-holes being burred into the openings to form secure mechanical and electrical connections.

4,945,191
CURLED ELECTRICAL CONDUCTOR CORD
Mamoru Satsuka, Osaka, and Hironobu Furusawa, Ohtsu, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan
Filed Aug. 3, 1988, Ser. No. 227,679
Claims priority, application Japan, Aug. 5, 1987, 62-195867; Aug. 13, 1987, 62-202348; Sep. 29, 1987, 62-244686; Oct. 23, 1987, 62-268923; Nov. 25, 1987, 62-296889; Dec. 10, 1987, 62-313502; Jan. 23, 1988, 63-13444
Int. Cl.[5] H01B *7/06, 3/42*
U.S. Cl. 174—69 14 Claims

1. An electrical conductor cord including a curled portion, said cord comprising at least one core wire and a sheath layer covering said core wire, said core wire having at least one conductor consisting essentially of at least one solid wire and covered with an insulating layer, said cord having a diameter

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of at least 1 mm when circular in cross-section, or a cross-sectional area of at least 1 mm^2 when non-circular in cross section, said insulating layer consisting essentially of crystalline copolyester selected from the group consisting of polyester-polyester block copolymer and polyester-polyether block copolymer, said polyester-polyester block copolymer comprising crystalline aromatic polyester segments and polylactone



segments, said polyester-polyether block copolymer comprising crystalline aromatic polyester segments and aliphatic polyether segments, and said crystalline copolyester having a melting point of at least 180° C. and Shore D hardness of from 40 to 80, and wherein vertical stretch L_0 of the curled portion of said cord by its own weight is 30% or less and vertical stretch L_{50} of the curled portion of said cord under a load of 50 g is at least 200%.

4,945,192

CONNECTOR TERMINAL

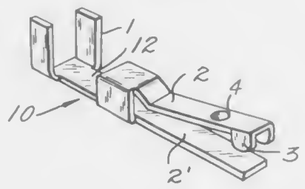
Kenichi Urushibata; Kiyoto Sugawara, and Haruo Saen, all of Tochigi, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 6, 1989, Ser. No. 319,184

Claims priority, application Japan, Mar. 16, 1988, 63-34964[U]

Int. Cl.[5] H01R *11/01*

U.S. Cl. 174—94 R **15 Claims**



1. A connector terminal for connecting a first wire and a second wire comprising:

a base portion having first and second ends;

a first crimpable portion for securing said first wire to said first end of said base portion;

a clasping portion for connecting said second wire to said second end of said base portion, said clasping portion comprising:

a first spring portion having a first end and a second end, said first end of said first spring portion being connected to a middle portion of said base portion, and

a second crimpable portion disposed at said second end of said first spring portion for securing said first spring portion to said second end of said base portion, a second wire being disposed between said first spring portion and said second end of said base portion; and

a projecting portion projecting from said connector terminal toward said second wire.

4,945,193

GROMMET

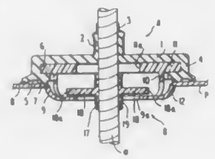
Ryuetsu Oikawa, and Akira Ikari, both of Shizuoka, Japan, assignors to Yazaki Corporation, Shizuoka, Japan

Filed Dec. 14, 1988, Ser. No. 284,289

Claims priority, application Japan, Dec. 16, 1987, 62-189967[U]

Int. Cl.[5] H01B *17/30;* **H02G** *3/22*

U.S. Cl. 174—153 G **4 Claims**



1. A grommet for sealing the clearance between a panel and an electric cord extending therethrough, comprising:

a locking portion made of a hard resin, said locking portion including a lower part having a center hole, an annular wall provided at the peripheral edge of said lower part a base plate provided at the top of said wall and having a center hole, and engaging tongues provided on said walls;

a soft portion including an annular recess fitted with said base plate, and a tube for receiving therethrough an electric cord; and

electric cord fastening members having stoppers dimensioned so as to be prevented from passing through said holes of said lower part and said base plate, said fastening members being securable to said cord so that said stoppers are located between said lower part and said base plate.

4,945,194

ELECTRIC MULTIPLE SWITCH ASSEMBLY WITH PUSHBUTTON ACTUATOR AND FORCE TRANSMITTING INSERT

Fritz Berger, Oberbuchsiten, Switzerland, assignor to Elektro-Apparatebau Olten AG, Olten, Switzerland

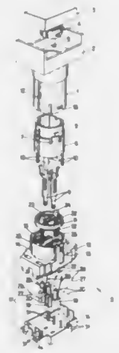
Filed Jan. 24, 1989, Ser. No. 301,611

Claims priority, application Switzerland, Feb. 1, 1988, 329/88-9

Int. Cl.[5] H01H *9/00, 13/50*

U.S. Cl. 200—5 R **15 Claims**

1. A pushbutton switch comprising a housing having a first section and a second section; a plunger movable in said first section between extended and depressed positions; switching means provided in said second section and including at least one first contact and at least one second contact; and means for engaging said second contact with said first contact in response to movement of said plunger to said depressed position, including a floating insert disposed in said housing between said plunger and said second contact, a pusher between said second contact and said insert, means for biasing said pusher against said insert, and means for transmitting motion between said



insert and said plunger at n points wherein n is a whole number exceeding two.

4,945,195

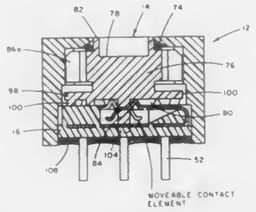
ROTARY SWITCH

Ralph Ipcinski, Hollis, N.H., assignor to C & K Components, Inc., Newton, Mass.

Filed Mar. 20, 1989, Ser. No. 325,392

Int. Cl.[5] H01H *19/60*

U.S. Cl. 200—6 B **6 Claims**



1. A DIP coded rotary switch comprising a housing, a rotor, a base, a fixed contact and a series of contact portions, the base formed by insert molding around a metal stamping, the metal stamping separated into the contact portions and the fixed contact, the base including a first long side edge, a second long side edge, a first side edge, a second side edge, an upper surface and a lower surface, the upper surface having a pair of spaced first and second ribs, formed in spaced parallel relation to each other and to the second long side edge, a pair of first channels being formed in the first rib extending from the first long side edge to a third channel and in spaced parallel relation with the first and a second side edges; the upper surface having a pair of spaced second channels formed in the second rib extending from the second long side edge to the third channel and being in spaced parallel relation with the first and a second side edges, each of the first and second channels having a floor and each of the floors being provided with a portion, the portion being wedge shaped in cross section, the third channel extending from first side edge to the second side edge, in spaced parallel relation with the first and second long side edges and in right angle relation with the first and second channels, each of the contact portions comprising a movable contact portion extending in integral, right angle relation to a support portion, each of the movable contact portions includes a free terminal end, the fixed contact portion positioned in the third channel with a movable contact portion positioned within each of the channels and each of the movable contact portions bent around the wedge shaped portion, the terminal end of each of the movable contact portions positioned in superimposed, spaced relation to the fixed contact portion, the rotor mounted within the housing in superposed relation to the upper surface of the base and to the terminal ends of each of the movable contact portions whereby rotation of the rotor urges one of the terminal ends into engagement with the fixed contact portion.

4,945,196

PROVIDING A PROGRAMMER/TIMER WITH DUAL RATE DRIVE

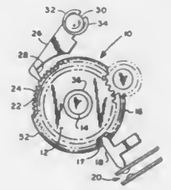
Joseph J. Mahon, Libertyville, and Robert K. Aigner, Chicago, both of Ill., assignors to Eaton Corporation

Continuation of Ser. No. 242,397, Sep. 9, 1988, Pat. No. 4,856,096. This application Jul. 28, 1989, Ser. No. 386,163

The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.

Int. Cl.[5] H01H *7/08*

U.S. Cl. 200—38 C **9 Claims**



1. A dual rate time-out electromechanical programmer for an appliance comprising:

(a) housing means;

(b) program means including shaft means mounted for rotation on said housing means and having at least one program track thereon;

(c) at least one appliance program function switch having a cam follower means responsive to said cam track for opening and closing said switch;

(d) first advance means operative upon receipt of power to drive said program cam means through a first frictional coupling and including a toothed member rotatably connected with said program cam means and a first driving means movably disposed on said housing means for movement between a first position drivingly engaging said toothed member and a second position drivingly disengaged from said toothed member;

(e) blocking means operative in response to user rotation of said shaft means and program cam means to a selected position, to move said first driving means to said second disengaged position;

(f) second advance means operative upon receipt of power, to continuously drive said program cam means through a second rotary frictional coupling, said second advance means operable to advance said program cam means at a rate significantly different from the rate of said first advance means;

(g) wherein said first advance means is operative to override said second rotary frictional coupling when said first driving means is in said first position.

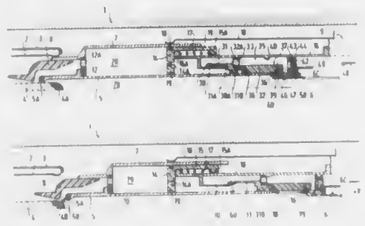
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,197

HIGH TENSION CIRCUIT BREAKER INCLUDING A DIELECTRIC GAS USED FOR BLASTING

Edmond Thuries, Puignan; Denis Dufournet, Bron, and Michel Perret, Tramole, all of France, assignors to Societe Anonyme dite: GEC Alsthom SA, Paris, France

Filed Sep. 11, 1989, Ser. No. 405,155
Claims priority, application France, Sep. 16, 1988, 88 12115
Int. Cl.[5] H01H *33/88*
U.S. Cl. 200—148 A 7 Claims



1. A high tension circuit breaker having a dielectric gas under pressure, the circuit breaker being of the type including at least one circuit breaking chamber comprising an insulating envelope filled with said gas and containing a fixed assembly comprising a fixed main contact and a fixed arcing contact, and a moving assembly comprising in particular a moving main contact and a moving arcing contact, the circuit-breaking chamber further including a pair of secondary contacts and a blast cylinder opening out into a blast nozzle, wherein said blast cylinder is deliminted by a first cylinder constituting the moving arcing contact, a second cylinder constituting the fixed main contact, and a first piston sliding between said first and second cylinders, said first piston being urged by a spring to come into abutment against a part fixed to the fixed assembly, the cylinder constituting the moving arcing contact and a tube connected to the fixed assembly and coaxial with said cylinder together delimiting, on the other side of the piston closing the blast cylinder, a variable volume closed at one end by said first piston and at its other end by an annular end piston connected to said first cylinder and sliding along said tube, said volume enclosing said secondary contacts, a first secondary contact being fixed to said tube and the second secondary contact being entrained by said first cylinder.

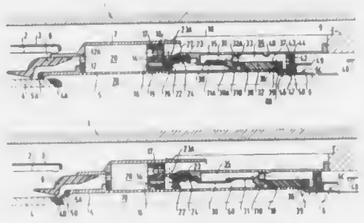
4,945,198

HIGH TENSION CIRCUIT BREAKER WITH LOW OPERATING ENERGY

Edmond Thuries, Meyzieu; Denis Dufournet, Bron, and Michel Perret, Bourgoin-Jallieu, all of France, assignors to Societe anonyme dite: ALSTHOM, Paris, France

Filed Mar. 23, 1989, Ser. No. 327,883
Claims priority, application France, Mar. 23, 1988, 88 03803
Int. Cl.[5] H01H *33/88*
U.S. Cl. 200—148 A 9 Claims

1. A high tension circuit breaker containing a dielectric gas under pressure, the circuit breaker being of the type comprising at least one interrupting chamber comprising an insulating envelope filled with said gas and containing a fixed assembly including a fixed main contact and a fixed arcing contact, and a moving assembly including a moving main contact and a moving arcing contact, the interrupting chamber also containing a pair of secondary contacts and a blast cylinder opening out into a blast nozzle, wherein the circuit breaker includes first means for limiting the maximum separation distance between the secondary contacts to a value which is less than the maximum separation distance between the arcing contacts, and



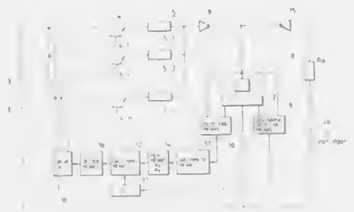
second means for preventing any arcs being struck during closure.

4,945,199

ELECTRIC DISCHARGE MACHINING METHOD AND DEVICE

Toshiaki Tanaka; Morihisa Nishikawa; Yoshio Ozaki; Kooji Akamatsu; Masahiro Nakata, and Atsushi Taneda, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP87/00868, § 371 Date Aug. 25, 1988, § 102(e) Date Aug. 25, 1988, PCT Pub. No. WO88/03453, PCT Pub. Date May 19, 1988
PCT Filed Nov. 10, 1987, Ser. No. 231,820
Claims priority, application Japan, Nov. 14, 1986, 61-271061
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.13 18 Claims



1. An electric discharge machining method in which an electrically conductive solution is used as a machining solution, a pulse voltage is repeatedly applied between electrodes which are an electrode and a workpiece to be machined, to cause electric discharge to take place between said electrodes, thereby to machine said workpiece; in which

an interelectrode impedance Rgap defined by the distance between said electrodes, the confronting area thereof, and the specific resistivity of said electrically conductive solution is detected,

during a no-load period which is provided after application of said voltage between said electrodes until electric discharge takes place between said electrodes, a power source internal impedance Rx with which a no-load voltage equal to or higher than a discharge starting voltage is supplied is set,

after detection of the occurrence of electric discharge between said electrodes, a power source internal impedance Ry with which a desired machining current is supplied is set, and said machining current is allowed to flow for a predetermined period of time, and

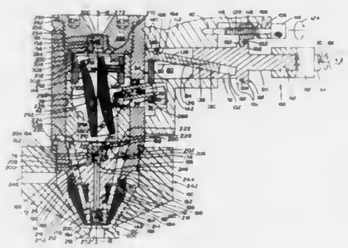
with a predetermined pause period, said series of operations are repeatedly carried out under control.

4,945,200

ELECTRICAL DISCHARGE MACHINE APPARATUS MOVING WIRE ELECTRODE GUIDE ASSEMBLY

Thomas J. Truty, South Barrington; William R. Fricke, Bloomingdale; James M. Ceriale, Green Oaks, all of Ill.; Jule L. French, Yoder, and Kevin M. Newell, Marion, both of Ind., assignors to Fort Wayne Wire Die, Inc., Fort Wayne, Ind. and T-Star Industrial Electronics Corp., Wheeling, Ill.

Filed Mar. 17, 1989, Ser. No. 325,284
Int. Cl.[5] B23H *7/10*
U.S. Cl. 219—69.12 37 Claims



1. A guide assembly for guiding an electrical discharge machine apparatus moving wire electrode through a workpiece, said assembly comprising:

first, second and third guide members each having a bore for receiving the moving wire electrode therethrough and guiding the moving wire electrode;

a current pick-up between said second and third guide members in contact with the moving wire electrode and placing electric current thereon; and,

wherein said first guide member is to be located closest to the workpiece compared to said second and third guide member; and,

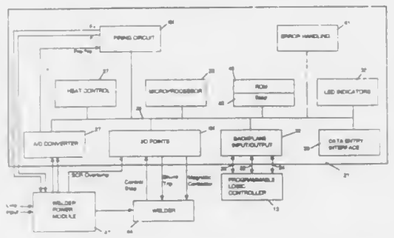
a post guide body having a wire passageway therethrough between first and second openings, said first guide member mounted to said body with said first guide member bore communicating with said passageway through said first passageway opening and said second guide member mounted to said body with said second guide member bore communicating with said passageway through said second passageway opening.

4,945,201

RACK MOUNTABLE WELD CONTROLLER

Roy A. Ito, Woodland Hills, and Wen-Tar Kuo, Chatsworth, both of Calif., assignors to Pertron Controls Corporation, Chatsworth, Calif.

Filed May 19, 1989, Ser. No. 354,509
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 9 Claims



1. A rack mountable weld controller for controlling the operation of a welder having a welder power module for use in a programmable logic controller system including a card adapted for installation in a slot coupled through a backplane to a programmable logic controller, said card comprising:

a) a microprocessor;

b) backplane input/output means coupled to said microprocessor and for coupling to said backplane for transferring data between said programmable logic controller and said microprocessor;

c) input/output means coupled to said microprocessor and for coupling to said welder power module and said welder for transferring control signals between said welder power module, said welder and said microprocessor;

d) analog to digital converter means coupled to said microprocessor and for coupling to said welder power module for converting power line voltage and welder transformer primary current to digital signals;

e) means coupled to said microprocessor for generating a prefire signal;

f) firing circuit means coupled to said prefire signal generating means and said microprocessor and for coupling to said welder power module for generating a firing signal;

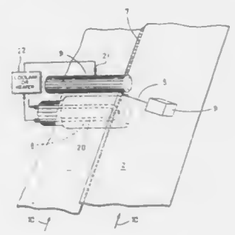
g) means for controlling the operation of said microprocessor.

4,945,202

METHOD OF AND APPARATUS FOR THE WELDING OF THIN SHEET METAL WORKPIECES

Bernd Büdenbender, Schubertweg 5, 2160 Stade, Fed. Rep. of Germany

Filed Jan. 19, 1989, Ser. No. 300,459
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1988, 3801365
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 16 Claims



1. A method of welding edge portions of thin sheet metal together, said method comprising the steps of:

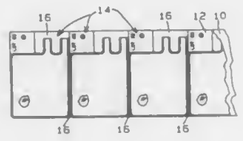
(a) overlapping said edge portions of said thin sheet metal to form an overlap region of the thin sheet metal, said sheet metal having a certain thickness and said overlap region having a width of 0.3 to 8 times said thickness;

(b) training a laser beam on said overlap region for a period and of an intensity sufficient to heat and raise the temperature locally of said edge portions to a temperature above the melting point of the sheet metal; and

(c) pressing the heated edge portions together between tools having a spacing less than the sum of the thicknesses of said edge portions to form a seam between said edge portions of a thickness which is equal to said thickness of said sheet metal.

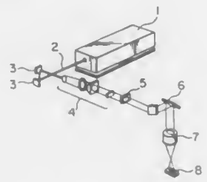
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,203
METHOD AND APPARATUS FOR MAKING FLUOROCARBON FILM PLASTIC BAGS USING A LASER
Charles I. Soodak, Silver Spring, and Robert R. Ulrich, Eldersburg, both of Md., assignors to American Fluoroseal Corporation, Silver Spring, Md.
Division of Ser. No. 927,542, Nov. 6, 1986, Pat. No. 4,847,462. This application Mar. 28, 1989, Ser. No. 329,836
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 56 Claims



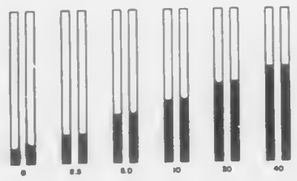
1. A method of welding two plastic films together, comprising the steps of putting said films into optical contact with each other, and using laser means to weld said films together at locations where laser energy from said laser means strikes said films, said plastic films consisting of fluorocarbon films, and each having physical characteristics different from each other.

4,945,204
METHOD OF LASER-MARKING SEMICONDUCTOR DEVICES
Masakatsu Nakamura, and Sayuki Hieda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Continuation of Ser. No. 301,064, Jan. 25, 1989, abandoned. This application Oct. 19, 1989, Ser. No. 426,453
Claims priority, application Japan, Nov. 10, 1988, 63-282339
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 3 Claims



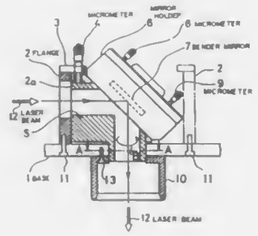
1. A method of laser-marking semiconductor devices comprising rectifying a pulsed laser beam to substantially the same size as that of a mask engraved with a mark such as a character or the like, passing the laser beam through said mask so that the beam takes the shape of said mark, and applying said laser beam to a resin surface of a resin sealed semiconductor device to engrave the resin with said mark, wherein
the energy density of said laser beam on the surface of said resin is 3 to 60 J/cm^2;
the pulse width of said laser beam is 0.1 ms or less, whereby said marking is performed.

4,945,205
CHROMATOGRAPHIC STRIP HAVING NON-COMPRESSED EDGES
David Litman, Los Altos; Robert Zak, Menlo Park, and Gerald Rowley, San Jose, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 599,386, Apr. 12, 1984, Pat. No. 4,756,828. This application Jul. 5, 1988, Ser. No. 215,198
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.72 2 Claims



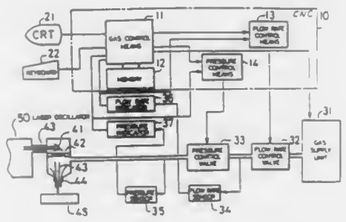
1. In a method for preparing chromatographic strips from a sheet of bibulous material having bound thereto a member of a specific binding pair, the improvement which comprises cutting the longitudinal edges of said strips from said sheet by non-compressive cutting means.

4,945,206
BEAM BENDER FOR USE IN A LASER-BEAM MACHINING APPARATUS
Takeji Arai, Yamanashi, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP88/00893, § 371 Date Apr. 28, 1989, § 102(e) Date Apr. 28, 1989, PCT Pub. No. WO89/02336, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 3, 1988, Ser. No. 350,708
Claims priority, application Japan, Sep. 16, 1987, 62-231854
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.74 2 Claims



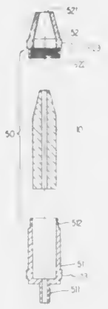
1. A beam bender for changing the direction of a laser beam in a laser-beam machining apparatus, comprising:
a base having a circular hole;
a removable flange screwed to said base;
a hollow light-guide member of an inverted L shape having one end rotatably inserted in said hole and an opposite end movably held against said flange whereby when said flange is removed from said base, said light-guide member may be rotated in said hole;
a mirror holder fixed to said light-guide member;
a bender mirror mounted on said mirror holder, said mirror holder having a fine adjustment mechanism for adjusting the angle of said bender mirror.

4,945,207
ASSIST GAS CONTROL METHOD
Takeji Arai, Yamanashi, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP88/00792, § 371 Date Mar. 21, 1989, § 102(e) Date Mar. 21, 1989, PCT Pub. No. WO89/01386, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 10, 1988, Ser. No. 332,936
Claims priority, application Japan, Aug. 12, 1987, 62-201599
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.84 6 Claims



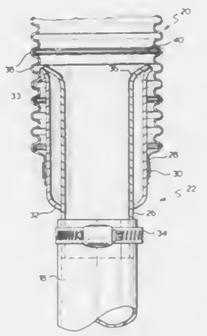
1. An assist gas control method for a laser machining device including a combination of a laser beam machine and a numerical control apparatus, comprising the steps of:
indicating a kind, mixing ratio, pressure, and flow rate of an assist gas via instructions in a machining program; and
automatically controlling the kind, mixing ratio, pressure, and flow rate of the assist gas using said numerical control apparatus during laser machining operations.

4,945,208
CARBON DIOXIDE WELDING GUN
Jon C. Lian, No. 8-3, Chong Shang E. Rd., Dan-Shuei, Taipei County, Taiwan
Filed Oct. 11, 1988, Ser. No. 255,462
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—137.61 1 Claim



1. In a carbon dioxide welding gun having a nozzle, the combination including:
(a) a front conical head member, said front conical head member having a through passage, said front conical member having an internal truncated conical configuration;
(b) a rear conduit member having a through passage, said rear conduit member being threadedly coupled to said front conical head member, said rear conduit member having a hollow cylindrical configuration defining a first male threaded connector portion at an upper section and a second male threaded connector portion at a lower section, said second connector portion having a diameter less than a diameter of said first connector portion;
(c) a welding contact tip member located within said nozzle of said welding gun and having an upper conical configuration for insert into mating and interfacing relation with said internal truncated conical configuration of said front conical head member, said front conical head member having a female threaded connector for threaded securement to said first male threaded connector of said rear conduit member, said combined front conical head member and said rear conduit member ing whereby said welding contact tip member is easily removed or inserted for operative efficiency.

4,945,209
WELDING GUN SWIVEL
Robert N. Mann, Mississauga, Canada, assignor to Mig Vac Inc., Mississauga, Canada
Filed Nov. 13, 1989, Ser. No. 434,273
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—137.31 8 Claims



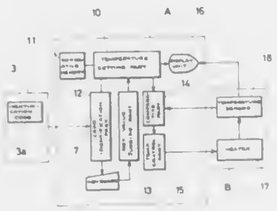
1. A welding gun, comprising:
a welding gun head for applying a weld to a site,
a conduit for conveying an electrical power cable to said welding gun head,
flexible bellows connector means connected at one end to said welding gun head, and
a generally elongate swivel connector means comprising two interacting parts arranged to swivel relative to one another about a longitudinal axis,
said swivel connector means having one of said interacting parts connected to the other end of said flexible bellows connector means and having the other of said interacting parts connected to said conduit.

4,945,210
CARD CONTROLLED SOLDERING IRON TEMPERATURE CONTROL DEVICE
Hiroshi Yoshimura, Osaka, Japan, assignor to Hakko Metal Industries Limited, Osaka, Japan
Filed Apr. 5, 1988, Ser. No. 177,696
Claims priority, application Japan, Nov. 18, 1987, 62-176117[U]
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—241 6 Claims

1. A soldering iron temperature control device capable of adjusting the set value of the temperature of a tip of a soldering iron having a heater for heating said tip, comprising:

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card means having an identification code to identify a specific card holding person;
card identification means for identifying whether the card holding person is a selected person or not from the identification code of said card means and delivering a setting permit signal when the card holding person is identified to be the selected person;
input means for receiving the setting permit signal and entering the set value of said tip temperature;
set value judging means for judging whether the input numerical value from said input means is within an allowable temperature of the tip temperature or not;

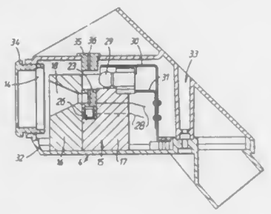


memory means for storing the set value entered through said set value judging means;
temperature sensor means for detecting the tip temperature of the soldering iron;
comparative means for comparing the detected temperature of said temperature sensor means and the set value in said memory means; and
temperature control means for delivering a control signal on the basis of the result of comparison by said comparative means and controlling the heating of the heater of the soldering iron in response to said control signal.

4,945,211
APPARATUS FOR MONITORING TEMPERATURE DEPENDENT CHANGES

John F. Brooks, Billericay, and Paul L. Farnese, Southend-on-Sea, both of England, assignors to Electrothermal Engineering, Essex, England

Continuation of Ser. No. 871,519, Jun. 6, 1986, Pat. No. 4,808,796. This application Aug. 2, 1988, Ser. No. 227,144
Claims priority, application United Kingdom, Jun. 7, 1985, 8514384
Int. Cl.[5] H05B *3/70*
U.S. Cl. 219—385 **1 Claim**

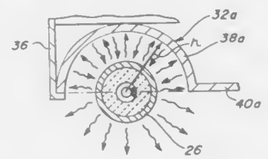


1. An improved apparatus for monitoring temperature dependent changes in a substance, the apparatus having a heating arrangement including:
a plurality of preformed pieces of heat insulating material having a first volume;
a heat sink member having a second volume, the heat sink member being insulated by the pieces of heat insulating material and being perforated to provide an insertion passage having an open end for insertion of a sample tube of a substance to be heated;
electrical heating means for heating the heat sink member;
means for monitoring a change of a substance with temperature at a position in the insertion passage spaced from the open end of the insertion passage;
temperature detecting means for detecting the temperature of the heat sink member;
means for energizing the electrical heating means to provide a first relatively slow and controlled rate of temperature change over a range of temperatures in which the change is to be monitored; and
means for switching the energizing means to a relative fast rate of temperature change, whereby a substance may rapidly attain a temperature close to the range of temperature;
the improvement comprising:
the heating arrangement is a replaceable unit;
at least one of the preformed pieces includes a preformed recess, the preformed pieces mutually defining a heat insulating block containing a cavity in which the heat sink member is disposed;
the heat insulating block having an opening to provide access for a sample tube to the insertion passage; and
the second volume being less than the first volume, whereby the heat sink member has a relatively low thermal mass thereby enabling the heat sink to be heated rapidly.

4,945,212
THERMAL RADIATION DEVICE

James M. Gogan, Brick, and Joseph Gialanella, N. Caldwell, both of N.J., assignors to Savory Equipment, Inc., Lakewood, N.J.

Filed Jul. 14, 1989, Ser. No. 380,613
Int. Cl.[5] F27D *11/00*
U.S. Cl. 219—388 **7 Claims**



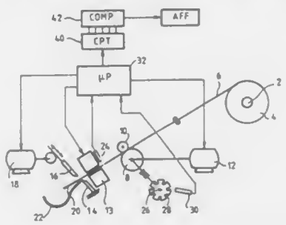
1. A thermal radiation device comprising, in combination:
cylindrical rod means for radiating thermal energy;
elongate channel means having in cross section a semicircular concave reflecting surface of constant radius, said surface being coaxially juxtapositioned along the length of said rod means for redirecting substantially all of the energy radiated to said surface back to said rod means for increasing the temperature of said rod means;
whereby the rate of the nonreflected emitted by said rod means is increased.

4,945,213
SYSTEM FOR ISSUING TICKETS

Pierre Didiergeorge, Besancon, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Filed May 9, 1988, Ser. No. 191,933
Claims priority, application France, Nov. 27, 1986, 86 16540
Int. Cl.[5] G07B *3/00*
U.S. Cl. 235—31 T **3 Claims**

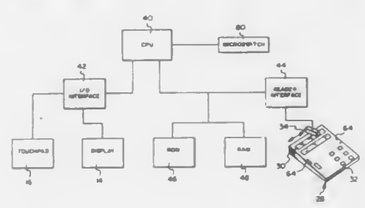
1. A ticket-issuing system including a strip of paper having first and second main faces mounted on a support in order to dispense a plurality of tickets, said strip of paper including at least one mark on one of said main faces, the system including print means comprising an aperture for printing a ticket on the strip, drive means for driving said strip to cause said strip to pass through said aperture of said print means cutter means for cutting off a part of the strip that has been printed from a remainder of the strip, said printed part of the strip cut corresponding to a ticket, detector means for detecting said mark to deliver a special detection signal in order to deduce information concerning a number of tickets remaining on the strip, means for generating a reference signal representative of a predetermined number of tickets, comparator means for comparing said predetermined number of tickets with the number of tickets remaining, and warning means for delivering a warning signal in response to said comparison.



4,945,214
DIGITAL DATA APPARATUS WITH DATASTRIP COMPRESSION AND EXPANSION

David Hancock, and Thomas Bond, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,469
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—456 **5 Claims**

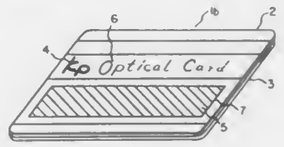


1. Digital data apparatus comprising:
means for defining an elongated reading station at which one or more datastrips containing related digital information are to be read in sequence, each of said datastrips being formed of compressed, digitally encoded data in a plurality of parallel, contiguous lines of sequential bits, wherein the aggregate of said lines constitute the length of said strip and said lines run transversely of said strip, and wherein the number of bits in each line is identical but the number of bits encoding a character is variable in accordance with a predetermined compression/decompression code;
a datastrip reader which is mounted for movement along said reading station from a start position, in a first direction, to sequentially read said encoded bits in each line of said datastrip until all of said lines have been read and in a second opposite direction to return said reader to said start position;
a digital memory; and
control means for storing in said digital memory the encoded bits read from a datastrip by said reader as it moves in said first direction, until all of the bits of a datastrip have been stored in said memory; and while said reader moves in said second direction back to said start position, for decoding said encoded data according to said predetermined compression/decompression code and for storing said decoded data in said memory.

4,945,215
OPTICAL RECORDING CARD HAVING HOLOGRAM CONTAINED THEREIN AND METHOD OF PRODUCING THE SAME

Yoichi Fukushima; Minoru Fujita; Yuji Kakinuma, and Toshio Haga, all of Tokyo, Japan, assignors to Kyodo Printing Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1987, Ser. No. 108,473
Claims priority, application Japan, Oct. 15, 1986, 61-244995; Oct. 24, 1986, 61-163468[U]
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—457 **11 Claims**

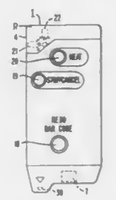


1. An optical recording card having hologram contained therein comprising a transparent card front board of which inside surface includes a hologram portion building area and an optical recording portion building area superposed on said hologram portion building area, said hologram portion building area being formed with a pattern of concavity and convexity in the form of interference fringe of hologram, a reflective metallic film covering said pattern of concavity and convexity, said optical recording area including an optical recording pattern layer disposed between said reflective film and said pattern of concavity and convexity, said recording layer comprising a light absorbing material for frequencies outside the visible spectrum and a card rear board adapted to be adhered to said card front board from the above of said reflective metallic film and said optical recording pattern layer.

4,945,216
WIRELESS BAR CODE READER

Takeshi Tanabe, Higashi Osaka; Kenzi Ide, and Mituo Obouchi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 308,962, Feb. 9, 1989, abandoned, which is a continuation of Ser. No. 855,087, Apr. 22, 1986, abandoned. This application Aug. 16, 1989, Ser. No. 395,203
Claims priority, application Japan, Nov. 6, 1985, 60-171615; Nov. 6, 1985, 60-171616; Nov. 6, 1985, 60-171617; Nov. 12, 1985, 60-174478
Int. Cl.[5] G06K *9/18*; G06F *15/20*
U.S. Cl. 235—462 **5 Claims**



1. A wireless bar code reader for transmitting to an elec-

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tronic cooking device a signal representing a cooking routine, said bar code reader comprising

a scanning unit for reading bar codes and a light transmitting unit for simultaneously transmitting to a separate control unit a bar code light signal indicative of information related to a bar code read by said scanning unit, said scanning unit and said light transmitting unit being disposed at opposite ends in a longitudinal direction of said wireless bar code reader, said scanning unit being adapted to receive light in said longitudinal direction to read a bar code and said light transmitting unit being adapted to transmit light substantially perpendicularly to said longitudinal direction,

controlling means for controllably activating said scanning and light transmitting units, and

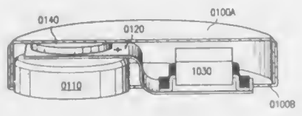
a read button and device control buttons disposed on one side surface of said bar code reader, said read button being disposed near said scanning unit, said device control buttons being disposed near said light transmitting unit, said read button serving to cause said controlling means to activate said scanning unit to read a bar code and to simultaneously cause said light transmitting unit to transmit a bar code light signal, and each of said device control buttons serving to cause said controlling means to activate said light transmitting unit to transmit a corresponding control signal for controlling an operation of said electronic cooking device.

4,945,217

HAND-HELD WAND FOR READING ELECTRONIC TOKENS

Michael L. Bolan, Dallas, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Filed May 15, 1989, Ser. No. 352,598
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **3 Claims**



1. A wand for rapidly manually contacting two-terminal thin round electronic token data modules, comprising:

a base shaped to be firmly supported by the hand of a user;

a surface positioned so that a user can bring said surface into contact with the token to be contacted,

said surface including a recess therein which is shaped to mate with the token to be contacted,

the inner perimeter of said recess being bordered by a conductive ring of conductive material,

said ring of conductive material being connected to a first lead wire;

an additional exposed contact, positioned substantially in the middle of said recess, said additional contact being connected to a second lead wire;

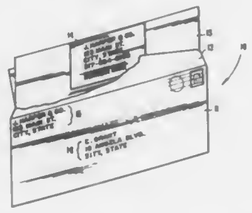
whereby said first and second lead wires can be connected to a host computer to provide a data interface to randomly positioned tokens, as quickly as a user can make contact between said recess and the respective tokens.

4,945,218

MAILING DEVICE AND MACHINE-READABLE BUSINESS CARD

Alex F. Talbott, 3703 Hillsdale Rd., Louisville, Ky. 40222

Filed Sep. 6, 1988, Ser. No. 240,796
Int. Cl.[5] G06K *19/00*
U.S. Cl. 235—487 **20 Claims**



1. A bar coded mailing combination with separable return label comprising:

a paper sheet including an addressor's section with a first portion to identify the addressor by name and address in written words printed on said addressor's section;

a removable paper sticker mounted atop and covering said addressor's section and having a bottom surface and an outwardly facing top surface, said sticker having a return section thereon printed on said top surface of said sticker and identifying the same addressor in pre-printed written words and in pre-printed machine readable bar code; and,

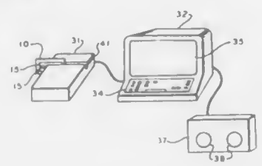
adhesive means on said bottom surface operable to allow said sticker to be removed from atop said addressor's section of said paper sheet by the addressee and to then mount said sticker onto a return envelope utilizing the identity of the addressor in pre-printed machine readable bar code on said sticker to mail to the same addressor.

4,945,219

COMPOSITE CALLING CARD FOR SOCIAL AND BUSINESS DATA AND USE

Masaki Tanaka, 10 Sarah Dr., Farmingdale, N.Y. 11735

Continuation of Ser. No. 80,884, Aug. 3, 1987, abandoned. This application Jul. 27, 1989, Ser. No. 388,300
Int. Cl.[5] G06K *19/02*
U.S. Cl. 235—488 **4 Claims**



1. A system for communicating information from one entity to another entity, said system comprising:

(a) a card reading means for reading and decoding encoded data on a calling card passed through said card reading means;

(b) a terminal coupled to said card reading means for receiving decoded data from said card reading means and for visually displaying said decoded data for visual presentation and for storing said decoded data for subsequent retrieval and display, said terminal including a cathode ray tube for visually displaying decoded data thereon and data storage and retrieval means for storing said decoded data and for retrieving said decoded data; and,

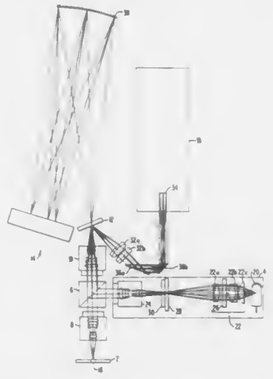
(c) said calling card having a front side and a back side bonded together forming a composite material calling card in disposible not destructible form, said front side being a paper material for accepting and retaining visible printed data thereon, said visible printed data being freely readable and defining social and/or business introduction information personal to an individual, said back side being an encodable material for accepting and retaining a virtually invisible encoded data defining business information, said encoded data being readable by said card reading means when said calling card is passed through said card reading means, said business information including business data, marketing data and marketing communications.

4,945,220

AUTOFOCUSING SYSTEM FOR MICROSCOPE HAVING CONTRAST DETECTION MEANS

Chester L. Mallory, Campbell; Phillip D. Wasserman, Cupertino; Hung V. Pham, San Jose, and Barry G. Broome, Glendora, all of Calif., assignors to Prometrix Corporation, Santa Clara, Calif.

Filed Nov. 16, 1988, Ser. No. 272,597
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.3 **27 Claims**



1. Apparatus for focusing a microscope comprising:

means for projecting an area of varied light intensity through an objective of the microscope onto a specimen surface;

means for measuring light intensity of an image reflected from said surface at a plurality of locations, said plurality of locations lying substantially along a path passing through said area of varied light intensity;

means for determining a derivative of a factor related to said light intensity as a function of said location; and

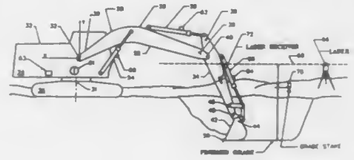
means for adjusting focus of said microscope until a variation in said derivative is substantially maximized.

4,945,221

APPARATUS AND METHOD FOR CONTROLLING A HYDRAULIC EXCAVATOR

Edward G. Nielsen, and Timothy E. Steenwyk, both of Grand Rapids, assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Division of Ser. No. 42,449, Apr. 24, 1987, Pat. No. 4,829,418. This application Jun. 24, 1988, Ser. No. 210,803
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—203.1 **10 Claims**



1. A laser receiver comprising:

an array comprising a plurality of linearly aligned photoreceptors;

comparison means for determining the identity of said receptors that are receiving light at a predetermined frequency and above a predetermined level;

median detection means responsive to said comparison means for determining from among a group of said receptors that are determined to be receiving said light the receptor closest to the longitudinal center of said group; and

wherein said median detection means includes

means for assigning discrete number values to said photo receptors, said number values assigned consecutively longitudinally to adjacent receptors;

means for reading the number values assigned to the receptors receiving said light; and

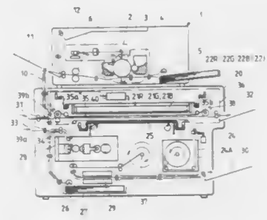
means for calculating the average value of said number values to produce a representation of the same receptor closest to the longitudinal center.

4,945,222

LIGHT IRRADIATION CONTROL DEVICE FOR USE IN IMAGE RECORDING APPARATUS

Toshio Sakai, and Michitoshi Akao, both of Nagoyo, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 18, 1988, Ser. No. 259,341
Claims priority, application Japan, Oct. 20, 1987, 62-264830; Feb. 25, 1988, 63-42944
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **9 Claims**



1. A light irradiation control device for use in an image recording apparatus which includes an exposure unit including e light source, and a pressure developing unit, said image recording apparatus employing an image recording medium on which an image corresponding to an image of an original is provided, said device comprising;

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a detection means for detecting one of light transmission factor of said image recording medium and thickness of said original and for generating an output signal indicative of one of said light transmission factor and said thickness prior to light application to said image recording medium; and,

a control means connected between said detection means and said light source for controlling light irradiation amount of said light source in response to said output signal, said light being firsty directed to one of said image recording medium and said original.

4,945,223

X-RAY IMAGE INTENSIFIER TUBE WITH CIRCUIT TO COMPENSATE FOR THE EFFECTS FO MAGNETIC DISTORTION

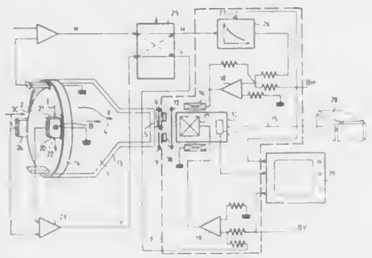
Jacques Beauzamy, Chatillon, France, assignor to General Electric CGR S.A., Issy les Moulineaux, France

Filed Jun. 29, 1989, Ser. No. 372,903

Claims priority, application France, Jul. 1, 1988, 88 08960

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—213 V T **9 Claims**



1. An X-ray image intensifier tube comprising:

a conversion panel to convert an X-radiation into an electronic radiation,

a screen to convert the electronic radiation into a light radiation,

a television camera provided with a target to detect the light radiation,

means for measuring magnetic disturbances, and a

and a circuit to compensate for distortion effects due to the magnetic disturbances, said circuit comprising:

a circuit to set the reading mode of the television camera target according to the measurement of the magnetic distortion.

4,945,224

OPTICAL WAVEFORM OBSERVING APPARATUS

Musubu Koishi; Etsuo Tsujimura; Motoyuki Watanabe, and Yutaka Tsuchiya, all of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 29, 1988, Ser. No. 291,825

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—213 VT **18 Claims**

1. Optical waveform observing apparatus comprising:

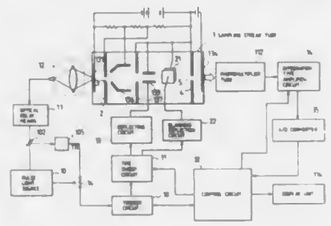
a sampling streak tube for observing a waveform of an incident light beam, the streak tube including means responsive to a repetitive deflecting trigger signal for deflecting in a sweep mode an electron beam corresponding to the incident light beam so that the electron beam can be sampled;

means for generating an electrical trigger signal having a predetermined repetitive frequency;

time sweep means for delaying by a predetermined time period said electrical trigger signal to provide said deflecting trigger signal;

integration means for integrating data outputted by said streak tube;

control means, operatively coupled to said time sweep means, for periodically generating a stop signal causing



said time sweep means to suspend provision of said deflecting trigger signal for a first time period; and

subtraction means, operatively coupled to said integration means, for subtracting the integration of the streak tube data outputted during said first time period from the integration of the streak tube data outputted during a second time period when said deflecting trigger is provided.

4,945,225

SIGNAL DISCRIMINATOR

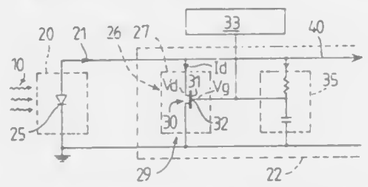
Christopher J. Gamgee, Carnegie; Peter Leigh-Jones, Vermont, both of Australia, and Charles Jungo, Saratoga, Calif., assignors to Amskan Limited, Oakleigh, Australia

Filed Sep. 16, 1988, Ser. No. 247,000

Claims priority, application Australia, Sep. 17, 1987, PI4408

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 B **8 Claims**



1. A discriminating apparatus for discriminating a radiant information signal from a radiant background signal on which the information signal is superimposed, the discriminating apparatus including an incident radiation sensing means sensitive to an incident radiation signal comprising both the radiant information signal and the radiant background signal and operative to generate an output sensing signal of a level related to the intensity of the incident radiation signal, the sensing means having a variable operating point determining the operating characteristics thereof, and detector means responsive to the sensing signal to detect in the sensing signal a radiant information signal component superimposed on a background radiation signal component, the detector means operating so as to set the variable operating point of the sensing means, the sensing means being operative to convert the radiant information signal and the radiant background signal to electrical energy so as to thereby generate an output signal of a magnitude related to the incident radiation level which, in the absence of the detector means, is capable of reaching a saturation level of the output signal, any increase in incident radiation level beyond a radiation level necessary to produce said saturation level does not produce significant changes in magnitude of the output sensing signal, the discriminating apparatus being operative over a range of radiant background signal intensities which could be sufficient in the absence of the detector means to cause the output signal to reach the saturation level without adjustment of the operating point of the sensing means, the radiation sensing means comprising a radiation sensitive semiconductor element operative in the photo-voltaic mode so as to produce as the output signal an output current which is dependent on the incident radiation intensity, the discriminating apparatus including a compensating circuit essentially powered by said output signal and operative in response to any variation in background radiation intensity level within a desired range to adjust the operating point of the incident radiation sensing means so as to maintain the level of the sensing signal below the saturation level and thus allow the sensing means and detector means to be responsive to a radiant information signal essentially independent of the level of the radiant background signal.

4,945,226

SEMICONDUCTOR PHOTOSENSOR AND DRIVING METHOD THEREFOR

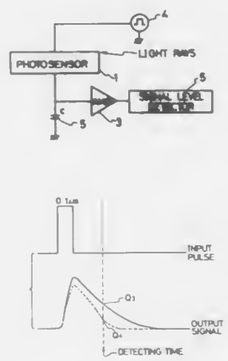
Takeshi Fukuda, Ebina; Nobumitsu Amachi, Atsugi; Mitsunori Sakama, Hiratsuka; Naoya Sakamoto, Atsugi, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Oct. 27, 1988, Ser. No. 263,367

Claims priority, application Japan, Oct. 28, 1987, 62-274451

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 R **7 Claims**



1. A photosensor comprising:

a pulse generator;

a photosensitive semiconductor device coupled with said pulse generator in order to receive a pulsed signal from said pulse generator;

a charge storage means for accumulating charge in correspondence with the current passing through said semiconductor device; and

a signal level detector which detects charge accumulation level of said storage means a substantial time period, comparable to a discharge time of the charge storage means, after said semiconductor device receives the input pulse from said pulse generator in order to differentiate the charge accumulation levels corresponding to when said device is illuminated from that corresponding to when said device is not illuminated.

4,945,227

AVALANCHE PHOTODIODE QUENCHING CIRCUIT

Robin Jones, Worcester, and Kevin D. Ridley, Southampton, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

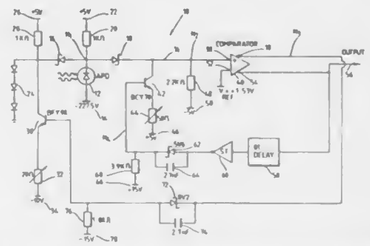
PCT No. PCT/GB87/00837, § 371 Date May 16, 1989, § 102(e) Date May 16, 1989, PCT Pub. No. WO88/04034, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 23, 1987, Ser. No. 359,754

Claims priority, application United Kingdom, Nov. 25, 1986, 8628110; Feb. 11, 1987, 8703105

Int. Cl.[5] G01J *1/44;* H01L *31/02;* H04B *9/00*

U.S. Cl. 250—214 R **14 Claims**



1. An avalanche photodiode quenching circuit including an avalanche photodiode and a comparator means having an input for detecting avalanche initiation by comparing photodiode potential with a reference potential said circuit comprising:

(a) a ballast resistor in series with and arranged for recharging the photodiode;

(b) a quenching circuit connected to the photodiode and arranged to reduce photodiode potential in response to avalanche detection by the comparator and to be deactivated by comparator reset;

(c) a reset circuit for resetting the comparator input after a preset delay activated in response to avalanche detection by the comparator and deactivated after a preset delay in response to comparator reset; and

(d) isolating means arranged to isolate the photodiode electrically from the quenching circuit during quiescence and recharge and from the reset circuit and comparator during quench and recharge.

4,945,228

INSPECTION OF CONTAINER FINISH

John W. Juvinall, Ottawa Lake, Mich., and James A. Ringlien, Maumee, Ohio, assignors to Owens-Illinois Glass Container Inc., Toledo, Ohio

Filed Mar. 23, 1989, Ser. No. 327,662

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 B **43 Claims**

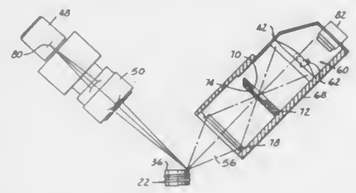
1. Apparatus for inspecting the finish of containers having a central axis and an open mouth surrounded by axially facing surface for sealing engagement with a container cap, said apparatus comprising:

means for rotating the container about its central axis,

a light source positioned to direct light energy onto the sealing surface of a container in said rotating means,

a camera that includes an array of light sensitive elements, said light source and said camera being positioned at respective acute angles to said sealing surface such that light energy from said source is directly reflected by said sealing surface to said camera, said camera having an effective field of view limited to an angular portion less than the entire circumference of the container sealing surface,

means for scanning said camera array at increments of container rotation to develop information indicative of intensity of light reflected by said sealing surface onto each said element as a function of said increments, and



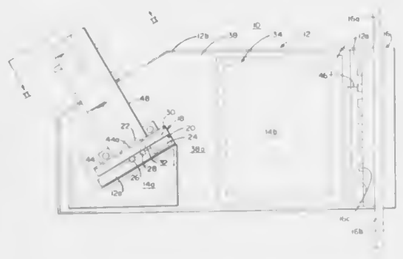
means for detecting commercial variations in the container sealing surface as a function of said information.

4,945,229

FIBER OPTIC RECEIVER AND TRANSCEIVER

C. David Daly, Whitehouse Station, N.J., and Ben Khoshnood, Coral Springs, Fla., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Dec. 29, 1988, Ser. No. 291,799
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.11 **15 Claims**



1. A fiber optic receiver having a sensor, a pre-amplifier and a post-amplifier, said receiver comprising:

(a) first printed circuit means having first surface for connection of said post-amplifier therewith and having matable connector means thereon for obtaining power for operation of said post-amplifier; and

(b) second printed circuit means supported by said first surface of said first printed circuit means in orthogonal geometric relation to said first circuit means and electrically connected therewith for obtaining power for operation of said pre-amplifier, said second printed circuit means having a first and a second surface, said pre-amplifier being mounted on said second printed circuit means first surface and electrically interconnected thereon, said sensor being mounted on said second printed circuit means second surface and electrically interconnected thereon;

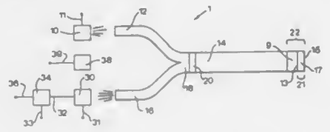
said second printed circuit means second surface having a ground plane member thereon, said first printed circuit means first surface having a ground plane member thereon electrically continuous with said ground plane member of said second printed circuit means; and wherein said ground plane member of said first printed circuit means includes a spacing portion separating said post-amplifier from said second printed circuit means.

4,945,230

OPTICAL MEASURING DEVICE USING A SPECTRAL MODULATION SENSOR HAVING AN OPTICALLY RESONANT STRUCTURE

Elric W. Saaski, Bothell, and James C. Hartl, Woodinville, both of Wash., assignors to Metricor, Inc., Woodinville, Wash.

Continuation of Ser. No. 628,813, Jul. 6, 1984, Pat. No. 4,678,904. This application Jun. 4, 1987, Ser. No. 58,150
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.21 **27 Claims**



1. An optical measuring device for measuring a range of values for a sensed physical parameter, wherein said optical measuring device comprises:

light source means for emitting input measuring light of at least two wavelengths;

optically resonant structure means;

detection means; and

light transmission means;

wherein said optically resonant structure means has a reflectivity curve and a transmission curve, and has at least one operating segment on at least one of said reflectivity curve and said transmission curve;

wherein said optically resonant structure means has an optically sensitive physical characteristic which changes as a function of said sensed physical parameter; wherein said changes of said optically sensitive physical characteristic microshift said at least one operating segment as a function of said sensed physical parameter;

wherein said optically resonant structure means are for spectrally modulating said input measuring light as a function of said microshifts to produce spectrally modulated output light which is spectrally modulated as a function of said sensed physical parameter;

wherein said at least one operating segment is selected to be less than about one resonance cycle in length for said range of values for said sensed physical parameter; wherein said at least one operating segment is microshifted less than about one resonance cycle over said range of values for said sensed physical parameter;

wherein said wavelengths of said input measuring light are selected to fall at least substantially within said at least one operating segment over said range of values for said sensed physical parameter;

wherein said at least one operating segment and said wavelengths of said input measuring light are selected such that over said range of values for said sensed physical parameter said spectrally modulated output light bears a unique one-to-one relationship to said sensed physical parameter;

wherein said light transmission means are for conveying said input measuring light from said light source means to said optically resonant structure means and for conveying said spectrally modulated output light from said optically resonant structure means to said detection means;

wherein said detection means are for deriving two electrical signals corresponding to any two different portions of said spectrally modulated output light; and are for taking the ratio of said two electrical signals to provide an output measuring electrical signal which is a function of said sensed physical parameter, to null errors in the measurement of the sensed physical parameter and to help to maximize both the useable length and the useable microshift of said at least one operating segment over said range of values for said sensed physical parameter;

wherein said optically resonant structure means comprises a body defining a cavity having a pair of opposed reflective surfaces; wherein at least one of said reflective surfaces bows as a function of said sensed physical parameter; and wherein said optically sensitive physical characteristic comprises the distance between said pair of opposed reflective surfaces and is a function of said bowing; and

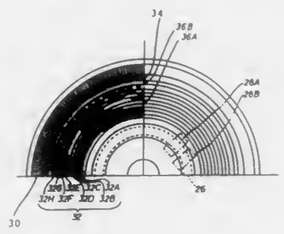
wherein said sensed physical parameter comprises a sensed chemical species; wherein at least a portion of said body is permeable to said sensed chemical species; and wherein said cavity is at least partially filled with a sensitive media which is responsive to said sensed chemical species and which responds to said sensed chemical species by changing its volume to cause said bowing of said at least one of said reflective surfaces as a function of said sensed chemical species.

4,945,231

COMPOUND ROTARY ENCODER FOR DETECTING THE ROTATION ANGLE AND THE NUMBER OF ROTATIONS OF A ROTOR SHAFT

Hideshi Ohya; Takao Miyatani, both of Toyota; Keiji Kawamura, Chiryu, and Yasutomo Kawabata, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 1, 1989, Ser. No. 360,191
Claims priority, application Japan, Jun. 2, 1988, 63-136092; Jun. 2, 1988, 63-136094; Jun. 2, 1988, 63-136093; Jun. 3, 1988, 63-137890
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.14 **5 Claims**



1. A compound rotary encoder comprising:

(a) a timing-signal detecting means including,

(i) a timing code pattern on a rotating disk, and

(ii) a timing-signal determining portion for reading the timing code pattern and detecting a timing signal;

(b) an absolute-signal detecting means including,

(i) an absolute code pattern on the rotating disk,

(ii) an absolute-signal detecting portion on a fixed board for reading the absolute code pattern and detecting an absolute signal, and

(iii) an absolute-signal determining portion for detecting upper m bits of n-bit rotation-angle signal of a rotor shaft from the absolute signal, m being larger than one and less than n, and m and n being integers;

(c) an incremental-signal detecting means including,

(i) an incremental code pattern on the rotating disk,

(ii) an incremental-signal detecting portion on the fixed board for reading the incremental code pattern and detecting an incremental signal, and

(iii) an incremental-signal determining portion for counting the incremental signal from the incremental-signal detecting portion, detecting a counted value of the incremental signal, and for delivering the lower l bits of the n-bit rotation-angle signal, l being n minus m; and

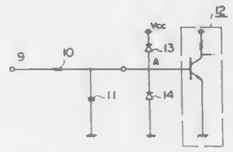
(d) a timing control means for delivering the upper m bits of the n-bit rotation-angle signal and simultaneously initializing the counted value of the incremental-signal determining portion in synchrony with the timing signal.

4,945,232

ANGLE MEASURING DEVICE

Masayuki Ikeuchi, and Kouichi Okamura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,646
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.14 **4 Claims**



1. An angle measuring device comprising:

a rotating disc adapted to rotate in synchronization with a crankshaft and having a plurality of slits formed along the circumference thereof;

a light-emitting means arranged in the vicinity of said rotating disc;

a light-receiving means adapted to receive light emitted from said light-emitting means through the slits of said rotating disc;

a signal processing circuit adapted to measure the turning angle of said rotating disc by processing signals output from said light-receiving means;

a power-source line for supplying power-source voltage to said signal processing circuit;

a first diode whose anode and cathode are connected to the input terminal of said signal processing circuit and to said power source line, respectively; and

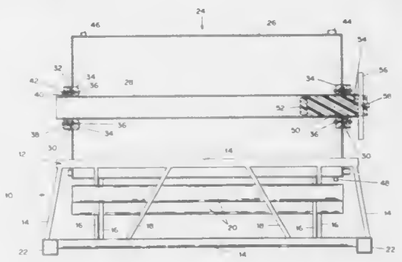
a second diode whose anode and cathode are connected to a ground line and to the input terminal of said signal processing circuit, respectively.

4,945,233

CALIBRATION AND QUALITY CONTROL SYSTEM FOR NEUTRON LOGGING INSTRUMENTS

Robert V. J. Jorro, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jul. 25, 1988, Ser. No. 223,325
Int. Cl.[5] G01V 5/10
U.S. Cl. 250—252.1 **6 Claims**



1. Apparatus for calibrating a well logging instrument, comprising:

a cylinder containing an aqueous liquid solution having neutron moderating and absorbing properties,

an elongated tubular member disposed within said cylinder and adapted for receiving the well logging instrument

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therein, said tubular member having preselected diameters to simulate a first calibration reference value for the well logging instrument, and

a plurality of rod members selectively insertable into said tubular member with the well logging instrument for selectively simulating a plurality of calibration reference values for said instrument, said rod members having a plurality of preselected diameters to simulate said plurality of calibration values.

4,945,234

METHOD AND APPARATUS FOR PRODUCING AN ARBITRARY EXCITATION SPECTRUM FOR FOURIER TRANSFORM MASS SPECTROMETRY

Seth Goodman, Madison, Wis., and Alan Haana, Boulder, Colo., assignors to Extrel FTMS, Inc., Madison, Wis.

Filed May 19, 1989, Ser. No. 354,462
Int. Cl.[5] H01J *49/26*
U.S. Cl. 250—291 **42 Claims**



1. Ion mass spectrometry apparatus comprising:

(a) an ion cell including a plurality of electrode plates;

(b) means for detecting motion of ions in the cell and providing a signal indicative thereof;

(c) means for producing a desired first discrete frequency spectrum;

(d) means for producing a first time domain waveform which is the inverse Fourier transform of the desired first discrete frequency spectrum followed by a time shift of half its length;

(e) means for producing a second time domain waveform which is the first time domain waveform multiplied by a window function, wherein the window function varies as a function of time from zero magnitude at the beginning and the end of the time domain waveform to a maximum magnitude level therebetween and has zero value over a segment at each end of the function;

(f) means for producing a second discrete frequency spectrum which is the forward Fourier transform of the second time domain waveform;

(g) phase scrambling means for producing a third discrete frequency spectrum which has the magnitude of the second discrete frequency spectrum with the phases of the discrete frequencies of the second discrete frequency spectrum varied as a non-constant function of frequency such that all discrete frequencies of the third discrete frequency spectrum are not in phase at any point in time and the group delays of the phase function are less than or equal to the length of the zero value segments of the window function;

(h) means for producing a third time domain waveform which is the inverse Fourier transform of the third discrete frequency spectrum followed by a time shift of half its length; and

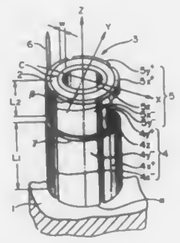
(i) excitation means connected to the ion cell for producing an electric field in the cell which corresponds to the third time domain waveform.

4,945,235

FINE ADJUSTMENT MECHANISM FOR A SCANNING TUNNELING MICROSCOPE

Tadashi Nishioka; Takao Yasue, and Hiroshi Koyama, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1988, Ser. No. 233,741
Claims priority, application Japan, May 16, 1988, 63-116927
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **14 Claims**



1. A fine adjustment mechanism for a scanning tunneling microscope comprising:

a mounting member;

a cylindrical piezoelectric element having opposed first and second ends and opposed inner and outer walls, said element extending in a longitudinal direction between said ends and being fixed to said mounting member at said first end;

a probe disposed at the second end of said piezoelectric element;

an inner electrode disposed on the inner wall of said piezoelectric element; and

a plurality of outer electrodes disposed on the outer wall of said piezoelectric element, said outer electrodes being sectioned into a plurality of groups transverse to the longitudinal direction of said piezoelectric element.

4,945,236

DIRECT IMAGING TYPE SIMS INSTRUMENT HAVING TOF MASS SPECTROMETRIC MODE

Akinori Mogami, and Motohiro Naitoh, both of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Apr. 28, 1989, Ser. No. 344,767
Claims priority, application Japan, Apr. 28, 1988, 63-107241
Int. Cl.[5] H01J *49/40*
U.S. Cl. 250—309 **5 Claims**

1. A direct imaging type SIMS instrument comprising:

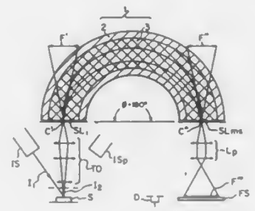
a beam source for producing a primary beam directed to a sample position to cause emanation of secondary ions from a sample at said position;

a mass analyzer into which are introduced the secondary ions emanating from the sample at the sample position, the mass analyzer comprising a magnetic field and a superimposed electric field perpendicular to the magnetic field; and

a first ion detector disposed at the output of the mass analyzer for displaying a two-dimensional direct image,

a second ion detector means for detecting a time-of-flight (TOF) spectrum, and

means for switching the mode of operation of the SIMS instrument between a direct imaging mode in which an image of the sample region irradiated with the primary



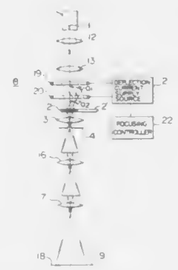
beam is focused onto the first ion detector and a time-of-flight (TOF) mass spectrometric mode in which the TOF spectrum is recorded at the second ion detector and in which the intensity of the magnetic field of the superimposed fields in the mass analyzer is reduced down to zero to only use the electric field.

4,945,237

TRANSMISSION ELECTRON MICROSCOPE

Kazuo Shii, Ibaraki; Toshiyuki Ohashi, Katsuta, and Hiroyuki Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 27, 1989, Ser. No. 343,750
Claims priority, applicatioo Japan, Apr. 28, 1988, 63-106195
Int. Cl.[5] H01V *37/27, 37/295*
U.S. Cl. 250—311 **8 Claims**



1. An electron microscope comprising:

means for generating an electron beam;

means for causing the electron beam to impinge upon a specimen, said electron beam producing transmitted main electron rays, inelastic scattering electron rays and diffractive scattering electron rays after passing through said specimen;

means for deflecting said electron beam before said electron beam impinges upon said specimen at a predetermined angle;

objective lens means for converging said electron rays from said specimen so as to form an image;

objective aperture means for normally cutting off said diffractive scattering electron rays so as to allow said transmitted main electron rays and said inelastic scattering electron rays to pass therethrough;

means for magnifying said image;

means for visually observing said magnified image; and

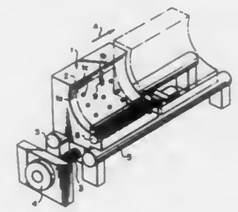
means coupled to said deflecting means, for controlling said deflecting means so as to deflect said electron beam before said specimen to a large deflecting angle by which said transmitted main electron rays and said inelastic scattering electron rays are cut off at said aperture means while said diffractive scattering rays alone is allowed to enter into said magnifying means through said aperture means so as to form a dark field image having high contrast, thereby focusing is made while said dark field image is observed through said observing means.

4,945,238

APPARATUS FOR LOADING SHEET-SHAPED MATERIAL

Katsuaki Murnishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 221,491, Jul. 19, 1988, abandoned. This application Jun. 27, 1989, Ser. No. 371,905
Claims priority, application Japan, Jul. 20, 1987, 62-180777
Int. Cl.[5] G03B *42/00*
U.S. Cl. 250—327.2 **3 Claims**



1. An apparatus for loading a sheet-shaped material, which comprises:

(i) a sheet holding means capable of holding a sheet-shaped material at a predetermined position on an inwardly concave curved surface,

(ii) a sheet conveyance means provided at an end portion of said sheet holding means for grasping said sheet-shaped material and conveying it to said predetermined position along said curved surface of said sheet holding means, and

(iii) a claw connected with an urging means, projected to a position on said curved surface at which a leading edge of said sheet-shaped material conveyed by said sheet conveyance means contacts said claw, and moveable on said curved surface against urging force of said urging means as the leading edge of said sheet-shaped material contacts said claw.

4,945,239

EARLY DETECTION OF BREAST CONCER USING TRANSILLUMINATION

Abund O. Wist; Ramendra N. Pandey, and Panos P. Fatouros, all of Richmond, Va., assignors to Center for Innovative Technology, Herndon, Va.

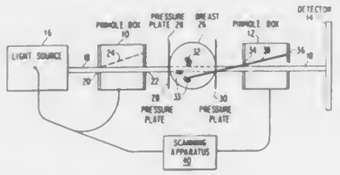
Filed Mar. 29, 1989, Ser. No. 330,136
Int. Cl.[5] G01N *21/27, 21/59*
U.S. Cl. 250—358.1 **50 Claims**

1. A transillumination apparatus for the early detection of breast caner, comprising:

a source of nonionizing radiation for producing radiation in a specific frequency range, said nonionizing radiation having an intensity which permits passing through a breast;

an optical receiver for receiving radiation from said source

of nonionizing radiation which passes through said breast; and



a biochemical marker associated with cancer cells within said breast which absorbs radiation in said specific frequency range.

4,945,240

THERMAL IMAGING DEVICE

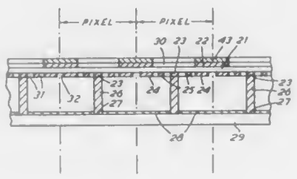
Elvin L. Nix, Windsor, and Stanley Taylor, Sunbury-on-Thames, both of England, assignors to Thorn EMI plc, London, England

Filed Jun. 1, 1989, Ser. No. 359,880

Claims priority, application United Kingdom, Jun. 1, 1988, 8812955

Int. Cl.[5] **H01L** *27/146, 31/09*

U.S. Cl. 250—330 **10 Claims**



1. A thermal imaging device comprising: a layer comprising pyroelectric material; an array of inter-connected electrodes carried on one major surface of the layer; an array of discrete electrodes carried on the other major surface of the layer; a plurality of pillars effective to support the layer and to enable the passage of electrical signals between the discrete electrodes and an electrical signal processing means, each pillar being located on an electrical contact region within a nonelectroded region of said other major surface within a respective discrete electrode, the contact region and discrete electrode being electrically connected by a respective elongate region of electrically conductive material extending over said nonelectroded region.

4,945,241

POSITION-SENSITIVE RADIATION DETECTOR

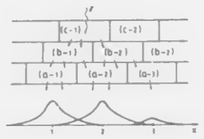
Takaji Yamashita, and Hiroshi Uchida, both of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka and Research Development Corporation of Japan, Tokyo, both of, Japan

Filed Mar. 7, 1989, Ser. No. 320,255

Claims priority, application Japan, Mar. 10, 1988, 63-57233

Int. Cl.[5] **G01T** *1/202*

U.S. Cl. 250—367 **9 Claims**



1. A position-sensitive radiation detector comprising:

a scintillator assembly having a plurality of scintillator layers arranged in a vertical direction, each layer comprising a plurality of scintillator blocks of rectangular solid form regularly arranged in a first horizontal direction, the scintillator blocks of each scintillator layer being staggered in the first horizontal direction with respect to the scintillator blocks of an adjacent scintillator layer;

reflection means disposed between adjacent ones of said scintillator blocks in a particular layer, for optically isolating said scintillator blocks;

coupling means disposed between adjacent ones of said scintillator layers, for optically coupling said adjacent ones of said scintillator layers;

position-sensitive photo-detecting means optically coupled to said scintillator assembly, for detecting scintillation light emanating from said scintillator assembly; and

computing means for determining, by calculation of the depth of a scintillation point in said scintillator assembly, a scintillation position in said first horizontal direction and in said vertical direction on the basis of an output signal from said position-sensitive photo-detecting means.

4,945,242

PHOTOSENSITIVE DEVICE AND IMAGE DETECTOR INCLUDING SUCH A DEVICE, ESPECIALLY TWO-ENERGY IMAGE DETECTOR

Jean-Luc Berger, and Marc Arques, both of Grenoble, France, assignors to Thomson-CSF, Paris, France

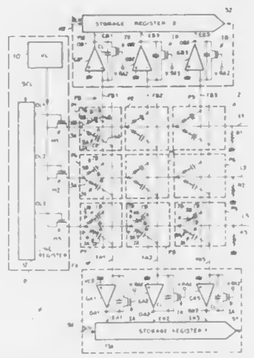
Filed Feb. 22, 1989, Ser. No. 314,435

Claims priority, application France, Feb. 26, 1988, 88 02366

Int. Cl.[5] **G01T** *1/20;* **H01L** *31/10*

U.S. Cl. 250—367 **18 Claims**

1. An image detector comprising a photosensitive device including a matrix of photosensitive points (P1 to P9), the photosensitive points (P1 to P9) being connected to line conductors (L1 to L3) and to column conductors (FA1 to FA3, FB1 to FB3), wherein each photosensitive point (P1 to P9) includes a first and a second photosensitive cell (JA, JB) each capable of storing an information item, the two photosensitive cells (JA, JB) being superposed; and a first and a second scintillator substance (27, 58) which are sensitive to different energies



of an incident radiation and emitting visible or non-visible light in response to the incident radiation.

4,945,243

MATRIX OF PHOTOSENSITIVE ELEMENTS AND RADIATION DETECTOR INCLUDING SUCH A MATRIX, ESPECIALLY DOUBLE-ENERGY X-RAY DETECTOR

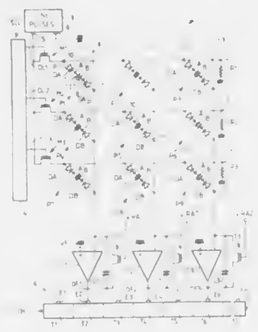
Marc Arques, Grenoble, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 22, 1989, Ser. No. 314,429

Claims priority, application France, Feb. 26, 1988, 88 02361

Int. Cl.[5] **G01T** *1/20;* **H01L** *31/10*

U.S. Cl. 250—367 **24 Claims**



1. A device for the conversion of images into electrical signals comprising a matrix of photosensitive elements including an array of line conductors (L1 to L3) and an array of column conductors (F1 to F3) and an array of photosensitive points (PI to P9), wherein each photosensitive point (P1 to P9) includes, between a line conductor (L1) and a column conductor (F1) two photosensitive elements (DA, DB) and a capacitor (CI), the two photosensitive elements (DA, DB) and the capacitor (CI) being connected in series, the two photosensitive elements being connected with directions of conduction which are opposite to one another; and a first and a second scintillator substance (27, 55) which are sensitive to differing energies of an incident radiation and which emit a light which is visible or near visible in response to the incident radiation.

4,945,244

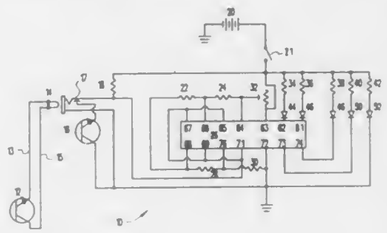
ELECTRONIC INFRARED DETECTOR

Robert D. Castleman, E. 1311 Glass, Spokane, Wash. 99207

Filed Dec. 23, 1988, Ser. No. 289,327

Int. Cl.[5] **G01J** *5/00, 5/10*

U.S. Cl. 250—370.01 **2 Claims**



1. A new and improved electronic infrared detector comprising:

a housing;

an integrated circuit in said housing;

a first phototransistor, sensitive to radiation in the infrared range, connected to said integrated circuit;

a battery in said housing operatively connected to said integrated circuit;

a series of light emitting diodes arranged in a bar graph like fashion in said housing;

a first connector in said housing;

a second phototransistor sensitive to radiation in the infrared range, said second phototransistor connected by elongated leads to a second connector for engagement with said first connector; and

means for deactivating said first phototransistor and for activating said second phototransistor upon engagement of said first and second connectors;

said integrated circuit including means for producing a plurality of discrete output voltages in response to changes in intensity of infrared radiation incident on said first or second phototransistor and transmitting said output voltages to each of said light emitting diodes in turn; and

said light emitting diodes operatively connected to said integrated circuit such that said light emitting diodes light up in sequence in response to progressively greater amounts of infrared radiation incident on said first or second phototransistor.

4,945,245

EVANESCENT WAVE BACKGROUND FLUORESCENCE/ABSORBANCE DETECTION

Herman W. Levin, 1919 Chestnut St. #2706, Philadelphia, Pa. 19103

Filed Jul. 14, 1988, Ser. No. 305,027

Int. Cl.[5] **G01N** *21/64, 33/551*

U.S. Cl. 250—461.2 **13 Claims**

1. A method for the optical analysis of a slurry, which slurry comprises:

(a) a continuous phase which comprises a component that fluoresces at an optically detectable wavelength, and

(b) a discontinuous phase which comprises a component that also fluoresces at said optically detectable wavelength,

the method comprising the steps of:

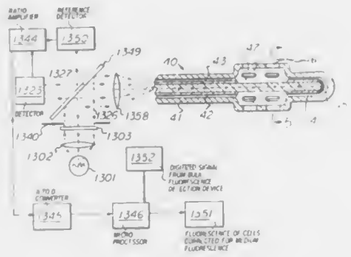
(i) optically exciting said slurry with an evanescent wave having a wavelength that excites the fluorescence of said components and simultaneously

(ii) detecting the intensity of the fluorescence resulting therefrom, and then

(iii) relating said detected intensity of fluorescence to the

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concentration of said component in said continuous phase, such that said detected intensity of fluorescence



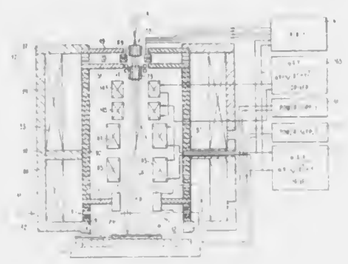
is independent of the concentration of the component in said discontinuous phase that also fluoresces.

4,945,246

TRI-DEFLECTION ELECTRON BEAM SYSTEM

Donald E. Davis; Cecil T. Ho, both of Poughkeepsie; Jon E. Lieberman, Montgomery, all of N.Y.; Hans C. Pfeiffer, Ridgefield, Conn., and Maris A. Sturans, Poughquag, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1989, Ser. No. 328,379
Int. Cl.[5] H01J *37/302*
U.S. Cl. 250—492.2 **13 Claims**



1. Apparatus for scanning a shaped electron beam onto a target area, said area being subdivided into fields, said fields being subdivided into clusters, said clusters being subdivided into sub-fields, said sub-fields being subdivided into spots, comprising:

(a) means for scanning said electron beam in a said area such that said electron beam scans one field, and said beam is paused in this and subsequent ones of said fields;

(b) means for scanning said electron beam in a said field such that said electron beam scans one cluster and is paused in this and subsequent ones of said clusters; and

(c) means for scanning said electron beam in said one cluster such that said electron beam scans one sub-field and is paused in this and subsequent ones of said sub-fields,

(d) means for vector scanning said shaped electron beam from a said spot to another said spot within a said sub-field,

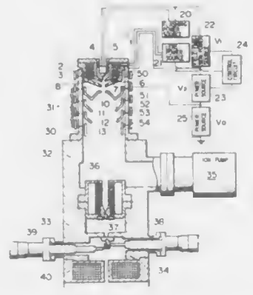
whereby scanning is performed hierarchically from field to field within an area, from cluster to cluster within a field, and from sub-field to sub-field within a cluster.

4,945,247

FIELD EMISSION ELECTRON GUN SYSTEM

Takeshi Kawasaki; Junji Endo, both of Kokubunji; Shigeto Isakozawa; Masahiro Tomita, both of Katsuta, and Akira Tonomura, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,827
Claims priority, application Japan, Jun. 17, 1988, 63-148105
Int. Cl.[5] H01J *37/073*
U.S. Cl. 250—423 F **6 Claims**



1. A field emission electron gun system with a multi-stage acceleration tube comprising:

a source of field emission electrons;

a field emission electrode for extracting the electrons;

a magnetic lens having a magnetic gap between said field emission electron source and said field emission electrode or a magnetic lens having a magnetic pole which also serves as said field emission electrode;

an acceleration elecrtrode assembly including at least two stages of acceleration electrodes for accelerating the electrons;

current interlocking means for changing a magnetization current I for said magnetic lens interlocking with a voltage V_1 applied between said field emission electron source and said field emission electrode so that $IN/\sqrt{V_1}$ a predetermined value, N being the number of windings of said magnetic lens; and

voltage interlocking means for changing a voltage V_2 applied between said field emission electron source and the first-stage acceleration electrode of said acceleration electrode assembly interlocking with said voltage V_1 applied between said field emission electron source and said field emission electrode so that V_2/V_1 takes a predetermined value.

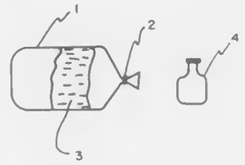
4,945,248

HYDROACTIVATED BIONIC INFRARED SOURCE

John F. Farr, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1989, Ser. No. 337,213
Int. Cl.[5] F21K *7/00*
U.S. Cl. 250—493.1 **1 Claim**

1. A hydroactivated bionic infrared source including a biomass in a waterproof container, wherein said biomass includes desiccated micro-organisms and a dehydrated culture medium for said micro-organisms, and means for releasing water in said container, whereby the release of water activates said micro-



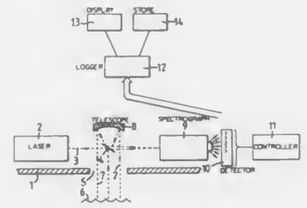
organisms to begin rapidly consuming said medium and to emit infrared radiation.

4,945,249

REMOTE SENSING SYSTEM

Andrew I. Grant, Surrey; Martyn T. MacPherson, Guildford, and David G. Stevens, Hampshire, all of England, assignors to The British Petroleum Company plc, London, England

Filed Jan. 5, 1989, Ser. No. 294,087
Claims priority, application United Kingdom, Jan. 12, 1988, 8800583
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—461.1 **11 Claims**



1. Apparatus for detecting an anomaly at or near a water or land surface which apparatus comprises means for generating a beam of primary light radiation, and directing the beam towards the surface, the beam being sufficiently intense and of such a spectral composition that the beam causes the anomaly, if present, to emit secondary light radiation, means for collecting the secondary light radiation, or means for collecting solar induced secondary light radiation, and spectral analysis means for analysing the spectrum of the secondary radiation, and a high resolution, multi-element digitising detector for detecting the analysed radiation, having a plurality of channels across the spectrum of the emitted secondary radiation, the channels being software configurable and under the control of a digitally addressable computer-operated controller, the concentration of used channels across the plurality of channels being adjustable and increasable in the regions of the spectrum of greatest interest and decreasable in the regions of least interest.

4,945,250

OPTICAL READ HEAD FOR IMMUNOASSAY INSTRUMENT

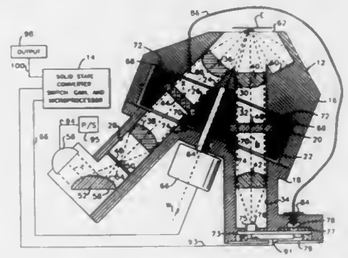
Mark S. Bowen, Medford; Stephen D. Fantone, Lynnfield, and Bruce E. Miller, Brighton, all of Mass., assignors to PB Diagnostic Systems, Inc., Westwood, Mass.

Filed Jul. 12, 1989, Ser. No. 378,649
Int. Cl.[5] G01N *21/64;* **G02B** *26/04*
U.S. Cl. 250—461.1 **21 Claims**

1. Optical apparatus for use in analyzing the concentration of a constituent in a fluid sample by irradiating the sample with excitation energy within a first band of wavelengths, determining the amount of radiant energy emitted by the sample within a second band of wavelengths, and relating the amount of emitted radiation to the concentration of the constituent under investigation, said optical apparatus comprising:

a housing having an exterior surface and a pair of passages defining excitation and emission optical branches which intersect near said exterior surface to form an opening defining a read port in said housing,

a substantially cylindrical filter wheel journaled for rotation with respect to said housing, supporting at least one matched pair of excitation and emission bandpass filters, and having diametrically opposed opaque regions of sufficient size to block the passage of light along each of said optical branches, said filter wheel having at least first and second working positions, each of said excitation and emission filters of said at least one matched pair, in said first position, being located in the excitation and emissions branches, respectively, and each of the excitation and emission branches being blocked by said opaque regions in said second position; and



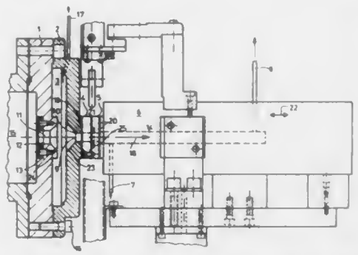
means for optically isolating said excitation and emission optical branches from one another, said isolating means including light baffling means between said filter wheel and said housing.

4,945,251

GAS TARGET DEVICE

Volker Bechtold, Hagenbach, and Hermann Schweickert, Karlsruhe, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 16, 1989, Ser. No. 324,024
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3808973
Int. Cl.[5] H01J *37/08*
U.S. Cl. 250—492.1 **6 Claims**



1. A gas target device for bombarding a gaseous target with charged particles from a charged particle accelerator, said device having a vacuum chamber formed at its charged particle entrance end, said vacuum chamber having charged parti-

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cle windows arranged opposite and in axial alignment with one another with metal foils sealingly extending across said windows which metal foils are translucent to said charged particles and a target chamber arranged adjacent said vacuum chamber and in axial alignment with the windows thereof so as to receive said charged particles passing through said vacuum chamber, said vacuum chamber forming a safety space between said target chamber and the adjacent vacuum system of said particle accelerator.

4,945,252

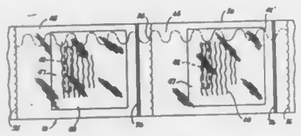
CONTINUOUS WEB REGISTRATION

Hershey Lerner, Hudson, and Bernard Lerner, Peninsula, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation of Ser. No. 759,503, Jul. 26, 1985, Pat. No. 4,926,048, which is a continuation of Ser. No. 378,079, May 14, 1982, abandoned, which is a division of Ser. No. 166,500, Jul. 7, 1980, abandoned. This application Nov. 29, 1989, Ser. No. 443,705

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 8 Claims



1. A process of performing repetitive work operations on a multi-layered plastic web comprising:

(a) forming lines of weakness in the web to delineate a series of interconnected commodities;

(b) applying position locating indicia to an external surface of one layer of the web at spaced positions with at least one such indicia being applied to each commodity, the positions being selected to repetitively produce consistent spatial relationships between each such indicia and a web location where a work operation is to be performed;

(c) the indicia applying step including the substep of incorporation into each indicia transparent electromagnetic wave shifting material which when stimulated emits energy in a wavelength shifted range of an intensity relatively greater than the intensity but in the same wavelength range as the electromagnetic energy ambient to the web;

(d) directing electromagnetic energy to the indicia to cause the indicia successively to effect a wavelength shift and emit a relatively high intensity electromagnetic energy signal in said range;

(e) detecting the successive indicia signals with a detector while discriminating them from any ambient light reflections of like wavelength which are present; and

(f) separating a commodity from the web in response to said signal detections.

4,945,253

MEANS OF ENHANCING THE SENSITIVITY OF A GLOSS SENSOR

Allen Frohardt, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Dec. 9, 1988, Ser. No. 282,102

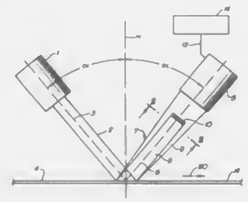
Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—571 21 Claims

1. A gloss sensor for determining the gloss of a surface, comprising:

a light source for emitting an incident light beam onto the surface, the source having an optical axis forming an angle, not equal to zero, with respect to a normal to the surface, thereby causing a light beam to be reflected from the surface, the reflected light beam having a specularly reflected component and a diffusely reflected component;

a light detector positioned to detect the reflected light beam including the diffusely reflected component falling beyond the outer edge of the specularly reflected component; and



light attenuating means, disposed in the path of the reflected beam at a point before the reflected beam reaches the light detector, for preferentially attentuating at least a portion of the specularly reflected component relative to the diffusely reflected component.

4,945,254

METHOD AND APPARATUS FOR MONITORING SURFACE LAYER GROWTH

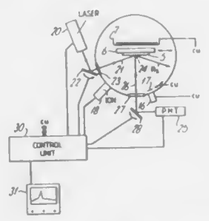
David J. Robbins, Malvern, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government for the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 21, 1988, Ser. No. 276,195

Claims priority, application United Kingdom, Mar. 19, 1986, 8606748; PCT Int'l Appl., Mar. 17, 1987, PCT/GB87/00187

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—571 23 Claims



1. A method of monitoring surface conditions on a surface of a subtrate being processed including the steps of:

directing a beam of light onto at least one portion of an area of the surface being monitored;

detecting light scattered from said at least one portion of an area in at least one non-specular reflection direction;

changing the process parameters in response to detected changes on said at least one portion of said area of said surface.

4,945,255

POWER SOURCE DEVICE

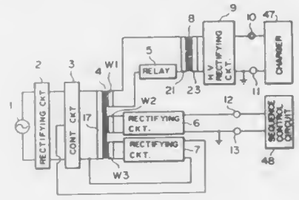
Koji Suzuki; George Nagahira, both of Yokohama; Kazuyoshi Takahashi, Kawasaki; Kunio Yoshihara, Tokyo; Toshiro Matsui, Kawasaki, and Tadashi Ishikawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 626,396, Jun. 29, 1984, abandoned. This application Mar. 28, 1988, Ser. No. 175,571

Claims priority, application Japan, Jul. 5, 1983, 58-122046; Jul. 5, 1983, 58-122047; Jul. 5, 1983, 58-122048

Int. Cl.[5] H02S *3/00*

U.S. Cl. 307—17 12 Claims



1. A power source device, comprising:

a first transformer having a primary winding to which an input power is to be applied and at least first and second secondary windings, wherein said first transformer is adapted to supply a low voltage output from its second secondary winding to a low voltage load through a low voltage rectifier;

a second transformer having primary and secondary windings, said primary winding of said second transformer being connected without rectification to said first secondary winding of said first transformer, wherein said second transformer is adapted to supply a high voltage output to a high voltage load through a high voltage rectifier; and

a switch, disposed between said first secondary winding of said first transformer and said primary winding of said second transformer, for connecting and disconnecting the high voltage output from said second transformer to the high voltage load.

4,945,256

DEVICE FOR PRODUCING EVEN CLOSING OF A CIRCUIT BREAKER

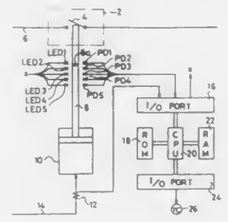
Shoji Tada; Toshiko Sugio, and Kuniaki Nakashima, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1988, Ser. No. 215,955

Claims priority, application Japan, Jul. 9, 1987, 62-171481; Nov. 16, 1987, 62-289965; Jan. 21, 1988, 63-11206

Int. Cl.[5] H01H *47/00*

U.S. Cl. 307—139 7 Claims



1. A circuit breaker, comprising:

at least one contact for opening and closing a phase of an electric power line;

an operation member for opening and closing said contact;

driving means for driving said operation member upon reception of a control signal;

control signal detecting means for detecting whether or not said control signal is applied to said driving means;

operation detecting means for detecting a movement of said operation member;

memory means for storing at least a regular control signal and a normal moving process of said operation member;

judging means for judging whether opening or closing operation of said contact is normally made or not, based on comparison among detected signals of said contol signal detecting means and said operation detecting means and said regular control signal and said stored data of said normal moving process of said operation member stored in said memory means; and

operation correcting means for correcting an abnormal state of said closing operation when said judging means detects an abnormal state of said contact, said moving member or said driving means.

4,945,257

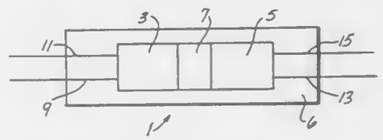
ELECTRICALLY SETTABLE RESISTANCE DEVICE

Matthew L. Marrocco, III, Santa Ana, Calif., assignor to Maxdem Incorporated, Pasadena, Calif.

Continuation-in-part of Ser. No. 78,836, Jul. 28, 1987, abandoned. This application Nov. 18, 1988, Ser. No. 274,442

Int. Cl.[5] G06G *7/06;* **H03H** *11/00*

U.S. Cl. 307—201 32 Claims



1. A device for providing an electrically settable resistance which comprises:

first and second electrodes, each comprising a redox active material;

an electrolyte between the electrodes;

a pair of terminals electrically connected to the first electrode at spaced-apart locations, the electrically settable resistance being defined between the pair of terminals, and being a function of the oxidation state of the first electrode; and

means, including a terminal electrically connected to the second electrode, for defining a control circuit path, including the first and second electrodes and the electrolyte, to enable a control current flowing through the control circuit path to change the oxidation state of the first electrode so that control current flowing in one direction sets the resistance of the first electrode to a lower value and control current flowing in the opposite direction sets the resistance of the first electrode to a higher value.

4,945,258

MONOLITHIC GAAS HIGH SPEED SWITCH DRIVER

Gary A. Picard, Langhorne, Pa., and Hayagriva V. Rao, Fairfield, Conn., assignors to Grumman Aerospace Corporation, Long Island, N.Y.

Filed Dec. 8, 1988, Ser. No. 281,394

Int. Cl.[5] H03K *3/01, 19/20, 19/092;* **H03L** *5/00*

U.S. Cl. 307—270 6 Claims

1. A high-speed switch driver circuit, comprising:

a reference input stage arranged to receive and process a

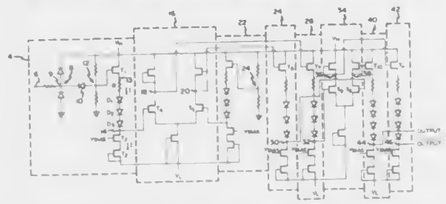
VOL 1116 ISS 5 JL 31 1990 UMI

predetermined input signal and to output a reference signal;

an input stage arranged to receive and process an input signal and to produce an intermediate voltage level, including a first voltage level shift stage having means arranged to output a first voltage level shift signal, wherein the first voltage level shift signal voltage is less than the intermediate voltage;

a first differential amplifier stage, including means arranged to receive and process the first voltage level shift signal and the reference signal, and to output first and second first differential amplifier signals, said first of said first differential amplifier signals having a voltage level greater than or equal to zero and proportional to the difference between the first voltage level shift signal voltage and the reference signal voltage, and said second of said first differential amplifier signals having a voltage level less than or equal to zero and proportional to the difference between the first voltage level shift signal voltage and the reference signal voltage;

second and third voltage level shift stages, each including means arranged to receive and process a respective one of the first differential amplifier stage output signals and to



output a shifted differential amplifier signal having a voltage level shifted from the respective first differential amplifier signal;

a second differential amplifier stage, including means arranged to receive and process said shifted differential amplifier signals and to output two second differential amplifier signals, one said second differential amplifier signal having a voltage level greater than or equal to zero and proportional to the difference between the first shifted differential amplifier signal voltage and the second shifted differential amplifier signal voltage, and the other of said second differential amplifier signals having a voltage level less than or equal to zero and proportional to the difference between the second shifted differential amplifier signal voltage and the first shifted differential amplifier signal voltage; and

fourth and fifth voltage level shift stages, including means arranged to receive and process a respective one of the second differential amplifier stage signals and to output two switch state-determining voltage level signals, wherein said switch state-determining voltage level signals determine the on/off characteristics of a driven switch.

4,945,259

BIAS VOLTAGE GENERATOR AND METHOD

Thomas R. Anderson, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Filed Nov. 10, 1988, Ser. No. 269,867

Int. Cl.[5] H03K *3/01;* **G05F** *3/16;* **H03F** *3/04*

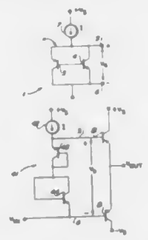
U.S. Cl. 307—296.1 **17 Claims**

1. A circuit for producing a reference voltage between a first terminal and a second terminal, comprising in combination:

(a) a first transistor having an emitter connected to the first terminal, a base, and a collector connected to the second terminal;

(b) a second transistor having an emitter connected to the second terminal, a base connected to the base of the first transistor, and a collector connected to the first terminal;

(c) a current source coupled to one of the first and second terminals for producing a first current in the first transistor



and a second current in the second transistor, a V_{BE} voltage of the first transistor and a V_{BE} voltage of the second transistor being thereby added to produce the reference voltage with a value equal to the sum of the amplitudes of the V_{BE} voltages of the first and second transistors.

4,945,260

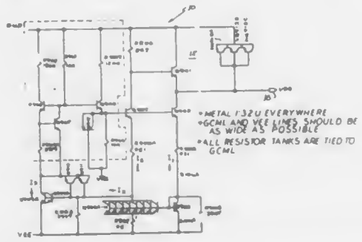
TEMPERATURE AND SUPPLY COMPENSATED ECL BANDGAP REFERENCE VOLTAGE GENERATOR

Kanoosh Naghshineh, Menlo Park, and David L. Campbell, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 17, 1989, Ser. No. 338,583

Int. Cl.[5] G05F *3/20*

U.S. Cl. 307—296.6 **10 Claims**



1. An ECL bandgap reference voltage generator for producing an output reference voltage V_{BB} that is compensated for variations in supply voltage, said bandgap generator comprising:

bandgap circuit portion means (12), including first and second parallel current branches connected between a first power supply potential and a second power supply potential, said first and second parallel current branches including first and second branch transistors, respectively, (Q902, Q903) for supplying current through the parallel branches, and a constant current source transistor (Q909) having its base coupled to the emitter of one of the first and second branch transistors and its emitter coupled to the second power supply potential, for establishing the output reference voltage B_{BB};

compensation circuit portion means (14), including a supply-independent current source connected between the first power supply potential and the collector of the constant current source transistor (Q909), for supplying constant current to the collector of the constant current source transistor (Q909) as variations in the supply voltage occur; and

said supply-independent current source being formed of a first transistor (Q907), a second transistor (Q908), a first resistor (R903), a second resistor (R904), and a third resistor (R908), said first transistor (Q907) having its collector connected to the base of said second transistor (Q908) and coupled to the first power supply potential via the first resistor (R903), said first transistor (Q907) having its base connected to the emitter of said second transistor (Q908) and coupled to the collector of said constant current source transistor (Q909) via the first resistor (R904), said second transistor (Q907) having its emitter connected to the collector of said constant current source transistor (Q909), said second transistor (Q908) having its collector coupled to the first power supply potential via the third resistor (R908).

4,945,261

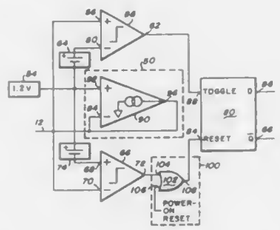
LEVEL AND EDGE SENSITIVE INPUT CIRCUIT

Michael E. Wright, Berkeley, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 27, 1989, Ser. No. 329,236

Int. Cl.[5] H03K *5/20*

U.S. Cl. 307—443 **10 Claims**



1. An input circuit for receiving signals on an input line, and functioning to control the state of a memory element, said circuit comprising:

bias means comprising a transconductance amplifier coupled as a voltage follower to apply a bias voltage to said input line;

first comparator means coupled to set the state of said memory element when said input signals are a predetermined increment above said bias voltage; and

second comparator means coupled to reset the state of said memory element when said input signals are a predetermined increment below said bias voltage.

4,945,262

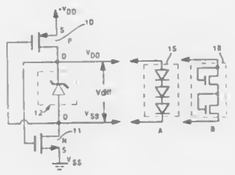
VOLTAGE LIMITER APPARATUS WITH INHERENT LEVEL SHIFTING EMPLOYING MOSFETS

Douglas S. Piasecki, Austin, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 26, 1989, Ser. No. 301,926

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—451 **20 Claims**



1. A voltage limiting apparatus, comprising:

first and second power terminals for the application therebetween of an operating potential which may vary in amplitude;

a first field-effect transistor (FET) of a given conductivity type having a source, gate and drain electrode, and means for connecting said source electrode to said first power terminal;

a second FET of an opposite conductivity type to said first FET and having a source, gate and drain electrode, and means connecting said source electrode of said second FET to said second power terminal and

voltage clamping means connected between said drain electrodes of said first and second FETs, with the gate electrode of said first FET connected to the drain electrode of said second FET and with the gate electrode of said second FET connected to the drain electrode of said first FET to cause the voltage across said voltage clamping means to remain relatively constant notwithstanding variations in said operating potential.

4,945,263

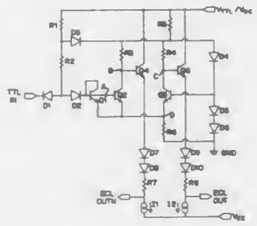
TTL TO ECL/CML TRANSLATOR CIRCUIT WITH DIFFERENTIAL OUTPUT

Julio R. Estrada, South Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 23, 1989, Ser. No. 397,769

Int. Cl.[5] H03K *19/092*

U.S. Cl. 307—475 **19 Claims**



1. A differential output TTL to ECL/CML translator circuit for delivering complementary ECL logic output signals in response to TTL logic input signals comprising:

a TTL input circuit for receiving TTL logic signals of high and low potential level;

a current mirror circuit comprising first and second current mirror branch circuits with a common emitter node coupling, said first and second current mirror branch circuits having a common base node coupling coupled to the TTL input circuit;

said TTL input circuit having bias circuit elements operatively coupled to the current mirror circuit for causing the first current mirror branch circuit to be substantially conducting and non-conducting respectively in response to TTL logic signal high and low potential levels at the TTL input circuit, said second current mirror branch circuit mirroring the current in the first current mirror branch circuit;

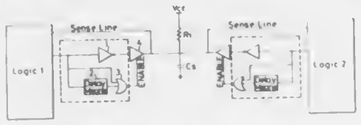
a differential amplifier gate comprising differential amplifier first and second gate transistor elements having emitter nodes coupled to said common emitter node coupling, and a current sinking bias feedback resistor element coupled to the common emitter node coupling, said differential amplifier first gate transistor element being the second current mirror branch circuit;

a threshold clamp circuit coupled to a base node of the differential amplifier second gate transistor element for applying a threshold voltage level, one of said first and second gate transistor elements being relatively conducting and the other being relatively non-conducting accord-

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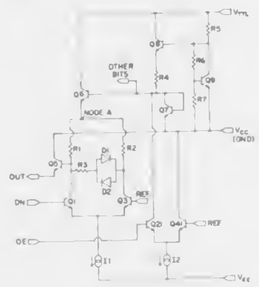
ing to the TTL logic input signal high and low potential levels applied at the TTL input circuit;
and complementary first and second ECL output circuits coupled respectively to collector nodes of the differential amplifier first and second gate transistor elements.

4,945,264
INTERFACE CONTROL CIRCUIT WITH ACTIVE CIRCUIT CHARGE OR DISCHARGE
Kun-Ming Lee, Taipei, and Ching-Dong Hwang, Keelung, both of Taiwan, assignors to Acer Incorporated, Taipei, Taiwan
Filed Feb. 22, 1989, Ser. No. 314,333
Int. Cl.[5] H03K *19/092, 19/00*
U.S. Cl. 307—475 **6 Claims**



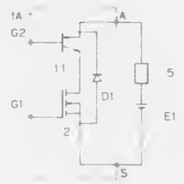
1. An interface control circuit for handshaking between logic circuits comprising:
buffer means having at least an input terminal, an output terminal coupled to a potential source through a resistive element, and an ENABLE line;
an inverter having an input terminal and having an output terminal connected to the input terminal of the buffer means;
an OR gate having one input terminal connected to the input terminal of the inverter and an output terminal connected to the ENABLE line of the buffer means; and
delay means having an input terminal connected to the input terminal of the inverter and an output terminal coupled to another input terminal of the OR gate.

4,945,265
ECL/CML PSEUDO-RAIL CIRCUIT, CUTOFF DRIVER CIRCUIT, AND LATCH CIRCUIT
Julio R. Estrada, South Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jul. 13, 1989, Ser. No. 379,988
Int. Cl.[5] H03K *19/086*
U.S. Cl. 307—455 **19 Claims**



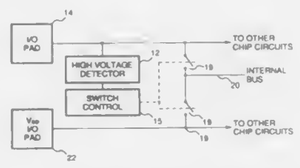
1. An emitter coupled logic or current mode logic (ECL/CML) circuit having a differential gate or buffer coupled between relatively high and low potential level power rails comprising:
a pseudo-rail circuit coupled between the differential gate and said high potential level power rail, said pseudo-rail circuit comprising a pseudo-rail node, a first clamp circuit coupled to the pseudo-rail node for clamping said pseudo-rail node substantially at a first potential level in response to a first control signal, and a second clamp circuit coupled to said pseudo-rail node for clamping said pseudo-rail node at a second potential level below said first potential level in response to a second control signal.

4,945,266
COMPOSITE SEMICONDUCTOR DEVICE
Satoshi Mori, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 26, 1988, Ser. No. 262,997
Claims priority, application Japan, Nov. 18, 1987, 62-292707; Dec. 3, 1987, 62-308081
Int. Cl.[5] H03K *17/60, 3/35/17/72*
U.S. Cl. 307—570 **17 Claims**



1. A composite semiconductor device, comprising;
first and second power source terminals for receiving first and second power source potentials, respectively;
first and second control signal input terminals for receiving first and second control signals, respectively;
a static induction type element having a first electrode connected to said first power source terminal, a control electrode connected to said first control signal input terminal and a second electrode;
a MOS field effect transistor having a first electrode connected to said second electrode of said static induction type element, a second electrode connected to said second power source terminal and a control electrode connected to said second control signal input terminal; and
a diode having an anode connected to the second electrode of said MOS field effect transistor and a cathode connected to one of the non-control electrodes of said static induction type element.

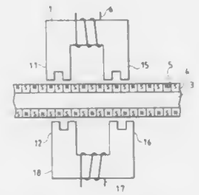
4,945,267
INTEGRATED CIRCUIT BUS SWITCHING CIRCUIT
Douglas C. Galbraith, Fremont, Calif., assignor to Actel Corporation, Sunnyvale, Calif.
Filed Jan. 10, 1989, Ser. No. 295,402
Int. Cl.[5] H03K *17/687, 3/26;* **G05F** *1/40*
U.S. Cl. 307—571 **2 Claims**



1. An integrated electronic circuit for selectively switching a bi-directional, low resistance circuit path between an internal bus in an integrated circuit and an input/output pad of said integrated circuit and a circuit node in said integrated circuit, including

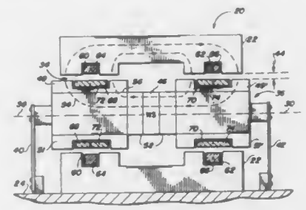
a first MOS switching transistor connected between said input/output pad and said internal bus,
a second MOS switching transistor connected between said circuit node and said internal bus,
high voltage detection means for detecting whether the voltage on said input/output pad is above a preselected threshold level,
switch control means responsive to said high voltage detection means, for activating said first switching transistor if high voltage is present at said input/output pad, and for activating said second switching transistor if high voltage is not present at said input/output pad, said switch control means adapted to limit current flow from said input/output pad to said internal bus until the potential difference between said input/output pad and said internal bus is less than a predetermined amount,
means, coupled with said switch control means, for preventing said first and said second switching transistors from being activated at the same time.

4,945,268
PERMANENT MAGNET TYPE LINEAR PULSE MOTOR
Hideki Nihei; Kunio Miyashita, both of Hitachi, and Hideki Asano, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 22, 1988, Ser. No. 288,123
Claims priority, application Japan, Dec. 26, 1987, 62-333529; Dec. 26, 1987, 62-333530
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **22 Claims**



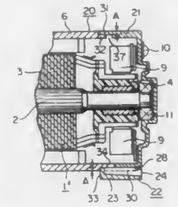
1. A permanent magnet type linear pulse motor comprising a plurality of N and S permanent magnetic poles which are disposed alternatively and in a constant pitch T along a longitudinal direction of at least two surfaces of a mover; a plurality of first phase stator magnetic poles which are wound by a same phase coil to form a pair of magnetic poles, each of said stator magnetic poles having teeth whose pitch is equal to said constant pitch T of said permanent magnetic poles, said stator magnetic poles being disposed at a predetermined distance in relation to said at least two surfaces of said mover; and a plurality of second phase stator magnetic poles having the same structure as said plurality of first phase stator magnetic poles, wherein said plurality of first phase stator magnetic poles and said plurality of second phase stator magnetic poles are disposed so as to have a delay of T/2 pitch, respectively, with respect to said pitch T of said plurality of N and S permanent magnetic poles, and wherein each of said plurality of first and second phase stator magnetic poles have respective teeth opposingly arranged with respective magnetic poles of a first polarity on a first surface of said mover and of a second polarity on a second surface of said mover.

4,945,269
RECIPROCATING ELECTROMAGNETIC ACTUATOR
Lawrence J. Kamm, San Diego, Calif., assignor to Science Applications International Corporation, San Diego, Calif.
Filed Jan. 26, 1989, Ser. No. 303,531
Int. Cl.[5] H02K *33/12*
U.S. Cl. 310—15 **37 Claims**



33. A reciprocating electromagnetic actuator comprising:
a reciprocator formed of a ferromagnetic material;
a stator also formed of a ferromagnetic material, the reciprocator being mounted for reciprocal motion relative to the stator;
means for generating a constant magnetic flux that passes through the stator and reciprocator;
a first coil disposed in the reciprocator through which a first current is passed, said first current creating a first magnetic flux that subtracts or adds to said constant magnetic flux; and
a second coil disposed in the stator through which a second current is passed, said second current creating a second magnetic flux that offsets the first magnetic flux, whereby the total magnetic flux passing through the stator and reciprocator remains constant.

4,945,270
MOISTURE DRAIN STRUCTURE FOR A DYNAMOELECTRIC MACHINE AND MANUFACTURING METHOD THEREFOR
Kyoichi Okamoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
PCT No. PCT/JP88/00135, § 371 Date Oct. 11, 1988, § 102(e) Date Oct. 11, 1988, PCT Pub. No. WO88/06368, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 10, 1988, Ser. No. 265,810
Claims priority, application Japan, Feb. 13, 1987, 20164
Int. Cl.[5] H02K *5/00, 15/14*
U.S. Cl. 310—88 **4 Claims**



1. A moisture drain structure for a dynamo-electric machine having a housing comprising:
a first housing section having an outer spigot joint element including an internally reduced thickness portion of said first housing section, and a second housing section having an inner spigot joint element including an externally reduced thickness portion;

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a moisture drain conduit integral with a bottom wall of said first housing section and defining therein a moisture drain channel extending substantially horizontally along the bottom wall, a first end of the drain channel extending into and in communication with an inner surface of the internally reduced thickness portion of said outer spigot joint element, and a second end of the drain channel being open to the exterior of the housing;

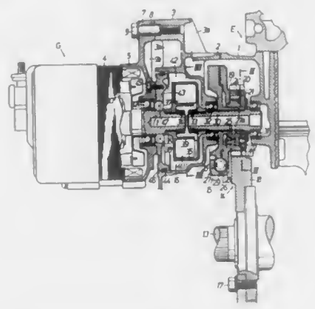
the inner spigot joint element having an axial dimension shorter than the outer spigot joint element at least at a position corresponding to the first end of the drain channel.

4,945,271

SUPPORTING DEVICE FOR GENERATOR ON ENGINE

Noboru Yokoya, and Hajime Tabata, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1988, Ser. No. 219,726
Claims priority, application Japan, Jul. 7, 1987, 62-104070[U]
Int. Cl.[5] H02K *5/24;* F16D *3/68*
U.S. Cl. 310—91 9 Claims



1. The combination comprising:

an engine having an engine body including a side casing and a crankshaft operable in said engine body;

a generator including a stator and a rotatably mounted rotor having a rotor shaft concentrically disposed within said stator;

means for mounting said generator to said side casing of said engine body; and

means for operatively connecting said rotor to said crankshaft including:

a generator drive shaft rotatably driven by said crankshaft;

an elastic coupling including an inner member attached to said rotor shaft and an outer member attached to said generator drive shaft, said inner and outer members each having radially extending fins in spaced, alternating relation with respect to one another, and a plurality of separate elastic members disposed between adjacent fins to be compressed or extended in response to relative rotation between said generator drive shaft and said rotor shaft;

a coupling chamber integrally formed on said engine body side casing concentrically enclosing said elastic coupling; and

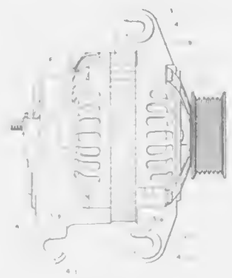
means for sealing said coupling chamber from the interior of said generator.

4,945,272

ALTERNATOR FOR MOTOR VEHICLES

Daisuke Ochi; Yasuhiro Yoshida, and Yoshiyuki Iwaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1989, Ser. No. 379,385
Claims priority, application Japan, Aug. 6, 1988, 63-104314
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—91 5 Claims



1. An alternator for motor vehicles having a housing formed with a stator (**5**) held between a front bracket (**1**) and a rear bracket (**6**), characterized by:

(a) a first mounting flange (**21***a*) extending downwardly from the front bracket, integral therewith, and defining a first boss (**41***a*) having a first U-shaped groove (**31***a*) for accommodating a mounting bolt to secure the alternator to an engine,

(b) a second mounting flange (**81**) extending downwardly from the rear bracket, integral therewith, and defining a second boss (**41***b*) having a second U-shaped groove (**31***b*) for accommodating an engine mounting bolt, and

(c) a third mounting flange (**21***b; 2b*) extending upwardly from the front bracket, integral therewith, and defining a third boss (**41***c; 4c*) for accommodating an engine mounting bolt, wherein

(d) said first and second grooves have axes perpendicular to the direction of an axis of rotation of the alternator, and

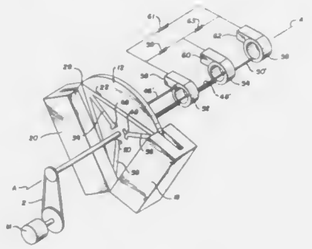
(e) said first and second grooves are oppositely oriented such that openings thereof face each other.

4,945,273

HIGH EFFICIENCY ELECTRICAL MACHINE

Joseph F. Pinkerton, Birmingham, Mich., assignor to Pinkerton Generator Inc., Birmingham, Mich.

Filed Nov. 30, 1989, Ser. No. 443,356
Int. Cl.[5] H02K *3/28*
U.S. Cl. 310—208 67 Claims



1. An electrical machine, comprising

a first member including field producing means for producing at least one magnetic field;

a second member having outside conductors, inside conductors, and output electrical connections thereon;

said members being movable relative to each other;

said outside conductors being connected together at spaced connection points to form a continuous outside loop;

said inside conductors having outer ends connected to the spaced connection points on said outside loop, each of said inside conductors having an inner end located within said outside loop;

said output electrical connections being at the inner ends of the inside conductors;

each said outside conductor and the inside conductors connected to its connection points forming an inside loop that occupies only a portion of the circumference of said second member, whereby there is a plurality of said inside loops;

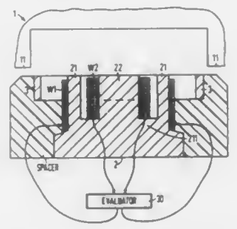
said magnetic field and said inside loops being positioned so that relative movement between said members moves the inside loops sequentially through the magnetic field to induce a current and produce a potential difference between the output electrical connections associated with each inside loop.

4,945,274

ANGULAR PULSE GENERATOR WITH FLUX RETURN

Alfons Perupeintner, Langguaid, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 17, 1989, Ser. No. 339,215
Claims priority, application Fed. Rep. of Germany, May 16, 1988, 3816642
Int. Cl.[5] G01B *7/30;* H02K *19/30;* H02P *9/00*
U.S. Cl. 310—256 6 Claims



1. An angular pulse generator that reads at least one marking on a movable generator part and outputs a pulse when a marking passes by, having a read head with a hollow cylinder that is open at one side, thereby defining an opening, and that is closed at the other side by a floor and with a solid cylinder that is attached on the floor concentrically within the hollow cylinder, and with a primary coil that is wound around the hollow cylinder and a secondary coil that is wound around the solid cylinder, and having an evaluation unit that feeds the primary winding with an alternating voltage having a defined frequency at a primary voltage and that evaluates the phase difference between the primary voltage and a secondary voltage that is induced in the secondary coil and modulated by the generator part and that forms a pulse therefrom, comprising:

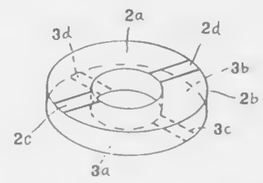
a cylindrical stray flux return line outwardly coaxially surrounding at least one part of a half of the primary winding facing toward the opening; and the stray flux return line having predetermined material, dimensions and arrangement such that a major part of a primary flux linked to the primary winding flows via the stray flux return line when the generator part is at a great distance from the read head.

4,945,275

ULTRASONIC DRIVING DEVICE

Keisuke Honda, Aichi, Japan, assignor to Honda Electric Co., Ltd., Aichi, Japan

Filed Jul. 20, 1988, Ser. No. 221,718
Claims priority, application Japan, Jul. 26, 1987, 62-187340; Sep. 2, 1987, 62-219791
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 14 Claims



1. An ultrasonic driving device comprising:

a stator including a ring type piezoelectric vibrator having divided first electrodes on one end thereof and a second electrode on an opposite end thereof,

a member to be driven on one end portion or side portion of the stator, and

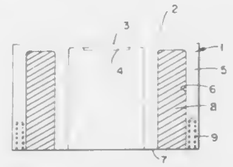
AC voltage supply means for supplying an AC voltage to only one first divided electrode and to the second electrode.

4,945,276

TRANSDUCER FOR ARRANGING IN A FLUID, PARTICULARLY FOR THE MEASUREMENT OF THE FLOW-VELOCITY OF A FLUID IN A PIPE, BY TRANSMITTING/RECEIVING SONIC PULSES

Kanagasaba Mylvaganam, Skjoldtun, and Erling Hammer, Mjlkeraen, both of Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

PCT No. PCT/NO88/00029, § 371 Date Feb. 3, 1989, § 102(e) Date Feb. 3, 1989, PCT Pub. No. WO88/08539, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 20, 1988, Ser. No. 312,587
Claims priority, application Norway, Apr. 24, 1987, 871700
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—326 6 Claims



1. A transducer for measurement of flow velocity of a fluid by transmitting and receiving sonic pulses, comprising:

a one-piece cup-shaped housing, said housing having a base portion at a closed end thereof and a cylindrical cup-wall portion, thereby forming a hollow central cylindrical chamber;

a membrane forming a central portion of said base portion, said membrane terminating adjacent said cylindrical cup-wall portion;

an electrode centrally disposed on an inner side of said membrane so that a first side of said electrode is connected to said membrane, while a second side of said electrode communicates with said central cylindrical chamber;

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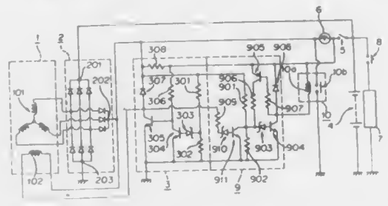
means for defining an annular chamber within said cylindrical cup-wall portion; and
means, filling said annular chamber, for damping vibration in the cup-shaped housing.

4,945,277

CONTROL DEVICE FOR A VEHICLE A.C. GENERATOR

Shiro Iwatani, and Yutaka Kitamura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1989, Ser. No. 455,054
Claims priority, application Japan, Jan. 9, 1989, 1-912[U]
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—455 4 Claims



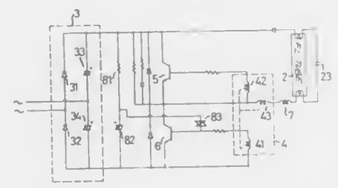
1. A control device for a vehicle a.c. generator comprising:
a rectifier connected to an armature coil of the a.c. generator, and having a main rectification output terminal for outputting the rectified output to a battery, and an auxiliary rectification terminal connected to one end of the field coil of the generator;
a voltage regulator which turns on and off the field current by means of a switching element connected to the other end of the field coil to adjust the output voltage from the generator at a predetermined value;
an overvoltage limiting unit including a switching element which conducts when the output voltage from the generator exceeds a predetermined overvoltage level; and
a switching unit which is energized by the conduction of the switching element in the overvoltage limiting unit to ground the auxiliary rectification terminal of the rectifier.

4,945,278

FLUORESCENT TUBE POWER SUPPLY

Tian P. Chero, Tainan, Taiwan, assignor to Loong-Tun Chang, Taiwan

Filed Sep. 9, 1988, Ser. No. 242,475
Int. Cl.[5] H05B *41/24, 41/29*
U.S. Cl. 315—209 R 3 Claims



1. A fluorescent tube power supply comprising:
a rectifier doubler circuit including a first and a second rectifier as well as a first and a second filtering electrolytic capacitor to form a full-wave filtering rectifier doubler circuit capable of converting an input of alternating current into direct current and also doubling the voltage to become higher for later use;
an induction windings network comprising a first inductor, a second inductor and a third inductor; the first and second inductors connect to respective bases of a first and a second transistor to provide triggering signals; the first and the second transistors having conductive paths linked at a connecting point and bridging a positive line and a negative line, and the connecting point between the first and the second transistors functions as a terminal, which series connects to a fluorescent tube through the third inductor of the induction windings network;
a resistor and an electrolytic capacitor to act as a delay circuit in series connected to a DiAC to further connect to the base of the second transistor; a resonance capacitor is connected across the filaments of the fluorescent tube and connects to the third inductor to form an LC resonance network having a resonant frequency such that the power supply activates the fluorescent tube at the resonant frequency; and
a filtering inductor series connects to the fluorescent tube to filter out extraneous signals, wherein the first, second and third inductors are inductively coupled for inducing an electromotive force in the first and second inductors opposite to a current in the third inductor to alternately disable the second transistor and provide a triggering signal to the first transistor, and disable the first transistor and provide a triggering signal to the second transistor.

4,945,279

LAMP APPARATUS FOR GENERATING SEQUENTIAL FLASHES

Wen-Fong Lee, 17, 4th Fl., Lane 247, Min-Chuan I Rd., Kaohsiung, Taiwan

Filed Dec. 1, 1988, Ser. No. 278,478
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—201 9 Claims



1. A lamp apparatus for generating sequential flashes, comprising:
at least one lamp unit having a socket formed on a first end and a plug formed on a second end thereof, enabling connection between adjacent lamp units and a plurality of xenon tubes to be installed therein;
an ignition circuit device being provided in said lamp unit for starting the flashes of said plurality of xenon tubes within the lamp unit; and
a main driving circuit device for controlling the flash sequence of the xenon tubes in the lamp apparatus.

4,945,280

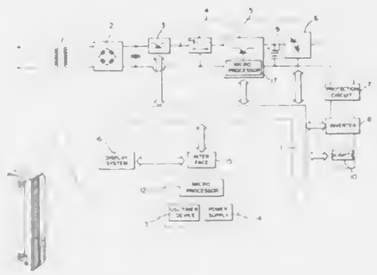
INDEPENDENT EMERGENCY LIGHTING SYSTEM WITH SELF-DIAGNOSIS

Gian P. Beghelli, Monteveglio, Italy, assignor to G.P.B. Beghelli s.r.l., Bologna, Italy

Filed Oct. 14, 1988, Ser. No. 257,863
Claims priority, application Italy, Oct. 29, 1987, 3675 A/87
Int. Cl.[5] H02J *9/00*
U.S. Cl. 315—129 5 Claims

1. An independent emergency lighting system with self-diagnosis having individual lighting devices, comprising:

means for controlling timed sequences and sequences affecting the control functions;
means for programming tests and diagnosis of the lighting system, via appropriate interfaces;
means for communicating results of periodical fault tests and independence tests to a centralized control and monitoring unit which is able to issue commands to activate/deactivate lighting equipment;



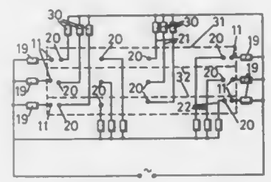
means for supplying the individual lighting devices by a centralised battery unit equipped with a programmable recharging circuit, a circuit for determining the charging condition and detection of the occurrence of incipient fault conditions; and
means for connecting said controlling means, programming means, communicating means and supplying means together.

4,945,281

FLAT LIGHT SOURCE

Stanley S. Ipson, Bradford, United Kingdom, assignor to Sidefact Limited, Bradford, England

PCT No. PCT/GB87/00017, § 371 Date Sep. 16, 1988, § 102(e) Date Sep. 16, 1988, PCT Pub. No. WO87/04562, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 15, 1987, Ser. No. 220,110
Claims priority, application United Kingdom, Jan. 17, 1986, 8601185; Aug. 19, 1986, 8620172
Int. Cl.[5] H05B *41/00;* H01J *17/34*
U.S. Cl. 315—58 22 Claims



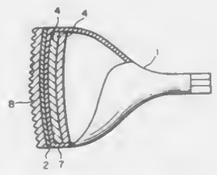
1. A flat light source comprising two sheets of material at least one of which is transparent, the sheets being overlaid one upon the other and sealed together to form a gas tight enclosure which is filled with low pressure gas and within which at least one gas discharge can be initiated between a pair of primary electrodes along a predetermined elongate path, the gas discharge path or paths occupying a plurality of adjacent elongate volumes within the enclosure, characterised in that further electrodes are spaced apart along the length of the or each discharge path, each further electrode being connected to a respective capacitive, resistive or inductive impedance.

4,945,282

IMAGE DISPLAY PANEL HAVING ANTISTATIC FILM WITH TRANSPARENT AND ELECTROCONDUCTIVE PROPERTIES AND PROCESS FOR PROCESSING SAME

Hiromitsu Kawamura, Mobara; Takao Kawamura, Chiba; Katsumi Kobara, Mobara, and Yoshishige Endo, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,213
Claims priority, application Japan, Dec. 10, 1987, 62-310823; Dec. 10, 1987, 62-310824; Jan. 14, 1988, 63-4715; Feb. 19, 1988, 63-35212
Int. Cl.[5] H01J *9/24, 29/88*
U.S. Cl. 313—479 36 Claims



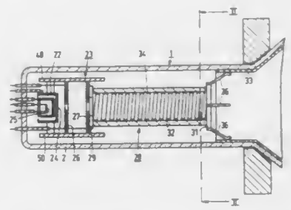
1. An image display panel having an antistatic film comprising a SiO_2 coat of transparent and electroconductive properties on the front surface of said panel; said coat containing fine particles of at least one compound selected from electroconductive metal oxides and hygroscopic metal salts capable of absorbing moisture to impart electroconductivity to said coat.

4,945,283

CATHODE RAY TUBE HAVING A TUBULAR FOCUS STRUCTURE

Antonius W. F. Van Der Heijden; Gerardus J. Hellings; Erich E. Himmelbauer; Tjerk G. Spanjer, and Gerardus A. H. M. Vrijssen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1989, Ser. No. 301,001
Claims priority, application Netherlands, Jan. 27, 1988, 8800194
Int. Cl.[5] H01J *29/02, 29/62*
U.S. Cl. 313—450 12 Claims



1. A cathode ray comprising an envelope containing a luminescent screen and an electron gun for producing an electron beam which is directed to the screen, characterized in that the electron gun comprises:
a. an electron-beam-forming structure including a cathode for emitting electrons and an electrode having a plate-shaped part with an aperture through which the electron beam leaves said structure; and
b. an electron-beam-focusing structure including;
(1) a tubular means of an electrical insulating material having an inner surface and an outer surface;
(2) a layer of resistive material disposed on at least one of said surfaces; and
(3) a first end part of the tubular means having an aperture

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for receiving the electron beam and a surface facing the plate-shaped part;

said surface of the first end part being affixed to said plate-shaped part to effect accurate positioning of the electron-beam-focusing structure with respect to the electron-beam-forming structure.

4,945,284

ELECTRON GUN FOR COLOR-PICTURE TUBE DEVICE

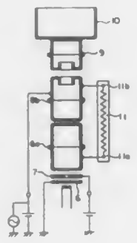
Taketoshi Shimoma, Isesaki; Shinpei Koshigoe, Fukaya, and Takahiro Hasegawa, Gyouda, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 8, 1989, Ser. No. 320,740

Claims priority, application Japan, Mar. 11, 1988, 63-57581

Int. Cl.[5] H01J *29/58*

U.S. Cl. 313—414 4 Claims



1. An electron gun for color-picture tube device comprising cathodes for generating electron beams, and a focusing electrode and a final accelerating electrode composing an electron lens for focusing said electron beam, said electrodes being disposed in the axial direction of said tube, whereby said focusing electrode is divided into plural electrode units in the axial direction of the tube, a first focusing electrode unit adjacent to said final accelerating electrode is connected to a second focusing electrode unit adjacent to said first focusing electrode unit through a resistor means, a focusing voltage being changed in synchronous with the deflection of said electron beam is applied to said first focusing electrode unit, the resistor means removes the substantial a.c. components from the focusing voltage, the resulting focusing voltage is applied to said second focusing electrode unit, first electron beam path holes whose major axes extend horizontally are formed on said first focusing electrode side opposite to said second focusing electrode unit, and second electron beam path holes whose major axes extend in the direction orthogonal to said first electron beam path holes are formed on said second focusing electrode unit side opposite to said first focusing electrode unit.

4,945,285

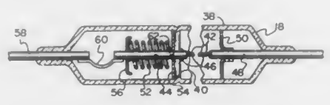
LAMP FOR SCANNING APPARATUS

Jon F. Gehret, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1988, Ser. No. 289,875

Int. Cl.[5] H01J *1/94, 19/50*

U.S. Cl. 313—278 3 Claims



1. An elongate lamp for a scanning apparatus comprising an elongate tube having an internal bore and abutment means within said bore adjacent one end of said tube;

an elongate filament housed within said tube, said filament being provided at opposite ends thereof with respective first and second support rods generally coaxial with said filament, said support rods being of greater cross-section than said filament and of relatively low resistance compared to said filament;

first support means adjacent one end of said tube for supporting said first support rod in generally coaxial relation to said tube, said first support rod extending beyond and being hermetically sealed into the adjacent end of said tube; and

second support means adjacent the other end of said tube for supporting said second support rod in generally coaxial relation to said tube, said second support means comprising a support member positioned by engagement with said internal bore of said tube and by abutment with said abutment means, said support member including an opening slidably receiving said second rod member, a spring engaging member fixed to said second rod adjacent to the end thereof opposite said filament, and a coil spring compressed between said support member and said spring retaining member and located between said abutment means and the corresponding end of said tube to maintain said filament under tension.

4,945,286

MICROCHANNEL PLATES FORMED WITH DEPOSITION USING NON-REACTIVE GAS

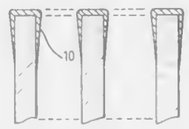
John L. Phillips, South Croydon, and Robert P. Ball, London, both of Great Britain, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1988, Ser. No. 239,711

Claims priority, application United Kingdom, Dec. 9, 1987, 8728760

Int. Cl.[5] H01J *9/12, 1/32, 43/10*

U.S. Cl. 313—105 CM 22 Claims



18. A microchannel plate having an output electrode which extends into the output end of each channel, the output electrode comprising a conductive layer characterized in that the thickness of the conductive layer within the output end of each channel is a continuously tapering function of the distance into the channel such that the thickness decreases with increasing penetration into the channel, said conductive layer forming exterior surfaces of said output end of each channel and exterior surfaces within each channel.

4,945,287

MULTIPLE PENTAPRISM SCANNING DEVICE AND METHOD

John A. Lawson, Centerville, Ohio, assignor to Eotron Corporation, Dayton, Ohio

Filed Jun. 13, 1988, Ser. No. 205,993

Int. Cl.[5] H01U *3/14*

U.S. Cl. 250—236 24 Claims

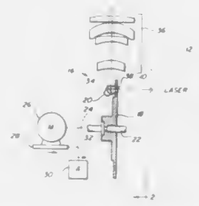
1. A scanning device for causing a beam of light to be repetitively swept across a surface, comprising:

means for providing a beam of light,

pentaprism assembly means for redirecting said beam of light to said surface, said pentaprism assembly means including a support member and a plurality of pentaprism elements positioned around the periphery of said support member,

means for rotating said support member such that successive





ones of said plurality of pentaprism elements are brought into the path of said beam of light and redirect said beam of light to said surface, whereby movement of each pentaprism element while intersecting said beam of light causes said beam of light to sweep across said surface.

4,945,288

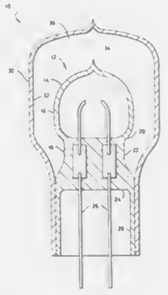
DOUBLE JACKET LAMP

Merle E. Morris, Lexington; Michael L. Martin, Jeffersonville; Louis D. Neff, Mt. Sterling, and George B. Kendrick, Lexington, all of Ky., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 21, 1988, Ser. No. 287,932

Int. Cl.[5] H01J *61/34*

U.S. Cl. 313—25 26 Claims



1. A double jacket arc lamp comprising:

(a) an electric lamp capsule having an inner light transmissive envelope with electrical leads extending from the inner envelope through a first press seal having an inner side adjacent the enclosed volume, a central portion where the seal is made, and an outer side adjacent the exterior, and

(b) a tubular, second light transmissive envelope sealed to the inner envelope at a second seal to substantially surround the electric lamp capsule and form an enclosed volume between a portion of the exterior of the inner envelope and the interior of the outer envelope with the leads extending to the exterior of the outer envelope.

4,945,289

ELECTRONIC SUPPLY SYSTEM FOR FLUORESCENT TUBES WITH ELECTRODES

Jean-Claude Harel, Tarascon, France, assignor to Interpatents Ltd., London, England

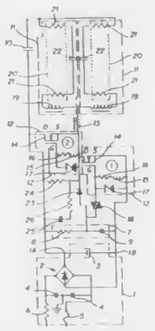
PCT No. PCT/CH87/00065, § 371 Date Jan. 25, 1988, § 102(e) Date Jan. 25, 1988, PCT Pub. No. WO87/07469, PCT Pub. Date Dec. 3, 1987

PCT Filed May 20, 1987, Ser. No. 162,407

Claims priority, application France, May 23, 1986, 86 07508

Int. Cl.[5] H05B *41/29*

U.S. Cl. 315—226 5 Claims



1. An electronic supply system for fluorescent tubes with electrodes, said system connectable across an AC source, said system comprising:

(a) a supply means for providing DC voltage, said supply means having input terminals adapted to be connected across said AC source and first and second output terminals across which said supply means provides a DC voltage;

(b) an element having a time constant, said element connected across said first and second output terminals, said element comprising a resistor connected in series with a capacitor, said resistor and said capacitor having a common electrical point therebetween;

(c) two MOS power transistors connected in series between said first and second output terminals, said two MOS power transistors having a common electrical point therebetween;

(d) at least one lighting unit connected in circuit between said common electrical point between said two power transistors and said first output terminal;

(e) a transformer having a primary winding and first and second secondary windings, the primary winding of said transformer connected in circuit between said at least one lighting unit and said common electrical point between said two power transistors;

(f) means for controlling one of said two MOS power transistors, said means including the first secondary winding of said transformer;

(g) means for controlling the other of said two MOS power transistors, said means including the second secondary winding of said transistor said means connected in circuit to said output terminal;

(h) a bilateral conducting element having a breakdown effect connected in circuit between said common point between the resistor and capacitor of the element having a time constant and said means for controlling the other of said two MOS power transistors, said bilateral conducting element having a breakdown effect being operable to provide a pulse;

(i) a capacitor connected in circuit between said at least one lighting unit and said output terminal, said capacitor only

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beginning to be charged when one of said two MOS power transistors is saturated as a result of the pulse provided by the bilateral conducting element having a breakdown effect; and

(j) said means for controlling one of said two MOS power transistors comprises the first secondary winding of said transformer, a first resistor connected in series with the first secondary winding, and a first zener diode connected in parallel with the series connection of said first secondary winding of said transformer and said first resistor and; further, wherein said means for controlling the other of said two MOS power transistors comprises the second secondary winding of said transistor, a second resistor connected in series with the second secondary winding, and a second zener diode connected in parallel with the series connection of said second secondary winding of said transformer and said second resistor.

4,945,290

HIGH-POWER RADIATOR

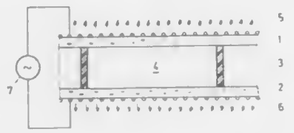
Baldur Eliasson, Birmenstorf, and Ulrich Kogelschatz, Hausen, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Oct. 21, 1988, Ser. No. 260,869

Claims priority, application Switzerland, Oct. 23, 1987, 4156187

Int. Cl.[5] H01J *61/06*

U.S. Cl. 315—246 **13 Claims**



1. A high-power radiator for ultraviolet light, said high-power radiator comprising:

(a) a first dielectric having a first side and a second side;

(b) a second dielectric having a first side facing but spaced from the first side of said first dielectric to form a discharge space therebetween and a second side;

(c) a first electrode located on the second surface of said first dielectric;

(d) a second electrode located on the second surface of said second dielectric;

(e) a filling gas located in said discharge space; and

(f) a source of alternating current connected to said first and second electrodes,

(g) wherein said first dielectric, said second dielectric, said first electrode, and said second electrode are all transparent to radiation from said filling gas.

4,945,291

LAMP-LIGHTING DEVICE

Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan

Filed Apr. 12, 1988, Ser. No. 182,865

Claims priority, application Japan, Apr. 18, 1987, 62-95933

Int. Cl.[5] H05B *39/04*

U.S. Cl. 315—307 **7 Claims**

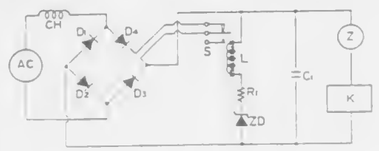
1. A device for lighting an incandescent lamp, consisting of:

a full-wave rectifier having both an input terminal connected with an ac source and an output terminal connected with an incandescent lamp;

a smoothing means connected in parallel with the incandescent lamp;

a detecting means to monitor a voltage across the incandescent lamp; and

means to switch the operation of said rectifier to half-wave rectification mode, said switching means switching the operation of said rectifier to half-wave rectification mode in order to decrease a voltage across the incandescent lamp to a prescribed level when a voltage across the



incandescent lamp exceeds the prescribed level and is detected by said detecting means; and

means to connect said switching means with said detecting means.

4,945,292

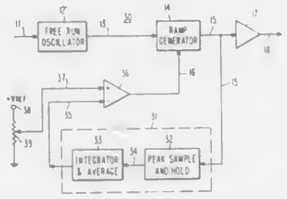
DYNAMIC VERTICAL HEIGHT CONTROL CIRCUIT

Bruce D. Ackerson, Holladay; Stephen J. Paker, Bountiful, and Clayton C. Wahlquist, West Valley City, all of Utah, assignors to Unisys Corp., Blue Bell, Pa.

Filed Aug. 8, 1988, Ser. No. 229,539

Int. Cl.[5] H01J *29/70*

U.S. Cl. 315—387 **9 Claims**



1. A dynamic vertical height control circuit comprising:

variable frequency oscillator means for receiving a dynamic variable frequency input,

ramp generator means coupled to the output of said oscillator means for generating a constant amplitude deflection ramp signal,

feedback means coupled to the output of said ramp generator means for generating a constant level gain control signal which is applied to the gain control of the ramp generator for maintaining a constant amplitude ramp signal from said ramp generator over a range of frequencies,

said feedback means comprising a comparator in a feedback loop having a voltage reference input and an analog voltage input indicative of the average analog voltage generated from the output of said ramp generator.

4,945,293

WEB TENSION CONTROL SYSTEM

Eugene W. Wittkopf, Little Suamico, and Glen B. Leanna, Green Bay, both of Wis., assignors to Integrated Design Corp., Green Bay, Wis.

Filed Sep. 18, 1989, Ser. No. 408,779

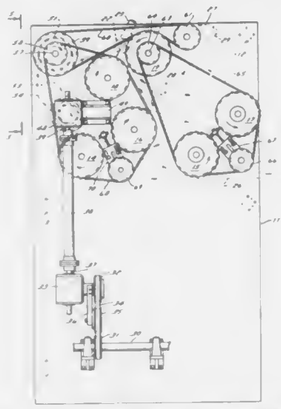
Int. Cl.[5] B65H *59/38*

U.S. Cl. 318—7 **18 Claims**

1. A method of controlling the draw or tension in a web processing machine which is driven by a motor driven main drive shaft, the web being drawn in said machine by a driven roll means and wherein a strain wave gear device having coacting elements including a flexspline, power output shaft, circular spline, and wave generator, is interposed between said main drive shaft and driven roll means to drive said driven roll means rotationally to transport the web, and further the power output shaft of the flexspline of the strain wave gear device is coupled in driving relation to said driven roll means, the spline of said strain wave gear device and a servomotor is coupled to the wave generator of said strain wave gear device to drive the wave generator rotationally, the method including the steps of:

driving said circular spline rotationally at a speed proportional to said main drive shaft,

operating said servomotor to drive said wave generator rotationally at a substantially higher speed continuously in one and the same rotational direction in which said circular spline is driven such that when the wave generator is rotating at a predetermined speed there is zero draw in said driven web leading to said driven roll means,



repeatedly determining the ratio of the wave generator speed relative to the main drive shaft speed as an indication of the percent of draw,

comparing the determined ratio with a preset stored value representing the percent of draw desired in the web, and

if said determined ratio is greater than said stored value to indicate that the flexspline power output shaft is rotating at a speed and is driving said driven roll means at a speed which is resulting in the percent of draw exceeding said preset value, then causing said servomotor to increase the rotational speed of said wave generator to reduce the speed of said power output shaft until said determined ratio and said preset value match, and

if said determined ratio is less than said preset value, then causing said servomotor to decrease the speed of the wave generator to increase the speed of said output shaft until said determined ratio and preset value match.

4,945,294

ELECTRONIC DAMPING CIRCUIT

Edward Anderson, Jr., San Francisco, Calif., assignor to Array Technologies, Inc., Oakland, Calif.

Filed Oct. 26, 1988, Ser. No. 263,035

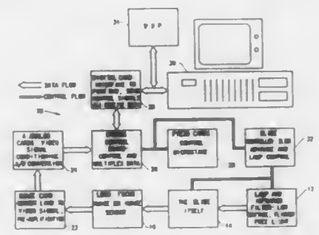
Int. Cl.[5] H02P *5/20*

U.S. Cl. 318—119 **5 Claims**

1. An electronic circuit for moving and stopping an object, responsive to a drive signal, from a first position to a final position, without physical damping or substantial ringing and the like, said circuit comprising:

means for generating a first signal for moving said object monotonically and continuously from said first position to an intermediate position, approximately one-half the distance between said first position and said final position, said object having a resonant frequency in response to said first signal; and

means for generating a second signal wherein said second signal is a time delay of said first signal by greater than or equal to one-half the rate of said resonant frequency, for moving said object monotonically and continuously from said intermediate position to said final position



wherein said first signal and said second signals are the components of said drive signal.

4,945,295

OPERATION CONFIRMATORY CIRCUIT FOR LINEAR ACTUATOR

Fumihiko Hara, Ohtsu; Shuji Hayashi, Mishima, and Genjiro Yamada, Sakai, all of Japan, assignors to Tsubakimoto Chain Company and Kabushiki Kaisha Nikken, both of, Japan

Filed Oct. 4, 1988, Ser. No. 253,198

Claims priority, application Japan, Dec. 2, 1987, 62-303203

Int. Cl.[5] B60Q *11/00*

U.S. Cl. 318—490 **6 Claims**

1. An operation confirmatory circuit for a linear actuator having an operating rod operable between opposite first and second end positions by a reversible electric motor comprising:

a first switch normally closed when said operating rod is located near the first end position;

a second switch normally closed when said operating rod is located at the second end position;

a confirmation lamp connected in a series with said first and second switches; and

a diode connected in parallel with said first switch and adapted to permit electric current to flow therethrough when the rod moves in the opposite direction from said first end position as a result of reverse rotation of said motor.

4,945,296

VARIABLE SPEED CONTROLLABLE INDUCTION MOTOR

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering

Filed Jul. 12, 1988, Ser. No. 217,966

Claims priority, application Japan, Jul. 14, 1987, 62-176475; Sep. 7, 1987, 62-225082

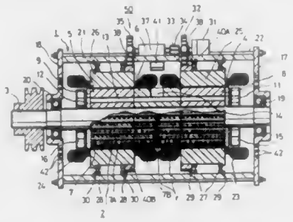
Int. Cl.[5] H02K *27/20*

U.S. Cl. 318—538 **11 Claims**

1. A variable speed controllable induction motor comprising:

VOL 1116 ISS 5 JL 31 1990 UMI

a single rotor formed in one-piece having a plurality of rotor cores axially mounted on a common axis with a non-magnetic portion being provided between said rotor cores and having, on said rotor cores, a plurality of sets of rotor conductive members including first group conductive members effective specifically for a low speed range and a second group conductive members effective specifically for a high speed range, at least said first group conductive members being short-circuited at said non-magnetic portion by resisting members and each set of said rotor conductive members being respectively connected linearly;



a plurality of stators disposed side by side and surrounding and facing said respective rotor cores; and

phase shifting means for producing phase differences between the voltage induced on the portions of said rotor conductive members which face one of said plurality of stators and the voltage induced on the corresponding portions of said rotor conductive members which face the another one of said stators;

whereby a rotation speed of said rotor can be varied by the controlling of said phase shifting means.

4,945,297

ELECTRONIC DEVICE FORMING A BIDIRECTIONAL INTERFACE FOR CONTROLLING A LOAD SWITCHING POWER ELEMENT

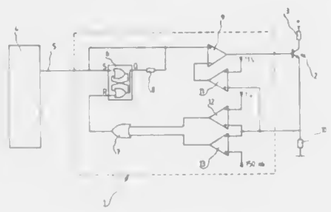
Andreé Coustre, Andresy, France, assignor to Automobiles Peugeot and Automobiles Citroen, both of, France

Filed May 18, 1988, Ser. No. 195,697

Claims priority, application France, May 19, 1987, 87 06993

Int. Cl.[5] G05B *23/02*

U.S. Cl. 318—558 9 Claims



1. A bidirectional interface-forming electronic device for controlling a power element for switching a load from a central control unit, comprising

one logical circuit connected to an input/output of the central control unit through a unique wire connection and a ground connection to control the power element for switching or disabling the load and to inform the central control unit of the condition of the load through the wire connection wherein said logical circuit is a bistable circuit, one control input of which is connected to the wire connection and which memorized at its output signal for controlling the conductive condition of the power element, which comes from the central control unit in an output mode, the output signal of the bistable circuit being applied back to the control input of the bistable circuit to inform the central control unit in an input mode of the normal operation of the load.

4,945,298

MOTOR DRIVING APPARATUS

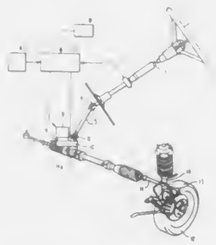
Hiroshi Nakashima, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 6, 1989, Ser. No. 306,729

Claims priority, application Japan, Feb. 5, 1988, 63-25257

Int. Cl.[5] G05B *11/01*

U.S. Cl. 318—635 5 Claims



1. A motor driving apparatus including a motor controllable to be switched on and off during each cycle of operation, a Pulsed Width Modulation circuit for controlling the on and off times of said motor during each cycle of operation, and a current supplying means for supplying current to said motor, the apparatus comprising:

current detecting means for detecting the current flowing through said motor; and

current prohibiting means for prohibiting current from being supplied to said motor when said current detecting means detects that the current flowing through said motor exceeds a predetermined level, said current prohibiting means continuing to prohibit current from being supplied to said motor after said current detecting means detects that the current flowing through said motor exceeds the predetermined level until the next operation cycle of said motor so that said motor is connected to receive current only once per operation cycle.

4,945,299

CONTROL APPARATUS FOR AN A.C. GENERATOR FOR AUTOMOBILE

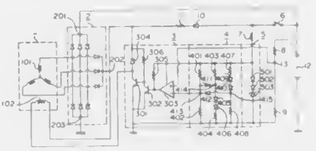
Hirofumi Watanabe, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,770

Claims priority, application Japan, Jul. 7, 1988, 63-169623

Int. Cl.[5] H02J *7/14*

U.S. Cl. 322—33 2 Claims



1. A voltage control apparatus for an a.c. generator for an automobile, which comprises:

an a.c. generator having an armature winding (**101**) and a field winding (**102**),

a rectifier (**2**) for rectifying the output of the a.c. generator to charge a battery (**12**) containing an electrolyte,

a voltage detection circuit (**8,9**) for detecting the voltage of the battery,

a constant voltage circuit (**5**) for generating a constant voltage on the basis of the voltage of the battery through the operation of a key switch (**6**),

a reference voltage circuit (**4**) comprising:

(i) a first voltage divider including two resistors (**401,402**) connected in series and defining a first junction point (**413**) therebetween,

(ii) a second voltage divider including a resistor (**403**) and a diode (**405,406**) connected in series and defining a second junction point (**414**) therebetween,

(iii) a third voltage divider including a diode (**409,410**) and a resistor (**408**) connected in series and defining a third junction point (**415**) therebetween,

(iv) the second junction point having a negative voltage-temperature characteristic with respect to the electrolyte temperature, the third junction point having qa positive voltage-temperature characteristic with respect to the electrolyte temperature, and the first, second and third voltage dividers being connected between said constant voltage circuit and ground,

(v) a first coupling diode (**411**) connected to the second junction point for supplying a potential thereof to the first junction point, and

(vi) a second coupling diode (**412**) connected to the third junction point for supplying a potential thereof to the first junction point and having a polarity opposite that of the first coupling diode, and

a voltage control circuit (**3**) for comparing the voltage of the voltage detection circuit with the voltage of the first junction point of the reference voltage circuit and controlling a field current to the field winding depending on a difference in the comparison to render the voltage of the battery constant, wherein:

(a) the voltage at the first junction point remains constant below a first predetermined electrolyte temperature (t1).

(b) the voltage at the first junction point decreases with an electrolyte temperature increase at a first reduction rate between said first temperature and a second, higher predetermined electrolyte temperature (t2), and

(c) the voltage at the first junction point decreases with an electrolyte temperature increase at a second lower reduction rate above said second temperature.

4,945,300

POWER SOURCE CONTROL APPARATUS

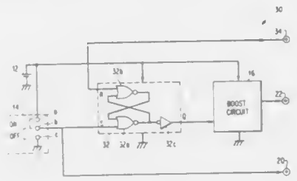
Toshifumi Sato, and Motoki Ide, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1989, Ser. No. 303,213

Claims priority, application Japan, Jan. 29, 1988, 63-19210

Int. Cl.[5] G05B *24/02*

U.S. Cl. 323—318 6 Claims



1. A power source control apparatus for controlling a power source which comprises a battery and feeding an operating voltage to external electronic equipment, comprising:

power switch means connected in parallel to said battery for generating a power ON/OFF signal when said power switch means is turned on and off;

reset/set flip-flop means, wherein a set input to said reset/set flip-flop means is the power ON/OFF signal while a reset input to said reset/set flip-flop means is a power control signal which said external electronic equipment generates in response to the power ON/OFF signal, an output of said reset/set flip-flop means turned to a set state when said power switch is turned on and to a reset state when the power control signal is entered; and

boosting means connected in parallel to said battery for boosting an output voltage of said battery to produce the operating voltage and in response to the output of said reset/set flip-flop means to deliver the output voltage as a source voltage.

4,945,301

CONSTANT-VOLTAGE POWER SUPPLY CIRCUIT AND AMPLIFIER CIRCUIT AND DA CONVERTER USING THE CONSTANT-VOLTAGE POWER SUPPLY CIRCUIT

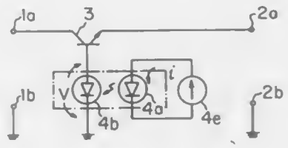
Yoshiro Koga; Hiroshi Kume, and Kenji Nakao, all of Neyagawa, Japan, assignors to Onkyo Kabushiki Kaisha, Japan

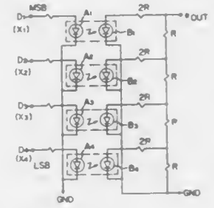
Filed Jun. 10, 1988, Ser. No. 205,459

Claims priority, application Japan, Jun. 12, 1987, 62-090961[U]; Sep. 7, 1987, 62-137293[U]; Sep. 7, 1987, 62-224755

Int. Cl.[5] G05F *1/44*

U.S. Cl. 323—902 17 Claims





1. A constant-voltage power supply circuit having a reference voltage circuit comprising:

a light emitting element and a photosensitive element optically coupled with each other; and

a driving power source for driving said light emitting element such that said light emitting element emits an amount of light sufficient to cause an output voltage of said photosensitive element to reach a saturation point thereof to become a non-variable constant voltage;

wherein said non-variable constant output voltage of said photosensitive element is used as a reference voltage.

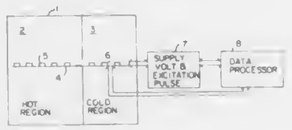
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,302

PROCESS AND A CIRCUIT BOARD FOR PERFORMING TESTS DURING BURN-IN OF INTEGRATED SEMI-CONDUCTOR CIRCUITS

Viggo K. Jansen, Allerod, Denmark, assignor to Scantest Systems A/S, Varlose, Denmark

Filed Apr. 21, 1988, Ser. No. 184,505
Claims priority, application Denmark, Apr. 24, 1987, 2080/87
Int. Cl.[5] G01R *31/10*
U.S. Cl. 324—73.1 14 Claims



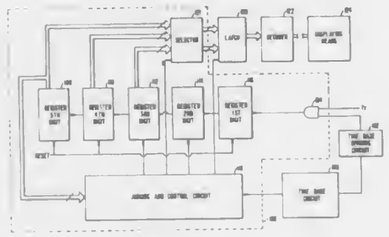
1. A process for dynamic testing and burn-in of a plurality of integrated circuits of a circuit board, comprising the steps of:
heating each circuit board to an elevated temperature for a predetermined time period corresponding to a pre-determined operating life of the integrated circuits;
cooling each circuit board to an operating temperature substantially lowr than the elevated temperature;
testing functionally at the operating temperature each individual integrated circuit of the circuit board independently of other integrated circuits of the board; and
repeating the heating step subsequent to each testing step until the error rate of the individual integrated circuits reaches a pre-determined level during a testing step.

4,945,303

FREQUENCY DETECTOR

Chiang-Tung Hwang, Keelung, and Ray-Shun Chou, Taipei, both of Taiwan, assignors to Acer Incorporated, Taipei, Taiwan

Filed Feb. 27, 1989, Ser. No. 316,360
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—78 D 8 Claims



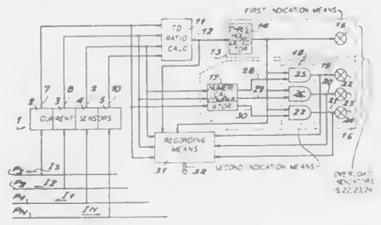
1. Frequency detecting apparatus comprising:
(a) means for providing a time base;
(b) means for dividing said time base into a plurality of discrete time bases;
(c) means for counting a number of clock pulses during said discrete time bases;
(d) means for indicating a frequency of said clock pulses based on said number of clock pulses; and
(e) round off means assigning a value of 5 to a most significant digit of said frequency which is not to be displayed and a value of 0 to all other digits.

4,945,304

DEVICE FOR MONITORING THE UNBALANCE OF THE ELECTRIC POWER DEMANDED

Paul Feron, Toulouse, France, assignor to Service National Electricite de France, France

Filed Aug. 9, 1989, Ser. No. 391,177
Claims priority, application France, Aug. 9, 1988, 88 10739
Int. Cl.[5] G01R *25/00*
U.S. Cl. 324—107 5 Claims



1. A device to monitor the unbalance of the electric power demanded on the conductive lines of a network or three-phase alternating electrical installation, said network including one line for each phase and a return current neutral line, wherein said device comprises a means to measure the currents connected to the lines of the network so as to supply on respective outputs the numerical values of the currents circulating in these lines, a means to calculate the value of the ratio, at a given instant of the value of the current circulating in the neutral line, to the sum of the values of the currents circulating in the phase lines, a numerical signal representative of the value of the ratio being supplied on one output of the calculation means, a first indication means connected to the output of the calculation means so as to indicate when the value of said ratio exceeds a predetermined unbalance threshold, while the power demanded at the same moment itself is greater than a certain proportion of the power assigned, and a second indication means connected to the outputs of the means for measuring the currents in the phase lines and to one output of the first indication means so as to localize the phase line in which a current is circulating whose value is greater than each of the values of the currents circulating in the other phase lines, the localized line being the one which has caused the unbalance.

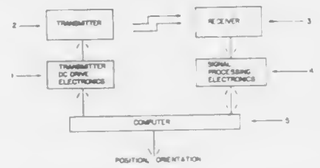
4,945,305

DEVICE FOR QUANTITATIVELY MEASURING THE RELATIVE POSITION AND ORIENTATION OF TWO BODIES IN THE PRESENCE OF METALS UTILIZING DIRECT CURRENT MAGNETIC FIELDS

Ernest B. Blood, Burlington, Vt., assignor to Ascension Technology Corporation, Vt.

Continuation-in-part of Ser. No. 917,389, Oct. 9, 1986, Pat. No. 4,849,692. This application Apr. 11, 1989, Ser. No. 336,342
The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.
Int. Cl.[5] G01B *7/14*; G01S *5/04*
U.S. Cl. 324—207.17 25 Claims

1. A device for quantitatively measuring the position of receiver antennae relative to transmitter antennae comprising:
transmitter antennae consisting of at least two aparallel antennae to generate at least two DC magnetic vectors;
drive means for sequentially supplying said aparallel antennae with DC pulses to generate said DC magnetic vectors;
receiver antennae consisting of at least two aparallel antennae to detect said DC magnetic vectors;
the number of transmitter antennae times the number of receiver antennae being at least equal to the number of degrees of freedom of the desired quantitative measurement of the position of the receiver antennae relative to the transmitter antennae;
means for compensating for the effects of the earth's magnetic field on the operation of the device; and



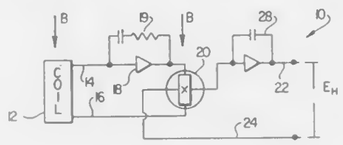
signal processing means to ascertain the magnitude of the detected DC magnetic vectors and to quantitatively compute said relative position from said received DC magnetic vectors.

4,945,306

COIL AND HALL DEVICE CIRCUIT FOR SENSING MAGNETIC FIELDS

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield

Filed Oct. 25, 1988, Ser. No. 262,372
Int. Cl.[5] G01N *27/83*; G01R *33/06*
U.S. Cl. 324—220 16 Claims



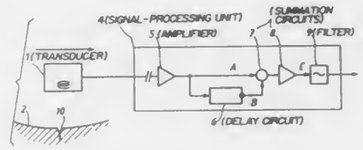
4. A device for sensing a relatively minute change in a magnetic field passing through a member formed of a magnetic material, which change is caused by a magnetic anomaly associated with said magnetic material, said device comprising:
a wire coil arranged to be disposed in said magnetic field and in proximity to said member;
means for producing a magnetic field passing through said member and said coil;
a Hall effect element disposed in said magnetic field, said Hall effect element including conductor means connected to said coil for conducting a current to said Hall effect element as a bias current and which is produced by a voltage signal generated in said coil as a result of a change in the intensity of said magnetic field;
signal output conductor means connected to said Hall effect element for producing a voltage across said signal output conductor means; and
an integrating circuit connected to said Hall effect element for integrating the signal output from said Hall effect element to provide a voltage across said output conductor means proportional to said change in the intensity of said magnetic field.

4,945,307

ELECTRONIC DEVICE FOR DETECTING IRREGULARITIES IN A SURFACE OF A SOLID OBJECT

Bengt Törnblom, Västerås, Sweden, assignor to Törnbloms Kvalitetskontroll AB, Västerås, Sweden

PCT No. PCT/SE83/00409, § 371 Date Jun. 15, 1984, § 102(e) Date Jun. 15, 1984, PCT Pub. No. WO84/02189, PCT Pub. Date Jun. 7, 1984
Continuation of Ser. No. 621,916, Jun. 15, 1984, abandoned.
This PCT application Nov. 22, 1983, Ser. No. 926,850
Claims priority, application Sweden, Nov. 24, 1982, 8206678
Int. Cl.[5] G01N *27/90*; G01R *33/12*
U.S. Cl. 324—225 12 Claims



1. Apparatus for detecting irregularities in the surface of an object, comprising:
a transducer adapted to be moved over the surface and provide output signals representative of surface irregularities thereof;
said output signal comprising a first low frequency signal resulting from the varying distance between the transducer and the surface and a second signal of higher frequency than said first signal and representative of said surface irregularities;
means for processing said output signal and including parallel first and second channels, said first channel conducting said output signal and said second channel including means for delaying said output signal, said processing means further including means for combining the output signal from said first channel and the delayed output signal from said second channel to essentially remove said low frequency signal and enhance said second signal to produce a measuring output signal representative of said surface irregularities.

4,945,308

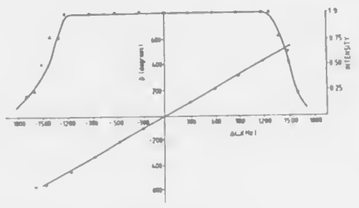
VOLUME SELECTED NMR SPECTROSCOPY

David M. Doddrell, Westlake, and William M. Brooks, Mount Gravatt, both of Australia, assignors to University of Queensland, Queensland, Australia

PCT No. PCT/AU87/00113, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO87/06700, PCT Pub. Date Nov. 5, 1987
PCT Filed Apr. 24, 1987, Ser. No. 283,482
Claims priority, application Australia, Apr. 24, 1986, PH5608
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 7 Claims

1. A method of volume-selected NMR spectroscopy including the steps of:
(a) applying a first rf pulse of selected bandwidth and duration to a volume element in the sample body in the presence of a field gradient superimposed upon an initial homogenous magnetic field;
(b) applying a hard refocussing pulse to the sample body to refocus a signal phase roll resulting from the first pulse in step (a), a time delay being dependent on the duration of the first pulse;
(c) after the time delay from the termination of the hard

refocussing pulse, pulsing a refocussed coherent signal back to a reference axis with a third pulse, and



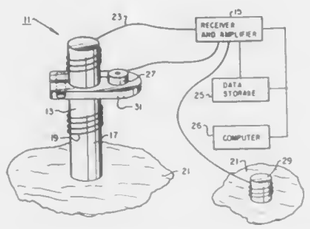
(d) recording the signal from the volume element, in the absence of the field gradient.

4,945,309

METHOD OF REDUCING IMPULSIVE NOISE IN ELECTROMAGNETIC GEOPHYSICAL DATA

Brian R. Spies, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 14, 1989, Ser. No. 393,559
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—345 **13 Claims**



1. A method of reducing impulsive noise in electromagnetic geophysical data, comprising the steps of:

(a) providing receiving antenna means for receiving an electromagnetic signal, said receiving antenna means receiving impulsive noise;

(b) providing noise sensor means for receiving said impulsive noise and placing said noise sensor means so as to receive the impulsive noise that is received by said receiving antenna means and so as to minimize the reception of said electromagnetic signal;

(c) simultaneously receiving said electromagnetic signal with said receiving antenna means so as to create a signal record and receiving said impulsive noise with said noise sensor means so as to create a noise record;

(d) examining said noise record for occurrences of said impulsive noise by comparing said noise record with a threshold noise value and identifying those instances of time in which said noise record exceeds said threshold;

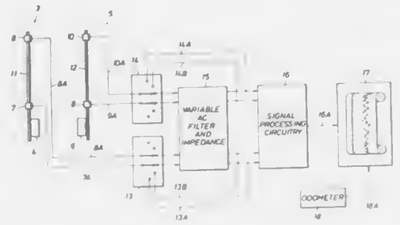
(e) removing those portions of said signal record which are simultaneous with said identified instances in which said noise records exceeds said threshold, wherein said signal record has reduced impulsive noise.

4,945,310

PASSIVE GEOPHYSICAL SURVEY METHOD BASED UPON THE DETECTION OF THE DC COMPONENT OF THE VERTICAL ELECTRICAL POTENTIAL OF NATURAL EARTH CURRENTS

John R. Jackson, 1401 E. Girard, #143, Englewood, Colo. 80110, assignor to J. R. Jackson and A. M. Arismendi, Jr., both of Gaithersburg, Md.

Division of Ser. No. 821,967, Jan. 29, 1986, Pat. No. 4,841,250.
This application Jun. 16, 1989, Ser. No. 367,018
The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.
Int. Cl.[5] G01V *3/165, 3/08*
U.S. Cl. 324—349 **6 Claims**



1. A method for performing passive geophysical measurements as a function of natural Earth currents, said method comprising:

(a) sensing an electrical potential occurring between at least one pair of vertically spaced points above the Earth and within the lower atmosphere adjacent thereto as a function of said natural Earth currents;

(b) generating an electrical signal proportional to said electrical potential, said electrical signal having an AC component and a DC component;

(c) filtering out the AC component of said electrical signal leaving the DC component thereof and outputting a DC signal; and

(d) measuring said DC signal, said DC signal providing an indication of the lithological character of adjacent Earth materials as a function of the DC component of said electrical potential.

4,945,311

ELECTRONICALLY VARIABLE EQUALIZER

Robert F. Smith, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

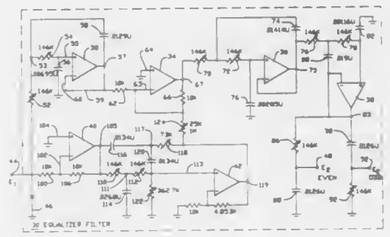
Filed Aug. 29, 1988, Ser. No. 237,876
Int. Cl.[5] H03B *1/00*; H03K *5/00*
U.S. Cl. 328—167 **17 Claims**

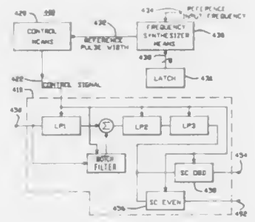
1. An electronically variable equalizer filter, having a variable cutoff frequency, comprising:

two or more active RC filter networks each having variable R values, said one or more active RC networks being coupled together to form said equalizer filter; and

means connected to each of said RC filter networks for simultaneously varying the R values of each of said two or more active RC networks, which means for simultaneously varying maintains a substantially constant ratio between the R values of each active RC filter network

such that the relative shapes of the magnitude and phase characteristics of said equalizer filter remains substantially





constant as the cutoff frequency of said equalizer filter is varied.

4,945,312

METHOD AND DEVICE FOR THE DEMODULATION OF SIGNALS WITH CONSTANT ENVELOPE AND CONTINUOUS PHASE ANGLE MODULATION BY A TRAIN OF BINARY SYMBOLS TOLERATING FREQUENCY DRIFTS

Gérard Auger, Champagne Sur Oise; Pierre A. Laurent, Bessancourt, and Patrick Mocchi, Chatou, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jul. 17, 1989, Ser. No. 380,537
Claims priority, application France, Jul. 19, 1988, 88 09731
Int. Cl.[5] H03D *3/00*
U.S. Cl. 329—345 **8 Claims**

1. A method for the demodulation of constant envelope and continuous phase signals having a bit period T_b, consisting in the performing of a digital processing operation for successive groups of n_b bits, of a received signal brought into baseband, the phase of which is over-sampled with respect to the bit period T_b, consisting:

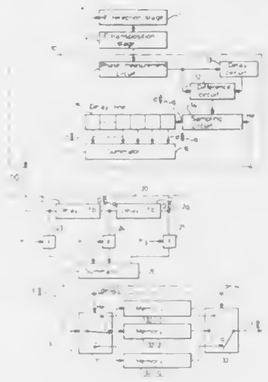
in a first stage, in measuring q subsets of n_b differential phases at the bit period, using starting instants, staggered with respect to one another by fractions T_b/q of this period to form staggered sampling combs at the bit period;

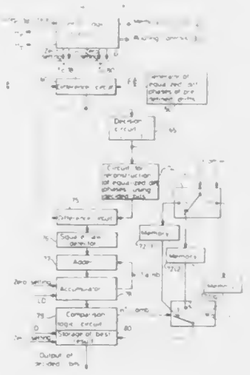
in a second stage, in making d a priori corrections of each of said q subsets of differential phases by phase deviations associated with a set of d pre-defined frequency drifts, to generate d times q subsets of n_b corrected differential phases, and deducing therefrom d times q sets of n_b associated demodulated bits, each corresponding to a measured subset of differential phases associated with one of said d pre-defined drifts;

in a third stage, reconstructing the differential phases supposed to have been emitted from each of the sets of n_b demodulated bits, and in computing, for each of the d times q sets of demodulated bits, a noise criterion taking into account the subset of reconstructed differential phases and the associated subset of corrected differential phases measured and corrected as a function of a predefined drift;

in a fourth stage, selecting the set of n_b bits that minimizes the noise criterion, the predefined frequency drift that is associated with said selected set of n_b bits corresponding to a rough estimation of the real drift;

in a penultimate stage, computing, on the basis of the selected set of demodulated bits, a fine estimation of the real drift by calculating mean of differences between the measured differential phases and the reconstructed differential





phases associated with this set of n_b bits, and then a final phase deviation associated with said fine estimation of the real drift;

and, in a last stage, performing a demodulation of the q subsets of measured differential phases, after having corrected them by the final phase deviation associated with the fine estimate of the real drift, in computing, for each, the noise criterion and in selecting, among the sets of resulting bits, that set which minimizes the noise criterion, the sampling comb associated with it forming the synchronization bit.

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4,945,313

SYNCHRONOUS DEMODULATOR HAVING AUTOMATICALLY TUNED BAND-PASS FILTER

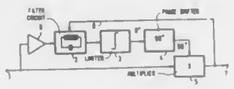
Joachim C. Brilka, and Wolfgang Weltersbach, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1989, Ser. No. 361,210

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1988, 3819460; Jun. 8, 1988, 3819461

Int. Cl.[5] H03D *1/22;* **H04N** *5/62*

U.S. Cl. 329—349 **10 Claims**



1. A synchronous demodulator for demodulating a carrier signal modulated with a useful signal, said demodulator comprising a filter circuit for selecting the carrier signal, a limiter for generating an amplitude-limited reference signal from the carrier signal, a phase shifter for shifting the phase of the reference signal through a phase angle of essentially 90° with respect to the carrier signal, and a multiplier for multiplicatively combining the modulated carrier signal with the phase shifted reference signal, characterized in that a direct voltage supplied as a mixing product by the multiplier as a measure of the frequency deviation of the carrier signal from the pass frequency of the filter circuit is applied as a variable to this filter circuit for the purpose of controlling the pass frequency.

4,945,314

AMPLIFIER ARRANGEMENT WITH SATURATION DETECTION

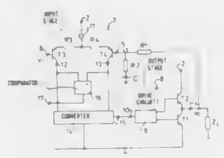
Martinus J. Van Den Bungelaar, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

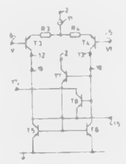
Filed Jul. 12, 1989, Ser. No. 378,959

Claims priority, application Netherlands, Mar. 2, 1989, 8900507

Int. Cl.[5] H03G *3/30;* **G01R** *21/00*

U.S. Cl. 330—2 **30 Claims**





14. An amplifier arrangment with saturation detection, comprising an input stage comprising a differential pair having a first input terminal and a second input terminal and a first output terminal and a second output terminal, an output stage coupled to said input stage and comprising at least one output transistor and having an output terminal coupled to the first input terminal via a coupling network, and a detection device having an output terminal for supplying a detection signal when said at least one output transistor is saturated, the detection device comprising a comparator having a first input terminal and a second input terminal respectively connected to the first output terminal and the second output terminal of the differential pair and having an output terminal coupled to the output terminal of the detection device, characterized in that the comparator comprises a transistor having a base-emitter path connected between the first input terminal and the second input terminal of the comparator and having a collector connected to the output terminal of the comparator.

4,945,315

METHOD OF AND APPARATAUS FOR PROJECTING A LASER BEAM INTO LIGHT AMPLIFIER

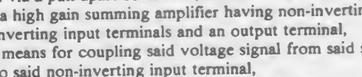
Hidetoshi Shinada, Kanagawa, Japan, assignor to Fuji Pboto Film Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1988, Ser. No. 263,767

Claims priority, application Japan, Oct. 28, 1987, 62-272713

Int. Cl.[5] H01S *3/00*

U.S. Cl. 330—4.3 **7 Claims**



1. A method of projecting an incident laser beam into a light amplifier, said laser beam being projected into a light waveguide region of said light amplifier in which a width of said light waveguide region is equal to or greater than a predetermined value, comprising the steps of:

making the intensity distribution of said laser beam coincide with an electromagnetic field distribution in a fundamental mode of said light waveguide region; and

subsequently projecting said laser beam into said light waveguide region.

4,945,316

VOLTAGE FOLLOWER WITH PULL-APART CONECTOR

Mark D. Sebald, Caledonia, and Richard E. Neumeyer, Rockford, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Division of Ser. No. 175,865, Mar. 31, 1988, Pat. No. 4,872,213. This application Jun. 16, 1989, Ser. No. 367,339

Int. Cl.[5] H03F *1/34*

U.S. Cl. 330—110 **2 Claims**

1. In apparatus for feeding a voltage signal from a source to a load via a pull-apart connector, the combination comprising

(a) a high gain summing amplifier having non-inverting and inverting input terminals and an output terminal,

(b) means for coupling said voltage signal from said source to said non-inverting input terminal,

(c) a pull-apart connector having first and second output members separably engageable respectively with first and second input members, said members when engaged inevitably creating first and second contact resistances,

(d) means coupling the output terminal of said amplifier to said second input member,

(e) a terminal point electrically joined directly to said first and second output members and adapted for connection to said load, said coupling means including an asymetrically conductive diode poled to pass current from said amplifier output terminal to said load via said second resistance and said terminal point, and

(f) a direction connection from said first input member to said inverting input terminal to create a negative feedback loop for said amplifier, said first contact resistance residing electrically in said negative feedback loop with the feedback voltage being taken from a point downstream of said second resistance where the voltage applied to the load exists.

4,945,317

MATCHING CIRCUIT

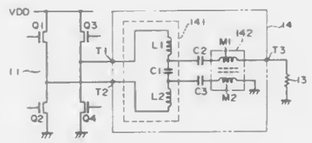
Tutomu Sato, Kawasaki; Haruhiko Yura, Yokohama; Yoshihiko Nasu, Tokyo; Atsumi Fujiwara, Tokyo, and Shigeo Mori, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1988, Ser. No. 246,780

Claims priority, application Japan, Sep. 22, 1987, 62-238140; Sep. 22, 1987, 62-238141

Int. Cl.[5] H03H *7/00*

U.S. Cl. 330—301 **14 Claims**



1. A matching circuit with a pair of balanced signal input terminals and an unbalanced signal output terminal, comprising:-

impedance transforming means having first and second input terminals connected to said pair of balanced signal input terminals, and first and second output terminals, a filter circuit being interposed between said first and second input terminals and said first and second output terminals, said filter circuit exhibiting a low impedance for the frequency of a signal to be transmitted from said first and second input terminals to said first and second output terminals and exhibiting a high impedance for a frequency which is higher than the frequency of the signal to be transmitted;

balance-to-unbalance transforming means having third and fourth input terminals, an output terminal connected to said unbalanced signal output terminal, a reference potential point, and a transformer including at least first and second windings, said first winding being interposed between the third input terminal and the output terminal, and said second winding being interposed between the fourth input terminal and the reference potential point; and

DC component blocking means including a coupling capacitor for removing DC components, through which the first output terminal of said impedance transforming means is connected to the third input terminal of said balance-to-unbalance transforming means, and a coupling capacitor for removing DC components, through which the second output terminal of said impedance transforming means is connected to the fourth input terminal of said balance-to-unbalance transforming means.

4,945,318

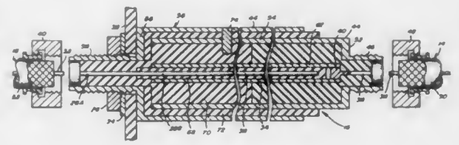
LOW FREQUENCY ISOLATOR FOR RADIO FREQUENCY HYPERTHERMIA PROBE

Jeffery L. Kabachinski, Boynton Beach, Fla., and Richard W. Fetter, Colgate, Wis., assignors to Labthermics Technologies, Inc., Champaign, Ill.

Filed Mar. 1, 1988, Ser. No. 162,631

Int. Cl.[5] H01P *1/202, 1/212*

U.S. Cl. 333—12 **4 Claims**



1. An isolator insertable in a RF supply line extending from a source of RF energy to a device employing the RF energy, said isolator providing isolation to the device against DC and low frequency AC while passing RF energy of a selected frequency, said RF supply line having an center conductor and an exterior conductor, said isolator comprising:

a central conductor connectable to the center conductor of the RF supply line at a first end of said isolator, said central conductor comprising two longitudinally adjacent parts;

an inner conductor spacedly surrounding said central conductor, said inner conductor being connectable to the center conductor of the RF supply line at a second end of said isolator, said central and inner conductors being electrically coupled together at the selected frequency of the RF energy;

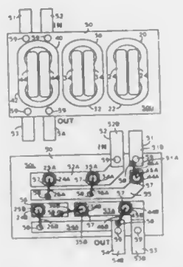
a first outer conductor spacedly surrounding said inner conductor, said first outer conductor being connectable to the exterior conductor of the RF supply line at said second end of said isolator;

a second outer conductor spacedly surrounding said first outer conductor, said second outer conductor being connectable to the exterior conductor of the RF supply line at said first end of said isolator, said first and second outer conductors being electrically coupled together at the selected frequency of the RF energy; and

insulating means between said central and inner conductors, said inner conductor and said first outer conductor, and said first and second outer conductors.

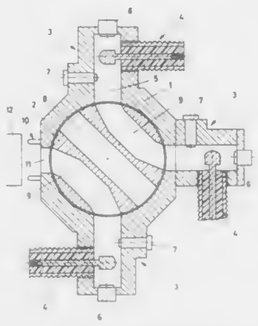
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,319
HIGH FREQUENCY IMPEDANCE TRANSFORMER
Lance G. Wilson, North Hollywood, Calif., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 28, 1989, Ser. No. 387,317
Int. Cl.[5] H03H *7/38*
U.S. Cl. 333—33 **18 Claims**



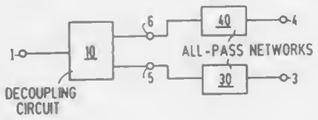
15. A high frequency impedance transformer, comprising:
three equi-length segments of coaxial transmission line, each having a central conductor and an electrically conductive coaxial shield at opposed ends thereof; and
a circuit board having substantially co-planar conductors thereon to which, at first locations, are attached the opposed ends of the coaxial shields and through which pass the central conductors without electrical contact at the first locations, and to which, at second locations, are attached the opposed ends of the central conductors.

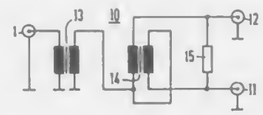
4,945,320
MICROWAVE SWITCH HAVING AT LEAST TWO SWITCHING POSITIONS
Eckart Hettlage, Karlsruhe, and Gerd Ruff, Heidelberg, both of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany
PCT No. PCT/EP87/00089, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO87/05155, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 17, 1987, Ser. No. 264,954
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1986, 3605043
Int. Cl.[5] H01P *1/10*
U.S. Cl. 333—106 **10 Claims**



1. A waveguide switch for the selective connection of at least one coaxial input line with at least one of two output lines of which at least one is a coaxial line, comprising:
a rotor including at least one rectangular waveguide passage for conducting microwave frequencies to be transmitted, said at least one waveguide passage in said rotor having a height which is small compared with a standard waveguide for said microwave frequencies to be transmitted; a housing for rotatably supporting said rotor, said housing having a plurality of waveguide sections, each of said waveguide sections having substantially the same cross-sectional dimensions as said at least one waveguide passage; said waveguide sections of said housing being connectable with one another by said at least one waveguide passage by rotation of said rotor; and at least two of said plurality of waveguide sections each having an adapter for connection respectively to said coaxial input line and to said coaxial output line.

4,945,321
π/2 POWER DIVIDER
Ralph Oppelt, Weiher, and Markus Vester, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Apr. 5, 1989, Ser. No. 333,287
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1988, 3811986
Int. Cl.[5] H01P *5/16*
U.S. Cl. 333—119 **12 Claims**

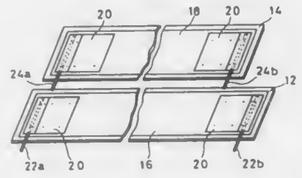




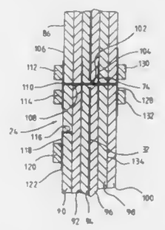
1. A π/2 power divider for dividing an input signal in two signal paths with the same amplitude and phase quadrature, said divider comprising:
a decoupling circuit having an input and two outputs and containing at least one line transformer; and
two unbalanced to ground all-pass networks respectively connected to said outputs of said decoupling circuit, each all-pass network consisting of a line transformer.

4,945,322
NOISE FILTER
Mitsunao Okumura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Mar. 23, 1989, Ser. No. 327,591
Claims priority, application Japan, Mar. 23, 1988, 63-70123; Jul. 19, 1988, 63-180048; Oct. 3, 1988, 63-249594
Int. Cl.[5] H03H *7/01, 7/09*
U.S. Cl. 333—184 **9 Claims**

1. A noise filter, comprising:
a first longitudinal insulation sheet;
a first conductor formed on one surface of said first insulation sheet so as to be extended in a longitudinal direction of said first insulation sheet, said first conductor having a pair of ends;
two first terminals fixed on said first conductor, end portions of which are exposed in a width direction of said first insulation sheet, and one of said two first terminals being fixed near one end of said first conductor and the other of said two first terminals being fixed at a position substantially removed from the other end of said first conductor and approaching said one end of said first conductor;
a second longitudinal insulation sheet above said first insulation sheet;
a second conductor formed on one surface of said second insulation sheet so as to be extended in a longitudinal direction of said second insulation sheet; and
two second terminals fixed to said second conductor, end portions of which are exposed in a width direction of said second insulation sheet, and one of said two second terminals being fixed near one end of said second conductor and the other of said two second terminals being fixed at a position substantially removed from the other end of said second conductor and approaching said one end of said second conductor;
said first and second insulation sheets being wound together with said first and second conductors so as to form a wound unit such that end portions of said first and second terminals can be exposed from an end surface of said wound unit, inductances being respectively formed between the first terminal by said first conductor and between the second terminals by said second conductor, and distributed capacitance being formed between said first and second conductors.

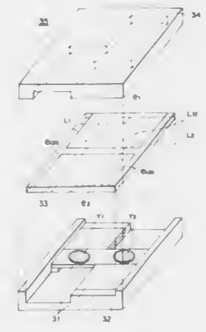


4,945,323
FILTER ARRANGEMENT
Bruno Gerstenberg, Muhlenstr. 9, 7776 Owingen; Hans J. Michling, Obertorstr. 14A, and Josef Vachek, Fichtenweg 3, both of 7770 Uberlingen, all of Fed. Rep. of Germany
Filed Jul. 11, 1989, Ser. No. 378,147
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1988, 3823469
Int. Cl.[5] H03H *7/00*; H05K *3/46, 9/00*
U.S. Cl. 333—185 **6 Claims**



1. Filter arrangement for filtering a plurality of conductors which are guided from a space comprising electromagnetic fields to a device located in a shielded space, comprising
(a) a separating wall (**24**) in the form of a multilayer printed circuit card (**26**) provided with an internal instrument ground (**32**) and having filter members, and
(b) holes, through which signal conductors are passed through, are provided in the printed circuit card for passing signals through,
characterized in that
(c) the instrument ground is formed by a continuous surface except for narrow apertures in the area of the holes through which feed-through conductors are passed, and
(d) in addition to the internal instrument ground, additional layers having conductive surfaces are provided in the multilayer printed circuit card which conductive surfaces form with the electrically connected signal conductor, filter members preventing passage of high-frequency electromagnetic waves through the holes.

4,945,324
THIN FILM FERROMAGNETIC RESONANCE TUNED FILTER
Yoshikazu Murakami; Takahiro Obgihara; Kanako Nifkura; Yasuyuki Mizuuma, all of Kanagawa, and Hiroyuki Nakano, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 127,014, Nov. 27, 1987, abandoned. This application Mar. 17, 1989, Ser. No. 326,430
Claims priority, application Japan, Nov. 28, 1986, 61-283512; Apr. 30, 1987, 62-107350
Int. Cl.[5] H01P *1/20, 1/218, 1/217*
U.S. Cl. 333—202 **8 Claims**



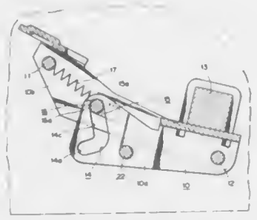
1. A thin film ferromagnetic resonance tuned filter comprising:
a ferrimagnetic thin film;
an input transmission line and an output transmission line coupled to said ferrimagnetic thin film; and
a magnetic circuit applying DC magnetic field to said ferrimagnetic thin film, each of said input and output transmission lines being grounded at a grounded end respectively, wherein each distance between the center of said ferrimagnetic thin film and said grounded ends of each of said input and output transmission lines is selected one-tenth or above and less than one-fourth the wavelength of a wave transmitted in said transmission lines at an upper limit frequency of a tuning bandwidth.

4,945,325
CIRCUIT BREAKER WITH SMOOTH SLIDING OPERATION
Haruhisa Toda; Hiroaki Fujihisa, and Shiro Murata, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1988, Ser. No. 272,329
Claims priority, application Japan, Nov. 20, 1987, 62-177948[U]; Nov. 20, 1987, 62-177949[U]; Nov. 20, 1987, 62-177950[U]
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **3 Claims**

1. A circuit breaker wherein, in limiting a current by separat-

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ing a movable contact arm 7 under electromagnetic repulsion caused by a flow of high currents regardless of an interrupting operation of an automatic tripping device 4, a contact arm 10 holding said movable contact arm 7 is divided into a first contact arm 310A and a second contact arm 310B both rotatably supported, and has a guide hole 14 provided on said first contact arm 310A in connection with a switching mechanism 20 and extending in a direction the circuit breaker contacts are opened and closed, a long hole 15 provided on said second

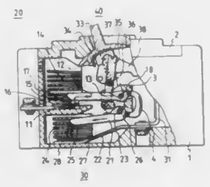


contact arm 310B supporting said movable contact arm 7 by a first pin 11 and extending in another direction said long hole 15 intersects said guide hole 14, a second pin 316 engaged in both said long hole 15 and said guide hole 14, and a spring 17 which is pulling said second pin 316; whereby at least the pin sliding surface 14c of said guide hole 14 of said first contact arm 310A, and at least the pin sliding surface 15a of said long hole 15 of said second contact arm 310B are surface-treated to provide both the sliding surfaces 14c, 15a with greater hardness than said second pin 316.

4,945,326
CIRCUIT BREAKER

Kiyoshi Kandatsu, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 28, 1989, Ser. No. 329,706
Claims priority, application Japan, Apr. 18, 1988, 63-94862
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **8 Claims**

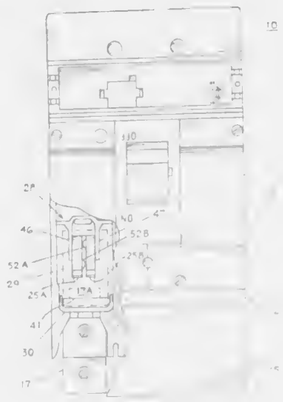


1. A circuit breaker assembly comprising:
a housing means for enclosing the circuit breaker assembly, including a substantially rectangular casing with an outer face;
a first breaking means for breaking the current, mounted within the casing;
a second breaking means for breaking the current, mounted within the casing, adjacent said first breaking means, and connected in series with said first breaking means;
a switching means for manually tripping said first and second breaking means;
an overcurrent tripping device operable to trip said first breaking means in an overcurrent condition; and
an insulating switching shaft mounted in the casing, disposed to support both the first and second breaking means.

4,945,327
MOLDED CASE CIRCUIT BREAKER VARIABLE ARC EXHAUST SHIELD

Dennis J. Doughty; Raymound K. Seymour, both of Plainville, and Aymon A. Maulandi, Plantsville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 5, 1989, Ser. No. 402,302
Int. Cl.[5] H01H *9/30*
U.S. Cl. 335—201 **11 Claims**



1. A molded case circuit breaker comprising:
a plastic case and a plastic cover, said cover being attached to said case;
a fixed contact arm connected to a line terminal at one end of said case, said fixed contact arm carrying a fixed contact at one end thereof;
a first movable contact arm connected to a load terminal at an opposite end of said case, said first movable contact arm carrying a movable contact at one end thereof;
an operating mechanism within said case and arranged for separating said fixed and movable contacts upon occurrence of an overcurrent condition in excess of a predetermined magnitude;
an arc chute arranged over said movable contact arm for cooling and extinguishing an arc which occurs upon separation of said contacts;
a movable contact arm guide arranged intermediate said operating mechanism and said arc chute, said guide including opposing sidewalls thereby confining movement of said first movable contact arm to a predetermined direction; and
a second moveable contact arm parallel to and electrically connected with said first movable contact arm, said first movable contact arm having means on a surface abutting said second contact arm for contacting said second contact arm and preventing said second contact arm from becoming distorted upon said overcurrent occurrence.

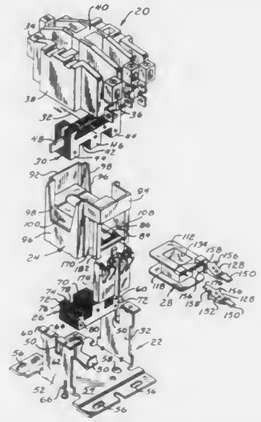
4,945,328
ELECTRICAL CONTACTOR

John W. Kinney, Aurora; Anthony P. Rubasch, St. Charles, and Thomas W. Degenhart, Batavia, all of Ill., assignors to Furnas Electric Company, Batavia, Ill.

Filed Oct. 31, 1988, Ser. No. 265,005
Int. Cl.[5] H01H *9/02*
U.S. Cl. 335—202 **11 Claims**

1. In a contactor, the combination of:
a base;
a contactor assembly, including at least one movable contact, mounted on said base;

a magnetic core mounted on said base in proximity to said contactor assembly;
a bobbin mounted on said magnetic core and having spaced flanges defining a peripheral winding receiving recess, at least one of said flanges having terminal receiving recesses in an edge thereof;,
metallic pins, one for each terminal receiving recess, each having one end captured in said edge adjacent the corresponding terminal receiving recess and an opposite end

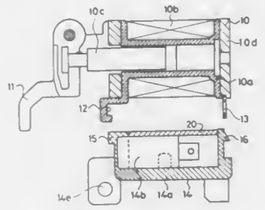


projecting away from the corresponding terminal receiving recess;
an electrical winding in said winding receiving recess and having ends extending therefrom and wrapped about a corresponding one of said pins; and
a plurality of metallic terminals, one for each terminal receiving recess, and having a mounting end disposed in the corresponding recess and a finger crimped about the corresponding pin and the winding end wrapped thereabout.

4,945,329
TRIPPING DEVICE WITH BURNING PREVENTION SWITCH

Kazuyoshi Sugihara, and Ichiro Arinobu, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 10,581, Feb. 3, 1987, abandoned. This application Oct. 19, 1988, Ser. No. 260,133
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—219 **3 Claims**

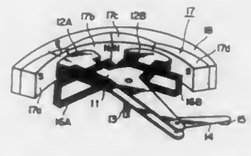


1. An electromagnet tripping switch assembly with nondestructive burning protection, comprising:
a bobbin;
electromagnet means having a coil wound on said bobbin;
plunger means disposed within said electromagnet means and driven by said electromagnet means;
an insulating case having first and second projecting;
burning prevention means in a circuit with said coil within said insulating case; and
means for interconnecting said bobbin and said insulating case, said interconnecting means comprising a channel section portion formed in one portion of said bobbin for receiving said first projection of said insulating case another portion of said bobbin having a through-hole for receiving said second projection of said insulating case.

4,945,330
ACTUATOR

Yoji Arita, Yokohama, Japan, assignor to Mitsubishi Kasei, Tokyo, Japan

Filed Mar. 27, 1989, Ser. No. 329,321
Claims priority, application Japan, Mar. 28, 1988, 63-71928; Oct. 15, 1988, 63-258364
Int. Cl.[5] H01F *7/08*
U.S. Cl. 335—229 **12 Claims**



1. An actuator comprising:
an armature having at least one pair of protruding poles and movable so that each of said protruding poles is movable along a predetermined path;
a coil disposed to surround each of said protruding poles and adapted for energizing same such that said protruding poles are energized in opposite polarities to each other;
a stationary yoke extending in the direction parallel to said path; and
a permanent magnet composed of plural pairs of juxtaposed magnetic pieces whose magnetic polarities are opposite to each other, said plural pairs of magnetic pieces corresponding in number to the number of said protruding poles and mounted on said yoke in juxtaposition with each other at positions adjacent to the path of the corresponding protruding pole, adjacent two magnetic pieces of adjacent pairs having the same polarity with each other, and said permanent magnet generating such a magnetic flux pattern that the amount thereof gradually decreases from both ends of the path of each protruding pole towards the boundary of the magnetic pieces of the corresponding pair.

4,945,331
ELECTROMAGNETIC ACTUATOR

Tadashi Kashio, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1989, Ser. No. 385,001
Claims priority, application Japan, Jul. 29, 1988, 63-101520
Int. Cl.[5] H01F *7/08*
U.S. Cl. 335—274 **7 Claims**

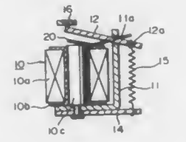
1. An electromagnetic actuator comprising:
a base plate;
a solenoid for producing a magnetic attractive force upon supply of an electric current thereto;
a yoke disposed on said base plate with said solenoid for introducing a magnetic flux produced by said solenoid;
an armature having one end rotatably supported by said

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yoke and the other end attracted toward an end surface of a core of said solenoid;

a return spring stretched in a state of tension between said base plate and the end of said armature for urging said armature to be released from said solenoid; and

a return leaf spring interposed between said core and said armature and formed of a non-magnetic material, said



return leaf spring having a V-shaped configuration with the bent portion of the convex side being in contact with the end surface of said solenoid;

whereby said armature is deflected to store supplemental releasing force for said armature when said solenoid attracts said armature, and powerful releasability is provided by the restoring force of said return leaf spring.

4,945,332

NOISE SUPPRESSION INDUCTOR

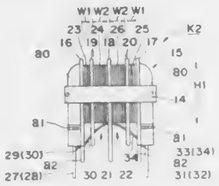
Yukio Sakamoto, Fukui; Mamoru Zushi, and Masahiro Bando, both of Takefu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 902,954, Sep. 2, 1986, abandoned. This application Dec. 6, 1988, Ser. No. 281,900

Claims priority, application Japan, Sep. 3, 1985, 60-195040

Int. Cl.[5] H01F *15/14, 27/30;* **H03H** *7/00*

U.S. Cl. 336—69 **5 Claims**



1. A noise suppression inductor comprising:

a bobbin having first and second flange portions at opposite ends thereof, respectively, a central flange portion at a substantially central location between said first and second flange portions and at least one partition plate between each of said first and second flange portions and said central flange portion, said partition plates dividing the respective distances between said first and second flange portions and said central flange portion so as to form a plurality of coil winding portions having different winding widths, respectively;

a core mounted on said bobbin;

a pair of first pin terminals and a pair of second pin terminals which are attached to said bobbin;

first and second coils which have first opposite ends and second opposite ends, respectively, said first opposite ends of said first coil, respectively, being connected to said first pin terminals, and said second opposite ends of said second coil being, respectively, connected to said second pin terminals;

said first and second coils each being wound around said coil winding portions through said partition plate so as to form a plurality of coil portions on said coil winding portions, respectively, such that magnetic fluxes of said first and second coils eliminate each other;

said coil portions of each of said first and second coils having a plurality of different stray capacities, respectively, so as to have a plurality of different self-resonance frequencies, respectively, whereby when said first and second coils are connected in a circuit with noise in the range of said self-resonance frequencies, each of said first and second coils is capable of cancelling noises of a plurality of different frequency bands.

4,945,333

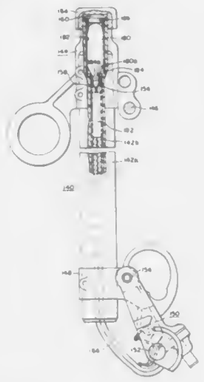
FUSE ASSEMBLY, FOR A CUTOUT, WITH ACCELERATED ARC EXTINCTION

Nicholas J. Stroud, Muncie; Andrew S. Sweetana, Jr., Bloomington; Frederick J. Brown, Bloomington, and Thomas P. Basa, Bloomington, all of Ind., assignors to Asea Brown Boveri Inc., Purchase, N.Y.

Filed Feb. 13, 1989, Ser. No. 309,747

Int. Cl.[5] H01H *71/10, 85/40*

U.S. Cl. 337—176 **7 Claims**



1. A fuse assembly, such as for a cutout, comprising:

a tube of insulating material containing a fusible element connected between first and second conductive elements, said fusible element producing an arc upon operation;

a gas capsule proximate said first conductive element and said fusible element and containing pressurized gas released by action of the arc produced by operation of said fusible element to cool and quench the arc and to force stagnant ionized gas out of said tube;

said second conductive element comprising a rigid conductor at said fusible element with a flexible conductor attached to said rigid conductor and extending from said tube;

a spring loaded flipper connected to said second conductive element that withdraws said second conductive element from said tube upon operation of said fusible element to assist further in arc extinction.

4,945,334

ENERGIZING MEANS FOR ELECTRONIC WARNING APPARATUS

James E. Biersach, Mequon, Wis., assignor to Alerting Communicators of America, Mequon, Wis.

Filed May 8, 1989, Ser. No. 348,971

Int. Cl.[5] G08B *3/00;* **G01K** *9/00*

U.S. Cl. 340—388 **5 Claims**

1. An electronic alerting and warning device for converting

at least 5 kW of electrical power to a high volume sound output, comprising, in combination:

A. a number of substantially identical electromagnetic drivers for converting electrical energy to acoustical energy, each said driver comprising:

(1) a diaphragm having front and rear sides,

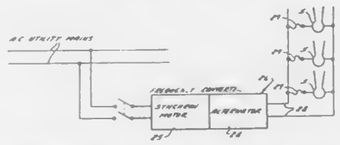
(2) a rigid housing across which said diaphragm extends and which cooperates with the diaphragm to define

(a) at the rear side thereof a totally enclosed rear chamber and

(b) at the front side thereof a front chamber wherein there is a driver port that provides for acoustic loading of the diaphragm,

(3) a permanent magnet fixed in said rear chamber, and

(4) a coil fixed to said rear side of the diaphragm and



capable of being duty energized with a power on the order of 100 W by an a.c. that impresses on the order of 40 V across the coil,

said number of drivers being such that the coils of all of said drivers can, together, consume said at least 5 kW of power;

B. a rotary alternator which, when driven at a predetermined rotational speed, produces an alternating current

(1) of substantially sine-wave form

(2) having a frequency within the range of about 200 HZ to about 800 HZ and

(3) having a voltage on the order of 40 V;

C. conductor means connecting the coils of said drivers, in parallel with one another, with said rotary alternator; and

D. powered means for driving the rotary alternator at said predetermined rotational speed.

4,945,335

ELECTRONIC UNIT OPERABLE IN CONJUNCTION WITH BODY UNIT

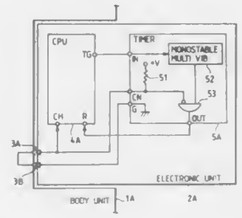
Toshiyuki Kimura; Youichi Yamazaki; Yoshiya Nonaka; Yasunao Go; Fumio Endo; Hiroyuki Komata, and Mitsuo Syoji, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 18, 1989, Ser. No. 353,420

Claims priority, application Japan, Oct. 6, 1988, 63-250795

Int. Cl.[5] B60R *25/10;* **H04B** *1/06*

U.S. Cl. 340—426 **4 Claims**



1. An electronic unit operable in conjunction with a body unit comprising:

a coupled/decoupled status signal generating means for generating a coupled-status signal when said electronic unit is coupled to said body unit and a decoupled-status signal when said electronic unit is decoupled from said body unit;

a microcomputer coupled to said coupled/decoupled status signal generating means, said microcomputer being selectively placed to a start mode when said coupled-status signal is received from said coupled-decoupled status signal generating means and to a stop mode when said decoupled-status signal is received therefrom, said microcomputer producing clock pulses when placed in said start mode and a stop signal when placed in said stop mode; and

a timer coupled to both said microcomputer and said coupled/decoupled status signal generating means, said timer outputting a reset signal to said microcomputer for resetting said microcomputer when said clock pulses fed from said microcomputer are interrupted for more than a predetermined period of time, and inhibiting said reset signal from being outputted from said timer when said stop signal is supplied, said timer being directly supplied with said decoupled status signal from said coupled/decoupled status signal generating means for controlling the output of said reset signal.

4,945,336

TROUBLE DETECTION APPARATUS FOR AUTOMOBILE AIR-BAG SYSTEM

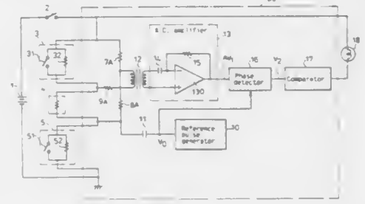
Hisatsugu Itoh, and Munehiro Kawabata, both of Sanda, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1989, Ser. No. 344,374

Claims priority, application Japan, May 12, 1988, 63-117701

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—438 **1 Claim**



1. A trouble detection apparatus for an automobile air-bag system comprising:

a Wheatstone bridge circuit including two resistors, together with a resistor connected between contacts of an acceleration speed sensor, and an internal resistance of a trigger means for inflating the air-bag;

a reference pulse generator for supplying pulse signals to said Wheatstone bridge circuit;

a current transformer connected across output terminals of said Wheatstone bridge circuit for producing a signal having no D.C. component;

an A.C. amplifier for amplifying signals issued from said current transformer;

a phase detector for phase detection of an output of said A.C. amplifier; and

a comparator for comparing an output of said phase detector with a reference signal and for producing a signal indicative of said resistor connected between said contacts of said acceleration speed sensor or the internal resistance of said trigger means.

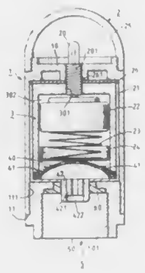
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,337

TIRE PRESSURE INDICATOR

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan

Filed Sep. 14, 1989, Ser. No. 407,351
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—442 4 Claims



1. A tire pressure indicator having a hollow cylindrical body formed with a closed side at one end thereof and an open side at another end thereof for being positioned on a tire valve of an associated tire with a light bulb being detachably mounted in a threaded central opening formed in the closed side of the hollow cylindrical body, comprising:

a transparent light cover screw-connected to the closed side of the hollow cylindrical body over the light bulb thereof;

a first conductor member having a central opening formed therein disposed on a bottom surface of the closed side of the hollow cylindrical body and engaged with a threaded negative portion of the light bulb through the central opening of said first conductor;

a piston container with an upper closed side thereof and an lower open side thereof screw-connected to the threaded negative portion of the light bulb at said upper closed side in the hollow cylindrical body;

a sleeve member with a closed side located at a lower end thereof movably disposed in the hollow cylindrical body with said piston container being sleevingly received therein;

a piston means movably disposed in an inner chamber of said piston container so as to be controlled by the tire pressure of an associated tire for turning the light bulb on and off in conjunction with the tire pressure condition of the associated tire;

a pressure sensing means fixedly provided on the closed side of said sleeve member under said piston means for being detachably connected to the tire valve of the associated tire to monitor and indicate the pressure condition of the associated tire; and

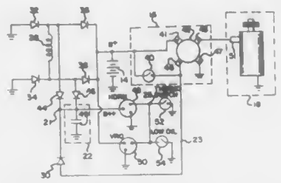
a supporting base, having an air chamber formed therein with internal and external threads provided therearound, screw-connected to the open side of the hollow cylindrical body for being detachably connected to the tire valve of the associated tire; whereby, with said tire pressure indicator being detachably connected to an associated tire, the pressure condition of the associated tire can be monitored and indicated via the light bulb without incurring any air pressure leakage therefrom even when the hollow cylindrical body is damaged or loosened.

4,945,338

ALTERNATOR POWERED MOTOR WARNING SYSTEM

Philip A. Anderson, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 23, 1989, Ser. No. 299,145
Int. Cl.[5] B60Q *11/00*
U.S. Cl. 340—459 20 Claims



1. A warning system for an internal combustion engine without a switched B+ power line and having an alternator connected to and charging a battery, said system comprising:

power supply means connected between said alternator and an auxiliary power supply node, said power supply means adapted to supply power to said power supply node only when said alternator is rotating;

annunciator means for alerting an operator of an abnormal condition of the engine, said annunciator means connected between said power supply node and a common node; and

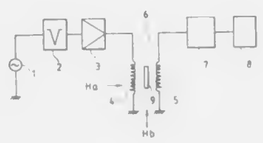
sensing means, connected between said common node and a reference voltage, for connecting said common node to said reference voltage when an abnormal condition of the engine is sensed thereby enabling said annunciator means.

4,945,339

ANTI-THEFT SENSOR MARKER

Kiyotaka Yamauchi, and Yoshihito Yoshizawa, both of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 16, 1988, Ser. No. 271,791
Claims priority, application Japan, Nov. 17, 1987, 62-290366
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—551 13 Claims



1. An anti-theft sensor marker mainly composed of an alloy and employed in an anti-theft system in which the unlawful taking of a commodity marked by said marker is determined by detecting a magnetic field of a specific frequency with respect to an incident magnetic field intensity applied to a detection region through said alloy of said marker when said marker is disposed within said detection region, said alloy having the constitutional formula

$$(Fe_{1-a}M_a)_{100-x-y-z-\alpha-\beta-\gamma}Cu_xSi_yB_zM'_\alpha M''_\beta X_\gamma$$
(atomic %)

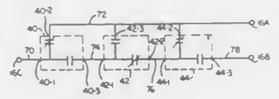
wherein, M is at least one member selected from the group consisting of Co and Ni; M' is at least one member selected from the group consisting of Nb, W, Ta, Zr, Hf, Ti and Mo; M'' is at least one member selected from the group consisting of V, Cr, Mn, Al, platinum metals, Sc, Y, rare-earth metals, Au, Zn, Sn and Re; X is at least one member selected from the group consisting of C, Ge, P, Ga, Sb, In, Be and As; and a, x, y, z, α, β and γ satisfy the relations: $0 \leqq a \leqq 0.3$, $0.1 \leqq x \leqq 3$, $6 \leqq y \leqq 25$, $3 \leqq z \leqq 15$, $14 \leqq y+z \leqq 30$, $1 \leqq \alpha \leqq 10$, $0 \leqq \beta \leqq 10$, $9 \leqq \gamma \leqq 10$, and wherein at least 50% of the structure of the alloy ribbon is composed of fine bccFe solid-solution crystalline grains in which the mean grain diameter, measured as a maximum grain diameter, is not larger than 500 Å.

4,945,340

TAMPER-RESISTANT MAGNETIC SECURITY SYSTEM

Henry L. Brill, Flushing, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed Apr. 25, 1989, Ser. No. 343,483
Int. Cl.[5] G08B *13/08*
U.S. Cl. 340—547 17 Claims



1. A security system for use in a physical security monitoring environment, said system comprising

a sensor unit having a common conductor, an alarm conductor, and a guard conductor and at least three switches, each of said switches having a deactivated condition and an activated condition and being adapted to be placed in its activated condition in response to a magnetic field of predetermined magnetic flux density;

said sensor unit having a logic circuit electrically interconnecting said switches and said common conductor, said alarm conductor and said guard conductor, said logic circuit completing a series circuit between said common conductor and said guard conductor whenever a predetermined one of said switches is in a deactivated condition and the remaining switches are in an activated condition, and completing a circuit between said common conductor and said alarm conductor when either all of said switches are in an activated condition or one of said remaining switches is in a deactivated condition; and

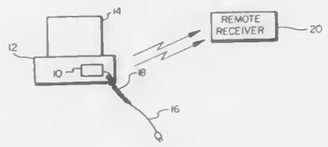
an actuator unit with at least two permanent magnets, the number of said permanent magnets being one less than the number of said switches and each said permanent magnet providing a discrete magnetic field of predetermined flux density sufficient to activate a corresponding one of said switches when said actuator unit is located in a predetermined juxtaposition with respect to said sensor unit.

4,945,341

ALARM SYSTEM FOR ELECTRICAL DEVICES

Gregory J. Buttimer, 25 S. Iowa Ave., Addison, Ill. 60101

Filed Apr. 5, 1989, Ser. No. 333,470
Int. Cl.[5] G08B *13/22*
U.S. Cl. 340—568 9 Claims



1. An apparatus comprising:

an electrical device having an electrical power cord, said electrical power cord comprising two conductors surrounded by an insulating coating;

a wire wrapped around said power cord of said electrical device, said wire making substantial contact with said insulating coating of said power cord, said wire having a length in the range of about 12 inches to about 36 inches, said wire being wrapped around said power cord at least about five times so that said wire is capable of sensing the connection of said power cord to a source of AC power whether or not said electrical device is turned on;

an amplifier electrically coupled to said

wire, said amplifier detecting when said power cord of said electrical device is disconnected from the source of AC power;

a transmitter electrically coupled to said amplifier, said transmitter generating an RF alarm signal upon said amplifier's being turned off in response to said power cord's being disconnected from the source of AC power; and

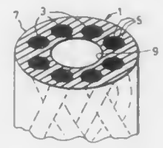
a receiver remote from said transmitter, said receiver receiving said RF alarm signal from said transmitter and generating a second alarm signal in response to receiving said RF alarm signal.

4,945,342

ELECTRICAL CABLE FOR PERFORMING STIMULATIONS AND/OR MEASUREMENTS INSIDE A HUMAN OR ANIMAL BODY AND METHOD OF MANUFACTURING THE CABLE

Samuel G. Steinemann, St. Sulpice, Switzerland, assignor to Instit Straumann, Switzerland

Filed Oct. 5, 1988, Ser. No. 254,367
Claims priority, application Switzerland, Oct. 16, 1987, 4082/87
Int. Cl.[5] H01B *5/68*
U.S. Cl. 174—113 R 37 Claims



1. Electrical cable for performing stimulations and/or measurements inside a human or animal body, for instance for a cardiac pacemaker, the cable comprising at least one bundle of fibers, wherein each fiber is less than 20 micrometers thick and has a cross-sectional area of a single metallic material.

23. Method of manufacturing an electrical cable for performing stimulations and/or measurements inside of a human or animal body, the cable comprising at least one bundle of fibers which are less than 20 micrometers thick, the method comprising the steps of: providing a number of wires thicker than the fibers and made of the same metallic material as the fibers to be produced; imbedding the thicker wires into a matrix consisting of a different metallic material; subjecting the thicker wires together with the matrix to a deformation process during which the wires are made longer and thinner; and, subsequently dissolving the matrix with an acid to yield a bundle of said fibers.

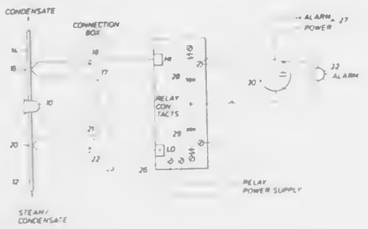
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,343

SYSTEM AND METHOD FOR DETECTION OF MALFUNCTIONING STEAM TRAPS

Richard Rodriguez, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 30, 1989, Ser. No. 374,377
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—606 **5 Claims**



1. System for continuous detection of a steam trap for malfunctioning which comprises

a steam trap having an inlet communicating with a source of steam, and having an outlet for discharge of gases which are noncondensable, and condensate;

sensing means for detecting malfunction of said steam trap, said sensing means comprising a pair of thermocouples including a first thermocouple disposed proximate and in temperature measurement relationship to said outlet for measuring the temperature of said outlet and a second thermocouple disposed proximate and in temperature measurement relationship to said inlet for measuring the temperature of said inlet;

signal generating means operatively connected to said sensing means for generating a signal indicative of malfunction of said steam trap; and

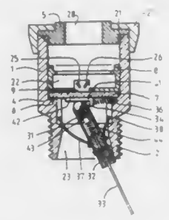
signal indicating means responsive to said generated signal for indicating malfunctioning of said steam trap.

4,945,344

FLUID FLOW SENSOR HAVING LIGHT REFLECTIVE SLIDER

Jonathon E. Farrell, and Mark C. Anthony, both of 8 Chomley Street, Cranbourne, Victoria, Australia 3977

Filed Nov. 23, 1987, Ser. No. 123,678
Claims priority, application Australia, Nov. 24, 1986, PH9156
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—610 **4 Claims**



1. A flow sensor comprising:

a body,

a partition dividing the body into first and second ends, the partition being fluid tight and capable of transmitting light,

light emission means located in the first end and adapted to transmit light through the partition toward the second end,

slider means located in said second end and adapted to be moved between first and second positions with respect to the partition, said slider means having a surface substantially abutting said partition and having a substantially light reflective portion and a substantially light unreflective portion which will, respectively, substantially reflect light from the light emission means back through the partition towards the first end when said slider means is in said first position and substantially not reflect light back through said partition towards the first end when said slider means is in said second position,

a light detector means located in the first end and adapted to produce an output signal when receiving light reflected through said partition toward the first end by said surface when in the first position,

wherein the second end is adapted to be connected to a pipe or other structure within which fluid may flow, and

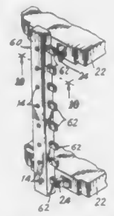
mechanical means incorporated in said second end and movable, in use, by fluid flowing in said pipe or other structure and operative when so moved to move said slider means from said second position to said first position.

4,945,345

CIRCUIT BREAKER SIGNAL

Ross Proctor, 162 Fox St., Bridgeport, Conn. 06605, and Emilio Ruiz, 1463 Black Rock Turnpike No. 11, Fairfield, Conn. 06430

Filed Aug. 8, 1989, Ser. No. 390,803
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—638 **9 Claims**



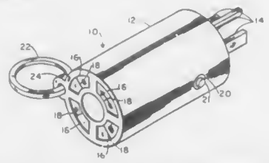
1. A circuit breaker signal for use with at least one circuit breaker each circuit breaker having a switch assembly comprising a housing supportable externally of said circuit breaker, indication means coupled to said housing for indicating when a circuit breaker has been activated and indicating which circuit breaker has been activated, and switch means supported on said housing for coming in contact with said switch assembly when the circuit breaker is activated and causing said indication means to indicate activation.

4,945,346

AUDIBLE CIRCUIT TRACER

John P. Schmiemann, 4 Seville La., Story Brook, N.Y. 11790

Filed Aug. 7, 1989, Ser. No. 390,289
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—656 **2 Claims**



1. A portable electric power indicator assembly comprising:

a. a palm size cylindrical housing having electric prongs at one end for plugging into an electrical outlet;

b. said housing having mounted in the other end thereof a piezo energized buzzer and including an attachment for carrying said housing on a tool belt;

c. a step down transformer within said housing having the primary coil thereof connected to two of said electric prongs;

d. a full wave bridge rectifier;

e. electrical conductors connecting the second coil of said transformer to said piezo buzzer through said rectifier so that only dc will be delivered to said buzzer;

f. openings at the end of said housing opposite the end carrying said prongs for broadcasting the buzzer sounds when said piezo buzzer is activated, said openings having adjustable shutters for permitting said sounds to be selectively baffled;

g. an adaptor for checking a bulb socket, said adaptor comprising a threaded male member at one end to thread into said bulb socket and openings at the other end for receiving said prongs on said housing; and

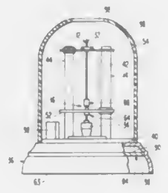
h. an adaptor for checking hard-wired electrical equipment, said adaptor comprising a member having openings for receiving said prongs and leads connected to said openings terminating in insulated alligator clips for electrical engagement to said equipment.

4,945,347

MOTION AND ORIENTATION RESPONSIVE DEVICE FOR SEISMIC, INTRUSION, AND TILT ALARMS AND THE LIKE

John C. Perry, 3170 Falcon Dr., Carlsbad, Calif. 92008

Filed Mar. 17, 1988, Ser. No. 169,318
Int. Cl.[5] G08B *21/00*; H01H *35/02*
U.S. Cl. 340—689 **39 Claims**



1. A motion and orientation responsive device comprising:

a pendulum having normally upper and lower ends, and a center of mass at said lower end,

a pendulum support,

pivot means pivotally mounting said pendulum between its ends on said support for swinging of the pendulum about a pivot point located close to said mass center such that the pendulum length between said pivot point and said upper pendulum end is several times the pendulum length between said pivot point and said mass center, whereby the pendulum has a normal generally vertical position relative to the gravitational field wherein said center of mass is situated below said pivot means, and

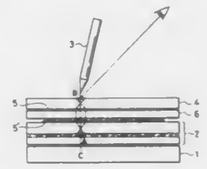
a zero position reference member mounted on said support at said upper pendulum end for cooperation with said upper pendulum end to indicate movement of said pendulum from said normal position thereof.

4,945,348

LIQUID CRYSTAL DISPLAY COMBINED WITH SIGNAL INPUT TABLET

Masahiko Ibamoto, Katsuta; Satoshi Shimada, Hitachi; Shinji Ohyama, Hitachi; Manabu Sato, Hitachi; Soshiro Kuzunuki, Katsuta, and Mitsunari Kano, Seto, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Apr. 19, 1988, Ser. No. 183,225
Claims priority, application Japan, Apr. 22, 1987, 62-97362
Int. Cl.[5] G09G *3/18*
U.S. Cl. 340—784 **14 Claims**



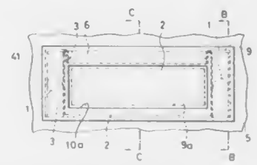
1. In a liquid crystal display combined with a signal imput tablet comprising a tablet for detecting a planar write position by a hand-writing input pen, a liquid crystal display disposed on said table and a transparent protective plate disposed on said liquid crystal display and having a light diffusion operation, the improvement comprising a two-dimensional lens array disposed as one-to-one erect imaging optical system between said liquid crystal display and said transparent protective plate so that the display image can be projected as the same size erect image on the surface of said transparent protective plate thereby elementating parallax otherwise existing between the liquid crystal display and the input panel.

4,945,349

LIQUID CRYSTAL DISPLAY

Yukiharu Sanai, Sanda, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1988, Ser. No. 241,250
Claims priority, application Japan, Sep. 28, 1987, 62-240914
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **9 Claims**



1. A liquid crystal display comprising:

a liquid crystal display board;

a light guide which is disposed at a rear side of said liquid crystal display board;

a light source which is disposed at said rear side of the liquid crystal display board;

a filter which is disposed between said liquid crystal display board and said light guide;

shade means which is of high thermal conductivity and is disposed between said light source and said filter for selectively shading heat coming from said light source toward said filter; and

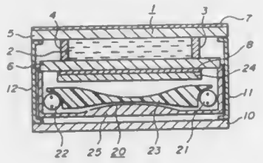
at least one case which covers said liquid crystal display board, said light guide, said light source, said filter and said shade means therewith, said case having an opening to show said liquid crystal display board therethrough.

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4,945,350
LIQUID CRYSTAL DISPLAY UNIT

Yasukazu Kawamura, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 882,677, Jul. 7, 1986, abandoned. This application Apr. 13, 1989, Ser. No. 338,383
Claims priority, application Japan, Jul. 9, 1985, 60-150556; Jul. 9, 1985, 60-150557
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **12 Claims**



1. A liquid crystal display unit for displaying characters and/or images comprising:

a liquid crystal display panel including a liquid crystal interposed between first and second transparent plates, a first polarizing plate disposed on the upper surface of said first transparent plate, and a second polarizing plate disposed on the rear surface of said second transparent plate;

a substrate carrying an electric circuit for driving said liquid crystal display panel;

means for interconnecting said electric circuit and said liquid crystal display panel;

a planar light source disposed between said liquid crystal display panel and said substrate and comprising two linear fluorescent lamps and a light guiding member, said light guiding member comprising a light guiding plate extending substantially in parallel with said liquid crystal display panel and disposed substantially in a first plane, said linear fluorescent lamps being disposed at opposite side surfaces of said light guiding plate and extending substantially in parallel to each other and disposed in said first plane, said light guiding plate including means for controlling light coupling so as to direct light substantially orthogonal to said first plane direction and toward said liquid crystal display panel;

said light guiding plate having opposite upper and lower surfaces, said upper surface facing said liquid crystal display panel, said means for controlling light coupling from the light guiding plate comprising a concave surface portion on each of the upper and lower surfaces of said light guiding plate to enhance uniformity of brightness;

a casing for containing said fluorescent lamps and light guiding member and including a reflecting plate for efficiently and uniformly utilizing the light from the fluorescent lamps;

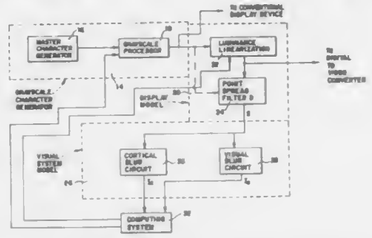
said casing reflecting plate extending under said light guiding plate and having a convex surface portion disposed adjacent to and in symmetric alignment with the concave surface portion of said lower surface of said means for controlling light coupling, and end walls disposed closely adjacent respective linear fluorescent lamps for reflecting light therefrom;

wherein said casing member and said planar light source contained therein are disposed between said liquid crystal display panel and said substrate and are detachably mounted to the rear surface of said liquid crystal display panel, thereby said planar light source illuminates said liquid crystal display panel with uniform intensity from behind.

4,945,351
TECHNIQUE FOR OPTIMIZING GRAYSCALE CHARACTER DISPLAYS

Abraham C. Naiman, Toronto, Canada, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 23, 1988, Ser. No. 197,420
Int. Cl.[5] G09G *1/14*
U.S. Cl. 340—793 **20 Claims**



1. A method for calibrating luminance linearization values for sub-pixel edge placements in a grayscale display device, comprising the steps of:

displaying a first field on a first area of said display device, said first field having a sharp transition line separating a first white field portion and a first black field portion;

substantially concurrently displaying a second field on a second area of said display device adjacent said first area, said second field having a second white field portion and a second black field portion separated by an intermediate gray strip, said gray strip being substantially parallel with said sharp transition line and having a height corresponding to a predetermined visual angle and a vertical position relative to said sharp transition line determined by a desired sub-pixel edge placement;

positioning a viewer at a distance from said display device calculated from said gray strip height and the predetermined visual angle;

varying the grayscale setting of the gray strip;

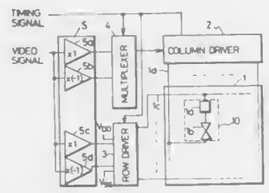
selecting the grayscale setting which minimizes line discontinuities between said sharp transition and a transition line between said second white field portion and said second black field portion perceived by said viewer;

setting a luminance linearization value corresponding to said desired sub-pixel edge placement for said display device to the grayscale setting selected by said selecting step.

4,945,352
ACTIVE MATRIX DISPLAY DEVICE OF THE NONLINEAR TWO-TERMINAL TYPE

Akira Ejiri, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Feb. 16, 1988, Ser. No. 157,045
Claims priority, application Japan, Feb. 13, 1987, 62-30811
Int. Cl.[5] G09G *3/18*
U.S. Cl. 340—805 **9 Claims**



1. An active matrix display device operative according to a video signal, comprising:

a group of column electrodes and another group of row electrodes which interesect with the column electrodes to define intersections therebetween;

a plurality of matrix picture elements disposed at the respective intersections, each matrix picture element including a nonlinear switching device having two terminals and liquid crystal connected in series to the nonlinear switching device between the corresponding column and row electrodes;

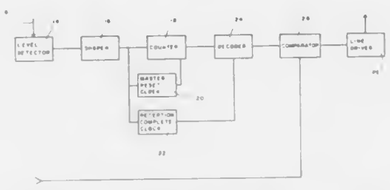
column drive means for applying to the group of the column electrodes a column drive signal having phase and amplitude determined according to the video signal; and

row drive means operative to sequentially select the row electrodes for applying to the selected row electrode a first row drive signal different from the column drive signal and effective to turn on the nonlinear switching device of a picture element on the selected row electrode to thereby drive the picture element according to the column drive signal and for applying to the non-selected row electrodes a second row drive signal having phase and amplitude the same as those of the column drive signal and effective to substantially avoid the application of voltage to picture elements on the non-selected row electrodes.

4,945,353
TELEMETRY SYSTEM USED WITH SENSING DEVICES

Raymond Jones, Marshfield, Mass., assignor to C&K Components, Inc., Newton, Mass.

Filed Nov. 17, 1988, Ser. No. 272,319
Int. Cl.[5] H04Q *9/00*
U.S. Cl. 340—825.070 **3 Claims**

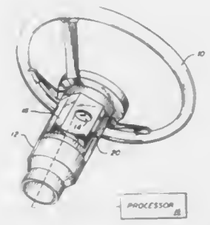


1. The combination of a power line and a transponder, the transponder comprising a level detector, a shaper, a counter, a master reset clock, a reception complete clock, a decoder, a line driver and a comparator, the line driver having a switch, the power line being connected to the level detector, which in turn being connected to the input of the shaper, the shaper being connected to the counter, the master reset clock and the reception complete clock, the master reset clock being connected to the counter and the reception complete clock being connected to the decoder and the switch being connected to the comparator, the shaper including an input and an output, the combination including a first resistor and a zener diode, first, second, third and fourth comparators, the first resistor and the zener diode connected in series to the base of a first transistor, the first transistor connected to a second resistor and being connected to the input of the shaper, the master reset clock having an input and an output, the output of the shaper electrically connected to the inputs of the first and second comparators, the third and fourth comparators including outputs, the fourth comparator being connected to the master reset clock and the reception complete clock, a first capacitor being connected to both the master reset clock and the reception complete clock.

4,945,354
SPURIOUS SIGNAL CORRECTION FOR SURFACE ACOUSTIC WAVE (SAW) SECURITY DEVICES

James R. McColl, Concord, Mass., assignor to GTE Products, Danvers, Mass.

Filed Nov. 25, 1988, Ser. No. 276,072
Int. Cl.[5] G01S *13/74*; G09C *1/00*
U.S. Cl. 340—825.31 **10 Claims**



1. A security device that provides a coded surface acoustical wave which is converted to an electrical signal for comparison with a preset code, said security device comprising:

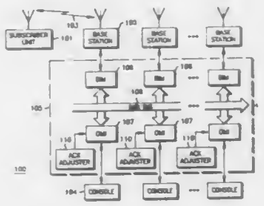
a substrate having means defining an acoustical wave path; and

a pattern of transducers disposed upon said substrate for providing said coded surface acoustical wave, including a plurality of spaced-apart tap transducers serially arranged along said acoustical path and operatively connected to a main transducer defining a given bit position in said code, and wherein a first of said serially arranged tap transducers closest to said main transducer is disposed a fractional bit length further from said main transducer than a given length of bits, each bit length defining a bit position in said code whereby crosstalk is reduced.

4,945,355
SYSTEM FOR COOPERATIVELY REASSIGNING DUTIES IN A MULTIPLE CONTROLLER ENVIRONMENT

Jeffrey J. Blanchette, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1988, Ser. No. 263,447
Int. Cl.[5] H04B *7/00*; H04J *3/00*
U.S. Cl. 340—825.060 **4 Claims**



1. In a communication system having a plurality of subscriber units, a plurality of base stations, a plurality of radio frequency communication channels, a plurality of consoles, a central electronics bank that consists of a plurality of base interface modules, a plurality of operator multiplex interface modules, and a data bus, wherein the central electronics bank, via the plurality of operator multiplex interface modules and the plurality of base interface modules, operably couples the plurality of radio frequency communication channels to the plurality of consoles, a method for cooperatively executing

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and reassigning acknowledgement assignments comprising the steps of;

(a) receiving, by a base interface module of the plurality of base interface modules, a data message transmitted by a subscriber unit of the plurality of subscriber units to produce a received data message;

(b) generating, for the received data message, an acknowledgement signal by each of a predetermined number of operator multiplex interface modules of the plurality of operator multiplex interface modules to produce generated acknowledgement signals, where the predetermined number of operator multiplex interface modules have acknowledgement assignments for data messages received by the base interface module of step (a);

(c) transmitting, by the base interface module of step (a), one of the generated acknowledgement signals to the subscriber unit of step (a); and

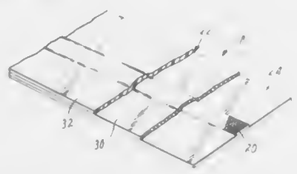
(d) reassigning acknowledgement assignments for at least one of the plurality of operator multiplex interface modules whenever the central electronics bank detects a predetermined event.

4,945,356

STRIP MATERIAL FOR AND A SURFACE MOUNTED INDUCTIVE LOOP

Martin C. Henderson, Los Angeles; Ralph J. Koerner, Ramona, and William D. Jordan, Jr., Los Angeles, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 9, 1983, Ser. No. 502,562
Int. Cl.[5] G08G *1/01*
U.S. Cl. 340—941 **23 Claims**



1. An inductive loop adapted to be applied to the surface of a roadway, comprising:

a loop of a ductile, flexible, extensible, flattened, metallic mesh; and

a protective covering adhered to said loop, said protective covering being capable of adhering said loop to said surface of said roadway.

4,945,357

JOYSTICK ASSEMBLY

Amir Tal, Natanya, Israel, assignor to Rotal Industries & Trading Ltd., Natanya, Israel

Continuation-in-part of Ser. No. 238,332, Aug. 29, 1988. This application Apr. 3, 1989, Ser. No. 331,825
Int. Cl.[5] H03M *11/00*
U.S. Cl. 341—20 **12 Claims**

1. A joystick assembly for use with a computer having a keyboard, the keyboard including at least four predeterminately positioned cursor control keys for controlling a cursor position on a display of the computer, the control keys being spaced about a central key, the joystick assembly being adapted for actuating a plurality of control keys by lateral movement of a handle thereof, the joystick assembly comprising:

a handle;

a multi-arm member having a plurality of circumferentially spaced arms extending in a common plane from a center aperture, each of said arms having an end which depends from its associated arm such that each arm forms a substantially L-shaped member extending from the center aperture, said aperture being sized to accept entry of the handle therethrough; and

means for pivotably attaching an end of sid handle to a central key of a keyboard whereby pivoting motion of



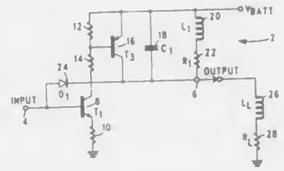
said handle causes selected ones of said depending ends of the multi-arm member to depress selected cursor control keys for controlling the position of a cursor on a computer display, said means for attaching being mounted to said central key of said keyboard.

4,945,358

SHORT CIRCUIT PROTECTION ARRANGEMENT FOR A DRIVER CIRCUIT

Stanley Wrzesinski, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1989, Ser. No. 358,970
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—42 **9 Claims**



1. A short circuit protection arrangement for a driver circuit having an input, an output, and short circuit protection means for sensing the presence of a short circuit condition at the driver circuit output and disabling the driver circuit in response thereto and for sensing the discontinuance of the short circuit condition and re-enabling the driver circuit in response thereto, the short circuit protection means comprising:

means for establishing an inductive current at the output upon the occurrence of the short circuit condition; and means for sensing the increase in voltage at the output due to the inductive current upon discontinuance of the short circuit condition.

4,945,359

A/D CONVERTER

Kazuo Yamakido, Hinode, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1989, Ser. No. 326,743
Claims priority, application Japan, Mar. 25, 1988, 63-69447
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—143 **11 Claims**

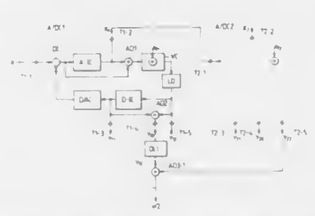
1. An analog/digital converter comprising:

input means for producing a second analog signal on the basis of an analog input signal and a first analog signal produced by digital/analog conversion means;

first integration means coupled to said input means for integrating said second analog signal to produce a third analog signal;

analog/digital conversion means coupled to said input means and said first integration means for producing a first digital signal on the basis of said second and third analog signals;

second integration means coupled to said analog/digital conversion means for integrating said digital signal to produce a second digital signal;



said digital/analog conversion means being coupled to said second integration means and said input means for producing said first analog signal on the basis of said second digital signal;

addition means coupled to said analog/digital conversion means and said second integration means for adding said first and second digital signals to produce a digital output signal;

a first output terminal connected to output said first digital signal;

a second output terminal connected to output a second digital signal; and

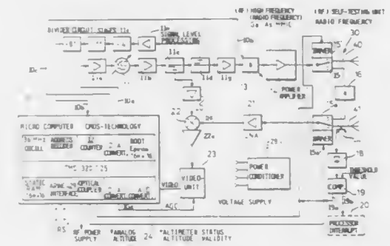
a third output terminal connected to output said digital output signals.

4,945,360

RADAR ALTIMETER

Guenther Trummer, Baiersdorf; Richard Koerber, Putzbrunn, and Ludwig Mehltretter, Riemerling, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 12, 1989, Ser. No. 406,295
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1988, 3830992
Int. Cl.[5] G01S *13/26*
U.S. Cl. 342—122 **11 Claims**



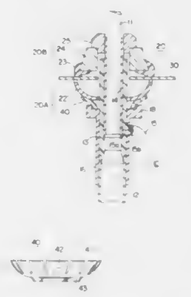
1. A radar altimeter operating, preferably in the C-Band, in accordance with the frequency modulated continuous wave (FMCW) principle, comprising receiver means for receiving reflected radar signals and transmitter means for transmitting radar signals, said transmitter means including voltage controlled oscillator means (11) for generating a carrier frequency, micro-computer means (10) for controlling the operation of said altimeter, closed loop control circuit means (11*f*, 10*a*, 10*b*) interconnecting said voltage controlled oscillator means (11) and said microcomputer means (10), a variable signal attenuating circuit (13) connected to an output of said voltage controlled oscillator, a power amplifier (14) connected to an output of said damping circuit (13), a self-testing mode control circuit (30) including a transmitter MMIC-switch (15) and a transmitter antenna means (40) connectable through said transmitter MMIC-switch (15) to an output of said power amplifier (14), said self-testing mode control circuit further including a receiver antenna (41) and a receiver MMIC-switch (15*a*) for connecting said receiver antenna to said receiver means, and decoupling means (17) operatively connected to said receiver antenna for decoupling a portion of received radio frequency power, detector means (18) connected to said decoupling means (17) for providing a d.c.-voltage signal representative of said received radio frequency power, signal comparing means connected to receive said d.c.-voltage signal for comparing said d.c.-voltage signal with a reference threshold signal, said microcomputer comprising interrupt circuit means (20) connected to an output of said signal comparing means for causing a processing interruption and a "waiting loop" in response to a signal at said output of said signal comparing means signifying an excessive received radio frequency power, and wherein all circuits of said altimeter are constructed in accordance with MMIC-techniques for a complete digital signal evaluation and mode control.

4,945,361

AUTOMOBILE ANTENNA ATTACHMENT DEVICE

Yoshimi Egashira, Sagamihara, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1989, Ser. No. 353,445
Claims priority, application Japan, Jul. 15, 1988, 63-93761
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—715 **4 Claims**



1. A device for attaching an antenna to an automobile, said device comprising an inner fastening element including a gland washer formed of an elastic and electrically conductive material and a gland base, and an outer fastening element including a pad and fastening means, said antenna being fastened to an automobile body wall by clamping said automobile body wall with said fastening elements, and the clamping force of said fastening elements being maintained by elastic deformation of said elastic material so as to compensate for decreases in the contact pressure between said inner and outer fastening elements and between said fastening elements and said automobile body wall which is caused by permanent deformation of said pad and wherein said gland washer is of a saucer shape with a plurality of radial cut-outs provided in the periphery thereof to form a plurality of tongues in a pedal-like arrangement.

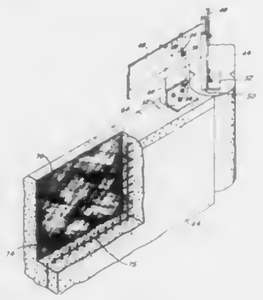
VOL 1116 ISS 5 JL 31 1990 UMI

4,945,362

MICROWAVE SHIELDING FOR SATELLITE EARTH STATIONS

Bernhard E. Keiser, Vienna, Va., assignor to The Reinforced Earth Company, Arlington, Va.

Filed Mar. 20, 1985, Ser. No. 714,093
Int. Cl.[5] H01Q *15/14*
U.S. Cl. 343—841 3 Claims



3. A construction for shielding an antenna for a satellite earth station against interfering microwave radio frequency radiation, comprising, in combination:

a concrete wall structure having a top and interposed between the source of interfering microwave radiation and the antenna, the wall structure having an electrically conductive, perforated metallic screen cast within the wall, screening the area defined by the wall's surface from RF radiation and substantially reflecting microwave radiation; and

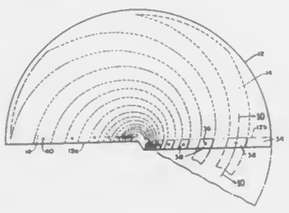
an adjustable RF diffractor made of conductive material and having one or more thin horizontal openings near the structure's top to create destructive interference with the diffractor positioned at the top of the wall structure along at least a portion of the wall structure, whereby undesirable microwave radiation is substantially reflected by the wall structure and diffraction across the top of the wall is adjustably controlled in the vicinity of the antenna by varying the opening width and location on the structure.

4,945,363

CONICAL SPIRAL ANTENNA

Robert W. Hoffman, Arlington, Mass., assignor to Revlon, Inc., New York, N.Y.

Division of Ser. No. 613,911, May 25, 1984, Pat. No. 4,675,690.
This application Mar. 20, 1987, Ser. No. 28,400
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[5] H01Q *1/36*
U.S. Cl. 343—895 5 Claims



1. A conical spiral antenna, comprising

a cone having a seam along a straight line, formed from a flat flexible substrate having generally the shape of a circular sector bounded by radial edges carrying a plurality of spaced conductive segments by joining the radial edges of said flat flexible substrate, the plurality of spaced conductive segments on the flat flexible substrate forming a plurality of ribbon-like spiral conductors on the cone,

means for joining said radial edges to form the seam of the cone,

means for electrically interconnecting mating portions of the ribbon-like spiral conductors across said seam,

said means for joining said radial edges of the flat flexible substrate to form the cone with said seam including a flange on one of the radial edges of said substrate arranged to overlap a surface immediately adjacent to the other radial edge of said substrate when said radial edges are joined, and

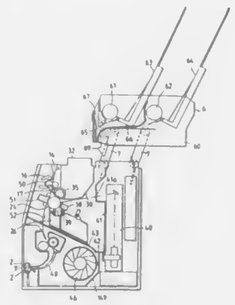
means for riveting the mating portions of the ribbon-like spiral conductors on said cone.

4,945,364

PAGE PRINTER

Mitsuaki Maruyama; Hiroshi Niki; Shigeru Sawada; Seiji Mochizuki, and Yasuhiro Gyoutoku, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 6, 1989, Ser. No. 403,309
Claims priority, application Japan, Sep. 7, 1988, 63-224076; Sep. 7, 1988, 63-224077
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—160 5 Claims



1. A page printer comprising:

a housing including a housing body and a cover pivotally coupled to a lower end of said housing body;

a gate roller, a developing unit, a photo-sensitive drum unit, a fixing unit and a sheet discharge roller arranged on a front side of said housing body;

an optical writing unit provided on a rear side of said housing body; and

guide means provided on said housing body, for guiding said photo-sensitive drum unit obliquely downwardly toward the rear side of said housing body.

4,945,365

CAMERA CAPABLE OF INPUTTING AND OUTPUTTING SIGNALS BETWEEN IT AND EXTERNAL DEIVCE THROUGH FILM SENSITIVITY READING MATERIALS

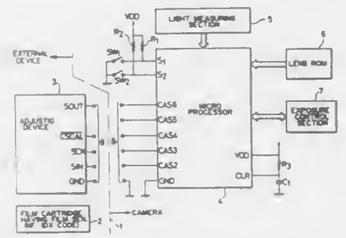
Akihiko Fujino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1989, Ser. No. 350,229
Claims priority, application Japan, May 16, 1988, 63-118627
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—21 4 Claims

1. A camera which input and outputs signals between the camera and an external device through a plurality of film sensitivity reading terminals, said camera including;

film sensitivity reading means connected to said film sensitivity reading terminals,

signal input and output means connected to at least one of said reading terminals for the input and output of signals between said reading terminals and the external device; and



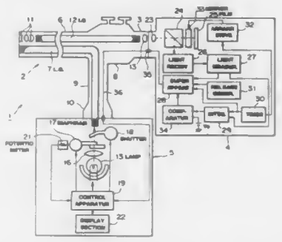
control means which activates said signal input and output means only when the camera is judged to be not loaded with a film cartridge having film sensitivity information responsive to an analysis of signals transmitted through said reading terminals and read by said film sensitivity reading means.

4,945,366

ENDOSCOPE STILL PHOTOGRAPHING APPARATUS PROVIDED WITH AN AUTOMATIC ILLUMINATING LIGHT AMOUNT CONTROLLING FUNCTION

Yasushi Hisamichi, Hachioji, and Akihiko Miyazaki, Nagoya, both of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Apr. 10, 1989, Ser. No. 335,417
Claims priority, application Japan, Sep. 21, 1988, 63-237184
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—62 7 Claims



1. An endoscope still photographing apparatus comprising:

an endoscope comprising an elongate insertable part, a light guide inserted through said insertable part, transmitting an illuminating light and emitting it from the end surface on the tip part side, an objective optical system arranged in the tip part of said insertable part and forming an object image and an image guide transmitting the optical image formed by said objective optical system to the end surface on the eyepiece part side;

an endoscope still camera comprising an image forming lens fittable to said eyepiece part and forming the optical image transmitted by said image guide, a recording medium arranged in the focal plane of said image forming lens, a light receiving device receiving a part of the light amount passed through said image forming lens, a light measuring means outputting a light measuring signal corresponding to the light amount reaching said recording medium side from the signal photoelectrically converted by said light receiving device, an integrating means integrating said light measuring signal, a judging means judging whether the output level of said integrating means has reached the first reference level corresponding to the optimum exposure amount of said recording medium, a release signal generating means outputting a release indicating signal exposing said recording medium and a timer means triggered by said release indicating signal and operating said integrating means after a fixed time;

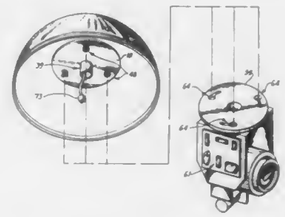
a lamp feeding the illuminating light to the other end surface of said light guide, a diaphragm formed of an illuminating light amount varying member which can vary the passed light amount of the light of said lamp, a diaphragm diving means driving said diaphragm, a diaphragm position signal generating means outputting a signal of the level corresponding to the position of said diaphragm driven by said diaphragm driving means, a shutter intercepting the illuminating light fed to said light guide, a diaphragmed amount controlling means started by said release indicating signal and controlling to drive said diaphragm so that the level of said light measuring signal transmitted by a signal cable within said endoscope may coincide with the second reference level corresponding to the optimum illumination intensity, a holding means holding said diaphragm position signal by said diaphragmed amount controlling means and an exposure amount controlling means holding the diaphragm position signal by said holding means, then exposing said recording medium with the output of said timer means and controlling to close said shutter at the timing when the signal level on which said light measuring signal is integrated by said integrating means has reached said first reference level.

4,945,367

SURVEILLANCE CAMERA SYSTEM

David M. Blackshear, Rte. 1, Box 175, Molena, Ga. 30258

Continuation-in-part of Ser. No. 163,257, Mar. 2, 1988, Pat. No. 4,918,473. This application Aug. 9, 1989, Ser. No. 391,173
Int. Cl.[5] G03B *29/00*; H01N *7/18*
U.S. Cl. 354—81 7 Claims



1. A surveillance camera system comprising:

a housing;

a camera mount including a camera receiving platform mounted for panning movement about a pan axis and tilting movement about a tilt axis;

means for releasably mounting said camera mount within said housing with said means comprising a first mounting plate positioned within and secured to said housing and a second mounting plate secured to said camera mount;

said first mounting plate including a set of depending pins having heads and said second mounting plate including a set of corresponding slots configured and positioned to receive and lockingly engage with said pins upon juxtapo-

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sition and rotation of said first mounting plate relative to said second mounting plate;

electric motor means on said camera mount for panning said camera receiving platform about said pan axis and tilting said camera receiving platform about said tilt axis;

orientation control means mounted within said housing for selectively actuating said electric motor means to control panning and tilting movement of said camera receiving platform;

remote control means for controlling said orientation control means from a location remote from said surveillance camera system; and

rotary electric coupling means mounted within said housing with said coupling means including electric connector means for operatively connecting said orientation control means with said remote control means and for electrically connecting a camera secured to said camera receiving platform with an ancillary video display.

4,945,368

CAMERA WITH BUILT-IN ELECTRONIC FLASH

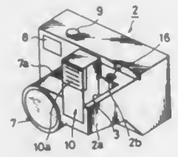
Tokio Ishino, Kawasaki; Atsushi Sato, Tokorozawa, and Motokuni Demura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,454

Claims priority, application Japan, Sep. 10, 1988, 63-118343[U]

Int. Cl.[5] G03B *15/03*

U.S. Cl. 354—149.11 **6 Claims**



1. A camera comprising:

a camera body which is integrally formed with a lens barrel containing a lens having an optical axis, and which defines a receiving chamber extending along a lateral side of the lens barrel in parallel to the optical axis of the lens, the receiving chamber having front and rear end portions and being open forward and upward at the front end portion thereof; and

an elongated electronic flash body having top and bottom ends and provided at its one side with a light emitting window located near a top end thereof, the flash body being built into the camera body through a pop-up means so as to be moved between a first position at which substantially the overall length of the flash body is received into the receiving chamber in a state that the light emitting window is oriented downward and that the bottom end of the flash body is located in the rear end portion of the receiving chamber, and a second position at which the flash body is raised upward from the camera body in a state that the light emitting window is oriented forward and that the bottom end of the flash body is located in the front end portion of the receiving chamber.

4,945,369

FILM MAGAZINE FOR UNDERWATER CAMERAS

John H. Fiorda, 3074 Van Buren Ave., Costa Mesa, Calif. 92626

Filed Aug. 2, 1989, Ser. No. 389,253

Int. Cl.[5] G03B *1/12, 1/66, 13/02, 17/26*

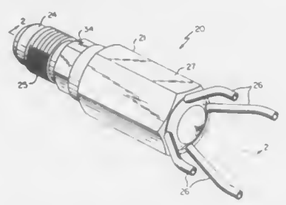
U.S. Cl. 354—173.1 **7 Claims**

1. For use in combination with a camera having means for exposing film and film transport means for advancing film between exposures, a film magazine comprising:

an outer housing having attachment means for attachment to the camera and sealing means for forming a seal therewith;

a film housing configured to be received within said outer housing and defining first and second of cavities;

first and second film cannisters supported within said first and second cavities respectively;



motor drive means coupled to said second film cannister for causing rotation thereof such that a quantity of film may be wound upon said first cannister and transferred to said second cannister through the film transport means of the camera; and

sensing means coupled to said motor drive means for detecting the advance of the film and operating said motor drive means to transfer a portion of the film to said second cannister.

4,945,370

FILM REWINDING SYSTEM OF CAMERA

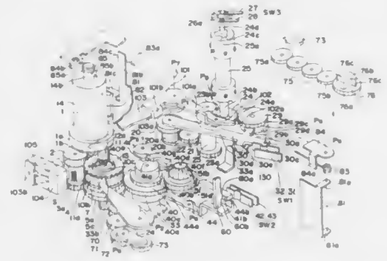
Takahisa Shimada; Hideo Kajita; Sueyoshi Okumura; Reiji Seki; Toshihiko Ishimura, and Sinji Katayori, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 5, 1989, Ser. No. 333,700

Claims priority, application Japan, Apr. 6, 1988, 63-86161; Apr. 6, 1988, 63-86162; Apr. 7, 1988, 63-87650; Apr. 8, 1988, 63-87558; May 11, 1988, 63-115404; Jun. 21, 1988, 63-154333; Jun. 21, 1988, 63-154334; Jun. 21, 1988, 63-154335; Jun. 21, 1988, 63-154336; Jun. 21, 1988, 63-154337; Aug. 17, 1988, 63-204282; Aug. 17, 1988, 63-204283

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—173.11 **7 Claims**



1. A film-rewinding system of a camera, capable of automatically rewinding a film roll, comprising:

driver means having a first driving characteristic representing driving at a high rotational speed with low torque and a second driving characteristic representing driving at a low rotational speed with high torque;

switching-over means for switching over the driving characteristics of said driver means one to the other and vice versa;

time setting means for setting a first time at the time when said driver means is switched over to the first driving characteristic and for setting a second time at the time when said driver means is switched over to the second driving characteristic, the second time being longer than the first time;

film rewinding means driven by said driver means for rewinding the film roll;

first detection means for detecting completion of film rewinding; and

means for making said driver means turned off when the time set by said time setting means is up after the completion of the film rewinding is detected.

4,945,371

DEVICE FOR CONTROLLING A ZOOM LENS OF A CAMERA

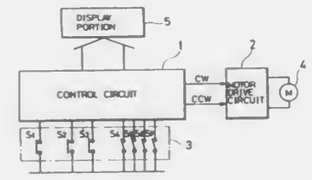
Takeshi Hashimoto, and Keisuke Maeda, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1989, Ser. No. 399,592

Claims priority, application Japan, Aug. 29, 1988, 63-215928

Int. Cl.[5] G03B *3/10*

U.S. Cl. 354—195.13 **19 Claims**



16. A device for controlling a zoom lens of a camera comprising:

drive means for driving a zoom lens;

control means for controlling the drive means so as to drive the zoom lens to one of a plurality of stop positions; and

display means for indicating the pluralitY of stop positions.

4,945,372

CAMERA

Tatsuji Higuchi, Akigawa; Kazuo Yamamoto, Yokohama; Hitoshi Shirai, Sagamihara; Yasuo Yamazaki, Hino; Yuichi Torikoshi, Shiroyama; Kazuyuki Iwasa, and Toshifumi Nakano, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1989, Ser. No. 307,367

Claims priority, application Japan, Feb. 16, 1988, 63-33028; Feb. 16, 1988, 63-33029

Int. Cl.[5] G03B *3/00*

U.S. Cl. 354—199 **14 Claims**

1. A camera, comprising:

a photographic optical system movable along an optical axis;

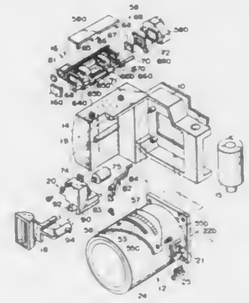
a cam ring rotatable about the optical axis of the photographic optical system, for moving the photographic optical system along the optical axis thereof to change the focal length of the photographic optical system by rotation, said cam ring including a cylindrical body, and an interlocking member fixed to the outer peripheral surface of the body and having an engaging portion;

drive means engaged with said engaging portion of the interlocking member, for rotating the cam ring;

a viewfinder optical system arranged outside of the cam ring, in relation to the radial direction thereof, and having an optical axis parallel to that of the photographic optical system;

a strobe mechanism arranged outside of the cam ring. in relation to the radial direction thereof, for movement parallel to the optical axis of the photographic optical system;

first cam means formed on the interlocking member, for moving the viewfinder optical system along the optical axis thereof, in association with the rotation of the cam ring, said first cam means having a working surface engaging the viewfinder optical system and changing its configuration in the direction of the optical axis of the photographic optical system; and



second cam means formed on the interlocking member, for moving the strobe mechanism in a direction parallel to the optical axis of the photographic optical system, in association with the rotation of the cam ring, said second cam means having a working surface engaging the strobe mechanism and changing its configuration in the direction of the optical axis of the photographic optical system.

4,945,373

DISPLAY SYSTEM FOR CAMERA

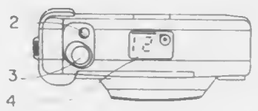
Takeshi Hashimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1989, Ser. No. 298,112

Claims priority, application Japan, Jan. 19, 1988, 63-4195[U]

Int. Cl.[5] G03B *17/18, 17/36*

U.S. Cl. 354—217 **8 Claims**



1. A display system for a camera, comprising:

a display means for displaying at least two figures thereon;

a first display control means for controlling said display means to display a frame count of a film;

a taking lens having a variable focal length;

a detecting means for detecting a focal length of said taking lens;

a second display control means for controlling said display means to display the focal length of said taking lens detected by said detecting means;

a changing means for alternatively rendering said first display control means or said second display control means effective;

an operating means;

a lens driving means for driving said taking lens to vary a focal length of said taking lens in response to operation of said operating means, wherein said changing means renders said second display control means effective in place

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of said first display control means in response to operation of said operating means; and

a timer means for counting a predetermined period of time in response to stopping of said operation of said operating means to output a signal for the predetermined period of time, wherein said changing means renders said second display control means effective in place of said first display control means in response to the signal of said timer means.

4,945,374

PRESSURE DEVELOPING DEVICE

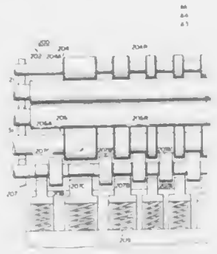
Takemi Yamamoto, Nagoya; Hiroshi Kawahara, Nishikasugai; Yumio Matsumoto, Kasugai; Shigeyuki Hayashi, Nagoya; Kiyoharu Hayakawa, Ama; Osamu Takagi, Nagoya; Yuji Asano, Nagoya; Takao Nakazawa, Nagoya, and Shunichi Higashiyama, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 28, 1989, Ser. No. 339,803

Claims priority, application Japan, Apr. 20, 1988, 63-97813; Aug. 9, 1988, 63-206876; Aug. 19, 1988, 63-206876

Int. Cl.[5] G03B *27/52*; B30B *3/04*; G03D *5/02*

U.S. Cl. 354—304 **10 Claims**



1. A pressure developing device having a pair of pressure rollers being adapted to be brought into and out of contact with each other for pressurizing an exposed recording sheet containing a plurality of photo-sensitive microcapsules each containing a component to change the rupture strength thereof when exposed to light and a developing sheet coated with a developer material to develope a visible image, said pressure developing device further comprising:

detect means for detecting width of the developing sheet to be pressurized by said pair of rollers; and

control means for controlling said pair of rollers so as to pressurize an area corresponding to the width detected by said detect means of the recording sheet and the developing sheet with a predetermined pressure force while pressurize the other area with pressure force less than said predetermined pressure force.

4,945,375

PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS

Takashi Nakamura, Minami-ashigara, and Yasuhisa Ogawa, Hatano, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1989, Ser. No. 340,819

Claims priority, application Japan, Apr. 20, 1988, 63-97783; Mar. 17, 1989, 1-65382

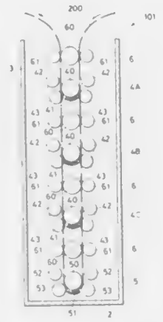
Int. Cl.[5] G03D *3/02, 3/08*

U.S. Cl. 354—322 **12 Claims**

1. A photosensitive material processing apparatus comprising:

a tank containing processing liquid therein; and

means for passing photosensitive material through said liquid along a path having a variable length



and having a plurality of vertically spaced-apart feed means which provide selectable reverse points, wherein said means for passing varies a length of said path by selecting a particular reverse point.

4,945,376

CAMERA HAVING INTERCHANGEABLE LENSES

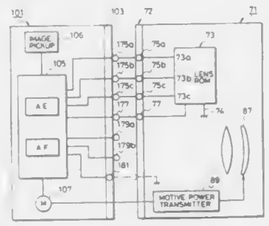
Masahiro Kawasaki, and Osamu Sato, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 266,328, Nov. 1, 1988, Pat. No. 4,841,322, which is a continuation of Ser. No. 103,311, Oct. 1, 1987, abandoned. This application Apr. 21, 1989, Ser. No. 341,176

Claims priority, application Japan, Oct. 1, 1986, 61-234141; Nov. 10, 1986, 61-265738; Nov. 6, 1987, 62-15509[U]

Int. Cl.[5] G03B *3/10*

U.S. Cl. 354—400 **13 Claims**



5. A photographing lens comprising:

a lens system including an automatically focusing movable lens;

a lens mount having a mount surface;

memory means;

a plurality of electrical contacts provided on the mount surface of said lens mount and connected to respective data terminals of said memory means; and

a first electrical contact provided on and projecting from the mount surface of said lens mount, to which electric power is supplied from a camera body to drive said memory means if said camera body is of an automatic focusing type.

4,945,377

PHASE DIFFERENCE DETECTING APPARATUS

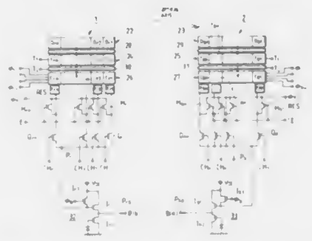
Takashi Mida, and Nozomu Ozaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 7, 1988, Ser. No. 216,360

Claims priority, application Japan, Jul. 8, 1987, 62-168895

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—402 **4 Claims**



1. A phase difference detecting apparatus for detecting a relative distance between a pair of focused images obtained from subject luminous flux passed through an objective lens to thereby judge a focusing state of said objective lens, comprising:

(a) a first signal generating means including,

1. a first light receiving section constituted by picture elements arranged in a row so as to receive a first one of said focused images,

2. a first signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said first light receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a first CCD, and

3. means for converting said signals output in parallel from said floating gates of said first CCD into a first time series signal and outputting said first time series signal;

(b) a second signal generating means including,

1. a second light receiving section constituted by picture elements arranged in a row to receive a second one of said focused images,

2. a second signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said second light receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a second CCD, and

3. means for converting said signals output in parallel from said floating gates of said second CCD into a second time series signal which has a predetermined quantity of relative movement relative to said first time series signal and outputting said second time series signal;

(c) a switching-capacitor integrator means including a plurality of capacitive elements and switching elements for intermittently connecting said capacitive elements to each other, and for receiving said first and second time series signals;

(d) gain control means for controlling a gain of said switching-capacitor integrator means by changing capacitance of said plurality of capacitive elements; and

(e) control means for comparing sizes of said first and second time series signals with each other to thereby generate a control signal corresponding to a relation of size between said first and second time series signals, and controlling said switching elements on the basis of said control signal to cause said switching-capacitor integrator means to generate an electric charge corresponding to an integrated value of an absolute value of a difference between said first and second time series signals and to cause said switching-capacitor integrator means to generate, as a correlative value, an integrated value on the basis of said first and second time series signals in predetermined numbers whenever said quantity of relative movement is changed in order to provide a signal indicative of a phase difference between said first and second time series signals.

4,945,378

CIRCUIT FOR DETECTING BACK LIGHT

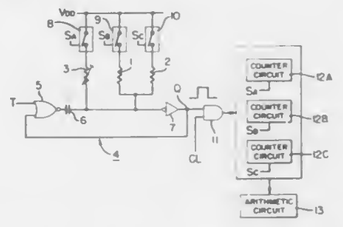
Shinji Nagaoka; Yoichi Seki; Hiroyuki Saito, and Michio Taniwaki, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Dec. 27, 1988, Ser. No. 290,451

Claims priority, application Japan, Dec. 29, 1987, 62-336678

Int. Cl.[5] G03B *7/08*

U.S. Cl. 354—429 **6 Claims**



1. A circuit for detecting back light, comprising:

a time constant determining device comprising a first photoconductive device for outputting a first signal representative of a first resistance value proportional to the brightness of the surrounding portion of an object to be photographed, a second photoconductive device for outputting a second signal representative of a second resistance value proportional to the brightness of the central portion of the object, and a reference resistive element for use in outputting a reference signal representative of a reference resistance value;

a time constant circuit selectively receptive of the first, second and reference signals for determining a time constant and for producing a corresponding output signal;

switching circuit means for selectively connecting said time constant determining device to said time constant circuit;

a pulse-generating circuit for receiving the output signal from the time constant circuit and producing pulses the number of which corresponds to the resistance value of said time constant determining device connected by the switching means;

a counter circuit for counting the number of pulses delivered from the pulse-generating circuit; and

an arithmetic circuit for comparing the magnitude of the ratio of the total count obtained by the counter circuit when the first photoconductive device is connected to said time constant circuit to the total count obtained when the reference resistive element is connected to said time constant circuit, with the magnitude of the ratio of the total count obtained when the second photoconductive device is connected to said time constant circuit to the total count obtained when the reference resistive element is connected to said time constant circuit.

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4,945,379

CAMERA SHUTTER AND VIEWFINDER CONTROL APPARATUS

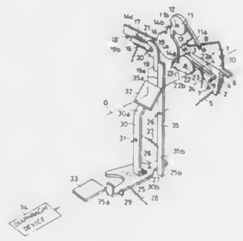
Nobuaki Date; Akio Sanouchi, both of Kawasaki; Syuichiro Saito, Yokohama; Yoshitaka Murata, Yokohama; Yukio Ogawa, Yokohama, and Nobuo Tezuka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 945,948, Dec. 24, 1986, abandoned. This application Aug. 7, 1989, Ser. No. 391,716

Claims priority, application Japan, Dec. 28, 1985, 60-297472; Dec. 28, 1985, 60-297473; Dec. 28, 1985, 60-297474; Dec. 28, 1985, 60-297475; Dec. 28, 1985, 60-297476; Dec. 28, 1985, 60-297477; Dec. 28, 1985, 60-297478

Int. Cl.[5] G03B *9/10, 19/12*

U.S. Cl. 354—441 21 Claims



1. A camera comprising:

a first shutter member movable between a rest position where it closes an aperture and a moved position where it opens the aperture;

a second shutter member movable between the rest position where it opens the aperture and a moved position where it closes the aperture;

latch means for latching said first shutter member at its moved position;

unlatch means responsive to movement of said second shutter member to its moved position to release said latch means;

a viewfinder mirror; and

means for moving said mirror between a viewing position in an optical path and a retracted position out of the optical path;

said latch means being responsive to said moving means to latch said first shutter member at its moved position when said mirror is moved to the retracted position by said moving means.

4,945,380

PROGRAM EXPOSURE CALCULATING APPARATUS

Takehiro Katoh; Shinichi Nishimura, and Toshihiko Ishimura, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 14, 1988, Ser. No. 270,017

Claims priority, application Japan, Nov. 13, 1987, 62-287800

Int. Cl.[5] G03B *7/08*

U.S. Cl. 354—443 21 Claims

1. A program exposure calculating apparatus comprising:

focal length outputting means for outputting information in association with a focal length of a lens;

full open aperture value outputting means for outputting information indicating a full open aperture value of said lens;

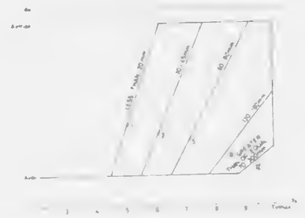
restricting exposure time outputting means for outputting information indicating restricting exposure time which becomes shorter as the focal length becomes longer, in response to the information in association with the focal length;

program constant outputting means for outputting, in response to the information in association with the focal length, a program constant which makes a ratio of an amount of change of the aperture value to an amount of change of the time value larger as the focal length becomes shorter;

exposure value outputting means for outputting information indicating an exposure value;

reference exposure value calculating means for calculating a reference exposure value based on the information indicating the restricting exposure time outputting from said restricting exposure time outputting means and the information indicating the full open aperture value outputted from said full open aperture value outputting means;

comparing means for comparing the exposure value outputted from said exposure value outputting means with the



reference exposure value outputted from said reference exposure value calculating means; and

setting means for setting the full open aperture value outputted from said full open aperture value outputted means as the aperture value and setting the exposure time as the exposure time appropriate for the full open aperture when it is determined that said exposure value is smaller than said reference exposure value by said comparing means; and for setting an aperture value and an exposure time capable of providing appropriate exposure based on said exposure value, said restricting exposure time outputted from said restricting exposure time outputting means, and the program constant outputted from said program constant outputting means when it is determined that said exposure value is larger than said reference exposure value by said comparing means.

4,945,381

IMAGE FORMING APPARATUS

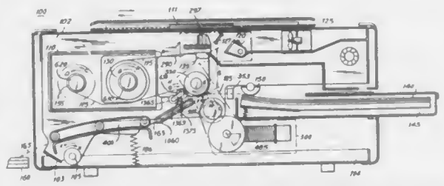
Kiyohiro Yamagata; Nobumasa Abe; Koichi Toba; Atsushi Kobayashi, and Koji Watanabe, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 6, 1987, Ser. No. 105,148

Claims priority, application Japan, Oct. 7, 1986, 61-238273; Oct. 17, 1986, 61-246691; Dec. 2, 1986, 61-287466; Apr. 24, 1987, 62-101194; May 19, 1987, 62-121727; May 27, 1987, 62-130424; Jun. 16, 1987, 62-149681

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 47 Claims



1. An image forming apparatus using pressure receiving materials, said pressure receiving materials including a receiving medium and a photosensitive medium having microcapsules on a front surface thereof, each microcapsule containing at least an optically hardening or softening matter and a color former; the photosensitive medium being first superposed on the receiving medium after exposing the photosensitive medium to light representative of the image to be formed, and being then pressed against the receiving medium for development of the image on the receiving medium, the apparatus comprising:

a photosensitive medium container for storing said photosensitive medium having an open-ended top;

exposing means for exposing said photosensitive medium to light representative of the image;

a receiving medium container for storing said receiving medium;

pressure developer means for applying pressure to said pressure receiving materials for development of the image on the receiving medium; and

an external drive shaft; and

wherein said photosensitive medium container includes a supply shaft around which the unexposed portion of said photosensitive medium is wound and which communicates with the external drive shaft; a member for rotatably supporting said supply shaft and for preventing exposure to light of the unexposed portion of the photosensitive medium; and a storage shaft around which the exposed portion of said photosensitive medium is wound and which communicates with the external drive shaft, said container serving as a replaceable cassette for rotatably supporting said storage shaft and wherein said member and said storage shaft are insertably received by said container through said open-ended top.

4,945,382

A PRINTER FOR PRINTING A CERTAIN IMAGE ON A SHEET OF DEVELOPING PAPER

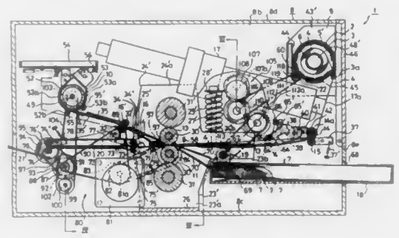
Yasuji Yui, Saitama; Akio Hitachi, Tokyo; Tatsuru Sato, Chiba, and Akira Shirakura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1988, Ser. No. 201,954

Claims priority, application Japan, Jun. 5, 1987, 62-140912

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—27 7 Claims



1. An apparatus for printing an image on a sheet of developing paper from a relatively long film having a photosensitive surface composed of photosensitive microcapsules by exposing the photosensitive surface to a light image according to a corresponding picture signal to form a photographed film frame on a respective area of said sensitive surface, overlapping the exposed area of said sensitive surface and a sheet of the developing paper, and pressing together the overlapping areas of said sensitive surface of the film and said sheet of developing paper, the apparatus comprising:

a supply spool on which the film is wound;

a take-up spool on which the film withdrawn from said supply spool is wound;

press rollers urged toward each other and defining a nip therebetween through which said film passes intermediate said supply and take-up spools;

exposing means for selectively exposing to light the photosensitive surface of said film at a position intermediate said supply spool and said nip of the press rollers;

developing paper supplying means including a supply tray for holding a stack of sheets of said developing paper, and paper supply roller means operative to deliver said sheets one at a time from said stack to said nip between said press rollers for passage therebetween with each delivered sheet facing said sensitive surface of the film and being overlapped with a respective exposed area thereof so as to be pressed together therewith in said passage between said press rollers;

means for separating each said sheet of developing paper from said film after passage therewith between said press rollers; and

roller drive means having a printing mode and a rewinding mode and including a first reversible motor operative in first and second directions in said printing and rewinding modes, respectively, first transmission means driven by said first motor and including first one-way clutch means through which said first motor drives said paper supply roller means only when said first motor operates in said first direction in said printing mode, second transmission means driven by said first motor and including second one-way clutch means through which said supply spool is rotated in a direction to rewind said film thereon only when said first motor operates in said second direction in said rewinding mode, and a second reversible motor operative in first and second directions for driving said press rollers in corresponding first and second directions in said printing and rewinding modes, respectively.

4,945,383

IMAGE FORMING APPARATUS

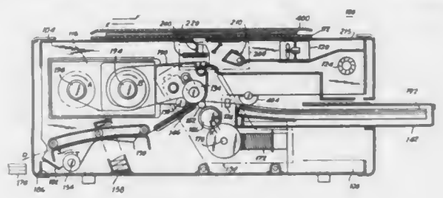
Atsushi Kobayashi; Takashi Suzuki, and Yasuhiko Kosugi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 149,815, Jan. 29, 1988, Pat. No. 4,860,058. This application Jun. 26, 1989, Ser. No. 370,969

Claims priority, application Japan, Feb. 2, 1987, 62-22006; Mar. 3, 1987, 62-48275; Apr. 30, 1987, 62-107702

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—30 33 Claims



1. An image forming apparatus for forming an image on a transfer medium by pressing the transfer medium against a photosensitive medium having light sensitive microcapsules thereon, the apparatus comprising:

an illuminating mechanism for illuminating said photosensitive medium;

exposure means for subjecting a first predetermined region of the photosensitive medium to light representative of the image and a second predetermined region of the photosensitive medium to light nonrepresentative of the image prior to pressing the transfer medium against the photosensitive medium; and

temperature control means for maintaining the ambient temperature surrounding at least the first predetermined region and the second predetermined region of the photosensitive medium within a predetermined range to prevent

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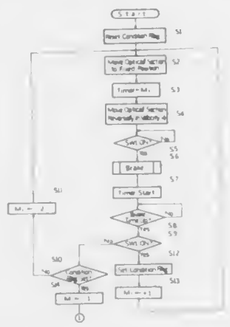
the ambient temperature from adversely affecting the light sensitive microcapsules in the first and second predetermined regions.

4,945,384

SCANNING-MEMBER-STOP POSITIONING DEVICE FOR THE IMAGE FORMING APPARATUS

Syuji Yamada, Hyogo, and Hironori Andou, Osaka, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1989, Ser. No. 317,193
Claims priority, application Japan, Mar. 1, 1988, 63-49114
Int. Cl.[5] G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **3 Claims**



1. A scanning-member-stop positioning device for an image forming apparatus, wherein a document in contact with a document glass plate is exposed due to the movement of a scanning member consisting of an optical section or a document glass plate, said device comprising:
- means for driving a scanning member to run back toward a home position at a fixed velocity;
- means for applying braking power to the scanning member under return beginning to be braked at the timing of passage over a fixed position;
- means for changing a degree of braking power by said means for applying braking power; and
- means for selecting a suitable degree of braking power based on the moving distances of the scanning member from the changed degrees of braking power.

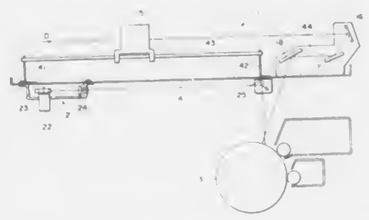
4,945,385

IMAGE FORMING APPARATUS

Akiyoshi Kimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1988, Ser. No. 241,863
Claims priority, application Japan, Sep. 11, 1987, 62-227667
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—202 **18 Claims**

1. An apparatus, comprising:
- a photosensitive member;
- first optical means for illuminating an original and exposing said photosensitive member to light from the original, said first optical means including a lens unit having a lens for forming an image of the original on said photosensitive member; and
- a second optical means for projecting light on said photosensitive member;
- wherein said lens unit and said second optical means are fixed on the same base member, and wherein said lens unit is fixed on a top surface of said base member, and said



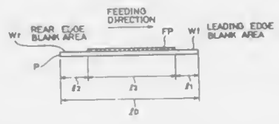
second optical means is fixed on a bottom surface of said base member.

4,945,386

COPIER WITH MAGNIFICATION SELECTION AND PAPER WINDING PREVENTION

Masazumi Ito, and Yoshihiro Horie, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1989, Ser. No. 323,627
Claims priority, application Japan, Mar. 16, 1988, 63-63804
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—243 **7 Claims**



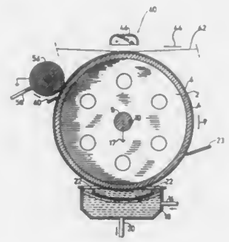
1. A copying apparatus having a photoreceptor, image forming means for forming a toner image on said photoreceptor, transfer means including a transfer portion for transferring the toner image formed on said photoreceptor onto copy paper, fixing means for thermally fixing the toner image transferred on the copy paper, and duplex means for feeding again the thermally fixed copy paper to said transfer portion to form images on both surfaces of the copy paper, comprising:
- mode selecting means for selecting
  - a duplex mode for forming images on both surfaces of copy paper, and
  - a simplex mode for forming an image on one surface of copy paper,
- first means for forming a margin at a leading edge of the copy paper,
- second means for forming margins at leading and rear edges of the copy paper, and
- control means for enabling said first means in response to the selection of said simplex mode by said mode selecting means and enabling said second means in response to the selection of said duplex mode by said mode selecting means.

4,945,387

IMAGE TRANSFER APPARATUS AND METHOD USING TENSION TRANSFER MEMBER

Benzion Landa, Edmonton, Canada; Shabtai Ezuz, Moshav Beit Hananan, Israel; Aron Shmaiser, Rishon-Le-Zion, Israel; Hanna Pinhas, Holon, Israel, and Ishaiau Lior, Nes Ziona, Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands

Filed Nov. 10, 1988, Ser. No. 269,710
Claims priority, application United Kingdom, Oct. 4, 1988, 8823259
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—271 **52 Claims**



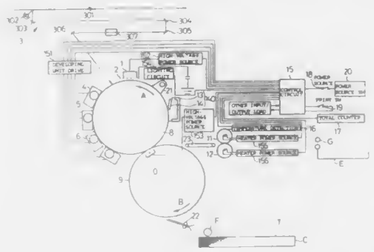
1. Imaging apparatus comprising:
- an image bearing surface for receiving an image comprising charged toner particles;
- a flexible substrate;
- means for tensioning said flexible substrate in at least two directions;
- means for bringing the tensioned flexible substrate into image transfer engagement with the image bearing surface; and
- means for generating an electric field in a region where image transfer engagement occurs to facilitate transfer of the image on said image bearing surface to said flexible substrate.

4,945,388

METHOD AND APPARATUS FOR CLEANING A COLOR IMAGE FORMING APPARATUS BY STICKING DEVELOPER ON THE PHOTOCONDUCTOR WITHOUT FORMING AN IMAGE

Keigo Tange; Tomohisa Kanada, and Shingo Hirota, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1989, Ser. No. 409,302
Claims priority, application Japan, Sep. 20, 1988, 63-237140
Int. Cl.[5] G03G *21/00, 15/01*
U.S. Cl. 355—296 **29 Claims**



1. In a method for controlling an image forming apparatus which is provided with a plurality of developing means for accommodating different kinds of developers for developing electrostatic latent image formed on a photoconductor to form an image, the method comprising the steps of:
- counting the number of image forming process; and
- prohibiting image forming operation when the counted number of image forming process has reached a predetermined value, and executing the following three steps of,
  - (1) sticking a predetermined kind of developer to the photoconductor by use of a predetermined developing means without forming electrostatic latent image on the photoconductor,
  - (2) removing the developer from the photoconductor by a cleaning means, and
- permitting image forming operation after the above two steps are executed.

4,945,389

METHOD OF CLEANING A PHOTOCONDUCTIVE ELEMENT OF AN IMAGE RECORDER

Noriyuki Usui, Kawasaki, and Tsumori Satoh, Yokosuka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 23, 1989, Ser. No. 356,058
Claims priority, application Japan, May 23, 1988, 63-125197
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—296 **6 Claims**



1. A cleaning method for removing toner particles remaining on a photoconductive element which is installed in an image recorder, said method comprising the steps of:
- (a) producing a predetermined number of copies; then
- (b) measuring a potential being deposited on a surface of the photoconductive element after said surface has been discharged and prior to a cleaning step; then
- (c) comparing the measured potential of the surface of the photoconductive element with a predetermined reference potential; and then, still prior to the cleaning step,
- (d) adjusting an output voltage for discharging the surface of the photoconductive element on the basis of a result of the comparison such that the surface potential of the photoconductive element is controlled to a predetermined value.

4,945,390

IMAGE-FORMING APPARATUS

Hirofumi Hasegawa; Hiroaki Kojima; Yasuhiro Matsuura; Naoto Ohmori, and Yukio Yamada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1989, Ser. No. 357,021
Claims priority, application Japan, Jun. 1, 1988, 63-136278
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—321 **6 Claims**

1. An image-forming apparatus comprising:
- a machine body including image-forming means for forming an image on one side of recording paper, a first tray, a first transport passage means for discharging the recording paper with said one side facing down onto said first tray,

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and a second transport passage means branched from said first transport passage means; and

a paper discharge unit removably attached to said machine



body and including a second tray, and discharge roller means for discharging the recording paper delivered through said second transport passage means with said one side facing up onto said second tray.

4,945,391

SEMICONDUCTOR DEVICE HOUSING WITH LASER DIODE AND LIGHT RECEIVING ELEMENT

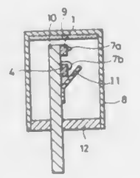
Hideya Yagoura, and Isamu Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 46,358, May 6, 1987, abandoned. This application Mar. 15, 1989, Ser. No. 323,660

Claims priority, application Japan, May 6, 1986, 61-105316

Int. Cl.[5] H01L *31/12*

U.S. Cl. 357—19 **3 Claims**



1. A semiconductor device, comprising: a planar substrate (10), a laser diode (1) disposed on one surface of said substrate for simultaneously emitting both a first, output laser beam (21) in a first direction parallel to said substrate and a second, monitor laser beam (20) in a second direction opposite to said first direction and parallel to said substrate, a light receiving element (4) disposed on said one surface of the substrate, spaced from the laser diode, and having a light receiving surface (4*a*) parallel to said substrate, a plurality of wiring patterns (13*a*, 13*b*, 13*c*) disposed on said one surface of the substrate wherein said laser diode and said light receiving element are each connected through a lead wire to a corresponding one of said wiring patterns, and a flat plate (11) mounted on said one surface of the substrate and having a reflecting surface (11*a*) disposed in the path of said monitor laser beam and oriented to reflect said monitor laser beam onto the light receiving surface of said light receiving element, said plate being disposed at an acute angle to said one surface of the substrate.

4,945,392

STATIC INDUCTION TRANSISTOR AND MANUFACTURING METHOD OF THE SAME

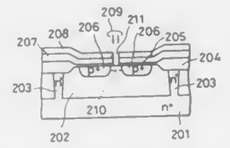
Yoshinori Ohta, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1988, Ser. No. 177,278

Claims priority, application Japan, Apr. 28, 1987, 62-103134

Int. Cl.[5] H01L *29/80*

U.S. Cl. 357—22 **21 Claims**



1. A vertical static induction transistor in which a first type of high-resistance semiconductor has in a surface region thereof a source region of a first type of diffusion layer, and a gate region which surrounds said source region from at least two directions and said gate region is a second type of diffusion layer which is at a depth in said surface region which is deeper than a depth of said first type of diffusion layer in said source region, said vertical static induction transistor comprising:

one of a first and a second type of impurity layers, said first type of impurity layer increases the impurity density of said first type of high-resistance semiconductor, and said second type of impurity layer has a maximum density exceeding that of the impurity density of said first type of high-resistance semiconductor, said one of said first and second type of impurity layers being disposed within a region of said first type of high-resistance semiconductor surrounded by said gate region, between (a) a depth which is deeper than a surface of the first type semiconductor but shallower than a depth of said source region and (b) a depth which is deeper than the source region but shallower than a depth of said gate region.

4,945,393

FLOATING GATE MEMORY CIRCUIT AND APPARATUS

Fabio Beltram, Jersey City; Federico Capasso, Westfield; Roger J. Malik, Summit, and Nitin J. Shah, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 209,466, Jun. 21, 1988, Pat. No. 4,905,063. This application Dec. 7, 1989, Ser. No. 447,286

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.5 **3 Claims**

1. A memory circuit comprising

a plurality of write lines, read lines, power supply lines, and row select lines,

a plurality of memory cells connected to said lines, each of said cells comprising

a memory device which includes

source, drain and control gate electrode means,

a semiconductor channel for conducting carriers from said source to said drain means, and

a semiconductor heterostructure disposed between said channel and control gate means, said heterostructure including a floating gate potential well for confining carriers in a region sufficiently close to said channel to at least partially deplete it and further including a graded bandgap injector region for controlling the flow of carriers between said control gate means and said potential well,

said source means being connected to a source of reference potential,

a first FET having its channel connected between said

gate means of said memory device and one of said write lines,

a second FET having its channel connected between said drain means of said memory device and one of said read lines and one of said power supply lines,

the gates of said FETs being connected to one of said row select lines, and

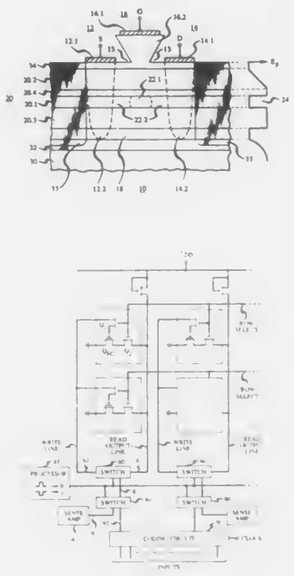
circuit means for maintaining the voltage on said supply line essentially constant.

3. Optical detection apparatus comprising

an array of memory devices each comprising

source, drain and control gate electrode means,

a semiconductor channel for conducting carriers from said source to said drain means, and



a semiconductor heterostructure disposed between said channel and control gate means, said heterostructure including a floating gate potential well for confining carriers in a region sufficiently close to said channel to at least partially deplete it and further including a graded banogap injector region for controlling the flow of carriers between said control gate means and said potential well

means for injecting carriers into the wells of said devices,

means for making light incident on said array so as to remove carriers from at least one of said devices, thereby generating an electrical signal therefrom, and

means for detecting said signal.

4,945,394

BIPOLAR JUNCTION TRANSISTOR ON SILICON CARBIDE

John W. Palmour, Raleigh, and John A. Edmond, Apex, both of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Oct. 26, 1987, Ser. No. 113,692

Int. Cl.[5] H01L *29/72*

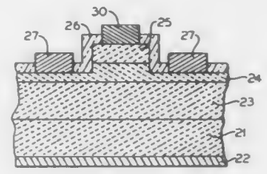
U.S. Cl. 357—34 **6 Claims**

1. A mesa bipolar junction transistor formed from silicon carbide and capable of operating at temperatures over 500° C. and under conditions of high radiation density, and comprising:

a single crystal substrate formed of silicon carbide;

a collector formed of an epitaxial layer of silicon carbide on said single crystal substrate and having a first conductivity type;

a base adjacent said collector formed of an epitaxial layer of doped silicon carbide upon said collector and having the opposite conductivity type from said collector, with said base having the bottom segment of a mesa structure extending from the surface thereof;



an emitter formed of an epitaxial layer of silicon carbide upon said bottom segment of said mesa structure of said base and having the same conductivity type as said collector so that said bottom segment and said emitter together form said mesa structure with a substantially planar p-n junction between said emitter and said base in said mesa structure; and

respective ohmic contacts upon said base, said emitter, and said collector.

4,945,395

SEMICONDUCTOR DEVICE

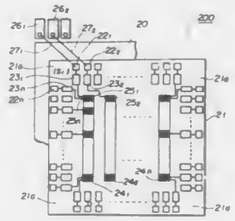
Yoshiyuki Suehiro, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 346,302, May 2, 1989, abandoned, which is a continuation of Ser. No. 84,050, Aug. 11, 1987, abandoned. This application Dec. 11, 1989, Ser. No. 449,435

Claims priority, application Japan, Aug. 12, 1986, 61-189098

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—40 **11 Claims**



1. A semiconductor device comprising:

an integrated-circuit chip having an internal cell region and peripheral regions surrounding said internal cell region;

basic cells formed in said internal cell region on said integrated-circuit chip;

pads for input/output cells used for interfacing with an external device, said pads being arranged in outer portions of the peripheral regions on said chip;

first logical circuit means provided for each of said input-/output cells, each including logic circuits formed by transistors which are a part of said respective input/out cells, said first logic circuit means being positioned in

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inner portions of said peripheral regions, said transistors in said logic circuits having a drive capability higher than that of a transistor formed by said basic cells, said first logic circuit means being arranged along four edges of said integrated-circuit chip, said first logic circuit means including protection circuit means for protecting said related input/output cell against an over-voltage resulting from electrostatic discharge; and

a second logic circuit means provided for each of said input-/output cells, each including remaining logic circuits of said respective input/output cells, said second logic circuit means being formed by said basic cells formed in said internal cell regions, so that each of said input/output cells is formed by one pad and the combination of said first and second logic circuit means.

4,945,396

SEMICONDUCTOR DEVICE HAVING DARLINGTON TRANSISTORS

Hisao Shigekane, and Shinichi Ito, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

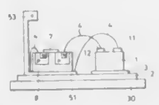
Continuation of Ser. No. 123,917, Nov. 23, 1987, abandoned. This application Dec. 15, 1989, Ser. No. 449,412

Claims priority, application Japan, Dec. 15, 1986, 61-297895; Mar. 18, 1987, 62-63590

Int. Cl.[5] H01L *27/02, 29/72, 29/747*

U.S. Cl. 357—46 **6 Claims**





1. A semiconductor device comprising:

a substrate having an insulating layer;

a first transistor of a first type mounted on said insulating layer and having a first base electrode, a first collector electrode, and a first emitter electrode;

Darlington transistor means of said first type having an external base region, an external collector region, and an external emitter region, and comprising a plurality of Darlington connected second transistors each of second transistors having a base region of a second conductivity type formed in a semiconductor layer of a first conductivity type, a collector region being part of said semiconductor layer and being common to all of said second transistors, and an emitter region of said first conductivity type formed in each of said base regions, said Darlington transistor means being mounted on said insulating layer and insulated from said first transistor;

a second base electrode connected to said external base region;

a second collector electrode connected to said external collector region;

a second emitter electrode connected to external emitter region; and

connecting means for coupling said first base electrode to said second collector electrode and said second base electrode, and for coupling said first emitter electrode to said second emitter electrode;

wherein the collector current of said first transistor is limited by a reference voltage applied by said Darlington transistor means between said first base electrode and said first emitter electrode.

4,945,397

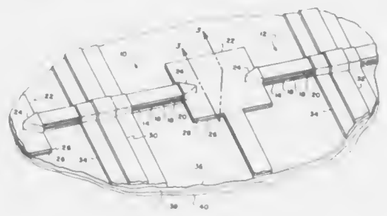
RESISTIVE OVERLAYER FOR MAGNETIC FILMS

James A. Schuetz, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 939,315, Dec. 8, 1986. This application Jul. 11, 1989, Ser. No. 378,561

Int. Cl.[5] G11C *11/15*

U.S. Cl. 357—71 **7 Claims**



1. A magnetic solid state device comprising;

a first layer of a ferromagnetic, magnetoresistive material;

a second layer of a ferromagnetic, magnetoresistive material; and

a third layer interposed between, and in contact with said first and second layers, wherein said third layer prevents exchange coupling between said first and second layers and includes nitrogen doped tantalum.

4,945,398

OVERCURRENT PREVENTIVE DIODE

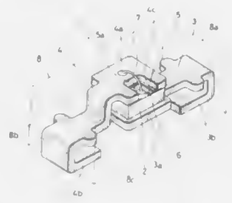
Yoshio Kurita, Kyoto; Katsuhiro Takami, Oumihachiman; Kenji Tanaka, Kyoto, and Yuji Kosumi, Uji, all of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 16, 1989, Ser. No. 421,761

Claims priority, application Japan, Oct. 20, 1988, 63-137016[U]

Int. Cl.[5] H01L *27/02, 23/48, 23/28, 23/02*

U.S. Cl. 357—74 **10 Claims**



1. An overcurrent preventive diode comprising:

a diode chip having a pair of bonding surfaces;

a first lead having a bonding end bonded to one bonding surface of said diode chip into electrical and heat conduction therewith;

a thin electrical insulating layer covering the other bonding surface of said diode chip but having an opening for exposing an electrical connecting portion of said other chip surface;

a second lead having a bonding end provided with an opening in corresponding relation to said opening of said insulating layer, said bonding end of said second lead being held in heat conduction with said diode chip via said insulating layer;

a fusing wire bonded both to said bonding end of said second lead and to said electrical connecting portion of said other chip surface, said wire being melt-cut upon passage of a predetermined overcurrent; and

a molded resinous body enclosing said diode chip, both of said bonding lead ends, and said fusing wire.

4,945,399

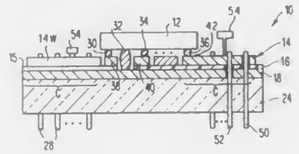
ELECTRONIC PACKAGE WITH INTEGRATED DISTRIBUTED DECOUPLING CAPACITORS

Michael B. Brown, Binghamton; William S. Ebert, Endicott; Leonard T. Olson, Endwell, and Richard R. Sloma, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 913,435, Sep. 30, 1986, abandoned. This application Jan. 19, 1989, Ser. No. 300,681

Int. Cl.[5] H01L *23/02*

U.S. Cl. 357—74 **3 Claims**



1. An electronic packaging structure comprising:

(a) a substrate;

(b) a layer of metallurgy on the substrate, said layer of metallurgy having a pad for unitary intermetallic electrical connections and including at least one portion forming a first plate of a capacitor;

(c) a dielectric layer covering the layer of metallurgy;

(d) a layer of metallurgy deposed on the dielectric layer, forming a second plate of said capacitor and having at least one pad for unitary intermetallic electrical attachment thereto, said second plate positioned relative to the first plate of the capacitor and separated therefrom by a portion of the dielectric layer;

(e) said electronic packaging structure having a plurality of apertures extending from the bottom of said substrate to the top of said second plate of said capacitor, said apertures extending through the plates of said capacitor;

(f) a semiconductor chip mounted on the layer of metallurgy disposed on the dielectric layer, the semiconductor chip being electrically connected to both of said layers of metallurgy by a plurality of unitary intermetallic electrical connections; and

(g) a plurality of pins extending entirely through said apertures, thereby providing electrical connections between said semiconductor chip and the bottom of said substrate.

4,945,400

SUBASSEMBLY FOR OPTOELECTRONIC DEVICES

Greg E. Blonder, Summit, and Bertrand H. Johnson, Murray Hill, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 163,664, Mar. 3, 1988, Pat. No. 4,897,711. This application Oct. 30, 1989, Ser. No. 429,107

Int. Cl.[5] H01L *23/02;* **G02B** *6/30*

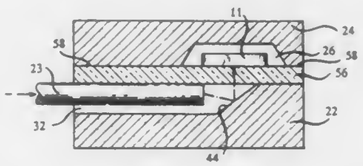
U.S. Cl. 357—74 **12 Claims**

1. A subassembly for an optoelectronic device comprising

a first member which is transparent to light transmitted between said device and the exterior of said subassembly, said device being mounted on one side of said first member,

a semiconductor lid mounted on said one side of said first member and hermetically sealed thereto, said lid having a cavity therein for receiving said device,

a semiconductor second member mounted on another side of said first member, said second member having a groove therein adapted to receive an optical fiber, said groove having side walls and an oblique end face formed by crystallographic planes, and



a reflector disposed on said end face to direct light between said fiber and said device and through said first member.

4,945,401

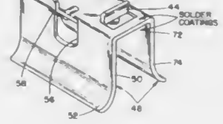
HEAT DISSIPATOR FOR SEMICONDUCTOR UNIT

Edmund G. Trunk, East Meadow, and Seymour Wilens, Wantagh, both of N.Y., assignors to The Staver Company Inc., Bay Shore, N.Y.

Continuation of Ser. No. 75,572, Jul. 20, 1987, abandoned. This application Sep. 22, 1988, Ser. No. 247,719

Int. Cl.[5] H01L *23/34, 23/36, 23/40*

U.S. Cl. 357—81 **12 Claims**



1. A heat dissipator for retaining and supporting a generally rectangular semiconductor unit on a circuit board, said semiconductor unit having flat opposite ends, flat top, flat opposite sides, and a pair of laterally extending metal legs, said heat dissipator comprising:

a highly heat conductive stamped sheet metal member, said member having:

a planar base;

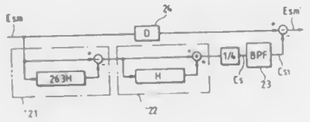
a pair of spaced springy tabs struck out from and extending away from one side of said base, each of said tabs engaging respectively one of said opposite ends of said semiconductor unit, with only said top of said semiconductor unit abutting said base for conduction of heat from said semiconductor unit;

a pair of rigid, platelike wings diverging at least in part from each other and bent away from the other side of said base to conduct and to radiate heat away from said semiconductor unit; and

a pair of spaced base legs stuck out from said wings, and disposed laterally of said base at obtuse angles to said wings, to engage said legs of said semiconductor unit, to conduct and radiate heat therefrom, and to cooperate with said tabs in retaining said semiconductor unit on said base and on said circuit board, said base legs being formed with longitudinal ridges terminating at said base for strengthening and maintaining rigidity of said base legs, and for maximizing conduction and radiation of heat from said semiconductor unit via said legs of said semiconductor unit.

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4,945,402
METHOD FOR PRODUCING NTSC COMPATIBLE SIGNAL FOR WIDESCREEN TV SYSTEM
Takahiko Fukinuki, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 3, 1988, Ser. No. 266,840
Claims priority, application Japan, Nov. 11, 1987, 62-283282
Int. Cl.[5] H04N 7/08, 11/06
U.S. Cl. 358—12 1 Claim



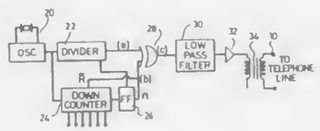
1. A method for producing an NTSC system compatible television signal for a widescreen television system having a widescreen panel, comprising the steps of:
deriving a luminance signal of a central portion of the widescreen panel;
deriving a color signal modulated in response to the luminance signal according to the NTSC system;
deriving a time-expanded luminance signal of two sides of the widescreen panel modulating a sub-carrier so that a scanning line of identical phase drops down for each field;
deriving a time-expanded color signal of the two sides of the widescreen panel modulating the sub-carrier having a phase which is the same in every scanning line in a field and which is inverse with respect to the phase for the adjacent fields and having a horizontal frequency which is higher than the horizontal frequency of the time-expanded luminance signal; and
multiplexing the luminance signal, the color signal, the time-expanded luminance signal and the time-expanded color signal so as to enable production of the NTSC compatible television signal for the widescreen television system.

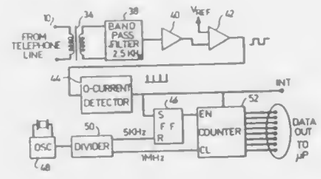
4,945,403
COLOR TELEVISION FORMAT USING PULSE FREQUENCY AND PULSE WIDTH MODULATION
Kiyoshi Kubo, Katano; Noboru Okamura, Kadoma, and Susumu Morikura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 27, 1988, Ser. No. 289,825
Claims priority, application Japan, Jan. 25, 1988, 63-13885
Int. Cl.[5] H04N 11/04, 11/00
U.S. Cl. 358—13 15 Claims



1. A signal transmission method comprising the steps of:
pulse frequency modulating a luminance signal in a component video signal including the luminance signal and two color difference signals;
pulse width modulating said pulse frequency modulated signal sequentially by said two color difference signals alternately to form one pulse train signal; and
transmitting said component video signal in form of said one pulse train signal.

4,945,404
VIDEO COMMUNICATION SYSTEM AND PHASE OR FREQUENCY MODULATOR INCLUDED THEREIN
Gershon Miller, Rehovot, Israel, assignor to Medson Ltd., Jerusalem, Israel
Filed May 6, 1988, Ser. No. 191,103
Claims priority, application Israel, May 15, 1987, 82539
Int. Cl.[5] H04N 7/04, 7/14
U.S. Cl. 358—141 19 Claims



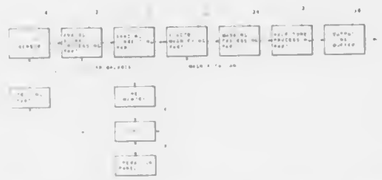


1. A video communication system for transmitting still pictures of a scene during periodic intervals each of a predetermined duration, comprising:
a T.V. camera producing video analog signals of the scene to be transmitted;
an analog-to-digital converter converting the video analog signals to pixel digital signals representing the gray level of each pixel in the scene;
a memory for storing said pixel gray levels for the predetermined duration;
generator means for generating a carrier wave;
and a modulator for modulating said carrier wave by said pixel gray levels from said memory;
said modulator being a phase modulator which shifts the cross-over point of the carrier wave no more than 180° according to the gray level of the respective pixel in said picture.

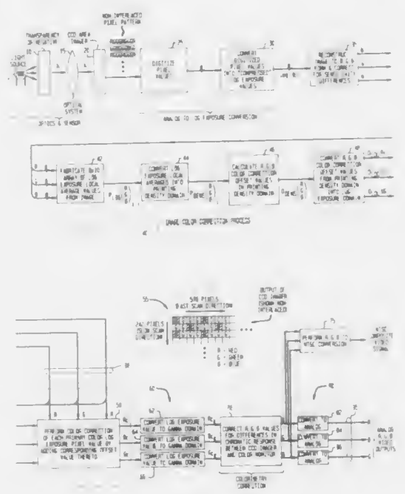
4,945,405
COLOR IMAGE READ APPARATUS WITH SHADING AND COLOR BALANCE CORRECTION
Yoshihiko Hirota, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 23, 1988, Ser. No. 197,833
Claims priority, application Japan, May 21, 1987, 62-126819; May 21, 1987, 62-126820; May 21, 1987, 62-126821; May 21, 1987, 62-126822; May 21, 1987, 62-126823; Jun. 17, 1987, 62-153126; Jun. 17, 1987, 62-153127; Jun. 17, 1987, 62-153128; Jun. 17, 1987, 62-153129
Int. Cl.[5] H04N 1/40
U.S. Cl. 358—75 10 Claims

1. A color image read apparatus, comprising:
a color image sensor which reads a color original, decomposes it into plural colors and outputs image signals of plural colors;
a scanning means for moving said color image sensor relatively to said color original;

a reference white pattern which is installed upstream in the scanning direction of said color original and is read by said color image sensor prior to said color original; and
shading correcting means for making shading correction for said read image signals of plural colors, wherein said shading correcting means includes,
a reference data obtaining means for obtaining one reference data from image signals of plural colors obtained by reading said reference white pattern, wherein said reference data is an average value of image signals of plural colors in reading said reference white pattern,
a reference data storing means for storing said reference data, and
a calculating means for correcting, using the reference data, said image signals of plural colors obtained by reading said color original.



4,945,406
APPARATUS AND ACCOMPANYING METHODS FOR ACHIEVING AUTOMATIC COLOR BALANCING IN A FILM TO VIDEO TRANSFER SYSTEM
David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 7, 1988, Ser. No. 267,867
Int. Cl.[5] H04N 1/40
U.S. Cl. 358—80 30 Claims



1. In a system for transferring an image from a first display format to a second display format, a method for balancing the colors present in the image prior to the image being transferred to said second display format, said method comprising the steps of:
providing a first set of digitized color values in a first domain for each pixel in a scanned image, wherein each of said digitized color values in said first set is associated with a separate primary color in said image;
determining a set of local average values from said digitized color values that collectively form said scanned image, wherein each of said local average values is formed by averaging the digitized color values associated with a particular primary color for pixels that are situated within a pre-defined portion of said scanned image;
converting the local average values from the first domain to a second domain to provide converted local average values;
determining, in response to said converted local average values, a set of color correction offset values in said second domain, wherein each of said color correction offset values is associated with a particular one of said primary colors;
converting each of said color correction offset values from said second domain to said first domain so as to generate a set of color correction offset values, wherein each of said color correction offset values is associated with a corresponding one of said primary colors;
adding each one of said color correction offset values to a corresponding one of the color values in a second set of digitized color values in said first domain and associated with a corresponding primary color for each pixel in the scanned image in order to produce a set of color balanced color values in said first domain for each of said pixels in said image; and
providing, in response to each of said color balanced color values for each of said pixels in said scanned image, color balanced values in said second display format for each of the pixels in the scanned image.

4,945,407
HIGH DEFINITION, THREE-DIMENSIONAL TELEVISION
Douglas F. Winnek, 28091 Robinson/Canyon Rd., Carmel, Calif. 93923
Filed May 12, 1989, Ser. No. 351,241
Int. Cl.[5] H04N 13/00
U.S. Cl. 358—88 23 Claims



1. Apparatus for use in making three-dimensional pictures comprising:
a lens system adapted to receive light rays from an object to be viewed in three dimensions;
a charge coupled device optically aligned with the lens system to receive light rays therefrom; and

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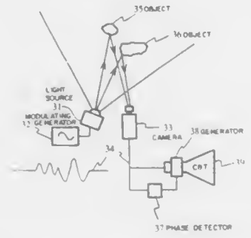
a lenticular screen adjacent to the device for forming three-dimensional images from the light rays passing toward the device, whereby the images will be received by the device and thereafter can be processed to form three-dimensional pictures.

4,945,408

THREE DIMENSIONAL STEREOSCOPIC VIDEO SYSTEM WITH A SINGLE IMAGE SENSOR

Antonio Medina, P.O. Box 1002, Pasadena, Calif. 91102

Continuation-in-part of Ser. No. 66,497, Jun. 26, 1987. This application Aug. 15, 1988, Ser. No. 232,424
Int. Cl.[5] H04N *13/00*
U.S. Cl. 358—88 10 Claims



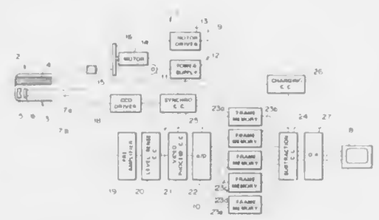
1. A three dimensional display system comprising:
means for emitting a beam of energy in the form of a series of scans with each scan falling into one of at least two groups having characteristics distinguishing one from the other;
detector means for detecting said beam of energy when reflected from objects during said scanning; and
means for separating and segregating said reflected energy by said distinguishing characteristics for segregated display of different groups of each eye of a viewer to create a stereoscopic image.

4,945,409

ENDOSCOPE APPARATUS FOR DISPLAYING IMAGES BELOW THE MUCOUS MEMBRANCE

Kazunari Nakamura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1988, Ser. No. 247,194
Claims priority, application Japan, Jun. 11, 1987, 62-145532
Int. Cl.[5] H04N *7/18, 5/335;* A61B *1/06*
U.S. Cl. 358—88 16 Claims



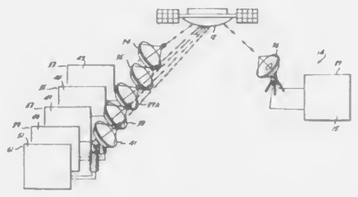
1. An endoscope apparatus comprising:
an elongated insertable part having an illuminating window and observing window in a tip part;
a light source part emitting an illuminating light;
a light guide means, inserted through said insertable part, for transmitting said illuminating light and for illuminating an object from said illuminating window;
an imaging means for receiving the reflected light from said object through said observing window and for converting said reflected light to an electric signal;
a light separating means interposed in an optical path of said illuminating light between said light source part and imaging means, for separating the light entering said imaging means into a plurality of wavelength bands, said light includes at least a range other than a visible range;
a video signal processing means for processing the output signal of said imaging means to produce a video signal;
an operating means for removing video information included in one video signal by operating on at least two of a plurality of video signals based on light of said plurality of wavelength bands separated by said light separating means which are output signals of said video signal processing means;
a changing means for selecting at least one of the video image information output by said operating means and a video signal and for composing a usual color observing picture image output from said signal processing means; and
a monitor means for displaying a picture image from input signals selected by said changing means.

4,945,410

SATELLITE COMMUNICATIONS SYSTEM FOR MEDICAL RELATED IMAGES

Paul J. Walling, San Bernardino, Calif., assignor to Professional Satellite Imaging, Inc., Colton, Calif.

Continuation-in-part of Ser. No. 12,450, Feb. 9, 1987, Pat. No. 4,802,008. This application Oct. 24, 1988, Ser. No. 262,566
The portion of the term of this patent subsequent to Jan. 13, 2006, has been disclaimed.
Int. Cl.[5] H04N *1/00, 7/12*
U.S. Cl. 358—141 12 Claims



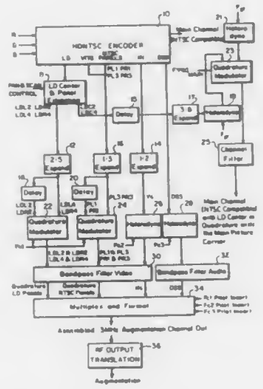
1. A satellite communication system for sending high resolution, medically related, static images from one or more remote satellite locations to a central location for diagnostics, said satellite communication system comprising:
each said one or more remote satellite locations comprising:
means for converting the high resolution images into voltage analog signals;
means for converting the voltage analog signals into narrow bandwidth and low frequency signals;
means for transmitting the narrow bandwidth and low frequency signals to a satellite; and
said central location comprising:
means for receiving the narrow bandwidth and low frequency signals;
means for converting the received narrow bandwidth and low frequency signals back into the voltage analog signals;
means for converting the voltage analog signals into digital signals;
means for converting the digital signals into high resolution, digitized, medically related images;
means for transmitting diagnostics of the high resolution, medically related images, in voice or readable form, from the central location to the transmitting remote satellite location.

4,945,411

HDNTSC CHANNEL WITH TIME AND FREQUENCY MULTIPLEXING

Alan P. Cavallerano, Ossining; Carlo Basile, Flushing, and Mikhail Tsinberg, Riverdale, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Aug. 31, 1988, Ser. No. 239,148
Int. Cl.[5] H04W *7/04*
U.S. Cl. 358—141 14 Claims



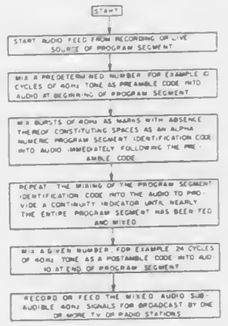
14. A method for providing high definition television signals for transmission comprising the steps of:
generating conventional television signals, line differential signals, left and right panel signals, luminance signals, and a digital signal packet comprising audio and synchronization signals,
separating said line differential signals into left panel line differential signals, center segment line differential signals, and right panel line differential signals;
time expanding said left and right panel line differential signals, said left and right panel signals, and said luminance signals to obtain time expanded left and right panel line differential signals, time expanded left and right panel signals, and time expanded luminance signals;
quadrature modulating said time expanded left and right panel line differential signals and said time expanded left and right panel signals, to obtain quadrature modulated time expanded left and right panel line differential signals and quadrature modulated time expanded left and right panel signals within a common frequency band;
converting said time expanded luminance signals to said common frequency band;
time multiplexing said quadrature modulated time expanded left and right panel line differential signals, said quadrature modulated time expanded left and right panel signals, and said time expanded luminance signals to obtain a time multiplexed signal;
converting said digital signal packet to occupy a frequency band contiguous with said common frequency band;
combining said time multiplexed signal and said digital signal pocket signal to establish a frequency multiplexed signal;
time expanding said center segment line differential signal to be of a time duration consistent with horizontal line durations of said television signals, thereby providing time expanded center segment line differential signals; and
quadrature modulating said time expanded line differential signals with said conventional television signals.

4,945,412

METHOD OF AND SYSTEM FOR IDENTIFICATION AND VERIFICATION OF BROADCASTING TELEVISION AND RADIO PROGRAM SEGMENTS

Robert A. Kramer, 627 14th St., Santa Monica, Calif. 90402

Continuation-in-part of Ser. No. 206,294, Jun. 14, 1988. This application Apr. 25, 1989, Ser. No. 344,064
Int. Cl.[5] H04N *7/08, 7/087*
U.S. Cl. 358—142 37 Claims



1. A system for identification and verification of broadcasted program segments, the system comprising:
a plurality of broadcasting stations, including at least one television broadcasting station, for broadcasting signals which include program segments having a subaudible preamble code, respective subaudible program segment identification codes, following each preamble code occurrence, a subaudible postamble code following each program segment identification code occurrence and, in the case of television broadcast stations a video signal;
at least one monitoring station for receiving the broadcasted signals, said monitoring station including (a) means for generating date-indicating and time-indicating signals, (b) respective channels responsive to the broadcasted signal from each respective broadcasting station for recovering each received preamble code, each received respective program segment identification code, each received postamble code and, for monitored television broadcast stations, each video signal to develop therefrom video presence and/or absence signals at least during periods between each received preamble code and each received postamble code, and (c) means for providing respective broadcast station-identification signals;
means at the monitoring station for storing data signal representations of each recovered preamble code, recovered respective program segment identification codes, recovered postamble code, the developed video presence and/or absence signals, the date-indicating and time-indicating signals, and the station-identifying signals for each channel; and
means at the monitoring station for sending the stored data signal representations to a central station, the central station being provided with means for receiving data from a plurality of monitoring station to compile and/or to reconcile same.

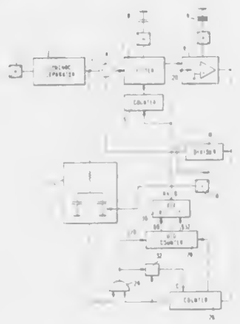
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4,945,413

LINE SYNCHRONIZATION DETECTION CIRCUIT

Jean-Marc Merval, Saint Egreve, and Danika Perrin, Grenoble, both of France, assignors to SGS-THOMSON Microelectronics S.A., Gentilly, France

Filed Feb. 17, 1989, Ser. No. 312,006
Claims priority, application France, Feb. 19, 1988, 88 02266
Int. Cl.[5] H04N 5/12, 5/10
U.S. Cl. 358—158 8 Claims



1. A line synchronization signal detection circuit for detecting a line synchronization signal in a video signal wherein the synchronization signal is supplied to a phase locked loop comprising a voltage controlled oscillator (VCO) (8) for supplying a line scanning signal to a display means, said detection circuit comprising:

first means (20) for inhibiting the operation of the loop whereby the VCO freely oscillates at its free frequency, wherein said free frequency is substantially equal to a desired line frequency or multiple of said desired line frequency, in the absence of an enabling signal;

second means (26, 40, 42, 54, 56) for generating a detection window in relation with the oscillations of the VCO;

third means (24, 44) for detecting the presence of the synchronization signal in said window;

fourth means (28, 30, 46–52) comprising an up/down counter (28) selectively operable in incrementing and decrementing modes in response to the output of the third means, and flip-flop means (30) for supplying said enabling signal in response to said up/down counter reaching a predetermined count and until said counter has counted down to a null value.

4,945,414

COMPENSATOR FOR TEMPERATURE-INDUCED BLACK LEVEL DRIFT FOR USE IN A TELEVISION RECEIVER

Thomas D. Gurley, and Gene K. Sendelweck, both of Indianapolis, Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed May 12, 1988, Ser. No. 193,430
Int. Cl.[5] H04N 5/52, 5/57
U.S. Cl. 358—168 9 Claims

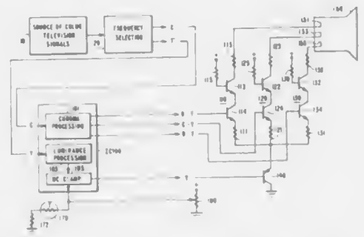
1. Apparatus in a television receiver for compensating for the effects of temperature variations comprising:

a circuit board;

an integrated circuit including amplifier means, mounted on said circuit board, and having an input terminal for receiving signals to be amplified, an output terminal for developing amplified signals, and a magnitude control input terminal for receiving magnitude control signals for controlling the magnitude of said amplified signals;

means for generating said magnitude control signals and applying said magnitude control signals to said magnitude control input terminal; and

means, external to said integrated circuit and exhibiting an impedance which is dependent upon temperature, for sensing variations in said temperature and for modifying said impedance in accordance with a given temperature coefficient in response to said variations in temperature, said temperature-responsive impedance means being mounted on said circuit board proximate to said magnitude control input of said amplifier of said integrated



circuit for receiving instantaneous self-induced temperature variations generated by said amplifier of said integrated circuit and for receiving ambient heat, said temperature-responsive impedance means being coupled to said magnitude control input terminal and to said means for generating magnitude control signals and being responsive to said instantaneous self-induced temperature variations of said amplifier of said integrated circuit and to ambient temperature for controlling the magnitude of said amplified signals.

4,945,415

SLEW ENHANCEMENT CIRCUIT FOR AN AUTOMATIC FREQUENCY CONTROL SYSTEM

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1988, Ser. No. 237,463
Int. Cl.[5] H04N 5/50; H04B 1/18
U.S. Cl. 358—195.1 6 Claims



1. A circuit responsive to an applied input signal for either sourcing or sinking current at an output thereof, comprising:

bias circuit means for supplying first and second reference potentials at respective first and second outputs thereof;

a first comparator having first and second inputs and an output, said first input of said first comparator being coupled to input of the circuit and said second input of said first comparator being coupled to said second output of said bias circuit means, said first comparator being responsive to the applied input signal being greater than said second reference potential for providing an output signal at said output of said first comparator;

a second comparator having first and second inputs and an output, said first input of said second comparator being coupled to said input of the circuit and said second input of said second comparator being coupled to said first output of said bias circuit means, said second comparator being responsive to the input signal being less than said first reference potential for providing an output signal at said output of said second comparator;

first circuit means coupled between said output of said first comparator and the output of the circuit and being responsive to said first comparator for sourcing current to the output of the circuit; and

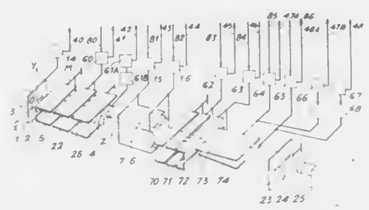
second circuit means coupled between said output of said second comparator and the output of the circuit and being responsive to said second comparator for sinking current at the output of the circuit.

4,945,416

ULTRA-RAPID ELECTRONIC CAMERA

Pierre Salgues, Massy, and Roger Verrecchia, Lesigny, both of France, assignors to Commissariat a l'Energie Atomique, France

Filed Feb. 17, 1989, Ser. No. 312,606
Claims priority, application France, Feb. 17, 1988, 88 01867
Int. Cl.[5] H04N 5/30
U.S. Cl. 358—209 3 Claims



1. An ultra rapid electronic digitally controlled camera apparatus for the study of very brief light phenomena, comprising a bilamellar optical image conversion tube, said tube comprising in succession along an axis a plane photocathode perpendicular to said axis, defined by a narrow aperture for receiving photons from the phenomena being studied and emitting electrons, a pair of plane electron accelerating electrodes parallel to said aperture and to said axis, a quadrupolar spatial focusing lens comprising a first and a second pair of mutually parallel cylindrical electrodes perpendicular to said aperture and parallel to said axis;

a temporal focusing lens comprising at least a first, a second and a third pair of electrodes parallel to said aperture and to said axis, a screen for forming an image from the aperture, the camera further comprising a means for recording the image formed on the screen;

a plurality of adjustable electrical sources respectively supplying adjustable voltage values at their outlets, said source outlets being respectively connected to the first pair of electrodes and to the second pair of electrodes of the quadrupolar lens, to the second and third pairs of electrodes of the temporal focusing lens;

an electrical supply source providing fixed value voltage at one outlet, said outlet being connected to the photocathode, the first pair of electrodes of temporal focusing lens, the pair of accelerating electrodes and the screen being connected to a reference mass, all the sources being situated near the tube, characterized in that the tube comprises, between the pair of acceleration electrodes and spatial focusing lens and along said axis, a pair of temporal prefocusing electrodes parallel to the axis and to the aperture and connected to an adjustable value voltage source;

a second pair of acceleration electrodes parallel to the axis and to the aperture, one of the electrodes of the second pair being connected by a shutter control means to a fixed value voltage source, another of the electrodes of the second pair being connected to a second reference mass, a pair of deflection plates parallel to the aperture, situated between the temporal focusing lens and the screen along said axis;

said pair of deflection plates being respectively connected to a pair of adjustable value voltage sources and respectively connected by a deflection control means, to a pair of fixed value voltage sources, all the sources being situated near the tube, the camera further comprising a control unit distant from at least one tube, to control a means of regulating values of voltage furnished by the sources of adjustable voltage and the respective measurements of voltage applied to the photocathode to the different electrodes and to the shutter control and deflection control devices, said adjustment and measurement means being situated near the tube; and

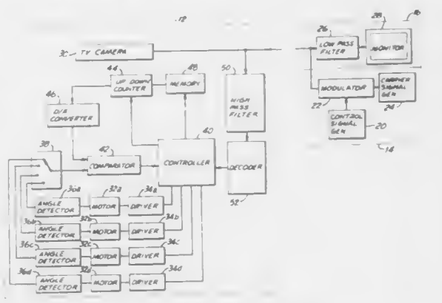
the control unit being connected to the adjustment and measurement devices by a pair of optic devices transmitting regulatory data to the voltage control devices and measurement instructions to the measurement devices, and transmitting measurement results to the control unit.

4,945,417

METHOD AND APPARATUS FOR REMOTELY PRE-SETTING CLOSED CIRCUIT TELEVISION CAMERA

David Elberbaum, Tokyo, Japan, assignor to Elbex Video, Ltd, Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 271,200
Claims priority, application Japan, Nov. 16, 1987, 62-287549
Int. Cl.[5] H04N 5/30
U.S. Cl. 358—210 3 Claims



1. A television camera comprising:

imaging means for generating video signals;

driving means adapted to the imaging means to be rotated in order to change coordinates positions of said imaging means;

detecting means for detecting the angle of the coordinates positions of said imaging means as electrical signals;

memory means in which information is stored and from which the information is read out; and

controlling means for receiving a command to store control information for setting said imaging means in a predetermined coordinates position and a command to change the coordinates position of said imaging means, for storing output signals of said detecting means as the control infor-

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mation in said memory means corresponding to the store command upon receipt thereof, for reading out from said memory means the control information corresponding to the change command upon receipt thereof, and for operating said driving means until the output signals of said detecting means coincide with the read-out control information,

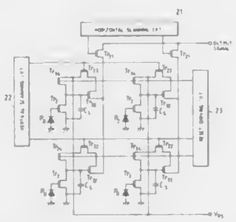
said controlling means including a counter in which the control information memorized in said memory means may be preset, a digital-to-analog converter for converting a counted value of said counter into an analog value, means for comparing output signals of said converter with the output signals of said detecting means and for generating coincidence signals when said output signals of said converter and said detecting means coincide with each other, and a controller for receiving the store command, the change command and the coincidence signals, for enabling said counter, upon receipt of the store command, to continue counting until the coincidence signals are generated, for storing the counted value of said counter, as the coincidence signals are generated, in said memory means at a portion thereof corresponding to the store command, for reading out from said memory means, upon receipt of the change command, the control information corresponding to the change command, for presetting the read-out control information in said counter, and for operating said driving means until the coincidence signals are generated.

4,945,418

SOLID STATE IMAGE PICKUP APPARATUS WITH CHARGE STORAGE DEVICE

Hideki Mutoh, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1989, Ser. No. 304,081
Claims priority, application Japan, Feb. 1, 1988, 63-19678
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.11 **15 Claims**



1. A solid state image pickup device, comprising:

a photodiode for receiving incident light and for performing photoelectric conversion of said incident light;

a first transistor coupled to said photodiode for converting a voltage produced across said photodiode into an electric current; and

a charge storage capacitor for storing an electric charge in response to said electric current,

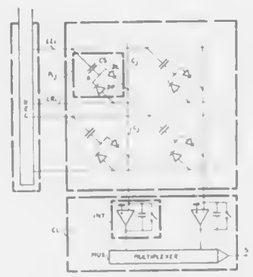
wherein said electric charge is stored in said charge storage capacitor with exclusive application of forwardly biased voltage to said photodiode.

4,945,419

PHOTOSENSITIVE MATRIX WITH TWO DIODES AND ONE CAPACITOR PER DOT WITHOUT OPTICAL RESETTING

Marc Arques, Grenoble, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 11, 1989, Ser. No. 295,664
Claims priority, application France, Jan. 15, 1988, 88 00413
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.11 **11 Claims**



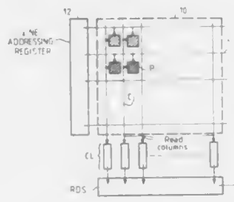
1. A matrix of photosensitive dots comprising a network of photosensitive dots arranged in rows (at least one row) and columns (at least one column), each photosensitive dot being located at the intersection of a row and a column, wherein each photosensitive dot comprises two diodes and one capacitor connected to a floating node, the capacitor being connected between a row conductor and the floating node, a first diode, called a reading diode, connected between the floating node and a column conductor to enable the transfer, between this column conductor and the floating node, of a quantity of charges generated at the floating node by the illumination of the photosensitive dot, and a second diode, called a photosensitive diode, connected between the floating node and a conductor connected to a resetting voltage source, firstly in order to generate, when it is illuminated, electrical charges on the floating node and, secondly, in order to reset the potential of the floating node at a chosen value after said charge transfer.

4,945,420

LOW NOISE READING METHOD AND CIRCUIT FOR LINE TRANSFER PHOTOSENSITIVE MATRICES

Jean-Luc Berger, and Marc Arques, both of Grenoble, France, assignors to Thomsoo-CSF, Paris, France

Filed Jan. 4, 1989, Ser. No. 293,469
Claims priority, application France, Jan. 5, 1988, 88 00027
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.31 **9 Claims**



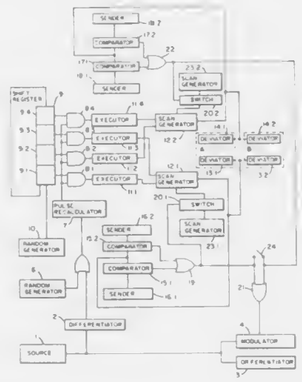
1. A method for the reading of electrical charges collected at an input conductor, comprising an operation for the transfer of charges from the input conductor to an intermediate storage zone, this operation being repeated N times with N as a whole number greater than or equal to two, and an operation for a transfer, from the intermediate zone towards an output, of a quantity of charges proportionate to the sum of charges transferred during the N preceding transfer operations, and wherein each operation for the transfer of a quantity of charges Qs from the input conductor to the intermediate storage zone is followed by an operation for the duplication of charges by which there is formed a charge Qs' which is a replica of the charge Qs, the replica charge being in a pre-determined ratio with the initial charge, and then an operation for the restitution of the charge Qs to the input conductor.

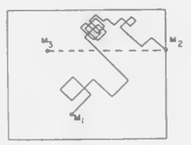
4,945,421

METHOD AND SYSTEM FOR REPRESENTING INFORMATION DATA WITH INTERROGATING ELEMENT DISPLACING FROM LIMIT INFORMATION FIELD BACK INTO THE INFORMATION FIELD

Iosif Baumberg, 69 Bay 29 St., Brooklyn, N.Y. 11214

Filed Jul. 14, 1988, Ser. No. 219,445
Int. Cl.[5] H04N *3/30*
U.S. Cl. 358—217 **10 Claims**





1. A method of representing information data, comprising the steps of

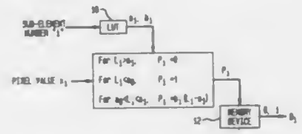
scanning information data, interrogating information data by a movable interrogating element, forming a main flow of impulses coresponding to the data which have been interrogated by said interrogating element, moving said interrogating element successively in directions selected in response to said impulses from more that two directions with an equal probability, and upon reaching by said interrogating element a limit of an information field displacing said interrogating element back into the information field in a jump-like manner to random point.

4,945,422

FALSE DENSITY CONTOUR SUPPRESSION USING STORED RANDOM PROBABILITIES TO FORM PRINT/NO-PRINT DECISIONS

Yee S. Ng, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,497
Int. Cl.[5] H04N *1/23, 1/40*
U.S. Cl. 358—298 **7 Claims**



1. Apparatus for suppressing false density contours in halftone reproduction of continuous tone original images which have been converted to a series of discrete picture element signals, said apparatus comprising:

means for selectively printing sub-elements sequentially organized into halftone cells;

means for assigning to each sequential sub-element of a halftone cell a weighted probability of being "ON" in accordance with the value of an associated picture element signal; and

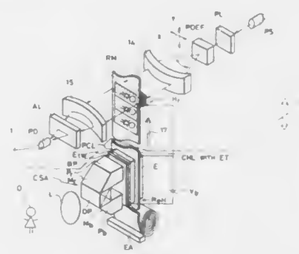
means for converting the weighted probability of each sub-element into a print/no-print decision, said converting means including (1) memory means having a plurality of rows, wherein each row represents a different probability that a sub-element will be "ON", and (2) means for accessing different rows of said memory means on the basis of the weighted probability of a sub-element being "ON".

4,945,423

REPRODUCING APPARATUS FOR CHARGE LATENT IMAGE RECORDING MEDIUM

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa; Hirohiko Shinonaga; Tsutou Asakura, both of Yokohama; Masato Furuya, and Hiromichi Tai, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 301,324, Jan. 24, 1989, which is a continuation-in-part of Ser. No. 139,005, Dec. 29, 1987, Pat. No. 4,831,452. This application Aug. 21, 1989, Ser. No. 396,203
Claims priority, application Japan, Aug. 19, 1988, 63-205771; Sep. 30, 1988, 63-248091
Int. Cl.[5] H04N *1/29, 5/74, 5/80, 5/84;* G01D *15/06*
U.S. Cl. 358—300 **25 Claims**



1. A reproducing apparatus for a charge latent image recording medium comprising:

an electromagnetic radiation source,

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an optical system for leading an electromagnetic radiation ray emitted from said electromagnetic radiation source in a direction toward a recording medium on which an object information to be read is prerecorded as a charge latent image, and

a read head arranged closely facing to said recording medium and arranged in series in a travelling path of said electromagnetic radiation ray,

said read head being of a multilayer structure comprising a support base plate, a photo modulation material layer for generating a mode modulation of said electromagnetic radiation ray which passes the photo modulation material layer therethrough in response to intensity of an electric field by said charge latent image, and an electrode for applying a predetermined electric field to said photo modulation layer, and for allowing to receive the electromagnetic radiation ray in a read wavelength range and transmit thereof to said photo modulation layer, an output surface facing to a process means for emitting thereto the electromagnetic ray having passed through the electrode and the photo modulation layer,

said process means processing the electromagnetic ray modulated by going through the photo modulation material layer and outputted from the output surface.

4,945,424

POWER SWITCHING ARRANGEMENT FOR VIDEO CAMERA APPARATUS

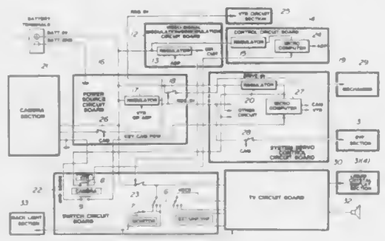
Keiichiro Hiroki, Tachikawa; Yukihiko Fukasawa, Kawasaki, and Ken Yamauchi, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1989, Ser. No. 305,282

Claims priority, application Japan, Feb. 10, 1988, 63-16898[U]

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **15 Claims**



1. A video camera apparatus having an image pick up equipment with an electronic view finder, a video recording and/or reproducing equipment with a television tuner, and a display equipment, the apparatus comprising:

a first on-off switch provided on said image pick-up equipment; a second on-off switch provided on said video recording and/or reproducing equipment;

a third on-off switch provided on said display equipment;

a selecting switch for selecting a television tuner or an external input;

means for causing said electronic view, finder to operate and said display equipment to turn off, when said first on-off switch is turned on and said second on-off switch is turned off;

means for causing said electronic view finder to turn off, when said first on-off switch is turned off and said second on-off switch is turned on and for causing said display equipment to operate, when said television tuner is selected by said selecting switch, and for causing said display equipment to operate or turn off in dependance on a manipulation of said third switch, when said external input is selected by said selecting switch; and

means for causing said electronic view finder to operate when said first and second on-off switches are turned on, and for causing said display equipment to operate when said television tuner is selected by said selecting switch, and for causing said display equipment to operate or turn off in dependance on a manipulation of said third switch, when said external input is selected by said selecting switch.

4,945,425

METHOD AND AN APPARATUS FOR CONTROLLING A VIDEO CASSETTE RECORDER

Mark C. Hahn, Los Gatos, Calif., assignor to Videonics Incorporated, Campbell, Calif.

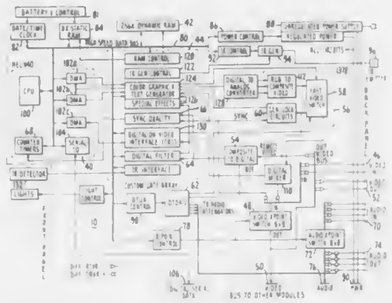
Filed Mar. 30, 1987, Ser. No. 32,371

Int. Cl.[5] G11B *5/86*

U.S. Cl. 360—15 **12 Claims**

MICROFICHE APPENDIX INCLUDED

(3 Microfiche, 231 Pages)



1. A method for assembling, editing and producing a production video cassette from a source video cassette having source video information recorded thereon recorded in a plurality of video fields with each field having a plurality of sync signals, but without any timing signals, indicating the number video fields from a particular location, said method comprising the steps of:

(a) locating the beginning of the video information of said source cassette;

(b) playing back said source video information, while simultaneously

(i) copying said source video information onto a dub cassette;

(ii) generating a timing signal on said dub cassette;

(iii) detecting video information from said source cassette near the beginning thereof and determining the starting point in said source video cassette by noting a number of video fields having a selected amount of change in video information (hereinafter: "a recognizable number of video fields");

(iv) counting the number of video fields from said recognizable number of video fields and recording said number in said dub cassette;

(v) detecting the absence of sync signals of each field of video information from said source cassette (hereinafter: "sync signals of poor quality") and noting the location thereof by the count of the number of video fields determined from step (b) (iv);

(c) assembling and editing said dub cassette by tracking the location of desired video scene by the timing signal associated therewith;

(d) rewinding said source cassette; and

(e) playing said video information from said source cassette starting from said recognizable number of video fields; while simultaneously

(i) counting the number of video fields from said recognizable number of video fields;

(ii) correcting the count of the number of video fields from said recognizable number of fields as determined from step e(i), in the event of detection of occurence of sync signals of poor quality; and

(iii) copying said video information onto a production cassette, when said number of video fields reaches a level that corresponds to the location of desired video scene.

4,945,426

HELICAL SCAN TRACKING SYSTEM

Hiroshi Okamoto, Nara, and Souichirou Fujioka, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1988, Ser. No. 200,373

Claims priority, application Japan, May 29, 1987, 62-135247

Int. Cl.[5] G11B *5/52, 15/467*

U.S. Cl. 360—70 **5 Claims**

1. A tracking system for a helical scanning type recording-/reproducing apparatus in which a rotating magnetic head arranged on a rotating drum scans over a magnetic tape for an angle θ_w every time the rotating drum rotates θ_p, where $\theta_2 < \theta_p$, so as to record and reproduce signals, comprising:

a tension control means which controls the tension of said magnetic tape;

a tape transfer means which transfers said magnetic tape in its longitudinal direction;

a transfer amount detection means which detects a transfer amount in the longitudinal direction of said magnetic tape;

a tracking error detection means which detects a positional error of the scanning position of said magnetic head with respect to a recorded track formed on said magnetic tape from the signal reproduced by said rotating magnetic head and outputs a tracking error signal; and

a control means which controls said tape transfer means according to the tracking error signal so that said rotating magnetic head scans over the recorded track during a first period in which said rotating magnetic head reproduces the signal recorded on said magnetic tape, and controls said tape transfer means by an output of said transfer amount detection means so that the transfer amount of said magnetic tape becomes a specified amount every time said rotating magnetic head rotates θ_p during a second period other than said first period.

4,945,427

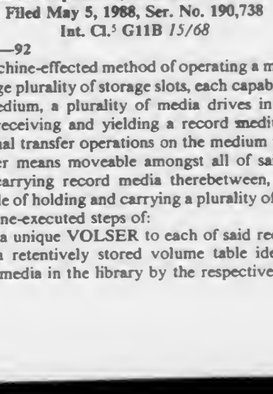
MAGNETIC DISK RECORDING WITH VARIABLE TRACK WIDTH AND VARIABLE TRACK DENSITY

Earl A. Cunningham, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1988, Ser. No. 206,076

Int. Cl.[5] G11B *21/21, 20/20*

U.S. Cl. 360—75 **9 Claims**



7. Disk drive apparatus, comprising; a recording disk and means for rotating said disk, head

means having a generally linear transducing gap,

movable means mounting said head, said movable means being movable between an inner track and an outer track of said disk in a manner to cause said head gap to be skewed to a radius of the disk at each of said tracks, said skew continuously varying in the same sense as said head moves from said inner track to said outer track, so as to cause tracks to be recorded of continuously reducing track width from said inner track to said outer track,

servo means controlling movement of said movable means in a manner to move said head a continuously reduced distance between adjacent tracks, as said head moves from said inner track to said outer track, and

said head being a flying head having a generally parallelogram shaped slider having oblique and acute internal angles, said slider having a plurality of parallel flying rails whose leading ends terminate in a generally linear leading slider edge, the outer corner of said leading edge being located so as to lead the inner corner of said leading edge, as said corners are viewed from said disk.

4,945,428

METHOD OF MANAGING A MEDIA LIBRARY

Ellen J. Waldo, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1988, Ser. No. 190,738

Int. Cl.[5] G11B *15/68*

U.S. Cl. 360—92 **2 Claims**

1. In a machine-effected method of operating a media library having a large plurality of storage slots, each capable of storing a record medium, a plurality of media drives in the library capable of receiving and yielding a record medium for performing signal transfer operations on the medium while in the drive, carrier means moveable amongst all of said slots and drives for carrying record media therebetween, the carrier being capable of holding and carrying a plurality of said media; the machine-executed steps of:

assigning a unique VOLSER to each of said record media;

creating a retentively stored volume table identifying all record media in the library by the respective VOLSERs

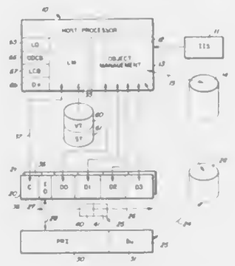
VOL 1116 ISS 5 JL 31 1990 UMI

and indicating that the volume table the location in the library of each record medium by its respective VOLSER;

creating a volatile library control block for the library indicating which of said record media are in the carrier and slots by the respective VOLSERs;

positioning the carrier at one of said slots or said drives, at said one slot or drive, first fetching a record medium whenever such slot or drive currently is holding a one of said record media and then inserting another record medium from the carrier into said one slot or drive;

contemporaneously to said fetching, inserting and carrying maintaining a working and a retentive copy of information



identifying the record media being carried by the carrier, stored in the slots and being held by the respective drives; and

when finished with a first record medium held in a given drive, leaving such record medium in the drive until a second record medium is to be mounted into the given drive and then in one carrier motion remove the first record medium from the drive and then inserting the second record medium into the given drive and then storing the first record medium in an empty one of said slots which is a closest one of the slots to the given drive irrespective of the slot from which the first record medium from for mounting into the given drive.

4,945,429

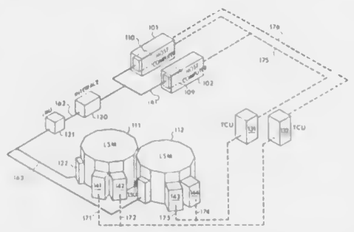
DATA SECURITY ARRANGEMENT FOR AN AUTOMATED MAGNETIC TAPE CARTRIDGE LIBRARY SYSTEM

Frederick G. Munro, Broomfield; Kelly J. Beavers, Boulder; Ronald W. Korngiebel; Raymond L. Lucchesi, both of Broomfield, and Michael E. Moy, Lafayette, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jan. 27, 1988, Ser. No. 148,599

Int. Cl.[5] G11B *17/22, 21/08*

U.S. Cl. 360—92 **15 Claims**



1. In a data processing system which includes a host computer connected to a plurality of information storage volume read/write devices and also connected to an automated library system, which includes two or more interconnected library modules, each of which stores information storage volumes for retrieval and placement into ones of said information storage volume read/write devices, an information storage volume security arrangement to permit data retrieval by said host computer from a selected information storage volume located in said automated library system without human access to said information storage volume comprising:

means responsive to a request from a user on said host computer for a data file stored on one of said information storage volumes for translating said data file request into an identification of the information storage volume that contains said requested data file;

means for converting said information storage volume identification to a definition of a physical location in said automated library system of said identified information storage volume;

means responsive to said definition for selecting one of said information storage volume read/write devices to read/write said requested information storage volume;

means responsive to said selecting means for robotically transporting said identified information storage volume from said identified location to said selected information storage volume read/write device;

means for performing an information storage volume audit, to determine if each information storage volume in said automated library system in located in its assigned information storage cell.

4,945,430

CARRIER APPARATUS FOR TAKING INFORMATION-STORAGE REGULAR ARTICLES IN AND OUT

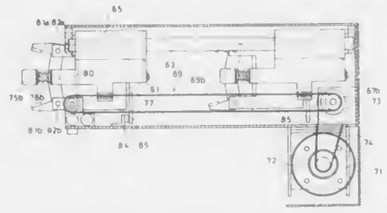
Masao Konishi, and Shigeki Tsuchida, both of Osaka, Japan, assignors to Kabushiki Kaisha Itoki Kosakusho, Osaka, Japan

Continuation of Ser. No. 159,591, Feb. 16, 1988, abandoned. This application Apr. 18, 1989, Ser. No. 339,897

Claims priority, application Japan, Jun. 16, 1986, 61-92246[U]; Jun. 16, 1986, 61-92247[U]

Int. Cl.[5] G11B *15/68, 23/12*

U.S. Cl. 360—92 **11 Claims**



1. An apparatus for placing information-storage regular articles at selected aligned positions aligned vertically and transversely within a predetermined depth inside a housing that has front and back portions and for transferring the articles between said aligned positions and an information reading means, comprising:

information reading means for reading information from said articles, having a greater depth with respect to a front-to-back direction within the housing than is required for said aligned positions and located at a lower portion of the housing to be in a predetermined alignment with respect to said aligned positions and adjacent to said front portion of said housing so that a space is defined between said aligned positions of said articles within said housing and said back portion of said housing and above said information reading means;

a picker movable between said front portion of said housing and said aligned positions for taking said articles in and out of said aligned positions and to and from the information reading means;

a picker support member having two ends, horizontally provided between said front portion of said housing and said aligned positions, for movably supporting thereon said picker;

an elevation mechanism for raising and lowering said picker support member, said elevation mechanism comprising a pull-driving portion arranged in said space; and

strings suspending both end portions of said picker support member and guided to said pull-driving portion through string guide members located in an upper part of the housing, said pull-driving portion pulling/loosening said strings to raise/lower said picker support member together with said picker supported thereon.

4,945,431

MAGNETIC TAPE CASSETTE DEVICE TO LIMIT MOVEMENT OF THE CASSETTE

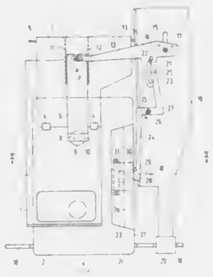
Norbert Kunze, Ehringshausen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1988, Ser. No. 194,764

Claims priority, application Fed. Rep. of Germany, May 25, 1987, 3717587; May 25, 1987, 3717599

Int. Cl.[5] G11B *15/00*

U.S. Cl. 360—96.5 **17 Claims**



1. A magnetic tape cassette device, comprising:

a cassette tray for receiving a magnetic tape cassette with a clearance fit;

means for mounting said tray for movement between a rest position in which a cassette can be inserted in said tray and a play position;

a pivotable operating lever coupled to say tray, said operating lever pivoting during movement of said tray between said rest and play positions;

a tappet lever having a tappet end and an opposing end, said tappet lever being mounted for movement of said tappet end against a cassette received in said tray, said tappet end having a sloped surface angled with respect to a wall of said cassette; and

coupling means for directly coupling said opposing end of said tappet lever to said operating lever for biasing said sloped surface against a cassette wall and urging the cassette against said tray when said tray is in said rest position and for withdrawing said tappet from said cassette when say tray is moved from said rest position.

4,945,432

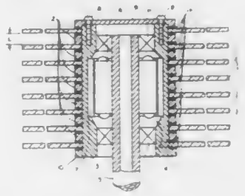
MAGNETIC DISK DRIVE WITH BRITTLE DISKS

Takeo Matsudaira, Cupertino; Hiroshi Komo, Sunnyvale, both of Calif.; Shinji Eda, Yamanashi, and Junzoh Funayama, Kanagawa, both of Japan, assignors to Hoya Electronics Corporation, San Jose, Calif.

Filed Mar. 31, 1988, Ser. No. 175,510

Int. Cl.[5] G11B *5/012*

U.S. Cl. 360—98.02 **30 Claims**



1. A magnetic disk drive comprising

rotatably around a fixed axis, a spindle disposed rotatably around a fixed axis, said spindle having an external peripheral surface and a rim formed at a lower position on said peripheral surface,

a plurality of magnetic disks disposed engagingly around said spindle and in layers on said rim, and

a plurality of spacers disposed between said magnetic disks and keeping said magnetic disks mutually at a fixed distance,

said magnetic disk drive being characterized wherein

said magnetic disks each comprise a substrate made of a brittle non-metallic material and

said substrates and said spacers are attached together by an adhesive and form a unistructural assembly.

4,945,433

EJECTING MECHANISM OF DISK CARTRIDGES

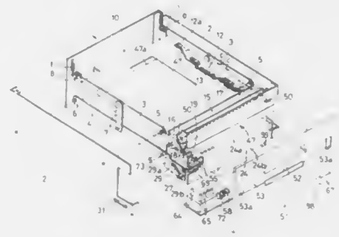
Masayuki Suzuki, Tokyo, and Hirokimi Iwata, Ibaragi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1988, Ser. No. 241,618

Claims priority, application Japan, Sep. 21, 1987, 62-236954

Int. Cl.[5] G11B *5/012, 17/022*

U.S. Cl. 360—99.07 **11 Claims**



1. An ejecting mechanism for disk cartridges comprising:

a cartridge holder movable between a raised position where a disk cartridge is inserted in and ejected from said cartridge holder through a cartridge insertion opening provided in a panel surrounding said ejecting mechanism, and a lowered position where a disk accommodated in said disk cartridge is mounted on a turntable;

an operating lever movable in the same direction as said disk

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cartridge is inserted and ejected, so as to raise and lower said cartridge holder;

a driving member driven by a motor and engaged with said operating lever to move said operating lever;

a disengaging member secured to said operating lever for disengaging said operating lever from said driving member;

a locking member for locking said disk cartridge inserted in said cartridge holder;

a releasing lever for unlocking said disk cartridge which has been locked by said locking lever; and

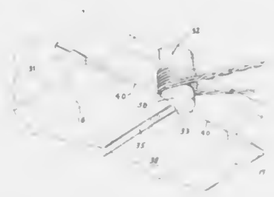
means, when said operating lever is moved to a second position where said cartridge holder is in said lowered position thereof, for manually actuating said disengaging member by a pushing operation from a front side of said panel to disengage said operating lever from said driving member and in succession, for moving said operating lever by said pushing operation to a first position where said cartridge holder reaches said raised position and further, just before said cartridge holder reaches said raised position, for driving said releasing lever so as to unlock said disk cartridge which has been locked by said locking member.

4,945,434

MAGNETIC RECORDING HEAD EMPLOYING AN I-BAR CORE STRUCTURE

Richard C. Wilmer, Campbell, Calif., and Joseph T. Di Bene, South Lake Tahoe, Nev., assignors to Maxtor Corporation, San Jose, Calif.

Filed Dec. 5, 1988, Ser. No. 280,029
Int. Cl.[5] G11B *17/32*
U.S. Cl. 360—103 13 Claims



1. A magnetic recording head for rigid-disk recording comprising:

a slider body having a flat air-bearing bottom surface, a top surface and a slot located across a side of said slider body;

a straight core member having an inner surface attached co-planar to said side and positioned over said slot substantially perpendicular to said bottom surface, said core member with a substantially rounded outer surface, and a tapered pole tip which forms a gap with a portion of said slider body;

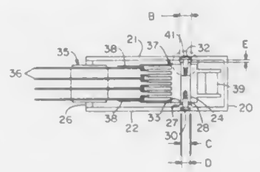
a wire coil wrapped around said pole body including a portion of said rounded outer surface to thereby reduce wear on the wire, said coil extending into said slot for inducing magnetic flux across said gap during write operations and for sensing magnetic flux emanating from the disk surface during readback operations.

4,945,435

NONINFLUENCING FASTENER FOR DISK DRIVES

Jeffrey F. Bolgenzaha; Darrell E. Bratvold; James M. Rigotti, all of Rochester, and Lyle R. Tufty, Elgin, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1989, Ser. No. 303,792
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 8 Claims



1. A rigid disk drive having a box frame within which a disk spindle assembly and a rotary actuator are mounted, said actuator being rotatably mounted about a shaft secured to substantially parallel walls of said box frame by connection means comprising

first securing means securing one end of said shaft to one of said substantially parallel walls;

a surface defining an opening in the other of said substantially parallel walls; and

second securing means at said other substantially parallel wall including a deformable washer disposed in said wall opening and compressive retaining means connected to said shaft which compresses and deforms said deformable washer into contact with said wall surface defining an opening, whereby said shaft is retained at the end opposite said one end to said substantially parallel wall without applying a force that urges said substantially parallel wall portions toward or away from one another.

4,945,436

DOUBLE-SIDED RECORDING METHOD USING SLANTED GUIDE PLATES UPSTREAM AND DOWNSTREAM OF RECORDING HEADS

Yasuo Nagashima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 21, 1988, Ser. No. 222,667
Claims priority, application Japan, Jul. 27, 1987, 62-185586; Jul. 27, 1987, 62-185587
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—104 9 Claims



1. A double-sided recording method comprising the following steps:

disposing first and second magnetic heads opposed to each other on opposite sides of a rotating flexible magnetic disk; and

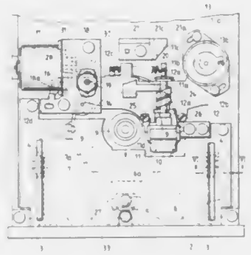
placing first and second guide plates at an upstream and downstream side, respectively, of said first or second magnetic head, said guide plates being adjustably slanted toward a surface of said flexible magnetic disc head to apply negative or positive pressure to said flexible magnetic disk and to cause said flexible magnetic disk to be attracted or urged to said first or second magnetic head.

4,945,437

MAGNETIC HEAD MECHANISM FOR REVERSING HEAD ORIENTATION AND MOVING HEAD IN TAPE WIDTH DIRECTION

Yuzo Oguchi; Fumito Komatsu, and Motohiro Iizawa, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiko Seisakusho, Nagano, Japan

Filed Sep. 12, 1988, Ser. No. 243,536
Claims priority, application Japan, Sep. 11, 1987, 62-227940; Sep. 30, 1987, 62-246928; Sep. 30, 1987, 62-246929; Sep. 30, 1987, 62-246930
Int. Cl.[5] G11B *5/55, 21/08*
U.S. Cl. 360—106 11 Claims



1. In a magnetic head mechanism in a magnetic tape apparatus capable of multiple track, two-way recording and reproduction on a magnetic tape having a plurality of parallel longitudinal tracks, the improvement comprising means for supporting a magnetic head in such a way that it is reversible by 180° in orientation around an axis that is perpendicular to the surface of the head over which the magnetic tape slides to allow two-way recording and reproduction on the magnetic tape, and means for moving said magnetic head across the width of said magnetic tape to effect track interchange.

4,945,438

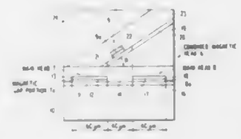
COMBINED MAGNETIC HEAD

Takashi Matsumoto, and Taichi Takesa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1988, Ser. No. 185,663
Claims priority, application Japan, Apr. 24, 1987, 62-100114; Apr. 24, 1987, 62-100115
Int. Cl.[5] G11B *5/29*
U.S. Cl. 360—121 6 Claims

1. A combined magnetic head comprising:

two main heads for forming main tracks on a recording medium, said main heads being separated from each other in a width direction of said main tracks of said recording medium by a predetermined distance; and



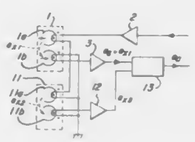
a data head fixed to said main heads and having a width in said width direction of between 2/5 to 3/5 of said predetermined distance.

4,945,439

SYNC CROSSTALK CANCELLING CIRCUIT

Shigemi Sato, Tokyo, Japan, assignor to Fostex Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 153,244, Feb. 8, 1988, abandoned. This application Jul. 25, 1989, Ser. No. 388,295
Claims priority, application Japan, Apr. 27, 1987, 62-103612
Int. Cl.[5] G11B *5/12*
U.S. Cl. 360—124 8 Claims



1. In a multi-track recording system for sync recording and ping-pong recording on a magnetic medium, said system having a multiplicity of parallel recording channels with one transducer per recording channel, selectively functioning as either a record or playback head, the improvement comprising circuitry for eliminating the effect of crosstalk in the playback signal between a selected pair of record and playback transducers, said circuitry comprising:

a first record transducer and a first playback transducer located on proximate tracks of said magnetic medium for recording signals on one track of said medium and playing back signals recorded on another track of said medium;

a second record transducer and a second playback transducer of like construction to said first record and playback transducer located adjacent to each other and away from said first record and playback transducers and said magnetic recording medium, said second record transducer being connected in series to said first record transducer;

means for driving the first and second record transducers with the signal to be recorded on the magnetic medium;

means for playing back the recorded and crosstalk signals detected by the first playback transducer;

means for playing back the crosstalk signals detected by the second playback transducer in reverse polarity to the signal playing back from the first playback transducer; and

means for combining the playback signals from the first and second playback transducers whereby the reverse polarity

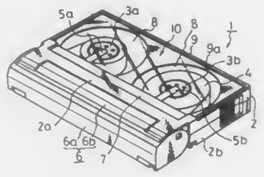
VOL 1116 ISS 5 JL 31 1990 UMI

crosstalk signal from the second playback transducer cancels out the crosstalk signal from the first playback transducer.

4,945,440
TAPE CASSETTE WITH TRANSPARENT REEL VIEWING WINDOWS AND LAMINATED THREE-COLOR CONSTRUCTION

Yuji Iwahashi; Kiyoshi Urayama, and Shinya Sato, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 19, 1988, Ser. No. 195,876
Claims priority, application Japan, Sep. 29, 1987, 62-84196[U]
Int. Cl.[5] G11B *23/08*
U.S. Cl. 360—132 **1 Claim**

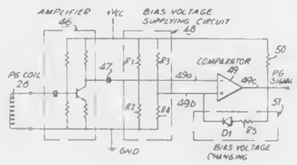


1. A tape cassette comprising:
a housing consisting of an upper half and a lower half,
said upper half being composed mainly of an opaque material,
said upper half having a through-hole window portion without any material on the upper wall thereof,
a cover portion laminated on the part of outside surface of said upper half, said cover portion being composed of a transparent material, said window portion being filled up by a single layer of said transparent material, an additional portion of said upper half surrounding the periphery of said window portion and being formed of a double layer of said transparent material on the outside surface of said opaque material, and a remaining portion of said upper half being formed by single layer of said opaque material, whereby said opaque material in said additional portion can be seen through said transparent material; and
wherein said cover portion has a raised peripheral edge to prevent scratching of said cover portion by lateral forces.

4,945,441
ZERO-CROSS POINT DETECTING CIRCUIT

Kiyotaka Kaneko, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1988, Ser. No. 193,955
Claims priority, application Japan, Aug. 17, 1984, 59-171345
Int. Cl.[5] G11B *00/00*
U.S. Cl. 360—137 **5 Claims**

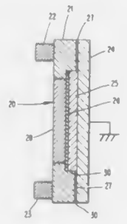


1. A zero-cross point detecting circuit for use in a magnetic recording and/or reproducing apparatus of which the recording medium is a rotating magnetic disk and which has means for generating a signal having a zero-cross point corresponding to a reference point set on said magnetic disk for indicating its rotational phase, said detecting circuit being responsive to said generated signal and comprising:
an operational amplifier having a first inverted input terminal, a second non-inverted input terminal and a third output terminal;
a comparator having a first inverted input terminal, a second non-inverted input terminal and a third output terminal, the third terminal of the comparator being either at a high level or a low level;
a resister connected between the first and third terminals of the amplifier to form therewith a voltage added circuit;
means to apply said generated signal between the first and second terminals of the amplifier;
a bias voltage supplying circuit coupled between the second terminal of the amplifier and one of the first and second terminals of the comparator to apply the same bias voltage thereto;
means connecting the third terminal of the amplifier to the other of the first and second terminals of the comparator; and
a bias voltage changing circuit coupled between the third output of the comparator and the first terminal of the amplifier to apply a voltage to the voltage adder circuit which depends upon the level at the third terminal of the comparator.

4,945,442
PROTECTIVE CIRCUITRY FOR HIGH-ENERGY TRANSIENTS

Arthur E. Brockschmidt, Jr., Renton, and Richard J. Jameson, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 302,994, Jan. 30, 1989, abandoned, which is a continuation of Ser. No. 19,516, Feb. 26, 1987, abandoned. This application Nov. 6, 1989, Ser. No. 432,339
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 **39 Claims**

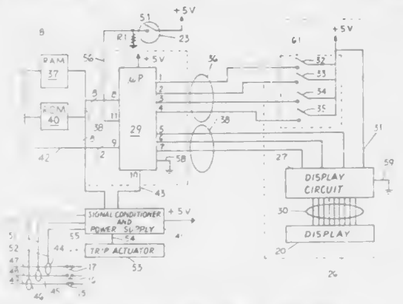


1. A circuit for terminating a DC arc across a spark gap, comprising:
an electrical DC power line including a pair of conductors for providing a DC voltage;
a pair of spaced electrodes connected to the pair of conductors and forming a spark gap, being operative to pass an arc between the electrodes at times when the sum of a high-energy transient and the DC voltage on the DC power line exceeds a predetermined value; and
means for accelerating termination of a DC arc passing between the electrodes after the sum of the high-energy transient and the DC voltage on the DC power line is reduced below the predetermined value, the termination means including
a low impedance capacitor for accelerating termination of the DC arc, and
a low impedance pair of leads, connected to the pair of spaced electrodes and to the low impedance capacitor and having a preselected length and cross-sectional area, for providing a low impedance connection between the pair of spaced electrodes and the low impedance capacitor.

4,945,443
ELECTRONIC CIRCUIT INTERRUPTER WITH COMBINED KEYPAD AND DISPLAY

Mark S. DeBiasi, Windsor; Robert J. Danek, Andover; Hanns P. Sailer, Plainville; Ira B. Goldman, Waterbury, and David J. Lesslie, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 14, 1989, Ser. No. 407,503
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—93 **12 Claims**



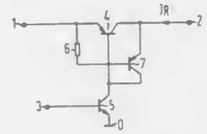
1. An electronic circuit interrupter comprising:
a plastic case and a plastic cover;
a pair of separable contacts within said case arranged for automatic separation upon occurrence of an overcurrent condition through said contacts;
an electronic trip unit within said cover and electrically connected with an associated electric power distribution circuit, said electronic trip unit including a microprocessor and memory storage elements containing fixed set point parameters;
a keypad and display unit within a recess formed within said cover, said keypad and display unit being interlocked with said microprocessor by means of a sealing wire passing through said keypad and display unit and said cover; and
a power supply connected with said microprocessor through a disconnect switch, said disconnect switch being held in a closed position by means of a sealing wire passing through said cover and said keypad and display unit whereby removal of said wire opens said disconnect switch to provide a logic signal to said microprocessor.

4,945,444
INTEGRATABLE CIRCUIT CONFIGURATION FOR REVERSE CURRENT REDUCTION IN AN INVERSELY OPERATED TRANSISTOR

Frank-Lothar Schwertlein, Munich, and Michael Lenz, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1989, Ser. No. 455,553
Claims priority, application European Pat. Off., Dec. 21, 1988, 88121417.5
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—101 **8 Claims**

1. Integratable circuit configuration, comprising a first transistor of one conduction type having an emitter being acted upon by a first potential, a collector being acted upon by a second potential, a base, a base-to-collector path and a base-to-emitter path, a resistor connected in parallel with the base-to-emitter path of said first transistor, a second transistor of the other conduction type being connected to the base of said first transistor for triggering, and a diode connected in parallel with the base-to-collector path of said first transistor, said diode

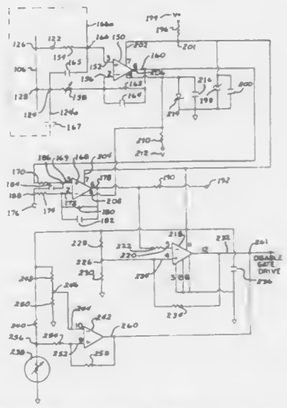


conducting in inverse operation for reverse current reduction during inverse operation of said first transistor.

4,945,445
CURRENT SENSE CIRCUIT

Richard F. Schmerda, Milwaukee; John A. Dombeck, Glendale, both of Wis., and Lance R. Kaufman, Paradise Valley, Ariz., assignors to Gentron Corporation, Milwaukee, Wis.

Filed Sep. 29, 1988, Ser. No. 251,671
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—101 **3 Claims**



1. A current sense circuit comprising:
a semiconductor switch comprising a semiconductor chip having a pair of main terminal metallization contact pads, a conductor jumper bond wire directly connected to one of said pads, a control terminal metallization contact pad with a conductor jumper bond wire directly connected thereto for controlling the conduction state of said semiconductor switch between an ON state passing current between said main contact pads, and an OFF state blocking current flow between said main contact pads;
control drive circuitry connected to said second mentioned bond wire and having an enabled state supplying a drive signal to said semiconductor switch driving the latter into said ON state;
amplifier means having first and second inputs connected to said first mentioned bond wire at spaced points therealong and sensing current flow through said first bond wire by sensing voltage between said spaced points and amplifying said voltage;
comparator means comparing said amplified voltage against a reference voltage and generating an output signal when said amplified voltage exceeds said reference voltage by a given amount;
disabling means responsive to said output signal from said comparator means and disabling said control drive cir-

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cuitry from supplying said drive signal to said semiconductor switch,

wherein said amplifier means comprises:

a first amplifier having first and second inputs and an output;

a first resistor connected between said first bond wire at one of said spaced points and said first input of said first amplifier;

a second resistor connected between said first bond wire at the other of said spaced points and said second input of said first amplifier;

a third resistor connected between said output of said first amplifier and said second input of said first amplifier;

a first capacitor connected between said first and second resistors;

a second capacitor connected between said output of said first amplifier and said second input of said first amplifier;

a second amplifier having first and second inputs and an output;

a fourth resistor connected between said output of said first amplifier and said first input of said second amplifier;

a fifth resistor connected between a reference point and said second input of said second amplifier;

a sixth resistor connected between said output of said second amplifier and said second input of said second amplifier;

a third capacitor connected between said fourth and fifth resistors;

a fourth capacitor connected between said output of said second amplifier and said second input of said second amplifier;

and wherein said comparator means comprises a comparator having a first input connected to said output of said second amplifier, and a second input supplied by said reference voltage, and an output supplying said output signal.

4,945,446

MAGNETIC FIELD COMPENSATING APPARATUS

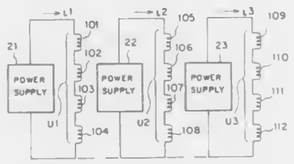
Shigenori Kuroda, and Moriaki Takechi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1988, Ser. No. 209,971

Claims priority, application Japan, Jun. 23, 1987, 62-154568

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—146 6 Claims



1. A magnetic field compensating apparatus for compensating error magnetic fields in the radial direction of a magnet apparatus used for a magnetic resonance apparatus comprising:

a plurality of compensating units comprising a plurality of serial coils each of which is disposed concentrically along a main magnetic field and symmetrically with regard to a plane perpendicular to said main magnetic field,

a plurality of power sources which separately supply currents to these compensating units,

and made in such a manner that a plurality of components among said error magnetic fields in the radial direction are contained in each of said compensating units, a plurality of said components are compensated by the whole of a plurality of said compensating units, and, at the same time, each of said currents supplied to said compensating units is decided in accordance with a constitution of each of said compensating units, said plurality of said compensating units comprising a first compensating unit composed of four saddle-shaped coils disposed cylindrically, a second compensating unit composed of four saddle-shaped coils disposed cylindrically pair by pair on both sides of the first compensating unit, and a third compensating unit composed of four saddle-shaped coils piled and disposed concentrically on each of said saddle-shaped coils of said first compensating unit.

4,945,447

ELECTROSTATIC GROUNDING SYSTEM FOR WORK SURFACES

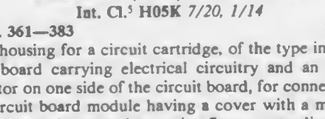
Harold K. Aronson, 10615 Daines Dr., Temple City, Calif. 91780

Division of Ser. No. 891,206, Jul. 28, 1987, Pat. No. 4,802,056, which is a continuation-in-part of Ser. No. 844,708, Mar. 27, 1986, abandoned. This application Jan. 31, 1989, Ser. No. 304,169

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

Int. Cl.[5] H05F *3/02*

U.S. Cl. 361—212 5 Claims



1. A grounded work station comprising:

a work surface including a laminate covering having an outer layer over an inner conductive layer;

means for grounding said inner layer to ground static electric charges, said grounding means including a conductive plug disposed in said work surface, the plug having a head adapted to be drawn against said covering, the head having a tapered circumference disposed in an intimate electrical conductive relationship with the conductive layer;

means for electrically grounding the plug to thereby ground the work surface;

a fixture attached to the work station, said fixture being connected in an electrically conductive relationship with said conductive layer, the fixture including connecting means to receive a grounding cable.

4,945,448

MEMORY CARTRIDGE FOR A CIRCUIT BOARD MODULE

Edwin L. Bremenour, Euclid; Michael F. Tratar, and Gerald S. Pepera, both of Mentor, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Mar. 17, 1989, Ser. No. 325,220

Int. Cl.[5] H05K *7/20, 1/14*

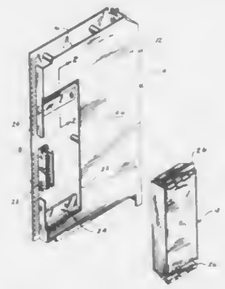
U.S. Cl. 361—383 10 Claims

1. A housing for a circuit cartridge, of the type including a circuit board carrying electrical circuitry and an electrical connector on one side of the circuit board, for connection to a main circuit board module having a cover with a main panel and with spaced, opposed mounting flanges extending towards one another and generally parallel to the main panel, wherein:

the housing extends in a longitudinal direction along the plane of the circuit board between two opposite ends and extends in the transverse direction perpendicular to the longitudinal direction and parallel to the plane of the circuit board; and

wherein the housing includes a pair of clip members at the opposite ends of the housing, the clip members each including means for receiving and seating a respective mounting flange transversely extending across the ends of the housing, wherein the means for receiving and seating

are located on the clip members to control depth of insertion, at least one clip member being yieldable in the longitudinal direction to allow insertion of the cartridge along



its length and through an opening on the main circuit board module to the controlled depth of insertion, where the mounting flanges are seated in the clip member to secure the cartridge therebetween.

4,945,449

HIGH VOLTAGE CAPACITOR WITH HIGH ENERGY DENSITY

Albert Cansell, and Mihail Raduleanu, both of Wissembourg, France, assignors to Atesys, Wissembourg, France

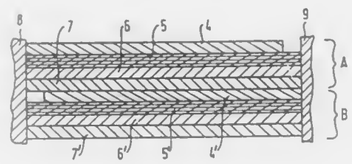
Continuation-in-part of Ser. No. 783,199, Oct. 2, 1985, abandoned. This application Jul. 20, 1987, Ser. No. 75,615

Claims priority, application France, Jul. 21, 1986, 86 10652

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

Int. Cl.[5] H01G *4/08, 9/00*

U.S. Cl. 361—273 23 Claims



2. A regenerating capacitor comprising in combination:

first and second metallic foils; and

a dielectric, including aramide fibers, providing a regenerating capacity, interposed therebetween,

whereby said capacitor is operative at elevated temperatures up to 250° C.

4,945,450

MODULAR ELECTRIC SWITCH-CIRCUIT BREAKER ASSEMBLY

Robert J. Sabatella, Southington; Joseph J. Mrowka; Jon P. McCuin, both of Bristol; Dean A. Robarge, New Britain; Denis A. Perzan, Plainville; Robert G. Markowski, East Haven, and David A. Reid, Forestville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 2, 1989, Ser. No. 388,467

Int. Cl.[5] H02B *1/04*

U.S. Cl. 361—334 27 Claims

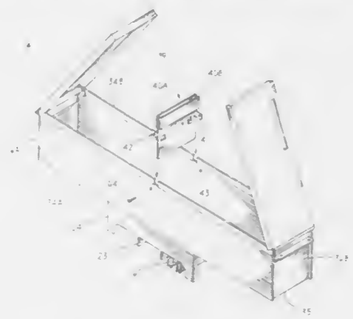
1. An electric switch-circuit breaker module comprising in combination:

a pair of opposing sidewalls and endwalls joined by a continuous rear wall defining a rectangular enclosure open at a forward side thereof;

a central partition intermediate and parallel to said endwalls separating said enclosure into first and second compartments;

a pair of corresponding first and second compartment covers each hingeably attached to one of said endwalls;

an insulative base attached to said rear wall and on the outside of said enclosure and communicating with said rear wall by means of an aperature therethrough;



a plurality of connector clips extending from said insulative base, said connector clips each including an inner and outer off-set clip;

an electric switch or circuit breaker within said first compartment, said second compartment being adapted for later receiving a field-installed electric switch or circuit breaker; and

means arranged on said rear wall for attaching said enclosure to an electrically grounded panelboard or switchboard interior and for making electrical ground connection between said enclosure and said panelboard or switchboard interior.

4,945,451

PRINTED CIRCUIT WITH THERMAL DRAIN

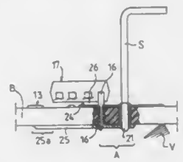
Pierre Gohl, La Colle Sur Loup; Raymond Llabres, Saint Laurent Du Var, and Pascal Malgouires, Cannes La Bocca, all of France, assignors to La Telemecanique Electrique, France

Filed Sep. 16, 1988, Ser. No. 254,260

Claims priority, application France, Sep. 16, 1987, 87 12805

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—386 6 Claims



1. A printed circuit card carrying at least an electronic component box having connecting clips which are welded on the card, said card presenting a mounting face for the box, a welding face of the box, conducting tracks provided on the mounting face and on the welding face, a first plurality of metallized holes wherein the connecting clips are inserted and welded and a thermal dissipator mounted on the card for dissipating the heat emitted by the box, wherein:

i- a thermal drainage metallic area collecting part of the

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heating emitted by the box is constituted by a zone of the welding face located under the box which is covered by a thick layer of soldering metal;

ii- the thermal dissipator is a metallic piece having lugs respectively positioned and welded in a second plurality of metallized holes provided on the card in close vicinity to at least one determined connecting clip of said box, said lugs being also welded on said faces of the card;

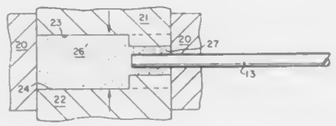
iii- the thermal drainage metallic area forms a privileged thermal adduction path between said determined connecting clip and the lugs of the thermal dissipator.

4,945,452

TANTALUM CAPACITOR AND METHOD OF MAKING SAME

John Sturmer, N. Berwick, and John Y. Cadwallader, Saco, both of Me., assignors to AVX Corporation, New York, N.Y.

Filed Nov. 30, 1989, Ser. No. 443,386
Int. Cl.[5] H01G *9/00*
U.S. Cl. 361—529 **5 Claims**



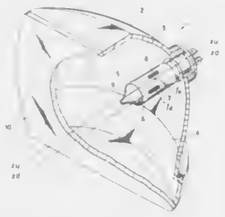
3. In a tantalum capacitor comprising a tantalum anode rod, a sintered porous mass of tantalum particles surrounding said anode rod, portions of said mass engaging said rod being non-welding mechanically and electrically coupled to said rod, a dielectric film encompassing the surface area of portions of said mass and a conductive cathode impregnant encompassing said dielectric coating film, the improvement which comprises the density of said mass in substantially the entirety of the regions of said mass in registry with said anode rod being from about 8 to 10 or more grams per cc, the density of the remaining regions of said mass being from about 4 to 7 grams per cc.

4,945,453

VEHICULAR HEADLAMP

Hiroyuki Serizawa, and Akio Mochizuki, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1989, Ser. No. 392,518
Claims priority, application Japan, Aug. 16, 1988, 63-203561
Int. Cl.[5] F21M *3/30*
U.S. Cl. 362—61 **9 Claims**



1. A vehicular headlamp comprising:

a concave light reflector whose opening is shaped generally rectangular, said concave light reflector including upper and lower light reflecting surfaces each being of a paraboloid of revolution, said upper and lower light reflecting surfaces having respective upper and lower rotation axes which extend forward in parallel with each other and having respective focuses which are placed on said axes, said respective focuses being located at respective positions where an imaginary line perpendicular to both the rotation axes intersects the same, said focus of said lower light reflecting surface being located above a horizontal plane which defines a conjunction portion between said upper and lower light reflecting surfaces;

a lens positioned in front of said concave light reflector;

a first light source positioned at the focus of said lower light reflecting surface; and

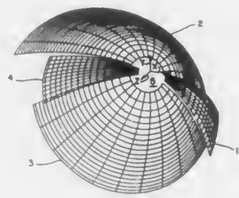
a second light source positioned just above the focus of said upper light reflecting surface.

4,945,454

REFLECTOR FOR DIMMED OR DIMMABLE MOTOR VEHICLE HEADLIGHTS

Wolfgang Bunse, Bielefeld; Hans-Otto Ernst, Lippstadt; Heinz Droste, Erwitte; Franz-Josef Kalze, Harsewinkel, and Wolfgang Peltz, Warstein, all of Fed. Rep. of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

Filed Mar. 9, 1989, Ser. No. 321,826
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1988, 3808086
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 **19 Claims**



1. A reflector for a dimmed or dimmable motor vehicle headlight, said reflector comprising a reflection surface for producing a beam of light in front of said headlight including an asymmetrical wedge-shaped sector, an upper sector, and a lower sector, the reflection surface being formed such that a desired reflected light distribution is created without a correcting lens, the asymmetrical wedge-shaped sector not having a parabolic shape but being arranged such that a corresponding point of every reflected light-filament image of each arbitrary point of the asymmetrical wedge-shaped sector lies immediately near a light-dark borderline for a prescribed light distribution produced by said reflective surface in front of said headlight, such as a legislatively mandated borderline.

4,945,455

AUTOMOTIVE PROJECTOR-TYPE HEADLAMP

Kunio Akizuki, Shirasakamachi, Japan, assignor to Ichikoh Industries Ltd., Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,400
Claims priority, application Japan, Nov. 30, 1988, 63-300972
Int. Cl.[5] F21V *7/08, 13/04*
U.S. Cl. 362—61 **8 Claims**

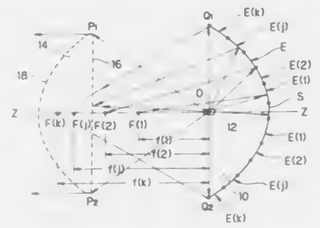
1. A projector-type headlamp, comprising:

a concave mirror having an inner reflecting surface, an apex and an axis

a lamp bulb as light source of which a center nearly falls on the axis of said concave mirror; and

a convex lens so disposed as to have an optical axis thereof nearly coincident with the axis of said concave mirror,

the inner reflecting surface of said concave mirror being composed, at an area near the apex, of a central spherical area formed by a part of a spherical surface and having a center thereof disposed on the axis of said concave mirror and a composite ellipsoidal surface of revolution formed by parts of a plurality of ellipsoidal surfaces of revolution smoothly joined to each other for junction with said central spherical area, having a common focus at the center of



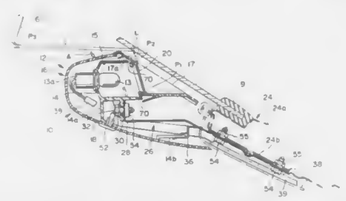
said spherical area and other foci at positions spaced a predetermined distance from said common focus toward said convex lens, said lamp bulb being having the center thereof disposed near said common focus and said convex lens having the focus thereof disposed near said common focus.

4,945,456

HIGH-MOUNTED STOPLIGHT FOR MOTOR VEHICLE

Susumu Kakidaira, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1988, Ser. No. 288,343
Claims priority, application Japan, Dec. 28, 1987, 62-330006
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—80.1 **8 Claims**



1. A high-mounted stoplight for a motor vehicle, comprising: a body, a front lens attached to an open front of said body; a light source provided in said body, said lens and said one front being located at the center rear of said vehicle inside a rear window thereof and spaced from said window; and means for ensuring that light emitted from said light source, transmitted from the foremost point of said lens and along an upper portion of shade means of said stoplight at the vertical central longitudinal section of said stoplight and reflected by said rear window toward the front of said vehicle does not proceed to a rearview mirror of said vehicle or is not reflected by said mirror toward the eyes of the driver of said vehicle, said ensuring means being spaced from said window.

4,945,457

COOL LIGHT SOURCE FOR OPTIC FIBRES

Armand Yazdani, Toronto, and Morris Anidjar, Mississauga, both of Canada, assignors to Nei Canada Limited, Rexdale, Canada

Filed Jan. 23, 1989, Ser. No. 298,923
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—101 **10 Claims**

1. Transmission source for synthetic optic fibres comprising:

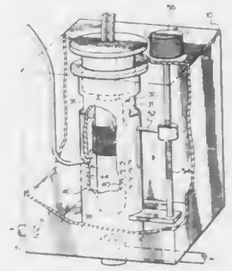
light source contained in a transparent envelope,

sleeve surrounding said envelope,

apertures in said sleeve directed inwardly toward said light source,

synthetic optical fibres projecting through said apertures, to ends spaced from said envelope,

means for causing liquid flow between said fibre ends and said envelope,



such liquid being transparent, and non-reactive with its environs and having a refractive index at least as great as that of water,

heat exchange means for cooling liquid existing from between said fibre ends and said envelope,

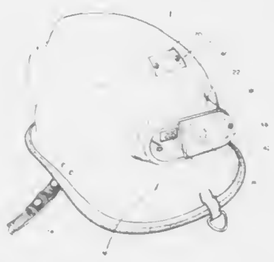
means for returning liquid flow causing means.

4,945,458

FIREMAN'S HELMET WITH INTEGRAL FRONT AND REAR LIGHTS

Felix M. Batts, 804 Ward Blvd., Wilson Woods, Apt. 1, and Joseph W. Walker, 504 Briggs St., both of Wilson, N.C. 27893

Continuation-in-part of Ser. No. 156,410, Feb. 16, 1988, abandoned. This application Feb. 23, 1989, Ser. No. 314,163
Int. Cl.[5] F21L *15/14*
U.S. Cl. 362—106 **18 Claims**



1. A helmet including an integral light assembly comprising:

a helmet including a surrounding wall structure having an opening formed therein and defining a head receiving area within the helmet; an opening formed wining the surrounding wall structure of the helmet; a light assembly integrally mounted within the opening formed within the side wall structure; said light assembly including an outer lense disposed within a plane that lies closely adjacent the outer surface of the surrounding wall structure, a light bulb, and a light bulb holding frame extending inwardly from the opening within the side wall structure such that it projects into the space of the head receiving area; a battery pack disposed within the head receiving area of the helmet; switch means mounted to said helmet

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and operatively interconnected between the light bulb assembly and the battery pack for actuating the same; and including a clock integrally formed within the structure of the fireman's helmet whereby by actuating the clock at a selected time enables one to determine an elapsed time from the time of actuation thereby enabling one to determine how long a fireman has been exposed to a dangerous situation.

4,945,459

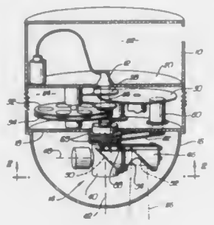
TWO-AXIS BEAM STEERING SYSTEM FOR USE IN AUTOMATED LIGHT FIXTURES

Bran Ferren, 615 Fireplace Rd., East Hampton, N.Y. 11937; Charles F. Harrison, 2620 Cool Spring Rd., Adelphi, Md. 20783; Clinton B. Hope, 75 Raynor Dr., Southampton, N.Y. 11968, and Robert J. Kohut, P.O. Box 2090 Noyac Path, Sag Harbor, N.Y. 11963

Continuation of Ser. No. 201,486, Jun. 1, 1988, Pat. No. 4,827,387. This application May 1, 1989, Ser. No. 345,496

Int. Cl.[5] F21V *7/05*

U.S. Cl. 362—284 **5 Claims**



1. A two-axis light beam steering assembly, for panning a light beam about a pan axis and tilting the light beam about a tilt axis, which is substantially perpendicular to the pan axis, the assembly comprising:

(a) an assembly housing;

(b) a light source producing a controllable light beam in a direction generally along a pan axis;

(c) a first body mounted for rotation about the pan axis and having a mirror mounted within it in the path of the light beam to reflect the beam out of said first body through an opening therein;

(d) a second body mounted in said first opening for rotation about a tilt axis that is panned upon rotation of said first body, said second body having a second mirror mounted within it in the path of the light beam reflected from said first mirror to reflect the beam out of said second body at a desired tilt angle;

(e) a first drive pulley connected to said first body;

(f) a second drive pulley connected to said second body;

(g) a pan-axis drive motor mounted on the assembly housing and having a pan-axis drive pulley;

(h) a tilt-axis drive motor mounted on said assembly housing and having a tilt-axis drive pulley;

(i) first and second interconnected drive pulleys mounted for rotation about said pan axis independently of said first body;

(j) a pan-axis drive belt coupling said pan-axis drive pulley to said first drive pulley to effect rotation of said first body about the pan axis;

(k) a first tilt-axis drive belt coupling said tilt-axis drive pulley to one of said first and second connected drive pulleys;

(l) a second tilt-axis drive belt coupling said other of said first and second connected drive pulleys to said second drive pulley.

4,945,460

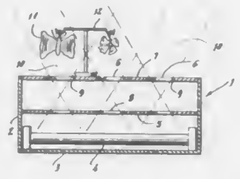
GLARE-FREE ILLUMINATING APPARATUS

Henry Von Kohorn, 945 Treasure La., Vero Beach, Fla. 32963

Filed Dec. 1, 1988, Ser. No. 278,442

Int. Cl.[5] F21V *7/00*

U.S. Cl. 362—290 **14 Claims**



1. In an illuminating apparatus having an electric light source housed in a container permitting light to escape upwardly in the direction of an object supported above and in close proximity to said light source, an improvement for protecting observers grouped around said apparatus from direct view of the light source and from glare produced by reflections of light from surfaces of components of said apparatus, the improvement comprising:

a first lower horizontal sheet disposed above said light source, said first sheet having an underside which is reflective and also having a plurality of apertures permitting the upward passage of light; and

a second upper light-impervious horizontal sheet, said second sheet having a plurality of apertures at least partially in vertical register with the apertures of said first sheet, wherein surfaces constituting necks of said second sheet apertures are non-reflective, said first and second sheets being vertically spaced from each other and said light source extending horizontally below substantially all of said apertures so that light escaping upwardly from said container passes through said apertures in said lower and upper sheets in a shape of a plurality of upwardly spreading light beams, the angle of divergence of the light beams being determined by size of said apertures and by distance of said lower sheet from said upper sheet and, so that observers grouped around said illuminating apparatus are completely protected from a direct view of the light source and are substantially protected from glare produced by reflections of said light from surfaces of components of said apparatus.

4,945,461

PORTABLE WORK LIGHT WITH REPLACEABLE SCUFF GUARD

James M. Crates, Charlotte, N.C., assignor to Jameson Corporation, Charlotte, N.C.

Filed May 22, 1989, Ser. No. 354,797

Int. Cl.[5] F21V *15/00*

U.S. Cl. 362—378 **14 Claims**

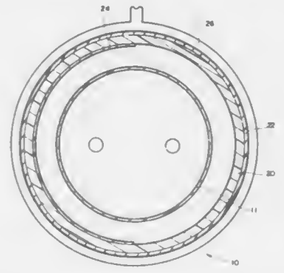
1. A portable work light, comprising:

(a) an elongate bulb for emitting light when powered from an electrical current source;

(b) an elongate, transparent, relatively thick protective shield;

(c) shock absorbing means within said shield mounting said bulb within said shield in spaced-apart relation thereto against breakage of said bulb from shock or impact; and

(d) an elongate, transparent, relatively thin disposable scuff guard positioned over said shield to protect said shield from scratching and scuffing and which can be replaced



when scratched and scuffed to restore full light transmission to the work light.

4,945,462

ZERO-CURRENT SWITCHING DC TO DC FULL-WAVE MODE CONVERTER

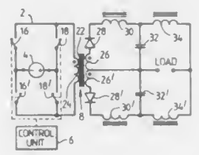
Lev A. Lieberman, 5/12 Dror Street, Rishon LeZion, Israel 75305

Filed Jan. 18, 1989, Ser. No. 298,023

Claims priority, application Israel, Jan. 19, 1988, 85138

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—17 **8 Claims**



1. A zero-current switching DC to DC fullwave mode converter, comprising:

a controllable DC to AC converter having an input connectable to a DC source of voltage and including electronic switching means for selectively coupling said DC source of voltage across a primary winding of a power transformer circuit when the current flow through said switching means is substantially negligible;

AC to DC converter having an input connected to secondary windings of said power transformer circuit;

two charging and energy storing circuits each including a storage capacitor connected in series with one of said secondary windings; an inductor unit connected in circuit in a location between said input of said DC to AC converter and said storage capacitor and,

at least one discharging circuit connected across said storage capacitors and being connectable via a first and a second terminal to a load, said discharging circuit including at least one discharging inductor connected between one side of said storage capacitors and said first terminal, wherein the charging period each of said storage capacitors is smaller than the discharging period thereof.

4,945,463

SWITCHED POWER PACK WITH PROTECTIVE DEVICE FOR LIMITING OUTPUT VOLTAGE

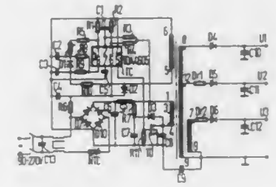
Rainer Dangschat, Landsham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 16, 1989, Ser. No. 367,201

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1988, 3820558

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—56 **4 Claims**



1. A switched power pack having a protective device for limiting output voltage, comprising:

a switching transistor for selectively conducting a DC voltage, the switching transistor being an avalanche-proof MOS transistor;

means for driving said switching transistor, said driving means being dimensioned so that a voltage safety margin in the range of between 5 through 20% is provided between reliable continuous operation of the switched power pack and a destruction limit of said avalanche-proof MOS transistor; and

a transformer having a primary winding connected to said switching transistor to receive a selectively conducted DC voltage, said transformer having a secondary winding supplying an output voltage.

4,945,464

HIGH VOLTAGE DC POWER SUPPLY

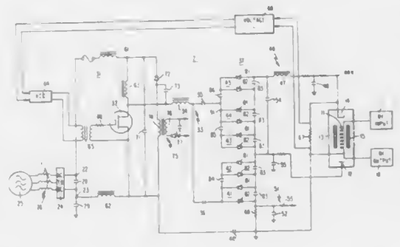
Bradley R. Gunn, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 62,806, Jun. 15, 1987, Pat. No. 4,821,165. This application Sep. 30, 1988, Ser. No. 254,755

The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.

Int. Cl.[5] H02M *3/18*

U.S. Cl. 363—61 **22 Claims**



1. A DC power supply responsive to a relatively low voltage DC power source and a high frequency switching source comprising capacitive and diode AC to DC converter means for deriving a DC output voltage; a switch controlled by the switching source to open and closed states; a flyback choke

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connected in series with the switch and the DC power source so current flows between terminals of the power source via the choke and switch while the switch is closed; resonant circuit means connected in circuit with the switch, the flyback choke and the AC to DC converter means so that each time the switch is closed (a) a half wave rectified current waveform having a duration determined by the resonant frequency of the resonant circuit means flows in the resonant circuit means and (b) a first current component having first polarity direction flows in the choke, and while the switch is open a second current component having a second polarity direction flows in the choke and the resonant circuit means, the AC to DC converter means responding to each half wave rectified current waveform to derive the DC output voltage and includes voltage multiplier means for deriving the DC output voltage as a high voltage DC and wherein the voltage multiplier means includes plural high speed signal switching diodes each having a recovery time that is a small fraction of the duration of each half wave rectified current waveform.

4,945,465

SWITCHED-MODE POWER SUPPLY CIRCUIT

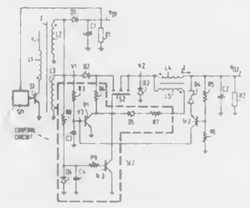
Antonius A. M. Marinus; Hubertus C. Miermans, and Guy L. P. De Bondt, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1989, Ser. No. 398,124

Claims priority, application Netherlands, Sep. 15, 1988, 8802267

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—89 **8 Claims**



1. A switched-mode power supply circuit comprising a transformer having a primary winding which is arranged in series with a first controllable switch, the series arrangement formed being coupled between the terminals of a d.c. input voltage, the transformer having a first secondary winding to which a rectifier is coupled for making a first d.c. output voltage available and a second secondary winding to which a second controllable switch is coupled for making a second d.c. output voltage available, the circuit further comprising first control means for applying a periodical control signal to the first switch for rendering said switch alternately conducting and non-conducting in dependence upon the first output voltage, as well as second control means for rendering the second switch alternately conducting and non-conducting, the rectifier being conducting when the first switch is blocked and the interval of conductance of the second switch being located in the interval of conductance of the first switch, characterized in that the second control means are implemented for a ratio between the period of conductance of the second switch and the period of the control signal of the first switch, said ratio being independent of the frequency of said signal.

4,945,466

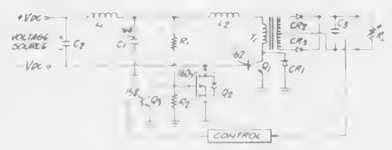
RESONANT SWITCHING CONVERTER

Walter G. Borland, 8319 Dunstaff Rd., Charlotte, N.C. 28213

Filed Feb. 22, 1989, Ser. No. 314,467

Int. Cl.[5] H02M *3/338*

U.S. Cl. 363—97 **7 Claims**



1. A resonant switching converter for providing an output voltage to a load, comprising:

(a) a first series resonant circuit including a first inductor and a first capacitor connected in series with a voltage source;

(b) a second series resonant circuit including a second inductor and said first capacitor;

(c) switch means connected in series with said second inductor and responsive to the current in said first inductor for enabling a discharge path to the load for a charge stored by said first capacitor; and

(d) a first control means responsive to the voltage on said first capacitor for operating said switch means at a controlled voltage on said first capacitor.

4,945,467

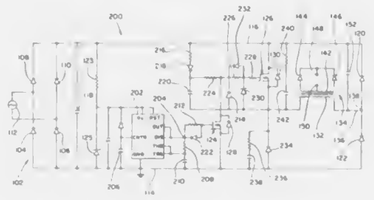
MULTIPLE-MODE VOLTAGE CONVERTER

Pradeep M. Bhagwat, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 26, 1988, Ser. No. 161,122

Int. Cl.[5] H02M *7/5387*

U.S. Cl. 363—132 **45 Claims**



1. A voltage converter, which comprises:

a load circuit;

means for coupling a power source to the voltage converter to provide a primary D.C. power source;

a secondary D.C. power source;

primary coupling means for coupling the primary D.C. power source to the load circuit to apply power of one polarity to the load circuit from the primary D.C. power source during a first portion of each cycle of operation of the voltage converter;

means for operating the primary coupling means during the first portion of each cycle;

secondary coupling means for coupling the secondary D.C. power source to the load circuit independently of the primary D.C. power source to apply power of opposite polarity to the load circuit from the secondary D.C. power source during a second portion of each cycle of operation of the voltage converter;

a tertiary D.C. power source developed through the primary coupling means during the period when the primary D.C. power source is coupled to the load circuit, and

means operable independently of the means for operating the primary coupling means for coupling the tertiary D.C. power source to the secondary coupling means during the second portion of each cycle to bias the secondary coupling means and thereby facilitate the application of power of the opposite polarity to the load circuit.

4,945,468

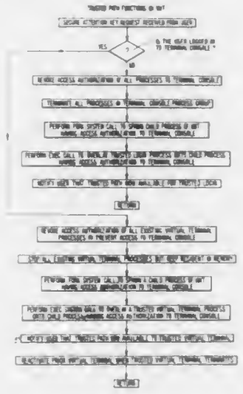
TRUSTED PATH MECHANISM FOR VIRTUAL TERMINAL ENVIRONMENTS

Mark E. Carson, Rockville, and Abhai Johri, Gaithersburg, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1988, Ser. No. 150,965

Int. Cl.[5] H04L *9/00*; H04K *1/00*; G06F *12/14, 9/44*

U.S. Cl. 364—200 **14 Claims**



8. In a data processor, including a terminal coupled to a system memory, running an operating system which includes a virtual terminal manager means for controlling a plurality of virtual terminals in said memory, a method for establishing a protected path for a special user from said terminal to a trusted process in said memory; comprising the steps of:

receiving a secure attention request from a user;

terminating in response to said request, all existing processes associated with said terminal and revoking their access thereto when said user is not logged onto said terminal, and then establishing a trusted login process to determine whether said user is a special user; and

deactivating in response to said request, all existing virtual terminal processes associated with said terminal and revoking their access thereto when said user is logged onto said terminal as a special user, and then establishing a protected path for said user from said terminal to a trusted process in said memory.

4,945,469

HIGH SPEED STACK CIRCUIT FOR REGISTER DATA IN A MICROCOMPUTER

Kenji Yamada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 863,886, May 16, 1986, abandoned. This application Oct. 11, 1989, Ser. No. 420,688

Claims priority, application Japan, May 17, 1985, 60-105572

Int. Cl.[5] G06F *9/46, 13/40*

U.S. Cl. 364—200 **7 Claims**

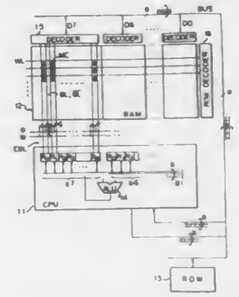
1. A microcomputer, comprising:

a central processing unit producing an address and including internal registers storing data of plural bits;

random access memory separate from said central processing unit, accessed by the address and including word lines, a fit number of bit lines and memory cells at intersections of the word and bit lines;

a data bus having a second number of data bus lines smaller than the first number, connected between said random access memory and said central processing unit, for transferring data, having a plurality of bits, between said random access memory and said central processing unit; and

a connection portion, separate from said data bus and connected between the bit lines of the random access memory and the internal registers, having the first number of conductors greater than the second number of the data bus lines, for transferring data between the internal registers and the bit lines, coupling, responsive to control by said central processing unit, the internal registers to the bit lines and transferring simultaneously, without using said data bus lines, a larger number of bits from said internal registers to said bit lines than can be transferred over said data bus.



4,945,470

HIERARCHY MULTI-PROCESSOR SYSTEM AND CONTROL METHOD THEREFOR

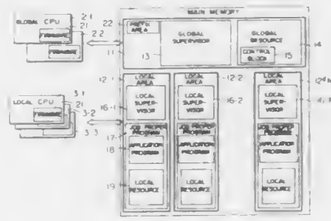
Hideo Takahashi, Yokohama, Japan, assignor to Hitachi. Ltd., Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 748,870

Claims priority, application Japan, Jun. 20, 1984, 59-125120

Int. Cl.[5] G06F *9/00*

U.S. Cl. 364—200 **8 Claims**



1. A multi-processor system comprising:

a main memory having a common area occupying an address space, and a plurality of local areas each occupying respective address spaces in which there are respective application programs for jobs to be executed independently from each other;

a plurality of local supervisors each provided in the address

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space of a respective one of said local areas and each being capable of executing similar operating system processes;

a global supervisor provided in the address space of said common area, said common area also containing a global resource utilized in common by said local supervisors via said global supervisor, and each local area containing a local resource utilized by the one of said local supervisors therein; and

a plurality of processors sharing said main memory for executing processing under control of said local supervisors or said global supervisor;

each of said local supervisors having means for requesting the execution of processing by said global supervisor when it requires access to a global resource in said common area in the course of processing;

said global supervisor having means for executing a processing when it receives a request from a local supervisor for such processing.

4,945,471

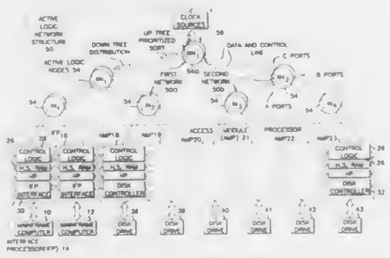
MESSAGE TRANSMISSION SYSTEM FOR SELECTIVELY TRANSMITTING ONE OF TWO COLLIDING MESSAGES BASED ON CONTENTS THEREOF

Philip M. Neches, Pasadena, Calif., assignor to Teradata Corporation, Los Angeles, Calif.

Division of Ser. No. 755,436, Jul. 16, 1985, Pat. No. 4,814,979, which is a division of Ser. No. 601,808, Apr. 19, 1984, Pat. No. 4,543,630. This application Sep. 8, 1988, Ser. No. 242,064

Int. Cl.[5] G06F *13/18, 13/40, 15/16*

U.S. Cl. 364—200 **10 Claims**



1. A message transmission network having a plurality of terminals comprising:

(a) a plurality of signal transmission means extending between the terminals, each of said transmission means comprising:

(i) a plurality of tiered bidirectional message switching nodes, each bidirectional switching node having a single upstream port and a first and second downstream port such that a first message and a second message arrive substantially simultaneously at the first and second downstream port, respectively means determining priority between the first and second colliding messages based on message data content, the upstream port connected to said first and second downstream ports and said determining means for emitting one of the first and second messages having the priority, said upstream port further transmits externally received message to the first and second downstream ports simultaneously;

(ii) a plurality of tiered transmission links, a first tier of transmission links being serially intercoupled between a terminal and a downstream port, remaining tiers of transmission links being serially interconnected between the upstream port of one bidirectional switching node and a downstream port of another bidirectional switching node occupying a successively more upstream tier; and

(b) a recirculation node, the recirculation node having a first and second input port, each said input port being intercoupled to a different one of only two remaining transmission links originating at the upstream port of only two remaining bidirectional switching nodes, the recirculating node returning a single selected message to the upstream port of each successive downstream pair of nodes, thereby returning the single selected message to all of the terminals.

4,945,472

DATA PROCESSOR WITH I/O AREA DETECTION

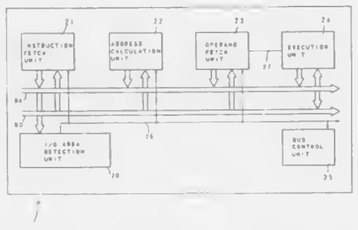
Ken Sakamura, Tokyo, and Souichi Kobayashi, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1988, Ser. No. 173,217

Claims priority, application Japan, Sep. 30, 1987, 62-246625

Int. Cl.[5] G06F *3/00*

U.S. Cl. 364—200 **19 Claims**



1. A data processor whose I/O area is memory-mapped, comprising:

a first register which stores an address for designating said I/O area;

a second register which stores data for masking an address used for accessing;

logical AND means coupled to said second register which obtains a masked address from said data stored in said second register and an address used for accessing;

coincidence detection means coupled to said first register and said logical AND means which detects coincidence of said masked address obtained by said logical AND means and an address stored in said first register; and

means, coupled to said detection means, for outputting a coincidence signal when said coincidence detection means detects said coincidence.

4,945,473

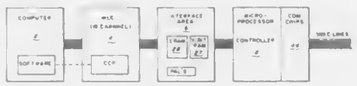
COMMUNICATIONS CONTROLLER INTERFACE

Thomas O. Holtey, Newton, Mass.; Thomas L. Murray, Jr., Hollis; Scott W. Smith, Hudson, both of N.H., and Wayne A. Perzan, Holbrook, Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed May 15, 1987, Ser. No. 51,084

Int. Cl.[5] G06F *13/00, 15/16*

U.S. Cl. 364—200 **20 Claims**



1. An apparatus for transferring data between a microprocessor control unit coupled to a plurality of communication lines and a multi-line communications unit coupled to a computer to emulate an interface for transferring data between the multi-line communications unit and multiple line adapters according to a predetermined protocol, said line adapters each including discrete registers for holding receive data, transmit data and control information, and logic circuits, said apparatus comprising:

an interface control unit coupled between said microprocessor control unit and said multi-line communications unit, said interface control unit including an interface memory and control elements, said interface memory having a plurality of addressable storage locations which are used to emulate the discrete registers and logic circuits of said line adapters;

said interface memory being mapped so as to divide said interface memory into a number of groups of locations corresponding to the number of communication lines, each group of locations including a location for receive data, a location for transmit data and a control location, said locations for receive data and said locations for transmit data emulating said discrete registers for holding receive data and transmit data, and said control locations emulating said discrete register for holding control information and said logic circuits;

said control elements generating a sequence of signals for controlling different tasks to be performed by said interface control unit; and

means for interconnecting said control elements to said interface memory so that said multi-line communications unit is able to access different ones of said control locations for updating the status of said communication lines and for enabling said interface control unit to transfer data to said receive locations for access by said multi-line communications unit and to transfer data from said transmit locations for transmission on said communication lines in a predetermined sequence consistent with said status, said control elements accessing said control locations for establishing data which is to be transferred to and from said multi-line communications unit in accordance with said predetermined protocol of said line adapter and so as to emulate the operation of said line adapter;

with said control elements monitoring accessing to said control locations concurrent with any access by said multi-line communications unit.

4,945,474

METHOD FOR RESTORING A DATABASE AFTER I/O ERROR EMPLOYING WRITE-AHEAD LOGGING PROTOCOLS

Linda C. Elliott; Gary R. Horn; Lloyd E. Jordan, II; Frank E. Levine; Cheng-Fong Shih, and William W. Myre, Jr., all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1988, Ser. No. 179,195

Int. Cl.[5] G06F *11/00, 15/40*

U.S. Cl. 364—200 **9 Claims**

1. In a computerized database system including a storage medium for storing data files, index files, and a recovery log having a plurality of files, and a CPU for I/O to said storage medium, a method executed by said system for recovering a database after an I/O error, comprising the steps of:

(a) writing log records during normal forward processing to said recovery log on said storage medium;

(b) traversing across said recovery log on said storage medium during RESTART routine processing after said I/O error for detecting committed and uncommitted transactions, said RESTART routine including a REDO sub-routine for redoing committed transactions recorded in said recovery log;

(c) detecting said written log records in said recovery log which are incomplete or failed;

(d) executing a recovery routine;

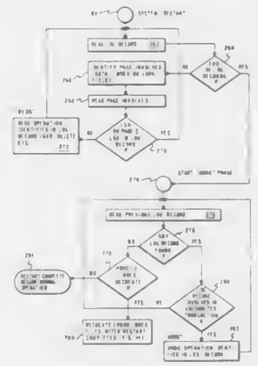
(e) executing an UNDO routine for undoing said detected uncommitted transactions;

(f) renaming said files on said storage medium having said I/O error;

(g) storing in a first file on said storage medium indicators of said renamed files that identify said renamed files as error files;

(h) accessing said first file for said indicators;

(i) preventing a subsequent RESTART routine from accessing said identified I/O error files in response to said accessing said first file;



(j) continuing said RESTART routine in response to said accessing said first file while preventing operations on said identified I/O error files during said continued RESTART routine;

(k) generating a request for access to one of said data files on said storage medium having a corresponding index file;

(l) accessing said one of said data files on said medium to determine whether said corresponding index file has been renamed thereby indicating said corresponding index file is an error index file;

(m) rebuilding said index file in response to said determination of said error index file.

4,945,475

HIERARCHICAL FILE SYSTEM TO PROVIDE CATALOGING AND RETRIEVAL OF DATA

Bill M. Braffey, Cupertino; Gursharan S. Sidhu, Menlo Park; Patrick W. Dirks, Cupertino, and Christopher R. McFall, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 924,802, Oct. 30, 1986, abandoned. This application Nov. 21, 1989, Ser. No. 442,408

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—200 **6 Claims**

1. In a computer, a hierarchial filing system to provide cataloging and retrieval of data stored on a storage device, said hierarchial filing system comprising:

a memory for storing a program for said cataloging and retrieval;

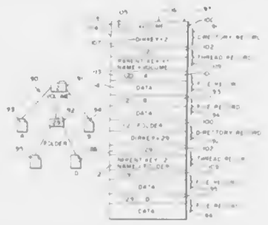
a processor coupled to said memory and said storage device for processing an organizing means to catalog and retrieve said data; said processor comprising;

said program for organizing said data on said storage device into a hypothetical catalog which has a root directory, a plurality of branching directories arranged at various subsequent levels from said root directory, wherein some of said branching directories branch from other of said branch directories; said branching directories being interconnected such that for each of said branching directories

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there is only a singular path from itself to said root directory; and wherein some of said branching directories have at least one file, each file corresponding to a representation of a predetermined portion of said stored data;

an assigning means for assigning a unique identification value to said root directory and each of said branching directories, and assigning an identification name to each of said files, root directory and branching directories, wherein each of said branching directories and files are each provided with a key comprised of its identification name and its next higher level directory identification value;



a list forming means for forming a linear list of files and directory entries such that said file and directory entries are ordered by said keys, such that said root directory being the highest level and files being the lowest level; and said interconnection of each of said singular path is provided by each file and branching directory identification name being associated with directory identification value of its next higher level;

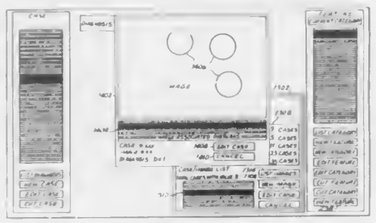
a structure forming means for forming a B-Tree indexing structure having a beginning node, a plurality of indexing nodes and a plurality of terminating nodes, and wherein said linear list is stored in said terminating nodes of said B-Tree indexing structure.

4,945,476

INTERACTIVE SYSTEM AND METHOD FOR CREATING AND EDITING A KNOWLEDGE BASE FOR USE AS A COMPUTERIZED AID TO THE COGNITIVE PROCESS OF DIAGNOSIS

Neil Bodick, Philadelphia, and Andre L. Marquis, Devon, both of Pa., assignors to Elsevier Science Publishing Company, Inc., New York, N.Y.

Filed Feb. 26, 1988, Ser. No. 161,188
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.02 **78 Claims**



76. A computerized aid to the cognitive process of diagnosis comprising:

textual knowledge base means for storing text data including: (a) case information representing multiple case records each of which includes data indicative of features that characterize the case, and (b) feature information representing multiple feature records each of which is comprised of data indicative of the components of which the features that characterize a case are formed;

image knowledge base means for storing image data representing images of features which are included in the case records stored in the textual knowledge base means;

inquiry entry means for use by an operator to enter text inquiry data designating case or feature records for selectively retrieving case information text data or feature information text data from said textual knowledge base means, and for retrieving image data from said image knowledge base means;

processor means responsive to said text inquiry data to retrieve case or feature information text data from said textual knowledge base means and to retrieve image data from said image knowledge base means in response to text inquiry data designating feature records; and

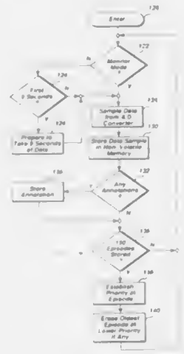
picture display means responsive to said processor means for displaying pictures corresponding to the image data retrieved from said image knowledge base means in response to said text inquiry data.

4,945,477

MEDICAL INFORMATION SYSTEM

D. Craig Edwards, Bellevue, Wash., assignor to First Medic, Bellevue, Wash.

Filed Oct. 22, 1987, Ser. No. 111,985
Int. Cl.[5] A61N *1/36*
U.S. Cl. 364—413.06 **16 Claims**



1. A medical information recording system for use with a patient having a medical state, said system receiving and storing data relating to the medical state of said patient, comprising:

monitor means for producing a monitoring ECG signal indicative of the patient's medical state;

analysis means for analyzing said ECG signal to determine if a defibrillation shock is indicated; defribrillator means for applying a defibrillator shock to said patient;

sampling means for obtaining samples of said monitoring signal, said samples having respective characteristics;

memory means for storing said samples, said memory means having a capacity limited to storing a predetermined number of said samples; and

processing means connected to said sampling means and said memory means for storing said samples in said memory means, said processing means further including prioritizing means operative whenever the number of samples obtained by said sampling means exceeds the storage capacity of said memory means, said prioritizing means overwriting previously obtained samples stored in said memory means with subsequently obtained samples, depending upon the characteristics of said previously and subsequently obtained samples.

4,945,478

NONINVASIVE MEDICAL IMAGING SYSTEM AND METHOD FOR THE IDENTIFICATION AND 3-D DISPLAY OF ATHEROSCLEROSIS AND THE LIKE

Michael B. Merickel; Charles S. Carman; James R. Brookeman; John P. Mugler, III, and Carlos R. Ayers, all of Charlottesville, Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Nov. 6, 1987, Ser. No. 117,508
Int. Cl.[5] G06F *15/70*
U.S. Cl. 364—413.22 **64 Claims**



1. A noninvasive imaging system for the display of a mammalian soft tissue live body part such as blood vessels or similar soft tissue for evaluation of soft tissue, using information obtained from multiple sequenced image slices produced by a body scan such as MRI and PET comprising:

an electronic digital storage means for storing said information;

a computer processing means for processing said information from said storage means;

a graphics display station means for displaying an image resulting from said processed information;

said computer processing means including:

means for determining the boundary of said soft tissue body part from said image slices;

means for extracting said soft tissue body part;

means for clustering and determining the different soft tissue types of interest in said body part; and

means for creating a data base for said extracted soft tissue body part including the different soft tissue types with their location and volume for displaying in contrasting delineation on said graphics display station whereby said display shows an extracted view of said body part with said different soft tissues shown delineated in their volumetric quantities and shape at the correct location in said body part.

4,945,479

TIGHTLY COUPLED SCIENTIFIC PROCESSING SYSTEM

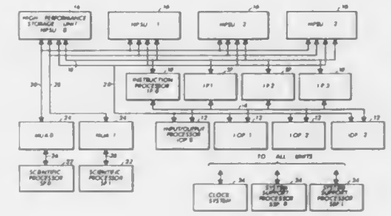
John T. Rusterholz, Roseville; Charles J. Homan, St. Paul; Lowell E. Brown, Anoka; Donald B. Bennett, Burnsville; Robert J. Malnati, St. Paul, and James R. Hamstra, Plymouth, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

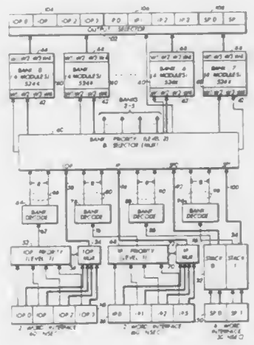
Filed Jul. 31, 1985, Ser. No. 761,139
Int. Cl.[5] G06F *9/00*
U.S. Cl. 364—200 **29 Claims**

1. A tightly coupled data processing system for executing both scientific instructions and general purpose data processing instructions comprising:

high performance storage unit means for providing addressable storage of first data words and first instruction words for use in general purpose operations and second data words and second instruction words for use in scientific operations, said high performance storage unit means including a plurality of addressable storage locations, reading and writing means, general purpose port means addressably coupled to said plurality of addressable storage locations, scientific port means addressably coupled to said plurality of addressable storage locations, and request/acknowledge means for controlling access to each referenced one of said plurality of addressable storage locations for activating said reading and writing means such that conflicts in any such references are arbitrated and only one such reference at a time is permitted;

general purpose host processor means for performing general purpose tasks and for selecting and controlling scientific tasks to be performed outside said general purpose host processor means, said general purpose host processor means including first port means directly coupled to said general purpose port means of said high performance storage unit means for reading and writing said first data words and said first instruction words required to perform said general purpose tasks and for selecting and controlling said scientific tasks;





scientific processor means having second port means directly coupled to said scientific port means of said high performance storage unit means for reading and writing second data words and said second instruction words for use in scientific operations, thereby having common access to said addressable storage locations available to said general purpose host processor means, whereby a tightly coupled data processing system wherein one or more ones of said scientific processor means share said plurality of storage locations of said high performance storage unit means with said general purpose host processor means to enable rapid task activity transfer and sharing between said general purpose host processor means and said scientific processor means.

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4,945,480

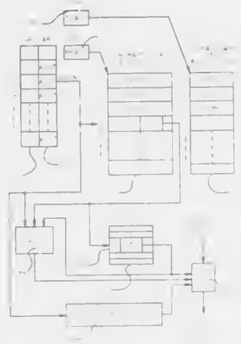
DATA DOMAIN SWITCHING ON PROGRAM ADDRESS SPACE SWITCHING AND RETURN

Carl E. Clark, Poughkeepsie; Alan G. Ganek, Chappaqua; Michael G. Mall, Lagrangeville, all of N.Y., and David R. Page, Romsey Hants, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1988, Ser. No. 154,685

Int. Cl.[5] G06F *12/08, 9/36*

U.S. Cl. 364—200 **20 Claims**



1. A computer system method for controlling the ability of an executing program to obtain access to data in a data domain, comprising:

recording program-address-space entries in a memory of the computer system in one or more system tables containing descriptors (STDs) for program address spaces,

recording a plurality of addresses in relation to the STDs for locating associated access lists (PSALs) representing data domains having data required for the execution of program instruction in an associated one of the program address spaces,

providing tokens for enabling an executing program to access data in an address space selected in a data domain defined by a PSAL of a current program address space having the executing program, each token having an AL-type indication field set to indicate which of plural types of access lists is to be accessed,

calling a program for execution including loading an address into a program control register for defining a next program address space having a next program to execute, and

concurrently loading a data domain control register with an address to a PSAL data domain associated with the next program address space,

executing the next program in which a currently-executing instruction has an operand that selects one of a plurality of general purpose registers (GPRs) as a base GPR by using a base address component of a virtual address represented in the instruction operand,

selecting an access register (AR) associated with the base GPR as a base AR containing one of the tokens previously loaded into the AR,

selecting a control register associated with the token in the base AR, the selected control register containing an address defining a required data domain, the token locating a selected AL entry (ALE) in an access list addressed from the selected control register to obtain access to an address space having data required by the operand.

4,945,481

SYSTEM FOR INTEGRALLY CONTROLLING AUTOMATIC TRANSMISSION AND ENGINE

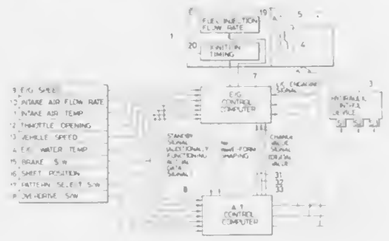
Kunihiro Iwatsuki; Yoshio Shindo, both of Toyota; Kazuhiko Hayashi, Nagoya; Hiroshi Sasaoka, Okazaki; Yukio Hamano, Kobe; Keita Sakurai, Toyota; Fumiaki Izumi, Toyota, and Yuji Kashihara, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 30, 1987, Ser. No. 44,307

Claims priority, application Japan, May 8, 1986, 61-105543; Jul. 7, 1986, 61-159402

Int. Cl.[5] G05D *17/02*; G06F *15/50*

U.S. Cl. 364—424.1 **9 Claims**



1. A system for integrally controlling an automatic transmission and an engine. comprising:

means for controlling said engine;

means formed separately from said engine control means for controlling said automatic transmission;

means formed integrally with said automatic transmission control means for determining data for torque change control of said engine, said engine torque change control data including a value for a change in engine torque and a duration for the change in engine torque;

means for associating values of parameters for changing engine torque, by which the engine torque change value is divided into equal parts with a plurality of digital values; and

means for transmitting said digital values from said automatic transmission control means to said engine control means so as to perform the engine torque change.

4,945,482

TRANSMISSION CONTROL SYSTEM

Seiichi Nishikawa, Toyokawa; Yoshiharu Harada; Kagenori Fukumura, both of Toyota; Yoichi Hayakawa, Toyoake, and Masao Kawai, Chiryu, all of Japan, assignors to Aisin-Warner Limited, Anjo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 819,730, Jan. 17, 1986, abandoned. This application Oct. 12, 1988, Ser. No. 257,149 .

Claims priority, application Japan, Jan. 19, 1985, 60-7771

Int. Cl.[5] G05D *17/02*; B60K *41/08, 23/08*

U.S. Cl. 364—424.1 **3 Claims**

1. A transmission control system for controlling a transmission, comprising

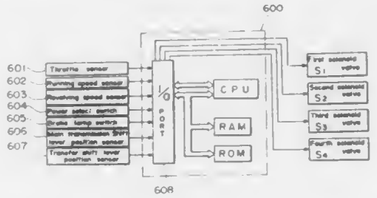
a main transmission having a speed changing mechanism and an output shaft,

a subtransmission connected to the output shaft of the main transmission,

a control system for receiving outputs from a pluraiity of sensor means for sensing running state of a vehicle, said control system having first and second outputs,

first hydraulic control means for controlling the speed changing mechanism of the main transmission and controlled by the first output from the control system,

second hydraulic control means for controlling the speed changing mechanism of the subtransmission and controlled by the second output from the control system, and a hydraulic pressure source for supplying a working fluid to the first and second hydraulic control means,



wherein said control system determines whether the main and the subtransmissions are in a transient period of the speed changing operation and said control system inhibits, as long as at least one of the main and subtransmission is in the transient period, the speed changing operation of the other transmission.

4,945,483

DRIVE CONTROL DEVICE FOR VEHICLE

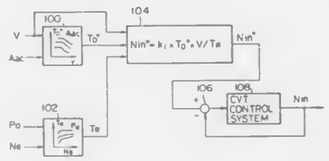
Setsuo Tokoro, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 29, 1988, Ser. No. 174,900

Claims priority, application Japan, Mar. 31, 1987, 62-78938

Int. Cl.[5] B60K *41/12, 41/18*; F16H *11/06*

U.S. Cl. 364—424.1 **17 Claims**



1. A drive control device for a vehicle having a continuously variable transmission designed to continuously control a speed ratio between an input shaft and an output shaft; said drive control device comprising:

means for detecting engine load of an engine to be used in combination with said continuously variable transmission;

means for detecting a vehicle speed of said vehicle;

means for determining an engine torque of said engine;

means for detecting an actual value related to an operation of said continuously variable transmission;

means for determining a target vehicle driving torque according to at least said engine load;

means for determining a target value related to an operation of said continuously variable transmission according to at least said target vehicle driving torque, said vehicle speed and said engine torque; and

means for feedback controlling said actual value of said continuously variable transmission so that said actual value becomes said target value.

4,945,484

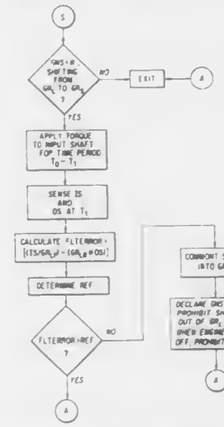
METHOD AND CONTROL SYSTEM FOR CONTROLLING AMT SYSTEM INCLUDING DETECTION OF ERRONEOUS GEAR NEUTRAL INDICATION

William F. Cote, Farmington Hills, and William J. Mack, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 13, 1988, Ser. No. 256,960

Int. Cl.[5] B60K *41/04*

U.S. Cl. 364—424.1 **14 Claims**



1. A method for controlling an at least partially automated mechanical transmission system (10) for devices having a throttle-controlled engine (14), a transmission having a plurality of gear ratio combinations selectively engageable between a transmission input shaft (114) and a transmission output shaft (20) said transmission input shaft being operatively connected to said engine by means of a selectably engageable and disengageable coupling (16) providing driving connection between said engine and said input shaft, said automatic mechanical transmission system comprising an information processing unit (42) having means for receiving a plurality of input signals including (1) a signal (GR_L) indicative of at least last engaged gear ratio of the transmission; (2) an input signal (IS) indicative of the rotational speed of the transmission input shaft; (3) an input signal (OS) indicative of tbe rotational speed of the transmission output shaft; and (4) an input signal (GNS) indicative of the gear neutral condition of said transmission, said gear neutral trial condition input signal having a first value (GNS=0) indicating the presence of a gear neutral condition and a second value (GNS=1) indicating the presence of a not gear neutral condition, said processing unit including means for processing said input signals in accordance with predetermined logic rules and for generating output signals whereby said transmission system is operated in accordance with said program, and means (34) associated with said transmission system effective to actuate said transmission system to effect engagement of said gear ratio combinations in response to said output signals from said processing unit, the method comprising the steps of:

during a commanded shift from a last engaged gear ratio (GR_L) to a selected gear ratio (GR_S), upon receiving an input signal (GNS=0) indicative of a gear neutral condition, sensing the presence and absence of faulty input signals indicative of the presence of a transmission gear neutral condition;

if said input signal indicative of transmission gear neutral condition is determined to be faulty, commanding an immediate shift directly into the last engaged ratio and prohibiting shifting from said last engaged gear ratio; and

upon sensing a faulty signal indicative of a transmission gear neutral condition, prohibiting said coupling from engaging after shut down of said engine.

4,945,485

METHOD FOR CONTROLLING THE OPERATION OF AN ENGINE FOR A VEHICLE

Takanori Fujimoto, and Toshiro Hara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

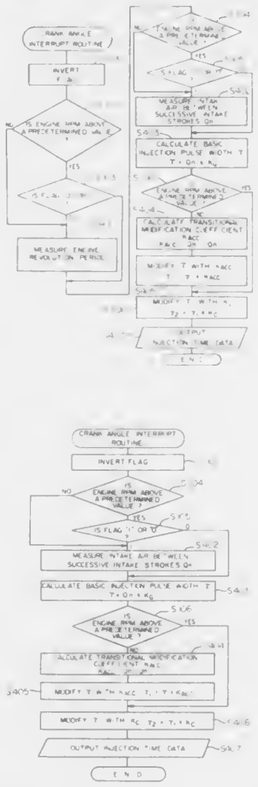
PCT No. PCT/JP88/00144, § 371 Date Sep. 28, 1988, § 102(e) Date Sep. 28, 1988, PCT Pub. No. WO88/06236, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 13, 1988, Ser. No. 254,657

Claims priority, application Japan, Feb. 13, 1987, 62-32016; Feb. 13, 1987, 62-32017

Int. Cl.[5] F02D *41/26*, *41/40*; F02M *51/00*

U.S. Cl. 364—431.05 16 Claims



1. An engine control method for a vehicle comprising:

sensing operating conditions of an engine through the use of various sensors,

establishing from the sensed operating conditions whether the engine is operating within a specified operating range in which variations in the sensed operating conditions of the engine are limited,

calculating a fuel injection pulse width based on the sensed engine operating conditions in a plurality of steps including a step of measuring engine revolution period and a step of measuring interstroke intake air through the use of a microcomputer,

optimizing operation of the engine by use of the fuel injection pulse width thus calculated,

calculating the steps of measuring engine revolution period and interstroke intake air every time the fuel injection pulse width is calculated while the engine operates outside the specified operating range, and

alternately calculating and omitting the step of measuring engine revolution period and the step of measuring interstroke intake air every other time the fuel injection pulse width is calculated while the engine operates in the specified operating range.

4,945,486

MULTI-COMPUTER SYNCHRONIZATION SYSTEM AND METHOD

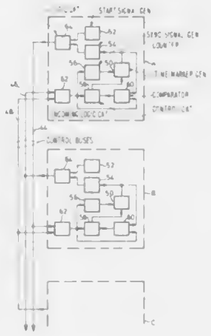
Werner Nitschke, Ditzingen; Hugo Weller, Oberriexingen, and Wolfgang Drobny, Besigheim, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 107,382, Oct. 9, 1987, abandoned. This application Sep. 1, 1989, Ser. No. 402,979

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638947

Int. Cl.[5] G06F *15/50*; H04B *1/20*

U.S. Cl. 364—431.11 14 Claims



1. Method of synchronizing a plurality of computer apparatus units interconnected by at least one bus (**44, 46, 48**; **70, 72**), particularly for a multi-unit computer system supervising and controlling safety apparatus, comprising the steps of:

generating a starting signal (**10, 12, 14**; **16, 18, 20**) at predetermined stages in a program in each apparatus unit;

transmitting said starting signal from each apparatus unit (A, B, C) to each other apparatus unit;

comparing, in each apparatus unit, a time of reception of said starting signals and determining an arrival instant of a last-to-arrive starting signal (**14, 18**);

generating, in each apparatus unit (A, B, C), a respective time marker signal (**32, 34**);

transmitting said respective time marker signal from each apparatus unit to each other apparatus unit;

comparing, in each apparatus unit, a time of reception of said time marker signals and determining the arrival instant thereof and generating synchronizing signals (**22, 24, 26**);

transmitting said synchronizing signals from each apparatus unit to each other apparatus unit;

comparing, in each apparatus unit, said synchronizing signals with the time marker signal of the respective apparatus unit, and

if a deviation between said synchronizing signals (**22, 24, 26**) and said time marker signal (**32, 34**) is detected in the respective apparatus unit, adjusting the time of generation of the time marker signal in said respective apparatus unit until the time marker signal and synchronizing signal coincide.

4,945,487

DATA PROCESSING DEVICE FOR THREE DIMENSIONAL SURFACE MACHINING

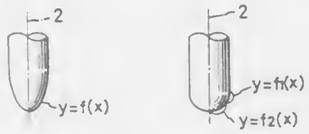
Rokuro Kimura, Nagoya; Kizo Hayakawa, Tokai; Kazutaka Ogo, Nagoya; Kazunari Teramoto, Toyota; Isao Ito, Nagoya; Akihiro Goto, and Yoshimasa Kuwano, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

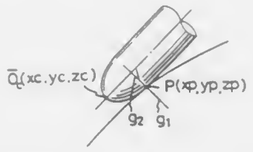
Filed Jul. 29, 1988, Ser. No. 225,815

Claims priority, application Japan, Jul. 31, 1987, 62-192031

Int. Cl.[5] B23Q *33/00*

U.S. Cl. 364—474.02 12 Claims





1. A data processing device for machining a three dimensional surface by using a tool having a plurality of various curvature machining portions, one of which is selected in response to variations of the curvature on the three dimensional surface comprising:

(a) means for calculating information for expressing the three dimensional surface based on factors of the three dimensional surface;

(b) means for generating tool locus data

(i) by providing tool shape and dimension indicative information and machining route information,

(ii) by calculating at least one information selected from a curvature, a normal line and a tangential line of the three dimensional surface to be machined, based on said calculated information for expressing the three dimensional surface at each machining point, said tool shape and dimension indicative information and said machining route information,

said three dimensional surface being machined by the tool having various machining portions, where a graphical projection of an outermost locus of motion of the tool, located on a plane parallel to the longitudinal axis of the tool, has a shape comprising at least one curve whose curvature is changed, and

(iii) by calculating a shape condition and/or a controlling condition of the tool based on said at least one information;

(c) means for checking the tool locus data based on a predetermined pattern; and

(d) means for converting the tool locus data into data to be inputted into r. machine which conducts three dimensional surface machining.

4,945,488

INTEGRATED AIRCRAFT MANUFACTURING SYSTEM

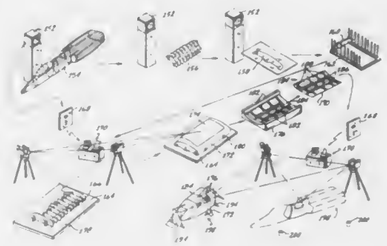
Larry L. Carver, Manhattan Beach; Charles E. Zamzow, Rancho Palos Verdes; Donald D. Mladenoff, Alta Loma, and Glenn A. Lovrien, Bellflower, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Continuation-in-part of Ser. No. 50,794, Apr. 14, 1987, abandoned. This application Mar. 6, 1989, Ser. No. 319,599

Claims priority, application European Pat. Off., Apr. 14, 1988, 88105995.0; Japan, Apr. 14, 1988, 63-92623

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—474.24 15 Claims



1. A method of manufacturing tooling for aircraft construction which comprises:

constructing a definition of said aircraft in a computer memory;

defining in said computer memory a first tool means for forming a component part of said aircraft;

defining in said computer memory a second tool means for assembling a component part of said aircraft wherein said component part of said aircraft is formed with said first tool means;

downloading said definitions of said first tool means and said second tool means to means for forming tools; and

operating said means for forming tools to form said first tool means and said second tool means essentially independent from one another.

4,945,489

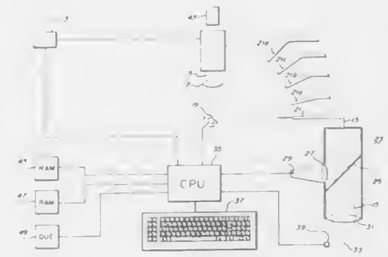
LASER TIME-SHARING SYSTEM

Christian Vahab, Fountain Valley, Calif., assignor to Robotase Systems, Inc., Costa Mesa, Calif.

Filed May 25, 1988, Ser. No. 198,337

Int. Cl.[5] B23K *26/00*; G06F *15/20*

U.S. Cl. 364—505 19 Claims



1. A laser multiplexer for time-sharing a high-power laser among a plurality of work stations, comprising:

a single laser light source capable of producing a high powered laser beam;

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a plurality of optic fibers, one optic fiber for each one of said plurality of work stations, for conducting the laser beam through an interior of the optic fiber to its respective work station;

means for measuring the laser beam reaching a particular work station through the interior of the selected optic fiber; and

means responsive to the measurement for coupling the laser beam into an output end of the optic fiber so that the intensity of the laser beam exiting the optic fiber at the work station is at a maximum.

4,945,490

BRINELL HARDNESS INDICATOR WITH DIGITAL READOUT

Ernest L. Biddle, Jr., 1028 Great Springs Rd., Bryn Mawr, Pa. 19010; John D. Lacasig, 833 Malin Rd., Newtown Square, Pa. 19073, and John B. Oehrle, 803 Newtown Rd., Villanova, Pa. 19085

Filed Apr. 11, 1988, Ser. No. 179,598
Int. Cl.[5] G06K *9/00*; G01N *3/42*
U.S. Cl. 364—506 **22 Claims**



1. An apparatus for determining Brinell hardness of a metal specimen which has been indented by a Brinell penetrator applied with a preselected force according to Brinell test criteria, comprising:

a. means for applying electromagnetic radiation to said indentation and an area of the specimen surrounding the indentation at an acute angle relative to an axis perpendicular to a surface of said specimen surrounding the indentation whereby a portion of said electromagnetic radiation is reflected by said indentation and by said surrounding area:

b. means for detecting and mapping intensities of said reflected radiation for at least a portion of said indentation and at least a portion of said area theresurrounding;

c. means for determining derivatives of mapped intensity of reflected radiation with respect to a change in position on said map for at least two points located on said map;

d. means for computing a location of a curve representing an edge of said indentation using said derivatives;

e. means for computing a diameter of said indentation using said location of the curve;

f. means for computing Brinell hardness of said specimen from said computed diameter;

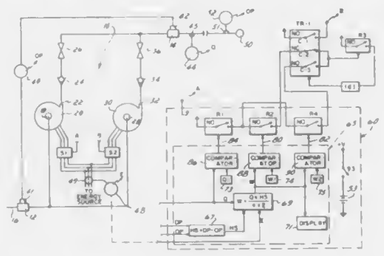
g. means for displaying said computed Brinell hardness.

4,945,491

MONITOR AND CONTROL FOR A MULTI-PUMP SYSTEM

James B. Risbel, Cincinnati, Ohio, assignor to Systecon, Inc., Cincinnati, Ohio

Continuation of Ser. No. 10,708, Feb. 4, 1987, Pat. No. 4,805,118. This application Nov. 28, 1988, Ser. No. 276,764
The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.
Int. Cl.[5] G01F *1/00*; G05B *11/01*
U.S. Cl. 364—510 **14 Claims**



1. Apparatus for monitoring a pumping system having a plurality of pumps coupled between an inlet header and an outer header of the system, the apparatus comprising:

(a) first transducer means for measuring fluid flow rate of the pumping system at the outlet header of the pumping system;

(b) second transducer means for measuring total dynamic head between the inlet and outlet headers of the system;

(c) third transducer means for measuring energy utilizing by the system to drive the pumps;

(d) fourth means communicating with said first, second, and third transducer means for determining wire-to-water efficiency of the system correlated to said measured fluid flow rate, total dynamic head and energy utilized; and

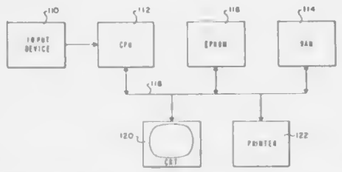
means for indicating to an operator said wire-to-water efficiency so that the operator may monitor operation of the system.

4,945,492

APPARATUS AND METHOD FOR DETERMINING NET SECTION PARAMETERS OF TRUSS CONNECTOR PLATES

Janice M. Bennett, Grand Prairie, Tex., assignor to Truswal Systems Corporation, Arlington, Tex.

Filed Dec. 30, 1988, Ser. No. 292,420
Int. Cl.[5] H04N *7/18*
U.S. Cl. 364—512 **4 Claims**



3. In a data processing system, an apparatus for determining respective lengths of overlap of a connector plate on individual wood members of a corresponding truss joint, wherein a Cartesian coordinate system having an origin corresponding to a predetermined reference point on the joint is established and each wood member is represented by a corresponding two-dimensional polygon, each side of which is defined by a corresponding member vector, each of said member vectors having starting and ending points expressed in Cartesian coordinates relative to the reference point, said apparatus comprising:

data processing means;

input means coupled to said processing means for entering selected truss parameters into the system;

memory means coupled to said processing means for storing said selected truss parameters, said memory means having a predetermined set of program instructions stored therein;

said data processing means being responsive to said truss parameters for determining respective lengths of overlap of the plate on individual wood members of the truss joint according to said program instructions by the following steps:

representing the plate as a corresponding rectangle, each side of which is defined by a corresponding plate vector, each of said plate vectors having starting and ending points expressed in Cartesian coordinates relative to the reference point;

selecting a particular one of the wood members and determining an area of intersection of the rectangle with the polygon defined by the particular wood member, said area of intersection defining an intersection polygon;

rotating the intersection polygon and redefining the Cartesian coordinate system of the intersection polygon, so that a first axis thereof is aligned with a central major axis extending along a geometric center of a major surface of a particular wood truss member;

measuring maximum and minimum coordinates of the intersection polygon along a second axis of the redefined coordinate system, which is perpendicular to the first axis thereof, and adding the maximum and minimum coordinates to determine the length of overlap of the connector plate along an axis perpendicular to the central major axis of the particular wood member; and

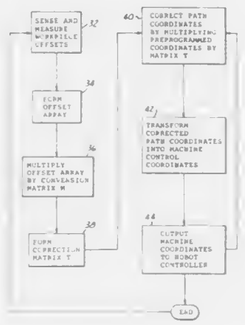
repeating the immediately preceding three steps with respect to each wood member of the joint to determine the length of overlap of the plate along an axis perpendicular to the corresponding central major axis of each wood member.

4,945,493

METHOD AND SYSTEM FOR CORRECTING A ROBOT PATH

Bernard Huang, Ann Arbor, Mich., and Veljko Milenkovic, Sturgeon Bay, Wis., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 26, 1988, Ser. No. 249,020
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—513 **7 Claims**



1. A method for correcting a programmed path for a robot manipulator to compensate for variability in the location of a workpiece, comprising the steps of:

sensing and measuring offsets between the idealized location and the actual location of said workpiece at a plurality of points;

converting said measured offsets into translations and rotations of the workpiece by multiplying a matrix comprised of said offset measurements by a previously prepared conversion matrix;

correcting the coordinates of waypoints within said preprogrammed path by applying said translations and rotations to said coordinates;

transforming said corrected preprogrammed path coordinates into machine control coordinates; and

providing a controller for said robot manipulator with said machine control coordinates, wherein said conversion matrix is formed according to the steps of:

converting said machine control coordinates corresponding to a plurality of waypoints along an idealized motion path into world space coordinates and unit measurement direction vectors;

arranging a measurement matrix having rows comprised of the components of said unit measurement direction vectors and the components of the vector cross-products of said world space coordinates and said unit measurement vectors; and

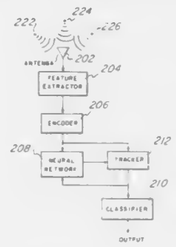
inverting said measurement matrix.

4,945,494

NEURAL NETWORK AND SYSTEM

Perry A. Penz; Michael T. Gately, both of Richardson, and Alan J. Katz, Dallas, all of Tex., assignors to Texas Instruments Incorporated

Continuation-in-part of Ser. No. 318,038, Mar. 2, 1989. This application Jun. 16, 1989, Ser. No. 367,272
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **8 Claims**



1. An information processor, comprising:

(a) an encoder, said encoder encoding input information at least partially into a position type code format; and

(b) a clustering neural network providing an output therefrom, said clustering network having an input receiving said output of said encoder and said output of said clustering network, said clustering neural network clustering said input thereto with thresholded analog neurons in conjunction with a learning rule and a recall rule to preserve analog aspects.

4,945,495

IMAGE MEMORY WRITE CONTROL APPARATUS AND TEXTURE MAPPING APPARATUS

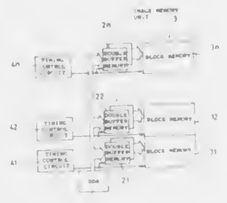
Tomoaki Ueda, Kyoto, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1988, Ser. No. 260,513

Claims priority, application Japan, Oct. 21, 1987, 62-266855; Oct. 28, 1987, 62-272861

Int. Cl.[5] G06F *3/00, 15/66*

U.S. Cl. 364—518 **20 Claims**



1. An image memory write control apparatus for controlling writing of pixel data which is generated by a linear interpolation operation unit and which comprises image data and coordinate data including first coordinate data pertaining to a scanline direction of a display means and second coordinate data pertaining to a direction perpendicular to said scanline direction to an image memory unit which stores image data as output data for the display means, said apparatus comprising:

an image memory unit including a plurality of block memories;

a corresponding plurality of double buffer memories, each of said double buffer memories being selectable to receive pixel data from said linear interpolation operation unit in response to a selection control signal applied thereto, each of said double buffer memories being associated with one of said block memories and connecting its associated block memory to said linear interpolation operation unit, and each of said double buffer memories including a first buffer memory designated for receiving pixel data and a second buffer memory designated for writing image data to its associated block memory, said buffer memories being interchangeable in response to an interchange control signal whereby said first buffer memory is designated to write image data to its associated block memory and said second buffer memory is designated to receive pixel data; and

timing control means disposed to receive coordinate data from said linear interpolation operation unit, said timing control means including decoding means for decoding contents of predetermined digits of both said first and second coordinate data from said linear interpolation unit to provide decoded contents, means for generating and applying selection control signals to said double buffer memories according to the decoded contents of said predetermined digits, and means for generating and applying interchange control signals to said buffer memories of said double buffer memories according to the decoded contents of said predetermined digits.

4,945,496

APPARATUS FOR CONVOLUTION PICTURE PROCESSING USING DELAY AND INTERMEDIATE STORAGE

Mitsuo Kurakake; Shoichi Otsuka, both of Hino, and Yutaka Muraoka, Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

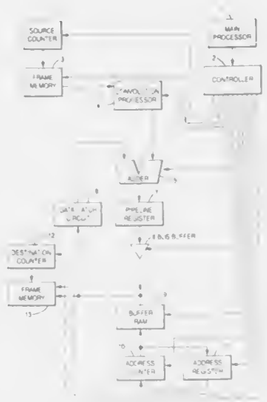
PCT No. PCT/JP87/00330, § 371 Date Nov. 25, 1987, § 102(e) Date Nov. 25, 1987, PCT Pub. No. WO87/07412, PCT Pub. Date Dec. 3, 1987

PCT Filed May 23, 1987, Ser. No. 130,240

Claims priority, application Japan, May 23, 1986, 61-118686

Int. Cl.[5] G06F *15/68, 9/38*

U.S. Cl. 364—518 **7 Claims**



1. A picture processing apparatus for performing convolution processing with respect to plural items of pixel data on a simultaneous basis with a predetermined coefficient matrix including rows and columns, said picture processing apparatus comprising:

a frame memory storing plural items of pixel data;

processing means, coupled to said frame memory, for executing convolution processing with respect to each item of said pixel data on a simultaneous basis with data from the coefficient matrix;

buffer means, coupled to said processing means, for storing intermediate processing results obtained by said processing means;

adding means, coupled to said processing means, for adding the stored intermediate processing results to intermediate processing results obtained from said processing means during a next processing cycle, and for outputting addition results;

delay means, coupled between said adding means and said buffer means, for providing a delay time and delaying the output of the addition results for the delay time and storing the addition results in said buffer means by rewriting the intermediate processing results in said buffer means; and

addressing means, coupled to said buffer, for designating a write address of said buffer means and for designating a read address of said buffer means upon revising the read address by an amount equivalent to a shift in the write address due to the delay time set by said delay means.

4,945,497

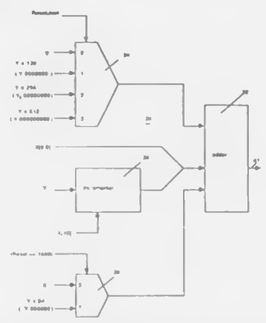
METHOD AND APPARATUS FOR TRANSLATING RECTILINEAR INFORMATION INTO SCAN LINE INFORMATION FOR DISPLAY BY A COMPUTER SYSTEM

Chris Malachowsky, Santa Clara, and Curtis Priem, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 20, 1988, Ser. No. 287,493

Int. Cl.[5] G06F *3/153*

U.S. Cl. 364—518 **8 Claims**



1. An apparatus for translating addresses corresponding to rectilinear coordinates of a plurality of scan line masks generated by a mask generator into addresses for a linear memory interface for the rapid display of an image on an output display, comprising:

an adder coupled to said linear memory interface for providing a plurality of resolutions upon which said scan line masks may be displayed on said output display;

first circuit means connected to said adder for providing a first input thereto, said first circuit means being coupled to said mask generator for receiving a Y rectilinear value therefrom, said first circuit means being further provided with an input indicative of a desired resolution for said output display;

second circuit means coupled to said adder for providing a second input thereto, said second circuit means being coupled to said mask generator for receiving a Y rectilinear value therefrom, said second circuit being further provided with an input indicative of a desired resolution for said output display; and

third circuit means coupled to said mask generator for providing a third input to said adder, said third circuit means being coupled to said mask generator for receiving a Y rectilinear value and the highest bit value of a X rectilinear value therefrom, said third input being provided with the value of the first ten bits of a X rectilinear coordinate.

4,945,498

CAD/CAM PLOTTING SYSTEM BY ONE-STROKE SKETCHING

Kazuhiro Mitamura, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 14, 1989, Ser. No. 310,132

Claims priority, application Japan, Feb. 17, 1988, 63-32812

Int. Cl.[5] G06F *3/14*

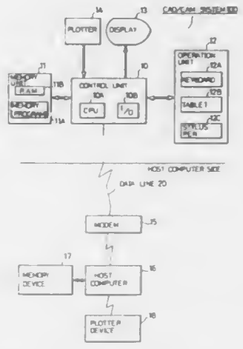
U.S. Cl. 364—521 **9 Claims**

1. A CAD/CAM (computer-aided design/computer-aided manufacturing) plotting system wherein grapic data relating to an object to be plotted is sequentially input in accordance with instructions of a CAD/CAM program so as to plot a desired shape of said object on a display screen, comprising:

means for one-stroke-sketching a schematic outline of said object as said graphic data on the display screen;

means for pattern-recognizing said sketched schematic outline;

means for data-analyzing said pattern-recognized schematic outline;



means for determining coordinate points of said data-analyzed outline corresponding to correct dimension values of said object by inputting a predetermined number of dimension values thereof; and,

means for automatically correcting said data-analyzed schematic outline with the correct dimension values based upon said determined coordinate points.

4,945,499

GRAPHIC DISPLAY SYSTEM

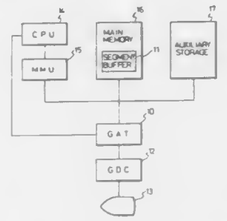
Naosuke Asari, and Nobuyuki Sakamoto, both of Tokyo, Japan, assignors to Seiko Instruments, Inc., Tokyo, Japan

Filed Jan. 12, 1989, Ser. No. 296,061

Claims priority, application Japan, Jan. 13, 1988, 63-5461

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—521 **22 Claims**



1. A graphic display system for displaying graphic images on a monitor comprising:

first processing means for executing processes for preparing display lists from original graphic image data, said first processing means having first accessing means for providing process addresses:

memory means having memory locations associated with physical addresses for storing original graphic image data and having segment buffer capacity for storing the display lists at the physical addresses;

memory management means connected between said processing means and said memory means for mapping the process addresses to the physical addresses;

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graphic display controller means for generating signals representing graphic images, said controller means having second processing means for processing the display lists and second accessing means providing graphic addresses for accessing said display lists;

graphic address transformer means connected between said graphic display controller and said memory means for mapping the graphic addresses to the physical addresses; and

monitor means connected to said graphic display controller for displaying graphic images under control of a display list.

4,945,500

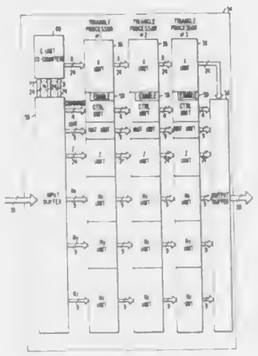
TRIANGLE PROCESSOR FOR 3-D GRAPHICS DISPLAY SYSTEM

Michael F. Deering, Mountain View, Calif., assignor to Schlumberger Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 117,110, Nov. 4, 1987, abandoned. This application Nov. 20, 1989, Ser. No. 440,459

Int. Cl.[5] **G09G** *1/06*

U.S. Cl. 364—522 **25 Claims**



1. An image processing system comprising:

a plurality of polygon processors coupled in series, each polygon process including

means for storing a representation of a single polygon, said polygon representing a portion of a three-dimensional object;

means for comparing said representation to an input representation of a pixel to determine whether said pixel is within said polygon;

means for comparing a Z position of said pixel to a Z position of said polygon; and

means for providing to an output of said polygon processor, which is coupled to an input of a next polygon processor in said series, except for a last polygon processor, a material property and Z position of said pixel in said polygon if said polygon has a Z position for said pixel in front of a received z position associated with said pixel.

4,945,501

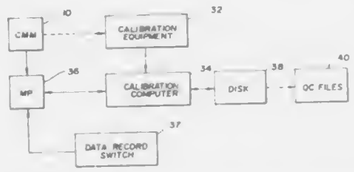
METHOD FOR DETERMINING POSITION WITHIN THE MEASURING VOLUME OF A COORDINATE MEASURING MACHINE AND THE LIKE AND SYSTEM THEREFOR

Frederick K. Bell, Centerville; Stephen N. Brown, and Michael T. Gale, both of Dayton, all of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Continuation of Ser. No. 4,435, Jan. 20, 1987, abandoned. This application Apr. 12, 1989, Ser. No. 338,378

Int. Cl.[5] **G01C** *25/00;* **G06F** *15/46;* **G05D** *23/275*

U.S. Cl. 364—571.05 **8 Claims**



1. A method for determining the absolute position of a point in the measuring volume (**102**) of a CMM (**10**) having a probe shaft (**22**) and a probe (**14**) supported on a distal end of the probe shaft, the probe shaft having three axes of motion (X, Y, Z), the CMM including devices for providing a position signal in determining the position of the probe for each of the axes of motion in a coordinate frame of the CMM, and control means (**36**) for receiving the position signals and for providing a coordinate measurement signal which identifies the position of the probe, the method including the steps of storing (**108**) sets of axis correction data to compensate for CMM geometry errors for a range of travel in each of the axes; and determining (**112**) a subset of the axis correction data for a given position of the probe shaft relative to each of the axes of motion as a function of the position signals; wherein the improvement comprises:

the step of storing (**108**) includes storing the axis correction data in storage means of a measurement processor included in the control means;

the step of determining includes determining compensated rotation data (**48** through **64**) representing the amount of angular rotation about each of the axes for each of the axes; squareness data (**84, 94, 96**) representing the orthogonality of three different pairs of the axes; normalized straightness data (**72** through **82**) for each of said axes with respect to each of the other axes; and scale error data (**66, 68, 70**) representing error in each of the devices; and wherein the improvement further comprises the steps of:

measuring the position of an artifact with the CMM by moving the probe of the CMM so that each of the devices provides an artifact position signal and the measurement processor provides a corresponding measurement signal as a function of the artifact position signals;

calculating probe offset data (**98**) as a function of the measured position of the artifact, the probe offset data representing the offset of the probe from the probe shaft along each of the axes;

storing the probe offset data in the storage means of the measurement processor;

retrieving the probe offset data from the storage means;

determining compensated probe offset data as a function of the probe offset data and respective compensated rotation data; and

modifying (**114**) the position signals from the devices as a function of the compensated probe offset data and the subset of axis correction data including the compensated rotation data, the squareness data, the normalized straightness data and the scale error data, the step of modifying being performed immediately after the step of determining

(**112**) the subset of axis correction data to obtain a corrected position signal in a standard coordinate frame.

4,945,502

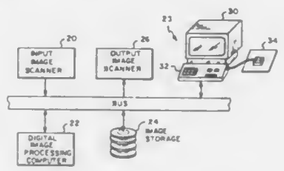
DIGITAL IMAGE SHARPENING METHOD USING SVD BLOCK TRANSFORM

Heemin Kwon, Pittsford, and Jeanine T. Liang, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,060

Int. Cl.[5] **G06F** *15/332;* **H04N** *1/40*

U.S. Cl. 364—574 **8 Claims**



1. A method of processing an image in a digital computer for sharpening the image, comprising the steps of:

(a) generating a non-linear gain function based upon the measured statistics of the SVD singular values for image noise, said non-linear gain function being characterized by boosting factors applicable wherever there is a high signal-to-nose ratio;

(b) filtering the digital image to produce a detail image and a low pass filtered image;

(c) dividing the detail image into blocks;

(d) transforming the blocks employing an SVD transformation to produce singular vectors and arrays of singular values;

(e) applying the non-linear gain function to the arrays of singular values to produce arrays of modified singular values whereby to boost those singular values corresponding to a higher signal-to-noise ratio;

(f) performing an inverse SVD on the singular vectors with modified singular values to produce blocks of processed detail image values; and

(g) combining the processed image detail values with the low pass filtered image values to produce a sharpened digital image.

4,945,503

HARDWARE SIMULATOR CAPABLE OF REDUCING AN AMOUNT OF INFORMATION

Shigeru Takasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 110,982

Claims priority, application Japan, Oct. 21, 1986, 61-250557; Nov. 11, 1986, 61-266656; Mar. 20, 1987, 62-66170

Int. Cl.[5] **G06F** *15/20, 7/38*

U.S. Cl. 364—578 **8 Claims**

1. A hardware simulator for use in successively carrying out simulations of a plurality of gates included in a logic circuit, said simulator comprising:

connection memory means for storing a plurality of connection data signals which specify connections of said gates and for producing a predetermined number of said connection data signals one at a time;

gate species memory means for storing a plurality of gate species data signals representative of species of said gates and for producing a predetermined number of saio gate species data signals one at a time;

first memory means for storing a plurality of test data signals utilized for simulation of said gates and for successively producing each of said test data signals;

simulation execution means, coupled to said connection memory means, said gate species memory means, and said first memory means and responsive to an execution result signal, for executing said simulations of said gates in response to said predetermined number of said connection data signals, and each of said plurality of test data signals with reference to said execution result signal to successively produce a simulation result signal representative of a result of each of said simulations;

holding means for holding said simulation result signal;



supply means for supplying said simulation result signal held in said holding means to said simulation execution means as said execution result signal;

second memory means, coupled to said holding means, for successively storing said simulation result signal and for producing a stored result signal; and

signal delivering means, coupled to said first and said second memory means and to said simulation execution means, for selectively delivering one of said each test data signal and said stored result signal to said simulation execution means.

4,945,504

INSTRUCTION INPUT SYSTEM FOR ELECTRONIC PROCESSOR

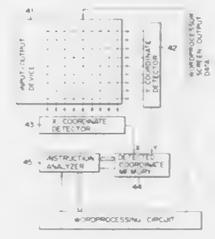
Masato Nakama, and Norihiro Hidaka, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1987, Ser. No. 40,489

Claims priority, application Japan, Apr. 30, 1986, 61-97843

Int. Cl.[5] **G06F** *1/00*

U.S. Cl. 364—709.11 **15 Claims**



1. An instruction input system for an electronic processor, comprising:

touch input means having a transparent touch panel overlapped on a display means; and

instruction-analyzing means coupled to said touch input means for simultaneously determining a type of an instruction of an area of said display means in which said instruction is to be executed, both said type of instruction and

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said area determined in accordance with a locus of operation positions selected by an operator on said transparent touch panel.

4,945,505

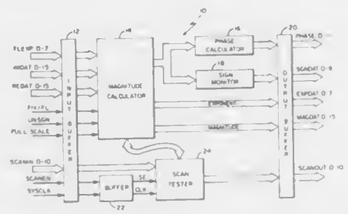
CORDIC APPARATUS AND METHOD FOR APPROXIMATING THE MAGNITUDE AND PHASE OF A COMPLEX NUMBER

Alan I. Wiener, Lexington, and Waljeet S. Hundal, Millis, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 259,018, Oct. 17, 1988, abandoned. This application Jan. 31, 1990, Ser. No. 473,126

Int. Cl.[5] **G06F** *7/00*

U.S. Cl. 364—715.03 **35 Claims**



1. Apparatus for determining an approximated magnitude of a complex number or vector comprising:

means having a plurality of stages for computing a real (I) component and an imaginary (Q) component for each of a plurality of vector rotations of fixed decreasing predetermined values of angles such that the value of said Q component is reduced by approximately one-half each of said vector rotations after a first rotation, said I and Q components for each of said vector rotations being computed by one of said plurality of stages respectively, the value of said I component at the end of said rotations being said approximated magnitude; and

each of said vector rotation stages of said computing means comprising shifting means for shifting said Q component on each rotation after said first rotation into a vacated most significant bit (MSB) position of said Q component resulting from said vector rotations in order to accommodate a one bit LSB growth in the next rotation; and

said shifting means further comprises means for left justifying said I component and correspondingly shifting said Q component into said vacated MSB position of said Q component before each of said rotations after said first rotation is performed, providing the three most significant bits of said I component are zero.

4,945,506

HIGH SPEED DIGITAL SIGNAL PROCESSOR CAPABLE OF ACHIEVING REALTIME OPERATION

Toru Baji, Kodaira; Hirotsugu Kojima, Tokyo; Nario Sumi, Kokubunji; Yoshimune Hagiwara, Hachioji, and Shinya Ohba, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Chiba, both of, Japan

Filed Mar. 17, 1989, Ser. No. 324,830

Claims priority, application Japan, Mar. 18, 1988, 63-63313

Int. Cl.[5] **G06F** *7/52*

U.S. Cl. 364—736 **4 Claims**

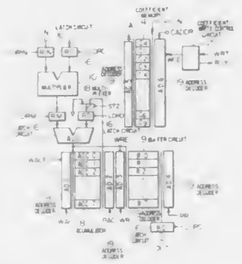
1. A digital signal processor for computing a vector product between a column vector input signal including a plurality of data items and a matrix including predetermined number of coefficient data items so as to produce a column vector output signal including a plurality of data items, said processor comprising:

(1) input means for serially receiving said plurality of data items of the column vector input signal;

(2) first store means for storing therein in a first cycle the data items received by said input means;

(3) coefficient memory means for storing therein the predetermined number of coefficient data items of the matrix;

(4) second store means for reading from said coefficient memory means data items in a direction of a row of the matrix among the predetermined number of coefficient data items in a second cycle shorter in time than the first cycle so as to store therein the data items thus read from said coefficient memory means;



(5) multiply means for multiplying the data items outputted from said first store means by data items delivered from said second store means;

(6) third store means connected to an output from said multiply means;

(7) add means having a first input connected to an output from said third store means;

(8) fourth store means having an output connected to a second input of said add means; and

(9) accumulator means having an input connected to an output from said add means and having an output connected to an input of said fourth store means.

4,945,507

OVERFLOW CORRECTION CIRCUIT

Ryuji Ishida, and Toyoo Kiuchi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1989, Ser. No. 364,478

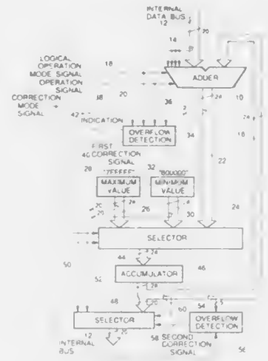
Claims priority, application Japan, Jun. 10, 1988, 63-144065

Int. Cl.[5] **G06F** *11/00*

U.S. Cl. 364—737 **10 Claims**

1. An overflow correction circuit coupled to receive an output of an arithmetic operation circuit, the arithmetic operation circuit having first and second data inputs, the first data input being connected to an internal data bus so as to receive data to be subjected to an arithmetic operation, the output of the arithmetic operation circuit outputting a result of arithmetic operation, the overflow correction circuit comprising a first selector having a first input connected to receive the result of arithmetic operation from the arithmetic operation circuit and a second input and an output, a corrected value generating circuit having an output connected to the second input of the first selector, a first overflow detection circuit coupled to receive a part of the output of the arithmetic operation circuit and for generating a first overflow signal indicative of whether or not there occurs an overflow in the result of the arithmetic operation, the first overflow signal being supplied to the first selector so as to control the first selector in such a manner that when the first overflow signal does not indicate occurrence of the overflow, the first selector outputs the output of the arithmetic operation circuit as its output and when the first overflow signal indicates occurrence of the overflow, the first selector outputs the output of the corrected value generating

circuit as its output, and an accumulator having an input connected to receive the output of the first selector and an output



connected to the second data input of the arithmetic operation circuit.

4,945,508

PROCESS AND DEVICE FOR SIMULATING A SYNCHRONOUS ELECTRIC MACHINE

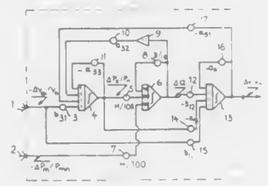
Richard Bénéjean, Montigny le Bretonneux, France, assignor to Service Electricite de France National, Paris, France

Continuation of Ser. No. 36,528, Apr. 9, 1987, abandoned. This application Nov. 9, 1989, Ser. No. 433,461

Claims priority, application France, Apr. 10, 1986, 86 05141

Int. Cl.[5] **G06G** *7/63*

U.S. Cl. 364—802 **2 Claims**



1. An analog simulator for simulating the state of an electrical synchronous electric rotating machine whose behaviour in steady state condition may be represented by a set of steady state equations:

$$d/X(t)/\,/dt = A.X.(t) + B.U.(t)$$

$$Y(t) = C.X(t)$$

in which

X(t) is a state vector having three components constituting state parameters of an alternator, a first component $\Delta V(t)/V_n$ representing at instant t the relative variation of the voltage of the stator, a second component $\Delta\Omega(t)$ representing variations of the speed of the synchronous machine, and a third component $\Delta P_A(t)/P_n$ representing the relative variations of the electric power;

U(t) is an input vector having two components constituting input parameters of operation, consisting of a first component $\Delta V_{ex}(t)/V_{exn}$ representing the relative variations of the excitation voltage of the machine, and a second component $\Delta P_m(t)/P_{mn}$ representing the relative variation of the mechanical power applied to the machine;

Y(t) is an output vector having components constituting output parameters of operation, consisting of a first component $\Delta\delta'(t)$ representing the total internal angle variations between the voltage of the network and the e.m.f. of the machine, a second component $\Delta Q_e(t)/Q_n$ representing the relative variations of the reactive power, a third component $\Delta I(t)/I_n$ representing the relative variations of the current of the stator, and a fourth and a fifth components $\Delta\rho(t)$ and $\Delta\Psi(t)$ respectively representing the variations of the internal angle between the voltage of the stator and the e.m.f. of the machine and the variations of the transport angle between the voltage of the stator and the voltage of the network.

and A, B and C are matrices whose coefficients are selected to define the relations between the state parameters in a specific alternator, the relations between the state parameters and the input parameters in said specific alternator and the relations between the state parameters and the output parameters in said specific alternator, respectively,

comprising a cascaded arrangement of first integrator means, second integrator means and third integrator means,

said first integrator means having a plurality of inputs one of which is connected to receive an electrical signal representing said first component of the input vector and the other of which are connected to receive, through respective amplifying means, the outputs of said first integrator means, of said second integrator means and of said third integreator means and being arranged to deliver an electrical output signal representative of said third component of the state vector on an output thereof,

said second integrator means having a plurality of inputs, comprising a first input connected to receive the output of said first integrator means, a second input connected to provide a feedback signal from the output of said second integrator means and a third input connected to receive an electrical signal representative of said second component of the input vector and being constructed to deliver an electrical output signal representative of said second component of the state vector on an output thereof,

said third integrator means having a plurality of inputs respectively connected to receive the output of said second integrator means, a feedback loop from the output of said third integrator means, the output from said first integrator means and said signal representative of said first component of the input vector and being constructed to deliver an electrical output signal representative of said first component of the state vector; and

means for delivering the components of said output vector from the outputs of said first, second and third integrator means.

4,945,509

DUAL LOOK AHEAD MASK GENERATOR

Stephen B. Barrett, Williston; John Bula, Essex Junction, and Alvar A. Dean, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1988, Ser. No. 168,031

Int. Cl.[5] **G06F** *7/00*

U.S. Cl. 364—900 **10 Claims**

1. A mask generator responsive to a starting address and an ending address for generating a mask word having a plurality of mask bits of a first logical level and a plurality of mask bits at a second logical level, with said plurality of mask bits of said first logical level beginning and ending at start and end positions in said mask word defined by said beginning and ending addresses, respectively, said mask generator comprising:

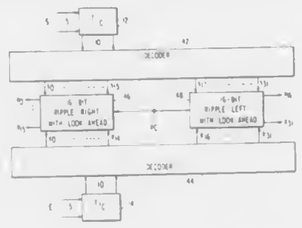
decoder means for decoding said beginning and ending addresses and for providing a plurality of start outputs corresponding to said start address and a plurality of end outputs corresponding to said ending address;

first ripple circuit means responsive to at least portions of each of said start and end outputs for generating a first ripple portion output including a plurality of bits forming

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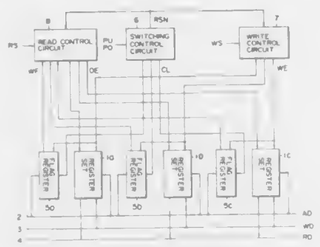
a first portion of said mask word, said first ripple circuit, when said starting address indicates a start position within said first portion of said mask word, generating a first logical level signal propagating from said start position in said mask word towards a higher order bit position thereof; and

second ripple circuit means responsive to at least portions of



each of said start and end outputs for generating a second ripple circuit output including a plurality of bits forming a second portion of said mask word, said second ripple circuit, when said ending address indicates an end position in said second portion of said mask word, generating a first logical level signal propagating from said end position in said mask word towards a lower order bit position thereof.

4,945,510
REGISTER DEVICE
Ken-ichi Maeda, Kamakura; Mitsuo Saito, Yokosuka; Takeshi Aikawa, Tokyo; Tsukasa Matoba, Kawasaki, and Mitsuyoshi Okamura, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 16, 1987, Ser. No. 133,737
Claims priority, application Japan, Dec. 19, 1986, 61-303443
Int. Cl.[5] G06F *12/00*
U.S. Cl. 364—900 **9 Claims**



1. A register device comprising:

a register set group consisting of a plurality of prioritized register sets each constituted by a plurality of registers, said register sets having an equal number of said registers;

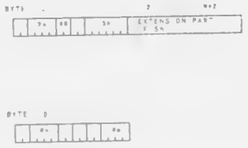
switching control means for receiving a saving/ recovery instruction and selecting a current register set to be used from said register set group to store data from a write signal line, in accordance with said saving/recovery instruction, a register set of lower priority than said current register set being no longer accessed, thereby saving data that is stored in said lower priority register set;

write control means for writing, in response to a write instruction, data into a register of said current register set selected by said switching control means;

write flag memory means for holding a write flag representing whether data is written in each of said registers; and

read control means for determining, in response to a read instruction, a register in which data is written most recently, from among said plurality of registers with reference to said write flags, and for reading out data from said register.

4,945,511
IMPROVED PIPELINED PROCESSOR WITH TWO STAGE DECODER FOR EXCHANGING REGISTER VALUES FOR SIMILAR OPERAND INSTRUCTIONS
Fujio Itomitsu, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1989, Ser. No. 371,961
Claims priority, application Japan, Jul. 4, 1988, 63-166307
Int. Cl.[5] G06F *9/00*
U.S. Cl. 364—900 **1 Claim**



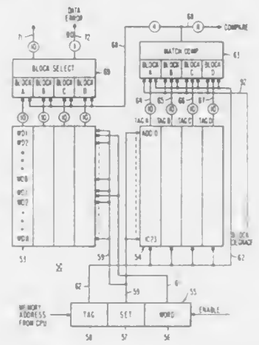
1. A data processor which has a pipeline processing mechanism comprising an instruction fetch means for fetching instructions including a first data transfer instruction having a format describing a destination operand designating field and a source operand designating field disposed in a first ordered sequence and also including an addressing mode designating field and a second data transfer instruction having a format describing the source operand designating field and the destination operand designating field disposed in a second ordered sequence opposite said first ordered sequence and also including an addressing mode designating field, an instruction decoding means for decoding the instruction fetched by said fetch means, and an instruction execution means for executing the instruction according to the decoding result of said instruction decoding means, wherein said instruction decoding means comprises:

a first instruction decoding part which decodes the instruction fetched by said instruction fetch means and produces an intermediate code including said source and destination operand designating fields in said first or second sequence if the fetched instruction is said first or second data transfer instruction respectively and including a parameter having a first value when the instruction fetched is said first data transfer instruction and a second value when the instruction fetched is said second data transfer instruction; and

means, coupled to receive said intermediate code and controlled by said first parameter, for exchanging said source operand and destination operand designating fields included in said intermediate code when said parameter has

said first value so that said first and second data transfer instructions are processed identically in the instruction execution means when the addressing mode designating field designates register direct addressing.

4,945,512
HIGH-SPEED PARTITIONED SET ASSOCIATIVE CACHE MEMORY
Clarence W. DeKarske, St. Paul Park, and Aaron C. Peterson, Columbia Heights, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Sep. 7, 1988, Ser. No. 241,436
Int. Cl.[5] G11C *7/00, 29/00*; G06F *11/00*
U.S. Cl. 365—49 **17 Claims**



1. A high-speed partitioned set associative cache memory, comprising:

high-speed cache memory data array means associated with a CPU,

said cache memory data array means having a plurality of individual partial data array boards which together comprise said memory data array,

a full tag array mounted on each of the individual data array boards and coupled to an individual partial data array,

a plurality of memory address registers, at least one mounted on each partial data array board and associated with each individual partial data array and each individual tag array on each of the data array boards,

said memory address registers being adapted to receive an address from said CPU and for simultaneously accessing said partial data arrays and said tag arrays on all of said data array boards,

logic circuit and control means mounted on a separate board from said plurality of individual partial data array boards for monitoring output error signals from said data arrays and from said tag arrays resulting from accessing memory addresses, and

means for subsequently identifying the exact data or tag array where an error has occurred.

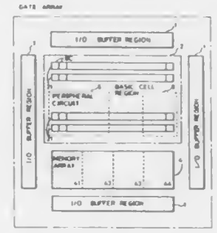
4,945,513
GATE ARRAY DEVICE
Masahiro Ueda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1988, Ser. No. 258,592
Claims priority, application Japan, Oct. 19, 1987, 62-264577
Int. Cl.[5] G11C *5/10*
U.S. Cl. 365—51 **6 Claims**

1. A gate array device comprising:

a memory array region comprising a plurality of memory cells for storing data signals;

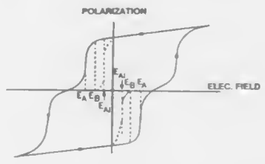
an input-output buffer means region for transferring to and from said memory cells said data signals and address signals for designating said memory cells;

a basic cell region including a plurality of basic cells each comprising a first field effect device of one conductive type and a second field effect device of the opposite conductive type;



access means comprising and plurality of basic cells in said basic cell region for accessing said memory cells in response to said address signals, said access means being connected between said input-output buffer means and said memory cells.

4,945,514
METHOD OF BISTABLE OPTICAL INFORMATION STORAGE USING ANTIFERROELECTRIC PHASE PLZT CERAMICS
Cecil E. Land, 2118 Gretta NE., Albuquerque, N. Mex. 87112
Filed May 31, 1988, Ser. No. 200,104
Int. Cl.[5] G11C *11/22*
U.S. Cl. 365—117 **11 Claims**



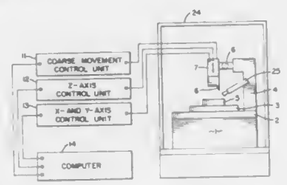
1. A method of bistable storage of optical information comprising:

applying a switching electric field across a portion of a surface of a material capable of shifting between a stable antiferroelectric (AFE) and a ferroelectric (FE) phase, the switching field causing the portion of the material to shift from the AFE phase to the FE phase; and

subsequently illuminating parts of the portion to cause the illumination parts to shift back to the AFE phase, whereby the difference in phase between the illuminated parts and the remainder of the portion of the surface represents spatially modulated information.

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4,945,515
MEMORY WRITING APPARATUS
Manabu Ooumi; Toshihiko Sakuhara, and Tatsuaki Ataka, all of Tokyo, Japan, assignors to Seiko Instruments, Inc., Chiba, Japan
Filed Sep. 12, 1988, Ser. No. 243,512
Claims priority, application Japan, Sep. 10, 1987, 62-227366; Sep. 29, 1987, 62-245334; Sep. 29, 1987, 62-245335; Oct. 7, 1987, 62-253157
Int. Cl.[5] G11C 7/00; G11B 9/00
U.S. Cl. 365—174 11 Claims



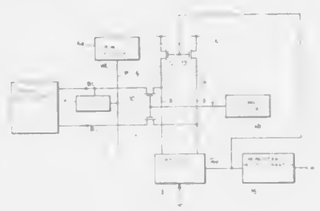
1. Data writing and storage apparatus comprising:
a memory having a surface and composed of a material which is located at the surface and which is constituted by individual segments each having an atomic or molecular scale and each capable of individually undergoing a change in physical state in response to an electrical signal;
an input section for placing each segment into a physical state corresponding to the value of a respective data bit, said input section comprising at least one needle having a fine tip portion dimensioned to apply an electrical signal to an individual memory segment in order to control the physical state of one segment at a time; and
control means for controlling the input section, said control means comprising means for positioning the tip portion of the needle close to the surface of the memory, means for scanning the tip portion of the needle over the surface of the memory and means for controlling a distance between the tip portion of the needle and each individual segment on the surface of the memory while the tip portion of the needle scans thereover to effect change of the physical state of the individual segments to thereby write a data bit into each segment.

4,945,516
WRITE CONTROL CIRCUIT FOR A HIGH-SPEED MEMORY DEVICE
Masamori Kashiyama, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 6, 1988, Ser. No. 254,225
Claims priority, application Japan, Oct. 9, 1987, 62-253769
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—189.05 7 Claims



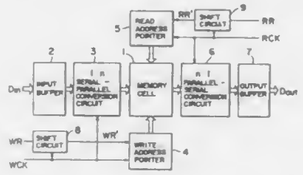
1. A write control circuit of a memory device comprising:
a first receiving circuit for receiving a first write enable signal with a pulse duration equal to two write cycles;
a second receiving circuit for receiving a second write enable signal with a pulse duration equal to two write cycles and having a phase difference equal to at least one write cycle relative to said first write enable signal;
a converting circuit connected to said first and second receiving circuits for converting said first write enable signal into a first write signal with a pulse duration equal to one write cycle and said second write enable signal into a second write signal with a pulse duration equal to one write cycle and having a phase difference relative to said first write signal equal to the phase difference between said first and second write enable signals; and
a generating circuit connected to said converting circuit and responsive to each of said first and second write signals for generating in each signal period of said first and second write signals a write execute signal for controlling execution of a write operation.

4,945,517
DYNAMIC RANDOM ACCESS MEMORY
Hideshi Miyatake; Masaki Kumanoya; Hideto Hidaka; Hiroyuki Yamasaki; Konishi Yasuhiro, and Yuto Ikeda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1988, Ser. No. 184,256
Claims priority, application Japan, May 13, 1987, 62-117405
Int. Cl.[5] G11C 7/00, 8/00
U.S. Cl. 365—189.01 1 Claim



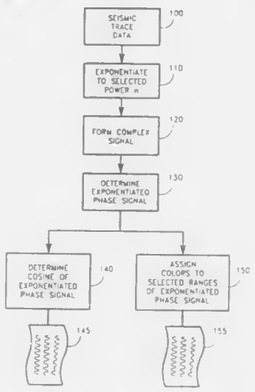
1. In a dynamic RAM device including:
a plurality of word lines (15);
a plurality of bit lines (6, 7) intersecting with said word lines;
a plurality of memory cells (2) provided in intersections of said word lines and said bit lines;
addressing means (4a, 4b) for selecting a word line and a bit line intersecting a selected memory cell;
I/O means (8, 9) connected with said bit lines for reading and writing data from and into said memory cells;
I/O load means (5) connected between said I/O means and a voltage source;
write means (3) for providing said I/O means with write voltage for writing data into said memory cells; and
means for rendering said I/O load means active during a write operation of a fast page mode of operation after a time period shorter than a pulse in a read/write indicating signal (W) pulse in a W operation, thereby to permit a change of column address immediately after an end of a writing cycle, comprising:
charge restart means for restarting charge of said I/O means before the end of the writing cycle,
said charge restart means including
monostable multivibrator means (16) responsive to the leading edge of said pulse of said read/write indicating signal (W), for providing an effective read/write signal pulse (We) having a shorter duration than that of the read/write indicating signal pulse (W);
said write means operable in response to termination of said shorter duration We pulse to begin application of a write voltage to said I/O means,
thereby providing to said I/O means a high voltage by the time a write operation is completed to permit a column address to change immediately upon attainment of a high level by a column address signal at the end of a write cycle.

4,945,518
LINE MEMORY FOR SPEED CONVERSION
Kunio Muramatsu, Fujisawa, and Seigo Suzuki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 8, 1989, Ser. No. 363,276
Claims priority, application Japan, Jun. 9, 1988, 63-141979
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—233 6 Claims



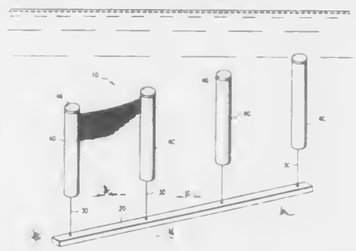
1. A line memory for speed conversion comprising; a memory cell having a plurality of memory regions having addresses, write means for writing input data into said regions of said memory cell in order of said address at a first rate and resetting a write address of said region in a predetermined period, read means for reading said data out of said regions of said memory cell in order of said address at a second rate different from said first rate and resetting a read address of said region in said predetermined period, first shift means for shifting reset timing of said write address, and second shift means for shifting reset timing of said read address, both of said first and second shift means being able to set shift quantities of said reset timing of said write and read addresses to the same value.

4,945,519
METHOD OF GEOPHYSICAL EXPLORATION
Timothy D. Stanley, Broken Arrow, Okla., and John H. Bodine, Houston, Tex., assignors to Amoco Corporation, Chicago, Ill.
Filed Feb. 28, 1989, Ser. No. 317,301
Int. Cl.[5] G01V 1/34; G06F 15/36
U.S. Cl. 367—48 14 Claims



1. A method of geophysical exploration, comprising the steps of:
(a) obtaining a set of seismic trace data;
(b) exponentiating each seismic trace to a selected power n where n is greater than 1
(c) determining the Hilbert transform of the exponentiated seismic trace and determining a ratio of the Hilbert transformed exponentiated seismic trace data to the exponentiated seismic trace data;
(d) obtaining a measure of an exponentiated phase angle from the arctangent of such ratio; and
(e) interpreting the geological character of the set of seismic trace data with the exponentiated phase angle.

4,945,520
HYDRO-ACOUSTIC DEVICE FOR WARNING SEA MAMMALS
Thomas J. Ford, 209 Harvard St., #206, Brookline, Mass. 02146
Filed Sep. 27, 1989, Ser. No. 413,067
Int. Cl.[5] H04B 11/00
U.S. Cl. 367—191 2 Claims



1. A passive hydro-acoustic device for warning sea mammals away from shallow areas comprising:
a. anchor means linearly arranged in front of a shallow area;
b. a plurality of cable means attached to said anchor means at predefined intervals and extending substantially perpendicular therefrom;
c. a hollow annular member attached at a first end of said cable means and containing a gas therein;
d. cap means affixed to a second end of said hollow annular member sealing said hollow annular member.

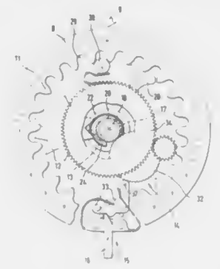
4,945,521
WATCH
Kurt Klaus, Schaffhausen, Switzerland, assignor to IWC International Watch Co. AG, Schaffhausen, Switzerland
Filed Jul. 21, 1989, Ser. No. 383,877
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1988, 3832514
Int. Cl.[5] G04B 19/22, 17/12
U.S. Cl. 368—21 33 Claims

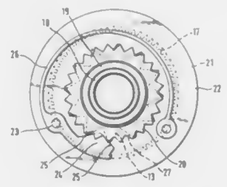
1. A watch comprising
a drive, a spring loaded detent connection, and a setting element;
an hour wheel rotatable about an axis of rotation by the drive;
a rotatable universal-time hour wheel arranged coaxially to the hour wheel, each of the hour wheels being connected by the spring-loaded detent connection, the universal-time hour wheel being rotatably reset by the setting element stepwise relative to the hour wheel by overcoming a spring force of the detent connection;
a coupling means for coupling the setting element to the universal-time hour wheel in order to reset the latter and for decoupling the resetting element from the universal-time hour wheel after a setting of the universal-time hour wheel;
an hour hand connected to the hour wheel;
a universal-time hour hand connected to the universal-time hour wheel, the hands providing that the times of two different time zones can be indicated on a fixed dial face;

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a transmission element for setting the universal-time hour wheel; and wherein

the setting element is a time-zone ring which is arranged





concentric to the axis of rotation and which can be rotatably reset stepwise from detent position to detent position; and the transmission element for setting the universal-time hour wheel can be driven by the time-zone ring.

4,945,522

TIME INDICATOR FOR A CLOCK OR WATCH

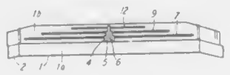
Winfried Radel, Strippchens Hof 7, 4330 Mulheim/Ruhr, Fed. Rep. of Germany

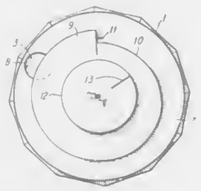
Filed Jun. 6, 1988, Ser. No. 203,474

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1987, 8708097[U]

Int. Cl.[5] **G04B** *19/20, 19/06*

U.S. Cl. 368—77 **7 Claims**





1. In a time indicator for a watch that has a watch plate and at least two time-indicating elements that are at least partially superimposed over one another, that are driven by centrally and coaxially disposed drive elements, that provide advantages of an analog reading and that also essentially realize advantages of a digital watch so that a precise time reading is offered without further additional visual marks, the improvement therewith which comprises:

said time-indicating elements being formed by dials that are disposed in different planes and rotate about centrally disposed shaft means as said drive elements; to indicate time, at least one dial being provided with means that cover or optically suppress all other information that at any given time is not necessary for reading off that time; said dials being different sizes;

the sizes of said dials progressively decrease in dial surfacing from the bottom toward the top in a mounted arrangement thereof on said centrally disposed shaft means; and

a first dial, which is provided with said means, to indicate the time, in the form of opening means, and also a second dial, which is provided with an outer rim that follows a spiral path, and is also provided with an essentially radially extending rim portion that connects an outwardly disposed end of said spiral path with an inwardly disposed end of said spiral path.

4,945,523

TIMEPIECE GLASS ASSEMBLY AND A TIMEPIECE

Philip Y. Lam, Room 1107, Hang Shing Building, 363-373 Nathan Road, P.O. Box 96259, T.S.T., Kowloon, Hong Kong

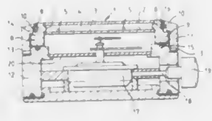
Filed Dec. 5, 1989, Ser. No. 446,980

Claims priority, application United Kingdom, Dec. 6, 1988, 8828406

Int. Cl.[5] **G04B** *37/00*

U.S. Cl. 368—285 **9 Claims**





1. A timepiece glass assembly having a pair of superimposed, spaced apart, transparent glasses, means for holding said glasses around their peripheries in said spaced apart disposition to define between and with said glasses an internal chamber for containing a fluid, at least one passage through said holding means providing communication between said chamber and the exterior of the holding means for said fluid and semi-sealing means co-operating with said holding means at least partially to seal said at least one passage on the holding means exterior in a manner such as to allow fluid from said chamber to pass along said at least one passage and escape therefrom via the semi-sealing means in a controlled manner.

4,945,524

COMPACT OPTICAL PICKUP APPARATUS FOR OPTICAL DISK PLAYER

Toyonori Igata, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

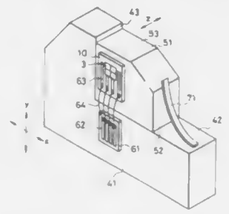
Filed Apr. 15, 1988, Ser. No. 181,951

Claims priority, application Japan, Apr. 15, 1987, 62-57288[U]; Apr. 15, 1987, 62-57290[U]; Apr. 15, 1987, 62-57291[U]

Int. Cl.[5] **G11B** *7/00;* **H01J** *5/02;* **H01S** *3/19*

U.S. Cl. 369—44.11 **2 Claims**

1. An optical pickup apparatus comprising: an optical detector formed on a substrate for detecting light reflected by a recording medium; a pattern formed on said substrate; a first block on which said substrate is fixed; first reference surface means formed on said first block substantially in parallel with an optical axis of said light to be detected; a second block



arranged to be movable so as to be adjusted in a plane perpendicular to said optical axis and to support said first block; second reference surface means formed on said second block so as to correspondingly contact with said first reference surface means; and a relay substrate fixed on said second block and electrically connected to said pattern.

4,945,525

OPTICAL INFORMATION PROCESSING APPARATUS

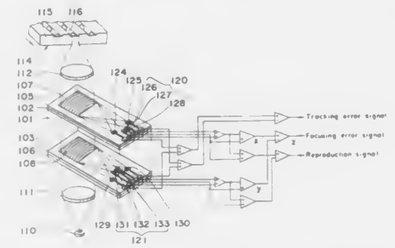
Osamu Yamamoto, Nara; Toshihiko Yoshida, Tenri, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1988, Ser. No. 239,753

Claims priority, application Japan, Sep. 4, 1987, 62-222457; Sep. 4, 1987, 62-222458

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—44.12 **4 Claims**



1. An optical information processing apparatus comprising:

a substrate;

means for projecting a plurality of laser light sports onto a recording medium;

optical waveguide means formed on said substrate for receiving and for dividing laser light spots reflected from said recording medium into two sets of reflected light;

photo-detector means for producing a tracking error signal from a comparison of the light intensity of each of said sets of reflected light.

4,945,526

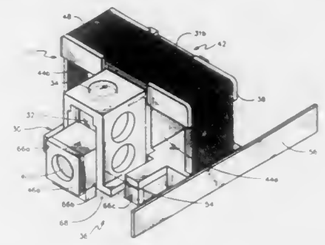
ACTUATOR ASSEMBLY FOR OPTICAL DISK SYSTEMS

Gerardus L. M. Jansen, Cascade; Leonardus J. Grasseus, Colorado Springs, and Zdenek T. Hollen, N. Colorado Springs, all of Colo., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Filed Oct. 18, 1988, Ser. No. 259,129

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—44.11 **23 Claims**



1. An actuator assembly for use in an optical disk information processing system comprising:

(a) an actuator body, said body defining a first channel and having a center of mass;

(b) a slide rail, said rail passing through said first channel;

(c) means for focusing an incoming optical beam onto said optical disk, said focusing means including a lens, said lens being displaced from said center of mass in a first direction; and

(d) means for applying a motive force to said body along a first line approximately parallel to said first channel, said line being substantially coincident with or displaced from said center of mass in said first direction.

4,945,527

OPTICAL PICKUP APPARATUS FOR DETECTION OF FOCUSING ERROR, TRACKING ERROR, AND INFORMATION

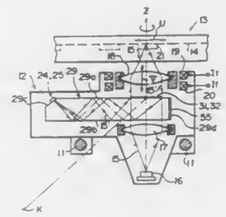
Hiroshi Sunagawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1988, Ser. No. 251,479

Claims priority, application Japan, Sep. 30, 1987, 62-247319; Sep. 30, 1987, 62-247320; Sep. 30, 1987, 62-247321

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—44.11 **22 Claims**



1. An optical pickup apparatus comprising:

(i) a light source for irradiating a light beam onto a surface of an optical recording medium,

(ii) an objective lens for converging said light beam onto the reflection surface of said optical recording medium,

(iii) a light guide disposed in such a direction that one surface

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thereof receives the light beam reflected by said optical recording medium,

(iv) a focusing grating provided at an incidence position of said reflected light beam on one surface of said light guide for making said reflected light beam enter said light guide in such a direction that said reflected light beam advances toward an edge face of said light guide by repetition of total reflection between said one surface of said light guide and the other surface of said light guide facing said one surface, and converging the light beam thus guided and advancing inside of said light guide,

(v) a photodetector secured to the surface or the edge face of said light guide for detecting said guided light beam converged by said focusing grating,

(vi) an error detection circuit for carrying out detection of tracking error and detection of focusing error on the basis of an output of said photodetector, and

(vii) a signal detection circuit for detecting signals recorded on said optical recording medium on the basis of the output of said photodetector.

4,945,528

METHOD OF RECORDING BINARY INFORMATION IN A MAGNETO-OPTICAL STORAGE LAYER, AND ARRANGEMENT FOR CARRYING OUT THE METHOD

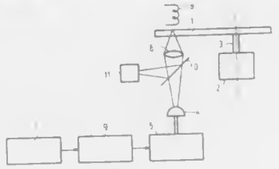
Jan H. Crasemann, Hamburg, German Democratic Rep., assignor to U.S. Philips Corp., New York, N.Y.

Filed Aug. 22, 1988, Ser. No. 235,254

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1987, 3728237

Int. Cl.[5] H04N *5/76*

U.S. Cl. 369—59 **4 Claims**



1. A method of recording binary information in a magneto optical storage layer comprising the steps of:

heating a selected area of the storage layer to approximately the Curie temperature by means of a laser beam of limited duration for one bit; and

dividing each laser beam of limited duration into a plurality of short pulses separated by pulse spacings, said pulses being essentially incident on the same selected area of the storage layer and each having an energy adequate to heat the exposed area of the storage area to approximately the Curie temperature.

4,945,529

OPTICAL HEAD COMPRISING A DIFFRACTION GRATING FOR DIRECTING TWO OR MORE DIFFRACTED BEAMS TO OPTICAL DETECTORS

Yuzo Ono; Yutaka Yamanaka, and Yasuo Kimura, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

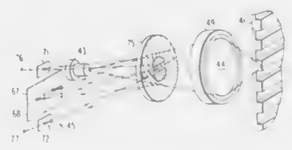
Filed Dec. 10, 1986, Ser. No. 940,007

Claims priority, application Japan, Dec. 10, 1985, 60-278365; Dec. 12, 1985, 60-280603; Jan. 24, 1986, 61-14144; Mar. 18, 1986, 61-60305; Mar. 18, 1986, 61-60306; May 26, 1986, 61-121575; May 26, 1986, 61-121577; Jun. 10, 1986, 61-132723; Jun. 10, 1986, 61-132724; Jul. 2, 1986, 61-156406; Aug. 27, 1986, 61-202245

Int. Cl.[5] G01J *1/20;* **G11B** *21/10, 7/13*

U.S. Cl. 369—109 **25 Claims**

1. An optical head device for use in combination with an optical source for generating a coherent beam along a main optical axis and an optical recording medium, said optical head device including a focussing lens for focussing an input beam on said optical recording medium along a lens axis of said focussing lens and responsive to an optical beam reflected from said optical recording medium for producing an output beam along said lens axis, wherein the improvement comprises a diffraction grating having a plurality of grating regions responsive to said coherent beam for producing a zeroth-order diffracted beam as said input beam and responsive to said output



beam for directing a plurality of sidewards diffracted beams to an optical detector assembly along a plurality of side optical axes, said diffraction grating having substantially no dependency on p-polarized and s-polarized beams and substantially no focal power, each of said grating regions having a grating pattern of slits along interference fringes between spherical wave fronts of two coherent beams having beam axes coincident with said main optical axis and a selected one of said side optical axes.

4,945,530

CARTRIDGE FOR OPTICAL DATA DISCS

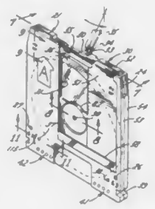
Patrick B. Sandell, Bartlett, and Albert Ditzig, Hoffman Estates, both of Ill., assignors to Opticord, Inc., Chicago, Ill.

Division of Ser. No. 120,614, Nov. 13, 1987, Pat. No. 4,908,817, which is a continuation-in-part of Ser. No. 930,874, Nov. 14, 1986, abandoned. This application Nov. 7, 1988, Ser. No. 268,075

The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.

Int. Cl.[5] G11B *25/04, 7/00*

U.S. Cl. 369—291 **14 Claims**



1. A protective cartridge for a data information disc comprising a pair of interlocking shells enclosing said disc, a sliding door movable from a closed position for covering said disc to an open position for exposing said disc during a read operation, said door including a pair of shutters each having a flat planar portion overlapping a respective one of the shells, a slide separate from said shutters upon which said shutters are mounted, and said slide having an outer periphery and said shells having a portion internally within said cartridge which together define a cooperating guide track and groove for supporting said slide and the shutters mounted thereon and for guiding their movement relative to said shells.

4,945,531

OPTICAL WAVELENGTH-DIVISION MULTIPLEX TRANSMISSION SYSTEM WITH AN OPTICAL FILTER FOR SPONTANEOUS EMISSION NOISE

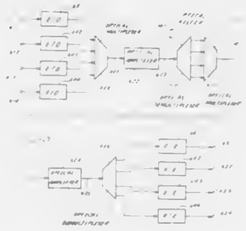
Syuji Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 39,193, Apr. 16, 1987, abandoned. This application Jul. 21, 1989, Ser. No. 383,256

Claims priority, application Japan, Apr. 17, 1986, 61-89148

Int. Cl.[5] H04J *14/02*

U.S. Cl. 370—3 **15 Claims**



1. An optical wavelength-division multiplex transmission system comprising optical multiplexer means (**620**) for multiplexing a plurality of optical signals having different wavelengths into a wavelength-division multiplexed optical signal, optical amplifier means (**622**) optically coupled to said optical multiplexer means for directly amplifying said wavelength-division multiplexed optical signal without resort to opto-electric and electro-optic conversions to produce an amplified wavelength-division multiplexed optical signal, optical filter means (**100**) optically coupled to said optical amplifier means for suppressing undesired spectra of the amplified wavelength-division multiplexed optical signal to produce a filtered wavelength-division multiplexed optical signal, and optical demultiplexer means (**626**) optically coupled to said optical filter means for demultiplexing said filtered wavelength-division multiplexed optical signal into a plurality of optical signals each having a different frequency component.

4,945,532

LOCAL NETWORK TESTING USING CARRIER SENSE MULTIPLE ACCESS AND COLLISION DETECTION (CSMA/CD)

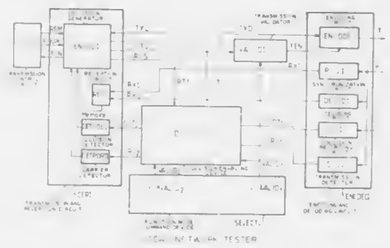
André Hald, Villiers-Saint-Frederick, France, assignor to Bull, S.A., Paris, France

Filed Mar. 15, 1989, Ser. No. 323,888

Claims priority, application France, Mar. 18, 1988, 88 03576

Int. Cl.[5] H04J *1/16, 3/14*

U.S. Cl. 370—13 **22 Claims**



1. A tester for local networks having at least one elementary segment with a number of stations on the segment, each of said stations having a transmission and a reception circuit and an encoding/decoding circuit, the tester comprising:

a transmission and reception circuit;

an encoding/decoding circuit;

means for detecting the presence of a transmission from a station;

said transmission and reception circuit including a collision generating means responsive to the detection of a transmission presence;

means for applying said frame of data through said encoding/decoding circuit to an elementary segment;

means for detecting collisions; and

means for verifying that said means for detecting collisions correctly detects collisions.

4,945,533

METHOD AND APPARATUS FOR TRANSMITTING DATA

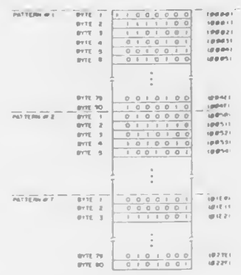
George L. Schroeder, Sherwood; Francis O. Couch, Portland, and Chamna Saengsuraiporn, Aloha, all of Oreg., assignors to Kentrox Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 210,728, Jun. 23, 1988, Pat. No. 4,881,221. This application Jun. 7, 1989, Ser. No. 363,953

The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.

Int. Cl.[5] H04B *3/20*

U.S. Cl. 370—32.1 **17 Claims**



7. A method of controlling a tone responsive device on a bit-synchronous digital data circuit, comprising the steps:

providing a serial data stream corresponding to a digitally encoded control tone; and

sequentially transmitting N different versions of said data stream, where N is the number of data bits in a byte, with each of said versions being bit shifted relative to the other versions;

wherein one of said versions will be effective to control the tone responsive device.

4,945,534

PROGRAMMABLE CONFERENCING MODULE FOR RING ARRAYS AND SWITCHABLE RING ARRAY NETWORKS

John L. Driscoll, Jeannette; Edward K. H. Law, Monroeville, both of Pa.; Gerald M. Masson, Baltimore, Md.; Giorgio L. Coraluppi, Pittsburgh, and Michael A. Kancel, Bridgeville, both of Pa., assignors to Compunetics, Inc., Monroeville, Pa.

Continuation of Ser. No. 94,984, Sep. 10, 1987, abandoned. This application Jul. 19, 1989, Ser. No. 383,230

Int. Cl.[5] H04Q *11/04*

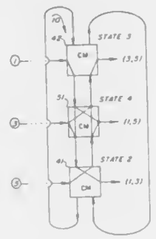
U.S. Cl. 370—62 **26 Claims**

1. A conferencing network for establishing conference comprising:

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a first, second and third station, each station having a transmit port and a receive port;

a first, second and third conferencing module capable of being in predetermined states, each conferencing module having an A input port and an A output port, said second and third modules having a B input port and a C output port, said first and second modules having a B output port and a C input port, said B output port and C input port of the first conferencing module linked to the B input port and C output port, respectively, of the second conferencing module, said B output port and C input port of the second conference module linked to the B input port and



C output port, respectively, of the third conferencing module, the transmit port of the first, second and third stations linked to the A input port of the first, second and third conferencing modules, respectively, the receive port of the first, second and third stations linked to the A output port of the first, second and third conferencing modules, respectively such that said first, second and third conferencing modules form an open ring array;

and control means for placing the conferencing modules in the proper states to establish the desired conferences between the stations, said control means in connection with each conferencing module.

4,945,535

INFORMATION PROCESSING UNIT

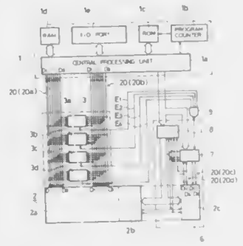
Osamu Hosotani; Koichi Kawauchi, and Naoki takahashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,433

Claims priority, application Japan, Aug. 25, 1987, 62-210607

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—11.1 **3 Claims**



1. An information processing unit comprising:

a memory device which stores a data word at a standard memory address;

with each standard memory address specifying several memory areas in which to store said data word and wherein each of said several memory areas is identified by an internal address;

a central processing unit which accesses said data word stored in said memory device by sending said standard memory address to an address control device;

said address control device, coupled to said central processing unit, stores said internal address and combines said internal address with said standard address to form a compound address specifying a given one of said several memory areas in which said data word is stored;

an error detection device, coupled to said memory device and said address control device, which generates an error signal if the data word read from said memory device contains an error;

said address control device having an internal address update device which, upon receipt of said error signal, prevents the use of the given memory area used to store said error containing data word by selecting a new internal address, and wherein said address control device forms a new compound address.

4,945,536

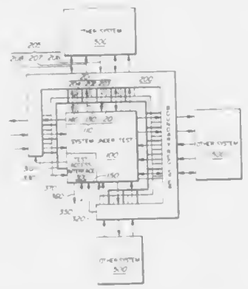
METHOD AND APPARATUS FOR TESTING DIGITAL SYSTEMS

Marius Hancu, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 9, 1988, Ser. No. 242,244

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **30 Claims**



1. A method for testing a digital system having a plurality of system terminals for coupling input signals into the system and output signals out of the system during normal operation of the system, the method comprising:

connecting at least some of the system terminals in parallel to boundary register means, said boundary register means being operable to pass input signals and output signals transparently through the boundary register means while accumulating together said input signals and said output signals;

initializing the state of the digital system and the state of the boundary register means to predetermined states;

running the digital system and boundary register means through a predetermined number of clock cycles while passing known input signals through the boundary register means into the system and accumulating together within the boundary register means said known input signals and output signals provided by the digital system to generate a test result pattern; and

comparing the generated test result pattern to a predetermined test result pattern.

4,945,537

MAXIMUM LENGTH LINEARLY OCCURRING CODE SEQUENCE GENERATOR

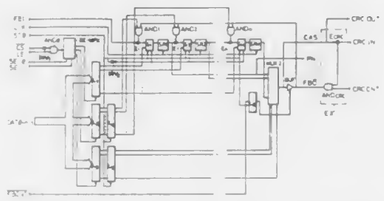
Masaaki Harada, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1988, Ser. No. 202,984

Claims priority, application Japan, Jun. 11, 1987, 62-146527

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.1 **9 Claims**



1. An apparatus comprising a maximum length linearly occurring code sequence generator which includes:

a shift register which has a plurality of units in cascade connection, each said unit including an exclusive logical sum gate having first and second inputs and an output, a flip-flop having a data input and a data output, an AND gate having first and second inputs and having an output coupled to said first input of said exclusive logical sum gate, and a steering gate having a first input coupled to said output of said exclusive logic sum gate, having a second input, and having an output coupled to said data input of said flip-flop;

means for applying a respective control signal to said first input of said AND gate of each said unit;

means for applying a respective initial condition signal to said second input of said steering gate of each said unit;

a multiplexer having a plurality of data inputs which are each coupled to said data output of said flip-flop of a respective said unit and having a data output, said multiplexer selecting said output of one of said flip-flops present at a respective one of said data inputs of said multiplexer and supplying it to said data output of said multiplexer; and

a selectively actuable three-state buffer having a data input coupled to said data output of said multiplexer and having a data output coupled to said second input of said AND gate of each said unit of said shift register;

wherein said second input of said exclusive logical sum gate of each of said units other than a first of said units is coupled to the data output of the flip-flop of a different said unit.

4,945,538

METHOD AND APPARATUS FOR PROCESSING SAMPLE VALUES IN A CODED SIGNAL PROCESSING CHANNEL

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1988, Ser. No. 270,895

Int. Cl.[5] G06F *11/10*

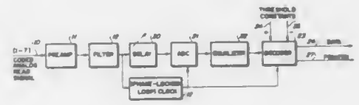
U.S. Cl. 371—43 **24 Claims**

1. A method of processing, in a signal processing channel, digital values corresponding to a digitized incoming analog signal representative of coded binary data, comprising the steps of:

using a state-dependant sequence detection algorithm iterated by successive clock cycles, advancing from a current state to a next state,

precomputing appropriate functional expressions of digital sample values for a preselected number of sample values ahead of a then current sample value;

comparing preselected ones of said functional expressions against corresponding thresholds to provide respective binary decision outputs; and



using said binary decision outputs in conjunction with state values corresponding to the current state, determining state values for the next state following said current state, which become current state values for the next iteration of the clock cycle.

4,945,539

ACOUSTO-OPTIC TUNABLE FILTER

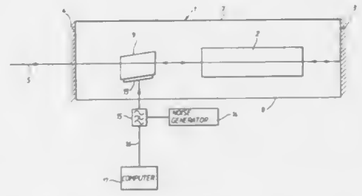
John M. Bagshaw; Lionel W. J. Kent; Terence F. Willats, all of Chelmsford, and Steven J. Payne, Basildon, all of United Kingdom, assignors to The General Electric Company, p.l.c., London, United Kingdom

Filed Feb. 13, 1989, Ser. No. 309,522

Claims priority, application United Kingdom, Feb. 17, 1988, 8803705

Int. Cl.[5] H01S *3/117, 3/10*

U.S. Cl. 372—13 **13 Claims**



1. An acousto-optical filter comprising

(a) an anisotropic crystal having an optic axis and a face;

(b) an acoustic transducer connected to said face;

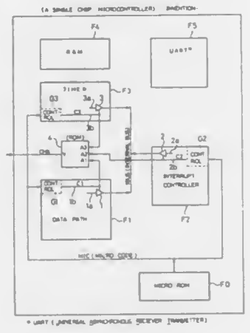
(c) a signal generator for generating a signal having a plurality of frequencies;

(d) means for applying said signal to said transducer, said transducer projecting an acoustic wave into said crystal in a direction normal to said face; and

(e) means for directing an optical wave onto said crystal, the angle of said face relative to the optic axis of said crystal and the value of said signal being such that said acoustic wave causes wavelength-specific diffraction of said optical wave which nearly, but not completely satisfies the parallel tangents phase matching condition, whereby a substantial angular field of view for said optical wave is obtained, the angle of the face of said crystal also being such that said diffraction is polarization-insensitive.

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4,945,540
GATE CIRCUIT FOR BUS SIGNAL LINES
Kouichi Kaneko, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 5, 1988, Ser. No. 152,784
Claims priority, application Japan, Jun. 30, 1987, 62-164303
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—57.1 5 Claims



1. In a bus gating circuit of the type for gating one of a plurality of input signals onto an internal bus line of a microcontroller, wherein the internal bus line provides for communication among a plurality of signal sources, with each input signal being connected to the internal bus line by a corresponding gate element that couples or isolates the corresponding input signal to or from the internal bus line depending on the active or inactive state of a control signal received by the gate element, a failure detection circuit for detecting an error condition in which two or more input signals are simultaneously coupled to the internal bus line, the failure detection circuit comprising:

circuit means responsive to the control signal lines for generating an error signal when more than one of the control signal lines are active, the error signal providing an indication of a control signal error, wherein the input signals are unchanged by the error signal; and

a multiplexer having a first input line carrying the error signal, a second input line carrying a normal signal from a microcontroller, a selection input line to choose between the inputs, and an output to carry the signal output of the selected input.

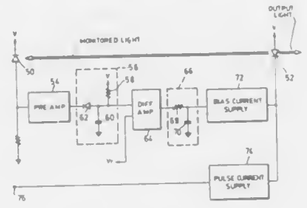
4,945,541
METHOD AND APPARATUS FOR CONTROLLING THE BIAS CURRENT OF A LASER DIODE
Takao Nakayama, Tokyo, Japan, assignor to Digital Equipmeot Corporation, Maynard, Mass.
Filed Jun. 28, 1989, Ser. No. 373,158
Claims priority, application Japan, Sep. 9, 1988, 63-225045
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—31 23 Claims

1. An apparatus for controlling the optical output intensity of a laser diode used in an optical communication system to periodically transmit data, wherein said laser diode receives current from a pulse current supply and a bias current supply, comprising:

first means for receiving a portion of the optical output of said laser diode and delivering a first signal having a magnitude proportional to the optical intensity of said laser diode optical output;

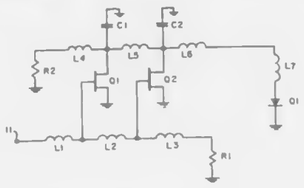
second means for receiving said first signal, detecting the magnitude corresponding to the minimum magnitude of said optical output, and delivering a second signal having a magnitude corresponding to said minimum magnitude of said optical output; and

third means for comparing the magnitude of said second



signal to a preselected magnitude and altering the magnitude of said bias current in response to said second signal differing from said preselected magnitude, independent of the presence and absence of data being transmitted.

4,945,542
LASER DIODE MODULATOR
Louis R. Brothers, Jr., Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed May 31, 1989, Ser. No. 359,492
Int. Cl.[5] H01S *3/00, 3/10*
U.S. Cl. 372—38 3 Claims



1. A laser diode modulator comprising:

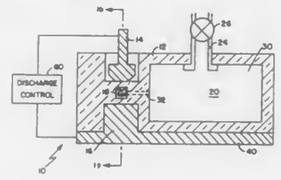
a series of transistors; each having an input terminal and an output terminal, the input terminals exhibiting a characteristic shunt capacitance;

an input circuit for receiving a modulating signal, said input circuit comprising a series of inductive elements, the input terminals of successive ones of said transistors being connected to said input circuit between successive ones of said inductive elements;

an output circuit comprising a series of inductive elements, the output terminals of successive ones of said transistors being connected to said output circuit between successive ones of the inductive elements; and

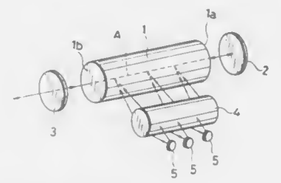
a tuning capacitor shunting each of said transistor output terminals, the values of said output circuit inductive elements forming, with said tuning capacitors, a singly terminated filter providing a graduated and decreasing characteristic impedance, the laser diode to be modulated being connected to the low impedance end of said output circuit.

4,945,543
GAIN MEDIUM FOR RADIANT ENERGY SOURCE
Richard C. Sharp, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Sep. 1, 1989, Ser. No. 401,706
Int. Cl.[5] H01S *3/22, 3/223*
U.S. Cl. 372—55 9 Claims



1. A gain medium for use in a radiant energy source comprising a gas mixture including carbon dioxide, carbon monoxide and deuterium.

4,945,544
DIODE LASER PUMPED SOLID-STATE LASER
Haruo Tanaka, Shiga, and Naotaroh Nakata, Kyoto, both of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Mar. 28, 1989, Ser. No. 329,570
Claims priority, application Japan, Mar. 29, 1988, 63-075655
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—70 5 Claims



1. A solid-state laser comprising:

a laser rod having a central longitudinal axis;

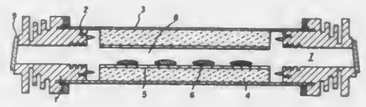
a total reflection mirror arranged on the extension of said longitudinal axis in facing relation to one end face of said laser rod;

a half mirror arranged on the extension of said longitudinal axis in facing relation to the other end face of said laser rod;

a plurality of laser diodes arranged in an array which is spaced laterally from said laser rod in parallel to said longitudinal axis, said array of laser diodes emitting pumping light toward said laser rod; and

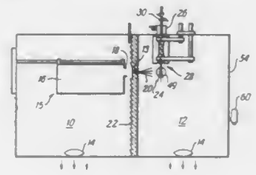
a cylindrical lens arranged in parallel to said longitudinal axis between said laser rod and said array of laser diodes, said lens serving to focus said pumping light from said array of laser diodes substantially on said longitudinal axis to generate efficiently a laser beam along said longitudinal axis within said laser rod.

4,945,545
COLD ELECTRODE METAL VAPOR LASER
James A. Piper, Sydney, Australia, assignor to Metalaser PTY, Australia
PCT No. PCT/AU87/00045, § 371 Date Nov. 25, 1987, § 102(e) Date Nov. 25, 1987, PCT Pub. No. WO87/05159, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 18, 1987, Ser. No. 165,985
Claims priority, application Australia, Feb. 18, 1986, PH4674
Int. Cl.[5] H01S *3/097, 3/22*
U.S. Cl. 372—87 4 Claims



1. A pulsed metal vapor laser having an optical resonator cavity and a discharge volume for amplifying stimulated emissions, wherein said discharge volume is defined by a tubular chamber the ends of which are closed by terminating flanges characterized in that there is formed integrally with a flange only a single cold cathode structure having a plurality of means for non-thermionic electron generation to sustain a high current, pulsed discharge in the discharge volume of the laser upon application of a high voltage electrical pulse between the terminating flanges of the tube.

4,945,546
PURELY CHEMICAL PROCESS YIELDING CONTINUOUS LASER AMPLIFICATION IN THE VISIBLE AND ULTRAVIOLET SPECTRAL RANGES
James L. Gole, Atlanta, Ga.; James R. Woodward, Chagrin Falls, Ohio, and Stephen H. Cobb, Mayfield, Ky., assignors to Georgia Tech Research Corporation, Atlanta, Ga.
Filed Jan. 4, 1989, Ser. No. 293,322
Int. Cl.[5] H01S *3/095*
U.S. Cl. 372—89 41 Claims



23. A chemical laser for amplification of visible and ultraviolet light comprising means for producing metal trimers from a source of metal, means for dissociating halogen molecules to form halogen atoms, a reaction chamber, and means for delivering the metal trimer and halogen atoms into the reaction chamber to chemically react the metal trimer and halogen atoms to form electronically excited metal dimer molecules in sufficient concentration to create a population inversion and laser amplification.

VOL 1116 ISS 5 JL 31 1990 UMI

4,945,547

LASER BEAM PROCESSING APPARATUS

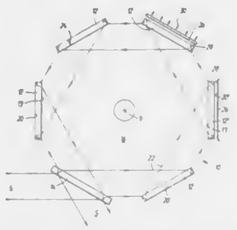
Beany A. Greene, Fadden, Australia, assignor to Electro Optic Systems Pty. Ltd., New South Wales, Australia

Continuation of Ser. No. 86,125, Jun. 4, 1987, abandoned. This application May 30, 1989, Ser. No. 358,521

Claims priority, application Australia, Oct. 4, 1985, 2711/85; Oct. 4, 1985, 2712/85; PCT Int'l Appl., Oct. 4, 1985, PCT/AU86/00291

Int. Cl.[5] **H01S** *3/083, 3/03, 3/07*

U.S. Cl. 372—94 **21 Claims**



1. Laser beam processing apparatus comprising;

a body providing a generally cylindrical bounding structure for a cavity;

means to recover a laser beam from the cavity;

reflective means including at least five substantially flat reflective interfaces together forming a reflective structure of polygonal cross section about said cavity arranged to define in said cavity a light path for said laser beam which is generally polygonal as viewed from an end of the cavity; and laser material disposed in said path and arranged in plural thin segments in front of the respective interfaces to define said cylindrical bounding structure,

wherein said reflective interfaces and said thin segments are so arranged that said light path traverses the thin dimension of each of said segments.

4,945,548

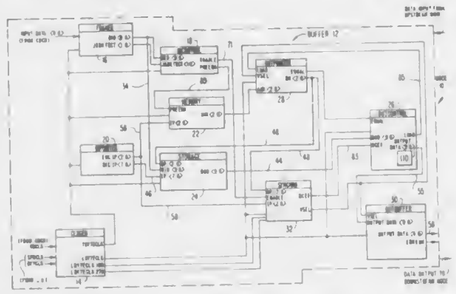
METHOD AND APPARATUS FOR DETECTING IMPENDING OVERFLOW AND/OR UNDERRUN OF ELASTICITY BUFFER

John R. Iannarone, Tewksbury, Mass., and Bruce W. Thompson, Mount Vernon, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 187,208, Apr. 28, 1988, Pat. No. 4,878,219. This application Oct. 14, 1988, Ser. No. 257,907

Int. Cl.[5] **H04L** *25/20, 7/00*

U.S. Cl. 375—4 **88 Claims**



1. A parallel asynchronous elasticity buffer in a repeater node for transferring data in a data communication system, the data communication system including a plurality of nodes coupled in a network for transferring frames of data from a source node to a destination node through the repeater node, wherein the repeater node receives a plurality of bits of data in a frame from an upstream node and transmits the plurality of bits of data in the frame to a downstream node, and wherein each node in the network transmits data in synchronism with an independent clock, the elasticity buffer comprising:

receiving means for providing in parallel format, in response to a transmit multibit clock signal that is in synchronism with an independent clock of the upstream node, a multibit data unit received from the upstream node;

storage means including a fixed number of multibit storage elements, coupled to the receiving means, for storing the multibit data unit in parallel format in one of the storage elements, wherein each storage element has a unique address;

transmitting means, coupled to the storage means, for outputting in parallel format, in response to a local multibit clock signal that is in synchronism with the independent clock of the repeater node, one of the multibit data units stored in the storage means;

write pointer means, coupled to the storage means, for selecting as a write address the address of a storage element to store the next multibit data unit provided by the receiving means;

read pointer means, coupled to the storage means, for selecting as a read address the address of a storage element to provide the next multibit data unit output by the transmitting means, wherein each multibit data unit is output in first-in, first-out order;

initialization means for initializing the elasticity buffer to prevent simultaneous selection of the same address as a read address and a write address, wherein in response to initialization, a write address is selected as a read address after a predetermined delay; and

detection means for detecting whether an error condition corresponding to a write overflow or read underrun of a storage element is impending by determining whether the same address is selected as the write address and as the read address during an overlap time period having a duration equal to a threshold time period.

4,945,549

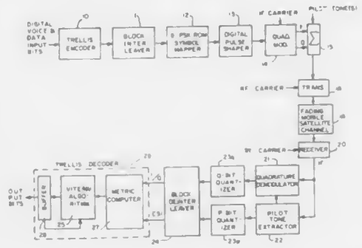
TRELLIS CODED MODULATION FOR TRANSMISSION OVER FADING MOBILE SATELLITE CHANNEL

Marvin K. Simon, La Canada, and Dariush Divsalar, Pacific Palisades, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 929,876, Nov. 13, 1986, abandoned. This application Sep. 15, 1988, Ser. No. 246,032

Int. Cl.[5] **H04L** *27/18*

U.S. Cl. 375—53 **6 Claims**



1. A method of communication with a mobile receiver over a fading mobile-satellite channel for digital coded voice and data comprising the steps of trellis coding said data at a transmitter, block interleaving said trellis coded data, and multiple phase-shift-keyed signaling the trellis coded and block interleaved data with constant amplitude and distinct phase spacing in a signal set of phases greater than four, and thereafter quadrature modulating the result on an IF carrier and modulating the modulated IF carrier on an RF carrier for transmission through said mobile-satellite channel and including the step of inserting two pilot tones in the modulated IF carrier for use in synchronous demodulation of the IF carrier at said mobile receiver, and further including the steps at said mobile receiver of extracting said pilot tones, using said pilot tones for synchronous demodulation of said IF carrier to coherently detect received trellis coded data, block deinterleaving detected trellis coded data, and decoding the deinterleaved trellis coded data, said demodulating step including the steps of recovering information from extracted pilot tones for use as side information in said deinterleaved trellis decoding step.

4,945,550

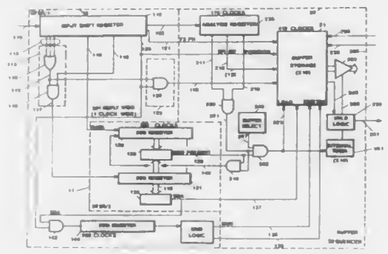
ATCRBS/SIF/TCAS REPLY DECODER

William E. Krause, Timonium, and Norman R. Sanford, Cockeysville, both of Md., assignors to Allied-Signal Inc., Morris Township, N.J.

Filed Apr. 7, 1989, Ser. No. 334,890

Int. Cl.[5] **H03K** *5/14*

U.S. Cl. 375—94 **18 Claims**



1. A decoder for separating pulse coded messages from a serial pulse stream composed of variably spaced pulses of uniform width, said messages being identified by first and second pulses of said stream which are separated by a first predetermined amount of time and containing information pulses which are spaced between said first and second pulses by integral multiples of a second predetermined amount of time, comprising:

a first serial storage means having an input terminal receiving said serial pulse stream and propagating said stream forward towards an output terminal thereof;

a second serial storage means having an input terminal receiving the pulse stream from said output terminal of said first storage means and propagating the stream forward;

a third serial storage means having an input terminal at which the pulses of said stream propagating through said first storage means are applied prior to the appearance of such pulses at said output terminal of said first storage means,

said third storage means propagating forward the pulse stream applied to said input terminal thereof;

a plurality of buffer storage means;

means for detecting the presence in said second storage means of first and second pulses having said first predetermined time spacing therebetween to provide a first bracket decode signal;

means for providing parallel output of all pulses contained in said second storage means having spacings from said first and second detected pulses which are integral multiples of said second predetermined amount of time, said output pulses comprising a message;

means controlled by said first bracket decode signal to enable the loading of one of said buffer storage devices with said message provided by said parallel output means; and

means for deleting from said third storage device all pulses therein which correspond to pulses provided by said parallel output means.

4,945,551

SOFT X-RAY LITHOGRAPHIC SYSTEM

Hideki Makabe, and Kenji Iwahashi, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Continuation of Ser. No. 44,251, Mar. 11, 1987, abandoned. This application Nov. 14, 1989, Ser. No. 436,135

Claims priority, application Japan, Jul. 19, 1985, 60-160785

Int. Cl.[5] **G21K** *5/00*

U.S. Cl. 378—34 **5 Claims**



1. A soft X-ray lithographic system for making a reduced copy of a patttern comprising:

(a) means for emitting a beam of soft X-rays;

(b) a spherical concave reflector, which convergently projects the beam of soft X-rays from the emitting means through a pattern to be copied; and

(c) a Fresnel zone plate, located at a point where the beam of soft X-rays convergently through the pattern to be copied is converged, which focuses the bean of soft X-rays convergently projected through the pattern onto a resist.

4,945,552

IMAGING SYSTEM FOR OBTAINING X-RAY ENERGY SUBTRACTION IMAGES

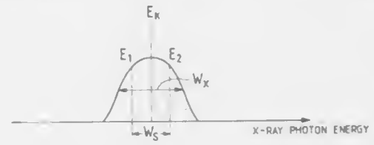
Ken Ueda, Ome; Keiji Umetani, Fuchu, and Yoshio Suzuki, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1988, Ser. No. 277,987

Claims priority, application Japan, Dec. 4, 1987, 62-305625; Jan. 22, 1988, 63-10648

Int. Cl.[5] **H05G** *1/64*

U.S. Cl. 378—99 **13 Claims**



1. An imaging system for selectively depicting the distribution of a target element injected into a subject as an energy subtraction image, comprising:

a source for irradiating a radiation beam toward said subject;

an energy selecting means for selecting quasi-monoenergetic X-rays having photon energy in a range extending above and below an absorption edge of said target element from said radiation beam;

a filter that is disposable in an optical path of said radiation

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beam which irradiates said subject, said filter containing said target element and having the function of substantially cutting X-rays having photon energy levels higher than said absorption edge;

an X ray image detecting means disposed behind said subject;

a control means for controlling said filter and said X-ray image detecting means such that a first image of said subject by means of said quasi-monoenergetic X-rays irradiated when said filter is removed and a second image of said subject by means of said quasi-monoenergetic X-rays irradiated when said filter is inserted are successively obtained; and

an image acquisition and processing means containing a recording means for recording the images obtained by said X-ray image detecting means, said image acquisition and processing means calculating an energy subtraction image using said first and said second images which have been recorded.

4,945,553

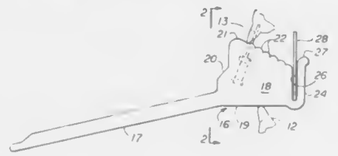
INTRA-ORAL RADIOGRAPHIC FILM HOLDER

Timothy G. Willis, 310 Evergreen, Yreka, Calif. 96097

Filed Apr. 10, 1989, Ser. No. 335,230

Int. Cl.[5] G03B *42/02*

U.S. Cl. 378—168 **8 Claims**



1. A radiographic film packet holder comprising a bite block having first and second parallel sides, said sides having converging top and bottom surfaces shaped and positioned to fit between the upper and lower teeth of a patient so that the patient may clamp said bite block between the teeth, a distal end perpendicular to said sides, a recess formed in said block bounded by said distal end and said sides and shaped to accept the exposed end of a root canal file protruding from one of the teeth of the patient, retainer means on the lingual end of said bite block shaped to receive and retain against unintentional dislodgment a portion of a film packet and to retain said packet positioned lingually of a selected tooth and parallel to said distal end, and a handle fixed to and extending from said block in a direction to extend out between the lips of the patient.

4,945,554

TEST CIRCUIT ARRANGEMENT FOR COMPUTER-CONTROLLED COMMUNICATIONS SWITCHING SYSTEMS

Ruediger Krause, Berlin, and Reinhard Foshag, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 335,569

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3824250

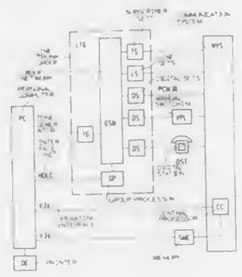
Int. Cl.[5] H04M *3/28*; H04Q *1/22*

U.S. Cl. 379—10 **5 Claims**

1. A test circuit arrangement for testing computer-controlled communications switching systems each respectively having a central network and a central processor unit, as well as having a plurality of subscriber sets and/or line sets connectable to the network for analog and/or digital information transmission that, in combination with the central processor unit, are respectively under the control of a group processor unit adapted to the plurality of subscriber sets and/or line sets, comprising:

a line trunk group configuration of the computer-controlled communications switching system, the line trunk group configuration being allocated to a single group processor unit and being formed of subscriber sets and/or line sets;

the group processor unit connected to a personal computer unit via an interface unit (HDLC);



the personal computer unit connected via a first operating interface unit to the central processor unit that controls an operating system of the communication switching system; and

a manual switching position device and a digital station each of which is controllable by the group processor unit via a digital set and each of which being directly connected t the communications switching system to be tested.

4,945,555

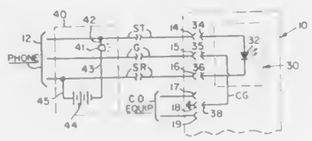
METHOD AND MEANS FOR REMOTE TESTING OF UNUSED TELEPHONE LINES

Christopher R. Teumer, and Mark A. Mendes, both of Rochester, N.Y., assignors to Rochester Telephone Corporation, Rochester, N.Y.

Filed Oct. 6, 1989, Ser. No. 418,241

Int. Cl.[5] H04B *3/46*

U.S. Cl. 379—21 **16 Claims**



15. Apparatus for testing a pair of unused telephone lines emanating from the main frame of a telephone central office, comprising,

a first device removably mounted in said main frame and releasably connecting said unused pair of lines together to permit DC current flow in one direction only through said lines,

a second, portable device disposed releasably to be connected across said unused lines at a point remote from said main frame,

said second device including a direct current power supply in series with an electrical signal generator operative to produce a signal when DC current flows therethrough, and

means for selectively connecting said second device across said lines in two different modes, in one of which said power supply has a first polarity with respect to said lines, and in the other of which said polarity is reversed.

4,945,556

METHOD OF LOCKING FUNCTION OF MOBILE TELEPHONE SYSTEM

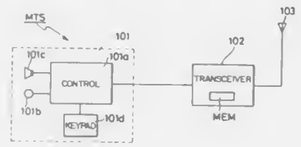
Makoto Namekawa, Iwaki, Japan, assignor to Alpine Electronics Inc., Japan

Continuation of Ser. No. 102,254, Sep. 28, 1987, abandoned, which is a continuation of Ser. No. 881,905, Jul. 3, 1986, abandoned. This application Nov. 9, 1988, Ser. No. 270,423

Claims priority, application Japan, Jul. 9, 1985, 62-150647

Int. Cl.[5] H04M *1/66*

U.S. Cl. 379—58 **6 Claims**



1. A method of selectively locking a plurality of functions of a mobile telephone system having an input keypad, a memory, a control portion for controlling operation of the functions of the mobile telephone system, and an on/off power switch, comprising the steps of:

storing, in advance, a first lock code in the memory;

storing, in advance, at least one, second lock code in the memory;

providing, in the control portion, all of said functions of the mobile telephone system in a first operational mode, and less than the total number of said functions of the mobile telephone system in a second operational mode;

assigning said first lock code to a first user who is to be allowed access to all of said functions of said mobile telephone system;

assigning a second lock code to a second user who is to have access to a different set of said functions in the form of said less than the total number of said functions;

locking all of said functions of said mobile telephone system when said on/off power switch is turned on;

comparing an input lock code keyed in by a user to determine if said first lock code or said second lock code has been provided by the user;

unlocking all of said functions of said mobile telephone system to allow unlimited use by said user in the first operational mode if the first lock code assigned to said first user is provided;

unlocking said different set of said functions corresponding to the previously assigned second lock code of a said second user to allow use of said different set of said functions in the second operational mode if said assigned second lock code is provided.

4,945,557

VOICE ACTIVATED DIALING APPARATUS

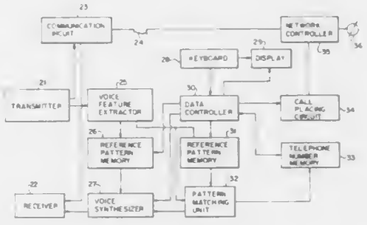
Kunihiro Kaneuchi; Toshiki Kawamoto, and Tomofumi Nakatani, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan

Division of Ser. No. 203,825, Jun. 8, 1988, abandoned. This application Apr. 5, 1989, Ser. No. 333,698

Claims priority, application Japan, Jun. 8, 1987, 62-143667; Jun. 8, 1987, 62-143668; Jun. 8, 1987, 62-143669; Jun. 8, 1987, 62-143670; Jun. 8, 1987, 62-143671; Jun. 8, 1987, 62-143673; Jun. 12, 1987, 62-147610; May 20, 1988, 63-124738

Int. Cl.[5] H04M *1/27, 1/56*

U.S. Cl. 379—67 **17 Claims**



1. A voice activated dialing apparatus, comprising:

first storing means for storing a plurality of telephone numbers;

second storing means for storing a plurality of voice data, each of which corresponds to one of said plurality of telephone numbers;

generating means for generating voices in accordance with at least one of said plurality of voice date stored in said second storing means;

first selecting means for selecting at least one of said plurality of voice data stored in said second storing means to be supplied to said generating means for generating a voice of each of said selected voice data;

second selecting means for selecting one voice data among said selected voice data while said selected voice date is used by said generating means to generate voices one after another; and

outputting means for outputting a dial signal of a telephone number which corresponds to said one voice data selected by said second selecting means.

4,945,558

TELEPHONE SET

David C. Deaville, West Chester, Pa., assignor to Mars Incorporated, McLean, Va.

Filed Oct. 19, 1988, Ser. No. 259,887

Claims priority, application United Kingdom, Oct. 19, 1987, 8724454

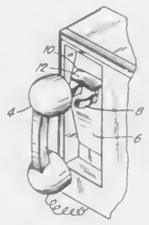
Int. Cl.[5] H04M *17/02*

U.S. Cl. 379—144 **2 Claims**

1. A telephone set having a base unit and a handset which is removable from a rest position on the base unit to make a telephone call and replaceable in the rest position following the call, and means for receiving a telephone enabling element which must be inserted into the receiving means to enable a call to be made and should be removed from the receiving

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means on completion of the call, characterized by means for defining a second, unstable or insecure position for the handset



on the base unit, said means being operative when the telephone enabling element is present in the receiving means.

4,945,559

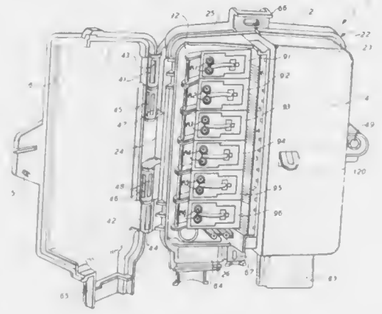
TELEPHONE NETWORK INTERFACE APPARATUS

Thomas J. Collins, Wall; Pina Schneider, Ocean Township, Ocean County; Anthony L. Nieves, Bradley Beach, and Thomas G. Graham, Ocean, all of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.

Continuation of Ser. No. 139,590, Dec. 30, 1987, abandoned. This application Nov. 7, 1989, Ser. No. 433,572

Int. Cl.[5] H04M *9/00*

U.S. Cl. 379—399 **23 Claims**



1. Telephone network interface apparatus for interconnecting incoming telephone company wiring to subscriber premises wiring, comprising:

a base including a bottom and an outwardly extending wall circumscribing said bottom, said wall including opposed first and second wall portions, said bottom and said wall providing a compartment divided generally into opposed first and second compartment portions, said first compartment portion adjacent said first wall portion and said second compartment portion adjacent said second wall portion, said first compartment portion for having first terminals mounted therein for connection to said telephone company wiring and said second compartment portion for having second terminals mounted therein for connection to said subscriber premises wiring;

a telephone company cover mounted pivotally to said second wall portion and for overlying said compartment, said telephone company cover including opposed first and second portions, said first portion being solid and for overlying and closing said first compartment portion and said second dover portion provided with an opening for overlying and exposing said second compartment portion to the exterior upon said telephone company cover being closed, said telephone company cover for being fastened only to said base, and said apparatus including first fastening means for fastening said telephone company cover only to said base;

a solid subscriber cover mounted pivotally to said second wall portion and for overlying only said second portion of said telephone company cover and for overlying and closing only said second compartment portion, said subscriber cover for being fastened only to said telephone company cover and said apparatus including second fastening means for fastening said subscriber cover only to said telephone company cover; and

said apparatus further comprising said first terminals and wherein said first terminals comprise:

a ground buss mounted to said base in said first compartment portion;

a plurality of electrical protection devices mounted on and electrically connected to said buss;

a plurality of pairs of telephone company wiring terminals mounted on said electrical protective devices and for connection to said telephone company wiring; and

said buss provided with a separate terminal for connection to earth ground whereby said bus remains grounded while said telephone company wiring is being connected and disconnected to and from said pairs of telephone company wiring terminals.

4,945,560

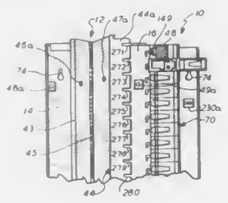
TELEPHONE NETWORK INTERFACE APPARATUS

Thomas J. Collins, Wall Township, Monmouth County, and Peter Quintana, Brick, both of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.

Continuation-in-part of Ser. No. 187,935, Apr. 29, 1988, abandoned. This application Sep. 13, 1989, Ser. No. 406,850

Int. Cl.[5] H04M *9/00*

U.S. Cl. 379—399 **12 Claims**



12. Telephone network interface apparatus, comprising:

enclosure means providing a splice chamber for receiving a telephone network cable including a plurality of incoming telephone lines, a terminal chamber having lightning protectors and a plurality of pairs of telephone terminals mounted therein, and a network interface section having a plurality of interface jacks and pairs of subscriber terminals mounted thereon;

an interface plug connected to each pair of said subscriber terminals and for being removably received within an associated one of said interface jacks, each of said interface jacks for being connected to one of said telephone terminals and thereby to one of said incoming telephone lines and each pair of said subscriber terminals for being connected to a subscriber premises line, upon each of said interface plugs being removed from its associated interface jack a demarcation point being provided between one of said telephone lines and one of said subscriber premises lines whereby the plug of an operating telephone may be plugged into said associated interface jack to facilitate determination of whether a fault exists on said one incoming telephone line or said one subscriber premises line;

separate splice chamber and terminal chamber doors

mounted pivotally on said enclosure means, said splice chamber door for covering and closing only said splice chamber and said terminal chamber door for covering and closing only said terminal chamber;

first fastening means for fastening said splice chamber door closed only over said splice chamber and second fastening means for fastening said terminal chamber door closed only over said terminal chamber; and

telephone network interface apparatus mounting means for mounting said apparatus on a support surface.

4,945,561

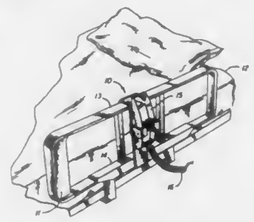
TELEPHONE HANGER FOR HOSPITAL BED

Robert A. Rioux, Jr., 6175 Crestview Rd., North Syracuse, N.Y. 13212

Filed Jan. 26, 1989, Ser. No. 301,609

Int. Cl.[5] H01M *1/04*

U.S. Cl. 379—454 **5 Claims**



1. In combination, a one-piece telephone instrument and a hospital room telephone support for supporting the one-piece telephone instrument from a hospital bed rail assembly of the type that has upper and lower horizontal rails spaced a distance apart; the telephone instrument comprising an elongated housing having on a front surface thereof an earpiece, a mouth piece, and a hook switch which when depressed places the instrument in an on-hook condition, and when released places the instrument in an off-hook condition, and

the telephone support comprising

a two-part bracket for mounting on the bed rail assembly, including an upper plate having a top edge and upper hook means at said top edge and extending rearwardly therefrom to engage the upper rail, a lower plate slidably engaging said upper plate and having a lower edge and lower hook means at said lower edge to engage the lower rail, said upper and lower plates together defining a rear wall, and engaging means on one surface of said upper plate and on a mating surface of said lower plate for holding the upper and lower plates at a desired longitudinal position with respect to each other;

a support shelf extending outward from a front surface of one of said plates; and

a pair of retaining members disposed on opposite side edges of one of said plates and extending forward therefrom, each having a front flange that extends toward the other of the retaining members, said retaining members being formed of a resilient semi-rigid material with the front flanges being angled inward towards said rear wall, the rear wall and the retaining members defining a retaining channel for retaining the telephone instrument, the latter being slidably removable from and insertable into the channel and against said support shelf with said angled-inward front flanges yieldably urging said instrument against said rear wall so that the hook switch is held depressed against said rear wall when said instrument is retained in said channel and is resting on said support shelf.

4,945,562

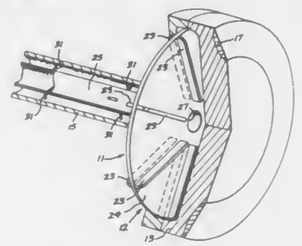
X-RAY TARGET COOLING

Fred W. Staub, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 24, 1989, Ser. No. 342,149

Int. Cl.[5] H01J *35/10*

U.S. Cl. 378—130 **10 Claims**



1. A rotatable anode for an X-ray tube comprising:

a hollow rotatable anode wheel having two circular faces, one of said faces having a bevelled edge for a target region;

a circular baffle having first and second sides situated concentrically inside said hollow anode wheel, said circular baffle having means for imparting a tangential velocity to a liquid on either side of the baffle, the outer perimeter of said circular baffle spaced away from the interior of said anode wheel said second side of said circular baffle having means situated thereon for creating operation between a forced and a free vortex condition in liquid in the vicinity of the disc periphery;

means for supplying cooling liquid to the central portion of the first side of said baffle;

means for removing cooling liquid from the central portion of the second side of said baffle, said second side of said baffle adjacent to the face of said hollow rotatable anode wheel having the bevelled edge; and

structural means for rotating said baffle when said anode wheel is being rotated.

4,945,563

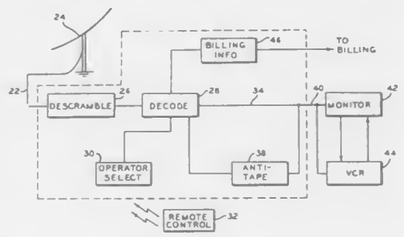
VIDEO SYSTEM AND METHOD FOR CONTROLLED VIEWING AND VIDEOTAPING

Edwin T. Horton, Ballwin, Mo., and Edward W. Smith, Lake Arrowhead, Calif., assignors to Satellite Technology Services, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 927,169, Nov. 5, 1986, abandoned. This application Sep. 22, 1988, Ser. No. 247,844

Int. Cl.[5] H04N *7/167*; H04H *1/02*

U.S. Cl. 380—5 **20 Claims**



1. A video reception system for receiving encrypted pre-

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mium TV programs and formatting said TV programs to control videotaping thereof, said programs being encoded to indicate that recording thereof is either permitted or not permitted, said system comprising a receiver, the receiver including: means to descramble the encrypted TV program, means to decode the program code, means to permit operator selection of a program code, means to format said TV program for unrestricted viewing and taping, and means to format said TV program for viewing but not taping thereof.

4,945,564

PROCESS FOR THE SCRAMBLING AND DESCRAMBLING OF TELEVISION IMAGES

Victorion Christian, Rennes, and Guionnet Jacques, Vezin le Coquet, both of France, assignors to Etablissement Public de Diffusion dit "Telediffusion de France" , France

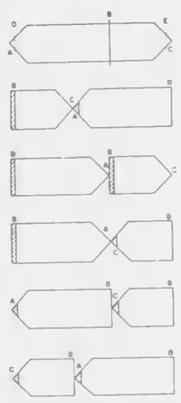
Continuation of Ser. No. 170,136, Mar. 14, 1988, abandoned, which is a continuation of Ser. No. 879,259, Jun. 27, 1986, abandoned. This application Oct. 5, 1989, Ser. No. 293,605

Claims priority, application France, Jul. 2, 1985, 85 10194

The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.

Int. Cl.[5] H04N *7/167*

U.S. Cl. 380—14 5 Claims



1. A scrambling and descrambling process for a MAC signal wherein the useful signal is a sampled video signal, in which at least a part of the said useful signal is spliced into two adjacent segments (AB, BC) each of them having at least two states, the splicing point (B) between the two segments being defined in a pseudo-random manner which is synchronous at transmission and reception, characterized in that at transmission at each line and in a pseudo-random manner, a scrambling scheme is selected from two possible schemes, that is a local reversing of a second of said two segments or a reversing of the second segment followed by permutations with a first of the two segments, and in that upon reception, the inverse processing of the process which occurred at transmission is applied in order to reintroduce intelligibility to the video signal, that is a local reversing of second received signal or a reversing of the first received signal followed by the permutation with the second received segment.

4,945,565

LOW BIT-RATE PATTERN ENCODING AND DECODING WITH A REDUCED NUMBER OF EXCITATION PULSES

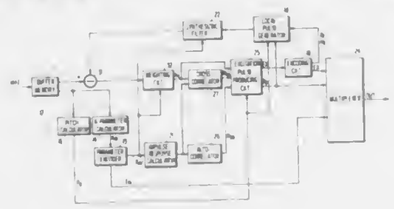
Kazunori Ozawa, and Takashi Araseki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 5, 1985, Ser. No. 751,818

Claims priority, application Japan, Jul. 5, 1984, 59-139634; Jul. 10, 1984, 59-143017

Int. Cl.[5] G10L *7/02*

U.S. Cl. 381—38 7 Claims



3. An encoder for encoding a discrete pattern signal into an output code sequence, said discrete pattern signal including pitch pulses and being composed of a succession of segments, said encoder comprising:

extracting means for extracting, from said discrete pattern signal, a pitch parameter representative of a pitch period of said pitch pulses in each of said segments of said discrete pattern signal and a spectral parameter specifying short time spectrum envelope characteristics of said discrete pattern signal;

calculating means for successively calculating excitation pulses for a first subframe and excitation pulses for a second subframe following said first subframe;

calculating means for calculating first and second signal-to-noise ratios for the first and second subframes, respectively;

determining means for determining a ratio R of said second signal-to-noise ratio to said first signal-to-noise ratio;

comparing means for comparing the ratio R to a predetermined threshold value Th;

generating means for generating a repeat signal for the second subframe when the ratio, R, is not greater than the threshold, Th, so as to repeat the excitation pulses of the first subframe for the second frame, and otherwise generating modified excitation pulses calculated from the first and second subframes, the excitation pulses of the first subframe and the modified excitation pulses being produced as practical excitation pulses which are specified by amplitudes and locations;

calculating means for calculating said amplitudes and said locations of the practical excitation pulses; and

signal producing means for combining said amplitudes and said locations of the excitation pulses and said spectral parameter to produce said output code sequence.

4,945,566

METHOD OF AND APPARATUS FOR DETERMINING START-POINT AND END-POINT OF ISOLATED UTTERANCES IN A SPEECH SIGNAL

Dieter Mergel; Hermann Ney, both of Hamburg, and Horst H. Tomaschewski, Stuvenborn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1988, Ser. No. 274,093

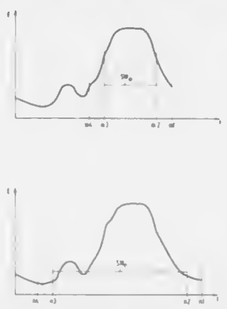
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739681

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—41 14 Claims

1. In a method of determining a start-point and an end-point of a word signal corresponding to an isolated utterance in a

speech signal by establishing an extreme value in a sequence of digital values derived from the speech signal, taking into account those values surrounding the extreme value of the signal variation and a threshold value, the improvement comprising: assigning a plurality of previously, sequentially received digital values to three adjacent time windows, a first window (end-window) including a predetermined first number (B_F) of the digital values which arrived last, a second window (signal window) including a second number (B_{SI}) of digital values, said second number varying between a predetermined first value and a predetermined higher second value, and a third window (start-window) including a predetermined third number (B_I) of digital values, forming for each new digital value a threshold value (thr) from the digital values in the first window and, consecutively for each value (1) of the second number (B_{SI}), from the digital values of the third window, decreasing each digital value of the second window by said threshold value, comparing the sum of the digital values thus decreased for each of said second number to the highest previous sum similarly produced and, depending on the result of said comparison, storing said sum together with positional data indicating the position of the second window in the sequence of digital values, and wherein the positional data stored last indicate the start-point and the end-point of the word signal.



4,945,567

METHOD AND APPARATUS FOR SPEECH-BAND SIGNAL CODING

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 275,703, Nov. 25, 1988, abandoned, which is a continuation of Ser. No. 708,623, Mar. 5, 1985, abandoned. This application Jan. 10, 1990, Ser. No. 462,981

Claims priority, application Japan, Mar. 6, 1984, 59-42307; Apr. 4, 1984, 59-67114

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—49 13 Claims

1. A method of coding a speech signal in which the speech signal in each frame period is represented by a plurality of excitation pulses and spectral parameters, said excitation pulses representing an excitation signal of said speech signal and having amplitude information and different location information and said spectral parameters representing spectrum information of said speech signal, said method comprising:

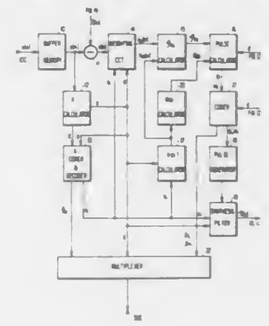
a pulse determining step for determining said excitation pulses from said speech signal in a short time interval which is not shorter than said frame period;

a spectrum determining step for determining said spectral parameters from said speech signal in said frame period;

a decision step for deciding voiced and unvoiced states of said speech signal in response to the spectral parameters determined in said frame period, said decision step thereby generating a judgment signal indicative of which of said voiced and unvoiced states said speech signal has in said frame period;

a setting step for setting the number of said excitation pulses at first and second predetermined numbers L1 and L2 (where L1 and L2 are the numbers of said excitation pulses in said frame period and L2>L1) when said judgment signal indicates the voiced and unvoiced states, respectively; and

a coding step for coding at least said excitation pulses and spectral parameters into a coded signal.



4,945,568

METHOD OF AND DEVICE FOR DERIVING FORMANT FREQUENCIES USING A SPLIT LEVINSON ALGORITHM

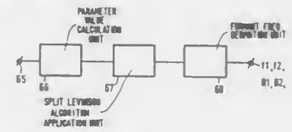
Leonardus F. Willems, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1987, Ser. No. 128,669

Claims priority, application Netherlands, Dec. 12, 1986, 8603163

Int. Cl.[5] G10L *9/04*

U.S. Cl. 381—50 9 Claims



5. A device for determining formant frequencies from a part of a speech signal located within a given time interval, comprising:

an input terminal for receiving a speech signal,

a first unit for deriving from said part of the speech signal respective parameter values for successive instants located within the given time interval, said first unit having an input coupled to the input terminal and an output coupled to an input of a second unit,

said second unit including means for determining a polynomial of a given order from the parameter values and having an output coupled to an input of a third unit, and

said third unit includes means for deriving the formant frequencies from the given polynomial, and having an output for supplying the formant frequencies, characterized in that the second unit performs a number of recursion steps in each of which a Split Levinson algorithm is performed to derive a singular predictor polynomial from the parameter values, the singular predictor polynomial derived in a recursion step having a higher order than the singular predictor polynomial determined in a preceding recursion

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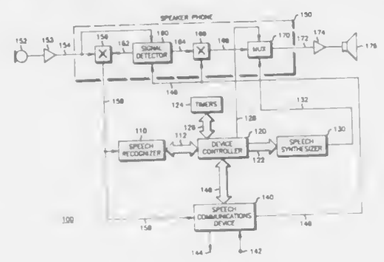
step, wherein in a recursion step the second unit derives a number of zeros of the singular predictor polynomial determined in said recursion step by using zeros calculated during a previous recursion step, and in that the third unit derives the formant frequencies from the zeros of the singular predictor polynomial obtained in the last recursion step.

4,945,569
HEARING AID
Jaromir Kulman, Freiestrasse 25, CH-8800 Thalwil, Switzerland
Filed Jan. 26, 1989, Ser. No. 302,418
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802250
Int. Cl.[5] H04R *25/02*
U.S. Cl. 381—68.6 **10 Claims**



1. A hearing aid installable in an auricle and having an auricular part consisting of plastic and a conical auditory canal part slidable into the auditory canal presenting at an end side at least one sound emergence opening, and containing electrical components namely a microphone, an amplifier a receiver, and a battery and a sound-volume regulator, wherein the sound emergence opening is arranged in a tube section projecting beyond the end side of the auditory canal part and the tube section is bridged by a curved yoke joined with a wall of the auditory canal part, which yoke leaves free over the tue section a clear distance of at least 0.9 mm for accommodating the size of granule formation of earwax.

4,945,570
METHOD FOR TERMINATING A TELEPHONE CALL BY VOICE COMMAND
Ira A. Gerson, Hoffman Estates, and Brett L. Lindsley, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 105,151, Oct. 2, 1987, abandoned. This application Aug. 25, 1989, Ser. No. 399,341
Int. Cl.[5] H04B *1/46*
U.S. Cl. 381—110 **43 Claims**



1. A speech communications device having a voice command system for controlling a voice communication path established by said speech communications device, said voice communication path being controlled by a command signal provided by said control system in response to user-spoken command words, said control system comprising:

speech recognition means for recognizing sequential first and second user-spoken utterances at least during the time said voice communication path is established, said speech recognition means including;

first means for recognizing, during the time said voice communication path is established, said first user-spoken utterance as one corresponding to a first predetermined command word, and for producing a first detect signal in response to such recognition,

second means for recognizing said second user-spoken utterance as one corresponding to a second predetermined command word, for producing a second detect signal if said second predetermined command word is recognized, and for cancelling said recognition of said first predetermined command word if said second predetermined command word is not recognized; and

decision means for providing said command signal in response to said second detect signal occurring within a predetermined recognition time interval after said first detect signal.

DESIGN PATENTS

GRANTED JUL. 31, 1990

ERRATA

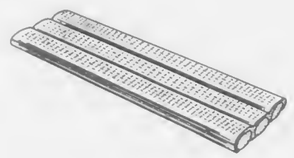
For CLASS	See PATENT NO.
D15-001	309,606
D22-134	309,644
D22-141	309,650
D26-051	309,661
D13-146	309,664

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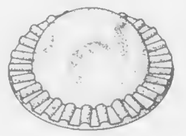
DESIGNS

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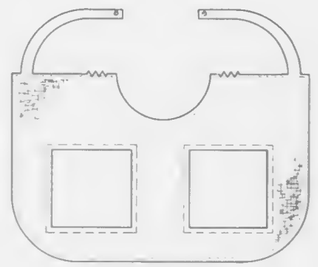
309,520
LICORICE STRIP OR SIMILAR ARTICLE
Charles Thomassen, Tietjerk; Klaas Kingma, De Tike, and Reinder Huisman, Tietjerk, all of Netherlands, assignors to R.G. Van Slooten's Suikerwerkfabriek B.V., VD Irnsum, Netherlands
Filed Jun. 15, 1987, Ser. No. 67,720
Claims priority, application Hague, Dec. 17, 1986, 61688-00
Term of patent 14 years
U.S. Cl. D1—121



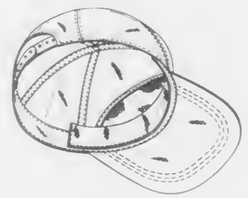
309,521
RAVIOLI
John Eureka, Medina; Linda K. Law, Warrensville Heights, and David C. Marsh, Chagrin Falls, all of Ohio, assignors to The Stouffer Corporation, Solon, Ohio
Filed May 12, 1987, Ser. No. 48,785
Term of patent 14 years
U.S. Cl. D1—126



309,522
BREAST FEEDING BIB
Darlene R. Merritt, 2767 Kesey La., San Jose, Calif. 95132
Filed Jul. 14, 1986, Ser. No. 885,522
Term of patent 14 years
U.S. Cl. D2—229



309,523
COMBINED CAP AND SWEATBAND
James B. Martin, P.O. Box 4209, Evansville, Ind. 47711
Filed Jul. 28, 1986, Ser. No. 889,899
Term of patent 14 years
U.S. Cl. D2—244



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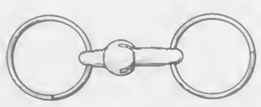
309,524
DISC STORAGE RACK
Robert A. Egly, 31 Belcourt S., Newport Beach, Calif. 92660, and Patrick Sullivan, 1752 Brookshire Ave., Tustin, Calif. 92680
Filed Jan. 16, 1987, Ser. No. 4,536
Term of patent 14 years
U.S. Cl. D3—35



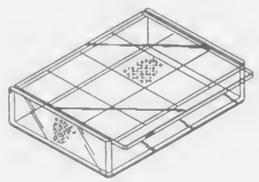
309,525
KEY-RING
Claude Grossiord, Annecy, France, assignor to S. T. Dupont, Paris, France
Filed Jun. 4, 1986, Ser. No. 870,689
Claims priority, application France, Mar. 5, 1986, 861077
The portion of the term of this patent subsequent to Dec. 12, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—61



309,526
KEY RING
Gary L. Hofmann, 7343 W. 83rd St., Los Angeles, Calif. 90045
Filed Mar. 3, 1988, Ser. No. 163,461
Term of patent 14 years
U.S. Cl. D3—61



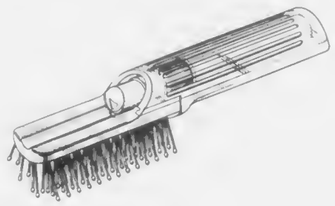
309,527
DENTAL MATERIALS BOX
Bruce A. Singer, 1520 Beecham Dr., Ambler, Pa. 19002
Filed Sep. 29, 1986, Ser. No. 913,147
Term of patent 14 years
U.S. Cl. D3—78



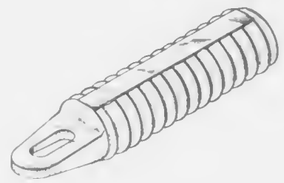
309,528
TONGUE BRUSH
Anthony Valenti, P.O. Box 726, Marstons Mills, Mass. 02648
Filed Jan. 24, 1990, Ser. No. 470,044
Term of patent 14 years
U.S. Cl. D4—104



309,529
COMBINED HAIRBRUSH AND SPRAY DISPENSER
Chan Y. Kim, Closter, N.J., assignor to Bandai Enterprises, Inc., New York, N.Y.
Filed Jun. 27, 1988, Ser. No. 211,842
Term of patent 14 years
U.S. Cl. D4—116



309,530
BRUSH HANDLE
Eric Gingras, Cross Junction, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 3, 1987, Ser. No. 127,969
Term of patent 14 years
U.S. Cl. D4—138



309,531
CHAIR
Andras Dozsa-Farkas, Munich, Fed. Rep. of Germany, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 30, 1987, Ser. No. 32,089
Claims priority, application Switzerland, Dec. 30, 1986, DM/008001
Term of patent 14 years
U.S. Cl. D6—366



309,532
CHAIR
Andras Dozsa-Farkas, Munich, Fed. Rep. of Germany, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 30, 1987, Ser. No. 32,090
Claims priority, application Switzerland, Dec. 30, 1986, DM/008001
The portion of the term of this patent subsequent to Jul. 31, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



309,533
CHAIR
Andras Dozsa-Farkas, Munich, Fed. Rep. of Germany, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 30, 1987, Ser. No. 32,092
Claims priority, application Switzerland, Dec. 30, 1986, DM/008001
Term of patent 14 years
U.S. Cl. D6—366



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309,534
CHAIR
Andras Dozsa-Farkas, München, Fed. Rep. of Germany, assignor to Giroflex Eatwicklungs AG, Koblenz, Switzerland
Filed Mar. 30, 1987, Ser. No. 32,096
Claims priority, application Switzerland, Dec. 30, 1986, DM/008001
The portion of the term of this patent subsequent to Jul. 31, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



309,535
CHAIR
Robert L. Wilson, Memphis, Tenn., assignor to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Mar. 30, 1987, Ser. No. 31,833
Term of patent 14 years
U.S. Cl. D6—372

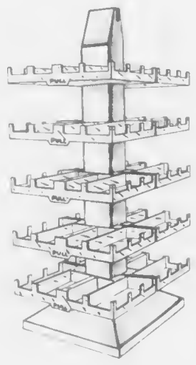


309,536
VANITY TABLE
Peter Mo Yau Kee, Flat 1002, Block A, 10th Floor, Lotto Villa, 18 Broadwood Road, Happy Valley, Hong Kong
Filed Jan. 10, 1989, Ser. No. 295,566
Term of patent 14 years
U.S. Cl. D6—397

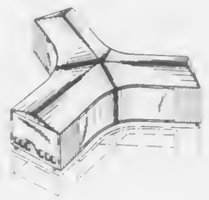




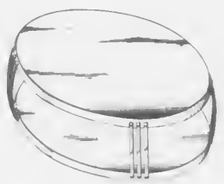
309,537
DISPLAY STAND
Arthur E. Landi, Greenwich, Conn., assignor to Display Producers, Inc., Bronx, N.Y.
Filed Nov. 4, 1987, Ser. No. 117,144
Term of patent 14 years
U.S. Cl. D6—461



309,538
HEADER FOR A MERCHANDISING DISPLAY STAND OR THE LIKE
William Prendergast, Park Ridge, and John G. Dewees, Morristown, both of N.J., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 5, 1986, Ser. No. 938,772
Term of patent 14 years
U.S. Cl. D6—455



309,539
COFFEE TABLE
Sally S. Lewis, 8950 St. Ives Dr., Los Angeles, Calif. 90069
Filed Feb. 24, 1987, Ser. No. 17,199
Term of patent 14 years
U.S. Cl. D6—479



309,540
SNEEZE GUARD
J. Marshall Suttles, Elberton, and Harry E. Schoepf, Hartwell, both of Ga., assignors to Royston Corporation, Royston, Ga.
Division of Ser. No. 851,699, Apr. 14, 1986, Pat. No. Des. 302,221. This application May 16, 1989, Ser. No. 352,821
Term of patent 14 years
U.S. Cl. D6—491



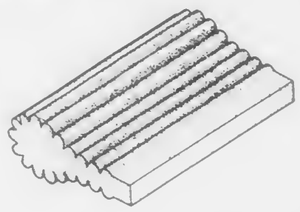
309,541
PLANT HANGER
Dale De Vries, and Dean De Vries, both of 3160 Waverly St., Vancouver, British Columbia, Canada V5S 1G2
Filed Apr. 29, 1988, Ser. No. 187,889
Claims priority, application Canada, Dec. 9, 1987, 09-12-87-2
Term of patent 14 years
U.S. Cl. D6—513



309,542
INFLATED FACE-DOWN PILLOW FOR A WOMAN
Gwendolyn Glenn, P.O. Box 15425, Richmond, Va. 23227
Filed May 2, 1988, Ser. No. 189,589
Term of patent 14 years
U.S. Cl. D6—596

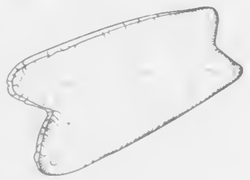


309,543
FOAMED CORE FOR A PILLOW
Larrison C. Goodman, 11924 High Valley, Dallas, Tex. 75234
Filed Jan. 20, 1987, Ser. No. 5,572
Term of patent 14 years
U.S. Cl. D6—601



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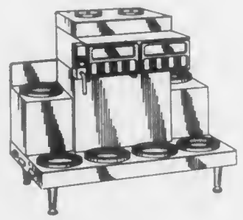
309,544
POST-SURGERY PILLOW
Olive Abriam, 11289 Del Gato Ave., San Diego, Calif. 92126
Filed Dec. 27, 1988, Ser. No. 289,752
Term of patent 14 years
U.S. Cl. D6—601



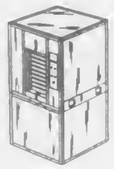
309,545
COMBINED TRAY, MUGS AND COFFEE SERVICE
Jane Ancona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jul. 6, 1989, Ser. No. 376,258
Term of patent 14 years
U.S. Cl. D7—507



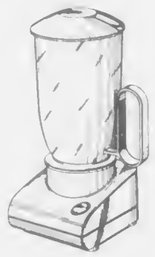
309,546
COMBINED COFFEE MAKING AND HOT WATER DISPENSING MACHINE
Raymond E. Van Camp, Rochester, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Dec. 7, 1987, Ser. No. 129,678
Term of patent 14 years
U.S. Cl. D7—308



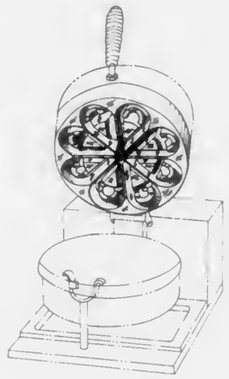
309,547
FOOD WARMER
James R. Kane, Garden Grove, Calif., assignor to NutraCare International, Newport Beach, Calif.
Filed Jun. 1, 1988, Ser. No. 201,111
Term of patent 14 years
U.S. Cl. D7—323



309,548
FOOD BLENDER
Don R. McCloskey, Stratford, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 16, 1988, Ser. No. 168,735
Term of patent 14 years
U.S. Cl. D7—378



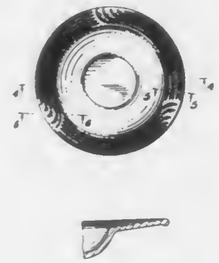
309,549
WAFFLE IRON PLATES
Donald O. Stephens, Peoria, Ill., assignor to CoBatCo., Inc., Peoria, Ill.
Filed Feb. 4, 1988, Ser. No. 152,064
Term of patent 14 years
U.S. Cl. D7—410



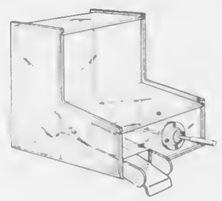
309,550
FOODSTUFFS CONTAINER WITH A SPOON
Ambrogio Pozzi, Gallarate, Italy, assignor to Fratelli Guzzini S.p.A., Recanti (Macerata), Italy
Filed Oct. 16, 1987, Ser. No. 109,253
Claims priority, application Italy, Apr. 27, 1987, 21464/87[U]
Term of patent 14 years
U.S. Cl. D7—505



309,551
PLATE OR SIMILAR ARTICLE
Hans-Wilhelm Seitz, Marktredwitz, Fed. Rep. of Germany, assignor to Porzellanfabrik Weiden Gebr. Bauscher Zweigniederlassung der Hutschenreuther Aktiengesellschaft, Weiden, Fed. Rep. of Germany
Filed Sep. 11, 1986, Ser. No. 907,756
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, MR V7654
Term of patent 14 years
U.S. Cl. D7—585



309,552
DISPENSER
Steven Spring, Sydney, and Robert Muras, Brookvale, both of Australia, assignors to Seahill Pty. Limited, Sydney, Australia
Filed Aug. 31, 1988, Ser. No. 240,898
Claims priority, application Australia, Mar. 1, 1988, 0635/88
Term of patent 14 years
U.S. Cl. D7—589



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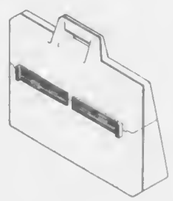
309,553
CONDIMENT SHAKER OR THE LIKE
Robert H. C. M. Daenen, Erembodegem, and Pieter J. K. De-Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Feb. 2, 1988, Ser. No. 152,596
Term of patent 14 years
U.S. Cl. D7—591



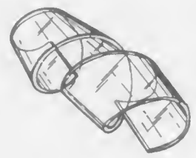
309,554
COVERED FOOD STORAGE BOWL OR THE LIKE
Edward Meisner, Edgewater, N.J., assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Nov. 28, 1986, Ser. No. 936,012
Term of patent 14 years
U.S. Cl. D7—602



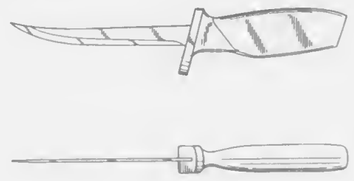
309,555
PORTABLE COOLER
James W. Kime, 4895 Settles Pt. NW., Sowanee, Ga. 30174
Continuation-in-part of Ser. No. 758,429, Jul. 24, 1985, Pat. No. Des. 296,497. This application Nov. 2, 1987, Ser. No. 115,358
Term of patent 14 years
U.S. Cl. D7—605



309,556
NAPKIN ARRANGER
Doana Bergeson, P.O. Box 127, Buckeye, Iowa 50043
Filed Aug. 24, 1987, Ser. No. 88,201
Term of patent 14 years
U.S. Cl. D7—633



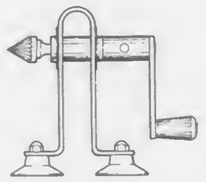
309,557
KNIFE FOR THE BONING OF MEAT
Michel Quennessen, Paris, France, assignor to Etablissments Jean PERNOT et Cie, France
Filed Aug. 10, 1987, Ser. No. 83,084
Claims priority, application France, Feb. 18, 1987, 87 1073
Term of patent 14 years
U.S. Cl. D7—693



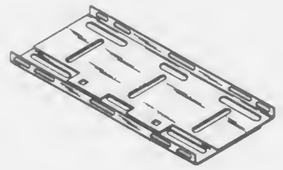
309,558
RECLOSABLE FUNNEL FIXTURE
Luay Ayyoubi, P.O. Box 8616, The Woodlands, Tex. 77387, and Travis O. Evans, 901 Sunnyside, Houston, Tex. 77076
Continuation-in-part of Ser. No. 923,297, Oct. 27, 1986, abandoned. This application Apr. 5, 1988, Ser. No. 178,995
Term of patent 14 years
U.S. Cl. D7—700



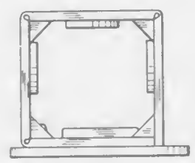
309,559
DRILL BIT SHARPENER
Daniel Vaccaro, 32 Doran Ct., Chula Vista, Calif. 92010
Filed Oct. 2, 1987, Ser. No. 106,329
Term of patent 14 years
U.S. Cl. D8—91



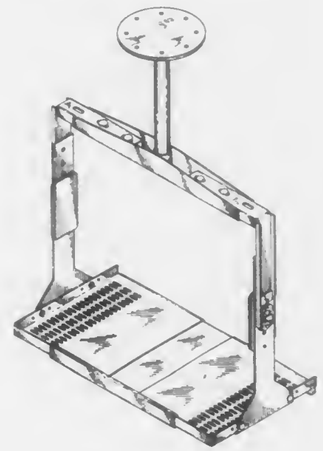
309,560
ADJUSTABLE MAILBOX MOUNTING PLATFORM
Byron A. Warlick, Lincoln, Nebr., assignor to State of Nebraska, Department of Roads, Lincoln, Nebr.
Filed Oct. 2, 1987, Ser. No. 104,872
Term of patent 14 years
U.S. Cl. D8—355



309,561
ELECTRICAL WIRING HARNESS RETAINER
Peter M. Collins, Richton Park, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Aug. 11, 1986, Ser. No. 895,252
Term of patent 14 years
U.S. Cl. D8—356



309,562
ADJUSTABLE CEILING-MOUNTED APPLIANCE SUPPORT
William L. Boscacci, and Edward L. O'Neill, both of San Leandro, Calif., assignors to Lacasey Manufacturing Corporation, Oakland, Calif.
Filed Sep. 9, 1987, Ser. No. 94,930
Term of patent 14 years
U.S. Cl. D8—373



309,563
TUBE CUTTER
William H. Astle, Rancho Cordova, Calif., assignor to Tri Tool Inc., Rancho Cordova, Calif.
Filed Dec. 16, 1986, Ser. No. 942,599
Term of patent 14 years
U.S. Cl. D8—60



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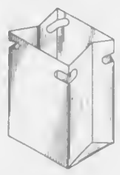
309,564
CONTAINER LID
Adrien P. Rayner, Wiltshire, England, assignor to CMB Packaging (UK) Limited, England
Filed Nov. 17, 1987, Ser. No. 121,825
Claims priority, application United Kingdom, May 19, 1987, 1042286
Term of patent 14 years
U.S. Cl. D9—435



309,566
COMBINED PACKAGE AND DISPENSER FOR EXTRUSIBLE COMESTIBLES
George Mileos, Riverdale, N.Y., and Robert H. Brainard, Danburry, Conn., assignors to Kraft General Foods, Inc., Glenview, Ill.
Filed Sep. 2, 1986, Ser. No. 903,059
Term of patent 14 years
U.S. Cl. D9—306



309,565
GROCERY BAG WITH HANDGRIPS
Herman Newman, and Pearl Newman, both of 123-60 83rd Ave., Kew Gardens, N.Y. 11415
Filed Jun. 2, 1987, Ser. No. 57,242
Term of patent 14 years
U.S. Cl. D9—305



309,567
PERFUME BOTTLE WITH CLOSURE
Joel Desgrippes, Paris, France, assignor to Hanorah Italiana S.p.A., Milan, Italy
Filed Jun. 26, 1987, Ser. No. 66,649
Claims priority, application Italy, Jan. 22, 1987, 20590/87[U]
Term of patent 14 years
U.S. Cl. D9—384



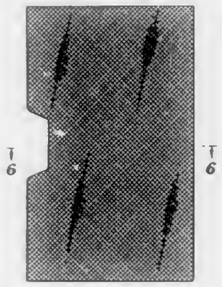
309,568
PERFUME BOTTLE
Jean C. Beton, Marseilles, France, assignor to Forbees-Compagnie Generale de Participation, Marseilles, France
Filed Aug. 29, 1988, Ser. No. 237,763
Term of patent 14 years
U.S. Cl. D9—410



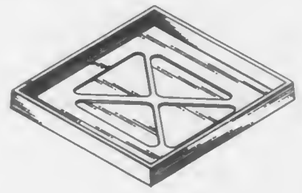
309,569
PACKAGE
Victor J. Grazi, 220 Elberon Blvd., Oakhurst, N.J. 07755
Filed Jun. 11, 1986, Ser. No. 873,315
Term of patent 14 years
U.S. Cl. D9—415



309,570
CASE FOR A VIDEO TAPE CASSETTE
Masayuki Kinoshita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 22, 1985, Ser. No. 714,894
Claims priority, application Japan, Sep. 26, 1984, 59-39918
Term of patent 14 years
U.S. Cl. D9—418



309,571
OVERFLOW WATER CONTAINMENT PEDESTAL OR SIMILAR ARTICLE
William L. Lehman, P.O. Box 427, Guilderland, N.Y. 12084
Filed Oct. 28, 1987, Ser. No. 114,148
Term of patent 14 years
U.S. Cl. D9—455



309,572
TRAVEL ALARM CLOCK
Motoyuki Suzuki, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 6, 1987, Ser. No. 69,625
Claims priority, application Japan, Jan. 5, 1987, 62-26
Term of patent 14 years
U.S. Cl. D10—18



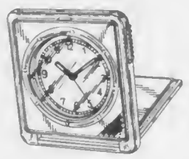
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309,573
TRAVEL ALARM CLOCK
Kimio Hirota, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 6, 1987, Ser. No. 69,628
Claims priority, application Japan, Jan. 5, 1987, 62-27
Term of patent 14 years
U.S. Cl. D10—18





309,574
TRAVEL ALARM CLOCK
Keiko Mayuzumi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 22, 1987, Ser. No. 76,555
Claims priority, application Japan, Jan. 23, 1987, 62-2254
Term of patent 14 years
U.S. Cl. D10—18



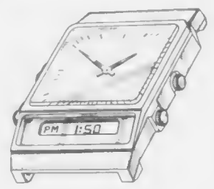
309,575
CLOCK
Keiko Nomura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Oct. 1, 1986, Ser. No. 914,603
Claims priority, application Japan, Apr. 1, 1986, 61-11862
Term of patent 14 years
U.S. Cl. D10—24



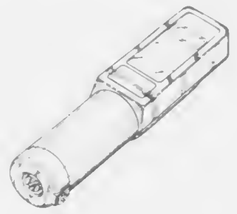
309,576
WRISTWATCH
Hans Saurer, Viganello, Lugano, Switzerland, assignor to Christian Dior S.A., Paris, France
Filed May 14, 1987, Ser. No. 50,210
Term of patent 14 years
U.S. Cl. D10—39



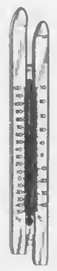
309,577
WRIST WATCH
Takashi Takeichi, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1987, Ser. No. 62,193
Term of patent 14 years
U.S. Cl. D10—39



309,578
ELECTRONIC THERMOMETER OR SIMILAR ARTICLE
Bernhard Schwan, Werbach, Fed. Rep. of Germany, assignor to Testoterm Fritzsching GmbH & Co., Lenzkirch, Fed. Rep. of Germany
Filed Jul. 25, 1988, Ser. No. 224,489
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, DM/010788
Term of patent 14 years
U.S. Cl. D10—52



309,579
THERMOMETER
Gregory L. Cross, Arvada, Colo., assignor to Sun Company, Inc., Arvada, Colo.
Filed Feb. 26, 1987, Ser. No. 19,021
Term of patent 14 years
U.S. Cl. D10—58



309,580
COMPASS
Sanae Aoki, and Tsunataka Konoike, both of Tokyo, Japan, assignors to Tanaka Manufacturing Company Limited, Tokyo, Japan
Filed Aug. 21, 1987, Ser. No. 88,105
Term of patent 14 years
U.S. Cl. D10—68



309,581
ELECTRONIC CIRCUIT BREAKER PROGRAMMER TESTER
Thomas D. Burton, Unionville, Conn., assignor to General Electric Company, New York, N.Y.
Filed Jul. 30, 1987, Ser. No. 79,601
Term of patent 14 years
U.S. Cl. D10—78

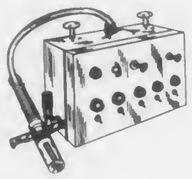


309,582
DIGITAL THERMO-HYGROMETER
Osamu Suzuki, Tokyo, Japan, assignor to 501 Tanaka Manufacturing Company Limited, Tokyo, Japan
Filed Sep. 11, 1987, Ser. No. 96,069
Term of patent 14 years
U.S. Cl. D10—53

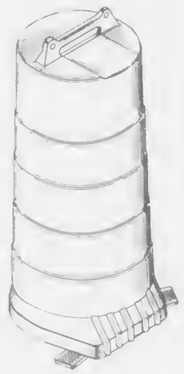


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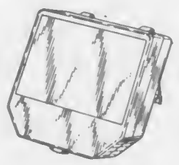
309,583
COMBINED SYSTEM ANALYZER FOR BRAKES AND LIGHTS
Don H. Little, and David A. Little, both of 9 Granite St., Methuen, Mass. 01844
Filed Apr. 2, 1987, Ser. No. 34,053
Term of patent 14 years
U.S. Cl. D10—78



309,585
TWO PIECE BREAKAWAY TRAFFIC CHANNELIZER
Jack H. Kulp, San Juan Capistrano, Calif., assignor to Traffix Devices, Inc., San Juan Capistrano, Calif.
Filed Feb. 24, 1988, Ser. No. 159,651
Term of patent 14 years
U.S. Cl. D10—113



309,584
PORTABLE CONTROL HOUSING FOR GAS PURGING SYSTEM
Jagadisan Krishnamurthy, Mountain View, and Noland E. Vogt, Woodside, both of Calif., assignors to Semi-jGas Systems, Inc., San Jose, Calif.
Filed Jul. 22, 1987, Ser. No. 76,554
Term of patent 14 years
U.S. Cl. D10—81



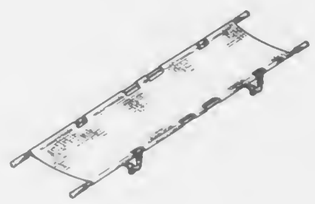
309,586
BRACELET
Ray S. Ruscitti, 465 W. Dominion Dr., Wood Dale, Ill. 60191
Filed Apr. 25, 1988, Ser. No. 185,822
Term of patent 14 years
U.S. Cl. D11—4



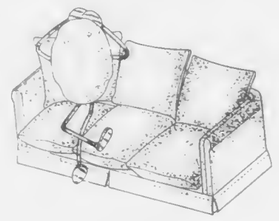
309,587
KNOCK-DOWN TOPIARY FORM
Rudy Vicenes, Cliffside Park, N.J., assignor to Spaeth Design, New York, N.Y.
Filed Mar. 26, 1987, Ser. No. 30,546
Term of patent 14 years
U.S. Cl. D11—149



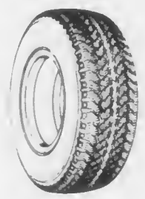
309,589
FOLDING POLE STRETCHER
Glenn F. Hare, 2924 Whispering Winds Dr., Las Vegas, Nev., and Michael Boyden, 1663 Diamond St. #4, San Diego, Calif. 92109
Filed Oct. 28, 1987, Ser. No. 114,522
Term of patent 14 years
U.S. Cl. D12—128



309,588
NOVELTY TABLE ORNAMENT
Sheldon J. Anderson, 7563 Benton St., Arvada, Colo. 80003, and Kevin M. Schlewels, 4920 S. Prince Ct. - #201, Littleton, Colo. 80123
Filed Apr. 1, 1987, Ser. No. 32,707
Term of patent 14 years
U.S. Cl. D11—158

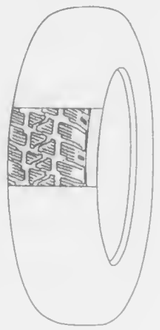


309,590
AUTOMOBILE TIRE
Akihiro Nakatani, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Nov. 24, 1987, Ser. No. 124,770
Claims priority, application Japan, May 25, 1987, 62-20543
Term of patent 14 years
U.S. Cl. D12—147



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309,591
VEHICLE TIRE
Romano Guermandi, Milan, and Maurizio Boiocchi, Segrate, both of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Italy
Filed Oct. 20, 1987, Ser. No. 110,495
Claims priority, application Italy, May 8, 1987, 21557/87[U]
Term of patent 14 years
U.S. Cl. D12—147



309,592
VEHICLE TIRE
Tatuyuki Shomura, Osaka, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan
Filed Jul. 23, 1987, Ser. No. 77,533
Claims priority, application Japan, Feb. 12, 1987, 62-5172
Term of patent 14 years
U.S. Cl. D12—147



309,593
TELESCOPING AUTOMOBILE DOOR GUARD
Wayne E. Bailey, P.O. Box 4, Woodbridge, Va. 22194-0004
Filed Apr. 4, 1988, Ser. No. 177,032
Term of patent 14 years
U.S. Cl. D12—167



309,594
AUTOMOBILE BUMPER
Tomoyuki Arai, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 10, 1986, Ser. No. 929,763
Claims priority, application Japan, May 10, 1986, 61-17581
Term of patent 14 years
U.S. Cl. D12—169

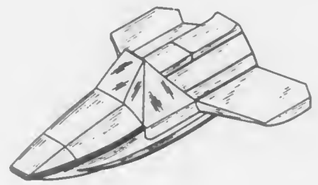




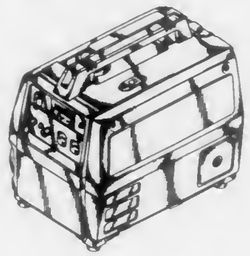
309,595
SUN VISOR WITH A POCKET FOR AN AUTOMOBILE
Mats Jönsås, Vattnäs, Sweden, assignor to Autopart Sweden Aktiebolag, Malung, Sweden
Filed Feb. 26, 1988, Ser. No. 160,859
Claims priority, application Sweden, Sep. 2, 1987, 87-1939
Term of patent 14 years
U.S. Cl. D12—191



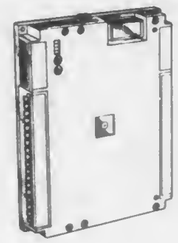
309,596
WATERCRAFT
William D. Castagna, 101 N. Garden Ave., Ste. 200, Clearwater, Fla. 33515
Filed May 26, 1987, Ser. No. 54,160
Term of patent 14 years
U.S. Cl. D12—300



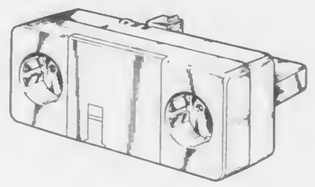
309,597
ENGINE GENERATOR
Masaaki Higuchi, Koshigaya; Masaru Atsuumi, Saitama; Yasuo Otake, Ohmiya, and Yukinori Itoh, Kawagoe, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 20, 1987, Ser. No. 110,681
Claims priority, application Japan, Apr. 22, 1987, 62-015976
Term of patent 14 years
U.S. Cl. D13—116



309,598
REMOTE I/O UNIT FOR A SEQUENCE CONTROLLER
Osamu Obana; Takichi Nagahashi; Tatsuo Ito; Hiroyoshi Ito, all of Nagoya, and Nobuyuki Kondo, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 3, 1988, Ser. No. 202,183
Claims priority, application Japan, Dec. 4, 1987, 62-49779
Term of patent 14 years
U.S. Cl. D13—162

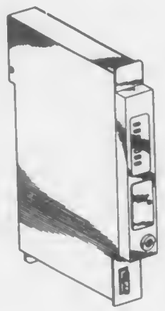


309,599
ADAPTER FOR AN ELECTRICAL OR TELECOMMUNICATION RAIL
Harald Widell, Kalendervägen 25; Jan Widell, Augustivägen 11, and Nils-Ake Bergman, Junivägen 24, all of S-352 47 Växjö, Sweden
Filed Jun. 5, 1987, Ser. No. 58,747
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1986, 861233
Term of patent 14 years
U.S. Cl. D13—133

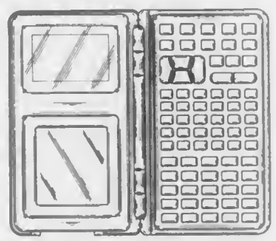


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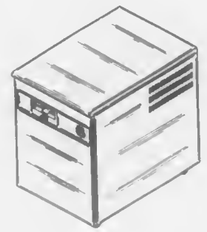
309,600
PROGRAMMABLE LOGIC CONTROLLER
James J. Backes, Hales Corners, Wis., assignor to Square D Company, Palatine, Ill.
Filed Apr. 8, 1988, Ser. No. 181,277
Term of patent 14 years
U.S. Cl. D13—162



309,601
ELECTRONIC MEMORANDUM INPUT/OUTPUT TERMINAL
Masaji Sawada, and Kuniyasu Matsumoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Aug. 24, 1988, Ser. No. 235,989
Claims priority, application Japan, Feb. 24, 1988, 63-7554
Term of patent 14 years
U.S. Cl. D14—100



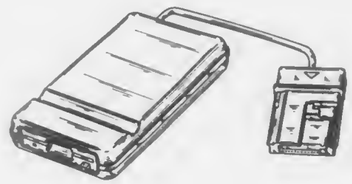
309,602
AUTOMATIC DISC CHANGER FOR ELECTRONIC FILING SYSTEM
Tooru Makidera, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 15, 1987, Ser. No. 38,828
Claims priority, application Japan, Oct. 17, 1986, 61-41435
Term of patent 14 years
U.S. Cl. D14—102



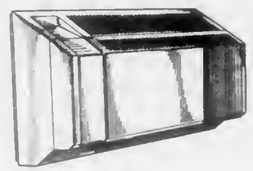
309,603
PORTABLE COMPUTER
Kanji Mizusugi; Hajime Shiozawa; Kouki Fukuda, and Yasuhiko Mano, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 28, 1989, Ser. No. 317,796
Claims priority, application Japan, Oct. 7, 1988, 63-39579
Term of patent 14 years
U.S. Cl. D14—106



309,604
MAGNETIC DISC DRIVE WITH COUPLING MEMBER FOR A WORD PROCESSOR
Kazumi Osaka; Shinsaku Hino, and Tatsumi Wada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 10, 1988, Ser. No. 269,981
Claims priority, application Japan, May 13, 1988, 63-19040
Term of patent 14 years
U.S. Cl. D14—109

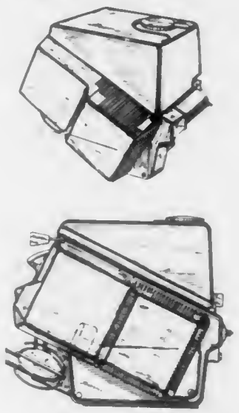


309,605
CONTROLLER HOUSING WITH EXTENDER
Duane D. Fortune, Noblesville, Ind.; Richard M. Joffe, Palisades Park, N.J.; Henry J. Mack, Jr., Levittown; John N. McGarvey, Drexel Hill, both of Pa., and Michael P. Zambelli, Maplewood, N.J., assignors to AT&T Company, Murray Hill, N.J.
Filed Apr. 6, 1987, Ser. No. 34,184
Term of patent 14 years
U.S. Cl. D14—140





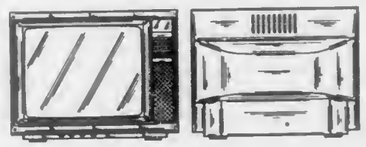
309,606
ENGINE
Gordon D. Kelly, Elm Grove, Wis., and Ronald J. Hoffman, Phoenix, Ariz., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 222,683, Jul. 21, 1988. This application Oct. 12, 1989, Ser. No. 420,234
Term of patent 14 years
U.S. Cl. D15—1



309,607
ADJUSTABLE COPY HOLDER FOR COMPUTERS
Bradley M. Nemeth, San Francisco, Calif., assignor to Wendell R. Brooks, Inc., Ft. Worth, Tex.
Filed Jul. 24, 1989, Ser. No. 384,455
Term of patent 14 years
U.S. Cl. D14—114

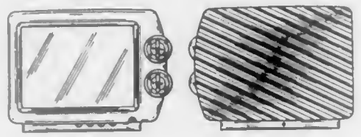


309,608
TELEVISION SET
Takeo Hashiba, and Harumi Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 121,729
Claims priority, application Japan, May 26, 1987, 62-21002
Term of patent 14 years
U.S. Cl. D14—126

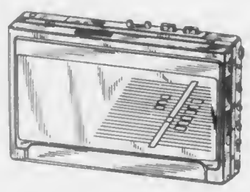


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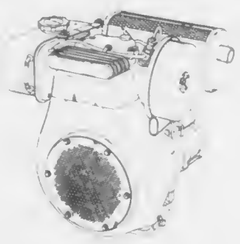
309,609
TELEVISION SET
Harumi Sakamoto, and Tomitaro Saito, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 121,744
Claims priority, application Japan, May 21, 1987, 62-20204
Term of patent 14 years
U.S. Cl. D14—126



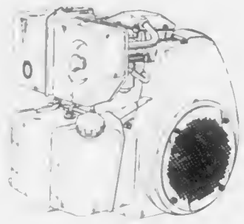
309,610
COMBINED TAPE PLAYER, TELEVISION SOUND AND RADIO TUNER
Norio Hosaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 10, 1987, Ser. No. 119,411
Claims priority, application Japan, May 13, 1987, 62-18701
Term of patent 14 years
U.S. Cl. D14—163



309,611
INTERNAL COMBUSTION ENGINE
Kiichiro Yamada, Osaka, Japan, assignor to Kubota Ltd., Osaka, Japan
Filed Sep. 13, 1988, Ser. No. 244,044
Claims priority, application Japan, Mar. 7, 1988, 63-9339
Term of patent 14 years
U.S. Cl. D15—1

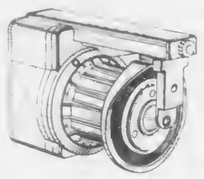


309,612
INTERNAL COMBUSTION ENGINE
Teruo Nakagawa, Osaka, Japan, assignor to Kubota Ltd., Osaka, Japan
Filed Oct. 20, 1988, Ser. No. 261,026
Claims priority, application Japan, Jul. 5, 1988, 63-26987
Term of patent 14 years
U.S. Cl. D15—1

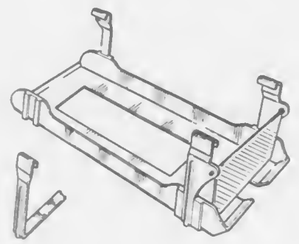


309,613
ROAD PLANER
Jerry F. Gilbert, 3545 E. Main St., Grand Prairie, Tex. 75050
Filed Apr. 17, 1987, Ser. No. 39,664
Term of patent 14 years
U.S. Cl. D15—23

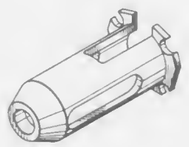
309,614
YARN FEEDER FOR TEXTILE MACHINES
Bruno Maina, Valdengo, Italy, assignor to ROJ Electrotex S.p.A., Biella, Italy
Filed Apr. 12, 1988, Ser. No. 180,829
Claims priority, application Italy, Oct. 12, 1987, 22525/87[U]
Term of patent 14 years
U.S. Cl. D15—78



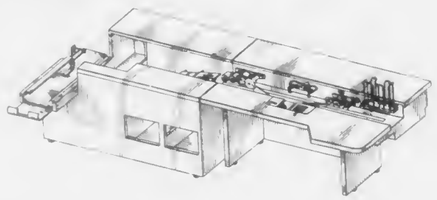
309,615
BEVERAGE CAN HOLDER FOR A REFRIGERATOR
Ray E. Arnatt, 3412 Conrad Ave., San Diego, Calif. 92117
Filed Apr. 6, 1987, Ser. No. 34,588
Term of patent 14 years
U.S. Cl. D15—89



309,616
NOSE PIECE FOR A PECK DRILL
Joseph F. Carter; John F. Stewart, and James A. Maass, all of Lexington, S.C., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Oct. 30, 1987, Ser. No. 116,124
Term of patent 14 years
U.S. Cl. D15—138



309,617
MACHINE FOR INSERTING PAPER SHEETS INTO ENVELOPES
Charles E. Bain, West Dundee, Ill., assignor to Bell & Howell Company, Skokie, Ill.
Filed Apr. 6, 1987, Ser. No. 34,587
Term of patent 14 years
U.S. Cl. D15—199



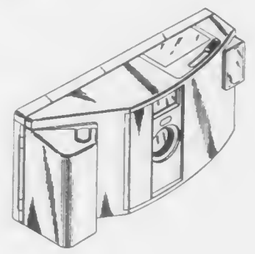
309,618
EYEGLASSES
Tony Evans, 5672 Fawn Dr., Powder Springs, Ga. 30073
Filed Jan. 4, 1988, Ser. No. 140,596
Term of patent 14 years
U.S. Cl. D16—102



309,619
RETAINER FOR EYEGLASSES
Edward V. L. Kalbach, 561 N. Main, Logan, Utah 84321
Filed Sep. 11, 1987, Ser. No. 95,878
Term of patent 14 years
U.S. Cl. D16—129

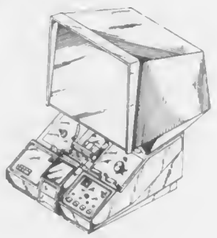


309,620
STILL CAMERA
Barry Wingate, San Jose, and Hartmut H. Esslinger, Los Gatos, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 2, 1987, Ser. No. 56,841
Term of patent 14 years
U.S. Cl. D16—209

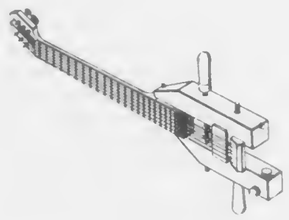


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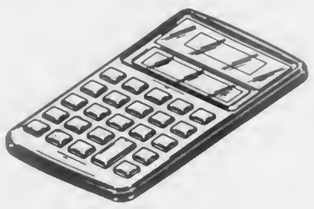
309,621
MICROFILM READER
Peretz Chaikin, Habika, Israel, assignor to Microvue Products, Habika, Israel
Filed Jul. 30, 1986, Ser. No. 890,525
Term of patent 14 years
U.S. Cl. D16—225



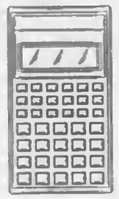
309,622
GUITAR
Keith Strasser, 15 Sandalwood Dr., Smithtown, N.Y. 11787
Filed Mar. 23, 1987, Ser. No. 29,469
Term of patent 14 years
U.S. Cl. D17—18



309,623
ELECTRONIC CALCULATOR
Masaji Sawada; Katsuhiro Iida, and Toshiya Takahashi, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 9, 1987, Ser. No. 130,730
Claims priority, application Japan, Jun. 22, 1987, 62-25580
The portion of the term of this patent subsequent to Jun. 12, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—7



309,624
ELECTRONIC CALCULATOR
Takahisa Yabisui; Hiroshi Sakaguchi, and Mieko Harada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Oct. 10, 1986, Ser. No. 918,866
Claims priority, application Japan, Apr. 11, 1986, 61-13463
The portion of the term of this patent subsequent to May 1, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—7

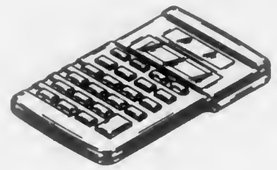




309,625
ELECTRONIC CALCULATOR
Masaji Sawada, and Toshiya Takahashi, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Oct. 16, 1987, Ser. No. 109,845
Claims priority, application Japan, Apr. 27, 1987, 62-16716
Term of patent 14 years
U.S. Cl. D18—7



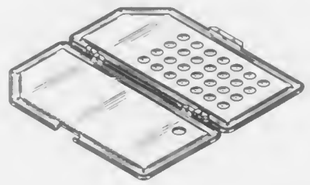
309,626
ELECTRONIC CALCULATOR
Hiroshi Sakaguchi, and Keiichi Koyama, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 30, 1987, Ser. No. 139,694
Claims priority, application Japan, Jul. 9, 1987, 62-28347
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—7



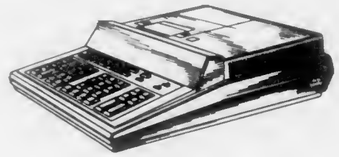
309,627
CALCULATOR
William H. K. Chu, No. 106, Wan-Shun Liau, Shen-Keng Hsiang, Taipei Hsien, Taiwan 22202
Filed Jan. 8, 1987, Ser. No. 1,984
Term of patent 14 years
U.S. Cl. D18—7



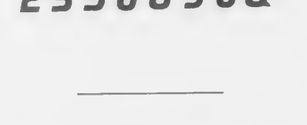
309,628
CASE FOR ELECTRONIC CALCULATOR
Masaji Sawada; Hiroshi Sakaguchi, and Katsuhiro Iida, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 7, 1987, Ser. No. 70,538
Claims priority, application Japan, Jan. 7, 1987, 62-191
Term of patent 14 years
U.S. Cl. D18—11



309,629
CALCULATOR CASE
Joseph C. Serelka, Stanhope; Terry L. Barner, Morris Plains, and Thomas Perelli, Stanhope, all of N.J., assignors to Monroe Systems For Business, Inc.
Filed Oct. 13, 1987, Ser. No. 110,471
Term of patent 14 years
U.S. Cl. D18—11



309,630
FONT OF TYPE OR THE LIKE
Richard Foy; Thomas Ruzicka; David A. Shelton, and David M. Tweed, all of Boulder, Colo., assignors to U.S. West Inc., Englewood, Colo.
Filed Feb. 25, 1988, Ser. No. 160,082
Term of patent 14 years
U.S. Cl. D18—24

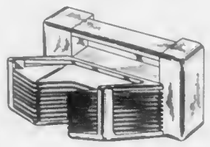


309,631
SORTER
Akiyoshi Tanizawa, and Masahiro Murakami, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1987, Ser. No. 127,003
Claims priority, application Japan, May 30, 1987, 62-22308[U]
Term of patent 14 years
U.S. Cl. D18—42



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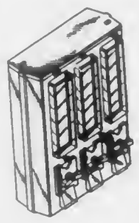
309,632
SORTER FOR COPIER
Takeshi Komada, Yokohama; Minoru Aoyama, Tokyo; Tomohiko Hirata, Kawasaki, and Mitsuru Sakurai, Musashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 12, 1988, Ser. No. 180,800
Claims priority, application Japan, Oct. 15, 1987, 62-42293
Term of patent 14 years
U.S. Cl. D18—42



309,633
BALL-POINT PEN OR SIMILAR ARTICLE
Kunio Itoh, Funabashi, Japan, assignor to Pentel Kabushiki Kaisha, Japan
Filed Feb. 18, 1987, Ser. No. 15,873
Term of patent 14 years
U.S. Cl. D19—51



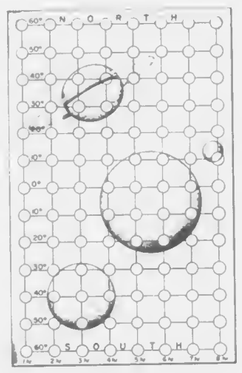
309,634
VENDING MACHINE
Alvin R. McDaniel; Edgar B. Wood; Lyle D. Hanh, and Ted L. Milton, all of Idaho Falls, Id., assignors to Innovative Design & Marketing, Inc., Idaho Falls, Id.
Filed Dec. 30, 1986, Ser. No. 947,965
Term of patent 14 years
U.S. Cl. D20—7



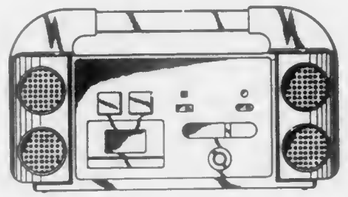
309,635
MENU SIGN
Robert P. Hilemn, Greensboro, N.C., assignor to Sterling Products, d./b./a. Sterling Signal Greensboro, N.C.
Filed Nov. 19, 1987, Ser. No. 123,163
Term of patent 14 years
U.S. Cl. D20—42



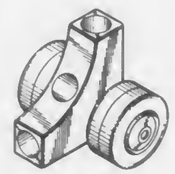
309,636
GAMEBOARD
Thomas D. Bailey, 411 Berkshire Dr., Tallahassee, Fla. 32304
Filed Oct. 19, 1987, Ser. No. 86,294
Term of patent 14 years
U.S. Cl. D21—31



309,637
SOUNDING TOY
Takashi Maezono, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Apr. 4, 1988, Ser. No. 177,157
Claims priority, application Japan, Oct. 8, 1987, 62-41217
Term of patent 14 years
U.S. Cl. D21—64

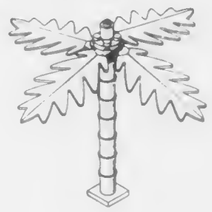


309,638
TOY BUILDING BLOCK
Anton Meyer, Gratzerstrasse 3, D-8000 Ingolstadt 2, Fed. Rep. of Germany
Filed Feb. 3, 1988, Ser. No. 151,804
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1987, P10-17335
Term of patent 14 years
U.S. Cl. D21—108





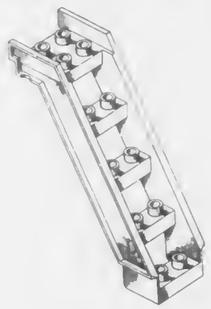
309,639
TOY PALM TREE
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1988, Ser. No. 277,913
Term of patent 14 years
U.S. Cl. D21—108



309,640
TOY PALM LEAF CONSTRUCTION ELEMENT
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1988, Ser. No. 277,915
Term of patent 14 years
U.S. Cl. D21—108

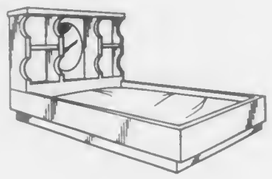


309,641
TOY STAIRCASE
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1988, Ser. No. 277,905
Term of patent 14 years
U.S. Cl. D21—109

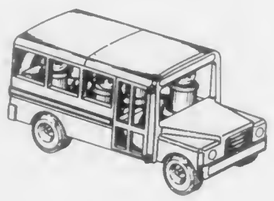


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309,642
TOY WATER BED
Harry R. MacVeigh, Box 208, Berlin, N.Y. 12022
Filed Apr. 30, 1987, Ser. No. 44,132
Term of patent 14 years
U.S. Cl. D21—123



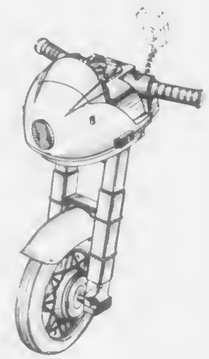
309,643
COMBINED TOY BUS AND FIGURINES
Augusto A. Picozza, Johnston; Lawrence O. Freese, Providence, both of R.I., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Jul. 31, 1987, Ser. No. 80,374
Term of patent 14 years
U.S. Cl. D21—128

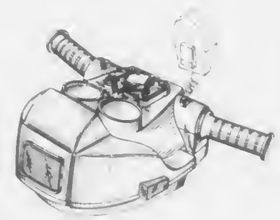


309,644
FISHING LINE RETRIEVER
Jonathan B. Orlick, 100 S. Highland Ave., #F, Placentia, Calif. 92670, and William H. Howard, Irvine, Calif., assignors to Jonathan B. Orlick, Fort Worth, Tex.
Filed Apr. 18, 1988, Ser. No. 182,568
Term of patent 14 years
U.S. Cl. D22—134



309,645
TOY MOTORCYCLE
Ho T. Kuen, Wan Chai, Hong Kong, assignor to Ever Sparkle Indusrial Co. Lts., Kwai Chung, Hong Kong
Filed Dec. 19, 1989, Ser. No. 452,948
Term of patent 14 years
U.S. Cl. D21—142





309,646
TOY ROAD BOARD
Linda D. Halbert, 1567 Hooker Oak Ave., Chico, Calif. 95926
Filed Jul. 27, 1987, Ser. No. 78,927
Term of patent 14 years
U.S. Cl. D21—143



309,647
ANIMAL TOY FIGURE
Yoshihiro Sekiguchi, Ichikawa, Japan, assignor to Kabushiki Keisha Sun Arrow, a Japanese Corporation, Tokyo, Japan
Filed Oct. 8, 1987, Ser. No. 108,882
Claims priority, application Japan, Apr. 10, 1987, 62-014067
Term of patent 14 years
U.S. Cl. D21—156



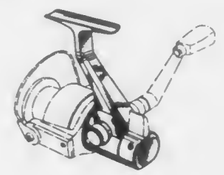
309,648
NOVELTY WITCH STICK
William Baron, New York, N.Y., and Neall Humphrey, Dorado Hills, Calif., assignors to Trade Source International, Dorado Hills, Calif.
Filed Feb. 10, 1987, Ser. No. 12,934
Term of patent 14 years
U.S. Cl. D21—190



309,649
GOLF SWING GUIDE CLUB
Howard E. Archer, 1775 NE. 2nd Ave., Apt.#5, Miami, Fla. 33132
Filed Nov. 19, 1986, Ser. No. 932,383
Term of patent 14 years
U.S. Cl. D21—214



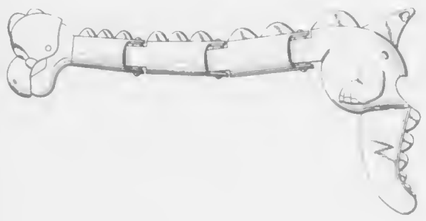
309,650
FISHING REEL BODY
Yasuhisa Kameda, and Toshiaki Yoshikawa, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed May 2, 1988, Ser. No. 189,606
Claims priority, application Japan, Nov. 9, 1987, 62-45709
Term of patent 14 years
U.S. Cl. D22—141



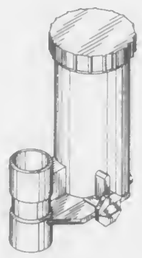
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309,651
OBJECT SNATCHING GAME DEVICE
Mitsunori Noshiro, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan
Filed Mar. 14, 1988, Ser. No. 167,413
Claims priority, application Japan, Sep. 28, 1987, 62-39553
Term of patent 14 years
U.S. Cl. D21—206

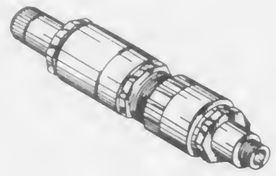




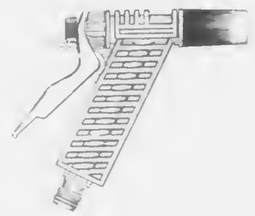
309,652
DISPENSER FOR LAWN CARE CHEMICALS OR THE LIKE
Philip E. Chalberg, Costa Mesa, and Katsumi Kawato, Woodland Hills, both of Calif., assignors to Martech Enterprises, Inc., Santa Ana, Calif.
Filed Aug. 27, 1986, Ser. No. 901,179
Term of patent 14 years
U.S. Cl. D23—207



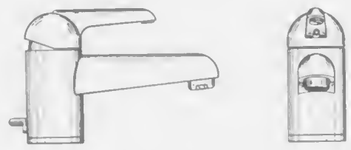
309,653
CHEMICAL DISPENSER
Virgil P. Kendrick, 10822 E. Revels Rd., Howey-in-the-Hills, Fla. 32737
Filed Oct. 27, 1987, Ser. No. 113,267
Term of patent 14 years
U.S. Cl. D23—213



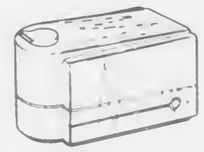
309,654
SPRAY GUN
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Italy
Filed Oct. 2, 1987, Ser. No. 104,672
Claims priority, application Italy, Apr. 6, 1987, 21331/87[U]
Term of patent 14 years
U.S. Cl. D23—226



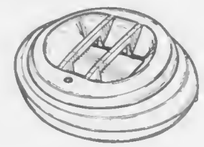
309,655
FAUCET
Herbert Reinecke, Iserlohn, Fed. Rep. of Germany, assignor to Aloys F. Dornbracht GmbH & Co., Iserlohn, Fed. Rep. of Germany
Division of Ser. No. 905,235, Sep. 8, 1986. This application Jun. 29, 1989, Ser. No. 373,777
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, MR7474; Aug. 25, 1986, MR7498
Term of patent 14 years
U.S. Cl. D23—238



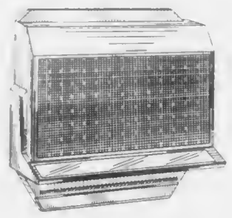
309,656
HUMIDIFIER
Jae W. Lee, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Oct. 14, 1987, Ser. No. 108,364
Claims priority, application Rep. of Korea, Jun. 11, 1987, 8784/1987
Term of patent 14 years
U.S. Cl. D23—356



309,657
ELECTRONIC FUMIGATOR
Jong C. Park, Seoul, Rep. of Korea, assignor to Lucky, Ltd., Seoul, Rep. of Korea
Filed Jun. 10, 1987, Ser. No. 60,362
Claims priority, application Rep. of Korea, May 9, 1987, 87-6848
Term of patent 14 years
U.S. Cl. D23—362



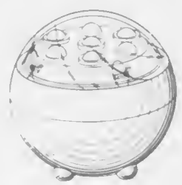
309,658
FAN HOUSING
Richard C. Schneider, 26 Dudley St., Arlington, Mass. 02174
Filed May 26, 1987, Ser. No. 54,365
Term of patent 14 years
U.S. Cl. D23—370



309,659
HOT AIR AND FUME DIRECTOR FOR CONVEYOR OVEN
Clarke T. Welsh, Logansport, Ind., assignor to LDI Mfg. Co., Inc., Logansport, Ind.
Filed Dec. 27, 1988, Ser. No. 289,762
Term of patent 14 years
U.S. Cl. D23—387



309,660
COMBINED MASSAGER AND COVER
Jean-Mary Saguin, 8 rue Joseph Mugnier, 73200 Albertville, France
Filed Mar. 8, 1988, Ser. No. 164,995
Claims priority, application Int'l Pat. Institute, Sep. 11, 1987, DM/009 283
Term of patent 14 years
U.S. Cl. D24—36

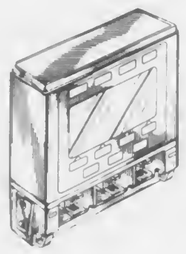


309,661
COMBINED LAMP AND MAGNIFIER
Haim Shwisha, Westport, Conn., assignor to Electrix, Inc., New Haven, Conn.
Filed Feb. 2, 1987, Ser. No. 10,147
Term of patent 14 years
U.S. Cl. D26—51

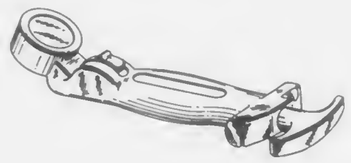


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309,662
MEDICATION INFUSION PUMP
Lanny A. Gorton, Sunland, Calif., assignor to Pacesetter Infustion, Ltd., Sylmar, Calif.
Filed Dec. 1, 1987, Ser. No. 128,533
Term of patent 14 years
U.S. Cl. D24—51



309,663
BALLOON CATHETER INFLATOR
David B. Robinson, Chanhassen, Minn., assignor to SciMed Life Systems, Inc., Minneapolis, Minn.
Filed Dec. 14, 1987, Ser. No. 132,861
Term of patent 14 years
U.S. Cl. D24—54



309,664
SET SCREW TRANSFORMER CONNECTOR
Eugene W. McGrane, Ormond Beach, Fla., assignor to Homac Mfg. Company, Ormond Beach, Fla.
Filed Jun. 10, 1988, Ser. No. 206,164
Term of patent 14 years
U.S. Cl. D13—146



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Franke, Albrecht, deceased (by Franke, Renate E., Catharina Franke, legal representatives); Schlecker, Rainer; Gries, Josef; Von Philipsborn, Gerda; and Unger, Liliane, to BASF Aktiengesellschaft. Therapeutic agents containing enantiomers of propafenone. 4,945,114, Cl. 514-652.000.

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Proctor, Ross; and Ruiz, Emilio. Circuit breaker signal. 4,945,345, Cl. 340-638.000.
Professional Satellite Imaging, Inc.: *See—*
Walling, Paul J., 4,945,410, Cl. 358-141.000.
Prometrix Corporation: *See—*
Mallory, Chester L.; Wasserman, Phillip D.; Pham, Hung V.; and Broome, Barry G., 4,945,220, Cl. 250-201.300.
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Bartholomew, Donald D., 4,944,536, Cl. 285-319.000.
Pruett, John H.: *See—*
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Prugnolle, Bernard: *See—*
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Pryor, Charles L.: *See—*
Pryor, Dewey L.; and Pryor, Charles L., 4,944,366, Cl. 182-141.000.
Pryor, Dewey L.; and Pryor, Charles L., to D. L. Pryor & Sons, Inc. Pneumatically operated scaffolding. 4,944,366, Cl. 182-141.000.
Puerner, Dean A., to AMP Incorporated. Latch arm for electrical connector housing. 4,944,693, Cl. 439-358.000.
Pugach, Joseph; and Salek, Jeffrey S., to Aristech Chemical Corporation. Preparation of unsaturated ketones. 4,945,184, Cl. 568-313.000.
Pukaite, Leonard G.: *See—*
Rue, Charles V.; Pukaite, Leonard G.; and Subramanian, Krishnamoorthy, 4,944,773, Cl. 51-307.000.
Puletti, Paul: *See—*
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Putseys, Roland: *See—*
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Brusasco, Enzo, 4,944,555, Cl. 297-330.000.
Raasch, Hans, to W. Schlafhorst & Co. Apparatus for cross-winding a traveling yarn. 4,944,463, Cl. 242-18.0DD.
Raddatz, Erich: *See—*
Schroder, Ludwig; Stransky, Werner; Mengel, Rudolf; Raddatz, Erich; Lust, Sigmund; Linden, Gerbert; and Schneider, Gerhart, 4,944,791, Cl. 71-92.000.
Radel, Winfried. Time indicator for a clock or watch. 4,945,522, Cl. 368-77.000.
Rademacher, Wilhelm: *See—*
Rentzea, Costin; Rademacher, Wilhelm; Jung, Johann; and Harreus, Albrecht, 4,944,789, Cl. 71-88.000.
Radex-Heraklith Industriebeteilgungs AG: *See—*
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Raduleanu, Mihail: *See—*
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Raethel, Dieter: *See—*
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Raether, Wolfgang: *See—*
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Raimo, Alen: *See—*
Sjostrom, Eero; and Raimo, Alen, 4,944,841, Cl. 162-49.000.
Rajendran, Narayanan; and Otzen, Karl G., to S. C. Johnson & Son, Inc. Baffle type hood and duct filters for commerical use. 4,944,782, Cl. 55-444.000.
Ramos, Elena: *See—*
Lacker, Anna M.; Margerum, J. David; Ramos, Elena; Smith, Willis H., Jr.; and Lim, Khoon C., 4,944,576, Cl. 350-334.000.
Rao, Hayagriva V.: *See—*
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Rao, V. N. Mallikarjuna: *See—*
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Raterman, Donald E.; and Muka, John, to Cummins-Allison Corp. Shredder. 4,944,462, Cl. 241-100.000.
Rathman, Terry L.: *See—*
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Ratkoff, Georges; and Deheuvels, Jean-Paul. Portable apparatus for localized heating of the skin for therapeutic purposes. 4,944,297, Cl. 128-399.000.
Rattle, Simon J.: *See—*
Forrest, Gordon C.; Rattle, Simon J.; Robinson, Grenville A.; and Hill, Hugh A. O., 4,945,045, Cl. 435-25.000.
Rausing, Hans, to Tetra Pak Holdings & Finance S.A. Opening arrangement for cardboard package. 4,944,408, Cl. 206-628.000.
Rawcliffe, John. Physiotherapy apparatus. 4,944,288, Cl. 128-25.00R.
Ray, Charles D., to Surgical Dynamics, Inc. Bone impactors. 4,944,744, Cl. 606-79.000.
Ray, Roderick J.; and Newbold, David D., to Bend Research, Inc. Hybrid membrane separation systems. 4,944,882, Cl. 210-640.000.
Raychem Corporation: *See—*
Follette, Martha G., 4,944,973, Cl. 428-36.100.
Raykovitz, Gary; Schmidt, Robert; and Puletti, Paul, to National Starch and Investment Holding Corporation. Toughened rubber based hot melt adhesive compositions for disposable applications. 4,944,993, Cl. 428-290.000.
Raytheon Company: *See—*
Sharp, Richard C., 4,945,543, Cl. 372-55.000.
Wiener, Alan I.; and Hundal, Waljeet S., 4,945,505, Cl. 364-715.030.
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Rayudu, S. Rao, to Buckman Laboratories International, Inc. Ester of carbamic acid useful as a microbicide and a preservative. 4,945,109, Cl. 514-478.000.
RCA Licensing Corporation: *See—*
Gurley, Thomas D.; and Sendelweck, Gene K., 4,945,414, Cl. 358-168.000.
Read, Shannon R., to Baroid Technology, Inc. Threaded pipe joint having improved seal ring entrapment. 4,944,538, Cl. 285-334.000.
Reaktor-Brennelement Union GmbH: *See—*
Schlomm, Hartmut; and Martin, Konrad, 4,944,912, Cl. 376-420.000.
Reber, Eric J., to Barber-Colman Company. Oxygen sensing probe having improved sensor tip and tip-supporting tube. 4,944,861, Cl. 204-428.000.
Redkey, Robert H. Golf practice club. 4,944,517, Cl. 273-186.00A.
Reel/Frame 5189/0412 Agfa-Gevaert Aktiengesellschaft: *See—*
Thiele, Harmut; Gruber, Leo; and Toral, Jose , 4,944,407, Cl. 206-628.000.
Regh, Karen A.: *See—*
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Reid, David A.: *See—*
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Reil Rock Products, Inc.: *See—*
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Reinforced Earth Company, The: *See—*
Keiser, Bernhard E., 4,945,362, Cl. 343-841.000.
Reismann, Hans-Jurgen: *See—*
Svagr, Alexandr; Bogendorfer, Hans; Riebschlager, Klaus; Reismann, Hans-Jurgen; and Wenig, Hubertus, 4,944,175, Cl. 72-225.000.
Reiss, John R.: *See—*
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Reiss, Kurt: *See—*
Sprintschnik, Gerhard; Niederstaetter, Walter; Reiss, Kurt; Asten, Wolfgang V.; Scharf, Gunther; and Grzemba, Barbara, 4,945,004, Cl. 428-469.000.
Reiter, John P. Hand sander with automatic slack take-up feature. 4,944,128, Cl. 51-363.000.
Reiter, Rainer: *See—*
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Renner, James S., to MK-Ferguson Company. Welding or burning shield. 4,944,444, Cl. 228-59.000.
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Lu, Toh-Ming; and Mei, Shao-Ning, 4,944,961, Cl. 427-38.000.
Rentzea, Costin; Rademacher, Wilhelm; Jung, Johann; and Harreus, Albrecht, to BASF Aktiengesellschaft. Azetidine derivative and their use for regulating plant growth. 4,944,789, Cl. 71-88.000.
Research Development Corporation: *See—*
Hamaya, Toru; and Horikoshi, Koki, 4,945,049, Cl. 435-168.000.
Research Development Corporation of Japan: *See—*
Yamashita, Takaji; and Uchida, Hiroshi, 4,945,241, Cl. 250-367.000.
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Research Foundation of State University of NY, The: *See—*
Schroeder, Roger A.; Broyden, Robert H.; Dearstyne, Robert C.; Magner, Joseph L.; Gephart, Randall J.; Dayton, David W.; and Newman, Raymond A., 4,944,056, Cl. 5-81.00R.
Restle, Serge: *See—*
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Reuther, Wolfgang: *See—*
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Baus, Ulf; Reuther, Wolfgang; and Hahn, Erwin, 4,945,167, Cl. 548-375.000.
Revlon, Inc.: *See—*
Futter, Menachem; Wilson, James E.; and Golden, Annette M., 4,944,625, Cl. 401-153.000.
Hoffman, Robert W., 4,945,363, Cl. 343-895.000.
Reynolds, Joseph D.: *See—*
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Rezende, Joel: *See—*
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Rhodes, Arthur B. Conveyor system. 4,944,228, Cl. 104-172.300.
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Ricci, Donato L. Ratchet feed drive for clamshell lathe. 4,944,205, Cl. 82-113.000.
Rich, Jonathan D.; McDermott, Philip J.; Davis, Gary C.; Policastro, Peter P.; Regh, Karen A.; Hernandez, Pamela K.; and Guggenheim, Thomas L., to General Electric Company. Silicon-polycarbonate block copolymers. 4,945,148, Cl. 528-26.000.
Rich, Jonathan D.: *See—*
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Richard, Bennett M.; and Johnson, Michael H., to Baker Hughes Incorporated. Method and apparatus for direct high velocity preparation of completion/workover systems. 4,944,347, Cl. 166-278.000.
Richard, Willy: *See—*
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Richard Wolf GmbH: *See—*
Falk, Ernst, 4,944,093, Cl. 30-251.000.
Richardson, Ronald D., to Caterpillar Inc. Engine ignition system with an insulated and extendable extender. 4,944,259, Cl. 123-169.0PA.
Richter, Ole J.: *See—*
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Ricoh Company, Ltd.: *See—*
Ishino, Tokio; Sato, Atsushi; and Demura, Motokuni, 4,945,368, Cl. 354-149.110.
Kaneuchi, Kunihiro; Kawamoto, Toshiki; and Nakatani, Tomofumi, 4,945,557, Cl. 379-67.000.
Nakayama, Nobuhiro; Asahina, Yasuo; Fushimi, Hiroyuki; and Iwamoto, Yasuaki, 4,945,022, Cl. 430-120.000.
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Riedel, John E.; and Olsen, Frederick O., to Minnesota Mining and Manufacturing Company. Light occlusive eye patch. 4,944,040, Cl. 2-15.000.
Rightmyre, Bruce M., to Du Pont de Nemours, E. I., and Company. Automated transparency organizer. 4,944,586, Cl. 353-108.000.
Rigotti, James M.: *See—*
Boigenzahn, Jeffrey F.; Bratvold, Darrell E.; Rigotti, James M.; and Tufty, Lyle R., 4,945,435, Cl. 360-106.000.
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Riley, Terry M., to FMC Corporation. Multi-directional vibratory conveyor. 4,944,381, Cl. 198-370.000.
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Linkow, Leonard I.; Armini, Anthony J.; and Rinaldi, Anthony W., 4,944,754, Cl. 623-16.000.
Ring, Thomas J.: *See—*
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Ringlien, James A.: *See—*
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Rinno, Helmut: *See—*
Kapmeyer, Wolfgang; and Rinno, Helmut, 4,945,146, Cl. 526-304.000.
Rioux, Robert A., Jr. Telephone hanger for hospital bed. 4,945,561, Cl. 379-434.000.
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Rishel, James B., to Systecon, Inc. Monitor and control for a multi-pump system. 4,945,491, Cl. 364-510.000.
Ritchie, Allan: *See—*
Clemow, Alastair J. T.; Jaeger, Scott H.; and Ritchie, Allan, 4,944,742, Cl. 606-59.000.
Rivin, Eugeny I., to Board of Governors of Wayne State University, The. Conjugate gear system. 4,944,196, Cl. 74-443.000.
Robarge, Dean A.: *See—*
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Robb, Frank B., to Jos. Dyson & Sons, Inc. Boat support means. 4,944,633, Cl. 405-3.000.
Robbins, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government for the. Method and apparatus for monitoring surface layer growth. 4,945,254, Cl. 250-571.000.
Robert Bosch GmbH: *See—*
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Baresel, Detlef; and Scharner, Peter, 4,944,273, Cl. 123-440.000.
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Robertshaw Controls Company: *See—*
McIntosh, Harold A., 4,944,083, Cl. 29-622.000.
Robertson, Edward I., to E. D. R. Industries, Inc. Method of assembling earring and display card assembly and assembly thereby formed. 4,944,389, Cl. 206-6.100.
Robertson, G. Neil, II; and Allen, Truman F. Device and process for hygienic mouth to month artificial respiration. 4,944,291, Cl. 128-203.110.
Robin, Philippe: *See—*
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Robinson, John W.: *See—*
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Roblin, William J.: *See—*
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Robolase Systems, Inc.: *See—*
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Robson, Peter M. Profiled fasteners. 4,944,072, Cl. 24-587.000.
Rochester Telephone Corporation: *See—*
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Rock-Way, Inc.: *See—*
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Rockwell International Corporation: *See—*
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Rockwell, Richard T.: *See—*
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Rodriguez, Facundo T.: *See—*
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Rodriguez, Michael A. Surgical laser backstop instrument. 4,944,738, Cl. 606-2.000.
Rodriguez, Richard, to Shell Oil Company. System and method for detection of malfunctioning steam traps. 4,945,343, Cl. 340-606.000.
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Rogers Corporation: *See—*
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Rohde, Ralph: *See—*
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Rohm Co., Ltd.: *See—*
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Tanaka, Haruo; Mushiage, Masato; and Ishida, Yuhji, 4,944,246, Cl. 118-729.000.
Tanaka, Haruo; and Nakata, Naotaroh, 4,945,544, Cl. 372-70.000.
Ronzani, Artemio. Heating system. 4,944,453, Cl. 237-8.00R.
Roote, Robert J.; Pasco, Ian K.; Smithers, Ian J.; and Fisher, Paul J., to Combined Optical Industries Limited. Stand magnifier and lens. 4,944,574, Cl. 350-245.000.
Rorer Pharmaceutical Corporation: *See—*
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Rosby Corporation: *See—*
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Rosenberg, Larry: *See—*
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Rosenberg, Robert D.: *See—*
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Rosenblad, Axel E., to Rosenblad Corporation. Interstage liquor heater for plate type falling film evaporators. 4,944,839, Cl. 159-13.100.
Rosenblad Corporation: *See—*
Rosenblad, Axel E., 4,944,839, Cl. 159-13.100.
Roskam, Willem: *See—*
Legoux, Richard; Leplatois, Pascal; Joseph, Evelyne L.; Niaudet, Brigitte; and Roskam, Willem, 4,945,047, Cl. 435-69.400.
Ross, Mark S., to Mobil Oil Corporation. Packing removal tool. 4,944,081, Cl. 29-235.000.
Rotal Industries & Trading Ltd.: *See—*
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Roth, Cary A.: *See—*
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Rowley, Gerald: *See—*
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Rubasch, Anthony P.: *See—*
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Rubinstein, Alan I., to University of Southern California. Novel method to treat blood. 4,944,920, Cl. 422-37.000.
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Rud, Stanley E., Jr.: *See—*
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Rudolph, Hans: *See—*
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Rue, Charles V.; Pukaite, Leonard G.; and Subramanian, Krishnamoorthy, to Norton Company. Bonded abrasive tools with combination of finely microcrystalline aluminous abrasive and a superabrasive. 4,944,773, Cl. 51-307.000.
Ruebsamen, Klaus: *See—*
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Ruff, Gerd: *See—*
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Ruggirello, Donald A.; and Banfield, Christopher R., to Schering Corporation. Gas chromatograph/autosampler coupling assembly. 4,944,781, Cl. 55-386.000.
Ruiz, Emilio: *See—*
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Rule, Mark: *See—*
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Rulf, Donald C.: *See—*
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Suzuki, Koji; Nagahira, George; Takahashi, Kazuyoshi; Yoshihara, Kunio; Matsui, Toshiro; and Ishikawa, Tadashi, to Canon Kabushiki Kaisha. Power source device. 4,945,255, Cl. 307-17.000.

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Suzuki, Syuji, to NEC Corporation. Optical wavelength-division multiplex transmission system with an optical filter for spontaneous emission noise. 4,945,531, Cl. 370-3.000.

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Suzuki, Toshimitsu; Sakaguchi, Masakazu; Miyata, Yoshiyuki; and Mori, Tomoyuki, to Pola Chemical Industries Inc., Japan. Heterocyclic derivatives and radiosensitizing agents and antiviral agents comprising same as their active component. 4,945,102, Cl. 514-398.000.

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Suzuki, Yasuhiro; Yoshikawa, Tuguo; Shibata, Kazuhiro; Fukui, Akio; and Shiga, Kiyotaka, to Aisan kogyo Corporation; and Fuji Seiko Corporation. Vertical feed type burnishing drill. 4,944,640, Cl. 408-211.000.

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Svagr, Alexandr; Bogendorfer, Hans; Riebschlager, Klaus; Reismann, Hans-Jurgen; and Wenig, Hubertus, to SMS Schloemann-Siemag Aktiengesellschaft. Universal rolling mill stand with adjustable sets of horizontal rolls and vertical rolls. 4,944,175, Cl. 72-225.000.

Svanberg, Joakim A.; Kilstrom, Lars G.; Tuvin, Lars G.; and Larsson, Anders E. C., to Aktiebolaget Electrolux. Suction cleaner. 4,944,065, Cl. 15-327.00C.

Svenska Tobaks AB: *See—*
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Swars, Helmut, to Emitec Gesellschaft fur Emissionstechnologie mbH. Probe for hydraulic expansion, including centering device. 4,944,173, Cl. 72-62.000.

Sweetana, Andrew S., Jr.: *See—*
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Swiatosz, Edmund; and Grimmer, Paul D., to United States of America, Navy. Timed oxygen breathing apparatus trainer. 4,944,293, Cl. 128-205.240.

Swinderman, Robert T., to Martin Engineering Company. Scraper for conveyor belts. 4,944,386, Cl. 198-499.000.

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Szlaga, Emil; Harris, Robert S.; and Thompson, Robert H., to Stant Inc. Vapor recovery system. 4,944,779, Cl. 55-168.000.

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Tada, Shoji; Sugio, Toshiko; and Nakashima, Kuniaki, to Mitsubishi Denki Kabushiki Kaisha. Device for producing even closing of a circuit breaker. 4,945,256, Cl. 307-139.000.

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Takahashi, Hiroyuki; and Shiratori, Yoshitaka, to Mitsubishi Kinzoku Kabushiki Kaisha. Coolant supply nozzle apparatus for slicing machine. 4,944,121, Cl. 51-267.000.

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Takahashi, Takashi; and Endo, Kinichi, to Takahashi, Takashi. Controlling transmission. 4,944,195, Cl. 74-409.000.

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TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JULY, 1990

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anami, Kenji: *See*—
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, Re. 33,280, Cl. 365-189.010.
BIC Corporation: *See*—
Schachter, Friedrich, Re. 33,282, Cl. 431-344.000.
Communications Technology Corporation: *See*—
Ray, Jimmy C.; and Matthews, H. Wayne, Re. 33,281, Cl. 379-25.000.
General Electric Company: *See*—
Wehrli, Felix W., Re. 33,279, Cl. 324-309.000.
Hollingsead International, Inc.: *See*—
Hollingsead, Robert A.; and Pryor, Clyde R., Re. 33,283, Cl. 439-296.000.
Hollingsead, Robert A.; and Pryor, Clyde R., to Hollingsead International, Inc. Pivotable extractor hold down apparatus. Re. 33,283, Cl. 439-296.000.
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, to Shin-Etsu Chemical Co., Ltd. Method for the polymerization of vinyl chloride monomer in an aqeous medium. Re. 33,284, Cl. 526-74.000.
Johnshoy, Edward W. Continuously variable transmission and torque retaining differential. Re. 33,278, Cl. 475-6.000.
Kunen, Scott M. Touch controlled switch for a lamp or the like. Re. 33,285, Cl. 307-116.000.
Matthews, H. Wayne: *See*—
Ray, Jimmy C.; and Matthews, H. Wayne, Re. 33,281, Cl. 379-25.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, Re. 33,280, Cl. 365-189.010.
Noguki, Genji: *See*—
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, Re. 33,284, Cl. 526-74.000.
Ohba, Hitoshi: *See*—
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, Re. 33,284, Cl. 526-74.000.
Pryor, Clyde R.: *See*—
Hollingsead, Robert A.; and Pryor, Clyde R., Re. 33,283, Cl. 439-296.000.
Ray, Jimmy C.; and Matthews, H. Wayne, to Communications Technology Corporation. Cable analyzer with d.c. functions. Re. 33,281, Cl. 379-25.000.
Schachter, Friedrich, to BIC Corporation. Liquid gas-operated lighter. Re. 33,282, Cl. 431-344.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, Re. 33,284, Cl. 526-74.000.
Shinohara, Hirofumi: *See*—
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, Re. 33,280, Cl. 365-189.010.
Tanaka, Motoaki: *See*—
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, Re. 33,284, Cl. 526-74.000.
Watase, Masahiko: *See*—
Itoh, Kenichi; Noguki, Genji; Tanaka, Motoaki; Ohba, Hitoshi; and Watase, Masahiko, Re. 33,284, Cl. 526-74.000.
Wehrli, Felix W., to General Electric Company. Method for rapid acquisition of NMR data. Re. 33,279, Cl. 324-309.000.
Yoshihara, Tsutomu: *See*—
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, Re. 33,280, Cl. 365-189.010.
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. Re. 33,280, Cl. 365-189.010.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Abbott Laboratories: *See*—
Shaffar, Mark R., B1 4,495,293, Cl. 436-172.000.
Davis, Stephen P.: *See*—
Palluel, August L. L.; Davis, Stephen P.; and Fletcher, Angela C., B1 4,785,035, Cl. 524-101.000.
Fletcher, Angela C.: *See*—
Palluel, August L. L.; Davis, Stephen P.; and Fletcher, Angela C., B1 4,785,035, Cl. 524-101.000.
Imperial Chemical Industries PLC: *See*—
Palluel, August L. L.; Davis, Stephen P.; and Fletcher, Angela C., B1 4,785,035, Cl. 524-101.000.
Palluel, August L. L.; Davis, Stephen P.; and Fletcher, Angela C., to Imperial Chemical Industries PLC. Curing composition. B1 4,785,035, 7-31-90, Cl. 524-101.000.
Shaffar, Mark R., to Abbott Laboratories. Fluorometric assay. B1 4,495,293, 7-31-90, Cl. 436-172.000.

LIST OF DESIGN PATENTEES

Abram, Olive. Post-surgery pillow. 309,544, 7-31-90, Cl. D6-601.000.
Aloys F. Dornbracht GmbH & Co.: *See*—
Reinecke, Herbert, 309,655, Cl. D23-238.000.
Anchor Hocking Corporation: *See*—
Meisner, Edward, 309,554, Cl. D7-602.000.
Ancona, Bruce: *See*—
Ancona, Jane; and Ancona, Bruce, 309,545, Cl. D7-507.000.
Ancona, Jane; and Ancona, Bruce, to M. Kamenstein, Inc. Combined tray, mugs and coffee service. 309,545, 7-31-90, Cl. D7-507.000.
Anderson, Sheldon J.; and Schleweis, Kevin M. Novelty table ornament. 309,588, 7-31-90, Cl. D11-158.000.
Aoki, Sanae; and Konoike, Tsunataka, to Tanaka Manufacturing Company Limited. Compass. 309,580, 7-31-90, Cl. D10-68.000.
Aoyama, Minoru: *See*—
Komada, Takeshi; Aoyama, Minoru; Hirata, Tomohiko; and Sakurai, Mitsuru, 309,632, Cl. D18-42.000.
Arai, Tomoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Automobile bumper. 309,594, 7-31-90, Cl. D12-169.000.
Archer, Howard E. Golf swing guide club. 309,649, 7-31-90, Cl. D21-214.000.
Arnatt, Ray E. Beverage can holder for a refrigerator. 309,615, 7-31-90, Cl. D15-89.000.
Astle, William H., to Tri Tool Inc. Tube cutter. 309,563, 7-31-90, Cl. D8-60.000.
AT&T Company: *See*—
Fortune, Duane D.; Joffe, Richard M.; Mack, Henry J., Jr.; McGarvey, John N.; and Zambelli, Michael P., 309,605, Cl. D14-140.000.

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Atsuumi, Masaru: *See—*
Higuchi, Masaaki; Atsuumi, Masaru; Otake, Yasuo; and Itoh, Yukinori, 309,597, Cl. D13-116.000.

Autopart Sweden Aktiebolag: *See—*
Jonsås, Mats, 309,595, Cl. D12-191.000.

Ayyoubi, Luay; and Evans, Travis O. Reclosable funnel fixture. 309,558, 7-31-90, Cl. D7-700.000.

Backes, James J., to Square D Company. Programmable logic controller. 309,600, 7-31-90, Cl. D13-162.000.

Bailey, Thomas D. Gameboard. 309,636, 7-31-90, Cl. D21-31.000.

Bailey, Wayne E. Telescoping automobile door guard. 309,593, 7-31-90, Cl. D12-167.000.

Bain, Charles E., to Bell & Howell Company. Machine for inserting paper sheets into envelopes. 309,617, 7-31-90, Cl. D15-199.000.

Bandal Enterprises, Inc.: *See—*
Kim, Chan Y., 309,529, Cl. D4-116.000.

Barner, Terry L.: *See—*
Sereika, Joseph C.; Barner, Terry L.; and Perelli, Thomas, 309,629, Cl. D18-11.000.

Baron, William; and Humphrey, Neall, to Trade Source International. Novelty witch stick. 309,648, 7-31-90, Cl. D21-190.000.

Bell & Howell Company: *See—*
Bain, Charles E., 309,617, Cl. D15-199.000.

Bergeson, Donna. Napkin arranger. 309,556, 7-31-90, Cl. D7-633.000.

Bergman, Nils-Ake: *See—*
Widell, Harald; Widell, Jan; and Bergman, Nils-Ake, 309,599, Cl. D13-133.000.

Beton, Jean C., to Forbees-Compagnie Generale de Participation. Perfume bottle. 309,568, 7-31-90, Cl. D9-410.000.

Black & Decker Inc.: *See—*
McCloskey, Don R., 309,548, Cl. D7-378.000.

Boiocchi, Maurizio: *See—*
Guermandi, Romano; and Boiocchi, Maurizio, 309,591, Cl. D12-147.000.

Boscacci, William L.; and O'Neill, Edward L., to Lucasey Manufacturing Corporation. Adjustable ceiling-mounted appliance support. 309,562, 7-31-90, Cl. D8-373.000.

Boyden, Michael: *See—*
Hare, Glenn F.; and Boyden, Michael, 309,589, Cl. D12-128.000.

Brainard, Robert H.: *See—*
Mileos, George; and Brainard, Robert H., 309,566, Cl. D9-306.000.

Bunn-O-Matic Corporation: *See—*
Van Camp, Raymond E., 309,546, Cl. D7-308.000.

Burton, Thomas D., to General Electric Company. Electronic circuit breaker programmer tester. 309,581, 7-31-90, Cl. D10-78.000.

Canon Kabushiki Kaisha: *See—*
Komada, Takeshi; Aoyama, Minoru; Hirata, Tomohiko; and Sakurai, Mitsuru, 309,632, Cl. D18-42.000.

Carter, Joseph F.; Stewart, John F.; and Maass, James A., to Cooper Industries, Inc. Nose piece for a peck drill. 309,616, 7-31-90, Cl. D15-138.000.

Casio Computer Co., Ltd.: *See—*
Takeichi, Takashi, 309,577, Cl. D10-39.000.

Castagna, William D. Watercraft. 309,596, 7-31-90, Cl. D12-300.000.

Chaikin, Peretz, to Microvue Products. Microfilm reader. 309,621, 7-31-90, Cl. D16-225.000.

Chalberg, Philip E.; and Kawato, Katsumi, to Martech Enterprises, Inc. Dispenser for lawn care chemicals or the like. 309,652, 7-31-90, Cl. D23-207.000.

Christian Dior S.A.: *See—*
Saurer, Hans, 309,576, Cl. D10-39.000.

Chromcraft Furniture Corp.: *See—*
Wilson, Robert L., 309,535, Cl. D6-372.000.

Chu, William H. K. Calculator. 309,627, 7-31-90, Cl. D18-7.000.

Claber S.p.A.: *See—*
Roman, Gianfranco, 309,654, Cl. D23-226.000.

CMB Packaging (UK) Limited: *See—*
Rayner, Adrien P., 309,564, Cl. D9-435.000.

CoBatCo., Inc.: *See—*
Stephens, Donald O., 309,549, Cl. D7-410.000.

Collins, Peter M., to Illinois Tool Works, Inc. Electrical wiring harness retainer. 309,561, 7-31-90, Cl. D8-356.000.

Conti, Rino: *See—*
Picozza, Augusto A.; Freese, Lawrence O.; and Conti, Rino, 309,643, Cl. D21-128.000.

Cooper Industries, Inc.: *See—*
Carter, Joseph F.; Stewart, John F.; and Maass, James A., 309,616, Cl. D15-138.000.

Cross, Gregory L., to Sun Company, Inc. Thermometer. 309,579, 7-31-90, Cl. D10-58.000.

Daenen, Robert H. C. M.; and DeCoster, Pieter J. K., to Dart Industries Inc. Condiment shaker or the like. 309,553, 7-31-90, Cl. D7-591.000.

Daiwa Seiko, Inc.: *See—*
Kameda, Yasuhisa; and Yoshikawa, Toshiaki, 309,650, Cl. D22-141.000.

Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and DeCoster, Pieter J. K., 309,553, Cl. D7-591.000.
Picozza, Augusto A.; Freese, Lawrence O.; and Conti, Rino, 309,643, Cl. D21-128.000.

DeCoster, Pieter J. K.: *See—*
Daenen, Robert H. C. M.; and DeCoster, Pieter J. K., 309,553, Cl. D7-591.000.

Desgrippes, Joel, to Hanorah Italiana S.p.A. Perfume bottle with closure. 309,567, 7-31-90, Cl. D9-384.000.

De Vries, Dale; and De Vries, Dean. Plant hanger. 309,541, 7-31-90, Cl D6-513.000.

De Vries, Dean: *See—*
De Vries, Dale; and De Vries, Dean, 309,541, Cl. D6-513.000.

Dewees, John G.: *See—*
Prendergast, William; and Dewees, John G., 309,538, Cl. D6-455.000.

Display Producers, Inc.: *See—*
Landi, Arthur E., 309,537, Cl. D6-461.000.

Dozsa-Farkas, Andras, to Giroflex Entwicklungs AG. Chair. 309,531, 7-31-90, Cl. D6-366.000.

Dozsa-Farkas, Andras, to Giroflex Entwicklungs AG. Chair. 309,532, 7-31-90, Cl. D6-366.000.

Dozsa-Farkas, Andras, to Giroflex Entwicklungs AG. Chair. 309,533, 7-31-90, Cl. D6-366.000.

Dozsa-Farkas, Andras, to Giroflex Entwicklungs AG. Chair. 309,534, 7-31-90, Cl. D6-366.000.

Eastman Kodak Company: *See—*
Wingate, Barry; and Esslinger, Hartmut H., 309,620, Cl. D16-209.000.

Egly, Robert A.; and Sullivan, Patrick. Disc storage rack. 309,524, 7-31-90, Cl. D3-35.000.

Electrix, Inc.: *See—*
Shwisha, Haim, 309,661, Cl. D26-51.000.

Esslinger, Hartmut H.: *See—*
Wingate, Barry; and Esslinger, Hartmut H., 309,620, Cl. D16-209.000.

Establissments Jean PERNOT et Cie: *See—*
Quennessen, Michel, 309,557, Cl. D7-693.000.

Eureka, John; Law, Linda K.; and Marsh, David C., to Stouffer Corporation, The. Ravioli. 309,521, 7-31-90, Cl. D1-126.000.

Evans, Tony. Eyeglasses. 309,618, 7-31-90, Cl. D16-102.000.

Evans, Travis O.: *See—*
Ayyoubi, Luay; and Evans, Travis O., 309,558, Cl. D7-700.000.

Ever Sparkle Indusrial Co. Lts.: *See—*
Kuen, Ho T., 309,645, Cl. D21-142.000.

Forbees-Compagnie Generale de Participation: *See—*
Beton, Jean C., 309,568, Cl. D9-410.000.

Fortune, Duane D.; Joffe, Richard M.; Mack, Henry J., Jr.; McGarvey, John N.; and Zambelli, Michael P., to AT&T Company. Controller housing with extender. 309,605, 7-31-90, Cl. D14-140.000.

Foy, Richard; Ruzicka, Thomas; Shelton, David A.; and Tweed, David M., to U.S. West Inc. Font of type or the like. 309,630, 7-31-90, Cl D18-24.000.

Fratelli Guzzini S.p.A.: *See—*
Pozzi, Ambrogio, 309,550, Cl. D7-505.000.

Freese, Lawrence O.: *See—*
Picozza, Augusto A.; Freese, Lawrence O.; and Conti, Rino, 309,643, Cl. D21-128.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Higuchi, Masaaki; Atsuumi, Masaru; Otake, Yasuo; and Itoh, Yukinori, 309,597, Cl. D13-116.000.

Fukuda, Kouki: *See—*
Mizusugi, Kanji; Shiozawa, Hajime; Fukuda, Kouki; and Mano, Yasuhiko, 309,603, Cl. D14-106.000.

General Electric Company: *See—*
Burton, Thomas D., 309,581, Cl. D10-78.000.

Gilbert, Jerry F. Road planer. 309,613, 7-31-90, Cl. D15-23.000.

Gingras, Eric, to Rubbermaid Commercial Products Inc. Brush handle. 309,530, 7-31-90, Cl. D4-138.000.

Giroflex Entwicklungs AG: *See—*
Dozsa-Farkas, Andras, 309,531, Cl. D6-366.000.
Dozsa-Farkas, Andras, 309,532, Cl. D6-366.000.
Dozsa-Farkas, Andras, 309,533, Cl. D6-366.000.
Dozsa-Farkas, Andras, 309,534, Cl. D6-366.000.

Glenn, Gwendolyn. Inflated face-down pillow for a woman. 309,542, 7-31-90, Cl. D6-596.000

Gold Star Co., Ltd.: *See—*
Lee, Jae W., 309,656, Cl. D23-356.000.

Goodman, Larrison C. Foamed core for a pillow. 309,543, 7-31-90, Cl. D6-601.000.

Gorton, Lanny A., to Pacesetter Infustion, Ltd. Medication infusion pump. 309,662, 7-31-90, Cl. D24-51.000.

Grazi, Victor J. Package. 309,569, 7-31-90, Cl. D9-415.000.

Grossiord, Claude, to S. T. Dupont. Key-ring. 309,525, 7-31-90, Cl. D3-61.000.

Guermandi, Romano; and Boiocchi, Maurizio, to Pirelli Coordinamento Pneumatici S.p.A. Vehicle tire. 309,591, 7-31-90, Cl. D12-147.000.

Halbert, Linda D. Toy road board. 309,646, 7-31-90, Cl. D21-143.000.

Hanh, Lyle D.: *See—*
McDaniel, Alvin R.; Wood, Edgar B.; Hanh, Lyle D.; and Milton, Ted L., 309,634, Cl. D20-7.000.

Hanorah Italiana S.p.A.: *See—*
Desgrippes, Joel, 309,567, Cl. D9-384.000.

Harada, Mieko: *See—*
Yubisui, Takahisa; Sakaguchi, Hiroshi; and Harada, Mieko, 309,624, Cl. D18-7.000.

Hare, Glenn F.; and Boyden, Michael. Folding pole stretcher. 309,589, 7-31-90, Cl. D12-128.000.

Hashiba, Takeo; and Sakamoto, Harumi, to Sharp Corporation. Television set. 309,608, 7-31-90, Cl. D14-126.000.

Higuchi, Masaaki; Atsuumi, Masaru; Otake, Yasuo; and Itoh, Yukinori, to Fuji Jukogyo Kabushiki Kaisha. Engine generator. 309,597, 7-31-90, Cl. D13-116.000.

Hilemn, Robert P., to Sterling Products. Menu sign. 309,635, 7-31-90, Cl. D20-42.000.

Hino, Shinsaku: *See—*
Osaka, Kazumi; Hino, Shinsaku; and Wada, Tatsumi, 309,604, Cl. D14-109.000.

Hirata, Tomohiko: *See—*
Komada, Takeshi; Aoyama, Minoru; Hirata, Tomohiko; and Sakurai, Mitsuru, 309,632, Cl. D18-42.000.

Hirota, Kimio, to Seikosha Co., Ltd. Travel alarm clock. 309,573, 7-31-90, Cl. D10-18.000.

Hoffman, Ronald J.: *See—*
Kelly, Gordon D.; and Hoffman, Ronald J., 309,606, Cl. D15-1.000.

Hofmann, Gary L. Key ring. 309,526, 7-31-90, Cl. D3-61.000.

Homac Mfg. Company: *See—*
McGrane, Eugene W., 309,664, Cl. D13-146.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Arai, Tomoyuki, 309,594, Cl. D12-169.000.

Hosaka, Norio, to Sony Corporation. Combined tape player, television sound and radio tuner. 309,610, 7-31-90, Cl. D14-163.000.

Howard, William H.: *See—*
Orlick, Jonathan B.; and Howard, William H., 309,644, Cl. D22-134.000.

Huisman, Reinder: *See—*
Thomassen, Charles; Kingma, Klaas; and Huisman, Reinder, 309,520, Cl. D1-121.000.

Humphrey, Neall: *See—*
Baron, William; and Humphrey, Neall, 309,648, Cl. D21-190.000.

Iida, Katsuhiro: *See—*
Sawada, Masaji; Iida, Katsuhiro; and Takahashi, Toshiya, 309,623, Cl. D18-7.000.
Sawada, Masaji; Sakaguchi, Hiroshi; and Iida, Katsuhiro, 309,628, Cl. D18-11.000.

Illinois Tool Works, Inc.: *See—*
Collins, Peter M., 309,561, Cl. D8-356.000.

Innovative Design & Marketing, Inc.: *See—*
McDaniel, Alvin R.; Wood, Edgar B.; Hanh, Lyle D.; and Milton, Ted L., 309,634, Cl. D20-7.000.

Interlego A.G.: *See—*
Knudsen, Jens N., 309,639, Cl. D21-108.000.
Knudsen, Jens N., 309,640, Cl. D21-108.000.
Olsen, Flemming H., 309,641, Cl. D21-109.000.

Ito, Hisayoshi: *See—*
Ohsawa, Osamu; Nagahashi, Takichi; Ito, Tatsuo; Ito, Hisayoshi; and Kondo, Nobuyuki, 309,598, Cl. D13-162.000.

Ito, Tatsuo: *See—*
Ohsawa, Osamu; Nagahashi, Takichi; Ito, Tatsuo; Ito, Hisayoshi; and Kondo, Nobuyuki, 309,598, Cl. D13-162.000.

Itoh, Kunio, to Pentel Kabushiki Kaisha. Ball-point pen or similar article. 309,633, 7-31-90, Cl. D19-51.000.

Itoh, Yukinori: *See—*
Higuchi, Masaaki; Atsuumi, Masaru; Otake, Yasuo; and Itoh, Yukinori, 309,597, Cl. D13-116.000.

Joffe, Richard M.: *See—*
Fortune, Duane D.; Joffe, Richard M.; Mack, Henry J., Jr.; McGarvey, John N.; and Zambelli, Michael P., 309,605, Cl. D14-140.000.

Jonsås, Mats, to Autopart Sweden Aktiebolag. Sun visor with a pocket for an automobile. 309,595, 7-31-90, Cl. D12-191.000.

Kabushiki Kaisha Sun Arrow, a Japanese Corporation: *See—*
Sekiguchi, Yoshihiro, 309,647, Cl. D21-156.000.

Kalbach, Edward V. L. Retainer for eyeglasses. 309,619, 7-31-90, Cl. D16-129.000.

Kameda, Yasuhisa; and Yoshikawa, Toshiaki, to Daiwa Seiko, Inc. Fishing reel body. 309,650, 7-31-90, Cl. D22-141.000.

Kane, James R., to NutraCare International. Food warmer. 309,547, 7-31-90, Cl. D7-323.000.

Kawato, Katsumi: *See—*
Chalberg, Philip E.; and Kawato, Katsumi, 309,652, Cl. D23-207.000.

Kelly, Gordon D.; and Hoffman, Ronald J., to Kohler Co. Engine. 309,606, 7-31-90, Cl. D15-1.000.

Kendrick, Virgil P. Chemical dispenser. 309,653, 7-31-90, Cl. D23-213.000.

Kim, Chan Y., to Bandal Enterprises, Inc. Combined hairbrush and spray dispenser. 309,529, 7-31-90, Cl. D4-116.000.

Kime, James W. Portable cooler. 309,555, 7-31-90, Cl. D7-605.000.

Kingma, Klaas: *See—*
Thomassen, Charles; Kingma, Klaas; and Huisman, Reinder, 309,520, Cl. D1-121.000.

Kinoshita, Masayuki, to Sony Corporation. Case for a video tape cassette. 309,570, 7-31-90, Cl. D9-418.000.

Knudsen, Jens N., to Interlego A.G. Toy palm tree. 309,639, 7-31-90, Cl. D21-108.000.

Knudsen, Jens N., to Interlego A.G. Toy palm leaf construction element. 309,640, 7-31-90, Cl. D21-108.000.

Kohler Co.: *See—*
Kelly, Gordon D.; and Hoffman, Ronald J., 309,606, Cl. D15-1.000.

Komada, Takeshi; Aoyama, Minoru; Hirata, Tomohiko; and Sakurai, Mitsuru, to Canon Kabushiki Kaisha. Sorter for copier. 309,632, 7-31-90, Cl. D18-42.000.

Kondo, Nobuyuki: *See—*
Ohsawa, Osamu; Nagahashi, Takichi; Ito, Tatsuo; Ito, Hisayoshi; and Kondo, Nobuyuki, 309,598, Cl. D13-162.000.

Konoike, Tsunataka: *See—*
Aoki, Sanae; and Konoike, Tsunataka, 309,580, Cl. D10-68.000.

Koyama, Keiichi: *See—*
Sakaguchi, Hiroshi; and Koyama, Keiichi, 309,626, Cl. D18-7.000.

Kraft General Foods, Inc.: *See—*
Mileos, George; and Brainard, Robert H., 309,566, Cl. D9-306.000.

Krishnamurthy, Jagadisan; and Vogt, Noland E., to Semi-jGas Systems, Inc. Portable control housing for gas purging system. 309,584, 7-31-90, Cl. D10-81.000.

Kubota Ltd.: *See—*
Nakagawa, Teruo, 309,612, Cl. D15-1.000.
Yamada, Kiichiro, 309,611, Cl. D15-1.000.

Kuen, Ho T., to Ever Sparkle Indusrial Co. Lts. Toy motorcycle. 309,645, 7-31-90, Cl. D21-142.000.

Kulp, Jack H., to Traffix Devices, Inc. Two piece breakaway traffic channelizer. 309,585, 7-31-90, Cl. D10-113.000.

Landi, Arthur E., to Display Producers, Inc. Display stand. 309,537, 7-31-90, Cl. D6-461.000.

Law, Linda K.: *See—*
Eureka, John; Law, Linda K.; and Marsh, David C., 309,521, Cl. D1-126.000.

LDI Mfg. Co., Inc.: *See—*
Welsh, Clarke T., 309,659, Cl. D23-387.000.

Lee, Jae W., to Gold Star Co., Ltd. Humidifier. 309,656, 7-31-90, Cl. D23-356.000.

Lehman, William L. Overflow water containment pedestal or similar article. 309,571, 7-31-90, Cl. D9-455.000.

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858 4,944,088
895.22 4,944,089

CLASS 30
41 4,944,090
120.2 4,944,091
134 4,944,092
251 4,944,093

CLASS 33
371 4,944,094
403 4,944,095
480 4,944,096
760 4,944,097

CLASS 34
156 4,944,098

CLASS 36
97 4,944,099
120 4,944,100

CLASS 37
135 4,944,102
219 4,944,103
231 4,944,104

CLASS 38
102 4,944,105

CLASS 42
71.01 4,944,109

CLASS 43
6.5 4,944,108
15 4,944,106
25.2 4,944,111
42.09 4,944,112
43.14 4,944,113
44.89 4,944,107
113 4,944,114
124 4,944,110

CLASS 44
073 4,944,770

CLASS 47
7 4,944,115

CLASS 48
197 R 4,944,771

CLASS 49
27 4,944,116
55 4,944,117
504 4,944,118

CLASS 51
165.72 4,944,120
215 R 4,944,119
267 4,944,121
293 4,944,772
307 4,944,773
309 4,944,774
363 4,944,128

CLASS 52
36 4,944,122
127.2 4,944,123
169.12 4,944,124
171 4,944,125
202 4,944,126
309.12 4,944,127
486 4,944,129
802 4,944,130

CLASS 53
117 4,944,131
167 4,944,132
390 4,944,133
432 4,944,134
493 4,944,136
502 4,944,135
540 4,944,138
569 4,944,137
599 4,944,139

CLASS 55
16 4,944,775
4,944,776
4,944,777
131 4,944,778
168 4,944,779
337 4,944,780
386 4,944,781
444 4,944,782

CLASS 56
10.2 4,944,140
17.1 4,944,141
320.1 4,944,142

CLASS 57
93 4,944,143
105 4,944,144
261 4,944,145
281 4,944,146

CLASS 59
56 4,944,147

CLASS 60
39.02 4,944,148
39.182 4,944,150
39.23 4,944,149
39.32 4,944,151
39.36 4,944,152
303 4,944,153
488 4,944,154

CLASS 62
45.1 4,944,155
81 4,944,158
112 4,944,159
180 4,944,160
293 4,944,161
324.6 4,944,156
380 4,944,162
407 4,944,157
500 4,944,163

CLASS 63
12 4,944,164

CLASS 65
3.11 4,944,783
32.3 4,944,784
136 4,944,785
154 4,944,786

CLASS 68
17 R 4,944,165
157 4,944,166
181 R 4,944,167

CLASS 70
49 4,944,168
100 4,944,169
267 4,944,170
456 R 4,944,171

CLASS 71
28 4,944,787
88 4,944,788
4,944,789
92 4,944,790
4,944,791
4,944,792
93 4,944,793
4,944,794
98 4,944,795
118 4,944,796

CLASS 72
53 4,944,172
62 4,944,173
201 4,944,174
225 4,944,175
319 4,944,176
410 4,944,177

CLASS 73
19.1 4,944,178
35 4,944,179
38 4,944,180
204.26 4,944,182
295 4,944,183
514 4,944,184
579 4,944,185
597 4,944,186
599 4,944,191
718 4,944,187
761 4,944,188
780 4,944,181
861.25 4,944,189
861.58 4,944,190

CLASS 74
6 4,944,192
15.86 4,944,193
335 4,944,194
409 4,944,195
443 4,944,196
477 4,944,197
813 R 4,944,198
858 4,944,199
867 4,944,200
868 4,944,201
869 4,944,202

CLASS 75
238 4,944,800
349 4,944,801
501 4,944,799

CLASS 79
837 4,944,086

CLASS 81
24 4,944,203
385 4,944,204

CLASS 82
113 4,944,205

CLASS 83
42 4,944,206
162 4,944,207

CLASS 84
313 4,944,208
731 4,944,209

CLASS 89
1.818 4,944,210
8 4,944,211
4,944,212
14.3 4,944,213

CLASS 92
98 R 4,944,214
168 4,944,215

CLASS 98
33.1 4,944,216

CLASS 99
280 4,944,217
357 4,944,218
581 4,944,219

CLASS 100
90 4,944,220
286 4,944,221

CLASS 101
93.29 4,944,222
148 4,944,223

CLASS 102
202.2 4,944,224
202.5 4,944,225
476 4,944,226

CLASS 104
103 4,944,227
137 4,944,229
139 4,944,230
172.3 4,944,228
287 4,944,231

CLASS 105
355 4,944,232
377 4,944,233
378 4,944,234

CLASS 106
20 4,944,802
203 4,944,803
277 4,944,804
493 4,944,806

CLASS 108
157 4,944,235

CLASS 110
257 4,944,236

CLASS 112
315 4,944,237

CLASS 114
61 4,944,238
162 4,944,239
211 4,944,241
283 4,944,240

CLASS 116
173 4,944,656
210 4,944,242

CLASS 118
305 4,944,243
723 4,944,244
726 4,944,245
729 4,944,246

CLASS 119
1 4,944,247
5 4,944,248
14.44 4,944,249

CLASS 122
20 B 4,944,250
451 R 4,944,251
470 4,944,252
504 4,944,253
511 4,944,254

CLASS 123
65 EM 4,944,255
90.24 4,944,256
90.34 4,944,257
169 P A 4,944,259
179 H 4,944,260
190 BD 4,944,262
190 D 4,944,261
193 H 4,944,263
195 C 4,944,264
196 R 4,944,265
302 4,944,266
339 4,944,267
342 4,944,268
399 4,944,269
414 4,944,270
435 4,944,271
438 4,944,272
440 4,944,273
489 4,944,274
501 4,944,275
520 4,944,276
532 4,944,277
559.1 4,944,278
4,944,279
627 4,944,280
644 4,944,281

CLASS 126
25 R 4,944,282
41 R 4,944,283
4,944,284
299D 4,944,285
367 4,944,286

CLASS 128
4 4,944,287
25 R 4,944,288
60 4,944,289
87 R 4,944,290
203.11 4,944,291
204.18 4,944,292
205.24 4,944,293
206.19 4,944,294
393 4,944,296
399 4,944,297
419 D 4,944,300
419 PG 4,944,298
4,944,299
420.6 4,944,301
422 4,944,302
648 4,944,303
667 4,944,304
683 4,944,305
725 4,944,306
748 4,944,307
751 4,944,308
782 4,944,309
848 4,944,310
849 4,944,311
857 4,944,312
859 4,944,313

CLASS 131
280 4,944,314
283 4,944,315
296 4,944,316
348 4,944,317

CLASS 132
73 4,944,318
238 4,944,319

CLASS 134
3 4,944,807
15 4,944,808
21 4,944,809
23 4,944,810
167 C 4,944,258
4,944,320

CLASS 135
88 4,944,321
105 4,944,322

CLASS 137
15 4,944,101
113 4,944,324
227 4,944,323
375 4,944,325
414 4,944,326
519.5 4,944,327
528 4,944,328
614.05 4,944,329
625.31 4,944,330
625.65 4,944,331

CLASS 141
1 4,944,332
51 4,944,333
71 4,944,334
95 4,944,335
4,944,336
174 4,944,337

CLASS 144
208 E 4,944,338
363 4,944,339

CLASS 148
33.1 4,944,811
108 4,944,805
251 4,944,812
260 4,944,813
329 4,944,814

CLASS 149
19.1 4,944,815
19.8 4,944,816

CLASS 150
167 4,944,340

CLASS 156
62.2 4,944,817
71 4,944,818
78 4,944,819
154 4,944,820
161 4,944,821
212 4,944,822
287 4,944,823
286 4,944,824
294 4,944,825
345 4,944,826
384 4,944,827
397 4,944,828
497 4,944,829
567 4,944,830
584 4,944,832
617.1 4,944,833
620.5 4,944,834
620.7 4,944,835
643 4,944,831
645 4,944,836
646 4,944,837
652 4,944,838

CLASS 159
13.1 4,944,839

CLASS 160
98 4,944,341

CLASS 162
46 4,944,840
49 4,944,841
60 4,944,842
101 4,944,843
205 4,944,844

CLASS 164
485 4,944,342

CLASS 165
47 4,944,343
104.33 4,944,344

CLASS 166
206 4,944,345
274 4,944,346
278 4,944,347
4,944,348
304 4,944,349
373 4,944,350
376 4,944,351

CLASS 172
19 4,944,352

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23 4,944,353
47 4,944,354
278 4,944,355

CLASS 174

16.2 4,945,188
32 4,945,189
68.5 4,945,190
69 4,945,191
94 R 4,945,192
113 R 4,945,342
153 G 4,945,193

CLASS 180

79.1 4,944,356
169 4,944,357
197 4,944,358
208 4,944,359
210 4,944,360

CLASS 181

129 4,944,361
213 4,944,362

CLASS 182

2 4,944,364
138 4,944,365
141 4,944,366

CLASS 184

29 4,944,367

CLASS 187

9 R 4,944,368
105 4,944,369

CLASS 188

71.5 4,944,370
73.39 4,944,371
156 4,944,372
251 A 4,944,373

CLASS 192

3.29 4,944,374
8 R 4,944,375
17 A 4,944,376
56 F 4,944,377
89 B 4,944,380
107 M 4,944,378
150 4,944,379

CLASS 198

370 4,944,381
399 4,944,382
468.6 4,944,383
494 4,944,384
495 4,944,385
499 4,944,386
706 4,944,387
731 4,944,388

CLASS 200

5 R 4,945,194
6 B 4,945,195
38 C 4,945,196
148 A 4,945,197
4,945,198

CLASS 202

84 4,944,845

CLASS 203

1 4,944,846
8 4,944,847
35 4,944,848
55 4,944,849

CLASS 204

15 4,944,850
106 4,944,851
129.2 4,944,856
131 4,944,852
157.76 4,944,853
168 4,944,854
181.7 4,944,855
192.15 4,944,857
4,944,858
244 4,944,859
298.23 4,944,860
428 4,944,861

CLASS 206

0.83 4,944,391
6.1 4,944,389
44 R 4,944,390
102 4,944,392
205 4,944,393
256 4,944,394
288 4,944,395
315.6 4,944,396
365 4,944,397
507 4,944,398
509 4,944,399
4,944,400
521 4,944,401
581 4,944,402
594 4,944,403
600 4,944,404
614 4,944,405
621.4 4,944,406
628 4,944,407
4,944,408
632 4,944,409

CLASS 208

49 4,944,862
107 4,944,863
120 4,944,864
121 4,944,865
408 4,944,866
409 4,944,867

CLASS 209

10 4,944,868
173 4,944,869
705 4,944,411

CLASS 210

103 4,944,870
169 4,944,871
170 4,944,872
209 4,944,873
232 4,944,874
4,944,875
321.74 4,944,877
321.75 4,944,876
500.27 4,944,879
640 4,944,880
4,944,881
4,944,882
683 4,944,878
692 4,944,884
701 4,944,885
748 4,944,886
778 4,944,887
782 4,944,883
787 4,944,888

CLASS 211

11 4,944,412
42 4,944,413
59.2 4,944,414
75 4,944,415
87 4,944,416
184 4,944,417

CLASS 215

100 R 4,944,418

CLASS 219

69.12 4,945,200
69.13 4,945,199
110 4,945,201
121.63 4,945,202
121.64 4,945,203
121.69 4,945,204
121.72 4,945,205
121.74 4,945,206
121.84 4,945,207
137.31 4,945,209
137.61 4,945,208
241 4,945,210
385 4,945,211
388 4,945,212

CLASS 220

1 T 4,944,419
1.5 4,944,421
3.3 4,944,420
20 4,944,422
4,944,423
85 P 4,944,424
203 4,944,425
270 4,944,426
406 4,944,427

CLASS 222

55 4,944,428
153 4,944,429
259 4,944,430
276 4,944,431
321 4,944,432
402.2 4,944,433
565 4,944,435

CLASS 223

98 4,944,436
101 4,944,437

CLASS 224

42.45 R 4,944,434
206 4,944,438
326 4,944,439

CLASS 225

1 4,944,440
16 4,944,441

CLASS 226

171 4,944,442

CLASS 227

19 4,944,443
176 4,944,295

CLASS 228

59 4,944,444
102 4,944,445
4,944,446
103 4,944,447
173.2 4,944,448

CLASS 229

73 4,944,449
4,944,450
120.17 4,944,451
120.21 4,944,452

CLASS 235

31 T 4,945,213
456 4,945,214
457 4,945,215
462 4,945,216
472 4,945,217
487 4,945,218
488 4,945,219

CLASS 237

8 R 4,944,453
12 3 C 4,944,454

CLASS 239

59 4,944,455
222.19 4,944,456
242 4,944,457
288.5 4,944,458
305 4,944,459
428.5 4,944,460

CLASS 241

36 4,944,461
100 4,944,462

CLASS 242

18 DD 4,944,463
54 R 4,944,464
4,944,465
55.3 4,944,466
58.4 4,944,470
65 4,944,467
72 B 4,944,468
82 4,944,469
129 4,944,472
131.1 4,944,471

CLASS 244

129.5 4,944,473

CLASS 246

122 R 4,944,474

CLASS 248

71 4,944,475
87 4,944,476
130 4,944,477
205.7 4,944,478
222.2 4,944,479
309.1 4,944,480
372.1 4,944,481
562 4,944,482

CLASS 249

83 4,944,483

CLASS 250

201.3 4,945,220
203.1 4,945,221
205 4,945,222
213 V T 4,945,223
213 VT 4,945,224
214 B 4,945,225
214 R 4,945,226
4,945,227
223 B 4,945,228
227.11 4,945,229
227.21 4,945,230
231.14 4,945,231
4,945,232
236 4,945,287
252.1 4,945,233
291 4,945,234
306 4,945,235
309 4,945,23o
311 4,945,237
327.2 4,945,238
330 4,945,240
358.1 4,945,239
367 4,945,241
4,945,242
4,945,243
370.01 4,945,244
423 F 4,945,247
461.1 4,945,249
4,945,250
461.2 4,945,245
492.1 4,945,251
492.2 4,945,246
493.1 4,945,248
548 4,945,252
571 4,945,253
4,945,254

CLASS 251

9 4,944,485
101 4,944,484
129.17 4,944,487
129.21 4,944,486
203 4,944,488
306 4,944,489
4,944,490

CLASS 252

32.5 4,944,889
54 4,944,890
62.9 4,944,891
92 4,944,892
171 4,944,893
182.12 4,944,894
299.01 4,944,895
587 4,944,896

CLASS 254

28 4,944,491
104 4,944,492

CLASS 256

23 4,944,493
68 4,944,494

CLASS 261

35 4,944,897
84 4,944,898

CLASS 264

1.2 4,944,900
1.4 4,944,899
19 4,944,901
25 4,944,902
40.1 4,944,903
62 4,944,905
101 4,944,906
220 4,944,907
232 4,944,908
255 4,944,909
572 4,944,910

CLASS 266

100 4,944,495
220 4,944,496
268 4,944,497

CLASS 267

64.11 4,944,498
154 4,944,499

CLASS 269

60 4,944,904
322 4,944,500
4,944,501

CLASS 270

31 4,944,502
95 4,944,503

CLASS 271

171 4,944,504
265 4,944,505

CLASS 272

69 4,944,506
85 4,944,507
119 4,944,509
132 4,944,508
133 4,944,510
137 4,944,511

CLASS 273

1 GE 4,944,512
26 R 4,944,513
51 4,944,514
58 A 4,944,363
167 H 4,944,515
183 B 4,944,516
186 A 4,944,517
4,944,518
243 4,944,519
419 4,944,520
428 4,944,521

CLASS 280

149.2 4,944,522
479.3 4,944,525
689 4,944,523
701 4,944,524
704 4,944,526
741 4,944,527
4,944,528
743 4,944,529
801 4,944,530
806 4,944,531

CLASS 283

70 4,944,532
93 4,944,533

CLASS 285

4 4,944,534
16 4,944,535
319 4,944,536
4,944,537
334 4,944,538

CLASS 291

2 4,944,539

CLASS 293

115 4,944,540

CLASS 294

58 4,944,541
86.29 4,944,543
86.4 4,944,542

CLASS 296

37.1 4,944,544
39.2 4,944,612
43 4,944,545
61 4,944,546
97.8 4,944,547
4,944,548
4,944,549
97.9 4,944,550
100 4,944,551
188 4,944,553

CLASS 297

145 4,944,552
284 4,944,554
330 4,944,555
437 4,944,556
468 4,944,557

CLASS 299

42 4,944,558
86 4,944,559
91 4,944,560

CLASS 300

10 4,944,561

CLASS 301

63 DS 4,944,563
111 4,944,562

CLASS 303

33 4,944,564
110 4,944,565

CLASS 307

17 4,945,255
116 Re.33,285
139 4,945,256
201 4,945,257
270 4,945,258
296.1 4,945,259
296.6 4,945,260
443 4,945,261
451 4,945,262
455 4,945,265
475 4,945,263
4,945,264
4,945,266
570 4,945,267
571

CLASS 310

12 4,945,268
15 4,945,269
88 4,945,270
91 4,945,271
4,945,272
208 4,945,273
256 4,945,274
323 4,945,275
326 4,945,276

CLASS 312

311 4,944,566

CLASS 313

25 4,945,288
105 CM 4,945,286
278 4,945,285
414 4,945,284
450 4,945,283
479 4,945,282

CLASS 315

58 4,945,281
129 4,945,280
201 4,945,279
209 R 4,945,278
226 4,945,289
246 4,945,290
307 4,945,291
387 4,945,292

CLASS 318

7 4,945,293
119 4,945,294
490 4,945,295
538 4,945,296
558 4,945,297
635 4,945,298

CLASS 322

33 4,945,299

CLASS 323

318 4,945,300
902 4,945,301

CLASS 324

73.1 4,945,302
78 D 4,945,303
107 4,945,304
207.17 4,945,305
220 4,945,306
225 4,945,307
309 Re.33,279
4,945,308
345 4,945,309
349 4,945,310

CLASS 328

167 4,945,311

CLASS 329

345 4,945,312
349 4,945,313

CLASS 330

2 4,945,314
4.3 4,945,315
110 4,945,316
301 4,945,317

CLASS 333

12 4,945,318
33 4,945,319
106 4,945,320
119 4,945,321
184 4,945,322
185 4,945,323
202 4,945,324

CLASS 335

16 4,945,325
4,945,326
201 4,945,327
202 4,945,328
219 4,945,329
229 4,945,330
274 4,945,331

CLASS 336

69 4,945,332

CLASS 337

176 4,945,333

CLASS 340

388 4,945,334
426 4,945,335
438 4,945,336
442 4,945,337
455 4,945,277
459 4,945,338
547 4,945,340
551 4,945,339
568 4,945,341
606 4,945,343
610 4,945,344
638 4,945,345
656 4,945,346
689 4,945,347
784 4,945,348
4,945,349
4,945,350
793 4,945,351
805 4,945,352
825.060 4,945,355
825.070 4,945,353
825.31 4,945,354
941 4,945,356

CLASS 341

20 4,945,357
143 4,945,359

CLASS 342

122 4,945,360

CLASS 343

715 4,945,361
841 4,945,362
895 4,945,363

CLASS 346

160 4,945,364

CLASS 350

96.18 4,944,567
96.20 4,944,568
4,944,569
96.23 4,944,570
96.29 4,944,571
167 4,944,572
173 4,944,573
245 4,944,574
333 4,944,575
334 4,944,576
346 4,944,577
347 E 4,944,578
396 4,944,579
611 4,944,580
641 4,944,581

CLASS 351

41 4,944,582
45 4,944,583
172 4,944,584
204 4,944,585

CLASS 353

108 4,944,586

CLASS 354

21 4,945,365
62 4,945,366
81 4,945,367
149.11 4,945,368
173.1 4,945,369
173.11 4,945,370
195.13 4,945,371
199 4,945,372
217 4,945,373
304 4,945,374
322 4,945,375
400 4,945,376
402 4,945,377
429 4,945,378
441 4,945,379
443 4,945,380

CLASS 355

27 4,945,381
4,945,382
30 4,945,383
51 4,945,384
202 4,945,385
243 4,945,386
271 4,945,387
296 4,945,388
4,945,389
321 4,945,390

CLASS 356

152 4,944,587
4,944,588
326 4,944,589
350 4,944,590
4,944,591
364 4,944,592
379 4,944,593
446 4,944,594

CLASS 357

19 4,945,391
22 4,945,392
23.5 4,945,393
34 4,945,394
40 4,945,395
46 4,945,396
71 4,945,397
74 4,945,398
4,945,399
4,945,400
81 4,945,401

CLASS 358

12 4,945,402
13 4,945,403
75 4,945,405
80 4,945,406
88 4,945,407
4,945,408
4,945,409
141 4,945,404
4,945,410
4,945,411
142 4,945,412
158 4,945,413
168 4,945,414
195.1 4,945,415
209 4,945,416
210 4,945,417
213.11 4,945,418
4,945,419
213.31 4,945,420
217 4,945,421
298 4,945,422
300 4,945,423
335 4,945,424

CLASS 360

15 4,945,425
70 4,945,426
75 4,945,427
92 4,945,428
4,945,429
4,945,430
96 5 4,945,431
98.02 4,945,432
99.07 4,945,433
103 4,945,434
104 4,945,436
106 4,945,435
4,945,437
121 4,945,438
124 4,945,439
132 4,945,440
137 4,945,441

CLASS 361

42 4,945,358
56 4,945,442
93 4,945,443
101 4,945,444
4,945,445
146 4,945,446
212 4,945,447
273 4,945,449
334 4,945,450
383 4,945,448
386 4,945,451
529 4,945,452

CLASS 362

61 4,945,453
4,945,454
4,945,455
80.1 4,945,456
101 4,945,457
106 4,945,458
284 4,945,459
290 4,945,460
378 4,945,461

CLASS 363

17 4,945,462
56 4,945,463
61 4,945,464
89 4,945,465
97 4,945,466
132 4,945,467

CLASS 364

200 4,945,468
4,945,469
4,945,470
4,945,471
4,945,472
4,945,473
4,945,474
4,945,475
4,945,479
4,945,480
413.02 4,945,476
413.06 4,945,477
413.22 4,945,478
424.1 4,945,481
4,945,482
4,945,483
4,945,484
431.05 4,945,485
431.11 4,945,486
474.02 4,945,487
474.24 4,945,488
505 4,945,489
506 4,945,490
510 4,945,491
512 4,945,492
513 4,945,493
4,945,494
518 4,945,495
4,945,496
4,945,497
521 4,945,498
4,945,499
522 4,945,500
571.05 4,945,501
574 4,945,502
578 4,945,503
709.11 4,945,504
715.03 4,945,505
736 4,945,506
737 4,945,507
802 4,945,508
900 4,945,509
4,945,510
4,945,511

CLASS 365

49 4,945,512
51 4,945,513
117 4,945,514
174 4,945,515
189.01 Re.33,280
4,945,517
189.05 4,945,516
233 4,945,518

CLASS 366

65 4,944,595
69 4,944,596
79 4,944,597
106 4,944,598
132 4,944,599
142 4,944,600
160 4,944,601
327 4,944,602

CLASS 367

48 4,945,519
191 4,945,520

CLASS 368

21 4,945,521
77 4,945,522
285 4,945,523

CLASS 369

44.11 4,945,524
4,945,526
4,945,527
44.12 4,945,525
59 4,945,528
109 4,945,529
291 4,945,530

CLASS 370

3 4,945,531
13 4,945,532
32.1 4,945,533
62 4,945,534

CLASS 371

11.1 4,945,535
22.3 4,945,536
37.1 4,945,537
43 4,945,538
57.1 4,945,540

CLASS 372

13 4,945,539
31 4,945,541
38 4,945,542
55 4,945,543
70 4,945,544
87 4,945,545
89 4,945,546
94 4,945,547

CLASS 375

4 4,945,548
53 4,945,549
94 4,945,550

CLASS 376

261 4,944,911
420 4,944,912

CLASS 378

34 4,945,551
99 4,945,552
130 4,945,562
168 4,945,553

CLASS 379

10 4,945,554
21 4,945,555
25 Re.33,281
58 4,945,556
67 4,945,557
144 4,945,558
399 4,945,559
4,945,560
454 4,945,561

CLASS 380

5 4,945,563
14 4,945,564

CLASS 381

38 4,945,565
41 4,945,566
49 4,945,567
50 4,945,568
68.6 4,945,569
110 4,945,570

CLASS 383

5 4,944,603
7 4,944,604

CLASS 384

19 4,944,605
42 4,944,606
44 4,944,607
58 4,944,608
118 4,944,609
147 4,944,610
476 4,944,611

CLASS 400

61 4,944,613
68 4,944,614
105 4,944,616
124 4,944,615
157.2 4,944,617
211 4,944,618
224 2 4,944,619
608.1 4,944,620
691 4,944,621

CLASS 401

25 4,944,623
90 4,944,622
131 4,944,624
153 4,944,625

CLASS 403

3 4,944,626
8 4,944,627
24 4,944,628
330 4,944,629

CLASS 404

83 4,944,630
91 4,944,631
111 4,944,632

CLASS 405

3 4,944,633
184 4,944,634

CLASS 406

10 4,944,635
72 4,944,636
132 4,944,637

CLASS 408

59 4,944,638
176 4,944,639
211 4,944,640
239 A 4,944,641
241 R 4,944,642

CLASS 409

80 4,944,643

CLASS 411

372 4,944,644

CLASS 414

217 4,944,645
332 4,944,646
412 4,944,647
483 4,944,648
686 4,944,649
757 4,944,650
787 4,944,651

CLASS 415

27 4,944,652
174.3 4,944,653
211.2 4,944,654

CLASS 416

61 4,944,655

CLASS 417

203 4,944,657
274 4,944,658
322 4,944,659
407 4,944,660
501 4,944,661

CLASS 418

32 4,944,662
178 4,944,663

CLASS 419

13 4,944,913

CLASS 420

85 4,944,798
418 4,944,914
469 4,944,797
479 4,944,915

CLASS 422

8 4,944,916
13 4,944,917
22 4,944,918
26 4,944,919
37 4,944,920
70 4,944,921
100 4,944,922
102 4,944,923
104 4,944,924
249 4,944,925

CLASS 423

22 4,944,926
4,944,927
161 4,944,928
235 4,944,929
344 4,944,930
386 4,944,931
447.6 4,944,932
462 4,944,933
579 4,944,934
604 4,944,935
612 4,944,936

CLASS 424

65 4,944,937
68 4,944,938
73 4,944,939
84 4,944,940
85.5 4,944,941
89 4,944,942
94.6 4,944,944
94.64 4,944,943
195.1 4,944,945
4,944,946
4,944,947
450 4,944,948
451 4,944,949
623 4,944,950

CLASS 425

58.1 4,944,951
63 4,944,664
116 4,944,665
131.1 4,944,666
317 4,944,667
397 4,944,668
589 4,944,669

CLASS 426

42 4,944,952
271 4,944,953
417 4,944,954
579 4,944,955
592 4,944,956
643 4,944,957

CLASS 427

2 4,944,958
14.1 4,944,959
27 4,944,960
38 4,944,961
164 4,944,962
195 4,944,963
203 4,944,964
389.7 4,944,965
393.5 4,944,967
397 4,944,966

CLASS 428

13 4,944,968
14 4,944,969
34.8 4,944,970
34.9 4,944,971
35.2 4,944,972
36.1 4,944,973
4,944,974
4,944,975
36.9 4,944,976
36.92 4,944,977
43 4,944,978
4,944,979
64 4,944,980
4,944,981
4,944,982
81 4,944,983
83 4,944,984
156 4,944,986
192 4,944,987
195 4,944,988
198 4,944,992
290 4,944,993
4,944,994
294 4,944,995
307.7 4,944,996
319.7 4,944,989
327 4,944,997
4,944,998
353 4,944,990
371 4,944,999
407 4,945,000
408 4,944,991
412 4,945,001
425.6 4,945,002
462 4,945,003
469 4,945,004
500 4,945,005
4,945,006
542.8 4,945,007
570 4,944,985
623 4,945,008
690 4,945,009

CLASS 429

26 4,945,010
72 4,945,019
81 4,945,011
103 4,945,012
104 4,945,013
218 4,945,014

CLASS 430

49 4,945,020
76 4,945,021
120 4,945,022
138 4,945,023
4,945,024
4,945,025
233 4,945,026
281 4,945,027
296 4,945,028
316 4,945,029
331 4,945,030
393 4,945,031
394 4,945,032
522 4,945,033
546 4,945,034
567 4,945,035
4,945,036
4,945,037
576 4,945,038

CLASS 431

166 4,944,670
344 Re.33,282

CLASS 432

3 4,944,672
8 4,944,671
59 4,944,673
158 4,944,674

CLASS 433

28 4,944,410
32 4,944,675
98 4,944,676
165 4,944,677
224 4,944,678

CLASS 434

2 4,944,679
264 4,944,680
270 4,944,681

CLASS 435

7 4,945,039
4,945,040
4,945,041
4,945,042
4,945,043
17 4,945,044
25 4,945,045
69.3 4,945,046
69.4 4,945,047
105 4,945,048
168 4,945,049
172.1 4,945,050
172.3 4,945,051
4,945,052
209 4,945,053
214 4,945,054
226 4,945,055
240.27 4,945,056
4,945,057
252.3 4,945,058
254 4,945,059
291 4,945,060
298 4,945,061

CLASS 436

11 4,945,062
85 4,945,063
172 B1 4,495,293
503 4,945,064

CLASS 437

4 4,945,065
30 4,945,066
41 4,945,067
52 4,945,068
67 4,945,069
160 4,945,070
192 4,944,682

CLASS 439

76 4,944,684
96 4,944,683
135 4,944,685
175 4,944,686
207 4,944,687
275 4,944,688
296 Re.33,283
358 4,944,693
417 4,944,689
492 4,944,690
501 4,944,694
516 4,944,691
517 4,944,692
595 4,944,695
4,944,696
621 4,944,697
676 4,944,698
784 4,944,699
801 4,944,700
827 4,944,701

CLASS 440

51 4,944,702
61 4,944,705

CLASS 441

62 4,944,703

CLASS 445

8 4,944,706

CLASS 446

48 4,944,707
74 4,944,704
175 4,944,708
221 4,944,709
329 4,944,710

CLASS 464

52 4,944,711
67 4,944,712

CLASS 474

11 4,944,713
91 4,944,714
238 4,944,717
245 4,944,715
255 4,944,716

CLASS 475

6 Re.33,278
16 4,944,718
281 4,944,719

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	CLASS 493	365	4,945,098	507	4,945,126	480	4,945,154		CLASS 558	358	4,944,734
466	4,944,720	381	4,945,099	524	4,945,127		4,945,155	405	4,945,177	385.1	4,944,733
	CLASS 494	383	4,945,100	591	4,945,128	485	4,945,156		CLASS 560	385.2	4,944,735
16	4,944,721		4,945,101		CLASS 525		CLASS 530	125	4,945,178	403	4,944,736
	CLASS 501	398	4,945,102	63	4,945,124	409	4,945,157	27	4,945,179		CLASS 606
41	4,945,071	419	4,945,103	66	4,945,129		CLASS 536		CLASS 562	1	4,944,737
53	4,945,074	425	4,945,104	67	4,945,130	117	4,945,158	599	4,945,180	2	4,944,738
88	4,945,072	450	4,945,105	68	4,945,131		CLASS 540		CLASS 564	53	4,944,739
93	4,945,073	469	4,945,106	194	4,945,132	215	4,945,159	212	4,945,181	59	4,944,742
	CLASS 502	473	4,945,107	261	4,945,133	481	4,945,160	349	4,945,182	61	4,944,743
24	4,945,075	475	4,945,108	301	4,945,134		CLASS 544		CLASS 568	79	4,944,744
117	4,945,076	478	4,945,109	338	4,945,135	401	4,945,161	309	4,945,183	194	4,944,740
168	4,945,077	517	4,945,110	351	4,945,136		CLASS 546	313	4,945,184		4,944,745
202	4,945,078	521	4,945,111	375	4,945,137	20	4,945,162	387	4,945,185	195	4,944,746
314	4,945,079	555	4,945,112	502	4,945,138	85	4,945,163	433	4,945,186	204	4,944,747
	CLASS 514	605	4,945,113	538	4,945,139		CLASS 548	868	4,945,187	206	4,944,741
29	4,945,080	652	4,945,114		4,945,140	247	4,945,164		CLASS 585		CLASS 623
30	4,945,081	731	4,945,115		CLASS 526	362	4,945,165	417	4,945,175	3	4,944,748
44	4,945,082		CLASS 518	74	Re.33,284	369	4,945,166		CLASS 600	8	4,944,749
52	4,945,083	715	4,945,116	90	4,945,141	375	4,945,167	16	4,944,722		4,944,750
53	4,945,084		CLASS 521	128	4,945,142	454	4,945,168		CLASS 604	15	4,944,751
	4,945,085	99	4,945,117	206	4,945,143	521	4,945,169	95	4,944,727		4,944,752
56	4,945,086	107	4,945,118	268	4,945,144	522	4,945,170	110	4,944,723	16	4,944,753
60	4,945,087	131	4,945,119	279	4,945,145		CLASS 549	118	4,944,724		4,944,754
132	4,945,088	163	4,945,120	304	4,945,146	224	4,945,171	143	4,944,726	19	4,944,755
171	4,945,089		CLASS 523		CLASS 527	227	4,945,176	164	4,944,725	20	4,944,756
232.8	4,945,090	179	4,945,015	427	4,945,125	253	4,945,172		4,944,728		4,944,757
235.8	4,945,093	339	4,945,121		CLASS 528	295	4,945,173		4,945,729		4,944,760
252	4,945,091		CLASS 524	26	4,945,147		CLASS 556	187	4,944,730	65	4,944,764
	4,945,092	81	4,945,016		4,945,148	16	4,945,174	192	4,944,731		4,944,765
264	4,945,094	101	B1 4,785,035	61	4,945,149			247	4,944,732	66	4,944,766
278	4,945,095	111	4,945,017	193	4,945,150						4,944,767
307	4,945,096	141	4,945,018	272	4,945,151						
318	4,945,097	166	4,945,122	335	4,945,152						
		269	4,945,123	337	4,945,153						

CLASSIFICATION OF DESIGNS

D1—	121	309,520	D7—	308	309,546		418	309,570		167	309,593		138	309,616	309,640
	126	309,521		323	309,547		435	309,564		169	309,594		199	309,617	109 309,641
D2—	229	309,522		378	309,548		455	309,571		191	309,595	D16—	102	309,618	123 309,642
	244	309,523		410	309,549	D10—	18	309,572		300	309,596		129	309,619	128 309,643
D3—	35	309,524		505	309,550			309,573	D13—	116	309,597		209	309,620	142 309,645
	61	309,525		507	309,545			309,574		133	309,599		225	309,621	143 309,646
		309,526		585	309,551		24	309,575		146	309,664	D17—	18	309,622	156 309,647
	78	309,527		589	309,552		39	309,576		162	309,598	D18—	7	309,623	190 309,648
D4—	104	309,528		591	309,553			309,577			309,600			309,624	206 309,651
	116	309,529		602	309,554		52	309,578	D14—	100	309,601			309,625	214 309,649
	138	309,530		605	309,555		53	309,582		102	309,602			309,626	D22— 134 309,644
D6—	366	309,531		633	309,556		58	309,579		106	309,603			309,627	141 309,650
		309,532		693	309,557		68	309,580		109	309,604		11	309,628	D23— 207 309,652
		309,533		700	309,558		78	309,581		114	309,607			309,629	213 309,653
		309,534	D8—	60	309,563			309,583		126	309,608		24	309,630	226 309,654
	372	309,535		91	309,559		81	309,584			309,609		42	309,631	238 309,655
	397	309,536		355	309,560		113	309,585		140	309,605			309,632	356 309,656
	455	309,538		356	309,561	D11—	4	309,586		163	309,610	D19—	51	309,633	362 309,657
	461	309,537		373	309,562		149	309,587	D15—	1	309,606	D20—	7	309,634	370 309,658
	479	309,539	D9—	305	309,565		158	309,588			309,611		42	309,635	387 309,659
	491	309,540		306	309,566	D12—	128	309,589			309,612	D21—	31	309,636	D24— 36 309,660
	513	309,541		384	309,567		147	309,590		23	309,613		64	309,637	51 309,662
	596	309,542		410	309,568			309,591		78	309,614		108	309,638	54 309,663
	601	309,543		415	309,569			309,592		89	309,615			309,639	D26— 51 309,661
		309,544													

CLASSIFICATION OF PLANTS

P.—	1	7,282	46	7,283	68	7,284	7,285	7,286	80	7,287

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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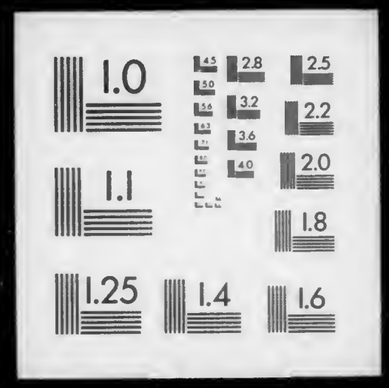
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